

**ECONOMIC IMPACTS OF THE CLAREMONT COLLEGES**

# THE CLAREMONT COLLEGES

**ACADEMIC YEAR 2016-17**

**Prepared for:**

**THE CLAREMONT COLLEGES**

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## 1. INTRODUCTION

### BACKGROUND

ALH Urban & Regional Economics (“ALH Economics”), in association with Applied Economics (“AE”), was retained by The Claremont Colleges (“TCC”) to prepare a study of the economic impacts of the seven educational institutions that comprise TCC. These institutions are Pomona, Scripps, Claremont McKenna, Harvey Mudd, and Pitzer colleges, along with Claremont Graduate University and Keck Graduate Institute, all located in the City of Claremont. The purpose of the study is to estimate and demonstrate the economic impacts of TCC on the following geographic areas:

- City of Claremont;
- City of Upland;
- Los Angeles County; and
- San Bernardino County.

This study focuses on the quantifiable economic impact of TCC during academic year 2016-17, providing them and The Claremont College Services, the organization whose mission is to support TCC, with a recent understanding of their relationship to the local and regional economies, including both quantitative and qualitative benefits.

### SCOPE OF WORK

In undertaking this assignment, ALH Economics and AE obtained information from The Claremont Colleges Services, the City of Claremont, and each institution comprising The Claremont Colleges and analyzed the impact of their operations and related activities. In all cases, the impact of operations is assessed collectively, pooling the data and findings across all the institutions. The following performance characteristics were all examined to create an overall picture of the collective economic impact of TCC: spending on goods, services, payroll, and construction; employment; research; students; and visitor and retiree spending. Collective financial data were gathered, including payroll, purchasing, and student budgets. The study used the IMPLAN input-output model to calculate the indirect and induced economic impacts of TCC’s spending on the study’s geographic areas. Additional study data were collected regarding financial benefits to the City of Claremont, such as transient occupancy taxes, building permit fees, and estimated sales tax associated with visitor spending. Further information on cultural and community benefits were also obtained from TCC.

To the extent possible, all data were gathered for the study's four geographic areas, with an emphasis on the City of Claremont and Los Angeles County. The most recent academic year for which data were available was FY 2016-17; thus, all data collected and analyzed are for this period, or in some cases, calendar year 2017.

## KEY FINDINGS

The Claremont Colleges took in about \$683 million in revenues academic year 2016-17. About half of these revenues are from tuition and fees. Most revenue is from outside the local area, which is significant in that the colleges are bringing new dollars into the region rather than just recirculating existing monies. The more revenue that is collected from outside the Los Angeles and San Bernardino county region, the greater the net contribution to the regional economy.

With more than 3,200 employees, TCC is the largest employer in the Claremont/Upland region, with about twice as many employees as the next largest employer. About half of these employees live in Claremont. The colleges make up 20% of total employment in the city. In terms of the total economic impacts, every job created by TCC results in an additional 0.98 jobs being created at other businesses in the Los Angeles and San Bernardino county region, including 0.21 jobs in Claremont.

In addition to being a major regional employer, TCC is a significant purchaser in the local and regional market for supplies and services. The colleges made over \$169.9 million in capital and non-capital purchases in academic year 2016-17, of which 32%, or \$54.8 million, was spent in Los Angeles and San Bernardino counties and creates local economic impacts. Major local purchases include professional and legal services, insurance, facilities maintenance and repairs, wholesale food and beverages, library acquisition of electronic media, equipment rental and maintenance, janitorial services, and utilities.

The approximately 3,200 employees of TCC have an annual payroll of more than \$242.3 million. An estimated 63% of that payroll, or \$153.6 million, is spent in the region generating a total impact of \$251.8 million in academic year 2016-17. The employees of the colleges represent a substantial amount of purchasing power that supports additional jobs and payroll at local retail and service establishments in the region. For every \$1,000 of TCC payroll, an additional \$634 of spending is generated at other businesses in the Los Angeles and San Bernardino county region, including \$157 in Claremont.

The regional economy also benefits from spending by students at the colleges. Although many of the students live on-campus, TCC students still spend an estimated \$98.0 million per year on restaurants, groceries, transportation, and other retail and personal services within the region.

In addition to providing educational services, the colleges also support research, bringing in \$8.6 million in grants in 2016-17 from primarily private foundations and federal government sources. Research funds provide considerable economic value to the region, with the money turning over multiple times through employment of personnel and purchase of goods, creating \$14.8 million in economic impacts.

The colleges also bring many visitors to Claremont for admissions events and student tours, commencement, alumni events, and other special arts and athletic events. All total, an estimated 68,400 overnight visitor days, and 29,400 day trip visitor days are attributed to TCC in 2016-17, resulting in expenditures of \$13.6 million in the region for lodging, food, entertainment, retail, and local transportation. Accounting for the multiplier effects within the region, visitors to the colleges generated economic impacts of \$19.9 million in 2016-17, of which estimated 23% was captured in Claremont.

There are also about 1,370 retired employees drawing pensions from TCC, including 211 retirees from the colleges living in Claremont or Upland in 2017. Based on pension distributions by these local retirees, they spent an estimated \$9.4 million in the region in academic year 2016-17 and generated economic impacts of \$15.7 million.

TCC is a significant contributor to the region's economy. The colleges not only create a large number of jobs for local residents, but also bring in students, visitors, and revenues from outside the region. TCC makes significant purchases from local vendors, combined with spending by employees, students, and visitors, creating a significant regional economic impact. Overall, for every \$1,000 of services or output produced by TCC, an additional \$1,330 of economic activity is generated at other businesses in the Los Angeles and San Bernardino county region, including \$330 at businesses in Claremont.

## **REPORT ORGANIZATION**

The report includes eight sections and three appendices. A number of tables are inserted into each section as warranted. The list of sections includes:

1. Introduction
2. Overview of The Claremont Colleges
3. Methodology
4. Summary of Economic Activities and Findings
5. Purchasing and Payroll
6. Sponsored Research
7. Regional Spending Impacts

#### 8. City of Claremont and Community Benefits

The appendices include detailed information about the economic impact methodology, a methodology on student spending, and sponsored research representative research activities for each institution.

## 2. OVERVIEW OF THE CLAREMONT COLLEGES

### INTRODUCTION TO THE CLAREMONT COLLEGES

The Claremont Colleges (TCC) comprises seven highly selective institutions of higher education in the City of Claremont, comprising 5 undergraduate colleges (Pomona, Scripps, Claremont McKenna, Harvey Mudd, and Pitzer) and 2 graduate schools (Claremont Graduate University and Keck Graduate Institute). Except for KGI, all of the campuses are adjoining, and span approximately a 1 square mile area. At present, TCC collectively enrolls approximately 8,600 students with over 3,200 faculty and staff, and more than 2,000 course offerings every semester.

The City of Claremont, with a population base of approximately 36,500, is a vibrant, livable, and inclusive community dedicated to quality services, safety, financial strength, sustainability, preservation, and progress. The city has a valued partnership with TCC and is committed to strengthening its mutually beneficial relationship with the colleges. The City of Claremont and TCC share a common commitment to enhancing the quality of life for the community.

### INDIVIDUAL COLLEGES

**Pomona College.** Pomona College, founded in 1887, ranks among the nation's foremost liberal arts colleges. Pomona is a place for adventurous, creative-minded students with the drive to explore and pursue their academic passions. Student interests are wide-ranging, distributed across the humanities, natural and physical sciences, social sciences, and the arts, as well as a range of interdisciplinary fields. With a student-faculty ratio of 8:1, students have the opportunity to work closely with great professors who are also top scholars. Pomona offers 48 majors, individually designed concentrations and approximately 600 courses each year. Opportunities include 59 study abroad programs in 34 countries, summer research grants, and paid internships in the L.A. area and around the world. Pomona enrolls about 1,640 students from 49 states, the District of Columbia, Guam, Puerto Rico and 63 countries, reflecting a broad diversity of socioeconomic, ethnic, and geographic backgrounds. More than 80% go on to graduate or professional schools within 10 years of graduation.

**Claremont Graduate University.** Claremont Graduate University (CGU) is one of a select few universities in America devoted solely to graduate-level education. Founded in 1925, CGU is a leading research university with more than 2,000 students pursuing graduate degrees in more than 20 distinct areas of study. Students are encouraged to look beyond the traditional disciplinary divisions and define their own unique program of study — CGU's transdisciplinary trademark. Through the accelerated master's program, students

of the undergraduate colleges can begin graduate coursework at CGU during their senior undergraduate year. This unique opportunity allows students to save both time and financial resources while remaining in the familiar surroundings of the Claremont community.

**Scripps College.** Scripps College was founded in 1926 by Ellen Browning Scripps, a pioneering philanthropist and influential figure in the world of education, publishing, and women's rights — a woman ahead of her time. Today, Scripps is a nationally top-ranked liberal arts college with approximately 1,039 students. The college's core curriculum in interdisciplinary humanities provides a rigorous exploration of critical thinking and engagement with contemporary issues. The mission of Scripps College is to educate women to develop their intellects and talents through active participation in a community of scholars, so that as graduates they may contribute to society through public and private lives of leadership, service, integrity, and creativity. Students major in humanities, fine arts, social sciences, and science. They engage in undergraduate research, participate in study abroad and global education programs, earn prestigious internships, and explore dual major opportunities.

**Claremont McKenna College.** Claremont McKenna College (CMC) was founded in 1946 to prepare students for thoughtful, productive lives, and responsible leadership in business, government, and the professions. Today, CMC is a top-ranked liberal arts college that educates approximately 1,300 students through a comprehensive, research-focused curriculum. CMC's commitment to a pragmatic liberal arts education is rooted in the interplay between the world of ideas and the world of events. Students combine learning and leadership at 11 research institutes and centers, the sponsored internship program, Silicon Valley and Washington, D.C. semester internships, more than 100 study abroad programs, and at the Athenaeum speaker series. CMC offers interdisciplinary majors and programs in the humanities, social sciences, and natural and physical sciences including, environment, economics, and politics (EEP) and philosophy, politics, and economics (PPE). CMC's students form a geographically, socioeconomically, and culturally diverse community of critical thinkers who seek to apply their education to make a difference in the world.

**Harvey Mudd College.** Harvey Mudd College (HMC) is a liberal arts college of engineering, science, and mathematics, ranked high among the nation's best colleges. Approximately 850 undergraduates pursue Bachelor of Science degrees in biology, chemistry, computer science, engineering, mathematics, and physics, plus dual degree programs in chemistry/biology, computer science/mathematics, mathematics/physics, and mathematical/computational biology. Since 1955, Harvey Mudd has led the way with interactive undergraduate research opportunities on par with graduate institutions, a strong focus on the humanities, social sciences and the arts, an exceptional faculty who challenge students to achieve beyond their expectations, one of the nation's highest rates of graduates who go on to earn PhDs and a high return on college investment. Regardless of their majors, Harvey Mudd graduates are passionate problem solvers who think across disciplines, communicate, collaborate, and understand their impact on society.

**Pitzer College.** Pitzer College is a nationally top-ranked liberal arts institution that emphasizes social responsibility, intercultural understanding, interdisciplinary learning, student engagement, and environmental sustainability. An innovative and flexible curriculum allows students to design their own course of study or choose from more than 40 majors and 20 minors. Since its founding in 1963,

Pitzer has pioneered academic programs such as environmental analysis, global/local studies, and secular studies. Today, the college is home to both the Robert Redford Conservancy for Southern California Sustainability and the Ferré/Marquet Vaccine Research Center. For 11 years, Pitzer has received more Fulbright Fellowships per 1,000 students than any other undergraduate institution in the United States. Pitzer was the first college in Southern California to divest from fossil fuel stocks. On campus, the drought-tolerant landscape and LEED platinum- and gold-certified residence halls reflect Pitzer's environmental ethos. Pitzer attracts diverse domestic and international students who aspire to effect change and transform the world.

**Keck Graduate Institute.** Keck Graduate Institute (KGI) was founded in 1997 as the first higher education institution in the United States dedicated exclusively to education and research in the applied life sciences. Now, KGI offers innovative postgraduate degrees and certificates that integrate life and health sciences, business, pharmacy, and genetics, with a focus on industry projects, hands-on industry experiences, and team collaboration. Programs include Master of Business and Science, Master of Engineering in Biopharmaceutical Processing, PhD in Applied Life Sciences, Master of Science in Applied Life Sciences, Master of Science in Translational Medicine, Postdoctoral Professional Masters, Certificate in Bioscience Management, Postbaccalaureate Premedical Certificate, Postbaccalaureate Pre-PA Certificate, Master of Science in Human Genetics and Genetic Counseling, Master of Science in Human Genetics and Genomic Data Analytics, and Doctor of Pharmacy. Founded in 2013, the Minerva Schools at KGI offer a unique four-year undergraduate program to students from around the world.

### **THE CLAREMONT COLLEGES SERVICES**

The Claremont Colleges Services (TCCS), established in 1925, is a nationally recognized model for providing shared support services designed to meet the needs of the students, faculty, and staff of TCC. TCCS annually serves more than 8,600 students and 3,200 faculty and staff through 33 shared programs and services, including student services (Student Health Services, Health Education Outreach, and Counseling and Psychological Services), academic services (The Claremont Colleges Library), and institutional services (campus safety, real estate and housing, financial services, and benefits). TCCS is an international model of advantageous, efficient, consortial collaboration in higher education. Through innovative leadership, TCCS continually strives to improve the quality and value of services and programs, and launch responsive, cost-effective central activities.

