

An Expanded School of Dentistry: Its Impact on Omaha and Creighton University



Produced for the Creighton University School of Dentistry

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Preface

An Expanded School of Dentistry: Its Impact on Omaha and Creighton University

The goal of this study is to evaluate the economic importance and contributions of the Creighton University School of Dentistry (hereafter CUSD) to the economy. The subsequent pages contain specific information that quantifies and explains the many ways CUSD contributes to Omaha's economy and to the operating budget of Creighton University. Additionally, this study evaluates how CUSD's proposed expansion will influence the Omaha economy and the operating budget of Creighton University.

The study estimates the impacts of three distinct scenarios: 1) **Scenario 1** - continue with the current facilities and enrollments; 2) **Scenario 2** - expand CUSD enrollments via the construction of new facilities; 3) **Scenario 3** - expand CUSD enrollments via the renovation of current facilities. Impacts for the period 2014-23 are estimated, and the rate-of-return is calculated for the 10-year period after construction or renovation of the current facility.

Greater investments in dental education result in long-term economic benefits including: productivity and earnings gains of an educated workforce, new knowledge creation, new products and services, an increase in the supply of skilled professionals, and an improvement in the general quality-of-life. This study will quantify the economic gains from these factors.

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Specific goals of the study are:

- Measure the business volume, employment, and government revenue impacts of CUSD's yearly operations and capital spending for the three alternative scenarios.
- Quantify the economic and social impact of students, employees and alumni for the three scenarios.
- Quantify the economic impact of CUSD clinical operations for the three scenarios.
- Quantify the spin-off effects of CUSD research on new business venture formation, enterprise growth, employment, and state and local government revenue.
- Estimate the impact of CUSD on Nebraska "brain gain" for the three scenarios.
- Estimate the rate-of-return for scenarios 2 and 3 for the 10-year period after construction or renovation of CUSD facilities compared to the baseline scenario 1.

The Goss & Associates research team thanks the staff of CUSD for their assistance in facilitating the completion of this study. However, any errors, omissions, or misstatements are solely the responsibility of Goss & Associates and the principal investigator.¹

¹This study was completed independent of Creighton University. As such, Creighton University bears no responsibility for findings or statements by Ernest Goss, or Goss & Associates, Economic Solutions.

Executive Summary

An Expanded School of Dentistry: Its Impact on Omaha and Creighton University

For 2014, it is estimated that CUSD will produce \$63.5 million in overall impacts, \$24.5 million in wages and salaries, \$2.5 million in self-employment income and \$2.6 million in state and local tax collections.² Additionally, it is projected that CUSD operations will support 590 jobs in Omaha for 2014.³

General impacts

- CUSD has provided economic stability with stable enrollments and faculty and staff levels for the state and community over the past decade.
- For fiscal 2013, faculty, staff and students of CUSD provided outreach programs to 13,381 children and adults in the Omaha community while serving 11,000 patients with 43,000 visits in Creighton's clinic..



Dr. Karla Marcias-Dias with CUSD student

²Unless otherwise indicated, all data are for fiscal years. For CUSD, fiscal 2014 began on July 1, 2013 and ends on June 30, 2014. It is assumed that construction and renovation do not begin until fiscal 2015. Thus, impacts for the three scenarios are equal for fiscal 2014.

³Estimated impacts for North Omaha (zipcode 68102) for 2014 are: Overall \$5.1 million; wages and salaries \$2.0 million; self-employment income \$200,000; jobs 48.

CUSD will produce \$63.5 million in overall impacts and will support 590 jobs for Omaha in 2014.

General dentistry provider shortage

- In 2012 Omaha suffered a shortage of 83 general dentists.⁴ By 2022, the shortage will expand to 96. CUSD's expansion would be an important factor in reducing Omaha's growing general dentistry shortage.
- It is estimated that 3 million children will gain dental benefits through the Affordable Care Act's health insurance exchanges by 2018, or roughly a 5 percent increase over the current number of children with private dental benefits.⁵

CUSD's expansion would be an important factor reducing Omaha's growing general dentistry shortage.

⁴As defined by the U.S. BLS, general dentists "examine, diagnose, and treat diseases, injuries, and malformations of teeth and gums. May treat diseases of nerve, pulp, and other dental tissues affecting oral hygiene and retention of teeth. May fit dental appliances or provide preventive care. Excludes 'Prosthodontists' (29-1024), 'Orthodontists' (29-1023), 'Oral and Maxillofacial Surgeons' (29-1022) and 'Dentists, All Other Specialists' (29-1029)."

⁵"Potential Effects of the Affordable Care Act on Dentistry," American Dental Association, April 2013, http://www.asdanet.org/uploadedFiles/The_Issues/EffectsofACAonDentistry.pdf

Executive Summary

The Impact of CUSD on brain gain and economic development

- According to population data, the existence of CUSD has a significant and positive impact on business and employee recruitment for Omaha.
- Approximately 88.2 percent of CUSD admissions come from outside of Nebraska.
- CUSD attracted dental students from 35 states around the nation as well as foreign countries. Of students from outside Nebraska, 10.1 percent were from Utah, 9.4 percent from Idaho, and 5.9 percent were from New Mexico.

- Each year, approximately eight additional CUSD graduates remain in Nebraska and provide dental care to the population.
- It is estimated that an additional 184 undergraduate students come to Creighton from outside Nebraska in anticipation of enrolling at CUSD.
- It is estimated that CUSD adds approximately \$1.8 million each year in “brain gain” to Nebraska. Between 2014 and 2028, it is estimated that CUSD will add \$25.8 million to the economy in “brain gain” in 2014 dollars.

Approximately 88.2 percent of CUSD admissions come from outside of Nebraska.

Executive Summary

Impact on health care quality

CUSD made substantial contributions to health care quality in the Omaha area.

- CUSD attracts dental students to the Omaha area who work in CUSD's dental clinic providing dental care to low income individuals and families.
- Over the past five years, CUSD's clinic has provided an average of \$8.6 million annually in dental care to low income and homeless individuals and families.
 - In fiscal 2013, 11,000 patients received care through more than 43,000 patient visits in the school, while 13,381 patients were served outside the school in the community.



Dr. Terry Wilwerding providing voluntary care in the Dominican Republic

- Over the past five years, CUSD faculty, students and staff have contributed an average of \$3.4 million annually in "free" or low cost dental care to individuals, families and children. This number does not include donated services. For the most recent fiscal year donated services included:
 - 210 CUSD volunteers supplied oral health screenings to 1,222 children and adults in Omaha.
 - 23 volunteers at the CUSD clinic furnished fluoride treatments to 2,316 children in school-based programs.
 - 71 CUSD senior dental students provided 2,313 children and adults with dental care.
 - 180 CUSD volunteers supplied 4,362 children and adults with dental education via community, or school-based health fairs.
 - 300 CUSD volunteers served 2,208 children and adults with community, or school-based oral health education.
 - 160 CUSD volunteers provided 860 adults with dental examinations at the *Thursday Night One World Clinic*.
 - 60 CUSD volunteers served 100 children in the *Give Kids A Smile* programs.



CUSD students with a patient in the Dominican Republic

Executive Summary

Impact on the overall economy for 2014

- CUSD will generate more than \$63.5 million in sales or business volume for the Omaha economy.⁶
- Approximately \$27.4 million of this impact represents spillover impacts.⁷

Impact on state and local tax collections for 2014

- It is estimated that CUSD will account for almost \$2.6 million in state and local tax collections.
- Of total state and local taxes created, 30.8 percent are sales taxes, 20.4 percent are personal income taxes, 2.1 percent are corporate taxes, 33.1 percent are property taxes and the remaining 13.6 percent comes from other or miscellaneous taxes and fees.

Impact on Omaha's labor force for 2014

- Both directly and indirectly, institutional spending will support an average of 590 jobs with a total payroll, including self-employment income, of approximately \$27.0 million.
- Average salaries and wages for direct and indirect jobs supported by CUSD operations will be approximately \$45,681. This is well above the state average of \$37,570 for Nebraska's private workers.⁸

⁶Since construction for the new building and/or renovation does not begin until after 2014, impacts for 2014 are the same for all scenarios.

⁷\$63.5 million (total impact) minus \$36.1 million (direct impact). Spillover impacts represent 'ripple' impacts in related businesses as CUSD dollars are re-spent in the community. For example, CUSD vendors spend a portion of their earnings in the retail sector, creating sales, earnings and jobs, termed spillover impacts, for businesses in the retail trade sector.

⁸According to the latest (2011) U.S. Census Bureau's County Business Patterns Nebraska had 797,681 private workers earning \$30.0 billion.



Dr. Mark Taylor with CUSD students

Impact on related industries (spillovers) for 2014

- Approximately 352 Omaha industries will experience impacts from CUSD operations.
 - Transportation firms will experience an additional \$1.5 million in additional wages as a result of 2014 CUSD operations.
 - Real estate firms will experience an additional \$1.5 million in wages as result of CUSD operations.
 - Scientific research and development firms will experience \$381.6 thousand in additional wages as a result of CUSD operations.

Average salaries and wages for the direct and indirect jobs supported by CUSD operations will be approximately \$45,681. This is well above the state average of \$37,570 for Nebraska's private workers.

Executive Summary

Impact of CUSD on the Omaha economy, 2014-23

- Table E.1 lists estimated impacts of CUSD operations and capital spending for the three scenarios.
- The total impact for the ten-year period is \$627.3 million for the baseline, or scenario 1.
- The total impact for the ten-year period is \$848.1 million for the build option, or scenario 2.

- The total impact for the ten-year period is \$714.7 million for the renovation option, or scenario 3.

Table E.2 lists the same impacts for North Omaha. Due to government data limitations, Goss & Associates defined North Omaha as zip code 68102.

The assumptions and methodologies used to produce these estimates are contained in accompanying Appendices A, B and C.

Table E.1: Estimated impacts on Omaha – 2014-23 (in 2014 dollars)

	Scenario 1 (baseline)	Scenario 2 (build)	Scenario 3 (renovate)	Impacts of build over baseline	Impacts of build over renovate
Sales or business volume (in millions)	\$627.3	\$848.1	\$714.7	\$220.8	\$133.4
Wages and salaries (in millions)	\$242.2	\$318.8	\$271.5	\$76.6	\$47.3
Self-employment income (in millions)	\$24.2	\$33.6	\$28.4	\$9.4	\$5.2
Total state & local tax collections (in millions)	\$25.6	\$33.4	\$28.6	\$7.8	\$4.8
Average year-round jobs	585	776	660	191	116
Average pay per job	\$45,623	\$45,499	\$45,465	n.a.	n.a.

Source: Implan Multiplier System

Table E.2: Estimated impacts on North Omaha – 2014-23 (in 2014 dollars)

	Scenario 1 (baseline)	Scenario 2 (build)	Scenario 3 (renovation)	Impacts of build over baseline	Impacts of build over renovate
Sales or business volume (in millions)	\$50.7	\$68.6	\$57.8	\$17.9	\$10.8
Wages and salaries (in millions)	\$19.6	\$25.8	\$22.0	\$6.2	\$3.8
Self-employment income (in millions)	\$2.0	\$2.7	\$2.3	\$0.7	\$0.4
Total state & local tax collections (in millions)	\$2.1	\$2.7	\$2.3	\$0.6	\$0.4
Average year-round jobs	47	63	53	16	10

Source: Implan Multiplier System

Executive Summary

Impact of CUSD on Creighton University undergraduate operations

- CUSD is a major factor contributing to Creighton's high percentage of science majors.
 - Over the past two years, 19.6 percent of CUSD acceptances were Creighton University undergraduate students.
 - Over the past two years, CUSD accepted 67.1 percent of Creighton graduates that applied, but only 4.3 percent of non-Creighton graduates. Approximately 30.8 percent of dental students that ultimately enrolled at CUSD were Creighton University undergraduates.
 - CUSD's preferential acceptance of Creighton University graduates has contributed significantly to the operating budgets of Creighton's undergraduate colleges and schools by increasing undergraduate enrollments. It is estimated that:
 - An additional 184 undergraduates enrolled as Creighton undergraduates due to CUSD.
 - The 184 students added \$3.4 million to Creighton undergraduate tuition revenues in 2014.

