
UNIVERSITY OF COLORADO

Economic Impacts of the University of Colorado on the State and Counties of Operations

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TABLE OF CONTENTS

Acknowledgements	i
Table of Contents	ii
List of Tables	iii
Executive Summary	1
Project Overview	2
Methodology	2
Definitions	3
Literature Review	3
The University of Colorado	4
Students	4
Alumni	5
Diversity	6
Study Abroad.....	6
Continuing Education.....	6
Financial Aid	7
Noneducation Spending and Visitation.....	7
Employment.....	8
Residence by Metropolitan Statistical Area	10
Resident Salaries	10
Construction	10
Operations	11
Sponsored Programs.....	13
Technology Transfer	14
Foundation.....	16
CU Real Estate Foundation	16
Off-Site Employee Assumptions	16
Economic Impact	17
Conclusion	18
Bibliography.....	19
Appendix 1: Literature Review	22
Appendix 2: The Sustainability of Companies Created Based on CU Intellectual Property.....	24
Appendix 3: Economic Data for Fiscal Impacts	25
Housing	25
Education	26
Income Taxes	28
Property Taxes	28
Sales Taxes	29
Cost of Government.....	30
Appendix 4: OPX Biotechnologies.....	31
Appendix 5: Arca biopharma	33
Appendix 6: University of Colorado Impact on the Boulder MSA	35
Appendix 7: University of Colorado Impact on the Colorado Springs MSA.....	39
Appendix 8: University of Colorado Impact on the Denver MSA	43
Appendix 9: Vendor and Purchasing Card Spending by County, (\$ Thousands).....	47

LIST OF TABLES

Table 1: Enrollment by Campus, Fall 2010	5
Table 2: FTE Enrollment by Campus, FY2011.....	5
Table 3: Alumni by Campus and Location.....	6
Table 4: Student Spending (in millions) for students attracted and retained by CU ^a	8
Table 5: Total Faculty, Staff, and Student Employment, FY2011.....	9
Table 6: Total Faculty and Staff (NonStudent) Employment, FY2011.....	9
Table 7: Total Regular Faculty and Staff Employment, Fall 2010 and 2011.....	9
Table 8: Residence of Employees by MSA, FY2011	10
Table 9: Total In-State Salaries by MSA, FY2011 (In Millions)	10
Table 10: Current Construction Projects as of June 30, 2011 (in Thousands)	11
Table 11: Operating and Nonoperating Revenues (Excluding Capital), FY2011 (in Thousands).....	11
Table 12: Total Vendor Spending, FY2011 (In Millions).....	12
Table 13: Total Procurement Card Purchases, FY2011 (In Millions).....	12
Table 14: Total Combined Vendor and Procurement Card Purchases, FY2011 (In Millions).....	13
Table 15: Sponsored Program Awards and Expenses, FY2011 (in Millions)	13
Table 16: Awards by General Source, FY2011 (in Millions)	13
Table 17: Expenses by General Source, FY2011 (in Millions)	14
Table 18: Companies Created Based on CU Technology, FY2011	15
Table 19: Technology Transfer office, FY2011 Budget	15
Table 20: TTO Performance at a Glance, FY2011	15
Table 21: TTO Portfolio Snapshot as of July 1, 2011.....	16
Table 22: Residence of Employees by MSA, FY2011	17
Table 23: Summary of Expenditures and Impacts, FY2011 (in Millions)	17
Table 24: Labor, Employment, and Output Impacts, FY2011	17
Table 25: Total Population in Occupied Housing Units by Tenure, 2010	25
Table 26: Percentage of Population in Occupied Housing Units by Tenure, 2010	26
Table 27: Total Population in Occupied Housing Units by Tenure	26
Table 28: Fall 2010 Classroom Pupil Membership, Aggregated by County	27
Table 29: Total State and Local Revenue Per Pupil by County, FY2009-2010	27
Table 30: Colorado Individual Statistics of Income, Adjusted Gross Income Tax, 2008	28
Table 31: Property Tax Levies, 2010	29
Table 32: County Tax Rates.....	29
Table 33: City Tax Rates	30
Table 34: Total CU-Boulder Faculty and Staff Regular Employment, Fall 2010 and 2011	36
Table 35: CU Vendor and Purchasing Card Expenditures, Boulder MSA, FY2011 (in Millions)	36
Table 36: UCB Vendor and Purchasing Card Expenditures, by Location, FY2011 (in Millions).....	37
Table 37: CU-Boulder Current Construction Projects as of June 30, 2011 (in thousands)	37
Table 38: System Impacts on the Boulder MSA, Summary of Expenditures and Impacts, FY2011 (in Millions)	38
Table 39: Labor, Employment, and Output Impacts, Boulder MSA, FY2011	38
Table 40: Total UCCS Faculty and Staff Regular Employment, Fall 2010 and 2011	40
Table 41: CU Vendor and Purchasing Card Expenditures, Colorado Springs MSA, FY2011 (in Millions).....	40
Table 42: UCCS Vendor and Purchasing Card Expenditures, by Location, FY2011 (in Millions)	41
Table 43: System Impacts on the Colorado Springs MSA, Summary of Expenditures and Impacts, FY2011 (in Millions).....	42
Table 44: Labor, Employment, and Output Impacts, Colorado Springs MSA, FY2011.....	42
Table 45: Total UCD/AMC Regular Faculty and Staff Employment, Fall 2010 and 2011	44
Table 46: CU Vendor and Purchasing Card Expenditures, Denver MSA, FY2011 (in Millions)	45
Table 47: UCD and AMC Vendor and Purchasing Card Expenditures, by Location, FY2011 (in Millions).....	45
Table 48: Current Construction Projects as of June 30, 2011 (in thousands).....	45
Table 49: System Impacts on the Denver MSA, Summary of Expenditures and Impacts, FY2011 (in Millions)	46
Table 50: Labor, Employment, and Output Impacts Denver MSA, FY2011	46

EXECUTIVE SUMMARY

The University of Colorado is the nexus of research and teaching that reaches far beyond economic statistics that quantify purchases and payroll in the state of Colorado. That said, the university's economic impacts still resonate as an economic engine driven by education and research expenditures. This enterprise, which directly employs 27,500 faculty, staff, and student workers, shares the complexity of any large corporation. Funding from tuition, grants, contracts, gifts, and appropriations is turned around and spent in private industry. These purchases, which range from food services to energy to equipment, leave an economic imprint of \$5.3 billion on the state of Colorado and directly and indirectly employ 43,500 in the state. The \$246 million in construction in fiscal year (FY) 2011 alone had economic benefits of \$478 million, concentrated in an industry disproportionately affected by the recession.

This public university serves "Colorado, the nation and the world through leadership in high-quality education and professional training, public service, advancing research and knowledge, and state-of-the-art health care." With education as a core element of this mission, the University of Colorado enrolled 57,400 students in the fall of 2010 and awarded 14,525 degrees for the year. An estimated 192,000 alumni reside in the state, contributing to Colorado's economic and social fabric. Evidence of the university's educational impact can be found in the leadership of private businesses, teachers in classrooms, health-care professionals, and policy makers. These alumni are an integral part of the Colorado labor force, particularly in the high-tech workforce, and contribute to the state's rank as second in the nation for educational attainment.

Leveraging the \$181.6 million in state funding FY2011, the university operated on \$2.7 billion in noncapital revenues. A significant portion of this leveraged funding was related to sponsored program and other restricted fund activity, primarily associated with research activity. Sponsored program awards in FY2011 exceeded \$793 million, were concentrated on the Anschutz Medical Campus and the Boulder campus, and were predominately comprised of funding from the National Institutes of Health, the National Science Foundation, NASA, the Department of Defense, and the Department of Commerce. In fact, 68% of FY2011 awards and 78% of research expenditures were federal in nature. This funding flows to departments and researchers with unique expertise, concentrated in fields such as biotechnology and aerospace, which lends to activity in specific industries and clusters in the state. This activity supports the concentration of companies, where Metro Denver alone touts cluster employment concentrations that far exceed the nation, including aerospace (5.1 times the national average), telecommunications (2.9 times), cleantech (2 times), medical devices and diagnostics (1.7 times), and financial investments (1.6 times). Some federal research laboratories (e.g., joint institutes) are located in Colorado because of the university. They are often on university grounds and partially staffed by university employees, leading to a high relative concentration of federal research laboratories in the state.

The University of Colorado's Technology Transfer Office is the conduit for technology commercialization. From CU intellectual property, 114 companies have been formed, 85 of which continue to operate in Colorado, and 11 of which were formed in FY2011 alone. These companies are taking risks to create innovative technological impacts, such as OPX Biotechnologies, a cleantech company creating proven alternatives to petroleum products, and Arca biopharma, a firm customizing treatment to improve cardiovascular health.

The University of Colorado collaborates in a research triangle that includes universities, businesses, and federal laboratories. These concerted efforts, with support from state and federal funds, help ensure Colorado's economic vitality. From direct expenditures and spinoff technologies to collaborative research and an educated workforce, the University of Colorado strengthens Colorado's economy.

PROJECT OVERVIEW

The University of Colorado is an economic driver in the state of Colorado, employing thousands of workers, buying from local vendors, importing investment, educating the local workforce, and exporting research discoveries. Aside from the direct impact, the university facilitates company growth and job creation through research, tech transfer, and spin-off companies. This study provides a snapshot of the university's economic contribution to the state. In addition, the economic contribution of the system and the four campuses (Boulder, Colorado Springs, Denver, and the Anschutz Medical Campus) to their respective communities is detailed for fiscal year (FY) 2011.

METHODOLOGY

This study was conducted in cooperation with the University of Colorado System and individual campuses. Economic impacts on Colorado were estimated by examining operating expenditures, capital expenditures, employee salaries and benefits, and construction expenditures. This approach accounted for the leakage that occurs when research grants lead to a portion of purchases made outside the state. Furthermore, this study estimated the multiplicative impacts of direct expenditures on other industries in the economy through input-output modeling by using IMPLAN, a widely used economic modeling software. Additional estimates were made for student and visitor expenditures. Intangible benefits, including community service, outreach, and fundraisers, are described to illustrate additional community benefits derived from the university's presence, but were not directly quantified when determining the overall economic contribution. The study also identified state funding as a component of total funding for the system and compared CU to peer institutions through a review of comparable studies. This study did not estimate the economic contributions of alumni working in Colorado, nor did it estimate the economic impacts of spin-off companies or technologies beyond the licensing agreements.

Data requests were made to multiple University of Colorado departments in order to obtain information on employment, salaries, expenditures, construction, research, visitation, and student spending. Additional information was sourced from publicly available data on the University of Colorado website.

Employment and salary data were provided by ZIP code and by campus, allowing for the allocation of employee spending to the counties in which they reside. Employees spend their earnings on a broad range of goods and services, including housing, energy, food, clothes, etc.

Expenditure data were provided by vendor ZIP code in order to identify (1) the in-state versus out-of-state spending (i.e., leakage), and (2) the counties/metropolitan statistical areas where spending occurred. Adjustments were made in instances where local companies provided services but out-of-state parent companies received payments. The vendor report contained all expenditures, including construction- and research-related expenditures, but excluded purchasing card transactions made by employees. Purchasing card transactions were also provided by ZIP code, representing travel and supplies, and accounted for a relatively small overall portion of spending. Given the absence of a public education category in the input-output model, operating expenditures were assigned as Private Education in the IMPLAN model.

Construction projects were identified by campus, but most projects spanned multiple years, making the identification of FY2011 construction spending impossible to accurately ascertain. The construction expenditures were included in the vendor report with accompanying ZIP codes, and the university also

identified specific projects and quantified the value of current construction by campus. Estimated construction expenditures were assigned as Nonresidential Building in the IMPLAN model.

Additionally, research funding and employment were identified by campus, and expenditures were included in the vendor report with accompanying ZIP codes.

For student expenditures and visitation data, the research team relied on a survey conducted by the university in 2009. This survey captured student spending habits and identified the source of funds (in-state versus out-of-state). Similarly, survey data estimated visitation due to students. This information does not include visitation related to conventions, athletics, or collaborative research visits; thus, this a conservative estimate of visitation impacts. These expenditures were assigned by spending activity in the IMPLAN model.

This study provides a conservative estimate of economic impacts using ZIP codes of vendors and employees in procurement and human resource databases. The research team believes this conservatively estimates the economic contribution of the University of Colorado since some vendors are located in the state, but the parent company's accounting office, where the check is mailed, is located in another state. Likewise, some faculty, staff, and students have a home of record in another state, but they are actually living and working in Colorado. Additional research could be conducted to reclassify these expenditures and residences. Furthermore, contract vendor activity was not captured in this study (e.g., football game vendors, basketball game vendors, etc.), nor did this study estimate the economic contributions of alumni living and working in the state of Colorado.

DEFINITIONS

Gross Domestic Product (GDP): A measure of economic activity, GDP is the total value added by resident producers of final goods and services.

Gross Output (Output): The total value of production is gross output. Unlike GDP, gross output includes intermediate goods and services.

Value Added: The contribution of an industry or region to total GDP, value added equals gross output, net of intermediate input costs.

Colorado Springs Metropolitan Statistical Area (MSA): El Paso County and Teller County.

Boulder MSA: Boulder County.

Denver MSA: Adams, Arapahoe, Broomfield, Denver, Douglas, Jefferson, Clear Creek, Gilpin, Park, and Elbert counties.

LITERATURE REVIEW

By their nature, universities have a profound impact on their respective communities, regions, and states, both in terms of economic contributions and in the area's cultural and social fabric. Economically, direct and indirect spending by the institution, employees, students, and visitors can often total in the billions. A review of recently conducted economic impact studies of several PAC 12 universities reveals a range of impacts. Although the studies used different methodologies, thus making direct comparisons difficult, the exercise highlights the important role universities play. For a more detailed look at each report, see Appendix 1.

Of those studies that reported a total economic impact, figures ranged from a high of \$46.3 billion for the University of California system to a low of over \$1.5 billion for Oregon State University. Those institutions with economic impacts in the middle of the range included UCLA, with \$9.89 billion, and the University of Washington, with \$9.1 billion.

In difficult economic times with tight government budgets, the return on taxpayers' investment becomes a highly scrutinized metric. Again, these figures were not calculated in the same way, so caution must be used in making comparisons. The University of Arizona reported that for every \$1 of state appropriated funds, the university created another \$3.50 in grants, contracts, and gifts. For the University of Utah, every \$1 received from appropriations created an additional \$7 through other revenues, including research grants, patient care, and tuition. For every \$1 invested by the State of Washington in the University of Washington, \$22.56 was generated in the state's economy. For the University of Oregon, for every \$1 appropriated by the state, \$33.64 was generated.