### 3. METHODOLOGY

#### DATA COLLECTION AND PRESENTATION

This study presents economic impact findings for The Claremont Colleges. An earlier study completed for TCC in 2008 is now quite outdated. Therefore, this study presents more current findings of TCC's impacts on the local and regional economies, along with information about financial benefits to the City of Claremont and cultural benefits to the local and regional population.

This study was prepared for academic year 2016-17, which comprises the year for which comprehensive annual data are most available for TCC. The Claremont College Services spearheaded the study, assisted by Communications representatives from each constituent college. TCCS provided a centralized set of data for all of the colleges, including TCC employment, spending, payroll, revenue sources, and retiree information. These data were provided by the TCCS Business Affairs office. The Communications representatives identified key individuals within their college appropriate to collect or provide key data points requested by ALH Economics and AE. A common set of questions were asked of each college, providing the basis for uniform data collection. The college data categories included the following:

- Student enrollment
- Student origin and alumni location
- Student budgets and resident location
- Sponsored research grants
- College events and attendance
- Student community engagement
- Community enrichment

For some colleges a key liaison per college collected the requested information while for other colleges ALH Economics reached out to identified college staff for individual responses per college. To support data preparation, TCCS Business Affairs and all relevant college representatives were presented with a zip code file to support collection by the study geographies. In addition, the City of Claremont also provided key data points regarding city revenues, including revenues associated with TCCS construction activity and on-campus sales.

Upon receipt of the study data and information, ALH Economics and AE then processed the data and information, reviewed it for reasonableness, prepared a model to support the economic impact analysis, generated study outputs, and summarized some of the

more qualitative information. This report highlights the relevant economic impact outputs and pertaining to TCC's academic year 2016-17 economic impacts and other academic year events. All findings are relevant to this academic year, unless otherwise stated.

## CONCEPT OF ECONOMIC MULTIPLIERS

The impact of TCC on the local and regional economy is much greater than the total of direct spending on payroll, goods and services, and capital investments. This is because money spent by TCC is then re-spent by employees and local vendors. Employees use their salaries and wages to purchase goods and services from other businesses. Vendor businesses make their own purchases and hire employees, who also spend their salaries and wages throughout the local and regional economy. A chain reaction of indirect and induced spending continues, with subsequent rounds of additional spending gradually diminished through savings, taxes, and expenditures made outside the region. Economic impacts specifically measure the extent of this re-spending within the region for each round of impacts. This economic ripple effect is measured by what is known as an "input-output" economic model, which can be used to derive a series of "multipliers" to provide estimates of the portion of each dollar of "input," or direct spending that cycles through the regional economy in terms of "indirect and induced output," or additional spending, personal income, and employment.

The types of economic impacts measured by multipliers can be defined in the context of this study as follows:

- **Direct impacts** refer to impacts from the economic activities associated with TCC
- **Indirect impacts** measure output (gross sales), jobs, and labor income associated with the businesses and organizations that support TCC's activities
- **Induced impacts** accrue when TCC employees and indirect industry employees spend their wages on local goods and services. These expenditures in turn stimulate other sectors in the local and regional economy

Direct, indirect and induced impacts are combined to estimate the total impacts and provide a comprehensive estimate of the value of the colleges to the regional economy.

## IMPLAN MODEL: DESCRIPTION AND APPLICATION

There are several input-output models used by economists to estimate multiplier effects, or final demand multipliers. This study uses the IMPLAN input-output model to develop estimates of college spending, personal income, and employment impacts. This model, initially developed by the U.S. Department of Agriculture, is described in Appendix A. The IMPLAN model examines interindustry relationships

in the local, regional, and national economies. ALH relied on IMPLAN to provide estimates of indirect and induced output, employment, and personal income impacts based on industry-specific multipliers for the study's four geographic areas. IMPLAN multipliers indicate the ratio of direct impacts to indirect and induced impacts. For example, a spending multiplier of 1.25 indicates that \$1.00 of direct spending generates an additional \$0.25 in indirect and induced spending. In the case of employment impacts, the multipliers measure the number of full-time equivalent (FTE) jobs supported by \$1 million in direct spending, e.g., an employment multiplier of 10 indicates that \$1 million in spending generates 10 indirect and induced FTE jobs. Multiplier effects are a way of representing the larger economic effects on the local or regional economy. In essence, the multiplier effect represents the recycling of local spending that, in turn, creates new business opportunities. Additional purchases by both TCC and their employees will also occur outside the region and are not represented here.

## 4. SUMMARY OF ECONOMIC ACTIVITIES AND FINDINGS

### OVERVIEW OF ECONOMIC ACTIVITIES

The economic impacts of The Claremont Colleges are the result of direct economic activities generated by the academic and research institutions. At its most basic level, this includes the jobs and payroll generated by TCC, purchases made by TCC, and spending generated by students, visitors, and retirees. A summary of this information for academic year 2016-17 is presented in **Table 1**. The information in these tables includes data generated by TCC and study estimates, which in turn drive the economic impact analysis.

**Table 1**  
Overview of Operating Characteristics  
The Claremont Colleges (TCC)  
Academic Year 2016-17

Impact Category	Amount
<b>Employees (1)</b>	3,207
<b>TCC Spending- Total</b>	
Salaries and Wages	\$242,342,684
Goods and Services	\$169,906,976
Construction	\$31,763,798
Total	\$444,013,458
<b>TCC Spending- in Los Angeles/San Bernardino Counties</b>	
Salaries and Wages	\$217,951,600
Goods and Services	\$54,752,378
Construction	\$20,414,428
Total	\$293,118,406

**Table 1**  
Overview of Operating Characteristics  
The Claremont Colleges (TCC)  
Academic Year 2016-17

Impact Category	Amount
<b>Students Living Locally (2)</b>	
On Campus	5,552
Off Campus	2,526
Total	8,078
Student Spending - Total	\$268,349,471
Student Spending in Los Angeles/San Bernardino Counties	\$98,038,492
<b>Visitors</b>	
Number	97,798
Total Spending	\$13,648,662
<b>Retirees</b>	
Number in Claremont and Upland	211
Retirement Payments	\$12,809,040
Total Spending	\$9,372,378
<b>Sponsored Research Grants</b>	\$8,639,079

Sources: Individual Colleges; Applied Economics; and ALH Urban & Regional Economics.

(1) Benefit-eligible employees.

(2) Does not include all enrollment as some students study internationally during the academic year.

As **Table 1** indicates, TCC had over 3,200 full-time employees with an aggregate payroll of \$242.3 million in academic year 2016-17. In addition, TCC had operating expenses of \$412.2 million with an additional \$31.8 million spent on capital projects. Of all these expenditures, \$293.1 million were made in Los Angeles or San Bernardino counties, comprising approximately 66% of all expenditures. An additional \$12.8 million in payments was made to the 211 TCC retirees living in Claremont and Upland who in turn spent \$9.4 million within the region. Students at TCC, including undergraduate and graduate students, spent an estimated \$268.3 million, of which \$98.0 million was spent in within the two-county region. Commencement ceremonies, academic programs, performances, and athletic events attracted an estimated 97,800 visitors who spent an estimated \$13.6 million locally. These figures indicate that TCC is responsible for \$414.1 million in total direct and indirect spending in the two-county region.

The data in **Table 1** comprise TCC's primary economic impacts. These activities have indirect and induced economic impacts in the cities of Claremont and Upland and other parts of Los Angeles and San Bernardino counties in the form of increased output, jobs, and employee compensation in a variety of industries that supply goods and services to TCC and its affiliated population. As the largest employer in the Claremont/Upland area, these impacts provide a substantial economic boost to all of its constituent geographic areas.

## SUMMARY OF ECONOMIC IMPACTS

Each type of TCC economic impact was differentiated by geographic area and by type of economic activity. The findings summarized in **Table 2** indicate total spending impacts in the study region of \$706.8 million as well as 6,505 jobs and \$390.3 million in earnings. The largest share of impacts is captured in Claremont, with \$403.8 million of spending impacts, 3,970 jobs, and \$274.7 million in earnings. An additional \$214.9 million in spending impacts, 1,704 jobs and \$87.0 million in earning were contained in other parts of Los Angeles County. Thus, in addition to the regional economy being enriched by TCC's operations, the local region is reaping tremendous economic benefits in addition to TCC's critical roles as educational institutions and sources of human capital development.

**Table 2**  
**Summary of Economic Impacts**  
**The Claremont Colleges**  
**Academic Year 2016-17**

<b>Impact Location</b>	<b>Total Impacts</b>		
	<b>Output</b>	<b>Jobs</b>	<b>Personal Income</b>
City of Claremont	\$403.8	3,970	\$274.7
City of Upland	\$46.1	458	\$14.1
Other Los Angeles County	\$214.9	1,704	\$87.0
Other San Bernardino County	\$41.9	372	\$14.5
<b>Total Local Economic Impact</b>	<b>\$706.8</b>	<b>6,505</b>	<b>\$390.3</b>

<b>Impact Type</b>	<b>Total Impacts</b>		
	<b>Output</b>	<b>Jobs</b>	<b>Personal Income</b>
University Consortium Employment and Payroll	\$303.2	3,271	\$245.6
Local Vendor Spending	\$42.4	726	\$30.8
Spending by Faculty and Staff	\$251.8	1,709	\$87.3
Student Spending	\$73.8	494	\$13.6
Retiree Pension Spending	\$15.7	103	\$5.5
Visitor Spending	\$19.9	201	\$7.6
<b>Total Local Economic Impact</b>	<b>\$706.8</b>	<b>6,505</b>	<b>\$390.3</b>

Sources: Applied Economics; and ALH Urban & Regional Economics.

Note: Direct impacts include jobs created by sponsored research as well as benefit eligible employees and payroll.

## 5. PURCHASING AND PAYROLL

### SOURCES OF THE CLAREMONT COLLEGES REVENUES

The Claremont Colleges directly and indirectly create ongoing impacts through increases in demand they generate in the local and regional economy. Employees and students are purchasers of goods and services that in turn support many local businesses. In addition to being a major regional employer, TCC is a significant purchaser in the local and regional market for supplies and services. The local economic impact of TCC can be measured to some degree by the amount of revenue it collects from outside the region, revenue that is then used to finance spending on payroll, goods and services, and capital investment within the region. The more revenue that is collected from outside the Los Angeles and San Bernardino county region, the greater the net contribution to the regional economy. Similarly, the more revenues TCC collects from outside the region, the greater the net contribution to the local economy.

**Table 3**  
Sources of Revenue  
The Claremont Colleges

Academic Year 2016-17	Total Revenue	Percent of Revenue
Tuition & Fees	\$328,539,164	48%
Endowment income used for operations	\$103,791,429	15%
Private gifts & grants	\$99,037,891	15%
Spending policy income	\$67,786,105	10%
Sales & Services	\$46,503,186	7%
Federal grants & contracts	\$11,851,266	2%
Other revenues	\$11,252,284	2%
Investment income	\$7,192,569	1%
Private contracts	\$5,859,131	1%
Summer conferences and other rental income	\$1,170,489	0%
<b>Total</b>	<b>\$682,983,514</b>	<b>100%</b>

Sources: The Claremont Colleges Services, Business Affairs; Applied Economics; and ALH Urban & Regional Economics.

In academic year 2016-17, TCC reported total revenues of close to \$683.0 million (**Table 3**). Close to half of all revenues come from tuition and fees, much of which is from outside the region. Other major revenue sources include endowment income and private gifts and grants, which account for an additional 30% of total revenues. A significant share of private gifts is also from outside the region.

## THE CLAREMONT COLLEGES SPENDING

**Total Employment and Payroll.** In academic year 2016-17, TCC paid approximately \$242.3 million in wages and salaries to an estimated 3,207 non-student employees. **Table 4** details the number of employees and payroll by employee residence. About 55% of TCC employees live in Claremont or Upland in the area immediately surrounding the colleges, and all but 6% live elsewhere in Los Angeles or San Bernardino counties. As such, much of their local spending is also captured within the region. These figures include only benefit-eligible employees. There are also a sizeable number of part-time student employees that receive income from the colleges.

**Table 4**  
**Benefit-Eligible Employees and Payroll by Employee Home Location**  
**The Claremont Colleges**  
**Calendar Year 2017**

Geographic Location	Calendar Year 2017 Employees		Annual Payroll
	Number	Percent	
City of Claremont	1,555	48%	\$96,834,568
City of Upland	218	7%	\$21,499,540
Other Los Angeles County	623	19%	\$59,209,537
Other San Bernardino County	611	19%	\$40,407,955
Outside Region	200	6%	\$24,391,084
<b>Total</b>	<b>3,207</b>	<b>100%</b>	<b>\$242,342,684</b>

Sources: The Claremont Colleges Services, Business Affairs; Applied Economics; and ALH Urban & Regional Economics.

TCC is a major employer in the cities of Claremont and Upland, ranking as the area's largest employer, followed the San Antonio Community Hospital and the Upland Unified School District. The only other employer in Claremont with more than 500 employees is the Claremont Unified District with 750 employees, as shown in **Table 5**. TCC accounted for approximately 31% of total employment among the top 15 employers.