- Over the past five years, CUSD has annually contributed an average of \$3.7 million directly to Creighton University operating budgets in addition to undergraduate tuition from the 184 students.
- The CUSD-proposed expansion via construction, or Scenario 2, will produce the following impacts for Creighton University over the years following building completion, 2018-28:
 - An increase in CUSD's contribution to the university compared to scenario 1 of \$28.3 million.
 - An increase in CUSD's contribution to undergraduate tuition compared to scenario 1 of \$9.0 million.



CUSD student performing dental exam in a community-based program

Chapter 1: CUSD - Past, Present, Future

Since its founding in 1905, CUSD has graduated more than 5,000 students. The dental school curriculum is focused on the development of a competent, values-centered general dentist educated in the Jesuit, Catholic tradition and is committed to excellence in education, patient care, service, and research.⁹

From its earliest operations, CUSD, one of 66¹⁰ dental schools in 37 U.S. states, has been a significant contributor to university health education. Creighton is the only university in the country to offer education in seven health professions—medicine, dentistry, pharmacy, nursing, occupational therapy, physical therapy and public health.

As a result of the quality of CUSD's offerings and its national and international reputation, it has been very successful in recruiting students from outside Nebraska. Table 1.1 shows that 88.2 percent of CUSD's students come from outside the state, with 9.1 percent of its graduates remaining in the state and 7.6 percent remaining in Omaha.

Thus, as a result of graduates remaining in the state and faculty and researchers moving to Nebraska, CUSD has been a significant contributor to Omaha's and Nebraska's "brain gain." Between 2009 and 2013 students originated from 33 U.S. states and six foreign countries.

Table 1.1: Origin and Destination of CUSD Enrollees and Graduates

Percent of CUSD students from outside Nebraska 2009 – 2013 average	88.2%
Percent of 2009-2013 CUSD graduates remaining in Omaha	7.6%
Percent of 2009-2013 CUSD graduates remaining in Nebraska	9.1%

Source: CUSD

Creighton is the only university in the country to offer education in seven health professions—medicine, dentistry, pharmacy, nursing, occupational therapy, physical therapy and public health.

Table 1.2 summarizes admission statistics for CUSD between 2012 and 2014. As indicated, CUSD receives a substantial number of applications for the relatively few slots. Over the last two years, CUSD has accepted 5.3 percent of all applicants and 9.6 percent of minority applicants. In terms of the share of admits that ultimately enroll at CUSD, 55.0 percent of all applicants enrolled, and 54.2 percent of minority students admitted ultimately matriculate at CUSD.



Dr. Gregory Davis with CUSD student

⁹<http://www.creighton.edu/dentalschool/>

¹⁰At this time not all 66 dental schools have begun to accept students.

Chapter 1: CUSD - Past, Present, Future

Table 1.2: CUSD undergraduate applications and acceptances: 2012-2014

General pool			
	2012-13	2013-14	Average 2012-14
Applications received	2,541	2,400	2,471
Offered Acceptance	124	136	130
Percent of applicants accepted	4.9%	5.7%	5.3%
Admissions	85	85	85
Percent of acceptances enrolled	54.0%	55.9%	55.0%
Under-represented minorities			
	2012-13	2013-14	Average 2012-14
Applications received	259	242	251
Offered Acceptance	22	26	24
Percent of applicants accepted	8.5%	10.7%	9.6%
Admissions	11	15	13
Percent of acceptances enrolled	50.0%	57.7%	54.2%

Source: CUSD

One of CUSD's goals is to graduate a dentist ready to go into a rural or underserved area as that area's only dentist – prepared to perform oral surgery, implants, orthodontics and other general and specialty dental health care. These dental specialties are taught by specialists who are experts in their fields.

CUSD has an ongoing commitment to make quality dental care accessible to those who choose to become patients in the school's clinics, many of whom are the underserved. CUSD is Omaha's largest provider of dentistry to the poor, providing services to 13,381 in the community for fiscal 2013, and serves more than 11,000 clinic patients annually. Last year the school's clinics recorded more than 43,000 patient visits.

CUSD also has the responsibility and obligation to foster and cultivate dental research, and it has been very successful in bringing research dollars to Creighton University. Fiscal 2014 is shaping up to be one of CUSD's most successful years in winning research awards.

These research dollars not only support the

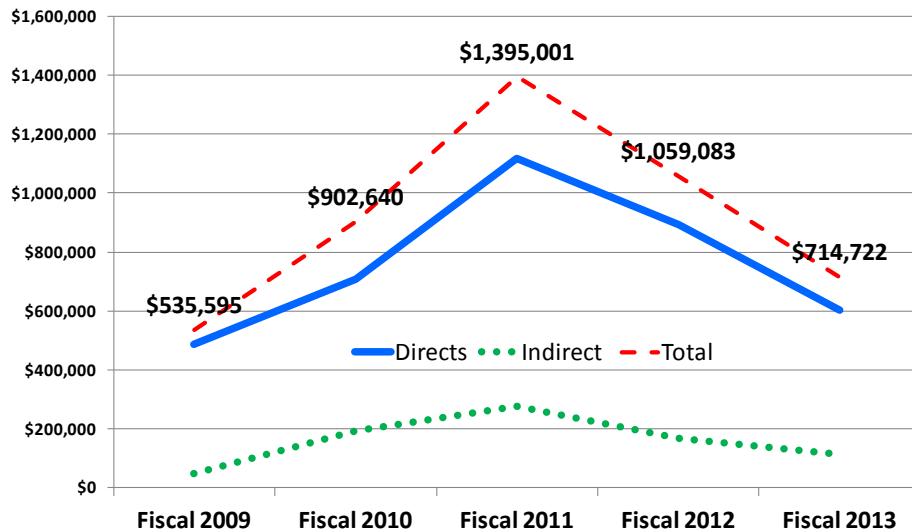
university, they stimulate economic development in the area, increase brain gain and generate new firms with linkages to CUSD researchers. Figure 1.1 profiles research dollars acquired by CUSD investigators.

The long-term goals of CUSD are to continue to recruit and retain the best and brightest dental students, to remain focused on fulfilling its Jesuit, Catholic mission by graduating "practice ready," highly competent and compassionate dental professionals, to sustain its commitment to efficiently executing a high-quality dental education program, to advance its positive community economic impact as the primary oral healthcare provider for the underserved, and to be a national resource for the oral healthcare workforce and dental research.

CUSD is Omaha's largest provider of dentistry to the poor in the Omaha community.

Chapter 1: CUSD - Past, Present, Future

Figure 1.1: CUSD Research awards, fiscal 2009-13



CUSD currently employs 172 individuals - 109 faculty and 63 staff. Of the 109 faculty, approximately 62 are full-time, defined as 28 to 36 hours per week, six work more than two days per week but less than 27 hours per week, and 41 work four to eight hours per week. This community support is discussed in the next section.

Fiscal 2014 is shaping up to be one of CUSD's most successful years in winning research awards.

These faculty and staff run nine departments: 1) Community and Preventive Dentistry, 2) Diagnostic Sciences, 3) Endodontics, 4) General Dentistry, 5) Oral Biology, 6) Oral and Maxillofacial Surgery, 7) Pediatric Dentistry, 8) Periodontics, and 9) Prosthodontics. In addition, "Contributed Service Faculty" donate their time to the community.



Dr. Gerald Bruno with CUSD students

Chapter 1: CUSD - Past, Present, Future

Community and international outreach

Among the benefits to Omaha is CUSD's community outreach. CUSD has an outstanding clinical education program, with the CUSD clinic providing a "dental home" for many of the area's underserved. A few of the programs in which CUSD clinicians participate include:

- **Senior Service-Learning Program:** Dental students provide patient-centered care for diverse populations in three local public health clinics - Charles Drew Health Center, Fred LeRoy Health and Wellness Center and OneWorld Community Health Centers. Students provide care in adult restorative dentistry, pediatric dentistry, basic oral surgery and management of the acute care patient to increase capacity at the safety net dental clinics and improve access to oral health care for underserved populations.
- **Healthy Smiles** – Through a partnership with **Building Healthy Futures**, students provide dental exams, fluoride varnish, dental sealants, and education in elementary schools for children from low-income and refugee families.
- **Give Kids a Smile** – Creighton participates annually in this national program sponsored by the American Dental Association. School-age children receive free dental exams, x-rays, cleanings and fluoride treatments. Follow-up care is provided in the school's pediatric dentistry clinic.
- **Thursday night OneWorld Clinic** – Volunteer students and faculty provide dental care every other Thursday night for low-income, adult patients referred by OneWorld Community Health Centers.
- **Heart Ministry Center/Porto Urgent Care Clinic** – Volunteer students and faculty supply dental screening for clients of the Heart Ministry Center's *Porto Urgent Care Clinic*. Clients are homeless or near-homeless and receive follow-up care in the dental school's acute care clinic and Thursday night clinic.
- **Project Homeless Connect** – The dental school participates in this event held annually at Creighton

University where homeless adults receive dental exams and follow-up care to relieve pain and infection. Some clients also receive dentures and partials which improves their ability to find work and raise their self-esteem.

- **Special Olympics, Special Smiles** – The dental school participates in the annual Special Olympics held each year at Creighton University. Volunteer students and faculty provide dental exams, mouth guards, and education to special athletes.
- **St. Francis Dental Clinic on the Rosebud Reservation** – In collaboration with the Jesuits, dental school alumni from South Dakota, and the South Dakota Dental Association, volunteer students and faculty furnish much-needed dental care on the Rosebud Reservation. Because of the tremendous backlog of patients at the *Indian Health Service Clinic*, many families go without care. This partnership allows members of the Rosebud tribe to receive preventive, restorative, and surgical care in a culturally respectful manner.
- **Institute for Latin American Concern** - Dental students and professional providers administer basic oral health care and education while serving as part of the community in the campos of the Dominican Republic.

Table 1.3 lists CUSD's outreach programs for May 1, 2012 through April 30, 2013 along with the number of dental student volunteers and the number of patients served in conjunction with these programs.



CUSD student providing care in the Dominican Republic

Chapter 1: CUSD - Past, Present, Future

Table 1.3: CUSD outreach programs in Omaha (May 1, 2012 – April 30, 2013)

Education Programs	Number of Volunteers	Number of Omahans Served
Community or school-based health fairs	180	4,362 children and adults
Community or school-based oral health education	300	2,208 children and adults
Screening Programs		
Oral health screening	210	1,222 children and adults
Preventive Dentistry Services		
School-based fluoride varnish programs	23	2,316 children
General Dentistry Services		
Extramural rotations by senior dental students	71	2,313 children and adults
Thursday Night One World Clinic at CUSD	160	860 adults
Give Kids A Smile at CUSD	60	100 children
TOTAL	1,004	13,381

Source: CUSD

CUSD'S future

Across the U.S., data indicate that there is a critical shortage of dentists (addressed in a subsequent section of this study). This shortage is expected to grow. By allowing CUSD to expand enrollments from 340 to 480, the proposed building is an important ingredient in solving this problem.¹¹

CUSD's class size has grown – from 75 students per class when the Boyne Building was constructed in 1973 – to the 85 per class that CUSD currently accepts. The current building was well-designed and solidly built, but over time has become structurally inadequate and deficient in mechanical, electrical, plumbing and technology infrastructure as well. Deferred maintenance is also a major concern. As a result, the school's mission to provide modern dental education and to conduct research is being hampered. To adequately serve students

now enrolled and additional students in the coming years, the Boyne Building requires necessary upgrades if a new building is not constructed.

Other options available to allow CUSD to address space constraints, to enhance academic and clinical programming, to introduce new, innovative technology, to increase class size, and to recruit and retain additional, talented faculty members are to build a new dental facility (scenario 2) or to renovate the current building (scenario 3).



