

MEMORANDUM

To: Chessy Brady, RTD

From: Dan Guimond, Tim Morzel, and Julia Jones; Economic & Planning Systems (EPS)

Subject: Denver Union Station Economic Impact Analysis Update

Date: October 25, 2019

The Economics of Land Use



This memorandum provides Economic & Planning Systems' (EPS) analysis of the economic impacts of Denver Union Station (DUS) on the Denver Metropolitan Area. The analysis was completed as an update to an economic impact analysis study completed by EPS in 2008. This former study evaluated both the one-time (construction-related) and ongoing economic impacts due to employment, wages, taxes, and spending. Now that DUS and the surrounding development are largely built out, this analysis focuses on the ongoing cumulative annual impacts of DUS on the Denver Metro Area economy.

This memo is divided into the following key sections:

- Project Description
- Study Approach
- Employment Impact
- Household Impact
- Guest Impact
- Limitations of the Analysis

Introduction

Since opening in 2014, DUS has been a catalyst for economic development in Downtown Denver as well as the larger regional economy. The significant investment in the area by RTD, the City and County of Denver, and multiple other public agencies, has attracted billions of dollars in investment from the private sector. The area is now one of the most attractive locations for office space, lodging, apartments, condos, and restaurants in the Denver Metropolitan Statistical Area (Metro area or MSA).

The 2018 economic output of these uses in the DUS Study Area (including employees, households, and guests) is estimated at between \$2.1 billion to \$2.3 billion per year, which represents approximately 1.0 to 1.1 percent of the gross regional product

Economic & Planning Systems, Inc.
730 17th Street, Suite 630
Denver, CO 80202-3511
303 623 3557 tel
303 623 9049 fax

Denver
Los Angeles
Oakland
Sacramento

in the Denver Metro Area and 2.5 to 2.7 percent of the gross regional product in the City and County of Denver, as shown in **Table 1**.

The greatest portion of the overall economic impact is due to employment, which accounts for approximately \$1.7 billion to \$1.9 billion per year (depending on the methodology used to estimate employment in the study area), as shown in **Table 1**. The ongoing economic impact of households residing in the DUS Study Area is estimated at \$339.3 million and the impact of visitors or guests is estimated at \$76.4 million, as shown.

Table 1. Gross Regional Product and DUS Output, 2018

Description	Low	High
Gross Regional Product		
Denver Metro Area [1]	\$211,559,776,227	\$211,559,776,227
City/County of Denver	\$83,503,480,885	\$83,503,480,885
Denver Union Station Output		
Employment Impact	\$1,658,409,304	\$1,845,612,336
Household Impact	\$339,288,217	\$339,288,217
Guest Impact	<u>\$76,416,453</u>	<u>\$76,416,453</u>
Total Impact	\$2,074,113,974	\$2,261,317,006
% of Region	1.0%	1.1%
% of City/County of Denver	2.5%	2.7%

[1] 6-County area that includes Denver County, Adams County, Arapahoe County, Douglas County, Jefferson County, and City/County of Broomfield but does not include Boulder County.

