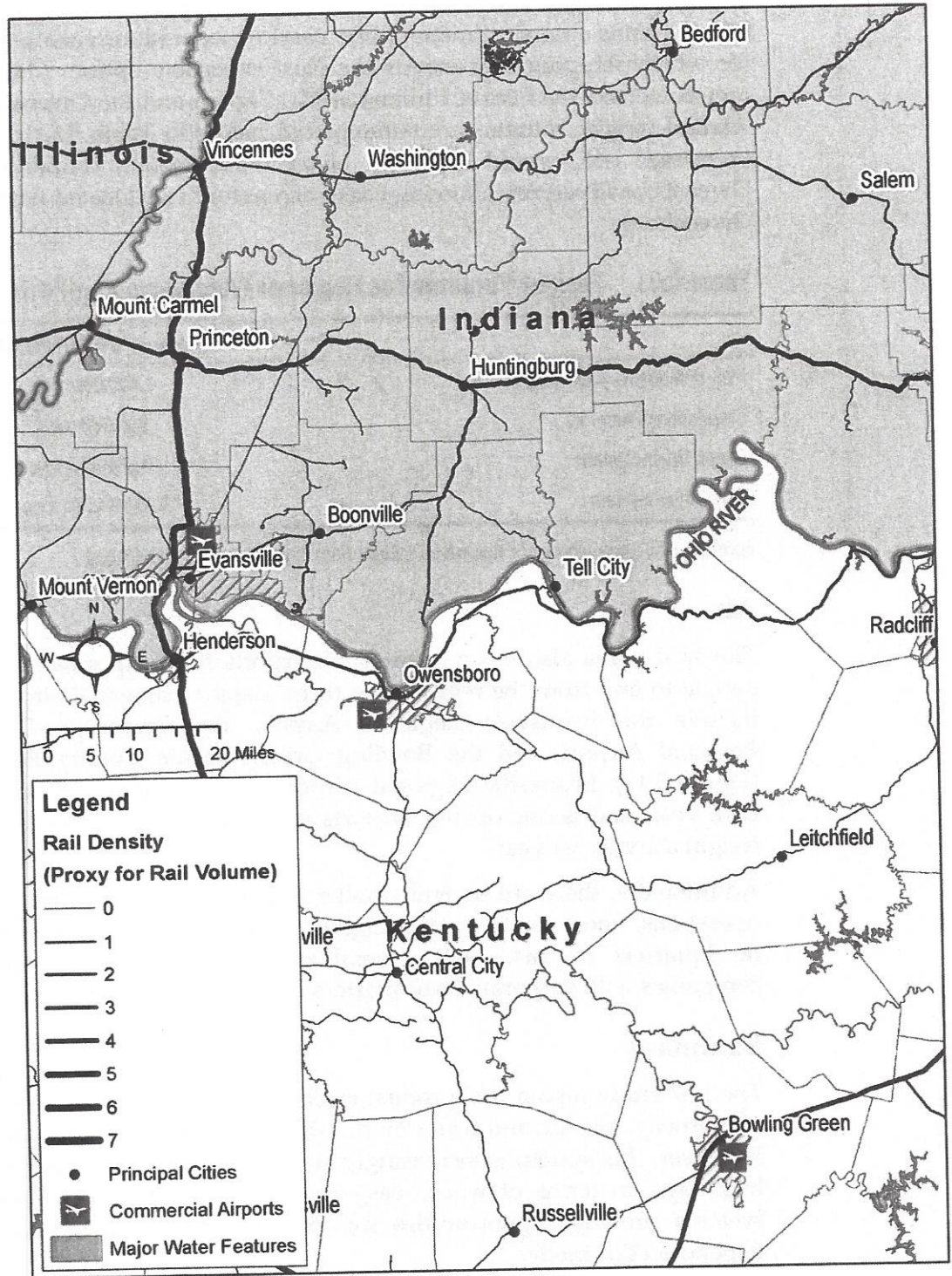


Figure 5.14 Regional Rail Volumes



Data Source: Freight Analysis Framework, National Transportation Atlas Databases 2012.

Water

The region boasts a significant waterborne shipping thoroughfare in the Ohio River. This is a major transportation asset for operations such as stone quarries, for which shipping by barge is the least expensive option. Major ports in the region include the Port of Indiana at Mt. Vernon and the Owensboro Riverport. Annual freight volumes are summarized below in Table 5.3. In particular, the proposed I-67 would provide better multi-modal connections with the Owensboro Riverport, allowing easier access for firms located north and south of Owensboro.

Table 5.3 Freight Volumes for Regional Waterways and Ports

	Annual Freight Tonnage
Port of Indiana—Mt. Vernon	4,700,000 tons
Owensboro Riverport	860,000 tons
Green River System	10,382,887 tons
Ohio River System	220,594,275 tons

Source: US Army Corps of Engineers Waterborne Commerce Statistics Center.

Air

The study area also has a number of airports that help move both goods and people to and from the region. The three major commercial airports in the area include the Evansville Regional Airport, the Owensboro-Daviess County Regional Airport, and the Bowling Green Warren County Regional Airport (Figure 5.14). Evansville Regional Airport moves a significant amount of cargo each year, and is one of four airports in Indiana with greater than 100 tons of freight activity per year.

Additionally, there are several smaller airports in the area that cater to private operations, most notably Huntingburg Airport. Easy access from corporate headquarters to this small general aviation airport is a major benefit to companies with corporate headquarters in the region.

Summary

The I-67 study region has a robust multimodal transportation system consisting of highway, rail, air, and water modes that serve local businesses and consumers. However, this system is increasingly strained by congestion, particularly on the highways. In terms of water, easy access to the Ohio and Mississippi River systems provides opportunities for growth among the local industries that depend on this mode.