CUSD sophomore lab

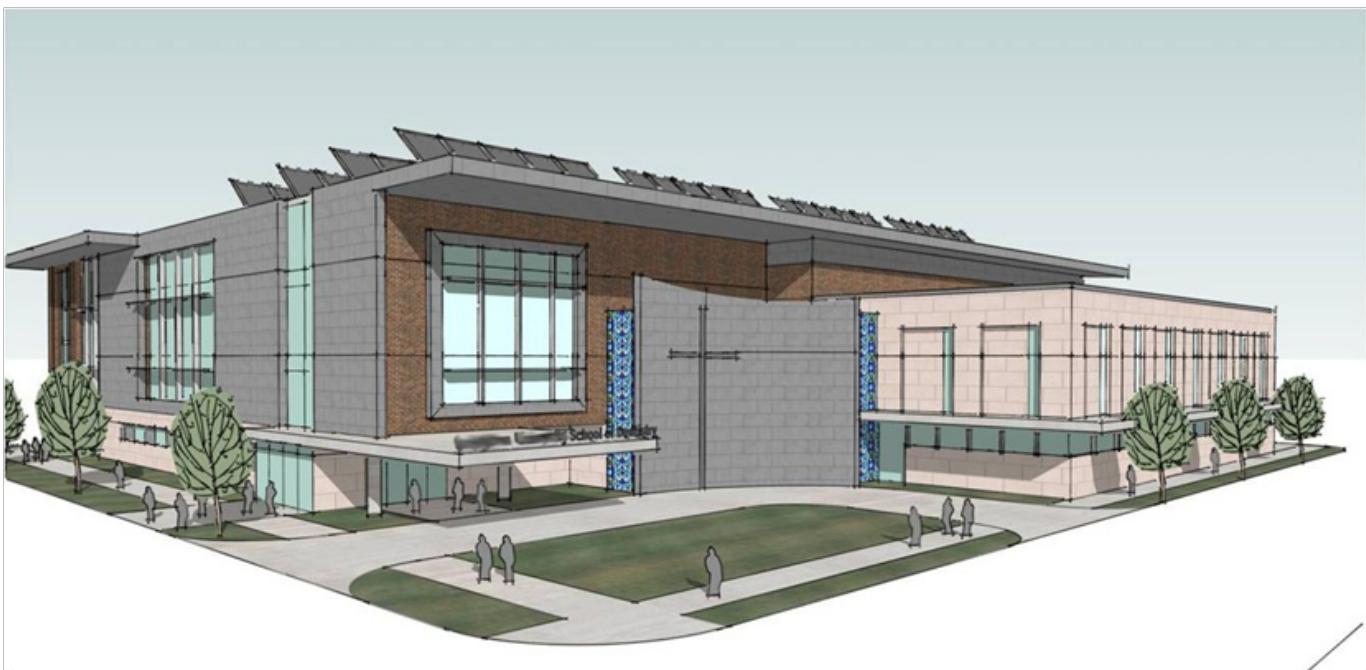
¹¹According to the American Dental Education Association, "if all anticipated new U.S. dental schools currently under consideration do open with an average class size of 85 and an estimated national population of 335 million, there will still only be one graduating dentist for every 60,000 Americans – a critical shortage in 2020." <http://tinyurl.com/m6358go>

Chapter 1: CUSD - Past, Present, Future

High-level projections were prepared to evaluate alternatives that maximize growth potential, giving consideration to capital costs, availability of faculty and impact on student experience. The projections indicate that it will cost approximately \$63 million to renovate the Boyne Building¹² and \$77 million to build a new dental facility.¹³ There is a fundraising campaign analysis underway to determine capacity. The potential for state and/or local support due to indigent care volumes is also being investigated.

Figure 1.2 below is an artist's rendition of what a new CUSD building might look like.

Figure 1.2: Artist's rendition of new CUSD building



The projections indicate that it will cost approximately \$63 million to renovate the Boyne Building and \$91 million to build a new dental facility.

¹²The option to renovate the Boyne Building would be a \$63 million investment over five years that would allow for 10 additional students per class. Incremental \$24M investment generates about \$2M incremental annual cash flow after ramp-up period (excludes financing costs).

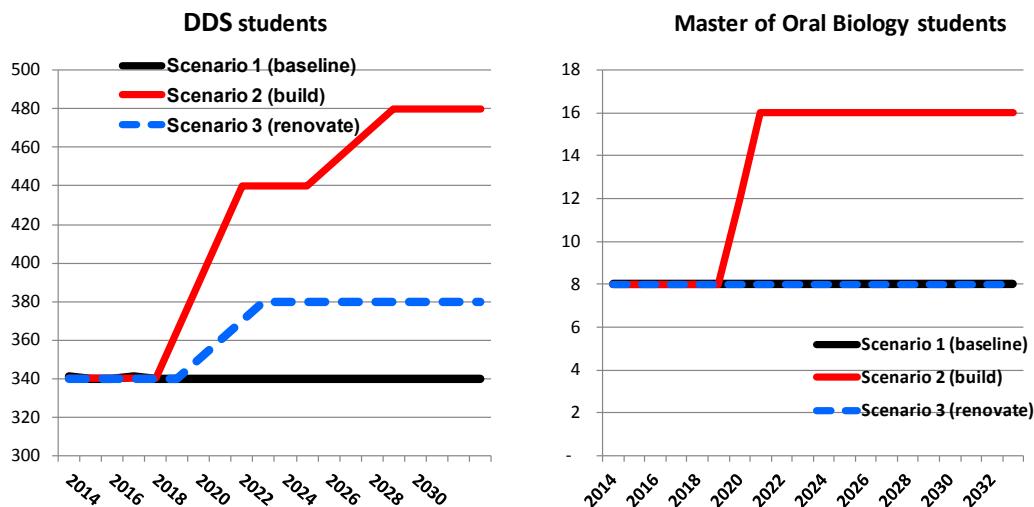
¹³The option to build a new building is estimated to be a \$77 million investment over two years. The option would also require \$5 million for demolition of old building plus \$9 million for parking. It would allow for initially 25 more DDS students/class, four more Master of Oral Biology (MOB) and Certificate students/class. The new structure would be able to add 100 MOB students in total for the first seven years and 10 DDS students per class for a total of 140 DDS students after year seven.

Chapter 1: CUSD - Past, Present, Future

Enrollment and employment

CUSD currently accepts 85 students per class - all full-time. Class sizes vary due to issues such as attrition, students repeating a year, or students coming back after a leave of absence. Currently, class sizes are: Seniors: 83; Juniors: 86; Sophomores: 87; and Freshman: 86. Figure 1.3 visually depicts the increase in enrollment anticipated in the next ten years in each of the three possible future scenarios.

Figure 1.3: Number of CUSD students, 2014-33



Future development in CUSD: Build, maintain or renovate?

Dental education is the most promising area of medical care in the U.S. According to U.S. News and World Report, dentist was ranked #1 in its “100 best jobs” list with a prediction that “the profession should grow 21.1 percent by 2020.”¹⁴

More than 2,500 aspiring students – in excess of 20 percent of all prospective U.S. dental students – apply for the school’s 85 first-year positions. Creighton dental students exceed national averages for National Board, and their regional exams exceed pass rate averages. A larger, updated facility will allow CUSD to answer the growing demands of its dental program, its patient base, and the national population. Another key priority is to recruit and retain faculty who are outstanding technically and who are committed to CUSD’s values-driven dental education.

Additionally, it is estimated that 3 million children will gain dental benefits through the Affordable Care Act’s health insurance exchanges by 2018, or roughly a 5 percent increase over the current number of children with private dental benefits.¹⁵



Dr. William Carlisle with CUSD student in lab

¹⁴<http://money.usnews.com/careers/best-jobs/rankings/the-100-best-jobs>

¹⁵“Potential Effects of the Affordable Care Act on Dentistry,” American Dental Association, April 2013, http://www.asdanet.org/uploadedFiles/The_Issues/EffectsofACAonDentistry.pdf

Chapter 1: CUSD - Past, Present, Future

Dental education is growing by leaps at other U.S. universities. For example, Marquette University's Dental School, with current admissions slightly below CUSD's 85, unveiled a plan for a strategic 40,000-square-foot expansion of its existing 120,000-square-foot dental facility.

"The design and construction of the expanded facility for the Marquette University School of Dentistry will provide space to accommodate additional students and bolster retention and recruitment of quality faculty. In addition to a new 24-chair clinic and an expanded faculty practice, space will be provided for clinical research along with an expanded and upgraded simulation laboratory, high-technology classroom space, support space and faculty offices. This will allow Marquette to expand the number of students admitted."¹⁶

Supply of dentists: Shortage or surplus

U.S. data for dentists indicate there is significant demand for additional dentists as envisioned by an expanded CUSD. According to the U.S. Bureau of Labor Statistics (BLS), the median 2012 salary for the nation's 170,200 general dentists was \$146,800. Furthermore, the BLS estimates that between 2012 and 2022, demand for dentists will grow by 16 percent which is well above the 12 percent projected growth for all occupations.



CUSD Adult dental clinic

Table 1.4 shows the current number of dentists and growth for all the surrounding cities for which the BLS collected data on general dentists.¹⁷ The shortage or surplus was computed using location quotients. A location quotient is a device that is used to calculate the size of a surplus or shortage of employment for an occupation or industry.

A location quotient of 1.0 indicates that a city has neither a shortage nor surplus, but instead has the same percentage of overall employment in general dentistry as the nation. A location quotient less than 1.0 indicates that the city has a lower percentage of its employment in general dentistry as the nation, or a shortage. A location quotient greater than 1.0 indicates that the city has a higher share of its employment in general dentistry than the nation, or a surplus.

Omaha's location quotient for general dentists was 0.74¹⁸ in 2012 indicating that Omaha had a shortage of general dentists of 83 which was 34.7 percent of its 2012 employment of dentists. Table 1.4 presents estimated shortages and surpluses for regional cities for 2012.

Data in Table 1.4 indicate that there is significant need in the Omaha area for the additional dentists provided by an expanded CUSD. Omaha's dentists had an average pay of \$212,380 which ranked third among the 18 cities examined.

¹⁷As defined by the U.S. BLS, general dentists "examine, diagnose, and treat diseases, injuries, and malformations of teeth and gums. May treat diseases of nerve, pulp, and other dental tissues affecting oral hygiene and retention of teeth. May fit dental appliances or provide preventive care. Excludes 'Prosthodontists' (29-1024), 'Orthodontists' (29-1023), 'Oral and Maxillofacial Surgeons' (29-1022) and 'Dentists, All Other Specialists' (29-1029)."

¹⁸Location quotients are not represented in table.

¹⁶<http://www.marquette.edu/dentistry/building-for-future-dentistry/plan.shtml>

Chapter 1: CUSD - Past, Present, Future

Table 1.4: Surplus or shortage of dentists in regional cities for 2012

Regional cities with a shortage of general dentists			
	Size of Shortage	Shortage as percent of current general dentists	Average annual pay
Des Moines-West Des Moines, IA	113	93.9%	\$183,470
Wichita, KS	71	54.9%	\$152,990
Kansas City, MO-KS	217	45.2%	\$128,520
Omaha-Council Bluffs, NE-IA	83	34.7%	\$212,380
Lincoln, NE	27	30.3%	\$165,580
St. Louis, MO-IL	126	15.9%	\$164,060
Topeka, KS	7	9.3%	\$141,740
Cheyenne, WY	1	2.5%	\$130,480
Minneapolis-St. Paul-Bloomington, MN-WI	17	1.4%	\$199,470
Regional cities with a surplus of general dentists			
	Size of Surplus	Surplus as percent of current general dentists	Average annual pay
Cedar Rapids, IA	1	0.6%	\$216,960
Denver-Aurora-Broomfield, CO	56	6.0%	\$135,390
Sioux Falls, SD	11	10.3%	\$150,300
Boulder, CO	15	11.9%	\$156,690
Sioux City, IA-NE-SD	10	16.5%	\$209,120
Grand Junction, CO	18	30.7%	n.a.
Colorado Springs, CO	116	39.9%	\$155,030
Rapid City, SD	37	46.4%	\$107,810
Dubuque, IA	50	55.2%	\$222,760

Source: Goss calculations based on U.S. BLS data

Chapter 1: CUSD - Past, Present, Future

Where will these needed dentists come from? Table 1.5 compares applicant and enrollment rates for the U.S., CUSD and UNMC Dental School for 2007.¹⁹ As listed, CUSD applications were more than triple that of UNMC Dental School. Furthermore, CUSD enrolled a much higher percent of out-of-state applicants at 91.8 percent than UNMC at 35.6 percent. CUSD's and UNMC's out-of-state recruitment has a significant and positive impact on Omaha "brain gain."

