

San Diego State University

Measuring the Economic Impact  
on the Region

Final Report

July 19, 2007



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on the Region

Final Report

**July 19, 2007**

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# 1. Executive Summary

## 1.1. SDSU's Economic Impact on the San Diego Region: Model-Based Analysis

The social and economic impact of San Diego State University (SDSU) on the San Diego region (San Diego and Imperial County) is significant. Serving roughly 34,305 students in 2006/2007, SDSU is a critical component to the region's higher education system. Moreover, the University is currently the 8<sup>th</sup> largest employer in San Diego,<sup>1</sup> and as it plans to expand its student body to roughly 44,826, its impact on the region will only grow. The San Diego region is one of the most dynamic and innovative in the nation, in part due to its higher education system. This 2006 study demonstrates that SDSU is a critical foundation to the region's success.

Traditionally, the impact of a university rests on the incalculable value of knowledge and learning. While education is indeed valuable in its own right, the economic impact of a university can be identified, in monetary terms, due to the spending and life-time income improvements as well as social value to the community. This report takes a two-pronged approach to explaining those impacts.

Part I uses an economic model to calculate the quantifiable impacts of university and student spending and the higher earning power of SDSU graduates. ICF used the IMPLAN 509-industry input-output model to measure the inter-industry effects of university and student spending and alumni earnings on the regional economy. IMPLAN calculates the flow of expenditures from various sectors--e.g., university and personal spending--using a model specific to the regional economy of San Diego and Imperial counties. By tracking SDSU-related spending throughout the economy, the model then calculates the indirect and induced impacts due to the expenditures by and on the current students, which are then used to estimate the total dollar amount per full-time student (or Full-Time Equivalent, referred to as FTE in this report).

The analysis in Part I builds upon a previous study conducted by ICF in 2004 that used a similar methodology to analyze the impact of the California State University system on the state's economy. The report calculated the impact of the CSU system on the State of California as well as each individual campus on 8 California regions. According to the Impact Report, in 2004 SDSU contributed a total of \$1.6 billion in direct, indirect and induced output into the San Diego regional economy from university and student spending. Moreover, in 2004 more than \$2.6 billion in earnings by SDSU alumni could be attributed to their CSU degrees.

In the second part of the analysis in Part I, results obtained for the regional economic impacts due to current students were then extrapolated to estimate the impacts of SDSU in 2025, at which point the University expects to have expanded by an additional 10,000 FTEs. IMPLAN is a static model, therefore the growth projections are based on the assumption that the conditions that were true in 2006 would also be valid in 2025 (e.g., macroeconomic conditions of the regional economy). As a result, these estimates are based on a simple linear extrapolation due to increased student population and projected increases in per FTE University spending, without consideration of structural shifts in the regional economy.

The tables below and subsequent text summarizes the impacts calculated in Part I of this report:

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<sup>1</sup> *San Diego Business Journal/Special Report*, June 11, 2007. See Appendix for excerpted list of the top 20 employers.

Measuring the Economic Impact on the Region  
Executive Summary

**Table 1. Summary: SDSU Annual Net Economic Impact on the San Diego Region**

	Output Impact		Tax Impact		Employment Impact
	Total Impact (\$)	Impact per FTE	Total Impact (\$)	Impact per FTE	Total Impact
<b>University Spending</b>					
Direct SDSU Institutional Expenditures	\$ 705.5 million				8,967
Spending Multiplier	x1.56				3,219
Total (direct, indirect, induced) Impact	\$1.1 billion	\$39,000	\$153.5 million	\$5,400	12,186
<b>Student and Alumni Spending</b>					
Direct Student Spending (out-of-region students only)	\$143.3 million				776
Spending Multiplier	x1.41				454
Total (direct, indirect, induced) Impact	\$201.4 million	\$7,100	\$24.5 million	\$870	1,230
Direct Alumni Spending	\$738.9 million				3,963
Spending Multiplier	x1.40				2,330
Total (direct, indirect, induced) Impact	\$1.0 billion	\$43,800	\$130.3 million	\$4,600	6,293
Total Impact of Student and Alumni Spending	\$1.2 billion				7,523
<b>Grand Total</b>	<b>\$2.4 billion</b>	<b>\$89,900</b>	<b>\$308.3 million</b>	<b>\$10,870</b>	<b>19,709</b>
<b>Regional Impact</b>					
San Diego Regional Totals	\$145.6 billion				1,346,154
SDSU Impact Percentage	2%				1.5%

*Note: Totals may not add up due to rounding. Figures are expressed in 2006 dollars.  
Full Time Equivalents (FTE) were 28,261 for Fall 2006.*

Total SDSU institutional expenditures (including auxiliary spending) amount to roughly \$705.5 million, in 2006 dollars. Using IMPLAN to calculate the secondary impacts of such spending, it was determined that SDSU expenditures indirectly contribute a total of \$1.1 billion worth of additional spending in the San Diego regional economy, giving the University a local output multiplier of 1.56. Furthermore, the University's \$1.1 billion output impact is associated with an additional 12,186 jobs in the regional economy and \$153.5 million in tax revenue. A concise way of evaluating this impact is to consider the total impact per student (or Full-Time Equivalent). Each SDSU student is associated with roughly \$39,000 of regional output.

However, these impacts only display a portion of total impact that SDSU has on the region. Beyond SDSU expenditures are the economic impacts associated with student spending and the increased earning potential of SDSU alumni. By including these integral elements of the SDSU-related impact the significance of the University is even more impressive. Out-of-region students who, without SDSU, might otherwise not reside in the region, spend roughly \$143.3 million in the regional economy. Additionally, SDSU graduates have additional earning power due to their degree. This difference in earning power translates to \$738.9 million annually spent in the local economy. Again, using IMPLAN to calculate the secondary impacts of this spending, it was determined that SDSU student and alumni indirectly contribute \$1.2 billion into the regional economy, with multipliers of 1.41 and 1.40 respectively. Combining the impacts, SDSU contributes an additional \$2.4 billion worth of spending annually into the San Diego regional economy. This equates to roughly \$89,900 of regional output and \$10,870 of tax revenue per FTE

student at SDSU. Clearly, the University has an enormous impact on its surrounding community. In total, roughly 700 jobs are created in the regional economy for every 1,000 SDSU FTEs.

SDSU is a major contributor to regional gross product and employment. The University is currently the 8<sup>th</sup> largest employer in San Diego.<sup>2</sup> SDSU's 8,967 direct employees represent 0.67% of the region's employment, and the University's \$705 million direct spending represents 0.48% of the region's total output (gross product). However, these numbers indicate only a portion of the University's impact. When taking into account SDSU's impact of \$2.4 billion in indirect and induced spending and 19,709 in secondary employment impacts, the University represents 2.0% of regional output (gross product) and 1.5% of regional employment.

A second analysis was conducted to *project* the impact of the University with an additional 10,000 FTE. The University expects to increase its total enrollment to 35,000 FTE by the year 2025. In addition to this growth in student population, the University also estimates that its per FTE spending will increase by 2.2% per year<sup>3</sup>. The results of these increases are shown in the table below.

**Table 2. Summary: SDSU 2025 Forecasted Annual Impact on the San Diego Region**

	Output Impact		Tax Impact		Employment Impact
	Total Impact (\$)	Impact per FTE	Total Impact (\$)	Impact per FTE	Total Impact
<b>University Spending</b>					
Direct SDSU Institutional Expenditures	\$ 1.3 billion				16,792
Spending Multiplier	X1.56				
Total (direct, indirect, induced) Impact	\$2.1 billion	\$58,800	\$287.5 million	\$8,200	22,820
<b>Student and Alumni Spending</b>					
Direct Student Spending (out-of-region students only)	\$263 million				1,426
Spending Multiplier	X1.41				
Total (direct, indirect, induced) Impact	\$370 million	\$10,600	\$45.1 million	\$1,300	2,260
Direct Alumni Spending	\$1.5 million				7,763
Spending Multiplier	x1.40				
Total (direct, indirect, induced) Impact	\$2.0 billion	\$58,000	\$255.2 million	\$7,300	12,327
<b>Grand Total</b>	<b>\$4.5 billion</b>	<b>\$127,400</b>	<b>\$587.7 million</b>	<b>\$16,800</b>	<b>37,407</b>

*Note: Totals may not add-up due to rounding. Figures are expressed in 2006 dollars.  
The 2025 Full Time Equivalents (FTE) is projected to be 35,000.*

It was forecasted that in 2025, the growth of student body and increase in University spending would generate \$4.5 billion of annual direct, indirect, and induced output into the San Diego regional economy, almost doubling the 2006 impact. Furthermore, this 2025 estimated impact equates to roughly \$127,400/FTE injected into the economy annually. Consequently, there would

<sup>2</sup> *San Diego Business Journal/Special Report*, June 11, 2007.

<sup>3</sup> According to SDSU budget analysis, over the last 10 years the marginal cost per FTE has increase by an average of 2.2%. This average represents an average over time of the general fund, auxiliary organization and capital budgets. Since 2004, there has been a noticeable increase in the per FTE budget. In light of CSU's revenue growth plan and recently agreed upon salary increases, continued growth can be anticipated; therefore, the 2.2% annual increase represents a conservative estimate.

also be a significant increase in tax revenues, both at the federal and state/local levels. Lastly, all of these spending impacts translate to a total of 37,407 jobs created in the local economy.

The table below summarizes the growth in SDSU output, tax and employment impact anticipated for the year 2025. The total employment impact grew from 19,709 in 2006 to an estimated 37,407 in 2025. The employment impact/per FTE shown in the table below indicates that for every 100 SDSU students in 2006, 70 jobs are supported. Conversely in 2025, we estimate every 100 SDSU students will support roughly 107 jobs.

**Table 3. Comparison Table: SDSU's Current (2006) Impact on the San Diego Region Compared to the 2025 Forecast**

Year	FTEs	Output Impact/FTE	Tax Impact/FTE	Employment Impact/FTE
2006	28,261	\$ 89,900	\$ 10,870	.70
2025	35,000	\$ 127,400	\$ 16,800	1.07
% Change-Increase	24%	42%	55%	53%

*Note: Figures are expressed in 2006 dollars.*

## 1.2. SDSU's Impact on San Diego's Economic Foundations: Qualitative Analysis

The first half of this report analyzes the economic impact that San Diego State University's revenues and expenditures have on income and employment in the San Diego region. This approach, called the "economic base approach," is valuable in capturing all of the cumulative monetary effects of the university on the regional economy, but it inherently treats the university like any other firm in the economy and does not address the vast range of economic effects that the university has on the surrounding region that are not easily measured in dollars.

In order to grasp the full significance of the economic impact of SDSU on the San Diego economy, a "foundation impact analysis" is needed that considers the range of University impacts that have a visible impact on the city's economy but are not easily revealed in a model. The foundation impact analysis presented here considers the contributions of the University to the regional economy in each of the following categories: workforce development; innovation and entrepreneurship; quality of life; housing and healthcare; transportation, energy, police, and other services; and image and marketing. These categories represent the major "foundations" of any region's economy, because it is by creating advantages in these foundation categories that a region makes itself a competitive place to grow, expand, and attract business.

There is no well-developed standard for measuring the foundation impacts of the university. In some instances, these impacts will be described quantitatively, and in other instances the impacts will be qualitative and not easily lend themselves toward quantification—this is the very nature of capturing all of the economic impacts of an active, wide-reaching university. The theme throughout the analysis is that SDSU makes invaluable contributions to San Diego's foundations, strengthening the region as a desirable place to do business, and creating a strong positive impact on the regional economy.

The following sections highlight SDSU's most important impacts on San Diego's regional economy in each of the six foundation categories.

### 1.2.1. Workforce Development

**What are we measuring?** *The University's role in creating and renewing a qualified and job-ready workforce for the region's industries, and providing an accessible higher education to populations that may not otherwise receive one.*

A successful regional economy has a strong pipeline of educational providers that carries the region's residents through growth (K-12), advancement (higher education), and renewal (continuing education) so that they are prepared—and constantly updating their skills—to match the most current needs of the region's economy.

SDSU is providing quality higher education, involving top-level research and training, in the industries that drive San Diego's globally-competitive economy, such as bioscience, information technology, and international business. Its impact on regional workforce development is astounding—the University is providing services at each segment of the workforce pipeline, from growth to advancement to renewal. The University is partnering with area schools to make tangible improvements in the advancement of the region's K-12 students to higher education at SDSU through such groundbreaking programs as the Compact for Success, and through such efforts the University is focusing on San Diego's most disadvantaged and underrepresented populations. SDSU is also tailoring higher education curricula and programs that respond to the unique challenges of the San Diego region, such as in healthcare, education, and social work. And finally, the University is providing far-reaching opportunities for thousands of San Diegans to renew their skills to remain competitive through the College of Extended Studies.

#### Preparing the Workforce for San Diego's Key Economic-Driving Industries

The numbers below represent SDSU bachelor, master and doctoral graduates for 2005/2006. See the textbox to the right for overall graduation trends over the past 5 years.

- 254 graduates in BioScience-related disciplines.
- 102 graduates in Defense & Transportation Equipment-related disciplines.
- 557 graduates in Engineering & Design-related disciplines.
- 303 graduates in Entertainment & Amusement-related disciplines.
- 63 graduates in Environmental Technology-related disciplines.
- 357 graduates in Information Technology-related disciplines.
- 489 graduates in Financial Services-related disciplines.
- 1,540 graduates in International Business-related disciplines.
- 99 graduates in Tourism-related disciplines.

Year	Total Graduates
2001-2002	7,109
2002-2003	7,686
2003-2004	7,963
2004-2005	8,046
2005-2006	8,162

#### Preparing the Workforce to Meet the Local Needs of San Diego and its Residents

- 306 *additional* new nurses added to the San Diego region since the inception of the Nurses Now program in 2000. Currently SDSU graduates 205 nurses each year, and this number is rising.
- 79 percent increase in math and science credentials awarded by SDSU between 2003 and 2006 since the start of the Mathematics and Science Teacher Initiative.

- 40 percentage points higher increase in math and science teacher credentials at SDSU over the CSU system-wide average between 2003 and 2006.
- 80 percent of the College of Education's credential program graduates teach in San Diego. More than half of these teach in the San Diego Unified School District, the eighth largest district in the country and second largest in the state.

### Creating Partnerships with San Diego's K-12 Educators

- 104 percent increase in enrollment of students from Sweetwater Union High School (California's largest and most diverse 7-12 system) at SDSU since implementation of Compact for Success in 2000.
- 26 percent increase in Average Academic Performance (based on California Department of Education's Academic Performance Index) at Rosa Parks Elementary School in San Diego's City Heights area since implementation of the City Heights K-16 Education Pilot.
- 40+ new science curricula developed for San Diego County elementary school teachers through the Partnerships Involving the Scientific Community in Elementary Schools (PISCES) Project.

### Serving San Diego's Underrepresented Populations

- 45 percent of admitted first-time freshmen are students of color.
- 3,802 transfer students accepted in Fall 2006, representing 42 percent of the incoming class and indicative of an aggressive acceptance of transfer students.

### Advancing and Renewing San Diego's Workforce

- 53,000 students take advantage of classes in the College of Extended Studies each year, ranging from single-day sessions to multi-year certificate programs, to degree programs for working adults.
- Approximately 500 continuing education students are served each year by SDSU to renew their skills in response to the changing needs of the region's marketplace.

#### 1.2.2. *Innovation and Entrepreneurship*

**What are we measuring?** *The University's contribution to an innovative culture that engages in applied research, R&D, technology commercialization, new business start-ups and spin-offs, and subsequently creates opportunities for employment in the region.*

All successful regional economies must have a healthy level of innovation activities that take place to ensure a constant turnover of ideas, technologies, and companies that keep the region competitive. A successful economy has a regional system for performing basic scientific research (discovery), turning research results into industrial applications and technologies (development), and commercializing those technologies for the creation of start-up and spin-off companies and new employment opportunities for the region (deployment). A smooth and well-supported "Innovation Pipeline" that carries innovation from discovery, through development, and into deployment is essential to the success of the regional economy—it is only through this process that a region fully enjoys the economic benefits of its innovation, in the form of new businesses, employment, and revenues.

San Diego State University is a leader in the region in supporting San Diego's Innovation Pipeline in every phase. The research capabilities at SDSU have reached new levels of growth, and the University is performing research and development and supporting technology commercialization and start-ups in San Diego's most important, economy-driving industries—in addition to driving innovation results in the industries that are meeting San Diego's most important local challenges. These efforts are generating intellectual property that is forming the basis for new businesses, employment, and wealth in San Diego.

### Establishing a World-Class Research Institution

- Classification as a research university with “high research activity” by the Carnegie Foundation for the Advancement of Teaching will attract greater distinction, attention, and research talent to SDSU in the future.
- #1 small research university in the nation, according to 2005 Faculty Scholarly Productivity Index (FSP Index) based on faculty productivity, publications, citations, and awards.<sup>4</sup>
- \$200 million in revenues in SDSU Research Foundation in 2005-06, including \$130 million in awards from 300 different organizations.
- 1,500 active research grants, most of which are engaged in innovation in San Diego's major economy-driving industries or in creating solutions to San Diego's local challenges.

### Performing Research in San Diego's Key Industries

- Almost \$3 million in industry-sponsored research in FY 2005-2006.
- New \$14.3 million BioScience Center affirms SDSU and the San Diego region as centers of innovation in this rapidly-growing industry.
- Over \$9.5 million from prestigious five-year Program Project Grant for the SDSU Heart Institute makes SDSU a center of new research in the preservation of heart cells during a heart attack.
- New \$11 million Coastal Waters Laboratory is a center of public-private collaborative innovation in marine science.
- \$25,126,570 invested in innovation at SDSU in Bioscience, one of San Diego's most important growing industries.

### Performing Research to Meet the Needs of San Diego and its Residents

- New grant of \$10 million from the National Institutes of Health addresses local issues in Latino health.

### Turning Research into Technologies, Start-Up Companies, and Employment Opportunities in San Diego

- 13 disclosures, \$198,626 in royalties, and 3 start-up companies in the past year alone.

