
CRAIG HOSPITAL

Economic Contribution on the Region and the State of Colorado, FY2012–FY2016

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Business Research Division

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EXECUTIVE SUMMARY

Craig Hospital is a nonprofit hospital specializing in brain injury and spinal cord rehabilitation and research. The Englewood, Colorado-based hospital is world renowned, drawing patients locally, nationally, and internationally. The essence of the hospital's presence is rehabbing patients to a full recovery or to a more self-sufficient life. Through these practices, Craig has immeasurable impacts on individuals and the community. This study examines the measurable—jobs, wages, operating expenditures, capital expenditures, and visitor spending.

This research found that Craig Hospital purchases a vast majority of goods and services within the state and locally in the Denver Metro region. Nearly six-out-of-seven dollars spent by Craig Hospital on nonlabor operations stays within the Colorado economy, more than half stays within the Denver Metro region, and about 45% is spent within Arapahoe County. Craig's labor force is inherently local, with nearly 97% of workers from Denver metropolitan statistical area counties, and 23% from Arapahoe County. Furthermore, Craig Hospital selected Colorado contractors for most of the \$86 million physical expansion of the hospital between FY2013 and FY2016.

The economic contribution from operations and capital maintenance and repair totaled \$155.6 million in 2013 on the state of Colorado and \$143.8 million on the Denver MSA. Taking a longer view, between FY2012 and FY2016, the hospital is expected to have an economic impact of \$788.3 million on the state of Colorado and \$728.8 million on the Denver Metro region. Additionally, the construction impacts will add \$114.6 million to the state economy, \$41.4 million impact to the Denver MSA, and \$21.1 million impact to Arapahoe County between FY2013 and FY2016.

As an employer, Craig Hospital pays higher than average wages compared to the average for all industries in Colorado. Average annual salary and benefits for full-time and part-time workers at Craig Hospital was \$56,817 in FY2013. Craig Hospital wages were 11.5% higher than all industries in Colorado in FY2013, 10.5% higher than private industry wages, and modestly higher (1.2%) than hospital industry employment in Colorado. Benefits are estimated at 30% of total compensation. Craig Hospital employment grew to 955 full-time and part-time workers in FY2013—a level that is expected to remain stable through the forecast years in this study (FY2016). Nearly 60% of the workers in FY2013 had full-time status.

Craig Hospital is a 93-bed facility that can treat 75 to 85 inpatients with spinal cord or traumatic brain injuries, and nearly 60 outpatients. The hospital treats patients from nearly every state and often serves international patients. Given that about half of Craig Hospital patients come from outside Colorado for specialized services, the economic contribution is similar to other exporting industries, such as manufacturing for professional services, where goods and services are exported and new dollars are imported or invested in the local economy.

Furthermore, given that roughly half of Craig Hospital patients come from out of state, there is an additional contribution from nonresident patient families and visitors. Through a survey deployed for this economic impact study, all visitors reported staying in the Denver Metro region during their time in Colorado, and more than 94% stayed in the city of Englewood. Most visitors (89.5%) reported staying at Craig Hospital during their time in Colorado, followed by hotels/motels (9.6%), friends (5.8%), and other, including renting an apartment. To assist patient families and outpatients, Craig Hospital provides housing options for out-of-state visitors; among these are free housing for new inpatient families. Based on survey responses, total visitor spending in Colorado due to Craig Hospital is \$620,237. Spending from individuals outside the region is estimated to total \$930,355.

PROJECT OVERVIEW

The Business Research Division conducted a study of the economic impacts of Craig Hospital on the Colorado economy. This study estimates direct industry sales, employment, wages, and locations of activity in the state. Input-output analysis is used to illustrate the supply chain impacts of the industry and demonstrate the scope and reach of the hospital within Colorado. This study does not include the individual or societal benefits of patient improvements.

The purpose of this study is to provide nonbiased, third-party research to Craig Hospital and its constituents, including governments, residents, and businesses, about the economic contributions of the hospital to Arapahoe County, the Denver Metro region, and the state of Colorado.

Craig Hospital is a not-for-profit hospital located in Englewood, Colorado, within Arapahoe County and part of the Denver metropolitan statistical area (MSA). With a specialized practice focusing on spinal and brain traumatic injury rehabilitation, the hospital currently has an 85-patient capacity, serving patients from across the nation. The labor-intensive practice of rehabilitation translates to local expenditures, primarily on hospital labor and other local goods and services. Given the national customer base, Craig Hospital can truly be considered a primary employer, importing revenues from other states to Colorado and the local economy.

This study quantifies the economic benefits of Craig Hospital. Additionally, this study describes other intangible benefits of Craig Hospital, ranging from community involvement and volunteerism to the rehabilitation of patients to live “normal” lives.

METHODOLOGY

This study was conducted in cooperation with Craig Hospital administration. In order to obtain information pertinent to the economic impact study, the research team created a survey asking questions about the facility, employment, operating expenditures, capital expenditures (including construction), visitors, and other spending data for historical fiscal years 2012 and 2013, and for projected fiscal years 2014, 2015, and 2016.¹ Data were reorganized by function and applied to a 440-sector IMPLAN input-output model. This model quantified the economic impacts of the Craig Hospital on Arapahoe County, the Denver MSA, and the state of Colorado. Craig Hospital is a 501(c)(3) organization, making it tax exempt in the state of Colorado and nationally. This exemption limits the tax revenue collections driven from hospital operations to (1) the fiscal impact of employee spending and (2) the fiscal impact driven off the supply chain.