Table 1.5: Acceptance rates, U.S., CUSD and UNMC Dental School compared 2007

	All U.S. dental schools	CUSD	UNMC Dental School
Total applicants	13,742	3,174	944
Total first-year enrollees	4,770	85	45
Percent of applicant accepted and enrolled	34.7%	2.7%	4.8%
Percent of in-state applicants	n.a.	2.4%	10.1%
Percent of in-state enrollees	n.a.	8.2%	64.4%

Source: Okwujie, Lfie, et. al (2007)

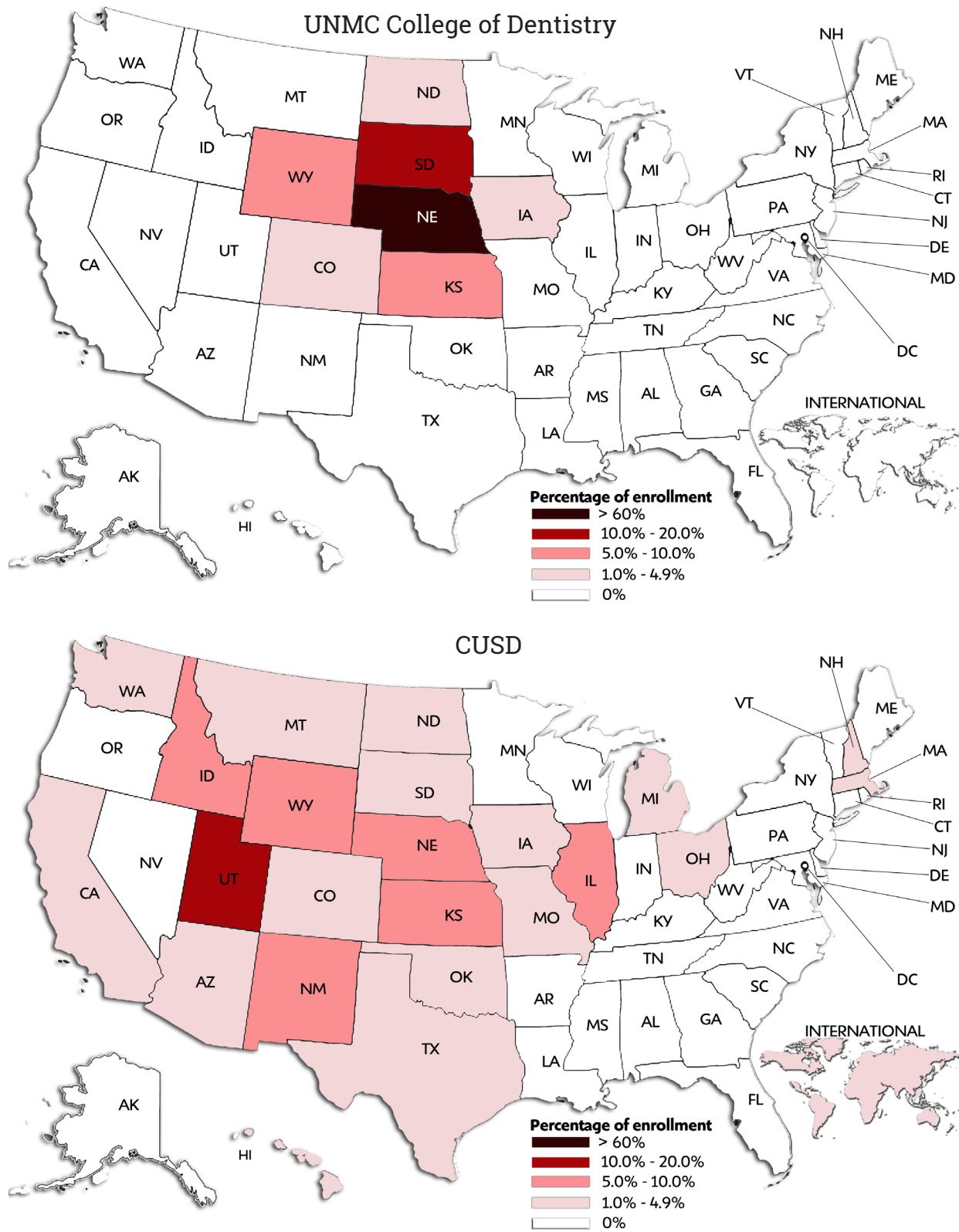
On the following page, Figure 1.4 shows the origin state for dental school enrollees for CUSD and UNMC. As presented, UNMC Dental School recruits more than 60 percent of their students from Nebraska while CUSD recruits less than 10 percent of its first-year students from Nebraska. By drawing a large percentage of its students from outside the state, CUSD is a significant contributor to the state and Omaha economies via brain gain.

By drawing a large percentage of its students from outside the state, CUSD is a significant contributor to the state and Omaha economies via brain gain.

¹⁹Data in Table 1.5 differ from that in Table 1.1 since it is from different years and sources.

Chapter 1: CUSD - Past, Present, Future

Figure 1.4: Dental school enrollment by state, 2007



Source: Okwatie, Lfie, et. al (2007)

Chapter 2: Estimated Economic Impacts for Omaha of CUSD Expansion

Introduction

The expenditures of CUSD provide a source of jobs and income for residents of the city of Omaha. This spending for locally-supplied goods and services consists of construction outlays, equipment and supply purchases, and spending by CUSD employees.

This initial spending leads to further spending for residents with a resultant impact that is a multiple of "first round" spending. Thus, the impact of CUSD continues after the initial money is spent for goods and services. It supports many enterprises and individuals that are indirectly linked to CUSD.

The impact of CUSD spending on the city of Omaha is greater than, or a multiple of, the initial round of outlays. Using Input-Output multipliers, the study will provide sales, earnings and job impacts in addition to estimating the impact of the initial CUSD spending on state and local tax collections.

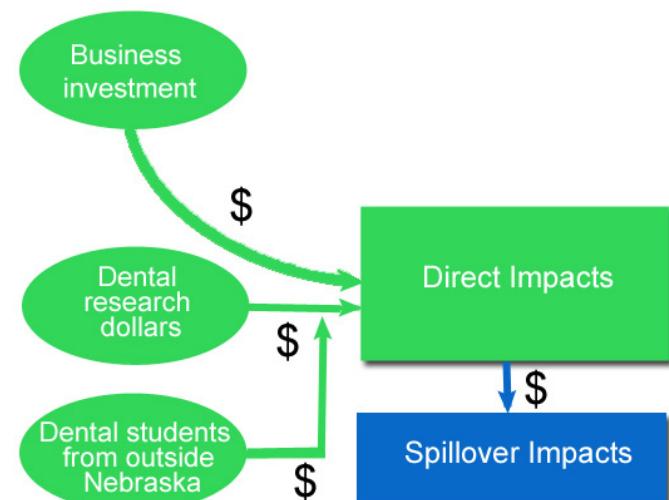
Input-Output multipliers show how spending initiated in one industry, dental school spending in this case, is filtered throughout the state and city economies. For each dollar generated by CUSD, there are direct effects for the initial spending plus the spillover impacts into the rest of the state and local economies.

Input-Output multiplier models are the most frequently-used type of analysis tool for economic impact assessment. Input-output analysis assumes that each sector purchases products and services from other sectors and then sells its output to other sectors and/or final consumers. The multiplier system that will be used is Implan.²⁰ This is a widely-used and accepted methodology and is described in more detail in the Appendices.

²⁰IMPLAN (Impact Analyses and Planning) is computer software consisting of procedures for estimating local input-output models and is one of the most widely-used and accepted tools for impact assessment. Since 1993, the Minnesota IMPLAN Group Inc. in Stillwater, Minnesota, with exclusive licensing and distribution rights, has continued development and maintenance of the IMPLAN system. Goss & Associates is a licensed user of IMPLAN.

In tailoring the IMPLAN model for CUSD spending, Goss & Associates used conservative assumptions. Impacts were calculated for five categories that reflect the contribution of CUSD to the state and local economies.

1. **Output:** contribution to overall economic activity.²¹
2. **Employment:** contribution to the job base.
3. **Wages and salaries:** contribution to wages and salaries.
4. **Self-employed:** contribution to the income of self-employed individuals.
5. **Taxes:** contribution to state and local tax collections.



²¹Output includes wages and salaries, self-employment income, and taxes.

Chapter 2: Estimated Economic Impacts for Omaha of CUSD Expansion

Total impact on Omaha economic activity

The first step in measuring impacts was to input CUSD direct spending into the Implan Multiplier System. In Appendix B are listed direct impacts for the three scenarios for the period 2014-23. Table 2.1 lists the sum of direct plus spillover impacts.

Scenario 1 - Baseline. As indicated over the ten-year period, the initial spending would generate a total of \$627.3 million in sales,²² \$242.2 million in wages and salaries, \$24.2 million in self-employment income and \$25.6 million in state and local taxes.²³ Additionally, CUSD operations and capital spending would support an average of 585 jobs per year for the ten-year period.²⁴

Scenario 2 - Build. As indicated over the ten-year period, the initial spending would provide a total of \$848.1 million in sales, \$318.8 million in wages and salaries, \$33.6 million in self-employment income and \$33.4 million in state and local taxes. Additionally, CUSD operations and capital spending would support an average of 776 jobs per year for the ten-year period.

Scenario 3 - Renovate. As indicated over the ten-year period, the initial spending would produce a total of \$714.7 million in sales, \$271.5 million in wages and salaries, \$28.4 million in self-employment income and \$28.6 million in state and local taxes. Additionally, CUSD operations and capital spending would support an average of 660 jobs per year for the ten-year period.

Table 2.1: Estimated impacts on Nebraska – 2014-23 (in 2014 dollars)

	Scenario 1 (baseline)	Scenario 2 (build)	Scenario 3 (renovate)	Impacts of build over baseline	Impacts of build over renovate
Sales or business volume (in millions)	\$627.3	\$848.1	\$714.7	\$220.8	\$133.4
Wages and salaries (in millions)	\$242.2	\$318.8	\$271.5	\$76.6	\$47.3
Self-employment income (in millions)	\$24.2	\$33.6	\$28.4	\$9.4	\$5.2
Total state & local tax collections (in millions)	\$25.6	\$33.4	\$28.6	\$7.8	\$4.8
Average year-round jobs	585	776	660	191	116
Average pay per job	\$45,623	\$45,499	\$45,465	n.a.	n.a.

²²Sales or business volume, or total impacts, include salary and wages, self-employment income, and state and local taxes.

²³Self-employment income includes earnings for self-employed individuals such as attorneys, accountants and consultants.

²⁴Jobs include part-time and full-time.

Chapter 2: Estimated Economic Impacts for Omaha of CUSD Expansion

Figures 2.1 – 2.4 show impacts for each year of the ten-year period. All monetary impacts are in 2014 dollars. As indicated, impacts peaked for Scenarios 2 and 3 in 2015 and 2016 when construction and renovation spending is assumed to take place.