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<sup>4</sup> <http://advancement.sdsu.edu/marcomm/news/releases/spring2007/pr060107.html>

- 97 disclosures, \$1,254,550 in royalties, and 13 start-up companies in the past 9 years, since the inception of the Technology Transfer Office.
- Of the 13 SDSU start-ups since 1998, 10 are still in existence, representing a survival rate of higher than 75 percent.
- SDSU's successful start-ups have collectively created over 45 new jobs and over \$1.1 million in revenues for the San Diego economy in biotechnology, medical, software, and other industries.
- The Center for Commercialization of Advanced Technology (CCAT), a public-private collaboration of which SDSU is a partner, has overseen 300 commercialization awards valued at over \$18 million to 134 defense/homeland security-related technologies developed in private companies, government laboratories, and universities in the San Diego region.
- The SDSU Entrepreneurial Management Program is a NASDAQ Center of Excellence, placing it among the top eight such programs in the country.
- Ranks in the top 25 in entrepreneurship among regional universities in the U.S.

### **1.2.3. Quality of Life**

**What are we measuring?** *The University's enhancement of the region's educational, community, arts, sports, and entertainment options, and their effect on residents' quality of life and engagement with their community and tourism to the region.*

Quality of life is an essential foundation to any successful regional economy, because—though quality of life is a rightful end unto itself—it is also a major and necessary tool in attracting businesses, employees, and residents to the region. Quality of life is the mix of arts, cultural offerings, sports and entertainment in a region, and San Diego—consistently described as having one of the nation's top qualities of life—is well benefited by San Diego State University's vast array of offerings.

SDSU provides programs and services that on a daily basis make San Diego a better region to live, work, and play, from its libraries to its cultural performances, and from its sporting events to the thousands of hours of volunteering its students contribute to the region. These amenities are creating real impacts on the San Diego economy. For those who come from within the San Diego region, SDSU is providing a huge and immeasurable public good to the region's quality of life. For those who come to SDSU from outside the San Diego region, SDSU is serving as a wealth generator for the San Diego economy by attracting visitors and their spending dollars from elsewhere.

### **Providing Public Access to Academic Resources**

- 6,400,000 items in library collections and available for public access.
- 685 public-access computers.
- 2,600,000 annual visits to the library, including those from the general public.
- 6,827 attendees to annual series of 195 library lectures.
- Estimated 74,000 visitors (prospective students and families and other non-SDSU affiliated) to campus each year for new student orientation, year-round campus tours, "Explore SDSU" in March, and graduation—and their spending dollars.

## Creating a Center for Lectures, Arts, and Performances

- KPBS, the local PBS radio and television station based at SDSU, is the most-watched public television station in the country during prime time.
- Estimated 65,800 annual attendees to SDSU Cultural Arts and Special Events (CASE), which includes noontime concerts, coffee house performances, open mic, homecoming, AzFest, and other special events. Approximately 10 percent of attendees are from the general public.
- 3,899 total attendees to Guest Art series and University Art Gallery each year. Between 15-35 percent are from the general public.
- 12,500 attendees to theatre performances each year, between Powell Theatre and Experimental Theatre. Approximately 45 percent are from the general public.
- 20,000-25,000 attendees to music and dance performances each year. This includes paid and free concerts and recitals by student, faculty, and guest artists throughout the year in Recital Hall, Rhapsody Hall, and Dance Studio Theatre.
- Estimated 208,295 attendees to Cox Arena (excluding athletic events) and 23,805 attendees to Open Air Theatre for major concerts, performances, and events for a total of 117 event days during 2005-06, of whom an estimated 85-90 percent is from the general public.

## Fielding Sports Teams for Regional Fans

- Estimated 375,000 total attendance for all campus home sports games for 2006-07 school year, up from 300,000 in recent years.
- Estimated 75 percent of attendance at SDSU athletic events, or over 280,000 people, are visitors from the general public.

## Offering the Public Use of Facilities

- 39,606 bed nights offered by SDSU Conference Center to summer youth and adult programs.
- 80+ organizations use SDSU facilities each year, ranging from industry associations to summer youth camps to church organizations.
- 16,778 members of Aztec Recreation Center, including 1,469 members from the general public.

## Enriching the San Diego Region with Community Service

- 175,000 hours of community service performed by SDSU students each year.
- 152,000 internship hours, or the equivalent of 73 full-time equivalent employees, are provided each year to San Diego social service agencies by students in the SDSU School of Social Work.
- 180 community agencies are partners with SDSU's Center for Community-Based Student Learning.

### **1.2.4. Housing and Healthcare**

**What are we measuring?** *The University's role in providing housing and healthcare options and its simultaneous role in preparing individuals who make better-informed decisions about health for themselves and their families and are less likely to require public assistance.*

Housing and healthcare are essential foundations to any regional economy. A region must provide the housing and healthcare options that its population needs in order to support a successful regional economy. San Diego State University contributes to the region's supply of housing and healthcare with its own programs that support its students, faculty, and staff, and reduce demand on public services.

### Offering Medical Care

- 55,000 patient visits provided by SDSU Student Health Services in 2005-2006.

### Providing Housing

- 5,000 students and 14 faculty/staff housed in campus-owned or managed housing.

### Providing Childcare for SDSU Families and the Public

- 246 children are cared for in the SDSU Children's Center.

## ***1.2.5. Transportation, Energy, Police, and other Services***

***What are we measuring?*** *The University's role in aiding transportation, police, and other services that lower the strain on other regional providers, and the university's simultaneous role in preparing individuals who have a statistically lower rate of participation in crime.*

Transportation, energy, and police are all part of the public infrastructure that is critical for a region to build and maintain in order to serve the needs of businesses and residents and to be economically competitive. This infrastructure in San Diego—while typically provided by public agencies—is in fact partially supported by San Diego State University.

The University is making active contributions to the transit, energy, and public safety needs of the region. SDSU is engaged in assisting the transportation needs of students, faculty and staff, and visitors to and from campus, preserving the public safety of those on its campus, and even in producing and providing energy to the grid. All of these activities contribute to the creation of a unified infrastructure network to support San Diego's regional economy, while simultaneously reducing SDSU's impact on the public provision of these services.

### Aiding the Transportation Needs of Students, Faculty, Staff, and the Public

- 9,264 subsidized transit passes sold in FY2005-2006, one year after the opening of SDSU's new multimodal transit center, evidence of the University's dedication to transit-oriented growth in the San Diego region.
- An estimated 12,000 students, faculty and staff can be accommodated by the SDSU trolley station. The University's dedication to smart transit growth resulted in a change from a "commuter campus" to a "community campus."<sup>5</sup>

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<sup>5</sup> [http://www.scup.org/about/Awards/2006/San\\_Diego\\_State.html](http://www.scup.org/about/Awards/2006/San_Diego_State.html)

## Providing Police Protection

- 27,948 total calls responded to by the SDSU police in 2006, of which 8,943 were called in by the community, contributing to the maintenance of public safety in the 1-mile jurisdiction around campus and reducing the use of the city police force.

## Providing Energy to the Grid

- 100 percent of SDSU's electric needs are met by its own clean, efficient power plant. It creates no burden on the grid.
- 120,000 kWh/month exported to the grid (with a capacity to export as much as 1.0-1.5 megawatts in a demand-response scenario), reducing San Diego's energy use "footprint."
- 5 solar photovoltaic arrays and two demonstration solar projects at SDSU indicate its leadership in the deployment of clean and renewable energy sources.

### 1.2.6. *Image and Marketing*

***What are we measuring?*** *The University's contribution to the elevation of the image of San Diego in news media and other outlets, and the subsequent rippling effects on marketing, business attraction, and inflow of visitors and new residents.*

Marketing is an essential foundation of any successful regional economy. Marketing relates to the packaging of a region's assets and advantages into a tight and consistent message about the region for promotion other businesses, investors, and the population in general. A successful region is able to coordinate and bundle its advantages into a comprehensive package that is consistently promoted by all coordinating organizations in the region, and is used to successfully attract businesses, investors, and others to the region, looking to take advantage of the region's strengths.

SDSU is more than a source of workforce, innovation and entrepreneurship, culture and recreation, and infrastructure. SDSU is an asset in the marketing of the San Diego region to the rest of California, the U.S., and even the world. The University's research, education, events, and activities draw news media and public attention on a daily basis, promoting the San Diego region as a place attractive to not only students and faculty, but employers who see the area as a good place to live and work.

- 200,000+ people receive SDSU marketing materials each year, acting as advertising for the San Diego region as well.
- \$1,000,000+ in advertising value is generated by SDSU's cooperative media efforts each year, indicative of the scope of reach of SDSU in the news.

Together, the institution, students, faculty, and staff of SDSU have an almost immeasurable impact on the San Diego region—its economy, workforce, innovation and entrepreneurship, social services, image, and quality of life. The purpose of this report is to highlight those impacts.

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## 2. SDSU's Economic Impact on the San Diego Region: Model-Based Analysis

### 2.1. Overview

San Diego State University provides a significant source of benefit to the San Diego region by generating revenues and creating jobs throughout the local economy, yet the enormity of this impact is often under-appreciated. The impacts associated with SDSU originate with the institution itself—its faculty, students, and alumni—but then percolate through the economy generating successive rounds of economic activity because of the inter-linkages between different economic sectors.

Direct spending by the University, faculty, and students is the first and most obvious economic impact of SDSU. Not only does SDSU purchase goods and services from the surrounding economy, it also is an important regional employer. The out-of-town student body represents residents who might not otherwise live in the region; therefore, the money they spend off-campus generates income and employment for local businesses that would not exist if not for the University. Moreover, this direct spending is indicative of only a portion of University-related spending. The full economic impact that SDSU has on the regional economy, including its impact on other seemingly unrelated sectors beyond those in which it is directly related (education, retail, construction), can be shown through a regional economic impact analysis.

Regional economic modeling is based on the relationships between industry sectors and is founded on the principle that industries are interdependent; one industry purchases inputs from other industries and households (e.g., labor) and then sells outputs to other industries, households, and government. Therefore, economic activity in one sector impacts other sectors and causes an increased flow of money throughout the economy. For the purpose of this analysis, the modeling software IMPLAN was used to calculate these impacts.

In addition to the direct, indirect, and induced impacts resulting from spending and job creation, the University makes a tremendously important non-direct economic contribution to San Diego and its future. A university education is vital to pursuing a lifelong professional career and achieving greater economic security. SDSU keeps this avenue of economic opportunity open to everyone in the region by providing a quality, affordable university education.

A university education changes the trajectory of people's lives. It helps them fulfill their aspirations to become artists, engineers, teachers, health care professionals and more. Its recipients are better prepared to succeed in, adapt to, and appreciate the rapidly changing world around them. In addition, a university education is widely recognized as an investment that pays a lifetime of dividends in the form of better jobs and higher incomes.

What is less well understood, however, is that the investment in higher education is also a good investment for the region. When regions make the investment in their public university systems, the region as a whole receives a lifetime earnings boost. Regional per capita income is systematically higher in locations where a higher percentage of the population has an undergraduate university degree. Investments made by locations in their public universities benefit everyone in those areas. This is because the U.S. economy, particularly in states such as California, has shifted from one dependent upon manufacturing to one driven by knowledge-based services and high-technology manufacturing. In such an economy, locations that have a well-educated workforce are more attractive locations for these fast-growing, high-paying industries. Workers in these regions benefit from higher wages and greater economic opportunities while everyone benefits from the greater level of public services these places can afford.

## 2.2. Model-Based Analysis

As explained above, direct spending and employment constitute only a portion of the economic impact of a university on its surrounding economy. To indicate the full economic effect of SDSU on the San Diego region it is critical to calculate the impacts of not only direct spending and employment, but also indirect and induced money flow and jobs.

To illustrate with a simple everyday example, if you spend \$30,000 to purchase a car, that affects not only the automobile industry, but also the steel, glass, and paint industries that supply the automobile industry. Thus, your spending on a car helps sustain other secondary jobs in inter-linked industries. Money flows from one industry to another to a varying degree depending on region and originating industry. Coefficients that measure the magnitude of the secondary impacts are called "multipliers." A unit increase in demand (an additional dollar of spending or one additional job in the sector) results in a total increase in output, income, or employment in the economy equal to its multiplier. That is, multipliers estimate the amount of direct, indirect, and induced effects on income or employment that result from each additional dollar of output, additional job, and additional dollar of employee compensation in a sector.

In this analysis, the indirect and induced impacts were calculated using the IMPLAN<sup>6</sup> (IMPact analysis for PLANning) input-output model. IMPLAN is created and maintained by the Minnesota IMPLAN Group (MIG). The IMPLAN model is a static input-output framework used to analyze the effects of an economic stimulus on a pre-specified economic region; in this case, the region comprises San Diego and Imperial Counties. IMPLAN is considered static because the impacts calculated by any scenario by the model estimate the indirect and induced impacts for one time period (typically a year).

The IMPLAN model is based on the input-output data from the U.S. National Income and Product Accounts (NIPA) from the Bureau of Economic Analysis. The model includes 509 sectors based on the North American Industry Classification System (NAICS). The specific modeling region used for this analysis included San Diego and Imperial counties. The model uses region-specific multipliers to trace and calculate the flow of dollars from the industries that originate the impact to supplier industries. These multipliers are thus coefficients that "describe the response of the [local] economy to a stimulus (a change in demand or production)."<sup>7</sup> Three types of multipliers are used in IMPLAN:

- **Direct:** Represents the jobs created due to the expenditures by people associated with the University, for example, students, faculty, staff, etc.
- **Indirect:** Represents the jobs created due to the industry inter-linkages caused by the iteration of industries purchasing from industries, brought about by the changes in final demands.
- **Induced:** Represents the jobs created in all local industries due to consumers' consumption expenditures arising from the new household incomes that are generated by the direct and indirect effects of the final demand changes.

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<sup>6</sup> IMPLAN was developed by the Minnesota IMPLAN Group (MIG). There are over 1,500 active users of MIG databases and software in the United State as well as internationally. They have clients in federal and state government, universities, as well as private sector consultants. More information is available at [www.implan.com](http://www.implan.com).

<sup>7</sup> Ibid.

The total impact is simply the sum of the multiple rounds of secondary indirect and induced impacts that remain in the region (as opposed to “leaking out” to other areas). IMPLAN then uses this total impact to calculate subsequent impacts such as total jobs created and tax impacts. This methodology, and the software used, is consistent with similar studies conducted across the nation.

## 2.3. Methodology

**Inputs and Model Parameters:** The direct economic impacts presented in the report are based on 2006 public financial data for SDSU and/or from calculations based on assumptions that will be discussed in greater detail in the following sections. The direct economic impacts include annual (2006) SDSU operational expenditures, capital expenditures, auxiliary expenditures, and average student expenditures. All data were collected from San Diego State University and presented to ICF through the office of Business and Financial Affairs.

In this assessment of San Diego State University’s economic impact, all SDSU-related expenditures, off-campus spending by out-of-county students, and the alumni earning potential differential were included in the model. Below is a list of the model input data.

SDSU-related expenditures include:

- Operational expenditures of SDSU;
- Capital expenditures of SDSU;
- Operational and capital expenditures of SDSU auxiliary institutions such as bookstores, campus restaurants, foundations, etc.

SDSU student-related expenditures include:

- Off-campus expenditures of students who moved to the region to attend SDSU.

SDSU alumni earnings-related impacts are explained below:

- SDSU alumni earnings-related impact refers to the total economic impacts (direct, indirect and induced) of the earnings differential of all SDSU alumni currently in the San Diego labor force, between their current salary and what they would have earned without their degree from SDSU.

**University Spending:** This study used 2006 SDSU financial statements provided by the University to estimate annual SDSU expenditures. All operational expenditures were coded as IMPLAN sector #462 (Higher Education). Again, IMPLAN uses county-specific data to assign expenditures that originate from the Higher Education industry to supplier industries. The construction-related capital expenditures were coded as such (IMPLAN sector #38—Commercial and Institutional Buildings) and all remaining capital expenditures were coded as #462.

Information regarding the impact of auxiliary organizations also came from internal SDSU financial reports. The following expenditure categories were included for auxiliaries:

- Salaries and Wages;
- Benefits;
- Other Student Scholarships/Grants;
- Interest on Bonds and Notes;
- Expenses-Other.

These were not broken down by the type of auxiliary enterprise, e.g., retail store, food service area, research institute, etc. The following assumptions were made regarding expenditures in each IMPLAN sector:

- 25% Retail Trade (IMPLAN sector #411);
- 25% Eating and Drinking Places (IMPLAN sector #481);
- 50% Rental Housing (IMPLAN sector #431).

The region impacted by SDSU has been defined as San Diego and Imperial counties. The main SDSU campus is in the City of San Diego, in San Diego County. This analysis therefore assumes that most of the impact will occur in San Diego County; however, SDSU has off-site campuses in Imperial County and therefore it is important to include the ripple affects of the students and spending that occurs in Imperial County. However, the San Diego main campus has a significantly greater impact as it has the majority of the population at 98% (Fall 2006 – 27,631 FTE) verses Imperial County at 2% (Fall 2006 – 630 FTE).

**Student Spending:** A full accounting of student expenditures attributable to SDSU operations required an estimate of off-campus student expenditures. First, it was assumed that a portion of SDSU student expenditure occurs at auxiliary organizations (e.g., campus housing, book stores, campus food services, and parking) which are incorporated in the auxiliary organization spending noted above. Second, it was assumed that since many resident students work in San Diego and therefore would likely make similar local expenditures whether or not they attended SDSU, the conservative assumption (e.g., an assumption that underestimates student spending impacts compared to many traditional impact calculations) was made to exclude these expenditures from the total student spending. Therefore only SDSU students who came from outside of the San Diego region were counted in this analysis.

In order to create these estimates, the following calculations were made:

1. The CSU system maintains a data set called *Residence of Total Enrollment by Campus*. This data set contains the number of students by campus and by county of residence. The number of out-of-region students for each region was calculated. The number of out-of-region students at SDSU in 2004 was used to extrapolate the number of out-of-region students in the current student body (2006).
2. The SDSU Office of Financial Aid and Scholarships provided information on estimated student spending for the 2007-2008 academic year. We used these data to estimate the amount a student will typically spend, excluding items from on-campus and auxiliary organizations, such as food, housing, and books. By multiplying this average off-campus spending by the number out-of-region students, we determined the total spending (excluding food, housing, and books) by out-of-region students. Our calculation will apply this 2007-2008 per student spending projection to the current 2006 student body, to present the most up-to-date, accurate estimate of current (2006 dollars) and future (2025) direct spending.
3. We assumed that all expenditures for books (retail) would occur under the auxiliary category, and therefore, were excluded from the additional student spending estimate. We assumed this category of expenditure was already accounted for as part of the auxiliary organization spending.
4. Some students live in on-campus housing while others live off-campus. We assumed that for students staying in on-campus housing, all food and housing expenditures would occur at

auxiliaries. For students not staying in on-campus housing, we assumed that none of their food and housing budget was spent at auxiliaries.

