



the power and promise of ucsf

ECONOMIC IMPACT REPORT | JUNE 2010



University of California
San Francisco

advancing health worldwide

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June 11, 2010

Colleagues and Friends:

We are pleased to present this *Economic Impact Report*, which documents the significant impact of the University of California, San Francisco (UCSF) on the economy through jobs and spending that support local businesses and our community.

Such information was last provided in 2003 when a report was released based on data from FY 2000-01, before the opening of the Mission Bay campus. The current report clearly indicates the advancement of the University in just under a decade. Based on data from FY 2008-09, the report reflects the direct and indirect economic growth generated by UCSF's \$3.3 billion enterprise, its 21,900 employees and the world-class research, patient care and education they support. Together, they generate a \$6.2 billion impact on industry output in the Bay Area, an increase from \$1.8 billion just eight years ago.

The report demonstrates that UCSF is essential for a vital local and regional economy and plays a critical role in generating the excitement, energy and innovation that make San Francisco one of the great intellectual capitals of the world.

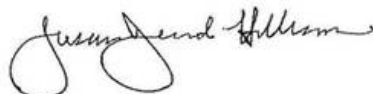
UCSF commissioned Economic & Planning Systems, Inc., a Berkeley consulting firm, to conduct the independent study of UCSF's economic impact within San Francisco and the nine-county Bay Area. The firm's research applied common impact methodologies and economic modeling that are widely used in economic forecasting. Also utilized were independent investigation and research, as well as financial and operational data provided by UCSF, the UC Office of the President, the City and County of San Francisco, and other published and non-published sources.

Members of UCSF's Community Advisory Group also participated in meetings to provide input into the methodology and assumptions of the report and reviewed an early draft to provide feedback. UCSF leadership and representatives from relevant agencies of the City and County of San Francisco also reviewed a preliminary version of the report to ensure that it reflected the full impact of this complex, world-renowned institution.

This document is only the beginning of the story. As a retrospective report, it neither includes the potential impact of the University's future operations or projects, nor its impact beyond the San Francisco Bay Area.

There are many significant developments underway. At Mission Bay two research buildings progress and the hospital complex is slated to open in 2014, at Parnassus Heights the stem cell research building approaches completion, and at Mount Zion the new Osher Center is anticipated to open late this year. UCSF has much more to give, and I trust that you, like me, look forward to seeing where the next decade will take us.

Sincerely,



Susan Desmond-Hellmann, M.D., M.P.H.
Chancellor
Arthur and Toni Rembe Rock Distinguished Professor

The Economics of Land Use



A Study of the Economic and Fiscal Impact of the University of California, San Francisco



Prepared for:



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Prepared by:

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June 2010

Final Report

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1. INTRODUCTION AND SUMMARY OF FINDINGS

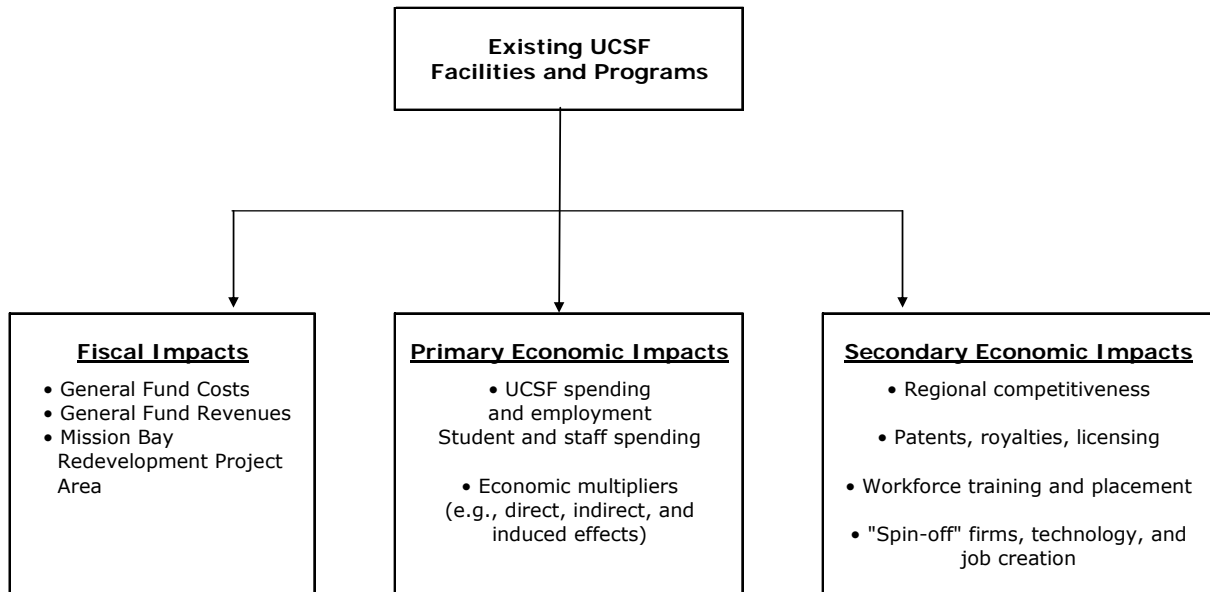
Introduction

This report assesses the variety of fiscal and economic effects that the University of California, San Francisco (UCSF) has within San Francisco and the broader Bay Area, including its academic, research, and medical functions. Although UCSF has previously sponsored studies on these topics, this analysis updates and expands upon prior analyses to reflect new programming information and economic conditions. UCSF retained Economic & Planning Systems (EPS) to evaluate three discrete categories of impacts relevant to UCSF, as described below and summarized in **Figure 1**.

- **Primary Economic Impacts.** The primary economic impact of a university and/or research institution derives from its local and regional spending and those of its faculty, staff and students. Specifically, UCSF and its employees and students purchase goods and services in the local economy which, in turn, create a “ripple” effect throughout the economy as local businesses expand and hire new workers and generate successive rounds of spending. These primary economic impacts can be quantified using input-output (I/O) analysis based on economic multipliers that quantify “direct,” “indirect,” and “induced” effects on local and regional output and employment.¹
- **Secondary Economic Impacts.** The secondary economic impacts of a university and/or research institution stem from its role in enhancing the overall competitiveness of a region by providing specialized research and a highly educated workforce. Specifically, by hiring and training highly skilled individuals and investing in specialized research activities, UCSF helps support a business environment conducive to economic innovation, growth, and diversification, especially in the life sciences sector. Although these secondary economic impacts are generally more difficult to quantify in terms of variables such as jobs or output, a variety of “proxy” measures can be utilized. Examples include patent, royalty and licensing activity, workforce training and employment, and firm creation through UCSF inventions and the entrepreneurial activity of its faculty.
- **Fiscal Impacts.** Universities and/or research institutions rely on the public services and facilities of the jurisdictions in which they reside but also generate tax revenues to help pay for them. UCSF’s net fiscal impact is the difference between the City and County of San Francisco (hereafter “City”) General Fund costs associated with providing necessary public services and facilities (e.g., public safety, recreation services, etc.) and the General Fund revenues generated by UCSF facilities, students, and staff. Although UCSF facilities are exempt from property tax, its students, staff, and visitors generate a variety of other tax revenues, including sales, hotel, and business license taxes.

¹ “Direct” impacts refer to the economic effects of total UCSF direct employment and spending. “Indirect” impacts represent economic effects on industries that supply UCSF. “Induced” impacts represent economic effects on all local industries as a result of the new personal spending by employees in the direct and indirect categories generated by UCSF.

Figure 1. Diagram for UCSF Fiscal and Economic Impacts Study



Report Organization

This report includes seven chapters that describe the methodology and results.

- **Chapter 1** provides an introduction to the analyses contained in the report, describes report organization, presents a brief overview of UCSF, and summarizes the key findings of the study.
- **Chapter 2** is an introduction to UCSF and its people and operations.
- **Chapter 3** describes the analysis of UCSF's primary economic impacts.
- **Chapter 4** provides the description and results of the secondary economic impact analysis.
- **Chapter 5** contains the key assumptions and methodology for the fiscal impact analysis
- **Chapter 6** presents the fiscal impact analysis.
- **Chapter 7** contains an evaluation of UCSF's impact on the Mission Bay South Redevelopment Project Area and the Community Facilities Districts contained in the Project Area.

In addition, there are three appendices. **Appendix A** presents a list of figures and tables. **Appendices B** and **C** provide detailed data and calculations relevant to the primary and secondary economic impacts, respectively.

UCSF Background and Mission

The University was founded in 1864 as Toland Medical College in San Francisco and became affiliated with the University of California (UC) in 1873. UCSF is the only UC campus exclusively dedicated to health sciences. Unlike other UC campuses, UCSF does not offer undergraduate programs; rather, it focuses on professional training with four schools in the areas of Dentistry, Medicine, Nursing, and Pharmacy. It also operates graduate programs with degrees in biological, biomedical, pharmaceutical, nursing, social, and behavioral sciences. In addition to these schools, UCSF has a medical center with two locations: Parnassus Heights and Mount Zion. A third location, a 289-bed women's, children's and cancer hospital complex at Mission Bay, is scheduled to open in 2014.

UCSF is the second largest employer in San Francisco and the fifth largest employer in the nine-county Bay Area. The table below summarizes student enrollment in 2009 by school and 2009 employment by personnel category. UCSF's students and staff work to accomplish UCSF's mission which is "advancing health worldwide."

UCSF Students/Medical Residents and Personnel, 2009

UCSF Students: School	Students/ Medical Residents	% of Students/ Medical Residents
Dentistry	463	10%
Medicine	1,988	45%
Nursing	667	15%
Pharmacy	605	14%
Graduate Division	<u>721</u>	<u>16%</u>
Total Students	4,444	100%
UCSF Personnel	Number	% of Personnel
Full-Time Equivalents (FTE)		
Managers and Senior Professionals	1,366	7%
Academic Employees	4,873	26%
Professional and Support Staff	<u>12,574</u>	<u>67%</u>
Total FTE Personnel	18,812	100%
Head Count (Full-Time and Part-Time Employees)		
Managers and Senior Professionals	1,540	7%
Academic Employees	5,698	26%
Professional and Support Staff	<u>14,665</u>	<u>67%</u>
Total Personnel	21,903	100%

Source: University of California, Office of the President (UCOP) – Table 1a: Enrollment by Campus, Level, and Gender: General Campus and Health Sciences Combined (<http://www.ucop.edu/ucophome/uwnews/stat/statsum/fall2009/statsumm2009.pdf>).

UCSF is also one of the top biomedical research enterprises in the world. Scientists in basic research laboratories study the genetic, molecular, and cellular basis of diseases, while others carry out epidemiological, behavioral, and clinical-research studies, all working to develop improved treatments and cures. The quality and breadth of this research has led to UCSF scientists being among the most prolific publishers of scientific discoveries worldwide.

UCSF also provides clinical services to San Francisco General Hospital (SFGH) under terms covered in an affiliation agreement. All SFGH physicians are UCSF faculty and combined almost 2,000 UCSF physicians, specialty nurses, health care professionals and other professionals work side by side with 3,500 City employees at SFGH. Most UCSF faculty based at SFGH are from the School of Medicine and provide patient care, research, and teaching at all levels for many UCSF learners. In addition, to help meet the health needs of the City's most vulnerable populations, UCSF has established clinics around San Francisco and provides staff for other existing clinics. Examples of these efforts include St. Anthony Free Medical Center, UCSF School of Dentistry Buchanan Dental Center, and Glide Health Services.

Summary of Findings

1. *As the second largest employer in San Francisco behind the City itself, and the fifth largest in the nine-county Bay Area, UCSF has a significant primary economic impact in terms of job creation, wages, and industry spending.²*

UCSF's primary economic impacts result from the spending by its 21,903 employees, 4,444 students, 3,910 retirees, and overnight visitors as well as the purchases of goods and services by UCSF itself. These direct economic activities, as summarized in **Table 1** and **Figure 2**, have "indirect" and "induced" economic impacts in San Francisco and the broader region in the form of increased jobs, output, and employee compensation in a variety of industries that supply goods and services to UCSF and its affiliated population.

Table 1. Economic Activities

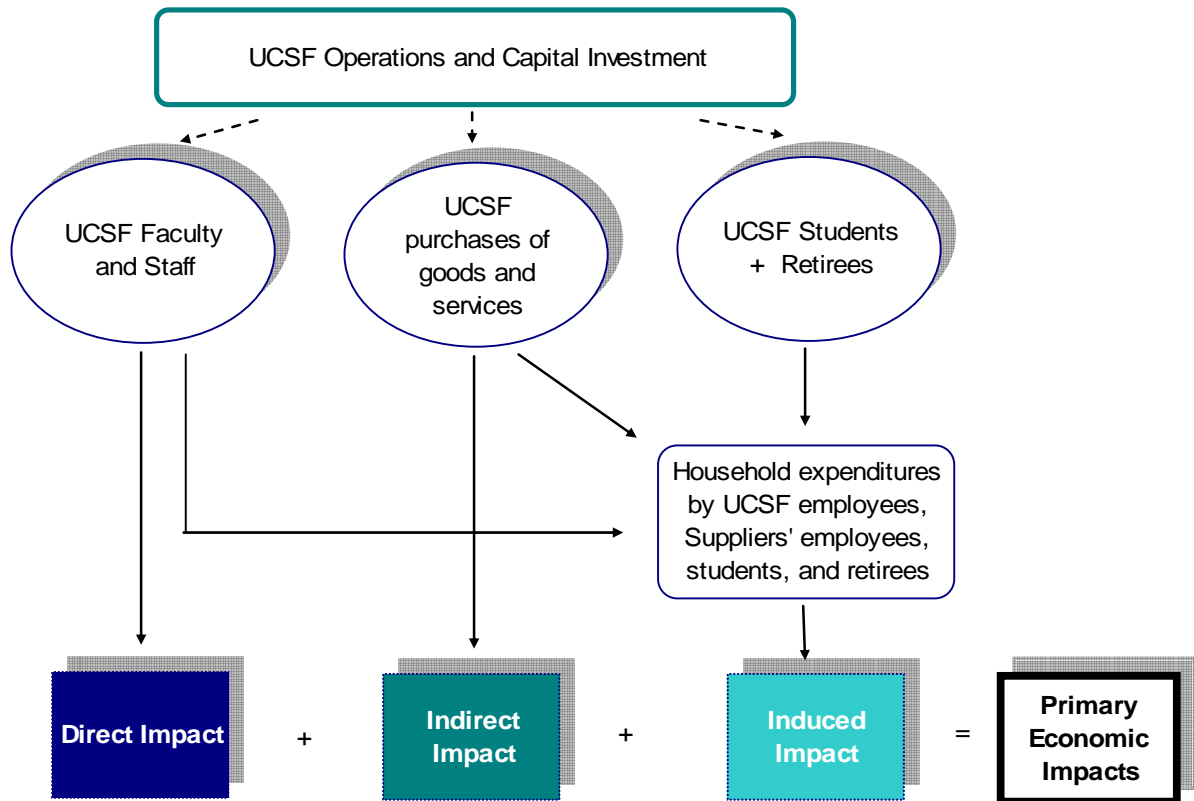
Impact Category	San Francisco	Total
UCSF Employees		
Headcount (full- and part-time)	20,808	21,903
Full-Time Equivalent	17,872	18,812
Students	3,289	4,444
Retirees	1,657	3,910
Wages	\$1,430,000,000	\$1,780,000,000
Construction Expenditures (Annual)		
2008/2009	\$320,000,000	\$320,000,000
Average for the last 10 years	\$180,000,000	\$180,000,000

As summarized in **Table 2**, UCSF's primary economic impacts are estimated to total 32,110 jobs, \$4.67 billion in industry output, and \$2.20 billion in employee compensation in San Francisco in FY 2008-09 (similar calculations are provided for the nine-county Bay Area³). In terms of employment, UCSF's primary economic impact represents 5.6 percent of San Francisco's total employment. As an indicator of relative scale, the entire financial services industry, one of San Francisco's largest, accounts for about 5 percent of all City jobs. It is important to note that because UCSF is primarily funded through a variety of State and federal sources, the economic impacts quantified herein have historically been relatively stable and less subject to the vicissitudes of the private sector business cycle.

² Note that UCSF, together with the University of California, Berkeley (UCB), would represent the largest employer by far in the San Francisco Bay Area.

³ The nine-county Bay Area refers to the counties which ring San Francisco Bay and are members of the Association of Bay Area Governments (ABAG), a regional organization. The nine counties are San Francisco, Marin, Sonoma, Napa, Solano, Contra Costa, Alameda, Santa Clara, and San Mateo.

Figure 2. Primary Economic Impacts Illustration



2. *In addition to the primary economic impacts that can be directly translated into jobs and spending, UCSF also generates a myriad of secondary economic impacts that, although more difficult to quantify, generally have a more fundamental and pervasive effect on the economic competitiveness of San Francisco and the broader region.*

Secondary economic impacts of a university, hospital, and research institution such as UCSF stem from its role in enhancing the overall competitiveness of a region by funding innovative specialized research and the development of a highly educated workforce. There is ample evidence that a premier research and medical institution such as UCSF can spawn everything from clusters of ancillary and support-related businesses and services (e.g., private doctors offices or medical supply firms), to small research and development (R&D) -related start-ups, to entire industry sectors.

This analysis has identified the following three discrete but highly interrelated categories that are most applicable to UCSF's secondary economic impacts:

1. **Innovation and Technology Leadership.** As a premier research and medical institution, UCSF is directly responsible for numerous innovations and scientific discoveries with practical applications in a variety of fields. Most notably, UCSF research

Table 2
Summary of Primary Economic Impacts
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Expenditure Category	Assumption / Model Input ¹	Total Impact in: ²	
		San Francisco County	Nine-County Bay Area
I. Employment			
UCSF Operations	20,808 UCSF Employees	30,108	35,984
UCSF Construction	\$180,000,000 Avg. / Year	1,500	1,600
UCSF Student Spending	4,444 Students (74% in SF)	182	530
UCSF Retiree Spending	6,816 Retirees (24% in SF; 57% in Bay Area)	320	1,020
Total		32,110	39,134
% of County / Bay Area Total		5.6%	1.1%
II. Industry Output			
UCSF Operations	20,808 UCSF Employees	\$4,290,000,000	\$5,590,000,000
UCSF Construction	\$180,000,000 Avg. / Year	\$288,000,000	\$330,000,000
UCSF Student Spending	4,444 Students (74% in SF)	\$31,000,000	\$96,400,000
UCSF Retiree Spending	6,816 Retirees (24% in SF; 57% in Bay Area)	\$57,000,000	\$176,000,000
Total		\$4,666,000,000	\$6,192,400,000
% of County / Bay Area Total		4.4%	0.8%
III. Employee Compensation			
UCSF Operations	20,808 UCSF Employees	\$2,050,000,000	\$2,640,000,000
UCSF Construction	\$180,000,000 Avg. / Year	\$117,000,000	\$126,000,000
UCSF Student Spending	4,444 Students (74% in SF)	\$9,000,000	\$31,100,000
UCSF Retiree Spending	6,816 Retirees (24% in SF; 57% in Bay Area)	\$20,000,000	\$58,000,000
Total		\$2,196,000,000	\$2,855,100,000
% of County / Bay Area Total		5.7%	1.3%

(1) Describes the data input used to in the I/O model to calculate total employment, output, and compensation.

(2) Based on economic multipliers that include "direct," "indirect," and "induced" economic impacts.

continues to advance a wide range of life sciences-related sectors, such as biotechnology and medical equipment, that provide economic benefits to producers and consumers in the form of new and improved products and more effective delivery of services.

2. **Creation of “Spin Off” Firms and Ancillary Businesses.** Both anecdotal information and more academic research suggests that UCSF, similar to other major research and medical institutions, is directly linked to the creation of R&D-related start-ups or spin-off firms as well as clusters of ancillary and support-related businesses and services (e.g., private doctors offices or medical supply firms). Again, these activities provide direct economic benefits, in the form of increased jobs and output within the Bay Area and beyond.
3. **Professional Relationships and Knowledge Transfer.** In addition to discrete scientific innovation and firm creation, UCSF’s cadre of elite scientists and researchers participate in a wide range of formal and informal networks and professional relationships that contribute to the type of information diffusion and knowledge transfer critical to the success of the biotech field. In addition, UCSF’s four professional schools and its graduate programs provide a reliable supply of well-trained professionals for life sciences firms seeking to acquire new talent and expertise.

Specific metrics related to UCSF:

- UCSF has consistently ranked in the top two or three in total R&D expenditures nationwide, behind Johns Hopkins and the University of Wisconsin, Madison, in total R&D spending and number one in life sciences over the last five years.⁴ Perhaps even more notable, available data suggest that UCSF is one of the single most prominent R&D institutions in the San Francisco Bay Area in terms of total spending in both the public and private sector. Specifically, EPS estimates that UCSF accounts for about 17 percent of the total R&D spending in San Francisco and 4 percent in the nine-county Bay Area.
- UCSF has consistently ranked as one of the top five recipients of National Institutes of Health (NIH)⁵ funding while its individual professional schools often rank number one. For example, in both 2008 and 2009 UCSF ranked second in overall funding behind Johns Hopkins University while the school of Pharmacy ranked first. Meanwhile, the School of Dentistry, School of Medicine, and School of Nursing ranked second.
- The University of California as a whole was the leading biotechnology patenting organization in the U.S. from 1977 to 2003 with approximately 1,585 patents; UCSF accounted for about 95 percent of the UC total. Moreover, data from the National

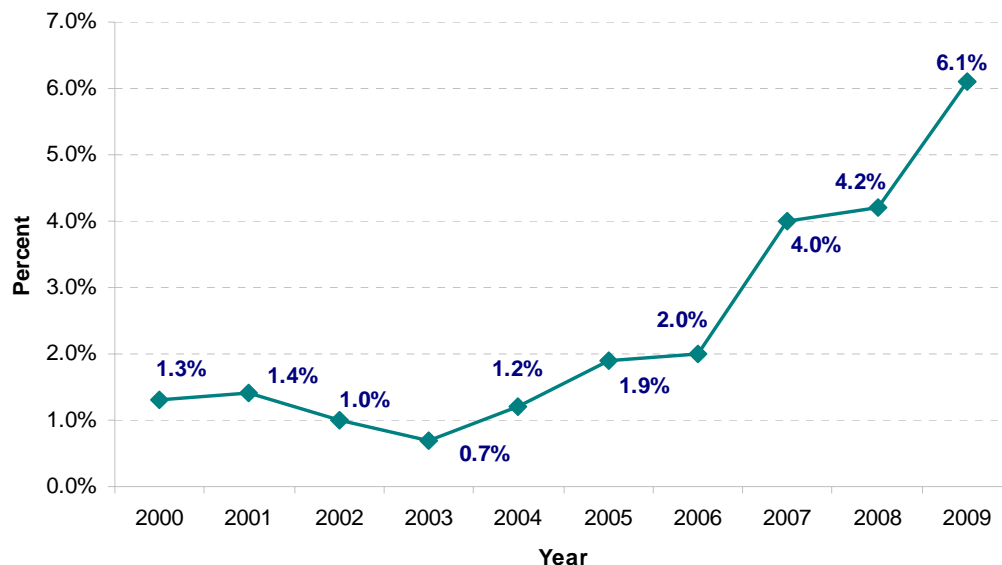
⁴ R&D expenditures are generally specifically identified as such and expended for activities specifically organized to produce research outcomes. These activities are either commissioned by an agency external to the institution or are separately budgeted by an organizational unit within the institution. It is generally distinguished from academic spending.

⁵ NIH is the primary federal agency for conducting and supporting medical research. NIH annually invests over \$28 billion in medical research. More than 83 percent of NIH’s funding is awarded through competitive grants.

Science Foundation suggest that UCSF alone accounts for about 6 percent of the total academic licensing revenue in the U.S.

- UCSF has been the source of 66 biotech start-ups (e.g., new pharmaceuticals, biotechnology, Medical Device firms) and has helped “incubate” another 27 firms at its Mission Bay campus.
- UCSF graduates from UCSF professional schools and graduate programs also serve as an important resource for the biotechnology sector and UCSF Alumni Association data suggest that students exhibit a high propensity to remain in California, and especially the Bay Area after graduation. Specifically, over half (55 percent) remain in the Bay Area and 75 percent in the State.
- Another potential indication of UCSF’s positive impact on the biotechnology industry is the increasing growth of this cluster in San Francisco. As shown on Figure 3, the percentage of San Francisco’s share of Bay Area occupied biotech space has increased significantly over the past few years, from 1.3 percent in 2000 to 6.1 percent in 2009. UCSF alone accounts for more than half of all life sciences-related building space in San Francisco with about 1.7 million square feet dedicated to research uses. In addition, average lease rates for biotech building space in San Francisco have increased significantly in the past few years, and currently far exceed other Bay Area locations. Although a number of factors can account for this phenomenon, the timing suggests that the development of the Mission Bay campus has been a significant catalyst. The first building at the Mission Bay campus, Genentech Hall, opened in 2003.

Figure 3. San Francisco’s Share of Bay Area Biotech Space



3. From a fiscal perspective, UCSF has a positive impact on the City and County of San Francisco General Fund budget.

UCSF generates about \$4.89 million in revenues and \$4.17 million in costs to the City’s General Fund, resulting in a positive net fiscal impact of roughly \$720,000 annually. This

positive net benefit represents about 15 to 17 percent of the City budget associated with UCSF. However, it represents less than 1 percent of the total San Francisco General Fund budget.⁶

UCSF is an entity of the State, and like all governmental agencies and nonprofit organizations, UCSF is exempt from property taxes and a variety of other local taxes. Yet the University generates a significant amount of sales and use tax for San Francisco—both from its own purchases and the purchases of students and staff during the school/workday—as well as hotel, payroll and parking taxes.⁷ The largest cost items attributed to UCSF are for the Fire Department and the Municipal Transportation Agency (MTA), which runs the Municipal Railway, Muni. See **Table 3** for summary of results.

Table 3. Summary of Fiscal Impacts

Item	Total
Revenues	
Sales and Use Tax	\$1,512,000
Intergovernmental	\$820,000
Hotel Tax	\$1,012,000
Business Taxes [1]	\$904,000
Fines, Licenses, Permits (Including Parking Tax)	\$641,000
Property Taxes	<u>\$0</u>
Total Revenues	\$4,889,000
Costs	
Fire	\$900,238
Police and Other Public Protection Services	\$667,762
Pub. Works, Transp, & Cmmrc. (Including Muni)	\$1,294,000
Human Welfare and Neigh. Dev.	\$393,000
General City Resp.	\$622,000
Culture and Recreation	\$156,000
General Admin. and Finance	\$136,000
Community Health	<u>\$0</u>
Total Costs	\$4,169,000
Net Fiscal Impact	\$720,000

[1] Includes Payroll Taxes for the Construction industry related to UCSF average annual capital expenditure.

⁶ This overall fiscal impact represents a “snapshot” from all UCSF-related programs, activities, and facilities on an aggregate level. It does not represent the fiscal impact of individual or incremental programs, activities, and facilities. These individual or incremental impacts should be evaluated on a case-by-case basis.

⁷ While the University is exempt from paying payroll taxes for its employees, its substantial capital outlays have supported a significant amount of construction labor and the payroll tax from those projects are attributed to UCSF. In addition, while the University’s parking garages are not subject to the parking tax, a portion of UCSF’s employees and students pay this tax when parking in non-UCSF parking facilities as part of their UCSF commute.

4. UCSF contributes funds toward infrastructure and public open space at the Mission Bay Redevelopment Project Area.

UCSF has provided or has committed to make payments to support public improvements and ongoing maintenance in the Mission Bay Redevelopment Project Area consistent with its agreements with the Redevelopment Agency and the Master Developer of Mission Bay.

The Redevelopment Agency currently receives about \$8.2 million in tax increment revenues from the Mission Bay South Project Area to finance public improvements in the Project Area. In addition to this financing source, the Project Area has two Community Facilities Districts (CFDs) that fund infrastructure and maintenance. While UCSF is exempt from property taxes and the original portion of the UCSF Mission Bay campus is not included in the CFD boundaries, portions of subsequently acquired land for the Mission Bay campus are subject to the CFDs. In addition, UCSF has made several commitments to the improvements needed to support its own expansion:

- **Capital.** UCSF committed to fund about \$60 million worth of public improvements (e.g., for public streets, utilities, and open space). Of this amount, \$35 million has already been paid with subsequent payments expected as the campus development is completed and as the hospital site is built.
- **Ongoing.** In addition, UCSF has made payments of about \$4.1 million to date for park/open space maintenance; ongoing payments continue as the full UCSF-planned development is built out.

2. OVERVIEW OF UCSF

This chapter presents an overview of UCSF's programs, facilities, staff, and students. The information provides a basis for evaluating UCSF's economic and fiscal impacts in subsequent chapters.

UCSF Background and Mission

The University was founded in 1864 as Toland Medical College in San Francisco and became affiliated with UC in 1873. UCSF is the only UC campus exclusively dedicated to health sciences. Unlike other UC campuses, UCSF does not offer undergraduate programs; rather, it focuses on professional training with four schools in the areas of Dentistry, Medicine, Nursing, and Pharmacy. It also operates graduate programs with degrees in biological, biomedical, pharmaceutical, nursing, social, and behavioral sciences. In addition to these schools, UCSF has a medical center with two locations: Parnassus Heights and Mount Zion. A third location, a 289-bed women's, children's, and cancer hospital complex at Mission Bay, is scheduled to open in 2014.

UCSF's students and staff work to accomplish UCSF's mission which is "advancing health worldwide." The University's goals underpinning this mission are to:⁸

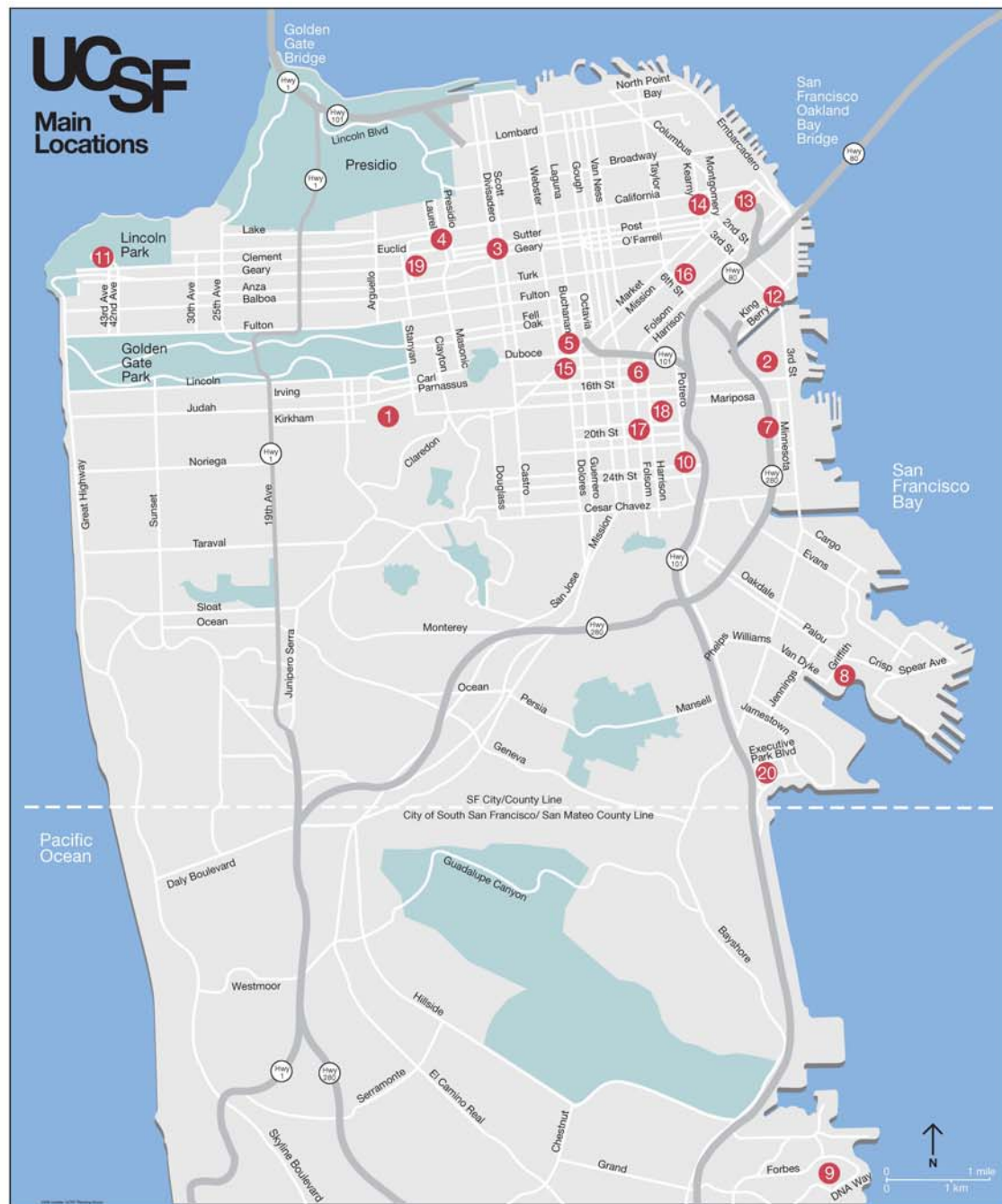
- Develop the world's future leaders in health care delivery, research and education.
- Be a world leader in scientific discovery and its translation into exemplary health.
- Provide high-quality, patient-centered care leading to optimal outcomes and patient satisfaction.
- Educate, train and employ a diverse faculty, staff and student body.
- Provide a supportive and effective work environment to attract and retain the best people and position UCSF for the future.
- Serve our local, regional and global communities and eliminate health disparities.

