Northern Beltline Project

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Executive Summary

This report estimates the economic impact of the proposed Northern Beltline project in Birmingham, Alabama. This proposed project will stretch 52 miles through Jefferson County and is estimated to cost over $5 billion (https://fhwaapps.fhwa.dot.gov/foisp/publicActive.do). This cost makes the project the most expensive road project in the history of the state of Alabama. Given this, a comprehensive economic analysis is needed to determine the benefits and the costs of this project.

ALDOT has recently written a reevaluation on this project, but it is based on the 2010 study conducted by the University of Alabama's Center for Business and Economic Research. This study has been previously critiqued by the Ochs Center for Metropolitan Studies in 2012 and is not consistent with ALDOT's own 2012 Reevaluation. Despite the numerous flaws found in the CBER analysis, the 2010 CBER study has not been updated or revised, and ALDOT leans on it in its most recent reevaluation.

Our team of trained economists has analyzed the various studies to produce an updated analysis of the Northern Beltline project. Our team has determined that significant flaws exist in the 2010 CBER analysis – flaws which have never been corrected or updated. The current re-evaluation of the Beltline project continues to use outdated and inaccurate numbers. As such, the benefits of this project have been dramatically overstated while the costs have not been fully considered.

Specifically, our team has concluded the following:

1. Because the Northern Beltline Project will not necessarily lead to economic development, it cannot be justified as an economic development project.

The Northern Beltline project is being sold primarily as an economic development project. However, the primary purpose of any transportation project should be the efficient movement

of people, goods, and services. The Northern Beltline project should be analyzed as a transportation project, first and foremost. Building a "bridge to nowhere" may create temporary construction jobs but provides little benefit to the overall community.

2. Even if the proposed Northern Beltline is constructed, projected population and economic growth remains low.

The 2010 CBER study assumes that "if you build it, they will come." In fact, the relationship is the reverse. Economic development creates demand for more transportation options. Building excess transportation routes does not necessarily lead to economic growth.

3. Beltlines and interstate expansions do not necessarily produce economic development. In fact, beltlines across the nation are being removed to remedy the economic and community harm caused by previous beltlines.

Interstate beltlines have the potential to cause harm, splitting neighborhoods and lowering property values. A couple hours north of Birmingham, Chattanooga, TN, has converted its Riverfront Parkway to a boulevard, leading to revitalization and economic growth in the surrounding neighborhoods. Other cities like Rochester, NY, are actively tearing down their inner beltlines.

4. In terms of job creation, the Northern Beltline project has a very expensive per-job cost and many of these jobs will be short-term.

The Northern Beltline project will create jobs, but at an exorbitant cost. First, the number of permanent jobs created is radically overstated by the 2010 CBER analysis. In the 2012 Reevaluation (Appendix L), ALDOT predicts a 7.6% increase in permanent jobs for the area, or 2,842 more jobs. This turns out to cost the taxpayer about $2.3 million per permanent job.

As far as construction-related temporary jobs are concerned, once adjusted for the latest Federal Highway Administration numbers, the 2012 Ochs Center report estimated the project cost will be between $302,326 and $456,016 per job. This number has increased since then because of the rising cost of construction materials and construction-related labor. With these higher costs, the estimated cost per construction job is now $560,512 if the project was completed in 17 years, or $845,453 per construction job if the project is completed in 30 years.

5. Beltlines and interstate expansions require secondary investments for additional roads and sewers in the affected areas.

If the beltline is constructed, it would require secondary capital investments into the areas such as connecting roads, sewer capacity, and first-responder infrastructure. These additional costs make the project even less attractive from a cost standpoint.

6. The large expenditure for this project compared with the costs results in a low rate of return; the Northern Beltline is not a sound investment.

Given the extraordinary amount of money being directed towards this project, other alternatives should be scrutinized. A more pressing transportation project could be relieving congestion in other areas of Birmingham or expanding the existing interstate capacity. Non-transportation alternatives should be considered as well, as other investments such as K-12 education would create more jobs than this project.

Conclusions

The Northern Beltline project is not an efficient use of transportation funds. It does not address existing areas of congestion or expand highways for greater regional commerce. It is instead being portrayed as an economic development project, and in that capacity, it will not deliver the reported benefits.

The project will create a limited number of mainly construction jobs at a very high cost to the taxpayers. There will also be additional costs to taxpayers in the form of secondary roads, expanded sewer systems, expanded first-responder services, and other infrastructure spending. The funds for this project could be better used for other transportation projects in the Birmingham area, or for other non-transportation projects which would create more jobs and produce economic growth.

1. Introduction

Study Authors

This report is authored by two PhD Economists: Matthew Metzgar and Craig Depken. Both economists are currently employed at the University of North Carolina at Charlotte.

Dr. Matthew Metzgar has taught undergraduate and MBA classes in the Belk College of Business since 2011. Previously, he taught undergraduate and graduate classes in Ohio and New York. He also spent several years working in the private sector. His research interests include the economics of obesity and the effects of employee ownership. Dr. Metzgar has provided economic damages testimony to a variety of clients, including the U.S. Department of Justice.

Dr. Craig A. Depken, II joined the Belk College of Business in August 2007. Before coming to UNC Charlotte, he was an associate professor of economics at the University of Texas at Arlington. Dr. Depken has taught a wide variety of applied economics courses, including econometrics, international economics and industrial organization. He has a national reputation in the area of sports economics and has widely published in other areas including the economics of advertising, applied public choice, and local and regional economic development. From 2006 through 2016, he worked with the Coweeta Long Term Ecological Research Project, funded by the National Science Foundation, to contribute original research on how local development and public policy impact ecosystem services.

Background on the Northern Beltline Project

The Northern Beltline, a proposed transportation infrastructure project in Birmingham, Alabama, has been a subject of intense debate and discussion for over a decade. This research paper aims to examine the potential benefits and challenges associated with the construction of the Northern Beltline, considering its impact on the regional economy, transportation efficiency, and environmental sustainability. Existing research has demonstrated how the planning and implementation of transportation projects, such as highways and urban renewal initiatives, often have conflicting dynamics (Retzlaff, 2020).

The proposed Northern Beltline project, which would create a 52-mile long, four-lane highway encircling the northern suburbs of Birmingham, has been touted as a means to alleviate traffic congestion, spur economic development, and improve connectivity within the region (https://birminghamwatch.org/jeffco-commissioner-says-northern-beltline-work-will-go-on-proposes-resolution-of-support/). Proponents of the project argue that the Beltline will attract new businesses and industries to the area, create thousands of jobs, and enhance the overall quality of life for residents by reducing commute times and improving access to various amenities and services. However, concerns have been raised regarding the potential environmental impact of the project, as well as its implications for the region's socioeconomic dynamics and the risk of exacerbating existing inequalities.

While the Northern Beltline has been touted as a means to improve transportation efficiency and spur economic development, it is crucial to carefully consider the potential job creation and taxpayer impacts of the project. The proximity to new transportation infrastructure can bring benefits, such as enhanced accessibility, and challenges, such as exposure to air pollution, noise, and visual blight, particularly for disadvantaged populations who are more likely to reside near highways (Ross et al., 2012).

Moreover, the prioritization of roadway construction over the development of trails, greenspace, and civic spaces may have significant implications for the health and well-being of local residents. The integration of public health considerations and a commitment to addressing the priority of unmet needs of the communities should be at the forefront of the decision-making process for the Northern Beltline project.

The 1997 Final Environmental Impact Statement (FEIS) describes the various impacts of the Northern Beltline project. This beltline is part of the Corridor X-1 project, developed by the Appalachian Development Highway System to bring mobility and economic development to underserved areas of the region.

Following the 1997 FEIS, the Coalition for Regional Transportation commissioned the University of Alabama's Center for Business and Economic Research (CBER) to conduct a 2010 study on the project. This 2010 study estimated there would be a large amount of job creation and economic development from the project.

In March of 2012, the Alabama Department of Transportation issued a reevaluation of the 1997 FEIS. This 2012 reevaluation used the CBER report to cite to the future the economic development, but also included an appendix which showed the opposite, that the Beltline would only create population growth of 2,208 people (1.1%) and create only 2,842 permanent jobs (7.6% growth).

In June of 2012, the Ochs Center for Metropolitan Studies issued a critique of the 2010 CBER study. The Ochs Center study found numerous flaws in the CBER analysis, which led to an overstatement of the job creation and an understatement of the project costs. The Ochs Center report showed that the CBER study failed to include additional costs such as connecting roads and sewer expansion. It also showed that the CBER failed to discount the benefits and jobs from the project, as these would be happening many years into the future. Importantly, it also showed that other regional transportation projects would be provide more benefit at a lower cost than the Northern Beltline project.

Finally, in 2024 another ALDOT reevaluation took place. This 2024 reevaluation again cited the 2010 CBER report to demonstrate the economic impacts of the proposed beltline, without even mentioning the findings of Appendix L in the 2012 Reevaluation. In the 2024 reevaluation, ALDOT never conducted its own study nor acknowledged the flaws cited by or even mentioned the 2012 Ochs Center report.