Other figures reported in the studies include the economic impact generated by university employee, student, and visitor spending. The impact of technology transfer was also discussed in the some of the studies; however, the impact of spin-off companies and the commercialization of research is often many years in the making and therefore difficult to assess. The UCLA report addresses this topic; however, no figures are provided for revenue generated. The University of Washington report does specify an impact of spin-off companies and commercialization between \$3.66 billion and \$6.6 billion on the state's economy by 2020, based on research funding of \$1.15 billion. The University of Utah earned approximately \$17 million in royalties from its patents. The Stanford Office of Technology Licensing reported royalty revenue totaled \$61.3 million in FY2005.

THE UNIVERSITY OF COLORADO

The University of Colorado is a research university that educates students, conducts research, commercializes technology, and creates companies. In FY2011, nearly 57,400 students were enrolled at the University of Colorado, and the institution awarded 14,525 degrees. The university's 27,483 faculty, staff, and student employees are responsible for the teaching, research, service, and administration functions of the campuses. The university recorded operating revenue totaling \$2.7 billion in FY2011, including tuition, fees, and other revenues—\$792 million of which were contracts and grants. The University of Colorado is comprised of four campuses: the Anschutz Medical Campus (AMC), the University of Colorado Boulder (UCB), the University of Colorado Colorado Springs (UCCS), and the University of Colorado Denver (UCD). A fifth entity includes the President's Office and administration, referred to in this report as the University of Colorado System.

STUDENTS

The University of Colorado recorded 57,361 students in the fall of 2010. On a full-time equivalent (FTE) basis, the university enrollment was 48,814 for FY2011. UCB recorded the greatest enrollment, followed by UCD, UCCS, and AMC. On a full-time basis, 80% of students were undergrads, while 20% were graduate students. More than three-quarters of the student body were Colorado residents. The ratio of nonresident students is limited by Colorado statute. In FY2011, the University of Colorado awarded 14,580 degrees: 9,659 bachelors, 3,772 masters, 45 specialist, and 1,104 doctoral.¹

¹University of Colorado Office of Institutional Research, March 2012.

TABLE 1: ENROLLMENT BY CAMPUS, FALL 2010

Campus	Boulder	UCCS	Denver	AMC	Total
Undergraduate - resident	16,571	6,553	8,691	393	32,208
Undergraduate - nonresident	8,629	618	990	14	10,251
Graduate - resident	3,534	1,580	4,257	2,482	11,853
Graduate - nonresident	1,768	141	681	459	3,049
Total	30,502	8,892	14,619	3,348	57,361

Note: Enrollment includes degree and nondegree students.

Source: University of Colorado, Institutional Research, www.cu.edu/ir, retrieved December 27, 2011.

FIGURE 1: TOTAL ENROLLMENT BY CAMPUS, FALL 1993-FALL 2011

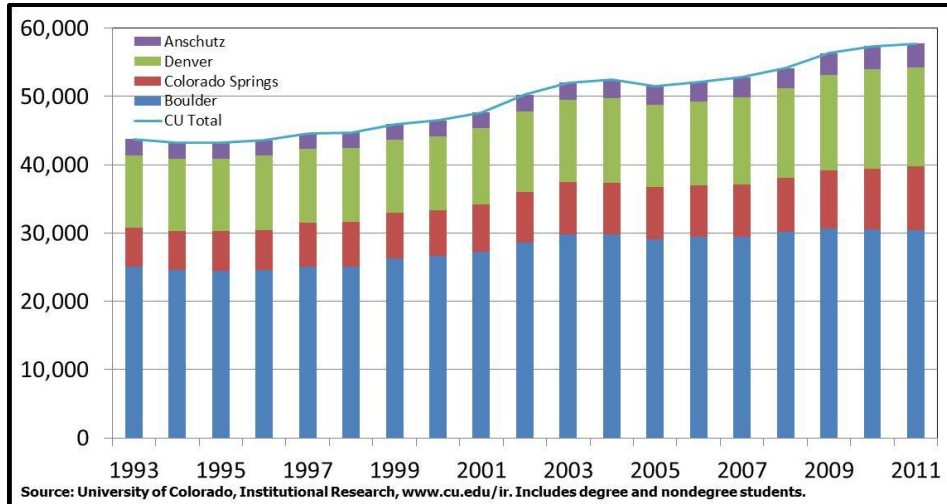


TABLE 2: FTE ENROLLMENT BY CAMPUS, FY2011

Campus	Boulder	UCCS	Denver	AMC	Total
Undergraduate - resident	15,667	5,917	7,298	438	29,320
Undergraduate - nonresident	8,186	577	933	19	9,714
Graduate - resident	1,985	722	2,284	2,834	7,825
Graduate - nonresident	941	63	391	560	1,955
Total	26,779	7,279	10,906	3,850	48,814

Note: FTE is based on total credit hours (30=full time). Totals may not sum due to rounding.

Source: University of Colorado, Institutional Research, www.cu.edu/ir, retrieved December 27, 2011.

Alumni

The university has a long history of educating students and preparing them to be actively engaged, contributing members of society. Alumni records indicate that nearly 192,000 graduates reside in the state of Colorado, including business leaders, policy makers, educators, health-care workers, engineers, and many others. UCB has the largest number of in-state alumni, totaling 102,286, followed by UCD (51,752), UCCS (22,090), and AMC (15,774).

TABLE 3: ALUMNI BY CAMPUS AND LOCATION

Campus	Boulder	UCCS	Denver	AMC
Boulder MSA	36,341	444	5,029	1,769
Denver MSA	48,393	933	41,784	10,582
Colorado Springs MSA	4,362	16,746	1,116	782
Rest of Colorado	13,190	3,967	3,823	2,641
State Total	102,286	22,090	51,752	15,774

Diversity

The University of Colorado System is taking steps to prepare all students to participate in the increasingly diverse and global economy of the 21st century and to meet the educational needs of the state and the nation. To support the system’s philosophy of inclusion and diversity, each campus maintains various statistics on diversity. Minority enrollment in 2010-11 increased 7% compared to the previous year for undergraduate and graduate students on the Boulder campus. For the Colorado Springs campus, the number of African American students enrolled in 2010-11 climbed 18.7% and Latino students, 19.3%. The percentage of undergraduate students of color at the AMC was nearly 31%.

Similar growth is reflected in the number of minority and female faculty members. For the Boulder campus, the percentage of minority tenured/tenure track faculty rose to 18% from 14% over an eight-year period, and the percentage of female tenured/tenure track faculty increased to 32% from 27% during the same period. At UCCS, a report published in 2010 indicated that the share of minority assistant professors was 22%, increasing from 13% in the past year. As well, one-quarter of full professors were female at the Denver campus in fall 2010.

Study Abroad

Study abroad programs play an important role in offering students the opportunity to embrace the richness of the global community, learn about other cultures, and help them to better compete professionally in the global market. All of the campuses of the University of Colorado System offer study abroad programs that strive to enhance students’ perspective and understanding of the world. At CU-Boulder, more than 1,000 students study abroad every year—a total of 20,000 since 1962—in 160 different programs that vary in length from three weeks to one year. Programs range from enrollment at a foreign university to internships. At UCD, 115 programs are offered in 13 schools and colleges. One program, Signature International Ventures, uniquely offers a long-term commitment to partner programs in specific regions, including the Middle East, Africa, and China. Among the programs offered at UCCS are international field courses led by faculty members and exchange programs with foreign universities.

Continuing Education

All campuses in the University of Colorado System offer lifelong learning opportunities that extend their educational resources. Among these are degree, recertification, high school, professional, and retraining programs, in addition to pre-collegiate outreach programs and personal enrichment courses. Lifelong learning may be viewed as a continuum that includes pre-collegiate educational opportunities for high school students who are interested in taking college courses, as well as programs and courses that boost career development and enhance personal enrichment throughout an individual’s life. In the

CU System, courses and programs may be provided by multiple departments and are offered in ways that fit with students' busy schedules, such as online, independent, evening, and weekend study formats. Many courses are available to the general public. According to the Colorado Department of Higher Education, in fall 2010, a total of 3,480 individuals enrolled in an extended studies program at CU-Boulder, compared to 6,288 at UC Denver and 1,126 at UCCS. If all students are included—regardless of their status (degree or nondegree) or whether they have enrolled in more than one course—that number increases significantly. For CU-Boulder, the total was about 20,000 enrollments in FY2010-11, generating \$22.8 million in revenue.

Financial Aid

Many resources are available through federal, state, and institutional sources to help defray the cost of a college education, including scholarships, grants, work study, and loans. Each campus has an office of financial aid that helps students learn more about funding options. In FY2010, 41,720 students in the CU System received financial assistance totaling \$613.5 million. Federal loans accounted for 62% of the aid, followed by institutional aid with 17%. Not surprisingly, resident undergraduate students accounted for the largest share of the aid; nearly 23,000 in the CU System received financial assistance in FY2010. Each year, more than \$30 million in financial assistance is awarded to UCD and AMC students, and over half of CU-Boulder students apply for and receive some form of financial aid.

Noneducation Spending and Visitation

Student spending is similar in nature to offsite employee spending, with expenditures ranging from food and rent to clothing and entertainment. However, spending habits tend to vary from employee spending as do the sources of funds. The University of Colorado System conducts student spending surveys in order to quantify spending habits. The results are for students who would not be in Colorado if they were not enrolled at the university; thus, this is spending that otherwise would not have occurred in the state or in the metropolitan areas. Statewide, this spending was estimated at \$500.9 million in FY2011, with the Boulder campus accounting for 63% of the total, followed by the Denver campuses (27%) and the Colorado Springs campus (9%). Nearly 38% of the spending was identified as housing expenditures, followed by groceries (11%), and books (11%).

Visitors bring substantial ancillary benefit to university communities. These individuals range from visiting professors and researchers to students' families, alumni, and sports spectators. In a survey of students, the university gained insight into the number of visitors and amount of spending related to students (e.g., parents' weekend). These other visitor impacts, including those from visiting professors and researchers, have not been quantified in this study; thus, visitor impacts are conservative at best. Public revenues derive from sales and accommodation taxes paid on the visit. Given the relatively small number of visitors compared to local business activity and visitation, additional public costs, including police and fire protection, are considered marginal.

TABLE 4: STUDENT SPENDING (IN MILLIONS) FOR STUDENTS ATTRACTED AND RETAINED BY CU^a

Spending	Boulder	Colorado Springs	Denver	AMC	CU Total
Students					
Housing	\$117.8	\$17.2	\$31.2	\$22.5	\$188.8
Groceries	\$34.8	\$4.4	\$8.7	\$5.8	\$53.7
Restaurants	\$25.7	\$3.5	\$6.2	\$3.3	\$38.6
Personal Goods	\$22.4	\$3.3	\$6.0	\$2.6	\$34.2
Personal Services	\$11.7	\$1.4	\$3.2	\$1.6	\$17.8
Transportation	\$14.7	\$4.3	\$4.7	\$3.0	\$26.7
Entertainment and Luxury Items	\$18.9	\$2.4	\$3.9	\$2.3	\$27.5
Medical Expenses	\$10.9	\$1.6	\$2.5	\$1.3	\$16.2
Hotels	\$1.9	\$0.2	\$0.4	\$0.2	\$2.7
Recreation	\$4.9	\$0.4	\$1.1	\$0.6	\$7.0
Books	\$37.1	\$4.5	\$8.5	\$3.9	\$54.0
Childcare	\$2.6	\$0.2	\$0.8	\$1.3	\$4.9
Utilities	\$15.3	\$3.6	\$5.8	\$4.1	\$28.8
Total Student Expenditures	\$318.7	\$46.8	\$82.9	\$52.5	\$500.9
Visitors^b					
Hotels	\$6.8	\$0.5	\$1.3	\$0.6	\$9.2
Recreation	\$4.5	\$0.5	\$0.9	\$0.6	\$6.5
Restaurants	\$4.9	\$0.6	\$1.0	\$0.6	\$7.1
Total Visitor Expenditures	\$16.2	\$1.6	\$3.2	\$1.9	\$22.9

Note: Conferences, events, and athletics not included.

^aIncludes nonresidents and resident students who indicated that they would have left Colorado had they not attended CU (based on survey responses).

^bIncludes only students' visitors.

EMPLOYMENT

In FY2011, the University of Colorado was the third-largest employer in the state of Colorado,² and is among the largest employers in each county of operations. Differentiating between employee work location and residence is important for assigning employee spending to home MSAs.

Together, the faculty and staff of the University of Colorado form a collaborative community that supports CU's pillars of excellence and impact—learning and teaching, discovery and innovation, community and culture, and health and wellness. A wide range of employees with a variety of skills is needed to support these pillars, including faculty researchers, scientists, and teachers; administrators; and support staff. Inherent in this range is an array of educational attainment. Most tenured/tenure-track faculty hold a doctorate or other terminal degree.

The University of Colorado employed 27,483 faculty, staff, and students in FY2011, with total salaries of nearly \$1.2 billion. More than 92% of the employees (25,320) primarily live in Colorado, representing 95% of total salaries (\$1.1 billion). Average earnings were \$44,828, including student pay. The Boulder campus recorded the largest number of employees—nearly 13,200 when student workers are counted. The Anschutz Medical Campus grossed the highest total and average wages. Benefits were estimated system-wide to total \$330 million.

²Excludes student workers.

**TABLE 5: TOTAL FACULTY, STAFF,
AND STUDENT EMPLOYMENT, FY2011**

Campus	Total Employment	Total Salaries (Millions)	Average Salaries
Colorado	25,320	\$1,135.0	\$44,828
Total	27,483	\$1,191.9	\$43,368

When focusing on nonstudent employment, the University of Colorado employed 17,860 individuals in FY2011 earning average salaries of \$64,547.

**TABLE 6: TOTAL FACULTY AND
STAFF (NONSTUDENT) EMPLOYMENT, FY2011**

Campus	Total Employment	Total Salaries (Millions)	Average Salaries
Boulder	8,105	\$454.2	\$57,216
UCCS	1,135	\$55.3	\$48,705
Denver	1,598	\$90.6	\$56,685
AMC	6,844	\$539.1	\$78,769
System	179	\$13.6	\$76,210
Total	17,860	\$1,152.80	\$64,547

Note: Includes temporary workers, but excludes student employment.

**TABLE 7: TOTAL REGULAR FACULTY AND
STAFF EMPLOYMENT, FALL 2010 AND 2011**

Occupation	Fall 2010			Fall 2011		
	Full-Time	Part-Time	Total	Full-Time	Part-Time	Total
Faculty/Academic Staff						
Instructional Faculty	4,341	1,278	5,619	4,491	1,643	6,134
Tenured/Tenure Track	2,971	18	2,989	3,002	39	3,041
Full Professor	997	17	1,014	1,013	18	1,031
Associate Professor	973	-	973	999	17	1,016
Assistant Professor	1,001	1	1,002	990	4	994
Non-Tenure Track	1,370	1,260	2,630	1,489	1,604	3,093
Instructor/Sr. Instructor	1,272	58	1,330	1,333	62	1,395
Other	98	1,202	1,300	156	1,542	1,698
Research Faculty/Academic Research Staff	3,160	513	3,673	3,205	530	3,735
Public Service Faculty	62	182	244	48	195	243
Total Faculty/Academic Staff	7,563	1,973	9,536	7,744	2,368	10,112
Staff						
Officers	96	3	99	84	4	88
Executive/Administrative/Managerial	1,025	121	1,146	1,233	197	1,430
Other Professionals (support/service)	1,923	328	2,251	1,890	309	2,199
Technical and Paraprofessionals	981	193	1,174	980	184	1,164
Clerical and Secretarial	661	166	827	641	148	789
Skilled Crafts	280	13	293	275	11	286
Service/Maintenance	754	51	805	728	65	793
Total Staff	5,720	875	6,595	5,831	918	6,749
Total Faculty and Staff	13,283	2,848	16,131	13,575	3,286	16,861

Note: Excludes temporary workers and student employees.

