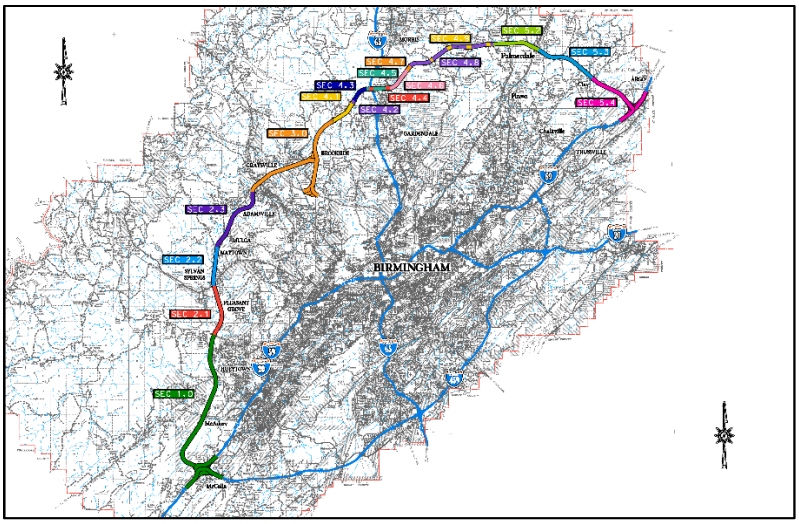
Updated Socioeconomic Indirect and Cumulative Impact Components of the Birmingham Northern Beltline



April 2025

by

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Commissioned by Alabama Department of Transportation

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Disclaimer and Acknowledgments: This report reflects the analysis and opinions of the authors, but not necessarily those of the faculty and staff of the Culverhouse College of Business (Culverhouse) or the administrative officials of The University of Alabama (UA). Completion of this project, commissioned by the Alabama Department of Transportation (ALDOT), was due to the timely contributions of many people. We are very grateful to the officers and staff of ALDOT who provided critical data about the Birmingham Northern Beltline or were involved in the data gathering efforts. Many thanks also to our colleagues at the Center for Business and Economic Research for their help on various phases of this research project.

Contents

Executive Summary

- This report presents updated socioeconomic indirect and cumulative impact (ICI) components of constructing and using the Birmingham Northern Beltline (BNB). The BNB is part of Corridor X1 of the Appalachian Development Highway System. The BNB is a 52.5-mile interstate highway in Jefferson County, Alabama, that will cost $2.902 billion (in 2019 dollars) to build over roughly 30 years. The original 2010 report on the socioeconomic ICI components of the BNB is titled "Socioeconomic Indirect and Cumulative Impact Components for the Birmingham Northern Beltline" and was commissioned by the Coalition for Regional Transportation. This report covers (a) review of existing conditions in Jefferson County and the BNB and I-459 corridors, (b) population projections and economic forecasts, and (c) economic and fiscal impacts. It differs from the original in two ways; (i) considers just one build period of 30 years, and (ii) compares existing conditions in the BNB and I-459 corridors.

- The impacts presented in this report include effects on population, communities, and economies (the State of Alabama, the Birmingham-Hoover metro area, and Jefferson County); environmental justice is also addressed. Economic and fiscal impacts for both the construction and post-build use phases are presented. Reflecting the geography, statewide economic impacts for Alabama include metro area impacts, which in turn include county impacts. However, state taxes are separate from local (county and municipality) taxes because fiscal impacts are jurisdiction-based.

- The economic impacts focus on output, value-added, earnings (wages and salaries), and employment. Output refers to total or gross business sales and contains value-added, which is the contribution to gross domestic product (GDP), or the value of goods and services produced on a value-added basis. Earnings impacts are part of value-added and are the wages and salaries of the workers recognized by the employment impact. Construction phase employment impacts refer to the total one-time number of jobs over the entire construction period and are thus job-years; unlike the annual post-build use phase employment impacts, which are ongoing jobs per year. As an example of the difference, 10 jobs per year for three (3) years equals 30 job-years. The fiscal impacts are conservative because they are derived from earnings impacts and cover just income, sales, and property taxes; examples of fees and taxes not considered include utility taxes, building permit fees, direct construction spending related sales taxes, construction phase earnings-based property taxes, and taxes on rental/leasing, alcoholic beverages, cigarettes and tobacco, insurance premiums, and lodgings.

- Socioeconomic data on the six-mile wide corridors (three miles on each side) of the planned BNB and existing I-459 to the south show that although shorter, at about six-tenths the length of the BNB corridor, the I-459 corridor has more than triple the number of census block groups, population, and households as well as nearly six times the number of block groups with 0.0 percent unemployment and more than double the maximum median household income. The comparison shows that constructing the BNB presents a strong economic development opportunity for its corridor, Jefferson County, the Birmingham-Hoover metropolitan area, and Alabama as a whole, especially given that the BNB is longer. The BNB could enable development in its corridor similar to what I-459, to the south, has done for that area. Spillover effects of the BNB's development potential will benefit the balance of the county, the metro area, and the state. Additionally, economic forecasts and population projections point to increased demand for road use in these areas. However, estimating a fuller range of the

economic development potential of the BNB is beyond the scope of this report and so we recommend a follow-up study with that as a focus.

- During the 30-year construction phase of the project, the economic and fiscal impacts that the BNB will have on the Alabama economy are about $6.0 billion in gross business activity or output, of which roughly $3.1 billion is contribution to GDP that includes $1.6 billion in earnings to Alabama workers in 36,375 direct and indirect jobs. The $1.6 billion statewide construction phase earnings impact will generate $116.2 million in state and local taxes comprising $81.5 million for the state ($53.8 million individual income tax and $27.7 million sales tax) and $34.7 million local sales tax. Of the total $2.902 billion investment to build the BNB, $824.3 million will be paid directly as earnings to 15,399 construction sector jobs statewide over the 30-year project period (an average of 513 direct construction jobs per year); $775.1 million of these earnings will be paid for 14,480 metro area construction jobs, with $487.8 million going for 9,114 Jefferson County construction jobs.

- Most of the statewide construction phase economic and fiscal impacts will occur in the Birmingham-Hoover metro area, which will see impacts of about $5.6 billion in output, $3.0 billion contribution to GDP, $1.5 billion in earnings for 34,016 jobs, and $99.8 million in state and local taxes comprising $71.5 million for the state ($48.8 million individual income tax and $22.7 million sales tax) and $28.3 million local sales tax.

- Impacts on the Jefferson County economy will be $4.8 billion in output, $2.6 billion contribution to GDP, $852.3 million in earnings for 18,903 jobs, and $54.0 million state and local taxes ($28.0 million individual state income tax, $11.6 million state sales tax, and $14.5 million local sales tax).

- In the baseline projection where the BNB is not built, the county population rises 9.5 percent (64,559 new residents) to 743,779 between 2020 and 2050, while the number of businesses increases by 24.1 percent (13,336 new businesses) to 68,565 in line with the baseline employment growth forecast. Construction of the highway will provide an extra 1.3 percent increase (9,167 more residents) over baseline population projection to 752,946 and raise the number of businesses by an extra 3.9 percent (2,166 additional businesses) over baseline.

- The additional development effects of building the highway will yield post-build annual impacts on Alabama of $1.9 billion in output, of which $990.5 million is contribution to GDP that includes $528.0 million in earnings to Alabama workers in 11,738 direct and indirect jobs, and $50.2 million in state and local taxes with roughly $28.0 million for the state ($17.4 million individual income tax, $9.0 million sales tax, and $1.7 million property tax) and $22.2 million local ($11.2 million sales tax and $11.0 million property tax). Annual impacts on the metro area will be $1.8 billion in output, $960.7 million contribution to GDP, $479.0 million in earnings for 10,977 jobs, and $43.7 million in state and local taxes with $24.6 million for the state ($15.7 million individual income tax, $7.3 million sales tax, and $1.5 million property tax) and $19.1 million local ($9.1 million sales tax and $10.0 million property tax). Jefferson County will have annual impacts of about $1.6 billion in output, contribution to GDP of $825.1 million, $275.0 million in earnings for 6,100 jobs, and $24.0 million in state and local taxes with $13.6 million for the state ($9.0 million individual income tax, $3.7 million sales tax, and $864,322 property tax) and $10.4 million local ($4.7 million sales tax and $5.7 million property tax).

- The BNB will have significant economic and fiscal impacts on Alabama, the Birmingham-Hoover metro-area, and Jefferson County. It will improve access to essential services and activities. It will also provide new economic development opportunities and job opportunities for minority and lower income populations as well as for other residents of the project area. Socioeconomic data on the BNB corridor show that the highway presents development opportunities that can benefit minority and low-income populations. Average earnings per BNB construction job of about $53,500 is higher than the median household income for 31 out of the corridor's 102 block groups. Similarly, average earnings per job related to the BNB of about $45,000 is higher than the median household income for 25 of the corridor's 102 block groups. Therefore, to the extent that project-related and subsequent development jobs go to minority and lower income groups, the new highway will help to lower poverty levels in the area. Future area development plans must consider (i) mixed income housing to prevent adverse displacement of low income and minority households and (ii) mixed density and multi-use development. To derive the full benefits that the highway presents, nearby communities may need to invest in infrastructure and amenities.

- In addition to acknowledging the conservative fiscal impacts, it is important to note that the impacts presented in this report may slightly understate the BNB's actual impacts because (i) the impact multipliers used in impact studies are for industries, not individual economic activities that can have effects that are above or below industry averages, (ii) during the years of construction some additional impacts will be realized as people and businesses flock to the area so as to be well-placed for traffic flow after completion, and (iii) the actual impacts will also depend on future changes in the structure of the three economies.

Updated Socioeconomic Indirect and Cumulative Impact Components of the Birmingham Northern Beltline

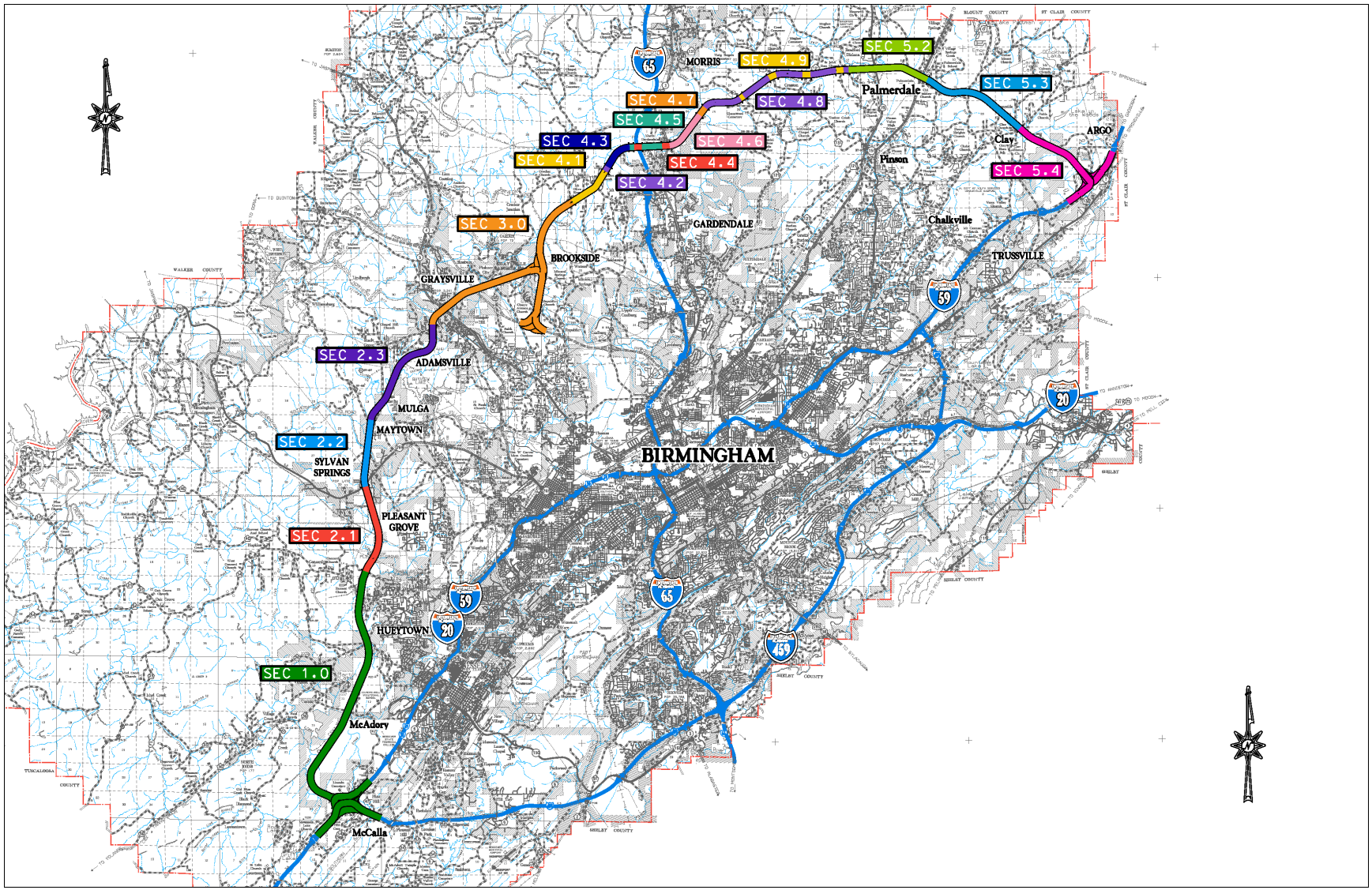
Introduction

This report presents updated socioeconomic indirect and cumulative impact (ICI) components of constructing and using the Birmingham Northern Beltline (BNB). Located in the northern section of Jefferson County, Alabama, the BNB is part of Corridor X1 of the Appalachian Development Highway System. The BNB begins at I-20/59 on the southwest side of Jefferson County, looping from where I-459 joins I-20/59 to I-59 on the northeast side of the county, northeast of Birmingham and south of Argo (Figure 1). Corridor X1 continues the loop all the way to I-20. This report is an update to a June 2010 report titled "Socioeconomic Indirect and Cumulative Impact Components for the Birmingham Northern Beltline" that was commissioned by the Coalition for Regional Transportation and covers (a) review of existing conditions in Jefferson County and the BNB and I-459 corridors, (b) population projections and economic forecasts, and (c) economic and fiscal impacts. It differs from the original in two ways; (i) considers just one build period of 30 years, and (ii) compares existing conditions in the BNB and I-459 corridors.

Socioeconomic impacts include secondary or indirect and cumulative impacts of constructing and using the highway and must be based on analyses that meet federal requirements. The impacts include effects on population, communities, and economies (the State of Alabama, the Birmingham-Hoover metro area, and Jefferson County); environmental justice is also addressed. Economic and fiscal impacts for both the construction and post-build use phases are presented; construction phase impacts are presented in total and by section. It is important to note that construction phase impacts are one-time only, lasting for the duration of construction, but post-build impacts are continuous although they are presented on an annual basis. Reflecting the geography, the statewide economic impacts for Alabama include the metro area economic impacts, which in turn include the county economic impacts. However, state taxes are separate from local (county and municipality) taxes because fiscal impacts are jurisdiction-based.

The BNB is a roughly 52.5-mile interstate highway that will cost $2.902 billion (in 2019 dollars) to build over roughly 30 years. The BNB provides additional highway capacity that is likely to accommodate new economic development opportunities and general growth of the Birmingham area. The Alabama Department of Transportation (ALDOT) recognizes that completion of the BNB could increase freight traffic to, from, and through Alabama with associated improvements in the transportation system, safety, travel time, congestion, etc. Transportation network improvements that benefit freight traffic also benefit other users (e.g., commercial and passenger vehicles) directly and indirectly. In this report, socioeconomic impacts on the BNB corridor, Jefferson County, the Birmingham-Hoover metro area, and the State of Alabama are presented as appropriate. The BNB corridor is defined as a 6-mile-wide swath split equally on each side of the highway. Figure 1 shows the proposed BNB by color-coded segments whose construction phase economic and fiscal impacts are presented later in this report.

Figure 1. Birmingham Northern Beltline Sections



Source: Alabama Department of Transportation.

Highway and road projects generally contribute to and facilitate ensuing economic development, but do not automatically generate or guarantee such growth. Impacts of highways vary in magnitude depending on the investment and the degree to which the highway projects provide and improve access to areas while helping to alleviate constraints that impede economic growth. Such constraints include transportation costs of obtaining inputs and shipping products, traffic congestion, business climate, workforce issues, availability of sites and infrastructure, actual costs of inputs, degree of access and connectivity, zoning, and leadership. Management of highway access is an important factor that can enable economic growth and development of an area or a region. Addressing constraints to development highlights the role of regulations and leadership (at all levels) in economic development. For example, any development must first be permitted and the type and scope of development in the area is subject to the vision and actions of area leadership. Also, residential and commercial development or business growth will depend to some extent on both zoning and other demand factors.

The large $2.9 billion investment for constructing the BNB and the post-build effects will provide jobs and increase economic output over the project period and afterward and also create impacts that extend beyond those directly associated with the project itself. Income from both direct and indirect employment will generate tax revenues. Upon completion, the many benefits of the BNB will lead to economic development opportunities by stimulating additional development, especially of sites, infrastructure, and amenities. This boost to development yields additional jobs, income, and tax revenues that are also presented in this report. While noting the benefits of highway projects, it is important to ensure that they achieve environmental justice. Specifically, this means minimizing, by avoiding or mitigating, disproportionately high and adverse health, environmental, social, and economic effects on disadvantaged and underserved (e.g., minority and low-income) populations in the area. We believe that the impacts of the BNB demonstrate environmental justice of the project by providing lots of employment opportunities for these populations than would otherwise be the case.

The map in Figure 1 was used to collect data on the BNB corridor and to determine whether there are any special sub-areas for which there may be environmental justice concerns. It is important to note that the corridor covers just part of the area of the census block groups in which it is contained. Some economic and demographic data are only available at the block group level. A census block is the smallest geographic unit for which the Census Bureau tabulates 100-percent data such as decennial population. Many blocks correspond to individual city blocks bounded by streets, but especially in rural areas blocks may include many square miles and may have some boundaries that are not streets. A census block group is the smallest geographic unit for which the Census Bureau tabulates sample data. A block group consists of all the blocks within a census tract with the same beginning number. Block groups are also subdivisions of census tracts. Block groups generally have between 600 and 3,000 people and consist of 40 census blocks on average. Firms or economic activities within the corridor were identified using information in a Dun and Bradstreet database. Population and some other socioeconomic data for corridor block groups were drawn from the U.S. Census Bureau's American Community Survey (ACS). All methodologies used in the study are detailed in the Appendix.

Existing Conditions Review

Jefferson County

Table 1 shows selected Jefferson County economic and demographic indicators for 2010-2019 that are used to assess socioeconomic trends and dynamics as well as firms by employee size in 2021. The selected dataset sufficiently serves the socioeconomic impacts purpose of this study. There are a host of other social, economic, and demographic variables that may be of interest but that would not add materially to the study goals. These include other workforce variables (e.g., occupations of employed residents, benefits, job creation, job flows, and skills), income variables (e.g., personal income and its components), demographic variables (e.g., vital statistics and marital status), and social variables (schools, infrastructure, resources, and institutions). These other variables could be considered in comprehensive profiles that serve to describe the county and may be needed for other purposes (e.g. economic development planning). Population estimates in the table show a gain of just 1,214 for the county from 2010 to 2019. However, recent census data indicate that the county gained 22,308 residents over the 2010 to 2020 period, a 3.4 percent population growth that is less than Alabama's 5.1 percent increase in population over the same time period.