2. Population and Economic Growth Trends: Birmingham, Alabama

The primary purpose of any transportation project should be the efficient movement of goods, workers, and residents. Having an efficient transportation system can lower the cost and time of travel, leading to greater economic productivity. While having a sub-optimal transportation system can hinder economic growth, building excess transportation capacity will not necessarily induce economic growth. Therefore, inducing economic growth should not be the primary purpose of any transportation project.

Instead, an optimal transportation system should meet the demands of the residents, workers, and businesses in a given area. The first step in analyzing the viability of the Northern Beltline project is to determine the need for transport in the Birmingham area. The demand for transport ultimately depends on the population and wealth of a region.

The next two sections show the general population trends for the Birmingham city area and the Birmingham MSA area. It is important to study both population trends, as beltlines often have negative effects on cities while shifting development outward to the suburbs.

Birmingham Population Trends

Birmingham city proper has experienced population loss since the 1960s.

Birmingham, Alabama's population trajectory reflects a story of industrial rise, racial transformation, economic shifts, and recent challenges. This analysis delves into the key periods and factors shaping Birmingham's population over the past century.

The Industrial Boom and the "Magic City" (Late 19th - Early 20th Century):

- Explosive Growth: Founded in 1871 amidst Alabama's burgeoning iron and steel industry, Birmingham experienced explosive population growth, earning it the nickname "The Magic City."
- Migration and Opportunity: The promise of industrial jobs attracted both black and white migrants from rural Alabama and neighboring states, dramatically increasing the city's population.

Civil Rights Era and Demographic Shifts (Mid-20th Century):

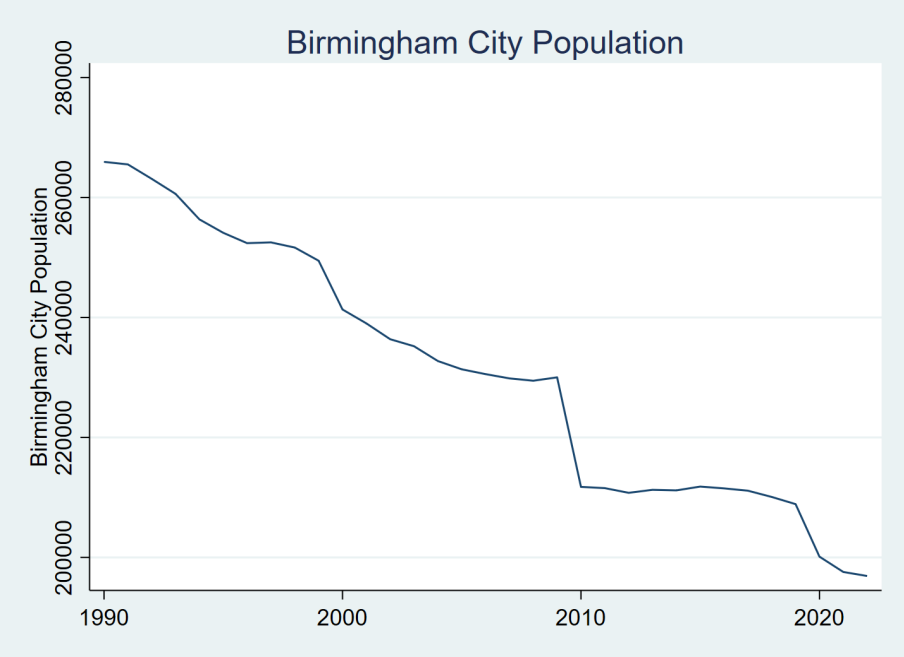
- White Flight and Suburbanization: The Civil Rights Movement and the dismantling of segregation led to white flight to surrounding suburbs, significantly impacting Birmingham's demographics.
- Black Majority City: As white residents moved out, Birmingham transitioned to a majority-black city, experiencing economic challenges associated with suburbanization and industrial decline.

Post-Industrial Transition and Recent Trends (Late 20th - Early 21st Century):

- Economic Restructuring: Like many industrial cities, Birmingham faced job losses as heavy industries declined. The city sought to diversify its economy, with growth in healthcare, education, and service sectors.

- Population Loss and Stagnation: Birmingham's population peaked in the 1960s and has experienced a slow but steady decline since then, reflecting broader trends of outmigration from Rust Belt cities.
- Recent Revitalization Efforts: Efforts to revitalize downtown Birmingham, attract new industries, and improve quality of life have shown some success in stabilizing population and attracting young professionals.
- Figure 1 depicts the population of the city of Birmingham from 1990-2022. As can be seen, the population of the city has been steadily declining since 1990 when population was 265,940 through 2022 when the city's population was 196,910.

Figure 1: Birmingham City Population



Source: U.S. Census Bureau

Challenges and Opportunities:

- Addressing Poverty and Inequality: Birmingham continues to grapple with high poverty rates, particularly among its African American population. Addressing these disparities is crucial for future growth.

- Investing in Education and Workforce Development: Preparing residents for jobs in a changing economy is essential for attracting new industries and retaining talent.
- Leveraging Cultural Assets: Birmingham boasts a rich history and vibrant cultural scene, which can be further leveraged to attract residents and visitors.

Birmingham's population trends reflect a complex interplay of industrial history, racial dynamics, and economic transitions. While facing challenges, the city's recent revitalization efforts offer hope for a more prosperous and equitable future. Understanding these historical trends is crucial for crafting effective policies to address Birmingham's unique challenges and capitalize on its potential.

Birmingham, Alabama MSA: Navigating Population Trends in the 21st Century

The Birmingham-Hoover Metropolitan Statistical Area, encompassing Jefferson, Shelby, St. Clair, Blount, Bibb, Chilton, and Walker counties, provides a broader lens through which to examine population trends impacting Alabama's largest urban center. While the city of Birmingham itself has faced population decline, the MSA paints a more nuanced picture of growth, decline, and shifting demographics.

Figure 2a depicts the Birmingham-Hoover Metropolitan Statistical Area and its component counties. Jefferson County is home to the city of Birmingham. The proposed Northern Beltline project (depicted as project X-1 in Figure 1b provided by the Appalachian Regional Commission (2011)) is contained almost entirely within the boundaries of Jefferson County.

Figure 2a: Birmingham-Hoover Metropolitan Statistical Area

Source: Gunter (2017).

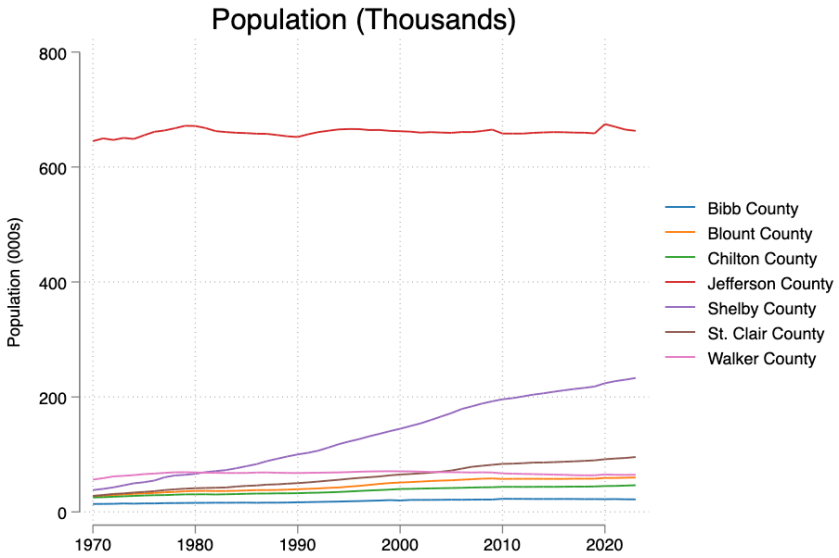
Figure 2b: Proposed Northern Beltline Project in Jefferson County, Alabama

Source: Appalachian Regional Commission (2011).

MSA Growth amidst City Decline:

- Birmingham's population decline and the MSA's growth suggests a pattern of suburbanization and outward migration within the region. As can be seen in Figure 3, Jefferson County has had a relatively stable population level whereas Shelby County has experienced rather steady population growth since the late 1980s. The other counties in the MSA show modest growth in their residential populations.