Source: Economic & Planning Systems

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Project Description

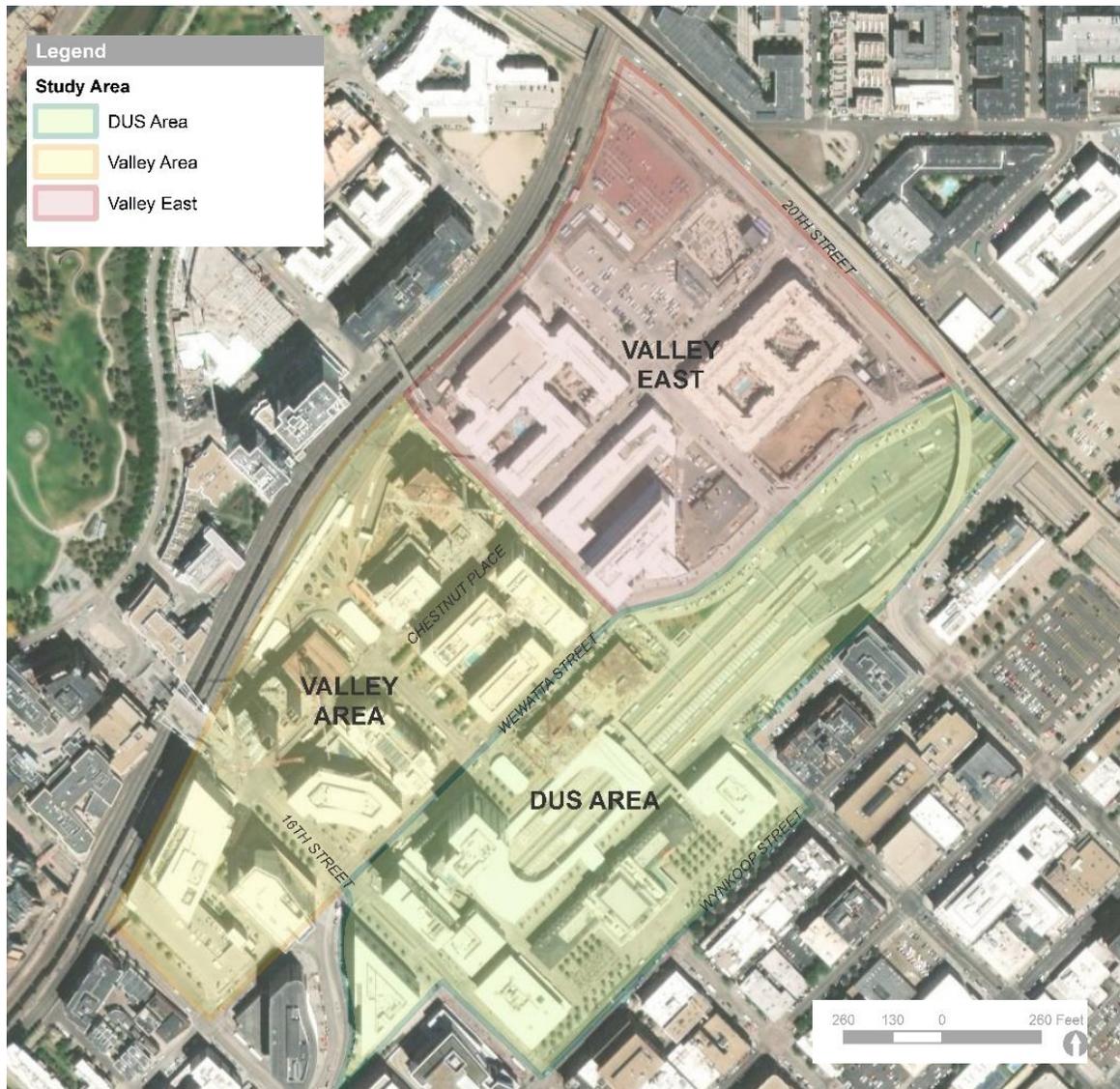
The DUS Study Area includes roughly 50 acres and is bounded by Wynkoop Street on the east, 16th Street and 15th Street on the south, Little Raven Street on the west, and 20th Street on the north, as shown in **Figure 1**. The development within the DUS Study Area contains approximately 2.0 million square feet of office space, 3.5 million square feet (2,791 units) of multifamily housing, 630,000 square feet of hotel space (725 keys), and more than 150,000 square feet of retail space. Multifamily development makes up half of the total value of development at \$1.7 billion followed by office at \$1.3 billion (38 percent), hotel at \$337 million (10 percent), and retail at nearly \$80 million (2 percent). The total value of development surrounding DUS is estimated at over \$3.5 billion.

The office market surrounding DUS is strong compared to Downtown Denver and the Denver MSA. The inventory of office space within one half-mile of DUS nearly doubled between 2005 and 2018. Vacancy rates in the area rival Downtown rates and are lower

than the Denver MSA overall average. The rent premium for properties within the DUS Study Area increased from 13 percent in 2005 to 30 percent in 2018. Average sale price per square foot within a half-mile of DUS is nearly double that of Denver MSA average prices for office sales in recent years.

In addition, there were nearly 5,000 housing units built in the DUS Study Area between 2005 and 2018. This compares to 5,000 units in the remainder of Downtown and 63,000 units elsewhere in the MSA over the same time period. Both the Downtown Denver market and the DUS Study Area surpass the Denver MSA on average sale price per square foot, and the properties within a half-mile of DUS have an average premium of 24 percent over the Downtown Denver market for multifamily sales in the past five years.

Figure 1. Denver Union Station Study Area



Study Approach

The economic impact of the redevelopment of DUS and the surrounding Study Area includes the increase in economic output and employment associated ongoing employment at the project upon occupancy, and the ongoing personal spending of the residents, and hotel visitors or guests. These impacts are described in fuller detail below:

- **Ongoing Employment Impacts** – The employment that occupies the commercial development generates direct, indirect, and induced impacts through wages, profits, and purchases. These are ongoing impacts, which occur upon absorption of new development. In this case, employment includes office and retail tenants, as well as hospitality staff employed at the various hotels located within the Study Area.
- **Ongoing Personal Spending Impacts** – The households and hotel visitors or guests occupying or using the residential and commercial development generate direct, indirect, and induced impacts in the regional economy through daily personal spending. These are ongoing impacts, which occur upon occupancy of new development and continue indefinitely. In this case, personal spending includes the households occupying the residential units and the visitors of various hotels located within the Study Area.