UCSF Facilities and Locations

UCSF facilities are largely situated within San Francisco and cover about 185 acres. UCSF has three campus sites in San Francisco: at Parnassus Heights, Mission Bay, and Mount Zion. In addition, major programs and departments are located at 15 other sites throughout the City, plus San Francisco General Hospital and the Veterans Affairs Medical Center, as illustrated in **Figure 4**. UCSF facilities include its hospitals, instruction space, conference centers, office space, and almost 900 on-campus housing units.

⁸ From UCSF Institutional Profile 2009.

Figure 4. UCSF's Locations in San Francisco



- | | | |
|---------------------------|--|---------------------------------|
| 1 Parnassus Heights | 8 Hunters Point | 14 220 Montgomery Street |
| 2 Mission Bay | 9 Oyster Point | 15 1930 Market Street |
| 3 Mount Zion | 10 San Francisco General Hospital (Affiliation) | 16 982 Mission Street |
| 4 Laurel Heights | 11 Veterans Affairs Medical Center (Affiliation) | 17 2300 Harrison Street |
| 5 Buchanan Dental Clinic | 12 185 Berry Street | 18 2727 Mariposa Street |
| 6 Mission Center Building | 13 50 Beale Street | 19 3360 Geary Boulevard |
| 7 654 Minnesota Street | | 20 250 Executive Park Boulevard |

UCSF Students, Faculty, and Staff

UCSF enrolled 4,444 students in 2009 in its professional schools and graduate programs. UCSF has almost 19,000 full-time equivalent positions and employs 21,900 people. **Table 4** reports student enrollment in 2009 by school and 2009 employment by personnel category (e.g., academic, managers and senior professionals, and professional and support staff which includes most of the hospital and laboratory personnel).

Table 4. UCSF Students/Medical Residents and Personnel, 2009

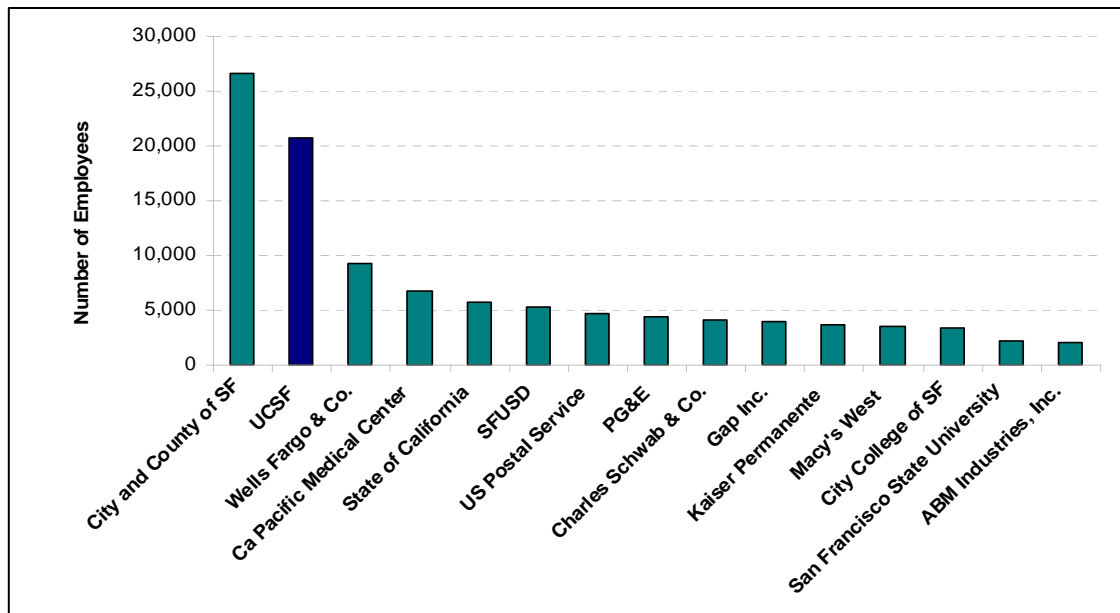
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Source: University of California, Office of the President (UCOP) – Table 1a: Enrollment by Campus, Level, and Gender: General Campus and Health Sciences Combined (<http://www.ucop.edu/ucophome/uwnews/stat/statsum/fall2009/statsumm2009.pdf>).

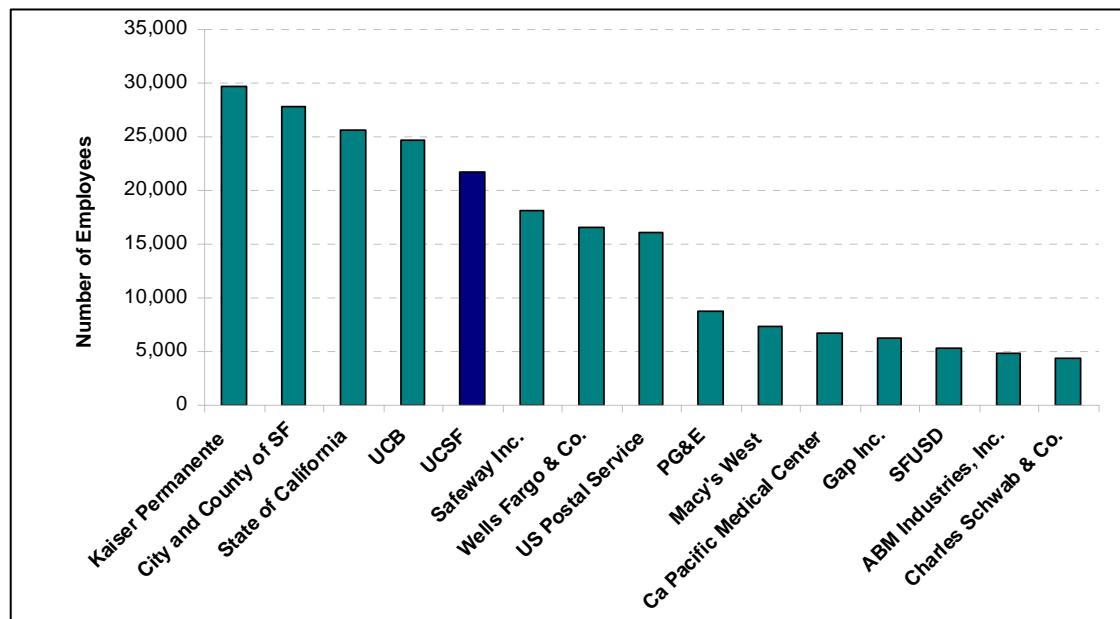
UCSF is the second largest employer in San Francisco and the fifth largest employer in the nine-county Bay Area. **Figure 5** and **Figure 6** show other large employers in San Francisco and the nine-county Bay Area (Bay Area).

Figure 5. Top Employers by Number of Employees in San Francisco, 2009



Source: San Francisco Business Times Book of Lists, 2009

Figure 6. Top Employers by Number of Employees in Nine-County San Francisco Bay Area, 2009



Source: San Francisco Business Times Book of Lists, 2009

UCSF Program Overview

UCSF's primary operations are its educational programs, clinical enterprise (UCSF Medical Center), and UCSF research institutes, centers, and foundations. Its professional and graduate programs and the UCSF Medical Center and UCSF Children's hospital are ranked among the best in the country by *U.S. News and World Report*.

Educational Programs

UCSF's education programs are consistently ranked among the best in the nation and the world. Admissions to all of its programs are very competitive and tend to attract some of the most talented students in the country. Brief facts about each program are provided below.

School of Dentistry

- The School of Dentistry admits 80 students per year into a four-year curriculum which leads to the DDS degree.
- For each student admitted, the school received 19 applications in 2009.
- The school offers postgraduate programs in several dental specialty areas: dental public health, endodontics, oral and maxillofacial surgery, orthodontics, pediatric dentistry, periodontology, prosthodontics, and a general practice residency.
- Tuition and fees to attend the School of Dentistry are affordable, based on the fact that the school ranks 41st in terms of tuition/fee costs among the 54 U.S. dental schools.
- The School of Dentistry operates the UCSF Oral and Maxillofacial Surgery Clinic, which provides inpatient and outpatient services such as trauma surgery for the jaw and facial bone fractures, surgical correction of maxillofacial skeletal and soft tissue deformities and diagnosis and disease.

School of Medicine

- In 2009, the Medical School received almost 6,000 applications for 150 spaces.
- The school offers professional degree programs and graduate degrees in many fields.
- The school ranks among the top 10 programs in the U.S. in seven of eight medical school specialty programs, including first in AIDS medicine, second in women's health, and third in internal medicine according to *U.S. News and World Report*.
- UCSF's Elizabeth Blackburn, Professor of Biology and Physiology, won the Nobel Prize in 2009 in Physiology or Medicine for co-discovering the enzyme telomerase and showing how telomeres and telomerase protect chromosomes and play a key role in cell aging.
- Stanley Prusiner, Director of the Institute for Neurodegenerative Diseases and Professor of Neurology and Biochemistry at UCSF, discovered prions—infectious agents linked to a number of neurodegenerative diseases, including "mad cow" disease in animals and

- Creutzfeldt-Jakob in humans, earning him the 1997 Nobel Prize in Physiology or Medicine. The research has informed scientists' understanding of Alzheimer's, Parkinson's, and other neurodegenerative diseases.
- J. Michael Bishop, Professor and Director of the G. W. Hooper Foundation and former UCSF Chancellor, and Harold E. Varmus, Professor Emeritus of Microbiology and Immunology at UCSF, discovered that some normal genes, when altered or misexpressed, have the capacity to cause cancer. The two shared the 1989 Nobel Prize in Physiology or Medicine for their discovery.
- The school received \$418 million in NIH funding in 2009, second in the nation for medical schools behind Johns Hopkins University.
- It holds 632 active patents in the United States.

School of Nursing

- The School of Nursing ranked first in the nation in terms of NIH research funding every year from 2003 to 2008.
- The school offers more than 14 master's degree specialties in nursing and an outstanding PhD program.
- Four departments of instruction and research are within the main School: Family Health Care Nursing, Community Health Systems, Physiological Nursing, and Social and Behavioral Sciences.
- An accelerated RN program for 85 students each year draws from a highly competitive nationwide pool (more than 600 applicants in 2009).
- The School of Nursing offers a nurse-midwifery education program that has graduated hundreds of nurse-midwives and has provided more than 12,000 women with midwifery care for their births, about half of which are at San Francisco General Hospital (SFGH). It is also a training site for other advanced nursing students such as nurse practitioners and clinical nurse specialists.

School of Pharmacy

- The School of Pharmacy has ranked first in the nation in NIH research funding for 30 consecutive years.
- The school provides professional degrees in Doctor of Pharmacy (PharmD) and pathways in Pharmaceutical Care, Pharmaceutical Health Policy and Management, and Pharmaceutical Sciences.
- Out of a pool of more than 1,500 applicants in 2009, the school admitted 122 students.
- The school also provides PhD graduate programs in Biology and Medical Informatics, Biophysics, Chemistry and Chemical Biology, Pharmaceutical Sciences and Pharmacogenomics, as well as UCSF/UCB Joint Graduate Group in Bioengineering.

- The School of Pharmacy manages the California Poison Control Center, which consists of four answering sites, including SFGH. The school also regularly works with a multidisciplinary team of pharmacists, physicians and nurse practitioners to answer calls to the National HIV Telephone Consultation Service and the National Clinicians Hotline.

Graduate Division

- The Graduate Division offers graduate degrees in the Biological, Biomedical, Pharmaceutical, Nursing, Social and Behavioral Sciences.
- The division offers 22 degree programs, a high proportion of which are ranked in the top ten, nationally.
- Degrees offered include PhD, Master of Science, Master of Arts, Master of Clinical Research, and Doctor of Physical Therapy.

Medical Center

UCSF operates the UCSF Medical Center, a 722-licensed bed tertiary care referral center with two major sites (Parnassus Heights and Mount Zion). UCSF Medical Center and UCSF Children's Hospital are world leaders in health care, known for innovative medicine and advanced technology. UCSF's expertise covers virtually all specialties, including cancer, heart disease, infertility, neurological disorders, organ transplantation, and orthopedics as well as special services for women and children. Clinical faculty also provide clinical services within and outside of the UCSF Medical Center.

As an academic medical center, UCSF Medical Center is unlike community hospitals in that it offers pioneering treatments not widely available elsewhere. For example, UCSF has the only nationally designated Comprehensive Cancer Center in northern California. The center is dedicated to finding new and better treatments for cancer patients. UCSF also has northern California's only nationally designated Center of Excellence in Women's Health, which offers specialized care and health education for women.

Another area of distinction is UCSF's health services for children and pregnant women. UCSF Children's Hospital is a "hospital within a hospital" with more than 150 specialists in more than 40 areas of medicine. It has programs designed specifically for young patients, including a 50-bed neonatal intensive care nursery, recreational therapy for recovering children and 60 outreach clinics throughout northern California. In the area of neurology and neurosurgery, UCSF Medical Center is among the top five hospitals in the nation. UCSF has one of the largest brain tumor treatment programs in the nation as well as the only comprehensive memory disorders center and the only comprehensive epilepsy center in northern California.

UCSF also has one of the nation's largest centers for kidney and liver transplants. Its AIDS program is the most comprehensive in the nation and its surgical eye care program is the largest in northern California. In the area of orthopedics, UCSF is internationally recognized for treating the spine, including deformities, degenerative disc disease, tumors and fractures. UCSF also has institutes, centers, and foundations dedicated to diseases such as diabetes, lupus, and multiple sclerosis and research on pain, asthma, health improvement and prevention, bioinformatics, smoking/tobacco, stem cell science, addiction/substance abuse, aging, and more.

The Medical Center has approximately 750,000 outpatient visits annually. In addition to medical services, UCSF provides dentistry services amounting to about 121,000 patient visits per year. The campus profile for 2009 reports that patient volumes have increased about 4 percent per year for the last nine years. This has generated demand for additional space. To address this need, as well as to meet new seismic standards for inpatient facilities, UCSF has acquired 14.5 acres in Mission Bay to develop a 289-bed children's, women's, and cancer hospital complex (estimated for completion in 2014).

Research Enterprise

UCSF is one of the top biomedical research enterprises in the world. Scientists in basic research laboratories study the genetic, molecular, and cellular basis of diseases, while others carry out epidemiological, behavioral, and clinical-research studies, all working to develop improved treatments and cures. The quality and breadth of this research has led to UCSF scientists being among the most prolific publishers of scientific discoveries worldwide. The secondary economic impacts of these activities are described further in **Chapter 4**.

UCSF research focuses on treatment for such diseases as cancer, diabetes, HIV/AIDS, and infectious diseases; cardiological and immunological diseases; and such neurological conditions as Alzheimer's disease and Parkinson's disease. The University is a leader in such innovative areas as stem cell science, bioengineering, and pharmaceutical chemistry and was home to the co-discovery of the techniques of recombinant DNA—splicing genes from one organism into another—which spawned a revolution in biology and the birth of biotechnology.

Community Health Clinics

To help meet the health needs of the City's most vulnerable populations, UCSF has established clinics around San Francisco and provides staff for other existing clinics. Examples of these efforts are:

- *St. Anthony Free Medical Center.* The UCSF School of Pharmacy partners with the St. Anthony Foundation to provide needed pharmaceutical care to patients with no health insurance and limited access to health care.
 - Ninety percent of patients at the clinic have incomes below the federal poverty level.
 - St. Anthony Free Medical Clinic sees a diverse patient population—61 percent Latino, 14 percent African America, 15 percent Caucasian, and 9 percent Asian.
- *UCSF School of Dentistry Buchanan Dental Center.* The dental school clinic on Buchanan Street provides comprehensive services to low-income adults and children.
 - The clinic sees approximately 2,700 patients each year, with 10,000 total patient visits.
 - Seventy percent of patients are Latino, African American, Asian, or another ethnic minority.

- *Glide Health Services.* This Tenderloin District community clinic is managed by the UCSF School of Nursing, in cooperation with Glide Memorial United Methodist Church, Catholic Healthcare West, and other community partners. Founded in 1997, the clinic sees 3,000 underserved patients a year in more than 10,000 visits.

UCSF Affiliations

San Francisco General Hospital

San Francisco General Hospital (SFGH) is one of two major hospital affiliations maintained by UCSF (the other is the Veterans Affairs Medical Center). UCSF has been the City's partner in providing patient care at SFGH since 1873. All SFGH physicians at SFGH are UCSF faculty, committed to providing quality, culturally sensitive care to the people of San Francisco. Today, almost 2,000 UCSF physicians, specialty nurses, health care professionals and other professionals work side by side with 3,500 City employees at SFGH.

Most UCSF faculty based at SFGH are from the School of Medicine and provide patient care, research, and teaching at all levels for many UCSF learners. Approximately one-third of UCSF's physician training is conducted at SFGH. The research enterprise encompasses more than 190 investigators and approximately \$100 million a year in research grants. This research helps SFGH provide low-cost, leading-edge care to SFGH patients.

The clinical services that UCSF provides at SFGH are provided under terms covered in an affiliation agreement, which also outlines how UCSF is to be compensated for these services. In recent years, the City's annual compensation to UCSF has not fully covered the cost of services provided. The gap between the cost of services provided and compensation received has been estimated by UCSF at \$6 million a year, under a formula agreed upon by both the City and UCSF. Nonetheless, the affiliation continues to provide mutual benefit to both UCSF and the City and enables the City to provide quality care at a lower cost than providing it directly or contracting with another health care entity.

Veterans Affairs Medical Center

The Veterans Affairs Medical Center (VAMC) is a 124-bed tertiary care teaching hospital in San Francisco that provides a full range of patient care services and world-class research programs. The VAMC includes a 120-bed nursing home and provides outpatient services through clinics located in San Francisco and in four other northern California communities. Patients from these clinics come to San Francisco for hospitalization and for specialty care.

The facility is owned by the Department of Veterans Affairs (VA) and affiliated with all four UCSF schools—Dentistry, Medicine, Nursing, and Pharmacy. More than 240 full- and part-time UCSF physicians are on staff at the VAMC. Additionally, the VAMC is a UCSF teaching hospital. It funds 171 residency positions for UCSF residents who train at the VAMC and provides clinical training for one-third of UCSF medical students.

The VAMC's research enterprise is the largest funded research program in the VA with 180 funded investigators overseeing more than \$77 million a year in expenditures. UCSF PhD faculty also are on staff at the VAMC and integral to both the clinical and research programs.

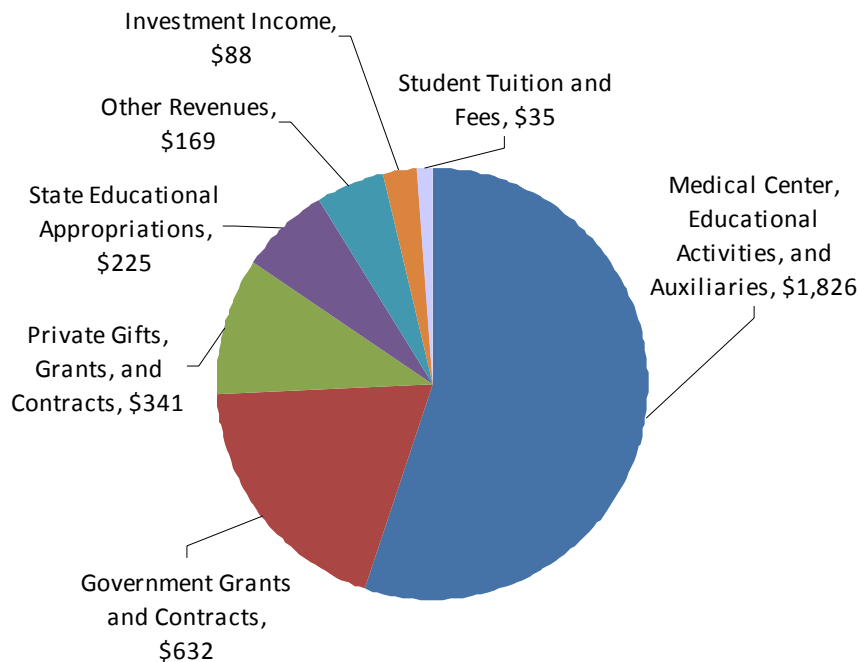
The VAMC provides comprehensive health care through primary care, tertiary care and long-term care in the areas of medicine, surgery, psychiatry, dermatology, physical medicine and rehabilitation, neurology, oncology, dentistry, geriatrics and extended care.

UCSF Budget Overview

UCSF's revenues in FY 2008/09 summed to \$3.3 billion. Nearly half of that amount was derived from the Medical Center's income. About 7 percent of total UCSF revenues are from the State of California appropriations. A portion of UCSF's funding is for services it provides at San Francisco General Hospital (SFGH). More than 2,000 UCSF physicians and staff work at SFGH, along with San Francisco Department of Public Health employees. SFGH is the only trauma center in the City and County of San Francisco.

UCSF expenditures for the fiscal year totaled \$3.2 billion. About half of expenditures were for hospital operations and almost 40 percent went to research, instruction and academic support uses. **Figure 7** and **Figure 8** depict the breakdown of revenues and expenditures, respectively.

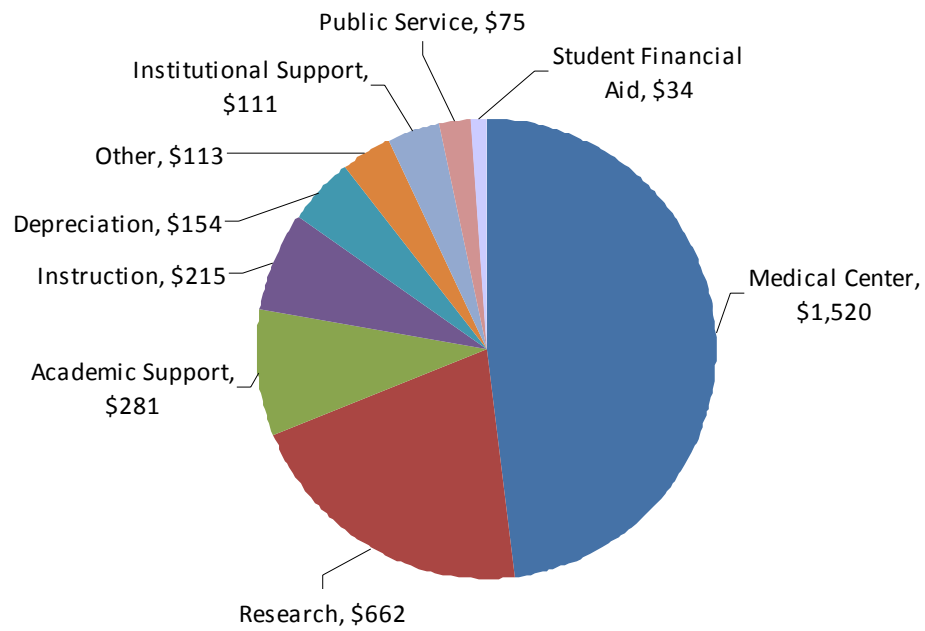
Figure 7. UCSF Revenues Supporting Core Activities, FY 2009, \$3.3 Billion



Pie chart is shown in millions.

Source: UCSF Annual Financial Report, 2009, pg. 7.

Figure 8. UCSF Operating Expenses, FY 2009, \$3.2 Billion



Pie chart is shown in millions.

Source: UCSF Annual Financial Report, 2009, pg. 21.

3. PRIMARY ECONOMIC IMPACTS

This chapter evaluates UCSF's primary economic impacts in both the County of San Francisco and the nine-county Bay Area (Study Area). Primary economic impacts represent those that can be directly linked to spending by UCSF and its students and staff (including retirees) and that can be readily translated into quantifiable economic metrics such as spending, jobs, and employee compensation (these are differentiated from the secondary economic impacts evaluated in **Chapter 4**). Specifically, the primary economic impact analysis quantifies the level of output (i.e., value of goods and services), employment, and employee compensation within the Study Area that are directly attributable to UCSF. This economic output is derived from the following discrete UCSF-related activities:

1. UCSF's annual operating expenditures: This includes UCSF's annual spending for existing programs and facility maintenance, including salaries of existing faculty and staff.
2. UCSF's annual construction expenditures: This includes the average amount that UCSF spends per year to develop or improve its capital facilities (e.g., buildings and related infrastructure).
3. Spending by UCSF students: This includes the spending by students currently enrolled in UCSF programs (spending by UCSF faculty and staff are included in #1 above).
4. Spending of UCSF retirement payments by retirees: This includes the impact of UCSF retirement benefits paid to eligible UCSF retirees who currently reside in the Study Area. The local spending of these retirees is directly attributable to UCSF since it is based entirely on UCSF payments (the analysis excludes retiree spending attributable to income from other sources).

It is important to note that primary economic impact analysis only focuses on economic activities that originate from UCSF and therefore excludes a number of spending categories that UCSF contributes to, albeit less directly. For example, the primary economic impact analysis excludes the spending by UCSF visitors or by UCSF alumni (unless their spending is based on UCSF income or other payments).⁹ This is because the spending from visitors and alumni are generally based on income derived from another source (e.g., their employer or personal savings).

The analysis utilizes an input/output (I/O) modeling framework to quantify UCSF's contribution to regional output, jobs, and employee compensation. As further described below, the I/O modeling framework is premised on the concept that industries in a particular geographic area

⁹ The fiscal analysis described in subsequent chapters does account for the tax revenues generated by visitor spending. Unlike the economic analysis, a fiscal analysis focuses on the tax implications of spending attributable to UCSF regardless of whether UCSF is the origin or primary source of the income that enables this spending.

are interdependent and thus the total contribution of any one establishment's activity is larger than its individual (direct) output and/or employment. Consequently, an establishment's economic activity has a "multiplier" effect that generates successive rounds of spending and output in other economic sectors within a particular region. It is also worth noting that because UCSF is primarily funded through a variety of State and federal sources, the economic impacts quantified herein have historically been relatively stable and less subject to the vicissitudes of the private sector business cycle.

Overview of Input/Output Modeling

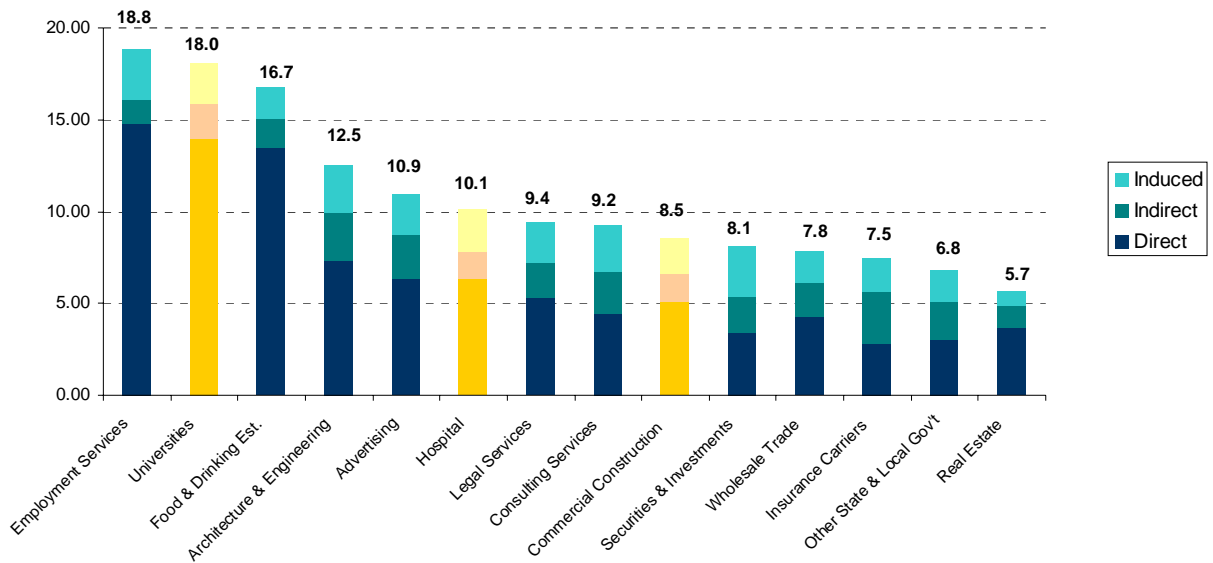
Industries in a geographic region are interdependent in the sense that they purchase output from and supply input to other industries. For example, consider the implications of a health care expenditure. Hospitals purchase goods from producers, which in turn purchase raw materials from suppliers. Thus, an increase/decrease in the demand for health care provisions will stimulate an increase/decrease in output and employment in the interdependent secondary industries.

This regional economic analysis relies on IMPLAN (Impact Analysis for Planning) software, an I/O model that draws upon data collected by the Minnesota IMPLAN Group (MIG) from several state and federal sources, including the Bureau of Economic Analysis, Bureau of Labor Statistics (BLS), and the Census Bureau. The model is widely used for estimating economic impacts across a wide array of industries and economic settings.

Regional economic impact analysis and I/O models in particular provide a means to estimate total regional effects stemming from a particular industry. Specifically, I/O models produce quantitative estimates of the magnitude of regional economic activity resulting from some initial activity (e.g., university or hospital operations). I/O models rely on economic "multipliers" that mathematically represent the relationship between the initial change in one sector of the economy and the effect of that change on economic output, income, or employment in other local industries. These economic data provide a quantitative estimate of the magnitude of shifts in jobs and revenues within the regional economy.