Table 5  
Major Employers in Claremont and Upland

Employer Name	City	Employment
The Claremont Colleges	Claremont	3,207
San Antonio Community Hospital	Upland	1,590
Upland Unified School District	Upland	1,037
Claremont Unified School District	Claremont	750
Wal Mart	Upland	400
Smiley Medical Spa and Wellness Center	Upland	400
VCI Construction	Upland	380
Technip USA	Claremont	350
HiRel Connectors	Claremont	310
Lewis Company	Upland	300
Claremont Toyota	Claremont	300
Baumann Engineering	Claremont	300
City of Upland	Upland	273
Claremont Manor	Claremont	250
VNA Hospice and Palliative Care	Upland	250
City of Claremont	Claremont	159

Sources: California Employment Development Department, Labor Market Information, 2018; City of Upland Annual Budget, June 2017; City of Claremont Annual Budget, June 2017; InfoUSA, 2018.

Among the top 15 employers in Table 5, TCC accounted for approximately 31% of total employment. In 2016, employment in the City of Claremont totaled about 15,700. Thus, at 3,207 employees, TCC accounted for 20% of all employees working in the City of Claremont.

**Goods and Services Purchasing and Construction Expenditures.** In academic year 2016-17, TCC purchased more than \$169.9 million worth of goods and services locally and, on a cash (versus accrual) basis, spent \$31.8 million on capital expenditures over the past two years. These expenditures totaled \$201.7 million (**Table 6**). Of the approximately \$201.7 million spent on goods, services, and construction by TCC in academic year 2016-17, \$75.2 million (37%) was spent in Los Angeles or San Bernardino counties. The locational distribution of these expenditures within the region is depicted in **Figure 1 (1A and 1B)**.

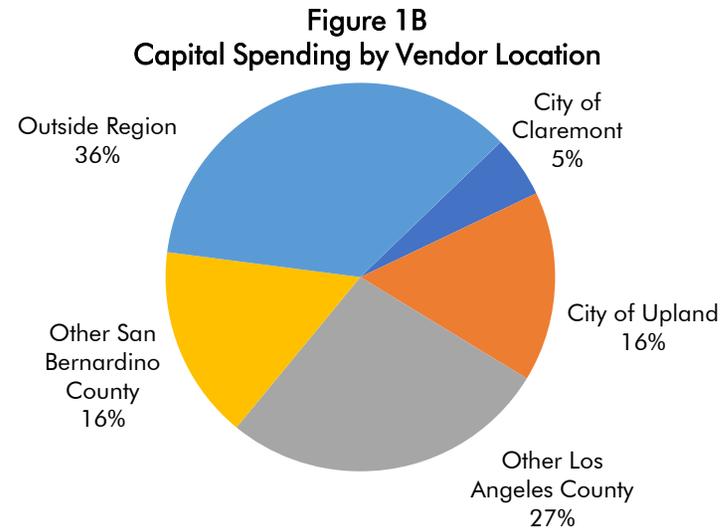
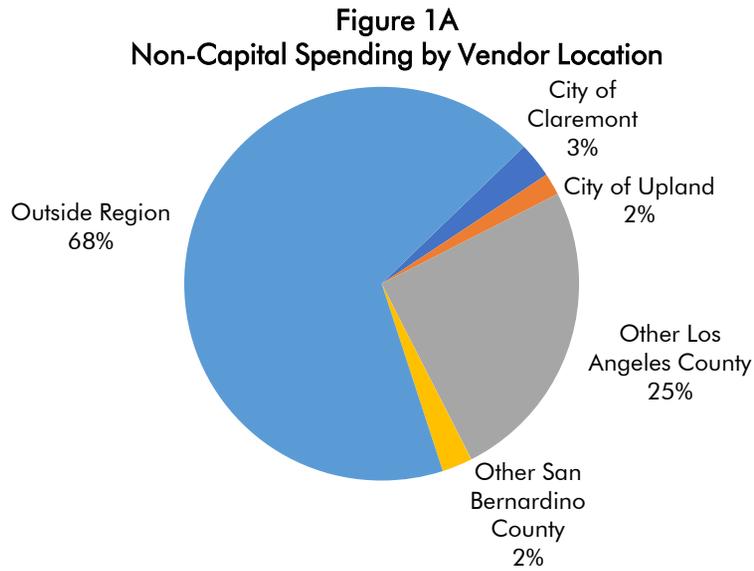
**Table 6**  
**Vendor Spending by Vendor Location**  
**The Claremont Colleges**

<b>Academic Year 2016-17</b>	<b>Total Spending</b>
<b>Non-Capital Spending</b>	
City of Claremont	\$4,922,956
City of Upland	\$3,074,166
Other Los Angeles County	\$42,518,041
Other San Bernardino County	\$4,237,215
Outside Region	\$115,154,598
<b>Total</b>	<b>\$169,906,976</b>
<b>Academic Year 2015-16 and 2016-17</b>	<b>Total Spending</b>
<b>Capital Spending</b>	
City of Claremont	\$1,630,077
City of Upland	\$5,021,092
Other Los Angeles County	\$8,647,249
Other San Bernardino County	\$5,116,010
Outside Region	\$11,349,370
<b>Total</b>	<b>\$31,763,798</b>

Sources: The Claremont Colleges Services, Business Affairs; Applied Economics; and ALH Urban & Regional Economics.

Note: Excludes internal transactions between colleges.

As shown in **Figures 1A and 1B**, of the \$75.2 million total spending in the two-county region, \$6.6 million, or 3% to 5%, was paid to vendors in the City of Claremont, and 2% to 16% (\$8.1 million) to vendors in the City of Upland. However, the City of Upland captured a much larger share of capital spending than non-capital spending. An additional \$51.2 million, or 25% to 27%, was paid to vendors elsewhere in Los Angeles County and \$9.4 million, or 2% to 16%, was paid to vendors elsewhere in San Bernardino County. Only 36% of the capital spending was outside the region versus 68% of non-capital spending.



## 6. REGIONAL SPENDING IMPACTS

### TYPE OF TCC SPENDING IMPACTS

This section discusses the “total” economic impacts – including direct, indirect, and induced economic impacts – of The Claremont Colleges purchases of goods and services, payroll expenditures, and spending on construction projects. The analysis estimates total impacts in three distinct ways: spending, employment, and personal income. The methodology of estimating indirect and induced economic impacts is based on estimates of direct spending in particular geographic areas. In order to estimate direct spending in this way, vendors and contractors who received payments from TCC during academic year 2016-17 were sorted geographically to identify purchases within the region.

**Vendor Spending Multipliers.** TCC’s Capital expenditures often extend for more than one year, and the volume varies from year to year, so it is a standard approach to look at multiple years for capital spending. For non-capital expenditures, about 3% of purchases are made in Claremont and about 30% of transactions occurred within the two county region as a whole.

Based on the detail provided on the specific nature of each transaction, capital and non-capital transactions were grouped by industry type. Multipliers specific to each of those industries were used to estimate the spending impacts. Major local purchases include professional and legal services, insurance, facilities maintenance and repairs, wholesale food and beverages, library acquisition of electronic media, equipment rental and maintenance, janitorial services and utilities.

Direct output impacts created by TCC include the value of education and research services produced, including the cost of labor and the cost of other inputs. The input or vendor purchases by TCC, in turn, become sales for other local businesses. These indirect impacts are part of the total economic impact created by TCC. In academic year 2016-17, TCC purchased an estimated \$54.8 million from local vendors and contractors (excluding capital equipment). This spending supported an estimated 688 additional jobs and \$28.9 million in payroll at local vendor businesses and their suppliers within the region. **Table 7** shows the spending impacts broken down by geography, indicating the discrete share of impacts for the City of Claremont, City of Upland, other Los Angeles County, and other San Bernardino County. While the impacts by geography are generally proportional to the level of spending within that region, the impacts for Los Angeles and San Bernardino counties also include secondary spending (i.e., vendor employee spending) related to initial purchases made in Claremont or Upland.

Table 7  
Economic Impact of Vendor Spending  
The Claremont Colleges  
Academic Year 2016-17

Vendor Location	Annual Purchases	Indirect Impacts		
		Output	Jobs	Personal Income
City of Claremont	\$4,922,956	\$6,228,504	50	\$2,252,740
City of Upland	\$3,074,166	\$4,542,494	56	\$1,592,830
Other Los Angeles County	\$42,518,041	\$74,046,791	536	\$23,372,113
Other San Bernardino County	\$4,237,215	\$6,183,221	46	\$1,722,229
<b>Total Local Vendor Spending Impact</b>	<b>\$54,752,378</b>	<b>\$91,001,009</b>	<b>688</b>	<b>\$28,939,912</b>

Sources: Applied Economics; and ALH Urban & Regional Economics.

After wages and salaries, vendor spending is the next most significant impact that the colleges have on the City of Claremont and the surrounding region.

All vendor spending is technically part of the indirect impacts created by TCC. The estimates of total indirect impacts reflect multipliers for specific vendor industries at the city and county levels. The average regional multiplier for TCC's direct spending is 1.66, which indicates that for every \$1.00 of TCC direct spending in the region, there is an estimated additional \$0.66 in additional spending throughout the region.

**Capital Spending Impacts.** In addition to annual vendor spending, TCC also creates impacts through capital spending. While capital impacts are non-recurring, there is a regular stream of capital projects occurring at the various campuses. Since many of these projects occur over a multi-year period, and capital spending generally varies from year to year, this analysis includes capital spending in both academic year 2015-16 and 2016-17. Total capital spending during this two year period is estimated at \$31.8 million, of which \$20.4 million occurred within the two-county region. This includes spending on construction contractors, as well as professional services such as architecture and engineering that can be performed from offices outside the region. The largest share of local spending is captured in Los Angeles County (**Table 8**). Direct capital spending by TCC resulted in a total economic impact of \$30.5 million in the two-county region over the two year period. This spending supported 198 direct, indirect and induced jobs and \$7.4 million in personal income.

**Table 8**  
**Economic Impact of Capital Spending**  
**The Claremont Colleges**  
**Academic Year 2015-16 and 2016-17**

Capital Vendor Location	Annual Spending	Capital Spending Impacts		
		Output	Jobs	Personal Income
City of Claremont	\$1,630,077	\$2,086,682	9	\$680,302
City of Upland	\$5,021,092	\$6,812,414	43	\$1,514,414
Other Los Angeles County	\$8,647,249	\$14,502,998	99	\$3,502,684
Other San Bernardino County	\$5,116,010	\$7,051,711	47	\$1,660,028
<b>Total Local Capital Spending Impact</b>	<b>\$20,414,428</b>	<b>\$30,453,805</b>	<b>198</b>	<b>\$7,357,428</b>

Sources: Applied Economics; and ALH Urban & Regional Economics.

Although these are one-time impacts, the magnitude of on-going capital expenditures by TCC creates sizeable impacts in the local construction industries and other related industries.

**Employee Spending Impacts.** TCC has over 3,200 full-time with an annual combined payroll of more than \$242.3 million. About 94% of the employees live in the two-county study area. The average wage per employee is estimated at \$75,600 plus benefits, which is well above average wage levels in the region. These employees represent a substantial amount of purchasing power that supports additional jobs and payroll at local retail and service establishments in the region.

Employee spending for TCC employees is allocated to the area where they live. Based on a total payroll of \$242.3 million, employee spending in the region is estimated at \$153.6 million.<sup>1</sup> This level of spending results in an estimated annual economic impact of \$251.8 million in the two-county region for 2016/17. Through this spending, TCC supports about 1,700 jobs and \$87.3 million in personal income at local businesses (**Table 9**).

<sup>1</sup> The difference between payroll and spending reflects the fact that a portion of payroll is spent outside the region, and a portion of payroll is allocated to taxes and savings. In addition, the differential reflects margining for retail purchases.

Table 9  
Economic Impact of Employee Spending  
The Claremont Colleges  
Academic Year 2016-17

Geographic Location	Employee Local Spending	Induced Impacts		
		Output	Jobs	Personal Income
City of Claremont	\$38,040,685	\$49,046,515	374	\$17,717,627
City of Upland	\$11,683,538	\$16,853,317	142	\$5,743,774
Other Los Angeles County	\$79,394,987	\$150,515,638	916	\$52,514,235
Other San Bernardino County	\$24,434,780	\$35,343,182	278	\$11,291,559
<b>Total Employee Spending Impact</b>	<b>\$153,553,991</b>	<b>\$251,758,652</b>	<b>1,709</b>	<b>\$87,267,196</b>

Sources: Applied Economics; and ALH Urban & Regional Economics.

Based on where employees live and where retail and service establishments are located, about 19% of the output impacts are captured in Claremont, and an additional 7% in Upland, with the remaining 74% allocated to other parts of Los Angeles and San Bernardino counties.

### THE CLAREMONT COLLEGES GRADUATES IN THE REGION

TCC plays a major role in supporting economic development in the regional economy by providing a steady stream of bachelor's, master's and doctoral degree recipients to the local work force each year. Of the 81,349 total alumni who have graduated from one of the colleges and are connected with the alumni offices of their respective institutions, about 49% lived in the State of California as shown in **Table 10**. Of these alumni, about 14,800, or 18% of the total currently reside in the two-county study area. By comparison, about 29% of current students come from within the two-county study area.