Source: University of Colorado Office of Institutional Research, as reported to integrated postsecondary educated system, January 2011, January 2012.

Residence by Metropolitan Statistical Area

Most University of Colorado employees live in the same metropolitan area in which they work (77%); however, given the proximity and integration of communities and economies within the state, 23% live and work in two different places. Of the Colorado-based employees, most University of Colorado employees (51.5%) live in the Denver MSA, and more than 36% live in the Boulder MSA.

TABLE 8: RESIDENCE OF EMPLOYEES BY MSA, FY2011

Campus	Boulder MSA	Colorado Springs MSA	Denver MSA	All Other	In-State Total
Boulder	8,540	219	3,570	861	13,189
UCCS	20	1,560	110	59	1,749
Denver	246	40	2,389	71	2,747
AMC	358	73	6,971	233	7,635
Total	9,164	1,892	13,040	1,224	25,320

Resident Salaries

Salaries, like employment, were concentrated in the metropolitan areas where the university has a presence. Of the \$1.1 billion in resident salaries, more than \$662 million in salaries were paid to employees living in the Denver MSA, \$341 million to workers residing in the Boulder MSA, and \$56 million to employees in the Colorado Springs MSA.

TABLE 9: TOTAL IN-STATE SALARIES BY MSA, FY2011 (IN MILLIONS)

Campus	Boulder MSA	Colorado Springs MSA	Denver MSA	All Other	Total
Boulder	\$305.6	\$1.1	\$94.0	\$20.6	\$421.3
UCCS	\$1.0	\$47.7	\$3.7	\$1.2	\$53.7
UCD/AMC/System	\$34.1	\$7.4	\$564.6	\$17.0	\$623.1
Total	\$340.7	\$56.3	\$662.3	\$38.8	\$1,098.1

Note: This includes FY2011 system administration redistributed to the Denver MSA using UCD geographic distribution of residences.

CONSTRUCTION

In FY2011, the University of Colorado continued progress on construction projects valued in excess of \$554 million. Nearly 85% of this activity was related to the Boulder campus, of which 42% was attributable to the biotechnology building. Capital revenues for the fiscal year topped \$76 million, primarily derived from capital grants and gifts. Construction outlays totaled \$246.4 million in FY2011, and are nested in the vendor procurement data.

TABLE 10: CURRENT CONSTRUCTION PROJECTS AS OF JUNE 30, 2011 (IN THOUSANDS)

Campus/Project Description	Financing Sources	Value ^a
CU-Boulder		
Housing Williams Village Projects	Bond proceeds	\$46,705
Housing Kittredge West Renovation	Bond proceeds and campus cash resources	\$22,800
Renovate Smith/Buckingham	Bond proceeds	\$58,276
Willard Hall Renovation	Campus cash resources	\$7,175
Basketball/Volleyball Practice Facility	Bond proceeds and campus cash resources	\$11,040
New Power Plant	Bond proceeds and campus cash resources	\$91,100
Joint Institute of Laboratory Astrophysics (JILA)	Governmental grants and contracts, and campus cash resources	\$37,125
Biotechnology Building Systems	Governmental grants and contracts, bond proceeds, and campus cash resources	\$194,900
UC Denver		
CU Anschutz Medical Campus Center for Bio Ethics and Humanities, new building	Private gifts	\$8,255
1475 Lawrence Court Remodel	Campus cash resources	\$20,403
CU Anschutz Medical Campus Health and Wellness Center	Campus cash resources, private gifts, and bond proceeds	\$37,721
School of Dental Medicine Building Fourth Floor Addition	Campus cash resources	\$12,410
RCI Energy Conservation Project	Campus cash resources	\$6,402

^aValue represents budgeted costs for project in thousands.

Source: University of Colorado Financial and Compliance Audit June 30, 2011 and 2010 (page 26).

OPERATIONS

The University of Colorado recorded operating and nonoperating revenues of \$2.7 billion in FY2011. More than half of these noncapital revenues are generated from tuition and fees (25.5%) and grants and contracts (29.1%). State appropriations totaled \$181.6 million in FY2011, and are nested within these various revenue sources.

TABLE 11: OPERATING AND NONOPERATING REVENUES (EXCLUDING CAPITAL), FY2011 (IN THOUSANDS)

Revenues	2011
Operating Revenues	
Student tuition and fees, net	\$694,477
Fee-for-service	\$130,939
Grants and contracts	\$791,995
Sales and services of educational departments	\$151,164
Auxiliary enterprises, net	\$180,892
Health services	\$422,491
<u>Other operating</u>	<u>\$48,498</u>
Total Operating Revenues	\$2,420,456
Nonoperating Revenues	
Federal Pell Grant	\$46,280
State appropriations	\$15,674
Gifts	\$89,544
Investment income (loss), net	\$133,665
Royalty income, net	\$3,037
State fiscal stabilization funds	\$10,910
<u>Other nonoperating, net</u>	<u>\$4,565</u>
Total Nonoperating Revenues	\$303,675
Total Noncapital Revenues	\$2,724,131

Source: University of Colorado Financial and Compliance Audit June 30, 2011 and 2010 (page 23).

Expenditures by the university to vendors totaled \$660.4 million in FY2011, of which 62% was expended to in-state vendors. While this leakage includes the purchase of some supplies and equipment out-of-state, this leakage also includes payments to partnering research institutions that contribute unique capabilities to research projects—collaboration that runs both directions in research. The Boulder campus accounted for 52% of expenditures to vendors in FY2011, totaling \$342 million. AMC vendor spending accounted for 30.6%, or \$202.1 million, followed by UCD, the system, and UCCS.

TABLE 12: TOTAL VENDOR SPENDING, FY2011 (IN MILLIONS)

Campus	Boulder MSA	Colorado Springs MSA	Denver MSA	All Other	CO Total	Total
Boulder	\$36.0	\$2.3	\$176.4	\$11.5	\$226.2	\$342.0
UCCS	\$0.3	\$7.9	\$5.4	\$0.5	\$14.1	\$21.8
Denver	\$1.7	\$0.2	\$37.1	\$1.2	\$40.3	\$56.5
AMC	\$1.5	\$1.1	\$94.7	\$8.5	\$105.7	\$202.1
System	\$2.0	\$0.1	\$22.2	\$0.1	\$24.4	\$37.9
Total	\$41.6	\$11.6	\$335.8	\$21.8	\$410.7	\$660.4

Expenditures on university procurement cards totaled \$99.4 million in FY2011. These are purchases made by university staff, faculty, and students to purchase items up to \$5,000. Most of these purchases (70%) were made from out-of-state companies. The AMC recorded the largest procurement card spending, totaling \$46.8 million, followed by Boulder at \$39.8 million.

TABLE 13: TOTAL PROCUREMENT CARD PURCHASES, FY2011 (IN MILLIONS)

Campus	Boulder MSA	Colorado Springs MSA	Denver MSA	All Other	CO Total	Total
Boulder	\$7.3	\$0.4	\$5.4	\$1.0	\$14.1	\$39.8
UCCS	\$0.0	\$1.6	\$0.7	\$0.1	\$2.5	\$5.6
Denver	\$0.2	\$0.1	\$2.3	\$0.1	\$2.7	\$6.7
AMC	\$0.3	\$0.3	\$8.8	\$0.8	\$10.2	\$46.8
System	\$0.1	\$0.0	\$0.1	\$0.0	\$0.2	\$0.4
Total	\$7.9	\$2.5	\$17.3	\$2.0	\$29.6	\$99.4

Combined, vendor and procurement card expenditures totaled nearly \$760 million in FY2011, \$440 million of which occurred in Colorado. Some of this out-of-state or international spending is attributable to collaborative research grants with other universities, or to specialized goods and services subcontracted to companies outside the state or country. Without these collaborations, many of the grants would otherwise not be awarded to the University of Colorado.

TABLE 14: TOTAL COMBINED VENDOR AND PROCUREMENT CARD PURCHASES, FY2011 (IN MILLIONS)

Campus	Boulder MSA	Colorado Springs MSA	Denver MSA	All Other	CO Total	Other States	Inter-national	Total
Boulder	\$43.3	\$2.7	\$181.8	\$12.5	\$240.3	\$134.7	\$6.8	\$381.9
UCCS	\$0.3	\$9.6	\$6.1	\$0.6	\$16.6	\$10.5	\$0.3	\$27.4
Denver	\$2.0	\$0.3	\$39.4	\$1.3	\$43.0	\$19.2	\$1.0	\$63.2
AMC	\$1.8	\$1.4	\$103.4	\$9.3	\$115.9	\$129.2	\$3.8	\$248.9
System	\$2.1	\$0.1	\$22.3	\$0.1	\$24.5	\$13.6	\$0.2	\$38.4
Total	\$49.4	\$14.0	\$353.1	\$23.8	\$440.3	\$307.3	\$12.1	\$759.8

SPONSORED PROGRAMS

Each campus has an office that reviews, negotiates, and administers all externally funded sponsored research for its respective campus. Responsibilities also include ensuring campus, university, and sponsor policies are being followed, providing award management assistance, preparing subcontracts, and managing government property. These services are provided by the Office of Contracts and Grants for UCB, by the Office of Grants and Contracts for UCD and AMC, and by the Office of Sponsored Programs at UCCS.

In FY2011, the University of Colorado secured more than \$793 million in sponsored program awards from federal, state, and private sources, while spending \$877.1 million. Often thought of as research grants, sponsored program funding more broadly includes consulting agreements, scholarship awards, and other funding.

TABLE 15: SPONSORED PROGRAM AWARDS AND EXPENSES, FY2011 (IN MILLIONS)

Campus	Awards	Expenses
Boulder	\$359.1	\$382.0
Colorado Springs	\$12.4	\$11.1
Denver	\$21.8	\$47.6
Anschutz Medical Campus	\$400.1	\$436.4
Total Expense	\$793.4	\$877.1

Sources: University of Colorado Boulder, Office of Contracts and Grants; University of Colorado Denver, Office of Grants and Contracts; University of Colorado Colorado Springs, Office of Sponsored Programs.

TABLE 16: AWARDS BY GENERAL SOURCE, FY2011 (IN MILLIONS)

Campus	Federal	State	Other Non-Federal	Total
Boulder	\$273.9	\$7.7	\$77.6	\$359.1
Colorado Springs	\$5.4	\$2.2	\$4.8	\$12.4
Denver	\$14.5	\$2.2	\$5.0	\$21.8
Anschutz Medical Campus	\$248.6	\$16.8	\$134.7	\$400.1
Total Expense	\$542.4	\$29.0	\$222.1	\$793.4

Sources: University of Colorado Boulder, Office of Contracts and Grants; University of Colorado Denver, Office of Grants and Contracts; University of Colorado Colorado Springs, Office of Sponsored Programs.

The source of sponsored program expenditures is concentrated in the federal government, which accounted for \$542.4 million in expenditures in FY2011, or 78% of the overall amount for all campuses. The bulk of this funding came from the National Institutes of Health, the National Science Foundation, NASA, the Department of Defense, and the Department of Commerce. AMC and Boulder accounted for 94% of federal funding expenditures and 93% of overall sponsored program expenditures. State awards expended for research totaled \$32.3 million in FY2011, concentrated in activity at AMC and UCD.

TABLE 17: EXPENSES BY GENERAL SOURCE, FY2011 (IN MILLIONS)

Campus	Federal	State	Other Non-Federal	Total
Boulder	\$349.3	\$3.8	\$28.9	\$382.0
Colorado Springs	\$9.3	\$0.5	\$1.3	\$11.1
Denver	\$32.6	\$7.3	\$7.8	\$47.6
Anschutz Medical Campus	\$292.7	\$20.7	\$123.0	\$436.4
Total Expense	\$683.9	\$32.3	\$160.9	\$877.1

Sources: University of Colorado Boulder, Office of Contracts and Grants; University of Colorado Denver, Office of Grants and Contracts; University of Colorado Colorado Springs, Office of Sponsored Programs.

TECHNOLOGY TRANSFER

The University of Colorado’s Technology Transfer Office (TTO) works to assist with the commercialization of university technology. With a budget of \$4.6 million in FY2011, “the CU Technology Transfer Office pursues, protects, packages, and licenses to business the intellectual property generated from research at CU. The TTO provides assistance to faculty, staff, and students, as well as to businesses looking to license or invest in CU technology.”³

Research conducted at the university reaches the community through commercialization, with 114 companies formed based on University of Colorado intellectual property (only 23 of which are nonoperational). Of the remaining 91 companies,

- 85 have an operational footprint in Colorado,
- 19 have received Proof of Concept investments from the TTO,
- 7 went public through an initial public offering or reverse merger, and
- 17 have been acquired.

³ *University of Colorado Technology Transfer Office Annual Report 2009-10.*

TABLE 18: COMPANIES CREATED BASED ON CU TECHNOLOGY, FY2011

Company	Description
BioSIPs	Environmentally friendly structural insulated panels for building construction
Clarimedix	Non-invasive optical device for treating Alzheimer's disease and other conditions
Claro Scientific	Tox screen for detecting illegal drugs in urine
Clean Urban Energy	Software for efficient energy management in large buildings
Colorado Cancer Therapeutics	Novel anti-cancer compounds for lung and other solid tumors.
Mosaic Biosciences	Degradable synthetic materials for wound care and tissue repair
OnKure	Novel compounds that inhibit cancer cell growth and metastasis
ProtechSure	Sunscreen with anti-cancer properties
Red Wave Energy	Electron tunneling devices for solar energy conversion and other applications
Shape Tech	Shape memory polymer devices for treating ophthalmic conditions
Suvica	Screening and development of novel small molecule cancer drug candidates

Source: *University of Colorado Technology Transfer Office Annual Report 2010-11.*

To see a complete list of companies created based on University of Colorado technology that have a presence in Colorado, see Appendix 2.