The county's civilian labor force declined from 2010 to 2014 but grew consistently from 2015 to 2019. The Jefferson County labor force estimate for March 2021 is 315,389, which is more than 11,000 below the 2019 level. However, the labor market has been rebounding since the spring of 2020. The labor force declined sharply in the early days of the coronavirus pandemic in 2020 due to the significant number of people who lost jobs then and the restrictions that were put in place to deal with the pandemic.

Per capita personal income increased by 36.1 percent from $42,111 in 2010 to $57,329 in 2019. The average wage per job grew by 22.6 percent, rising from $57,024 to $69,900 over the same period. The county unemployment rate continuously declined from 2010 to 2019, as the economy rebounded from the Great Recession, which severely impacted jobs in the area. As of March 2021, the unemployment rate for Jefferson County was 3.8 percent, with a total labor force of 315,389 and 11,900 unemployed. Nearly 90.1 percent of the 25-year-old and over population had completed high school or a higher level of education in 2019 compared to 86.6 percent in 2010; the proportion with bachelor's or higher degrees rose to 33.4 percent from 28.8 percent.

Total real gross domestic product (GDP) in year 2012 dollars for Jefferson County rose by 6.3 percent from $38.9 billion in 2010 to $41.4 billion in 2019. Total employment in the county rose from 439,137 in 2010 to 483,959 in 2019. Jefferson County had 55,229 firms in 2021, with nearly 85.6 percent of them having fewer than 10 employees. There were 643 firms that provided 100 or more jobs, including 26 large employers with 1,000 or more jobs. Recent announcements and economic activity raise hopes of long-term growth in the county's GDP and jobs.

Jefferson County total employment grew from 439,137 in 2010 to 483,959 in 2019, a roughly 44,800 increase, but seems to have supported population gains mainly for the suburban metro area counties. From 2010 to 2018, net in-commuting of workers to Jefferson County increased from 81,925 to 88,984 and the number of residents who live and work in the county rose by 3.7 percent to 207,975 (Table 2). The total number of commuters to and from the county rose by more than 31,000 to 241,796. Clearly, more people are traveling to work and there is considerable commuting within the county.

Table 1. Jefferson County Existing Conditions Review

		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Civilian Labor Force[a]		330,484	328,402	326,518	324,642	322,497	322,632	324,102	325,783	326,091	326,672
	Change		-2,082	-1,884	-1,876	-2,145	135	1,470	1,681	308	581
	Percent change		-0.63	-0.57	-0.57	-0.66	0.04	0.46	0.52	0.09	0.18
Population[a]		658,466	657,486	658,464	658,552	658,834	659,026	659,096	659,460	659,892	659,680
	Change		-980	978	88	282	192	70	364	432	-212
	Percent change		-0.15	0.15	0.01	0.04	0.03	0.01	0.06	0.07	-0.03
Total housing units[a]		300,183	300,366	301,202	301,587	302,599	303,755	305,262	306,110	307,372	307,874
Occupied		260,441	259,394	259,255	259,634	259,397	260,929	261,773	261,390	260,924	261,231
	Change		-1,047	-139	379	-237	1,532	844	-383	-466	307
	Percent change		0.06	0.28	0.13	0.34	0.38	0.50	0.28	0.41	0.16
Vacant		39,742	40,972	41,947	41,953	43,202	42,826	43,489	44,720	46,448	46,643
Per capita income ($)[b]		42,111	43,579	45,720	45,060	46,817	49,160	49,942	52,923	55,570	57,329
	Change		1,468	2,141	-660	1,757	2,343	782	2,981	2,647	1,759
	Percent change		3.49	4.91	-1.44	3.90	5.00	1.59	5.97	5.00	3.17
Average wage per job ($)[b]		57,024	58,563	59,709	60,169	61,863	63,704	64,211	66,029	68,111	69,900
	Change		1,539	1146	460	1694	1841	507	1818	2082	1789
	Percent change		2.70	1.96	0.77	2.82	2.98	0.80	2.83	3.15	2.63
Unemployed[c]		32,403	29,529	24,109	21,293	19,562	17,993	17,745	13,605	11,627	9,154
Unemployment rate (%)[c]		10.2	9.2	7.6	6.8	6.3	5.8	5.7	4.4	3.7	2.9
Educational attainment (percent of population 25 years and over)[a]											
High School or more		86.6	86.7	87.2	87.4	87.7	88.4	89.0	89.4	89.7	90.1
Bachelor's or more		28.8	29.0	29.3	30.0	30.3	30.8	31.4	31.9	32.4	33.4
		2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Total earning ($ millions)[b]		27,718	28,680	30,087	29,706	30,898	32,468	32,979	34,908	36,645	37,756
Total employment[b]		439,137	442,708	446,634	448,363	453,356	454,816	460,436	465,032	475,723	483,959
Proprietors employment[b]		76,580	80,311	78,232	78,782	82,291	84,005	86,716	87,418	91,586	94,391
Farm proprietors employment		377	365	339	341	329	322	322	311	305	297
Wage & salary employment[b]		362,557	362,397	368,402	369,581	371,065	370,811	373,720	377,614	384,137	389,568
Forestry, fishing, & related activities		276	294	313	337	358	386	369	350	369	375
Natural resources		2,182	2,561	3,009	2,838	2,671	2,706	2,501	2,496	2,421	2,389
Utilities		5,143	4,808	4,863	4,994	4,953	5,029	4,905	4,781	4,629	4,625
Construction		22,132	22,569	22,752	22,322	22,047	21,665	22,013	22,623	24,291	25,428
Manufacturing		24,311	24,150	24,847	25,283	25,633	25,041	24,341	24,188	24,736	25,148
Wholesale trade		20,985	20,777	21,144	21,081	21,843	21,606	20,650	20,260	20,407	20,069
Retail trade		44,623	44,870	44,148	44,526	44,936	45,207	44,802	44,788	44,506	43,995
Transportation & warehousing		12,572	13,188	14,012	14,763	14,603	15,242	15,864	16,622	17,211	17,802
Information		9,174	8,716	8,400	8,596	8,219	7,930	7,780	7,259	7,257	7,366
Finance & insurance		28,941	30,424	31,406	31,121	31,621	30,942	31,821	32,243	33,315	34,210
Real estate, rental, & leasing		18,436	18,849	18,610	18,776	19,483	19,726	20,249	20,699	21,395	22,214
Prof., sci., & technical services		28,139	27,488	27,641	27,764	28,055	27,999	28,503	29,028	29,859	31,236
Management of companies		7,406	7,583	7,895	7,344	6,520	6,550	7,781	7,094	7,362	7,338
Admin. support & waste mgt.		26,675	27,933	29,073	29,109	30,052	30,655	30,933	32,048	33,382	33,944
Educational services		9,140	8,951	8,925	9,173	9,147	9,315	9,347	9,363	8,959	9,052
Health care & social assist.		53,016	53,309	53,589	54,199	54,752	55,341	56,100	57,380	58,648	59,885
Arts, entertainment, & rec.		6,876	6,945	6,926	7,262	7,691	7,607	8,054	8,419	9,386	9,734
Accommodation & food services		27,409	28,204	28,787	29,512	30,654	31,449	32,861	33,747	34,371	34,732
Other services		27,174	27,404	27,381	27,275	27,765	27,864	27,765	27,447	28,431	28,702
Public administration		64,101	63,272	62,533	61,704	61,995	62,193	63,435	63,838	64,443	65,378
Total real gross domestic product ($ millions)[b]		38,922	39,837	40,215	39,602	39,288	39,461	39,589	39,986	40,929	41,360

[a]United States Census Bureau, American Community Survey, 5-year estimates; [b]United States Bureau of Economic Analysis; [c]United States Bureau of Labor Statistics, Local Area Unemployment Statistics

Table 1. Jefferson County Existing Conditions Review (continued)

Firms by employment size in 2021	
Fewer than 5 employees	33,808
5 to 9 employees	13,454
10 to 19 employees	2,986
20 to 49 employees	2,170
50 to 99 employees	912
100 to 249 employees	467
250 to 499 employees	108
500 to 999 employees	42
1,000 to 4,999 employees	22
5,000 to 9,999 employees	3
10,000 employees or more	1
Not declared	1,256
All establishments	**55,229**

Source: Dun & Bradstreet and Center for Business and Economic Research, The University of Alabama

Average commute time and distance were up in 2019 and early 2020 (pre-COVID lockdowns), suggesting that congestion, which can impede the mobility of workers and goods and delay or slow economic development, is worsening. The BNB would definitely help to reduce congestion on major Birmingham roadways that workers currently use for their commute by facilitating the flow of through traffic and easing congestion at the I-65 and I-20/59 interchange. Figures 2 and 3 show the Jefferson County labor shed without and with the BNB corridor, respectively. Together with Figure 1, the maps show that the northern part of the county where the BNB will go is very sparsely populated and has very low road density. It is thus reasonable to infer that the BNB will greatly facilitate development for northern Jefferson County, similar to what I-459 to the south has done. Indeed, the BNB seems to have greater development potential because of its larger area of influence.

Table 2. Jefferson County Commuting Patterns

Year	Inflow	Outflow	Live & Work in Jefferson
2010	146,245	64,320	200,633
2018	165,390	76,406	207,975

	Percent of Workers				
Average commute time (one-way)	**2015**	**2016**	**2017**	**2018**	**2019/2020**
Less than 20 minutes	47.9	55.6	45.0	52.5	45.3
20 to 40 minutes	33.7	28.8	36.4	30.7	35.3
40 minutes to an hour	10.4	7.8	6.0	6.4	6.5
More than an hour	2.5	0.7	4.0	1.0	2.4
Average commute distance (one-way)	**2015**	**2016**	**2017**	**2018**	**2019/2020**
Less than 10 miles	41.3	43.7	39.6	40.4	39.5
10 to 25 miles	38.1	38.0	38.1	41.5	42.1
25 to 45 miles	12.3	12.0	11.5	10.4	9.9
More than 45 miles	3.9	0.7	5.8	3.3	5.9

Note: Rounding errors may be present.
Source: U.S. Census Bureau; Alabama Department of Labor; and Center for Business and Economic Research, The University of Alabama.

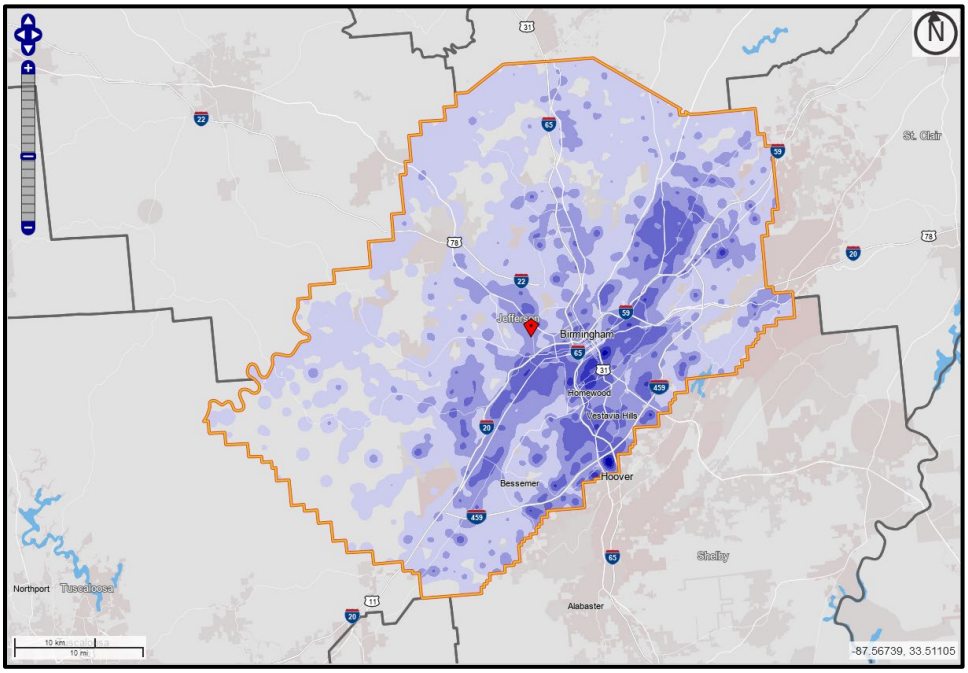


Figure 2. Jefferson County Labor Shed

Note: Density increases with blue shade; the darkest blue areas indicate the highest density areas.
Source: U.S. Census Bureau and Center for Business and Economic Research, The University of Alabama.

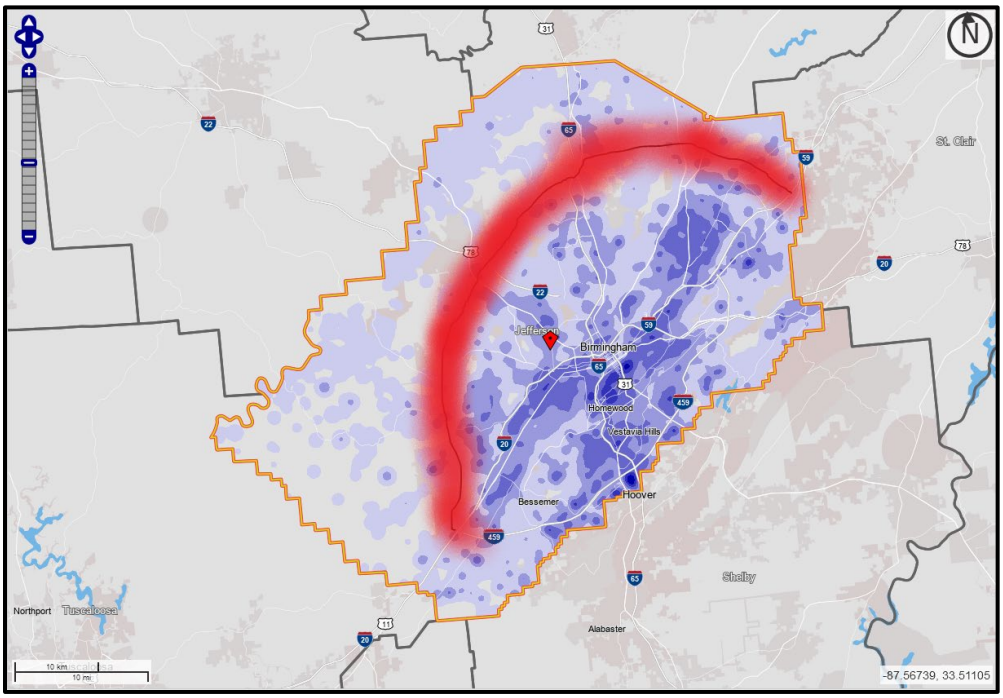


Figure 3. Jefferson County Labor Shed with Birmingham Northern Beltline Corridor

Note: Density increases with blue shade; the darkest blue areas indicate the highest density areas. Birmingham Northern Beltline and corridor in red.
Source: U.S. Census Bureau and Center for Business and Economic Research, The University of Alabama.

Birmingham Northern Beltline Corridor

Table 3 shows selected 2019 data on the BNB corridor using estimates derived from the American Community Survey. The corridor is contained within 102 block groups with a total population of 165,843 and 61,112 households. Three corridor block groups cross into Blount County and four into St. Clair County; the remaining 95 had a 22.4 percent share of the Jefferson County population in 2019 that is projected to get to 25.2 percent by 2050. White people were 68.8 percent of the corridor block groups' population; black people and those of all other races made up 27.8 and 3.5 percent, respectively. The more racially mixed an area, the higher its diversity index.[1] Many block groups in the corridor have significant racial diversity. The 2019 poverty threshold for a family of three is $21,330 and the average household size and poverty level in Jefferson County were 2.47 persons and 16.0 percent, respectively. About 10.0 percent of households in the BNB corridor had an income below $15,000. There were 13 corridor block groups with 0.0 percent estimated unemployment; the remainder had unemployment rates ranging from 0.5 percent to 34.0 percent. Median household income ranged from $23,889 to $116,417. A very mixed relationship exists between median household income and the unemployment rate; some block groups with low unemployment have low median household income and others with high unemployment have relatively high median household income. The block group with the highest unemployment rate had a median household income of $68,490. The block group with the lowest median household income had 0.0 percent unemployment and 16.7 percent of its households earning below $15,000.

[1] The diversity index reports the percentage of times two randomly selected people would differ by race/ethnicity. The index is calculated as 1 minus the sum of the squared shares of each race in the population, converted into a percent. The diversity indices in Table 3 are determined from a more detailed race breakdown than shown.