Economic benefits refer to dollars generated and distributed throughout the economy due to the existence of an establishment. The sources of impacts that sum to economic benefits include capital expenditures, operating expenditures, off-site employee effects, secondary effects, and visitor impacts.

Capital expenditures refer to the purchase or upgrade of equipment, land, or buildings. For this study, capital expenditures are primarily captured through construction, which includes the addition to Craig Hospital estimated at \$86 million between FY2013 and FY2016. Economic benefits arise from expenditures on materials, architectural and engineering services, and construction and other contract

¹Fiscal year ending September 30.

labor. The projects inherently generate tax revenues, including sales taxes on materials, impact fees, and property taxes.

Operating expenditures include ongoing costs for materials, maintenance costs, utilities, and salaries and benefits. Direct public revenues are scarce in relation to operations of nonprofit hospitals due to their tax-exempt status; however, public costs still exist when providing government services to the facility (i.e., fire and police protection).

Off-site employee effects take into account the impact of employees incurred outside the workplace. Benefits encompass employee spending, including expenditures on housing (rent or own), retail purchases, transportation, entertainment, and other disposable income expenditures. Public revenues include sales taxes and property taxes, while public costs include services to respective households. The off-site impacts rest primarily in the county of employee residence rather than in the locale of the facility.

Secondary effects, or the *multiplier effects*, estimate the indirect employment and earnings generated in the study area due to the interindustry relationships between the facility and other industries. As an example, consider a manufacturing company operating in Arapahoe County. The firm employs management, engineers, and support staff for its direct manufacturing operations. In addition, the company spends on goods and services to support its manufacturing operations, leading to auxiliary jobs in the community in transportation, accounting, utilities, retail goods, and so on—the *indirect impact*. Furthermore, employees spend earnings on goods and services in the community, leading to jobs in retail, accounting, entertainment, and so on—the *induced impact*.

Conceptually, multipliers quantify the number of jobs. Multipliers are static and do not account for disruptive shifts in infrastructure without specifically addressing infrastructure changes. This model uses IMPLAN multipliers aggregated specifically for Arapahoe County, the Denver metropolitan statistical area (MSA), and for 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.

LITERATURE REVIEW

The Health Insurance Portability and Accountability Act (HIPAA) prevents health care providers from disclosing demographic information on their patients, including where they live. None of the studies considered for this review contained quantitative data on the proportion of in-state, out-of-state, or international patients; the omission is assumed to be due to HIPAA restrictions. Despite the lack of concrete figures, some studies suggested that, like Craig Hospital in Denver, out-of-state and international patients make up a sizable proportion of the patient population. Other hospitals are self-classified as “community hospitals,” and are presumed to cater to a largely in-state patient population.

Examples of both of these categories are presented in order to provide a complete background for understanding the economic impact of Craig Hospital in Denver.

Institutions that attract out-of-state and international patients seem to have larger operating budgets, revenues, and economic impacts than individual community hospitals that cater to local residents. The Mayo Clinic, the nation's largest not-for-profit medical practice, supports 144,468 jobs and had an total revenue of approximately \$8.48 billion in 2011. The Mayo Clinic generated approximately \$1 billion in state and local tax revenue. Although few institutions are as large as the Mayo Clinic, other organizations of comparable quality, like Johns Hopkins Hospital and the Cleveland Clinic, are equally respected, equally attractive to out-of-state and international patients, and almost as lucrative for the states where they reside. Johns Hopkins and the Cleveland Clinic contributed \$175 million and \$663 million to Maryland and Ohio, respectively, in 2010. Harvard Medical School's teaching hospitals in Boston, including the top-ranked hospital in the country, Massachusetts General, also attract both domestic and international patients. These teaching hospitals have an impact of \$28 billion on the Massachusetts economy as a whole.

Community hospitals are a much different class than Denver's Craig Hospital or any of the aforementioned institutions; they are much smaller and cater to a smaller, more local patient base. Due to their size, almost no economic impact studies have been conducted on individual community hospitals; rather, they are commonly grouped by state or country for analysis. Though they operate on a smaller scale, community hospitals do have significant impacts on their surrounding area. In Iowa 118 community hospitals are overseen by the Iowa Community Hospital Association. An impact study commissioned by the association indicates that they have a nearly \$6 billion impact on the Iowa economy and contribute approximately \$99 million in state taxes. In a more urban area, the hospitals of California's Santa Clara County have an economic impact of \$14.3 billion on the state. These institutions support direct and indirect 64,000 jobs.

ECONOMIC OVERVIEW

Craig Hospital resides in the city of Englewood, Colorado, in Arapahoe County, which is part of the 10-county Denver MSA. As of third quarter 2013, Arapahoe County recorded 299,100 covered wage and salary employees. Employment over the past four quarters ending in Q3 2013 averaged 293,684, with total wages of \$17.1 billion. Arapahoe County represents 23.9% of Denver MSA employment and 14.5% of state employment. Average wages exceed the Denver MSA by 3% and the state average by 14%. The largest employment industries in Arapahoe County include Health Care and Social Assistance (11.7%), Retail Trade (10.9%), Local Government (9.5%), and Professional and Technical Services (9.5%). Colorado is among the top five states in the nation for employment recovery from the recession, and the Denver MSA is outperforming the state.