TABLE 19: TECHNOLOGY TRANSFER OFFICE, FY2011 BUDGET

Category	Amount
Salaries, Benefits, Students	\$2,171,874
General Operating Expenses	\$200,000
System and Boulder Overhead	\$229,836
Building Rentals	\$172,724
Patent Costs, Legal Expenses	\$1,176,000
Boulder Innovation Center	\$50,000
ULEHI Management Fee	\$60,000
Proof of Concept Programs	\$205,000
Treasury Loan Repayment and Interest	\$335,866
Total Expense	\$4,601,300

Source: *University of Colorado Technology Transfer Office Annual Report 2009-10.*

TABLE 20: TTO PERFORMANCE AT A GLANCE, FY2011

Metric	Count
Invention Disclosures	250
U.S. Patent Applications Filed	253
U.S. Patents Granted	33
Total Options and Licenses	46
Exclusive Options and Licenses	37
Non-exclusive Licenses	9
Start-up Companies Formed from CU IP	11
Service Agreements Executed	668
Revenue (in millions)	4
Ratio of legal fee reimbursements to legal expenditures	1

Notes: The criteria used for TTO's performance metrics conform to the standards used by the Association of University Technology Managers (see www.autm.net). Service measures include interinstitutional and IP management agreements, materials transfer, confidential disclosure agreements, and software evaluation.
Source: *University of Colorado Technology Transfer Office Annual Report 2010-11.*

TABLE 21: TTO PORTFOLIO SNAPSHOT AS OF JULY 1, 2011

Portfolio	Count
U.S. Patents in Force	331
U.S. Patent Applications in Prosecution	342
Exclusive Licenses in Force	166
Non-exclusive Licenses in Force	179
Companies created based on CU IP still in business	91
Companies in which University License Equity Holdings, Inc. (ULEHI) currently holds equity	59

Source: *University of Colorado Technology Transfer Office Annual Report 2010-11*.

FOUNDATION

Created in 1967 by volunteers and community leaders, the University of Colorado Foundation raises, manages, and invests private support for the benefit of the university. Fundraising efforts supplement state funding, tuition, and other revenue sources by funding student scholarships, faculty support, academic programs, and building improvements. In April 2011, the university system-wide *Creating Futures* campaign was announced—the fourth and largest campaign in the university’s history. With a goal of \$1.5 billion, it was launched to enhance CU’s four campuses and advance the economy, culture, and health of Colorado and the nation. In FY2011, donors gave more than 47,000 gifts totaling \$102.4 million—an 11.3% increase compared to the previous year. Notably, estate commitments climbed to a record \$33 million in 2010-11 and giving through the foundation’s website rose 79%. The impact of these gifts touches all four campuses in the areas of learning and teaching, discovery and innovation, community and culture, and health and wellness.

CU REAL ESTATE FOUNDATION

The University of Colorado Real Estate Foundation (CUREF) acquires, manages, and sells real estate for the benefit of the university. Properties range from student housing to retail and industrial holdings. In addition to real estate operations, the CU Real Estate Council and the CU Real Estate Center provide assistance in implementing campus master plans and strategic real estate guidance to the university. With council members totaling more than 300, the organization provides financial and advisory support for students in the CU Real Estate Center. Located in the Leeds School of Business, the center prepares Leeds graduate and undergraduate students for a career in the industry. The curriculum has an emphasis on sustainable development.

OFF-SITE EMPLOYEE ASSUMPTIONS

Employees have incredible economic impacts on their local communities. Aside from where they reside—own their home or pay rents—they spend a great deal of their disposable income close to their place of residence. These purchases range from regular spending on fuel and groceries to less frequent spending on clothing, at restaurants, and on vehicles. Their activity supports local business, employment, and wages. It also funds public activities ranging from police and fire protection to schools and infrastructure through the payment of property taxes, sales taxes, income taxes, and fees. Economic information related to employee off-site impacts is detailed in the appendix.

Additionally, employees make important community contributions through volunteerism and charitable giving. They are generally economic and societal stewards who positively impact the communities in which they reside and in which they work. The university's employees are dispersed across the state, but concentrated in the metropolitan areas where they work. The CU System provided employee counts by ZIP code in Colorado in order to assign off-site economic benefits to their respective metropolitan areas. The data, which include student employees, show that 51% of CU employees live in the Denver Metro region, 36% reside in the Boulder MSA, and 7.5% live in the Colorado Springs MSA.

TABLE 22: RESIDENCE OF EMPLOYEES BY MSA, FY2011

Campus	Boulder MSA	Colorado Springs MSA	Denver MSA	All Other	Total
Boulder	8,540	219	3,570	861	13,189
UCCS	20	1,560	110	59	1,749
Denver	246	40	2,389	71	2,747
AMC	358	73	6,971	233	7,635
Total	9,164	1,892	13,040	1,224	25,320

Note: Includes faculty, staff, and student employees.

ECONOMIC IMPACT

The University of Colorado's direct expenditures led to \$5.3 billion in economic activity in the state of Colorado in FY2011, resulting from the work of 17,860 faculty and staff. These faculty and staff participate in activities ranging from teaching and research to administrative and support, operating one of the largest institutions in the state of Colorado. The majority of economic activity is in fact driven off salaries and benefits, directly accounting for \$1.2 billion in economic activity. Sliced by function, sponsored programs (i.e., research) accounted for more than \$1.3 billion in total economic activity (\$570 million in direct activity) in Colorado, excluding the long-term benefits of scientific discoveries and technology commercialization via licenses, patents, and spinoff companies. University construction, too, impacted Colorado's economy in FY2011, providing an infusion to the ailing construction industry still steeped in recession.

TABLE 23: SUMMARY OF EXPENDITURES AND IMPACTS, FY2011 (IN MILLIONS)

Expenditures	Direct Expenditures in Colorado	Impact on Colorado Output
University Operating Expenditures	\$1,785	\$4,091
Capital Construction Expenditures	\$246	\$478
Student & Out-of-State Visitor Spending	\$524	\$719
Total	\$2,556	\$5,288

TABLE 24: LABOR, EMPLOYMENT, AND OUTPUT IMPACTS, FY2011

Impact	Employment	Labor Income (In Millions)	Value Added (In Millions)	Output (In Millions)
Direct Effect	25,255	\$1,346.6	\$1,586.9	\$2,447.9
Indirect Effect	6,185	\$353.0	\$670.1	\$1,207.7
Induced Effect	12,014	\$522.4	\$959.2	\$1,632.5
Total Effect	43,455	\$2,222.1	\$3,216.2	\$5,288.1

CONCLUSION

The University of Colorado continues to be an economic engine in the state of Colorado through educational, research, operational, and ancillary activities. Students enroll at the university to earn an education, many of whom will enter the Colorado workforce and become contributing members of society. This labor force not only fills local employment and entrepreneurial needs, but becomes a draw for businesses looking to locate in Colorado. Likewise, while research is driven off the interests and expertise of faculty, it also instills competitive economic attributes that differentiate Colorado from other states—as seen in such industry concentrations as the Professional, Scientific, and Technical Services sector; the Information sector; and in aerospace, cleantech, and biotechnology clusters. This research activity exists in a collaborative triangle of universities, businesses, and federal research facilities in the state, occasionally resulting in the creation of companies and the licensing of technologies from the university.

The economic impacts of the university are ultimately driven by the education and research missions of the university, which result in both operating and capital expenditures in the state of Colorado. The \$2.6 billion in direct spending related to the university operations, capital projects, and student spending resulted in economic activity of nearly \$5.3 billion. Comparatively, state funding for the university topped \$182 million in FY2011, lending to the substantial economic activity generated by the university. This is not to say that additional dollars invested by the state will result in similar returns on investment. While state funding is often times a match for federal dollars, the amount of additional federal funding is limited, and may even decline in coming years.

This operating and capital spending occurs primarily with private companies in the state, ranging from utilities to food suppliers. The 17,900 faculty and staff, and the 9,600 student workers, accounted for more than 43,500 workers in the state related to the supplier companies and household spending of employees.

This research presents a conservative estimate of impacts. The research team accounted for spending leakage and only a portion of student spending. Additionally, this study does not quantify the economic impacts of alumni living and working in the state, nor does it quantify impacts derived from visiting professors, researchers, or alumni.

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APPENDIX 1: LITERATURE REVIEW

Count the Ways: The University Boosts Utah's Economy, Reputation & Way of Life. (n.d.)

During 2008, the University of Utah employed more than 30,000 individuals who paid approximately \$136 million in state and local taxes and fees. For every \$1 the University of Utah received from appropriations, it generated an additional \$7 through other revenues, such as research grants, patient care, tuition, and technology exchange. The university earned about \$17 million in royalties from its patents, a gain of 240% compared to the amount earned in 2003. The University of Utah conducted business with approximately 10,000 vendor firms.

The Economic and Societal Impact of the University of Washington, Executive Report (FY08-09), July 7, 2010 (Tripp Umbach 2010).

The third-largest employer in the state, the three campuses of the University of Washington generated \$9.1 billion in total economic impact in the state in FY2008-09 (\$4 billion direct impact and \$5.1 billion indirect). For every \$1 invested by the state in the university, \$22.56 was generated in the state's economy. UW employs 27,921 full-time equivalent (FTE) workers and indirectly accounts for 69,803 total FTEs throughout the state.

Economic Impact Analysis of the University of Southern California Annual Operations, Fiscal Year 2008. (Economics Research Associates 2009).

The total economic impact of the University of Southern California (USC) in FY2008 was estimated at \$4.9 billion, including all direct expenditures and regionally induced impacts. Total direct spending by USC was estimated at approximately \$2.1 billion, with 82% of spending occurring within Los Angeles County. With nearly 27,000 workers, aggregate payroll was \$1 billion. For every \$1 spent by USC in Los Angeles County in FY2008, an additional .63¢ of output was created elsewhere in the regional economy. University sporting and cultural events attracted approximately 1.09 million visitors who spent approximately \$12 million.

The Economic Impact of the University of Oregon FY2009-10 (Duy 2010).

Direct spending by the University of Oregon (UO), students, and visitors totaled more than \$1 billion in FY2009-10. The total impact of the spending was nearly \$2 billion. The university directly and indirectly supports 13,247 jobs in Oregon, with associated household earnings of \$658 million. Direct spending by the UO totaled \$645 million in FY2009-10. Much of the UO's revenue is from out-of-state, but the majority of spending is in state. A total of \$230 million was paid to Oregon vendors, 89% of which are small businesses. For every \$1 of state appropriation, the UO contributed \$33.64 to the state economy.

Oregon's Economy & Oregon State University (n.d.).

Oregon State University's economic impact was \$1.5 billion in output effects, \$849 million in value-add effects, and 15,987 full- and part-time jobs in employment effects at the university and in cities and counties around the state in FY2005. The university has a physical presence in each of Oregon's 36 counties, and in 22 of those, that presence generated \$500,000 or more in economic activity. OSU spent more than \$175 million annually on supplies and services, with more than 65% of those expenditures going to Oregon vendors and service providers. The university spent \$357 million annually in salaries and benefits for its approximately 8,700 full- and part-time workers. The total economic impact of visitor spending was an estimated \$44.5 million. About 10% of visitors are from outside the state.

Stanford University: Economic Impact Study 2008. (The Pacific Partners Consulting Group, Inc. 2008). In 2006, Stanford University received \$4.5 billion in revenue to support teaching and research and provide medical services, and spent more than \$2.1 billion in direct expenditures in Santa Clara and San Mateo counties. The two hospitals at Stanford accounted for \$609 million of those direct expenditures. The university is the largest employer in the local area, with more than 20,000 employees in 2006. Goods and services purchased in support of the university's annual operations totaled more than \$1.4 billion, with 31% spent in Santa Clara and San Mateo counties. Using a total enrollment figure of 14,402 (undergraduate and graduate students) along with cost-of-living estimates, Stanford students spent a total of \$252 million. Visitor spending in the local communities was estimated at \$100 million.

UCLA's Economic Impact on Southern California: An Engine for the Economy (Freeman, Sidhu, and Montoya 2007).

As the seventh-largest employer in the five-county Southern California region, UCLA's estimated economic impact totaled \$9.34 billion in fiscal year 2005-06. The university supported 70,000 full-time equivalent jobs in the region (including those employed directly by UCLA), earning \$1.95 billion in wages and salaries. Taking into consideration economic multipliers, the university's impact on California totaled \$9.89 billion and statewide employment climbed to 80,600 for a total \$3.95 billion in wages and salaries. Spending by UCLA's 36,611 undergraduate and graduate students on goods and services purchased from non-UCLA sources was over \$423 million. More than 2 million people visited the UCLA campus during 2005-06, adding approximately \$50 million to the local economy and supporting 1,200 jobs with combined earnings of nearly \$29 million.

The University of Arizona Economic and Tax Revenue Impacts, Fiscal Year 2004 (Pavlovich-Kochi, et al. 2005).

The annual economic impact of the University of Arizona included approximately 41,300 jobs, \$1.2 billion in earnings, and a total dollar impact on the state's economy of \$2.3 billion in the fiscal year (FY) ending June 30, 2004. For every dollar of state appropriated funds, the university generated another \$3.50 in grants, contracts, and gifts in support of teaching, research, and public service. The total tax revenue impact in FY2004 was \$98.1 million, including \$54.2 million to state government, \$20.3 million to the City of Tucson, \$14 million to Pima County, \$9.5 million to other Arizona counties and cities, and approximately \$100,000 to the Pima Association of Governments.

The University of California's Economic Contribution to the State of California (Economic & Planning Systems, Inc. 2011).

Through economic multipliers, the state's \$3.35 billion investment in UC generates a total economic impact of \$46.3 billion and contributes \$32.8 billion to gross state product (GSP). For every \$1 of taxpayer investment, \$9.80 is generated in GSP and \$13.80 in economic output. With more than 190,000 staff employed throughout California, UC is the third-largest employer in the state. In total, university employees and other employees directly supported by UC in California earn an estimated \$15.6 billion, including fringe benefits. With multiplier effects, this amount climbs to nearly \$25 billion in employee compensation. The UC system comprises nearly 235,000 students.