Figure 9 illustrates the multipliers calculated for San Francisco County for a variety of economic sectors. Specifically, the chart compares the total direct, indirect, and induced employment generated for every \$1 million in output for key economic sectors in San Francisco, including those most closely associated with UCSF (the UCSF multipliers included "universities," "hospitals," and "commercial construction," as highlighted). By way of example, universities are estimated to generate about 18 jobs per \$1 million in output, compared to 10 jobs from hospitals and 8.5 jobs for commercial construction. It is worth noting that the employment multiplier for universities is high relative to other sectors of the economy, indicating a relatively strong labor component to this activity.

Figure 9. Workers Supported per \$1 Million of Output



Interpretation of Model Results

Economic impacts using an I/O model are based on an initial change in output or employment in some sector. The model then translates the initial change into changes in demand for output from other interdependent sectors, corresponding changes in demand for inputs to those sectors, and so on. These effects are commonly described as direct, indirect or induced and are generally defined as follows:

- The direct effect represents the change in output attributable to a change in demand or a supply shock. For example, the total revenue generated by a new hospital facility would represent the direct impact on the San Francisco County economy.
- The indirect effect results from industry-to-industry transactions required to satisfy the direct effect. This effect is a measure of the change in the output of suppliers linked to the industry that is directly affected. For example, the new hospital will cause an increase in purchases of food, laundry service, biomedical supplies, and other goods from San Francisco County suppliers.
- The induced effect consists of impacts from employee spending in the regional economy. Specifically, the employees of directly and indirectly affected businesses generate this effect by purchasing goods and services in the regional economy.

The total impact is the sum of the direct, indirect, and induced effects. The total effect measures the impact of an activity as it “ripples” throughout the regional economy. In the subsequent section, the regional economic effects described above are reported in three categories:

1. Employment represents the estimated number of direct, indirect, and induced jobs in the Study Area economy resulting from UCSF-related activity.

2. Output represents the estimated level of direct, indirect, and induced output or “final sales” (often referred to as Regional Domestic Product) attributable to UCSF-related activity.
3. Employee compensation represents the estimated amount of direct, indirect, and induced labor income resulting from the jobs evaluated in #1 above.

Caveats to Input/Output Modeling

Several important caveats are relevant to the interpretation of IMPLAN model estimates. First, IMPLAN relies upon I/O relationships derived from 2008 data (latest available from IMPLAN). Thus, our analysis assumes that this characterization of the economy is a reasonable approximation of current conditions. To the extent that significant structural changes have occurred within the regional economy since 2008, our results may not account for such changes. However, the magnitude and direction of any such change is unknown.

Second, the I/O methodology assumes that UCSF demand for goods and services results in a corresponding increase in supply and therefore employment. This implies that key industry suppliers can increase output rather than shift output from one set of consumers or products to another. This assumption may not hold in areas with tight labor or capital markets since companies may find it difficult to obtain these inputs or other resources necessary to expand production. In these cases, accommodating an establishment’s demand for labor and other inputs may come at the expense of other establishments in the same or related sectors and/or may need to be satisfied by increased imports from outside the Study Area (i.e., increased imports). This phenomenon is often referred to as “crowding out” since the sector being stimulated tends to crowd out other sectors which can reduce the net economic gain.

In the case of UCSF, it is difficult to speculate what industries might be crowded out or might have emerged in the absence of UCSF. Although UCSF may compete for inputs with other sectors in the local economy, it also undoubtedly supplies inputs needed by a number of sectors to grow and remain competitive. Most notably, UCSF provides trained labor as well as technological innovation that is relied upon by many companies in the health care and high-technology industries. These more qualitative impacts are discussed further in **Chapter 4**.

Primary Economic Impact Analysis and Results

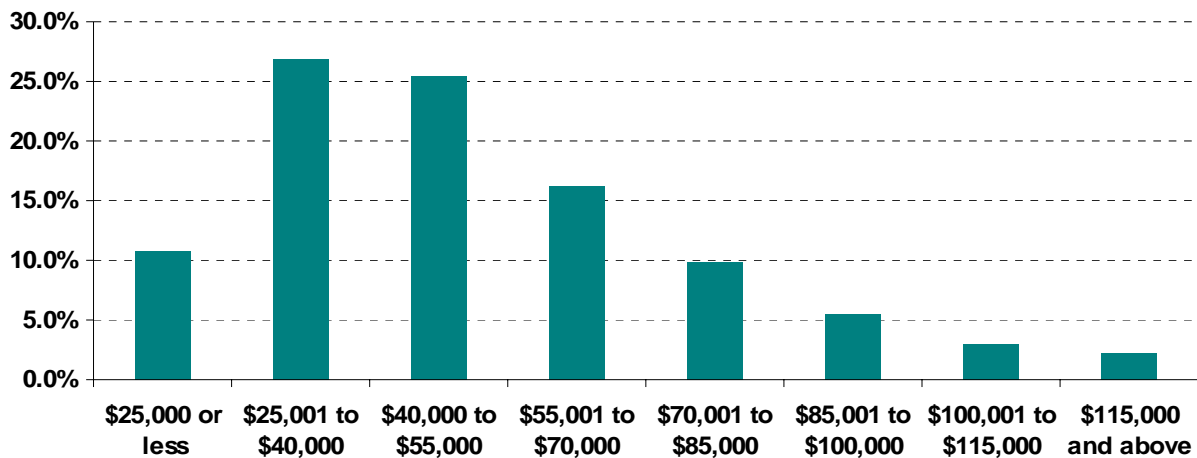
This section summarizes the key assumptions and results from applying an I/O analysis to UCSF-related economic activity. The four discrete areas of economic activity are described separately below.

UCSF Operations

EPS has evaluated the economic impact of UCSF's operations based on data on its existing number of employees. Specifically, EPS used IMPLAN software to generate multipliers for the amount of indirect and induced jobs, output, and employee income created by every UCSF direct job.¹⁰ The results from this calculation are summarized in **Table 5** for San Francisco and in **Table 6** for the nine-county Bay Area (detailed supporting data on the multiplier effects for all industry sectors is shown in **Appendix B**).

UCSF data on its direct jobs served as the primary data for this analysis. Specifically, UCSF directly employs approximately 20,808 workers in San Francisco with a relatively wide distribution of wage and job categories, as illustrated in **Figure 10**. As shown in **Table 5**, a total employment multiplier of 1.45 suggests that UCSF's 20,808 direct jobs create 3,800 indirect and 5,500 induced jobs, for a total primary economic impact of 30,108 jobs. The total annual output and employee compensation resulting from this activity is estimated at \$4.29 billion and \$2.05 billion, respectively.

Figure 10. Distribution of UCSF Employees (Head Count) by Wage



Source: UCSF 2007 data.

¹⁰ The analysis relies on multipliers from the private "Hospitals" and "Universities" sectors. Although UCSF is a public institution, industry sectors representing private hospitals and private universities were used to compute the associated economic impacts as these sectors were considered to best reflect the actual expenditure patterns associated with UCSF operations.

Table 5
San Francisco County Economic Impacts from UCSF Operations (2009\$)
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

San Francisco County
UCSF Operations

Impact Category	Multiplier Impacts			Total
	Direct	Indirect	Induced	
Activity/ Input [1]	20,808 Employees (in San Francisco)			
San Francisco County Impacts (Rounded)				
Employment [2]	20,808	3,800	5,500	30,108
Multiplier	1.00	0.18	0.26	1.45
Industry Output [3]	\$2,450,000,000	\$870,000,000	\$970,000,000	\$4,290,000,000
Multiplier	1.00	0.36	0.40	1.75
Labor Income [4]	\$1,430,000,000	\$290,000,000	\$330,000,000	\$2,050,000,000
Multiplier	1.00	0.20	0.23	1.43

Source: Minnesota Implan Group, Inc.

[1] Based on total UCSF academic and hospital staff reported by UCSF. See Table B-1 for detail.

[2] Reflects full-time and part-time workers.

[3] Reflects business expenditures on goods and services retained in the local economy. Inclusive of labor income reported below.

[4] Includes worker wages and benefits.

Table 6
Regional Economic Impacts from UCSF Operations (2009\$)
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Nine-County Bay Area
UCSF Operations

Impact Category	Multiplier Impacts			Total
	Direct	Indirect	Induced	
Activity/ Input [1]	21,903 Employees (in Bay Area)			
Nine-County Bay Area Impacts (Rounded)				
Employment [2]	21,903	5,100	9,200	36,203
Multiplier	1.00	0.23	0.42	1.65
Industry Output [3]	\$2,880,000,000	\$1,120,000,000	\$1,590,000,000	\$5,590,000,000
Multiplier	1.00	0.39	0.55	1.94
Labor Income [4]	\$1,780,000,000	\$340,000,000	\$520,000,000	\$2,640,000,000
Multiplier	1.00	0.19	0.29	1.48

Source: Minnesota Implan Group, Inc.

[1] Based on total UCSF academic and hospital staff reported by UCSF. See Table B-1 for detail.

[2] Reflects full-time and part-time workers.

[3] Reflects business expenditures on goods and services retained in the local economy. Inclusive of labor income reported below.

[4] Includes worker wages and benefits.

UCSF Construction Spending

EPS has evaluated the economic impact of UCSF's construction spending based on UCSF's average annual construction budget over the last nine fiscal years (2000 – 2009). Specifically, EPS used IMPLAN to generate multipliers for the amount of direct, indirect, and induced jobs, output, and employee income created by every \$1 million in the construction sector (specifically the construction of new nonresidential health care and commercial structures). The results from this calculation are summarized in **Table 7** for San Francisco County and in **Table 8** for the nine-county Bay Area (detailed supporting data are provided in **Appendix B**).

As shown, the San Francisco construction multiplier of 8.33 jobs per \$1 million in construction spending suggests that UCSF's average annual spending of \$180 million in this sector creates 900 direct, 300 indirect, and 300 induced jobs, for a total primary economic impact of 1,500 jobs.¹¹ The total annual output and employee compensation resulting from this construction activity is estimated at \$288 million and \$117 million, respectively.

UCSF Student Expenditures

EPS has evaluated the economic impact of UCSF's students based on annual enrollment levels, place of residence, and estimated average student household income. For students who live in the Study Area, EPS used IMPLAN to generate household consumption multipliers for the amount of direct, indirect, and induced jobs, output, and employee income created by every \$1 million household income for households earning between \$15,000 and \$25,000 annually. For students who live outside the Study Area (i.e., impacts in San Francisco from UCSF students who live elsewhere), EPS estimated the percentage of retail expenditures likely to be captured locally.¹² EPS then calculated the direct, indirect, and induced impact in the retail sector resulting from the estimated UCSF student retail spending in San Francisco.

The results of this analysis are summarized in **Table 9** and **Table 10** for San Francisco County and the nine-county Bay Area, respectively (detailed supporting data are provided in **Appendix B**). As shown, the combined effect of the 1,467 San Francisco-based UCSF students, with an estimated total household income of \$26 million, and the \$9.9 million in retail spending in San Francisco by the 2,977 UCSF students who live elsewhere results in 120 direct, 36 indirect, and 26 induced jobs, for a total primary economic impact of 182 jobs in San Francisco (530 for the entire Bay Area).

¹¹ UCSF's construction expenditure for 2008/09 was significantly higher than the average annual. See **Appendix B** for details on the impacts on this annual construction expenditure.

¹² The average student household income is estimated to be \$18,000, based on UCSF financial aid data estimating that the cost of living expenditures for students of nine-month programs. Student expenditures on UCSF fees and tuitions are excluded as these impacts are accounted for under UCSF operations. EPS also assumed that non-San Francisco student residents spend 46 percent of their income on retail (based on BLS data), and approximately 40 percent of this retail spending is captured in the City.

Table 7
Impacts of San Francisco County Average Annual Construction Expenditures (2009\$)
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Impact Category	Multiplier Impacts			Total
	Direct	Indirect	Induced	
[1]				
Activity/Input [2]	\$180 M Construction			
San Francisco County Impacts (Rounded)				
Employment in Job Years [3]	900	300	300	1,500
Multiplier	5.00	1.67	1.67	8.33
Industry Output [4]	\$180,000,000	\$51,000,000	\$57,000,000	\$288,000,000
Multiplier	1.00	0.28	0.32	1.60
Labor Income [5]	\$77,000,000	\$21,000,000	\$19,000,000	\$117,000,000
Multiplier	1.00	0.27	0.25	1.52

Source: Minnesota Implan Group, Inc.; UCSF; and EPS.

[1] Note that induced impacts may be overstated to the extent that construction activities are temporary and do not generate net new household expenditures in the local economy.

[2] Reflects average annual construction expenditures from 1999 through 2009 as reported by UCSF.

[3] Reflects full-time and part-time workers. Job years refer to the number of jobs in each year summed over the entire period of construction.

[4] Reflects business expenditures on goods and services retained in the local economy. Inclusive of labor income reported below.

[5] Includes worker wages and benefits.

Table 8
Regional Impacts of Average Annual Construction Expenditures (2009\$)
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Nine-County Bay Area
Average Annual Construction

Impact Category	Multiplier Impacts			Total
	Direct	Indirect	Induced	
[1]				
Activity/Input [2]	\$180 M Construction			
Nine-County Bay Area Impacts (Rounded)				
Employment in Job Years [3]	900	300	400	1,600
Multiplier	5.00	1.67	2.22	8.89
Industry Output [4]	\$180,000,000	\$74,000,000	\$76,000,000	\$330,000,000
Multiplier	1.00	0.41	0.42	1.83
Labor Income [5]	\$75,000,000	\$26,000,000	\$25,000,000	\$126,000,000
Multiplier	1.00	0.35	0.33	1.68

Source: Minnesota Implan Group, Inc.; UCSF; and EPS.

- [1] Note that induced impacts may be overstated to the extent that construction activities are temporary and do not generate net new household expenditures in the local economy.
- [2] Reflects average annual construction expenditures from 1999 through 2009 as reported by UCSF.
- [3] Reflects full-time and part-time workers. Job years refer to the number of jobs in each year summed over the entire period of construction.
- [4] Reflects business expenditures on goods and services retained in the local economy. Inclusive of labor income reported below.
- [5] Includes worker wages and benefits.

Table 9
Summary of San Francisco County Impacts from Student Expenditures
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

San Francisco County
All Student Expenditures

Impact Category	Multiplier Impacts			Total
	Direct	Indirect	Induced	
Total Student Study Area Expenditures [1]				\$36,258,774
San Francisco County Impacts (Rounded)				
Employment [2]	120	36	26	182
<i>Multiplier</i>	<i>6.00</i>	<i>1.80</i>	<i>1.30</i>	<i>9.10</i>
Industry Output [3]	\$20,000,000	\$6,000,000	\$5,000,000	\$31,000,000
<i>Multiplier</i>	<i>1.00</i>	<i>0.30</i>	<i>0.25</i>	<i>1.55</i>
Labor Income [4]	\$6,000,000	\$2,000,000	\$1,000,000	\$9,000,000
<i>Multiplier</i>	<i>1.00</i>	<i>0.33</i>	<i>0.17</i>	<i>1.50</i>

Source: Minnesota Implan Group, Inc.

- [1] Based on data provided by UCSF regarding total number of enrolled students and disposable income assumptions. Adjusted to reflect county of residence.
- [2] Reflects full-time and part-time workers.
- [3] Reflects business expenditures on goods and services retained in the local economy. Inclusive of labor income reported below. Differential between direct output and total expenditures based on local purchase percentage factor and retail margins applied by IMPLAN model. See Table B-2 for
- [4] Includes worker wages and benefits.

Table 10
Nine-County Bay Area Impacts from Student Expenditures
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

**Nine-County Bay Area
Student Expenditures**

Impact Category	Multiplier Impacts			Total
	Direct	Indirect	Induced	
Total Student Study Area Expenditures [1]				\$55,700,000
San Francisco Bay Area Impacts (Rounded)				
Employment [2]	320	100	110	530
Multiplier	5.75	1.80	1.97	9.52
Industry Output [3]	\$55,700,000	\$21,900,000	\$18,800,000	\$96,400,000
Multiplier	1.00	0.39	0.34	1.73
Labor Income [4]	\$17,600,000	\$7,400,000	\$6,100,000	\$ 31,100,000
Multiplier	\$315,978	\$132,855	\$109,515	\$558,348

Source: Minnesota Implan Group, Inc.

[1] Based on data provided by UCSF regarding total number of enrolled students and disposable income assumptions.

[2] Reflects full-time and part-time workers.

[3] Reflects business expenditures on goods and services retained in the local economy. Inclusive of labor income reported below. Differential between direct output and total expenditures based on local purchase percentage factor applied by IMPLAN model. See Table B-2 for detail.

[4] Includes worker wages and benefits.

UCSF Retiree Expenditures

EPS has evaluated the economic impact of UCSF's Study Area retirees based on their place of residence and total benefits paid by UCSF. Specifically, EPS used IMPLAN to generate household consumption multipliers for the amount of direct, indirect, and induced jobs, output, and employee income created by every \$1 million household income based on the household expenditure patterns of households earning between \$35,000 and \$50,000 annually. UCSF pays an average of \$36,000 per retiree to the 3,910 retirees who live in the nine-county Bay Area (42 percent live in San Francisco).

The results of this analysis are summarized in **Table 11** and **Table 12** for San Francisco County and the nine-county Bay Area, respectively (detailed supporting data are provided in **Appendix B**). As shown, UCSF's total annual retiree benefit payments of \$141 million create 210 direct, 60 indirect, and 50 induced jobs, for a total primary economic impact of 320 jobs in San Francisco (1,020 for the entire Bay Area).

Table 11
San Francisco County Impacts from Retiree Expenditures
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

San Francisco County Retiree Expenditures
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Impact Category	Multiplier Impacts			Total
	Direct	Indirect	Induced	
Total Retiree Payments [1]				\$54,327,338
San Francisco County Impacts (Rounded)				
Employment [2]	210	60	50	320
Multiplier	3.87	1.10	0.92	5.89
Industry Output [3]	\$35,000,000	\$13,000,000	\$9,000,000	\$57,000,000
Multiplier	1.00	0.37	0.26	1.63
Labor Income [4]	\$12,000,000	\$5,000,000	\$3,000,000	\$20,000,000
Multiplier	1.00	0.42	0.25	1.67

Source: Minnesota Implan Group, Inc.

[1] Number of retirees residing in San Francisco and total retirement payments provided by UCSF. Assumes total average income between \$35,000 and \$50,000.

[2] Reflects full-time and part-time workers.

[3] Reflects business expenditures on goods and services retained in the local economy. Inclusive of labor income applied by IMPLAN model. See Table B-4 for detail.

[4] Includes worker wages and benefits.

Table 12
Nine-County Bay Area Impacts from Retiree Expenditures
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Nine-County Bay Area
Retiree Expenditures

Impact Category	Multiplier Impacts			Total
	Direct	Indirect	Induced	
Total Retiree Payments [1]				\$140,930,477
San Francisco County Impacts (Rounded)				
Employment [2]	620	200	200	1,020
Multiplier	4.40	1.42	1.42	7.24
Industry Output [3]	\$100,000,000	\$41,000,000	\$35,000,000	\$176,000,000
Multiplier	1.00	0.41	0.35	1.76
Labor Income [4]	\$33,000,000	\$14,000,000	\$11,000,000	\$58,000,000
Multiplier	1.00	0.42	0.33	1.76

Source: Minnesota Implan Group, Inc.

- [1] Number of retirees residing in the nine-county Bay Area and total retirement payments provided by UCSF. Assumes total average income between \$35,000 and \$50,000.
- [2] Reflects full-time and part-time workers.
- [3] Reflects business expenditures on goods and services retained in the local economy. Inclusive of labor income reported below. Differential between direct output and total expenditures based on local purchase percentage factor applied by IMPLAN model. See Table B-4 for detail.
- [4] Includes worker wages and benefits.

4. *SECONDARY ECONOMIC IMPACTS*

This chapter evaluates UCSF's secondary economic impacts in both the County of San Francisco and the nine-county Bay Area. Secondary economic impacts, although generally more qualitative, intangible, and complex than the primary economic impacts evaluated in **Chapter 3**, are nonetheless real and can be significant. This chapter identifies and describes the secondary economic impacts applicable to UCSF with a focus on the Bay Area life sciences industry.

Through its range of programs and activities, UCSF continues to support a local and regional environment that is highly conducive to growth in the life sciences and biotechnology industry. Specifically, by funding specialized research, attracting top scientists, training a highly skilled workforce, developing state-of-the-art facilities, and a host of other activities, UCSF plays a major role in attracting, retaining, and fostering economic growth in this industry within the Bay Area and beyond.

Economic Overview

The role of prominent R&D institutions such as UCSF in fostering the development and growth of the life sciences industry has been the subject of substantial research and analysis. Although it is commonly accepted that these institutions and the research they conduct has played and continues to play a fundamental role in the life sciences industry, this impact is difficult to quantify in direct economic terms such as output and employment. This is especially true for more basic research that often does not result in an actual sellable good or service but may create the foundation for "downstream" product development and commercialization.

Probably the most compelling evidence supporting the importance of prominent R&D institutions such as UCSF in fueling the life sciences industry is the emergence and growth of biotechnology "clusters" in selected regions, both nationally and internationally. Specifically, the biotech industry is highly concentrated in regions that contain prominent institutions that are heavily involved in life sciences-related R&D (conversely, the industry is relatively weak in areas that lack such institutions). This phenomenon has spawned a significant amount of academic and professional research and analysis on the mechanisms and processes by which life sciences-related R&D fosters economic growth in the biotech sector.¹³ Based on a review of this research and additional analysis, EPS has identified the following three discrete but highly interrelated categories that are most applicable to UCSF's secondary economic impacts:

¹³ As found in case studies of comparable universities, companies within technology clusters, including both those spun off from the University itself as well as companies which locate in the area, benefit from the pool of talent and collaborate with one another.

- **Innovation and Technology Leadership.** As a premier research and medical institution, UCSF is directly responsible for numerous innovations and scientific discoveries with practical applications in a variety of fields. Most notably, UCSF research continues to advance a wide range of life sciences-related sectors, such as biotechnology and medical equipment, that provide economic benefits to producers and consumers in the form of new and improved products and more effective delivery of services.
- **Creation of Spin-Off Firms and Ancillary Businesses.** Both anecdotal information and detailed research and documentation suggests that UCSF, similar to other major research and medical institutions, is directly linked to the creation of R&D-related start-ups or spin-off firms as well as clusters of ancillary and support-related businesses and services (e.g., private doctors offices or medical supply firms). Again, these activities provide direct economic benefits, in the form of increased jobs and output within the Bay Area and beyond.
- **Professional Relationships and Knowledge Transfer.** In addition to discrete scientific innovation and firm creation, UCSF's cadre of elite scientists and researchers participate in a wide range of formal and informal networks and professional relationships that contribute to the type of information diffusion and knowledge transfer critical to the success of the biotech field. In addition, UCSF's four professional schools and graduate programs provide a reliable supply of well-trained professionals that contribute to the success of local and regional life sciences firms.

Subsequent sections of this chapter further document and describe UCSF's role in producing, attracting, and/or retaining a cluster of biotech-related firms in the Bay Area region based on the interrelated categories described above. But first, the following section describes and documents the relative size and orientation of the San Francisco Bay Area life sciences industry as a basis for understanding the role of UCSF.

The Bay Area Life Sciences/Biotech Industry

The origin of the modern-day biotechnology industry is attributed to groundbreaking research in recombinant DNA at the UCSF laboratory in the early 1970s by Herbert Boyer, who later co-founded Genentech. Of course, the biotech industry has evolved significantly since that time both geographically and economically, with significant industry diversification and growth.¹⁴ Nevertheless, the Bay Area continues to remain one of the centers of economic activity in the industry and UCSF remains a major factor behind the region's success and competitiveness.

As the birthplace of biotechnology, the Bay Area has been a leading locale for the industry right from the start. The region contains clusters of biotechnology firms on the Peninsula (South San Francisco and throughout San Mateo County), in the East Bay (Emeryville, Richmond, and

¹⁴ The term "biotechnology" was created in 1917 to describe the interaction of biology with human technology. Today, biotechnology refers to an industry which applies knowledge of organisms and biological systems and the ability to manipulate these systems at the molecular level to create, develop, and market new techniques and products.

Hayward), in Santa Clara County (Palo Alto and Mountain View), and increasingly in San Francisco. In addition, within the Bay Area are representatives of the overall industry with giants such as Amgen, Genentech, Chiron/Novartis, and Johnson & Johnson as well as smaller start-ups.

There is no clear consensus on how best to measure the relative strength and size of the biotech industry in particular metropolitan areas. Geographic comparisons can vary based on industry definition, geographic scope, and economic metrics utilized (e.g., employment, number of firms, venture capital spending, etc.). However, by almost any measure, the San Francisco Bay Area consistently ranks number one or two in the United States. For example, **Table 13** compares the number of public companies in 16 regions in the United States and their market capitalization.¹⁵ According to this measurement, the Bay Area is home to the highest number of public companies of any region with 69 firms and the highest market capitalization, with 37 percent of the total value of public, biotech companies in the country. Overall, the Bay Area contains nearly 18 million square feet of biotechnology space with an average vacancy rate near 7 percent.¹⁶

Perhaps more importantly in terms of UCSF's impact, the Bay Area biotech industry is generally more focused on R&D-related endeavors with a high proportion of scientists and other highly trained technicians within the employed ranks. Unlike biotechnology employment nationally, of which about 36 percent is research-focused, more than 50 percent of all biotechnology jobs in the Bay Area are in the research sector.¹⁷ In addition, the Bay Area region consistently ranks far ahead of other regions in terms of venture capital funding suggesting a heavy focus on innovation linked to groundbreaking research.

Biotech in San Francisco

Another potential indication of UCSF's positive impact on the biotechnology industry is the increasing growth of this cluster in San Francisco. Until 2006, San Francisco has had a relatively negligible share of the region's biotech jobs or firms. However, as shown on **Figure 11**, the percentage of San Francisco's share of Bay Area occupied biotech space has increased significantly over the past few years, from 1.3 percent in 2000 to 6.1 percent in 2009. UCSF alone accounts for more than half of all life sciences-related building space in San Francisco with about 1.7 million square feet dedicated to research uses.¹⁸ In addition, average lease rates

¹⁵ Market capitalization (often market cap) is a measurement of size of a business enterprise (corporation) equal to the share price multiplied by the number of shares outstanding of a public company. As owning stock represents ownership of the company, including all its equity, capitalization could represent the public opinion of a company's net worth.

¹⁶ As reported by Colliers Alchemy Report, 2007.

¹⁷ Counting all 23 North American Industry Classification System (NAICS) codes, the United States has about 508,500 jobs in the research industry code, of the 1.4 million biotech jobs in the country. The Bay Area has about 37,000 jobs of its 68,000 jobs in this job code.

¹⁸ The UCSF bioscience-related building space is not included in the total inventory of Bay Area biotech space shown in **Figure 11**. This is because commercial real estate brokers typically do not track publicly owned and occupied building space that is not available to the private sector.

Table 13. Regional Biotech Industry, Public Companies and Total Capitalization, 2006

Region	Public Companies		Market Capitalization	
	<i>number</i>	<i>%</i>	<i>millions\$</i>	<i>%</i>
San Francisco Bay Area	69	21%	145,553	37%
New England ¹	60	18%	62,936	16%
San Diego	38	11%	20,916	5%
New Jersey	28	8%	28,556	7%
Mid-Atlantic ²	23	7%	17,111	4%
Southeast ³	19	6%	5,301	1%
New York State	17	5%	8,893	2%
Mid-West ⁴	8	2%	1,161	0%
Pacific NW ⁵	15	4%	4,928	1%
Los Angeles/ Orange County	11	3%	81,585	21%
North Carolina	9	3%	2,017	1%
Pennsylvania/ Delaware Valley	12	4%	7,140	2%
Texas	11	3%	1,495	0%
Colorado	6	2%	1,847	0%
Utah	2	1%	1,454	0%
Other ⁶	<u>8</u>	2%	<u>1,526</u>	0%
	336	100%	392,419	100%

[1] New England region includes the following states: Maine New Hampshire, Vermont, Massachusetts, Connecticut, and Rhode Island.

[2] Includes Maryland, Virginia, and Washington D.C.

[3] Includes Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Tennessee, and South Carolina.

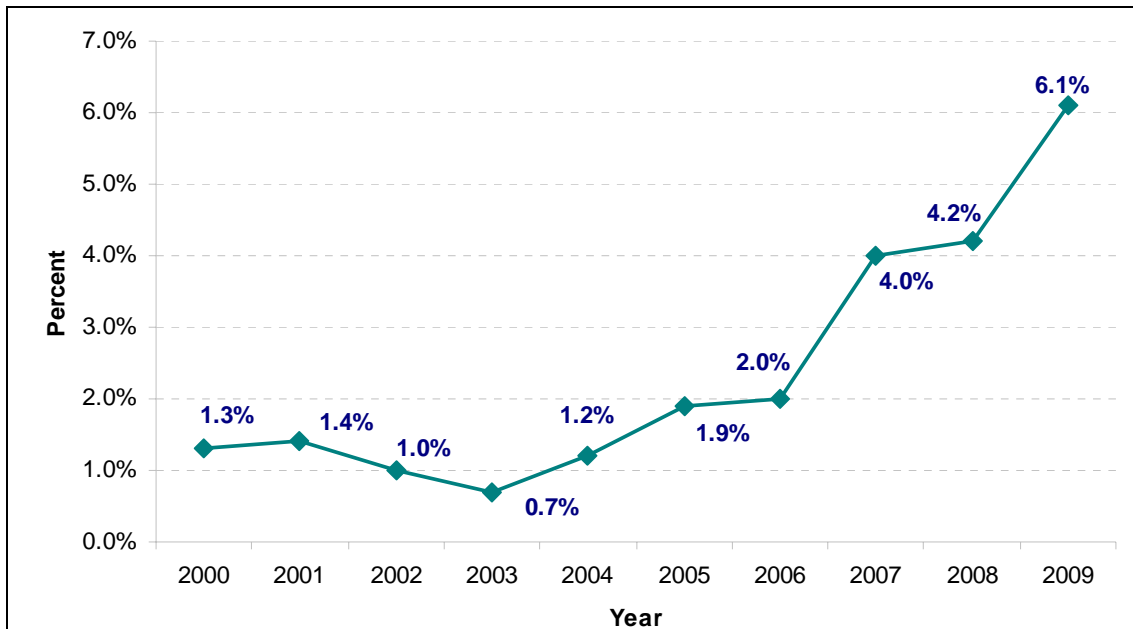
[4] Includes Illinois, Michigan, Ohio, and Wisconsin.

[5] Includes Oregon and Washington.

[6] Other includes Hawaii, Minnesota, Missouri, Montana, Nebraska, Oklahoma, and South Dakota.