**Table 10**  
**Geographic Home Location of Students and Alumni**  
**The Claremont Colleges**  
**Academic Year 2016-17 Students and All College Alumni**

<b>Geographic Location</b>	<b>Academic Year</b>		<b>College Alumni</b>	
	<b>2016-17 Students</b>		<b>Number</b>	<b>Percent</b>
	<b>Number</b>	<b>Percent</b>	<b>Number</b>	<b>Percent</b>
City of Claremont	339	4%	1,130	1%
City of Upland	168	2%	449	1%
Other LA County	1,407	17%	11,661	14%
Other San Bernardino County	405	5%	1,564	2%
Other California	1,988	25%	25,311	31%
Other US	2,986	37%	31,465	39%
Outside US	768	10%	3,756	5%
Missing	17	0%	5,993	7%
<b>Total</b>	<b>8,078</b>	<b>100%</b>	<b>81,329</b>	<b>100%</b>

Sources: Individual Colleges; Applied Economics; and ALH Urban & Regional Economics.

As the data in **Table 10** indicate, for the 8,687 students attending TCC in 2016-17, 71% of them came from outside the Los Angeles/San Bernardino county region. TCC plays a critical role in attracting human capital to the region, and retaining them thereafter to help enhance the region's economic base.

### **STUDENT, VISITOR, AND RETIREE SPENDING IMPACTS**

**Student Spending Impacts.** TCC students fuel the local economy through their spending. Based on student budget data provided by TCC, and the estimated capture of that spending by type, the amount of local student spending can be determined. The average spending for each student includes housing, food, transportation, and personal expenses during academic year 2016-17. Spending for on-campus housing and meal plans, tuition, registration fees, books, and supplies are not included in this analysis, as these items represent institutional revenues rather than contributions to the local economy. The budgets for graduate students are higher than for undergraduates because graduate students are older and more likely to have families.

Based on information provided by TCC, the average student living off-campus spends about \$22,700 per year on non-tuition expenses on housing, food, transportation, personal items and books. For on-campus students, expenditures on transportation, personal items and books & supplies were included at an average of \$3,900 per year. Exact spending budgets varied by institution.

**Table 11** estimates total spending of undergraduate and graduate students based on their on-campus or off-campus living arrangements. ALH created assumptions about student spending patterns in the cities of Claremont, Upland, and the surrounding areas. These estimated “capture rates” are based on several factors, such as students’ residential locations, the distribution of retail and entertainment venues, and the expectation that students who do not live in Claremont make expenditures there because of time spent on and around campus. Based on these assumed capture rates and the data on average student spending provided by TCC, it is estimated that undergraduate and graduate students spent an estimated \$159.9 million off-campus in 2016-17. Of that total, an estimated \$98.0 million was spent at establishments in Los Angeles or San Bernardino counties.

**Table 11**  
**Student Academic Year and Year-Round Spending**  
**The Claremont Colleges**  
**Academic Year 2016-17**

Student Spending Categories	Student Living Location	
	On Campus	Off Campus
<b>Aggregate Academic Year Student Spending</b>		
Housing	\$46,216,324	\$26,117,368
Food	\$37,984,196	\$20,779,351
Transportation	\$3,361,489	\$12,010,851
Books and Personal Items	\$9,773,112	\$14,068,288
<b>Total</b>	<b>\$97,335,121</b>	<b>\$72,975,858</b>
<b>Aggregate Year-Round Spending Outside College Campuses (1) (2)</b>		
Housing	\$0	\$38,981,146
Food	\$1,899,210	\$24,156,771
Transportation	\$3,361,489	\$13,963,062
Personal Items	\$5,863,867	\$9,812,946
<b>Total</b>	<b>\$11,124,566</b>	<b>\$86,913,926</b>

Sources: Individual Colleges; Applied Economics; and ALH Urban & Regional Economics.

(1) Spending figures above adjusted pursuant to the capture rate assumptions in the preceding table. Some figures for Off Campus students are higher than the academic year spending estimates because of additional expenditures assumed during breaks, especially summer, as some students who live off campus may have year-round spending obligations, such as housing costs.

(2) These spending estimates comprise a portion of the overall induced impacts for the economic impacts of the colleges. Dollars spent on campus are not measured as local economic impacts as these funds are paid to the colleges, and impact college spending, which is a separate economic impact vector.

**Table 12** details student spending by estimated location. Since the vast majority of students are full-time and likely live close to the campus or on-campus, their local spending can be attributed to the presence of TCC. The analysis assumes that 75% of off-campus students live in Claremont and 25% in Upland. For food, transportation, and personal items, the analysis assumes that 60% of purchases would be in Claremont or Upland and 40% in other parts of Los Angeles and San Bernardino counties. A higher portion of non-housing spending is allocated to Upland than Claremont, given the larger concentration of retail establishments. Overall, approximately 40% of local student spending is estimated to be captured in Claremont, an additional 36% in Upland, and the remainder in other parts of San Bernardino and Los Angeles counties (see **Appendix C** for Student Spending Methodology).

In total, student spending within the study area is estimated at \$98.0 million per year. Although the amount of disposable income per student is significantly less than for employees at the colleges, the sheer volume of students results in a sizeable amount of

expenditures. Multipliers specific to housing, food, transportation and personal items are used to estimate student spending impacts. All total, the \$98.0 million in student spending supports and induced economic impact of \$73.8 million per year, supporting about 494 jobs and \$13.6 million in personal income at local businesses. Unlike other types of economic impacts, retail spending is margined meaning that only the retail markup is attributed to the local economy, while the cost of goods is attributed back to the location where the product was made. Therefore, the economic impact of student spending in the regional economy is less than the actual amount of spending. This concept of margining applies only to retail purchases of goods, not to purchases of services.

In all, about 50% of the induced impacts of student spending are captured in Claremont, and an additional 32% are captured in Upland. However, the jobs impacts are higher in Upland because a large portion of the spending in Claremont is housing which does not generate a lot of jobs compared to other types of spending.

Table 12  
Economic Impact of Student Spending  
The Claremont Colleges  
Academic Year 2016-17

Geographic Location	Student Spending	Induced Impacts		
		Output	Jobs	Personal Income
<b>City of Claremont</b>	\$38,792,721	\$36,767,578	167	\$3,909,457
Housing	\$29,235,859	\$33,764,034	136	\$2,892,469
Food	\$6,177,480	\$2,179,617	24	\$803,645
Transportation	\$2,945,193	\$552,294	4	\$117,481
Personal Items	\$434,188	\$271,634	4	\$95,862
<b>City of Upland</b>	\$35,622,833	\$23,827,074	208	\$5,309,704
Housing	\$9,745,286	\$12,655,470	82	\$1,347,601
Food	\$9,456,109	\$3,696,242	43	\$1,378,231
Transportation	\$7,449,538	\$1,592,616	17	\$490,175
Personal Items	\$8,971,900	\$5,882,747	66	\$2,093,696
<b>Other Los Angeles County</b>	\$18,941,417	\$10,414,154	91	\$3,437,829
Housing	\$0	\$0	0	\$0
Food	\$8,730,430	\$4,834,301	44	\$1,645,968
Transportation	\$5,350,343	\$1,528,758	10	\$363,509
Personal Items	\$4,860,643	\$4,051,096	37	\$1,428,351
<b>Other San Bernardino County</b>	\$4,681,522	\$2,831,554	28	\$963,093
Housing	\$0	\$0	0	\$0
Food	\$1,691,962	\$970,823	10	\$343,388
Transportation	\$1,579,478	\$434,213	4	\$130,729
Personal Items	\$1,410,082	\$1,426,518	14	\$488,976
<b>Total Student Spending Impact</b>	<b>\$98,038,492</b>	<b>\$73,840,360</b>	<b>494</b>	<b>\$13,620,083</b>

Sources: Applied Economics; and ALH Urban & Regional Economics.

**Campus Visitor and Retiree Spending Impacts.** In addition to the direct spending by TCC and their students, events and activities at TCC attract visitors and also anchor retired TCC employees to the local area. Their presence in turn also supports the local and regional economies.

**Visitors.** Campus visitors may include families of prospective students who come for campus tours and interviews as well as special event visitors for commencement, student events, alumni events, and other college programs, including sports games and other athletic events. No comprehensive sources of data exist to measure the total number of visitors to TCC. Some of the colleges maintain records of attendance at certain campus events that give an estimate of the number of annual visitors. Some of these visitors likely require overnight accommodations as part of their trip, but this information is also not uniformly maintained. Instead, for the purpose of this study, each college provided some information about visitors to various campus events. A summary of this collective information is presented in **Table 13**. As noted in the footnotes, this information is likely not comprehensive, and includes both day and overnight visitors. In addition, the study assumes a portion of the visitor count includes local residents, and thus do not comprise individuals with additional spending power in Claremont or the region.

**Table 13**  
**Visitor Events and Attendance (1)**  
**The Claremont Colleges**  
**Academic Year 2016-17**

Event	Attendance
Commencement	14,100
Alumni Events	16,000
Student Tours (2)	32,800
Other Events (3)	49,500
Total	112,400

Sources: Individual Colleges; Applied Economics; and

(1) Figures are estimated, based upon information shared by individual colleges, and likely is greatly understated.

(2) Estimated to exclude students/parents who tour multiple TCC colleges.

(3) Other events include athletic events, performances, lectures, etc. This figure in particular is likely understated, as information was not provided for all events, nor was attendance available for all events.

Based on this information, as well as further information about overnight stays, this study estimates that at least 75,000 day trip and overnight visitors came to TCC campuses during academic year 2016-17 for a variety of events. This equates to almost 9 visitors annually per enrolled student.

It should be noted that the estimate of visitation was prepared with great effort to estimate only visitor attendance and to exclude students, staff, and faculty. Therefore, the economic impacts attributed to visitation can be interpreted as being in addition to the impacts of student, staff, and faculty, which were estimated separately and discussed previously in this report. Some visitors spend their entire stay on the campus and therefore are not likely to spend anything in Claremont, Upland or elsewhere in the region. However, it is also likely that many visitors shop and eat in the commercial areas proximate to campus, and some stay in local hotels.

In order to translate the total number of visitors into overnight visitor days and day trip visitor days, it was necessary to make assumptions about the breakdown of overnight and day trip visitors by event type and the average length of stay for overnight visitors. For student tours, the share of overnight visitors was based on the share of current students living outside the study region in other parts of California or outside the state. A single day stay was assumed for overnight visitors related to student tours. For commencement visitors, a similar assumption was applied but with a two day length of stay. For alumni events, several of the colleges provided estimates of overnight versus day trip visitors. For those colleges that did not provide this information, an average of 77% overnight visitation with a two day average stay was applied for all alumni event visitors. For special events, which included performances at Bridges Auditorium, as well as event visitors at other on-campus venues, this study assumes based on the types of events that 75% of attendees were students, faculty or local residents and did not constitute visitors for the purpose of the economic impacts. The remaining 25% of special event attendees were designated as day trip visitors. All total, there were approximately an estimated 29,400 day trip visits to TCC and 68,400 overnight visits in 2016-17. Note that overnight visits represent visitor days and account for multi-day stays.

Pursuant to information from the Los Angeles Tourism & Convention Board, the average overnight visitor to the region spends \$170 per day on food, lodging, transportation, entertainment and retail purchases, whereas the average day trip visitor spends \$68 (**Table 14**). The breakdown of purchases by type in Table 14 is based on information from Visit California. Assuming approximate estimates of 68,400 overnight visitor days and 29,400 day trip visitor days attributed to TCC, this translates into visitor expenditures of \$13.6 million in 2016-17.

**Table 14**  
**Visitor Spending Assumptions**  
**The Claremont Colleges**  
**Academic Year 2016-17**

Visitor Spending Categories	Overnight Visitors	Day Trip Visitors
<b>Per Person Per Day Spending</b>	<b>\$170</b>	<b>\$68</b>
Lodging	\$56	\$0
Food and Beverages	\$45	\$20
Entertainment	\$27	\$17
Retail	\$17	\$14
Local Transportation	\$25	\$17
<b>Total Visitor Spending by Type</b>	<b>\$11,648,590</b>	<b>\$2,000,073</b>
Lodging	\$3,844,608	\$0
Food and Beverages	\$3,069,948	\$596,176
Entertainment	\$1,864,922	\$500,018
Retail	\$1,133,299	\$413,477
Local Transportation	\$1,735,812	\$490,402

Sources: Los Angeles Tourism and Convention Board, "2017 Tourism Quick Facts," March 2018; Visit California, "2016 Domestic Travel to California," December 2016; Applied Economics; and ALH Urban & Regional Economics.

In order to estimate the economic impacts, it was necessary to allocate the total spending by type to the study area geographies. Overall, an estimated 30% was captured in Claremont, 16% in Upland, and the remaining 54% in the rest of Los Angeles and San Bernardino counties. A variety of assumptions were used to allocate the spending by type by location as described below.

For the purpose of this study, the limited hotel facilities in Claremont were contacted and queried regarding their room rates, number of rooms, and estimated share of occupancy associated with TCC visits, and average number of nights per guest. Based upon the results of these queries, this study estimates that the room revenues generated by the hotels in Claremont total \$2,465,600. This reflects approximately 17% occupancy of the 460 rooms at the private lodging facilities in Claremont. The average stay at the hotels in Claremont appears to be 2 nights.