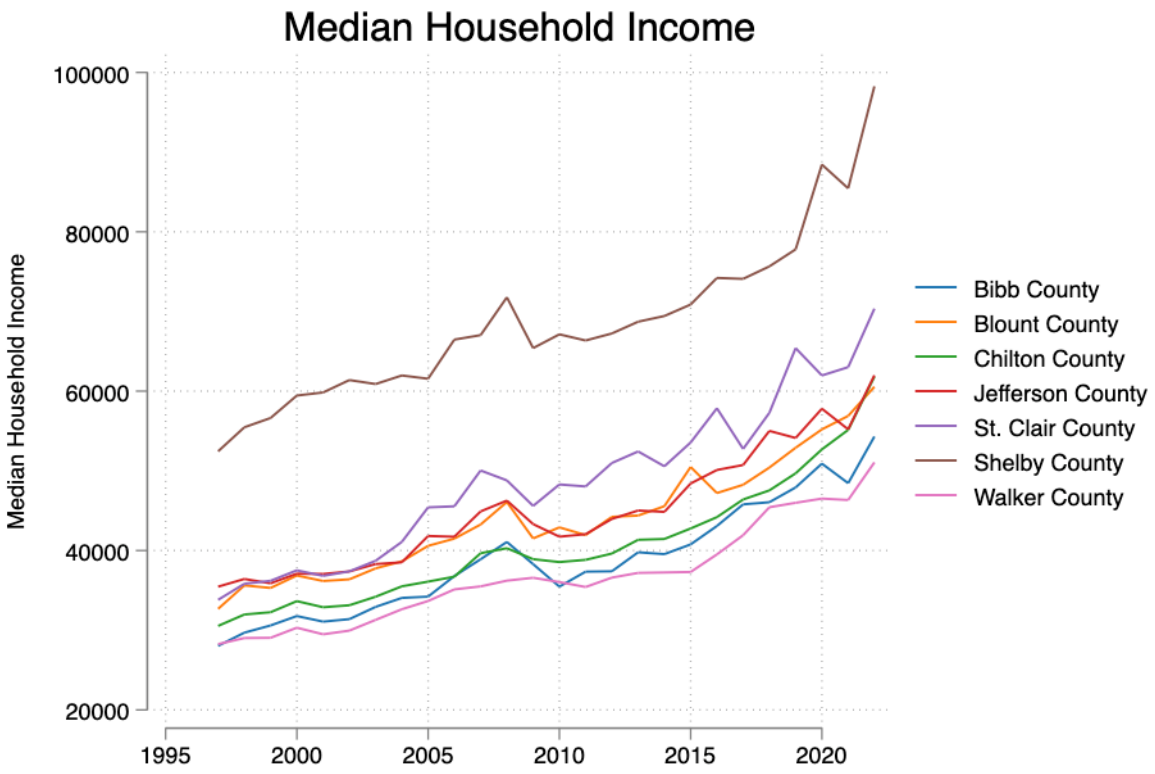
Figure 3: Birmingham-Hoover MSA County Population Trends



Source: Federal Reserve Bank of St. Louis

Figure 4 depicts the median household income for the seven MSA counties. As can be seen, Shelby County has the highest median household income with St. Clair County coming in second. There is considerable inequality across the seven MSA counties, with Shelby County having a median household income in 2022 ($98,263) that is approximately 90% greater than the median household income in Walker County in 2022 ($51,065).

Figure 4: Median Household Income of Birmingham-Hoover MSA Counties



Source: Federal Reserve Bank of St. Louis

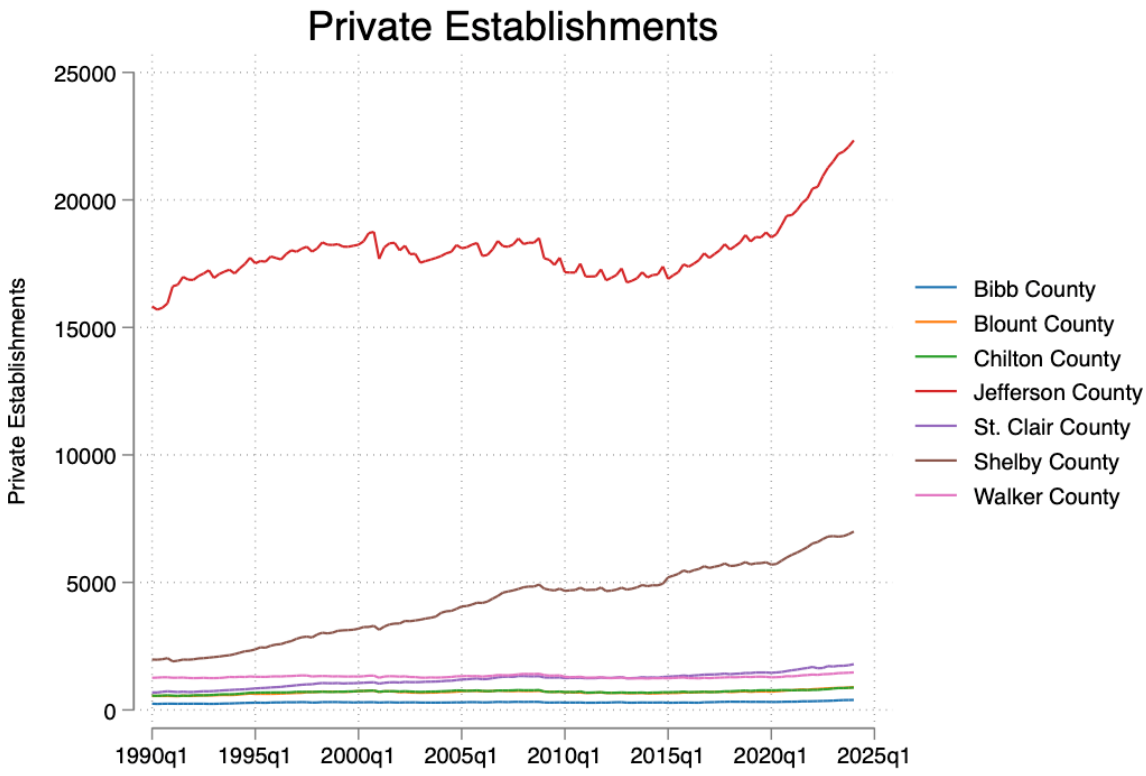
- Suburban Appeal: Factors like perceived lower crime rates, newer housing stock, and highly-rated school districts (like Hoover and Oak Mountain) have contributed to the growth of suburban counties like Shelby, which has consistently outpaced the MSA's overall growth rate (The fastest growing and shrinking cities in Alabama, 2019). While some argue the construction of I-459 was a driver in this growth, there is much more to the issue that will be discussed below. A large part of this "growth" was simply reallocation from the city population to the suburbs.

Factors Influencing Population Trends:

- Economic Shifts: The decline of heavy industry in Birmingham city proper led to job losses and outmigration. The MSA has diversified its economy, attracting sectors like healthcare and technology, and this has led to positive population growth. The overall trend in private enterprises amongst the seven MSA counties is depicted in Figure 5. As can be seen, Jefferson County experienced a slight decline in private business establishments around the time of the Great Recession in 2008 and has not had much increase in business establishments except since the end of the pandemic, 2021.

Alternatively, Shelby County has experienced a steady increase in business establishments.

Figure 5: Private Business Establishments by County in the Birmingham-Hoover MSA



Source: Federal Reserve Bank of St. Louis

- Aging Population: Like many parts of the US, the Birmingham MSA is experiencing an aging population, with a growing cohort of retirees. (Alabama County and MSA Population Trends - Public Affairs Research Council of Alabama, 2019) This demographic shift has implications for healthcare, housing, and workforce development.
- Migration Patterns: While the MSA has experienced net domestic outmigration, it has seen an influx of international migrants, contributing to population growth and cultural diversity.

Challenges and Opportunities:

- Sprawl and Infrastructure: ensuring adequate infrastructure to support growth in outlying areas are ongoing challenges for the MSA.

- Regional Collaboration: Fostering greater collaboration between Birmingham city and its surrounding suburbs is crucial for addressing shared challenges and maximizing economic opportunities.
- Attracting and Retaining Talent: Investing in education, workforce development, and quality of life initiatives is essential for attracting and retaining young professionals to fuel future growth.

The Birmingham MSA's population trends present a mixed bag of growth and decline, reflecting broader economic and demographic shifts impacting the region. While suburbanization and an aging population pose challenges, the MSA's economic diversification efforts and potential for regional collaboration offer hope for a more vibrant and sustainable future. Understanding these trends is crucial for policymakers, businesses, and residents alike as they navigate the evolving landscape of the Birmingham metropolitan area.

Birmingham, Alabama: A Look at Economic Growth Across the MSA

Understanding economic growth in the Birmingham-Hoover MSA requires looking beyond the city itself and examining the diverse economic landscapes of its constituent counties. While some counties thrive, others grapple with the legacy of industrial decline and seek new paths to prosperity.

Jefferson County: The Urban Core's Transformation

- Legacy Industries and Challenges: Home to Birmingham, Jefferson County faces the most significant hurdles. The decline of heavy industries like steel and iron manufacturing led to job losses and economic stagnation. (Alabama's GDP by metro: who's growing, who's shrinking, who's contributing, who's not?, 2013)
- Revitalization Efforts: Recent years have seen efforts to revitalize downtown Birmingham, attract tech startups, and expand the healthcare and education sectors. These initiatives show promise but haven't fully offset historical losses.

Shelby County: The Suburban Success Story

- Rapid Growth and High Income: Located south of Birmingham, Shelby County exemplifies suburban prosperity. It boasts the highest median household income in the state and has experienced rapid population and job growth. (The fastest growing and shrinking cities in Alabama, 2019)
- Diversified Economy: Shelby County benefits from a diversified economy with strong healthcare, professional services, and retail sectors.

(https://www2.labor.alabama.gov/workforcedev/CountyProfiles/Shelby%20County.pdf) Its proximity to Birmingham provides access to a larger workforce and amenities.