5.5 SWOT ANALYSIS

Introduction

This section discusses the strengths, weaknesses, opportunities and threats (SWOT) analysis of the study region with respect to business site selection factors and business quality-of-life factors, as ranked in the 2010 Area Development Corporate Survey. The discussion focuses on the top three most important site selection and quality of life factors.

A review of the 2010 Area Development Corporate Survey, shown as Tables 5.4 and 5.5, identifies those factors that drive businesses to locate in a given region. These factors can be interpreted as driving (in part) the success of existing businesses as well. It is important to bear in mind the ranking (and thus the relative importance) of these factors in reviewing the SWOT analysis that follows for the study region.

Table 5.4 Business Site Selection Factors

Ranking	2010	2009	2008
1. Highway accessibility	97.3	92.9	95.4
2. Labor costs	91.0	96.7	91.4
3. Tax exemptions	90.9	88.4	88.6
4. Occupancy or construction costs	89.8	86.7	90.4
5. State and local incentives	89.3	84.9	87.2
6. Corporate tax rate	86.3	87.0	85.3
7. Availability of skilled labor	85.9	86.9	87.7
8. Inbound/outbound shipping costs	84.0	81.7	N/A
9. Energy availability and costs	82.1	88.0	87.9
10. Availability of buildings	81.0	75.7	80.8
11. Low union profile	75.4	75.8	82.7
12. Environmental regulations	74.8	71.2	76.1
13. Available land	73.4	75.7	82.0
14. Availability of advanced ICT services	72.9	83.2	55.5
15. Expedited or "fast track" permitting	68.2	72.2	72.5
16. Right-to-work state	67.9	74.0	76.6
17. Proximity to major markets	66.4	73.3	78.7
18. Proximity to suppliers	63.6	63.9	69.2
19. Raw materials availability	61.5	57.0	56.8
20. Availability of long-term financing	58.5	65.4	64.2
21. Training programs	56.7	61.7	62.3
22. Accessibility to major airport	50.0	49.0	53.3
22. Availability of unskilled labor	45.4	55.5	62.9
23. Proximity to technical university	36.1	36.7	38.4
25. Railroad service	36.0	27.4	27.2
26. Waterway or ocean port accessibility	21.9	17.7	15.7

Source: *Area Development Corporate Survey 2010.*

The SWOT analysis in this report focuses on the three most important factors in both the business selection factor (highway accessibility, labor cost and tax exemptions) and quality-of-life factors (healthcare facilities, and housing cost and availability) that are in some way interrelated with transportation.

Table 5.5 Business Quality-of-Life Factors

Ranking	2010	2009	2008
1. Low crime rate	84.6	79.0	95.4
2. Healthcare facilities	72.2	68.4	91.4
3. Housing cost	68.4	61.5	88.6
4. Housing availability	66.4	62.4	90.4
5. Ratings of public schools	61.2	61.4	87.2
6. Climate	56.3	55.0	85.3
7. Colleges and universities in area	53.2	50.7	87.7
8. Cultural opportunities	48.7	46.0	N/A
9. Recreational opportunities	48.2	52.7	87.9

Source: Area Development Corporate Survey 2010.

Highway Accessibility

The region's current transportation system was examined in Section 5.4. The proposed I-67 corridor would link Gaylord, MI to Nashville, TN with a new segment connecting I-69 to US-231 through Dubois and Daviess Counties. Current segments of US-231 south of I-64 and the Natcher Parkway between Owensboro and Bowling Green, KY, would be upgraded through minor improvements to Interstate standards. The facility is aimed at improving access within and to the study corridor, as well as diverting traffic from the congested I-65 route through the Louisville metropolitan area.

Owensboro, KY and Rockport, IN are in the middle portion of the corridor and are the farthest from an alternative north-south Interstate connection. Currently, the closest north-south Interstate access from Owensboro, KY is in Elizabethtown, KY at I-65, approximately 97.5 miles away; it is approximately 30.5 miles to Henderson, KY, where a connection to the I-69 corridor is proposed. Owensboro is an influential economy in the study region and the home of notable manufacturing firms including Unilever Foods, Specialty Food Group, and Toyotetsu Mid-America, among others.

Conexus Indiana published "A Plan for Indiana's Logistics Future" in March 2010. Among others, the plan included the following proposals to support infrastructure goals to facilitate travel and improve accessibility in Indiana:

- Support the completion of key infrastructure projects in bottleneck regions; and
- Identify and create a plan to improve/provide infrastructure (Interstate-like) access to regions/cities with limited accessibility based on impact and potential.

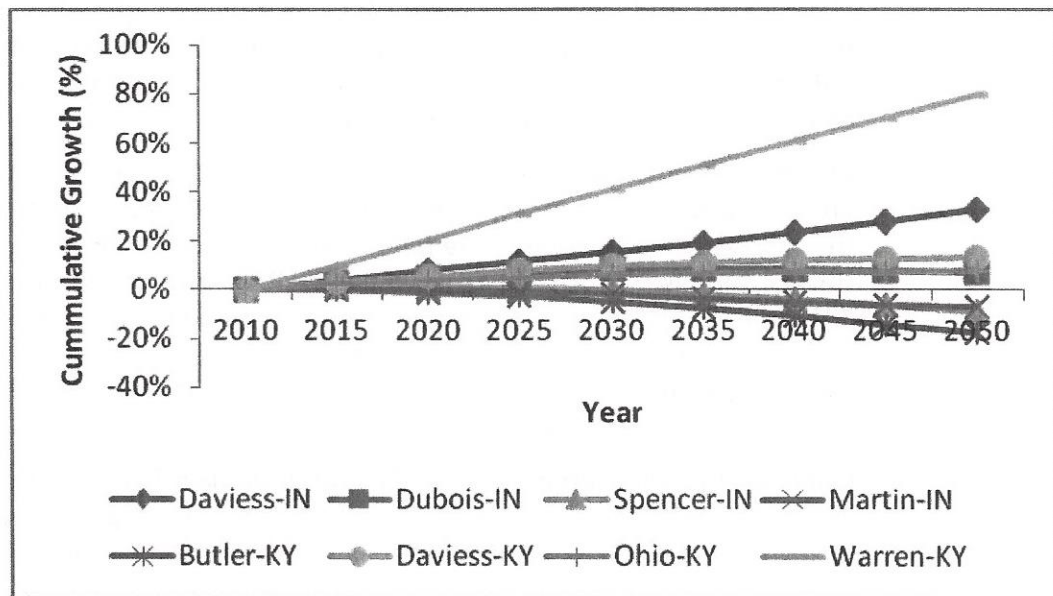
A formula was then developed to identify logical cities for improved access based on impact and potential. Two such cities – Jasper and Washington – are in the study corridor. Development of the proposed I-67 corridor is expected to provide this accessibility.