For day trips, all visitor spending was allocated to Claremont and Upland based on the relative shares of annual taxable sales by type in each city as reported by the California Board of Equalization. The assumptions for overnight visitor spending by location varied by type of expenditure. For overnight visitor spending on food and beverages, the study assumes that at least one meal per day (conservatively 33% of food and beverage spending) was eaten in Claremont or Upland. The remaining food and beverage spending was allocated to other Los Angeles and San Bernardino Counties. Retail spending by overnight visitors in Claremont and Upland was assumed to be the same as the share of lodging spending in Claremont. The remainder of retail spending was allocated between the two counties. All allocations between the two counties were based on annual visitor spending by type by county from the annual California Travel Impacts study conducted by Dean Runyan Associates for Visit California.

The total study area visitor spending of \$13.6 created an induced impact of \$19.9 million in 2016-17, supporting 201 jobs and \$7.6 million in personal income (**Table 15**). Economic multipliers for each study area geography and each category of spending were used to estimate these impacts. The level of output and associated jobs and income includes not only visitor spending, but also purchases from vendors in the region and household spending by hospitality and vendor employees. As a result, the economic impacts are not directly proportional to the level of visitor spending by location. Of the total output impact, 23% is captured in Claremont, 15% in Upland, and the remainder in the other county areas.

**Table 15**  
**Economic Impact of Visitor Spending**  
**The Claremont Colleges**  
**Academic Year 2016-17**

Geographic Location	Local Visitor Spending	Induced Impacts		
		Output	Jobs	Personal Income
City of Claremont	\$4,116,060	\$4,626,802	46	\$2,164,614
City of Upland	\$2,186,838	\$2,963,555	44	\$1,086,550
Other Los Angeles County	\$6,158,074	\$10,536,079	91	\$3,759,935
Other San Bernardino County	\$1,187,690	\$1,726,310	20	\$549,486
<b>Total Visitor Spending Impact</b>	<b>\$13,648,662</b>	<b>\$19,852,746</b>	<b>201</b>	<b>\$7,560,585</b>

Sources: Applied Economics; and ALH Urban & Regional Economics.

**Retirees.** According to data from TCC, in 2017 there were approximately 1,370 retired employees from TCC, 211 of whom lived in Claremont or Upland.<sup>2</sup> Of these local retirees, 169, or 80%, lived in the City of Claremont, and 42, or 20%, lived in the City of Upland. Total annual pension distributions to retirees living in Claremont and Upland during the calendar year were \$12.8 million, with \$11.5 million received by retirees in the City of Claremont, \$1.3 million received by retirees in Upland (**Table 16**).

**Table 16**  
**Pension Payments to Retirees in Claremont and Upland**  
**The Claremont Colleges**  
**Calendar Year 2017**

Geographic Location	Calendar Year 2017 Employees		2017 Pension
	Number	Percent	Distribution
City of Claremont	169	80%	\$11,540,996
City of Upland	42	20%	\$1,268,044
Total	211	100%	\$12,809,040

Sources: The Claremont Colleges Services, Business Affairs; Applied Economics; and ALH Urban & Regional Economics.

**Table 17** indicates that total induced spending generated by payments received by TCC retirees within the two-county region was \$15.7 million. Retiree spending also supported 103 jobs and generated \$5.5 million in personal income in the Los Angeles and San Bernardino counties. The City of Claremont captured the largest share of direct retiree spending, although the secondary or multiplier impacts were larger in Other Los Angeles County due to the substantial base of suppliers within the county. It is estimated that \$5.7 million, or 36%, of regional induced spending impacts occurred in Claremont and \$8.9 million or 57% in other parts of Los Angeles County. Comparable impacts in Upland and other parts of San Bernardino County total \$1.1 million of induced output, 9 jobs, and \$347,000 in personal income.

<sup>2</sup> Figure includes retirees with pensions.

**Table 17**  
**Economic Impact of Local Retiree Spending**  
**The Claremont Colleges**  
**Calendar Year 2017**

Geographic Location	Retiree Local Spending	Total Induced Impacts		
		Output	Jobs	Personal Income
City of Claremont	\$4,437,698	\$5,699,532	44	\$2,080,091
City of Upland	\$687,008	\$989,332	8	\$338,215
Other Los Angeles County	\$4,204,649	\$8,910,577	51	\$3,061,064
Other San Bernardino County	\$43,023	\$66,924	0.2	\$8,875
<b>Total Retiree Spending Impact</b>	<b>\$9,372,378</b>	<b>\$15,666,365</b>	<b>103</b>	<b>\$5,488,245</b>

Sources: Applied Economics; and ALH Urban & Regional Economics.

Although only a portion of retired workers from the colleges stay within the region, they do continue to create economic impacts attributed to TCC through their pension distributions and related spending.

## SUMMARY

TCC is a significant contributor to the region's economy. It provides a highly educated future workforce. TCC also provides high quality jobs to hundreds of workers and supports the local economy with millions of dollars each year in vendor purchases, creating a significant economic impact on the region.

In addition to jobs and vendor purchases that are generally associated with economic impacts created by local businesses, universities are unique in that they also create impacts through their students and visitors. They bring students and visitors to the area who would not otherwise be there and who generate significant demand for consumer goods and services, restaurants and lodging. This results in jobs and economic activity in the region, as well as state and local tax revenues that would not have occurred were it not for the presence of TCC.

## 7. SPONSORED RESEARCH

### THE SIGNIFICANCE OF ACADEMIC RESEARCH

Research conducted by The Claremont Colleges contributes to the economy of the region in several important ways. First, because most research funding is sponsored by the federal government, with a lesser amount from foundations and major corporations, academic research is a significant generator of local jobs and income. It is, in effect, a major export industry, bringing into Claremont millions of dollars from sources outside the region. Second, some products of academic research may have potential commercial application and may provide the basis for the creation of new enterprises or the expansion of existing ones.

### TCC GRANT ACTIVITY

In academic year 2015-16, TCC faculty collectively received 68 research grants, remaining relatively stable at 69 in academic year 2016-17 (**Table 18**). The aggregate value of these grants was \$7.3 million and \$8.6 million, respectively. The average grants were \$106,700 to \$125,200 for each academic year. This average is skewed by the number of smaller grants spread across the colleges. The actual range is \$4,000 to \$2.9 million in the cited years.

**Table 18**  
**Academic Year Summary of Sponsored Research**  
**The Claremont Colleges**  
**Academic Years 2015-16 and 2016-17**

Grant Characteristic	Academic Year	
	2015-16	2016-17
Number of Grants Received During Academic Year	68	69
Aggregate Volume of Grants Received	\$7,258,674	\$8,639,079
Average Grant Amount	\$106,745	\$125,204

Sources: Individual Colleges; Applied Economics; and ALH Urban & Regional Economics.

As demonstrated in **Table 19**, research grants awarded to college faculty originate from a wide variety of sources. The major categories include the federal government, foundations and non-profits, private industry, colleges and universities, and other varied sources, including Unified School districts. As shown in **Table 19**, approximately two-thirds of all grant funding is from various federal agencies, the most significant of which is the National Science Foundation, comprising yet additional revenue is brought in to TCC and the region from outside the area, helping to fuel local impacts as the grants funds are spent. These federal grant funds totaled \$4.6

million and \$5.8 million in academic years 2015-16 and 2016-17, respectively. For both years, nearly \$3.0 million in funding was provided by the National Science Foundation. The next largest category of grant funding comprises foundations and non-profits, many of which are regional but many others also from outside the immediate region. These two categories, federal and foundations and non-profits, collectively account for approximately 80% of all grant funding.

**Table 19**  
**Summary of Sponsored Research Grants by Grantor**  
**The Claremont Colleges**  
**Academic Years 2015-16 and 2016-17**

Type of Grantor	2015-2016			2016-2017		
	Funding	Number	Funding Percent	Funding	Number	Funding Percent
<b>Federal</b>	<b>\$4,586,430</b>	<b>18</b>	<b>63%</b>	<b>\$5,763,314</b>	<b>25</b>	<b>67%</b>
<i>National Science Foundation</i>	\$2,943,783	7	41%	\$2,949,624	8	34%
<i>All Other Federal</i>	\$1,642,647	11	23%	\$2,813,690	17	33%
<b>Foundations and Non-Profits</b>	<b>\$1,169,092</b>	<b>21</b>	<b>16%</b>	<b>\$1,491,368</b>	<b>25</b>	<b>17%</b>
<b>Private Industry</b>	<b>\$116,785</b>	<b>4</b>	<b>2%</b>	<b>\$981,233</b>	<b>9</b>	<b>11%</b>
<b>Colleges and Universities (1)</b>	<b>\$755,059</b>	<b>10</b>	<b>10%</b>	<b>\$213,707</b>	<b>4</b>	<b>2%</b>
<b>Other</b>	<b>\$631,308</b>	<b>15</b>	<b>9%</b>	<b>\$189,457</b>	<b>6</b>	<b>2%</b>
<i>Unified School Districts</i>	\$324,906	8	4%	\$171,496	5	2%
<i>International (2)</i>	\$267,402	4	4%	\$0	0	0%
<i>Water Districts</i>	\$39,000	3	1%	\$17,961	1	0%
<b>Total</b>	<b>\$7,258,674</b>	<b>68</b>	<b>100%</b>	<b>\$8,639,079</b>	<b>69</b>	<b>100%</b>

Sources: Individual Colleges; Applied Economics; and ALH Urban & Regional Economics.

(1) Primarily includes various University of California campuses, with additional funding provided by other colleges and universities and several California State University campuses.

(2) This includes the United Nations, the World Bank, and other organizations with an international focus.

The remaining grantors accounted for approximately 20% of all grant funding in the two identified years. The percentages by year by source varied, but collectively comprised approximately 20%.

## ACADEMIC RESEARCH AS AN EXPORT INDUSTRY

Spending associated with sponsored research projects at TCC during academic years 2015-16 and 2016-17 totaled \$15.9 million. As referenced above, the federal government provided approximately two-thirds of the funding for TCC's research expenditures. Research funds provide considerable economic value to the region, with the funds turning over multiple times through employment of personnel and purchase of goods. A primary added value is in the knowledge transfer within the region and nation.

Spending associated with sponsored research is included in the preceding analysis, as these dollars are reflected through TCC spending on goods, services, and wages. As a result, the economic impacts of TCC's sponsored research are already included in the direct impacts of the colleges. To highlight the role and significance of sponsored research, however, an estimated breakout of the impacts of sponsored research is shown in **Table 20**. These impacts are a subset of the earlier economic impacts.

Over the two-year period, sponsored research at TCC supported an estimated 151 jobs in Claremont and an additional 37 jobs in other parts of Los Angeles County. These include faculty and student employees at the colleges, as well as local suppliers of data and other goods and services that may have been purchased to support the research. The total direct and indirect value of this sponsored research is estimated at \$27.2 million over two years.

Table 20  
Economic Impact of Sponsored Research  
The Claremont Colleges  
Academic Years 2015-16 and 2016-17

Annual Grants Received	Sponsored Research	Direct and Indirect Impacts		
		Output	Jobs	Personal Income
City of Claremont				
Academic Year 2015-16	\$7,258,674	\$9,903,532	69	\$3,556,649
Academic Year 2016-17	\$8,639,079	\$11,786,918	82	\$4,233,028
Other Los Angeles County				
Academic Year 2015-16	\$0	\$2,525,997	17	\$737,489
Academic Year 2016-17	\$0	\$3,006,374	20	\$877,739
<b>Total Sponsored Research Impact</b>	<b>\$15,897,753</b>	<b>\$27,222,820</b>	<b>188</b>	<b>\$9,404,904</b>

Sources: Individual Colleges; Applied Economics; and ALH Urban & Regional Economics.

Note: There may be additional indirect or induced impacts in San Bernardino County that are not captured here.

The impacts are shown for the City of Claremont and Other Los Angeles County only. It is certainly possible that some supplier purchases may have occurred in San Bernardino County, but it is not possible to estimate the impacts with that level of geographic specificity based on the information available.

## REPRESENTATIVE RESEARCH ACTIVITIES

The sponsored research occurring throughout TCC is quite varied, reflecting the individual focus of each college. **Appendix B** includes representative examples of recent research occurring at TCC, with 2-3 examples provided per college. These examples highlight the variety of research occurring on the campuses, with a range of funding sources and individual grant amounts, ranging from \$10,100 to \$1.6 million. Matching the pattern of funding, many of the examples include grants funded by the federal government, especially including the National Science Foundation, but also the National Institutes of Health and the Health Resources Services Administration. Other examples are funded by foundations and non-profits, thus collectively highlighting research funded by the dominant grantors of TCC research.

The disciplines represented by the examples include psychology, mathematics, computer science, physics, chemistry, biomedical sciences, pharmacy, and international programs. The grants fund research as well as educational programs, designed to reach out to students in the United States as well as international, with the potential to diversify the TCC student population. The majority of the examples provided have implications for furthering advancements in science, behavioral understanding, and education. See **Appendix B** for these examples and their potential for long-term application.

## 8. CITY OF CLAREMONT AND COMMUNITY BENEFITS

### CITY REVENUE GAINS

The government of the City of Claremont receives direct benefits from the presence of The Claremont Colleges. The most readily identifiable of these are transient occupancy taxes associated with overnight accommodations for college visitors, sales tax revenues from taxable purchases at restaurants and retail establishments in Claremont, and building permit and plan check fees to support building improvements and construction. The latter are largely assessed on a cost-recovery basis, but still represent funds used to support city staff.