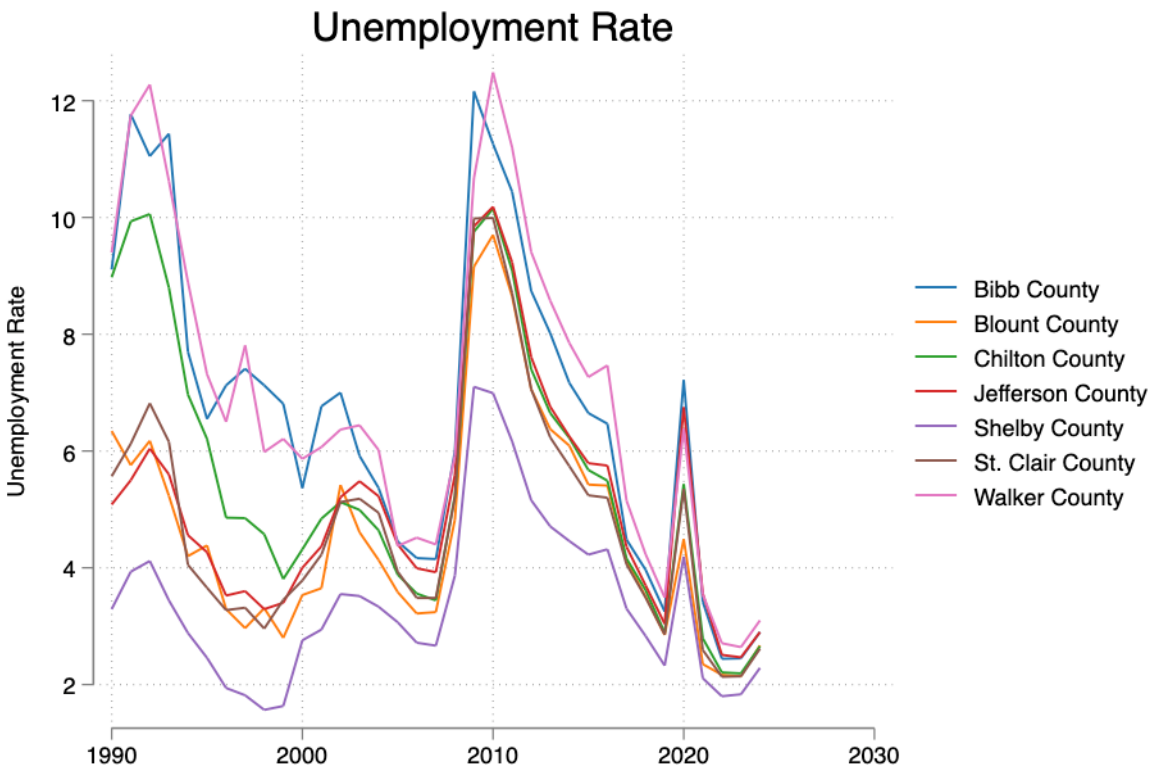
St. Clair, Blount, Bibb, Chilton, and Walker Counties: Seeking New Paths

- Mixed Growth Patterns: These counties, located on the periphery of the MSA, present a mixed picture. St. Clair benefits from its proximity to Birmingham and growth in automotive manufacturing. Blount and Walker counties, more rural, have seen slower growth and struggle with higher poverty rates. Bibb and Chilton counties are also more rural and have lower growth rates than the other counties in the MSA.
- Leveraging Assets: Each county possesses unique assets. St. Clair's location along the I-20 corridor makes it potentially attractive for logistics and distribution, if there is sufficient demand. Blount and Walker counties boast natural beauty and recreational opportunities, with potential for tourism development.

Key Takeaways and Future Outlook:

- Uneven Growth: Economic growth across the Birmingham MSA is uneven, with suburban counties like Shelby outpacing the urban core.
- Converging Labor Markets: Over the past 30 years, the seven counties in the Birmingham-Hoover MSA have seen their unemployment rates converge, suggesting that the labor markets in these seven counties are becoming more similar over time. As seen in Figure 6, the unemployment rates in the 1991 recession were very disparate, whereas the unemployment rates during the Great Recession in 2008 were more strongly correlated, and during the pandemic year of 2020 were even more strongly correlated. While Jefferson County has lower income levels, its unemployment rate is similar to other surrounding counties.

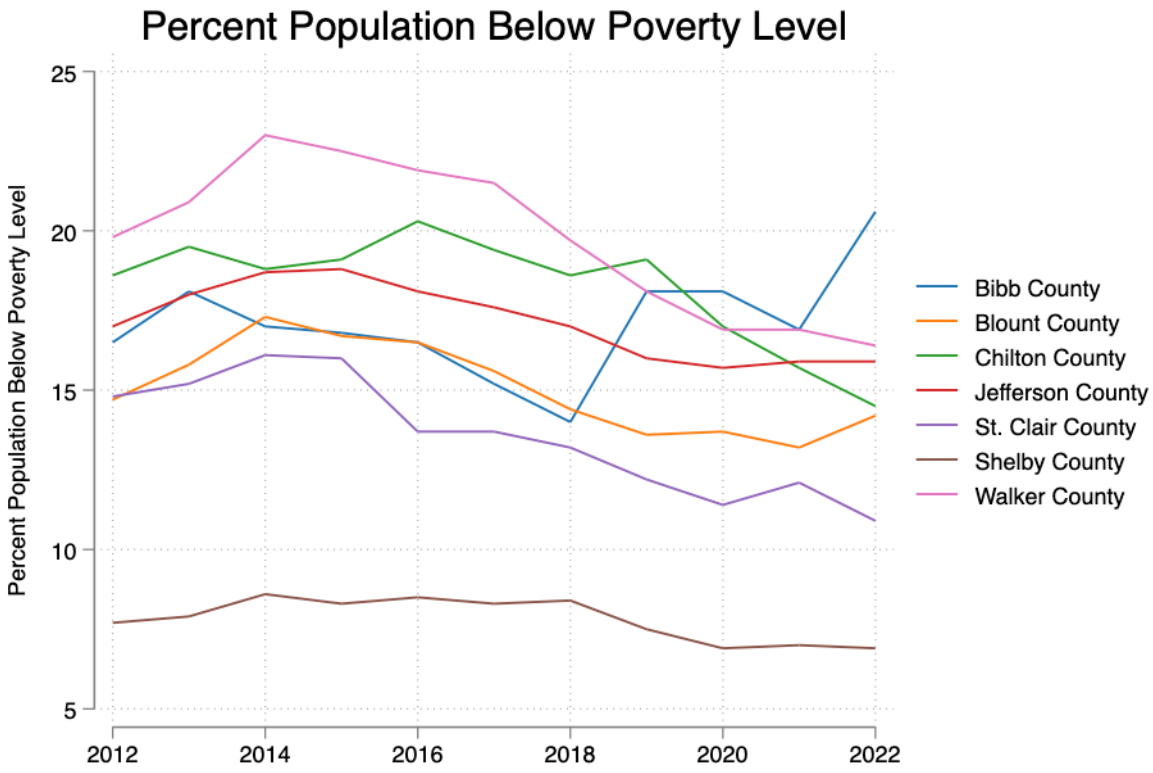
Figure 6: Annualized Unemployment Rate in Birmingham-Hoover MSA Counties



Source: Federal Reserve Bank of St. Louis

- Importance of Regional Collaboration: Addressing economic disparities requires collaboration between counties to leverage strengths and support struggling areas. As can be seen in Figure 7, the percentage of the various county populations that are below the poverty level varies dramatically from a low in Shelby County to a high in Walker County. The percentage of the population below the poverty line in Jefferson County is third highest among the seven counties in 2023, suggesting that there appears to be room for more collaboration amongst the MSA counties to reduce poverty.

Figure 7: Percent of Population Below the Poverty Level in Birmingham-Hoover MSA Counties



Source: Federal Reserve Bank of St. Louis

- Investing in Infrastructure and Education: Improving needed transportation infrastructure and investing in education and workforce development are crucial for attracting new industries and creating opportunities for all residents.

The Birmingham MSA presents a microcosm of the challenges and opportunities facing many American metropolitan areas. While some suburban counties thrive, the urban core grapples with the legacy of industrial decline. By fostering regional collaboration, investing strategically, and leveraging the unique assets of each county, the Birmingham MSA can strive for more inclusive and sustainable economic growth that benefits all its residents.

Conclusions

A key finding is that while the population of Birmingham city has stagnated, the Birmingham MSA area has shown growth over time. This highlights one potential issue with beltlines, which is they may shift population and resources from the city towards the outlying areas. Shifting population from one area of an MSA to another is not growth.

3. Transportation and Regional Economic Development – If you Build It, Will They Come? No.

Overall, while the relationship between transport infrastructure and economic development is complex, the evidence suggests that economic growth leads to demand for more and better transportation options (Maparu & Mazumder, 2017). The economic development comes first and then the transportation projects follow (Kasu & Chi, 2018). In fact, this is known as Wagner's Law, which states that as income rises, public sector spending will rise to provide more amenities (Wagner & Weber, 1977). In addition, integrating transportation planning with economic development strategies that prioritize equity and sustainability are crucial for creating thriving and inclusive regions.