Table 3. BNB Corridor Selected Data, 2019

Tract		Block Group	Total Population	White Alone	Black Alone	Other Race	Diversity Index	Households	Unemployment	Median Household Income	Households with Income below $15,000	
											Number	Percent
Census Tract	100.01	1	1,651	712	939	0	49.1	731	2.9	$33,475	94	12.9
Census Tract	100.01	2	1,741	1,216	441	84	44.6	614	7.5	$43,333	57	9.3
Census Tract	100.01	3	437	419	18	0	7.9	215	4.1	$47,986	33	15.3
Census Tract	100.01	4	1,111	306	802	3	40.3	329	0.0	$42,026	14	4.3
Census Tract	100.02	1	1,118	926	135	57	29.7	409	14.7	$58,698	23	5.6
Census Tract	100.02	2	828	261	552	15	45.6	330	12.6	$51,000	54	16.4
Census Tract	100.02	3	1,809	1194	597	18	45.5	669	0.6	$53,792	29	4.3
Census Tract	100.02	4	651	401	250	0	47.3	263	3.4	$38,969	69	26.2
Census Tract	102	1	789	157	632	0	31.9	387	7.4	$36,458	98	25.3
Census Tract	102	2	1,333	477	400	456	66.5	301	23.7	$38,565	38	12.6
Census Tract	104.01	3	428	138	268	22	50.1	240	7.7	-	74	30.8
Census Tract	104.01	4	916	49	843	24	14.9	271	10.4	-	103	38.0
Census Tract	104.02	1	2,478	389	1942	147	35.8	778	7.3	$58,864	86	11.1
Census Tract	111.07	1	4,983	4,580	341	62	15.0	1,568	6.0	$107,966	33	2.1
Census Tract	111.08	2	1,228	900	299	29	40.3	420	4.0	$100,000	32	7.6
Census Tract	111.09	1	1,042	1,006	29	7	6.7	420	5.3	$115,244	22	5.2
Census Tract	111.09	3	2,706	2,477	28	201	15.6	952	3.4	$102,500	39	4.1
Census Tract	111.10	1	1,319	1,220	99	0	13.9	561	3.2	-	89	15.9
Census Tract	111.10	2	1,134	635	499	0	49.3	428	2.6	$98,854	12	2.8
Census Tract	111.10	3	2,975	2,403	521	51	31.7	911	3.8	$89,583	63	6.9
Census Tract	111.11	1	4,833	2,742	1538	553	56.4	1,753	1.3	$85,956	37	2.1
Census Tract	111.11	3	2,611	2,369	65	177	17.2	839	1.8	$116,417	19	2.3
Census Tract	112.05	1	2,142	1368	707	67	48.2	819	0.0	$63,681	53	6.5
Census Tract	112.06	1	1,524	1241	236	47	31.2	641	0.0	$62,596	98	15.3
Census Tract	112.06	2	1,913	1416	497	0	38.5	772	1.9	$86,056	0	0.0
Census Tract	112.06	3	1,969	1,633	312	24	28.7	655	12.8	$63,787	18	2.7
Census Tract	112.08	1	1,899	955	931	13	50.7	645	1.9	$61,914	45	7.0
Census Tract	112.08	2	2,207	1,381	799	27	47.7	825	1.2	$73,168	43	5.2
Census Tract	113.01	1	1,975	1,584	208	183	33.7	721	0.0	$63,672	108	15.0
Census Tract	113.01	2	1,493	1,004	365	124	48.1	514	19.7	$44,310	62	12.1

Table 3. BNB Corridor Selected Data, 2019 (continued)

Tract		Block Group	Total Population	White Alone	Black Alone	Other Race	Diversity Index	Households	Unemployment	Median Household Income	Households with Income below $15,000	
											Number	Percent
Census Tract	113.02	1	3,414	3,230	119	65	10.3	1,223	2.6	$76,542	77	6.3
Census Tract	113.02	2	1,116	880	141	95	35.5	391	1.7	$71,685	27	6.9
Census Tract	113.02	3	2,057	1965	32	60	8.6	767	6.9	$71,213	38	5.0
Census Tract	116	1	593	467	126	0	33.5	263	14.3	$36,528	45	17.1
Census Tract	116	2	2,820	2489	231	100	21.3	989	4.4	$74,922	103	10.4
Census Tract	116	3	243	154	85	4	47.6	159	7.6	$24,861	64	40.3
Census Tract	117.03	1	3,988	3282	457	249	30.6	1,649	1.1	$85,099	107	6.5
Census Tract	117.03	2	1,559	1344	50	165	24.5	688	2.1	$47,273	118	17.2
Census Tract	117.03	4	2,307	1575	732	0	43.3	970	18.9	-	249	25.7
Census Tract	117.04	1	2,902	2,789	71	42	7.6	1,045	1.6	$72,014	91	8.7
Census Tract	117.04	2	1,158	1109	36	13	8.2	425	1.1	$61,094	37	8.7
Census Tract	117.05	1	1,950	1792	158	0	14.9	765	8.5	$87,774	92	12.0
Census Tract	117.05	2	2,326	2,200	0	126	10.2	946	0.0	$50,735	102	10.8
Census Tract	117.05	4	841	839	2	0	0.5	288	3.6	$72,623	17	5.9
Census Tract	117.06	1	2,366	2,279	29	58	7.1	865	8.8	$53,672	96	11.1
Census Tract	120.01	1	1,591	431	1132	28	42.0	758	15.9	$74,063	31	4.1
Census Tract	120.01	2	2,448	1621	646	181	48.6	837	7.2	$59,271	90	10.8
Census Tract	121.03	1	1,113	415	698	0	46.8	443	7.9	$62,112	105	23.7
Census Tract	121.03	2	675	346	329	0	50.0	237	12.1	$56,728	50	21.1
Census Tract	121.03	3	653	517	136	0	33.0	252	23.5	$39,519	46	18.3
Census Tract	121.03	4	667	331	322	14	52.0	275	25.9	$35,208	45	16.4
Census Tract	121.03	5	1,039	225	814	0	33.9	354	2.0	$57,279	26	7.3
Census Tract	121.04	1	1,234	981	253	0	32.6	479	5.7	$52,337	30	6.3
Census Tract	121.04	2	814	251	507	56	51.2	262	9.7	$61,719	25	9.5
Census Tract	121.04	3	398	128	270	0	43.6	160	6.0	$24,000	47	29.4
Census Tract	123.02	1	2,704	2,285	303	116	27.2	975	9.3	$62,098	71	7.3
Census Tract	123.02	2	1,322	1,164	93	65	21.7	443	34.0	$68,490	58	13.1
Census Tract	123.04	1	733	498	228	7	44.2	271	14.3	$57,774	9	3.3
Census Tract	123.04	2	1,723	746	929	48	52.1	630	0.0	$81,000	53	8.4

Table 3. BNB Corridor Selected Data, 2019 (continued)

Tract		Block Group	Total Population	White Alone	Black Alone	Other Race	Diversity Index	Households	Unemployment	Median Household Income	Households with Income below $15,000	
											Number	Percent
Census Tract	123.05	1	574	0	574	0	0.0	217	0.0	$90,565	0	0.0
Census Tract	123.05	2	2,761	1222	1,539	0	49.3	985	5.9	$75,822	71	7.2
Census Tract	123.05	3	881	490	391	0	49.4	304	0.0	$63,649	0	0.0
Census Tract	123.05	4	2,243	447	1,780	16	33.0	863	11.1	$64,023	12	1.4
Census Tract	123.05	5	975	314	661	0	43.7	444	0.0	$64,792	0	0.0
Census Tract	124.02	3	798	383	415	0	49.9	276	1.8	$54,464	46	16.7
Census Tract	124.03	1	272	119	89	64	64.6	132	0.0	$23,889	22	16.7
Census Tract	124.03	2	1,437	575	749	113	56.2	463	11.9	$51,023	70	15.1
Census Tract	124.03	3	455	280	175	0	47.3	172	14.3	$77,222	0	0.0
Census Tract	124.03	4	1,047	722	308	17	43.8	385	0.5	$55,917	30	7.8
Census Tract	125	2	1,254	505	732	17	49.7	462	15.8	$32,727	154	33.3
Census Tract	125	3	1,338	888	408	42	46.6	468	5.1	$54,167	41	8.8
Census Tract	125	4	919	723	55	141	35.4	349	8.7	$32,379	66	18.9
Census Tract	138.01	1	646	307	264	75	59.4	209	9.9	$25,363	61	29.2
Census Tract	138.01	3	975	0	946	29	5.8	405	11.8	$29,076	126	31.1
Census Tract	139.01	1	1,525	411	1,103	11	40.4	593	11.8	$42,019	135	22.8
Census Tract	139.02	1	1,403	533	863	7	47.7	488	7.4	$57,576	46	9.4
Census Tract	139.02	2	802	484	307	11	48.9	311	4.7	$60,912	40	12.9
Census Tract	140.01	1	1,202	1,169	0	33	5.3	539	8.8	$52,031	76	14.1
Census Tract	140.01	2	736	714	0	22	5.8	279	7.2	$57,361	7	2.5
Census Tract	140.01	3	1,188	1,095	23	70	14.7	423	3.8	$66,595	26	6.1
Census Tract	140.01	4	555	529	0	26	8.9	195	7.2	$88,750	18	9.2
Census Tract	140.02	1	2,102	1,666	436	0	32.9	661	6.6	$86,620	47	7.1
Census Tract	140.02	2	1,579	1,226	328	25	35.4	534	4.8	$66,111	9	1.7
Census Tract	141.02	1	1,496	1,398	87	11	12.3	532	5.5	$44,022	41	7.7
Census Tract	141.02	2	1,039	845	177	17	30.9	397	0.0	$85,179	37	9.3
Census Tract	141.04	1	2,091	1,354	693	44	47.0	671	0.9	$67,936	30	4.5
Census Tract	141.04	2	1,146	181	863	102	40.0	647	23.8	$31,312	165	25.5

Table 3. BNB Corridor Selected Data, 2019 (continued)

Tract		Block Group	Total Population	White Alone	Black Alone	Other Race	Diversity Index	Households	Unemployment	Median Household Income	Households with Income below $15,000	
											Number	Percent
Census Tract	141.05	1	3,630	951	2,636	43	40.4	1,482	10.4	$66,535	70	4.7
Census Tract	141.05	2	494	46	448	0	16.9	182	14.8	$24,143	37	20.3
Census Tract	141.05	3	645	133	456	56	45.0	173	15.2	$66,375	40	23.1
Census Tract	142.03	1	4,545	2,308	1,783	454	57.8	1,601	3.6	$80,459	143	8.9
Census Tract	142.03	4	2,784	1,833	951	0	45.0	1,239	9.7	$60,037	78	6.3
Census Tract	143.01	1	1,450	774	666	10	50.4	580	10.5	$40,435	116	20.0
Census Tract	143.01	2	372	292	67	13	35.0	199	3.5	$34,563	50	25.1
Census Tract	143.01	3	688	599	81	8	22.8	421	0.0	$26,068	59	14.0
Census Tract	401.03	1	4,083	3,559	447	77	22.8	1,337	2.5	$71,161	90	6.7
Census Tract	405.01	2	2,778	2,778	0	0	0.0	785	2.3	$88,653	0	0.0
Census Tract	405.01	3	627	454	173	0	40.0	317	0.0	-	38	12.0
Census Tract	405.01	4	4,165	3,848	84	233	14.3	1,545	1.8	$69,625	90	5.8
Census Tract	507	3	2,415	2,362	0	53	4.3	716	3.4	$55,993	154	21.5
Census Tract	507	4	1,719	1,715	0	4	0.5	594	3.9	$38,750	165	27.8
Total		**102**	**165,843**	**114,054**	**46,040**	**5,749**		**61,112**			**6,123**	**10.0**

Note: A "-" in place of data means that the sample size was not large enough to publish the results.
Source: U.S. Census Bureau, American Community Survey, 2019 5-Year Estimates, and Center for Business and Economic Research, The University of Alabama.

I-459 Corridor

Table 4 shows selected data from the 2019 American Community Survey 5-year estimates for block groups that are in the I-459 corridor, the six-mile-wide band (three miles on each side of the highway). The corridor contains 376 block groups with total population of 561,245 and 220,735 households. The corridor includes two block groups in Tuscaloosa County, two block groups in St. Clair County, 64 block groups in Shelby County, and 308 block groups in Jefferson County. The 376 corridor block groups make up approximately 50.0% of Birmingham-Hoover metropolitan area's total population. White people accounted for 62.5 percent of the corridor block groups' population; black people and all other races made up 31.1 percent and 6.4 percent of the total population, respectively. Many block groups in the corridor have significant racial diversity, and the index ranged from 0.0 to 66.5, with an average index of 30.3. About 10.8 percent of households in the I-459 corridor had an income below $15,000; the 2019 poverty threshold for a family of three is $21,330. There were 75 corridor block groups with 0.0 percent estimated unemployment; the remainder had unemployment rates ranging from 0.2 percent to 37.3 percent in 2019. Median household income for the block groups ranged from $11,588 to $239,196. A very mixed relationship exists between median household income and the unemployment rate; some block groups with low unemployment have low median household income and others with high unemployment have relatively high median household income. The block group with the highest unemployment rate had a median household income of $11,588. The block groups with the lowest median household income had a 37.3 percent unemployment rate and 66.4 percent of their households had an income below $15,000.

Table 4. I-459 Corridor Selected Data, 2019 ACS 5-year estimates

	Tract	Block Group	Total Population	White Alone	Black Alone	Other Race	Diversity Index	Households	Unemployment	Median Household Income	Households with Income below $15,000	
											Number	Percent
Census Tract	001.00	1	598	26	466	106	35.9	200	14.4	$30,750	49	24.5
Census Tract	001.00	2	692	235	457	0	44.9	302	15.6	$37,813	79	26.2
Census Tract	001.00	3	433	30	394	9	16.7	177	14.7	$33,894	10	5.6
Census Tract	001.00	4	691	95	562	34	31.7	176	26.2	$31,451	26	14.8
Census Tract	001.00	5	713	93	503	117	45.8	240	13.9	$25,455	93	38.8
Census Tract	003.00	1	909	35	850	24	12.3	464	17.0	$20,701	175	37.7
Census Tract	003.00	2	505	145	360	0	40.9	151	0.0	-	28	18.5
Census Tract	003.00	3	405	75	209	121	61.0	142	10.1	-	59	41.5
Census Tract	004.00	1	673	13	660	0	3.8	256	2.5	$25,208	56	21.9
Census Tract	004.00	2	1,102	100	959	43	23.3	336	24.5	$29,082	65	19.3
Census Tract	004.00	5	500	75	425	0	25.5	195	6.0	$34,213	0	0.0
Census Tract	005.00	1	752	40	712	0	10.1	280	12.6	$17,315	115	41.1
Census Tract	005.00	2	1,152	0	1,152	0	0.0	405	37.3	$11,588	269	66.4
Census Tract	005.00	3	389	0	389	0	0.0	138	23.8	-	47	34.1
Census Tract	005.00	4	729	23	706	0	6.1	440	0.0	$22,283	136	30.9
Census Tract	007.00	1	495	0	490	5	2.0	240	13.4	$31,750	39	16.3
Census Tract	016.00	2	942	153	789	0	27.2	319	8.8	$61,202	39	12.2
Census Tract	016.00	4	1,067	0	1,067	0	0.0	414	3.6	$21,667	174	42.0
Census Tract	019.02	1	770	85	653	32	26.7	303	12.6	$17,396	140	46.2
Census Tract	019.02	2	384	65	277	42	43.9	185	0.0	$13,625	98	53.0
Census Tract	019.02	3	724	64	472	188	50.0	318	14.7	$25,000	58	18.2
Census Tract	020.00	1	1,378	207	1,143	28	28.9	574	8.6	$40,213	135	23.5
Census Tract	020.00	2	1,602	750	842	10	50.5	463	12.0	$23,259	163	35.2
Census Tract	020.00	3	1,100	399	619	82	54.6	382	20.2	-	46	12.0
Census Tract	021.00	1	1,284	370	914	0	41.0	630	5.5	$21,842	276	43.8
Census Tract	021.00	2	916	355	561	0	47.5	420	10.3	$31,919	135	32.1
Census Tract	021.00	3	477	26	451	0	10.3	236	12.5	$17,167	79	33.5

Table 4. I-459 Corridor Selected Data, 2019 ACS 5-year estimates (continued)

	Tract	Block Group	Total Population	White Alone	Black Alone	Other Races	Diversity Index	Households	Unemployment	Median Household Income	Households with Income below $15,000	
											Number	Percent
Census Tract	022.00	1	1,272	155	1,034	83	32.0	473	18.9	$31,891	106	22.4
Census Tract	022.00	2	1,329	10	1,319	0	1.5	467	23.2	$34,390	87	18.6
Census Tract	023.03	1	772	48	599	125	36.8	297	24.5	-	168	56.6
Census Tract	023.03	2	871	0	871	0	0.0	290	34.0	$46,500	35	12.1
Census Tract	023.03	3	582	104	478	0	29.4	346	0.0	$22,203	114	32.9
Census Tract	023.03	4	861	11	850	0	2.5	433	16.9	-	208	48.0
Census Tract	023.05	1	1,967	974	932	61	52.9	845	5.4	$56,935	92	10.9
Census Tract	023.05	2	1,394	1,209	43	142	23.6	661	0.0	$76,550	43	6.5
Census Tract	023.06	1	803	792	11	0	2.7	419	0.0	$81,490	34	8.1
Census Tract	023.06	2	1,977	1,530	419	28	35.6	866	6.5	$88,021	52	6.0
Census Tract	023.06	3	1,084	822	198	64	38.8	591	5.3	$80,260	29	4.9
Census Tract	024.00	1	1,254	63	1,108	83	21.2	357	22.6	$22,904	99	27.7
Census Tract	024.00	2	521	293	190	38	54.5	161	6.3	$63,309	42	26.1
Census Tract	024.00	3	570	177	381	12	45.6	284	1.7	-	123	43.3
Census Tract	024.00	4	477	316	143	18	47.0	301	0.0	$41,094	71	23.6
Census Tract	024.00	5	511	250	220	41	56.9	247	11	$29,977	19	7.7
Census Tract	024.00	6	553	369	170	14	46.0	395	11.7	$27,917	123	31.1
Census Tract	027.00	1	2,496	1,461	910	125	52.2	1193	10.1	$54,139	360	30.2
Census Tract	027.00	2	644	31	613	0	9.2	402	27.0	$14,375	209	52.0
Census Tract	027.00	3	490	76	400	14	30.9	363	0.0	$14,583	193	53.2
Census Tract	045.00	1	3,915	2,181	1,009	725	58.9	774	12.6	$25,104	322	41.6
Census Tract	045.00	2	1,262	123	1,132	7	18.6	523	25.6	-	332	63.5
Census Tract	047.01	1	756	478	207	71	51.6	396	3.7	$44,570	28	7.1
Census Tract	047.01	2	673	483	179	11	41.4	417	3.5	$58,304	51	12.2
Census Tract	047.01	3	1,340	1,144	138	58	25.9	846	2.0	$35,000	101	11.9
Census Tract	047.01	4	938	883	28	27	11.2	422	0.0	$104,167	0	0.0
Census Tract	047.02	1	667	659	0	8	2.4	306	0.0	$117,778	22	7.2

Table 4. I-459 Corridor Selected Data, 2019 ACS 5-year estimates (continued)

	Tract	Block Group	Total Population	White Alone	Black Alone	Other Races	Diversity Index	Households	Unemployment	Median Household Income	Households with Income below $15,000	
											Number	Percent
Census Tract	047.02	2	1,741	1,660	32	49	9.0	819	1.0	$131,161	45	5.5
Census Tract	047.02	3	1,250	958	262	30	36.8	836	5.0	$47,692	97	11.6
Census Tract	048.00	1	1,071	1,042	6	23	5.3	582	4.5	$66,964	54	9.3
Census Tract	048.00	2	990	923	28	39	12.8	637	0.0	$55,324	130	20.4
Census Tract	049.01	1	421	337	36	48	33.9	286	3.2	$43,750	39	13.6
Census Tract	049.01	2	721	508	166	47	44.6	507	2.2	$30,337	125	24.7
Census Tract	049.02	1	1,642	1,115	303	224	48.6	839	4.7	$36,625	124	14.8
Census Tract	049.02	2	1,074	586	427	61	54.1	487	13.9	$40,375	96	19.7
Census Tract	049.02	3	875	704	123	48	33.0	456	0.0	-	153	33.6
Census Tract	050.00	1	1,899	1,294	255	350	48.4	935	2.5	$50,361	177	18.9
Census Tract	050.00	2	806	565	108	133	46.3	342	13.0	$37,583	17	5.0
Census Tract	050.00	3	836	582	219	35	44.5	385	8.3	$38,598	63	16.4
Census Tract	051.04	1	1,286	167	1,094	25	25.9	823	0.0	$35,536	59	7.2
Census Tract	051.04	2	1,041	360	471	210	63.5	459	5.3	$46,477	0	0.0
Census Tract	051.04	3	805	282	447	76	56.0	422	3.7	$26,250	120	28.4
Census Tract	053.02	1	1,519	708	750	61	53.7	595	4.8	$75,625	27	4.5
Census Tract	053.02	2	1,674	719	928	27	50.8	699	7.4	$65,304	33	4.7
Census Tract	053.02	3	816	581	115	120	45.2	310	0.0	$66,000	11	3.5
Census Tract	055.00	2	1,195	179	936	80	36.0	484	12.0	$17,917	227	46.9
Census Tract	056.00	1	1,213	1,212	1	0	0.2	655	0.0	$64,156	32	4.9
Census Tract	056.00	2	1,635	1,247	57	331	37.6	738	6.8	$41,455	33	4.5
Census Tract	056.00	3	849	849	0	0	0.0	401	0.0	$100,481	26	6.5
Census Tract	056.00	4	1,090	836	254	0	35.7	512	0.0	$80,224	26	5.1
Census Tract	058.00	1	1,126	80	879	167	36.4	429	8.6	$30,032	16	3.7
Census Tract	058.00	2	1,046	752	179	115	44.2	670	0.0	$53,683	108	16.1
Census Tract	058.00	3	1,753	312	1,225	216	46.5	858	1.5	$32,004	85	9.9
Census Tract	059.03	1	2,187	1,042	978	167	56.7	612	4.5	$92,649	0	0.0