**Transient Occupancy Taxes.** According to the City of Claremont Finance Director, in Fiscal Year 2015-2016 the City of Claremont received \$1,333,844 in transient occupancy taxes. This increased to \$1,398,333 in Fiscal Year 2016-17. These taxes correspond to average annual hotel room revenues of \$13.7 million, since the City of Claremont has a 10% transient occupancy tax rate. The facilities in the City of Claremont contributing transient occupancy taxes include Doubletree Hotel, Motel 6, Hotel Casa 425, Knights Inn, Claremont Lodge, Claremont Manor, and three of the colleges, including Pomona College, Pitzer College, and Harvey Mudd College.

For the purpose of this study, the hotel facilities in Claremont were contacted and queried regarding their room rates, number of rooms, and estimated share of occupancy associated with TCC visits, and average number of nights per guest. Based upon the results of these queries, this study estimates that among the 460 rooms at the private lodging facilities, about 17% of them on an annual basis are occupied by college visitors. In addition, some of the colleges pay transient occupancy tax to the city associated with facilities rented out at various times of the year, such as Pitzer College in the summer (July or August in recent years), Harvey Mudd College in September, and Pomona College in April (in FY 2015-16, but not in FY 2016-17). Across the two most recent fiscal years, these revenues accounted for 2.5% of all city transient occupancy tax revenues. Thus, given the variable room rates at the hotels and the visitor occupancy rates by hotel, plus the revenues generated directly by TCC, the analysis suggests that just over 20% of the city's annual transient occupancy tax revenues are attributable to TCC guests and visitors. This is equivalent to an average of about \$280,000 a year in transient tax revenues accrued by the City of Claremont from TCC-related hotel stays.

**Sales Tax Revenues.** All taxable purchases in the City of Claremont generate 1.0% of the sales value in sales tax to the city's General Fund. Use taxes are also paid on purchases made from out-of-state vendors when the known destination is the City of Claremont. Sales and use tax revenues received by the City of Claremont in Fiscal Year 2016-17 totaled \$4.2 million (per the city's 2018-19 budget), expected to increase to \$4.3 million in Fiscal Year 2016-17 and \$4.8 million in Fiscal Year 2017-18. These taxes apply to taxable purchases made by TCC, TCCS, students, employees, and visitors. Only a portion of the city's sales and use tax revenues are

generated by these sources, and this study earlier generated an estimate of local spending associated with students, employees, visitors, and TCC. Not all of this spending will be for taxable goods, but a significant portion will be. For the purpose of this study these portions include the following assumptions:

- For students, 95% of student spending on personal items is taxable and a portion of spending on food by students living off campus is taxable, with 75% of spending assumed to occur at grocery stores, where 30% of items are taxable, and 25% of spending assumed to occur at restaurants, all of which is taxable.
- For employees, 25% of spending is estimated to occur in retail or restaurant sectors in Claremont based on household spending multipliers from IMPLAN. Retirees have somewhat different spending patterns than current employees, and based on their estimated income levels 23% of their local spending occurs in retail or restaurants.
- For visitors, taxable spending includes lodging, food and beverage, entertainment and retail expenditures in Claremont. Claremont captures an estimated 30% of total visitor spending.
- For TCC, taxable sales on campus generated annual sales tax of \$101,670 revenues to the City of Claremont in fiscal year 2017.
- For TCC, individual vendor purchases from businesses located in Claremont that would be subject to sales tax can be identified based on the data provided by the colleges. These purchases make up 12% of vendor purchases in Claremont.

Pursuant to these assumptions, and the earlier estimates for local spending by each respective group, the resulting estimates of taxable purchases occurring in the City of Claremont and the resulting sales tax revenue to the city are presented in **Table 21**.

**Table 21**  
**City of Claremont Taxable Retail Sales**  
**Attributable to The Claremont Colleges**  
**Fiscal Year 2016-17**

Source of Revenue	Taxable Sales	Sales Tax
Students (1)	\$26,367,439	\$263,674
Employees (2)	\$9,510,171	\$95,102
Visitors (3)	\$3,958,648	\$39,586
Retirees (4)	\$1,020,670	\$10,207
TCC (from on campus sales) (5)	\$10,167,000	\$101,670
TCC (from vendor purchases) (6)	\$596,033	\$5,960
<b>Total</b>	<b>\$51,619,962</b>	<b>\$516,200</b>

Sources: City of Claremont, Finance Director; Applied Economics; and ALH Urban & Regional Economics.

(1) Assumes sales taxes are generated by all student spending on personal items and students living off campus spending on food, including grocery stores (75%) and restaurants (25%).

(2) Assumes 25% of spending in City of Claremont is in taxable sectors.

(3) Includes visitor expenditures in Claremont on lodging, food and beverage, entertainment, and retail.

(4) Assumes 23% of spending in City of Claremont is in taxable sectors.

(5) Information provided by the City of Claremont, Finance Director.

(6) Taxable sales figure based on detailed analysis of vendor purchase data.

The estimated taxable sales occurring in the City of Claremont attributable to TCC total \$51.6 million, resulting in \$516,200 in sales tax revenue to the city in Fiscal Year 2016-17. This sales tax figure comprises approximately 12% of the sales taxes accrued by the city in Fiscal Year 2016-17, when sales tax revenues totaled almost \$4.2 million per the city's budget document.

**Building Permit and Plan Check Fees.** As noted in Chapter 5, over academic years 2015-16 and 2016-17 TCC and The Claremont College Services spent \$31.8 million on capital expenditures. While just a portion of these expenditures directly benefitted businesses located in the City of Claremont, the building permit and plan check fees paid to the city were tied to the total project cost. Thus, all building permit fees for construction-related efforts in the City of Claremont accrue to the City of Claremont.

Per the City of Claremont Finance Director, these fees totaled approximately \$588,200 in Fiscal Year 2014-15, \$109,500 in Fiscal Year 2015-16, and \$347,800 in Fiscal Year 2016-17, for a 3-year total of just over \$1.0 million. As these amounts are lumpy, reflecting different levels of construction activity by year, the figures were averaged to provide an overall 3-year average, which is \$348,500. These revenues were generated by all of the TCC colleges as well as TCCS, with each engaging in construction or building improvement activities at some point over the 3-year time period.

**Summary Annual Revenues.** A summary of the city revenues directly attributable to TCC is provided in Table 22. The results indicate revenue of over \$1.1 million a year to the City of Claremont in transient occupancy tax, sales tax, and building permit and plan check fees alone.

**Table 22**  
**City of Claremont Revenues**  
**Attributable to The Claremont Colleges**  
**Fiscal Year 2016-17**

<b>Type of Revenue</b>	<b>Amount</b>
Transient Occupancy Tax	\$280,000
Sales Tax (1)	\$516,200
Building Permit and Plan Check Fees	\$349,000
<b>Total</b>	<b>\$1,145,200</b>

Sources: City of Claremont Finance Director; Applied Economics; and ALH Urban & Regional Economics.  
(1) See Table 21.

There are likely yet additional revenues that directly accrue to the City of Claremont as well, that are not included in this enumeration.

## COMMUNITY CULTURAL AND ORGANIZATIONAL BENEFITS

**Educational and Cultural Events on Campus.** There are innumerable educational and cultural events that take place at TCC, with each campus providing some offerings, some in the hundreds of events per year. These events draw many people from the local and regional communities, and provide opportunities to attend theater performances, musical performances, lectures, art exhibits, workshops, film screenings, and more. Some events are free of charge while others involve nominal payment. These events are held in theaters, musical halls, auditoriums, gardens, classrooms, etc. The topics are far-ranging, providing educational and cultural opportunities to meet a myriad of interests. The list of opportunities is quite extensive, but examples that just scratch the surface of the available events include classical music concerts, lunchtime colloquium, art shows and openings, ballroom dancing, and local elementary school productions. Other significant events that attract local community members include football games and other sports events, such as NCAA Tennis Championships and track relays. These events are offered throughout the academic year, providing year-round enrichment opportunities for community members fortunate to live near TCC.

**Free or Discounted Facility Use for Civic/Community Groups and Nonprofits.** Many of the campuses make meeting or event space available to local and regional groups and organizations at a discounted cost. Information on the value of the discounts was provided by only several colleges, as this information is not maintained in a centralized manner by college, or by TCCS. Among the colleges providing examples, the value of the discounts for academic year 2016-17 totaled approximately \$114,000. As this represents just several colleges, the total value of subsidized facility use is likely much higher.

The type of organizations benefitting from the discounted space provided by TCC includes local schools, performance organizations, and other entities. Examples include Theatre Experience of Southern California, Inland Pacific Ballet, Claremont Youth Symphony Orchestra, Claremont Unified School District (and various schools), Project Think, Our Lady of the Assumption School, the City of Claremont, Toastmaster's Club, Girls Fly!, Bright Prospect, and Bio-Pharma Leadership Academy. As noted, many of these organizations serve local and regional youth, engaged in the arts and educational advancement.

**College Financial Contributions.** In addition to discounted facility rental, the colleges provide direct support and service contributions to local and regional organizations. The value of the direct financial contributions identified for study purposes totals \$28,000; however, as with the case of discounted facility use, centralized information is not maintained and thus was not available for this study. The types of groups benefitting from these direct financial contributions in academic year 2016-17 included Sustainable Claremont, Claremont ArtWalk, Project Pericles, CA Campus Compact, and Jumpstart.

## COMMUNITY INVOLVEMENT

**Service Volunteer Contributions.** Many of the organizations receiving financial contributions from the colleges also benefit from service hour contributions by TCC employees and students. Service contribution examples include 300 service hours for Project Pericles, 200 service hours for CA Campus Compact, and 15,280 hours for the Jumpstart early childhood education program through AmeriCorps. In addition, there are numerous examples of students engaging in volunteer activities that directly benefit the community. Select examples of these activities include the following:

- **50** Volunteers annually working with Native Initiatives, where native/indigenous students are pulled from Semillas Charter School, Anahualmecca Charter School, and Sherman Indian School for college writing workshops, including helping high school seniors fill out college applications. Students also participated in planning and implementing the annual Powwow and worked in the Ne-Sook (Grandmother) Garden at the Pomona College Organic Farm.
- **30** students volunteer annually through the Hunger and Homelessness Initiative (HHI), which seeks to raise awareness about food and shelter scarcity in the local communities. Through Food Recovery Network, HHI organizes student volunteer drivers to pick up left over food from the dining halls and deliver it to local shelters. This activity simultaneously reduces food waste at TCC provides reliable, nutritious food for those in need.
- **25** students volunteer annually for the Pomona College Academy for Youth Success (PAYS), a yearlong program that works to support high school students in their preparation for postsecondary study and to inculcate a culture of college-bound achievement.
- Over **1,000** patients are screened annually at the Anaheim Health Fair, an annual event that KGI pharmacy students volunteer at to provide free health services to the under-served population. This health fair offers free medical services, eye exams with glasses, dental services, various screenings such as blood panels, osteoporosis, and many more.
- In nearby Rialto, CA, The Parent Summit is an annual event held at Rialto High School, where student organizations perform Health Screenings such as blood pressure, blood glucose readings, and flu vaccines, while also providing and handing out Health Education information.
- **35** students volunteering **1,286** hours of service to the Prison Education Project (PEP), which gives students the opportunity to teach STEM subjects at local women's and men's prisons to educate, empower, and transform the lives of incarcerated individuals. Students design curriculum and teach classes on Mathematics, Computer Science, Physics, and Chemistry.
- **10** students provide **480** hours of service through Mudders Making a Difference, an organization committed to working with The Office of Community Engagement to provide Harvey Mudd students an opportunity to volunteer and participate in socially conscious activities. The organization serves as a connection between students and the outside community. A project example include weekly pot-luck styles meals prepared by students to share with participants of the Claremont Homeless Advocacy Program (CHAP).

- **16** students with **512** hours of service volunteer with STEAM:CODERS, a nonprofit organization dedicated to inspiring underrepresented and underserved students and families through the fundamentals of Science, Technology, Engineering, Art, and Math. This program features 8-week programming classes on Saturdays in the fall and summer and is open to all local high school students.

These bullet points highlight just a few examples of volunteer activities engaged in by TCC students. These indicate students are highly engaged in supporting their local college community through providing educational and social services throughout the academic year, and into the summer in some cases.

**Student Internships.** In addition to service volunteerism, TCC students are engaged in internships throughout the local community and southern California. Many of these internships are industry-oriented, while others are still focused on community service. Some internships are paid while others are unpaid. Some of the many businesses and organizations where students gain invaluable work and industry experience through internships include Bowers Museum and American Museum of Ceramic Art in Santa Ana, Los Angeles County Metropolitan Transit Authority in Los Angeles, Applied Medical in Rancho Santa Margarita (a medical device company), Axonics Modulations Technologies (engaged in medical technology innovation) in Irvine, International Visitors Council of Los Angeles in Los Angeles, Orange County Child Abuse Prevention Center in Anaheim, Orange County Health Care Agency, Center for Sustainable Energy in San Diego, Accenture (management consulting and professional services firm) in Los Angeles, and Innocean (an advertising agency) in Huntington Beach. Other, more service-oriented internships include internships at Peace Over Justice, Dignity Now, da Center for the Arts in Pomona, Local Roots Farm. Through these internships students also support organizational goals and serve vulnerable populations, thus providing important contributions and demonstrating the educational impact of TCC.

## CITY – COLLEGE PROJECTS

The City of Claremont and TCC share a common commitment to enhancing the quality of life for their community. There are many ways in which this commitment is demonstrated, a few examples of which are provided below. These examples include instances where the city provides direct support to TCC, where the colleges support city events, and where efforts are collaborative. These examples are not constrained to the academic year 2016-17 addressed by the bulk of this study, but are illustrative of efforts spanning that period as well as more recent periods.