Sources: Ernst & Young, Beyond Borders, Global Biotechnology Report, 2007; Economic & Planning Systems

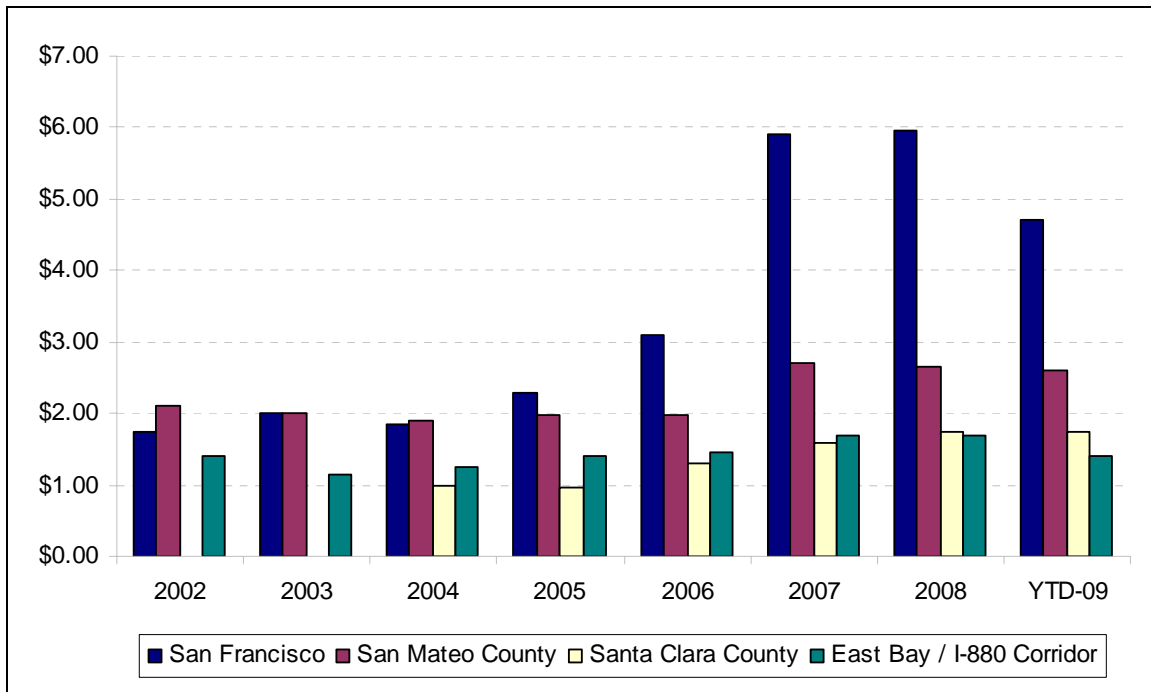
Figure 11. San Francisco's Share of the Bay Area Occupied Commercial Space in Life Sciences, 2000 - 2009



for biotech building space in San Francisco have increased significantly in the past few years and currently far exceed other Bay Area locations, as shown in **Figure 12**. This is a sharp contrast to years before 2005 when San Francisco biotech lease rates tended to be more comparable to other Bay Area sub-markets and actually lagged behind San Mateo.

Although a number of factors can account for this phenomenon, the timing suggests that the development of the Mission Bay biomedical research campus has been a significant catalyst. For one, most of the recent growth in biotech-related space in San Francisco has occurred in the Mission Bay neighborhood (e.g., 450,000 building square feet at 409 and 449 Illinois Street, developed in 2008 by Shorenstein Properties). In addition, growth and success of the San Francisco biotech sector has increased, while many other sectors of the economy have declined because of the effects of the national recession.

Figure 12. Average Monthly Lease Rates for Life Sciences Space, San Francisco and Other Bay Area Biotechnology Clusters, 2006-2009



Source: City and County of San Francisco, Office of the Controller Office of Economic Analysis

UCSF Innovation and Technology Leadership

Throughout its history UCSF and its faculty have contributed to major breakthroughs in medical research and treatment that have ultimately been adopted for use in the broader economy. Some of UCSF's more notable achievements include the following:¹⁹

- UCSF investigator Herbert Boyer, Ph.D., co-created recombinant DNA technology which launched the modern biotechnology industry.
- J. Michael Bishop, M.D. (UCSF) and Harold Varmus, M.D., discovered that some normal genes—when altered or misexpressed—have the capacity to cause cancer. The two shared the 1989 Nobel Prize in Physiology or Medicine for the discovery.
- Stanley Prusiner, M.D. (UCSF) discovered prions—infectious agents linked to a number of neurodegenerative diseases, including “mad cow” disease in animals and Creutzfeldt-Jakob in humans—which earned him the 1997 Nobel Prize. The research has informed scientists’ understanding of Alzheimer’s, Parkinson’s and other neurodegenerative diseases.

¹⁹ All achievements cited are from UCSF’s publication Meeting the Challenges of Global Health.

- UCSF scientist Jay Levy, M.D., was among the first to identify HIV as the cause of AIDS.
- UCSF's Elizabeth Blackburn, Ph.D., won the Nobel Prize in 2009 in Physiology or Medicine for co-discovering the enzyme telomerase and showing how telomeres and telomerase protect chromosomes and play a key role in cell aging.
- UCSF scientist Gail Martin, Ph.D., co-discovered embryonic stem cells, launching what may be the scientific field with the greatest potential to cure diseases.
- John Clements, M.D., discovered that lungs produce a secretion called surfactant that is necessary for normal breathing. His invention of an artificial surfactant is credited with halving the mortality rate of newborns in nations where the surfactant is widely available.
- Michael Harrison, M.D., founded the UCSF Fetal Treatment Center and is widely regarded as the "father of fetal surgery." Harrison developed and tested techniques for fetal intervention, performed the first successful human fetal surgery for congenital diaphragmatic hernia, as well as other fetal anomalies, and initiated the first NIH-sponsored clinical trials for fetal surgery.

As noted earlier, although impressive, the actual economic impact of the accomplishments described above, and many others, is difficult to quantify. Nevertheless, a variety of measures are commonly used to assess the scale and effectiveness of a research institution's research and development activity and programs. These include the level of R&D spending (including grant awards from the NIH), scientific citations, the number of inventions and patents derived from this research, and the monetary value from the licensing of patents by end users. UCSF's performance in each of these areas is described further below.

Spending on Research and Development

UCSF continues to rank at the top among universities and colleges in the United States in total R&D spending in general and in the life sciences field in particular. As shown in **Table 14**, UCSF has consistently ranked in the top two or three in total R&D expenditures nationwide, behind Johns Hopkins and the University of Wisconsin, Madison, in total R&D spending and number one in life sciences over the last five years.²⁰

Perhaps even more notable, available data suggest that UCSF is one of the single most prominent R&D institutions in the San Francisco Bay Area in terms of total spending (e.g., R&D spending by academic, nonprofit, and private sector entities). Specifically, EPS estimates that

²⁰ R&D expenditures are generally specifically identified as such and expended for activities specifically organized to produce research outcomes. These activities are either commissioned by an agency external to the institution or are separately budgeted by an organizational unit within the institution. It is generally distinguished from academic spending.

Table 14
R&D Expenditures by Top Performing Universities
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

	Year				Total
	2005	2006	2007	2008	
R&D Life Sciences Expenditures by top 5 Universities					
UCSF	\$728,403,000	\$770,485,000	\$820,239,000	\$862,987,000	3,182,114,000
Johns Hopkins University	\$674,083,000	\$702,207,000	\$692,380,000	\$738,962,000	2,807,632,000
Duke U.	\$528,719,000	\$553,834,000	\$669,354,000	\$655,202,000	2,407,109,000
U. CA, Los Angeles	\$585,436,000	\$609,514,000	\$612,248,000	\$649,978,000	2,457,176,000
U. PA	\$528,225,000	\$546,624,000	\$525,729,000	\$590,059,000	2,190,637,000
All Universities & Colleges	\$27,605,070,000	\$28,803,932,000	\$29,838,248,000	\$31,215,160,000	117,462,410,000
R&D Expenditures by top 10 Universities (all fields)					
Johns Hopkins University	\$1,443,792,000	\$1,499,977,000	\$1,554,103,000	\$1,680,927,000	6,178,799,000
UCSF	\$754,444,000	\$796,149,000	\$842,840,000	\$885,182,000	3,278,615,000
U. WI Madison	\$798,099,000	\$831,895,000	\$840,672,000	\$881,777,000	3,352,443,000
U. MI all campuses	\$808,887,000	\$800,488,000	\$808,731,000	\$876,390,000	3,294,496,000
U. CA, Los Angeles	\$785,625,000	\$811,493,000	\$823,083,000	\$871,478,000	3,291,679,000
All Universities & Colleges	\$45,799,461,000	\$47,751,211,000	\$49,553,959,000	\$51,908,726,000	195,013,357,000

(1) R&D expenditures are generally specifically identified as such and expended for activities specifically organized to produce research outcomes. These activities are either commissioned by an agency external to the institution or are separately budgeted by an organizational unit within the institution. It is generally distinguished from academic spending.

Source: "Science and Engineering Indicators, 2010," National Science Foundation.

UCSF accounts for almost 17 percent of the total science and engineering R&D spending in San Francisco and about 4 percent in the nine-county Bay Area, as shown in **Table 15**. This calculation is based on the relationship between statewide R&D spending by all entities and total State output.²¹ Such a high share of total R&D spending is particularly impressive given the wide range of notable private, nonprofit, and academic institutions engaged in such activity in the region, including Stanford and UCB, as well as private software and biotech pioneers such as Apple, Genentech, and Hewlett-Packard.

Another measure of the effectiveness of UCSF research programs in the life sciences field has been its success in receiving competitive grants from the NIH, the primary government agency responsible for biomedical and health-related research. NIH funding is extremely competitive and is generally awarded to researchers and programs involved in efforts to develop findings and applications in the medical fields. As shown in **Table 16**, since 2005 (latest data available) UCSF has consistently ranked as one of the top five recipients of NIH funding, while its individual professional schools often rank number one. For example, in both 2008 and 2009 UCSF ranked second in overall funding behind Johns Hopkins University, while the School of Pharmacy ranked first. The School of Dentistry, School of Medicine, and School of Nursing all ranked second in their respective fields.

Scientific Citations

Researchers often seek to publish the results of their work in the world's peer-reviewed scientific journals, and this article-level data is often used here to assess an institution's research output. Scientific citations are often considered the first phase on the commercialization pipeline since it is a good indicator of the relevance of a research efforts, as judged by colleagues in the field. The world's leading biotech universities measured by papers and citations are listed below.²²

- | | |
|-------------------------------|---|
| 1. Harvard University | 6. University of California, San Diego |
| 2. University of Tokyo | 7. Johns Hopkins University |
| 3. University of London | 8. Washington University, St. Louis |
| 4. UCSF | 9. University of Washington |
| 5. University of Pennsylvania | 10. University of California, Los Angeles |

²¹ Although total output is available at the County level, total R&D spending by all entities (public, private, and nonprofit) is only available at the State level. Consequently, EPS estimates county totals based on the ratio of total State R&D spending to total state output. The approach assumes that the ratio of non-academic R&D spending to total output in the San Francisco Bay Area is roughly equivalent to the ratio of total R&D spending to total output at the State level (in other words, but not for its major R&D universities, the relative size of the Bay Area R&D sector would be comparable to the State average).

²² Based on data provided by the UCSF's Office of Technology Management.

Table 15

Estimated UCSF R&D Expenditures as a Percentage of Overall R&D by Geography
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Item	Formula	Assumptions	San Francisco	Nine-County Bay Area
Assumptions				
State of California GDP ¹	A	\$1,801,762,000,000		
State of California Total R&D Expenditures ¹	B	\$77,608,000,000		
Statewide R&D Expenditures as a % of GDP	C = B / A	4.3%		
Gross Regional Product²	D		\$98,352,593,079	\$523,824,181,135
Estimated R&D Expenditures (Excluding Academic)³	E = C * D		\$4,236,379,746	\$22,562,884,027
Academic R&D Expenditures				
UCSF	F		\$862,987,000	\$862,987,000
Berkeley and Stanford	G		\$0	\$1,279,995,000
Total Academic R&D Expenditures	H = F + G		\$862,987,000	\$2,142,982,000
Total R&D Expenditures	I = E + H		\$5,099,366,746	\$24,705,866,027
UCSF R&D as % of Total R&D in Geography	J = F / I		16.9%	3.5%

Source: National Science Foundation, IMPLAN, and EPS.

[1] National Science Foundation data.

[2] Provided by IMPLAN.

[3] Based on data provided by the National Science Foundation, approximately 4.3 percent of statewide GDP reflects expenditures on Research and Development (R&D). It is expected that R&D expenditures in San Francisco and the nine-county Bay Area would exceed the statewide average. To account for this, this analysis assumes that the statewide average R&D ratio applied to the IMPLAN generated Gross Regional Product is a reasonable approximation of local R&D expenditures, *excluding that generated by academic institutions*.

Table 16
NIH Funding Recipients (2007-2009)
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Institution	Fiscal Year 2009		Fiscal Year 2008		Fiscal Year 2007	
	Rank	Amount	Rank	Amount	Rank	Amount
Overall Institution						
Johns Hopkins University	1	\$603,400,000	1	\$575,900,000	1	\$582,000,000
UCSF	2	\$463,300,000	2	\$444,300,000	3	\$439,000,000
University of Pennsylvania	3	\$454,900,000	3	\$437,100,000	2	\$451,500,000
University of Michigan, Ann Arbor	4	\$454,200,000	4	\$423,200,000	5	\$402,000,000
University of Pittsburg	5	\$418,000,000	n/a	n/a	n/a	n/a
School of Dentistry						
University of Pennsylvania	1	\$19,400,000	2	\$11,500,000	n/a	n/a
UCSF	2	\$15,500,000	1	\$18,990,000	1	\$18,300,000
University of Michigan, Ann Arbor	3	\$12,600,000	4	\$10,600,000	2	\$11,200,000
University of Florida	4	\$11,100,000	3	\$10,800,000	n/a	n/a
Boston University Medical Campus	5	\$10,200,000	n/a	n/a	n/a	n/a
Schools of Medicine						
Johns Hopkins University	1	\$434,900,000	1	\$422,200,000	1	\$434,600,000
UCSF	2	\$417,700,000	2	\$383,700,000	3	\$373,100,000
University of Pennsylvania	3	\$368,800,000	3	\$366,100,000	2	\$380,600,000
Washington University	4	\$357,800,000	4	\$350,200,000	4	\$351,600,000
Yale University	5	\$322,700,000	5	\$328,300,000	n/a	n/a
Schools of Nursing						
University of Pennsylvania	1	\$10,900,000	2	\$7,700,000	4	\$6,900,000
UCSF	2	\$8,800,000	1	\$8,970,000	1	\$13,800,000
University of Washington	3	\$8,500,000	3	\$7,100,000	2	\$9,900,000
Johns Hopkins University	4	\$7,000,000	5	\$5,200,000	n/a	n/a
University of Pittsburg	5	\$6,800,000	4	\$6,300,000	5	\$6,200,000
School of Pharmacy						
UCSF	1	\$18,900,000	1	\$19,700,000	1	\$19,600,000
University of Kansas, Lawrence	2	\$17,800,000	2	\$17,800,000	3	\$10,800,000
University of N. Carolina, Chapel Hill	3	\$16,800,000	3	\$16,100,000	n/a	n/a
University of Utah	4	\$10,700,000	4	\$11,400,000	4	\$10,100,000
University of Illinois, Chicago	5	\$10,200,000	5	\$8,990,000	2	\$13,500,000

Source: National Institutes of Health.

Patents and Licensing

Inventions and patents represent another indication of the level of innovation by a particular entity in a given field. A patent for an invention is the grant of a property right to the inventor, issued by the U.S. Patent and Trademark Office (inventions can have several patents associated with them, each conferring a proprietary right to a useful application). Meanwhile, licensing agreements and royalties are contracts and fee income that indicate the level of third-party interest in a portfolio of patents and inventions.

Table 17 compares patent and licensing data across the ten UC campuses from 2000 to 2009. As shown, UCSF has consistently served as UC's flagship campus in both areas, accounting for about 21 percent of the patents and over 50 percent of the licensing revenue since 2000. Although detailed comparison with other institutions and the private sector is difficult to obtain, aggregate data suggest that UCSF is one of the nation's premier institutions when it comes to patents and licensing. For example, UC as a whole was the leading biotechnology patenting organization in the U.S. from 1977 to 2003 with approximately 1,585 patents with UCSF accounting for about 95 percent of the UC total (see **Table 18**). Moreover, preliminary estimates suggest that UCSF alone accounted for about 6 percent of the total academic licensing revenue in the United States from 2000 through 2008 (data on licensing revenue generated by the private sector is not readily available).

It should be noted that UCSF does not patent or charge royalties for technologies used exclusively in developing countries so as not to create barriers for foundations, governments, or companies seeking to commercialize UCSF R&D. For example, Merck, the exclusive licensee for the hepatitis vaccine (Recombivax HB) produced from UCSF technologies, enabled broad access in China by licensing the technology to the Chinese government for a one-time fee (no royalty), training Chinese scientists and engineers in vaccine production and sending Merck engineers to the country to assist in creating vaccine production plants in Beijing and Shenzhen. Merck took this step when it realized the Chinese could not afford the vaccine even at a discounted price.

Firm Creation and Support

UCSF can also be directly linked to the creation of new firms through its R&D and the entrepreneurial activity of its faculty and researchers. This impact occurs in a number of ways, including through formal UCSF programs and initiatives; the spin-outs of intellectual property, technology, and products; former UCSF researchers who leave to pursue commercial applications to their specialized research; and individual faculty who operate private medical offices while maintaining their teaching position. Although there is significant overlap in these mechanisms, each is described separately below.

Table 17
UC and UCSF Patent and Licensing Activity
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Campus	Fiscal Year Ending June 30th										Total	
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	#	%
UC Patents Issued¹												
UCB	48	49	57	47	34	44	41	53	36	24	433	15%
UCD	38	32	37	31	33	49	43	45	21	24	353	12%
UCI	19	22	16	24	23	26	21	30	28	25	234	8%
UCLA	51	37	43	46	30	34	35	42	42	60	420	14%
UCM	n/a	n/a	n/a	n/a	n/a	0	0	0	0	0	0	0%
UCR	9	13	7	6	13	8	13	10	3	6	88	3%
UCSB	17	14	14	27	31	38	21	25	13	12	212	7%
UCSC	2	4	3	6	6	6	16	9	5	5	62	2%
UCSD	61	59	42	52	50	60	44	64	45	54	531	18%
UCSF	<u>85</u>	<u>80</u>	<u>79</u>	<u>84</u>	<u>49</u>	<u>52</u>	<u>41</u>	<u>62</u>	<u>35</u>	<u>35</u>	<u>602</u>	<u>21%</u>
	330	310	298	323	269	317	275	340	228	245	2935	100%
Income from Royalties and Fees (in \$1,000s)¹												
UCB	\$5,079	\$5,428	\$5,810	\$5,528	\$8,756	\$6,970	\$5,630	\$5,056	\$5,195	\$4,885	\$58,337	5%
UCD	\$6,219	\$9,569	\$16,401	\$9,032	\$9,241	\$9,913	\$8,444	\$8,090	\$8,011	\$9,845	\$94,765	8%
UCI	\$1,920	\$5,605	\$4,257	\$3,507	\$48,777	\$10,850	\$8,555	\$5,191	\$4,694	\$4,490	\$97,846	8%
UCLA	\$7,468	\$8,383	\$10,118	\$10,969	\$13,964	\$19,488	\$18,880	\$20,911	\$32,837	\$22,557	\$165,575	13%
UCM	n/a	n/a	n/a	n/a	n/a	\$0	\$0	\$50	\$250	\$0	\$300	0%
UCR	\$898	\$1,047	\$1,089	\$908	\$1,190	\$1,198	\$814	\$762	\$1,588	\$1,949	\$11,443	1%
UCSB	\$605	\$709	\$2,347	\$1,592	\$857	\$1,823	\$2,316	\$2,951	\$3,880	\$2,720	\$19,800	2%
UCSC	\$0	\$35	\$38	\$59	\$79	\$59	\$68	\$100	\$33	\$61	\$532	0%
UCSD	\$5,477	\$5,627	\$12,690	\$6,368	\$11,473	\$15,506	\$22,495	\$21,423	\$22,694	\$22,235	\$145,988	12%
UCSF	<u>\$239,826</u>	<u>\$35,133</u>	<u>\$34,344</u>	<u>\$27,852</u>	<u>\$27,029</u>	<u>\$24,942</u>	<u>\$123,928</u>	<u>\$30,410</u>	<u>\$62,397</u>	<u>\$29,252</u>	<u>\$635,113</u>	<u>52%</u>
	\$267,492	\$71,536	\$87,094	\$65,815	\$121,366	\$90,749	\$191,130	\$94,944	\$141,579	\$97,994	\$1,229,699	100%
All US Universities												
(in \$1,000s) ²	\$1,012,000	\$753,900	\$868,900	\$866,800	\$924,800	\$1,588,100	\$1,322,200	\$1,898,800	NA	NA	\$9,235,500	
UCSF Share	23.7%	4.7%	4.0%	3.2%	2.9%	1.6%	9.4%	1.6%			5.9%	

(1) Based on data from University of California Office of the President.

(2) Based on data from University of California Technology Transfer Annual Reports (see <http://www.ucop.edu/ott/genresources/annualrpts.html>).

Table 18
Top 25 Biotechnology Patenting Organizations: 1977–2003
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Company	Patents Issued	Share of Group	Share of Total
All organizations	89,448	na	100.00
University of California	1,585	10.54%	1.77%
UCSF ¹	1,483	9.86%	1.66%
U.S. Department of Health and Human Services	1,021	6.79%	1.14%
Merck and Co., Inc.	943	6.27%	1.05%
Genentech, Inc.	792	5.27%	0.89%
Yoder Brothers, Inc.	729	4.85%	0.81%
Pioneer Hi-Bred International, Inc.	693	4.61%	0.77%
Eli Lilly and Company	674	4.48%	0.75%
Abbott Laboratories	654	4.35%	0.73%
SmithKline Beecham Corporation	636	4.23%	0.71%
University of Texas	576	3.83%	0.64%
Incyte Pharmaceuticals, Inc.	572	3.80%	0.64%
Boehringer Mannheim G.M.B.H.	549	3.65%	0.61%
Isis Pharmaceuticals, Inc.	512	3.40%	0.57%
Novo Nordisk A/S	490	3.26%	0.55%
Chiron Corporation	484	3.22%	0.54%
E. I. Du Pont De Nemours and Company	461	3.07%	0.52%
Becton, Dickinson and Company	427	2.84%	0.48%
Hoffmann-La Roche Inc.	426	2.83%	0.48%
U.S. Department of Agriculture	418	2.78%	0.47%
General Hospital Corporation	414	2.75%	0.46%
Johns Hopkins University	412	2.74%	0.46%
Hoechst Aktiengesellschaft	402	2.67%	0.45%
Institut Pasteur	395	2.63%	0.44%
Miles Inc.	387	2.57%	0.43%
Takeda Chemical Industries Ltd.	387	2.57%	0.43%
Subtotal	15,039	100.00	16.81%

(1) Based on data from UCOP, assumes all UCSF patents are biotech related.

na = not applicable

Source: U.S. Patent and Trademark Office, Office of Electronic Information Products, Patent Technology Monitoring Division, special tabulations (January 2005).

Science and Engineering Indicators 2006

UCSF Spin-offs and Start-ups

Reporting of individual linkages of specific life sciences firms to UCSF faculty, staff, graduates, patents, and incubators is common in trade and financial journals. However, a comprehensive analysis of the number of firms that have been created by UCSF faculty is not available because it is difficult to track all firms that may have a relationship to UCSF. In addition, a former UCSF faculty member who leaves his or her post and later plays a major role in an entrepreneurial venture is not required to report this activity back to UCSF, unless proprietary UCSF technology is being used.

However, a variety of sources and data suggests that UCSF has been the direct source of between 60 and 80 spin-off firms (e.g., new pharmaceuticals, biotechnology, medical device firms). For example, restricting estimates of spin-offs to firms founded either by UCSF faculty or alums, or based upon UCSF technology, a California Healthcare Institute survey conducted in 2001 associated 60 companies with UCSF.²³ This estimate coincides with a more recent list (circa 2005) of 41 UCSF start-ups and 32 associated corporate entities associated with UC licensed or patented technology, as documented in **Table 19**.

Firm Incubation

While companies spun off from research institutions often occur organically, UCSF has made targeted efforts to help biotech start-up companies during the critical nascent period in a firm's development. For example, UCSF provides "incubator" space at the Mission Bay Campus in the California Institute for Quantitative Biosciences Garage (QB3 Garage) for up to six companies at a time (firms must have a UC affiliate for admission) for up to two years. While the QB3 Garage is relatively new, it has hosted 13 tenants to date. Seven of these have "hatched" from the incubator and four are now active commercially, as summarized in **Table 20**. QB3 recently expanded by creating the QB3 Mission Bay Incubator Network, which houses 16 companies (15 of which are new to Mission Bay since July 2009).²⁴ The following six tenants are UCSF spin-outs in the most restrictive usage of the term:²⁵

- SeaChange Pharmaceuticals
- Simprota Corporation
- Mynosys Cellular Devices
- 100X
- Bay Therapeutics
- Metafold Therapeutics, Inc.

²³ California Healthcare Institute Survey, 2001, summarized as Exhibit 30 in Taking Action for Tomorrow: Bay Area Life Sciences Strategic Plan, Monitor Group, May 2003.

²⁴ Note though that UC affiliation is not required for the QB3 MB Incubator Network.

²⁵ Communication with Douglas Crawford, Associate Executive Director of QB3, May 3, 2010

Table 19
Biotechnology/Biomedical Company Start-ups from UCSF Technology (to 2005)
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

#	Common Name	Associated Corporate Entities
1	ARIZEKE PHARMACEUTICALS, INC.	
2	AVMAX	
3	CALHOUN VISION	CALHOUN VISION, INC.
4	CALITHRIX	CALITHRIX, INC.
5	CARDIO VASC	
6	CATALYST BIOSCIENCES, INC.	
7	CERAMED CORP.	DENTSPLY INTERNATIONAL, INC. COORS BIOMEDICAL COMPANY
8	CERAPEDICS	
9	CYTOKINETICS PHARMACEUTICALS	
10	DANIOLABS LIMITED	VASTOX PLC
11	DAO-GEN, INC.	
12	DAVIS ALLERGY RESEARCH	
13	ELIXIR PHARMACEUTICALS, INC.	
14	ENDOCHEM, INC.	
15	EOLAS TECHNOLOGIES, INC.	EOLAS DEVELOPMENT CORPORATION EOLAS TECHNOLOGIES INC. (ETI)
16	EXELIXIS, INC.	EXELIXIS PHARMACEUTICALS, INC. ROCHE
17	GENENTECH	ROCHE HOLDING, INC ROCHE, INC. GENETROL GENTERIC
18	GENETROL BIOTHERAPEUTICS	
19	GENTERIC, INC.	
20	HERMES BIOSCIENCES	
21	IGUAZU BIOSCIENCES	
22	INPRO BIOTECHNOLOGY	INPRO RESEARCH INPRO INTERNATIONAL
23	INSITE VISION INCORPORATED	
24	ISLET TECHNOLOGY, INCORPORATED	
25	KBC PHARMA	
26	MBT MUNICH BIOTECHNOLOGY	MUNICH BIOTECH AG MUNICH BIOTECHNOLOGY Munich Biotech AG VALENTIS POLYMASC GENEMEDICINE
27	MEGABIOS	
28	NEUROGESX	
29	NEUROTONE, INC.	
30	OCTAMER	
31	ORPHAGEN PHARMACEUTICALS INC.	
32	PARALLELE BIOSCIENCE, INC.	PARALLELE GENOMICS, INC. ParAllele BioScience Inc.
33	PLANET BIOTECHNOLOGY, INC.	
34	PROSETTA CORPORATION	
35	PROTOS CORPORATION	NOVARTIS VACCINES & DIAGNOSTICS, INC PROTOS CHIRON
36	RENOVIS, INC.	
37	SCIENTIFIC LEARNING CORPORATION	SCIENTIFIC LEARNING PRINCIPLES SLIL BIOMEDICAL CORP.
38	SEQUENTIAL BIOMEDICAL SCIENCES	SEQUENTIAL BIOMEDICAL SCIENCES SEQUENTIAL BIOMEDICAL DEVELOPMENT TAIJI BIOMEDICAL CORPORATION
39	TAIJI BIOMEDICAL, INC.	
40	THURIS	
41	TISSUE TECHNOLOGIES, INC.	INTEGRA LIFESCIENCES HOLDINGS CORP. TISSUE TECHNOLOGIES

Source: University of California database

Table 20
QB3 Incubator Tenants and Alumna (through April 2010)
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

QB3 Garage@UCSF	
Tenants	Research Focus
Allopartis Biotechnologie	Biofuels
Lypro Biosciences, Inc.	Drug delivery
Omniox Inc.	Oxygen delivery
SeaChange Pharmaceuticals	* Drug repurposing
Simprota Corporation	* Computer-aided peptide and protein modeling
Alums	Outcome
Fluxion Biosciences	Now in South San Francisco - 29 employees
Satoris (http://www.satorisinc.com/)	Now in Menlo Park
Mynosys Cellular Devices	* Albany
True Materials	Sold to Affymetrix for \$25 million.
100X	*
Nidaan	No longer active
Bay Therapeutics	* No longer active
QB3 Mission Bay Incubator Network	
Tenants	Research Focus
Aliva Biopharmaceuticals, Inc	
Carmot Therapeutics, Inc.	
CV Ingenuity	
Delpor	
Gemmus Pharma, Inc.	
Green Pacific Biosciences	Eukaryotic algae platform for biofuel
Locus Development	Genetic markers
Metafold Therapeutics, Inc.	* Treatment of type 2 diabetes
Medicus Biosciences	
MLC Dx	
Osprey Pharmaceuticals	
PharmaJet	
Photoswitch Therapeutics, Inc.	Therapeutics for retinal degenerative diseases
Siluria Technologies,	
Solidus Biosciences	Chip-based toxicology assays
Tunitas Therapeutics	Allergy-specific vaccines

* Note: These six QB3 Incubator Network tenants are UCSF spin-outs.

Source: Communication with Douglas Crawford, Associate Executive Director of QB3

According to UCSF interviews with founders of the QB3 Garage firms, being able to use the incubator and its state-of-the-art technology was a critical component of the development of their companies. Specifically, “micro” spaces are available for rent so firms pay for what they need and can expand as necessary; sharing space with other start-ups fosters a creative atmosphere, and having an address in UCSF space provides firm founders exposure to venture capitalists looking for new investment opportunities.

Other UCSF Firm “Genealogy” Analysis

One of the difficulties in tracking direct spin-off activity from UCSF is the complex and multi-dimensional nature of the firm creation process. Start-ups and spin-offs flourish or fail and continuously change via corporate merger, acquisition, division, and restructuring. The movement of products, persons, and ideas are not unidirectional, not always radiating out from the University, nor always from academia to industry.

The case of UCSF’s current chancellor is just one notable example, from the hundreds possible, that illustrate the complexity of biotechnology career paths and the fluid social network created among academic, commercial and governmental organizations. Chancellor of UCSF since August 2009, Susan Desmond-Hellmann, M.D., M.P.H., originally completed her clinical training and served as associate adjunct professor of epidemiology and biostatistics at UCSF. However, she joined Genentech in 1995 as a clinical scientist, following an associate directorship position at Bristol-Myers Squibb.²⁶ She was the firm’s president of product development from 2004 until returning to UCSF as chancellor.

Another more expansive attempt to link the career path network of key staff of first-generation UCSF spin-offs was made in 2001, for the 25th anniversary of Genentech, by Tom Abate, long-term business reporter for the San Francisco Chronicle.²⁷ Abate, with the assistance of former Genentech scientist Cynthia Robbins-Roth and former Cetus and Chiron financial officer Hollings Renton, compiled two “genealogies” linking Genentech and Chiron/Cetus to other biotech firms, research institutes, and venture capital operations.

Genentech was founded in 1976 by Dr. Herbert W. Boyer (UCSF Professor of Biochemistry 1976 to 1991) and venture capitalist Robert A. Swanson. Dr. William Rutter, chairman of the Department of Biochemistry and Biophysics and later Director of the Hormone Research Institute at UCSF, and his former students, Edward E. Penhoet of UCB and Pablo Valenzuela of UCSF, founded Chiron Corporation in 1981, which merged with the Cetus Corporation in 1991.

Abate’s lists connect 36 Genentech and 19 Chiron/Cetus “progeny” by veterans of those firms who had also founded, directed research, or held high executive posts in other biotech firms, research institutes, and venture capital operations (see **Appendix C** for detailed breakdown of this genealogy).