APPENDIX 2: THE SUSTAINABILITY OF COMPANIES CREATED BASED ON CU INTELLECTUAL PROPERTY

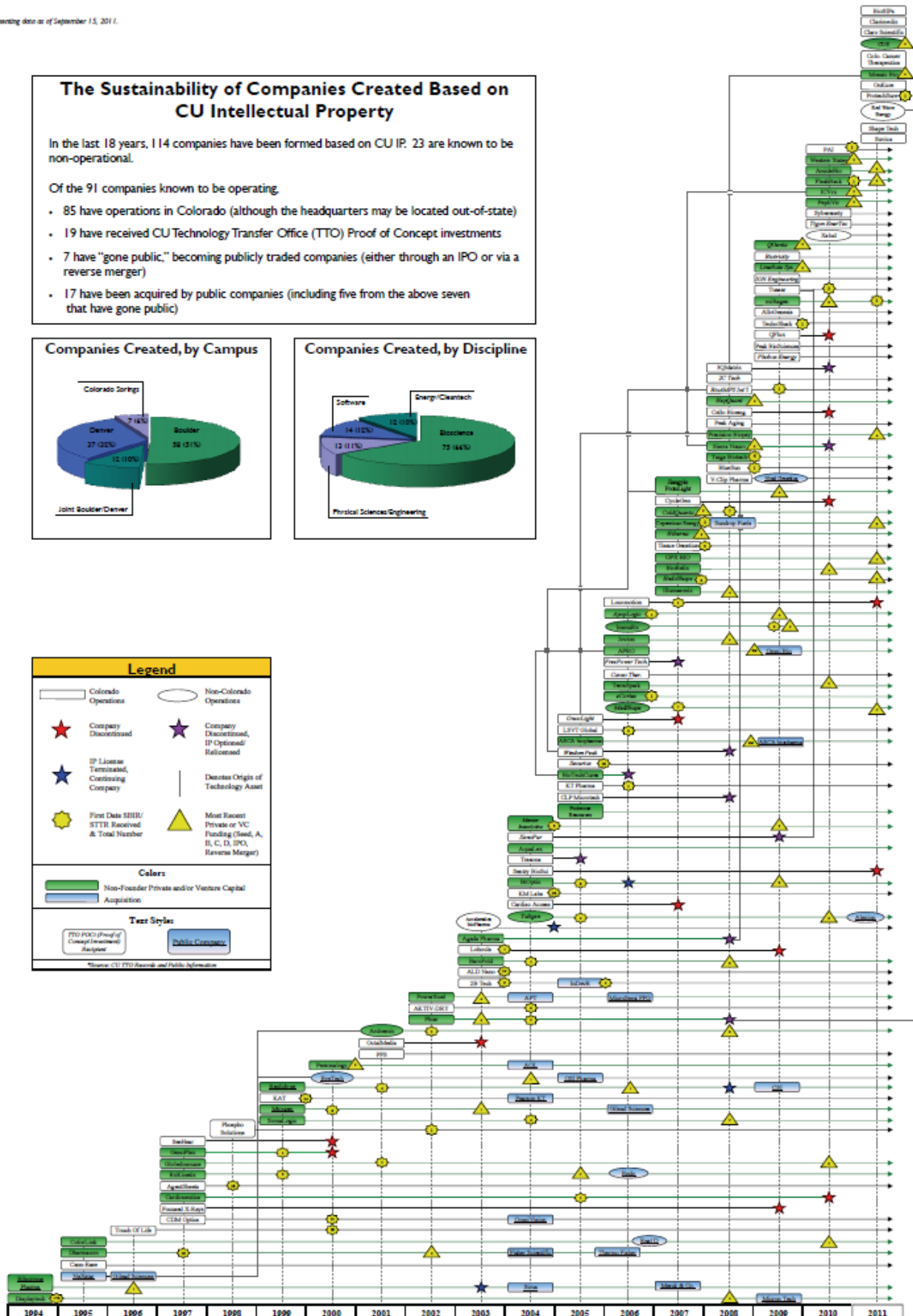
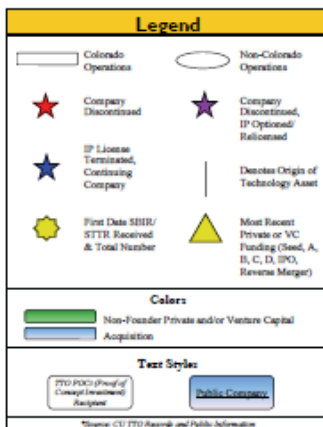
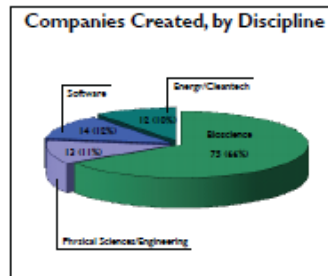
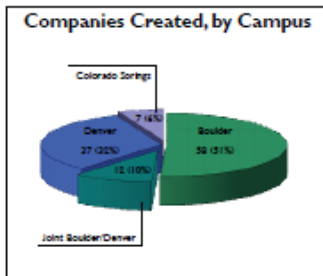
Representing data as of September 15, 2011.

The Sustainability of Companies Created Based on CU Intellectual Property

In the last 18 years, 114 companies have been formed based on CU IP. 23 are known to be non-operational.

Of the 91 companies known to be operating,

- 85 have operations in Colorado (although the headquarters may be located out-of-state)
- 19 have received CU Technology Transfer Office (TTO) Proof of Concept investments
- 7 have "gone public," becoming publicly traded companies (either through an IPO or via a reverse merger)
- 17 have been acquired by public companies (including five from the above seven that have gone public)



Source: <https://www.cu.edu/techtransfer/>, retrieved January 5, 2012.

APPENDIX 3: ECONOMIC DATA FOR FISCAL IMPACTS

HOUSING

Housing price and rents data were gathered to express the average cost of housing and to calculate the inferred tax liability associated with housing costs. The National Association of REALTORS reported 2010 median sales prices of existing single-family homes for metropolitan areas. The Boulder MSA median sales price was \$358,100 in 2010, followed by the Denver-Aurora MSA at \$232,400 and the Colorado Springs MSA at \$195,500.⁴ The Colorado Association of REALTORS reported a median single-family sales price of \$200,729 in 2010.⁵

Rents were reported through the Colorado Department of Local Affairs, Division of Housing for the state, Colorado Springs, the Denver Metro area (including Boulder), and Boulder/Broomfield.⁶ Rents in the Denver Metro region and the Boulder/Broomfield region averaged \$995 per month and \$1,280, respectively, in Q3 2011. Data in Q3 2011 show rents in Colorado Springs of \$752 and statewide rates of \$852.

Data reporting population, household size, and household tenure were sourced from the U.S. Census Bureau. Colorado's population topped 5 million in 2010. The University of Colorado operates in metropolitan areas totaling 3.5 million residents, with more than 2.5 million in the Denver-Aurora-Broomfield MSA, 295,000 in the Boulder MSA, and 646,000 in the Colorado Springs MSA. Nearly 66% of the population in these metropolitan areas live in owner-occupied housing.

TABLE 25: TOTAL POPULATION IN OCCUPIED HOUSING UNITS BY TENURE, 2010

County	Total Occupied	Owner-Occupied	Renter-Occupied
Adams	441,603	289,948	147,628
Arapahoe	572,003	372,622	194,461
Boulder	294,567	187,998	97,620
Broomfield	55,889	42,376	13,231
Clear Creek	9,088	7,103	1,901
Denver	600,158	309,975	274,202
Douglas	285,465	238,493	46,321
El Paso	622,263	401,569	201,553
Elbert	23,086	20,207	2,806
Gilpin	5,441	4,227	1,165
Jefferson	534,543	383,839	143,277
Park	16,206	13,531	2,583
Teller	23,350	18,767	4,451
Colorado	5,029,196	3,323,026	1,590,292

Source: U.S. Census Bureau, Profile of General Population and Housing Characteristics: 2010, retrieved January 11, 2012.

⁴National Association of REALTORS, <http://www.realtor.org/research/research/metroprice>, retrieved January 17, 2012.

⁵Colorado Association of REALTORS, http://coloradorealtors.com/car_resources_main.asp?section=&module_id=84, retrieved January 17, 2012.

⁶Colorado Department of Local Affairs, Division of Housing, <http://www.colorado.gov/cs/Satellite/DOLA-Main/CBON/1251592890239>, retrieved January 17, 2012.

TABLE 26: PERCENTAGE OF POPULATION IN OCCUPIED HOUSING UNITS BY TENURE, 2010

County	Owner-Occupied	Renter-Occupied
Adams	65.7%	33.4%
Arapahoe	65.1%	34.0%
Boulder	63.8%	33.1%
Broomfield	75.8%	23.7%
Clear Creek	78.2%	20.9%
Denver	51.6%	45.7%
Douglas	83.5%	16.2%
El Paso	64.5%	32.4%
Elbert	87.5%	12.2%
Gilpin	77.7%	21.4%
Jefferson	71.8%	26.8%
Park	83.5%	15.9%
Teller	80.4%	19.1%
Colorado	66.1%	31.6%

Source: U.S. Census Bureau, Profile of General Population and Housing Characteristics: 2010, retrieved January 11, 2012.

In 2010, there were 2.49 people per household in Colorado, with higher densities in owner-occupied housing (2.57) than renter-occupied housing (2.34). Among the selected counties, Adams County had the greatest household density, with 2.85 people per household. Clear Creek County had the lowest density, with 2.14 people per household.

TABLE 27: TOTAL POPULATION IN OCCUPIED HOUSING UNITS BY TENURE

County	Average Household Size	Owner-Occupied	Renter-Occupied
Adams	2.85	2.87	2.80
Arapahoe	2.53	2.60	2.42
Boulder	2.39	2.51	2.20
Broomfield	2.60	2.73	2.24
Clear Creek	2.14	2.20	1.94
Denver	2.22	2.36	2.08
Douglas	2.79	2.90	2.34
El Paso	2.56	2.64	2.41
Elbert	2.75	2.74	2.81
Gilpin	2.19	2.23	2.06
Jefferson	2.42	2.49	2.24
Park	2.25	2.23	2.34
Teller	2.37	2.36	2.39
Colorado	2.49	2.57	2.34

Source: U.S. Census Bureau, Profile of General Population and Housing Characteristics: 2010, retrieved January 11, 2012.

EDUCATION

Pupil counts, funding, and taxes were obtained from the Colorado Department of Education. The Jefferson County R-1 school district remained the largest district in the state by enrollment in 2010, but Arapahoe and El Paso counties recorded more students overall when district enrollments were summed.

**TABLE 28: FALL 2010 CLASSROOM PUPIL MEMBERSHIP,
AGGREGATED BY COUNTY**

County	Pupil Membership	Occupied Housing Units	Pupils per Household
Adams	84,428	153,764	0.55
Arapahoe	111,789	224,011	0.50
Boulder	56,905	119,300	0.48
Broomfield	-	21,414	-
Clear Creek	989	4,208	0.24
Denver	78,317	263,107	0.30
Douglas	61,465	102,018	0.60
El Paso	109,962	235,959	0.47
Elbert	3,601	8,380	0.43
Gilpin	386	2,460	0.16
Jefferson	85,938	218,160	0.39
Park	1,810	7,174	0.25
Teller	3,193	9,805	0.33
Colorado	843,316	1,972,868	0.43

Sources: Colorado Department of Education, Pupil Membership by County and District, <http://www.cde.state.co.us/cdereval/rv2010pmlinks.htm>, retrieved January 13, 2012; U.S. Census Bureau, Profile of General Population and Housing Characteristics: 2010, retrieved January 11, 2012.

The sources of funding vary from county to county, but when comparing total funding across metropolitan areas, the Denver, Boulder, and Colorado Springs MSAs, there is less variation. Total funding in the MSAs ranged between \$10,441 in the Colorado Springs MSA and \$11,440 in the Boulder MSA.

TABLE 29: TOTAL STATE AND LOCAL REVENUE PER PUPIL BY COUNTY, FY2009-2010

County/MSA	State Revenue	Local Revenue	Total Funding	Property Taxes
Adams	\$5,776	\$4,087	\$10,751	\$3,095
Arapahoe	\$5,251	\$4,881	\$10,963	\$3,859
Boulder	\$3,640	\$7,164	\$11,440	\$5,449
Broomfield	-	-	-	-
Clear Creek	\$853	\$12,361	\$13,849	\$10,611
Denver	\$3,727	\$7,758	\$13,296	\$6,052
Douglas	\$4,664	\$5,535	\$10,473	\$4,042
El Paso	\$5,468	\$4,058	\$10,449	\$3,027
Elbert	\$6,273	\$3,432	\$10,122	\$2,144
Gilpin	\$5,276	\$15,679	\$21,680	\$12,318
Jefferson	\$4,622	\$5,507	\$10,797	\$4,298
Park	\$4,049	\$7,512	\$12,180	\$5,936
Teller	\$4,464	\$5,001	\$10,192	\$4,071
<i>Denver MSA</i>	<i>\$4,859</i>	<i>\$5,492</i>	<i>\$11,254</i>	<i>\$4,239</i>
<i>Boulder MSA</i>	<i>\$3,640</i>	<i>\$7,164</i>	<i>\$11,440</i>	<i>\$5,449</i>
<i>Colorado Springs MSA</i>	<i>\$5,437</i>	<i>\$4,087</i>	<i>\$10,441</i>	<i>\$3,059</i>
Colorado	\$4,908	\$5,371	\$11,222	\$4,121

Sources: Colorado Department of Education, Fiscal Year 2009-10 District Revenues and Expenditures, <http://www.cde.state.co.us/cdefinance/FY09-10RevExp.htm>, retrieved January 13, 2012.

Consumer spending data were obtained from the Bureau of Labor Statistics' 2009-2010 Consumer Expenditure Survey for MSAs in western states.⁷ It is estimated that 25.9% of consumers' disposable income is spent on taxable retail goods and services in Colorado. This assumes the following taxable goods and services: food at home, food away from home, alcoholic beverages, housekeeping supplies, household furnishings and equipment, apparel and services, vehicle purchases, gasoline and motor oil, personal care products and services, reading, and tobacco products and smoking supplies.

INCOME TAXES

The state income tax rate is 4.63%. However, the effective tax rate is below 3%. Student earnings were disaggregated from total university salaries and the 0.11% effective tax rate was applied.

TABLE 30: COLORADO INDIVIDUAL STATISTICS OF INCOME, ADJUSTED GROSS INCOME TAX, 2008

Minimum	Maximum	Midpoint	Number of Returns	Colorado Gross Tax (Millions)	Colorado Net Tax (Millions)	Colorado Gross Tax per Return	Colorado Net Tax per Return	Estimated Colorado Gross Tax Rate	Estimated Colorado Net Tax Rate
\$250,000	> \$250,000	\$250,000	40,134	\$887.8	\$799.2	\$22,120.25	\$19,913.01	NA	NA
\$100,000	\$250,000	\$175,000	277,342	\$1,304.1	\$1,274.0	\$4,701.99	\$4,593.61	2.69%	2.62%
\$75,001	\$100,000	\$87,501	202,834	\$506.3	\$498.8	\$2,496.02	\$2,459.06	2.85%	2.81%
\$50,001	\$75,000	\$62,501	318,161	\$509.1	\$502.9	\$1,600.05	\$1,580.76	2.56%	2.53%
\$35,001	\$50,000	\$42,501	285,209	\$281.5	\$279.2	\$986.98	\$978.80	2.32%	2.30%
\$25,001	\$35,000	\$30,001	248,979	\$146.2	\$145.3	\$587.18	\$583.73	1.96%	1.95%
\$20,001	\$25,000	\$22,501	135,930	\$47.1	\$46.8	\$346.36	\$344.36	1.54%	1.53%
\$15,001	\$20,000	\$17,501	139,486	\$27.7	\$27.5	\$198.64	\$197.51	1.14%	1.13%
\$10,001	\$15,000	\$12,501	130,686	\$10.3	\$10.2	\$78.48	\$77.99	0.63%	0.62%
\$5,001	\$10,000	\$7,501	112,812	\$0.6	\$0.6	\$5.27	\$5.25	0.07%	0.07%
\$0	\$5,000	\$2,500	76,617	\$0.2	\$0.2	\$2.77	\$2.77	0.11%	0.11%
(Negative Income)		NA	23,480	\$0.1	\$0.2	\$4.02	\$6.73	NA	NA
Total			1,991,671	\$3,720.8	\$3,584.9	\$1,868.19	\$1,799.96	NA	NA

Note: Current data available through 2008.