It is also important to note that the effect of highways has lessened over time. Early in the development of the highway system, new highways could connect cities and contribute to growth. Yet building more highways now will not produce this growth. A study of US highways from 1970 to 2010 (Kasu & Chi, 2018) shows this relationship:

"This study indicates that in all models (except the 1980s and 1990s), highways have mostly no statistically significant impact on population and employment change. This means that highway infrastructure does not produce any significant population or employment change; rather, it plays a facilitator role for the flow of people, materials, and raw and finished products."

The relationship between transport investment and regional economic development is complex and influenced by a multitude of factors. Here are some key considerations:

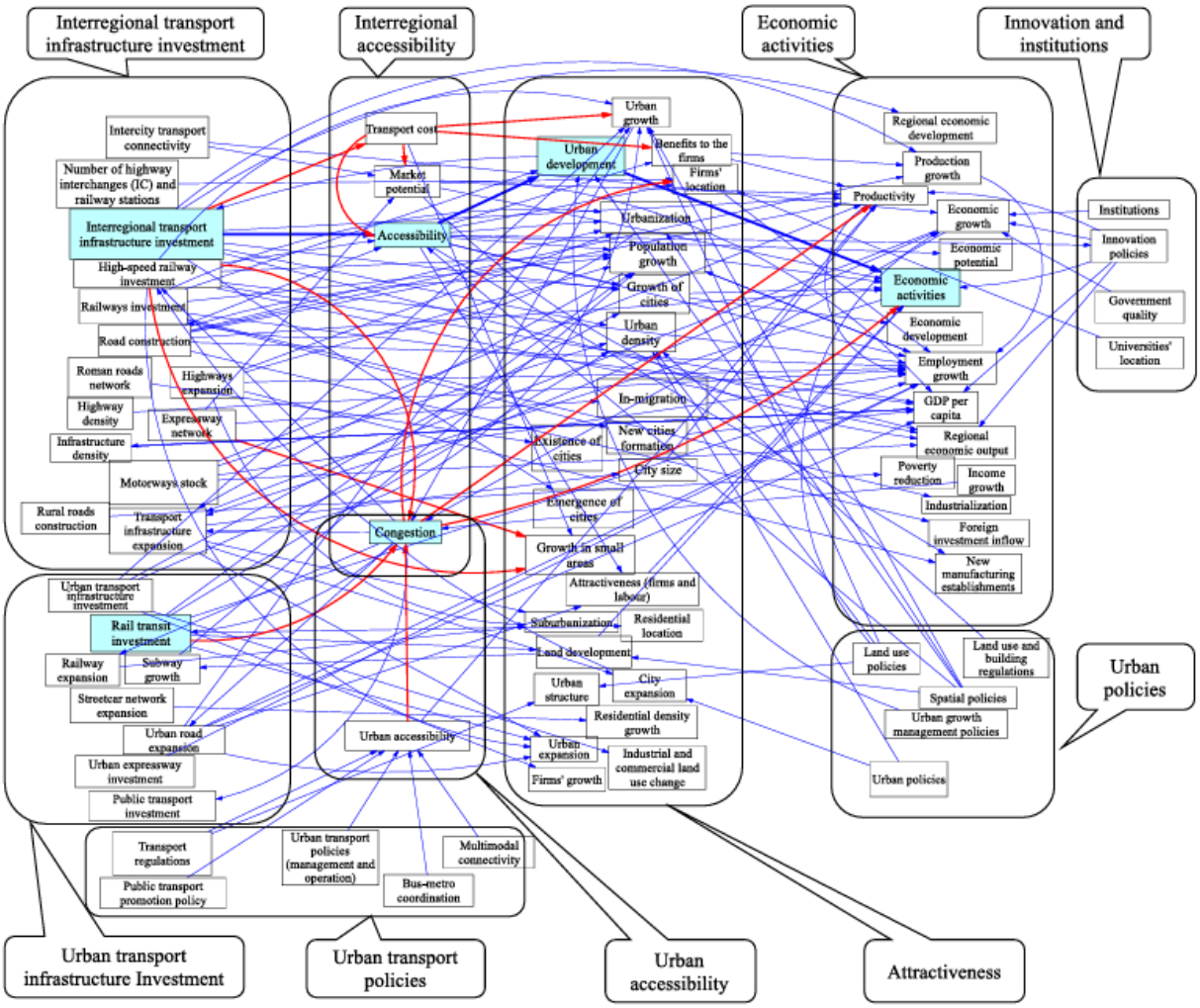
Key Factors Influencing the Relationship:

1. Positive Externalities: The presence of factors like a skilled workforce, supportive institutions, and conducive policies are crucial. Banister & Berechman (2001) suggests that transport investment alone might not be sufficient for regional growth without these supporting elements. In fact, Bannister & Berechman (2001) state: "In developed countries, where there is already a well-connected transport infrastructure network of a high quality, further investment in that infrastructure will not on its own result in economic growth."
2. As discussed by Pokharel, et al. (2023), the relationship between transportation projects and regional development is highly complex and non-linear and entails a nuanced

relationship between at least nine broad categories of issues: interregional transport infrastructure investment, interregional accessibility, economic activities, innovation and institutions, urban policies, attractiveness, urban accessibility, urban transport policies, and urban transport infrastructure investment. Each of these broad categories, according to Pokharel et al.'s taxonomy, has a large number of sub-topics that also interact in often difficult to predict manners. This is why, according to the authors, the definitive connection between large transportation projects and regional economic development has proved elusive, notwithstanding a large amount of research seeking such a connection.

Figure 8 depicts these nuanced and varied relationships that have been discussed in the academic and policy literature focusing on this question as depicted in Figure 8 from Pokharel, et al. (2023). As can be seen, there appears to be a substantial challenge in establishing a strong connection between transportation projects and regional development.

Figure 8 from Pokharel, et al. (2023). Taxonomy of Variables Investigated in the Literature on the Relationship Between Transportation Projects and Regional Economic Development.

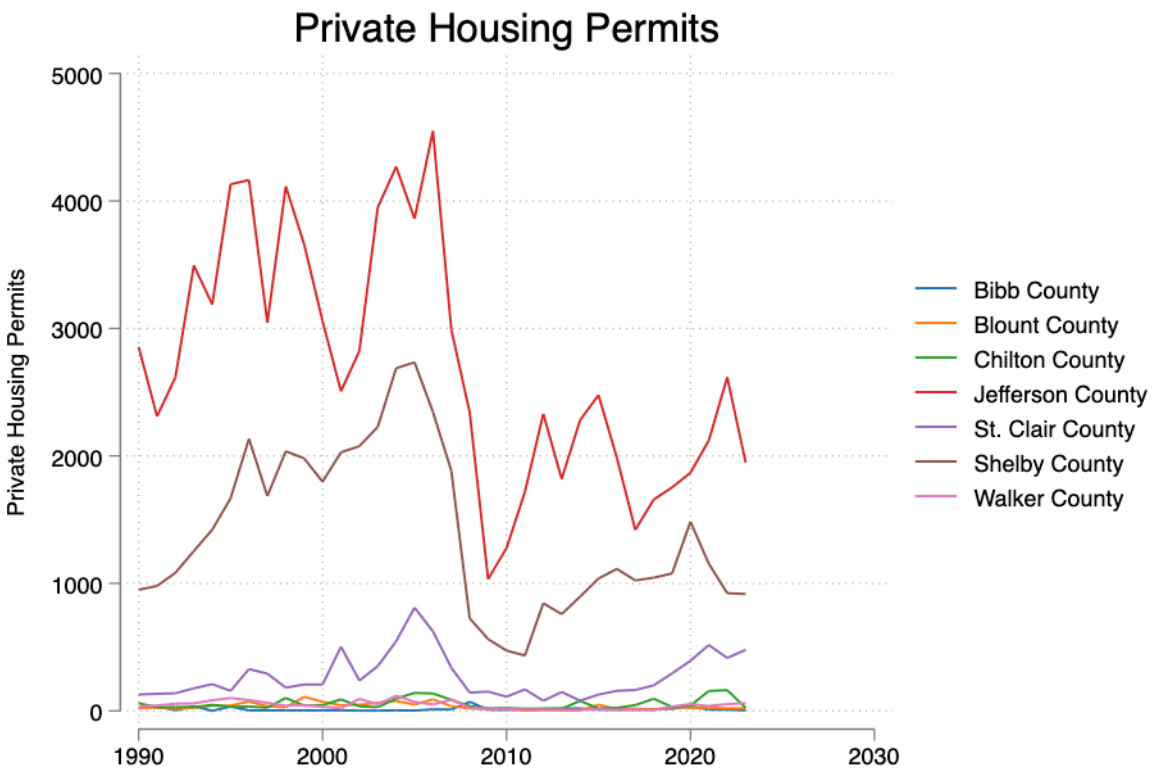


3. Spatial Spillover Effects: Transport infrastructure can have both positive and negative spillover effects, affecting not just the region where the investment occurs but also neighboring areas. (Has Transport Infrastructure Promoted Regional Economic Growth?— With an Analysis of the Spatial Spillover Effects of Transport Infrastructure, 2014) highlights the importance of considering these spatial effects for a comprehensive understanding.