One-time construction-related impacts can also be quantified separately. Construction projects generate direct, indirect, and induced impacts on the larger economy in which the project occurs. These impacts sum to the total estimated economic impact of the construction project. These are one-time impacts that occur during construction. This analysis does not include an update to the one-time construction impacts as these were estimated in the 2008 study.

Methodology

The IMPLAN model (Impact Analysis for Planning) was used to estimate the impacts in this analysis. The IMPLAN model is based on a matrix that describes the relationships (transactions) between industries, commodities (goods and services), and institutions (households, government, etc.). IMPLAN calculates the direct, indirect, and induced impacts of an economic event, defined as follows:

- **Direct Impact** – Direct impacts represent the value or impact of the action taken, in this case the impact of the jobs occupying the commercial development and the personal daily spending of the occupants/users of the development. Direct impacts represent the value of the entire project including supplies, worker compensation, and other direct spending associated with the project.
- **Indirect Impacts** - Indirect impacts represent the increases in economic activity by local suppliers necessary to support the direct impact of the project. For example, the businesses located within the Union Station Area will result in an increase in demand for additional employment and business services, which will in turn increase their purchases from their suppliers. This cycle of increased spending in the economy resulting from the direct impact represents the indirect impact.

- **Induced Impact** – Induced impacts (often referred to as the multiplier effect) represent the impact from the spending of household income derived from wages generated by the direct and indirect effects. Induced impacts include all varieties of household expenditures such as retail purchases, services, housing, and transportation expenditures.

The impacts in this analysis are estimated for the 6-County Denver Metro Area defined as Adams, Arapahoe, Broomfield, Denver, Douglas, and Jefferson Counties. It is important to note that the previous analysis was estimated for the 7-County Denver Metro Area including Boulder County. Since completing that analysis, Boulder County has been defined in its own Metropolitan Statistical Area and, as a result, is no longer included in the defined Denver Metro Area by IMPLAN. This change has only a minor impact on the results of this analysis.

Dollar amounts are in producer prices (2018 Dollars) and jobs are reported as full-time equivalents (FTE). All impacts in this analysis represent gross potential impacts rather than “net new,” or actual economic impacts, as discussed in greater detail in the final section of this memo.

Employment Impacts

The tenants that occupy the commercial development (office and retail), as well as the staff required for the operation of the hotel development, represent the total employment in the Study Area and therefore generate direct, indirect, and induced impacts through wages, profits, and purchases. The wages of businesses occupying office, retail, restaurant, lodging, and any other commercial space types within the Study Area represent the direct employment impacts. Indirect impacts include jobs created from the transactions involved in maintaining operations of the businesses occupying the commercial and hotel development. Induced impacts represent jobs created by the spending of household income derived from wages generated by the direct and indirect employment. All of these impacts are ongoing.

- **QCEW Data** – EPS has applied two approaches in order to estimate total employment in the Study Area. The first approach relies on data gathered from the Quarterly Census of Employment and Wages (QCEW) point level data that was provided by the City and County of Denver. Total 2018 employment in the Study Area was estimated at 4,594 jobs, as shown in **Table 3**. Employment was primarily concentrated in three sectors that include Management of companies (31 percent), Accommodation and Food Services (24 percent), and Professional, Scientific, and Technical Services (20 percent), as shown. Based on a comparison of total office, retail, and hotel space to QCEW employment, it appears that the data underrepresent actual employment based on average square feet of space figures by development type. There may be a reporting lag due to the recent completion of several major projects. Due to the fact that much of the commercial development included in the Study Area is relatively new, it is likely that the QCEW data does not capture the full level of employment in the Study Area. As a result, EPS has also relied on an alternative approach to estimating total employment in the Study Area.
- **Commercial Space Occupancy** – The second approach is based on applying industry standards for building area per employee to the estimated commercial space (accommodation, office, and retail/restaurant) in the Study Area. Accommodation and Retail Trade (retail/restaurant) employment estimates are revised and estimated office employment is redistributed to the remaining sectors based on the QCEW employment distribution. Based on the estimated level of accommodation, office, and retail/restaurant development in the Study Area, this methodology results in a total employment estimate of 7,888, as shown in **Table 2**.

Table 2. Space Based Employment Estimate, 2018

Description	Comm. Space (RBA)	SF per Emp	Emp. Estimate
Accommodation	440,000	500	880
Office	1,885,994	300	6,287
Retail	154,658	500	309
Restaurant	103,105	250	412
TOTAL	2,583,757		7,888

Source: CoStar; Economic & Planning Systems

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Table 3. Study Area Employment, 2018