Labor Availability and Labor Costs

For businesses looking to find a start-up location, relocate, or expand, both the availability and quality of the labor force can be a major location decision factor. Population trends and projections define a region’s labor supply, while data on educational attainment and existing employment mix are utilized to assess the skill level.

The study region has posted growth over the past ten years and it is projected to continue into the future. As shown in Figure 5.15, the study region is projected to grow by 22.4 percent and 32.5 percent by 2035 and 2050 respectively, with Warren County posting the highest growth of about 80 percent by 2050. Over the same period, Butler County’s population is projected to decline by 17.5 percent. The overall growth trend of the region bodes well in terms of labor supply for businesses choosing to locate in the region, since labor quality in the region is comparable to the national average.

Figure 5.15 Projected Population Growth of the Study Region, 2010-2050

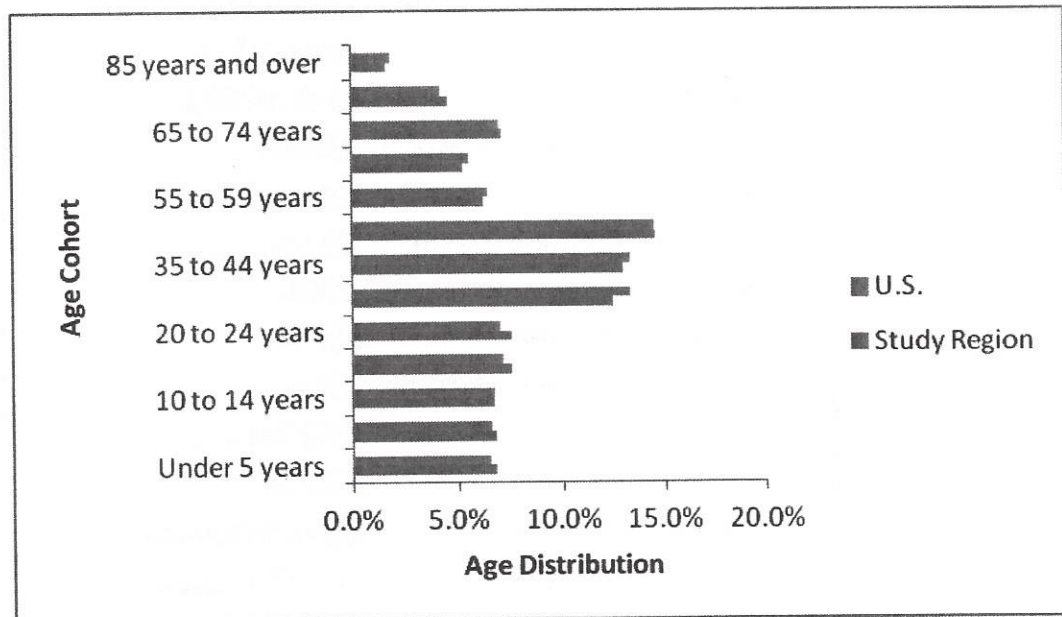


Source: U.S. Census Bureau

In tandem with its population growth, the study region’s age distribution indicates availability of long-term labor supply. From Figure 5.16, the study region’s working age group closely matches the national average. Similarly, the study region’s share of older population over 60 years is at par with the national average of 18.3 percent. Also, the share of the study region’s active working-age

group (20-44 years) is 33 percent, compared to 33.6 percent nationally, thus closely matching the national average.