Figure 2.1: Total Impacts, 2014-23 (millions of 2014 dollars)

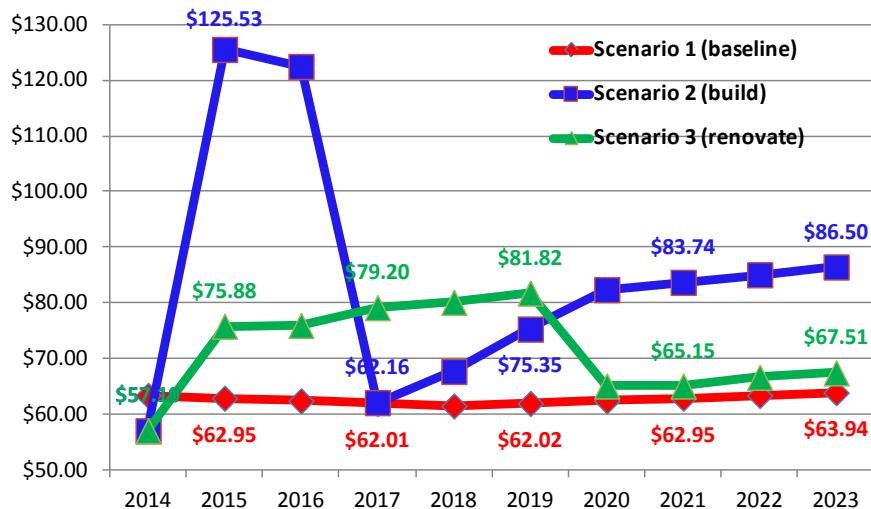
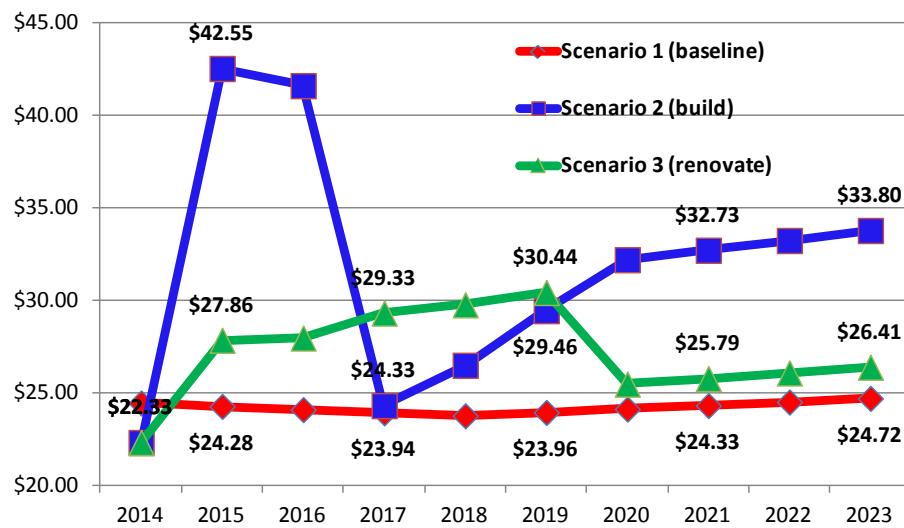


Figure 2.2: Impact on wages & salaries 2014-23 (millions of 2014 dollars)



Chapter 2: Estimated Economic Impacts for Omaha of CUSD Expansion

Figure 2.3: Self-employment income impacts 2014-23 (millions of 2014 dollars)

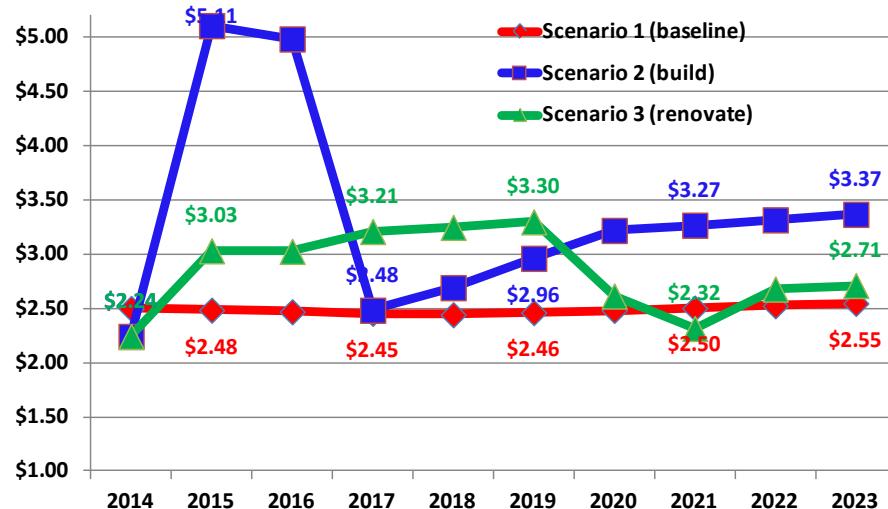
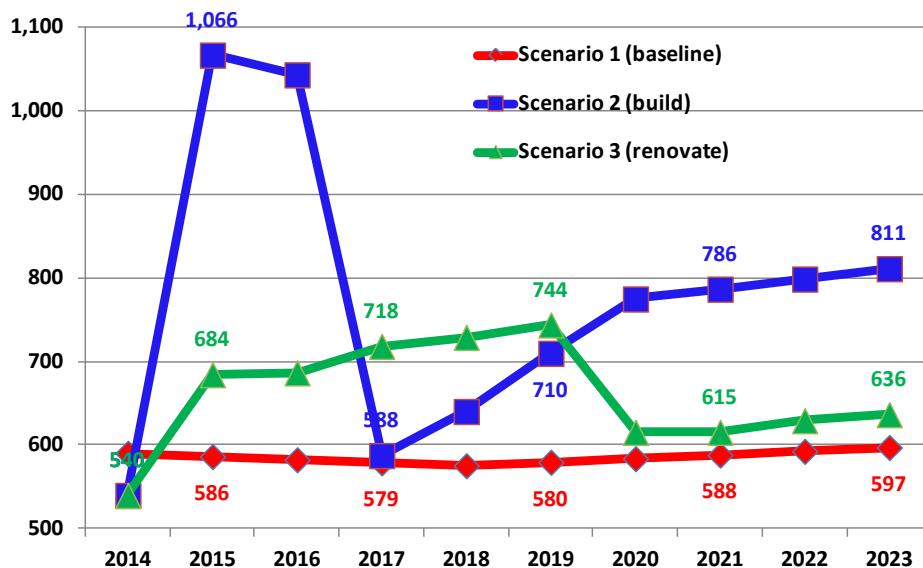


Figure 2.4: Job impacts 2014-23



Chapter 2: Estimated Economic Impacts for Omaha of CUSD Expansion

Impact on state and local tax collections

While CUSD is a non-profit institution, its employees, residents, and visitors pay state and local taxes. Through the spending related to CUSD operations, state and local tax collections are created. Table 2.2 provides detailed estimates of the impact on state and local taxes. As indicated, the outcome for 2013-2023 is \$13.2 million in state, \$12.4 million in local, and \$25.6 million in state and local tax collections under Scenario 1; \$17.3 million in state, \$16.2 million in local, and \$33.4 million in state and local tax collections under Scenario 2; and \$14.7 million in state, \$13.9 million in local, and \$28.6 million in state and local tax collections under Scenario 3.

Table 2.2: Estimated impacts on Nebraska tax collections – 2014-23 (in 2014 dollars)

	Scenario 1 (baseline)	Scenario 2 (build)	Scenario 3 (renovate)	Impacts of build over baseline	Impacts of build over renovate
State taxes	\$13,159,499	\$17,252,416	\$14,745,648	\$4,092,917	\$2,506,768
Local taxes	\$12,433,705	\$16,184,333	\$13,879,866	\$3,750,628	\$2,304,467
Total	\$25,593,204	\$33,436,749	\$28,625,514	\$7,843,545	\$4,811,235

Source: IMPLAN Multiplier System

Table 2.3 lists impacts to Nebraska tax collections for Scenarios 1, 2, and 3 by type of tax.

Table 2.3: Estimated impacts on Nebraska tax collections by type – 2014-23 (in 2014 dollars)

	Scenario 1 (baseline)	Scenario 2 (build)	Scenario 3 (renovate)	Impacts of build over baseline	Impacts of build over renovate
Personal income	\$5,203,795	\$6,867,698	\$5,850,174	\$1,663,903	\$1,017,524
Corporate income	\$544,158	\$736,869	\$621,462	\$192,711	\$115,407
Sales taxes	\$7,882,533	\$10,262,409	\$8,801,337	\$2,379,876	\$1,461,072
Property taxes	\$8,471,563	\$11,031,952	\$9,460,176	\$2,560,389	\$1,571,776
Personal property-motor vehicle	\$334,005	\$440,804	\$375,494	\$106,799	\$65,310
Fees and other taxes	\$3,157,150	\$4,097,017	\$3,516,871	\$939,867	\$580,146
Total	\$25,593,204	\$33,436,749	\$28,625,514	\$7,843,545	\$4,811,235

Source: IMPLAN Multiplier System

Chapter 2: Estimated Economic Impacts for Omaha of CUSD Expansion

Figures 2.5 and 2.6 provide the state and local tax impacts by year for the ten-year period of 2014-2023.

Figure 2.5: State tax impacts, 2014-23 (millions of 2014 dollars)

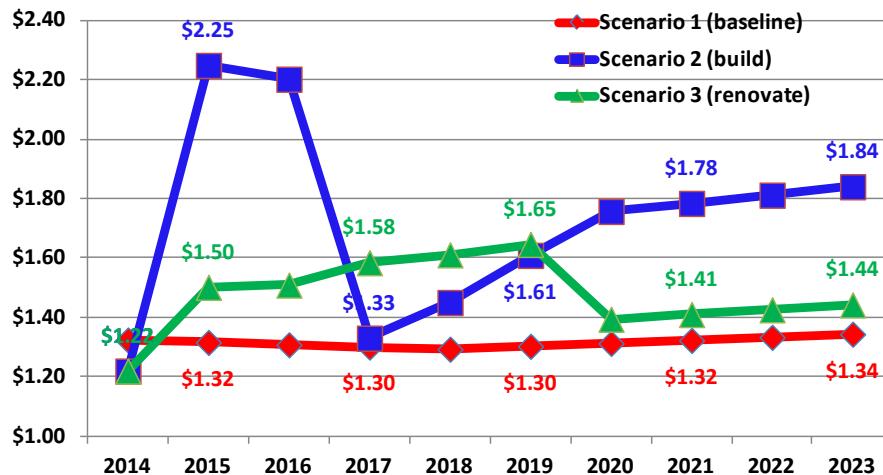
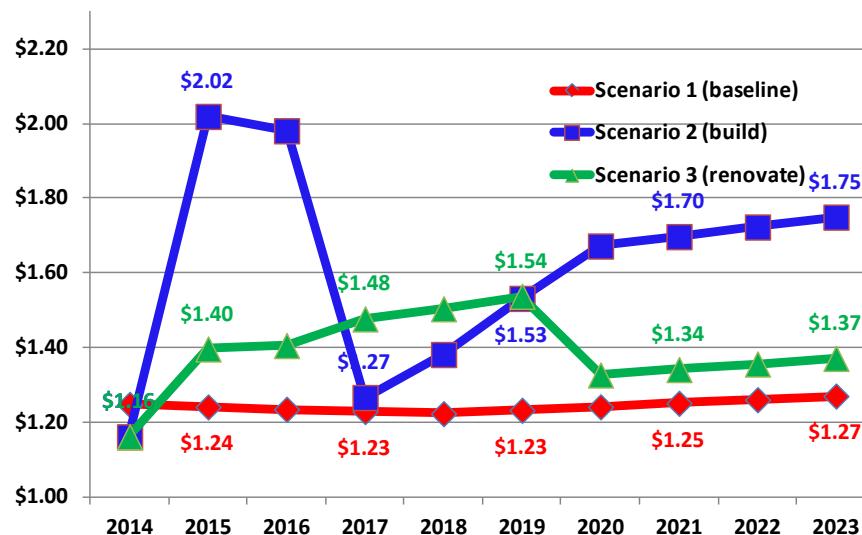


Figure 2.6: Local tax impacts, 2014-23 (millions of 2014 dollars)



Chapter 2: Estimated Economic Impacts for Omaha of CUSD Expansion

Impacts by industry

For 2014, approximately 352 Omaha industries will experience impacts from CUSD construction and operations. Table 2.4 lists wages & salaries impacts by industry for the ten-year period 2014-2023. As listed, CUSD construction and operations (Scenario 2) will generate \$24.2 million in wages and salaries for the construction industry for the 10-year period. Firms in the accommodations industry are expected to experience an additional \$15.5 million in wages and salaries for the full period for Scenario 2.

For Scenario 3, CUSD is estimated to produce \$13.6 million in wages & salaries for the construction industry and \$11.5 million for the accomodations industry for the period 2014 to 2023.