4. Accessibility and Land Use: Improved transport infrastructure can enhance accessibility, leading to changes in land use patterns. AidData (2020) suggests that transport projects can shift economic activity from city centers to peripheries. Vickerman, et al. (1999) emphasizes the importance of considering accessibility in regional development studies and creating options to meet various transportation demands.

One implication for land-use changes is the mix of residential properties. Figure 9 shows the annualized private housing permits issued in each of the seven MSA counties. As can be seen, Jefferson County has the largest number of housing permits with Shelby County coming in second.

Figure 9: Private Housing Permits in Birmingham-Hoover MSA Counties

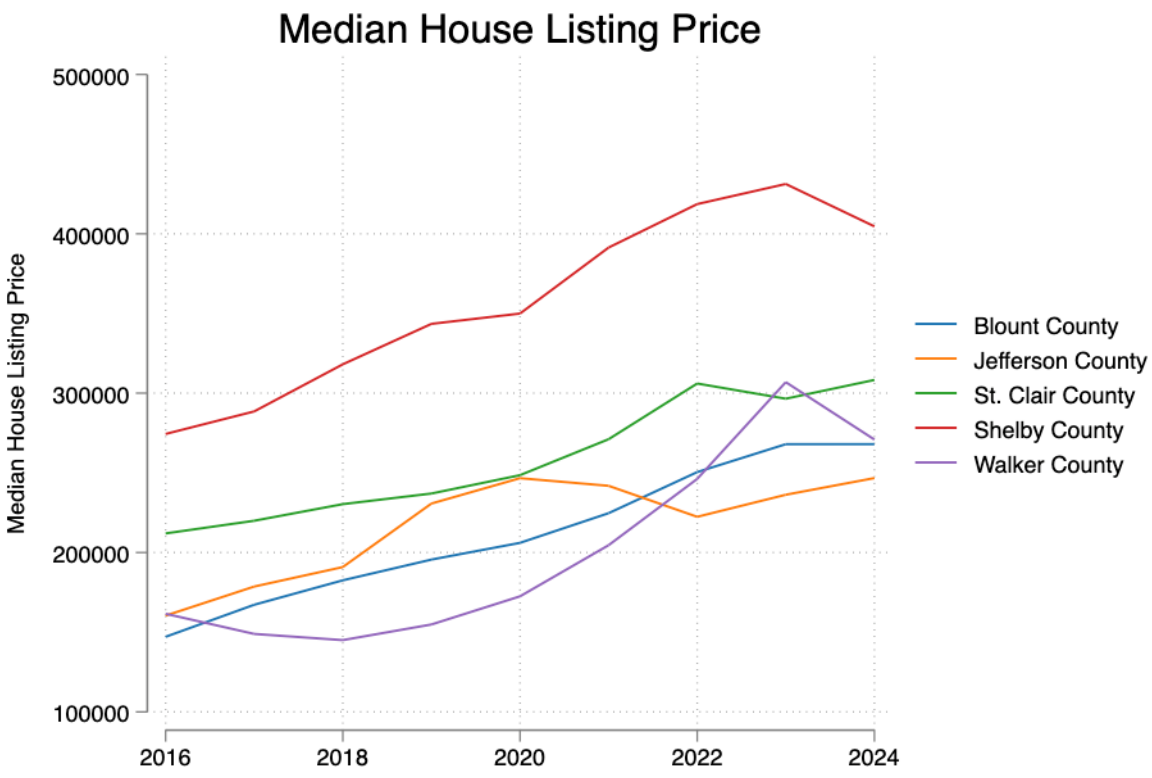


Source: Federal Reserve Bank of St. Louis

Another indicator of the health of housing markets is the median listing price for houses up for sale. Figure 10 depicts the annualized median house listing price for five of the seven MSA counties for which data are available. As can be seen, Shelby County has the highest median listing price with St. Clair County coming in second. Of the five counties for which data are available, Jefferson County has the lowest median listing price. As has been mentioned earlier, transportation projects tend to follow economic development with a lag rather than leading economic development (Maparu & Mazumder, 2017; Kasu & Chi, 2018). The data on median list price suggests that there is substantial growth in counties that are not included in the Beltline project which, in turn, suggests a greater need for a more diversified

portfolio of transportation projects in the Birmingham-Hoover MSA. The Birmingham-Hoover MSA might be better served spending resources on transportation projects to serve that growth.

Figure 10: Median House Listing Price in Birmingham-Hoover MSA Counties



Source: Federal Reserve Bank of St. Louis

5. Regional Needs and Industrial Structure: Transport infrastructure should be tailored to the specific needs and industrial structure of a region. Vickerman (1995) argues for a policy that aligns transport provision with regional requirements.

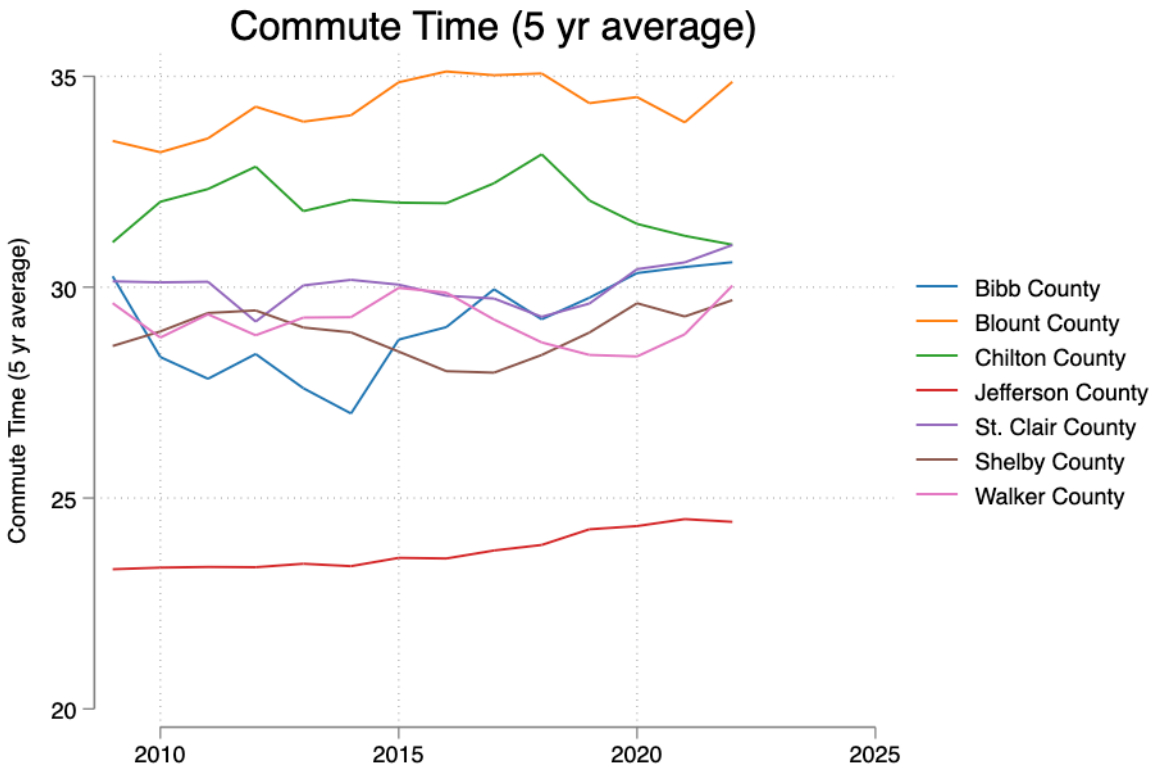
6. Government Quality and Institutions: The effectiveness of transport investment in promoting economic development can be influenced by the quality of governance and institutional capacity. Pokharel, et al. (2023) mentions that return on investment is affected by these factors.

7. Innovation and Other Factors: While transport infrastructure plays a role, other factors like innovation, technological advancements, and access to capital are also crucial for regional economic development. Pokharel, et al. (2023) cites studies indicating that innovation might play a more significant role than transport investment in some cases.

8. Type of Transport Investment: The specific type of transport infrastructure investment (e.g., roads, railways, ports, airports) can have varying impacts on regional economic development depending on the context.
9. Time Lags: The economic benefits of transport investment might not materialize immediately and could involve significant time lags.
10. The quality of transport infrastructure: Well-maintained and efficient infrastructure is likely to have a more positive impact on economic development than infrastructure that is in poor condition. (Impacts of Transport Infrastructure on Productivity and Economic Growth: Recent Advances and Research Challenges, 2014)
11. The geographical context: The impact of transport infrastructure can vary depending on the specific geographical context, such as the size and location of a region. (Impacts of Transport Infrastructure on Productivity and Economic Growth: Recent Advances and Research Challenges, 2014)

Efficient transportation systems can help facilitate economic growth by boosting productivity. Reduced transportation time and costs improve productivity for businesses and workers (Transport and Regional Growth, 2016). However, as can be seen in Figure 11, the five-year moving average of commute times is shortest in Jefferson County, where the Northern Beltline is proposed, and longest in Blount County. Indeed, the increased commute time in six of the seven MSA counties (relative to Jefferson County) suggests that other transportation projects in the Birmingham-Hoover MSA might be more useful in reducing commute time across the MSA thereby improving quality of life, reducing noise and air pollution, and potentially reducing traffic accidents.