5. SDSU provided information on student housing that contained the number of students residing in on-campus housing.
6. The number of out-of-region students exceeded the number of students living in on-campus housing. Therefore, it was assumed that 100 percent of the on-campus housing was occupied by out-of-region students.

The “left-over” out-of-region students were assumed to reside in off-campus housing. Data relating to financial aid were used to estimate housing and food expenditures, which were then added to the total calculated above. This sum of spending described above became the total direct impact of student expenditures and was used as input into IMPLAN similarly to the other direct spending impacts of SDSU. The calculation applies the most recent available data, the projected 2007-2008 student spending estimates to the current (2006) study body to get the most accurate figures for current and future spending. *As previously noted, the assumptions used in this analysis to generate the additional student spending were intentionally conservative; that is, they are believed to understate the total additional student spending impact. Thus the results of this study should be treated as a lower bound of the total economic impacts of SDSU.*

**Alumni Spending:** Alumni impacts are treated differently than the other spending impacts in IMPLAN, as they are not expenditures by SDSU, but by SDSU graduates. Thus, instead of treating the direct impact as originating from the Higher Education sector, these expenditures were assumed to originate in the household sector, categorized by different income brackets in IMPLAN.

The method used to assess the direct impact of alumni consisted of the following steps:

1. SDSU data on the number of resident (living in San Diego County) alumni were collected. It was estimated that roughly 50% of each graduating class, remains a local alumni.
2. Data from the Census Bureau American FactFinder, 2005 for San Diego County, *Earnings by Educational Attainment--Workers 25 Years Old and Over*, was used to estimate the average salary of a bachelor's and master's degree alumnus compared to a high school graduate. These Census data provide average salary for San Diego County residents of different levels of educational attainment, including high school graduates, those with some college education, bachelor's graduates, and more advanced graduates.
3. The amount of earnings that is attributable to the alumnus's SDSU degree is the difference between the average salary associated with his/her degree and the average salary for an individual with a high school degree. For bachelor's degree holders, it is the difference between the average bachelor's degree salary and the average salary for either a high-school graduate or transfer student who already had some college credit.
4. It was estimated that 35 percent of income would be spent locally. This assumption was based on spending/saving patterns and data on regional purchase coefficients in IMPLAN.<sup>8</sup> Note: This calculation is based upon the additional degree-generated income to ensure that the alumni spending impact includes only added impact of an SDSU degree.

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<sup>8</sup> RPCs indicate the share of the regional demand purchased from local suppliers, and these typically vary by IMPLAN sectors and modeling regions.

5. To produce the most conservative estimate, ICF assumed that all alumni were single wage-earner households (IMPLAN code 10005, household annual income \$35K-\$50K). Actual household income is expected to be much higher as it is likely that many SDSU alumni are part of double-income households.

**2025 Forecast:** A second round of analysis was conducted to project the impact of SDSU in 2025, at which point the University expects to have a student body of 35,000 FTE. Additionally, the University projects that it will increase its per FTE spending 2.2 percent per year. The 2025 impact forecast takes only these events into consideration and builds upon the 2006 IMPLAN model. It was assumed that all of the assumptions and conditions used to estimate the 2006 impacts would remain valid in the 2025. The methodological assumptions ICF used to determine the 2025 direct impact projections are outlined below:

1. The 2025 direct University expenditures were calculated based on the projected increase in University spending. Information from SDSU indicated that it will increase its per FTE spending 2.2 percent per year. ICF compounded the 2.2 percent growth rate and calculated the projected 2025 per FTE and total direct amount. According to SDSU budget analysis, over the last 10 years the marginal cost per FTE has increase by an average of 2.2%. Since 2004, the increase has been significantly more, marking an increase in spending. In light of CSU's revenue growth plan and recently agreed upon salary increases, continued growth can be anticipated; therefore, the 2.2% annual increase represents a conservative estimate.
2. The projected 2025 direct student spending expenditure was calculated according to the 2006 student budget, demographic and spending pattern assumptions. The 2025 estimates incorporate the increased student population and on-campus housing capacity.
3. The estimated 2025 alumni population was calculated by compounding the average per year local (San Diego resident) graduates from 2007 to 2025. These 'new' graduates were added to the existing 110,000 resident alumni. The 2006 model's alumni earning potential and spending pattern assumptions were kept constant in the 2025 projected calculations.
4. The induced and indirect impacts were calculated by ICF based on the 2006 model and using linear extrapolations.

**Output:** Whenever new income is injected into an economy, it starts a ripple effect that creates a total economic impact that is much larger than the initial input. This is because the recipients of the new income spend some percentage of it within the region, and the recipients of that share, in turn, spend some of it within the region, and so on. The *total spending impact* of the new income is the sum of these progressively smaller rounds of spending within the economy. This total economic impact creates a certain number of jobs, called the *total employment impact*, and also creates tax revenue for federal and local governments, which we characterize as the *total fiscal impact*.

Thus, three impact results are presented in this report: total spending, total employment, and total fiscal (tax) impact. The numbers that are presented in this report represent a conservative estimate of the University's impact, as the IMPLAN model was run based on the most conservative assumptions and inputs.

## 2.4. SDSU Spending-Related Impacts

This analysis provides quantitative estimates of the total economic impact of San Diego State University on the San Diego region (San Diego and Imperial Counties) in terms of direct,

indirect, and induced spending related to University capital, operational and auxiliary expenditures, and student spending, as well as jobs that the University supports both within the institution and in the surrounding economy (e.g., through indirect and induced effects).

Direct SDSU-related expenditures for wages and salaries, capital equipment and supplies, and an array of other items related to its educational mission totaled roughly \$705.5 million in 2006 dollars. This total includes:

- \$401.2 million in University expenditures on wages and salaries, services, supplies, and related ongoing needs;
- \$54.8 million in average annual construction and capital expenditures;
- \$249.5 million in expenditures by campus auxiliary organizations such as bookstores, campus restaurants, research institutes, etc. This category captures the bulk of student expenditures for books, on-campus food purchases, and related purchases.

The IMPLAN model was used to calculate the indirect and induced impacts for each of the expenditures. It is important to note that each expenditure category represents a different mix of direct impact industries. All of the SDSU direct impacts were modeled as originating in the Higher Education industry (sector #462 in IMPLAN). Auxiliary expenses were attributed predominantly to the retail, housing, and food establishment sectors, and capital expenditures were assigned to construction and institutional codes. Because of these differences, a separate impact scenario was constructed for each SDSU expense type.

The total spending impact is calculated at over \$1.1 billion in expenditures within the region. This level of spending activity supports over 12,186 regional jobs annually and generates over \$153.5 million in annual taxes. Stated another way, SDSU has a local multiplier of 1.56, meaning that for every dollar the University spends in the local economy an additional 56 cents is generated (Note: All reported results are in 2006 dollars).

These impacts are better understood in the context of per student (or Full-Time Equivalent) value. The total impact of all SDSU-related expenditures equates to roughly \$39,000 per FTE of spending to the economy and \$5,432 per FTE in tax revenue. Additionally, SDSU-related spending currently corresponds to 431 employees per 1,000 students. These impressive impacts based on SDSU-related expenditures confirm that the University is a large and significant presence in the San Diego region with a spending profile and an economic impact to match.

The total impacts can be seen below in greater detail. (Note: Whenever assumptions or estimation was required, ICF used the most conservative estimate).

## Total Output Impact

Table 4 below shows how direct spending in each category causes indirect and induced spending throughout the economy. This spending ripples through numerous industry sectors throughout the region. As a result, the combined total impact is far greater than the initial direct spending. Initial direct spending of a little over \$700 million leads to an additional \$174 million in secondary (indirect) spending due to the industry inter-linkages, and an additional \$220 million in induced spending due to the consumption expenditures arising from the new household incomes.

**Table 4. Output Impact**

SDSU Expenditure	Direct	Indirect	Induced	Total
Operational	\$401,234,154	\$106,936,967	\$119,161,929	\$625,963,172
Capital	\$54,777,257	\$13,726,644	\$23,736,211	\$92,240,113
Auxiliary	\$249,487,305	\$53,452,295	\$77,228,673	\$380,168,278
<b>Total SDSU</b>	<b>\$705,498,716</b>	<b>\$174,115,906</b>	<b>\$220,126,813</b>	<b>\$1,098,371,563</b>

*Totals may not add up due to rounding. Figures are expressed in 2006 dollars.*

## Employment Impacts

IMPLAN uses the total spending impact in each industry to calculate the subsequent impact on regional employment. As shown in Table 5, SDSU spending supports over 3,200 non-University jobs. These jobs are a result of the economy-wide indirect and induced spending and therefore affect numerous industries within the region. Some of the major sectors where these secondary jobs are created include wholesale and retail trade, food services and restaurants, hotels, entertainment, and healthcare services—sectors that typically benefit from a vibrant local economy.

**Table 5. Employment Impact**

SDSU Expenditure	Direct	Indirect	Induced	Jobs Created
<b>Total SDSU</b>	<b>8,967</b>	<b>1,370</b>	<b>1,849</b>	<b>12,186</b>

*Totals may not add up due to rounding.*

## Fiscal Impact

The fiscal (tax) impacts were estimated based on the spending across all industries in the local economy as a result of institutional and auxiliary spending.<sup>9</sup> Table 6 below shows two types of tax revenue streams—federal and state/local. Based on the \$1.1 billion total regional economic activity attributable to SDSU, the federal government collects roughly \$85.4 million in taxes, of which 47 percent, or \$40 million, comes from income tax (corporate and personal). Additionally, the state and local governments collect another \$68.1 million in taxes, of which property and sales tax comprise 56 percent or \$38 million. Tax impacts of SDSU spending are shown below.

**Table 6. Tax Impact for Total SDSU Expenditures  
 (includes Operational, Capital, and Auxiliary Expenditures)**

	Total Tax Impact
Federal Tax Revenues	\$ 85,439,788
State and Local Tax Revenues	\$ 68,073,577
<b>Total</b>	<b>\$ 153,513,365</b>

*Totals may not add up due to rounding. Figures are expressed in 2006 dollars.*

<sup>9</sup> The tax impacts are not part of the GDP accounting framework used for the other impacts. These are calculated in IMPLAN using standard assumptions about tax rates.

## 2.5. SDSU Student Expenditure-Related Impacts

SDSU student spending on textbooks, meals, and housing for the 2006-2007 academic year totaled \$143.3 million. These expenses include additional off-campus spending by out-of-region students who are in San Diego or Imperial Counties to attend SDSU. Expenditures on a region-wide basis for housing and other living expenses by resident students were assumed to exist with or without SDSU and therefore were not considered an incremental benefit.

Using IMPLAN, it is estimated that the total (direct plus secondary) spending impact of SDSU student expenditures is \$201.4 million. This level of spending activity is associated with roughly 1,230 additional regional jobs, of which about 430 are in support sectors. Moreover, SDSU student expenditures also generate over \$24.5 million in annual taxes, half of which is at the state and local level.

As stated previously, impact is often better understood in the context of per student equivalent. In the case of student spending, each SDSU student corresponds to roughly \$7,100 in total regional output and \$870 in tax revenue annually.

Tables 7 and 8 below provide additional detail. (Note: Whenever assumptions or estimation were required, ICF used the most conservative estimates).

### Total Output and Economic Impact

Student spending patterns were modeled in IMPLAN to calculate the total secondary impact of off-campus expenditures by out-of-region students. Because student expenditures affect different industry sectors than do the University expenditures discussed above, the multiplier value estimated from student spending is 1.41, which is slightly lower than the 1.56 for University spending. Thus, every dollar spent by students contributes an additional 41 cents into the regional economy because of its impact on secondary support sectors.

**Table 7. Output and Employment Impact**

	Direct	Indirect	Induced	Total
Output Impact	\$ 143,291,504	\$ 28,634,251	\$ 29,507,402	\$ 201,433,157
Employment Impact	776	209	224	1,230

*Totals may not add up due to rounding. Dollar figures are expressed in 2006 dollars.*

### Fiscal Impact

The fiscal (tax) impact of off-campus student spending was estimated to be roughly \$24.5 million, split relatively evenly between federal and state tax revenues. Of the totals, the largest tax revenues were federal corporate and personal income tax at \$6 million, and state property and sales tax at \$7 million.

**Table 8. Tax Impact for Out-of-Town SDSU Student Spending**

	Total Tax Impact
Federal Tax Revenues	\$ 12,465,867
State and Local Tax Revenues	\$ 12,067,389
<b>Total</b>	<b>\$ 24,533,256</b>

*Totals may not add up due to rounding. Figures are expressed in 2006 dollars.*

## 2.6. SDSU Alumni-Related Impacts

Expenditures alone tell us nothing about the impact of SDSU in terms of providing an affordable, quality university education to residents of San Diego and Imperial Counties who might not otherwise attend a university and obtain a bachelor's, master's, or Ph.D. degree. One of the ways that the value of a SDSU education can be estimated is by focusing on the higher earnings power of college and professional degree graduates. The U.S. Census Bureau estimates that bachelor's degree holders earn, on average, nearly one million dollars more than high-school graduates<sup>10</sup> over the course of their working life.

University education has a powerful economic impact, and the increased earnings power of university graduates needs to be considered for a holistic analysis of SDSU's economic impact on the local region.

Each year the 110,000 SDSU alumni that remain residents of the San Diego region earn an estimated \$5.2 billion<sup>11</sup> in income. Not all of this income is attributable to their university education, however, it is estimated that \$2.1 billion of this total is attributable to the enhanced earnings power of their SDSU degree.

When the spending habits of the SDSU alumni are considered, a total annual direct impact of \$738.9 million in additional revenues is added to the San Diego regional economy<sup>12</sup>. Moreover, this spending also has indirect and induced effects on regional output, employment, and taxation. Again, IMPLAN was used to calculate these secondary impacts.

As Table 9 below indicates, SDSU alumni's enhanced earning power adds an additional \$1.0 billion to the regional economy. This level of economic activity supports roughly 6,290 jobs and generates \$130.3 million in annual tax revenue.

**Average Annual Earnings  
in San Diego County,  
Full-time Year-Round Workers, 2005**

- High school: \$28,318
- Some College: \$36,078
- Bachelor's: \$ 47,492
- Master's or higher: \$65,422

*Source: US Census Bureau*

<sup>10</sup> Bachelor's degree holders that work full-time, year-round throughout their career can expect to earn an average of \$2.1 million over their lifetime, compared to \$1.2 million for workers with a high school diploma only. Source: U.S. Census, *The Big Payoff: Educational Attainment and Synthetic Estimates of Work-Life Earnings*

<sup>11</sup> This current estimate is based on the assumption that 100 percent of local alumni are bachelor's degree graduates and therefore the figure may be underestimating their total earnings potential.

<sup>12</sup> It was estimated that 35% of the additional income (\$2.1 billion) would be spent locally. See Methods section above for more information.

The tables below provide additional detail on the results summarized in the above discussion.

## Total Output and Employment Impact

The difference in the purchasing power of a SDSU graduate due to education was modeled in IMPLAN to calculate the total secondary output and employment impacts of the additional spending. We assumed that alumni spending would affect different sectors than those affected by current student spending, because generally alumni belong to a higher income bracket and purchase a different bundle of goods than current students. Despite these differences, the multiplier value of alumni spending was determined to be 1.40, similar to that estimated for current student spending. As Table 9 below shows, alumni spending supports over 2,300 secondary jobs in the local economy due to the indirect and induced effects.

**Table 9. Total Output Impact**

	Direct	Indirect	Induced	Total
Output Impact	\$ 738,866,500	\$ 145,653,518	\$ 150,778,250	\$ 1,035,298,271
Employment Impact	3,963	1,082	1,247	6,293

*Totals may not add up due to rounding. Dollar figures are expressed in 2006 dollars.*

## Fiscal Impact

The fiscal (tax) impact of alumni spending was determined to be about \$130.3 million, split almost equally between the federal and state/local governments. Of the \$65.0 million of federal tax revenue, a little less than half, or \$32 million, is in corporate and personal income taxes. Similarly, of the \$65.3 million of state/local tax revenue, just over half, or roughly \$36 million, is generated through property and sales taxes.

**Table 10. Fiscal Impact**

	Total Tax Impact
Federal Tax Revenues	\$ 65,023,720
State and Local Tax Revenues	\$ 65,249,231
<b>Total</b>	<b>\$ 130,272,951</b>

*Totals may not add up due to rounding. Figures are expressed in 2006 dollars.*

## 2.7. 2025 Forecasts

San Diego State University estimates that its FTE student population will expand to 35,000 by 2025. This growth comes during a period in which the University also estimates that its per FTE spending will increase by an average of 2.2 percent per year. The growth in population in tandem with the increase in expenditure results in a significant additional impact for the San Diego region. The section below explains in detail the direct, secondary (indirect and induced), and total impacts from the expected 2025 University, student and alumni spending.

## Total Output and Employment Impact

Using the 2006 IMPLAN model created to assess SDSU's current impact; ICF calculated the projected 2025 impacts. The calculations take into account the University's forecasted growth in FTE and increased per FTE spending. Spending impacts were calculated for the University, current students, and alumni. The direct, indirect, induced, and total impacts are detailed in the tables below for each category of spending. The below calculations rely on all assumptions used in the 2006 model and those discussed in the methodology section above. Because the same model was used, the 2006 and 2025 multipliers for each category are identical, 1.56 for University spending, 1.41 for student spending and 1.40 for alumni spending. That said, there is a significant increase in total and per FTE impact.

**Table 11. 2025 Forecasted SDSU Expenditures: Output and Employment Impact**

	Direct	Indirect	Induced	Total
Output Impact	\$ 1,321,133,912	\$ 326,053,647	\$ 412,214,780	\$ 2,059,402,339
Employment Impact	16,792	25,65	3,462	22,820

*Dollar figures are expressed in 2006 dollars.*

**Table 12. 2025 Forecasted SDSU Student-Related Expenditures: Output and Employment Impact**

	Direct	Indirect	Induced	Total
Output Impact	\$ 263,274,937	\$ 52,610,800	\$ 54,215,074	\$ 370,100,811
Employment Impact	1,426	384	412	2,260

*Dollar figures are expressed in 2006 dollars.*

**Table 13. 2025 Forecasted SDSU Alumni-Related Expenditures: Output and Employment Impact**

	Direct	Indirect	Induced	Total
Output Impact	\$ 1,447,323,764	\$ 285,312,431	\$ 295,350,978	\$ 2,027,907,173
Employment Impact	7,763	2,119	2,443	12,327

*Dollar figures are expressed in 2006 dollars.*

## Fiscal Impact

The fiscal (tax) impact of the 2025 University, student-related and alumni-related spending was estimated to be roughly \$587.7 million, in 2006 dollars. This sum is split relatively evenly between federal and state and local tax revenues. The tables below detail the projected federal, state/local, and total taxes for each spending category. Increased tax revenue can be seen for both student and alumni spending, adding to the overall estimated impact on the region of the University in 2025.