Table 2.4: Wages & salaries impacts by industry for top 12 industries – 2014-23 (2014 dollars)

Industry	Scenario 1 (baseline)	Scenario 2 (build)	Scenario 3 (renovate)	Impacts of build over baseline	Impacts of build over renovate
Colleges, universities, and professional schools	\$88,693,968	\$113,381,393	\$96,436,106	\$24,687,425	\$16,945,287
Offices of physicians, dentists, and other health practitioners	\$35,240,910	\$43,978,848	\$40,330,806	\$8,737,938	\$3,648,042
Construction and/or repair of new health care structures	\$12,764,487	\$24,226,477	\$13,649,859	\$11,461,990	\$10,576,618
Accommodations	\$10,632,453	\$15,486,472	\$11,458,244	\$4,854,019	\$4,028,228
Retail Stores - Food and beverage	\$6,669,732	\$7,692,157	\$7,255,640	\$1,022,425	\$436,517
Transit and ground passenger transportation	\$6,509,138	\$7,691,905	\$7,019,850	\$1,182,767	\$672,055
Scientific research and development services	\$4,543,348	\$5,518,679	\$4,847,839	\$975,331	\$670,840
Private hospitals	\$4,529,010	\$5,973,582	\$5,089,490	\$1,444,572	\$884,092
Food services and drinking places	\$4,471,366	\$5,574,086	\$4,997,803	\$1,102,720	\$576,283
Wholesale trade businesses	\$4,224,943	\$5,921,994	\$4,939,948	\$1,697,051	\$982,046
Real estate establishments	\$1,353,080	\$1,756,464	\$1,502,370	\$403,384	\$254,094
Architectural, engineering, and related services	\$1,294,449	\$2,857,546	\$2,058,053	\$1,563,097	\$799,493
All other industries	\$61,309,225	\$78,736,918	\$71,920,827	\$17,427,693	\$6,816,091
Total Impact	\$242,236,108	\$318,796,520	\$271,506,833	\$76,560,412	\$47,289,687

Source: IMPLAN Multiplier System

Chapter 3: Impact of CUSD on non-CUSD Operating Budgets

CUSD's direct financial contributions to the Creighton University operating budget

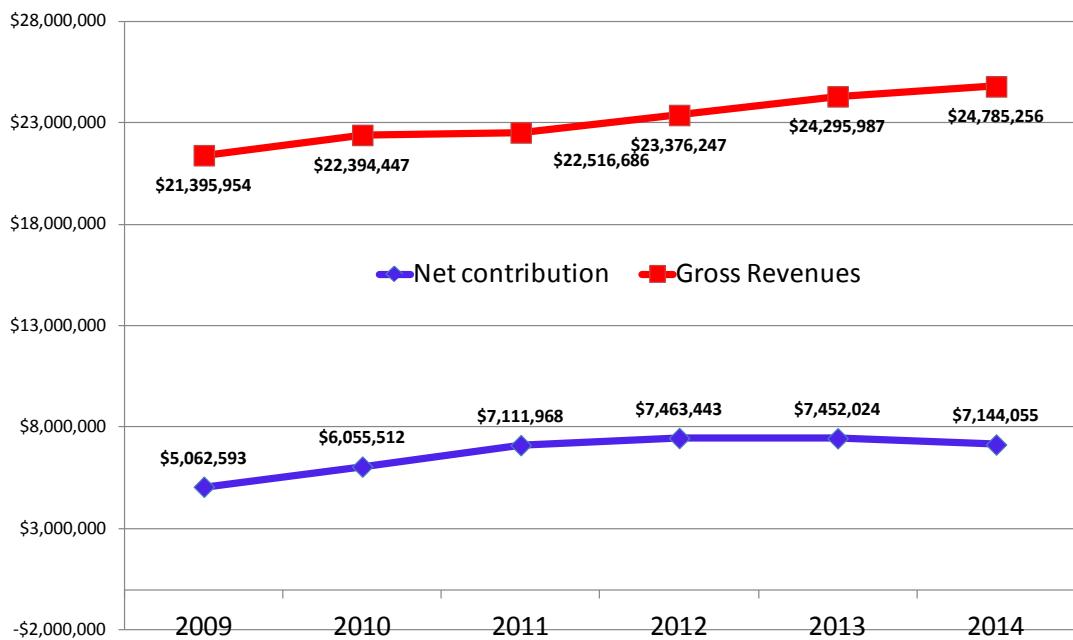
Each year, CUSD contributes to the university operating budget. Figure 3.1 shows CUSD's yearly contribution, and contribution as a percent of combined operating revenues. Operations are the summation of clinical revenues, teaching revenues, and contracts and grants.

The contributions listed in Figure 3.1 do not include the gain in undergraduate tuition revenues that are identified and estimated later in this chapter.

For the period 2009-13, CUSD contributed approximately 29.0 percent of its gross revenues to the university. Regression analysis is used to project contributions for the period 2015-17 and the ten years after expected construction of the building (Scenario 2) and the renovation (Scenario 3).

The contributions listed in Figure 3.1 do not include the gain in undergraduate tuition revenues that are identified and estimated later in this chapter.

Figure 3.1: CUSD gross revenues and net contribution to university operations, fiscal 2009-13



Chapter 3: Impact of CUSD on Non-CUSD Operating Budgets

Table 3.1 lists contributions of CUSD for the three scenarios based on that experienced between 2009 and 2014. Between fiscal year 2009 and fiscal 2014, CUSD's contribution as a percent of revenue was 29 percent. This contribution is assumed for future years.

Table 3.1: CUSD direct contributions to Creighton University - 2014-23 (2014 dollars)

Discounted to 2014 dollars			
Fiscal Year	Scenario 1 (baseline)	Scenario 2 (build)	Scenario 3 (renovate)
2013-14	\$7,196,274	\$7,196,274	\$7,196,274
2014-15	\$7,111,338	\$7,111,338	\$7,111,338
2015-16	\$7,027,806	\$7,027,806	\$7,027,806
2016-17	\$6,945,669	\$6,945,669	\$7,123,800
2017-18	\$6,864,917	\$7,600,328	\$7,526,322
2018-19	\$6,785,541	\$8,254,125	\$7,681,867
2019-20	\$6,707,534	\$9,067,932	\$7,795,896
2020-21	\$6,630,885	\$9,762,288	\$7,575,003
2021-22	\$6,555,588	\$9,721,128	\$7,505,528
2022-23	\$6,481,636	\$9,682,135	\$7,437,630
2023-24	\$6,409,021	\$9,645,315	\$7,371,303
2024-25	\$6,337,736	\$9,024,370	\$6,989,341
2025-26	\$6,267,775	\$8,999,710	\$6,930,368
2026-27	\$6,199,133	\$8,977,132	\$6,872,898
2027-28	\$6,131,805	\$8,956,644	\$6,816,930
Total	\$99,652,657	\$127,972,194	\$108,962,303

Chapter 3: Impact of CUSD on Non-CUSD Operating Budgets

CUSD's indirect financial contributions to Creighton via undergraduate tuition

Reasons Undergraduates Come to Creighton.

A high share of Creighton undergraduate students are attracted to Creighton due to CUSD and other professional medical professional schools.²⁵

Nationally, 78.9 percent of individuals who enrolled in dental school in 2007 received bachelor's degrees in science. As presented in Table 3.2, for the last five years, 30.5 percent of incoming Creighton freshman have been biology/chemistry majors. Of course, many of these freshmen switch to other majors as they move through the curriculum. The existence of CUSD contributes to the undergraduate college via attracting students selecting the pre-dental option and majoring in science. Without CUSD, it is very likely that the number of undergraduates would decline substantially.

CUSD requires a minimum of 90 semester hours of study in a liberal arts college for admission. Of the 90 hours, CUSD requires a minimum of 32 hours in science.²⁶ It is current policy of CUSD to give preferential admission to Creighton undergraduates.²⁷ This has meant that Creighton's undergraduate program in sciences has grown due to the matriculation of students who intend to gain admission to CUSD. A measure of this impact on the undergraduate program is the percentage of students majoring in science.

It is current policy of CUSD to give preferential admission to Creighton undergraduates.

Table 3.2: New biology & chemistry majors as percent of total first year Creighton students, 2009-13

	Anticipated biology/chemistry majors	Total students	Percentage biology/chemistry
2009	292	1,041	28.0%
2010	337	994	33.9%
2011	328	964	34.0%
2012	277	936	29.6%
2013	292	953	30.6%
Totals	2,342	7,685	30.5%

Source: *Creighton University Fact Book*

²⁵"U.S. Dental School Applicants and Enrollees, 2006 NS 2007 Entering Class," Okwujie, Lfie, et. al, *Journal of Dental Education*, V72(11), pp. 1350-91.

²⁶http://creighton.agdotnetnuke.betamx.jtmd.com/Portals/14/Forms/PDF_Majors/PreMedPreDent.pdf (accessed September 9, 2009). Eight hours each in biology, general chemistry (with lab), organic chemistry (with lab) and physics (with lab).

²⁷http://creighton.agdotnetnuke.betamx.jtmd.com/Portals/14/Forms/PDF_Majors/PreMedPreDent.pdf (accessed September 9, 2009).

Chapter 3: Impact of CUSD on Non-CUSD Operating Budgets

Table 3.3 lists the number and share of Creighton undergraduates identifying themselves as pre-dentistry and pre-professional medical, which includes pre-dentistry.

Table 3.3: Concentrations of new undergraduate students at Creighton University, 2009-13

	Pre-dentistry	Total pre-professional medical	Percentage Pre-dentistry
2009	38	509	7.5%
2010	51	533	9.6%
2011	53	530	10.0%
2012	47	468	10.0%
2013	40	517	7.7%
Totals	229	2,557	9.0%

Pre-professional medical includes students concentrating on studies leading to dental school, medical school, occupational therapy, pharmacy and physical therapy

Source: *Creighton University Fact Book*

Table 3.4 shows the ultimate majors of Creighton students receiving bachelor's degrees. These data point to the importance of science majors in Creighton University's undergraduate program. It is likely that a large share of science majors is due to Creighton's broad range of medical programs, including dental.

Table 3.4: Degrees conferred Creighton University, July 1, 2012 – June 30, 2013

Area	Percentage
Biological / life sciences	8.5%
Health professions and related	27.7%
Physical sciences	5.1%
Other areas	58.7%
Total	100.0%

Source: *Creighton University Fact Book*

Chapter 3: Impact of CUSD on Non-CUSD Operating Budgets

Over the past two academic years, 67.1 percent of Creighton graduating seniors who applied for CUSD admission were accepted and 86.2 percent of Creighton undergraduates who were accepted ultimately enrolled at CUSD, pointing to the importance of CUSD in encouraging undergraduates to come to Creighton.

Surveys of incoming freshmen provide further evidence of the importance of CUSD in attracting undergraduate students. Incoming freshmen are given twenty reasons on the Freshman Survey²⁸ for choosing their particular institution. The response options are: 1) very important, 2) somewhat important and 3) not important. These reasons have varied very little over the past three years examined (2006, 2007, and 2008) and are listed below. As indicated for the three-year period, the top three reasons for choosing Creighton are 1) this college has a very good academic reputation, 2) this college's graduates get good jobs, 3) this college's graduates gain admission to top graduate/ professional schools.

The results are listed in Table 3.5. As reported, more than six of ten of Creighton freshmen indicated that the likelihood of gaining admission to top graduate and professional schools was very important in their decision to come to Creighton. Again, these data point to the importance of CUSD and other Creighton medical units in attracting undergraduate students.

Table 3.5: Very important reasons for choosing Creighton (average for 2006-2008)

Reason	Percent identifying as very important
1. College has a good academic reputation	88%
2. Graduates get good jobs	72%
3. Graduates gain admission to top grad/professional schools	62%
4. I was offered financial assistance	58%

Source: Creighton's Office of Institutional Research

Table 3.6 compares the share of undergraduate students enrolled as science majors among Jesuit colleges and universities, showing that only University of Detroit-Mercy and Marquette have a higher share of science majors than Creighton.

²⁸Higher Education Research Institute at UCLA.