Table 4. I-459 Corridor Selected Data, 2019 ACS 5-year estimates (continued)

	Tract	Block Group	Total Population	White Alone	Black Alone	Other Races	Diversity Index	Households	Unemployment	Median Household Income	Households with Income below $15,000	
											Number	Percent
Census Tract	059.03	2	1,940	476	1,354	110	44.9	784	24.5	$30,000	213	27.2
Census Tract	059.03	3	1,991	570	1,373	48	44.2	811	0.0	$41,875	112	13.8
Census Tract	059.05	1	1,213	277	936	0	35.2	517	6.4	$40,679	83	16.1
Census Tract	059.05	2	2,333	382	1,900	51	30.9	762	4.2	$51,000	56	7.3
Census Tract	059.05	3	2,741	485	2,162	94	34.5	867	7.7	$48,906	160	18.5
Census Tract	059.07	1	2,409	539	1,853	17	35.8	829	5.1	$67,607	40	4.8
Census Tract	059.08	1	1,160	231	929	0	31.9	448	18.4	$35,259	73	16.3
Census Tract	059.08	2	1,430	280	1,150	0	31.5	672	4.4	$25,938	151	22.5
Census Tract	059.08	3	1,112	160	924	28	28.8	456	9.3	$35,526	51	11.2
Census Tract	059.09	1	2,691	296	2,366	29	21.5	987	12.4	$54,214	86	8.7
Census Tract	059.10	1	2,019	59	1,864	96	14.5	610	9.6	$59,297	93	15.2
Census Tract	059.10	2	975	101	842	32	24.2	399	9.1	$57,344	48	12.0
Census Tract	059.10	3	1,626	98	1,502	26	14.3	638	4.3	$60,743	38	6.0
Census Tract	059.10	4	1,218	117	1,101	0	17.4	538	4.9	$36,968	111	20.6
Census Tract	100.02	1	1,118	926	135	57	29.7	409	14.7	$58,698	23	5.6
Census Tract	100.02	2	828	261	552	15	45.6	330	12.6	$51,000	54	16.4
Census Tract	100.02	3	1,809	1,194	597	18	45.5	669	0.6	$53,792	29	4.3
Census Tract	100.02	4	651	401	250	0	47.3	263	3.4	$38,969	69	26.2
Census Tract	101.00	1	310	22	241	47	36.8	146	0.0	-	132	90.4
Census Tract	101.00	2	424	7	417	0	3.2	147	10.6	$53,988	13	8.8
Census Tract	101.00	3	615	16	577	22	11.8	349	28.7	$18,177	143	41.0
Census Tract	102.00	1	789	157	632	0	31.9	387	7.4	$36,458	98	25.3
Census Tract	102.00	2	1,333	477	400	456	66.5	301	23.7	$38,565	38	12.6
Census Tract	102.00	3	691	0	691	0	0.0	220	32.4	$26,512	19	8.6
Census Tract	103.01	1	725	222	476	27	47.4	382	4.7	$22,083	136	35.6
Census Tract	103.01	2	1,285	213	957	115	41.0	549	7.3	$45,188	97	17.7
Census Tract	103.01	3	846	95	751	0	19.9	269	8.7	$35,625	40	14.9

Table 4. I-459 Corridor Selected Data, 2019 ACS 5-year estimates (continued)

	Tract	Block Group	Total Population	White Alone	Black Alone	Other Races	Diversity Index	Households	Unemployment	Median Household Income	Households with Income below $15,000	
											Number	Percent
Census Tract	103.02	1	353	0	353	0	0.0	110	4.1	$60,833	9	8.2
Census Tract	103.02	2	2,129	34	1,970	125	14.0	903	11.8	$17,450	427	47.3
Census Tract	103.02	3	1,337	106	1,215	16	16.8	547	21.4	-	179	32.7
Census Tract	104.01	1	739	179	560	0	36.7	227	32.1	$45,375	72	31.7
Census Tract	104.01	2	954	97	696	161	42.9	276	17.2	$24,792	38	13.8
Census Tract	104.01	3	428	138	268	22	50.1	240	7.7	-	74	30.8
Census Tract	104.01	4	916	49	843	24	14.9	271	10.4	-	103	38.0
Census Tract	104.01	5	805	246	516	43	49.3	283	11.8	$40,938	68	24.0
Census Tract	104.02	1	2,478	389	1,942	147	35.8	778	7.3	$58,864	86	11.1
Census Tract	105.00	2	199	80	119	0	48.1	123	5.3	-	33	26.8
Census Tract	105.00	3	808	151	556	101	47.6	262	6.4	$32,917	48	18.3
Census Tract	107.01	1	520	407	91	22	35.5	234	1.7	$92,750	5	2.1
Census Tract	107.01	2	988	581	251	156	56.5	379	1.7	$70,521	16	4.2
Census Tract	107.02	1	1,787	1,704	8	75	8.9	830	0.0	$119,405	48	5.8
Census Tract	107.02	2	2,066	1,772	190	104	25.3	895	0.0	$56,625	136	15.2
Census Tract	107.02	3	1,186	1,095	-	91	14.2	381	4	$170,170	-	-
Census Tract	107.03	1	1,723	1,539	112	72	19.6	595	2.5	$151,875	25	4.2
Census Tract	107.03	2	742	727	0	15	4.0	267	0.0	$155,625	5	1.9
Census Tract	107.04	1	3,208	2,324	670	214	42.7	418	6.5	$99,397	26	6.2
Census Tract	107.04	2	1,801	1,408	301	92	35.8	794	3.8	$58,167	62	7.8
Census Tract	107.05	1	3,230	3,132	14	84	5.9	1160	1.6	$129,020	29	2.5
Census Tract	107.05	2	552	349	27	176	49.6	245	0.0	$68,021	37	15.1
Census Tract	107.06	1	1,741	1,075	423	243	54.0	704	1.8	$64,505	16	2.3
Census Tract	107.06	2	729	64	665	0	16.0	342	4.2	-	64	18.7
Census Tract	107.06	3	1,554	899	248	407	57.1	930	1.5	$49,167	196	21.1
Census Tract	107.06	4	1,023	935	21	67	16.0	369	0.0	$112,944	16	4.3
Census Tract	108.01	1	2,530	2,379	77	74	11.4	991	3.7	$116,458	157	15.8

Table 4. I-459 Corridor Selected Data, 2019 ACS 5-year estimates (continued)

	Tract	Block Group	Total Population	White Alone	Black Alone	Other Races	Diversity Index	Households	Unemployment	Median Household Income	Households with Income below $15,000	
											Number	Percent
Census Tract	108.01	2	1,598	1,595	3	0	0.4	455	0.0	$239,196	14	3.1
Census Tract	108.01	3	1,213	1,111	51	51	15.8	507	0.0	$116,518	0	0.0
Census Tract	108.01	4	332	332	0	0	0.0	148	0.0	$148,667	15	10.1
Census Tract	108.01	5	1,378	1,103	147	128	33.9	672	0.0	$95,156	0	0.0
Census Tract	108.02	1	1,331	1,331	0	0	0.0	438	1.7	$154,839	22	5.0
Census Tract	108.02	2	1,727	1,698	18	11	3.3	646	0.0	$214,375	48	7.4
Census Tract	108.03	1	574	509	42	23	20.7	316	0.0	-	24	7.6
Census Tract	108.03	2	753	339	398	16	51.8	257	16.0	$72,321	19	7.4
Census Tract	108.03	3	1,897	552	1,306	39	44.1	851	0.0	$70,120	42	4.9
Census Tract	108.03	4	795	795	0	0	0.0	317	0.0	$181,750	19	6.0
Census Tract	108.03	5	2,263	1,463	769	31	46.6	803	6.3	$104,161	18	2.2
Census Tract	108.04	1	3,014	2,919	23	72	6.1	1070	0.0	$163,519	33	3.1
Census Tract	108.05	1	2,831	2,807	0	24	1.7	922	3.0	$168,750	23	2.5
Census Tract	108.05	2	1,580	1,204	195	181	39.1	646	6.9	$113,750	36	5.6
Census Tract	108.05	3	519	470	49	0	17.1	353	4.7	$50,729	31	8.8
Census Tract	108.05	4	2,285	2,210	0	75	6.3	803	2.8	$151,917	26	3.2
Census Tract	109.00	1	546	76	470	0	24.0	161	6.4	$43,843	12	7.5
Census Tract	109.00	2	574	182	307	85	59.1	186	12.9	$32,778	51	27.4
Census Tract	109.00	3	296	85	211	0	40.9	179	0.0	$29,958	9	5.0
Census Tract	110.01	1	299	299	0	0	0.0	119	12.8	$50,481	17	14.3
Census Tract	110.01	2	1,633	1,251	382	0	35.8	598	3.6	$66,875	0	0.0
Census Tract	110.01	3	2,230	2,002	209	19	18.5	825	2.2	$101,509	28	3.4
Census Tract	110.01	4	789	673	107	9	25.4	333	6.3	$46,685	41	12.3
Census Tract	110.01	5	972	936	0	36	7.1	406	5.2	$56,389	63	15.5
Census Tract	110.02	1	1,419	508	863	48	50.1	536	1.9	$36,953	80	14.9
Census Tract	110.02	2	387	172	212	3	50.2	166	3.3	$35,288	11	6.6
Census Tract	111.04	1	1,808	466	1,245	97	45.7	606	11.4	$55,139	53	8.7

Table 4. I-459 Corridor Selected Data, 2019 ACS 5-year estimates (continued)

	Tract	Block Group	Total Population	White Alone	Black Alone	Other Races	Diversity Index	Households	Unemployment	Median Household Income	Households with Income below $15,000	
											Number	Percent
Census Tract	111.04	2	1,198	553	634	11	50.7	587	11.8	$40,941	73	12.4
Census Tract	111.04	3	1,188	123	836	229	45.7	367	3.1	$97,917	19	5.2
Census Tract	111.04	4	722	512	210	0	41.3	281	18.6	$44,250	56	19.9
Census Tract	111.04	5	712	273	391	48	54.7	375	0.0	$31,827	102	27.2
Census Tract	111.04	6	2,193	920	1,171	102	53.7	957	9.9	$58,438	47	4.9
Census Tract	111.07	1	4,983	4,580	341	62	15.0	1568	6.0	$107,966	33	2.1
Census Tract	111.07	2	391	391	0	0	0.0	189	0.0	$120,313	0	0.0
Census Tract	111.07	3	2,127	1,905	147	75	19.2	647	3.8	$95,685	11	1.7
Census Tract	111.07	4	3,377	2,951	349	77	22.5	1192	2.8	$70,948	106	8.9
Census Tract	111.07	5	871	730	141	0	27.1	370	10.5	$76,136	35	9.5
Census Tract	111.08	1	2,188	1,984	55	149	17.3	782	0.0	$102,986	34	4.3
Census Tract	111.08	2	1,228	900	299	29	40.3	420	4.0	$100,000	32	7.6
Census Tract	111.08	3	614	562	0	52	15.5	275	0.0	$54,028	8	2.9
Census Tract	111.08	4	823	361	351	111	60.8	469	6.9	$59,351	65	13.9
Census Tract	111.09	1	1,042	1,006	29	7	6.7	420	5.3	$115,244	22	5.2
Census Tract	111.09	2	495	489	4	2	2.4	217	2.4	$62,679	13	6.0
Census Tract	111.09	3	2,706	2,477	28	201	15.6	952	3.4	$102,500	39	4.1
Census Tract	111.11	1	4,833	2,742	1,538	553	56.4	1753	1.3	$85,956	37	2.1
Census Tract	111.11	2	1,482	887	537	58	50.9	460	0.0	-	5	1.1
Census Tract	112.05	1	2,142	1,368	707	67	48.2	819	0.0	$63,681	53	6.5
Census Tract	112.07	1	1,936	308	1,517	111	35.7	832	4.1	$50,741	105	12.6
Census Tract	112.07	2	3,539	510	2,745	284	37.1	1043	11.0	$51,483	153	14.7
Census Tract	112.08	1	1,899	955	931	13	50.7	645	1.9	$61,914	45	7.0
Census Tract	112.08	2	2,207	1,381	799	27	47.7	825	1.2	$73,168	43	5.2
Census Tract	112.09	1	2,497	671	1,581	245	51.7	829	15.3	-	322	38.8
Census Tract	112.09	2	1,066	214	852	0	32.1	402	8.1	$52,000	48	11.9
Census Tract	112.10	1	2,937	647	2,244	46	36.7	1139	17.7	$23,194	361	31.7

Table 4. I-459 Corridor Selected Data, 2019 ACS 5-year estimates (continued)

	Tract	Block Group	Total Population	White Alone	Black Alone	Other Races	Diversity Index	Households	Unemployment	Median Household Income	Households with Income below $15,000	
											Number	Percent
Census Tract	112.10	2	961	780	50	131	32.0	354	8.0	$53,883	57	16.1
Census Tract	118.02	1	792	499	293	0	46.6	254	0.0	$47,031	0	0.0
Census Tract	118.02	2	901	488	379	34	52.8	462	19.5	$52,950	34	7.4
Census Tract	118.02	3	1,966	242	1,724	0	21.6	773	15.0	$18,558	195	25.2
Census Tract	118.02	4	1,737	790	706	241	60.9	737	4.3	$38,882	102	13.8
Census Tract	118.02	5	1,960	457	1,503	0	35.8	716	7.5	$50,952	62	8.7
Census Tract	118.03	1	1,261	185	982	94	36.6	552	16.8	$45,543	130	23.6
Census Tract	118.03	2	3,221	698	2,515	8	34.3	1123	10.9	$38,590	240	21.4
Census Tract	118.04	1	1,723	135	1,588	0	14.4	617	8.7	$34,301	139	22.5
Census Tract	118.04	2	680	252	422	6	47.7	260	0.0	$66,071	47	18.1
Census Tract	118.04	3	465	114	351	0	37.0	261	9.4	$24,542	68	26.1
Census Tract	119.01	1	2,030	983	599	448	63.0	654	14.6	$32,973	106	16.2
Census Tract	119.01	2	431	311	120	0	40.2	320	14.8	$18,269	137	42.8
Census Tract	119.01	3	95	49	35	11	58.5	58	12.7	-	0	0.0
Census Tract	119.04	1	697	128	569	0	30.0	270	19.0	$46,300	44	16.3
Census Tract	119.04	2	335	4	265	66	33.5	153	10	$43,625	39	25.5
Census Tract	119.04	3	1,294	10	1,240	44	8.1	410	10.3	$57,083	77	18.8
Census Tract	126.02	1	664	652	0	12	3.5	277	4.3	$67,375	21	7.6
Census Tract	126.02	2	457	219	228	10	52.1	258	0.0	$41,900	20	7.8
Census Tract	126.02	3	449	312	137	0	42.4	239	0.0	$37,846	55	23.0
Census Tract	126.02	4	1,324	578	659	87	55.7	497	10.8	$38,802	0	0.0
Census Tract	127.01	1	897	333	544	20	49.4	330	3.3	$53,750	22	6.7
Census Tract	127.01	2	476	443	33	0	12.9	187	6.5	$31,799	29	15.5
Census Tract	127.01	3	1,626	766	318	542	62.9	493	0.0	$63,194	81	16.4
Census Tract	127.01	4	728	641	41	46	21.8	331	2.7	$61,728	26	7.9
Census Tract	127.03	1	3,315	3,090	18	207	12.7	1065	1.0	$213,679	34	3.2
Census Tract	127.03	2	2,940	2,099	534	307	44.6	1212	3.4	$79,688	90	7.4

Table 4. I-459 Corridor Selected Data, 2019 ACS 5-year estimates (continued)

	Tract	Block Group	Total Population	White Alone	Black Alone	Other Races	Diversity Index	Households	Unemployment	Median Household Income	Households with Income below $15,000	
											Number	Percent
Census Tract	127.04	1	2,466	2,135	286	45	23.7	956	3.1	$83,289	40	4.2
Census Tract	128.02	1	538	535	3	0	1.1	228	5.4	$113,194	18	7.9
Census Tract	128.02	2	943	941	2	0	0.4	416	5.3	$67,500	24	5.8
Census Tract	128.02	3	1,024	928	0	96	17.0	490	3.3	$79,423	20	4.1
Census Tract	128.03	1	945	928	0	17	3.5	319	5.5	$109,083	0	0.0
Census Tract	128.03	2	1,729	1,476	156	97	26.0	1156	6.2	$76,513	29	2.5
Census Tract	128.03	3	608	540	0	68	19.9	323	4.0	$56,484	38	11.8
Census Tract	128.03	4	1,189	1,176	13	0	2.2	593	8.0	$90,911	46	7.8
Census Tract	129.05	1	1,794	1,772	8	14	2.4	615	3.0	$134,583	22	3.6
Census Tract	129.05	2	1,867	1,849	0	18	1.9	627	2.0	$197,792	11	1.8
Census Tract	129.05	3	551	507	44	0	14.7	228	5.7	-	24	10.5
Census Tract	129.06	1	1,728	1,479	75	174	25.5	696	0.0	$86,033	29	4.2
Census Tract	129.06	2	1,945	1,921	0	24	2.4	781	1.1	$107,019	33	4.2
Census Tract	129.06	3	1,562	1,179	194	189	40.0	675	2.6	$82,639	18	2.7
Census Tract	129.06	4	1,133	187	624	322	58.9	444	4.5	$39,018	0	0.0
Census Tract	129.07	1	692	628	0	64	16.8	316	0.0	$63,882	0	0.0
Census Tract	129.07	2	2,123	1,219	848	56	51.0	1071	2.7	$57,755	34	3.2
Census Tract	129.07	3	1,996	1,562	364	70	35.3	782	5.0	$69,130	40	5.1
Census Tract	129.08	1	1,461	249	730	482	61.2	363	8.8	$37,111	81	22.3
Census Tract	129.08	2	1,158	629	529	0	49.6	516	5.5	$48,712	24	4.7
Census Tract	129.08	3	1,359	514	319	526	65.2	509	6.9	$73,803	68	13.4
Census Tract	129.08	4	1,538	1,137	339	62	40.3	634	0.0	$52,500	15	2.4
Census Tract	129.10	1	2,155	2,020	49	86	11.9	977	6.4	$104,063	54	5.5
Census Tract	129.10	2	1,779	1,342	327	110	39.3	1015	5.1	$64,099	82	8.1
Census Tract	129.11	1	1,960	1,940	0	20	2.0	600	4.5	$184,063	0	0.0
Census Tract	129.11	2	868	868	0	0	0.0	288	3.7	$238,526	10	3.5
Census Tract	129.11	3	1,214	1,160	0	54	8.5	471	1.7	$115,625	0	0.0