Figure 5.16 Study Region Age Distribution, 2010

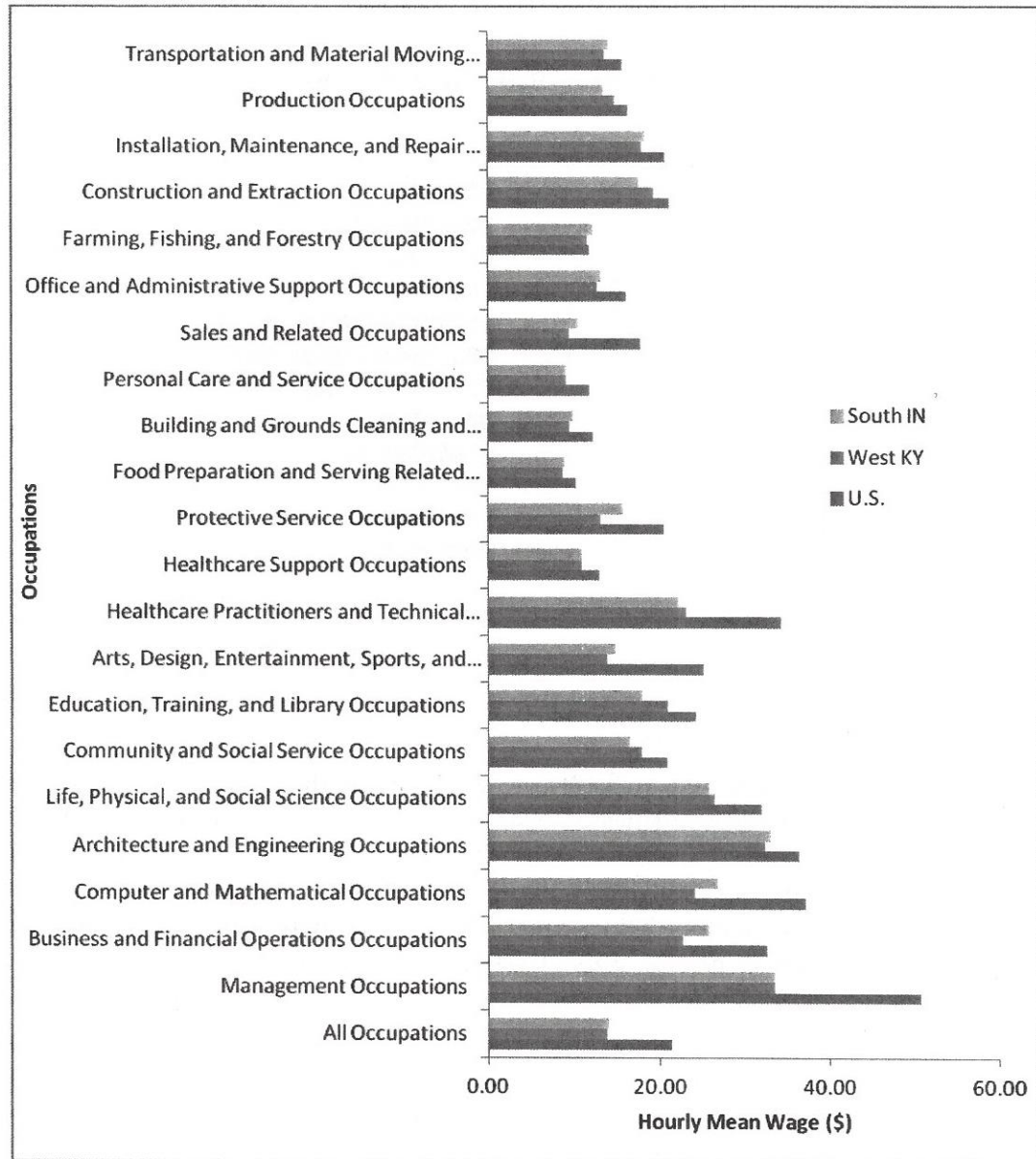


Source: U.S. Census

As indicated in Table 5.4, labor cost is the second most important criterion that influences business site selection. The importance of labor cost is explained by its effect on business competitiveness. Labor is a major production input factor; therefore a relatively higher cost of labor increases the overall business cost. All other factors being equal, the increased production cost translates into higher market prices, thus making it uncompetitive in the market. This leads to reduction in demand for products.

Figure 5.17 shows that labor costs for most occupations in the study region are lower than the national average. According to wage data provided by the Bureau of Labor Statistics (BLS), labor costs for farming, fishing and forestry are at par with the national average.

Figure 5.17 Comparison of Hourly Wage by Occupation



Source: Bureau of Labor Statistics

Business Tax Climate

While taxes are an important source of revenue for the government services that keep businesses' doors open, the burden of high taxes, especially compared to one's neighbors, can slow economic growth and hinder prosperity. State and local taxes represent a significant business cost for corporations operating in the United States; in fact, they often have a material impact on net income of businesses. Consequently, business location decisions are influenced by

assessments of relative tax burdens across multiple states. This could explain the reason tax exemptions rank third in business site selection factors.

According to the Tax Foundation, Indiana and Kentucky rank 11th and 22nd nationally (respectively) as states with more favorable business tax climates in 2012. The overall ranking is based on each state's performance in five tax categories: corporate income tax, individual income tax, sales tax, unemployment insurance tax, and property tax. A rank of 1 is more favorable than 50. This ranking is based on the tax climate as of July 1, 2011, the first day of the standard state fiscal year. Table 5.6 shows that Indiana and Kentucky rank 1st and 4th among their neighboring states, including Illinois, Tennessee, Michigan, Missouri, Ohio, West Virginia, and Virginia.

Table 5.6 State Business Tax Climate Rankings, 2012

State	Overall Rank	Corporate Tax	Individual Income Tax	Sales Tax	Unemployment Insurance Tax	Property Tax
Indiana	11	18	10	11	16	11
Kentucky	22	26	25	8	47	19
Ohio	39	22	42	29	10	33
Virginia	26	6	37	6	36	27
Illinois	28	45	13	33	43	11
Michigan	18	49	11	7	44	30
West Virginia	23	24	22	18	26	25
Tennessee	14	13	8	43	27	48
Missouri	15	8	23	26	9	7

Source: The Tax Foundation

In a study conducted by the Tax Foundation and KPMG LLP (*Location Matters - 2012*), Indiana ranks 43rd in tax burdens for mature operations, but 15th for newly established operations. Similarly, Kentucky ranks 18th for mature operations and 7th for newly established firms. A summary of Indiana and Kentucky's business tax climates for newly established firms across seven firm-types is presented in Table 5.7.

All other factors being equal, the study region's business tax climate is likely to stimulate attraction of businesses in research and development, call center, retail, corporate offices, distribution centers, and labor-intensive manufacturing. The region's tax climate is less favorable for attracting capital-intensive manufacturing businesses.