**Table 14. Tax Impact for 2025 Forecasted SDSU Institutional Spending**

	Total Tax Impact
Federal Tax Revenues	\$ 159,996,608
State and Local Tax Revenues	\$ 127,476,222
<b>Total</b>	<b>\$ 287,472,830</b>

*Figures are expressed in 2006 dollars.*

**Table 15. Tax Impact for 2025 Forecasted SDSU Student-Related Spending**

	Total Tax Impact
Federal Tax Revenues	\$ 22,904,012
State and Local Tax Revenues	\$ 22,171,873
<b>Total</b>	<b>\$ 45,075,886</b>

*Figures are expressed in 2006 dollars.*

**Table 16. Tax Impact for 2025 Forecasted SDSU Alumni-Related Spending**

	Total Tax Impact
Federal Tax Revenues	\$ 127,371,285
State and Local Tax Revenues	\$ 127,813,025
<b>Total</b>	<b>\$ 255,184,310</b>

*Figures are expressed in 2006 dollars.*

## 2.8. Summary of Results

This chapter has presented a quantitative assessment of the economic impact of SDSU on the surrounding San Diego region. The tables below summarize the main findings from the regional economic modeling and projected 2025 calculations in terms of total output impact, employment impact, and fiscal (tax) impact. While the 2006 numbers have been calculated using exact expenditure data provided by the University and region-specific models, because of some of the assumptions we made (both with the SDSU-supplied data and the local economy data in IMPLAN), results presented here should be considered as providing a representative picture of the overall economic impact of SDSU in the San Diego region, and not as the exact numbers of jobs created, etc. Additionally it should be remembered that the estimated 2025 results are based on the 2006 model using similar assumptions and calculation methodology. That said, the results summarized in Tables 17 and 18 below do indicate the magnitude of the current and projected economic impact of SDSU on the San Diego region.

SDSU's current presence in the San Diego region is associated with about \$2.4 billion in economic activity, and supports close to 20,000 local jobs, including those in secondary activities that depend on the spending of SDSU students, faculty, staff, and alumni. SDSU's activities also generate significant tax revenue streams, both for the federal and state/local

governments, and the total fiscal impact is estimated to be close to \$250 million. The enormity of this impact can also be explained in per student impact; University (operational, capital and auxiliary) and current student-related and alumni-related expenditures create an *aggregate* annual impact of \$89,900 per FTE. Additionally, University expenditures have a multiplier of about 1.56, indicating that every dollar spent by SDSU creates an additional 56 cents of economic activity in the local economy.

**Table 17. Summary of SDSU Impacts on the San Diego Regional Economy**

	Output Impact		Tax Impact		Employment Impact
	Total Impact (\$)	Impact per FTE	Total Impact (\$)	Impact per FTE	Total Impact
<b>University Spending</b>					
Direct SDSU Institutional Expenditures	\$ 705.5 million				8,967
Spending Multiplier	x1.56				3,219
Total (direct, indirect, induced) Impact	\$1.1 billion	\$39,000	\$153.5 million	\$5,400	12,186
<b>Student and Alumni Spending</b>					
Direct Student Spending (out-of-region students only)	\$143.3 million				776
Spending Multiplier	x1.41				454
Total (direct, indirect, induced) Impact	\$201.4 million	\$7,100	\$24.5 million	\$870	1,230
Direct Alumni Spending	\$738.9 million				3,963
Spending Multiplier	x1.40				2,330
Total (direct, indirect, induced) Impact	\$1.0 billion	\$43,800	\$130.3 million	\$4,600	6,293
Total Impact of Student and Alumni Spending	\$1.2 billion				7,523
<b>Grand Total</b>	<b>\$2.4 billion</b>	<b>\$89,900</b>	<b>\$308.3 million</b>	<b>\$10,870</b>	<b>19,709</b>
<b>Regional Impact</b>					
San Diego Regional Totals	\$145.6 billion				1,346,154
SDSU Impact Percentage	2%				1.5%

*Note: Totals may not add up due to rounding. Figures are expressed in 2006 dollars.*

Furthermore, SDSU's impact on San Diego will only grow over time as it adds to its student body and increases per student spending. The summary table below details the forecasted impacts of the University in 2025 if it adds an additional 10,000 FTE and increases its per student spending. In 2025, it is projected that the University will generate \$4.5 billion in direct, indirect, and induced impacts, nearly \$600 million in taxes and roughly 37,400 jobs. Each SDSU student is projected to induce \$127,400 of spending in the local economy.

Measuring the Economic Impact on the Region  
 SDSU's Economic Impact on the San Diego Region: Model-Based Analysis

**Table 18. Summary: SDSU 2025 Forecasted Annual Impact on the San Diego Region**

	Output Impact		Tax Impact		Employment Impact
	Total Impact (\$)	Impact per FTE	Total Impact (\$)	Impact per FTE	Total Impact
<b>University Spending</b>					
Direct SDSU Institutional Expenditures	\$ 1.3 billion				16,792
Spending Multiplier	x1.56				
Total (direct, indirect, induced) Impact	\$2.1 billion	\$58,800	\$287.5 million	\$8,200	22,820
<b>Student and Alumni Spending</b>					
Direct Student Spending (out-of-region students only)	\$263 million				1,426
Spending Multiplier	x1.41				
Total (direct, indirect, induced) Impact	\$370 million	\$10,600	\$45.1 million	\$1,300	2,260
Direct Alumni Spending	\$1.5 million				7,763
Spending Multiplier	x1.40				
Total (direct, indirect, induced) Impact	\$2.0 billion	\$58,000	\$255.2 million	\$7,300	12,327
<b>Grand Total</b>	<b>\$4.5 billion</b>	<b>\$127,400</b>	<b>\$587.7 million</b>	<b>\$16,800</b>	<b>37,407</b>

*Note: Totals may not add-up due to rounding. Figures are expressed in 2006 dollars.  
 The 2025 Full Time Equivalents (FTE) is projected to be 35,000.*

There is no denying that the University currently has and will continue to have a measurable and significant fiscal impact on the surrounding San Diego regional economy, through secondary output, employment, and tax revenue impacts from direct spending, and the higher income associated with a SDSU-degree. The remainder of the report will focus on the equally-significant qualitative impacts that, when combined with the fiscal impacts described above, present a full picture of the University's importance to the region and its residents.

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## 3. SDSU's Impact on San Diego's Economic Foundations: Qualitative Analysis

### 3.1. Introduction and Methodology

The first half of this report has analyzed the economic impact that San Diego State University's revenues and expenditures have on income and employment in the San Diego region. This approach, the "economic base approach," is valuable in capturing the cumulative monetary effect—both direct and indirect—of the University on the regional economy. It reveals the economic effects of the University as tracked through its operational expenditures, construction and capital spending, student expenditures, and earnings potential of graduates, and each of their respective rippling effects throughout the economy.

While the economic base approach used in the preceding chapter is valuable for estimating the impact of a university on the economy in dollar terms, it treats a university like any other firm and ignores the vast range of economic effects that a university has on the surrounding region that are not as easily measured in dollars.<sup>13</sup> In order to grasp the significance of the economic impact of SDSU on the San Diego economy, a "foundation impact analysis" is needed that considers the range of ways the University visibly impacts the city's economy that are not easily revealed in a model. The foundation impact analysis presented here considers the contributions of the University to the regional economy in each of the following categories:

- **Workforce Development:** The University's role in creating and renewing a qualified and job-ready workforce for the region's industries, and providing an accessible higher education to populations that may not otherwise receive one.
- **Innovation and Entrepreneurship:** The University's contribution to an innovative culture that engages in applied research, R&D, technology commercialization, new business start-ups and spin-offs, and subsequently creates opportunities for employment in the region.
- **Quality of Life:** The University's enhancement of the region's educational, community, arts, sports, and entertainment options, and their effect on residents' quality of life and engagement with their community *and* tourism to the region.
- **Housing and Healthcare:** The University's role in providing housing and healthcare options and its simultaneous role in preparing individuals who make better-informed decisions about health for themselves and their families and are less likely to require public assistance.
- **Transportation, Energy, Police, and other Services:** The University's role in aiding transportation, police, and other services that lower the strain on other regional providers, *and* the university's simultaneous role in preparing individuals who have a statistically lower rate of participation in crime.
- **Image and Marketing:** The University's contribution toward elevating the image of San Diego in news media and other outlets, and subsequent rippling effects on marketing, business attraction, and inflow of visitors and new residents.

In the sections that follow, ICF will assess San Diego State University's impacts on the economy in each of the foundation categories listed above. While the economic base approach is a well-

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<sup>13</sup> Nagowski, Matthew P. "Assessing the Economic Impact of Higher Education Institutions In New England." Federal Reserve Bank of Boston, February 22, 2006.

established model for measuring the monetary impacts of the University as seen in Module I, there is no equally well-developed standard for measuring the foundation impacts of the university. In some instances, these impacts will be described quantitatively, and in other instances the impacts will be qualitative and not easily lend themselves toward quantification—this is the very nature of any attempt to capture the full range of economic impacts of an active, wide-reaching university.

The theme throughout the analysis is that SDSU makes invaluable contributions to San Diego's foundations, strengthening the region as a desirable place to do business, and creating a strong positive impact on the regional economy.

## **3.2. SDSU and San Diego's Workforce Development**

### ***3.2.1. Summary of SDSU's Impact on Workforce Development***

Workforce development is essential to the success of any regional economy—some will argue that it is more important to a region's economic success than any other individual foundation. A successful region has a strong pipeline of educational providers that carries the region's residents through growth (K-12), advancement (higher education), and renewal (continuing education) so that they are prepared—and constantly updating their skills—to match the most current needs of the region's industries.

SDSU is providing quality higher education, involving top-level research and training, in the industries that drive San Diego's globally-competitive economy, such as bioscience, information technology, and international business. Its impact on regional workforce development is astounding—the University is providing services at each length of the workforce pipeline, from growth to advancement to renewal. The University is partnering with area schools to make tangible improvements in the advancement of the region's K-12 students to higher education at SDSU through such groundbreaking programs as the Compact for Success, and through such efforts the University is focusing on San Diego's most disadvantaged and underrepresented populations. SDSU is also tailoring higher education curricula and programs that respond to the unique challenges of the San Diego region, such as in healthcare, education, and water resources. And finally, the University is providing far-reaching opportunities for thousands of San Diegans to renew their skills to remain competitive through the College of Extended Studies.

### Highlights of SDSU's Impact on San Diego's Workforce Development

- 254 graduates in BioScience-related disciplines in 2005/06.
- 102 graduates in Defense & Transportation Equipment-related disciplines in 2005/06.
- 557 graduates in Engineering & Design-related disciplines in 2005/06.
- 303 graduates in Entertainment & Amusement-related disciplines in 2005/06.
- 63 graduates in Environmental Technology-related disciplines in 2005/06.
- 357 graduates in Information Technology-related disciplines in 2005/06.
- 489 graduates in Financial Services-related disciplines in 2005/06.
- 1,540 graduates in International Business-related disciplines in 2005/06.
- 99 graduates in Tourism-related disciplines in 2005/06.
  
- 306 *additional* new nurses added to the San Diego region since the inception of the Nurses Now program in 2000. Currently SDSU graduates 205 nurses each year, and this number is rising.
- 79 percent increase in math and science credentials awarded by SDSU between 2003 and 2006 since the start of the Mathematics and Science Teacher Initiative.
- 40 percentage points higher increase in math and science teacher credentials at SDSU over the CSU system-wide average between 2003 and 2006.
- 80 percent of the College of Education's credential program graduates teach in San Diego. More than half of these teach in the San Diego Unified School District, the eighth largest district in the country and second largest in the state.
- 104 percent increase in enrollment of students from Sweetwater Union High School (California's largest and most diverse 7-12 system) at SDSU since implementation of Compact for Success in 2000.
- 26 percent increase in Average Academic Performance (based on California Department of Education's Academic Performance Index) at Rosa Parks Elementary School in San Diego's City Heights area since implementation of the City Heights K-16 Education Pilot.
- 40+ new science curricula developed for San Diego County elementary school teachers through the Partnerships Involving the Scientific Community in Elementary Schools (PISCES) Project.
- 45 percent of admitted first-time freshmen are students of color.
- 3,802 transfer students accepted in Fall 2006, representing 42 percent of the incoming class and indicative of an aggressive acceptance of transfer students.
- 53,000 students take advantage of classes in the College of Extended Studies each year, ranging from single-day sessions to multi-year certificate programs, to degree programs for working adults.
- Approximately 500 continuing education students are served each year by SDSU to renew their skills in response to the changing needs of the region's marketplace.

The sections below detail SDSU's impacts on San Diego's workforce development.

### 3.2.2. *Preparing the Workforce for San Diego's Key Economic-Driving Industries*

San Diego State University is feeding thousands of graduates each year into San Diego's skilled workforce, and the University has a particularly important role in maintaining tight relationship with the export-oriented industries that are driving San Diego's economy in order to produce the degrees, programs, and curricula that create graduates with the skills in demand by these industries, such as bioscience, coastal and marine science, international business, healthcare, and tourism industries. Through its development of the workforce for these economy-driving industries, SDSU is creating and retaining high-quality jobs and wealth in the San Diego region, and is contributing to the attraction of new employers to the region who want access to the skills in these rapidly-growing industries.

What follows is an assessment of the impact of SDSU on workforce development in the broadly-categorized, export-oriented industries that drive San Diego's economy. These industries have been selected based on their a) generation of new wealth for the San Diego region through the export of goods/knowledge to other regions, and b) identification as major industry clusters in the San Diego region.<sup>14</sup>

The table below presents a summary of the economy-driving industries in San Diego, and the corresponding academic programs at SDSU that are producing graduates with the key expertise needed to enter the workforce of San Diego's most important exporting industries.

**Table 19: San Diego's Economy-Driving Industries and the SDSU Programs that Support Them**

Economy-Driving Industry in San Diego Region	Related Academic Programs at SDSU	Total Bachelors, Masters, and Doctoral Graduates from SDSU in 2005/06
BioScience	Biology, Chemistry/Biochemistry, Microbiology, and Molecular Biology	254
Defense & Transportation Equipment	Aerospace Engineering, Civil Engineering, Engineering Sciences/ Applied Mechanics	102
Engineering & Design	Aerospace Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Engineering Sciences/Applied Mechanics, Environmental Engineering, Mechanical Engineering, Graphic Design, Interior Design	557
Entertainment & Amusement	Recreation Administration, Television, Film, and New Media Production, Theatre Arts, Theatre Arts – MFA, Music, Music-Liberal Arts, Music-Performance, Dance, Dance – BFA, Art, Art - MFA	303
Environmental Technology	Environmental Engineering, Ecology, Environmental Science, Geological Sciences	63
Information Technology	Computational Science, Computer Science, Electrical Engineering, and Information Systems	357
Financial Services	Accounting/Accountancy, Finance, Financial and Tax Planning, and Taxation	489

<sup>14</sup> San Diego Association of Governments, "Traded Clusters in the San Diego Region," September 2006  
[http://www.sandag.cog.ca.us/uploads/publicationid/publicationid\\_1255\\_5879.pdf](http://www.sandag.cog.ca.us/uploads/publicationid/publicationid_1255_5879.pdf)

Economy-Driving Industry in San Diego Region	Related Academic Programs at SDSU	Total Bachelors, Masters, and Doctoral Graduates from SDSU in 2005/06
International Business	International Economics, International Security and Conflict Resolution, International Business (in the Arts & Letters School), International Business (in the Business School), Accounting/Accountancy, Business Administration, Entrepreneurship, Finance, Financial and Tax Planning, Human Resource Management, Information Systems, Management, Marketing, Production Operations Management, Real Estate, and Taxation	1,540
Tourism	Hospitality Tourism Management and Recreation Administration	99

## Bioscience

- SDSU is a leader in statewide efforts in bioscience education and research:** SDSU is the home campus for the California State University Program for Education and Research in Biotechnology (CSUPERB), a multi-campus program created in 1987 to provide a coordinated and amplified development of bioscience research, research training, and education within the CSU. CSUPERB fosters the workforce development and training of a sufficient number of bioscience technicians and scientists to meet the needs of this growing industry in California. CSUPERB does this by catalyzing interdisciplinary, inter-campus endeavors between Chemistry and Biology departments on all campuses and between faculty from a number of allied academic and research units such as biomedical engineering, agricultural biotechnology, environmental and natural resources, molecular ecology, and marine biotechnology.

**Table 20: Biotechnology Academic Programs at San Diego State University<sup>15</sup>**

<b>Biotechnology/Bioinformatics</b>	
Certificate (Undergrad)	Certificate in Biotechnology
MS	Biotechnology Graduate Internship Program with an MS in Molecular Biology
PhD/MBA	Joint Ph.D./MBA in Life Sciences
Certificate (Graduate)	Certificate in Biotechnology
<b>Biochemistry</b>	
BS	BS in Chemistry with Emphasis in Biochemistry
<b>Cell and Molecular Biology</b>	
BS	Cell and Molecular Emphasis of the BS in Biology
Minor	Cell Biology and Genetics in the Minor in Biology
MS	MS in Molecular Biology
Ph.D.	Cell and Molecular in the Doctoral Program in Biology
PhD/MBA	Joint Ph.D./MBA in Life Sciences
<b>Microbiology</b>	
BS	BS in Microbiology
MS	MS in Microbiology

<sup>15</sup> CSUPERB, <http://www.csuchico.edu/csUPERB/BiotechCampusSDSU.htm>.