Description	Low Estimate [1]		High Estimate [2]	
	Amount	% of Total	Amount	% of Total
Employment by Industry				
Ag, Forestry, Fish & Hunting	0	0%	0	0%
Mining	278	6%	502	6%
Utilities	5	0%	9	0%
Construction	41	1%	74	1%
Manufacturing	1	0%	2	0%
Wholesale Trade	9	0%	16	0%
Retail trade	0	0%	309	4%
Transportation & Warehousing	18	0%	32	0%
Information	52	1%	94	1%
Finance & insurance	72	2%	130	2%
Real estate & rental	364	8%	657	8%
Professional- scientific & tech svcs	913	20%	1,648	21%
Management of companies	1,422	31%	2,567	33%
Administrative & waste services	106	2%	191	2%
Educational svcs	3	0%	5	0%
Health & social services	129	3%	233	3%
Arts- entertainment & recreation	13	0%	23	0%
Accommodation & food services	1,111	24%	1,292	16%
Other services	57	1%	103	1%
Government	0	0%	0	0%
Non NAICs	0	0%	0	0%
Total	4,594	100%	7,888	100%

[1] Recodred QCEW employment.

[2] Employees estimated based on average square feet of commercial space..

Source: Bureau of Labor Statistics; City and County of Denver;
Economic & Planning Systems

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Employment Impact

QCEW Approach

The direct impact of employment in the Study Area is equal to the total employment in the Study Area or 4,594 jobs, as shown in **Table 4**. This direct employment supports an additional 1,644 jobs through the indirect impacts. In addition, employment in the Study Area supports an additional 3,045 jobs through induced demand. The total impact of employment in the Study Area is 9,283 jobs. The total jobs multiplier is 2.02; in other words, each direct job supports an additional 1.02 indirect and induced jobs.

Table 4. Employment Impact: Employees – QCEW Approach

Description	Direct	Indirect	Induced	Total
Employment by Industry				
Ag, Forestry, Fish & Hunting	0	1	4	5
Mining	278	16	3	298
Utilities	5	9	8	21
Construction	41	60	27	128
Manufacturing	1	20	35	56
Wholesale Trade	9	36	80	125
Retail trade	0	29	448	477
Transportation & Warehousing	18	43	82	143
Information	52	74	59	185
Finance & insurance	72	186	237	495
Real estate & rental	364	125	251	740
Professional- scientific & tech svcs	913	475	149	1,538
Management of companies	1,422	28	20	1,471
Administrative & waste services	106	297	177	581
Educational svcs	3	1	122	126
Health & social services	129	1	519	649
Arts- entertainment & recreation	13	40	104	157
Accommodation & food services	1,111	72	404	1,587
Other services	57	102	260	420
Government	0	27	57	84
Non NAICs	0	0	0	0
Total	4,594	1,644	3,045	9,283
<i>Multiplier</i>	<i>1.00</i>	<i>0.36</i>	<i>0.66</i>	<i>2.02</i>

Source: IMPLAN; Economic & Planning Systems

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Space Based Approach

The commercial space based employment estimate results in total direct impact of employment in the study area of 7,888 jobs, as shown in **Table 5**. This direct employment supports an additional 1,853 jobs through the indirect impacts. In addition, employment in the Study Area supports an additional 3,354 jobs through induced demand. The total impact of employment in the Study Area is 13,095 jobs. The total jobs multiplier is 1.66. The reduction in the multiplier is a result of the redistribution of jobs and specifically associated with an increase in retail employment.

Table 5. Employment Impact: Employees – Space Based Approach

Description	Direct	Indirect	Induced	Total
Employment by Industry				
Ag, Forestry, Fish & Hunting	0	1	4	5
Mining	502	17	4	522
Utilities	9	10	8	27
Construction	74	64	30	168
Manufacturing	2	22	38	62
Wholesale Trade	16	43	88	147
Retail trade	309	34	493	835
Transportation & Warehousing	32	68	90	190
Information	94	81	65	240
Finance & insurance	130	204	261	595
Real estate & rental	657	152	276	1,085
Professional- scientific & tech svcs	1,648	519	164	2,332
Management of companies	2,567	38	23	2,627
Administrative & waste services	191	331	195	718
Educational svcs	5	3	135	142
Health & social services	233	1	571	806
Arts- entertainment & recreation	23	42	115	180
Accommodation & food services	1,292	78	445	1,815
Other services	103	115	287	505
Government	0	31	62	93
Non NAICs	0	0	0	0
Total	7,888	1,853	3,354	13,095
<i>Multiplier</i>	<i>1.00</i>	<i>0.23</i>	<i>0.43</i>	<i>1.66</i>

Source: IMPLAN; Economic & Planning Systems

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Economic Output

QCEW Approach

The equivalent economic output of the 4,594 direct jobs is \$870.5 million, as shown in **Table 6**. This \$870.5 million represents investment in those sectors occupying the office, retail, and lodging development and results in \$319.7 million of indirect spending in the form of suppliers buying and selling materials to produce goods and services to maintain operations. In addition, the induced impacts from the spending of labor income equal \$468.2 million. The total economic multiplier is 1.91; in other words, each \$1.00 of economic activity associated with the new permanent employment will support an additional \$0.91 in indirect and induced spending. Total economic output is estimated at \$1.66 billion.