Table 5.7 Business Tax Climate Ranking for New Businesses, 2012

Firm Type	Indiana Ranking	Kentucky Ranking
Corporate Headquarters	12	6
Manufacturing – Capital Intensive	38	35
Manufacturing – Labor Intensive	20	11
Call Center	16	4
Retail Store	2	16
Distribution Center	23	12
Research & Development	5	9

Source: Tax Foundation

Healthcare Facilities

As the third largest medical facility in Kentucky, the Owensboro Medical Health System (OMHS) has positioned Owensboro as a medical hub. OMHS operates a full-service medical facility. The facility provides premiere heart services through its partnership with Louisville's Jewish Hospital Heart and Lung Institute and is home to the Owensboro Cancer Research Program, a joint venture with James Graham Brown Cancer Center at the University of Louisville, which include full-time University of Louisville researchers linked to the plant biotech industry and Kentucky BioProcessing.

Other medical facilities located in the study region include the Ohio County Hospital, Commonwealth Regional Specialty Hospital, Greenview Regional Hospital, Western Kentucky Orthopaedic & Neurosurgical Associates, Memorial Hospital and Health Care Center, and Daviess Community Hospital.

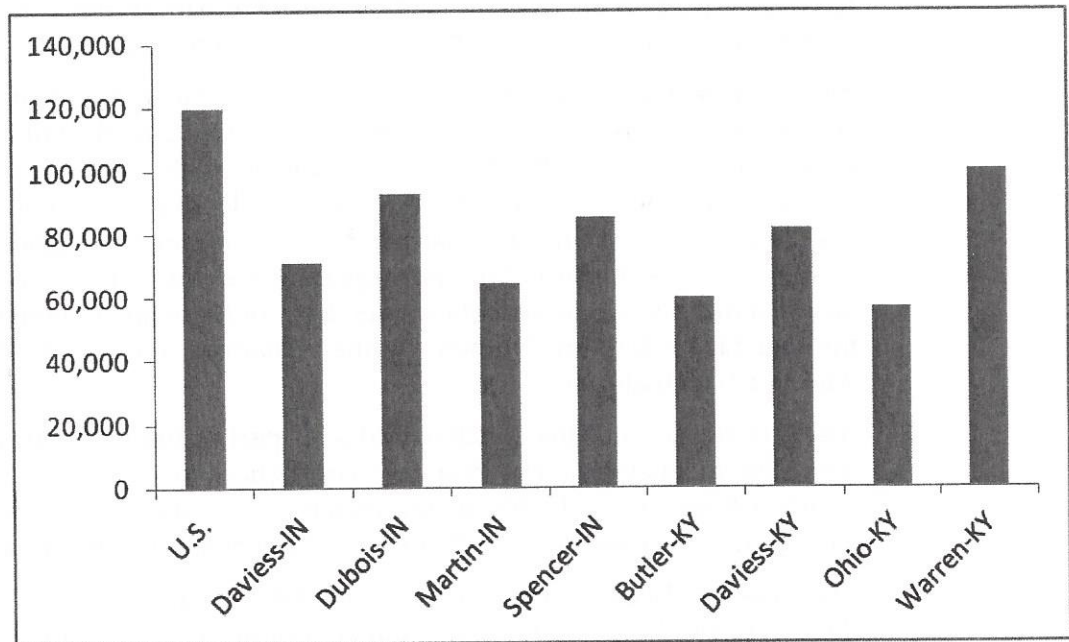
Housing Cost and Availability

The benefits of affordable housing extend beyond its occupants to the community or town. Generally, affordable housing leads to increased spending in the local economy and acts as an important revenue source for local government. In areas where housing demand outstrips housing supply, housing prices are relatively high. This puts employers and the regional economy at a disadvantage as employers are unable to attract and retain workers.

Median housing values in the study area have been consistently lower than the national average since 2000 (Figures 5.4 and 5.18). As mentioned in section 5.2, 10 percent of housing units in the study area are unoccupied, up from 8.3 percent in

2000¹⁰. The increase in unoccupied housing catalyzed by the recent economic meltdown will continue to contribute to affordable housing in the study area. Additionally, the slow recovery of the U.S. economy is likely to stabilize housing prices in the medium term, as residents continue to face foreclosures, and the demand for multi-family housing remain high.

Figure 5.18 Median Housing Values, 2000



Opportunities

The proposed I-67 corridor is expected to foster long-term economic development of the study region through improved accessibility, improved supply chain connectivity to existing business (especially manufacturing), and accelerated development of new lands earmarked for development.

The region's manufacturing capability, today, is tied together by its transportation system. The manufacturing sector makes extensive use of intermodal rail and water services, but it is trucking and the highway system that provide manufacturers with the capability to access a wide range of materials, labor, technology, and markets, and to integrate these elements into cost-effective, just-in-time manufacturing operations. For these reasons, the proposed I-67 corridor will improve transportation capacity to deliver freight reliably and at stable or lower costs to keep the manufacturing sector competitive.

¹⁰ U.S. Census Bureau

Also, the planned Technology Park to be developed by the Huntington Airport Authority is expected to benefit from the development of the corridor. The corridor will provide access to over 200 acres of land earmarked by the Huntingburg Airport Authority for development of a Technology Park. This technology park has also received Foreign Trade Zone (FTZ) status and there are more than fifteen economic development incentives for aviation based manufacturers to locate at this location; however not being on an Interstate will have an impact on the inbound and outbound transportation costs and reliability for high value goods, limiting the ability to attract businesses.

The proposed I-67 corridor could provide Indianapolis manufactures with competitive access to the Ohio River. This would directly link Indianapolis to ports such as the Mid-America Terminal, with 947 acres available for development and a 150 railcar unit train trans-loading facility for coal and bulk materials. The terminal is expected to have one of the highest capacity coal mixing facilities in the nation, an important service to help electric generation facilities meet new emission standards. Lack of highway accessibility has been a limiting factor for development of the remaining industrial sites at the Mid America Terminals site.

Also, construction of the Natcher Bridge as part of the I-67 corridor has already provided a reliable, congestion free connection to the two Class 1 railroads (Norfolk Southern and CSX) in the region. At the moment neither NS nor CSX has a bridge to cross the Ohio River in the Rockport/Owensboro area.