Biotechnology/Entrepreneurship-Related Business Programs	
MBA	MBA with a Specialization in Entrepreneurship
MSBA	MSBA with a Concentration in Entrepreneurship
PhD/MBA	Joint Ph.D./MBA in Life Sciences
Regulatory Affairs-Biotechnology	
Certificate (Graduate-Extended Ed)	Advanced Certificate in Regulatory Affairs
MS (Extended Ed)	MS in Regulatory Affairs
Biomedical and Engineering	
BS	Bioengineering Emphasis within the BS in Biology
Certificate (Graduate-Extended Ed)	Advanced Certificate in Biomedical Quality Systems
MS (Extended Ed)	Master of Science in Biomedical Quality Systems

- SDSU is updating the workforce with cutting-edge skills in biotech, pharmaceuticals, and biodevices:** The Center for Bio/Pharmaceutical and Biodevice Development meets the continuing education and training needs of the pharmaceutical, biotechnology, and medical device industries. Programs and courses are designed to give those who are already employed in these industries a foundation for effectively addressing the real-world challenges encountered during the development, manufacture, and commercialization of FDA-regulated therapeutic and medical device products. Most courses are available through distance learning and designed to afford students a high degree of flexibility in integrating their studies with their professional responsibilities.
- SDSU is leading the new convergence of scientific fields:** The SDSU Macromolecular Structural Analysis Resource Center (MSARC) works to produce exceptional graduates from CSU in bioinformatics and cheminformatics. The MSARC is designated a CSU Bioinformatics Core Resource Facility. As such, it works to incorporate CSU system-wide course and curricula changes that will produce graduates who can perform sequence editing, fragment assembly, mapping, comparison, database searching, multiple sequence analysis, evolutionary analysis, pattern recognition, RNA secondary structure, translation, manipulation, display, and sequence exchange.
- SDSU produced 254 graduates in BioScience-related disciplines in 2005/06:** These include Bachelors, Masters, and Doctoral graduates in Biology, Chemistry/Biochemistry, Microbiology, and Molecular Biology.

## Coastal and Marine Science

- SDSU is producing graduates in marine studies:** The Marine Studies Program at SDSU is a multi-disciplinary program coordinated by the Coastal and Marine Institute (CMI). Students can emphasize marine studies within the traditional science departmental degree programs and have access to SDSU's laboratory facilities and research opportunities—particularly those of the new Coastal Waters Laboratory. The undergraduate and graduate programs allow students working within traditional degree programs to emphasize marine studies. Furthermore, SDSU just finished construction of the new \$11 million Coastal Waters Laboratory which brings in concert the activities of SDSU and U.S. Geological Survey (USGS) researchers.

## Information Technology

- **SDSU is preparing a high-tech workforce with skills in computer modeling and simulations:** The Computational Science Research Center educates students in real-world computer modeling and simulation applications. Computational science is enjoying tremendous popularity of late; computer modeling and simulations play a pivotal role in virtually every area of pure and applied research. The goal of the SDSU computational science program is the training of science professionals capable of effectively utilizing modern computing facilities and appropriate computational methods in the variety of real-world applications in which they are needed. SDSU incorporates high-tech learning into all aspects of its teaching.
- **SDSU is keeping its students on the leading edge of skills in computational science:** The Education Center on Computational Science and Engineering (ECCSE) works to create a well-prepared technical workforce through design of the undergraduate curriculum. The ECCSE designs curricula and trainings that prepare SDSU students for work in fields that demand collaborative interdisciplinary teams, sophisticated computer tools, and effective communication in a research and problem-solving environment.
- **SDSU produced 357 graduates in IT-related disciplines in 2005/06:** These include Bachelors, Masters, and Doctoral graduates in Computational Science, Computer Science, Electrical Engineering, and Information Systems.

## International Business

- **SDSU is responding to the needs of the international business industry:** Located ideally on the Pacific Rim and bordering with Mexico, San Diego is attributed with natural assets that prepare it to be a competitive region in international business. Still, global competition requires San Diego to be savvy in creating and replenishing the skills to compete in international business. San Diego State University is responding to the challenge by developing an international business program widely acclaimed as one of the nation's biggest and best.
- **SDSU ranks in the top 10:** SDSU ranks in the top 10 in the U.S. in international business programs according to *U.S. News & World Report*.
- **SDSU is among the top six internationalized campuses:** SDSU is among the top six internationalized campuses in the U.S., as named by the Association of International Educators and the Bureau of Educational and Cultural Affairs of the U.S. State Department.
- **SDSU has one-of-a-kind program in international business:** SDSU is the first and only university in the U.S. to offer a transnational triple degree program in International Business—one with Canada and Mexico, and one with Mexico and Chile.
- **SDSU creates some of the best opportunities for its students to learn internationally:** SDSU ranks 2<sup>nd</sup> for study-abroad opportunities among universities of its type according to the Institute of International Education.
- **SDSU is home to one of only five Centers for International Business Education and Research:** The SDSU Center for International Business Education and Research (CIBER) is one of the five original centers founded by the U.S. Department of Education to be “centers of excellence” in international business education. CIBER performs activities to impact interdisciplinary education in the U.S. while enhancing U.S. competitiveness abroad, by proving grants to fund faculty research and student internships abroad, performing outreach

and development programs for the business community, and offering training programs for language and business faculty from institutions across the country.

- **SDSU provides unique training in global conflict resolution:** The International Security and Conflict Resolution (ISCOR) program at SDSU is the only program of its kind in California. ISCOR is an innovative program housed across three colleges at SDSU and designed to provide students with an understanding of world affairs and a commitment to conflict resolution. ISCOR challenges students to examine the increasingly interdependent and interconnected global system, analyze a world experiencing both increased cooperation and conflict, and assess international issues from a variety of viewpoints and perspectives.
- **SDSU is one of only nine national sites for language resources:** The Language Acquisition Resource Center is one of only nine sites nationwide that serves as a National Language Resource Center as selected by the U.S. Department of Education.
- **SDSU attracts foreign students:** SDSU is host to 1,494 international students from 89 nations, providing strong opportunities for international connection and exchange among students—in addition to their contribution to the San Diego economy during their education here.
- **SDSU produced 1,540 graduates in International Business-related disciplines in 2005/06:** These include Bachelors, Masters, and Doctoral graduates in: International Economics, International Security and Conflict Resolution, International Business (in the Arts & Letters School), International Business (in the Business School), Accounting/Accountancy, Business Administration, Entrepreneurship, Finance, Financial and Tax Planning, Human Resource Management, Information Systems, Management, Marketing, Production Operations Management, Real Estate, and Taxation.

## Tourism

- **SDSU is creating new programs to respond to the tourism and hospitality industry:** The Hospitality and Tourism Management Program is in its second year and offers students a unique learning approach to one of San Diego's largest industries (and the world's fastest-growing industry).
- **SDSU produced 99 graduates in Tourism-related disciplines in 2005/06:** These include Bachelors graduates in Hospitality Tourism Management and Recreation Administration.

### ***3.2.3. Preparing the Workforce to Meet the Local Needs of San Diego and Its Residents***

In addition to its major contributions to the development of the workforce for San Diego's export-oriented, economy-driving industries, SDSU has a commitment to identifying the unique challenges facing the San Diego region, and addressing them with workforce solutions. By developing a workforce that addresses San Diego's local challenges in healthcare, education, and environment, SDSU is serving its residents' needs and ultimately creating a region that is more competitive to start, grow, and attract business.

The table below presents a summary of the industries that are driven by the most critical, locally-demanded needs of San Diego residents, and the corresponding academic programs at SDSU that are producing graduates with the key expertise needed to enter the workforce to meet San Diegans' needs.

**Table 21: Critical Locally-Demanded Industries by San Diego Residents and the SDSU Programs that Support Them**

Locally-Demanded Industries by San Diego Residents	Related Academic Programs at SDSU	Total Bachelors, Masters, and Doctoral Graduates from SDSU in 2005/06
Healthcare	Gerontology, Health Science, Nursing, and Public Health	364
Education	Counseling, Education, Educational Leadership, Educational Technology, Elementary Curriculum and Instruction, Math Ed K-8, Policy Studies in Language and Cross-Cultural Education, Reading Education, Rehabilitation Counseling, Secondary Curriculum and Instruction, Special Education, Teaching and Learning, and Vocational Education	412
Social Work	Counseling, Rehabilitation Counseling, Social Work, Social Work and Juris Doctor, Social Work and Public Health, and Speech, Language and Hearing Science	352
Law Enforcement	Criminal Justice Administration and Criminal Justice and Criminology	340

## Healthcare

- **Since inception of the “Nurses Now” program in 2000, SDSU has provided 306 additional nurses to the San Diego region:** SDSU is responding to San Diego (and California’s) severe nursing labor shortage with the SDSU “Nurses Now” program, a community partnership to address the nursing shortage. The Nurses Now partnership calls upon local hospitals to support the University so that it can expand the number of nursing students admitted to the undergraduate program. This financial support, totaling several million dollars, has enabled SDSU to significantly boost enrollment. Since program inception in 2000, the SDSU School of Nursing has almost doubled its admittances and has injected an *additional* 306 graduates into the San Diego region. SDSU currently graduates 205 nurses each year (2005-06) and this number is rising. The school is continuing to look for financial support to increase its enrollment even further and still maintain focus on the quality of its education; SDSU’s nursing students earn among the highest pass rates in the state on the NCLEX exam for RN licensure.
- **SDSU produced 364 graduates in Healthcare-related disciplines in 2005/06:** These include Bachelors, Masters, and Doctoral graduates in Gerontology, Health Science, Nursing, and Public Health.

## Education

- **SDSU has increased math and science teacher credentials by 79 percent over 3 years:** The SDSU College of Education Math and Science Teacher Initiative is a comprehensive program to significantly increase its credential enrollments in mathematics and science. The program has three components: 1) Expanding the numbers of candidates seeking other credentials (e.g., liberal studies majors) who also obtain mathematics or subject-matter authorizations; 2) Creating new pathways for community college transfer students and graduates students to receive math and science credentials; and 3) Attracting new pools of students to SDSU by identifying and mentoring high school students interested in teaching mathematics or science. The numbers reveal the success of this program:

- 105 percent increase in math teacher credentials between 2003 and 2006 (from 20 to 41 awarded).
- 57 percent increase in science teacher credentials between 2003 and 2006 (from 23 to 36 awarded).
- **The SDSU Math and Science Teacher Initiative has produced some of the best results, not only in the CSU system but among all universities in California:** SDSU far exceeded the CSU system-wide average in its percentage increase in math and science teacher credentials. As shown in the chart below, its percentage increase in math teacher credentials exceeded the CSU average by 41 percentage points, and for science teacher credentials SDSU exceeded the CSU average by 40 percentage points. SDSU is a leading institution in the CSU system in the training and development of math and science teachers.

**Table 22: Percentage Increase in Teacher Credentials between 2003 and 2006**

	CSU System-Wide Average	SDSU
Math	63.9	105.0
Science	15.8	56.5

- **SDSU uses innovative programs to prepare its teachers for San Diego classrooms:** This program connects SDSU student teachers for one year with local schools, including Hoover High School, Monroe Clark Middle School, and at Rosa Parks Elementary School. The credential candidates in the program learn state-of-the-art applications of educational technology, how to develop and implement curricula for diverse learners in urban classrooms, how to ensure literacy development across different subject areas, and more. In turn, the students and schools of City Heights benefit from the presence of a highly-motivated group of student teachers committed to providing the best tools to help them attain academic success.
- **SDSU produces nationally-recognized teachers:** Alumni of the SDSU College of Education made up two of the last eight National Teachers of the Year and a finalist for National Principal of the Year.
- **SDSU produces teachers who stay in San Diego:** A recent survey found that more than 80 percent of the College of Education's credential program graduates teach in San Diego. More than half of these teach in the San Diego Unified School District, the eighth largest district in the country and second largest in the state.
- **SDSU produced 412 graduates in Education-related disciplines in 2005/06:** These include Bachelors, Masters, and Doctoral graduates in Counseling, Education, Educational Leadership, Educational Technology, Elementary Curriculum and Instruction, Math Ed K-8, Policy Studies in Language and Cross-Cultural Education, Reading Education, Rehabilitation Counseling, Secondary Curriculum and Instruction, Special Education, Teaching and Learning, and Vocational Education.

## Social Work

- **SDSU produced 352 graduates in Social Work-related disciplines in 2005/06:** These include Bachelors, Masters, and Doctoral graduates in Counseling, Rehabilitation Counseling, Social Work, Social Work and Juris Doctor, Social Work and Public Health, and Speech, Language and Hearing Science.

## Law Enforcement

- **SDSU produced 340 graduates in Law Enforcement-related disciplines in 2005/06:** These include Bachelors, Masters, and Doctoral graduates in Criminal Justice Administration and Criminal Justice and Criminology.

### 3.2.4. *Creating Partnerships with San Diego's K-12 Educators*

San Diego State University is renowned for the partnerships and synergies it creates between its School of Education and local K-12 schools in need. SDSU's efforts are not only improving the quality of the K-12 education in the San Diego region, but simultaneously strengthening the skills and experiences of SDSU's graduating teachers. At the same time, SDSU is making groundbreaking efforts in delineating a clear path for high school graduates to enroll at SDSU in order to strengthen the pipeline between K-12 education and higher education.

#### **The Compact for Success is One of its Kind in the U.S.**

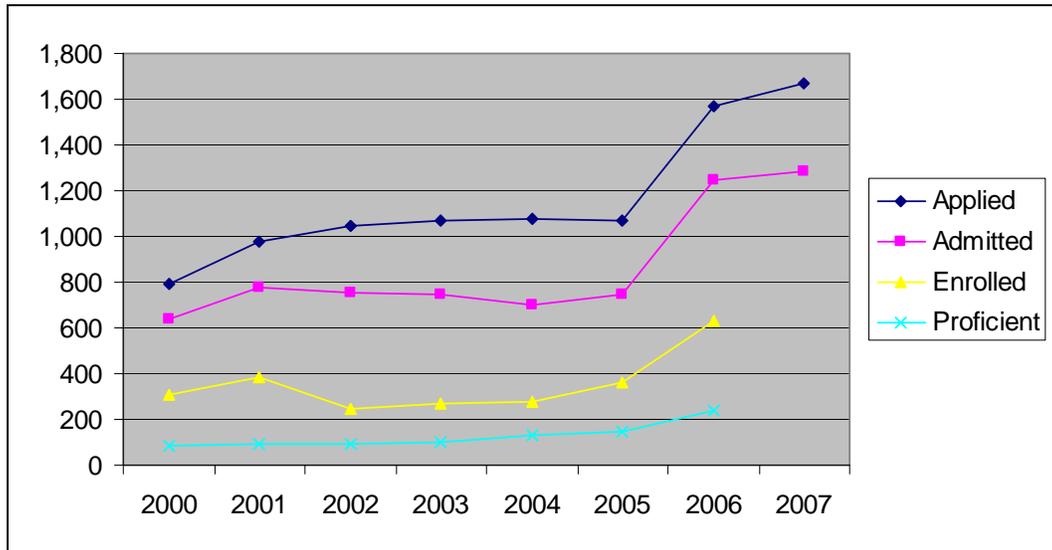
"The Compact is an agreement like no other in the nation. San Diego State University has extended an invitation to our graduates, that if they work hard, there will be a place for them at the university. The Compact is our promise to Sweetwater students that we will give them the tools they need to be successful in college. The Compact is the chance to impact an entire generation."

–Sweetwater Union High School District

- **SDSU strengthens the pipeline between K-12 and higher education:** The Compact for Success is a one-of-its-kind guaranteed admissions program and partnership between SDSU and Sweetwater Union High School District. The Compact for Success is a clear roadmap—supported with mentors, tutors, college preparation, and orientations—for students in the Sweetwater Union High School District to gain admittance to SDSU. The district is situated 15 miles from SDSU campus and is the largest and most diverse 7-12 system in California. Because of the Compact, there has been an unprecedented pipeline created between the school district and the University, providing the support and information for many students who may not have gone to college otherwise. The numbers show the impact of this remarkably successful program on the Sweetwater Union High School District graduates at SDSU:
  - 99 percent increase in applications to SDSU.
  - 96 percent increase in admittances to SDSU.
  - 104 percent increase in enrollment to SDSU.
  - 169 percent increase in proficiency at SDSU.<sup>16</sup>

<sup>16</sup> Proficiency is defined as having passed the EPT and ELM portion of the California Standards Test or having scored 550 on the SAT; or having received ACT scores of 24 in English and 23 for math.

Figure 1: Sweetwater Union High School District Applicants to SDSU



- SDSU science majors create hands-on science curricula in local elementary schools:** The Partnerships Involving the Scientific Community in Elementary Schools (PISCES) Project has served over 150 classrooms in San Diego County. PISCES is a joint program of SDSU, the San Diego Science Alliance (SDSA), and San Diego County Office of Education. Elementary school teachers are partnered with SDSU science majors to plan and implement standards-based science unit using hands-on instruction. The effect of these programs are evidenced in the numbers:
  - 150+ classrooms served in San Diego County alone.
  - 10,980+ hours of support provided to San Diego County teachers through classroom intervention and professional development institutes.
  - 40+ hands-on science curriculum kits developed for teachers.
  - 500+ books and DVDs in PISCES resource library for teachers.
- SDSU student teachers improve the academic performance of local schools:** Average Academic Performance (based on California Department of Education's Academic Performance Index) at Rosa Parks Elementary School has risen by nearly 26 percent since the start of the City Heights K-16 Education Pilot. City Heights K-16 Education Pilot is a six-year partnership between SDSU, Price Charities, San Diego City Schools, and San Diego Education Association to connect student teachers in the SDSU College of Education with classrooms in the City Heights area of San Diego, an area with a growing immigrant population and overcrowded classrooms.
- SDSU performs outreach to prospective students:** In the 2005-2006 academic year SDSU conducted 244 visits to make contact with 18,821 prospective students at high schools, community colleges, and other sites within the local SDSU area.

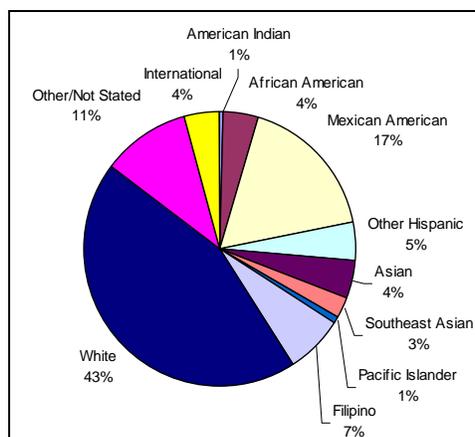
### 3.2.5. *Serving San Diego's Underrepresented Populations*

Part of the San Diego State University mission is to further social justice on campus and off campus in the San Diego region, and to promote a diverse student body. In pursuit of this mission, SDSU has made great accomplishments, and has achieved third-party recognition, for the education it provides to a diverse student body that draws from many of San Diego's most underrepresented communities and populations.