Arapahoe County population totaled an estimated 594,731 as of July 2012. Colorado has a highly educated workforce, and Arapahoe County fits this profile with 39.3% of its population possessing a bachelor's degree or higher.

Through Q4 2013, home prices in the Denver MSA grew 10.9% year-over-year compared to 8.2% for the state overall according to data from the Federal Housing Finance Agency. Despite the recession, the Denver MSA recorded a compound annual growth rate of 1.4% over the past 10 years. The foreclosure rate in Arapahoe County has improved steadily over the past couple years, recording a foreclosure rate of 1,585 occupied homes per completed foreclosure in Q4 2012 compared to 410 occupied homes per

completed foreclosure in Q4 2011. An estimated 64.2% of housing units in Arapahoe County are single family. Additional economic data may be found in Appendix 3.

DATA

Data were collected from Craig Hospital on operating and capital expenditures for FY2012 and FY2013, as well as for forecast years FY2014–FY2016. This included expenditures related to the facility expansion between FY2012 and FY2016, with the most notable expenditures occurring in FY2013 and FY2014. For all expenditures, the research team classified vendors by NAICS code. The industry share of nonconstruction expenditures was applied to the forecast years.

Craig Hospital purchases from every industry in Colorado.² Nearly 49% of Craig Hospital vendors reside within Colorado, 45.1% in the Denver MSA, and 12.4% in Arapahoe County. However, the magnitude of expenditures to the Colorado-based firms is much higher—85.6% in-state, 52.1% in the Denver MSA, and 45.3% in Arapahoe County. One contributor to the high level of local expenditures is the purchase of health services from other institutions in the Denver area that provide complimentary services to Craig Hospital, while another contributing factor is the presence of construction expenditures in current year data.

Two of the primary contractors on the construction project were El Paso County firms in FY2013. Craig Hospital provided additional data on subcontractors within the Denver MSA and Arapahoe County. It is estimated that 38.2% of Colorado construction expenditures was spent within the Denver MSA and 22.6% within Arapahoe County.

Craig Hospital reported 869 full-time and part-time workers in FY2012, growing to 955 in FY2013 and stabilizing at 950 for the forecast years FY2014–FY2016. Nearly 60% of the workers in FY2013 had full-time status. This is expected to stabilize at 57.9% for the forecast years.

Average annual salary and benefits for full-time and part-time workers at Craig Hospital was \$56,817 in FY2013. Craig Hospital wages were 11.5% higher than all industries in Colorado in FY2013, 10.5% higher than private industry wages, and modestly higher (1.2%) than hospital industry employment in Colorado. Benefits are estimated at 30% of total compensation.

Most employees are residents of the Denver Metro region, and 22.9% live within Arapahoe County—the same county as Craig Hospital operations.³

TABLE 1: RESIDENCE OF EMPLOYEES

Area	Percentage
Arapahoe	22.9%
Denver MSA	96.6%
Rest of Colorado	2.6%
Unclassified	0.7%
Total	100.0%

²Based on 2-digit NAICS codes.

³The Denver MSA includes Adams, Arapahoe, Broomfield, Denver, Douglas, Jefferson, Elbert, Clear Creek, Gilpin, and Park counties.

SURVEY RESULTS

The Business Research Division facilitated a survey of Craig Hospital patient family and visitors in order to understand visitor impacts on the state and local economies. In Q1 2014, Craig Hospital staff deployed the survey among patient family and visitors to ensure confidentiality and HIPPA compliance. No personally indefinable questions were asked in the survey (see Appendix 1).

Craig Hospital staff collected survey data from patient families and visitors of 55 nonresident patients over the past year. Craig Hospital records an estimated 500 total patients per year of which approximately 50% are nonresidents to the state and 75% are nonresidents to the Denver Metro region. Three responses were removed since they reside within the Denver Metro region. All respondents indicated they were in the Denver Metro region specifically for Craig Hospital. The average group size was 2.06 individuals, and the median group was 2 individuals.

All visitors reported staying in the Denver Metro region during their time in Colorado, and more than 94% stayed in the city of Englewood. Most visitors (89.5%) reported staying at Craig Hospital during their time in Colorado, followed by hotels/motels (9.6%), friends (5.8%), and other, including renting an apartment. Based on survey responses, total visitor spending in Colorado due to Craig Hospital is \$620,237. Spending from individuals outside the region is estimated at \$930,355.

TABLE 2: COLORADO VISITOR PURCHASES PER YEAR*

Purchase	Out of State	Out of Region
Lodging	\$51,392	\$77,088
Restaurants	\$94,023	\$141,035
Groceries	\$195,186	\$292,779
Shopping	\$104,115	\$156,173
Transportation	\$114,720	\$172,079
Other	\$60,801	\$91,201
Total	\$620,237	\$930,355

*Based on a survey of patient families and visitors in Q1 2014.

ECONOMIC IMPACT

The economic impact of Craig Hospital is driven from direct hospital purchases for operations, capital expenditures on new facility space, the impact of new construction, and visitors staying within the community while visiting friends and family. The following economic impacts are summarized for Colorado, the Denver MSA, and Arapahoe County.