- The city police department works closely with TCC Campus Security on emergency response and preparation.
- The city police department assists with emergency training drills.
- The city and colleges worked together in 2015 as a host city for Special Olympics World Games athletes, housing delegations from four countries.

- The colleges actively support city special events.
- The city's Fourth of July Fireworks Show is held at Pomona College
- The city works with the colleges on development projects, such as:
  - CMC Arbol Verde Neighborhood Subdivision, House Relocations, overall Development Agreement.
  - The Claremont Colleges Services administrative office building expansion on First Street.
  - Pomona College Museum of Art (PCMA) construction, improvements and landscaping.
  - Lot line adjustment south of the Blaisdell neighborhood
  - Sports fields within along Claremont Boulevard Mitigation Measures (MIG, CMC)
- The colleges worked with the city on Foothill Boulevard street improvements, sidewalk easements and planting plans adjacent to the Bernard Field Station.
- The Village South Specific Plan (KGI-owned land).
- Harvey Mudd College clinic projects.
- Senior project advising.
- Scooters/bikes shared mobility pilot program.
- Parking management plans - annual reports.
- City staff works on institutional master plans.
- Interns – the colleges pay for and provides interns employed by the city.
- The city assisted TCC with its College Avenue tree and museum tree plan.
- Tree trimming – Per request from the colleges, the city trims trees on 6<sup>th</sup> Street before classes start in the fall.
- Special Waste Collection – For certain events like commencement, the Colleges try to generate zero waste, and the city provides a special waste collection for those events.
- The colleges are the largest participant in the city's organics collection program.
- City staff speak at college events, such as a Harvey Mudd College forum on organics where city community services staff were invited to speak

These are just a sampling of the activities engaged in by the City of Claremont to support TCC, and ways in which TCC gives back to the City of Claremont and the local community. Every year a different mix of activities occur, always with the city and TCC jointly demonstrating their commitment to each other and the local community's quality of life.

**APPENDICES**

## APPENDIX A: ECONOMIC IMPACT METHODOLOGY

### The Mechanics of the Input-Output Model

Economic multipliers are generated through the use of input-output models. These are statistical models that quantify relationships between industries. They examine the pattern of purchases by industry and the associated distribution of jobs and wages by industry. Input-output models identify, for example, all the industries from which a construction contractor purchases its supplies and in what proportion. In turn, the model then identifies the industries that are suppliers to these suppliers, or “second-generation” suppliers. This continues until all major purchases are accounted for contributing to the construction contractor’s original purchases. These original purchases are indirect impacts, but are also included in the value of direct output. All other associated sales from within the supply chain are considered also included in indirect impacts. There are other induced impacts associated with the contractor purchases. These include retail and other expenditures made by the construction workers and the employees at the supplier businesses.

The size of these indirect and induced impacts depends upon the definition of the study area, as well as the nature of the economy within the region. A large region with a closed economy, which means that most needs are being met by industries located within the region, would keep many of the output, earnings, and jobs impacts within the region. In a region like this (such as Los Angeles County), the multiplier effects would be relatively large, with a large share of the effects captured within the region. In contrast, a small region with an open economy, which means an economy with a limited array of producers providing goods and services, would leak sales to other regions. Because many purchases would be made from industries outside the local economy, the multiplier impacts on the local economy would be minimized.

### Indirect and Induced Impacts Defined

Input-output models measure output, jobs and income in two different ways: “indirect” impacts and “induced” impacts. “Indirect” impacts are the changes in inter-industry purchases as they respond to new demands of directly affected industries. In the case of TCC, indirect impacts reflect the spending by the colleges as well as spending by suppliers purchasing goods and services from second-, third- and fourth-generation suppliers in order to meet the demand generated by TCC. Indirect impacts of TCC spending also include the share of suppliers’ payroll (or employee wages) that is supported by TCC spending. For example, when TCC constructs a new building, the general contractor purchases lumber, rents construction equipment, hires engineers, and employs construction workers. The spending on the materials, equipment rentals, architecture and engineering fees, and employee payroll that is generated by the construction contract reflects the indirect impacts of TCC construction spending, to the extent that these expenditures are made within the study area. TCC construction spending also supports a certain number of jobs and generates a share of the personal income of the employees of these suppliers. This represents the indirect employment and personal income impacts of construction spending.

Induced impacts typically reflect changes in spending by employee households as income increases due to additional production. In the case of TCC, induced impacts reflect the additional spending by the employees of the colleges as well as employees of suppliers. Using the TCC construction example, the additional wages received by the employees of the general contractor, lumberyard, equipment rental company, and engineering firm “induce” spending at the grocery store, movie theater, and clothing store. The jobs and personal income that result from these consumer purchases are considered induced employment and personal income impacts.

### **The IMPLAN Input-Output Model**

There are several input-output models commonly used by economists to estimate indirect and induced economic impacts. Because of the difficulty of measuring these effects, all of the models have limitations. Still, economists generally agree that the models can provide an approximate measure of the indirect and induced spending, jobs, and personal income generated by a given amount of direct spending in a particular geographic area. To calculate the multiplier effects of TCC’s spending, this study uses the IMPLAN model (Impact Analysis for PLANning). IMPLAN is a national vendor of input-output software and data used to create economic impact models and is widely used in government, higher education and in the private sector to evaluate economic impacts.

The IMPLAN model begins with the most current national transactions matrix developed by the National Bureau of Economic Analysis Benchmark Input-Output Model. The model breaks down the U.S. economy into over 500 separate economic sectors in agriculture, manufacturing, commercial services, and government. Next, IMPLAN creates state, county and zip-code level values by adjusting the national data, such as removing industries that are not present in a particular region. These economic sector data are updated annually by IMPLAN. The most current available sectoral data are for 2016, which was used in this analysis.

This study categorizes all TCC purchasing and payroll into the IMPLAN industry classifications and applies multipliers for the City of Claremont, City of Upland, San Bernardino County and Los Angeles County to calculate the total effect of TCC spending for FY 2016-17. The IMPLAN model incorporates regional purchase coefficients, which measure trade flows, i.e., the proportion of local demand purchased from local producers.

### **Methodology for Estimating Direct, Indirect, and Induced Economic Impacts**

In conducting this analysis of TCC’s total spending impacts, all estimates of direct spending aligned with the four study regions. Expenditures outside the two-county area were not included. For example, the spending associated with a catered event on the TCC campus is counted as direct spending in the location of the vendor providing the catering. The impact of college payroll is analyzed differently than the impact of the university’s goods and services purchasing and capital expenditures. This is because the TCC’s payroll is a direct expenditure of the colleges, but is also direct income to residents of the region who are TCC employees. The full amount of TCC’s payroll is counted as direct personal income, whereas induced impacts are based on employees’ places of residence.

Household spending multipliers from IMPLAN were then applied to the calculated induced spending estimates in the same way that they were applied to goods and services purchasing and capital expenditures.

### **Expenditures Excluded from Baseline Estimates of TCC Spending**

This analysis excludes several categories of college expenditures from the direct expenditure estimates that form the basis for measuring the indirect and induced economic impacts. These categories include internal charges between colleges, as well as travel reimbursements to employees for spending that occurred outside the region, honorariums to speakers and performers who may live outside the region, participant and student stipends and accounting adjustments such as accounts payable clearing expenses.

TCC expenditures for health care benefits are not considered in the analysis because the amount of the health benefit contribution is not necessarily equal to the value of the health care-related goods and services purchased by TCC employees. Furthermore, the location of the actual purchase of health-care related goods and services is difficult to track based on the patterns of TCC health benefits contributions and therefore does not lend itself to inclusion in this type of analysis.

## APPENDIX B: STUDENT SPENDING METHODOLOGY

Student spending estimates were calculated using three main inputs of data. The first is the estimated average annual student budgets provided by each college. The second is student enrollment by category and location of residence, also provided by each college. The student budget data were sorted into four major categories, based upon the presentation of college student budget information. These categories include housing, food, transportation, and books and personal items. In some cases books and personal items were budgeted separately. Therefore, for colleges lacking this distinction, an estimate was prepared based upon the division of spending at the colleges with these disaggregated spending estimates. The same approach was applied to other spending categories that were not disaggregated by select colleges, such as housing and food. The student spending estimates were prepared by college, and then aggregated to develop lump sum spending estimates by category across all of TCC. These resulting figures were presented in Table 11 in **Chapter 6. Regional Spending Impacts.**

The third input includes spending capture rate assumptions that estimate the percentage of student spending that occurred in the City of Claremont. These capture rates reflect several factors, such as the residential location of students, the distribution of retail and entertainment venues, and the expectation that students who live off campus will continue to pay their housing costs year-round (100%), even during academic break periods, but not all other costs. The capture rate assumptions are presented in Table B-1 on the following page. Some of the key assumptions include the assumption that for students who live on campus, only a scant 5% of annual spending for food will occur off-campus (such as dining out or grocery supplies), while 100% of spending on personal items will occur off campus. The greatest amount of local student spending will result from spending by students living off-campus, for whom almost all spending is assumed to occur off campus, with adjustments for the share of the calendar year during which students are estimated to be in school and living locally.

**Table B-1**  
**Percent Local Capture Rate of Student Spending (1)**  
**The Claremont Colleges**  
**Academic Year 2016-17**

Student Spending Categories	Student Living Location	
	On Campus	Off Campus
<b>Academic Year Spending</b>		
Housing	0%	100%
Food	5%	100%
Transportation	100%	100%
Books and Personal Items (2)	<b>Split</b>	
Books	40%	0%
Personal Items	60%	100%
<b>Non-academic Year Spending as a Percent of Academic Year Spending (Excluding Books)</b>		
Students Living on Campus	0%	0%
Students Living Off Campus		
Academic Year as Percent of Total (3)	0%	67%
Adjustment Factor for Percent of Academic Year Spending During Breaks (4)	NA	49%
Percent of Students Continuing Local Residency During Breaks (5)		
Percent Housing Costs Paid During Breaks	0%	100%
Percent All Other Costs Paid During Breaks	0%	33%

Sources: Individual Colleges; Applied Economics; and ALH Urban & Regional Economics.

(1) Capture rate assumptions developed by Applied Economics and ALH Urban & Regional Economics.

(2) The analysis assumes that books comprise 40% of the student budget for "Personal Items" and personal items comprise 60% of the student budget for "Personal Items." These percentages were derived from budget information disaggregated in this manner by several of the individual colleges.

(3) The analysis assumes the academic year comprises 8 months of the year, with the balance in semester and summer breaks.

(4) For students living year-round in off campus housing, this is the percentage increase in academic year spending required to support year-round living.

(5) Assumes that 33% of students continue their local residency during semester and summer breaks, but that housing costs are paid regardless of occupancy due to the nature of rental agreements.

## APPENDIX C: SPONSORED RESEARCH CASE STUDIES

### Pomona College

#### **BIOMAPS: Spatial graphs and their application to complex molecular structures**

Principal Investigators: Erica Flapan & Lingurn Burkhead, Professor of Mathematics

Award Amount: \$197,044

Funding Source: NA

The objective of this project is to work with chemists, molecular biologists, biophysicists, and materials scientists to design new topologically complex structures and to analyze the topology and geometry of existing molecular structures.

#### **Pomona College Humanities Studio**

Principal Investigator: Kevin Dettmar, Professor of English

Award Amount: \$845,000

Funding Source: The Andrew W. Mellon Foundation

In Fall 2018, the College established the Pomona College Humanities Studio as part of its commitment to providing a balanced liberal arts experience. The Humanities Studio promotes dynamic and collaborative research, work and conversations between faculty, students and scholars across the humanities disciplines. The Studio provides multiple opportunities each year for free programming for the surrounding communities and across The Claremont Colleges.

#### **Pomona College Museum of Art**

Principal Investigator: Kathleen Howe, Director of the Pomona College Museum of Art and Professor of Art History

Award Amount: \$175,000

Funding Source: The Andrew W. Mellon Foundation

In 2016, the Pomona College Museum of Art was awarded a grant to support the exhibition and publication of "Prometheus 2017: Four Artists from Mexico Revisit Orozco," as part of the wider Getty-led initiative. "Prometheus 2017" examined José Clemente Orozco's 1930 mural on Pomona College's campus and the ongoing resonance his vision has with artists currently working in Mexico. "Prometheus" was the first mural painted in the U.S. by a Mexican muralist. This community programming reached a large audience across Southern California.

## Claremont Graduate University

### **Understanding and Overcoming Adolescents Resistance to Anti-Marijuana Ads**

Principal Investigator: Bill Crano

Award Amount: \$1,604,280

Funding Source: National Institutes of Health

This project will develop and implement a novel, tailored, interactive media intervention to change adolescents' marijuana-related attitudes and behaviors, with the goal of reducing the use of marijuana among adolescents.

### **Social and Behavioral Interventions to Increase Solid Organ and Tissue Donation**

Principal Investigator: Jason Siegel

Award Amount: \$1,301,181

Funding Source: Health Resources and Services Administration

This study will be implemented in an area with a high percentage of Hispanics with the goal of assessing whether or not an intervention that focuses on the benefits experienced by donor families can increase donor registration rates among adults fifty years of age and older. Previous studies suggest that people's attitudes are most likely to lead to the desired behavior (i.e., organ donation) if a person believes they have a personal stake in the outcome (there is a vested interest), but they have not evaluated the behavior that results when the benefits experienced by the donor's family are the focus of a campaign. The investigator proposes that by increasing feelings of pride in peoples' families, the familial vested interest appeal will be particularly moving. The findings will demonstrate the utility of focusing on the benefits experienced by donor families and how eliciting specific positive emotions can maximize this approach.