²⁶ Biography of Susan Desmond-Hellman: UCSF News Office
<http://news.ucsf.edu/releases/biography-of-susan-desmond-hellmann/>

²⁷ Biotechnology Industry Personalities: Chips Off The Old Block: Alums of Genentech, Chiron, Cetus make Bay Area the capital of biotech industry; SF Chronicle, April 2, 2001:
<http://www.mindfully.org/GE/Genentech-Genentech-Chiron-Cetus.htm>

Private Employment by Existing UCSF Faculty

Many existing UCSF faculty, mostly physicians, maintain private medical practices in offices located off campus. These private medical offices, in turn, employ nurses and support staff (e.g., accountants, office managers, etc.), thus increasing employment and output in the jurisdictions in which they occur. Indeed, data provided by UCSF suggest that approximately 36 percent of UCSF's 900 physicians maintain private office space in the City. These physicians support roughly 320,000 square feet of office space²⁸ (see **Table 21**).

Table 21. Estimated Private Physician Space, UCSF Physicians Only

Item	Total
Est. Number of Physicians	900
Proportion with private offices in City [1]	36%
Building Sq.Ft./ Physician	<u>1,000</u>
Estimated Sq.Ft. of Private Physician Space Generated by UCSF Physicians	320,000

[1] From UCSF review of existing physicians and residents in 2007.

Professional Relationships and Knowledge Transfer

"The best way to send information is wrap it up in a person."

*J. Robert Oppenheimer*²⁹

The professional relationships and activities of UCSF faculty and graduates can be relatively complex and difficult to trace, let alone quantify. However, the importance of formal and informal information and entrepreneurial networks to the advancement of the biotech industry has been well documented in academic studies and professional literature.³⁰ Proximity to prominent academic institutions is especially vital in biotech industry because of the "knowledge intensive" nature of the field and its reliance on scientific research and highly trained workers.

²⁸ Calculation of space is provided as an estimate for illustration purposes. It is based on a number of assumptions (particularly, the amount of space required per doctor; individual doctors may lease or own more or less space, depending on their preferences, practice size, etc.). The estimate is not intended as a specific accounting of space.

²⁹ From "The Eternal Apprentice," Time Magazine, Vol. 52, p. 81.

³⁰ One explanation for clustering is that advanced knowledge is most effectively transmitted through face-to-face interaction and is not easily spread beyond the environment in which it is developed and applied (Feldman 2000).

Given the industry's high dependence on scientific research and validation, many biotech firms have extensive links with academic-research institutions, especially in early stages of a product life cycle (e.g., R&D phase).³¹ Indeed, as described in the previous section, many of the key employees in a biotech firm have or formerly held prestigious academic posts at UCSF. However, less direct but more ubiquitous are the numerous affiliations and relationships that UCSF staff have with professionals in the private sector as well as nonprofit research institutes or governmental agencies. For professional, economic, and personal reasons biotechnology scientists are often reluctant to give up their university positions even while they pursue a career or cultivate relationships with private sector entities focused on commercialization.

One of the more visible ways in which UCSF faculty and researchers contribute to leadership in the biotechnology industry is through their participation in scientific advisory boards. Although comprehensive analysis of the number of UCSF alumni that serve on such boards is not available, a number of studies have indicated that this is a common practice and can often serve as a prelude to actual employment. According to one study, UC scientists served on the scientific advisory boards of 36 percent of the biotechnology companies founded from 1996 to 2000.

In addition to UCSF faculty, graduates from UCSF professional schools and graduate programs also serve as an important resource for the biotechnology sector. Indeed, data from the UCSF Alumni Association suggest that students exhibit high propensity to remain in California, and especially the Bay Area after graduation. As shown in **Table 22**, over half (55 percent) remain in the Bay Area and 75 percent in the State.

³¹ “The biotech-university connection is reinforced by the often-cited list of founders of some of the key biotech firms created in the late 1970s and 1980s: Genentech (Herbert Boyer, University of California – San Francisco), Biogen (Walter Gilbert, Harvard), Hybritech (Ivar Royston, University of California – San Diego), Genetics Institute (Mark Ptashne, Harvard), Systemix (David Baltimore, MIT and Whitehead Institute), and Immulogic (Malcolm Gefter, MIT).¹ All of these eminent scientists retained their university affiliations, often full-time. They were able, so to speak, to have their cake and eat it too, precisely because their universities had created rules and routines that enabled technology transfer and faculty entrepreneurship. There are many regions where there is scientific excellence but not the requisite infrastructure to capture the rents from knowledge spillovers.” From Powell, Walter W., et al.

Table 22. UCSF Alumni in the United States by Place of Residence

Jurisdiction	Amount	% of Total in US
San Francisco	3,296	11%
Bay Area	13,175	44%
California	22,529	75%
United States	30,131	100%

"alumni"

Source: UCSF Alumni Association

A complete analysis of the full range of "downstream" economic activities and impacts of existing or former UCSF students and faculty would be a highly complex and difficult endeavor.³² However, as a case study, the current activities of former students and associates of UCSF's Stroud Lab display in microcosm the influence of UCSF training on academia, on public and private sector research, and on commercial life sciences products and services, both locally and internationally. As summarized in **Table 23**, of 88 individual scientists present at the Lab from 1971 to early 2010, 44 are known to hold academic posts, 30 work in the private sector, and 5 hold positions at government or not-for-profit research institutes. Of the 30 former Lab members in the private sector, 17 are located in the Bay Area and 3 more elsewhere in California. Of the 44 former Lab members working in academia, 28 hold positions outside California, while 9 work in the Bay Area and 7 elsewhere in the State. Two of the five former Lab members working in government/not-for-profit research institutes are located in California; the other three out of State.

³² Recent research by Walter W. Powell, Professor of Education, Sociology, Organizational Behavior, Management Science and Engineering, and Communication, at Stanford University, and others has applied formal social network analysis and visualization tools such as Pajek spider charts to trace career affiliations, financing, commercialization, licensing and collaborative R&D ties with the Bay Area Life Sciences industry, including links to financial institutions, government institutes, pharmaceutical corporations, public research organizations and biomedicine suppliers. A representative paper which includes Bay Area biotechnology cluster analysis is "Organizational and Institutional Genesis: The Emergence of High-Tech Clusters in the Life Sciences," May 2009: http://academic.reed.edu/sociology/faculty/whittington/Powell_Packalen_Whittington_2010.pdf

Table 23. Occupations of Former UCSF Stroud Lab Members

Sector	Geographic Location			Total
	SF Bay Area	California	Elsewhere	
Academia	9	7	28	44
Private Sector	17	3	10	30
Government/Not-for-Profit	1	1	3	5
Total	27	11	41	79

Source: Stroud Lab at UCSF: Former Members.

<http://www.msg.ucsf.edu/stroud/people/former.htm>

Early efforts to trace Knowledge/Career Affiliation Networks linking biotechnology and biomedical firms (and stretching the concept of spin-off in common usage) include a "Critical Linkages" employment survey conducted in 1995-1996. Responses from 134 firms, which represented 58 percent of California biotechnology firms operating in 1995, indicated 24 of the employed PhDs had earned their degrees at UCSF.³³

³³ "Assessing the Role of the University of California in the State's Biotechnology Economy: Heightened Impact over Time," UC IUCRP Working Paper 02-5, March 2003.

5. *FISCAL IMPACT METHODOLOGY AND BUDGET OVERVIEW*

This chapter provides an overview of the methodology and data sources used to evaluate UCSF's fiscal impact. This includes an overview of the City and County of San Francisco (City of San Francisco) General Fund budget.

Overview of Fiscal Impact Analysis

A fiscal impact analysis compares the tax revenues received by a City or County from a defined activity or land use with cost of providing public services to this activity or land use. Since local governments are required to have balanced budgets, a City's land uses and population on the whole may be assumed to have a fiscal impact of zero (i.e., the revenues generated equal the costs to serve the population). In reality, however, most population and land use types have attributes that push this balance to either the positive or negative side of the ledger. For example, churches and nonprofits are exempt from property tax (as a policy matter because of their provision of desirable public services) but can nevertheless create public service costs that may not be off-set by the other tax revenues they generate.³⁴ As another example, tourists, who typically make high, taxable expenditures (hotels rooms, souvenirs, restaurant meals, etc.), generally provide a net fiscal benefit to cities since they do not place an equivalent demand on local public services.

As a government (State) and nonprofit entity, UCSF is exempt from the payment of a number of significant local government taxes, including property taxes, assessments, and other special taxes.³⁵ UCSF's activities and associated population (e.g., employees, students, and visitors) do generate a significant level of other local taxes such as sales tax, hotel tax, and parking tax. This fiscal impact analysis aims to determine whether these local revenues attributed to UCSF are sufficient to cover its demands on the City/County public services.

Focus on San Francisco's General Fund Budget

The fiscal impact analysis examines cost and revenue impacts reasonably attributed to UCSF on San Francisco's General Fund budget. The General Fund is the primary operating budget used by the City to fund basic City services and programs. While San Francisco's total budget was about \$6.53 billion in FY 2008/09, compared to about \$3 billion for the General Fund, most of the other fund categories have dedicated revenue sources and operate on a cost recovery basis. This analysis also focuses on FY 2008/09 because it is the most recent year for which complete data on UCSF's population and operations is available.

³⁴ Another example is longtime homeowners who pay low property taxes due to Proposition 13, relative to their property's value if sold on the open market.

³⁵ Under California law all property (1) used exclusively for religious, hospital, or charitable purposes, and/or (2) owned or held in trust by nonprofit organizations operating for those purposes is exempt from paying property tax. There are thousand of entities in San Francisco that claim this exemption.

In addition to a focus on the General Fund, the fiscal impact represents a “snapshot” from all UCSF-related programs, activities, and facilities at the aggregate level in relation to the revenue and spending priorities reflected in the San Francisco City and County FY 2008/09 budget. It does not represent the fiscal impact of individual or incremental UCSF programs, activities, and facilities. These individual or incremental impacts should be evaluated on a case by case basis.

Consideration of Redevelopment Agency Budget

In addition to the City’s General Fund, the analysis includes an evaluation of the San Francisco Redevelopment Agency’s (SFRA’s) budget for the Mission Bay Project Area and CFDs applicable to this area. Although the SFRA is an independent City agency with dedicated revenue sources (i.e., property tax increment) and restricted expenditures categories, UCSF is considered given its tax-exempt status and relative size within the Mission Bay Project Area.

Overview of San Francisco Budget

City/County Budget

The City and County of San Francisco’s budget has fluctuated in line with wider economic trends. San Francisco’s total budget for fiscal year 2008/09 was \$6.53 billion. This is an increase of about 8 percent over the 2007/08 budget. The proposed budget for FY 2009/10 is essentially flat from the prior year, at \$6.60 billion.

For FY 2008/09, which is the fiscal year focused on for this analysis, roughly 35 percent of revenue was derived from local taxes (property, sales, business, etc.), about 30 percent was from charges for services provided by the City and County (including charges for hospital, public safety and other services), almost 20 percent was from intergovernmental revenue (State and federal), and the remaining 20 percent was from rents and concession payments, licenses and fines, prior year balance, and other revenues and financing sources. **Table 24** illustrates San Francisco’s major revenue sources.

Table 24. Overview of San Francisco Budget, FY 2008/09 Major Revenue Sources

Service Area	\$ millions	%
Local Taxes	\$2,297	35%
Licenses & Fines	\$156	2%
Rents/Concessions (“Use of Money or Property”)	\$429	7%
Intergovernmental (Federal, State, Other)	\$1,154	18%
Charges for Services	\$1,922	29%
Other Revenue	\$343	5%
Fund Balance (previous year)	<u>\$231</u>	<u>4%</u>
Total Sources	\$6,531	100%

As the only consolidated city and county in California, San Francisco has responsibility for a wide array of services including county functions mandated by the State such as the administration of justice, health, and human welfare programs as well as typical city functions including public safety, public works, planning, and administration. **Table 25** provides City/County expenditures by service area in FY 2008/09.

Table 25. Overview of San Francisco Budget, FY 2008/09 Major Uses

Service Area	\$ millions	%
Public Protection	\$1,089	15%
Public Works, Transportation, and Commerce	\$2,395	32%
Human Welfare and Neighborhood Development	\$872	12%
Community Health	\$1,576	21%
Culture and Recreation	\$273	4%
General Administration and Finance [1]	\$637	9%
General City Responsibilities [2]	\$531	7%
Subtotal	\$7,374	100%
Less Departmental Recoveries and Transfers	(\$843)	--
Net, Uses	\$6,531	--

[1] Includes human resources, mayor's office, treasurer/tax collect, IT, etc.

[2] Includes general citywide expenditures such as payment of legal claims, retiree subsidies, and employee health services administration.

Three Categories of Funds

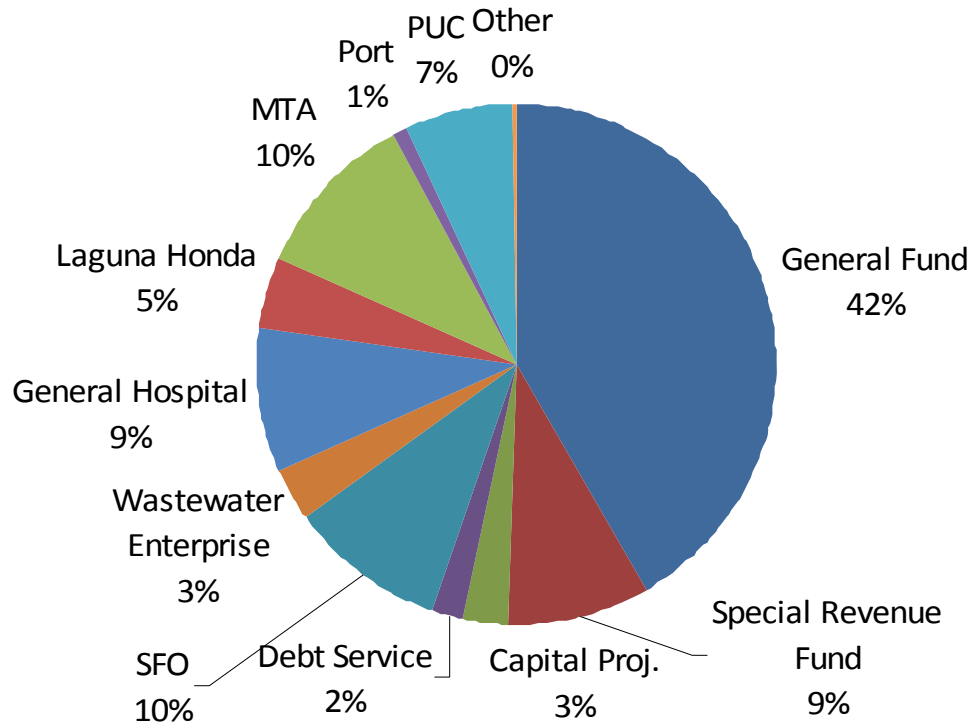
The budget is generally defined by funds in three categories: governmental funds, proprietary funds, and fiduciary funds. They differ in terms of how flexibly additional revenues may be generated (e.g., revenues for some propriety funds like San Francisco International Airport may be raised to cover costs) and the extent to which expenditures are restricted to particular purposes (i.e., intergovernmental funds like homeland security grants may only be used for particular functions).

- Governmental funds are used to provide most of the City's basic services. The largest of the categories of monies within this fund is the General Fund, the City's primary operating fund. Other categories include special revenue, debt service, capital projects, and permanent funds.
- Proprietary funds generally comprise those services for which the City charges customers a fee. Examples of these funds include the San Francisco International Airport, the San Francisco Water Department, MTA, Port of San Francisco, General Hospital, and Laguna Honda Hospital. These funds typically set their charges for service to cover their operating costs and are therefore budget neutral.
- Fiduciary funds are not available for City programs; rather, they are restricted monies like employee pensions, employee benefits, investment trust funds, etc.

General Fund Overview

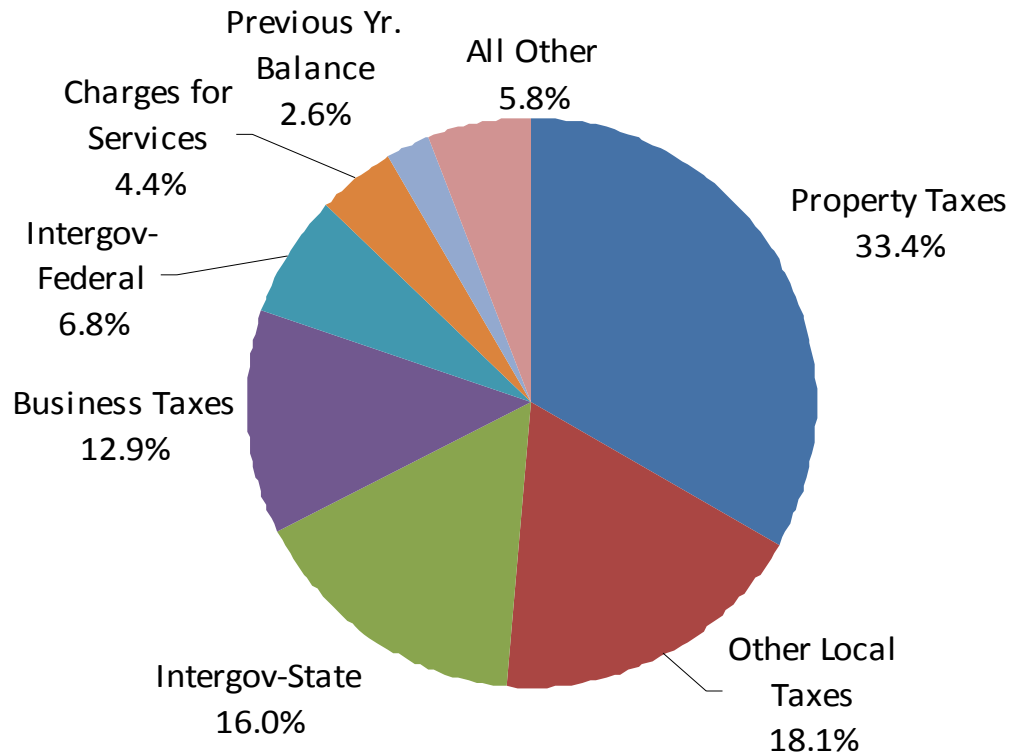
The General Fund is the City's primary operating fund and is the City's major source of discretionary spending, accounting for roughly 42 percent of San Francisco's total budget. (See **Figure 13** for illustration of uses of City/County revenues.) As shown, much of the budget is constrained to specific services or purposes (hospitals, utilities, capital projects, etc.) or is part of an enterprise fund, which is a fee-for-service category of the budget (e.g., San Francisco Public Utilities Commission charges rate-payers to provide water service).

Figure 13. San Francisco Budget by Use of Revenue, FY 2008/09; \$6.53 Billion Total



In terms of revenue sources, property taxes are a primary source of revenue to the General Fund. Specifically, property taxes make up more than 50 percent of General Fund revenues. Other large contributors are sales taxes (i.e., "other local taxes"), State funds, business taxes, federal funds, and charges for service, as illustrated in **Figure 14**.

Figure 14. General Fund – Sources of Revenue FY 2008/09; Total \$2.7 Billion



Looking more closely at the General Fund's largest source of revenue—property taxes—San Francisco property tax roll is primarily made up of residential property value. As shown in **Table 26**, about two-thirds of the total assessed property value in San Francisco is residential property, about 15 percent is hotel property, and 11 percent is non-office commercial property.³⁶

³⁶ While residential uses make up 67 percent of the tax roll, the uses contribute about 57 percent of the taxes. Property taxes are based on San Francisco's secured and unsecured property tax roll and commercial uses have a higher rate of assessed property on the unsecured roll. In 1985, the proportion of taxes contributed by residential and commercial uses was almost the opposite of what it is today, with commercial uses contributing about 60 percent of the taxes. This switch may be attributed to commercial uses' low turnover rate combined with the Proposition 13 law, which only allows a reassessment to market value of a property when it is sold.

Table 26. Assessed Property Value in San Francisco, By Land Use

Item	Assessment Roll 2008\$, Billions	% of Total
Residential [1]	\$89.6	67%
<u>Non-Residential</u>		
Office	\$5.1	4%
Hotel	\$19.9	15%
Non-Office Commercial	\$14.8	11%
Industrial	\$2.6	2%
Other/Misc.	<u>\$2.0</u>	<u>2%</u>
Subtotal, Non-Residential	\$44.4	33%
Total, San Francisco Assessment Roll	\$134.0	100%

[1] Residential property contributes about 57 percent of property taxes to the City.

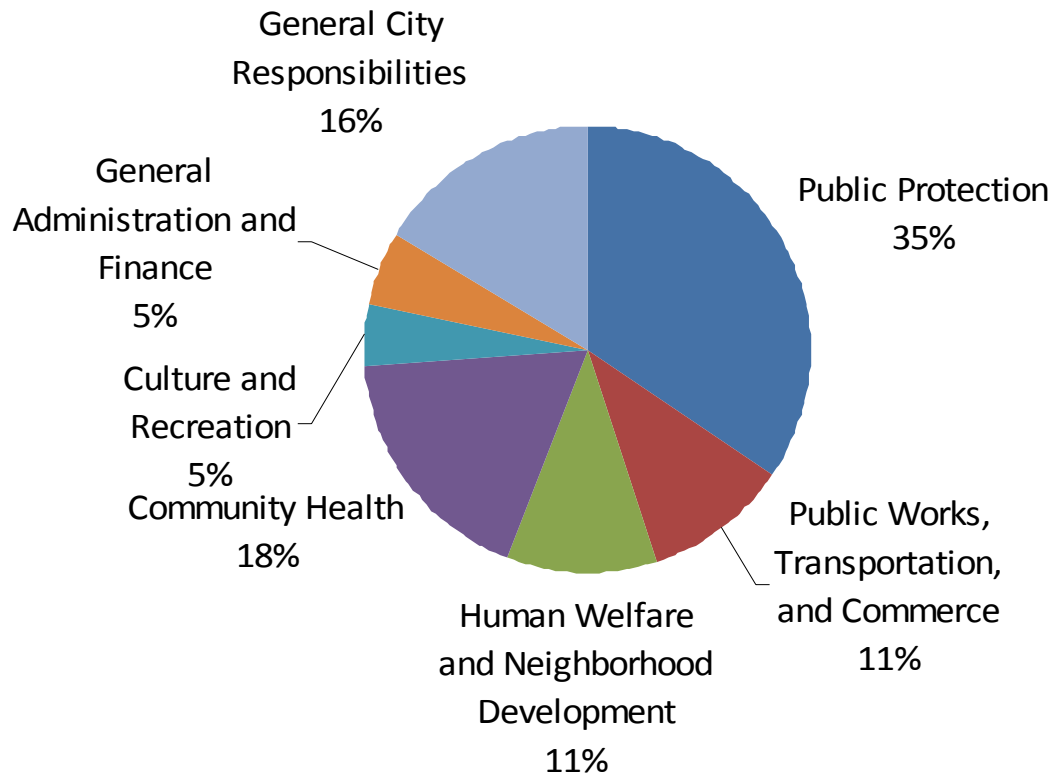
Source: Assessor-Recorder 2008 Annual Report; EPS

As noted, the General Fund is generally used to cover the costs of basic City services and functions, as illustrated in **Figure 15** and summarized below.

- **35 percent of spending to Public Protection.** This category of expenditures includes police, sheriff, fire, district attorney, etc.
- **18 percent to Community Health.** Community Health, also called Public Health, “protects and promotes the health of all San Franciscans,” providing a wide array of preventive care, health care, disease control, preventive care, health care, environmental health, etc.
- **16 percent to General City Responsibilities.** This category primarily includes employee benefit and retirement funds. Rather than attempting to allocate these costs to departmental budgets, San Francisco categorizes these expenditures separately.
- **11 percent to Public Works, Transportation, and Commerce.** This includes a substantial amount of General Fund support for San Francisco MTA. Pursuant to voter mandates, MTA receives a total of 9.16 percent of General Fund aggregate discretionary revenues—these are General Fund revenues that are not generally restricted for a particular purpose.
- **11 percent to Human Welfare and Neighborhood.** This includes a variety of agencies providing services to children, families, women, and San Francisco’s homeless population.

- **5 percent to Culture and Recreation.** This General Fund service category includes park maintenance and recreational programming and support for many of San Francisco’s cultural museums.
- **5 percent to General Administration and Finance.** This includes the Assessor/Recorder’s office, City Attorney, Human Resources, Elections, Mayor, etc.

Figure 15. General Fund – Uses of Funds FY 2008/09; Total \$2.7 Billion



Fiscal Impact Methodology

As noted, at the broadest level, all municipal revenues and costs balance out and thus all activity and land uses in a City taken as a whole are revenue-neutral. However, a fiscal analysis is premised on the notion that different land uses and activities have differential impacts on the City’s budget. In trying to determine the unique impacts of UCSF on the City’s General Fund budget, this analysis categorizes and evaluates each General Fund budget item based on one of the following basic techniques, as summarized below.

1. **Case Study:** For some costs and revenues, specific information is available on UCSF’s generation of revenues or demand for public services (e.g., Muni, police, fire, etc.). In these instances, a **case study** method is used to estimate UCSF’s budgetary impact. A case study method is appropriate when sufficient data is available to directly link UCSF’s population and operations with a particular budget item.

2. **Population-Based:** For many cost and revenue items, unique data are not available on usage or generation. For example, a UCSF employee's usage of public roads cannot be reasonably differentiated from an employee of another organization located in San Francisco. For these items, a ***per-population*** basis is used to estimate revenues and costs. As an initial step in the per-population allocation method, various population types are defined (e.g., residents, employees, visitors, and students, as described further below) and compared against one another in terms of their likely services demands and revenue impacts. For example, UCSF's employees are assumed to be comparable to San Francisco employees in general in terms of their budget impacts.
3. **Negligible Impact:** UCSF's impact on a limited number of cost and revenue items is estimated to be ***negligible***. For example, UCSF is not subject to property taxes; therefore, the organization's impact on property tax-related revenues (property tax, property transfer tax, State revenues to the City/County which are dependent on increases in assessed property value, etc.) is negligible. In addition, because of the unique attributes of UCSF's population and operations, its impacts on some departmental costs are estimated to be negligible.

Treatment of UCSF's Population Groups

UCSF has a variety of population categories including students, employees, and visitors to the campus and the Medical Center. These categories of UCSF-affiliated people may be further subdivided into San Francisco residents and nonresidents and on-campus residents (living on UCSF-owned property) and off-campus residents.

The fiscal impact analysis focuses on each of these population groups during their affiliation with UCSF. This means that, to the extent possible, only the "UCSF-related" impact of the various population types (students, staff, faculty, visitors) is included in the fiscal impact analysis. For example, the fiscal impacts of a nurse at UCSF that occur during the workday—purchasing a prepared lunch, riding Muni to work, using the public streets, etc.—are accounted for in the study. Impacts not closely associated with UCSF operations are excluded. For example, property taxes paid by UCSF off-campus residents or services consumed by UCSF personnel in their private lives are considered to be revenue-neutral as UCSF-San Francisco residents pay taxes and local fees just like other residents.

This approach is premised on the idea that UCSF affiliates' "off campus" life is revenue-neutral for the City. As an example, many UCSF employees are San Francisco residents and generate property tax, sales tax, costs for police, etc., like any other San Francisco resident. Alternatively, UCSF employees who are non-City residents return to their home jurisdiction and generate costs and revenues there. The fiscal impact associated with these employees represented by their "non-UCSF" life is not under evaluation. Again, while it is recognized that UCSF employees and other affiliated population groups have differential impacts on the City's budget as part of their private (non-UCSF) life, such impacts are beyond the scope of this analysis.

The one partial exception to this methodology is the treatment of UCSF on-campus residents. Because these residents do not generate property taxes for San Francisco, they cannot be treated like typical San Francisco residents. Because of their special status, the full range of their costs and revenue generation is included in the fiscal impact analysis.

Relative Size of UCSF Population Groups

In order to estimate UCSF's generation of revenues and the need for public services, the size of UCSF-related population groups must be measured and compared with San Francisco's total population. The various UCSF population groups are documented in **Table 27** and described below.

- **UCSF Employees.** As shown on **Table 27**, UCSF has 21,903 employees on payroll and employs about 21,000 people in San Francisco (the difference accounts for the small number of employees working outside of San Francisco).
- **UCSF Students.** In 2009, UCSF had 4,444 enrolled students with almost half of those students in the School of Medicine, while the remaining half were spread among the Schools of Dentistry, Nursing, and Pharmacy and other graduate programs. UCSF has 923 on-campus housing units, with 1,387 people residing in the units (including students, faculty, and their roommates or family members). **Figure 16** illustrates the locations of the on-campus housing units, shown on the Parnassus and Mission Bay campuses.

Figure 16. General Locations of UCSF On-Campus Housing Units

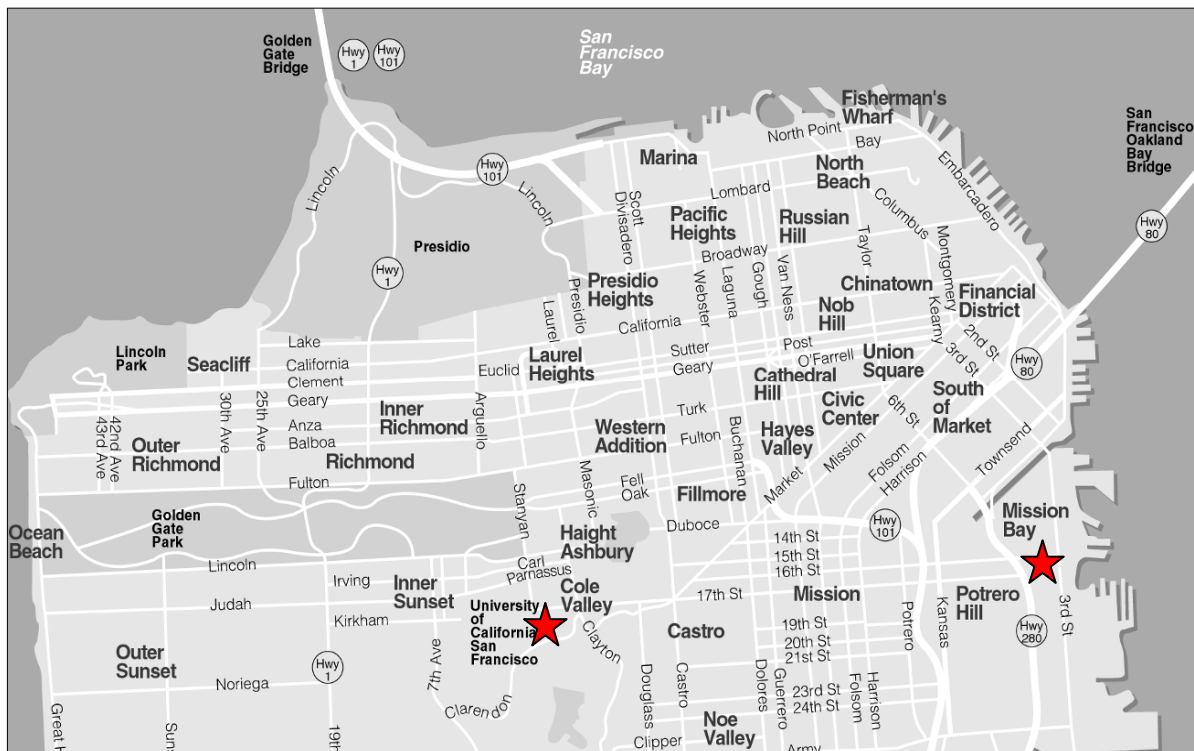


Table 27
UCSF Population, Employment, and Visitor Estimates (2009)
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Category	Total
Employees [1]	
<u>San Francisco</u>	
Full-Time	13,605
Part-Time	<u>7,203</u>
Total, Headcount	20,808
% of Jobs located in San Francisco	<u>95.0%</u>
Total,	21,903
<u>By Category</u>	
Academic (Includes Doctors)	5,698
Non-Academic	<u>16,205</u>
Total, Headcount	21,903
Students [1]	
<u>By School</u>	
Dentistry	463
Medicine	1,988
Nursing	667
Pharmacy	605
Other Graduate Programs	<u>721</u>
Total Students	4,444
<u>By Location of Residence, City</u>	
San Francisco residents	3,289
Non-San Francisco residents	<u>1,155</u>
Total Students	4,444
Students and Employees-Residence [1]	
<u>By Location of Residence, On-Campus/Off-Campus</u>	
Number of on-campus housing units	923
Number of on-campus housing units occupied	913
Number of students living on-campus	560
Number of faculty/employees living on-campus	319
All others living on-campus (roommates, spouses, children, etc.)	<u>508</u>
Total on-campus population	1,387
UCSF Out-of-Town Visitors	
<u>Conference Attendees [2]</u>	
School of Medicine (annual visitors)	14,000
Average Length of Stay (nights)	<u>4</u>
Total Hotel-Nights	56,000
School of Dentistry (annual visitors)	1,197
Average Length of Stay (nights)	<u>1</u>
Total Hotel-Nights	1,197
Estimated number of Hotel-Nights (conference attendees)	57,197
<u>Visitors to Hospital Patients [3]</u>	
UCSF Hospital Inpatients	30,524
Total Days Spent in Hospital	194,038
Estimated Proportion of Days that Visitors Came to Hospital	48%
Total Visitor-Days	92,567
Estimated Proportion of Days in Hotel	16%
Estimated number of Hotel-Nights (visitors to hospital inpatients)	14,524

[1] All counts from UCSF Campus Planning.