Source: Colorado Department of Revenue, Office of Research and Analysis, Federal AGI and Tax, All Full-Year Resident Returns, 2008 Individual Income Tax Returns.

PROPERTY TAXES

Given the tax exempt status of federal properties, the property taxes captured in this study are derived from employees' home property taxes. The Colorado Department of Local Affairs, Division of Property Taxation's *2010 Annual Report* provides a summary of county, average municipal, average school, and average special property levies in *Section XI: Assessed Valuation, Revenue, and Average Levies by County* (Table 8). Summing the assessed values for counties comprising the MSAs and dividing by the total revenue for the sum of those counties yielded average metropolitan levies ranging between 67.004 and 89.093. Statewide, the average levy is 73.218.

⁷ www.bls.gov/cex/2010/msas/west.pdf, retrieved January 18, 2012.

TABLE 31: PROPERTY TAX LEVIES, 2010

County	Assessed Valuation 2010	Total Revenue	County Mill Levy	Average Municipal Levy ^a	Average School Levy	Average Special Levy ^b	Total Average County Levy ^c
Adams	\$4,609,492,840	\$489,605,898	26.883	7.224	56.085	3.566	106.217
Arapahoe	\$7,968,810,420	\$760,394,292	15.949	7.914	50.688	3.205	95.421
Boulder	\$5,808,272,120	\$491,517,669	24.645	11.423	44.594	1.611	84.624
Broomfield	\$1,089,316,550	\$116,546,550	17.511	11.457	51.452	6.574	106.991
Clear Creek	\$541,808,930	\$36,878,119	38.056	7.644	20.448	3.102	68.065
Denver	\$11,960,083,760	\$842,280,859	26.043		39.972	2.017	70.424
Douglas	\$4,916,844,570	\$513,567,789	19.774	1.874	46.890	4.983	104.451
El Paso	\$6,830,113,540	\$461,739,091	7.717	4.749	46.584	2.488	67.603
Elbert	\$276,432,380	\$23,525,980	28.137	17.317	34.420	5.680	85.106
Gilpin	\$384,226,190	\$15,355,704	9.928	1.249	15.843	5.880	39.965
Jefferson	\$7,352,599,610	\$702,199,340	24.346	4.961	48.210	3.652	95.504
Park	\$469,448,772	\$24,956,968	16.306	14.560	22.462	3.238	53.162
Teller	\$496,439,260	\$29,172,194	14.700	10.673	26.823	4.424	58.763
Boulder MSA ^d	\$5,808,272,120	\$491,517,669	-	-	-	-	84.624
Colorado Springs MSA ^d	\$7,326,552,800	\$490,911,285	-	-	-	-	67.004
Denver MSA ^d	\$39,569,064,022	\$3,525,311,499	-	-	-	-	89.093
Colorado	\$92,794,864,875	\$6,794,300,280	18.224	7.391	36.541	2.854	73.218

^aMunicipal revenues are divided by the sum of municipal assessed valuation. ^bSpecial district revenues are divided by the sum of special district assessed valuation. ^cAverage will not add to the total average county levy because denominators (assessed valuation) are not common to all. ^dMSAs a sum of their respective counties.

Note: These figures include tax increment valuation, and all tax revenues attributable to the increment are allocated to the increment financing authority. Source: <http://www.colorado.gov/cs/Satellite/DOLA-Main/CBON/1251594453029>, retrieved January 13, 2012.

SALES TAXES

State, city, and county tax rates are published by the Colorado Department of Revenue. In addition to the inclusion of special districts, tax rates vary within each county and city.

TABLE 32: COUNTY TAX RATES

County	County Rate	RTD	Scientific and Cultural Facilities	Metropolitan Football Stadium	Total County
Adams	0.75%	1.00%	0.10%	0.10%	1.95%
Arapahoe	0.25%	1.00%	0.10%	0.10%	1.45%
Boulder	0.80%	1.00%	0.10%	0.10%	2.00%
Broomfield ^a	4.15%	1.00%	0.10%	0.10%	5.35%
Clear Creek	1.00%	0.00%	0.00%	0.00%	1.00%
Denver ^a	3.62%	1.00%	0.10%	0.10%	4.82%
Douglas	1.00%	1.00%	0.10%	0.10%	2.20%
El Paso	1.00%	1.00%	0.00%	0.00%	2.00%
Elbert	1.00%	0.00%	0.00%	0.00%	1.00%
Gilpin	0.00%	0.00%	0.00%	0.00%	0.00%
Jefferson	0.50%	1.00%	0.10%	0.10%	1.70%
Park	1.00%	0.00%	0.00%	0.00%	1.00%
Teller	1.00%	0.00%	0.00%	0.00%	1.00%
Colorado	2.90%	0.00%	0.00%	0.00%	2.90%

Note: Does not include local improvement districts in dispersed areas of the counties.

^aCounty and city tax rates are combined in Broomfield and Denver.

Source: <https://www.colorado.gov/revenueonline/#2>, retrieved January 13, 2012.

TABLE 33: CITY TAX RATES

City	City Rate
Arvada	3.46%
Aurora	3.75%
Berthoud	3.00%
Boulder ^a	3.41%
Brighton	3.75%
Broomfield	4.15%
Centennial	2.50%
Colorado Springs	2.50%
Commerce City	3.50%
Denver ^a	3.62%
Erie	3.50%
Golden	3.00%
Lafayette	3.50%
Lakewood	3.00%
Littleton	3.00%
Longmont	3.28%
Louisville	3.50%
Parker	3.00%
Westminster	3.85%

^aBoulder and Denver have an alternative tax on food and liquor for immediate consumption (3.56% and 4%).

Source: www.colorado.gov/revenueonline/#2, retrieved January 13, 2012.

COST OF GOVERNMENT

The University of Colorado is a source of economic activity across the state, both through direct spending for operations and construction, and through employee earnings and disposable income. While this state university itself is a government entity, real costs are still associated with providing government services to the facility, including police and fire protection, and infrastructure used by the university, such as roads. When university employees are offsite, they inherently consume government resources, ranging from fire and police protection to other amenities such as schools, open space, community centers, libraries, and many others. Comprehensive annual financial reports (CAFRs) were used as resources to identify these costs at state, county, and city levels. Costs were assigned to residents and businesses based on government function, and per capita expenses were derived using total business employment and residential population as denominators. The cost of providing state government services was estimated at \$1,223 per resident and \$1,151 per employee, including transfers for education. The average cost of providing city and county government services totaled \$728 per resident and \$656 per employee (excluding student workers).

APPENDIX 4: OPX BIOTECHNOLOGIES

Microbes, Markets, and Mother Earth: The Case of OPX Biotechnologies

The United States is no stranger to the “Go Green” movement. Climate change and issues concerning ever-growing global energy needs increasingly dominate public debates over the future of American environmental and energy policy. From the development of alternative energy resources to the delicate balancing of environmental and economic priorities, the country has increasingly pushed for a new “green” economy: that is, one in which the United States becomes less dependent on foreign petroleum imports and instead promotes domestic production and alternatives, all while reducing greenhouse gas emissions and protecting the environment. As the development of this new green economy gains momentum, companies large and small have been eager to innovate and compete for investment. One such company is Boulder, Colorado-based OPX Biotechnologies, Inc.

Founded in 2007 by Drs. Michael Lynch and Ryan Gill based on technology they developed at the University of Colorado Boulder, OPXBIO is an innovative bioengineering firm that seeks to develop renewable biochemicals and fuels that are more economical and environmentally sustainable than existing petroleum-based products. Since its founding, OPXBIO has increased employment and raised more than \$60 million in private investment financing. Having licensed original microbial metabolic research conducted at CU-Boulder, OPXBIO’s business platform revolves around the idea that clean, bio-based chemicals can be engineered, commercialized, and marketed more cost-effectively than existing petroleum-based products through the development of low-cost bioprocesses and the leveraging of capital and expertise from larger partners in the global chemical industry. Utilizing its highly efficient, unique technology platform known as Efficiency Directed Genome Engineering, for example, OPXBIO was able to pilot its first microbe and bioprocess in just 18 months, leading to the development of its first product, known as BioAcrylic. The company provides that BioAcrylic is a renewable, direct replacement for petroleum-based acrylics at 25 – 50% lower cost and a 75% reduction in greenhouse gas emissions. Through its recently formed partnership with global giant, The Dow Chemical Company, OPXBIO believes this new BioAcrylic material can be fully commercialized within the next three to five years, offering a feasible technological alternative that is not only environmentally safer, but also more economically efficient and profitable. OPXBIO thus seeks to capture a growing portion of the roughly \$8 billion global market for petroleum-based acrylics moving forward.

As the company continues its research and development of renewable, marketable biochemicals, more public- and private-sector organizations have begun to express interest. In 2011, for example, the United States Department of Energy awarded OPXBIO a \$6 million grant to further the development of diesel and jet fuel that is bio-processed from carbon dioxide and hydrogen. Companies such as Braemar Energy Ventures and the Altira Group, among others, have invested in OPXBIO as well, indicating that both the firm and the emerging green chemical industry as a whole are increasingly viewed as viable and highly lucrative opportunities. With four patents already awarded and over 40 more in the pipeline, OPXBIO intends to build on its budding partnerships with CU-Boulder and The Dow Chemical Company to foster even further collaboration and investment with other key players in the future. As these types of public-private initiatives continue to make progress and gain a stronger foothold in the global chemical industry, implications for the U.S. energy sector, and economy as a whole, are likely to be very significant.

While the widely recognized need for greater energy independence in the United States is not a highly controversial topic, the path the country should take to accomplish this goal is the subject of intense political debate. From increased domestic oil production to government grants for clean energy research, the United States has attempted to make progress on several fronts simultaneously. In the field of clean energy development, as the case of OPXBIO clearly demonstrates, advances in biochemical engineering are bolstering these efforts significantly. High-tech solutions like OPXBIO's BioAcrylic and newly developed renewable diesel fuel will help accelerate the United States' shift away from dependence on foreign petroleum for commercial shipping and a wide variety of manufactured goods, such as plastics, that form the basis of the nation's consumer-driven economy. As OPXBIO and similar companies gradually expand their operations, their highly efficient development processes benefit both the American economy and the environment. Such bio-products dramatically reduce both input costs and greenhouse gas emissions in the goods manufacturing and shipping industries. The United States asserting its role as a global leader in clean energy initiatives thus provides the country a strong foundation on which to build further collaborative relationships in the advancement of biotechnology, environmental protection, and economic growth both domestically and internationally. For Colorado specifically, ventures like OPXBIO shine a spotlight on the state's already renowned high-tech clusters. Colorado's business-friendly regulatory environment, together with a highly educated, professional workforce and top-tier research institutions like CU-Boulder, will continue to foster innovation in the clean energy industry, attracting to the state significant outside investment, job growth, and growing demand for high-tech exports. Consequently, as OPX Biotechnologies and companies like it continue to develop and compete, the United States, Colorado, the environment, and the businesses themselves all stand to benefit greatly.

APPENDIX 5: ARCA BIOPHARMA

Genetics and Ingenuity: The Case of ARCA biopharma, Inc.

Undeniably, people are at the core of the biotechnology industry. However, ARCA biopharma, Inc., a Colorado-based biopharmaceutical company, is uniquely able to address the individual—right down to their DNA. Founded in 2004, ARCA is working to develop the first genetically targeted drugs to treat cardiovascular conditions such as heart failure and atrial fibrillation.

Research has long indicated that there is no magic pill to treat all patients. Based on individual genetic variations, patients' experience with a specific medication will fall on a continuum of drug responses, ranging from adverse to favorable reactions. ARCA's leading compound, Gencaro™, interacts with common genetic variations in the cardiovascular system, allowing the company the prospect of predicting patient responses to the drug based on their DNA. Gencaro is entering Phase 3 clinical trials—large-scale trials reserved for viable treatments because of the extensive time and money required to pursue testing.

Current president and CEO, Michael R. Bristow, M.D., Ph.D., described the founding of ARCA as the natural outgrowth of his research with the University of Colorado Health Sciences Center. Dr. Bristow has been involved in translational research in cardiology, specializing in heart failure, with the University for over 30 years. His interest in genetic variation began approximately 20 years ago, leading him to search for drugs designed for certain targets. According to Dr. Bristow, the university was instrumental in supporting his research and obtaining the patents on the genetic-targeting technology. Presently, the intellectual property has been licensed to ARCA for continued investigation and improvement.

Dr. Bristow credits the enthusiastic research-to-development culture of CU as one of the factors of his success, describing ARCA as an “integrated academic commercial enterprise.” CU's business-friendly philosophy, in addition to the extensive support offered by the Technology Transfer Operation at the university, created a strong incentive for Dr. Bristow to establish his corporation in Colorado. The Technology Transfer Operation provided two unique advantages. First, it facilitated the seamless protection and transfer of the intellectual property that Bristow created. Second, it offered key business development networks and funding access that supports the movement of academic ideas toward practical and profitable applications. According to Dr. Bristow, this assistance has been “vital”; concrete innovation “starts with research at the university and then branches out.”

Beyond the university's support of research and development, ARCA's location has provided the company with other advantages. The company's headquarters are located in Broomfield, Colorado, strategically placed between the medical expertise of the Health Sciences Center in Denver and the hard science of the Boulder campus. Its proximity to the university and the mountains also gives the company significant ability to attract gifted human resources, whether from the steady stream of CU graduates or talent from other states. In addition, Dr. Bristow suggests that the high quality of life in the state—the friendly culture, active lifestyle, strong work ethic, and reasonable cost of living—contributes to Colorado's credibility with biotechnology investors. The National Institute of Health provided grants of close to \$10 million for Dr. Bristow's research. However, as development has progressed, the need for venture capital funding and investing partners has increased. Colorado is gradually being recognized as among the top 10 biotechnology clusters, and the state's growing biotech industry adds to investor confidence, regardless of product.

For patients struggling with heart failure, the treatment being developed by ARCA has the potential to increase quality of life by interacting favorably with their unique genotype. More broadly, however, the interaction between the University and researcher-entrepreneurs, like Dr. Bristow, helps to promote an innovative and vibrant business culture in Colorado. Academic scholarship and support are being translated into cutting-edge products, high-paying jobs, and investor confidence, providing Colorado businesses and citizens with a competitive position in the recovering economy.

APPENDIX 6: UNIVERSITY OF COLORADO IMPACT ON THE BOULDER MSA

The Boulder Metropolitan Statistical Area (MSA) recorded 158,800 employees in 2010 and \$18.3 billion in total output. University of Colorado faculty and staff (nonstudents) accounted for 5.2% of total employment in the Boulder MSA and 3.7% of direct value added. Funding for university operations and capital spending is by and large nonlocal, resulting in an infusion of investment into the local economy.