Impact on Colorado

The economic impact of Craig Hospital operations on the state totaled \$155.6 million in 2013, and \$23.9 million in construction-related impacts. Over the five years FY2012–FY2016, the total impact related to operations is expected to total \$788.3 million, plus an additional \$114.6 million related to construction. Construction contractors are based in Colorado, Craig’s labor force is inherently local, and nearly six-out-of-seven dollars spent by Craig Hospital on nonlabor operations stays within the Colorado economy.

TABLE 3: ECONOMIC IMPACTS ON COLORADO, 2013

Impact Type	Employment	Labor Income (In Millions)	Value Added (In Millions)	Output (In Millions)
Direct Effect	955	\$54.3	\$58.0	\$75.7
Indirect Effect	214	\$12.3	\$16.3	\$26.4
Induced Effect	411	\$19.9	\$34.3	\$53.5
Total Effect	1,580	\$86.5	\$108.7	\$155.6

TABLE 4: CONSTRUCTION ECONOMIC IMPACTS ON COLORADO, 2013

Impact Type	Employment	Labor Income (In Millions)	Value Added (In Millions)	Output (In Millions)
Direct Effect	86.1	\$5.1	\$4.9	\$12.6
Indirect Effect	34.2	\$2.3	\$3.1	\$5.4
Induced Effect	45.8	\$2.2	\$3.8	\$5.9
Total Effect	166	\$9.5	\$11.8	\$23.9

TABLE 5: ECONOMIC IMPACTS ON COLORADO, 2012–2016

Impact Type	Employment	Labor Income (In Millions)	Value Added (In Millions)	Output (In Millions)
Direct Effect	935	\$270.0	\$288.9	\$386.2
Indirect Effect	71	\$62.3	\$82.9	\$134.8
Induced Effect	201	\$99.6	\$171.5	\$267.3
Total Effect	1,206	\$431.9	\$543.4	\$788.3

TABLE 6: CONSTRUCTION ECONOMIC IMPACTS ON COLORADO, 2012–2016

Impact Type	Employment	Labor Income (In Millions)	Value Added (In Millions)	Output (In Millions)
Direct Effect	101	\$24.3	\$23.4	\$60.0
Indirect Effect	40	\$10.8	\$15.1	\$25.9
Induced Effect	54	\$10.4	\$18.1	\$28.6
Total Effect	195	\$45.6	\$56.6	\$114.6

Impact on the Denver MSA

Most of the economic impact of Craig Hospital is nested within the Denver metro region (~92%). In 2013, the economic impact of operations and capital improvements totaled \$143.8 million. Over the five years FY2012–FY2016, the total impact related to operations and normal capital improvements is expected to total \$728.8 million. The impact of the construction project builds local operating capacity for the hospital, and with contractors located primarily along Colorado’s Front Range, construction expenditures between 2012 and 2016 add an additional \$41.4 million in economic activity to the Denver economy.

TABLE 7: ECONOMIC IMPACTS ON THE DENVER MSA, 2013

Impact Type	Employment	Labor Income (In Millions)	Value Added (In Millions)	Output (In Millions)
Direct Effect	923	\$52.4	\$55.9	\$73.2
Indirect Effect	201	\$12.5	\$16.2	\$25.3
Induced Effect	340	\$18.1	\$30.1	\$45.4
Total Effect	1,464	\$83.0	\$102.2	\$143.8

TABLE 8: CONSTRUCTION ECONOMIC IMPACTS ON THE DENVER MSA, 2013

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	31	\$2.1	\$2.0	\$4.8
Indirect Effect	11	\$0.8	\$1.1	\$1.8
Induced Effect	15	\$0.8	\$1.3	\$2.1
Total Effect	57	\$3.7	\$4.5	\$8.6

TABLE 9: ECONOMIC IMPACTS ON THE DENVER MSA, 2012–2016

Impact Type	Employment	Labor Income (In Millions)	Value Added (In Millions)	Output (In Millions)
Direct Effect	903	\$261.0	\$278.6	\$373.2
Indirect Effect	66	\$63.2	\$82.2	\$128.7
Induced Effect	166	\$90.3	\$150.2	\$226.9
Total Effect	1,136	\$414.5	\$511.1	\$728.8

TABLE 10: CONSTRUCTION ECONOMIC IMPACTS ON THE DENVER MSA, 2012–2016

Impact Type	Employment	Labor Income (In Millions)	Value Added (In Millions)	Output (In Millions)
Direct Effect	36	\$10.1	\$9.8	\$22.9
Indirect Effect	13	\$3.9	\$5.2	\$8.5
Induced Effect	18	\$3.9	\$6.5	\$9.9
Total Effect	67	\$17.9	\$21.5	\$41.4

Impact on Arapahoe County

Arapahoe County accounts for about 23.1% of the Denver MSA employment and 26.9% of the economy based on gross regional output. Arapahoe County is home to Craig Hospital, and much of Craig’s spending remains in the local community—45.3% of nonlabor operating expenditures and 22.9% of employees reside in the county. In 2013, the economic impact of operations and capital improvements totaled \$63.3 million on Arapahoe County. Over the five years FY2012–FY2016, the total impact related to operations and ongoing capital improvements is expected to total \$329.7 million. The localized impact from the facility expansion is expected to total \$21.1 million in additional construction-related economic activity between 2012 and 2016.