[2] Conference attendee information from 2000/2001 Fiscal and Economic Impacts Analysis completed for UCSF. No comprehensive new counts of conference attendees have been completed since that time, though anecdotal information suggests that the number of conference attendees has likely increased since that year due to the development of the Mission Bay campus. With its more central location and light rail transit access, the Mission Bay conference center is viewed favorably by meeting planners. This anecdotal information suggests that the use of the 2000/2001 data likely undercounts the number of conference attendees.

[3] Hospital visitor data is detailed on Table 34 .

Sources: UCSF Campus Planning; Fiscal and Economic Impact Analysis of UCSF on San Francisco and The Bay Area, Fiscal Year 2000/2001; EPS

- **UCSF Visitors.** UCSF also has a significant number of people with a loose connection to the hospitals and University including patients, prospective students, and other visitors. Rather than attempting to quantify every visit to the campus and the hospitals, this analysis separates visitors into two categories: visitors who spend a significant amount of time in San Francisco (e.g., overnight) *and* those whose presence in San Francisco is directly attributable to UCSF (e.g., attending conference, visiting patients in UCSF hospital). This method will capture those visitors with the greatest impact because they stay at least one day in the City and those visitors who can reasonably be assumed to be in San Francisco *because of UCSF*.³⁷ As shown in **Table 27**, overnight conference attendees accounted for almost 57,200 hotel-room nights.³⁸ Also shown in the table is the number of overnight stays that visitors to UCSF inpatients spend in San Francisco.³⁹ UCSF had 30,524 inpatients to its hospitals in 2009 and they stayed a total of 194,038 nights (an average length of stay of 6.4 nights). Based on the number of inpatient-days in the hospital and the residence of the inpatient, an estimate has been made regarding the number of days spent in San Francisco by people visiting UCSF hospital inpatients. Both conference attendees and visitors to hospital inpatients are counted as part of the total UCSF-related population.

The UCSF population estimates are aimed at determining the proportion of San Francisco's service population that is represented by UCSF. Thus, the total number of San Francisco residents, employees, and visitors must be accounted for and compared with these counts for UCSF. **Table 28** reports these totals by population group.

- **Total San Francisco Population.** According to the Department of Finance, San Francisco had 845,559 residents in 2009.
- **Total San Francisco Employment.** Based on the Association of Bay Area Governments' (ABAG's) *Projections 2009*, 565,600 jobs were located in San Francisco in 2009. Roughly 43 percent of those jobs are held by San Francisco residents. This leaves about 321,500 jobs held by non-San Francisco residents.

³⁷ This is contrasted with people who are in San Francisco for other reasons and are using UCSF hospitals or school facilities simply because it is one of their options in the City. For example, community groups sometimes use UCSF facilities for meetings; while they are "visitors" to the UCSF campus, they are only associated with UCSF for a short period of time and would likely have held their meeting elsewhere in San Francisco regardless of whether UCSF is located in the City.

³⁸ Based on 2000/2001 fiscal and economic impact analysis completed for UCSF. No updated estimate of conference attendees is available. Anecdotal information indicates that since the opening of the Mission Bay campus, UCSF has become a more attractive location for conferences (and conference breakout sessions) because of Mission Bay's more central location within the City. This indicates that the 2000/2001 data may actually undercount conference visitors.

³⁹ Inpatients are defined as hospital patients who are admitted to and spend at least one night in the hospital.

Table 28
San Francisco Population, Employment, and Visitor Estimates (2008/2009)
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Category	Total
San Francisco Residents	
Population	845,559
Households	346,680
San Francisco Employment	
Jobs in San Francisco (1)	565,602
Jobs held by Residents	244,046
Jobs held by non-Residents	321,556
<u>2008: Visitors to San Francisco by Accommodation Type</u>	
Stay in SF Hotel	4,740,000
Stay in Private home in SF	1,190,000
Avg. # nights stay	4.60
Total Overnight days	27,278,000
Stay in other Bay Area Location	6,000,000
Bay Area residents on Day Trips	<u>4,460,000</u>
Day trips	<u>10,460,000</u>
Total	37,738,000
Total Visitors, Avg .Day	103,392
<u>Average, 2000-2008</u>	
Stay in SF Hotel	4,172,222
Stay in Private Home in SF	1,212,222
Stay in other Bay Area Location	5,990,000
Bay Area residents on Day Trips	4,198,889
Total	15,573,333
<u>Average Spending per Visitor (2009\$)</u>	
Stay in SF Hotel	\$1,200
Stay in Private home in SF	\$800
Stay in other Bay Area Location	\$200
Bay Area residents on Day Trips	<u>\$300</u>
Average of all Visitor Types	\$500

(1) The growth rate between 2005 and 2010 is applied to ABAG to estimate 2009 numbers.

Source: San Francisco Convention & Visitors Bureau, Comparison of Annual Visitor Volume and Spending 2000-2008; ABAG.

- **San Francisco Visitors.** Rather than attempting to account for each person who enters the City as a visitor for a short period of time (e.g., visitors making short shopping trips to downtown, individuals visiting family members, or groups going out to dinner for an evening), this analysis has defined “visitors” as those spending the night or spending a full day in the City as day-trip tourists. As shown in **Table 28**, the San Francisco Convention and Visitor Bureau keeps estimates of these types of tourists and makes the data available dating back to 2000. In 2008 (the latest estimates posted), almost 6 million people spent at least one night in San Francisco (either in a hotel or in a private home). Overnight guests stayed an average of 4.6 days. Adding these visitor-days to the 21 million day-trips taken by Bay Area residents and visitors staying elsewhere in the Bay Area results in an estimate of about 37.7 million visitor-days per year or an average of about 104,000 visitors per day.

Resident Equivalent Factors

All of the various population types described above—employees, students, residents, and visitors—have different characteristics in terms of their demand for public services and generation of revenues. These differences are mostly attributable to the amount of time spent in San Francisco. In order to place the counts of the population types into a unit type that can be easily compared, all population types are compared with a typical San Francisco resident, referred to as a Resident Equivalent.

Table 29 shows the various population groups and a factor that weights the population according to its likely impact relative to a Resident Equivalent. As shown, a San Francisco resident is assumed to be the baseline for comparison purposes and is therefore assigned a Resident Equivalent weight of 1.00. In order to avoid double-counting, San Francisco residents who hold San Francisco jobs are excluded from the City’s job count to estimate only nonresidents working in the City. Nonresident employees are weighted a 0.50 of a Resident Equivalent as an approximation of the number of waking hours typically spent at work. Since daily visitors either spend the night in the City and/or are day visitors in town for most of the waking hours of a day, they are assumed to be equal to Resident Equivalents (normalized for a 365 days per year). Weighting the counts of each of these population groups and adding them together results in a total of 1.1 million Resident Equivalents in San Francisco.

Also shown in the table are UCSF’s population groups and relative weightings. Because the full range of fiscal impacts will be estimated for on-campus UCSF residents,⁴⁰ UCSF on-campus residents are weighted as equivalent to one Resident Equivalent. To avoid double-counting, these on-campus residents are deducted from either the Student or UCSF Jobs population categories. UCSF employees and UCSF students are weighted as 0.50 Resident Equivalents because roughly half of their waking hours are estimated to be spent working or in school. The other half are estimated to be spent on non-UCSF-related activities and are thus excluded from

⁴⁰ The full range of impacts are evaluated for on-campus residents because they reside on tax-exempt property and because both their work/student time and personal-home time is associated with UCSF.

Table 29
Summary of Resident Equivalents
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Item	Number	<u>Resident Equivalent Calculation</u>	
		Resident Equivalent Weighting Factor	Resident Equivalents
<hr/>			
<u>Resident Equivalent Items</u>			
San Francisco			
Residents	845,559	1.00	845,559
Non-Resident Employees	321,556	0.50	160,778
Daily Visitors	<u>103,392</u>	1.00	<u>103,392</u>
Total	1,270,507		1,109,729
 UCSF			
Residents	1,387	1.00	1,387
SF Jobs	20,808	0.50	10,404
(less) Faculty counted in "Residents"	<u>-320</u>	0.50	<u>-160</u>
Net Jobs	20,488	0.50	10,244
Students	4,444	0.50	2,222
(less) students counted in "Residents"	-512	0.50	-256
(less) students counted in "Jobs"	<u>-25</u>	0.50	<u>-13</u>
Net Students	3,907	0.50	1,954
Visitors			
Conference Attendees, Prospective Students (Days)	157	1.00	157
Visitors to Hospital Patients	<u>254</u>	1.00	<u>254</u>
Total Visitors	410		410
 Total	 26,192		 13,995
 <u>Key Factors Used in General Fund Budget Allocation</u>			
UCSF as % of San Francisco's:			
"Service Population"			1.26%
"Residential Population"			0.16%
UCSF's Residential Population Compared to San Francisco's Service Population			0.12%

Sources: ABAG Projections 2009; California Department of Finance; Census Longitude Employment Dynamics (Census OnTheMap 2008); UCSF Planning Department; EPS

the fiscal impact analysis. There are roughly 410 overnight visitors (conference attendees and visitors to UCSF hospital inpatients) associated with UCSF on an average daily basis. This population group is assigned a weight of 1.00 Resident Equivalent.

Having these various population groups totaled in identical terms (Residential Equivalents) allows for a comparison between UCSF's related population and San Francisco's population. Depending on whether a General Fund cost or revenue is generated by the residential population or the full service population (residents, employees, and visitors), the appropriate proportion that UCSF represents may be applied. The key comparisons made in the table are as follows:

- **UCSF as a proportion of San Francisco's Service Population.** Including students, employees, and visitors and comparing these groups with similar San Francisco population groups, UCSF's Resident Equivalent population totals 26,192, equal to about **1.3 percent** of San Francisco's total Resident Equivalents.
- **UCSF as a proportion of San Francisco's Residential Population.** Some public services and revenues are almost wholly demanded by or generated by the residential population. For example, cable television taxes and services like Sheriff, District Attorney, Public Defender, etc. are revenues and costs tied to the residential population.⁴¹ To estimate these kinds of items, the UCSF on-campus residential population is compared with San Francisco's total residential population. UCSF's on-campus residents make up about **0.2 percent** of San Francisco residents.
- **UCSF's Residential Population compared with San Francisco's Service Population.** In rare cases, San Francisco's entire service population generates revenues or public service costs, but only UCSF's residential population is subject to the revenue generation. For example, San Francisco's service population generates telephone taxes by using these services and paying a tax for that usage. State entities and hospitals are among the various exemptions noted for this tax; therefore, UCSF does not generate this revenue. However, cell phone users are not exempt; thus, UCSF's residential population will generate revenues under this tax for the City. In this example, the proportion of the telephone tax revenue attributable to UCSF is: UCSF's residential population divided by San Francisco's full service population. This proportion is about **0.1 percent**.

⁴¹ These are County functions directed by officials elected by County residents.

6. GENERAL FUND FISCAL IMPACT CALCULATIONS

This chapter describes the calculations and results from an analysis of UCSF's fiscal impact on the City's General Fund based on the methodology and approach described in **Chapter 5**.

General Fund Revenue Analysis

As described earlier, San Francisco's General Fund revenues are made up of property taxes, sales tax, business tax, hotel taxes, a variety of user taxes, intergovernmental transfers, and other sources. **Table 30** reports General Fund revenues by source for FY 2008/09, the recommended allocation method used to apportion these revenues to UCSF, and the resulting impact on General Fund revenues attributed to UCSF. The revenues are segmented into major groupings and are detailed in the subsequent sections.

Property Taxes

Because UCSF is exempt from property taxes, it does not generate property tax revenues. Consequently, UCSF has a *negligible impact* on this budget item. In other words, UCSF's occupancy of tax-exempt property generates zero General Fund revenues for the City (the impact on the SFRA, which is not part of the General Fund, is described in **Chapter 7**). Again, this is not to say that UCSF's tax-exempt status has negligible fiscal implications overall, rather that it has no impact on this particular revenue item. UCSF's overall fiscal implications are evaluated compressively in this chapter.

Business Taxes

While UCSF is not subject to the payroll or business registration tax, UCSF spending on goods and services supports those businesses' provision of payroll taxes to San Francisco. Though the campus and the Medical Center spend roughly \$900 million per year in purchases of services in San Francisco, it is unlikely that UCSF is such a large customer for those businesses that their payroll taxes are dependent on the presence or absence of the University. An exception to this rationale is payroll tax associated with capital project expenditures. The expansion and contraction of construction jobs in a particular locale is largely dependent on the presence of construction projects in the jurisdiction. In other words, if UCSF did not spend money on their projects, those construction jobs and payroll taxes would not have been paid to San Francisco. Contractors will work on a project from start to finish; therefore, it is reasonable to attribute the payroll taxes associated with the wages paid from UCSF capital expenditures to the University.

Table 31 illustrates the estimate of payroll taxes for 2008/09 attributable to UCSF's capital program. While UCSF expended roughly \$300 million in 2008/09 on capital projects, its average expenditure over the last nine years has been \$180 million. To avoid overestimating this variable expenditure, the average of \$180 million is used to evaluate the payroll tax impact. An estimated 40 percent of the total expenditure is expected to be spent on labor on the projects. A

Table 30

San Francisco General Fund Revenues: UCSF's Impact
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Revenue Allocation Choices			
<i>Service Population</i>	Residents, students, employees, and visitors, weighted by their estimated impact.		1.26%
<i>ServPop: UCSF Resid Only</i>	Revenue generated by full service population, but only UCSF-resident pop. contributes		0.12%
<i>Residential Capita</i>	On-campus residents only, all residents are weighted equally.		0.16%
<i>Case Study</i>	Revenues attributed to UCSF's population estimated from direct data.		Case Study
<i>Negligible Impact</i>	UCSF's population and operations generate negligible revenues.		0.00%
<i>Included Elsewhere</i>	Revenue is included in another item.	<i>Included Elsewhere, see note</i>	
General Fund Revenue Items	2008-09 General Fund (\$ millions)	Allocation Method	Net Revenues Attributed to UCSF
Property Taxes			
Property Tax	\$827.1	Negligible Impact	\$0
Property Tax AB1290 Redev. Pass Through	\$5.1	Negligible Impact	\$0
Property Tax In Lieu of Vehicle License Fee	<u>\$146.8</u>	Negligible Impact	<u>\$0</u>
Total: Property Taxes	\$978.9		\$0
Business Taxes			
Payroll Tax	\$384.6	Case Study	\$904,000
Business Registration Tax	<u>\$10.0</u>	Negligible Impact	<u>\$0</u>
Total: Business Taxes	\$394.6		\$904,000
Other Local Taxes			
Sales and Use Tax	\$159.3	Case Study	\$1,512,184
Hotel Room Tax *	\$184.4	Case Study	\$1,012,200
Gas Electric Steam Users Tax	\$40.6	Negligible Impact	\$0
Telephone Users Tax	\$40.4	ServPop: UCSF Resid Only	\$50,484
Water Users Tax	\$1.8	Negligible Impact	\$0
Parking Tax	\$65.4	Case Study	\$501,337
Property Transfer Tax	\$94.3	Negligible Impact	\$0
Stadium Admission Tax	<u>\$2.5</u>	Negligible Impact	<u>\$0</u>
Total: Other Local Taxes	\$548.7		\$3,076,000
Licenses, Permits, and Franchises			
PG&E Gas and Electric	\$6.8	Residential Capita	\$11,074
Cable TV	\$8.9	Residential Capita	\$14,548
All Other [1]	<u>\$8.7</u>	Residential Capita	<u>\$14,290</u>
Total: Licenses, Permits, and Franchises	\$24.3		\$40,000
Fines, Forfeitures, and Penalties			
Traffic Fines-Moving	\$3.3	Service Population	\$41,969
All Others	<u>\$0.5</u>	Service Population	<u>\$6,720</u>
Total: Fines Forfeitures, and Penalties	\$3.9		\$49,000
Interest and Investment Income	\$21.4	Negligible Impact	\$0
Rents and Concessions [2]	\$18.7	Negligible Impact	\$0
Intergovernmental - Federal [3]	\$201.5	Residential Capita	\$330,000
Intergovernmental - State [3]	\$298.4	Residential Capita	\$490,000
Charges for Services [4]	\$146.5	Included Elsewhere	\$0
Other Revenues [5]	<u>\$11.4</u>	Negligible Impact	\$0
Total: General Fund Revenues	\$2,688.1		\$4,889,000

* Indicates revenue item is included in Sensitivity Test. See Table 41 for details.

Subtotals are rounded to nearest thousand.

[1] All Other Licenses, Permits, and Franchises includes the following licenses: apartment, marriage, eating places, dog, etc. as well as fees like those for sidewalk displays, cafes, news racks, cannabis dispensary, lobbyist registration and others.

[2] Rents and Concessions includes rent from City garages and lots and concession fees.

[3] Portion of federal and State intergovernmental transfers which are provided to support the General Fund's contribution to Community Health costs are excluded from the amount shown. Because UCSF is estimated to have a negligible impact on this Department, these revenues are excluded from the UCSF "residential capita" estimate to ensure the accounting of revenues and costs is consistent.

[4] Rather than trying to estimate charges for services, these revenues are excluded from the departmental costs on Table 36.

[5] Other Revenues includes land sales, hospital and medical charges, and other miscellaneous revenue.

Source: City and County of San Francisco Consolidated Budget and Annual Appropriations Ordinance; Fiscal Year Ending June 30, 2009; EPS

Table 31
Case Study: Payroll Tax Estimate
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Item	Total
Capital Expenditures [1]	\$179,261,000
Soft Costs at 35% of total [2]	\$62,741,350
Payroll, assuming 65% of soft costs go to payroll [3]	\$40,781,878
Deduct Proportion of Firms Outside San Francisco, Exempt from Tax, assuming 50% [4]	<u>(\$20,390,939)</u>
Soft Costs Net Payroll Subject to Tax	\$20,390,939
Hard Costs at 65% of total	\$116,519,650
Payroll, assuming 40% of soft costs go to payroll [5]	<u>\$46,607,860</u>
Total Payroll from Capital Expenditures	\$66,998,799
Deduct Proportion Exempt from Tax, assuming 10% of payroll [6]	<u>(\$6,699,880)</u>
Net Payroll Subject to Tax	\$60,298,919
San Francisco Payroll Tax	1.50%
Total Payroll Tax Supported by Capital Expenditures in SF	\$904,000

[1] Based on a review of UCSF's capital expenditures from 2000 to 2009. Average annual expenditure is shown.

[2] Estimated based on EPS's experience reviewing development pro formas.

[3] Soft costs typically go to professional service firms like architectural, engineering, planning, etc. The majority of these types of firms' costs are labor.

[4] Estimate, data is not available on the professional service firms hired for capital projects. About half of the spending is assumed to be awarded within the City because San Francisco has a high number of these types of firms.

[5] The percentage of hard construction costs that go to labor versus materials and supplies will vary by project type, location, whether prevailing wage is used, etc. The estimate used here is based on factors provided in the IMPLAN model. The model is described in the Economic Impact chapter. All of the payroll for hard construction costs is expected to be subject to San Francisco's payroll tax (except for very small firms).

[6] Firms with annual payroll of \$170,000 or less per year are exempt from the payroll tax. This limit only applies to firms of just a few employees. We estimate that only a small proportion of

Source: UCSF, IMPLAN, Economic & Planning Systems

portion of the firms working on the project will be exempt from payroll taxes (firms with payrolls less than \$170,000 do not pay the tax). Accounting for these deductions and applying the 1.5 percent payroll tax results in an estimated generation of \$904,000 in these taxes to San Francisco's General Fund in 2008/09.

Other Local Taxes

San Francisco has an array of local taxes, which are generated through various mechanisms. To estimate UCSF's generation of these taxes, the case study and residential per capita estimating methodologies have been applied.

Case Study – Sales Tax, Hotel Tax, and Parking Tax

Sales and Use Tax

Sales taxes are generated in San Francisco when a taxable good is purchased within the City. While the sales tax rate was 8.5 percent in 2008 (up to 9.5 percent currently), the General Fund receives 1 percent of the total purchase price. The remaining tax goes to the State's General Fund, the local transit districts, including County Transportation Authority and Bay Area Rapid Transit, and the local school district. Use tax is generated when a person or entity purchases a taxable good from a retailer out of state who does not hold a California business license. The sale must be reported to California and San Francisco's sales tax is paid on the purchase. UCSF generates a substantial amount of sales and use taxes through its daily operations. In addition, its students, staff, and visitors make expenditures during their time associated with UCSF which often provides sales tax to San Francisco.

Table 32 reports sales taxes from four sources and use taxes related to UCSF operations. The sales tax sources are as follows:

- **UCSF Campus Purchases.** UCSF campus direct purchases subject to California sales and use tax was reported by UCSF to the State of California for financial audits in FY 2005/06 and 2006/07. This detailed data is the most recent available for the campus and has been averaged to estimate FY 2008/09 revenues in this category. The portion shown that is expected to have been captured in San Francisco is based on a review of all UCSF vendors for FY 2008/09. On average, about 25 percent of UCSF's purchases were from San Francisco vendors (this included both taxable and non-taxable purchases). The estimate assumes that this proportion is the same for both taxable and non-taxable purchases.
- **On-site Taxable Sales.** Both UCSF campuses and the Medical Center have several retail locations on site including food vendors, florists, and bookstores. Total sales at these sites for 2008/09 totaled almost \$20 million, generating nearly \$200,000 in sales tax for San Francisco.

Table 32

UCSF Sales and Use Tax: From Direct Expenditures and Onsite Sales
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Purchases Subject to CA Sales Tax: Campuses		Formula
2006/07: Campus Purchases Subject to CA Sales Tax	\$98,131,270	
2005/06: Campus Purchases Subject to CA Sales Tax	<u>\$86,197,540</u>	
Average, applied to 2008/09	\$92,164,405	
Estimated Annual Purchases in San Francisco (based on 24% capture in City) [1]	\$22,082,000	
Estimated Sales Tax 2008/09 (Local Portion @ 1% of sales)	\$220,820	a
Purchases Subject to CA Use Tax: Campuses		
2006/07: Campus Purchases Subject to CA Use Tax	\$19,460,018	
2005/06: Campus Purchases Subject to CA Use Tax	<u>\$20,106,965</u>	
Average, applied to 2008/09	\$19,783,491	
Estimated Sales Tax 2008/09 (Local Portion @ 1% of sales)	\$197,835	b
On-site Taxable Sales: Medical Centers		
Medical Center-On-site Taxable Sales 2008/09	\$11,766,642	
Estimated Sales Tax 2008/09 (Local Portion @ 1% of sales)	\$117,666	c
On-site Taxable Sales: Campuses		
Campus Life Services-On-site Taxable Sales 2008/09	\$7,826,578	
Estimated Sales Tax 2008/09 (Local Portion @ 1% of sales)	\$78,266	d
Estimated Sales Tax Generated from Construction Expenditures		
Average Annual Construction Expenditure	\$179,261,000	
(less) Soft Costs @ 35% [2]	<u>(\$62,741,350)</u>	
Net Expenditure, Hard Costs	\$116,519,650	
Estimated Expenditure on Materials (assuming 60% of Net) [3]	\$69,911,790	
Estimated Annual Purchases in San Francisco (based on 20% capture in City)	\$13,982,358	
Estimated Sales Tax 2008/09 (Local Portion @ 1% of sales)	\$139,824	e
Total Local Sales and Use Tax Generated On-site and Through UCSF Purchases	\$754,411	f=a+b+c+d+e

[1] Non-capital expenditures totaled \$1.2 billion in 2008/09. Of this amount, \$200 million were purchases from vendors in San Francisco. While these non-capital expenditures include both taxable and non-taxable spending, the proportion of the vendors located in San Francisco is assumed to apply equally to both taxable and non-taxable expenditures.

[2] Estimated based on EPS's experience reviewing development pro formas.

[3] The percentage of hard construction costs that go to labor versus materials and supplies will vary by project type, location, whether prevailing wage is used, etc. The estimate used here is based on factors provided in the IMPLAN model. The model is described in the Economic Impact chapter.

Source: UCSF, IMPLAN, Economic & Planning Systems

- **Sales Tax from Capital Expenditures.** Over the last nine years, UCSF spent an average of \$180 million per year on capital construction projects.⁴² While the detailed information on the location of supplies and equipment purchases is not available, **Table 32** reports assumptions underpinning the estimated sales tax generated because of this expenditure. As shown, soft costs—which are typically spent on architects, legal fees, engineering, and other professional services—are excluded from the total leaving an estimated \$116 million in hard construction costs. Of this amount, roughly 60 percent is estimated to be spent on supplies and materials.

In addition to these sources of sales tax, UCSF-related population groups make expenditures that generate sales tax for the City. **Table 33** describes and quantifies the sales tax generation.

- Employees and students are estimated to spend roughly \$73.2 million on retail goods during the course of the workday/school day (off-campus residents only).
- On-campus residents are estimated to spend \$approximately \$8.6 million on retail goods.
- Overnight visitors are estimated to spend nearly \$7.5 million on retail goods.

Accounting for the proportion of these expenditures that are likely occurring on UCSF premises (and thus are already accounted for in the previous table), the total retail expenditures expected to be captured in San Francisco is \$75.8 million. This spending generates retail tax to San Francisco's General Fund totaling \$758,000 annually.

Hotel Tax

Hotel taxes are levied on hotel rooms in San Francisco equal to 15.5 percent of the rate. UCSF generates hotel taxes by attracting two key types of visitors to the City: conference attendees and visitors to hospital inpatients.⁴³ In part because of its specialized clinics and reputation, UCSF hospitals handle a significant number of hospital patients from outside San Francisco and California. In 2009, UCSF hospitals admitted about 30,500 inpatients and those patients spent almost 195,000 days in the hospital. About 35 percent of these inpatients were San Francisco residents. While survey or other data are not available to estimate the number of visitors to hospital inpatients, **Table 34** illustrates some reasonable assumptions regarding (1) the proportion of days inpatients received visitors (more for patients who are San Francisco residents who are likely to have friends and family in town and fewer for those traveling from outside California to the hospital) and (2) the proportion of visitor-days that are likely to be spent

⁴² For FY 2008/09, UCSF spent \$320 million on capital projects. To avoid using a year's data which is not typical, the average annual expenditure on construction projects is used.

⁴³ The primary economic impact analysis described in **Chapter 3** does not account for visitor spending. Unlike the economic analysis, a fiscal analysis focuses on the tax implications of spending attributable to UCSF regardless of whether UCSF is the origin or primary source of the income that enables this spending.

Table 33
UCSF Sales and Use Tax: From Population Expenditures
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Item	Assumptions	Total
SALES TAX GENERATED FROM EMPLOYEES AND STUDENTS (Off-Campus student-residents only)		
<u>Employees</u>		
Number of Full-Time Employees	13,605	\$63,943,726
Employee Exp. per Day [1]	\$20.00 per day	
Annual Retail Generated by FT Employees	235 workdays/ year	
Number of Part-Time Employees	7,203	\$8,463,469
Employee Exp. per Day [1]	\$10.00 per day	
Annual Retail Generated by Project PT Employees	118 workdays/ year	
<u>Students (Off-Campus Residents)</u>		
Number of Students	3,932	\$7,864,000
Employee Exp. per Day [1]	\$10.00 per day	
Annual Retail Generated by Students (off-campus residents only)	200 days at school/ year	
<u>Annual Retail Sales Generated by Employees + Off-Campus Students (daytime only)</u>		
(less) Capture of Sales by On-Campus vendors		\$80,271,194
Less Sales Counted in Accounting of UCSF's On-site Sales, see Table 32 [2]		<u>-\$7,043,920</u>
San Francisco Capture Rate [3]	85% of sales	\$73,227,274
<i>Subtotal: Annual Retail Sales Generated by Employees + Off-Campus Students</i>		\$62,240,000
SALES TAX GENERATED FROM UCSF ON-CAMPUS RESIDENTS		
Households (occupied units)	880	
Typical Rent (1-2 bedroom at UCSF) [4]	\$1,200 per unit/month	\$14,400
Average HH Income	33% of income on rent	\$43,636
Average HH Taxable Retail Exp. [5]	30%	\$13,091
% of Expenditures Captured in San Francisco (per household)	75%	<u>\$9,818</u>
Total Household Expenditure on Retail in San Francisco		\$8,640,000
Less Sales Counted in Accounting of UCSF's On-site Sales, see Table 32		<u>-\$782,658</u>
<i>Subtotal: Annual Retail Sales Generated by On-Campus Households</i>		\$7,857,342
VISITOR RETAIL EXPENDITURES		
Conference Attendees and Visitors to Hospital Patients-Days in SF [6]	149,764 per year	
Taxable Expenditure per Day [7]	\$50 per day	\$7,488,183
(less) Capture of Sales by On-Campus and Medical Center vendors		<u>-\$1,176,664</u>
San Francisco Capture Rate	90% of sales	
<i>Subtotal: Visitor Retail Expenditures</i>		\$5,680,367
Total Taxable Retail Sales Estimated to be Captured in San Francisco		\$75,777,367
Total Annual Sales Tax	1%	\$757,774

[1] Office Worker Retail Spending Patterns Survey document reports that typical office workers spent about \$130 per week during the workday (survey date: 2004). This includes spending on lunch, occasional dinner/drinks, and shopping during the day (pharmaceutical and other consumables). This translates into roughly \$25 per day on retail goods. This amount has been applied to UCSF's full-time employees. Expenditures by part-time employees have been halved, to reflect the lower amount of time they spend at work. While students spent more time at UCSF than the typical part-time worker, their expenditure has been estimated to be slightly less, based on their limited incomes.