Chapter 3: Impact of CUSD on Non-CUSD Operating Budgets

Table 3.6: Percentage of science majors by Jesuit college, 2008

Jesuit institutions with dental and/or medical schools	
Institution Name	Percentage of science majors
Creighton University	22.2%
Marquette University	24.1%
Saint Louis University	15.0%
University of Detroit-Mercy	34.6%
Jesuit higher education with dental schools (median)	23.2%
Jesuit higher education institutions without dental and/or medical schools	
Holy Cross College	0.00%
Satin Josephs--all campuses	1.20%
Regis University	3.20%
Fordham University	3.50%
Loyola University New Orleans	6.30%
Xavier University	6.30%
Saint Peters College	6.90%
University of San Francisco	6.90%
Loyola College in Maryland	8.30%
Boston College	8.40%
Canisius College	9.20%
Wheeling Jesuit University	10.30%
Fairfield University	10.50%
Loyola Marymount University	10.50%
Rockhurst University	12.40%
Spring Hill College	12.70%
Le Moyne College	12.80%
Gonzaga University	13.50%
Santa Clara University	13.80%
University of Scranton	14.20%
Seattle University	14.60%
John Carroll University	14.70%
Loyola University of Chicago	16.7%
Jesuit higher education without dental schools (median)	10.3%

Source: Creighton University Fact Book

Chapter 3: Impact of CUSD on Non-CUSD Operating Budgets

Table 3.7 compares Creighton to other private schools without dental schools. This comparison indicates that Creighton has gained a premium of 13.0 percent of science students.²⁹ Assuming that a portion of these students enrolled at Creighton as a result of CUSD, an 184 additional students have enrolled at Creighton as a result of CUSD.

Table 3.7: Percent of science students Creighton vs. other Jesuit Universities (from table 3.6)

Creighton	22.2%
Average of private colleges and universities without dental and/or medical schools	15.9%
Median of Jesuit colleges and universities with dental and/or medical schools	23.2%
Median of Jesuit colleges and universities without dental and/or medical schools	10.3%

Source: Creighton University Office of Admissions

Assuming average net tuition per student of \$18,273, this produces an estimated increase in 2014 tuition revenue of \$3.4 million based on CUSD attracting an additional 184 undergraduate students to Creighton. Of course, many of these students choose not to pursue a degree in dentistry or to seek admission to another dental school.

Table 3.8 provides details on the calculation of the premium attributable to CUSD.³⁰

Table 3.8: Creighton science students enrolled above national average for Jesuit universities without dental schools

Total undergraduates enrolled (fall 2013)	4,076
Percent of science undergraduate students expected without dental and/or medical schools	10.3%
Actual percent of science undergraduate students	22.2%
Science students expected	375
Science students actually enrolled	904
Number of additional undergraduates attributable to CUSD (CUSD % of medical)	184
Net tuition for Creighton undergraduate student for fiscal 2014	\$18,273
Gross tuition addition due to CUSD fiscal 2014 (184 x \$18,273)	\$3,361,518

Source: *Creighton University Fact Book* and author calculations

²⁹Creighton's 22.2 percent minus median for Jesuit universities without dental school of 10.3 percent.

³⁰CUSD's share of the 13.0 percent premium is equal to CUSD's proportion of total medical students at Creighton for 2012.

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Based on this addition of 184 students, CUSD's anticipated contribution to undergraduate tuition at Creighton University is listed in Table 3.9.

Table 3.9: CUSD indirect contribution to undergraduate tuition at Creighton

	Discounted to 2014 dollars		
Fiscal year	Scenario 1 (baseline)	Scenario 2 (build)	Scenario 3 (renovate)
2014	\$3,361,518	\$3,361,518	\$2,260,297
2015	\$3,327,149	\$3,327,149	\$2,274,376
2016	\$3,293,131	\$3,293,131	\$2,288,543
2017	\$3,259,461	\$3,259,461	\$2,302,799
2018	\$3,226,135	\$3,480,088	\$3,508,305
2019	\$3,193,150	\$3,714,481	\$3,565,529
2020	\$3,160,503	\$3,906,860	\$3,529,074
2021	\$3,128,189	\$4,094,918	\$3,492,992
2022	\$3,096,205	\$4,053,050	\$3,457,279
2023	\$3,064,549	\$4,011,610	\$3,421,930
2024	\$3,033,216	\$3,970,594	\$3,386,944
2025	\$3,002,203	\$3,929,998	\$3,352,314
2026	\$2,971,508	\$3,889,816	\$3,318,039
2027	\$2,941,126	\$3,850,046	\$3,284,115
2028	\$2,911,055	\$3,810,682	\$3,250,537
Total 2014-28	\$46,969,098	\$55,953,402	\$46,693,073

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The impact of scenarios

Table 3.10 provides details on the net benefit to Creighton University resulting from building the new building (scenario 2) compared to the baseline (scenario 1) and emanating from the new CUSD building compared to the renovation (scenario 3). Assuming Creighton's current cost of borrowing of 4.35 percent, the first column total indicates that the net cost discounted to present value of the new building compared to the baseline is a **cost** of \$4.3 million. On the other hand, if the cost of borrowing dips to 3.0 percent, the net **benefit** to Creighton University for the build option compared to the baseline model is \$1.8 million.

Furthermore with a borrowing cost of 4.35 percent and with the cost of the demolition of the current CUSD building and the additional cost of parking shouldered by the university instead of CUSD, the net benefit to the university is \$8.3 million, discounted to present value.

Table 3.10: Discounted net benefits: scenario 2 compared to scenarios 1 and 3 with alternative assumptions

	Borrowing cost = 4.35%		Borrowing cost = 3.0%		Parking & demolition paid by university or donor	
	Scenario 2 over 1	Scenario 2 over 3	Scenario 2 over 1	Scenario 2 over 3	Scenario 2 over 1	Scenario 2 over 3
2013-14	\$0	\$0	\$0	\$0	\$0	\$0
2014-15	\$3,737,422	\$0	\$3,786,408	\$0	\$3,737,422	\$0
2015-16	-\$38,203,964	-\$30,214,192	-\$39,211,990	-\$31,011,405	-\$31,775,412	-\$23,785,641
2016-17	-\$36,611,369	-\$29,132,796	-\$38,069,893	-\$30,293,389	-\$30,450,802	-\$22,972,229
2017-18	\$4,278,598	\$10,954,715	\$4,507,361	\$11,540,430	\$4,278,598	\$10,954,715
2018-19	\$5,142,032	\$10,904,973	\$5,487,959	\$11,638,600	\$5,142,032	\$10,904,973
2019-20	\$6,127,472	\$11,409,058	\$6,625,410	\$12,336,194	\$6,127,472	\$11,409,058
2020-21	\$6,992,924	\$2,789,211	\$7,660,294	\$3,055,399	\$6,992,924	\$2,789,211
2021-22	\$6,896,502	\$2,811,371	\$7,653,687	\$3,120,039	\$6,896,502	\$2,811,371
2022-23	\$6,806,036	\$2,834,186	\$7,652,287	\$3,186,584	\$6,806,036	\$2,834,186
2023-24	\$6,721,325	\$2,857,662	\$7,656,092	\$3,255,091	\$6,721,325	\$2,857,662
2024-25	\$6,055,878	\$2,612,713	\$6,988,511	\$3,015,082	\$6,055,878	\$2,612,713
2025-26	\$5,989,916	\$2,641,120	\$7,002,990	\$3,087,812	\$5,989,916	\$2,641,120
2026-27	\$5,929,058	\$2,670,165	\$7,022,693	\$3,162,686	\$5,929,058	\$2,670,165
2027-28	\$5,873,138	\$2,699,859	\$7,047,636	\$3,239,771	\$5,873,138	\$2,699,859
Totals	-\$4,265,031	-\$4,161,957	\$1,809,445	-\$667,107	\$8,324,087	\$8,427,162

Source: Goss & Associates calculations based on alternative assumptions

Chapter 3: Impact of CUSD on Non-CUSD Operating Budgets

Summary

As demonstrated in this chapter, CUSD has a significant and positive impact on the operating budgets of Creighton's non-dental school departments and schools. For the latest year, it is estimated that the financial benefit to other Creighton programs due to CUSD's expansion with a new building (Scenario 2) adds \$36.9 million in revenue above the baseline Scenario 1 and \$24.2 million in revenue above Scenario 3, the renovation option.

By subtracting the net incremental costs for each scenario from the net incremental revenues, one obtains the net incremental benefits or (loss) as listed in Table 3.10.

As listed, if Creighton's borrowing costs decline to 3.0 percent, a net incremental benefit of \$1.8 million in 2014 dollars will accrue to the university if the new building option or Scenario 2 is implemented (compared to the baseline). Alternatively if the \$14 million in parking and demolition outlays related to the new building are paid by the university or a donor, a net incremental benefit of \$8.3 million will accrue to the university if Scenario 2 is implemented (compared to the baseline). If on the other hand, assuming that Creighton's borrowing costs are unchanged at 4.35 percent, that additional parking and demolition costs associated with the new building are paid fully by CUSD, and that there are no philanthropic contributions to build the new CUSD facility, the net incremental cost of Scenario 2 over Scenario 1 is \$4.3 million.



CUSD student providing instructions to patient

Appendix A: The Importance of CUSD Spending on the Economy

Revenues from outside the state are more powerful than revenues of firms that deal in intra-state commerce in terms of job and income creation, since a high proportion of these revenues are “new” to the area and are not offset by reduced spending in other area industries.

Economic impacts identified in this study are short-run in nature and represent annual, recurring events. Indicators are discussed for long-run, more intangible impacts on the regional economy such as workforce development, knowledge enhancement and access to excellent, affordable oral health care,³¹ but assignment of dollar values is outside the scope of this study.

In terms of long-term, but less measurable impacts, the presence of CUSD increases the attractiveness of the community and encourages the startup and/or relocation of other businesses in the state. By contributing to the area’s attractiveness via access to dental education and services, CUSD influences community growth in non-dental school related industries. Moreover, by making the nation more aware of Omaha, CUSD contributes to the overall growth of state and local economic activity.

Table A.1 provides an overview of the influences of CUSD spending on community and economic development.

Table A.1: Impact of CUSD on the city of Omaha and Nebraska

Issue	Measurement	Community Impact
Direct payments	Wages paid to CUSD employees	Increases sense of collective identity; builds social capital; learning opportunities; creates “quality jobs.”; encourages the in-migration of educated workers
Purchase inputs/equipment	Payments to medical and scientific equipment vendors	Encourages the startup and/or relocation of businesses to Omaha to supply products and services
Research funds from outside the state	Community and state recognition; grants and contracts to institutions	Creates recognition of state’s high tech/scientific sector; builds community pride; personal interaction of diverse individuals
Philanthropic and government support	Donated services	Faculty/staff/researchers/ students provide valuable “free” services to the community
“Brain gain”	Educated, high human capital individuals	Direct plus matching funds assist in bringing to the state highly educated, highly paid individuals

Source: Goss & Associates 2014

³¹National Research Council. Improving Access to Oral Health Care for Vulnerable and Underserved Populations. Washington, DC: The National Academies Press, 2011.

Appendix B: Types of Economic Impacts

Figure B.1 depicts examples of the flow of funds into and out of CUSD. As indicated, the total impact is the sum of direct (green arrows), indirect (blue arrows) and induced (red arrows) impacts minus leakages (gray arrows). Leakages represent CUSD spending outside of the area. Input-output multiplier systems are used to estimate each of the impacts in Figure B.1 by industry.