- **SDSU is committed to creating educational opportunities for underrepresented populations:** SDSU is consistently recognized for its ethnic and racial diversity. In the fall of 2006, 45 percent of admitted first-time freshmen were students of color.
- **SDSU is exceptional in the education it provides to San Diego's increasing Hispanic population:** SDSU is particularly recognized for the education it provides to Hispanics; SDSU ranks 9<sup>th</sup> in the nation and 4<sup>th</sup> in California for bachelor's degrees awarded to Hispanics (2004).
- **SDSU is aggressive in its acceptance of transfer students:** SDSU accepted 3,802 transfer students (on the San Diego and Imperial Valley campuses) in the Fall 2006, representing 42 percent of the incoming class (incoming class including first-time freshmen and transfer students).

**Figure 2: Enrollment by Ethnicity (Spring 2007)**

*Total Enrollment, San Diego & Imperial Valley Campuses: 32,259*



### 3.2.6. *Advancing and Renewing San Diego's Workforce*

San Diego State University helps to ensure that its workforce remains competitive by providing continuing education and extended studies to thousands of San Diego residents each year. These opportunities—frequently offered online or in other flexible scenarios—allow San Diegans to renew their skills and remain cutting-edge in San Diego's major industries.

- **SDSU is one of California's largest continuing education providers:** The College of Extended Studies at SDSU is one of the largest providers of continuing education in California.

- **SDSU is serving 53,000 students through the College of Extended Studies:** Each year more than 53,000 students take advantage of programs offered by the College of Extended Studies, ranging from single-day sessions to multi-year certificate programs, to degree programs for working adults.
- **SDSU offers seven fully-online degrees:** Seven Extension degree programs are offered fully online that focus on areas of regional employment growth:
  - MS, Biomedical Quality Systems
  - MA, Education
  - MA, Educational Technology
  - BA, Interdisciplinary Studies
  - MS, Regulatory Affairs
  - MS, Rehabilitation Counseling
  - BS, Vocational Education.
- **SDSU serves approximately 500 continuing education students each year:** Continuing education provides the San Diego workforce with a valuable venue for renewing its skills in response to the changing needs of the region's marketplace.

### 3.3. SDSU and San Diego's Innovation Economy

#### 3.3.1. *Summary of SDSU's Impact on Innovation*

All successful regional economies must have healthy levels of innovation activities taking place that ensure a constant turnover of ideas, technologies, and companies to keep the region competitive. A successful economy has a regional system for performing basic scientific research (discovery), turning research results into industrial applications and technologies (development), and commercializing those technologies for the creation of start-up and spin-off companies and new employment opportunities for the region (deployment). A smooth and well-supported "Innovation Pipeline" that carries innovation from discovery, through development, and into deployment is essential to the success of the regional economy—it is only through this process that a region fully enjoys the economic benefits of its innovation, in the form of new businesses, employment, and revenues.

San Diego State University is a leader in the region in supporting San Diego's Innovation Pipeline in every phase. The research capabilities at SDSU have reached new levels of growth, and the University is performing research and development and supporting technology commercialization and start-ups in San Diego's most important, economy-driving industries—in addition to driving innovation results in the industries that are meeting San Diego's most important local challenges. These efforts are generating intellectual property that is forming the basis for new businesses, employment, and wealth in San Diego.

### Highlights of SDSU's Impact on San Diego's Innovation

- Classification as a research university with "high research activity" by the Carnegie Foundation for the Advancement of Teaching will attract greater distinction, attention, and research talent to SDSU in the future.
- #1 small research university in the nation, according to 2005 Faculty Scholarly Productivity Index (FSP Index) based on faculty productivity, publications, citations, and awards.<sup>17</sup>
- \$200 million in research revenues in SDSU Research Foundation in 2005-06, including \$130 million in awards from 300 different organizations.
- Almost \$3 million in industry-sponsored research in FY 2005-2006.
- \$25,126,570 invested in innovation at SDSU in Bioscience, one of San Diego's most important growing industries.
- 1,500 active research grants, most of which are engaged in innovation in San Diego's major economy-driving industries or in creating solutions to San Diego's local challenges.
- Over \$9.5 million from prestigious five-year Program Project Grant for the SDSU Heart Institute will make SDSU a center of new research in the preservation of heart cells during a heart attack.
- New \$14.3 million BioScience Center will affirm SDSU and the San Diego region as centers of innovation in this rapidly-growing industry.
- New \$11 million Coastal Waters Laboratory will be a center of public-private collaborative innovation in marine science.
- New grant of \$10 million from the National Institutes of Health will address local issues in Latino health.
- 13 disclosures, \$198,626 in royalties, and 3 start-up companies in the past year alone.
- 97 disclosures, \$1,254,550 in royalties, and 13 start-up companies in the past 9 years, since the inception of the Technology Transfer Office.
- Of the 13 SDSU start-ups since 1998, 10 are still in existence, representing a survival rate of higher than 75 percent.
- SDSU's successful start-ups have collectively created over 45 new jobs and over \$1.1 million in revenues for the San Diego economy in biotechnology, medical, software, and other industries.
- The Center for Commercialization of Advanced Technology, a public-private collaboration of which SDSU is a partner, has overseen 300 commercialization awards valued at over \$18 million to 134 defense/homeland security-related technologies developed in private companies, government laboratories, and universities in the San Diego region.
- The Entrepreneurial Management Program is a NASDAQ Center of Excellence, placing it among the top eight such programs in the country.
- Ranks in the top 25 in entrepreneurship among regional universities in the U.S.

The sections below detail SDSU's impacts on San Diego's regional levels of innovation.

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<sup>17</sup> <http://advancement.sdsu.edu/marcomm/news/releases/spring2007/pr060107.html>

### ***3.3.2. Establishing a World-Class Research Institution***

SDSU is becoming a premier research institution—and this research is concentrated around on the concrete needs of San Diego's industries, workforce, and economy. SDSU separates itself among teaching institutions and research institutions in that it performs leading-edge research *and* creates learning opportunities for its students with each project. SDSU is rapidly expanding its efforts to generate intellectual property that will form the basis for new sources of innovation, businesses, and employment in San Diego. The following is a summary of the recent distinctions that San Diego State University has received for its research and innovation.

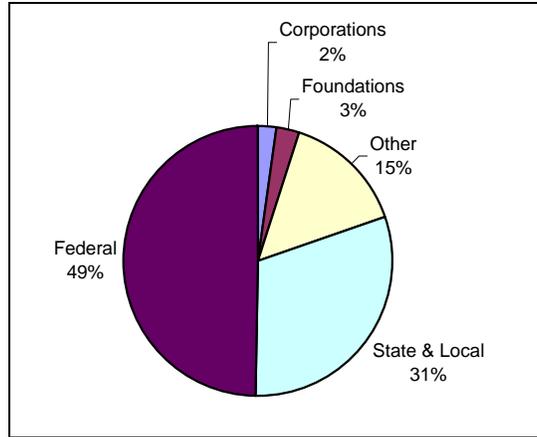
- **SDSU is newly-classified as a research institution:** SDSU was newly classified as a research university with “high research activity” by the Carnegie Foundation for the Advancement of Teaching, a distinction that attracts stronger faculty, provides students with greater research opportunities, and establishes SDSU as a prestigious university and degree to bring to the workplace.
- **SDSU has been named the #1 small research university in the nation:** This ranking is according to the 2005 Faculty Scholarly Productivity Index (FSP Index) based on faculty productivity, publications, citations, and awards.<sup>18</sup> This recognition will only serve to accelerate SDSU's national recognition, prestige, and ability to attract top faculty, students, and research dollars in the future.
- **SDSU is growing its number of research faculty:** In 2006 alone, SDSU hired 88 new faculty members engaged in research and solidifying SDSU's reputation as a world-class research institution.
- **SDSU is attracting millions of research dollars to the region:** SDSU Research Foundation had 2005-2006 revenues of \$130 million in awards (contracts and grants) from 300 different organizations. These research dollars stay in San Diego, which makes university research a large scale economic engine.

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<sup>18</sup> <http://advancement.sdsu.edu/marcomm/news/releases/spring2007/pr060107.html>

**Figure 3: SDSU Research Awards by Sponsor Type (Fiscal Year 2005-2006)**

Total Awards: \$130,363,547



- **SDSU is engaged in thousands of active research grants and contracts:** There are 1,500 active research grants and contracts administered by SDSU Research Foundation.

**Figure 4: A Sampling of Corporate Sponsors of SDSU Research (FY 2003-2004)**

Advanced Bionutrition Corporation	Menon and Associates
Advantage Interlock	Miyazaki
Air France	NCB English Language Institute
Applied Micro Circuits Corporation	Nokia
Aqua Bounty Pacific	Pacific Resources for Education and Learning
Bitterroot Restoration Incorporated	Personal Products Company
Boehringer Ingelheim Pharmaceuticals, Inc.	Pfizer La Jolla
Compass Learning, Inc.	Philips Electronics
Cox Cable San Diego	Prentice Hall
CVAC Systems	ProPharmaCon, LLC.
Eastman Kodak Corporation	Pyxis Corporation
ENCAD, Inc.	QUALCOMM Inc.
For Placement, Inc.	Science Applications International Corporation
General Atomics Corporation	Sea World of California
Geo-Centers	Social Policy Research Associates
IDEC Pharmaceuticals Corporation	Sorrento Electronics
Innovative Inclosures	Sullivan Consulting
Institute for Matching Person and Technology	Sun Microsystems
Knoll Pharmaceutical Company	Systems Integration and Management
KV Pharmaceutical Company	Tenera Environmental
Lawrence Frank and Company, Inc.	Union Bank Vitivity, Inc.
LifeScore	Websense, Inc.
McGraw-Hill Companies	

- **SDSU is attracting millions in external research funding:** SDSU faculty members have secured more than \$800 million in external funding since 2000, to perform research that is more likely to have ties to industry and engage in issues of importance to San Diego than would research at other universities.
- **SDSU is a key resource for industry-sponsored R&D:** There was \$2,963,857 in industry-sponsored research at SDSU in fiscal year 2005-2006, and this number is rising.

### 3.3.3. *Performing Research in San Diego's Key Economy-Driving Industries*

SDSU is an important innovation resource for San Diego's export-oriented industries. More than ever before, advanced and applied science is taking place at San Diego State University on complex issues that directly apply to San Diego's most important economy-driving industries. As noted above, SDSU had almost \$3 million in industry-sponsored research in fiscal year 2005-2006; the University is actively working with corporations and public agencies to create research outcomes that are making San Diego's main industries more competitive. SDSU is active in research across a wide range of disciplines, from managing heart disease to probing the universe, and protecting our homeland to developing new antibiotics, and other areas in which advances are vital to San Diego and our nation.

The chart below shows the research dollars that SDSU has invested in each of San Diego's key export-oriented industries. SDSU is a clear leader in bioscience research, and has key research happening in coastal and marine science, aerospace and defense, international business, and information technology.

**Table 23: SDSU Research Dollars in San Diego's Key Economy-Driving Industries**

Aerospace and Defense	\$2,043,536
Bioscience	\$25,126,570
Coastal and Marine Science	\$8,699,729
Information Technology	\$76,074
International Business	\$106,285

*Source: SDSU Research Foundation*

What follows is an assessment of the impact of SDSU's research and innovation in broadly-categorized, export-oriented industries that drive San Diego's economy:

#### **Aerospace and Defense**

- **SDSU is performing research with naval/defense applications:** The Cognitive Ergonomics Research Facility conducts basic research that uses eye-tracking measures to investigate aspects of cognitive processing and decision-making. The research has been applied to the context of Navy officers making tactical decisions in near-warfare situations and other defense applications. Sponsors include the Office of Naval Research, Air Force Office of Scientific Research, National Science Foundation, and National Institute of Education. In the course of the research, the CERF team has developed a joint venture, EyeTracking, Inc., that has patented and exclusively licensed several eye-tracking breakthroughs.

## Bioscience

- **SDSU is helping make San Diego a global leader in biotechnology:** SDSU is a part of a special group of bioscience-focused research institutions that contribute to making the San Diego region a global leader in the biotechnology industry. That is no small contribution to the regional economy. This distinctive and growing activity not only adds to core knowledge of human health care, it reinforces and grows the surrounding bioscience economy—helping to form and attract new quality jobs at many levels from lab technicians and software programmers to engineers and scientists as well as those that supply these industries, including legal, accounting, management, logistics, technical services, marketing and finance.
- **SDSU's research covers a range of bioscience applications:** SDSU is conducting research on leading edge ways to improve human health and life expectancy. Research at SDSU is focusing on topics that range from the potential of stem cells to retard cardiac aging, to the use of gene transfer to interfere with the hardening of arteries, to the development of new vaccine delivery systems that have the potential to protect against disease-causing infections.
- **SDSU is a statewide leader in biotechnology and biomedicine:** SDSU's emergence as a significant life sciences research center has paralleled the development of a world-class biotechnology industry cluster in San Diego.
- **SDSU is home base to the CSU biotechnology program:** SDSU is the home base for California State University Program for Education and Research in Biotechnology (CSUPERB). CSUPERB is a broadly-based program designed to coordinate and amplify biotechnology research and education within the CSU, including activities that foster economic competitiveness, facilitate the training of the scientific and bio-manufacturing workforce, catalyze technology transfer and improve IP protection, and facilitate the acquisition of state-of-the art biotechnology resources.
- **SDSU's BioScience Center is a hub of cutting-edge research:** In 2005, SDSU completed the \$14.3 million, 37,000 square-foot BioScience Center, a facility that brings together University researchers and biotechnology professionals from the private sector under one roof. The mission of the facility is to translate scientific discoveries into new, effective ways of treating human diseases. This facility houses research related to reducing the prevalence of cardiovascular disease, analyzing the organisms considered most likely to be agents of biological warfare, and addressing other critical health issues related to diabetes and cancer. The BioScience Center is home to several institutes, including:
  - **The Heart Institute:** This special organization is a multidisciplinary institute of 55 faculty and staff—from SDSU and other San Diego institutions—that perform research related to heart and cardiovascular system performance in health and disease. It is jointly sponsored by the College of Sciences and the College of Health and Human Services. In 2006, the Heart Institute won a prestigious five-year Program Project Grant from the National Heart, Lung and Blood Institute totaling almost \$10 million to study how protecting mitochondria can preserve heart cells during a heart attack.
  - **The Center for Microbial Sciences:** The Center for Microbial Sciences (CMS) develops new applications of microorganisms in human health and the biotech industry. The CMS also promotes homeland security by researching the prevention, detection, and treatment of infectious diseases related to bioterrorism. The CMS is staffed by a multidisciplinary group of scientists from SDSU and several other institutions in San Diego.

- **SDSU is performing collaborative research in genomics:** The Center for Applied and Experimental Genomics promotes collaborative, multidisciplinary approaches to solving biological problems through the use of genomic, bioinformatic, and proteomic approaches.
- **SDSU is an R&D resource to San Diego's biomedical companies:** Numerous San Diego biotech companies such as Genentech, Integra Life Sciences, and Lpath Therapeutics sponsored research at SDSU in fiscal year 2005-2006. The level of industry-sponsored research at SDSU is rising and evidence of the strong and interconnected relationship between the University's research and the competitiveness of the bioscience industry in San Diego.
- **SDSU is performing research in a range of molecular biology applications:** The Molecular Biology Institute (MBI) has research grants in excess of \$3 million per year from such sources as the National Institutes of Health, the National Science Foundation, National Aeronautics and Space Administration (NASA), the American Heart Association, the Muscular Dystrophy Association, Sea Grant, and the Air Force. The MBI faculty performs research that spans a wide range of biological issues.
- **SDSU houses specialized bioscience tools:** The CSUPERB Microchemical Core Facility is located on the SDSU campus and performs automated fluorescent sequencing services to support research by students and faculty at SDSU and other CSU campuses. DNA sequencing is done on the ABI Prism 3100 capillary electrophoresis DNA sequencer.

## Coastal and Marine Science

- **The Coastal Waters Laboratory will be a center of collaborative research in marine science:** SDSU just finished construction of the new \$11 million Coastal Waters Laboratory, which provides 10,500 square feet of indoor and 12,000 square feet of outdoor space for research focused on the environmental and ecological problems caused by urbanization in the coastal environment (at the land-water interface). The laboratory brings in concert the activities of SDSU and U.S. Geological Survey (USGS) researchers, and—with the Metropolitan Wastewater Department (MWWD) of the City of San Diego constructing an adjacent laboratory—this will be a site of mutual access and sharing of innovation among SDSU, USGS, and MWWD.
- **SDSU is active in research in the preservation of the region's coastal and marine environments:** The Coastal Marine Institute, whose home is in the Coastal Waters Laboratory, is a multidisciplinary research institute that studies the processes that affect the coastal and marine environment, educates students and the public, and provides advice on the wise use and management of natural resources.
- **SDSU is active in research specific to San Diego's coastal areas:** The Pacific Estuarine Research Laboratory performs research in coastal wetland restoration and wastewater management. Research topics range across coastal vegetation, invertebrates, fish, and birds in such places as Tijuana Estuary, Sweetwater Marsh National Wildlife Refuge, San Diego River Estuary, the wetlands of Mission Bay and Famosa Slough, Los Peñasquitos Lagoon, and San Elijo Lagoon.
- **SDSU provides marine mammal behavioral trainings to Sea World and the Navy:** The Cetacean Behavior Laboratory (CBL) performs research in the behavioral training of marine mammals. The CBL has taught training techniques to marine mammal behavioral trainers for such linchpins of the San Diego economy as Sea World and the U.S. Navy.

## Information Technology

- **SDSU contributes to San Diego's leadership in information technology and engineering:** SDSU is actively engaged in helping the San Diego region stay at the top of the information age. Information technology and engineering are among the best known areas of California's innovation leadership, and SDSU focuses on understanding the IT and engineering needs of companies in the region and building research programs that are securing increasing levels of company participation. SDSU's Center for Information Technology and Infrastructure is an example of a growing number of centers in these fields.