The General Motors Corvette plant located in Bowling Green, KY estimates that development of I-67 could save about 20 minutes in travel time per truck due to improved accessibility. The saving in transport cost will reflect in market prices, thus improving its competitiveness and profitability and creating more jobs in the region.

Transportation is a key contributor to the overall competitiveness of the study region's manufacturers. Increasingly, high-technology and manufacturing industries depend on reliable transportation systems to support "just-in-time" (JIT) production methods that seek to minimize inventories and produce goods as they are needed by customers. Today, manufacturers draw on a worldwide supply chain and distribution network, hallmarks of JIT, that would not be possible without efficient transportation links. Deficiencies in the transportation system may result in late deliveries of critical manufacturing inputs, potentially delaying production runs and adding to costs.

In addition to manufacturing, tourist access can also be improved. Holiday World, in Santa Claus, IN, would be able to increase its potential market, and would likely lead to increased development of tourist-related amenities (e.g., hotels and restaurants).

Threats

In view of the important role transportation plays in the study region's economy, delay or abandonment of development of the proposed I-67 corridor will pose a threat to the long-term development of the regional economy. Continued lack of high-speed facilities, increased congestion on existing roadways through local communities, and continued issues with safety due to narrow shoulders and limited sight distances will result in increased transportation cost and unreliability in freight delivery to and from manufacturers in the region. In response to unreliability in freight delivery, the region's manufacturers will be forced to invest in buffer stocks to avoid shortage, thus increasing dependency on warehousing. Increased dependency has both upsides and downsides, though the downsides outstrip the upsides.

On the upside, jobs are created in warehouses. On the downside warehousing increases inventory cost (e.g., carrying cost and insurance). These embedded costs increase market prices of goods. In a highly competitive environment, the increased market price will translate into reduction in demand for products, thus affecting profitability of businesses in the region. As a result, the growth of the region's major freight dependent industries will be constrained. As confirmed by Hagler Bailly (1999), the long-run price elasticity of rail and truck freight truck transport is -0.4^{11} . This means that a 10 percent increase in freight transportation cost will lead to a 4 percent decline in rail and truck shipment by shippers. This in the long-run will negatively impact the region's economy, particularly since freight dependent industries drive economic growth in the region.

Finally, independent of actual impact on cost, even the perceived lack of highway access can be an impediment to site selection decisions by businesses. Highway access, as identified in Table 5.4 above, is the most critical site selection criterion. For many companies, particularly international corporations, "highway access" is equivalent to "Interstate access". The lack of a signed Interstate highway in the corridor, therefore, could be a threat to further economic growth with new businesses.

Summary

Table 5.8 summarizes several of the key findings from the SWOT analysis. Based on this analysis, availability of housing and lower housing costs, lower labor cost, favorable business tax climate for selected industries, and improved accessibility arising from development of the proposed I-67 corridor have the potential to attract businesses to the region.

¹¹ Victoria Transport Policy Institute, Transportation Elasticities, How Prices and Other Factor Affect Travel Behavior

Table 5.8 Summary of SWOT Analysis

Factors	Strengths/Opportunities	Weakness/Threat
Business Site Selection Factor		
Highway Accessibility	Development of the I-67 corridor will improve accessibility to existing businesses and also open up new lands for development	Lack of Interstate access
Labor Cost	Labor cost for most occupations are lower than the national average	
Tax Exempt	Favorable business tax climate for research and development, call center, retail, corporate offices, distribution centers, and labor-intensive manufacturing related businesses	
Business Quality-Of-Life Factor		
Healthcare Facilities	The study corridor is home to Owensboro Medical Health System (OMHS) and has positioned Owensboro as a medical hub.	
Housing Cost and Availability	Housing is available in the study corridor, and the median value is below the national average.	

Source: Cambridge Systematics Analysis

5.6 ESTIMATED ECONOMIC IMPACTS

Transportation Efficiency Benefits

Economic composition and level of economic activity are key factors that affect the demand for transportation, and conversely – as indicated in the SWOT analysis – transportation supply impacts level of economic activity through improvements in travel efficiencies. To estimate the travel efficiencies associated with the highway improvement, output from the I-67 Travel Demand Model, expressed in daily VMT and daily VHT, is employed. VMT and VHT are produced by vehicle classification (auto, non-freight truck, and freight truck) for build without toll, build with toll, and no-build scenarios for 2035. The base year model produces similar outputs for 2010. VMT and VHT for the benchmark years are interpolated to attain travel data for a 20-year study period spanning between an assumed opening year of 2016 and 2035. The daily changes in VMT and VHT are estimated, annualized and monetized to determine the net benefit or travel efficiency gains in terms of four areas between the build (toll and toll-free) and no-build scenarios:

- **Travel time.** System VHT changes for autos and trucks are output from the I-67 Model for the model area as well as within the eight-county study

corridor. Within the corridor, as the number of vehicles in the corridor is projected to increase considerably with the new facility, the total VHT is also expected to increase – though the overall *speed* in the corridor is expected to improve for all vehicles. To normalize the VHT across scenarios and capture the improved time savings for vehicles with likely origins and destinations in the corridor (and therefore economic impacts to the corridor counties), the average speed was calculated (VMT/VHT) for the build scenarios in the eight counties and multiplied by the original no-build VMT in the eight counties. These new VHTs, as well as the model area VHTs, are multiplied by values of time for trucks and autos from the Illiana Expressway Feasibility Study.