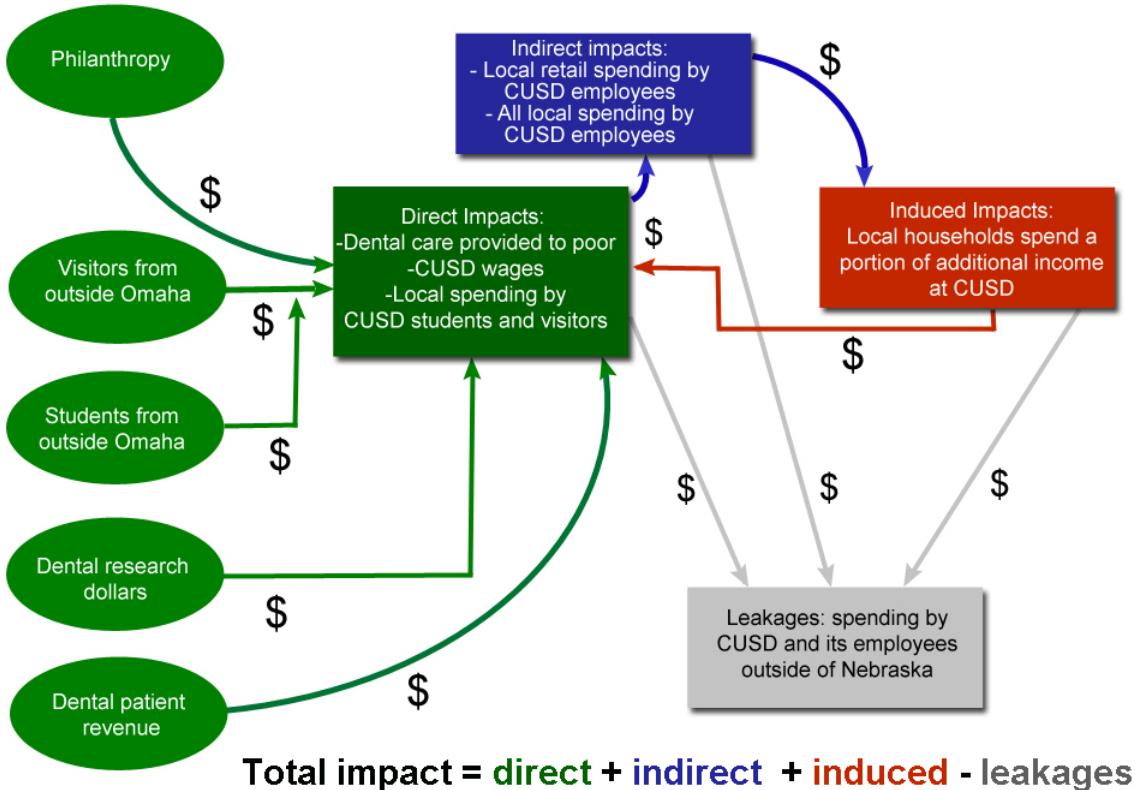
Direct economic impacts. Spending by CUSD has direct economic effects on the local economy through expenditures for goods and services and employee salaries. The most obvious direct expenditures are wages paid to workers employed by CUSD. In addition, expenditures by visitors to CUSD produce direct impacts on the region, affecting primarily the accommodations industry. Direct economic impacts are color coded green in Figure B.1. Table B.1 contains estimated direct spending by CUSD for the three possible future scenarios for 2014-2023, indicating a total of \$409.0 million.

Table B.1: Direct spending for 3 scenarios, 2014-23

	Scenario 1 (baseline)	Scenario 2 (build)	Scenario 3 (renovate)	Impacts of build over baseline	Impacts of build over renovate
Construction of new health care structures	\$0	\$91,000,000	\$63,000,000	\$91,000,000	\$28,000,000
Maintenance and repair, construction of nonresidential structures	\$39,000,000	\$0	\$0	-\$39,000,000	\$0
Retail Stores - Food and beverage	\$11,537,305	\$13,641,370	\$12,469,277	\$2,104,065	\$1,172,093
Retail Stores - Clothing and clothing accessories	\$3,329,558	\$3,936,771	\$3,598,516	\$607,213	\$338,255
Retail Stores – Miscellaneous	\$1,703,495	\$2,014,162	\$1,841,101	\$310,667	\$173,061
Transport by air	\$2,381,347	\$2,815,635	\$2,573,710	\$434,288	\$241,925
Transit and ground passenger transportation	\$15,408,883	\$18,219,011	\$16,653,598	\$2,810,128	\$1,565,413
Insurance agencies, brokerages, and related activities	\$6,968,842	\$8,239,754	\$7,531,778	\$1,270,912	\$707,976
Scientific research and development services	\$11,668,916	\$14,187,086	\$12,444,031	\$2,518,170	\$1,743,055
Private colleges, universities, and professional schools	\$214,244,836	\$277,526,939	\$233,723,612	\$63,282,103	\$43,803,327
Offices of physicians, dentists, and other health practitioners	\$69,010,306	\$86,059,281	\$79,698,050	\$17,048,975	\$6,361,231
Medical and diagnostic labs	\$1,238,905	\$1,464,845	\$1,338,983	\$225,940	\$125,862
Accommodations	\$26,791,325	\$31,677,275	\$28,955,502	\$4,885,950	\$2,721,773
Food services and drinking places	\$3,406,989	\$4,028,324	\$3,682,203	\$621,335	\$346,121
Personal care services	\$929,179	\$1,098,634	\$1,004,237	\$169,455	\$94,397
Grant making, giving, and social advocacy organizations	\$1,393,768	\$1,647,951	\$1,506,356	\$254,183	\$141,595
Total	\$409,013,655	\$557,557,037	\$470,020,952	\$148,543,382	\$87,536,085

Appendix B: Types of Economic Impacts

Figure B.1: Schematic of impacts



Appendix B: Types of Economic Impacts

Indirect economic impacts. CUSD spending also produces indirect economic effects on the area economy. For example, CUSD vendors purchase from wholesalers in the area. This indirect spending tends to increase: (a) the number of firms drawn to a community; (b) the volume of deposits in local financial institutions and; (c) economic development. Examples of indirect economic impacts are color coded red in Figure B.1.

Induced economic impacts. Induced impacts in the region occur as the initial spending feeds back to industries in the region when workers in the area purchase additional output from local firms in a second round of spending. That is, CUSD spending increases overall income and population,

which produces another round of increased spending adding to sales, earnings and jobs for the area. Examples of induced economic impacts are color coded red in Figure B.1.

Table B.2 lists estimated impacts for each additional \$1,000,000 in CUSD spending. It is assumed that the additional revenue is not produced by reduced spending at other establishments in the area. In terms of spillover, or indirect plus induced impacts, data indicate that for Omaha, each \$1,000,000 of CUSD funding generates another \$756,650 in revenue or sales across other industries. Additionally, each \$1,000,000 in CUSD revenue produces \$677,375 in salaries and wages and \$69,201 in self-employment income with 16.3 jobs supported for 2014.

Table B.2 Direct, Indirect and Induced Impacts of \$1,000,000 CUSD spending for 2014

Impact Type	Direct Effect	Indirect Effect	Induced Effect	Total Effect
Output	\$1,000,000	\$291,230	\$465,420	\$1,756,650
Salary & wages	\$455,571	\$81,029	\$140,775	\$677,375
Self-employment income	\$36,434	\$14,215	\$18,552	\$69,201
Average year-round jobs	10.0	2.1	4.2	16.3

Source: IMPLAN Multiplier System

Appendix C: The Multiplier Effect

When employees of CUSD spend their salaries within the community, that spending filters through the local economy, causing increased overall spending greater than the initial spending. The impact of this re-spending is known as the multiplier effect. Economic impacts that take place outside the local economy, for example employee dollars spent in Des Moines or Kansas City, are called leakages and reduce the multiplier and overall impacts. They are excluded when estimating regional economic impacts.

While the direct effects of institutional spending can be measured by a straightforward methodology, the indirect and induced effects of spending must be estimated using regional multipliers. Community characteristics that affect leakages, and consequently the multiplier include:

Location. Distance to suppliers affects the willingness to purchase locally. For example, if Omaha firms are unable to provide supplies at competitive prices, and there are alternative suppliers in Kansas City that are more price-competitive, then CUSD will be more likely to spend outside the community. This results in greater leakages, lower multipliers and smaller impacts.

Population size. A larger population provides more opportunities for companies and workers to purchase locally. Larger population areas are associated with fewer leakages and larger multipliers. Thus, in general, dental school dollars flowing into Omaha will have larger impacts than the same level of dollars flowing into more rural areas of Nebraska.

Clustering. A community will gain more if the inputs required by local industries for production match local resources and are purchased locally. Thus, over time, as new firms are created to match the requirements of CUSD, leakages will be fewer, resulting in larger multipliers and impacts. This issue is at the heart of economic development, amplifying the impacts of the clustering of healthcare-related firms.

As a result of CUSD's location in a large metropolitan city with extensive medical/dental operations infrastructure, financial impacts are sizeable, with those impacts growing as CUSD expands.

As CUSD increases in size, institutions become more proficient and focused on meeting its needs. Furthermore, suppliers unique to dental schools are more likely to locate in close proximity to CUSD. This not only expands income and jobs in Omaha, it increases the size of multipliers related to schools of dentistry.

Appendix D: Researcher's Biography



Ernie Goss is currently the Jack MacAllister Chair in Regional Economics at Creighton University and principal of the Goss Institute in Denver, Colorado. He received his Ph.D. in Economics from The University of Tennessee in 1983 and is a former faculty research fellow at NASA's

Marshall Space Flight Center. He was a visiting scholar with the Congressional Budget Office for 2003-04, and he has testified before the U.S. Congress, the Kansas Legislature, and the Nebraska Legislature. In the fall of 2005, the Nebraska Attorney General appointed Goss to head a task force examining gasoline pricing in the state.

He has published more than 100 research studies focusing primarily on economic forecasting and on the statistical analysis of business and economic data. His book Changing Attitudes Toward Economic Reform During the Yeltsin Era was published by Praeger Press in 2003, and his book Governing Fortune: Casino Gambling in America was published by the University of Michigan Press in March 2007.

He is editor of *Economic Trends*, an economics newsletter published monthly with 9,500 subscribers. He is the past-president of the Omaha Association of Business Economics, and past-president of the Nebraska Purchasing Management Association.

Goss produces a monthly business conditions index for the nine-state Mid-American region and conducts a survey of bank CEOs in ten U.S. states. Survey and index results are cited each month in approximately 100 newspapers.

Survey results from all three surveys are cited each month in approximately 100 newspapers. Newspaper citations have included the New York Times, Wall Street Journal, Investors Business Daily, The Christian Science Monitor, Chicago Sun Times and other national and regional newspapers and magazines. Each month 75-100 radio stations carry his Regional Economic Report.

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Fall 2013.
Contract with Greater Omaha Chamber of
Commerce to investigate Nebraska's tax
competitiveness.

Appendix E: Goss & Associates, Research Consultancies, 2011-14

1. Fall 2013. Contract with Metropolitan Entertainment & Convention Authority to estimate the impact of the CenturyLink Center on Omaha, Nebraska.
2. Summer 2013. Contract with Greenbrier Rail Service to perform a competitive demand and supply analysis for welders and construction laborers for 2013, Portland, Oregon.
3. Summer 2013. Contract with the Platte Institute for Economic Research to determine the impact of taxes and spending on economic development.
4. Winter 2013. Contract with Douglas County Health Center to estimate the impact of the organization on Douglas County and the state of Nebraska.
5. Fall 2012. Contract with Metropolitan Community College to estimate the impact of the institution on the state of Nebraska and its service area.
6. Summer 2012. Contract with the American Society of Engineering-Nebraska to examine the impact on costs of outsourcing.
7. Summer 2012. Contract with Consumer Energy Alliance to examine the impacts of the Keystone Pipeline, Houston, Texas.
8. Spring 2012. Contract with Lancaster County Agricultural Society to estimate the economic feasibility of Phase 3 of the Lancaster Event Center, Lincoln, Nebraska.
9. Winter 2012. Contract with New York First to estimate the impact of New York property and casualty industry on the state of New York.
10. Winter 2012. Contract with East Campus Realty to estimate the impact of Midtown Crossing on the City of Omaha.
11. Fall 2011. Contract with Iowa-Nebraska Agriculture Equipment Manufacturers to estimate the impact of a sales tax exemption on agriculture repair and replacement parts for the state of Nebraska.
12. Summer 2011. Contract with Kirk and Michael Engineering to gauge the impact of the Gateway Trade Zone in Pottawattamie County, Iowa.
13. Summer 2011. Contract with City of Ralston to estimate the impact of the new ice arena on the State of Nebraska.
14. Winter 2010-11. Contract with Kansas Board of Regents to examine the impact of member universities and colleges on the state economy.