Table 4. I-459 Corridor Selected Data, 2019 ACS 5-year estimates (continued)

	Tract	Block Group	Total Population	White Alone	Black Alone	Other Races	Diversity Index	Households	Unemployment	Median Household Income	Households with Income below $15,000	
											Number	Percent
Census Tract	129.11	4	1,464	1,426	38	0	5.1	465	0.0	$121,875	21	4.5
Census Tract	129.12	1	607	369	227	11	49.0	256	9.1	$41,146	20	7.8
Census Tract	129.12	2	1,342	891	264	187	50.1	744	0.0	$31,705	37	5.0
Census Tract	129.12	3	2,714	549	1,893	272	46.3	1288	5.6	$40,685	180	14.0
Census Tract	129.13	1	2,185	799	896	490	64.8	600	3.6	$46,250	26	4.3
Census Tract	129.13	2	2,213	941	951	321	61.3	948	2.4	$52,083	61	6.4
Census Tract	129.14	1	1,954	1,784	69	101	16.3	982	1.7	$55,313	152	15.5
Census Tract	129.15	1	821	792	29	0	6.8	319	0.0	$81,696	0	0.0
Census Tract	129.15	2	1,250	1,139	22	89	16.4	447	0.0	$137,404	22	4.9
Census Tract	129.15	3	1,321	830	84	407	50.6	630	0.0	$80,441	11	1.7
Census Tract	129.15	4	712	457	117	138	52.3	364	0.0	$46,406	0	0.0
Census Tract	129.15	5	2,096	1,922	126	48	15.5	721	1.4	$123,242	0	0.0
Census Tract	130.02	1	767	6	741	20	6.6	386	0.0	$29,167	76	19.7
Census Tract	130.02	2	992	159	833	0	26.9	421	5.1	$25,063	146	34.7
Census Tract	131.00	1	1,663	0	1,663	0	0.0	745	13.7	$19,679	299	40.1
Census Tract	131.00	2	1,378	0	1,252	126	16.6	424	12.5	$41,034	77	18.2
Census Tract	131.00	4	531	45	486	0	15.5	257	0.0	$40,060	17	6.6
Census Tract	133.00	1	773	177	309	287	65.0	238	12.5	$29,028	75	31.5
Census Tract	133.00	3	1,274	17	1,229	28	6.9	429	20.1	$35,598	110	25.6
Census Tract	138.01	1	646	307	264	75	59.4	209	9.9	$25,363	61	29.2
Census Tract	138.01	2	475	0	475	0	0.0	178	20.9	$31,711	21	11.8
Census Tract	138.01	3	975	0	946	29	5.8	405	11.8	$29,076	126	31.1
Census Tract	140.02	1	2,102	1,666	436	0	32.9	661	6.6	$86,620	47	7.1
Census Tract	140.02	2	1,579	1,226	328	25	35.4	534	4.8	$66,111	9	1.7
Census Tract	141.02	1	1,496	1,398	87	11	12.3	532	5.5	$44,022	41	7.7
Census Tract	141.02	2	1,039	845	177	17	30.9	397	0.0	$85,179	37	9.3
Census Tract	141.04	1	2,091	1,354	693	44	47.0	671	0.9	$67,936	30	4.5

Table 4. I-459 Corridor Selected Data, 2019 ACS 5-year estimates (continued)

	Tract	Block Group	Total Population	White Alone	Black Alone	Other Races	Diversity Index	Households	Unemployment	Median Household Income	Households with Income below $15,000	
											Number	Percent
Census Tract	141.04	2	1,146	181	863	102	40.0	647	23.8	$31,312	165	25.5
Census Tract	141.05	1	3,630	951	2,636	43	40.4	1482	10.4	$66,535	70	4.7
Census Tract	141.05	2	494	46	448	0	16.9	182	14.8	$24,143	37	20.3
Census Tract	141.05	3	645	133	456	56	45.0	173	15.2	$66,375	40	23.1
Census Tract	142.03	1	4,545	2,308	1,783	454	57.8	1601	3.6	$80,459	143	8.9
Census Tract	142.03	2	2,752	2,620	63	69	9.2	1063	2.2	$93,717	19	1.8
Census Tract	142.03	3	3,770	2,146	1,588	36	49.8	1547	0.2	$82,330	34	2.2
Census Tract	142.03	4	2,784	1,833	951	0	45.0	1239	9.7	$60,037	78	6.3
Census Tract	142.04	1	612	601	0	11	3.5	357	13.3	$60,363	0	0.0
Census Tract	142.04	2	1,565	1,311	194	60	28.1	432	2.2	$107,000	0	0.0
Census Tract	142.04	3	2,893	1,909	515	469	50.7	1102	4.7	$100,786	38	3.4
Census Tract	142.04	4	1,539	946	567	26	48.6	627	0.0	$66,448	21	3.3
Census Tract	142.04	5	1,698	1,024	634	40	49.6	607	7.2	$115,764	14	2.3
Census Tract	142.04	6	1,581	1,293	176	112	31.4	537	0.0	$117,880	0	0.0
Census Tract	143.01	1	1,450	774	666	10	50.4	580	10.5	$40,435	116	20.0
Census Tract	143.01	2	372	292	67	13	35.0	199	3	$34,563	50	25.1
Census Tract	143.01	3	688	599	81	8	22.8	421	0.0	$26,068	59	14.0
Census Tract	143.02	1	9,119	4,973	3,368	778	55.9	3849	3.5	$73,897	420	10.9
Census Tract	144.04	1	3,183	2,473	511	199	36.7	1212	5.8	$122,500	58	4.8
Census Tract	144.04	2	1,708	761	397	550	64.4	712	0.0	$65,682	112	15.7
Census Tract	144.04	3	1,288	882	221	185	48.1	517	0.0	$76,016	0	0.0
Census Tract	144.05	1	1,768	967	755	46	51.8	658	7.5	$39,783	118	17.9
Census Tract	144.05	2	2,396	1,884	366	146	35.5	995	1.5	$85,911	28	2.8
Census Tract	144.06	1	1,599	1,378	221	0	23.8	598	3.0	$137,642	27	4.5
Census Tract	144.06	2	1,522	1,149	336	37	38.1	536	0.0	$109,167	0	0.0
Census Tract	144.06	3	800	694	29	77	23.7	293	3.5	$106,953	16	5.5
Census Tract	144.06	4	1,608	1,058	436	114	48.9	553	0.0	$118,472	17	3.1

Table 4. I-459 Corridor Selected Data, 2019 ACS 5-year estimates (continued)

	Tract	Block Group	Total Population	White Alone	Black Alone	Other Races	Diversity Index	Households	Unemployment	Median Household Income	Households with Income below $15,000	
											Number	Percent
Census Tract	144.08	1	1,608	754	548	306	62.8	797	4.3	$53,339	82	10.3
Census Tract	144.08	2	1,681	1,024	508	149	53.0	795	0.7	$54,549	21	2.6
Census Tract	144.09	1	2,167	2,084	29	54	7.4	876	2.9	$93,311	38	4.3
Census Tract	144.09	2	784	740	44	0	10.6	275	8.5	$88,854	26	9.5
Census Tract	144.10	1	3,412	2,550	377	485	40.9	1177	4.3	$151,932	30	2.5
Census Tract	144.10	2	1,798	966	516	316	59.8	836	1.7	$52,128	88	10.5
Census Tract	144.12	1	1,334	1,326	0	8	1.2	505	2.0	$95,380	20	4.0
Census Tract	144.12	2	2,859	2,736	52	71	8.3	980	3.3	$87,750	31	3.2
Census Tract	144.13	1	3,453	1,954	455	1,044	57.1	1267	3.3	$112,731	93	7.3
Census Tract	144.13	2	4,096	3,441	374	281	28.1	1415	5.1	$131,635	53	3.7
Census Tract	144.13	3	2,365	2,336	29	0	2.4	865	1.6	$171,064	0	0.0
Census Tract	401.03	1	4,083	3,559	447	77	22.8	1337	2.5	$71,161	90	6.7
Census Tract	401.04	1	2,083	1,711	240	132	30.8	856	2.6	$60,128	20	2.3
Census Tract	302.11	1	3,192	2,862	58	272	18.8	1084	0.0	$121,667	53	4.9
Census Tract	302.12	1	2,161	1,404	581	176	49.9	1110	1.4	$42,843	208	18.7
Census Tract	302.12	2	1,226	719	396	111	54.4	887	1.2	$44,810	96	10.8
Census Tract	302.13	1	974	753	172	49	36.9	420	0.0	$77,875	10	2.4
Census Tract	302.13	2	1,732	1,415	241	76	31.1	694	8.1	$110,417	42	6.1
Census Tract	302.13	3	2,606	1,778	206	622	47.1	1124	3.6	$58,000	119	10.6
Census Tract	302.16	1	1,139	835	185	119	42.5	533	20.8	$44,940	71	13.3
Census Tract	302.16	2	2,643	2,546	26	71	7.1	842	2.1	$169,286	15	1.8
Census Tract	302.16	3	4,593	3,767	475	351	31.1	1673	4.0	$129,258	111	6.6
Census Tract	302.17	1	1,188	1,085	103	0	15.8	504	1.9	$132,300	10	2.0
Census Tract	302.17	2	2,252	1,961	48	243	23.0	685	2.1	$130,966	0	0.0
Census Tract	302.17	3	2,152	1,981	171	0	14.6	853	4.0	$114,219	91	10.7
Census Tract	303.03	1	2,081	1,898	68	115	16.4	966	10.0	$80,236	54	5.6
Census Tract	303.03	2	1,894	1,828	30	36	6.8	863	2.8	$76,336	47	5.4

Table 4. I-459 Corridor Selected Data, 2019 ACS 5-year estimates (continued)

	Tract	Block Group	Total Population	White Alone	Black Alone	Other Races	Diversity Index	Households	Unemployment	Median Household Income	Households with Income below $15,000	
											Number	Percent
Census Tract	303.03	3	1,425	1,345	50	30	10.7	487	0.0	$147,125	0	0.0
Census Tract	303.03	4	3,010	2,123	587	300	45.5	1414	0.8	$62,647	69	4.9
Census Tract	303.04	1	931	882	23	26	10.1	465	0.0	$90,050	0	0.0
Census Tract	303.04	2	1,708	1,605	64	39	11.5	600	7.7	$161,964	0	0.0
Census Tract	303.04	3	1,961	1,808	153	0	14.4	683	0.0	$133,578	21	3.1
Census Tract	303.04	4	1,451	1,156	286	9	32.6	453	0.0	$108,355	38	8.4
Census Tract	303.05	1	671	591	40	40	21.7	247	3.7	$102,083	0	0.0
Census Tract	303.05	2	1,445	1,212	0	233	27.0	444	1.8	$110,962	9	2.0
Census Tract	303.05	3	2,035	1,827	55	153	18.8	716	2.5	$114,583	17	2.4
Census Tract	303.14	1	1,195	1,054	118	23	21.2	450	2.6	$80,781	30	6.7
Census Tract	303.14	2	1,739	945	641	153	56.1	1066	1.0	$41,500	192	18.0
Census Tract	303.15	1	1,598	870	192	536	57.7	497	2.8	$49,491	93	18.7
Census Tract	303.15	2	1,676	1,367	257	52	31.0	875	5.4	$61,484	26	3.0
Census Tract	303.15	3	1,995	1,787	137	71	19.2	818	2.7	$93,462	31	3.8
Census Tract	303.16	1	1,152	941	130	81	31.5	455	3.2	$36,694	118	25.9
Census Tract	303.16	2	1,135	955	101	79	27.9	384	0.0	$72,000	42	10.9
Census Tract	303.16	3	1,189	885	304	0	38.1	487	2.9	$60,804	19	3.9
Census Tract	303.16	4	1,864	1,604	143	117	25.0	769	5.1	$54,946	75	9.8
Census Tract	303.17	1	1,869	1,655	20	194	20.5	766	1.3	$64,265	45	5.9
Census Tract	303.17	2	502	481	0	21	8.0	185	0.0	$74,375	17	9.2
Census Tract	303.17	3	1,500	1,182	204	114	35.5	500	1.5	$90,500	7	1.4
Census Tract	303.20	1	1,097	1,081	0	16	2.9	401	3.7	$97,917	42	10.5
Census Tract	303.20	2	2,094	1,582	273	239	39.9	737	5.4	$66,985	18	2.4
Census Tract	303.30	1	1,358	1,274	45	39	11.8	502	15.7	$106,490	20	4.0
Census Tract	303.30	2	1,854	1,854	0	0	0.0	589	2.6	$108,443	35	5.9
Census Tract	303.30	3	2,995	2,541	280	174	26.8	1166	1.2	$108,714	93	8.0
Census Tract	303.31	1	1,071	1,052	19	0	3.5	386	6.0	$106,719	37	9.6

Table 4. I-459 Corridor Selected Data, 2019 ACS 5-year estimates (continued)

	Tract	Block Group	Total Population	White Alone	Black Alone	Other Races	Diversity Index	Households	Unemployment	Median Household Income	Households with income below $15,000	
											Number	Percent
Census Tract	303.31	2	913	879	0	34	7.2	336	1.2	$99,821	0	0.0
Census Tract	303.31	3	801	701	0	100	21.9	246	7.6	-	0	0.0
Census Tract	303.31	4	1,677	1,470	178	29	22.0	552	4.5	$136,667	26	4.7
Census Tract	303.32	1	1,165	961	97	107	30.4	452	0.8	$87,500	15	3.3
Census Tract	303.33	1	1,478	1,154	118	206	36.5	576	2.5	$123,250	10	1.7
Census Tract	303.33	2	1,757	1,662	75	20	10.3	841	4.0	$90,347	9	1.1
Census Tract	303.33	3	1,632	1,202	104	326	41.4	546	2.1	$116,944	9	1.6
Census Tract	303.34	1	2,801	2,257	466	78	32.2	841	1.1	$132,050	6	0.7
Census Tract	303.34	2	1,502	1,369	14	119	16.3	601	1.1	$92,688	48	8.0
Census Tract	303.36	1	2,803	2,749	0	54	3.8	926	1.3	$108,900	53	5.7
Census Tract	303.36	2	3,631	1,949	1,028	654	59.9	1166	0.0	$93,527	16	1.4
Census Tract	303.36	3	1,172	1,029	126	17	21.7	383	2.7	$117,862	0	0.0
Census Tract	303.37	1	1,690	1,254	154	282	41.3	670	4.7	$63,500	58	8.7
Census Tract	303.40	1	1,189	1,133	45	11	9.0	426	4.7	$106,324	19	4.5
Census Tract	303.40	2	2,537	2,159	254	124	26.3	813	5.3	$89,679	26	3.2
Census Tract	303.40	3	2,065	1,237	661	167	53.2	756	3	$79,375	39	5.2
Census Tract	303.41	1	2,632	1,724	335	573	50.7	1041	2.0	$62,418	101	9.7
Census Tract	303.42	1	1,073	781	42	250	41.4	315	4.7	$125,156	11	3.5
Census Tract	303.42	2	1,586	1,368	33	185	24.2	468	4.8	$141,719	0	0.0
Census Tract	303.44	1	3,293	2,992	175	126	17.0	1436	3.1	$85,345	46	3.2
Census Tract	303.45	1	2,972	2,460	74	438	29.3	1109	4.2	$100,602	26	2.3
Census Tract	309.00	3	1,196	1,134	16	46	9.9	472	6.8	$32,372	88	18.6
Census Tract	800.00	1	0	0	0	0	-	0	-	-	-	-
Census Tract	106.02	1	2,993	2,770	114	109	14.1	930	4.8	$53,893	40	4.3
Total		**376**	**561,245**	**350,945**	**174,364**	**35,936**		**220,735**			**23,737**	**10.8**

Note: A "-" in place of data means that the sample size was not large enough to publish the results.
Source: U.S. Census Bureau, American Community Survey, 2019 5-Year Estimates, and Center for Business and Economic Research, The University of Alabama.

Comparison of Birmingham Northern Beltline and I-459 Corridors

Table 5 compares selected socioeconomic data on the planned Birmingham Northern Beltline corridor and the existing I-459 corridor to the south. Each corridor is a six-mile-wide swath, three miles on each side of the highway's path. The I-459 corridor is shorter—about six-tenths the length of the BNB corridor—but has more than triple the number of census block groups, population, and households. The I-459 corridor also has nearly six times the number of block groups with 0.0 percent estimated unemployment and more than double the maximum median household income.

Table 5. Selected Socioeconomic Data on BNB and I-459 Corridors

	BNB Corridor	I-459 Corridor
Length (miles)	52.5	32.8
Number of block groups	102	376
Population	165,843	561,245
Households	61,112	220,735
Block groups with 0% unemployment	13	75
Percent of households with 0% unemployment	12.7	19.9
Percent of Households with <$15K income	10.0	10.8
Minimum median household income	$23,889	$11,588
Maximum median household income	$116,417	$239,196

Source: U.S. Census Bureau 2019 Estimates; and Center for Business and Economic Research, The University of Alabama.

This comparison shows that constructing the BNB presents economic development opportunities for its corridor, Jefferson County, the metro area, and the state as a whole, especially given that the BNB is longer. The BNB has the potential to provide similar development in the northern Jefferson County area as I-459 has done for the southern area, which in turn will benefit the balance of the county, the Birmingham-Hoover metropolitan area, and the State of Alabama. A post-build impact is presented later, but estimating a fuller range of the economic development potential of the BNB is beyond the scope of this report. As such, we recommend a follow-up study that focuses solely on the economic development potential of building the BNB.

Population Projections and Economic Forecasts

Population projections and economic forecasts are presented for Jefferson County, the Birmingham-Hoover metro area, and the State of Alabama. These were derived to provide baseline growth for business activity and population in the project area as defined by the corridor. The population projections (total population and household units) through 2050 are in five-year increments. Economic forecasts using the North American Industry Classification System (NAICS) are in the same five-year increments.

Population and Household Projections

The population projections take into account population estimates available from the Census Bureau for 2011 through 2019 as well as initial Census 2020 data and are presented in Table 6. Alabama's population growth slowed to 5.1 percent for 2010 to 2020 from 7.5 percent for 2000 to 2010. Household growth somewhat parallels population gains as persons per household are held at the

Census 2010 levels over the projection period and group quarters populations are assumed to remain steady at the level used by the Census Bureau in the 2019 estimates.