Table 6. Employment Impact: Output – QCEW Approach

Description	Direct	Indirect	Induced	Total
Output by Industry				
Ag, Forestry, Fish & Hunting	\$0	\$56,510	\$165,681	\$222,191
Mining	\$134,813,796	\$7,829,924	\$1,639,697	\$144,283,417
Utilities	\$5,924,511	\$10,288,361	\$8,861,234	\$25,074,106
Construction	\$7,693,082	\$11,184,206	\$5,055,925	\$23,933,213
Manufacturing	\$436,178	\$8,771,016	\$15,033,199	\$24,240,393
Wholesale Trade	\$2,257,710	\$9,129,906	\$20,010,463	\$31,398,079
Retail trade	\$0	\$2,713,792	\$41,893,507	\$44,607,299
Transportation & Warehousing	\$3,547,951	\$8,511,916	\$16,157,560	\$28,217,427
Information	\$24,252,329	\$34,680,518	\$27,406,299	\$86,339,146
Finance & insurance	\$17,400,090	\$44,965,445	\$57,279,352	\$119,644,887
Real estate & rental	\$142,279,342	\$48,799,641	\$98,091,084	\$289,170,067
Professional- scientific & tech svcs	\$164,909	\$78,367,250	\$24,612,760	\$103,144,919
Management of companies	\$422,047,375	\$8,402,614	\$6,057,171	\$436,507,160
Administrative & waste services	\$9,312,295	\$26,129,076	\$15,579,265	\$51,020,636
Educational svcs	\$186,641	\$49,940	\$7,600,216	\$7,836,797
Health & social services	\$14,347,857	\$128,219	\$57,689,409	\$72,165,485
Arts- entertainment & recreation	\$1,234,761	\$3,810,283	\$9,890,101	\$14,935,145
Accommodation & food services	\$80,106,266	\$5,182,211	\$29,144,376	\$114,432,853
Other services	\$4,516,964	\$8,118,510	\$20,608,664	\$33,244,138
Government	\$0	\$2,572,842	\$5,419,104	\$7,991,946
Non NAICs	\$0	\$0	\$0	\$0
Total	\$870,522,057	\$319,692,180	\$468,195,067	\$1,658,409,304
<i>Multiplier</i>	<i>1.00</i>	<i>0.37</i>	<i>0.54</i>	<i>1.91</i>

Source: IMPLAN; Economic & Planning Systems

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Space Based Approach

Using the space based approach results in an equivalent economic output of \$967.0 million, as shown in **Table 7**. This direct output results in \$362.8 million of indirect spending in the form of suppliers buying and selling materials to produce goods and services to maintain operations. In addition, the induced impacts from the spending of labor income equal \$515.7 million. The total economic multiplier of 1.91 is consistent between the two approaches. Total economic output is estimated at \$1.85 billion.

Table 7. Employment Impact: Output – Space Based Approach

Description	Direct	Indirect	Induced	Total
Output by Industry				
Ag, Forestry, Fish & Hunting	\$0	\$61,938	\$182,517	\$244,455
Mining	\$134,813,796	\$8,011,190	\$1,806,304	\$144,631,290
Utilities	\$5,924,511	\$11,682,241	\$9,762,482	\$27,369,234
Construction	\$7,693,082	\$12,091,540	\$5,569,160	\$25,353,782
Manufacturing	\$436,178	\$9,608,375	\$16,559,929	\$26,604,482
Wholesale Trade	\$2,257,710	\$10,843,278	\$22,042,443	\$35,143,431
Retail trade	\$96,517,497	\$3,137,158	\$46,146,118	\$145,800,773
Transportation & Warehousing	\$3,547,951	\$13,330,428	\$17,795,285	\$34,673,664
Information	\$24,252,329	\$37,682,899	\$30,192,418	\$92,127,646
Finance & insurance	\$17,400,090	\$49,238,054	\$63,105,594	\$129,743,738
Real estate & rental	\$142,279,342	\$59,255,228	\$108,046,275	\$309,580,845
Professional- scientific & tech svcs	\$164,909	\$85,619,855	\$27,110,308	\$112,895,072
Management of companies	\$422,047,375	\$11,159,180	\$6,672,253	\$439,878,808
Administrative & waste services	\$9,312,295	\$29,097,680	\$17,159,508	\$55,569,483
Educational svcs	\$186,641	\$180,003	\$8,367,465	\$8,734,109
Health & social services	\$14,347,857	\$129,003	\$63,553,068	\$78,029,928
Arts- entertainment & recreation	\$1,234,761	\$4,027,708	\$10,893,131	\$16,155,600
Accommodation & food services	\$80,106,266	\$5,612,626	\$32,100,453	\$117,819,345
Other services	\$4,516,964	\$9,112,377	\$22,702,849	\$36,332,190
Government	\$0	\$2,954,474	\$5,969,987	\$8,924,461
Non NAICs	\$0	\$0	\$0	\$0
Total	\$967,039,554	\$362,835,235	\$515,737,547	\$1,845,612,336
<i>Multiplier</i>	<i>1.00</i>	<i>0.38</i>	<i>0.53</i>	<i>1.91</i>