Figure 11: Average Commute Time in Birmingham-Hoover MSA Counties



Source: Federal Reserve Bank of St. Louis

In summary, the relationship between transport investment and regional economic development is not simply a case of "build it and they will come." A nuanced understanding of these various factors is essential for policymakers and researchers to make informed decisions and maximize the positive impacts of such investments.

Conclusions

The 1997 FEIS assumes that transportation improvements will lead to economic development, even though no such consistent relationship exists in the research literature. Studies suggest that economic development drives the need for investment in transport infrastructure, rather than the other way around (Maparu & Mazumder, 2017). This is known as Wagner's Law (Wagner & Weber, 1977). For example, as a region becomes wealthier, it demands better transportation, leading to investments in infrastructure.

As such, the project casts itself primarily as an economic development project and rejects other transportation alternatives: “As has been stated earlier, the Birmingham Northern Beltline

project is being considered primarily based upon its ability to increase cross-region accessibility and its potential for stimulating economic development. Due to costs and the large size of the study area, TSM (Transportation System Management) type improvements to the existing network throughout the study area are unlikely to adequately correct the deficiencies in accessibility and to promote increased economic development."(2012 Reevaluation of FEIS)

In general, transportation investments follow economic growth, as residents' willingness to pay for travel increases. The beltline project incorrectly assumes the reverse, that building roads creates economic development. Transportation infrastructure should be built to meet residents' demand for travel. The next section will analyze demand for travel in the beltline area.

4. Low Demand for Travel in the Northern Beltline area

The geographic area for the Northern Beltline is projected to have low population and economic growth, even if some or all of the Northern Beltline is constructed (https://www.rpcgb.org/regional-transportation-plan). ALDOT knows this as it predicted only a 1.1% growth rate in the population (2,208 more people) in the area of the Beltline and only 7.6% growth in jobs (2,842 more jobs) in the Appendix L of the 2012 Reevaluation. Given the low demand for travel in this area, the beltline project would create an excess supply of interstate transportation in this area. The growth in population and income is largely happening south of Birmingham.

The Birmingham MSA is also growing slower than the average MSA in the United States. For population growth from 2020 to 2023, the Birmingham MSA ranked 234th in population growth among 387 MSAs in the United States. While the average MSA grew by 1.1% in population growth during this time, the Birmingham MSA grew only by 0.3% (https://www.census.gov/data/tables/time-series/demo/popest/2020s-total-metro-and-micro-statistical-areas.html). The low population growth in the Birmingham MSA does not create the demand for a large transportation infrastructure investment of this scope.

From an outside view, some may see a correlation between city beltlines and growth. Yet it's important to note that correlation does not mean beltlines are causing growth. Cities like Atlanta and Charlotte have beltlines and growth. However, both Charlotte and Atlanta are in the top 10 MSAs for population growth from 2020 to 2023. For these growing cities, the beltways can facilitate growth, but they are not creating it. The Birmingham MSA is growing

slower than the average MSA, and therefore there is no demand for such a large infrastructure investment; nor will it create the sort of economic growth seen in Charlotte or Atlanta.

Though originally touted as both an economic development project and a way to enhance local cross-regional transport, the intent of the project has now changed. The 2024 Reevaluation now states the following:

"The traffic patterns analyzed in 2012 demonstrated that the BNB would primarily serve as a connection between local and state routes north of Birmingham. However, the current traffic patterns analyzed are now trending toward utilizing the BNB as a bypass around Birmingham between interstate connections. This trend demonstrates interstate volumes have not decreased and continued to grow, putting a further strain on the inner-Birmingham interstate routes."

First, if the intent is to create a bypass around Birmingham, then the benefits of this travel route will go to many non-Birmingham residents traveling through the area. The 2017 Birmingham Comprehensive Plan notes that: "The vast majority of federal transportation dollars in the region (over 82%) is being spent on roadway- capacity projects, most of which are outside the City of Birmingham" (Birmingham Comprehensive Plan, 2017). The Northern Beltline would continue this trend, with the roadway being built primarily for travelers, not residents.

Second, if the goal of the beltline is to serve travelers and freight passing through the area, this will create only a limited amount of demand for goods and service at these beltway exits. A bypass-focused beltline will essentially create a series of travel stops, rather than building vibrant communities. Fast food restaurants and gas stations are not the main drivers of economic development.

Third, there is already excess road capacity in the city of Birmingham. Building a large northern beltway will only serve to pull more traffic and potential development away from the city itself. The 2017 Birmingham Comprehensive Plan states that: "many of Birmingham's arterial and downtown streets have excess capacity: more lanes than needed to support traffic demand" (Birmingham Comprehensive Plan, 2017).

Fourth, building a beltline instead of investing in the city would repeat the same mistakes from decades ago. The previous construction of interstates in Birmingham coincided with the city first losing population: "Between 1960 and 1970, Birmingham experienced its first population decline, coinciding with the city's interstate construction projects, most of which were completed or underway by 1971" (Heim Lafrombois & Park, 2023).

Fifth, building a 52-mile beltway is an expensive way to solve the problem of interstate congestion. The beltline project should be contrasted against simpler alternatives, such as expanding existing capacity on I-20 and I-65.

5. Removing Beltlines

While this project seeks to build a massive 52-mile interstate beltline, many cities are headed in the opposite direction. These cities are tearing down beltlines or portions of interstates to revitalize areas and build up neighborhoods. While this trend is relatively new, it does show promising results for cities.

Review: Cities Tearing Down Interstate Beltlines

While highway construction was once seen as synonymous with progress, a growing movement advocates for removing urban interstate highways, particularly beltlines, to reclaim urban spaces and address past planning mistakes. This review examines the motivations, challenges, and outcomes of such projects.

Motivations for Removal

- Reconnecting Communities: Urban highways, often built through minority neighborhoods, caused significant displacement and community disruption. (Urban Expressways and the Racial Restructuring of Postwar American Cities, n.d) Removal aims to heal these divisions and reconnect neighborhoods. (Retzlaff, 2020)
- Revitalizing Urban Cores: Removing aging highways can free up valuable land for redevelopment, parks, and affordable housing, revitalizing urban cores and attracting investment. (Jung & Shiozaki, 2010)
- Improving Traffic Flow: Counterintuitively, removing highways can sometimes improve traffic flow by reducing induced demand and encouraging alternative transportation modes (Brinkman & Lin, 2019).
- Environmental Benefits: Demolition can reduce pollution, noise, and the urban heat island effect, creating healthier urban environments.

Case Studies and Examples

Several cities have undertaken or are considering highway removal projects (Garrick & Billings, 2013):

- San Francisco Embarcadero Freeway: The removal of this elevated freeway after earthquake damage in 1989 is often cited as a successful example of urban waterfront revitalization.
- Milwaukee Park East Freeway: Demolition of this freeway segment in the 1990s led to increased property values and the creation of a vibrant urban park.
- Rochester Inner Loop: The city is in the process of removing a section of its inner loop highway, replacing it with a street-level boulevard and development.
- Chattanooga: The city is replacing its Riverfront Parkway highway with a boulevard and other development plans.

Spotlight: Milwaukee Park East Freeway Demolition

The demolition of the Park East Freeway spur in Milwaukee stands as a testament to the transformative potential of removing urban highways to revitalize cities. Once a symbol of urban blight and disinvestment, the freeway's removal paved the way for a remarkable urban renaissance, reshaping Milwaukee's landscape and demonstrating the power of visionary urban planning (https://www.fhwa.dot.gov/ipd/project_profiles/wi_park_east_freeway.aspx).

Completed in 1971, the Park East spur quickly became a physical and psychological barrier, separating downtown Milwaukee from its eastern neighborhoods and contributing to the decline of the surrounding area. By the 1990s, the freeway was widely seen as a mistake, carrying far less traffic than projected and hindering the city's growth.

In 1999, under the leadership of Mayor John Norquist, a champion of urban revitalization, Milwaukee made the bold decision to demolish the Park East spur. The demolition, completed in 2003, opened up 24 acres of prime real estate, reconnecting neighborhoods and creating unprecedented opportunities for redevelopment.

The transformation of the former Park East corridor has been nothing short of remarkable. Once a desolate scar of concrete, the area now boasts a vibrant mix of residential, commercial, and recreational spaces. Parks, apartments, hotels, and businesses have sprung up, attracting residents, visitors, and investment. The Park East's demolition serves as a national model for urban renewal, proving that removing outdated infrastructure can unlock a city's potential and create a more livable, prosperous future (Iskandar, 2014).

Conclusions

Removing urban interstate beltlines is a complex undertaking with potential benefits and challenges. These examples show that removing freeway sections and beltlines, as opposed to building them, can spur economic growth and development.