[2] About 90% of all sales generated at on-campus retail outlets is expected to be due to employee and student expenditures and is therefore deducted from this calculation to avoid double-counting of student/employee expenditure.

[3] A large proportion of spending made during the work or school day are expected to be captured in San Francisco's jurisdiction. This is due to the availability of retail outlets in the City (i.e., no need to travel outside the City to procure retail goods) and due the limited time workers likely have to shop during the day, limiting travel-distances to shop.

[4] Estimated from UCSF's Housing Services data on apartment rental rates from January 2008.

[5] Estimated from the U.S. Bureau of Labor Statistics data on household expenditure patterns.

[6] See Table 29 for detail on the number of days UCSF-related visitors are expected to spend in San Francisco each year.

[7] According to the San Francisco Convention & Visitors Bureau, Comparison of Annual Visitor Volume and Spending 2000-2008 data, the typical overnight visitor spends between \$800 and \$1,200 in San Francisco during a trip to the City. In order to estimate how much of that spending may be attributed to taxable retail expenditures, the following deductions have been made: Avg. visit is 2 nights, \$200 per day is spent on lodging, and half of remaining spending is on taxable goods (spending on transportation, tickets to events are not taxable).

Source: International Council of Shopping Centers - Office Worker Retail Spending Patterns Survey; UCSF Housing Services; Bureau of Labor Statistics; EPS

Table 34
UCSF Hotel Tax Revenue Estimate
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Item	Assumptions/ Factors				Total
<hr/>					
Visitors to Hospital Patients	Inpatients' Home Address				
	<i>San Francisco</i>	<i>Other Bay Area</i>	<i>Other California</i>	<i>Outside California</i>	
Number of Cases (Inpatients) [1]	10,927	10,663	7,952	982	30,524
Days [1]	54,805	67,803	65,508	5,922	194,038
Average Length of Stay [1]	5.02	6.36	8.24	6.03	6.36
Proportion of Days with Visitors [2]	75%	50%	25%	20%	92,567
Proportion of Visitor-Nights in Hotel [2]	5%	5%	60%	80%	
Visitor-Days in Hotel	2,055	1,695	9,826	948	14,524
<hr/>					
Conference Attendees	School of Medicine		School of Dentistry		
	<i>Out-of-Town Attendees</i>	<i>Length of Stay</i>	<i>Out-of-Town Attendees</i>	<i>Length of Stay</i>	
Total Nights Spent in SF for Conference [3]	14,000	3	1,197	1	<u>43,197</u>
Visitor-Nights in Hotel assuming 80% of nights spent in hotel in San Francisco [4]					34,558
<hr/>					
Hospital Visitors + Conference Visitors	Calculation of Hotel Tax				
Total Room-Nights					49,082
Daily Hotel Room Revenue \$190 / room / night [5]					\$9,326,000
TOT Rate of 15.5% of room revenues					\$1,446,000
<hr/>					
% of Hotel Tax to General Fund (70%)					\$1,012,200

[1] Information on inpatients cases, days in hospital, and residential location from UCSF Medical Center.

[2] Proportions of the number of days inpatients receive visitors and the number of days visitors may spend in a hotel are estimated by EPS based on the inpatients residential location. For example, inpatients from San Francisco are more likely to have visitors most of their days in the hospital as they are likely to have friends and family nearby, so they are estimated to have visitors on 75% of their days in the hospital. However, since we assume their friends and family are nearby, they are less likely to require a hotel room for their visit, thus only 5% of the visitors are estimated to spend a night in a hotel.

[3] All data on conference attendees is derived from the 2003 Fiscal/Economic Impacts Analysis. No new data has been collected on UCSF conferences since that time. Most likely, this data undercounts the number of conference attendees as UCSF's locations have expanded in Mission Bay, increasing the campus's ability to host conferences.,

[4] EPS assumption, assumes a portion of attendees may stay in town with friends or family.

[5] Based on San Francisco Conference and Visitors Bureau's San Francisco Fact Sheet for 2009.

Source: UCSF; 2003 Fiscal and Economic Impact Analysis of UCSF; an Francisco Conference and Visitors Bureau

in a hotel (fewer for San Francisco-resident inpatients and much more for inpatients traveling from outside California). These assumptions conclude that an estimated 14,500 hotel-nights are generated by visitors to UCSF-hospital inpatients.

Also shown in the table is the estimated number of out-of-town attendees of UCSF conferences. Estimates from the School of Medicine and the School of Dentistry indicate that out-of-town attendees of UCSF conferences spent roughly 43,200 hotel nights in town. After making adjustments for some attendees staying in private homes or outside the City, the estimated number of hotel room-nights from conferences sum to approximately 35,000. Adding these two room-night estimates together (a total of 49,000 hotel nights) generates an estimated \$1.4 million in hotel taxes, about \$1,012,000 of which goes to the City's General Fund.

Parking Tax

San Francisco charges a 25 percent parking tax on parking revenue from off-street parking spaces. UCSF's population contributes to this tax during the course of their UCSF-related activities as they park in garages and facilities during the work/school day. In addition to commuters, UCSF on-campus residents generate parking taxes when parking in San Francisco parking facilities for other activities.

Table 35 illustrates calculations for estimating parking tax. The proportion of commute trips and the location of commuter parking are derived from UCSF's Transportation Survey of employees and students. As shown, only those commute trips in which individuals drove alone and parked in non-UCSF parking facilities are counted in the calculation (UCSF parking facilities are not subject to the tax). Commuters of this type are estimated to spend roughly \$2.5 million per year for off-street parking. A similar calculation is shown for UCSF's on-campus population. These individuals are estimated to use a non-UCSF parking facility once per week for 50 weeks out of the year. Taken together, commuters and on-campus residents pay \$3.3 million for off-street parking in San Francisco per year, generating roughly \$500,000 in parking tax for San Francisco's General Fund.

Other General Fund Revenue Sources

UCSF is exempt from several other local taxes including the parking tax, telephone users' tax and gas/steam/electric users' tax. All other General Fund revenue sources are expected to be generated by UCSF on either a service population basis (notably, traffic fines for moving vehicle violations) or on a residential per capita basis. The primary revenues generated for the City's General Fund that are not evaluated on a case study basis are intergovernmental transfers from the State and federal governments. While some of these revenues are directed to specific programs and County functions, about 20 percent of General Fund revenues are derived from these transfers.⁴⁴ The revenues are directed to departments like police and fire, as well as social services programs by the City. Residential population has been used as a proxy to estimate UCSF's portion of the intergovernmental transfers.

⁴⁴ Care has been taken to avoid counting revenues for which matching costs are excluded. Thus, the portion of State revenue transfers that are directed to Community Health programs are excluded from the total revenues, then the per capita proportion is applied.

Table 35
UCSF Parking Tax Estimate
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Item	Total
<u>UCSF Commuters [1]</u>	
UCSF Employees and Students (Off-Campus Residents)	25,252
Number of Days per Week Commuted	4.45
Estimated Weeks per Year	47
One-Way Commute Trips per Year	5,281,240
% of Commute Trips: Drive Alone	34%
% Parking at Non-UCSF Facility	12%
Parking Days/Year at Non-UCSF Facility	209,171
Avg. Daily Parking Rate [2]	<u>\$12</u>
Parking Paid per Year (Commute)	\$2,510,046
<u>UCSF Residential Population [1]</u>	
On-Campus Population	1,387
Assumed Days per Week Driving & Parking at Non-UCSF Facility	1
Parking Days/Year at Non-UCSF Facility	69,350
Avg. Daily Parking Rate [2]	<u>\$12</u>
Parking Paid per Year (Residential Pop)	\$832,200
Total Parking Payments per Year	\$3,342,246
Parking Tax Rate	25%
Portion of Tax to General Fund [3]	<u>60%</u>
Parking Tax to General Fund	\$501,337

[1] All information related to mode of transit and the number of days commuting and parking in a non-UCSF facility are derived from UCSF's Transportation Survey (2009).

[2] Avg. daily parking rate is a conservative assumption. A Colliers International study of median daily parking rates in San Francisco in 2005 revealed a median daily rate of more than \$20. This rate includes high rent districts like San Francisco's downtown.

[3] 40 percent of parking tax revenue is directed to San Francisco MTA.

Sources: UCSF Transportation Survey (2009); Colliers International; EPS

General Fund Expenditures Analysis

UCSF personnel and operations generate demands on public services across the spectrum of San Francisco's departments. **Table 36** summarizes San Francisco's General Fund expenditures by major service area (e.g., Public Safety, Public Works, Human Welfare). The table also reports the cost allocation methodology and resulting net costs attributed to UCSF. A case study has been performed to estimate the costs for the Fire, Police, and MTA Departments.

Departmental Costs Estimated with Case Study Approach

Fire

San Francisco Fire Department (Fire) provides protection to people and property in San Francisco from fires, natural disasters, and hazardous materials incidents. The department also provides emergency medical services. The General Fund portion of Fire's budget in FY 2008/09 totaled \$181 million. The department received about \$23.7 million in charges for services allocated to the General Fund, so the net cost to the General Fund to support fire services was \$157.3 million, about 7 percent of net General Fund expenditures (see **Table 37**).

UCSF's direct impact on Fire may be measured by the number of calls for service that Fire responded to at UCSF locations (both owned and leased). While an argument may be made that all City residents, even those who have not called the Fire Department are provided security by fire operations, annual calls are a key driver of the Fire Department's budget. In addition, the premise of this analysis is that various land uses and population groups have differential impacts on departmental budgets (and generation of revenue). Therefore, a case study approach has been applied to estimate costs for public services for which usage of those services may be tracked.

San Francisco's Department of Emergency Management provided detailed information for calendar years 2007-2009 on the number of calls responded to by Fire for UCSF's roughly one hundred street addresses. For these years, the department responded to between 111,000 and 140,000 calls for service. UCSF's call rate varied from 659 to 773 calls per year. The net cost to the General Fund per fire call averaged \$1,200 over the three-year period. Costs to operate the Fire Department attributed to UCSF are estimated at \$900,000.

Table 36
San Francisco General Fund Costs: UCSF's Impact
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Cost Allocation Choices					
<i>Service Population</i>	Residents, students, employees, and visitors, weighted by their estimated impact.				1.26%
<i>Residential Capita</i>	On-campus residents only, all residents are weighted equally.				0.16%
<i>Case Study</i>	Costs attributed to UCSF's population estimated from direct data.				Case Study
<i>Negligible Impact</i>	UCSF's population and operations generate negligible costs.				0.00%
San Francisco General Fund Expenditures - By Major Service Area	2008-09 General Fund (\$ millions)	(less) Charges for Service (\$ millions)	Net 2008-09 General Fund (\$ millions)	Allocation Method	Net Costs Attributed to UCSF (\$s)
Public Protection					
Adult Probation	\$11.7	\$0.0	\$11.7	Residential Capita	\$19,262
Superior Court	\$32.6	\$0.3	\$32.3	Case Study	\$54,504
District Attorney	\$32.6	\$0.2	\$32.4	Case Study	\$54,705
Department of Emergency Management	\$3.2	\$0.0	\$3.2	Service Population	\$40,658
Fire *	\$181.1	\$23.7	\$157.3	Case Study	\$900,238
Juvenile Probation	\$32.1	\$0.0	\$32.1	Residential Capita	\$52,689
Public Defender	\$23.2	\$0.0	\$23.2	Case Study	\$39,104
Police	\$332.9	\$4.2	\$328.7	Case Study	\$181,181
Sheriff	\$136.6	\$2.7	\$133.9	Case Study	\$226,133
<i>Total: Public Protection</i>	\$786.0	\$31.1	\$754.9		\$1,568,000
Public Works, Transportation, and Commerce					
Public Works	\$36.5	\$10.4	\$26.1	Service Population	\$329,225
Economic & Workforce Development	\$9.4	\$0.0	\$9.4	Residential Capita	\$15,417
Municipal Transportation Agency	\$195.7	\$0.0	\$195.7	Case Study	\$949,163
<i>Total: Public Works</i>	\$241.6	\$10.4	\$231.2		\$1,294,000
Human Welfare and Neighborhood Development (6)					
Children, Youth and Their Families	\$26.6	\$0.0	\$26.6	Residential Capita	\$43,590
Human Services Agency	\$212.3	\$3.7	\$208.6	Residential Capita	\$342,220
Human Rights	\$0.9	\$0.0	\$0.9	Residential Capita	\$1,531
County Education Office	\$0.1	\$0.0	\$0.1	Residential Capita	\$131
Department of the Status of Women	\$3.5	\$0.0	\$3.5	Residential Capita	\$5,712
<i>Total: Human Welfare & Neighborhood Dev.</i>	\$243.4	\$3.7	\$239.7		\$393,000
Community Health					
<i>Total: Community Health *</i>	\$410.7	\$43.9	\$366.8	Negligible Impact	\$0
Culture and Recreation					
Asian Art Museum	\$4.5	\$0.0	\$4.5	Residential Capita	\$7,311
Arts Commission	\$3.7	\$0.0	\$3.7	Residential Capita	\$6,093
Fine Arts Museum	\$5.0	\$0.0	\$5.0	Residential Capita	\$8,229
Public Library	\$46.3	\$0.0	\$46.3	Residential Capita	\$75,890
Law Library	\$0.6	\$0.0	\$0.6	Residential Capita	\$980
Recreation and Park	\$40.4	\$8.8	\$31.6	Residential Capita	\$51,916
Academy of Sciences	\$3.2	\$0.0	\$3.2	Residential Capita	\$5,252
<i>Total: Culture and Recreation</i>	\$103.7	\$8.8	\$94.9		\$156,000
General Administration and Finance					
General Services Agency-City Admin.	\$33.0	\$3.1	\$29.8	Residential Capita	\$48,954
Assessor/Recorder	\$12.3	\$1.4	\$10.9	Residential Capita	\$17,945
Board of Supervisors	\$10.8	\$0.1	\$10.7	Residential Capita	\$17,522
City Attorney	\$1.0	\$0.0	\$1.0	Residential Capita	\$1,651
Controller	\$13.2	\$13.8	\$0.0	Residential Capita	\$0
City Planning	\$3.2	\$15.5	\$0.0	Residential Capita	\$0
Civil Service	\$0.5	\$0.0	\$0.5	Residential Capita	\$859
Ethics	\$3.9	\$0.0	\$3.9	Residential Capita	\$6,325
Human Resources	\$11.9	\$0.0	\$11.9	Residential Capita	\$19,571
Mayor	\$0.8	\$0.3	\$0.5	Residential Capita	\$885
Elections	\$10.3	\$0.0	\$10.3	Residential Capita	\$16,871
General Services Agency-Technology	\$3.0	\$0.0	\$3.0	Residential Capita	\$4,976
Treasurer/ Tax Collector	\$12.8	\$3.6	\$9.1	Negligible Impact	\$0
<i>Total: General Administration and Finance</i>	\$116.7	\$37.8	\$78.9		\$136,000
SUBTOTAL	\$1,902	\$136	\$1,767		\$3,547,000
UCSF's % of Net General Fund Costs					0.2%
General City Responsibilities					
<i>Total: General City Responsibilities [1]</i>	\$375.7	\$0.3	\$375.4	% based on GF %	\$622,000
Total: General Fund Uses	\$2,277.7	\$135.9	\$2,141.9		\$4,169,000

* Indicates revenue item is included in Sensitivity Test. See Table 41 for details.
Subtotals are rounded to nearest thousand.

[1] This departmental designation accounts for expenditures that are City-wide including items like: payment of legal claims, retiree subsidies, and city employee health services administration. Because this is a Citywide cost, UCSF is attributed its portion of costs based on the proportion of all General Fund costs attributed to it.
Consolidated Budget and Annual Appropriations

Table 37
UCSF's Impact on Fire Costs (General Fund)
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Item	2007	2008	2009	Average
Total SFFD Calls [1]	140,708	111,969	111,135	121,271
SFFD General Fund [2]	\$156,476,827	\$179,712,070	\$181,085,264	
(less) Charges for service [3]	\$20,510,519	\$23,556,126	\$23,736,120	
Net SFFD GF Exp.	\$135,966,308	\$156,155,944	\$157,349,144	
\$ per call	\$966	\$1,395	\$1,416	\$1,259
UCSF Calls for Service [1]	714	773	659	715
Total/ Average	\$690,106	\$1,077,387	\$933,222	\$900,238

[1] From San Francisco Department of Emergency Management database.

[2] Estimated from San Francisco's consolidated budget documents. While calls are shown for calendar year, the fiscal year budgets applied were: 2006/07, 2007/08, and 2008/09.

[3] 2009 Charges for service are directly from the FY 2008/09 budget documents. This level of budget detail was not available for the other two years. Charges for services for these fiscal years were estimated to be in the same proportion as reported for 2008/09.

Sources: San Francisco Department of Emergency Management; EPS

Police

The University of California, San Francisco Police Department (UCSFPD) provides primary patrol, investigations, crime prevention, emergency management, homeland security, and related law enforcement duties for the UCSF campus. UCSFPD has 42 sworn and 82 non-sworn, totaling 124 officers, and responded to 64,000 calls for service in calendar year 2009, up from 38,000 calls in 2005.⁴⁵ It should be noted that the 124 UCSFPD sworn officers exceeds the level that would be allocated to UCSF based on its service population by about 60 officers. In other words, UCSFPD has assigned more sworn officers to patrol UCSF facilities than would be implied by its service population given the City's current service standards.

While UCSFPD has law enforcement jurisdiction on campus, the San Francisco Police Department (SFPD) responds to calls to non-campus, UCSF locations (e.g., leased space) and may occasionally respond to calls on campus under a mutual aid agreement with UCSFPD. Likewise, UCSFPD may respond to calls for service in public areas and other locations outside its immediate jurisdiction. UCSFPD and SFPD have concurrent jurisdiction within one mile of UCSF property.

Table 38 reports information on SFPD and UCSFPD calls for services. As shown, on an annual basis SFPD responds to roughly 1.5 million calls per year at a net cost to the General Fund of about \$194 per call. According to data provided by the Department of Emergency Management, SFPD calls to UCSF addresses averaged about 1,800 per year. Conversely, UCSFPD responded to approximately 1,700 calls for service off campus, areas that would normally be patrolled by SFPD. Thus, overall there are roughly 3,500 calls for service near UCSF facilities responded to by both departments. This analysis assumes that about 75 percent of these calls, or about 2,600, can be attributable to UCSF-related activities and populations (e.g., students, faculty, and staff). Given that UCSFPD responds to about 1,700 calls, SFPD responds to about 935 "net" calls for service, after crediting UCSFPD's response to off-campus areas. This results in an estimated annual cost of about \$181,000 for SFPD to serve UCSF locations.

Other Public Protection Departments

Although UCSFPD is responsible for patrolling UCSF property and investigating all crimes occurring therein, the City remains responsible for a number of public protection functions, including services provided by the District Attorney, Sheriff, Public Defender, and Superior Court. Consequently, the City may still incur costs as a result of criminal activity occurring on or near UCSF property. These costs are estimated based on the proportion of UCSF-related calls for service relative to total citywide calls for service, as shown in **Table 38**. Specifically, the City budgets for these departments are multiplied by the proportion of UCSF-related costs to determine the net amount attributable to UCSF.

⁴⁵ The significant increase in calls may be attributed to the expansion of the campus.

Table 38
UCSF's Impact on Police and other Public Protection Costs (Excluding Fire)
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Item	2007	2008	2009	Average
Total SFPD Calls¹	1,573,318	1,593,285	1,525,669	1,564,091
Police				
SFPD General Fund ²	\$269,599,367	\$317,313,275	\$332,907,011	
(less) Charges for service ³	\$3,373,794	\$3,970,890	\$4,166,032	
Net SFPD GF Exp.	\$266,225,573	\$313,342,385	\$328,740,979	
Cost per call	\$169	\$197	\$215	\$194
Calls for Service Near UCSF Facilities (excluding On-Campus)				
SFPD Responses ¹	1,750	1,869	1,827	1,815
UCSFPD Responses ⁴				<u>1,706</u>
Total Calls Near UCSF Facilities				3,521
% Assumed Attributable to UCSF				75%
Total UCSF Related Calls for Service				2,641
Less UCSFPD Response				935
SFPD Costs				\$181,181
Other Public Protection Departments		Budget	Cost Allocation ⁵	
Superior Court	\$32,279,691		0.17%	\$54,504
District Attorney	\$32,398,444		0.17%	\$54,705
Public Defender	\$23,159,128		0.17%	\$39,104
Sheriff	133,925,553		0.17%	<u>\$226,133</u>
				\$374,446

[1] From San Francisco Department of Emergency Management database.

[2] Estimated from San Francisco's consolidated budget documents. While calls are shown for calendar year, the fiscal year budgets applied were: 2006/07, 2007/08, and 2008/09.

[3] 2009 Charges for service are directly from the FY 2008/09 budget documents. This level of budget detail was not available for the other two years. Charges for services for these fiscal years were estimated to be in the same proportion as reported for 2008/09.

[4] Based on calls for service on public streets responded to by UCSFPD.

[5] Based on the ratio of UCSF calls to total City-wide calls.

Sources: San Francisco Department of Emergency Management; EPS

Municipal Transportation Agency

The Municipal Transportation Agency (MTA) is responsible for a safe and efficient public transit system for transit riders, pedestrians, bicycles, and drivers. MTA includes operation of Municipal Railway (Muni) and the Department of Parking and Traffic (DPT). MTA's total budget for FY 2008/09 was \$786 million, with General Fund support totaling \$195 million.⁴⁶ The operation of rail and buses (Muni) is the single largest expenditure for MTA, making up about 60 percent of the department's budget (\$464 million) for 2008/09. The next largest programmatic area in terms of expenditure is administration, with \$120 million. Because Muni services are such a large part of the department's services, the number of Muni boardings is the metric that is used to determine UCSF's allocation of MTA General Fund costs.

UCSF completed a transportation survey in 2009 that asked respondents about the number of days they commuted to UCSF and the commute mode and also asked about the number of inter-day trips to other UCSF locations. (See **Table 39** for details.) This data, which reflects about 3,600 respondents, has been extended to the almost 25,700 people associated with UCSF (students, employees, and overnight visitors counted in UCSF's service population). Based on this data, UCSF accounts for almost 1.3 million Muni passenger boardings per year. This is almost 0.5 percent of Muni's 225 million annual boardings and translates into \$949,000 of MTA's total General Fund subsidy attributable to UCSF.

UCSF also operates an extensive shuttle system with routes between campus locations throughout San Francisco. The shuttle is free to UCSF employees, students, patients, and visitors. In FY 2008/09, there were over 2.2 million boardings, which assisted in minimizing UCSF's passenger load on Muni as well as traffic on city streets.

Departmental Costs Estimated with Population-Based Approach

Service Population Basis

The only two budget items assigned a service-population-based approach is the Department of Public Works and the Department of Emergency Management. The Public Works Department cleans and maintains public roadways and public buildings in San Francisco. The General Fund expenditure for Public Works was \$36.5 million in FY 2008/09. After accounting for revenues from charges for services to the department, the net expenditure was \$26.1 million. Residents, students, employees, and visitors all create demands on the City's public streets and an individual group's relative impact on the City's provision of this service cannot reasonably be evaluated. Therefore, UCSF's proportion of San Francisco's total service population is used to estimate its impact on this department. As shown in **Table 36**, the impact is estimated at \$329,000 annually.

⁴⁶ Because MTA's various sources including riders' fares, parking and traffic fees and fines, and State and federal sources are accounted for outside of the General Fund, only the subsidy provided by the General Fund (a cost) is accounted for in the fiscal impact analysis. In other words, rather than attempting to estimate all of the costs and revenues to MTA that may be attributed to UCSF population, only the General Fund subsidy is examined here.

Table 39
UCSF's Impact on MTA Costs (General Fund)
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Item	Total	Formula
UCSF Transportation Survey¹		
People Surveyed	15,000	a
Respondents	3,588	b
<u>Commute Trips</u>		
Days per Week Commuted	4.45	c
Avg. # of Weeks Worked per Year (accounting for time off)	47	d
Commute Trips per Day	2	e
Commute Trips per Year Represented	1,500,799	$f = b * c * d * e$
<u>Commute Mode</u>		
Public Transit	25%	g
% of Transit via Muni	40%	h
<u>Other Work Related Commutes</u>		
Trips During the Day per Week per Person	2.12	i
Total Inter-day trips	357,486	$j = b * d * i$
Proportion of Day Trips on Transit	6%	k
Work Day Transit Trips	22,581	$l = k * j$
Survey Application to Estimate UCSF's Portion of MTA Costs		
Total UCSF Employees and Students	25,252	m
Survey Respondents as a % of Total UCSF Population	14%	$n = b / m$
Total UCSF Muni Boardings	1,239,103	$o = ((f * g * h) + l) / n$
Muni Boardings per Year ²	255,500,000	p
% of Annual MONA Boardings Attributed to UCSF	0.48%	$q = o / p$
General Fund Subsidy to MTA	\$195,715,000	r
Portion attributed to UCSF	\$949,163	$= r * q$

[1] All data on commute trips and mode from UCSF Transportation Survey 2009.

[2] As noted on sfgov website, Muni handles 700,000 boarding per day, which is translated into an annual number of boardings per year.

Sources: UCSF Transportation Survey (2009); www.sfgov.org; EPS

As described above, the Department of Emergency Management is responsible for dispatch and other public safety activities that generally serve both residents and employees.

Residential per Capita Basis

Almost all other departments supported by the City's General Fund have been evaluated to be primarily impacted by UCSF on-campus residential population, the only population for which the full range of costs and revenues are evaluated.⁴⁷ These costs are allocated on a residential per capita basis because these are largely functions directed by officials elected by County residents (Board of Supervisors, Mayor, Assessor, etc.).

One major service area included in this allocation is Culture and Recreation, which had a net General Fund cost of \$95 million in FY 2008/09. Off-campus residents are unlikely to be able to use museums and other cultural offerings as part of their working/school days; thus, only on-campus residents are attributed a cost for these items. While off-campus residents may be able to use parks and recreational facilities during their work/school days, UCSF Campus Life Services includes a range of recreational programs on campus. Therefore, any impact on San Francisco's provision of these services is likely to be negligible and costs are only allocated to on-campus residents.

Negligible Impact Methodology and Other

UCSF is estimated to have a negligible impact on the Community Health service area and the Treasurer/Tax Collector's General Fund budget.

Community Health

San Francisco provides Community Health services that protect and promote the health of the community. These services include providing care for uninsured residents, providing low-cost health insurance, operating San Francisco General Hospital, Laguna Honda Hospital, and providing health care for jail inmates. UCSF provides health insurance coverage for its employees and students. In addition, UCSF serves the community with free or low cost health services, as described in **Chapter 2**.

Given that UCSF provides insurance coverage for its affiliated population and provides an array of Community Health programs, its impact on the General Fund costs are estimated to be negligible and is likely to be positive, with its community programs diverting clients who may otherwise have sought to use scarce County health services.

Treasurer/Tax Collector's

UCSF's largely tax-exempt status means that its impact on General Fund costs to run this department is estimated to be negligible.

⁴⁷ The "full range" of costs and revenues is defined as costs and revenues generated both as part of a person's UCSF affiliation and as a part of a person's private life.

General City Responsibilities

A variety of citywide costs are placed into a budget designation called General City Responsibilities. This designation totaled \$375 million in General Fund costs in FY 2008/09. This cost item is largely made up of subsidies to City retiree benefits. Because these costs are citywide in nature, the allocation of the general costs to UCSF is based on the estimated impact of UCSF on all other City departments. As shown in **Table 36**, total costs of all other departments attributed to UCSF sums to \$3.6 million. This is roughly 0.2 percent of all General Fund expenditures. Therefore, UCSF's portion of the General City Responsibility General Fund expenditure is \$622,000.

General Fund Net Impact and Sensitivity Analysis

The net fiscal impact of UCSF's population and operations on the City's General Fund budget is estimated to be positive \$720,000, as summarized in **Table 40**. Sales and use taxes make up the largest source of revenue with intergovernmental transfers, hotel taxes, and payroll taxes other significant sources. The largest cost items are for Public Protection, especially Fire, and MTA.

The positive net fiscal impact estimate provided above does not account for the likely subsidy received by the City as a result of its contract with UCSF to provide clinical services to operate SFGH. As noted, all SFGH physicians at SFGH are UCSF faculty and provide service under terms covered in an affiliation agreement with the City. The gap between the cost of services provided and compensation received has been estimated by UCSF at \$6 million a year, under a formula agreed upon by both the City and UCSF. In other words, City General Fund expenditures could potentially be about \$6 million per year higher if this contract were provided at its fair market value (or conversely they would provide a lower level of service). However, as described in **Chapter 5**, this fiscal impact analysis focuses on the revenue and spending priorities and realities reflected in the San Francisco City and County FY 2008/09 budget and thus on existing contractual relationships, service standards, and staffing levels.

While all costs and revenues estimated have been based on specific data and information to the extent possible, a number of assumptions and judgments were needed in a number of areas. In order to test key assumptions or judgments that may impact the final result of the fiscal impact analysis, a number of costs and revenues have been reanalyzed to understand how sensitive the result is to these variations. The key sensitivity tests are illustrated in **Table 41** and further described below.

- **Hotel Tax.** The current methodology attributes a potential increase in hotel tax revenue to UCSF-related visitors only. However, an alternative methodology would also attribute some revenue to employees and on-campus residents. Specifically, calculating the Hotel Tax revenue based on a service-population factor would increase this revenue from about \$1.01 million to \$2.33 million, improving UCSF's annual net fiscal balance to \$2.03 million.

Table 40
Net Fiscal Impact Summary
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Item	Total
Revenues	
Property Taxes	\$0
Sales and Use Tax	\$1,512,000
Intergovernmental	\$820,000
Hotel Tax	\$1,012,000
Business Taxes	\$904,000
Fines, Licenses, Permits (Including Parking Tax)	<u>\$641,000</u>
Total Revenues	\$4,889,000
Costs	
Public Protection	\$1,568,000
Pub. Works, Transp, & Cmmrc. (Including Muni)	\$1,294,000
Human Welfare and Neigh. Dev.	\$393,000
General City Resp.	\$622,000
Community Health	\$0
Culture and Recreation	\$156,000
General Admin. and Finance	<u>\$136,000</u>
Total Costs	\$4,169,000
Net Fiscal Impact	\$720,000

Table 41
Sensitivity Test Results
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Sensitivity Test Item	Description	Revenues	Costs	Net Impact
Hotel Tax				
Original Approach	Case Study	\$1,012,000	\$0	\$720,000
Alternative Approach 1 [1]	Service Pop.	\$2,326,000	\$0	\$2,034,000
Payroll Tax				
Original Approach	Includes capital spending only	\$501,000	\$0	\$720,000
Alternative Approach	Includes capital & ongoing spending	\$1,254,000	\$0	\$1,473,000
MTA				
Original Approach	Case Study	\$0	\$949,000	\$720,000
Alternative Approach [2]	Alt. Case Study	\$0	\$153,000	\$1,516,000
Fire				
Original Approach	Case Study	\$0	\$900,000	\$720,000
Alternative Approach	Service Pop.	\$0	\$1,984,000	(\$364,000)
Combination of Tests				
Fiscal Impact				\$720,000
"Best" Case [3]				\$2,034,000
"Worst" Case [4]				(\$364,000)

[1] Hotel tax has been estimated on a case study basis which estimates hotel taxes generated by UCSF-related visitors. A case may be made that hotel taxes generated in the City are attributable to the entire City's service population.

[2] The original approach to allocating the General Fund expenditure to SF's MTA apportioned those costs based on UCSF's proportion of total annual passenger boardings on Muni buses and light rails vehicles. This approach assumes that each additional Muni-rider costs the General Fund more money. In reality, the Muni system likely has some capacity for new riders. To model this, the Alternative Approach assumes that 80 percent of the General Fund costs are "fixed" and are not increased by UCSF Muni riders. 20 percent of General Fund costs to the MTA are therefore assumed to fluctuate with marginal increase in Muni ridership.