TABLE 11: ECONOMIC IMPACTS ON ARAPAHOE COUNTY, 2013

Impact Type	Employment	Labor Income (In Millions)	Value Added (In Millions)	Output (In Millions)
Direct Effect	219	\$12.4	\$13.9	\$30.4
Indirect Effect	179	\$10.9	\$14.0	\$21.5
Induced Effect	91	\$4.7	\$7.8	\$11.4
Total Effect	489	\$28.0	\$35.7	\$63.3

TABLE 12: CONSTRUCTION ECONOMIC IMPACTS ON ARAPAHOE COUNTY, 2013

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	17	\$1.4	\$1.3	\$2.8
Indirect Effect	5	\$0.3	\$0.5	\$0.7
Induced Effect	7	\$0.3	\$0.6	\$0.9
Total Effect	28	\$2.1	\$2.4	\$4.4

TABLE 13: ECONOMIC IMPACTS ON ARAPAHOE COUNTY, 2012–2016

Impact Type	Employment	Labor Income (In Millions)	Value Added (In Millions)	Output (In Millions)
Direct Effect	214	\$61.9	\$69.5	\$159.4
Indirect Effect	61	\$56.5	\$73.0	\$112.3
Induced Effect	45	\$23.7	\$39.4	\$57.9
Total Effect	320	\$142.1	\$181.9	\$329.7

TABLE 14: CONSTRUCTION ECONOMIC IMPACTS ON ARAPAHOE COUNTY, 2012–2016

Impact Type	Employment	Labor Income (In Millions)	Value Added (In Millions)	Output (In Millions)
Direct Effect	20	\$6.6	\$6.4	\$13.5
Indirect Effect	5	\$1.7	\$2.2	\$3.4
Induced Effect	8	\$1.6	\$2.8	\$4.2
Total Effect	33	\$9.9	\$11.4	\$21.1

ADDITIONAL COMMUNITY BENEFITS

A number of benefits provided by Craig Hospital are noteworthy and important, although they are not quantifiable, with an economic value, and are more intangible in nature. As a rehabilitation hospital that specializes in the care of patients with spinal cord injury and traumatic brain injury, the facility offers patients and their families a full range of interdisciplinary clinical and support services, including physicians, nurses, physical and occupational therapists, counselors, therapeutic recreation specialists, psychologists, dietitians, pharmacists, and when necessary, speech and language pathologists, neuropsychologists, respiratory therapists, and others.

Compared to national averages, Craig patient graduates are more independent, require less assistance, are rehospitalized less frequently, and have higher levels of life satisfaction. Around 91% return home after initial rehabilitation with high levels of functional independence, and 50% return to work or school within one year after rehab—which benefits patients and their families, employers, and society as a whole.

Craig Hospital encourages family involvement with patient rehabilitation and offers counseling services, assisting with understanding insurance policies, applying for public benefits, and planning for life after discharge. Craig offers 30 days of apartment housing close by during initial inpatient rehabilitation at no charge.

The relatively small number of inpatients and outpatients at a given time encourages patients and their families to share and learn from each other, and develop friendships that often last a lifetime. This interaction supplements and enhances the knowledge that is provided by the staff.

The Craig Hospital Foundation supports the mission of the hospital by raising money for patient assistance, hospital programs, and research. In 2011, one project assisted 127 patients with the purchase of 234 new or refurbished pieces of equipment.

CONCLUSION

Craig Hospital impacts the community primarily through rehabilitation services for individuals with traumatic head and spinal injuries. However, examining exclusively the economic impacts of Craig on the state and local economy, the hospital's economic footprint is also significant. In addition to a localized labor force, the hospital sources a high percentage of goods and services locally for hospital operations. Most purchases are not only sourced within Colorado, but within the Denver Metro region. The impact from operations and capital maintenance and repair totaled \$155.6 million in 2013 on the state of Colorado and \$143.8 million on the Denver MSA. Taking a longer view, between FY2012 and FY2016, the hospital is expected to have an economic impact of \$788.3 million on the state of Colorado and \$728.8 million on the Denver Metro region. Additionally, the construction impacts will add \$114.6 million in the state economy between FY2013 and FY2016. Much of this economic contribution is paid by nonresidents to the state who come to Colorado seeking out the specialized services Craig Hospital offers. In that sense, the export of these services makes the hospital a primary employer, similar to that of a professional services firm or a manufacturer that sells goods and services to a national or global community.

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APPENDIX 1: PATIENT FAMILY AND VISITOR SURVEY



Leeds School of Business
UNIVERSITY OF COLORADO BOULDER

BUSINESS RESEARCH DIVISION

The purpose of this study is to gain a better understanding of the economic impact of Craig Hospital patient family and visitors on Colorado.