Table 6. Population and Household Projections

BNB Corridor		Change in Population			Change in Households	
	Population	Number	Percent	Households	Number	Percent
2010	165,466			57,049		
2020	165,885	419	0.3%	63,104	6,055	10.6%
2025	172,987	7,102	4.3%	65,806	2,702	4.3%
2030	179,210	6,223	3.6%	68,173	2,367	3.6%
2035	184,235	5,025	2.8%	70,084	1,912	2.8%
2040	187,565	3,330	1.8%	71,351	1,267	1.8%
2045	190,690	3,125	1.7%	72,540	1,189	1.7%
2050	193,793	3,103	1.6%	73,897	1,357	1.9%
Jefferson County		**Change in Population**			**Change in Households**	
	Population	**Number**	**Percent**	**Households**	**Number**	**Percent**
2010	656,912			260,441		
2020	679,220	22,308	3.4%	250,288	-10,153	-3.9%
2025	694,548	15,328	2.3%	255,936	5,648	2.3%
2030	707,934	13,386	1.9%	260,869	4,933	1.9%
2035	719,054	11,120	1.6%	264,966	4,098	1.6%
2040	728,228	9,174	1.3%	268,347	3381	1.3%
2045	736,666	8,438	1.2%	271,456	3,109	1.2%
2050	743,779	7,113	1.0%	274,077	2621	1.0%
Metro Area		**Change in Population**			**Change in Households**	
	Population	**Number**	**Percent**	**Households**	**Number**	**Percent**
2010	1,115,485			432,183		
2020	1,117,451	1,966	0.2%	442,517	10,334	2.4%
2025	1,141,607	24,156	2.2%	452,083	9,566	2.2%
2030	1,164,415	22,808	2.0%	461,115	9,032	2.0%
2035	1,182,698	18,283	1.6%	468,355	7,240	1.6%
2040	1,197,511	14,813	1.3%	474,221	5,866	1.3%
2045	1,211,414	13,903	1.2%	479,727	5,506	1.2%
2050	1,222,794	11,380	0.9%	484,233	4,506	0.9%
Alabama		**Change in Population**			**Change in Households**	
	Population	**Number**	**Percent**	**Households**	**Number**	**Percent**
2010	4,779,736			1,821,210		
2020	5,024,279	244,543	5.1%	1,924,597	103,387	5.7%
2025	5,161,586	137,307	2.7%	1,977,194	52,597	2.7%
2030	5,274,274	112,688	2.2%	2,020,360	43,166	2.2%
2035	5,372,733	98,459	1.9%	2,058,076	37,716	1.9%
2040	5,464,422	91,689	1.7%	2,093,198	35,122	1.7%
2045	5,546,627	82,205	1.5%	2,124,687	31,489	1.5%
2050	5,621,183	74,555	1.3%	2,153,246	28,559	1.3%

Source: Center for Business and Economic Research, The University of Alabama, April 2021.

The population of Alabama is projected to grow slower than the national growth rate, and the Jefferson County and Birmingham-Hoover metro area are projected to have reduced shares of the state's total population. Nevertheless, the population and number of households in the BNB corridor are expected to grow by at least 17.0 percent in the next 30 years. The corridor block groups' total population is projected to be nearly 194,000 by 2050, rising by 27,908 residents and the number of households will increase by about 10,800, or 17.1 percent, over the same period. Comparable number of households projected growth rates are 9.5 percent, 9.4 percent, and 11.9 percent, respectively, for the county, metro area, and state. Increased job prospects that will result from the new highway should boost growth in both population and number of households later in the projection period.

Economic Forecasts

Table 7 shows forecasts of economic output (real GDP in inflation-adjusted year 2012 dollars) and employment for Jefferson County, the Birmingham-Hoover metro area, and Alabama from 2020 to 2050; the BNB corridor is too small a geographic area to allow for forecasting because of data limitations and disclosure issues. Alabama GDP will rise 75 percent to $342.1 billion with an accompanying 35.5 percent increase in jobs to 2.7 million. The metro area GDP is expected to grow by 39.1 percent to $74.8 billion with a 33.6 percent job growth to 692,000. The Jefferson County economy will see a 57.4 percent increase in GDP to $62.4 billion and 24.1 percent employment growth to 473,000. Most of the gains will be in the following industries: retail trade, food and accommodation establishments, professional, technical and business services, healthcare and educational services, financial activity related services, construction, and state and local government. Manufacturing sector GDP growth will be primarily driven by improvements and innovations in technology, automation and productivity, rather than job growth. Infrastructure and property development over this period will further boost construction sector performance, thus benefiting both the area's manufacturing industries, retailers, and other services providing businesses.

Table 7. Output and Employment Forecasts, 2020-2050

	2020	2025	2030	2035	2040	2045	2050
Jefferson County							
Total Real Output ($, Millions 2012)	39,629	41,591	46,791	51,005	55,440	59,980	62,379
Total Employment (Thousands)	381	392	412	426	450	464	473
Birmingham-Hoover MA							
Total Real Output ($, Millions 2012)	53,764	56,452	59275	62,832	66,604	71,932	74,809
Total Employment (Thousands)	518	550	580	600	627	657	692
Alabama							
Total Real Output ($, Millions 2012)	195,628	218,165	234,995	259,409	284.795	312,382	342,143
Total Employment (Thousands)	2,006	2,112	2,194	2,331	2,449	2,574	2,718

Source: Alabama Department of Labor, IHS Markit, and Center for Business and Economic Research, The University of Alabama.

Together, the economic forecasts and population projections suggest that in-commuting for work will intensify. In addition, there will be increased demand for road use by passengers, freight, and commercial vehicles to facilitate economic development for Jefferson County, the metro area, and the state. The BNB provides the opportunity to facilitate such economic development by meeting the increased demand for road use within and through these areas.

Economic and Fiscal Impacts

The impacts presented in this report are determined using a model that combines an Alabama-specific economic structure and fiscal component with relevant multipliers from the Regional Input-Output Modeling System (RIMS II), an input-output model developed and maintained by the U.S. Department of Commerce's Bureau of Economic Analysis (BEA). Also incorporated in the model are consumer expenditure data from the U.S. Bureau of Labor Statistics (BLS) and tax data from the Alabama Department of Revenue (ADOR). It is important to note that the impacts presented in this report may slightly understate the actual impacts because (i) the RIMS II impact multipliers used in this study are for industries, not individual economic activities that can have effects that are above or below the industry average, (ii) while construction is ongoing some additional impacts will be realized as people and businesses flock to the area so as to be well-placed for traffic flow after completion, and (iii) the actual impacts will also depend on future changes in the structure of the state, metro area, and county economies, all of which are expected to grow.

The economic impacts of focus in this report are output, value-added, earnings (wages and salaries), and employment. Output refers to total or gross business activity often measured by revenues or sales. This overall business activity impact includes the contribution to gross domestic product (GDP) or value-added, which is the value of goods and services produced on a value-added basis. The contribution to GDP is overall business activity less business-to-business transactions that are also called intermediate transactions. Earnings impacts are part of value-added and are the wages and salaries of the workers recognized by the employment impact. Construction phase employment impact refers to the total one-time number of jobs over the entire construction period and are thus job-years, unlike the annual post-build use phase employment impacts that are ongoing jobs per year. The distinction can be seen with the following example: 10 jobs per year for three (3) years equal 30 job-years. The fiscal impacts are conservative because they are derived from earnings impacts and cover just income, sales, and property taxes; fees and taxes not considered include utility taxes, building permit fees, direct construction spending related sales taxes, construction phase earnings-based property taxes, and taxes on rental/leasing, alcoholic beverages, cigarettes and tobacco, insurance premiums, and lodgings.

Construction Phase Impacts

The total economic and fiscal impacts for the construction phase are shown in Table 8 and by segment in Table 9. The construction phase impacts will occur over the construction period only regardless of the phase's duration. As noted earlier, there will be some additional impacts during the construction period as some people and businesses move to the area before completion of the BNB, but such impacts are not included in this report because of uncertainty with respect to determining them. Of the total $2.9 billion investment to build the BNB, $824.3 million will be paid directly as earnings to 15,399 construction sector jobs statewide over the 30-year project period (an average of 513 direct construction jobs per year); $775.1 million of these earnings will be paid for 14,480 metro area construction jobs, with $487.8 million going for 9,114 Jefferson County construction jobs.

For the Alabama economy, the construction phase economic and fiscal impacts will be about $6.0 billion in gross business activity or output, of which roughly $3.1 billion is contribution to GDP that includes $1.6 billion in earnings to Alabama workers in 36,375 direct and indirect jobs. The earnings impact will generate $116.2 million in state and local taxes; $53.8 million state individual income tax,

$27.7 million state sales tax, and $34.7 million local sales tax. Most of these statewide impacts will occur in the Birmingham-Hoover metro area, which will see impacts of $5.6 billion in output, $3.0 billion contribution to GDP, $1.5 billion in earnings for 34,016 jobs, and $99.8 million in state and local taxes comprising $48.8 million state individual income tax, $22.7 million state sales tax, and $28.3 million local sales tax. Jefferson County, which will contain the BNB, will have impacts of $4.8 billion in output, $2.6-billion contribution to GDP, $852.3 million in earnings for 18,903 jobs, $28.0 million state individual income tax, $11.6 million state sales tax, and $14.5 million local sales tax. In Jefferson County, average earnings per BNB construction direct job is about $53,500 and average earnings per job related to the BNB (i.e., both direct and indirect) are about $45,000.

Table 8. Total Construction Phase Economic and Fiscal Impacts of the Birmingham Northern Beltline

	Birmingham Northern Beltline (Total)		
Input Data	**Alabama**	**Birmingham-Hoover Metro**	**Jefferson County**
Construction expenditures	$2,901,952,455	$2,901,952,455	$2,901,952,455
Economic Impacts (direct and indirect)			
Output (gross business sales)	$5,971,637,762	$5,564,493,832	$4,815,790,099
Contribution to GDP	$3,069,395,111	$2,977,113,023	$2,556,910,308
Earnings (wages and salaries)	$1,636,120,794	$1,484,348,681	$852,303,436
Direct earnings (wages and salaries)	$824,283,739	$775,116,805	$487,838,954
Employment (jobs)	36,375	34,016	18,903
Direct jobs	15,399	14,480	9,114
Fiscal Impacts (direct and indirect)			
State taxes			
Individual income (II)	$53,790,089	$48,800,338	$28,020,839
Sales	$27,748,609	$22,657,098	$11,564,053
Combined state II and sales	$81,538,698	$71,457,436	$39,584,892
Local (city and county) taxes			
Sales	$34,685,761	$28,321,373	$14,455,066
Total state and local taxes	**$116,224,458**	**$99,778,809**	**$54,039,958**

Note: Rounding effects may be present.
Source: U.S. Bureau of Economic Analysis; Alabama Department of Revenue; Alabama Department of Transportation; and Center for Business and Economic Research, The University of Alabama.

Table 9. Construction Phase Economic and Fiscal Impacts of the Birmingham Northern Beltline by Section

	Section 1.0			Section 2.1		
Input Data	**Alabama**	**Birmingham-Hoover Metro**	**Jefferson County**	**Alabama**	**Birmingham-Hoover Metro**	**Jefferson County**
Construction expenditures	$727,439,650	$727,439,650	$727,439,650	$36,903,875	$36,903,875	$36,903,875
Economic Impacts (direct and indirect)						
Output (gross business sales)	$1,496,925,311	$1,394,865,528	$1,207,186,099	$75,940,793	$70,763,180	$61,241,980
Contribution to GDP	$769,412,918	$746,280,337	$640,947,075	$39,033,228	$37,859,685	$32,516,004
Earnings (wages and salaries)	$410,130,475	$372,085,381	$213,649,025	$20,806,405	$18,876,332	$10,838,668
Direct earnings (wages and salaries)	$206,625,258	$194,300,460	$122,287,806	$10,482,344	$9,857,092	$6,203,805
Employment (jobs)	9,118	8,527	4,738	463	433	240
Direct jobs	3,860	3,630	2,285	196	184	116
Fiscal Impacts (direct and indirect)						
State taxes						
Individual income (II)	$13,483,696	$12,232,902	$7,024,054	$684,044	$620,590	$356,339
Sales	$6,955,813	$5,679,511	$2,898,790	$352,877	$288,128	$147,059
Combined state II and sales	$20,439,508	$17,912,413	$9,922,844	$1,036,920	$908,718	$503,398
Local (city and county) taxes						
Sales	$8,694,766	$7,099,389	$3,623,487	$441,096	$360,160	$183,824
Total state and local taxes	**$29,134,274**	**$25,011,803**	**$13,546,331**	**$1,478,016**	**$1,268,878**	**$687,221**

Note: Rounding effects may be present.
Source: U.S. Bureau of Economic Analysis; Alabama Department of Revenue; Alabama Department of Transportation; and Center for Business and Economic Research, The University of Alabama.

Table 9. Construction Phase Economic and Fiscal Impacts of the Birmingham Northern Beltline by Section (Continued)

	Section 2.2			Section 2.3		
Input Data	**Alabama**	**Birmingham-Hoover Metro**	**Jefferson County**	**Alabama**	**Birmingham-Hoover Metro**	**Jefferson County**
Construction expenditures	$45,463,360	$45,463,360	$45,463,360	$43,177,568	$43,177,568	$43,177,568
Economic Impacts (direct and indirect)						
Output (gross business sales)	$93,554,503	$87,175,993	$75,446,446	$88,850,800	$82,792,987	$71,653,175
Contribution to GDP	$48,086,596	$46,640,861	$40,057,767	$45,668,914	$44,295,867	$38,043,756
Earnings (wages and salaries)	$25,632,242	$23,254,509	$13,352,589	$24,343,513	$22,085,326	$12,681,252
Direct earnings (wages and salaries)	$12,913,619	$12,143,347	$7,642,716	$12,264,352	$11,532,807	$7,258,458
Employment (jobs)	570	533	296	541	506	281
Direct jobs	241	227	143	229	215	136
Fiscal Impacts (direct and indirect)						
State taxes						
Individual income (II)	$842,701	$764,529	$438,988	$800,332	$726,090	$416,916
Sales	$434,723	$354,957	$181,168	$412,866	$337,110	$172,059
Combined state II and sales	$1,277,424	$1,119,486	$620,156	$1,213,198	$1,063,201	$588,976
Local (city and county) taxes -- statewide						
Sales	$543,404	$443,696	$226,460	$516,082	$421,388	$215,074
Total state and local taxes	**$1,820,827**	**$1,563,182**	**$846,616**	**$1,729,280**	**$1,484,589**	**$804,050**

Note: Rounding effects may be present.

Source: U.S. Bureau of Economic Analysis; Alabama Department of Revenue; Alabama Department of Transportation; and Center for Business and Economic Research, The University of Alabama.

Table 9. Construction Phase Economic and Fiscal Impacts of the Birmingham Northern Beltline by Section (Continued)

Input Data	Section 3.0 Alabama	Section 3.0 Birmingham-Hoover Metro	Section 3.0 Jefferson County	Section 4.0 Alabama	Section 4.0 Birmingham-Hoover Metro	Section 4.0 Jefferson County
Construction expenditures	$448,596,168	$448,596,168	$448,596,168	$5,229,759	$5,229,759	$5,229,759
Economic Impacts (direct and indirect)						
Output (gross business sales)	$923,121,194	$860,183,152	$744,445,340	$10,761,798	$10,028,063	$8,678,785
Contribution to GDP	$474,480,167	$460,214,809	$395,258,083	$5,531,516	$5,365,210	$4,607,941
Earnings (wages and salaries)	$252,918,519	$229,456,940	$131,752,694	$2,948,538	$2,675,022	$1,535,980
Direct earnings (wages and salaries)	$127,421,290	$119,820,856	$75,412,223	$1,485,484	$1,396,878	$879,160
Employment (jobs)	5,623	5,258	2,922	66	61	34
Direct jobs	2,380	2,238	1,409	28	26	16
Fiscal Impacts (direct and indirect)						
State taxes						
Individual income (II)	$8,315,101	$7,543,764	$4,331,581	$96,938	$87,946	$50,498
Sales	$4,289,498	$3,502,431	$1,787,621	$50,007	$40,832	$20,840
Combined state II and sales	$12,604,599	$11,046,195	$6,119,201	$146,945	$128,777	$71,338
Local (city and county) taxes						
Sales	$5,361,873	$4,378,038	$2,234,526	$62,509	$51,039	$26,050
Total state and local taxes	**$17,966,472**	**$15,424,233**	**$8,353,727**	**$209,454**	**$179,817**	**$97,388**

Note: Rounding effects may be present.
Source: U.S. Bureau of Economic Analysis; Alabama Department of Revenue; Alabama Department of Transportation; and Center for Business and Economic Research, The University of Alabama.

Table 9. Construction Phase Economic and Fiscal Impacts of the Birmingham Northern Beltline by Section (Continued)

	Section 4.1			Section 4.2		
Input Data	**Alabama**	**Birmingham-Hoover Metro**	**Jefferson County**	**Alabama**	**Birmingham-Hoover Metro**	**Jefferson County**
Construction expenditures	$73,418,301	$73,418,301	$73,418,301	$39,909,216	$39,909,216	$39,909,216
Economic Impacts (direct and indirect)						
Output (gross business sales)	$151,080,179	$140,779,592	$121,837,670	$82,125,185	$76,525,922	$66,229,344
Contribution to GDP	$77,654,537	$75,319,835	$64,688,865	$42,211,978	$40,942,865	$35,164,010
Earnings (wages and salaries)	$41,393,238	$37,553,461	$21,562,955	$22,500,816	$20,413,564	$11,721,337
Direct earnings (wages and salaries)	$20,854,067	$19,610,162	$12,342,141	$11,335,995	$10,659,825	$6,709,025
Employment (jobs)	920	861	478	500	468	260
Direct jobs	390	366	231	212	199	125
Fiscal Impacts (direct and indirect)						
State taxes						
Individual income (II)	$1,360,869	$1,234,630	$708,917	$739,750	$671,129	$385,358
Sales	$702,029	$573,216	$292,566	$381,614	$311,593	$159,035
Combined state II and sales	$2,062,898	$1,807,846	$1,001,483	$1,121,364	$982,721	$544,393
Local (city and county) taxes						
Sales	$877,537	$716,520	$365,708	$477,017	$389,491	$198,794
Total state and local taxes	**$2,940,435**	**$2,524,366**	**$1,367,191**	**$1,598,381**	**$1,372,212**	**$743,187**

Note: Rounding effects may be present.
Source: U.S. Bureau of Economic Analysis; Alabama Department of Revenue; Alabama Department of Transportation; and Center for Business and Economic Research, The University of Alabama.

Table 9. Construction Phase Economic and Fiscal Impacts of the Birmingham Northern Beltline by Section (Continued)

	Section 4.3			Section 4.4		
Input Data	**Alabama**	**Birmingham-Hoover Metro**	**Jefferson County**	**Alabama**	**Birmingham-Hoover Metro**	**Jefferson County**
Construction expenditures	$40,277,746	$40,277,746	$40,277,746	$72,958,653	$72,958,653	$72,958,653
Economic Impacts (direct and indirect)						
Output (gross business sales)	$82,883,546	$77,232,578	$66,840,919	$150,134,316	$139,898,217	$121,074,885
Contribution to GDP	$42,601,772	$41,320,940	$35,488,722	$77,168,367	$74,848,282	$64,283,869
Earnings (wages and salaries)	$22,708,593	$20,602,067	$11,829,574	$41,134,089	$37,318,351	$21,427,956
Direct earnings (wages and salaries)	$11,440,674	$10,758,260	$6,770,977	$20,723,507	$19,487,390	$12,264,871
Employment (jobs)	505	472	262	915	855	475
Direct jobs	214	201	127	387	364	229
Fiscal Impacts (direct and indirect)						
State taxes						
Individual income (II)	$746,581	$677,326	$388,916	$1,352,349	$1,226,900	$704,478
Sales	$385,138	$314,470	$160,504	$697,634	$569,627	$290,735
Combined state II and sales	$1,131,719	$991,796	$549,420	$2,049,983	$1,796,528	$995,213
Local (city and county) taxes						
Sales	$481,422	$393,087	$200,630	$872,043	$712,034	$363,418
Total state and local taxes	**$1,613,141**	**$1,384,883**	**$750,049**	**$2,922,026**	**$2,508,562**	**$1,358,631**

Note: Rounding effects may be present.
Source: U.S. Bureau of Economic Analysis; Alabama Department of Revenue; Alabama Department of Transportation; and Center for Business and Economic Research, The University of Alabama.