Source: IMPLAN; Economic & Planning Systems

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Household Impacts

In addition to the employment generated by the commercial development, the households occupying the residential development generate impacts in the regional economy through daily personal spending. These are ongoing impacts that will continue indefinitely. The residents occupying housing units located within the Study Area will spend money on a variety of sectors in the regional economy. These costs include retail purchases, services, utilities, transportation, and other housing expenditures, all having direct impacts on the Denver Metro Area. The household impacts are solely defined as induced impacts.

For the purpose of this analysis, total households are estimated based on the total number of units located within the Study Area and an estimated vacancy rate of 7 percent. In order to avoid double counting the impact of residents who both live and work within the Study Area, this analysis adjusts down the total number of households to only include those living in the Study Area but are employed outside of it.

In order to calibrate total household spending within the Study Area, unit counts and corresponding household incomes are estimated separately for market rate units and affordable units. Based on an evaluation of the unit mix in the Study Area, approximately 96.4 percent of units are assumed to be market rate and 3.6 percent are assumed to be affordable, as shown in **Table 8**. The average household income for market rate units is estimated at \$198,260 and the average household income for affordable units is estimated at \$43,200, which correlates to 60 percent of the Area Median Income (AMI) for a two-person household.

IMPLAN has constructed spending profiles representing households in a range of income brackets. These spending profiles account for total spending after taxes and not only include disposable income spending, but also expenditures on housing, utilities, transportation, miscellaneous debt, etc. As a result, an additional adjustment is made to account for the proportion of gross household income that goes towards federal income taxes, which is estimated at 32 percent for the market rate households and 22 percent for the affordable households (based on the 2018 tax rates by income bracket). Multiplying the after-tax income estimates by the number of each type of residential unit results in total annual household income, or total personal income (TPI), which is estimated at \$336.0 million, as shown in **Table 8**.

Table 8. Households and Total Personal Income, 2018

Description		Amount
Total Units		2,791
Occupied Units (Households)	7.0%	2,596
Households Employed Outside of Study Area [1]	98.7%	2,562
Household by Unit Type		
Market Rate	96.4%	2,469
Affordable	3.6%	<u>93</u>
Total		2,562
Average Household Income		
Market Rate		\$198,260
Affordable [2]		\$43,200
After Tax Household Income		
Market Rate	32.0%	\$134,817
Affordable [2]	22.0%	\$33,696
Total Personal Income		
Market Rate		\$332,886,663
Affordable		<u>\$3,123,919</u>
Total		\$336,010,583

[1] 2015 LEHD Commuter data.

[2] 60% AMI household income limit for a two-person household.

Source: Economic & Planning Systems

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Employment Impact

Total personal income of households residing within the Study Area of \$336.0 million supports 2,254 equivalent jobs, as shown **Table 9**. These jobs are supported by the daily household spending of those households located within the Study Area.

Table 9. Household Impact: Employees

Description	Direct	Indirect	Induced	Total
Employment by Industry				
Ag, Forestry, Fish & Hunting	0	0	3	3
Mining	0	0	2	2
Utilities	0	0	5	5
Construction	0	0	19	19
Manufacturing	0	0	25	25
Wholesale Trade	0	0	58	58
Retail trade	0	0	324	324
Transportation & Warehousing	0	0	61	61
Information	0	0	41	41
Finance & insurance	0	0	157	157
Real estate & rental	0	0	178	178
Professional- scientific & tech svcs	0	0	115	115
Management of companies	0	0	15	15
Administrative & waste services	0	0	129	129
Educational svcs	0	0	113	113
Health & social services	0	0	404	404
Arts- entertainment & recreation	0	0	63	63
Accommodation & food services	0	0	316	316
Other services	0	0	189	189
Government	0	0	35	35
Non NAICs	0	0	0	0
Total	0	0	2,254	2,254

Source: IMPLAN; Economic & Planning Systems

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Economic Output

Household spending within the Study Area results in a total of \$339.3 million in induced impacts, as shown in **Table 10**. The difference between the direct household spending of \$336.0 million and the induced impact of \$339.3 million is a function of the assumptions used in the IMPLAN model. Theoretically the direct spending amount and the induced impact should be the same due to the fact that the induced impacts are a function of household expenditures on items such as retail purchases, services, housing, and transportation expenditures that are captured in the direct spending estimate.