Enrollment

In the fall of 2010, the University of Colorado Boulder enrolled 30,502 students, 66% of whom were Colorado residents and 83% of whom were undergraduate students. On a full-time equivalent (FTE) basis, the University of Colorado Boulder enrolled 26,779 students in FY2011.

Alumni

The University of Colorado Boulder accounts for more than 102,000 alumni living in the state of Colorado, including business leaders, policy makers, educators, health-care workers, engineers, and others.

Employment and Wages

The University of Colorado Boulder employed 14,803 individuals in FY2011, with average salaries of \$32,211, including faculty, staff, and students. Based on employment records, 13,189 (89.1%) of these employees live in Colorado, with some of the nonresident employment attributable to student workers citing their parents' out-of-state home address. University of Colorado Boulder employees living and working in the Boulder MSA totaled 8,540 in FY2011, with an additional 624 individuals living in the Boulder MSA, but working on other campuses.

With their home of record located outside the Boulder MSA, in-commuters totaled 4,649 (35.2%) in FY2011. This number, too, likely includes student workers still citing their parents' address. This number also includes part-time employees and employees working remotely; thus, daily commuters related to the University of Colorado Boulder total less than 4,649.

Excluding the number of student workers (e.g., work-study recipients), the University of Colorado Boulder was estimated to employ 8,105 individuals in FY2011, earning average salaries of \$57,216, which includes temporary workers.

Excluding temporary workers and student employees, the University of Colorado Boulder recorded 3,789 full-time and part-time faculty and academic staff and 3,463 staff in the fall of 2011, for a total of 7,252 faculty and staff.

**TABLE 34: TOTAL CU-BOULDER FACULTY AND
STAFF REGULAR EMPLOYMENT, FALL 2010 AND 2011**

Occupation	Fall 2010			Fall 2011		
	Full-Time	Part-Time	Total	Full-Time	Part-Time	Total
Faculty/Academic Staff						
Instructional Faculty	1,386	664	2,050	1,344	663	2,007
Tenured/Tenure Track	1,090	-	1,090	1,062	-	1,062
Full Professor	441	-	441	443	-	443
Associate Professor	353	-	353	340	-	340
Assistant Professor	296	-	296	279	-	279
Non-Tenure Track	296	664	960	282	663	945
Instructor/Sr. Instructor	296	7	303	282	7	289
Other	-	657	657	-	656	656
Research Faculty/Academic Research Staff	1,337	412	1,749	1,336	446	1,782
Public Service Faculty	-	-	-	-	-	-
Total Faculty/Academic Staff	2,723	1,076	3,799	2,680	1,109	3,789
Staff						
Officers	25	-	25	21	2	23
Executive/Administrative/Managerial	456	49	505	576	94	670
Other Professionals (support/service)	773	230	1,003	713	211	924
Technical and Paraprofessionals	503	111	614	510	110	620
Clerical and Secretarial	321	138	459	329	113	442
Skilled Crafts	182	13	195	179	11	190
Service/Maintenance	569	35	604	549	45	594
Total Staff	2,829	576	3,405	2,877	586	3,463
Total Faculty and Staff	5,552	1,652	7,204	5,557	1,695	7,252

Note: Excludes temporary workers and student employees.

Source: University of Colorado Office of Institutional Research, as reported to integrated postsecondary educated system, January 2011, January 2012.

Operations Spending

Direct operations spending by the University of Colorado in the Boulder MSA totaled \$41.6 million in FY2011, with \$36 million attributable to the Boulder campus. The University of Colorado Boulder made \$342 million in purchases in FY2011, 66% of which occurred in Colorado.

**TABLE 35: CU VENDOR AND PURCHASING CARD EXPENDITURES,
BOULDER MSA, FY2011 (IN MILLIONS)**

Campus	Boulder MSA
Boulder	\$36.0
UCCS	\$0.3
Denver	\$1.7
AMC	\$1.5
System	\$2.0
Total	\$41.6

**TABLE 36: UCB VENDOR AND PURCHASING
CARD EXPENDITURES, BY LOCATION, FY2011 (IN MILLIONS)**

Campus	Boulder
Boulder MSA	\$36.0
Colorado Springs MSA	\$2.3
Denver MSA	\$176.4
All Other	\$11.5
Colorado Total	\$226.2

Other local spending related to the University of Colorado Foundation and the University of Colorado Real Estate Foundation were estimated at \$10.1 million.

Construction

Capital expenditures for the Boulder campus were estimated at \$242 million in FY2011, but only a portion of this was sourced locally in the Boulder MSA. Given the in-flow of labor and materials for construction, local construction expenditures on buildings were estimated at \$16 million in FY2011.

TABLE 37: CU-BOULDER CURRENT CONSTRUCTION PROJECTS AS OF JUNE 30, 2011 (IN THOUSANDS)

Campus/Project Description	Financing Sources	Value ^a
CU-Boulder		
Housing Williams Village Projects	Bond proceeds	\$46,705
Housing Kittredge West Renovation	Bond proceeds and campus cash resources	\$22,800
Renovate Smith/Buckingham	Bond proceeds	\$58,276
Willard Hall Renovation	Campus cash resources	\$7,175
Basketball/Volleyball Practice Facility	Bond proceeds and campus cash resources	\$11,040
New Power Plant	Bond proceeds and campus cash resources	\$91,100
Joint Institute of Laboratory Astrophysics (JILA)	Governmental grants and contracts, and campus cash resources	\$37,125
Biotechnology Building Systems	Governmental grants and contracts, bond proceeds, and campus cash resources	\$194,900

^aValue represents budgeted costs for project in thousands.
Source: University of Colorado Financial and Compliance Audit June 30, 2011 and 2010 (Page 26).

Student Spending and Visitors

Based on a biannual survey of students, the University of Colorado Boulder recorded \$335 million in nonlocal student and visitor spending in Colorado, of which \$285.6 million occurred in the Boulder MSA. This includes nonresident and resident students who indicated that they would have left Colorado had they not attended CU, as well as students' visitors. Spending included rents, groceries, transportation, child care, recreation, health care, and other.

Research

Research is one facet of this spending, which directly draws federal, state, and private funding. University research leads to immeasurable scientific discoveries and societal benefits that range from medicine and energy to space and weather. To understand just a slice of the benefits, one could look to licensed technologies in the CU Tech Transfer portfolio, or to the spinoff companies that dot the Colorado landscape. However, by the nature of the work, research begets research, and is thus a perpetual building block of knowledge that propels the next scientific discovery. Research funding for UCB in FY2011 totaled \$359.1 million in FY2011—three-quarters of which was from federal sources,

2.1% from the state, and the remainder from other entities, such as nonprofit organizations. While state funding has been depleting over time, this still-significant funding source assists with operational expenditures.

Economic Impact

Given the metropolitan area’s participation in the regional economy, the University of Colorado System resulted in even larger economic contributions through other campus’s purchase of goods and services from companies in the Boulder MSA, and from the residence of employees who live in the Boulder MSA, but work on another campus. Through research, teaching, operations, construction, student spending, and visitation, the University of Colorado is an economic driver in the Boulder MSA, contributing more than \$1.5 billion in economic activity locally driven off \$809 million in direct expenditures in the Boulder MSA in FY2011. This funding is by and large nonlocal, thus leveraging outside investment for the local economy.

TABLE 38: SYSTEM IMPACTS ON THE BOULDER MSA, SUMMARY OF EXPENDITURES AND IMPACTS, FY2011 (IN MILLIONS)

Expenditures	Direct Expenditures in the Boulder MSA	Impact on Boulder MSA Output
University Operating Expenditures	\$507	\$1,153
Capital Construction Expenditures	\$16	\$25
Student and Out-of-State Visitor Spending	\$286	\$366
Total	\$809	\$1,544

TABLE 39: LABOR, EMPLOYMENT, AND OUTPUT IMPACTS, BOULDER MSA, FY2011

Impact	Employment	Labor Income (In Millions)	Value Added (In Millions)	Output (In Millions)
Direct Effect	9,724	\$541.6	\$669.4	\$747.2
Indirect Effect	1,958	\$80.7	\$193.5	\$296.0
Induced Effect	4,443	\$176.4	\$325.8	\$501.0
Total Effect	16,125	\$798.7	\$1,188.7	\$1,544.1

APPENDIX 7: UNIVERSITY OF COLORADO IMPACT ON THE COLORADO SPRINGS MSA

The Colorado Springs Metropolitan Statistical Area (MSA) recorded 246,100 employees in 2010 and \$26.5 billion in total output. University of Colorado faculty and staff (nonstudents) accounted for 0.5% of total employment in the Colorado Springs MSA, and 0.4% of direct value added. Funding for university operations and capital spending is by and large nonlocal, resulting in an infusion of investment into the local economy.

Enrollment

In the fall of 2010, the University of Colorado Colorado Springs enrolled 8,892 students, 91% of whom were Colorado residents and 81% of whom were undergraduate students. On a full-time equivalent (FTE) basis, the University of Colorado Colorado Springs enrolled 7,279 students in FY2011.

Alumni

The University of Colorado Colorado Springs accounts for 22,090 alumni living in the state of Colorado, including business leaders, policy makers, educators, health-care workers, engineers, and others.

Employment and Wages

The University of Colorado Colorado Springs employed 1,811 individuals in FY2011, with average salaries of \$27,456, including faculty, staff, and students. Based on employment records, 1,749 (96.6%) of these employees live in Colorado, with some of the nonresident employment attributable to student workers citing their parents' out-of-state home address. University of Colorado Colorado Springs employees living and working in the Colorado Springs MSA totaled 1,560 in FY2011, with an additional 332 individuals living in the Colorado Springs MSA, but working on other campuses.

With their home of record located outside the Colorado Springs MSA, in-commuters totaled 188 (10.8%) in FY2011. This number, too, likely includes student workers still citing their parents' address. This number also includes part-time employees and employees working remotely.

Excluding the number of student workers (e.g., work-study recipients), the University of Colorado Colorado Springs was estimated to employ 1,135 individuals, earning average salaries of \$48,704, which includes temporary workers.

Excluding temporary workers and student employees, the University of Colorado Colorado Springs recorded 745 full-time and part-time faculty and academic staff and 533 staff in the fall of 2011, for a total of 1,278 faculty and staff.

**TABLE 40: TOTAL UCCS FACULTY AND
STAFF REGULAR EMPLOYMENT, FALL 2010 AND 2011**

Occupation	Fall 2010			Fall 2011		
	Full-Time	Part-Time	Total	Full-Time	Part-Time	Total
Faculty/Academic Staff						
Instructional Faculty	317	48	365	335	377	712
Tenured/Tenure Track	214	7	221	217	8	225
Full Professor	69	6	75	74	4	78
Associate Professor	66	-	66	68	3	71
Assistant Professor	79	1	80	75	1	76
Non-Tenure Track	103	41	144	118	369	487
Instructor/Sr. Instructor	103	40	143	113	43	156
Other	-	1	1	5	326	331
Research Faculty/Academic Research Staff	15	25	40	17	16	33
Public Service Faculty	7	1	8	-	-	-
Total Faculty/Academic Staff	339	74	413	352	393	745
Staff						
Officers	14	1	15	12	-	12
Executive/Administrative/Managerial	76	14	90	97	19	116
Other Professionals (support/service)	148	40	188	147	42	189
Technical and Paraprofessionals	1	-	1	-	-	-
Clerical and Secretarial	94	8	102	100	22	122
Skilled Crafts	-	-	-	-	-	-
Service/Maintenance	76	16	92	75	19	94
Total Staff	409	79	488	431	102	533
Total Faculty and Staff	748	153	901	783	495	1,278

Note: Excludes temporary workers and student employees.

Source: University of Colorado Office of Institutional Research, as reported to integrated postsecondary educated system, January 2011, January 2012.

Operations Spending

Direct operations spending by the University of Colorado in the Colorado Springs MSA totaled \$11.6 million in FY2011, with \$7.9 million attributable to the Colorado Springs campus. The University of Colorado Colorado Springs made \$21.8 million in purchases in FY2011, 65% of which occurred in Colorado.

**TABLE 41: CU VENDOR AND PURCHASING CARD EXPENDITURES,
COLORADO SPRINGS MSA, FY2011 (IN MILLIONS)**

Campus	Colorado Springs MSA
Boulder	\$2.3
UCCS	\$7.9
Denver	\$0.2
AMC	\$1.1
System	\$0.1
Total	\$11.6

TABLE 42: UCCS VENDOR AND PURCHASING CARD EXPENDITURES, BY LOCATION, FY2011 (IN MILLIONS)

Campus	UCCS
Boulder MSA	\$0.3
Colorado Springs MSA	\$7.9
Denver MSA	\$5.4
All Other	\$0.5
Colorado Total	\$14.1

Other local spending related to the University of Colorado Foundation and the University of Colorado Real Estate Foundation were estimated at \$1.9 million.

Student Spending and Visitors

Based on a biannual survey of students, the University of Colorado Colorado Springs recorded \$48.4 million in nonlocal student and visitor spending in Colorado. This includes nonresident and resident students who indicated that they would have left Colorado had they not attended CU, as well as students’ visitors. Spending included rents, groceries, transportation, child care, recreation, health care, and other.

Research

Research is one facet of this spending, which directly draws federal, state, and private funding. University research leads to immeasurable scientific discoveries and societal benefits that range from medicine and energy to space and weather. To understand just a slice of the benefits, one could look to licensed technologies in the CU Tech Transfer portfolio, or to the spinoff companies that dot the Colorado landscape. Research funding for UCCS in FY2011 totaled \$12.4 million in FY2011—43.5% of which was from federal sources, 17.7% from the state, and the remainder from other entities, such as nonprofit organizations. While state funding has been depleting over time, this still-significant funding source assists with operational expenditures.

Economic Impact

Given the metropolitan area’s participation in the regional economy, the University of Colorado System resulted in even larger economic contributions through other campus’s purchase of goods and services from companies in the Colorado Springs MSA and from the residence of employees who live in the Colorado Springs MSA, but work on another campus. Through research, teaching, operations, construction, student spending, and visitation, the University of Colorado is an economic driver in the Colorado Springs MSA, contributing \$249 million in economic activity locally driven off \$141 million in direct expenditures in the Colorado Springs MSA in FY2011. Much of this funding is nonlocal, thus leveraging outside investment for the local economy.