- **Reliability.** Reliability is measured in time lost due to non-recurring delay (unanticipated delays, such as traffic accidents), and is usually valued at a higher dollar value per hour than standard time savings. For trucks, reliability is estimated as 25% of travel time savings as calculated above.¹² For autos, non-recurring congestion (incidents) are estimated to be about 30 percent of total delays, also calculated from the travel time savings above. Auto reliability benefits are estimated at 6 percent of this.
- **Vehicle operating costs.** VMT by auto and truck were multiplied by vehicle operating cost rates (including fuel) by speed from the California Department of Transportation's economic model, CAL-B/C, for each scenario. Similar to the travel time calculations for the eight-county study corridor, the average vehicle operating cost for each scenario was found and multiplied by the VMT from the no-build in order to normalize the traffic volume.
- **Safety.** VMT by functional classification and volume level from the model was multiplied by crash rates from the HERS-ST model, as described in Section 4. As with the other benefit calculations in the study corridor, average rates calculated from the build scenarios were multiplied by the VMT from the no-build to get normalized changes in crashes.
- **Emissions.** Using emissions rates by pollutant, speed, and vehicle type from the EPA's MOVES model, a CO, VOC, PM, and NO_x emission rate was assigned to each segment in all scenarios. These rates were multiplied by VMT for each segment. To normalize for the eight-county study corridor in the build scenarios, the average rates were found and multiplied by the no-build VMT. The results were monetized based on estimated health impact costs from the literature and EPA's 2010 and 2012 recommendations.

To estimate the economic impact of the investments, travel efficiency gains are disaggregated into changes in monetary (explicit, out-of-pocket) costs and

¹² Guide to Quantifying Economic Impacts of Federal Investment in Large Scale Freight Transportation Projects, Cambridge Systematics and Boston Logistics.

opportunity (implicit) costs and are mapped to households or industry, depending on the beneficiary. Changes in explicit costs arising from personal travels (changes in vehicle operating and safety costs), are mapped to households, while those related to business travels (truck and business related auto trips) are mapped to industry. The gains or savings mapped to industry are further distributed across various industries in the study region based on each industry's transportation cost. Estimated changes in explicit costs mapped to household and industry serve as input into the IMPLAN input/output economic model to estimate economic impacts. The output from the IMPLAN model is expressed as changes in employment, output, and value added.

Tables 5.9 and 5.10 show present value and allocation of estimated user benefits associated with I-67 corridor investment (discounted at three percent) at the corridor level and model area level, respectively. The model area level results reflect all benefits to the entire region with the I-67 improvements, including cost savings to road users with longer trips through the study corridor that have been diverted from other facilities (namely, I-65). These trips, without an origin or destination in the study corridor, do not directly impact the economies of the eight counties but do impact the economy of the region.

If I-67 is built with a toll, households and industries in the eight-county study corridor are expected to experience a present value of \$1.1 billion worth of transportation-related benefits over 20 years. While there are increases in some travel costs, such as vehicle operating costs (a user cost) and emissions costs (a societal cost) due to increased speeds and decreased vehicle efficiencies, as well as increased driving distances to access a now faster route, this is compensated by the time and reliability savings of that faster route, as well as the improved safety of an Interstate-class facility. Across users from the entire model area, incorporating most of southern Indiana and central Kentucky, a total of \$1.8 billion in travel benefits are expected to accrue over 20 years, indicating that potential benefactors of I-67 extend far beyond the eight counties physically in the corridor. Finally, revenues also accrue to the government or operating agency at a present value of \$44 million.

Without tolls, while no direct revenues are obtained, user benefits within the eight counties more than double to \$2.4 billion, driven primarily by improved travel time, reliability, and safety savings due to the reduced out-of-pocket cost of using the new facility, which attracts more users. For the entire model area, the present value of these benefits is \$3.2 billion.

Table 5.9 20-Year Present Value of Transportation Benefits to Eight-County Study Corridor (Million US\$, 2012)

	Build Without Toll Scenario	Build With Toll Scenario
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Benefit Category	Household	Industry	Household	Industry
Travel Time & Reliability	349.2	1,013.7	331.0	424.0
Vehicle Operating Cost	(302.5)	(113.9)	(303.2)	(100.9)
Safety Cost	926.0	513.2	463.5	253.53
Emission Cost	(14.3)	(5.7)	(4.5)	(0.2)
Total	958.6	1,407.3	486.8	576.4
Toll Revenue (accrues to government)	N/A	N/A	15.8	27.9

Source: Cambridge Systematics Analysis

Table 5.10 20-Year Present Value of Transportation Benefits to Entire Model Area (Million US\$, 2012)

Benefit Category	Build Without Toll Scenario		Build with Toll Scenario	
	Household	Industry	Household	Industry
Travel Time & Reliability	628	1,031.6	375.0	549.0
Vehicle Operating Cost	(106.5)	(41.4)	(18.7)	(5)
Safety Cost	1,172.2	595.4	631.0	318.7
Emission Cost	(5.1)	(1.13)	(1.8)	(0.9)
Total	1,688.4	1,584.4	985.5	861.8
Toll Revenue (accrues to government)	N/A	N/A	15.8	27.9

Source: Cambridge Systematics Analysis

Economic Impacts

Economic impacts are measured as changes in economic activity in a given region, arising from a project or a change in policy. They can be expressed in various economic variables including sales (output), employment, and personal income (earnings). Reduction in transportation cost and improved connectivity to domestic and international markets arising from roadway capacity expansion increases output of firms (especially export oriented manufacturing industries) and increases demand for key factors of production including labor, materials, equipment, and supporting downstream activities which are supplied by other local and non-local firms. This chain of activities leads to local economic expansion through increased employment, personal income, and business profits. Generally, total assessment of economic impacts comprises estimation of three impact types, namely direct, indirect and induced.

- **Direct impacts.** Direct impacts associated with roadway capacity improvement are the direct effects of changes in output (sales) or production

cost, and spending in key economic industries including wholesale and retail trades, manufacturing, and transportation and logistics. For instance, the direct effect of an improved roadway to a manufacturing firm is the reduction in crew and inventory costs.