Table 10. Household Impact: Output

Description	Direct	Indirect	Induced	Total
Output by Industry				
Ag, Forestry, Fish & Hunting	\$0	\$0	\$119,133	\$119,133
Mining	\$0	\$0	\$1,149,220	\$1,149,220
Utilities	\$0	\$0	\$5,856,879	\$5,856,879
Construction	\$0	\$0	\$3,599,446	\$3,599,446
Manufacturing	\$0	\$0	\$10,978,775	\$10,978,775
Wholesale Trade	\$0	\$0	\$14,419,230	\$14,419,230
Retail trade	\$0	\$0	\$30,356,418	\$30,356,418
Transportation & Warehousing	\$0	\$0	\$12,104,357	\$12,104,357
Information	\$0	\$0	\$19,208,222	\$19,208,222
Finance & insurance	\$0	\$0	\$37,980,477	\$37,980,477
Real estate & rental	\$0	\$0	\$69,645,168	\$69,645,168
Professional- scientific & tech svcs	\$0	\$0	\$18,957,722	\$18,957,722
Management of companies	\$0	\$0	\$4,442,395	\$4,442,395
Administrative & waste services	\$0	\$0	\$11,339,153	\$11,339,153
Educational svcs	\$0	\$0	\$7,052,358	\$7,052,358
Health & social services	\$0	\$0	\$44,973,787	\$44,973,787
Arts- entertainment & recreation	\$0	\$0	\$6,025,185	\$6,025,185
Accommodation & food services	\$0	\$0	\$22,749,563	\$22,749,563
Other services	\$0	\$0	\$14,985,878	\$14,985,878
Government	\$0	\$0	\$3,344,851	\$3,344,851
Non NAICs	\$0	\$0	\$0	\$0
Total	\$0	\$0	\$339,288,217	\$339,288,217

Source: IMPLAN; Economic & Planning Systems

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Guest Impacts

In addition to household daily spending, this analysis also accounts for the spending associated with guests at the various hotels located within the Study Area. Guest spending is primarily driven by spending on accommodations, retail, food and beverages, and arts, entertainment and recreation.

To estimate the impact of hotel visitor spending, total guest days are estimated. There are an estimated 725 hotel rooms located within the Study Area that are estimated to generate 238,163 guest days based on a 75 percent stabilized occupancy rate and an average of 1.20 guests per room, as shown in **Table 11**. Total daily spending is estimated at \$343 based on an average daily rate (ADR) of \$183 per night and average daily expenditures on retail, food and beverage, and arts, entertainment and recreation of \$160 per day. Total annual guest spending totals \$81.7 million. Based on visitation data published by Longwoods International, total retail spending is estimated at \$13.4 million, while total arts, entertainment and recreation spending is estimated at \$15.5 million, and accommodation and eating/drinking spending is estimated at \$52.7 million.

Additional adjustments are made in order to avoid double counting guest spending. For the purposes of this analysis, approximately 80 percent of retail and arts, recreation, and entertainment spending is estimated to occur outside the DUS area. This translates to \$10.7 million in retail spending and \$12.4 million in arts, recreation, and entertainment spending. In addition, 33 percent of spending on accommodation, eating, and drinking is estimated to occur outside of the study area. This accounts for the amount that guests are spending on hotels within the study area and generally estimates the amount spent on eating and drinking outside the study area, which is estimated at \$17.4 million.

Table 11. Guest Days and Spending, 2018

Description		Amount
Guest Days		
Total Hotel Rooms		725
Stabilized Occupancy		75%
Days per Year		365
People per Room		1.20
Total Guest Days		238,163
Daily Spending		
Average Daily Room Rate		\$183
Daily Expenditure per Person		<u>\$160</u>
Total		\$343
Total Guest Spending		
Retail	16% of total spending	\$13,442,615
Arts/Recreation/Entertainment	19% of total spending	\$15,510,710
Accommodation & Eating/Drinking	<u>65%</u> of total spending	<u>\$52,736,413</u>
Total	100%	\$81,689,738
Spending Outside DUS Area		
Retail	80% out of DUS area	\$10,754,092
Arts/Recreation/Entertainment	80% out of DUS area	\$12,408,568
Accommodation & Eating/Drinking	33% out of DUS area	<u>\$17,371,995</u>
Total		\$40,534,655

Source: Metro Denver Convention & Visitor Bureau; Longwoods International; STR; Economic & Planning Systems

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Employment Impact

The direct impact of guest spending in the Study Area supports 486 equivalent jobs, as shown in **Table 12**. In addition, guest spending supports an additional 83 equivalent jobs through indirect impacts and an additional 128 equivalent jobs through induced impacts. The total employment impacts of guest spending are estimated at 698 equivalent jobs.