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- **SDSU is leading innovation in computational science:** The Computational Science Research Center (CSRC) fosters research, develops educational programs, and promotes industrial interaction, outreach, and partnership activities in computational science. Real world applications (and the educational opportunities they provide for students) are the focus of research projects undertaken at the CSRC. Computer modeling and simulations play a pivotal role in virtually every area of pure and applied research.

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- **SDSU is a leader in visualization:** The SDSU Visualization Center is a new type of infrastructure for the visualization of scientific data, and has a broad range of possible applications in the future. The SDSU Visualization Center, and its sister facility at the University of California San Diego, are the result of a unique effort sponsored by the California Institute for Telecommunications and Information Technology, CAL(IT)<sup>2</sup>, along with academic and industrial partners. The centers are used for research in environmental change, seismicity, climatological change, and natural disasters. Future applications (e.g., medical and pharmaceutical research, command-and-control functions for crisis response) are unlimited.

- **University-industry partnerships allow sharing of next-generation tools:** SDSU's relationship with CAL(IT)<sup>2</sup> was the foundation for an enhanced relationship with Sun Microsystems, which designated the SDSU Visualization Center a "Sun Center of Excellence for Collaborative Visualization." More recently, Sun donated a Sun "Zulu" high-end graphics system to that facility.

- **SDSU promotes new technologies to keep the region's IT industry competitive:** The Center for Information Technology and Infrastructure (CITI) has a mission to promote the use of emerging tools to increase San Diego's competitiveness in the industry. CITI promotes the use of optical networking, wireless communication, and human-computer interactions through visualization, in order to pursue projects in the themes of homeland security, natural

### The Center for Information Technology and Infrastructure (CITI) Was Born Out of Joint Projects with Local San Diego Agencies

CITI was born out of projects with local San Diego agencies that demonstrated the importance of new technologies to the San Diego region:

- **Shadow Bowl:** A community readiness event planned around the Super Bowl to prepare local San Diego emergency medical providers with "what-if" scenarios.
- **FairSher:** Demonstration for the San Diego County Fair of the use of various technologies to enhance communication between emergency responders and decision makers. Participants included the County Sheriff's Department, several high-tech companies, and SDSU and UCSD as university partners.
- **Demonstration of homeland security capabilities:** Demonstration with the County Hazardous Materials group of local homeland security capabilities using wireless interaction among first responders in the field, SDSU's Visualization Center, and the Sheriff's Department Operations Center.

Bob Welty, Co-Director of CITI, says that these events gave CITI the opportunity to showcase technologies that could be developed and scaled throughout the San Diego region. "The knowledge we gain in creating a smart campus," he says, "will be extended through our participation in development of a smart community."

disaster mitigation and response, global sharing of information and collaborative visualizations, and remote sensing and environmental monitoring. CITI has an explicit mission to use its resources to increase San Diego's competitive ability to retain and attract people, businesses, and jobs.

## International Business

- **SDSU is a national leader in innovation around international business issues:** SDSU has the largest undergraduate international business program in the country, supported by the Center for International Business Education and Research (CIBER). CIBER is one of 30 centers nationwide that performs activities to enhance U.S. competitiveness abroad. CIBER is funded in part by a grant from the U.S. Department of Education. The Center's activities include providing grants to fund faculty research and student internships abroad, performing outreach and development programs for the business community, and offering training programs for language and business faculty from institutions across the country.
- **SDSU is performing research with international distinction:** Research is focusing on topics of international importance in the International Security and Conflict Resolution (ISCOR) program. The only program of its kind in California, ISCOR performs research in topics that range from the role of women-run non-governmental organizations in the reconstruction of Afghanistan, to the migration and ethno-religious violence in the Russian Federation.

### *3.3.4. Performing Research to Meet the Needs of San Diego and Its Residents*

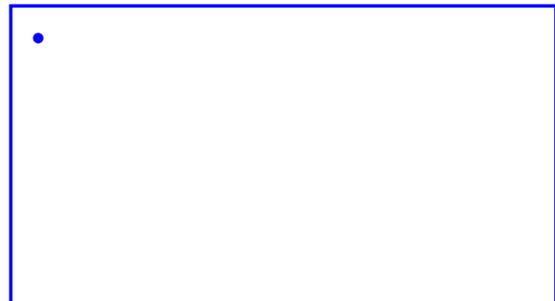
SDSU is highly involved in innovative research on the issues facing everyday San Diego, from meeting education needs to managing water resources to meeting energy needs to managing healthcare. SDSU is committed to identifying and addressing the unique challenges facing the San Diego region. This stewardship of the region is one of the main facets of SDSU's contribution to the San Diego region.

The research that is taking place at SDSU will create solutions for San Diego and its residents (in education, public health, environmental quality, and energy) that will make San Diego a more competitive place to start, grow, and attract business. And, in many cases, the research being performed to address San Diego-specific issues is producing results that have state, national, or even international consequence, and the knowledge that is exported may be the basis for future industries to drive the San Diego economy.

SDSU is long-recognized for forging strong community partnerships in education and public health. Research is also being performed in such topics of regional importance as addressing obesity, nurturing youth, monitoring water quality, and eliminating air pollution.

## Education

- **SDSU is a leading institution in the research of math and science education:** The Center for Research in Mathematics & Science Education (CRMSE) brings together faculty members from the College of Sciences and the College of



Education in the study of how individuals acquire knowledge in mathematics and science. CRMSE serves as the headquarters for the Association of Mathematics Teacher Educators (AMTE), the leading organization devoted to supporting mathematics teacher education. CRMSE performs research in such topics as the teaching and learning of mathematics and science; the development of mathematics and science curriculum for elementary, secondary, and tertiary education; the development of materials for the professional development of teachers; and community involvement in education.

## Energy

- **SDSU research is working to address regional energy issues:** The Center for Energy Studies facilitates interdisciplinary research into energy issues of particular concern to the San Diego region, including the border region with Mexico. Research has been performed in such topics as using photovoltaics to meet peak demand in San Diego County, and analyzing the emissions from trucking across the California-Mexico border. Sponsors include San Diego Association of Governments (SANDAG) and Southwest Center for Environmental Research and Policy.

## Environment

- **SDSU is working on global environmental issues:** The Global Change Research Group is conducting research to elucidate the responses of plants and ecosystems to elevated CO<sub>2</sub> in order to aid the understanding of potential changes and inform policy decisions that affect the world's biological future.
- **SDSU's field stations provide protected areas for collaborative environmental research:** The SDSU Field Stations Program provides a network of protected lands and facilities to support research and innovation in global climate change, watershed studies, and innovative education programs. The SDSU Field Stations Program was one of the country's first field-based programs to invest in wide-area wireless telecommunications and sensor networks for new ways to discover the natural world.
- **SDSU is developing innovations in the ecosystem dynamics of arid lands:** The SDSU Soil Ecology and Restoration Group (SERG) focuses on ecosystem dynamics of arid and semiarid lands. SERG is a research group within the biology department of SDSU and administrated by the SDSU Research Foundation. Research emphases include restoration techniques, soil chemistry, soil microbial ecology, and plant-microorganism relationships. Grants have come from such federal agencies as U.S. DOE, EPA, and NSF, such state agencies as California Department of Transportation, Department of Fish and Game, and Department of Parks and Recreation, and such corporations as Southern California Edison, AMEC, and EDAW.

## Public Health

- **SDSU is active in issues that are of importance to San Diego:** Faculty have won prestigious grants in the past year to study topics that directly affect San Diego, including \$10 million from the National Institutes of Health to study Latino health.
- **SDSU's Graduate School of Public Health (GSPH) is deeply engaged in San Diego public health issues:** The GSPH has a number of affiliated research centers that conduct clinical and community-based health research, most of which are housed off-campus in the San Diego community.

- **Center for Injury Prevention Policy and Practice:** Serves as a resource center to San Diego public health agencies and programs on child and adolescent injury prevention strategies.
- **California Distance Learning Health Network:** A non-profit organization under the GSPH that researches, develops, and transmits public health media campaigns, particularly related to immunization and bioterrorism preparation.
- **Center for Behavioral and Community Health Studies:** Promotes interdisciplinary research in the applications of behavioral science to medicine and healthcare, working in collaboration with other San Diego institutions.
- **Center for Behavioral Epidemiology and Community Health:** An interdisciplinary, extramurally-funded research organization that studies behavior that prevents or contributes to the causes of disease and injury.
- **Institute for Public Health:** Serves as the bridge in developing mutually-beneficial partnerships between GSPH research and local, regional, and statewide public and private health and social services agencies.
- **San Diego Prevention Research Center:** An academic-community partnership committed to conducting research and education to promote physical activity and improve the health of Latino populations.
- **Center for Public Health Security:** Partners with public-private community leaders—such as San Diego County, Health and Human Services—to promote preparedness for infectious disease epidemics and other global disasters.

## Water Resources

- **SDSU is tackling critical water resources issues:** The Center for Inland Waters fosters interdisciplinary research into solutions for increasingly serious economic, environmental, and political problems concerning water supply in southern California. Major regional focuses for the Center are the Salton Sea, the lower Colorado River, and the Coachella, Imperial and Mexicali Valleys.

### ***3.3.5. Turning Research into Technologies, Start-Up Companies, and Employment Opportunities in San Diego***

Research and innovation would be for naught for the regional economy, if not for the infrastructure in place that works to turn basic research into commercial products and eventually into new employment opportunities through start-ups or spin-offs. SDSU carries out research to advance knowledge *and* provides the means to apply these ideas to grow the economy. SDSU could be described as an “ivory tower with entrepreneurial muscle.” Research at SDSU has historically focused on real-world, commercial applications, and the University has a wide variety of programs and facilities in place to accelerate and amplify the economic impact of SDSU research on San Diego's economy. The University also provides a wide range of trainings and services to promote entrepreneurial skills across California's communities.

- **SDSU trains world-class entrepreneurs:** The College of Business' Entrepreneurial Management Center (EMC) is a NASDAQ Center of Excellence, placing it among the top eight such programs in the country. The Center was founded in 1986 with the objective of seeding the local business community with graduates well-grounded in entrepreneurial skills and methods. The Center has helped the SDSU College of Business attain leadership

stature by continually developing and enhancing coursework and complementary experiential outreach programs. The EMC maintains a clear focus on the three essential areas of research, curriculum, and outreach.

- **SDSU is a recognized center of entrepreneurship:** SDSU ranks in the top 25 in entrepreneurship among regional universities in the U.S. according to *Entrepreneur Magazine*.
- **SDSU speeds the commercialization of defense/homeland security technologies:** The Center for Commercialization of Advanced Technology (CCAT) is a public-private collaborative that provides commercialization support to technologies that meet critical defense and homeland security needs. CCAT is supported by Congress and funded through the Office of Naval Research. Partners include the SDSU Research Foundation and Entrepreneurial Management Center, the University of California, San Diego (UCSD) Jacobs School of Engineering, the von Liebig Center for Entrepreneurialism, CONNECT, and the Space and Naval Warfare Systems Center Pacific. CCAT collaborates with military services and other DOD and DHS agencies to determine critical needs, translates these needs into CCAT-sponsored solicitations, employs a vast network of subject matter experts to review submissions, and then fast-tracks the most promising technologies to market. Since inception in 2001, CCAT has achieved the following:
  - Sponsored 30 nationwide competitive solicitations inviting industry, government laboratories, and academic research institutions to submit proposals for new technologies responding to topics of critical interest.
  - Accepted and evaluated 925 proposals for new technologies responding to solicitations.
  - Awarded 300 commercialization awards valued at over \$18 million to 134 technologies developed in private companies, government laboratories, and universities.
  - Awards range from product development, market studies, and case studies to mentoring, financial forums, and technology springboards.

**Table 24: Technology Transfer Results at SDSU**

	Activity in the Past 1 Year (2006-2007)	Activity in the Past 9 Years (1998-2007)
Disclosures (Patents and copyrights)	13	97
Royalties	\$198,626	\$1,254,550
Start-up companies	3	13

*Source: Technology Transfer Office, SDSU Research Foundation*

- **SDSU turns ideas into disclosures, royalties, and start-up companies in San Diego:** Since July 1, 2006 alone, the SDSU faculty has filed 13 disclosures (patents and copyrights), generated \$198,626 in royalties, and started 3 companies.
- **SDSU R&D and commercialization activities have resulted in 13 new companies since 1998:** Since 1998, SDSU faculty has produced 97 disclosures (patents and copyrights), \$1,254,550 in royalties, and started 13 companies.

- **Of the 13 start-ups since 1998, 10 are still in existence, representing a survival rate higher than 75 percent:** These successful start-ups to have emerged from SDSU since 1998 are shown in the table below. Their high survival rate can in great part be attributed to the support of the SDSU Technology Transfer Office. The majority of these start-ups are in biotechnology and San Diego's other major economy-driving industries.

**Table 25: Selected SDSU Start-Up Companies Since 1998**

Company	City	Business	Stage	Employees	Revenue
Novaphage	San Diego	Biotechnology	Development	2	None
LPath	San Diego	Biotechnology, public company	Revenue-generating	20+	\$411,000
Vaxion	San Diego	Biotechnology	Research	4	None
Pure-O-Tech	Escondido	Environmental engineering, water purification	Spin-off, \$1,500,000 R&D grant	3	None
Eyetracking	San Diego	Software	Unknown	Unknown	\$46,500 (includes revenues and grants)
SPARK	Atlanta, GA	Sports and Fitness Education	Acquired by Sportime	Unknown	\$290,000
Software Partners	San Diego	Electronic medical registry	Unknown	Unknown	Unknown
E-Chug/E-Toke	San Diego	Alcohol and Drug Abuse Testing/Software	Revenue-generating	6	\$390,000
Fluorotronics	San Diego	Analytical Devices	R&D grants	5	None
EXIGE	San Diego	Language Testing	Operated within the University	4	\$26,000
SD CHI	San Diego	Exercise and Nutrition Counseling	Grant-funded R&D company, Relocated to UCSD	6	\$6,000 (includes revenues and grants)

- **SDSU's start-ups have collectively contributed over 45 jobs and over \$1.1 million in revenues to the San Diego economy.** These ten SDSU start-ups (in the table above) that have survived since 1998 have contributed in new employment, innovations, and revenues to San Diego's biotechnology, medical, software, and other industries.

## 3.4. SDSU and San Diego's Quality of Life

### 3.4.1. Summary of SDSU's Impact on Quality of Life

Quality of life is an essential foundation to any successful regional economy, because—though quality of life is a rightful end unto itself—it is also a major and necessary tool in attracting businesses, employees, and residents to the region. Quality of life is the mix of arts, cultural offerings, sports and entertainment in a region, and San Diego—consistently described as having one of the nation's top qualities of life—is well benefited by San Diego State University's vast array of offerings.

SDSU provides programs and services that on a daily basis make San Diego a better region to live, work, and play, from its libraries to its cultural performances, and from its sporting events to the thousands of hours of volunteering its students contribute to the region. These amenities not only represent a huge contribution by SDSU to the public good for San Diego residents, but they also attract visitors and their spending dollars to the San Diego economy each year.

### Highlights of SDSU's Impact on San Diego's Quality of Life

- 6,400,000 items in library collections and available for public access.
- 685 public-access computers.
- 2,600,000 annual visits to the library, many of whom are from the general public.
- 6,827 attendees to annual series of 195 library lectures.
- Estimated 74,000 visitors (prospective students, families, and other non-SDSU affiliated) to campus each year for new student orientation, year-round campus tours, "Explore SDSU" Open House in March, and graduation—and their spending dollars.
- KPBS, the local PBS radio and television station based at SDSU, is the most-watched public television station in the country during prime time.
- Estimated 375,000 total attendance for all campus home sports games for 2006-07 school year, up from 300,000 in recent years.
- Estimated 75 percent of attendance at SDSU athletic events, or over 280,000 people, are visitors from the general public. For those who are coming from within the San Diego region, SDSU is providing a large but as yet unquantifiable public good to the region's quality of life. Yet, for those who are coming from outside the San Diego region, SDSU is serving as a wealth generator for the San Diego economy by attracting visitors and their spending dollars from elsewhere.
- Estimated 65,800 annual attendees to SDSU Cultural Arts and Special Events (CASE), which includes noontime concerts, coffee house performances, open mic, homecoming, AzFest, and other special events. Approximately 10 percent of attendees are from the general public.
- 3,899 total attendees to Guest Art series and University Art Gallery each year. Between 15-35 percent are from the general public.
- 12,500 attendees to theatre performances each year, between Powell Theatre and Experimental Theatre. Approximately 45 percent are from the general public.
- 20,000-25,000 attendees to music and dance performances each year. This includes paid and free concerts and recitals by student, faculty, and guest artists throughout the year in Recital Hall, Rhapsody Hall, and Dance Studio Theatre.
- Estimated 208,295 attendees to Cox Arena (excluding athletic events) and 23,805 attendees to Open Air Theatre for major concerts, performances, and events for a total of 117 event days during 2005-06, of whom an estimated 85-90 percent is from the general public.
- 175,000 hours of community service performed by SDSU students each year.
- 152,000 internship hours, or the equivalent of 73 full-time equivalent employees, are provided each year to San Diego social service agencies by students in the SDSU School of Social Work.
- 180 community agencies are partners with SDSU's Center for Community-Based Student Learning.
- 39,606 bed nights offered by SDSU Conference Center to summer youth and adult programs.
- 80+ organizations use SDSU facilities each year, ranging from industry associations to summer youth camps to church organizations.
- 16,778 members of Aztec Recreation Center, including 1,469 members from the general public.

The sections below detail SDSU's impacts on San Diego's quality of life.

### 3.4.2. *Providing Public Access to Academic Resources*

SDSU provides a public good to the community in the library resources and academic lectures it provides. In addition, the visitors who come to the SDSU campus to explore and utilize its academic resources, including prospective students and their families, bring an influx of spending dollars into the San Diego economy.

- **SDSU provides leading-edge library resources to San Diego residents:** The SDSU Library is an open facility, welcoming the general public to use its resources on an in-house basis. Certain services such as research assistance are available to community members, though priority is given to affiliates of the University. Guest library cards are available on an annual basis to residents of San Diego and Imperial Counties, allowing guests to borrow up to five books at a time. Resources that are available to the public include 6,400,000 total items in the collections, 685 public-access computers, and 195 annual orientations/lectures.