- **Indirect impacts.** As business sales increase, demand for key input materials also increases in tandem, and vice versa. Therefore, the indirect impact associated with increased business sales (output) is estimated or referred to as increase in demand (purchases) for key input materials by local firms who are the direct suppliers to these businesses. For example, increased construction activities increase the demand (purchases) for steel, concrete, timber, fuel, and other materials. Consequently, spending on factors of production stimulate expansion of businesses downstream of the production chain. Accordingly, changes in output, employment, and income arising from these expansions are considered to be indirect impacts.
- **Induced impacts.** Direct and indirect impacts are the sources of induced impacts, and it normally constitutes the largest portion of total impacts. Changes in output, employment, and income stemming from household consumption of goods and services are induced impacts. Similar to indirect impacts, increases or decreases in personal consumption also lead to increases or decreases in business sales (output). This chain of activities also translates into changes in employment, and income.

To estimate the economic impact of the proposed study, the user benefits shown in Table 5.10 are disaggregated into explicit and implicit benefits. The explicit benefits are mapped to the respective beneficiaries: households and industry. Based on 2010 industry output reported by IMPLAN and transportation cost per dollar of output, explicit costs mapped to industry are distributed across industries to estimate each industry’s transportation cost savings. Changes in industry output arising from these savings are introduced into IMPLAN. Similarly, household savings are introduced into the IMPLAN model for simulation.

The results of the IMPLAN simulation are summarized in Tables 5.11 and 5.12. These results represent the present value of impacts over 20 years in terms of increased GRP and total output. Total permanent jobs (not related to temporary construction jobs for the construction of the facility itself) created over 20 years are presented as job-years. The new facility is anticipated to increase economic output in the study corridor by \$460 million if I-67 is tolled, and \$1.3 billion without tolls, over 20 years. This equates to the creation of 3,600 job-years and 10,800 job-years, respectively.

Table 5.11 20-Year Present Value of Economic Impacts to Eight-County Study Corridor, Toll Free Scenario (Million US\$, 2012)

Impacts	Job Years	Gross Regional Product	Output
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Direct	6,980	434.3	898.8
Indirect	1,920	122.4	236.4
Induced	1,930	116.9	194.3
Total	10,830	673.5	1,329.5

Source: IMPLAN, Cambridge Systematics Analysis

Table 5.12 20-Year Present Value of Economic Impacts to Eight-County Study Corridor, Toll Scenario (Million US\$, 2012)

Impacts	Job-Years	Gross Regional Product	Output
Direct	2,310	149.5	313.9
Indirect	660	42.1	81.7
Induced	650	39.0	64.9
Total	3,610	230.5	460.5

Source: IMPLAN, Cambridge Systematics Analysis

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6.0 Conclusions and Next Steps

I-67, if built, is expected to attract anywhere from 16,000 to 30,000 vehicles per day along its length in 2035, with the highest volumes toward the central and southern ends of the corridor. It provides some diversion not only from parallel arterials (such as US-231) for trips to, from, and within the corridor, but also diverts some longer-distance traffic from I-65, providing some congestion relief in that corridor. I-67 is not expected to divert traffic from I-69, but rather increase demand on the facility north of Washington, IN.

Through the transportation cost savings experienced by users in the corridor, \$2.4 billion is expected in benefits for households and businesses over 20 years. These benefits increase to \$3.2 billion for all of southern Indiana and central Kentucky. Tolls provide some revenue but also decrease demand and usage on the facility, and therefore decrease transportation benefits of the facility.

These transportation benefits to households and industry translate into direct economic impacts in the form of increased industry output and additional job creation. These direct impacts, in turn, ripple through the economy in the form of indirect and induced economic impacts. Total increased combined economic output over these 20 years due to these impacts from I-67 are expected to reach \$1.3 billion in the corridor, with over 10,000 new job-years created.

With the highly skilled labor force, available land, productive local industry in the form of manufacturing and power generation, diverse intermodal transportation options, and affordable and available housing, the region would benefit in the form of growth of existing businesses and increased business attraction. Numerous industries have identified supply chains that rely on highway transportation, whose costs would be reduced by improvements in the corridor. Highway access, and particularly Interstate access, is known to be a key factor in business location decisions.

Several next steps are recommended based on typical progression of highway corridor projects as well as issues specific to the study corridor:

- **Further analysis of financial feasibility and funding options.** A more detailed traffic and revenue study would carefully examine a range of toll rates and the sensitivity of traffic to these rates, helping to determine the optimal point for both regional benefits and revenues. It would also explore other potential funding sources and implementation mechanisms in this context, such as public private partnerships, build-operate-transfer, or others, though the specifics of a delivery model should be explored at later stages.
- **Consideration of phasing.** There may be logical phasing of improvements in the corridor. By breaking the project into phases that move towards the end product while independently providing measureable benefits, it may be

easier to move portions of I-67 forward at an earlier date. It might also be easier to acquire funding and convince elected officials and state DOTs of short term feasibility of the project.

- **Concurrence to proceed with developing the I-67 Corridor between the States of Indiana and Kentucky.** It is imperative to continue outreach to both INDOT, KYTC, and representatives from each state, by presenting results from this and other potential studies. Buy-in from each state is crucial for moving the process forward for further study, funding, and eventual construction.
- **NEPA Studies.** An environmental impact study (EIS) will have to be performed if Federal funds are anticipated as necessary for implementation. Such a study will also help to articulate a more specific corridor and design, costs, benefits, and other information necessary for moving the concept forward.
- **Corridor Preservation.** With information from the NEPA study, corridor preservation can begin. Due to the long timeframe in which highway corridor planning, design, and construction occurs, unanticipated development within a proposed highway corridor often hinders or increases the cost of highway construction. In areas where growth is occurring, proactive corridor preservation measures should be considered.
- **Preliminary Design and Final Design.**
- **Right-of-way Acquisition and Construction.**