Table 9. Construction Phase Economic and Fiscal Impacts of the Birmingham Northern Beltline by Section (Continued)

	Section 4.5			Section 4.6		
Input Data	**Alabama**	**Birmingham-Hoover Metro**	**Jefferson County**	**Alabama**	**Birmingham-Hoover Metro**	**Jefferson County**
Construction expenditures	$109,367,389	$109,367,389	$109,367,389	$73,783,906	$73,783,906	$73,783,906
Economic Impacts (direct and indirect)						
Output (gross business sales)	$225,056,213	$209,711,968	$181,495,182	$151,832,522	$141,480,640	$122,444,392
Contribution to GDP	$115,677,887	$112,200,004	$96,363,606	$78,041,238	$75,694,909	$65,011,000
Earnings (wages and salaries)	$61,661,334	$55,941,419	$32,121,202	$41,599,366	$37,740,468	$21,670,333
Direct earnings (wages and salaries)	$31,065,209	$29,212,229	$18,385,440	$20,957,915	$19,707,816	$12,403,602
Employment (jobs)	1,371	1,282	712	925	865	481
Direct jobs	580	546	343	392	368	232
Fiscal Impacts (direct and indirect)						
State taxes						
Individual income (II)	$2,027,215	$1,839,164	$1,056,036	$1,367,646	$1,240,778	$712,447
Sales	$1,045,776	$853,890	$435,820	$705,525	$576,071	$294,023
Combined state II and sales	$3,072,991	$2,693,053	$1,491,856	$2,073,171	$1,816,849	$1,006,470
Local (city and county) taxes						
Sales	$1,307,220	$1,067,362	$544,776	$881,907	$720,088	$367,529
Total state and local taxes	**$4,380,212**	**$3,760,416**	**$2,036,632**	**$2,955,078**	**$2,536,937**	**$1,373,999**

Note: Rounding effects may be present.
Source: U.S. Bureau of Economic Analysis; Alabama Department of Revenue; Alabama Department of Transportation; and Center for Business and Economic Research, The University of Alabama.

Table 9. Construction Phase Economic and Fiscal Impacts of the Birmingham Northern Beltline by Section (Continued)

	Section 4.7			Section 4.8		
Input Data	**Alabama**	**Birmingham-Hoover Metro**	**Jefferson County**	**Alabama**	**Birmingham-Hoover Metro**	**Jefferson County**
Construction expenditures	$62,367,406	$62,367,406	$62,367,406	$175,752,082	$175,752,082	$175,752,082
Economic Impacts (direct and indirect)						
Output (gross business sales)	$128,339,647	$119,589,500	$103,498,710	$361,662,635	$337,004,618	$291,660,581
Contribution to GDP	$65,966,005	$63,982,721	$54,951,921	$185,892,978	$180,304,061	$154,855,160
Earnings (wages and salaries)	$35,162,743	$31,900,928	$18,317,307	$99,089,024	$89,897,190	$51,618,387
Direct earnings (wages and salaries)	$17,715,121	$16,658,448	$10,484,407	$49,921,419	$46,943,702	$29,545,182
Employment (jobs)	782	731	406	2,203	2,060	1,145
Direct jobs	331	311	196	933	877	552
Fiscal Impacts (direct and indirect)						
State taxes						
Individual income (II)	$1,156,031	$1,048,794	$602,211	$3,257,710	$2,955,514	$1,697,037
Sales	$596,360	$486,936	$248,529	$1,680,550	$1,372,191	$700,358
Combined state II and sales	$1,752,392	$1,535,730	$850,740	$4,938,260	$4,327,705	$2,397,395
Local (city and county) taxes						
Sales	$745,450	$608,670	$310,662	$2,100,687	$1,715,238	$875,448
Total state and local taxes	**$2,497,842**	**$2,144,400**	**$1,161,402**	**$7,038,947**	**$6,042,943**	**$3,272,843**

Note: Rounding effects may be present.
Source: U.S. Bureau of Economic Analysis; Alabama Department of Revenue; Alabama Department of Transportation; and Center for Business and Economic Research, The University of Alabama.

Table 9. Construction Phase Economic and Fiscal Impacts of the Birmingham Northern Beltline by Section (Continued)

	Section 4.9			Section 5.2		
Input Data	**Alabama**	**Birmingham-Hoover Metro**	**Jefferson County**	**Alabama**	**Birmingham-Hoover Metro**	**Jefferson County**
Construction expenditures	$33,546,045	$33,546,045	$33,546,045	$265,222,751	$265,222,751	$265,222,751
Economic Impacts (direct and indirect)						
Output (gross business sales)	$69,031,052	$64,324,542	$55,669,662	$545,775,377	$508,564,625	$440,137,155
Contribution to GDP	$35,481,652	$34,414,888	$29,557,420	$280,526,104	$272,092,020	$233,687,766
Earnings (wages and salaries)	$18,913,260	$17,158,802	$9,852,473	$149,532,587	$135,661,437	$77,895,922
Direct earnings (wages and salaries)	$9,528,571	$8,960,210	$5,639,330	$75,335,073	$70,841,482	$44,585,841
Employment (jobs)	420	393	219	3,324	3,109	1,728
Direct jobs	178	167	105	1,407	1,323	833
Fiscal Impacts (direct and indirect)						
State taxes						
Individual income (II)	$621,804	$564,123	$323,916	$4,916,123	$4,460,087	$2,560,953
Sales	$320,769	$261,912	$133,678	$2,536,073	$2,070,736	$1,056,892
Combined state II and sales	$942,573	$826,035	$457,594	$7,452,196	$6,530,823	$3,617,845
Local (city and county) taxes						
Sales	$400,961	$327,390	$167,098	$3,170,091	$2,588,420	$1,321,115
Total state and local taxes	**$1,343,534**	**$1,153,425**	**$624,692**	**$10,622,287**	**$9,119,243**	**$4,938,960**

Note: Rounding effects may be present.
Source: U.S. Bureau of Economic Analysis; Alabama Department of Revenue; Alabama Department of Transportation; and Center for Business and Economic Research, The University of Alabama.

Table 9. Construction Phase Economic and Fiscal Impacts of the Birmingham Northern Beltline by Section (Continued)

	Section 5.3			Section 5.4		
Input Data	**Alabama**	**Birmingham-Hoover Metro**	**Jefferson County**	**Alabama**	**Birmingham-Hoover Metro**	**Jefferson County**
Construction expenditures	$475,946,575	$475,946,575	$475,946,575	$127,346,372	$127,346,372	$127,346,372
Economic Impacts (direct and indirect)						
Output (gross business sales)	$979,402,861	$912,627,557	$789,833,341	$262,053,364	$244,186,668	$211,331,304
Contribution to GDP	$503,408,692	$488,273,591	$419,356,527	$134,694,258	$130,644,643	$112,204,888
Earnings (wages and salaries)	$268,338,679	$243,446,673	$139,785,509	$71,797,884	$65,137,669	$37,401,629
Direct earnings (wages and salaries)	$135,190,024	$127,126,200	$80,010,022	$36,172,041	$34,014,449	$21,407,836
Employment (jobs)	5,966	5,579	3,100	1,596	1,493	830
Direct jobs	2,526	2,375	1,495	676	635	400
Fiscal Impacts (direct and indirect)						
State taxes						
Individual income (II)	$8,822,063	$8,003,699	$4,595,672	$2,360,470	$2,141,505	$1,229,638
Sales	$4,551,024	$3,715,970	$1,896,610	$1,217,692	$994,261	$507,465
Combined state II and sales	$13,373,087	$11,719,669	$6,492,282	$3,578,162	$3,135,766	$1,737,104
Local (city and county) taxes						
Sales	$5,688,780	$4,644,963	$2,370,762	$1,522,115	$1,242,827	$634,332
Total state and local taxes	**$19,061,867**	**$16,364,631**	**$8,863,044**	**$5,100,278**	**$4,378,593**	**$2,371,435**

Note: Rounding effects may be present.
Source: U.S. Bureau of Economic Analysis; Alabama Department of Revenue; Alabama Department of Transportation; and Center for Business and Economic Research, The University of Alabama.

Impacts on Corridor Population, Businesses, and the Post-Build Economy

The BNB corridor is currently a relatively sparsely populated area of Jefferson County, but the baseline population projections and economic forecasts from Tables 6 and 7 suggest that it is likely to become increasingly suburban by 2050. Taken together, the existing conditions review, baseline population projections and economic forecasts, and construction phase impacts show that the BNB will facilitate and enhance the area's economic development opportunities. Table 10 presents the expected population and number of businesses in Jefferson County with and without the BNB. In the baseline projection (i.e., without the BNB), the county population rises 9.5 percent (64,559 new residents) between 2020 and 2050, while the number of businesses increases by 24.1 percent (13,336 new businesses). Growth in the number of businesses is in line with the baseline employment forecast for Jefferson County, which assumes that the number of employees per business (roughly 7 in 2020) remains constant. Construction of the highway injects additional growth for the county from the $2.902 billion investment and its $4.816 billion construction phase county output impact over 30 years. Working from the 2020 real output for Jefferson County of $39.629 billion, this injection creates above baseline growth factors of 1.142 (i.e., $[1+4.816/30/39.629*(1+9.5\%)]^{30}$) for population and 1.162 (i.e., $[1+4.816/30/39.629*(1+24.1\%)]^{30}$) for the number of businesses. Building the BNB increases the population by 73,726 new residents (10.9 percent) from 2020 to 752,946 in 2050, which is 1.3 percent higher or 9,167 more residents than baseline population projection and also raises the number of businesses by 15,502 (28.1 percent) to 70,731, 3.9 percent higher or 2,166 additional businesses over the baseline.

Table 10. BNB Impacts on Population and Businesses in Jefferson County

	2020	2050 Projections	
		Baseline	With BNB
Population	679,220	743,779	752,946
Change		64,559	73,726
Percent change		9.5	10.9
Number of Businesses	55,229	68,565	70,731
Change		13,336	15,502
Percent change		24.1	28.1

Source: Center for Business and Economic Research, The University of Alabama.

Table 11 shows the extra annual economic and fiscal impacts to the county, metro area, and state economies that will result from the boost to population and number of businesses that constructing the BNB will provide. Post-build annual impacts on Alabama will be $1.9 billion in output, of which $990.5 million is contribution to GDP that includes $528.0 million in earnings to Alabama workers in 11,738 direct and indirect jobs, and $50.2 million in state and local taxes with roughly $28.0 million for the state ($17.4 million individual income tax, $9.0 million sales tax, and $1.7 million property tax) and $22.2 million local ($11.2 million sales tax and $11.0 million property tax). As with the construction phase impacts, most of the statewide impacts will be in the Birmingham-Hoover metro area. Post-build annual impacts on the metro area will be $1.8 billion in output, $960.7 million contribution to GDP, $479.0 million in earnings for 10,977 jobs, and $43.7 million in state and local taxes with $24.6 million for the state ($15.7 million individual income tax, $7.3 million sales tax, and $1.5 million property tax) and $19.1 million local ($9.1 million sales tax and $10.0 million property tax). Jefferson County will have annual impacts of about $1.6 billion in output, contribution to GDP

of $825.1 million, $275.0 million in earnings for 6,100 jobs, and $24.0 million in state and local taxes with $13.6 million for the state ($9.0 million individual income tax, $3.7 million sales tax, and $864,322 property tax) and $10.4 million local ($4.7 million sales tax and $5.7 million property tax).

Table 11. BNB Post-Build Annual Economic and Fiscal Impacts

	Alabama	Birmingham-Hoover Metro	Jefferson County
Economic Impacts (direct and indirect)			
Output (gross business sales)	$1,927,038,786	$1,795,654,034	$1,554,048,433
Contribution to GDP	$990,489,321	$960,710,026	$825,111,223
Earnings (wages and salaries)	$527,973,791	$478,997,152	$275,037,074
Direct earnings (wages and salaries)	$265,995,159	$250,129,061	$157,424,918
Employment (jobs)	11,738	10,977	6,100
Direct jobs	4,969	4,673	2,941
Fiscal Impacts (direct and indirect)			
State taxes			
Individual income (II)	$17,357,983	$15,747,798	$9,042,284
Sales	$8,954,435	$7,311,413	$3,731,703
Property	$1,659,193	$1,505,281	$864,322
Combined state II, sales, and property	$27,971,612	$24,564,491	$13,638,309
Local (city and county) taxes			
Sales	$11,193,044	$9,139,266	$4,664,629
Property	$10,997,967	$9,977,758	$5,729,164
Combined local sales and property	$22,191,011	$19,117,024	$10,393,793
Total state and local taxes	**$50,162,623**	**$43,681,515**	**$24,032,102**

Note: Rounding effects may be present.
Source: U.S. Bureau of Economic Analysis; Alabama Department of Revenue; Alabama Department of Transportation; and Center for Business and Economic Research, The University of Alabama.

Communities Impact

Average earnings per BNB construction job of about $53,500 is higher than the median household income for 31 out of the corridor's 102 block groups. Similarly, average earnings per job related to the BNB of about $45,000 is higher than the median household income for 25 of the corridor's 102 block groups. The BNB is an asset that will increase economic development opportunities in its corridor and across the broader region. The post-build annual impacts reflect one possibility in a range of economic development related impacts. Determining a fuller range of economic development impacts is beyond the scope of this report. The analyses presented in this report strongly support the need for the highway, especially because the BNB presents additional opportunities for development while improving quality of life. The new development will not reduce sales for existing businesses in the corridor. Rather, the corridor's communities are most likely to benefit from the new highway. However, to realize the economic benefits of the highway these communities will need to make optimal investments in infrastructure and amenities to attract both residents and businesses.

Environmental Justice

Highway projects contribute to development, but it is essential to ensure that they achieve environmental justice, especially as required by law. For highway projects, this means to minimize, by avoiding or mitigating, disproportionately high and adverse health, environmental, social, and economic effects on minority and low-income populations. Table 3 presented earlier the 2019 race, income, and unemployment data for block groups in the corridor that are needed to address environmental justice issues. The BNB corridor has 102 block groups, white people made up 68.8 percent of the population and black people represented 27.8 percent of the population in 2019. About 10.0 percent of households in the corridor had income below $15,000. The 95 block groups in the Jefferson County portion of the corridor contained 22.4 percent of the county's population.

The average unemployment rate in the corridor in 2019 was 6.9 percent and the median was 5.2 percent. The average household income and median household income were $60,648 and $60,912, respectively. There were 13 block groups that had an estimated 0.0 percent unemployment rate; for the remainder, the unemployment rate ranged from 0.5 percent to 34.0 percent and the median household income ranged from $23,889 to $116,417. About 56.8 percent (58) of the 102 block groups had an unemployment rate at or below the overall average of 6.9 percent; all except 10 of these block groups had a majority white population. About half (12) of the 25 block groups with unemployment rates at or above 10 percent had mostly black residents. Just five of the corridor block groups had unemployment rates of 20 percent or higher. There were 29 block groups that had a median household income above $70,000 and all but four had a majority white population. In contrast, half of the 12 block groups with $35,000 or lower median household income were predominantly black. As noted earlier, a very mixed relationship exists between median household income and the unemployment rate among the corridor block groups. Some block groups with low unemployment have low median household income and others with high unemployment have relatively high median household income. The block group with the highest unemployment rate had a median household income of $68,490. The block group with the lowest median household income had 0.0 percent unemployment and 16.7 percent of its households had below $15,000 income.

As noted earlier, average earnings per BNB construction job of about $53,500 is higher than the median household income for 31 out of the corridor's 102 block groups. Similarly, average earnings per job related to the BNB of about $45,000 is higher than the median household income for 25 of the corridor's 102 block groups. Since lower income BNB corridor block groups are generally more diverse, the benefits of the BNB make it very valuable to lower income and more diverse corridor block groups because of increased job opportunities and expected improved access to essential services and activities. The more project-related and subsequent development jobs go to residents of the BNB corridor block groups, the more likely the new highway will lower unemployment and poverty rates in the corridor, especially for those block groups with high rates. Average wages per job related to the project are more than double the $15,000 low-income threshold used in this report. Plans for future residential development in the corridor must include mixed income housing to prevent adverse displacement of low income and minority households. Mixed density and multi-use development are also advised since it optimizes the cost of providing public services.

Conclusions

This report presents updated socioeconomic indirect and cumulative impacts of constructing and using the Birmingham Northern Beltline (BNB) in Jefferson County, Alabama. Socioeconomic impacts include secondary or indirect and cumulative impacts of constructing and using the highway and must be based on analyses that meet federal requirements. The impacts include effects on population, communities, and economies (the State of Alabama, the Birmingham-Hoover metro area, and Jefferson County) and environmental justice is also addressed. The analyses presented in the foregoing sections indicate that the BNB will be beneficial in various ways. It will provide significant economic and fiscal impacts for both the construction and post-build use phases as well as new economic development opportunities. The transportation network expansion effect of the BNB will benefit all users (freight, commercial, and passenger vehicles) directly and indirectly.

Notably, the BNB will not have net adverse environmental justice effects but rather present potential for improvements in quality of life in the Alabama, Birmingham-Hoover metro area, and Jefferson County economies. Examination of socioeconomic data on the BNB corridor together with the economic development potential and higher incomes related to the highway noted earlier lead to the conclusion that the highway will not have unfair or disproportionately adverse effects on minority and low-income populations. Instead, it presents development opportunities that can benefit these groups. Future area development plans must consider (i) mixed income housing to prevent adverse displacement of low income and minority households and (ii) mixed density and multi-use development. To derive the full benefits that the highway presents, nearby communities may need to invest in infrastructure and amenities.

It is important to note that the construction phase impacts are only for the build period, but the post-build impacts are annual impacts that will continue with use of the highway. Additionally, the impacts presented in this report may slightly understate the highway's actual impacts because (i) the impact multipliers used are for industries, not individual firms or economic activities, (ii) the actual impacts will also depend on future changes in the structure of the three economies, which are expected to grow and (iii) the fiscal impacts in this report are conservative because they cover income, sales, and property taxes, but not other taxes and fees (e.g., rental/leasing, alcoholic beverages, utilities, cigarettes and tobacco, insurance premiums, lodgings, and driver's license and auto title); construction phase impacts do not include property taxes.