1.	Are you from the Denver Metro Region? (If yes, please skip to question 7.)			
	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
1b.	If you are from outside the Denver Metro region, are you in Denver specifically for Craig Hospital?			
	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
2.	Approximately how long have you spent in the region for Craig Hospital (in days, weeks, or months)?			
	<input type="checkbox"/> Days _____			
	<input type="checkbox"/> Weeks _____			
	<input type="checkbox"/> Months _____			
3.	Approximately how long do you plan on spending in the region for Craig Hospital (in days, weeks, or months)?			
	<input type="checkbox"/> Days _____			
	<input type="checkbox"/> Weeks _____			
	<input type="checkbox"/> Months _____			
4.	In which city are you staying in Colorado?			
	<input type="checkbox"/> Englewood	<input type="checkbox"/> Littleton	<input type="checkbox"/> Lakewood	<input type="checkbox"/> Denver
	<input type="checkbox"/> Aurora	<input type="checkbox"/> Don't know	<input type="checkbox"/> Other (please specify) _____	
4b.	In what type of lodging are you staying?			
	<input type="checkbox"/> Craig Hospital	<input type="checkbox"/> Hotel/Motel	<input type="checkbox"/> With Friends/Family	<input type="checkbox"/> Church
	<input type="checkbox"/> Other (please specify) _____			
5.	Related to your time at Craig Hospital, please estimate the total amount your party plans to spend in the Denver area (lodging, food, etc., etc.), excluding health care costs.			
	<input type="checkbox"/> Less than \$100	<input type="checkbox"/> \$100-\$499	<input type="checkbox"/> \$500 to \$999	<input type="checkbox"/> \$1,000 to \$2,999
	<input type="checkbox"/> \$3,000 to \$4,999	<input type="checkbox"/> \$5,000 to \$6,999	<input type="checkbox"/> \$7,000 to \$9,999	<input type="checkbox"/> \$10,000 to \$14,999
	<input type="checkbox"/> \$15,000 or more	<input type="checkbox"/> Other \$ _____		
5b.	Of this amount, how much does your party plan to spend in the region in these specific categories?			
	<input type="checkbox"/> Lodging \$	<input type="checkbox"/> Restaurants \$	<input type="checkbox"/> Groceries \$	<input type="checkbox"/> Shopping (excl. food)\$
	<input type="checkbox"/> Childcare \$	<input type="checkbox"/> Transportation (excl. airfare) \$		<input type="checkbox"/> Other \$
5c.	How many people are covered by the above amount?			
	<input type="checkbox"/> 1 Myself	<input type="checkbox"/> 2 People	<input type="checkbox"/> 3 People	<input type="checkbox"/> 4 People
	<input type="checkbox"/> 5 People	<input type="checkbox"/> 6 People	<input type="checkbox"/> Other (please specify) _____	
5d.	How many people in your party are in the following age groups?			
	<input type="checkbox"/> Under 5 years old _____	<input type="checkbox"/> 5 to 17 _____	<input type="checkbox"/> 18 to 34 _____	
	<input type="checkbox"/> 35 to 44 _____	<input type="checkbox"/> 45 to 54 _____	<input type="checkbox"/> 55 and over _____	
6.	Are you working while you are in the Denver region?			
	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
7.	What is your ZIP code (or country, if not from USA)?			

8.	What category includes your age?			
	<input type="checkbox"/> Under 18	<input type="checkbox"/> 18 to 20	<input type="checkbox"/> 21 to 24	<input type="checkbox"/> 25 to 34
	<input type="checkbox"/> 35 to 44	<input type="checkbox"/> 45 to 54	<input type="checkbox"/> 55 to 64	<input type="checkbox"/> 65 & Over

9.	Last, if you would like to do so, please use this space to share how Craig Hospital impacted your family needs during your time in the Denver region (for example, how did Craig Hospital help with housing, transportation, etc.)?

APPENDIX 2: LITERATURE REVIEW

Disclaimer: The Health Insurance Portability and Accountability Act (HIPAA) prevents health care providers from disclosing demographic information on their patients, including where they live. None of the studies considered for this review contained quantitative data on the proportion of in-state, out-of-state, or international patients; the omission is assumed to be caused by HIPAA restrictions. Despite the lack of concrete figures some studies suggested that, like Craig Hospital in Denver, out-of-state and international patients account for a large portion of the patient population for some of these medical institutions. Other hospitals are self-classified as “community hospitals” and are presumed to cater to a largely in-state patient body. Examples of both of these categories are presented in order to provide a complete background for understanding the economic impact of Craig Hospital.

Category One: Institutions that Cater to Nationwide and International Patients

The following are hospitals that are comparable to Craig Hospital in that they are nationally recognized and patients from different geographic areas seek medical treatment at the facility.

- **The Mayo Clinic – Rochester, Minnesota**

The Mayo Clinic is the nation’s oldest and largest not-for-profit medical practice, and supports 144,468 jobs nationwide. The 2011 total revenue of the Mayo Clinic was about \$8.48 billion and generated more than \$1 billion in state and local tax revenue. It is estimated that the Mayo clinic is responsible for \$22 billion in health care spending nationwide.

- **Johns Hopkins Hospital – Baltimore, Maryland**

Johns Hopkins Hospital is ranked the second-best hospital in the nation, and is renowned for its medical expertise. In 2010, it employed nearly 97,000 people and generated \$9.98 billion of economic output in Maryland. The hospital contributed around \$175 million to Maryland through state taxes and fees in the same year.

- **The Cleveland Clinic – Cleveland, Ohio**

The Cleveland Clinic is the top-ranked cardiac care and surgery clinic in the nation, and is a driving force in the Ohio economy. The clinic, which attracts international patients, contributed approximately \$10.5 billion to the Ohio economy in 2010. Additionally, the institution generated \$663 million in total state and local taxes. In terms of regional impacts, the clinic supported more than 81,000 jobs.