[3] Adds "Fiscal Impact" result to the change in Hotel Tax resulting from the use of the Service Population as an estimating methodology.

[4] Adds 'Fiscal Impact' result of \$720,000 to the change in Fire costs resulting from the use of the Service Population as an estimating methodology.

- **Payroll Tax.** The fiscal impact analysis attributed payroll taxes generated by construction firms in San Francisco engaged in UCSF capital projects to UCSF.⁴⁸ The analysis excludes payroll taxes supported by UCSF's vendor contracts in San Francisco on an operational basis. The rationale for this exclusion is based on the notion that, while UCSF's expenditure on construction is likely a significant driver of the firm's business in San Francisco, other types of vendors likely have many other clients besides UCSF and thus they would pay their employees wages and San Francisco's payroll tax with or without UCSF as a client. A case may be made that UCSF, with about \$900 million worth of vendor contracts in FY 2008/09, supports a large amount of payroll tax in the City through these contracts and these expenditures should be counted. Including these taxes would increase the General Fund revenue from about \$500,000 to about \$1.25 million, improving UCSF's annual net fiscal balance to \$1.47 million per year.
- **MTA Costs.** The existing approach apportions San Francisco's MTA costs based on UCSF's proportion of total annual passenger boardings on Muni buses and light rails vehicles. This approach assumes that each additional Muni rider increases Muni's operating costs and thus the required General Fund subsidy. In reality, the Muni system likely has some capacity for new riders. To model this, the Alternative Approach assumes that 80 percent of the General Fund costs are "fixed" and are not increased by UCSF Muni riders. Thus, 20 percent of General Fund costs to MTA are assumed to fluctuate with marginal increase in Muni ridership. As shown, this approach improves UCSF's annual fiscal surplus to \$1.52 million.
- **Fire Department.** The fiscal impact analysis includes a cost estimate based on the number of call for service to UCSF property for the Fire Department. This methodology is consistent with the major premise of the fiscal impact analysis—that different land uses and population groups have different impacts on the City's budget and evaluating actual use of public services is the most appropriate way to analyze those differences (as data is available). A different approach to estimating Fire costs may assume that everyone shares in the benefits of having a Fire Department equally and should pay a population-based share of the department's costs. While this approach is not consistent with the framework of the fiscal impact analysis, which seeks to understand specific costs and revenues attributable to UCSF, EPS has provided such an estimate as a point of reference. As shown, a service-population approach to Fire would increase costs from \$900,000 to \$1.98 million, reducing UCSF's annual net fiscal impact to negative \$364,000.

Overall, depending on which sensitivity scenario is utilized UCSF's net fiscal impact ranges from positive \$2.03 million to negative \$364,000. The actual estimate used in this analysis falls well below the mid-point of this interval. It should also be noted that in either case, the net impact represents a relatively small proportion of the total General Fund Budget (less than 0.05 percent). Given the standard of error associated with an analysis of this type, UCSF's overall fiscal impact should be considered positive, or in a worst case, marginally negative.

⁴⁸ Based on wages that are supported by UCSF-capital expenditures which have averaged \$180 million annually over the last ten years.

7. MISSION BAY SAN FRANCISCO REDEVELOPMENT AGENCY AND COMMUNITY FACILITIES DISTRICT ANALYSIS

This chapter evaluates UCSF's impact on the SFRA and CFDs relevant to the Mission Bay area. Mission Bay is divided into two Redevelopment Areas, one to the north that is primarily residential and retail and the Mission Bay South Redevelopment Area (Mission Bay South) which contains the UCSF Mission Bay campus, private biotech space, and housing. The Mission Bay South area is the focus of the analysis.

SFRA Analysis

The San Francisco Redevelopment Agency is the City's primary housing and economic development entity. The SFRA works with developers to advance affordable housing goals and to revitalize economically depressed areas of the City. The agency sponsors public facilities projects within its project areas such as streetscape improvements, parks, open space, and cultural arts. The SFRA's total budget for FY 2009/10 is estimated to be \$236 million. Most of the funding for SFRA projects is obtained through property tax increment generated within the project area (tax increment is the additional property tax generated from an SFRA project area above the amount generated at the time the project area was formed).

Mission Bay Project Area

UCSF has a new 57-acre campus in the 303-acre Mission Bay redevelopment project area, located along San Francisco's central waterfront, just south of the Giant's ballpark. The SFRA project area is split into Mission Bay North and Mission Bay South. Mission Bay North is 68 acres of the 303 total. It is largely developed, with 2,835 of the 3,000 residential units programmed for the area built since 2000. Park development in the North area is complete and a new library has opened.

The development program for Mission Bay South includes a mix of uses with 3,090 housing units, the 57-acre UCSF campus, including the 14.5-acre UCSF hospital site, 4.5 million square feet of office/R&D/biotech, 300,000 square feet of retail, 41 acres of public open space and parkland (plus 8 acres of open space within the UCSF Campus), a 500-room hotel, a school site for the San Francisco Unified School District, and a new police and fire station.

A significant portion of the UCSF Mission Bay campus has already been developed, with nearly 1.5 million square feet of development that exist or are under construction. This development includes four research buildings with approximately 870,000 square feet of space, a student housing complex containing 430 housing units, and a campus community center with nearly 160,000 square feet of space, as well as parking for the on-site daily population, which averages 3,200 people. The SFRA's plan for the Mission Bay Redevelopment Area includes space for UCSF's campus (totaling 2.65 million square feet) and up to 6 million square feet of flexible commercial space (office, life sciences, and technology development types are allowed), as well

as residential, retail, and hospitality space. Of this flexible commercial space, 1.6 million square feet is planned to be devoted to new facilities for the UCSF Medical Center at Mission Bay immediately adjacent to the original UCSF research campus site.

In January 2007, UCSF acquired 14.5 acres of land, adjacent to the Mission Bay campus's south end, as the future site of the UCSF Medical Center at Mission Bay, containing hospital, outpatient, and related support facilities. The planned hospital will integrate multiple specialty hospitals (women, children, and cancer) with the goal of accelerating UCSF's translational research—which involves increasing the pace at which a new discovery is brought to patients through a diagnostic technique or a drug—by co-locating basic scientists, clinical researchers, and physicians and patients.

UCSF Relationship to Mission Bay South Financing

Tax Increment

Redevelopment agencies generate revenues through tax increment within their project boundaries. Tax increment is the additional property tax generated from an SFRA project area above the amount generated at the time the project area was formed. Tax increment revenues are typically used to finance revenue bonds for capital projects to improve the project area. For FY 2009/10, the SFRA reported \$8.2 million in tax increment to the Agency⁴⁹ from the Mission Bay South Project Area.

In the late 1990s, after several prior attempts at to develop Mission Bay had failed, the City and the Master Developer of Mission Bay (Catellus at that time) joined together to donate 42.4 acres to UCSF. One estimate valued the donation of the land at \$70 million.⁵⁰ Assuming development value on UCSF's campus site may have eventually totaled \$350 million, the site may have generated roughly \$1.5 million per year in tax increment to the SFRA.⁵¹ This amount may be compared to the contributions to public improvement projects UCSF has made as a part of its Mission Bay campus development which total \$15.1 million and an estimated \$5.6 million in future contributions, as well as ongoing contributions toward park maintenance. (See **Table 45** for summary.)

It is important to note that the estimate of potential tax increment that may have been generated by UCSF acreage is premised upon the notion that a private development would have occurred on the original 42.4-acre site had it not been donated. In addition, the comparison assumes that the tax increment generated from non-UCSF properties to the SFRA would have remained the same without the University, which essentially assumes that—without UCSF as a Mission Bay anchor—the level of private commercial development would have occurred in the

⁴⁹ A portion of the total incremental tax revenues are passed on to other agencies like the City, County, school district, etc.

⁵⁰ See "UCSF: A Hothouse for Biotech" *Business Week*, September 8, 2003.

⁵¹ This estimate is based on the following assumptions: A developer would pay roughly 20 percent of the finished development's value in land costs and about one-half of tax increment is directed to the SFRA with the other portion going to various pass-through agencies.

same intensity and absorption rate. These two important assumptions render estimates of what may have occurred today had the land donation not been made ten years ago fraught with uncertainty.

While the donation of land to UCSF resulted in a reduction in the amount of developable land that would generate tax increment for SFRA projects, it was made in order to retain UCSF-employment and activities within San Francisco and is credited by many as helping to spur private, commercial investment in the Mission Bay area.⁵²

In addition to the original 42.4-acre campus, UCSF subsequently acquired an additional 14.5 acres of land within Mission Bay South for the UCSF Medical Center at Mission Bay. In order to mitigate the loss of tax revenue which would have supported affordable housing, the SFRA and the University have an agreement under which UCSF has purchased land and will make a contribution toward the development costs to fund 160 affordable apartments. See **Table 45** for summary of these types of contributions by UCSF. Going forward, there is the possibility that UCSF will seek to occupy or develop additional property (either through a lease or purchase) within Mission Bay. The fiscal implications of such projects, if any, would need to be evaluated on a case-by-case basis.

Mission Bay CFD Analysis

Two Community Facilities Districts are in place in Mission Bay South; CFD No. 6 funds capital improvements and CFD No. 5 funds ongoing maintenance of parks and open space.

CFD No. 6 Mission Bay South Public Improvements

In addition to tax increment generated in Mission Bay South, a Community Facilities District was established in Mission Bay South to fund public improvements. CFD No. 6 was established in 2000 and is authorized to issue up to \$200 million in bonds for infrastructure and other improvements in Mission Bay South. (See **Table 42** for bond issuances.)

Table 42. Mission Bay Bond Issuances

Bond Issuances	Item
Series 2001 Bonds	\$54,000,000
Series 2002 Bonds	\$39,330,000
Series 2005A	\$15,160,000
Series 2005B	<u>\$5,708,939</u>
	\$114,198,939

Source: Redevelopment Agency of the City and County of San Francisco Community Facilities District No. 6 (Mission Bay South Public Improvements); CFD Tax Administration Report Fiscal Year 2009-10 (Goodwin Consulting Group, December 2009)

⁵² A December 7, 2009 Office of the Controller – Office of Economic Analysis publication entitled “Five-Year Evaluation of the Biotechnology Payroll Tax Exclusion” suggests that both the presence of SFRA financing and UCSF at Mission Bay likely supported the expansion of biotech in the City.

The entire CFD includes about 237 acres of land; however, only about 62 acres are expected to be subject to the CFD.⁵³ While the original 42.4-acre UCSF campus is not subject to the CFD special tax, the University has made or has committed to make contributions to public infrastructure valued at approximately \$15.1 million. In addition, for the UCSF Medical Center at Mission Bay site, the University has made or has committed to make contributions to public infrastructure valued at up to approximately \$32.7 million. A portion of the UCSF Medical Center at Mission Bay site is subject to the CFD special tax, and so the University has made and will continue to make CFD payments for this site. See **Table 45** for summary of these types of contributions by UCSF.

CFD No. 5 Mission Bay Maintenance District

CFD No. 5 was established in 1999 to levy a special tax to pay for operation, maintenance, and repair of open space parcels including landscaping in public plazas, public parks, and a portion of the Bayfront Park. While UCSF's original Mission Bay campus is not located within the CFD boundaries, it is subject to the CFD tax pursuant to an agreement between UCSF and the SFRA. In 1999, UCSF agreed to pay a park maintenance fee for the original campus site intended to provide the same amount of tax revenue that UCSF would have generated were it located within the CFD boundary. A portion of the subsequently acquired hospital site is within the CFD boundaries and UCSF therefore is subject to the CFD tax on those parcels as well.

For FY 2009/10, the CFD required tax is \$1.8 million; this translates into tax rates of \$17,936 per developed acre and \$10,238 per undeveloped acre. Under the agreement with the SFRA, UCSF pays a park maintenance fee equivalent to the CFD tax. A portion of the hospital site is subject to the CFD tax. In total, UCSF has over 35 acres subject to the CFD tax and almost 26 percent of the total acreage, providing about \$448,000 for the fiscal year, which is almost 25 percent of the special tax collected for 2009/2010. This amount will increase as the hospital site is developed and the "developed" acre tax rate is applied. (See **Table 43** and **Table 44** for details; also included in the **Table 45** summary.)

⁵³ Exempt acres include the UCSF original campus, City/County land, and land currently owned by Catellus/Pro Logis.

Table 43. UCSF Mission Bay Parcels Subject to CFD Payments

	CFD #5 Open Space Maintenance	CFD#6 Infrastructure Bond
Mission Bay Original Research Campus	Not subject to CFD#5, but UC entered into Park Maintenance Fee Agreement with the SFRA to contribute to open space maintenance in Mission Bay at the same CFD#5 rates as other property owners.	Not subject to CFD #6, but infrastructure fee negotiated with Master Developer.
Mission Bay Hospital		
Parcels 36-39	Subject to CFD fee	Subject to CFD fee
Parcels X-3 and WYL	Not subject to CFD fee	Not subject to CFD fee

Table 44. CFD No. 5 Tax Rate for 2009/2010

CFD No. 5	Actual Rate 2009/2010 \$/acre	Acres Taxed acres	Total Tax \$
<u>Developed Property</u>			
CFD No. 5	\$17,936	41.35	\$741,659
UCSF Original Campus and Hospital Site	\$17,936	<u>10.68</u>	<u>\$191,555</u>
Subtotal		52.03	\$933,214
<u>Undeveloped Property</u>			
CFD No. 5	\$10,238	60.65	\$620,241
UCSF Original Campus and Hospital Site	\$10,238	<u>24.95</u>	<u>\$256,155</u>
Subtotal		85.60	\$876,396
Total		137.63	\$1,809,610
UCSF Total		35.63	\$447,710
UCSF Portion		25.9%	24.7%

Source: Redevelopment Agency of the City and County of San Francisco Community Facilities District No. 5 (Mission Bay Maintenance District); CFD Tax Administration Report Fiscal Year 2009-10 (Goodwin Consulting Group, December 2009); UCSF.

Table 45. Summary of UCSF One-Time and Ongoing Contributions to Support Its Growth at Mission Bay

UCSF Mission Bay Payments for Public Improvements/ Maintenance	To-Date	Future	Total
UCSF Contributions: Campus			
<u>One-time</u>			
Public Infrastructure (public streets, utilities, and open space)	\$15,152,000	\$0	\$15,152,000
Public Fire Station	\$0	\$1,200,000	\$1,200,000
Public School Site [1]	\$0	\$4,400,000 <i>2.2 acres</i>	\$4,400,000
<u>Ongoing</u>			
Park Maintenance	\$1,585,000	Ongoing	Ongoing
UCSF Contributions: Future Hospital Site			
<u>One-time</u>			
Public Infrastructure (public streets, utilities and open space)	\$13,311,000	\$16,689,000	\$30,000,000
Public Infrastructure-Hospital Site (public sidewalks, landscaping, and street furniture around hospital site)	\$0	\$2,700,000	\$2,700,000
Affordable Housing-Land (Block 7 East)	\$5,000,000	\$0	\$5,000,000
Affordable Housing-Land (Block 7 West)	\$1,155,000	\$0	\$1,155,000
Property Taxes and related fees [2]	\$519,800	\$0	\$519,800
<u>Ongoing</u>			
Park Maintenance (CFD #5)	\$128,500	Ongoing	Ongoing
Public Infrastructure (CFD #6)	\$2,453,000	Ongoing	Ongoing
Total: One-time	\$35,137,800	\$24,989,000	\$60,126,800
Total: Ongoing	\$4,166,500	Ongoing	Ongoing

[1] Estimated value of 2.2-acre public school site.

[2] UCSF was not exempt from property tax on the hospital site until such time that the site was used for University purposes, which began in January 2010.

Source: UCSF.

Other Parks and Open Space Contributions

In addition to the payments that UCSF has made toward infrastructure and open space in the Mission Bay Redevelopment Area, UCSF has voluntarily donated funds toward parks and open space in the vicinity of Mission Bay. For example, since 2007, UCSF has committed to donating \$5 per car to a community-based nonprofit organization each time a fan who attends a San Francisco Giants game parks at the UCSF Mission Bay Third Street Garage. The GreenTrust,

a community-based nonprofit that works to realize a greener Central Waterfront and improve the community's social and ecological health, is the initial beneficiary of this policy and has received more than \$58,000 over three years.

UCSF also awarded \$50,000 to the Friends of Esprit Park, which was founded by Dogpatch neighbors to encourage the Esprit Corporation to donate the park to the City and County of San Francisco. The Friends of Esprit Park continue to raise funds and organize volunteers to help maintain and improve the park.



APPENDIX A:

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APPENDIX B:

Primary Economic Impacts Analysis; Supporting Tables

Table B-1
Distribution of UCSF Employees
UCSF Economic Impact Analysis; EPS # 19049

Employee Category	San Francisco			Nine-County Bay Area		
	Total	Academic	Hospital	Total	Academic	Hospital
Senior Management Group & Manager and Senior Professional	1,463	705	758	1,540	742	798
Academic Staff						
Academic Administrators	79	79	0	83	83	0
Regular Teaching Faculty - Ladder Ranks	406	406	0	427	427	0
Regular Teaching Faculty - Acting Ranks	4	4	0	4	4	0
Lecturers	5	5	0	5	5	0
Other Teaching Faculty	1,822	1,822	0	1,918	1,918	0
Student Assistants	1,604	1,604	0	1,688	1,688	0
Research	1,458	1,458	0	1,535	1,535	0
Librarian	10	10	0	11	11	0
Cooperative Extension	0	0	0	0	0	0
University Extension	0	0	0	0	0	0
Other Academic Personnel	26	26	0	27	27	0
Subtotal Academic Staff	5,413	5,413	0	5,698	5,698	0
Professional and Support Staff						
Clerical and Allied Services	2,516	1,212	1,304	2,648	1,276	1,372
Communications - Arts and Graphics	83	40	43	87	42	45
Architecture, Engineering and Applied Services	69	33	36	73	35	38
Fiscal, Management and Staff Services	3,068	1,478	1,590	3,229	1,556	1,673
Food and Linen Services	285	137	148	300	145	155
Health Care and Allied Services	5,823	0	5,823	6,129	0	6,129
Maintenance, Fabrication, and Operations	549	265	285	578	278	300
Protective Services	162	78	84	171	82	89
Sciences, Laboratory and Allied Services	1,245	600	645	1,311	632	679
Student Services	115	55	60	121	58	63
Other	17	8	9	18	9	9
Subtotal Professional and Support Staff	13,932	3,907	10,025	14,665	4,112	10,553
Total All Staff	20,808	10,025	10,783	21,903	10,552	11,351

Source: University of California.

Table B-2
UCSF Student Household Expenditures
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Item	UCSF Fiscal Year 2008-09	
	San Francisco	Nine-County Bay Area [1]
Total Students [2]	1,467	4,444
Estimated Disposable Income per Student	\$18,000	\$18,000
Total Student Disposable Income Expenditures (2009\$)	\$26,397,360	\$79,992,000
Total Disposable Income (2008\$) [3]	\$25,879,930	\$78,424,042
Less Expenditures Outside Study Area [4]	(\$9,875,613)	(\$22,013,550)
Less Direct Institutions Change [4]	(\$722,599)	(\$1,810,121)
Net Direct Output Impact (2008\$)	\$15,281,718	\$54,600,371
Net Direct Output Impact (2009\$) [5]	\$15,581,261	\$55,727,079

[1] Includes retirees residing in San Francisco.

[2] Reflects total students residing in San Francisco or nine-county Bay Area, respectively.

[3] Deflated from 2009\$ for purposes of IMPLAN analysis. Uses IMPLAN deflation factor of approximately 2 percent.

[4] Estimated by IMPLAN.

[5] Inflated to 2009\$ utilizing IMPLAN inflation factor of approximately 2 percent.

Table B-3
Estimated San Francisco Capture of Retail Expenditures By Students Residing Outside San Francisco
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Retail Expenditures	Assumptions	Percent Expenditure Distribution	Total
Assumptions			
Disposable Income per Student			\$18,000
Students Residing Outside San Francisco			2,977
Total Disposable Income			\$53,594,640
Total Spent on Retail Goods [1]	<i>46% of Disposable Income</i>		\$24,653,534
San Francisco Capture Rate	<i>40% of Retail Expenditures</i>		\$9,861,414
Distribution of Retail Expenditures by Commodity Sector [2]			
3320 Retail Services - Motor vehicle and parts		12%	\$1,195,017
3321 Retail Services - Furniture and home furnishings		5%	\$450,817
3322 Retail Services - Electronics and appliances		3%	\$327,924
3323 Retail Services - Building material and garden supply		9%	\$925,432
3324 Retail Services - Food and beverage		16%	\$1,532,207
3325 Retail Services - Health and personal care		7%	\$678,173
3326 Retail Services - Gasoline stations		7%	\$658,586
3327 Retail Services - Clothing and clothing accessories		9%	\$920,904
3328 Retail Services - Sporting goods, hobby, book and music		3%	\$332,452
3329 Retail Services - General merchandise		14%	\$1,349,817
3330 Retail Services - Miscellaneous		5%	\$475,142
3331 Retail Services - Nonstore, direct and electronic sales		10%	\$1,014,943
Percent of Income Spent on Retail Expenditures		100%	\$9,861,414

"sf_cap"

Source: IMPLAN.

[1] Data from BLS Consumer Expenditure Survey 2008.

[2] Based on IMPLAN distribution of household expenditures for households earning between \$15,000 and \$25,000.

Table B-4
UCSF Retiree Household Expenditures
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Item	UCSF Fiscal Year 2008-09		
	San Francisco	Nine-County Bay Area	Outside Bay Area
Number of Retirees [1]	1,657	3,910	1,249
Average Payment per Retiree	\$32,787	\$36,044	\$28,813
Total Annual Payments (2009\$)	\$54,327,338	\$140,930,477	\$35,987,498
Total Annual Payments (2008\$) [2]	\$53,262,444	\$138,168,038	\$35,282,091
Less Expenditures Outside Study Area [3]	(\$18,353,510)	(\$37,727,960)	N/A
Less Direct Institutions Change [3]	(\$1,036,631)	(\$2,245,489)	N/A
Net Direct Output Impact (2008\$)	\$33,872,303	\$98,194,589	N/A
Net Direct Output Impact (2009\$) [4]	\$34,504,820	\$100,110,038	N/A

[1] Reflects retirees residing in San Francisco and nine-county Bay Area, respectively. Nine-county Bay Area residents inclusive of San Francisco residents.

[2] Deflated from 2009\$ for purposes of IMPLAN analysis. Uses IMPLAN deflation factor of approximately 2 percent.

[3] Estimated by IMPLAN.

[4] Inflated to 2009\$ utilizing IMPLAN inflation factor of approximately 2 percent.

Table B-5
Impacts of San Francisco County 2008-2009 Construction Expenditures (2009\$)
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

San Francisco County
2008 - 2009 Construction

Impact Category	Multiplier Impacts			Total
	Direct	Indirect	Induced	
			[1]	
Activity/Input [2]	\$320 M Construction			
San Francisco County Impacts (Rounded)				
Employment in Job Years [3]	1,600	500	600	2,700
Multiplier	1.00	0.31	0.38	1.69
Industry Output [4]	\$320,000,000	\$90,000,000	\$101,000,000	\$511,000,000
Multiplier	1.00	0.28	0.32	1.60
Labor Income [5]	\$137,000,000	\$38,000,000	\$35,000,000	\$210,000,000
Multiplier	1.00	0.28	0.26	1.53

Source: Minnesota Implan Group, Inc.; UCSF; and EPS.

[1] Note that induced impacts may be overstated to the extent that construction activities are temporary and do not generate net new household expenditures in the local economy.

[2] Reflects 2008-2009 construction expenditures reported by UCSF.

[3] Reflects full time and part time workers. Job years refer to the number of jobs in each year summed over the entire period of construction.

[4] Reflects business expenditures on goods and services retained in the local economy. Inclusive of labor income reported below.

[5] Includes worker wages and benefits.

Table B-6
Regional Impacts of 2008-2009 Construction Expenditures (2009\$)
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Nine-County Bay Area
2008 - 2009 Construction

Impact Category	Multiplier Impacts			Total
	Direct	Indirect	Induced	
			[1]	
Activity/Input [2]	\$320 M Construction			
Nine-County Bay Area Impacts (Rounded)				
Employment in Job Years [3]	1,700	600	800	3,100
Multiplier	1.00	0.35	0.47	1.82
Industry Output [4]	\$320,000,000	\$131,000,000	\$135,000,000	\$586,000,000
Multiplier	1.00	0.41	0.42	1.83
Labor Income [5]	\$132,000,000	\$47,000,000	\$44,000,000	\$223,000,000
Multiplier	1.00	0.36	0.33	1.69

Source: Minnesota Implan Group, Inc.; UCSF; and EPS.

[1] Note that induced impacts may be overstated to the extent that construction activities are temporary and do not generate net new household expenditures in the local economy.

[2] Reflects 2008-2009 construction expenditures reported by UCSF.

[3] Reflects full time and part time workers. Job years refer to the number of jobs in each year summed over the entire period of construction.

[4] Reflects business expenditures on goods and services retained in the local economy. Inclusive of labor income reported below.

[5] Includes worker wages and benefits.

Table B-7
San Francisco County Impacts from Out of Study Area Student Expenditures
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

San Francisco County Commuter Student Expenditures

Impact Category	Multiplier Impacts			Total
	Direct	Indirect	Induced	
Total Student Disposable Income Expenditures [1]				\$9,861,414
San Francisco County Impacts (Rounded)				
Employment [2]	30	6	6	42
Multiplier	3.04	0.61	0.61	4.26
Industry Output [3]	\$4,000,000	\$1,000,000	\$1,000,000	\$6,000,000
Multiplier	1.00	0.25	0.25	1.50
Labor Income [4]	\$1,000,000	\$0	\$0	\$1,000,000
Multiplier	1.00	0.00	0.00	1.00

Source: Minnesota Implan Group, Inc.

- [1] Based on data provided by UCSF regarding total number of enrolled students, county of residence, and disposable income assumptions. Reflective of expenditures made in San Francisco by UCSF students residing outside San Francisco only.
- [2] Reflects full time and part time workers.
- [3] Reflects business expenditures on goods and services retained in the local economy. Inclusive of labor income reported below. Differential between direct output and total expenditures based on application of retail margins in the IMPLAN model.
- [4] Includes worker wages and benefits.

Table B-8
San Francisco County Impacts from Student Expenditures
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

San Francisco County
Student Expenditures

Impact Category	Multiplier Impacts			Total
	Direct	Indirect	Induced	
Total Student Disposable Income Expenditures [1]				\$26,397,360
San Francisco County Impacts (Rounded)				
Employment [2]	90	30	20	140
Multiplier	1.00	0.33	0.22	1.56
Industry Output [3]	\$16,000,000	\$5,000,000	\$4,000,000	\$25,000,000
Multiplier	1.00	0.31	0.25	1.56
Labor Income [4]	\$5,000,000	\$2,000,000	\$1,000,000	\$8,000,000
Multiplier	1.00	0.40	0.20	1.60

Source: Minnesota Implan Group, Inc.

- [1] Based on data provided by UCSF regarding total number of enrolled students and disposable income assumptions. Reflective of UCSF students residing in San Francisco only.
- [2] Reflects full time and part time workers.
- [3] Reflects business expenditures on goods and services retained in the local economy. Inclusive of labor income reported below. Differential between direct output and total expenditures based on local purchase percentage factor applied by IMPLAN model.
- [4] Includes worker wages and benefits.



APPENDIX C:

Secondary Economic Impacts Analysis; Supporting Tables

Appendix C-1
Genentech Progeny after 25 Years (circa 2001)
UCSF Economic and Fiscal
Impacts Analysis; EPS #19049

Linked Biotechnology Firms, Research Institutes and Venture Capital Firms	Genentech 'Alumni' Who were Founders, Managers or Key Executives in Linked Firms
Aradigm	Gonda Igor, Jerald Beers
Arris (later Axys)	Mike Ross
Axxima	Axel Ullrich
Biota	Hugh Niall
Cell Genesys	Steve Sherwin
Collabra Pharma	Nick Simon, Brad Goodwin
Connetics	Steve Peroutka, Jack Obijeski, Ernst Rinderknecht, Greg Vontz, Kirk Raab
Corgentech	John McLaughlin
Creative Biomolecules	Roberto Crea
CV Therapeutics	Tricia Suvari, Dick Lawn, Brent Blackburn, Dan Spiegelman
Cygnus	Gary Cleary
Cythera	Mike Ross
Deltagen	Bill Matthews, Mark Moore, Robert Klein, Paul Laland
Duke Univ. Medical Center	Ralph Snyderman
Eos Biotechnology	Dave Martin, Herb Heyneker
GenenCo	A joint venture spin-off of Genentech and Corning Glass Works
IDEC Pharmaceuticals	Bill Rastetter
IDUN Pharmaceuticals	Costa Sevastopoulos
InfiMed Therapeutics	Steve Rowe
Intermune	John Wulf, Karen Starko
Millennium Pharmaceuticals	Mark Levin
Neurocrine Biosciences	Gary Lyons
NewBiotics	Mike Shepard
Pain Therapeutics	Barry Sherman
Raven Biotechnologies	Jennie Mather, Gordon Vehar
Rigel Pharmaceuticals	Jim Gower, Brian Cunningham
Scios	Dick Brewer
Sensus	Bill Bennett
Sugen	Axel Ullrich
Sunesis Pharmaceuticals	Jim Wells, Daryl Winter
Telik Inc.	Reinaldo Gomez
Titan Pharmaceuticals	Louis Bucalo
Tularik	David Goeddel, Andrew Perlman, Roxanne Bales
VaxGen	Phillip Berman, John Curd
ViroLogic	Bill Young, Christos Petropoulos

Source: Biotechnology Industry Personalities: Chips Off The Old Block:
 Alums of Genentech, Chiron, Cetus make Bay Area the capital of biotech industry;
 SF Chronicle, April 2, 2001

Appendix C-2
Chiron/Cetus Progeny after 20 and 10 Years (circa 2001)
UCSF Economic and Fiscal Impacts Analysis; EPS #19049

Linked Biotechnology Firms, Research Institutes and Venture Capital Firms	Chiron/Cetus 'Alumni' Who were Founders, Managers or Key Executives in Linked Firms
Cell Therapeutics	Edward F. Kenney
Dynavax Technologies	Dino Dina
Eos Biotechnology	David W. Martin Jr.,
Epoch Biosciences	William G. Gerber
Eur Ing Pharming Group	George J.M. Hersbach
Genelabs Technologies	Frank F. C. Kung
Kleiner Perkins Caufield & Byers	Joe Lacob
KOSAN Biosciences	Michael S. Ostrach, Daniel V. Santi
Microcide Pharmaceuticals	James E. Rurka
MitoKor	Walter H. Moos
Neurobiological Technologies	Jeffrey S. Price
OnCare	Michael D. Goldberg
Onyx Pharmaceuticals	Frank McCormick, Hollings C. Renton
PARTEUROP	Jacques Martin
SuperGen	Joseph Rubinfeld
TRANSGENE	Margaret Liu
UCSF Cancer Center /	
UCSF Cancer Research Inst.	Frank McCormick
Versant Ventures	Brian G. Atwood
XTL Biopharmaceuticals	Judith I. Blakemore

Source: Biotechnology Industry Personalities: Chips Off The Old Block:
 Alums of Genentech, Chiron, Cetus make Bay Area the capital of biotech industry;
 SF Chronicle, April 2, 2001



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