A comparison of socioeconomic data on the planned BNB and existing I-459 corridors shows that while shorter, at about six-tenths the length of the BNB corridor, the I-459 corridor has more than triple the number of census block groups, population, and households as well as nearly six times the number of block groups with 0.0 percent unemployment and more than double the maximum median household income. The reasonable conclusion from this comparison is that constructing the BNB presents a strong economic development opportunity for its corridor, county, metro area, and the state as a whole. This is because the BNB has the potential of providing the northern Jefferson County area with similar development opportunities as I-459 has done for the southern area, which in turn will benefit the balance of the county, metro area, and state. Additionally, the economic forecasts and population projections presented in this report suggest that there will be increased demand for road use within and through these areas by passenger (including commuting for work), freight, and commercial vehicles that will facilitate economic development. The BNB will help meet the increased demand for road use and provide other economic development opportunities, but

estimating the economic development potential of the BNB is beyond the scope of this report. As such, we recommend a follow-up study that solely focuses on the BNB's economic development potential.

Appendix

Methodology: Existing Conditions Review

The existing conditions review is a socioeconomic assessment of the project impact area and Jefferson County using selected economic and demographic variables. The specific variables are labor force, population, unemployment rate, per capita income, average wage per job, number of firms (all registered economic entities), employment, earnings, and economic output. We use firms and economic entities interchangeably in this report. The review involved data collection and analysis of Jefferson County's current condition and historical trends. Median household income, population, households, and firms by employment size are used for assessment of the Birmingham Northern Beltline (BNB) corridor, which is a 6-mile-wide swath that the BNB centrally lies in. The main sources of data for the review are Alabama Department of Labor (ADOL), IHS Markit, Dun & Bradstreet, U.S. Bureau of Economic Analysis (BEA), U.S. Bureau of Labor Statistics (BLS), and U.S. Census Bureau.

Methodology: Population and Household Projections

Population projections at the state level are generated using an in-house cohort-component model developed by the Center for Business and Economic Research (CBER). The model is driven by measured demographic change including population growth (or decline) between 2010 and 2019 as well as recent population estimates and birth and death rates. Any remaining population change is assumed to be due to migration. Assumptions about future migration trends are key factors in the projections process. Age groups which have been experiencing strong in-migration are unlikely to see in-migration continue at the same rate, so migration expectations for these cohorts are generally dampened during each five-year projection period. Similarly, age groups having more residents move out than in will likely not experience the same level of out-migration in the future.

Since recent population estimates data are available, population projections have been modified to account for the trend between April 1, 2010, and July 1, 2019, using Census Bureau estimates. Annual rates of change are calculated for the various age groupings for this time period and used in the projections model, which works in five-year increments. Household projections are derived from the projected total populations. The household population of an area is defined as the resident population minus the population living in group quarters. Group quarters include institutional populations such as correctional facilities, nursing homes, and mental hospitals as well as non-institutional dwellings such as college dormitories, military barracks, group homes, and shelters.

Census 2010 data provide the average number of persons per household. Calculation of household projections is then accomplished by subtracting the group quarters population (assumed to hold constant at the year 2010 number plus any announcements) from the projected total population for a given projection year and dividing by the average number of persons per household. While there are indications that persons per household could be declining as an aging population creates more one- and two-person households, the Census Bureau has not yet projected household size based on the 2020 Census. Thus, there currently is no reasonable basis for revising average household size from the 2010 value.

Methodology: Population and Household Block Group Projections

Population and household projections were then developed for the 102 Census block groups that are wholly or partially in the BNB project corridor. Two separate series of block group projections were initially produced. Each forecasts total population for five-year intervals from 2020 to 2050. The constant proportion method assumes that the non-group quarters population of a block group grows at the same rate as the previously projected non-group quarters population of the county. Thus, an area keeps almost the same proportion of the county population through 2050. The group quarters population of each block group is assumed to remain constant at the number of group quarters residents counted in the 2010 census.

A second, or growth rate factor, method is based on the ratio of each block group's growth rate from 2010 to 2019 to the 2010 to 2019 growth rate of the county in which it is located. This growth factor is multiplied by the previously projected county growth rate for each five-year interval to yield a projected growth rate for the block group in that interval.

Studying the results of the two series of projections developed above revealed that the constant proportion method ignored recent growth trends, which often vary widely among block groups in each county. On the other hand, the growth rate factor method sometimes resulted in rapidly escalating growth or decline. Consequently, for most areas, the projections from the two methods were averaged for each five-year interval to yield preliminary projections. The averaging process helped pull in extreme rates while incorporating both recent sub-county and county growth rates and the county population projections. These preliminary results were then modified to dampen trends of very rapid growth or decline and including recent socioeconomic data and developments. In order to fine tune the preliminary projections, extensive data was compiled for the block groups in the BNB corridor area. The following variables were included:

Census Data

1. Change in the population between 2010 and 2019.
2. Change in the number of households between 2010 and 2019.
3. Number of housing units built in the first part of the 2010s and number built in the second half of the 2010s, as reported in the census.
4. Size of area in square miles and persons per square mile in 2010.
5. Persons per housing unit in 2010.
6. Median household income.

Methodology: Economic Forecasts

Economic output and employment forecasts for the Jefferson County economy are made to 2050 in five-year increments using the North American Industry Classification System (NAICS). Versions of the Alabama Econometric Model (AEM) were developed and used to make the economic forecasts. The AEM is developed by CBER based on IHS Markit's macroeconomic forecasting model. The AEM is a simultaneous equation model with numerous stochastic equations and identities. The simultaneous equation structure captures interrelationships and feedback among economic variables and provides consistent measures of economic activity across all sectors of the state economy, including gross domestic product (GDP), employment, wage rates, and income. This consistency is achieved because all of the equations included in the model are solved simultaneously. Simultaneous

equation econometric models are based on sound statistical methodology that enables the testing of estimated structural relationships. These models are powerful tools for regional economic forecasting and economic impact analysis because they represent a compromise between simplistic economic base models and detailed input-output models. AEM comprises five major components or blocks, each consisting of a set of equations for every major sector and industry in the state economy.

Output Block. This component models gross output in 2012 dollars (real gross output) for the major sectors. In general, GDP originating from a state sector is influenced by the national counterpart, aggregate state demand as represented by total real personal income, and competitive factors such as the relative tax burden and the relative wage rate. U.S. output and state total personal income are positively related to output. Typically, a negative relationship exists with the relative tax burden variable as higher state and local taxes reduce output. A lower relative wage rate tends to increase investment and production. Total GDP is obtained through the use of an identity that sums up each sector's output. The general functional form of the output equation is:

State sector real output = *F*(U.S. same sector output, relative sector wage rate, relative tax burden, …)

For sectors such as trade and finance, insurance, and real estate (FIRE), the state real personal income could be a better driving force of the output variable because internal demand tends to play a stronger role. The final selection of independent variables for the output equation depends on model fitness and is therefore determined empirically. Use of state real personal income as the driving variable introduces more feedback effects in the model through the output-employment-income relationship.

Employment Block. This block models the demand for labor. Each sector's wage and salary employment is derived from its real gross output and real wage rate. Theoretically, real gross output should be positively related to employment, while the real wage rate has a negative relationship. The total state wage and salary employment is obtained as the sum of the employment for each sector. The general functional form of the employment equation is:

State sector wage and salary employment = *F*(Same state sector real output, real sector wage rate, …)

Unemployment Rate. State unemployment rate is typically a function of the U.S. unemployment rate and total state employment or the change in total state employment. The state unemployment rate is positively related to the U.S. unemployment rate and negatively related to the level of state employment or the change in total state employment, as rising employment creates additional aggregate demand generating downward pressure on unemployment. The general functional form of the unemployment rate equation is:

State unemployment rate = *F*(U.S. unemployment rate, change in or actual state total employment, …)

Wage Rates. Each sector's wage rate is explained by the corresponding U.S. sector wage rate and the state unemployment rate. While the state wage rate tends to move with the U.S. wage rate, its

rise can be tempered by a high state unemployment rate. The general functional form of the wage rate equation is:

State sector wage rate = *F*(Corresponding U.S. sector wage rate, state unemployment rate,…)

Income Block. Wage and salary income is obtained by multiplying wage and salary employment by the wage rate for each sector and then summing up across the sectors. Other income categories such as dividends, interest, and rent; transfer payments; other labor income; proprietors' income; and adjustment for residence are driven by their national level counterparts. The general functional form of the income equations is:

State income category = *F*(Corresponding U.S. income category, …).

Total personal income is the sum of total wage and salary income and the other income categories. Very often total personal income, deflated by the GNP price deflator, is used to drive the output variables of such sectors as construction, TCPU, FIRE, and services.

Methodology: Economic Impact Analysis

The economic and fiscal impacts presented in this report are determined using a model that combines an Alabama-specific economic structure and fiscal component with multipliers from the Regional Input-Output Modeling System (RIMS II), an input-output model developed and maintained by the U.S. Department of Commerce's Bureau of Economic Analysis (BEA). Also incorporated in the model are consumer expenditure data from the U.S. Bureau of Labor Statistics (BLS) and tax data from the Alabama Department of Revenue (ADOR). The economic impacts focus on output, value-added, earnings (wages and salaries), and employment. Output refers to total or gross business sales and contains value-added, which is the contribution to GDP, or the value of goods and services produced on a value-added basis. Earnings impacts are part of value-added and are the wages and salaries of the workers recognized by the employment impact. It is important to note that earnings impact can in some cases be larger than the value-added impact, especially when large amounts of imports are used or in assembly operations with few area suppliers. Because of the nature of this study, multipliers for the highways and streets construction industry shown below are most appropriate and used for the analysis. All multipliers change with economic structure, time, and geographic definition.

Multipliers -- Construction: Highways and Streets	Alabama	Birmingham-Hoover MSA	Jefferson County
Final Demand Output	2.0578	1.9175	1.6595
Final Demand Earnings	0.5638	0.5115	0.2937
Final Demand Employment (jobs/per $million)	13	12	7
Final Demand Value-added (GDP)	1.0577	1.0259	0.8811
Direct Effect Earnings	1.9849	1.9150	1.7471
Direct Effect Employment	2.3622	2.3492	2.0740

Source: U.S. Bureau of Economic Analysis.

The output, value-added, earnings, and employment multipliers are defined as follows. Output multipliers represent the total dollar change in output that occurs in all industries for each additional dollar of output delivered to final demand (final consumption) by the activity or industry under study. Value-added multipliers are similarly defined except that they represent the total dollar change in value-added across all industries. Earnings multipliers represent the total dollar change in earnings of households employed by all industries for each additional dollar of payroll expenditure (or each dollar of output delivered to final demand) by the activity or industry whose economic impact is being estimated. Employment multipliers represent the total change in the number of jobs in all industries for each direct job (or for each million dollars of output delivered to final demand) by the activity or industry whose economic impact is being estimated. Construction phase employment impact refers to the total one-time number of jobs over the entire construction period and are thus job-years, unlike the annual post-build use phase employment impact which are ongoing jobs per year. The distinction is demonstrated with the following example: 10 jobs per year for three (3) years equals 30 job-years.

The fiscal impacts are conservative because they are derived from earnings impacts and cover just income, sales, and property taxes; fees and taxes not considered include utility taxes, building permit fees, direct construction spending related sales taxes, construction phase earnings-based property taxes, and taxes on rental/leasing, alcoholic beverages, cigarettes and tobacco, insurance premiums, and lodgings. Fiscal impacts are derived from earnings and employment impacts allowing for the fact that not all of the earnings impacts are sales or income taxable. Spending on sales taxable items constitute 42.4 percent of total earnings, based on BLS consumer expenditure data. State taxable income is about 65.8 percent of earnings and the applicable tax rate is essentially 5.0 percent; the first $500 and the next $2,500 are taxed at 2.0 percent and 4.0 percent, respectively, for single persons, head of family, and married persons filing separately while for married persons filing joint returns the first $1,000 and the next $5,000 are taxed at 2.0 percent and 4.0 percent, respectively, and the remainder is taxed at the 5.0 percent rate. Corporations pay at a 6.5 percent rate and corporate income tax averages about 12 percent of individual income tax. Sales tax rates used are 4.0 percent for the state and 5.0 percent for local (combined county and city) jurisdictions statewide; local sales tax rates vary between 3.0 to 7.0 percent but are usually at 5.0 percent. Property taxes are determined using assessment and millage rates published by the Alabama Department of Revenue as well as the ratio of state property tax receipts to state individual income tax receipts. Property taxes are not estimated for the construction phase because it is a one-time activity.

Economic impact analysis measures the effects of a specific economic activity or event on a specified geographic area. Examples include the economic impact on an area (e.g., state or county) of a proposed interstate highway or industrial plant, an existing industry, closing a military installation, or expanding an existing industrial facility. Federal laws and state and local regulations sometimes require economic impact studies prior to the implementation of a particular policy (relocation of an economic activity, change in tax policy, changes in zoning ordinance, providing incentives, etc.). Impact studies are designed to provide information for instituting policies to facilitate positive economic impacts and/or mitigate potential negative impacts. Economic impact analysis is therefore an important decision-making tool which can enhance the quality of decisions made, as well as the decision-making process in both public and private sectors. The analysis typically focuses on one or more of the major economic indicators: output, value-added, employment, and income. The purpose of an impact study usually determines which socioeconomic

variable(s) should be monitored. In this study, the primary focus is on all four major indicators and the consequent changes in selected taxes (income, property, and sales) from building the BNB.

Economic impacts comprise direct and indirect impacts. Direct impacts are those that are most obvious and include the wages and salaries of the employees who work directly for a firm or industry, as well as all other expenditures of the firm or industry, including taxes and distributed profits. Indirect economic impacts, often referred to as the "ripple" or "multiplier" effects, occur because of the additional demands arising from new income and expenditures for inputs and products related to the activity under study. New income creates demand for consumer products and services and their associated indirect impacts are often called induced impacts. Indirect and induced impacts may spark demand for the output of the firm, industry, or activity under study. For example, constructing the BNB creates direct and indirect effects on other industries through purchases of products and services for the main contractor's own use (e.g., subcontractor services and materials and equipment suppliers) and for its workers as consumers. These other industries and their workers in turn make purchases from other vendors in the state and the region, and so forth. To meet this additional demand, the other industries have to increase their production and sometimes payrolls with purchases of inputs that may also include the services of the contractors and subcontractors. All of this results in further development of the economy. The total economic impacts of the activity or organization being studied are the combined direct, indirect, and induced impacts. The ratio of the total economic impact to the direct effect is the multiplier that can be used to summarize the economic effects of the activity or organization on the geographic area(s) of focus.

Economic relationships do not obey strict geographic boundaries; workers and their incomes and industry purchases flow across these boundaries, enabled by transportation, communication, and other technology. Thus, a portion of the indirect effects of purchases/expenditures may occur beyond the boundaries of the specified region. Such occurrences are called *leakages*, as opposed to *linkages* (supplier-purchaser relationships) within the region. In general, a small geographic area will have a small *absolute* economic impact due to a high likelihood of leakage. A large region will have a larger absolute economic impact, but a smaller *relative* economic impact of an individual firm, industry, or activity on that area. The closure of one plant within a state, for example, may have only a small relative impact even if the plant employs thousands of workers; the absolute impact could be very large. The important point is that the effect or size of the economic impact is influenced by the size of the study area. If the area is too broadly defined, the relative impact will be small. If narrowly defined, the relative impact will be large.

Several methodological approaches are used in estimating economic impacts. These include the construction of econometric, economic base, computable general equilibrium (CGE), and input-output (I-O) models. Econometric and CGE models can be very costly and time-consuming to build. Economic base models require a very detailed set of information that is sometimes not available. The other methodological approaches generate slightly smaller multipliers than I-O models because of assumptions on factors such as input substitution and optimization behavior by economic agents.

The I-O modeling framework is used in this study. The technique generates multipliers for the economic activity of interest by focusing on economic interactions among all industries and all other economic transactions in the specified region. Interindustry relationships exist in two directions: backward (suppliers and other upstream linkages and leakages), and forward (distributors, retailers,

customers or users, and other downstream linkages and leakages). The number and strength of these backward and forward linkages and leakages determines the multiplier effects of the activity's industry. In general, products and services that require a small number of inputs and little additional processing (little value addition) will have smaller multiplier effects than complex products that require lots of inputs and extensive processing.

The nature of the product or service and technology largely determine the degree of interindustry linkages and leakages (and thus the overall impact), and the specific impact on a region depends upon the degree to which these interindustry relationships are localized. Technology determines inputs and economics determines the geographic source of supply and destination of products or services. Inputs purchased outside the economic impact study area constitute a leakage of potential impact—activities of local firms that have little or no economic impact—and provide opportunities for "localizing" such impact. Identifying leakage can provide valuable planning information for economic development. An activity's maximum impact on a specific area is obtained when all interindustry linkages occur within the area. A system-wide view is required because different firms and industries have different linkages. The I-O technique permits the incorporation of such system-wide perspectives.

For the purposes of this study, linkages between the construction sector and all their suppliers and/or customers must be traced. This task is facilitated by BEA's RIMS II, which provides multipliers for every state, region, county, and metropolitan area in the nation. The RIMS II I-O model provides data on each industry that reflect the value of inputs used per dollar of output in the production of that industry's output, represented in a tabular format. For example, data for the construction industry show the value of each input per dollar of product produced (or service provided). Rows reflect output produced by specific industries using inputs (represented in columns) from other industries and thus a balance is compelled. I-O models are based on a table of transaction balances that ensures economy-wide accounting consistency. Total payments equal total receipts for each producing sector and aggregate final demand equals aggregate value added. Demand for a particular input causes supply from its source industry which in turn creates demand for the materials that are used to produce the particular input, and so on. The round-by-round effects converge, and I-O methodology captures the total effect of the rounds of spending with the multiplier. RIMS II multipliers for an economy account for all linkages and leakages of that economy.

Multipliers are determined mathematically from I-O tables that are constructed from observed and reported data for the economic area of interest. The economy is divided into a number of producing industries that sell and purchase goods and services to and from each other creating *interindustry* flows that are key data. Sector goods and services are purchased by domestic consumers (households), international customers (exports), government (federal, state, and local), and for private investment purposes. These purchases are for direct use and termed *final demand*. For an economy with n sectors, if X_i represents total output for sector i, Y_i represents final demand for sector i products, and z_{ij} represents inter-industry flows (with j representing sectors as well), then

$$X_i = \sum_{j=1}^{n} z_{ij} + Y_i \qquad (1)$$

If a_{ij} represents the I-O technical coefficients where $a_{ij} = z_{ij} / X_j$ so that sectors use inputs in fixed proportions (the constant returns to scale Leontief production function), then the above equation becomes

$$X_i = \sum_{i=1}^{n} a_{ij} X_i + Y_i \qquad (2)$$

The standard formulation of the basic I-O model and its application, in matrix notation is:

Transactions balance: $X = AX + Y$ (3)

Solving for X: $X = (I - A)^{-1}Y$ (4)

For a change in Y: $\Delta X = (I - A)^{-1}\Delta Y$ (5)

where X is the gross output column vector, A is the matrix of fixed I-O coefficients, Y is the final demand column vector, and I is the identity matrix. This model enables determination of the output given changes in final demand levels (consumption, investment, government, or net exports). The Leontief inverse, $(I - A)^{-1}$, provides the I-O multipliers used to determine impacts. The elements of the matrix are really very useful and important. Each captures in a single number, an entire series of direct and indirect effects. Gross output requirements are translatable into employment coefficients in a diagonal matrix that is used together with the Leontief inverse to generate employment impacts. Similar manipulations generate value-added and income or earnings multipliers.