- **Boston Teaching Hospital – Boston, Massachusetts**

Boston’s Teaching Hospitals are tied to Harvard University, and include Massachusetts General Hospital, the number one ranked hospital in the country. These hospitals are recognized globally for their medical expertise and proficiency and, like the aforementioned hospitals, they treat patients from various locations around the country and the world. These hospitals have a combined direct and indirect impact of more than \$28 billion on the Massachusetts economy, and member hospitals provide more than 75,000 jobs for residents.

Category Two: Community and Local Counties

The following are hospitals that cater to local and in-state patients. It should be noted that economic impact studies are rarely conducted on individual institutions of this nature; it is far more common for community hospitals to be grouped by state or county and then analyzed.

- **Iowa Community Hospitals**

A total of 118 community hospitals in Iowa cater to local or in-state patients, all overseen by the Iowa Community Hospital Association. Taking into consideration the multiplier effect, these hospitals have a nearly \$6 billion impact on the Iowa economy and contribute approximately \$99 million to the Iowa government through state sales taxes. These hospitals supply 71,000 jobs to Iowa and a payroll of \$4.1 billion.

- **Santa Clara County Hospitals**

The combined operations of California's Santa Clara County hospitals have an economic impact of \$14.3 billion. These institutions supported 64,000 direct and indirect jobs and an annual payroll of \$5.6 billion in 2010. Annual property, sales, and personal income tax revenue total an estimated \$609.7 million.

APPENDIX 3: ECONOMIC ASSUMPTIONS

The following economic characteristics inform select assumptions in the economic and fiscal impact model and discussion.

Housing

The median sales price was \$236,485 in Arapahoe County and \$280,640 in Denver in 2014.⁴ The Colorado Association of REALTORS reported a median statewide (including urban and rural areas) single-family sales price of \$253,925 in Q1 2014 and a statewide condo/townhomes median price of \$173,725.⁵

Rents were reported through the Colorado Department of Local Affairs, Division of Housing, for the state, the Denver Metro area, and for Arapahoe County.⁶ Rents in the Denver Metro region averaged \$1,022 per month in Q2 2013.

TABLE 15: AVERAGE MULTIFAMILY RENTS BY AREA, 2012–2013

Area	Q3	Q4	Q1	Q2
	2012	2012	2013	2013
Arapahoe County	\$956	\$950	\$950	\$979
Metro Average	\$986	\$978	\$992	\$1,022
Statewide	\$944	\$943	\$950	\$977

Source: Colorado Department of Local Affairs.

Data reporting population, household size, and household tenure were sourced from the Colorado Demography Office and the U.S. Census Bureau. Colorado's population was estimated at 5,187,582 in 2012. Arapahoe County's population, home to Craig Hospital, was estimated to be 607,070 in 2013, a 1.9% increase from 2012. An estimated 64.1% of the population in Arapahoe County lives in owner-occupied housing.

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 Denver Metro counties, Adams County had the greatest household density, with 2.85 people per household. Denver County had the lowest density, with 2.22 people per household. Arapahoe County, where Craig Hospital is located, recorded household density of per 2.51 people household.

⁴Zillow, <http://www.zillow.com/denver-co/home-values/>, retrieved May 27, 2014.

⁵Colorado Association of REALTORS http://www.coloradorealtors.com/wp-content/uploads/2013/03/CAR-Colorado_Statewide_QMI_2014-Q1.pdf, retrieved May 27, 2014.

⁶Colorado Department of Local Affairs, Division of Housing, <http://www.colorado.gov/cs/Satellite/DOLA-Main/CBON/1251592890239>, retrieved May 27, 2014.

TABLE 16: 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
Denver	2.22	2.36	2.08
Douglas	2.79	2.90	2.34
Jefferson	2.42	2.49	2.24
Larimer	2.42	2.51	2.24
Weld	2.76	2.79	2.70
Colorado	2.49	2.57	2.34

Source: U.S. Census Bureau, Profile of General Population and Housing Characteristics: 2010, retrieved May 27, 2014.

Education

Pupil counts, funding, and taxes were obtained from the Colorado Department of Education. Arapahoe County is served by seven school districts, with a funded pupil count of 116,174 in the fall of 2013.

TABLE 17: FISCAL YEAR 2013-2014 CLASSROOM PUPIL MEMBERSHIP, AGGREGATED BY COUNTY

County	Funded Pupil Count	Occupied Housing Units	Pupils per Household
Adams	87,120	441,603	0.20
Arapahoe	116,174	572,003	0.20
Boulder	60,741	294,567	0.21
Broomfield	0	55,889	0.00
Denver	86,043	600,158	0.14
Douglas	66,230	285,465	0.23
Jefferson	85,983	534,543	0.16
Larimer	45,745	299,630	0.15
Weld	39,604	252,825	0.16
Colorado	876,999	5,029,196	0.17

Sources: Colorado Department of Education, Pupil Membership by County and District, http://www.cde.state.co.us/sites/default/files/2013_2014_pupilmembershipbycountyanddistrict.pdf, retrieved May 27, 2014; U.S. Census Bureau, Profile of General Population and Housing Characteristics: 2011, retrieved May 27, 2014.

Income Taxes

The state income tax rate is 4.63%. However, based on the most current statistics of income, the effective tax rate is below 3%.