Table 12. Guest Impact: Employees

Description	Direct	Indirect	Induced	Total
Employment by Industry				
Ag, Forestry, Fish & Hunting	0	0	0	0
Mining	0	0	0	0
Utilities	0	0	0	1
Construction	0	2	1	3
Manufacturing	0	2	2	3
Wholesale Trade	0	3	3	6
Retail trade	115	2	19	136
Transportation & Warehousing	0	5	3	9
Information	0	2	3	5
Finance & insurance	0	7	10	17
Real estate & rental	0	9	11	20
Professional- scientific & tech svcs	0	16	6	23
Management of companies	0	4	1	5
Administrative & waste services	0	13	8	20
Educational svcs	0	1	5	6
Health & social services	0	0	22	22
Arts- entertainment & recreation	131	7	4	142
Accommodation & food services	241	3	17	261
Other services	0	5	11	16
Government	0	2	2	4
Non NAICs	0	0	0	0
Total	486	83	128	698
<i>Multiplier</i>	<i>1.00</i>	<i>0.17</i>	<i>0.26</i>	<i>1.43</i>

Source: IMPLAN; Economic & Planning Systems

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Economic Output

Total guest spending of \$40.5 million is equivalent to the direct impact, as shown in **Table 13**. The indirect impact of guest spending is estimated at \$16.2 million, and the induced impact is estimated at \$19.7 million. The total impact is estimated \$76.4 million, which reflects an economic multiplier of 1.89.

As was previously noted, guest spending directly supports lodging jobs and a certain proportion of retail and restaurant jobs within the Study Area. As a result, these estimates account for the estimated of guest spending inside and outside the Study Area. This avoids double counting these impacts with the impact of employment in the DUS Study Area. As a result of these adjustments, total direct impacts are estimated at \$40.5 million, indirect impacts are estimated at \$16.2 million, and induced impacts are estimated at \$19.7 million. The adjusted total economic impact of guest spending is estimated at \$76.4 million.

Table 13. Guest Impact: Output

Description	Direct	Indirect	Induced	Total
Output by Industry				
Ag, Forestry, Fish & Hunting	\$0	\$8,359	\$6,982	\$15,341
Mining	\$0	\$98,246	\$69,089	\$167,335
Utilities	\$0	\$523,713	\$373,609	\$897,322
Construction	\$0	\$322,143	\$212,899	\$535,042
Manufacturing	\$0	\$651,944	\$633,217	\$1,285,161
Wholesale Trade	\$0	\$680,535	\$842,803	\$1,523,338
Retail trade	\$10,754,092	\$214,940	\$1,764,064	\$12,733,096
Transportation & Warehousing	\$0	\$1,022,998	\$679,702	\$1,702,700
Information	\$0	\$1,035,725	\$1,155,158	\$2,190,883
Finance & insurance	\$0	\$1,570,895	\$2,415,176	\$3,986,071
Real estate & rental	\$0	\$3,530,189	\$4,129,890	\$7,660,079
Professional- scientific & tech svcs	\$0	\$2,695,070	\$1,036,156	\$3,731,226
Management of companies	\$0	\$1,155,095	\$255,117	\$1,410,212
Administrative & waste services	\$0	\$1,122,413	\$655,685	\$1,778,098
Educational svcs	\$0	\$42,638	\$318,867	\$361,505
Health & social services	\$0	\$1,795	\$2,431,285	\$2,433,080
Arts- entertainment & recreation	\$12,408,568	\$679,575	\$416,205	\$13,504,348
Accommodation & food services	\$17,371,995	\$224,736	\$1,226,571	\$18,823,302
Other services	\$0	\$396,634	\$868,399	\$1,265,033
Government	\$0	\$184,875	\$228,406	\$413,281
Non NAICs	\$0	\$0	\$0	\$0
Total	\$40,534,655	\$16,162,518	\$19,719,280	\$76,416,453
<i>Multiplier</i>	<i>1.00</i>	<i>0.40</i>	<i>0.49</i>	<i>1.89</i>

Source: IMPLAN; Economic & Planning Systems

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Limitations of the Analysis

All economic impacts (direct, indirect, and induced) reported in this memo represent gross potential impacts, not “net new” impacts. In other words, if the Denver Union Station project was not built, a portion of the project’s share of private investment (office, retail, residential, etc.) would likely occur elsewhere in the Denver Metro Area to meet regional demand. Only employment generated from primary jobs (businesses relocating from outside the Denver Metropolitan Area) or from regional growth can be considered net new. Estimating the net new impacts of the ongoing economic activity is not an exact science. Many, if not most economic impact analyses choose to ignore this factor altogether.

The IMPLAN model operates on the assumption that constant returns to scale exist. The model assumes that each unit of increase in employment results in the same unit increase in output and productivity. The model also assumes there are no constraints on supply and demand. In other words, IMPLAN assumes that there is demand for each good or service produced. Output that is not consumed locally within the Study Area is assumed to be exported, and local industries can expand production to meet demand. Despite these limitations and the difficulty in estimating Net Economic Impact, IMPLAN remains the most precise model for estimating Gross Economic Impacts.