**TABLE 43: SYSTEM IMPACTS ON THE COLORADO SPRINGS MSA,
SUMMARY OF EXPENDITURES AND IMPACTS, FY2011 (IN MILLIONS)**

Expenditures	Direct Expenditures in the Colorado Springs MSA	Impact on Colorado Springs MSA Output
University Operating Expenditures	\$92	\$188
Capital Construction Expenditures	\$0	\$0
Student and Out-of-State Visitor Spending	\$48	\$61
Total	\$141	\$249

**TABLE 44: LABOR, EMPLOYMENT, AND OUTPUT IMPACTS,
COLORADO SPRINGS MSA, FY2011**

Impact	Employment	Labor Income (In Millions)	Value Added (In Millions)	Output (In Millions)
Direct Effect	1,868	\$86.6	\$108.3	\$131.2
Indirect Effect	274	\$10.2	\$26.5	\$41.4
Induced Effect	685	\$24.8	\$48.9	\$76.4
Total Effect	2,827	\$121.7	\$183.8	\$249.0

APPENDIX 8: UNIVERSITY OF COLORADO IMPACT ON THE DENVER MSA

The Denver Metropolitan Statistical Area (MSA) recorded 1.2 million employees in 2010 and \$157.6 billion in total output. University of Colorado faculty and staff (nonstudents) accounted for 0.7% of total employment in the Denver MSA, and 0.7% of direct value added. Funding for university operations and capital spending is by and large nonlocal, resulting in an infusion of investment into the local economy.

Enrollment

In the fall of 2010, the University of Colorado Denver and the Anschutz Medical Campus enrolled 17,967 students, 88% of whom were Colorado residents and 56% of whom were undergraduate students. On a full-time equivalent (FTE) basis, these campuses enrolled 14,756 students.

Alumni

The University of Colorado Denver and the Anschutz Medical Campus account for more than 67,500 alumni living in the state of Colorado, including business leaders, policy makers, educators, health-care workers, engineers, and others.

Employment and Wages

The University of Colorado Denver and the Anschutz Medical Campus employed 10,869 individuals in FY2011, with average salaries of \$61,214, including faculty, staff, and students. Based on employment records, 10,382 (95.5%) of these employees live in Colorado, with some of the nonresident employment attributable to student workers citing their parents' out-of-state home address. University of Colorado Denver and Anschutz Medical Campus employees living and working in the Denver MSA totaled 9,360 in FY2011, with an additional 3,680 individuals living in the Denver MSA, but working on other campuses.

With their home of record located outside the Denver MSA, in-commuters totaled 1,022 (9.8%) in FY2011. This number, too, likely includes student workers still citing their parents' address. This number also includes part-time employees and employees working remotely; thus, daily commuters related to the UCD and the AMC are around 1,022.

Excluding the number of student workers (e.g., work-study recipients), the University of Colorado Denver, the Anschutz Medical Campus, and System were estimated to employ 8,621 individuals in FY2011, earning average salaries of \$74,625, which includes temporary workers.

Excluding temporary workers and student employees, the University of Colorado Denver and the Anschutz Medical Campus recorded 5,578 full-time and part-time faculty and academic staff and 2,408 staff in the fall of 2011, for a total of 7,986 faculty and staff.

**TABLE 45: TOTAL UCD/AMC REGULAR FACULTY AND
STAFF EMPLOYMENT, FALL 2010 AND 2011**

Occupation	Fall 2010			Fall 2011		
	Full-Time	Part-Time	Total	Full-Time	Part-Time	Total
Faculty/Academic Staff						
Instructional Faculty	2,638	566	3,204	2,812	603	3,415
Tenured/Tenure Track	1,667	11	1,678	1,723	31	1,754
Full Professor	487	11	498	496	14	510
Associate Professor	554	-	554	591	14	605
Assistant Professor	626	-	626	636	3	639
Non-Tenure Track	971	555	1,526	1,089	572	1,661
Instructor/Sr. Instructor	873	11	884	938	12	950
Other	98	544	642	151	560	711
Research Faculty/Academic Research Staff	1,808	76	1,884	1,852	68	1,920
Public Service Faculty	55	181	236	48	195	243
Total Faculty/Academic Staff	4,501	823	5,324	4,712	866	5,578
Staff						
Officers	35	-	35	30	-	30
Executive/Administrative/Managerial	391	37	428	388	47	435
Other Professionals (support/service)	862	43	905	948	51	999
Technical and Paraprofessionals	448	79	527	455	73	528
Clerical and Secretarial	235	13	248	205	10	215
Skilled Crafts	98	-	98	96	-	96
Service/Maintenance	109	-	109	104	1	105
Total Staff	2,178	172	2,350	2,226	182	2,408
Total Faculty and Staff	6,679	995	7,674	6,938	1,048	7,986

Note: Excludes temporary workers and student employees.

Source: University of Colorado Office of Institutional Research, as reported to integrated postsecondary educated system, January 2011, January 2012.

Operations Spending

Direct operations spending by the University of Colorado in the Denver MSA totaled \$335.8 million in FY2011, with \$131.8 million attributable to the University of Colorado Denver and the Anschutz Medical Campus. University of Colorado System offices are also located in the Denver MSA, recording \$22.2 million in expenditures in the metropolitan region. The University of Colorado Denver, the Anschutz Medical Campus, and the system made \$296.6 million in purchases in FY2011, 57.4% of which occurred in Colorado.

TABLE 46: CU VENDOR AND PURCHASING CARD EXPENDITURES, DENVER MSA, FY2011 (IN MILLIONS)

Campus	Denver MSA
Boulder	\$176.4
UCCS	\$5.4
Denver	\$37.1
AMC	\$94.7
System	\$22.2
Total	\$335.8

TABLE 47: UCD AND AMC VENDOR AND PURCHASING CARD EXPENDITURES, BY LOCATION, FY2011 (IN MILLIONS)

Campus	UCD and AMC
Boulder MSA	\$5.3
Colorado Springs MSA	\$1.4
Denver MSA	\$154.0
All Other	\$9.8
Colorado Total	\$170.4

Other local spending related to the University of Colorado Foundation and the University of Colorado Real Estate Foundation were estimated at \$20.8 million.

Construction

Capital expenditures for the Denver campuses were estimated at \$40 million in FY2011, but the Denver MSA benefits from regional construction spending by the other campuses. Total university construction spending in the Denver MSA in FY2011 is estimated at \$230.4 million.

TABLE 48: CURRENT CONSTRUCTION PROJECTS AS OF JUNE 30, 2011 (IN THOUSANDS)

Campus/Project Description	Financing Sources	Value ^a
UC Denver		
CU Anschutz Medical Campus Center for Bio Ethics and Humanities, new building	Private gifts	\$8,255
1475 Lawrence Court Remodel	Campus cash resources	\$20,403
CU Anschutz Medical Campus Health and Wellness Center	Campus cash resources, private gifts, and bond proceeds	\$37,721
School of Dental Medicine Building Fourth Floor Addition	Campus cash resources	\$12,410
RCI Energy Conservation Project	Campus cash resources	\$6,402

^aValue represents budgeted costs for project in thousands.

Source: University of Colorado Financial and Compliance Audit June 30, 2011 and 2010 (page 26).

Student Spending and Visitors

Based on a biannual survey of students, the University of Colorado Denver and the Anschutz Medical Campus recorded \$140.5 million in nonlocal student and visitor spending in Colorado. Some student spending flows from the other campuses to the Denver MSA, thus increasing the direct student and visitor spending to \$189.8 million in the Denver MSA. This includes nonresident and resident students who indicated that they would have left Colorado had they not attended CU, as well as students' visitors. Spending included rents, groceries, transportation, child care, recreation, health care, and other.

Research

Research is one facet of this spending, which directly draws federal, state, and private funding. University research leads to immeasurable scientific discoveries and societal benefits that range from medicine and energy to space and weather. To understand just a slice of the benefits, one could look to licensed technologies in the CU Tech Transfer portfolio, or to the spinoff companies that dot the Colorado landscape. However, by the nature of the work, research builds on past scientific discoveries and knowledge, collectively propelling the next scientific discovery. Research funding for UCD and AMC in FY2011 totaled \$421.9 million in FY2011—62.4% of which was from federal sources, 4.5% from the state, and the remainder from other entities, such as nonprofit organizations. While state funding has been depleting over time, this still-significant funding source assists with operational expenditures.

Economic Impact

Given the metropolitan area’s regional economic importance, the University of Colorado System resulted in even larger economic contributions through other campus’s purchase of goods and services from companies in the Denver MSA and from the residence of employees who live in the Denver MSA, but work on another campus. Through research, teaching, operations, construction, student spending, and visitation, the University of Colorado is an economic driver in the Denver MSA, contributing \$3.3 billion in economic activity locally driven off \$1.6 billion in direct expenditures in the Denver MSA in FY2011. Much of this funding is nonlocal, thus leveraging outside investment for the local economy.

TABLE 49: SYSTEM IMPACTS ON THE DENVER MSA, SUMMARY OF EXPENDITURES AND IMPACTS, FY2011 (IN MILLIONS)

Expenditures	Direct Expenditures in the Denver MSA	Impact on Denver MSA Output
University Operating Expenditures	\$1,139	\$2,615
Capital Construction Expenditures	\$230	\$420
Student and Out-of-State Visitor Spending	\$190	\$272
Total	\$1,560	\$3,306

TABLE 50: LABOR, EMPLOYMENT, AND OUTPUT IMPACTS DENVER MSA, FY2011

Impact	Employment	Labor Income (In Millions)	Value Added (In Millions)	Output (In Millions)
Direct Effect	14,177	\$1,030.4	\$1,141.8	\$1,522.6
Indirect Effect	3,492	\$184.9	\$381.3	\$569.0
Induced Effect	9,532	\$437.2	\$796.0	\$1,214.9
Total Effect	27,201	\$1,652.5	\$2,319.1	\$3,306.5

APPENDIX 9: VENDOR AND PURCHASING CARD SPENDING BY COUNTY, (\$ THOUSANDS)

County/Campus	Boulder	UCCS	Denver	AMC	System	Total
ADAMS, CO	10,364.3	171.2	1,707.2	10,113.9	117.6	22,474.1
ALAMOSA, CO	13.4	0.1	62.5	692.6	-	768.5
ARAPAHOE, CO	87,683.8	2,069.0	2,970.5	18,055.5	9,844.3	120,623.9
ARCHULETA, CO	0.5	-	0.7	41.2	-	42.4
BACA, CO	-	-	12.1	5.0	-	17.1
BENT, CO	-	-	-	-	-	-
BOULDER, CO	43,308.7	291.1	1,976.7	1,771.9	2,097.7	49,445.0
BROOMFIELD, CO	3,941.9	314.8	805.7	1,664.5	221.1	6,949.7
CHAFFEE, CO	32.7	2.8	11.2	1.5	-	48.2
CHEYENNE, CO	1.3	-	-	-	-	1.3
CLEAR CREEK, CO	8.9	0.6	0.4	2.8	-	12.8
CONEJOS, CO	0.3	0.1	0.6	24.4	-	25.4
COSTILLA, CO	0.3	-	-	1.3	-	1.6
CROWLEY, CO	11.1	-	0.5	-	-	11.7
CUSTER, CO	0.2	-	1.4	-	-	1.6
DELTA, CO	15.5	0.2	12.7	3.8	-	32.1
DENVER, CO	69,666.9	3,288.3	32,435.9	67,555.9	11,502.6	184,451.7
DOLORES, CO	-	-	-	1.2	-	1.2
DOUGLAS, CO	1,509.7	116.4	429.9	1,501.6	68.9	3,626.4
EAGLE, CO	50.7	0.9	3.7	396.6	-	451.8
EL PASO, CO	2,674.2	9,533.0	304.2	1,393.5	68.4	13,977.6
ELBERT, CO	6.4	11.6	16.4	68.0	0.3	102.8
FREMONT, CO	45.2	27.7	17.7	56.8	-	147.4
GARFIELD, CO	15.2	39.3	54.3	33.4	-	142.2
GILPIN, CO	5.1	-	-	0.0	-	5.2
GRAND, CO	89.8	-	0.2	56.0	-	146.0
GUNNISON, CO	19.0	0.4	29.4	4.8	-	53.6
HINSDALE, CO	-	-	-	-	-	-
HUERFANO, CO	0.5	-	-	38.2	-	38.6
JACKSON, CO	0.6	-	-	-	-	0.6
JEFFERSON, CO	8,627.1	160.4	1,044.2	4,446.6	521.2	14,799.7
KIOWA, CO	0.0	-	-	0.4	-	0.4
KIT CARSON, CO	8.5	0.1	-	0.0	-	8.6
LA PLATA, CO	24.3	2.0	46.5	166.3	-	239.1
LAKE, CO	0.0	2.5	-	22.0	-	24.6
LARIMER, CO	4,472.1	253.3	345.3	3,313.2	26.3	8,410.0
LAS ANIMAS, CO	6.2	1.1	0.3	16.1	-	23.6
LINCOLN, CO	-	-	-	3.3	-	3.3
LOGAN, CO	0.6	-	-	301.2	-	301.8
MESA, CO	259.5	11.9	53.7	754.2	1.1	1,080.5
MINERAL, CO	-	3.6	0.1	0.1	-	3.8
MOFFAT, CO	32.5	-	-	69.4	-	101.9
MONTEZUMA, CO	2.6	2.2	1.7	21.7	-	28.2
MONTROSE, CO	160.5	0.2	7.6	19.8	0.1	188.1
MORGAN, CO	62.4	0.2	2.9	16.1	-	81.6
OTERO, CO	2.9	5.5	-	44.0	-	52.4
OURAY, CO	0.0	2.6	-	-	-	2.7
PARK, CO	8.1	0.4	30.8	8.6	-	48.1
PHILLIPS, CO	0.4	-	-	1.4	-	1.9
PITKIN, CO	40.9	1.3	5.5	212.4	0.1	260.1

County/Campus	Boulder	UCCS	Denver	AMC	System	Total
PROWERS, CO	0.4	1.3	-	38.9	-	40.7
PUEBLO, CO	14.7	112.1	141.1	400.4	42.4	710.8
RIO BLANCO, CO	0.5	-	-	4.4	-	4.9
RIO GRANDE, CO	0.7	-	0.1	22.4	-	23.2
ROUTT, CO	27.1	-	49.3	12.2	-	88.6
SAGUACHE, CO	-	-	-	2.9	-	2.9
SAN JUAN, CO	1.0	-	-	-	-	1.0
SAN MIGUEL, CO	6.5	-	1.5	2.9	-	10.9
SEDGWICK, CO	0.8	-	-	1.8	-	2.7
SUMMIT, CO	92.9	16.9	46.3	851.7	1.8	1,009.6
TELLER, CO	5.5	22.6	0.7	5.3	5.2	39.4
WASHINGTON, CO	0.1	-	-	-	-	0.1
WELD, CO	6,972.9	126.6	353.2	1,618.6	23.5	9,094.8
YUMA, CO	7.8	0.5	0.7	22.1	-	31.1
Colorado Total	240,305.8	16,594.9	42,985.6	115,884.8	24,542.5	440,321.2
Other States	307,343.7	134,744.0	19,217.6	129,245.4	13,616.9	307,343.7
International	12,107.3	6,826.2	998.0	3,792.5	212.7	12,107.3
Total	759,772.3	381,876.0	63,201.2	248,922.7	38,372.1	759,772.3