TABLE 18: COLORADO INDIVIDUAL STATISTICS OF INCOME, ADJUSTED GROSS INCOME TAX, 2010

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	49,059	\$1,335.25	\$1,171.55	\$27,217.19	\$23,880.45	NA	NA
\$100,000	\$250,000	\$175,000	305,334	\$1,431.72	\$1,400.05	\$4,689.02	\$4,585.30	2.69%	2.62%
\$75,001	\$100,000	\$87,501	204,879	\$499.64	\$492.18	\$2,438.69	\$2,402.27	2.85%	2.81%
\$50,001	\$75,000	\$62,501	311,671	\$489.54	\$483.51	\$1,570.70	\$1,551.35	2.56%	2.53%
\$35,001	\$50,000	\$42,501	278,127	\$264.35	\$262.03	\$950.48	\$942.12	2.32%	2.30%
\$25,001	\$35,000	\$30,001	248,979	\$136.08	\$135.21	\$546.57	\$543.07	1.96%	1.95%
\$20,001	\$25,000	\$22,501	135,930	\$44.66	\$44.40	\$328.52	\$326.63	1.54%	1.53%
\$15,001	\$20,000	\$17,501	139,486	\$26.19	\$26.02	\$187.74	\$186.53	1.14%	1.13%
\$10,001	\$15,000	\$12,501	130,686	\$9.55	\$9.49	\$73.05	\$72.61	0.63%	0.62%
\$5,001	\$10,000	\$7,501	112,812	\$0.56	\$0.56	\$4.96	\$4.98	0.07%	0.07%
\$0	\$5,000	\$2,500	76,617	\$0.45	\$0.43	\$5.82	\$5.57	0.11%	0.11%
(Negative Income)		NA	23,480	\$0.41	\$0.90	\$17.46	\$38.20	NA	NA
Total			1,991,671	\$3,720.80	\$3,584.90	\$1,868.19	\$1,799.96	NA	NA

Source: Colorado Department of Revenue, Office of Research and Analysis, Federal AGI and Tax, All Full-Year Resident Returns, 2010 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 *2012 Annual Report*,⁷ 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 19: PROPERTY TAX LEVIES, 2012

County	Assessed Valuation 2011	Total Revenue	County Mill Levy	Average Municipal Levy ^a	Average School Levy	Average Special Levy ^b	Total Average County Levy ^c
Adams	\$4,653,501,600	\$502,875,365	26.903	7.207	57.322	3.695	108.064
Arapahoe	7,462,819,400	772,987,003	17.150	7.889	57.419	3.293	103.578
Boulder	5,641,000,573	499,268,709	24.645	12.050	47.595	1.722	88.507
Broomfield	1,060,965,060	116,193,117	17.511	11.457	53.350	6.772	109.516
Denver	10,757,438,400	945,841,525	32.926	0	50.488	2.074	87.924
Douglas	4,551,405,080	481,903,109	19.774	1.857	48.727	4.928	105.880
Jefferson	6,987,049,103	685,446,998	24.346	5.012	50.616	3.675	98.103
Larimer	4,124,935,942	368,457,360	22.520	9.522	48.185	2.454	89.324
Weld	6,513,483,280	454,126,719	16.804	13.058	27.840	3.305	69.721
Colorado	89,324,478,547	6,939,136,163	19.507	7.748	39.129	2.995	77.685

^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.

Note: These figures include tax increment valuation, and all tax revenues attributable to the increment are allocated to the increment financing authority.

Source: http://dola.colorado.gov/dpt/publications/docs/2012_Annual_Report/SECXI.pdf, retrieved May 27, 2014.

⁷<http://www.colorado.gov/cs/Satellite/DOLA-Main/CBON/1251590375296>, retrieved June 25, 2012.

Sales Taxes

State, city, and county tax rates are published on the Colorado Department of Revenue website, Revenue Online.

TABLE 20: COUNTY SALES TAX RATES

County	County Rate	RTD	Scientific and Cultural Facilities	Total County
Adams	0.75%	1.00%	0.10%	1.85%
Arapahoe	0.25%	1.00%	0.10%	1.35%
Boulder	0.80%	1.00%	0.10%	1.90%
Broomfield ^a	4.15%	1.00%	0.10%	5.25%
Denver ^a	3.62%	1.00%	0.10%	4.72%
Douglas	1.00%	1.00%	0.10%	2.10%
Jefferson	0.50%	1.00%	0.10%	1.60%
Larimer	0.80%			0.80%
Weld	0.00%			0.00%
Colorado	2.90%	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 May 27, 2014.

TABLE 21: CITY TAX RATES

City	Tax Rate
Arvada	3.46%
Aurora	3.75%
Boulder ^a	3.46%
Brighton	3.75%
Broomfield ^b	4.15%
Denver ^{a,b}	3.62%
Erie	3.50%
Fort Collins	3.85%
Golden	3.00%
Lafayette	3.50%
Lakewood	3.00%
Littleton	3.00%
Longmont	3.275%
Louisville	3.50%
Loveland	3.00%
Superior	3.46%
Westminster	3.85%
Windsor	3.20%

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

Fort Collins has an alternative tax on food for home consumption (2.25%).

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

Source: <https://www.colorado.gov/revenueonline/#2>, retrieved May 27, 2014.