### **Cognition and Body-Worn Cameras**

Principal Investigator: Kathy Pezdek

Award Amount: \$251,810

Funding Source: National Science Foundation

Despite the ubiquitous use of Body-Worn Cameras (BWCs) in police departments in the U.S. and elsewhere, surprisingly little is known about how BWC video footage should be used in the legal system. The specific issue addressed by this research is how viewing BWC footage of an event affects an individual's memory of their state of mind at the time of the original event. The US Supreme Court has ruled that a test criterion of reasonableness must be used when hearing claims against law enforcement officers accused of excessive use of force; this reasonableness criterion was defined as judged from the perspective of a reasonable officer on the scene, rather than

with the 20/20 vision of hindsight (Graham v. Conner, 1989). Does viewing BWC footage contaminate an officer's memory of their state of mind on the scene? This is the critical question that will be investigated through testing that involves both civilians and experienced police officers from the San Bernardino County Sheriff's Department.

## **Scripps College**

### **Computational Modeling of Cooperative Success using Neural Signals & Networks**

Principal Investigator: Michael Spezio, Professor of Psychology

Award Amount: \$393,321

Funding Source: National Science Foundation

The purpose of this research is to study how peoples' minds and brains function when they work together to complete a cooperative, shared task in uncertain conditions; Collaborative cooperation is an understudied topic in the field of cognitive science despite the fact that societal progress requires humans to excel at cooperation over time. To sustain successful cooperation, people need to coordinate what they see, hear, think, and do, especially about who is in the best position at any given moment to make the best decision or to take the best action for the team as a whole. Expertise changes with changing circumstances and team members need to respond quickly and flexibly. This project will enhance understanding about how the mind and brain work to initiate and sustain successful cooperation in a rapidly changing world. The research will reveal aspects of the mind and brain that best support winning strategies for cooperative success. The outcomes of the research could help enhance innovation in teams for technology design, assist centers of disease control to contain sudden outbreaks, and create new methods to help robotic assistants better respond to human direction.

### **Consenting to Searches and the 4th Amendment: Situated Social Cognition within the "Totality of Circumstances" Analysis**

Principal Investigator: Jennifer Groscup

Award Amount: \$214,158

Funding Source: National Science Foundation

Under the 4th Amendment to the U.S. Constitution, people have the right to be free from unreasonable searches. People frequently consent to police requests to search, even when they are in possession of illegal material, and the reasons are poorly understood. As a result, it is difficult for courts to assess voluntariness of consent in a systematic way. The purpose of this research is to identify factors that influence the voluntariness of consents and the factors that may increase coercion to consent. Situated cognition is a psychological theory arguing that the social and physical situation in which events occur can affect how a person perceives an event and behaves.

This project will apply situated social cognition to the consent search situation to determine what aspects of the social and physical situation in which the consent search takes place might make people more likely to feel coerced to consent.

## **Claremont McKenna College**

### **Improving Undergraduate STEM Education**

Principal Investigator: Cathy Reed, Professor of Psychology

Award Amount: \$600,000

Funding Source: National Science Foundation

This research aims to implement best practices in teaching cognitive neuroscience at the undergraduate level by focusing on the teaching of cognitive electrophysiology, a technique found to be particularly conducive to undergraduate learning. The grant monies have been used to purchase a new 64-channel electroencephalography (EEG) system that measures brain activity through the surface of the scalp. In addition, the grant money will allow the researchers to develop a meaningful product (a freely downloadable course and database) that could help many undergraduates learn EEG/ERP methods regardless of their institution's resources. If successful, the products resulting from the project will increase the number and diversity of students with the skills to engage in authentic STEM-related research, better prepare students to participate in rapidly changing scientific fields, and increase the quality of learning outcomes. Finally, the researchers plan to develop a large, open-access repository of raw data for use in class activities, lab training, and independent research that will allow students to generate and test original research hypotheses; few, if any, current studies have a big enough sample to investigate these questions.

### **Early Life Predictors of Adult Success**

Principal Investigator: Ronald Riggio, Leadership & Organizational Psychology Professor

Award Amount: NA

Funding Source: W.K. Kellogg Foundation

This research builds on a project Ronald Riggio, PhD., helped start nearly 40 years ago as co-organizer of the Fullerton Longitudinal Study (FLS). The FLS followed 130 children born in 1978 and looked at numerous developmental and psychological variables from early childhood through adulthood (age 24 and 29). This research yielded thousands of measurements of education, family life, extracurricular experiences, and assessments of temperament and personality. The goal of the research is to study the impact of early life experiences on adult lives, with a focus on how early experiences affect educational attainment, career choice and trajectory, attainment of positions as leaders at work and in the community, family life, and perceptions of happiness, satisfaction, and success in

life. The team has also collected new data on key leadership outcomes that will provide a crucial corollary to the early-life data collected decades ago. They intend to extend these lines of research, examining not just leader emergence but also leader effectiveness. Study findings will inform how to best design leadership development programs, a topic germane to all sectors and industries.

## **Harvey Mudd College**

### **Adaptive Query Processing for Crowd-Powered Database Systems**

Principal Investigator: Beth Trushkowsky, Associate Professor of Computer Science

Award Amount: \$175,000

Funding Source: National Science Foundation

Database systems provide users with the ability to query collections of data and provide answers very fast; however, people are better able to tackle problems that require judgement or interpretation. A crowd-powered database system uses groups of people (the “crowd”) to help answer queries by asking them to process data using criteria that are subjective and require interpretation. While crowd-powered database systems may take hours or days to complete a query, they enable the processing of complex queries. Traditional database systems have information about how long parts of a query will take and the likelihood of items satisfying filters; they use this information to choose an efficient processing order for the query. The usefulness of a crowd-powered database system, however, hinges on its ability to efficiently process the query when this information is unknown before the process begins. The goal of this research is to build a cost-based optimizer for crowd-powered queries for which important statistics used in optimization are unknown at query time. This will yield a query processing system that involves multiple filtering criteria, observes the execution environment, and adjusts its processing strategy accordingly. Such a system will empower users to ask more interesting questions and advance research in allocating human computation resources in dynamic environments.

### **Interactions between Impurities and Dislocations in Small Colloidal Crystals**

Principal Investigator: Sharon Gerbode, Associate Professor of Physics

Award Amount: \$100,000

Funding Source: Research Corporation for Science Advancement

Manufactured silicon wafers are likely to contain crystals that are riddled with impurities. How these impurities move within crystals is a fundamental topic affecting numerous technological processes. Impurity segregation is thought to be influenced by dislocations, patches of disorder within the crystal whose motion determines the crystal’s materials properties and phase transitions, such as melting.

Existing theories of dislocation and impurity motion are quite accurate for very large crystals. However, these theories break down for smaller, technologically relevant systems, such as nanocrystals, where the entire crystal is only tens or hundreds of atoms wide. Unfortunately, the atomic-scale motions of dislocations and their interactions with impurities are too small and fast to observe experimentally. The field of colloidal physics promises an unprecedented glimpse of such mechanisms in crystals composed not of atoms but of much slower and larger colloids (microscopic spherical beads suspended in fluid). This research probes a colloidal system using an optical trap to induce disorder and observe the resulting interactions between dislocations and impurities in colloidal crystals in order to discover how these interactions change in the technologically relevant regime of very small crystals.

### **Pitzer College**

#### **Mentors Enable, Connect, Help, Advocate, Nurture, Intervene, Sustain and Motivate (MECHANISM) for Success in the Molecular Sciences**

Principal Investigators: Kathleen Purvis-Roberts, Roberta Espinoza

Award Amount: \$602,422

Funding Source: National Science Foundation

The Mentors Enable, Connect, Help, Advocate, Nurture, Intervene, Sustain and Motivate (MECHANISM) for Success Program provides scholarships for two cohorts of eight students each (16 students total) who demonstrate financial need and academic ability, and who major in molecular science discipline, such as chemistry, biochemistry, or molecular biology. The scholarships are aimed at covering textbook costs, eliminating the need for work study, and allowing students to graduate with little to no loan debt; they cover all four years of a student's undergraduate career and range from \$7,000 to \$9,000 each year. The project seeks significant interventions in the lives of the scholarship recipients in order to ensure optimal use of educational resources and learning experiences. These interventions are known as "Pivotal Moments" and are achieved through high impact practices and dedicated mentoring faculty and staff at Pitzer College.

#### **The Global/Local Portuguese & Vietnamese Project and Integrative, Community-Engaged LCTL Learning Program**

Principal Investigators: Michael Ballagh, Roberta Espinoza

Award Amount: \$50,000

Funding Source: Partners of the Americas

This funding will establish two new six-week summer study abroad programs in Salvador, Brazil, and Hue, Vietnam that will allow Pitzer to expand its global reach to two unrepresented regions in its study abroad portfolio, while also targeting interest and enrollment from underrepresented students (African-American, Asian-American, and First Generation students).

### **Vancouver Island University and Pitzer College Indigenous Student and Innovation Exchange**

Principal Investigators: Michael Ballagh, Scott Scoggins

Award Amount: \$10,100

Funding Source: Partners of the Americas

The goal of this project is to develop and implement an exchange program for Indigenous youth to learn more about college/university in both the United States and Canada. This exchange will bring together two established Indigenous mentorship programs, Vancouver Island University's 'Su'luqw'a' Community Cousins program and Pitzer College's Native Youth to College program. The new exchange program will go beyond the standard approach to academics, drawing on Native North American scholars and elders' wisdom to contribute cultural knowledge and traditional ways of learning within the academic environment.

### **Keck Graduate Institute**

#### **MucoJet Proof-of-Concept Study**

Principal Investigators: Dr. Kiana Aran, Assistant Professor, Biomedical Sciences, School of Life Sciences

Award Amount: NA

Funding Source: NA

Noninvasive immunization technologies have the potential to revolutionize global health by providing easy-to-administer vaccines at low cost, enabling mass immunizations during pandemics. Existing technologies, such as transdermal microneedles, are costly, deliver drugs slowly, and cannot generate mucosal immunity, which is important for optimal immunity against pathogens. This project tests a device termed MucoJet, a needleless, pill-sized technology that jet releases a stream of vaccine inside the mouth. The study has shown that the MucoJet device is capable of delivering vaccine-sized molecules to immune cells in the oral cavity of animals. Rabbits treated by MucoJet delivery have antibody titers that are three times higher than rabbits receiving a vaccine delivered in the mouth by a dropper. When a patient holds the MucoJet against their cheek, the device releases a jet stream that directly targets the buccal region. This region is rich in immune cells but underutilized in immunology because of the challenge of penetrating the thick mucosal layer with existing technologies, such as the oral spray often used for influenza vaccination. The researchers are also considering other

shapes, sizes, and designs to simplify vaccine administration procedures and increase patient compliance, especially for children. For example, MucoJet could be fabricated into a lollipop that children could hold in their mouths.

**New Investigator Research Grant**

Principal Investigators: Dr. Rachita Sumbria, Assistant Professor, School of Pharmacy

Award Amount: \$98,000

Funding Source: Alzheimer's Association

This grant will provide funding to support research on developing a brain penetrating TNF-alpha inhibitor (TNFI) for Alzheimer's disease. The tumor necrosis factor (TNF)-alpha plays an important role at various stages of the disease progression. To block its action, drugs must get past the blood-brain barrier (BBB); these drugs are called TNF-alpha inhibitors (TNFIs). The BBB is a natural barrier that protects and separates the periphery from the Central Nervous System, but also prevents large molecules, such as TNFIs from entering the brain. The key then is to find a way to get the TNFIs into the brain, which may lead to new treatments for Alzheimer's disease. This research will focus on getting a TNF-alpha inhibitor into the brain noninvasively via Molecular Trojan Horse technology (MTH), which essentially acts as a ferry for the drug (e.g., TNFI) and allows it to get past the BBB. This research will underscore the importance of the blood-brain barrier as a bottleneck to brain drug delivery, especially for Alzheimer's disease.

## ASSUMPTIONS AND GENERAL LIMITING CONDITIONS

ALH Economics has made extensive efforts to confirm the accuracy and timeliness of the information contained in this study and to review the information for reasonableness. Such information was compiled from a variety of sources, primarily including data provided by The Claremont Colleges, The Claremont Colleges Services, review of college documents, the City of Claremont, and other third parties deemed to be reliable. Although ALH Economics believes all information in this study is correct, it does not warrant the accuracy of such information and assumes no responsibility for inaccuracies in the information by third parties. We have no responsibility to update this report for events and circumstances occurring after the date of this report.

The accompanying analyses are based on estimates and assumptions developed in connection with the study. In turn, these assumptions, and their relation to the projections, were developed using currently available economic data and other relevant information. Economic impacts discussed in this report are estimates; ALH Economics does not represent these data to be actual measures of the economic impact of TCC. Instead, economic impacts are estimated based on spending data provided by TCCS, reasonable assumptions regarding spending patterns and habits of employees, students, visitors, and retirees, and the multiplier estimates of the IMPLAN input-output model. Actual TCC economic impacts may vary from the estimates provided herein.