**Table 26: SDSU Library Statistics**

Total items in collections	6,400,000
Total public access computers	685
Annual visits	2,600,000
Weekly reference questions	6,005
Annual orientations/lectures held	195
Annual attendance at orientations/lectures	6,827
Number of library cards issued to general public	1,231

- **SDSU attracts non-SDSU affiliated visitors and their spending dollars:** SDSU attracts an estimated 74,000 non-SDSU affiliated visitors to the campus each year (including prospective students and their families) for new student orientation, year-round tours for prospective students, "Explore SDSU" Open House in March, and graduation. These visitors, frequently coming from outside of San Diego represent an injection of spending dollars into the regional economy.

**Table 27: Major Academic and Other Events and Estimated Number of Visitors**

Event	Estimated Number of Visitors (Non-SDSU Affiliated)
New student orientation (August)	28,000
Tours by prospective students and families (Year-round)	15,000
"Explore SDSU" Open House for prospective students (March)	11,000
Graduation (May)	20,000
<b>TOTAL</b>	<b>74,000</b>

### 3.4.3. *Creating a Center for Lectures, Arts, and Performances*

SDSU delivers an amazing variety of culture resources and entertainment to San Diego residents and in doing so adds quality-of-life assets to the region that are measured by businesses, families, and individuals when deciding whether to locate in San Diego. SDSU is a cultural resource used by thousands of San Diego residents of all ages for its diverse offerings. SDSU is an important and highly-regarded provider of cultural events and other information resources including newspapers, radio, and television stations that reach large student and community audiences.

- **SDSU offers art gallery and lectures:** The School of Art, Design, and Art History reports 1,200 attendees to the Guest Art series and 2,699 visitors to the University Art Gallery (2003-2004). Between approximately 15-35 percent of these attendees are from the general public, revealing SDSU's impact on quality of life and—in the case of visitors who come to the gallery and lectures from outside the San Diego region—wealth generation for the region.
- **SDSU attracts theater-goers:** Theater performances attract approximately 12,500 people per year, between the Powell Theatre and the Experimental Theatre. It is estimated that approximately 45 percent of attendees are from the general public.
- **SDSU has a variety of music and dance offerings:** Music and dance performances have attendance of 20,000 to 25,000 each year. This includes paid and free concerts and recitals by student, faculty, and guest artists throughout the year in Recital Hall, Rhapsody Hall, and Dance Studio Theatre.
- **SDSU offers a range of cultural arts and special events:** Cultural Arts and Special Events (CASE) on campus have an annual attendance of 65,800—10 percent of whom are estimated to be from the general public.

**Table 28: Cultural Arts and Special Events (CASE) and Estimated Attendance**

Event	Estimated Annual Attendance <sup>19</sup>
Noontime concerts (40 per year)	20,000
Coffee House performances (60 per year)	3,000
Open Mic (30 per year)	1,800
Homecoming	5,000
AzFest	5,000
Special Events	10,000
<b>TOTAL</b>	<b>65,800</b>

<sup>19</sup> Attendance numbers do not differentiate between one-time and multiple attendees; nor do they differentiate between SDSU students and visitors, though most attendees are SDSU students.

### Dead Sea Scrolls Exhibition

San Diego State University makes tremendous contributions to our region's culture and economy through the work of its highly talented faculty. The current Dead Sea Scrolls exhibition at the San Diego Natural History Museum was the brainchild of Dr. Risa Levitt Cohn, director of SDSU's Jewish Studies program. Dr. Cohn is curator of the exhibit, which has already sold more than \$1 million in tickets to people in 47 states, Washington D.C., England, Scotland, and Canada.

By the time the six-month exhibition closes its doors, the museum expects more than 450,000 people to have visited. The Dead Sea Scrolls exhibit has caused membership at the museum to skyrocket and has brought in dozens of new donations. Already, there have been more than \$3 million in donations to support the exhibit. In addition, there will be dozens of lectures about the history and origins of the scrolls, as well as discussion of the many controversies and theories surrounding the biblical manuscripts. The catalog to describe the exhibition was written by Dr. Cohn and it is being published and paid for by SDSU.

- **SDSU offers large concerts, performances, and events:** Beyond hosting approximately 126,000 attendees to 18 basketball games each year, Cox Arena is a major venue for large concerts, performances, and events; it had approximately 208,295 attendees to 106 non-athletic events in fiscal year 2005-2006. In addition, Open Air Theatre had a total attendance of 23,805 for 11 event days during fiscal year 2005-2006. Of the attendees to these large events, it is estimated that 85-90 percent are from the general public. For those attendees making the trip from within the San Diego region, SDSU is providing an as yet unquantifiable public good to the region's quality of life, and for those visitors making the trip from outside the region, SDSU is serving as a net wealth generator for the San Diego economy by attracting the spending dollars of visitors from elsewhere.
- **KPBS, the local PBS radio and television station based at SDSU, is nationally-renowned:** KPBS is the most-watched public television station in the country during prime time, according to Nielson ratings. The station's daytime schedule—made up mostly of children's programs—ranked third in the country among public television stations. In 2005-2006, KPBS received a cumulative \$7.7 million in contributions from its 50,000 members.

#### ***3.4.4. Fielding Sports Teams for Regional Fans***

San Diego State University attracts hundreds of thousands of attendees to its home sports games each year, creating regional loyalty and entertainment and attracting visitors and their spending dollars into the San Diego regional economy.

- **SDSU sports teams attract an increasing number of fans each year:** Total attendance for all sports home games is estimated to reach 375,000 during the 2006-2007 school year, up from 300,000 in recent years. This includes the 150,000 who attend home football games (played at QUALCOMM Stadium).
- **Visitors from the general public come to SDSU from in and around the region for sports:** Of the 375,000 estimated visitors to SDSU athletic events, the general public (people not classified as students, faculty, or staff) constitutes approximately 75 percent, or over 280,000 general public visitors per year. This number is important; for those visitors who are making the trip to SDSU from within the region, SDSU is providing a large and as yet unquantifiable public good to the region's quality of life, and for those visitors making the trip

to SDSU athletic events from outside the region, SDSU is serving as a net wealth generator for the San Diego economy by attracting the spending dollars of visitors from elsewhere.

- **SDSU raises San Diego's visibility by hosting prominent sports events:** In 2006 SDSU's Cox Arena was host to six games in the first and second rounds of the NCAA Men's Basketball Tournament. Cox Arena also hosted games in the Tournament in 2001. Hosting nationally-televised events such as the NCAA Men's Basketball Tournament represents an important contribution by SDSU to San Diego's nationwide visibility.

### 3.4.5. *Offering the Public Use of its Facilities*

San Diego State University offers public use of its recreational and conference facilities to a wide range of community organizations, youth groups, and industry associations. The rental of these facilities enriches the abilities of these social-fabric organizations to operate, and they are greater evidence of SDSU's contribution to San Diego's quality of life.

- **SDSU Conference Center provides space for summer camps and other groups:** This facility offers the use of its facilities for a total of 39,606 bed nights in the summer to a variety of youth programs and adult conferences.

**Table 29: Summer Use of SDSU Conference Center (2004)**

Group Type	Number of Groups	Bed Nights
Youth Sports	14	6,499
Youth Religious	3	11,579
Youth Educational	15	17,277
Youth Leisure	5	2,307
Adult Educational	7	1,944
<b>TOTAL</b>	<b>44</b>	<b>39,606</b>

- **SDSU provides community use of facilities year-round:** More than 80 different organizations rent facilities during the year at SDSU, varying from industry associations to summer youth camps to church organizations (2004).
- **SDSU offers recreational facilities/gyms to its affiliates and the public:** Aztec Recreation Center has 16,778 members, including 1,469 from the general public.

**Table 30: Recreation Facilities and Annual Membership**

	Aztec Recreation Center	Mission Bay Aquatic Center
SDSU students	14,381	6,003
SDSU faculty/staff	460	156
SDSU alumni	468	1,415
Non-affiliated (general public) use	1,469	7,401 <sup>20</sup>
<b>TOTAL</b>	<b>16,778</b>	<b>14,975</b>

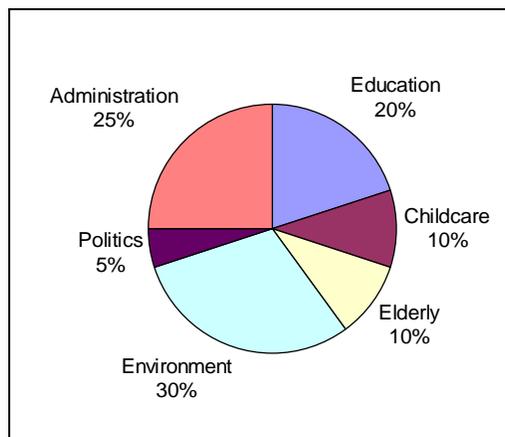
- **SDSU offers field trips to its field stations:** The four SDSU Field Stations provide a wealth of environmental education and interactive learning opportunities for the public, including public tours, lectures, public art projects, and volunteer opportunities. The field stations also partner with San Diego schools for field trips and other learning for K-12 students.

### ***3.4.6. Enriching the San Diego Region with Community Service***

San Diego State University provides a difficult-to-measure value to San Diego residents in its students' ongoing community service. These hours to the community, which can be assigned a fair market value, are being provided to the San Diego region at no cost, and represent a public good. These volunteer services would likely not otherwise be performed in the absence of the University; SDSU is dedicated to civic engagement and service through its mission and actions. SDSU instills students with a call to engage with the community and facilitates their volunteer activities in a variety of campus organizations, activities, and services.

- **SDSU students provide major levels of community service to the community:** It is estimated that SDSU students volunteer 175,000 hours of service to 1,400 community projects annually, ranging from K-12 education to nutrition to social services. This number is an estimate; official numbers do not accurately represent the actual number of community service hours that SDSU students perform. SDSU records 10,058 hours of community service by students involved in Greek organizations and 6,000 hours from students in community service organizations (2005-2006). It is estimated that 20 percent of SDSU students perform community service.

<sup>20</sup> Includes UCSD students, faculty, and staff and SDSU Extended Studies students.

**Figure 5: Student Community Service by Type**

- **SDSU course offerings foster service learning:** SDSU offers 20 courses with service learning components.
- **SDSU actively encourages students to be engaged with the community:** The Center for Community-Based Student Learning (CCBSL) serves as a resource to encourage SDSU students to be actively engaged with the San Diego community, and to assist SDSU students in developing the skills necessary to be civically-responsible citizens and to take action on social issues that are important to them. Since its inception in 1998, CCBSL has partnered with more than 180 community agencies in which students have performed community service.
- **SDSU students provide care to San Diego residents in need:** Students in the School of Social Work provide over 152,000 internship hours to local San Diego social services agencies per year—this equates to a little over one hour each week per student, or the equivalent of 73 full-time equivalent employees in San Diego social service agencies (2005/06).

### 3.5. SDSU and San Diego's Transportation, Energy, Police, and Other Services

#### 3.5.1. *Summary of SDSU's Impact on Transportation, Energy, Police, and other Services*

Transportation, energy, and police are all part of the public infrastructure that is critical for a region to build and maintain in order to serve the needs of businesses and residents and to be economically competitive. This infrastructure in San Diego—while typically provided by public agencies—is in fact partially supported by San Diego State University.

The University is making active contributions to the transit, energy, and public safety needs of the region. SDSU is engaged in assisting the transportation needs of students, faculty and staff, and visitors to and from campus, preserving the public safety of those on its campus, and even in producing and providing energy to the grid. All of these activities contribute to the creation of a unified infrastructure network to support San Diego's regional economy, while simultaneously reducing SDSU's impact on the public provision of these services.

**Highlights of SDSU's Impact on San Diego's Transportation, Energy, Police, and Other Services**

- 9,264 subsidized transit passes sold in FY2005-2006, one year after the opening of new multimodal transit center at SDSU, evidence of the University's dedication to transit-oriented growth in the San Diego region.
- An estimated 12,000 students, faculty and staff can be accommodated by the SDSU trolley station. The University's dedication to smart transit growth resulted in a change from a "commuter campus" to a "community campus."
- 27,948 total calls responded to by the SDSU police in 2006, of which 8,943 were called in by the community, contributing to the maintenance of public safety in the 1-mile jurisdiction around campus and reducing the use of the city police force.
- 100 percent of SDSU's electric needs are met by its own clean, efficient power plant. It creates no burden on the grid.
- 120,000 kWh/month exported to the grid (with a capacity to export as much as 1.0-1.5 megawatts in a demand-response scenario), reducing San Diego's energy use "footprint."
- 5 solar photovoltaic arrays and two demonstration solar projects at SDSU indicate its leadership in the deployment of clean and renewable energy sources.

The sections below detail SDSU's impacts on San Diego's transit, police, energy, and other services.

**3.5.2. Aiding Transportation Needs of Students, Faculty, Staff, and the Public**

- **SDSU is a leader in innovative, transit-oriented development:** SDSU worked with San Diego Metropolitan Transit System in the development of a new, groundbreaking, multimodal transit center in the heart of the SDSU campus that opened in 2005 with a mind for offering convenient mass transit and a "community campus" rather than a "commuter campus." The trolley can accommodate 12,000 students, faculty and staff.<sup>21</sup> SDSU has been recognized as an example to other institutions seeking growth in already heavily-built out areas.
- **SDSU contributes to the graduation of civil engineers who can go on to work on San Diego's regional transportation issues:** SDSU graduated 81 civil engineers in 2005/06, who are able to move onto meet key regional transportation needs for San Diego.

**Table 31: Number of SDSU Transit Passes Sold in Fiscal Year 2005-2006**

Students	5,902
Faculty and Staff	3,362
<b>TOTAL</b>	<b>9,264</b>

<sup>21</sup> [http://www.scup.org/about/Awards/2006/San\\_Diego\\_State.html](http://www.scup.org/about/Awards/2006/San_Diego_State.html)

### 3.5.3. *Providing Police Protection*

- **SDSU helps keep the campus and surrounding area safe:** The SDSU police responded to 27,948 total calls in 2006, of which 8,943 were called in by the community, contributing to the maintenance of public safety in the 1-mile jurisdiction around campus and reducing the use of the city police force.

### 3.5.4. *Providing Energy to the Grid*

- **SDSU provides 100 percent of its own electric energy:** SDSU uses a clean, efficient power plant to meet 100 percent of its own electric needs. It creates no burden on the grid.
- **SDSU is a net exporter to the grid, helping to reduce San Diego's energy "footprint":** SDSU exports 120,000 kWh/month to the grid and has the capacity to export 1.0-1.5 megawatts in a demand-response scenario.
- **SDSU is leading the deployment of clean and renewable energy sources:** SDSU has 5 solar photovoltaic arrays and two demonstration solar projects.

## 3.6. SDSU and San Diego's Housing and Healthcare

### 3.6.1. *Summary of SDSU's Impact on Housing and Healthcare*

Housing and healthcare are essential foundations to any regional economy. A region must provide the housing and healthcare options that its population needs in order to support a successful regional economy. San Diego State University contributes to the region's supply of housing and healthcare with its own programs that support its students, faculty, and staff, and reduce demand on public services.

#### Highlights of SDSU's Impact on San Diego's Housing and Healthcare

- 55,000 patient visits provided by SDSU Student Health Services in 2005-2006.
- 5,000 students and 14 faculty/staff housed in campus-owned or -managed housing.
- 246 children are cared for in the SDSU Children's Center.

The sections below detail SDSU's impacts on San Diego's housing and healthcare.

### 3.6.2. *Offering Medical Care*

- **SDSU provides medical care to its students, faculty, and staff:** SDSU Student Health Services provided for 55,000 patient visits in the 2005-2006 fiscal year, a number that has grown by almost 8 percent over the past two years. SDSU Student Health Services provides medical care for the student population and initial care for occupational injuries among faculty and staff.

### ***3.6.3. Providing Housing***

- **SDSU provides campus housing for students, faculty, and staff:** 5,000 students and 14 faculty/staff are housed in campus-owned or -managed housing.
- **SDSU offers guest housing on campus:** Guest housing on campus provides for approximately 40 guests for a total of 134 bed nights (2003-2004).

### ***3.6.4. Providing Childcare for SDSU Families and the Public***

- **SDSU helps fill the childcare needs of students, faculty, staff, and the public:** The SDSU Children's Center provides childcare to 246 children each year, of which 104 are related to students, 77 are related to faculty and staff, 41 are related to alumni, and 24 are related to the general public. All families are welcome. Priority is granted to families of SDSU students, faculty, and staff. Subsidized fees are available for income-eligible student families.

## **3.7. SDSU and San Diego's Image and Marketing**

### ***3.7.1. Summary of SDSU's Impact on Marketing***

Marketing is an essential foundation of any successful regional economy. Marketing relates to the packaging of a region's assets and advantages into a tight and consistent message about the region for promotion other businesses, investors, and the population in general. A successful region is able to coordinate and bundle its advantages into a comprehensive package that is consistently promoted by all coordinating organizations in the region, and is used to successfully attract businesses, investors, and others to the region, looking to take advantage of the region's strengths.

SDSU is more than a source of workforce, innovation and entrepreneurship, culture and recreation, and infrastructure. SDSU is an asset in the marketing of the San Diego region to the rest of California, the U.S., and even the world. The University's research, education, events, and activities draw news media and public attention on a daily basis, promoting the San Diego region as a place attractive to not only students and faculty, but employers who see the area as a good place to live and work.

#### **Highlights of SDSU's Impact on San Diego's Marketing**

- 200,000+ people receive SDSU marketing materials each year, acting as advertising for the San Diego region as well.
- \$1,000,000+ in advertising value is generated by SDSU's cooperative media efforts each year, indicative of the scope of reach of SDSU in the news.

## Appendix: San Diego's 20 Largest Employers

Rank	Company	Total Number of Employees, 2007
1	State of California	40,500
2	Federal Government	39,900
3	UC San Diego	26,924
4	County of San Diego	16,147
5	San Diego Unified School District	14,555
6	Sharp HealthCare	13,872
7	Scripps Health	12,196
<b>8</b>	<b>San Diego State University</b>	<b>11,247</b>
9	City of San Diego	11,195
10	Qualcomm, Inc.	8,008
11	Kaiser Permanente	7,330
12	U.S. Postal Service, San Diego District	6,946
13	San Diego Community College District	5,722
14	Sempra Energy	5,264
15	General Dynamics Nassco	4,680
16	Science Applications International Corp.	4,588
17	Northrup Grumman Corp.	4,165
18	Barona Valley Ranch Resort and Casino	3,453
19	Rady Children's Hospital, San Diego	3,260
20	University of San Diego	3,198

*Source: San Diego Business Journal/Special Report, June 11, 2007.*

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