6. No Significant Job Creation from the Beltline Project

Thus far, there has only been one actual study (the University of Alabama's Center for Business and Economic Research (CBER) study) supporting the theory that the Northern Beltline will bring job creation and growth. The 1997 FEIS suggests the project will create economic growth but does not give any specific job numbers. In 2012, the FEIS reevaluation concludes: "The finding of the FEIS and ROD (Record of Determination) concerning economic impacts remain unchanged." The 2012 revaluation's conclusion relies on the flawed 2010 CBER study. The 2010 CBER study does provide various job numbers that would hypothetically be created by the project. However, these job numbers were heavily, and correctly, critiqued in the 2012 Ochs Center for Metropolitan Studies report. Additionally, while ALDOT concluded that the Beltline would create growth, reported in Appendix L of the 2012 Reevaluation, ALDOT included a model which stated the opposite, that the Beltline would create only 2,842 additional permanent jobs.

The 2024 reevaluation does not update the economic impact numbers from the earlier 1997 EIS. It states that: "The findings of the 1997 FEIS and the 1999 ROD concerning economic impacts remain unchanged." It once more cites the 2010 CBER study as providing detailed economic calculations without mentioning the Ochs Center report.

The 2024 reevaluation also mentions how the project will produce various amounts of tax revenue. The source of these figures is the 2012 reevaluation, which produces those numbers based on the CBER report.

Temporary Jobs Produced by Construction

The Ochs Center report argues that the Northern Beltline's job creation potential during construction, as stated in the 2010 CBER report, has been dramatically overstated. It states the CBER specifically cites outdated data from the FHWA that was used to calculate the number of temporary jobs generated per $1 billion of highway spending (https://www.fhwa.dot.gov/policy/otps/pubs/impacts/).

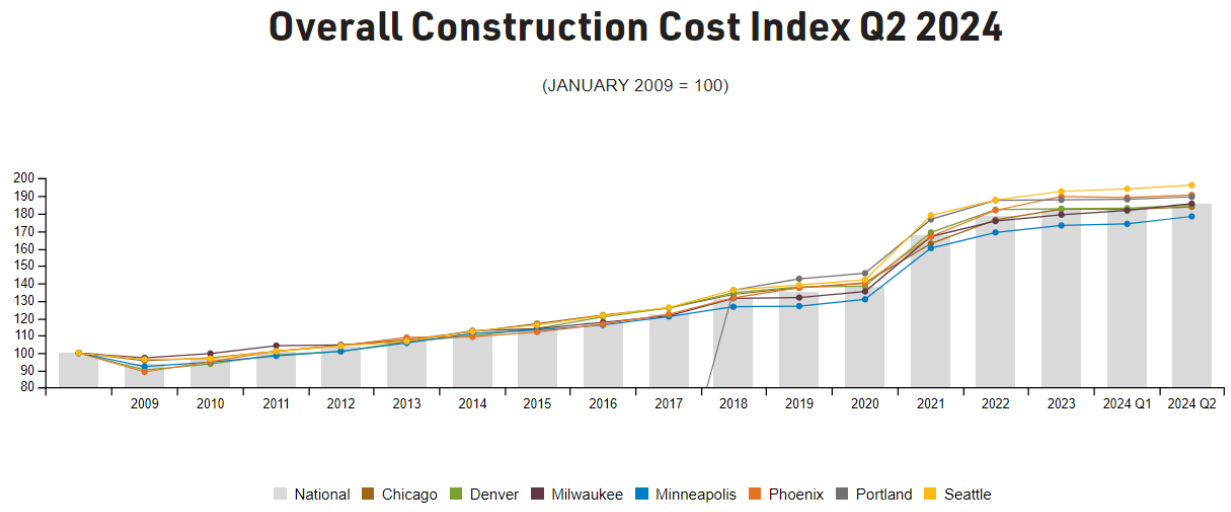
The Ochs Center report highlights the following:

- Outdated FHWA Data: The report claims that the study promoting the Northern Beltline relied on pre-2007 FHWA data, which estimated 27,800 job-years created per $1 billion of federal highway spending.
- Revised FHWA Estimates: Due to rising construction material costs, the FHWA revised its estimates in 2007 significantly reducing the projected job creation to 13,000 job-years per $1 billion—a decrease of over 50%.

Essentially, the Ochs Center report uses the FHWA's revised estimates to update the optimistic job creation figures used to support the Northern Beltline project. The Ochs Center report also correctly points out that the CBER report uses job-years, as opposed to actual jobs. Using a 17-year construction schedule, the Ochs report states that the beltline project would produce only 2,805 actual temporary jobs in any one year. If the project is completed in 30 years, the project would produce only 1,501 actual temporary jobs per year.

As of 2024, these job estimates have not been changed by the FHWA but it is highly likely that the number of job-years per $1 billion spent has dropped over the subsequent 14 years. One reason is that there has been a dramatic increase in construction costs. According to the National Highway Construction Cost Index published by the U.S. Department of Transportation (2024), construction costs have increased 120% from the first quarter of 2010 to the fourth quarter of 2023 (the latest data available).

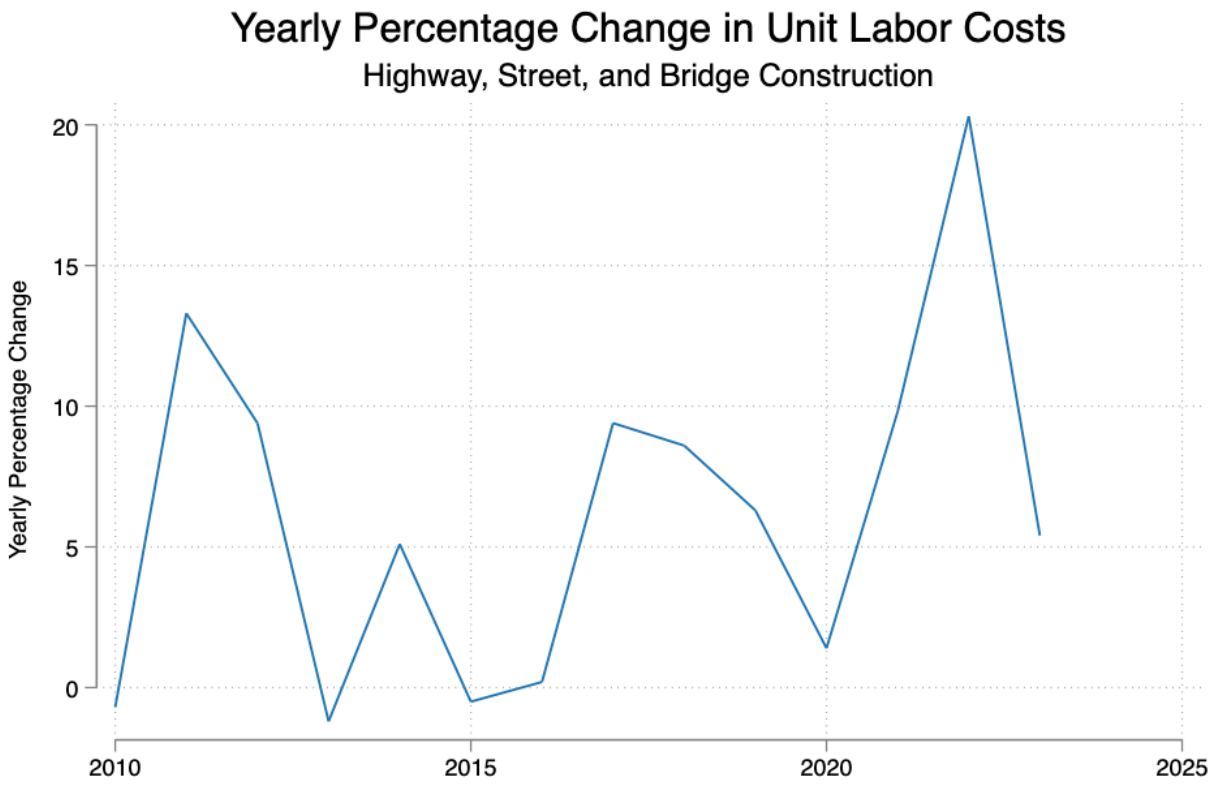
Figure 12:



Source: Mortenson Company.

Using the Highway Construction Cost Index for the first quarter of 2010 (1.431) and the last quarter of 2023 (3.178), $1 billion spent in 2010 is the equivalent of $453 million spent in 2023 because of the reduced purchasing power reflected in the higher cost index. Using the FHWA's estimate of 13,000 job-years per $1 billion spent in 2010, the increased highway cost index suggests that $1 billion spent in 2023 would generate an estimated 5,889 job-years – a decrease of 45% percent from 2010. For a thirty-year project, this is the equivalent to about 1,040 jobs during the construction phase. Another concern is the increase in unit costs for road construction labor, which measures how much labor is paid for each unit produced. The Bureau of Labor Statistics (2024) reports that unit labor costs of workers in the Highway, Street, and Bridge Construction have increased by an aggregate 128% between 2010 and 2023. The annual percentage changes in labor unit costs are depicted in Figure 13. The increased cost of construction labor since the project was first proposed leads to far fewer jobs for each $1 billion spent in 2024 and in the future. Therefore, either there will be fewer jobs for the same project cost, there will have to be project cost increases, or perhaps both.

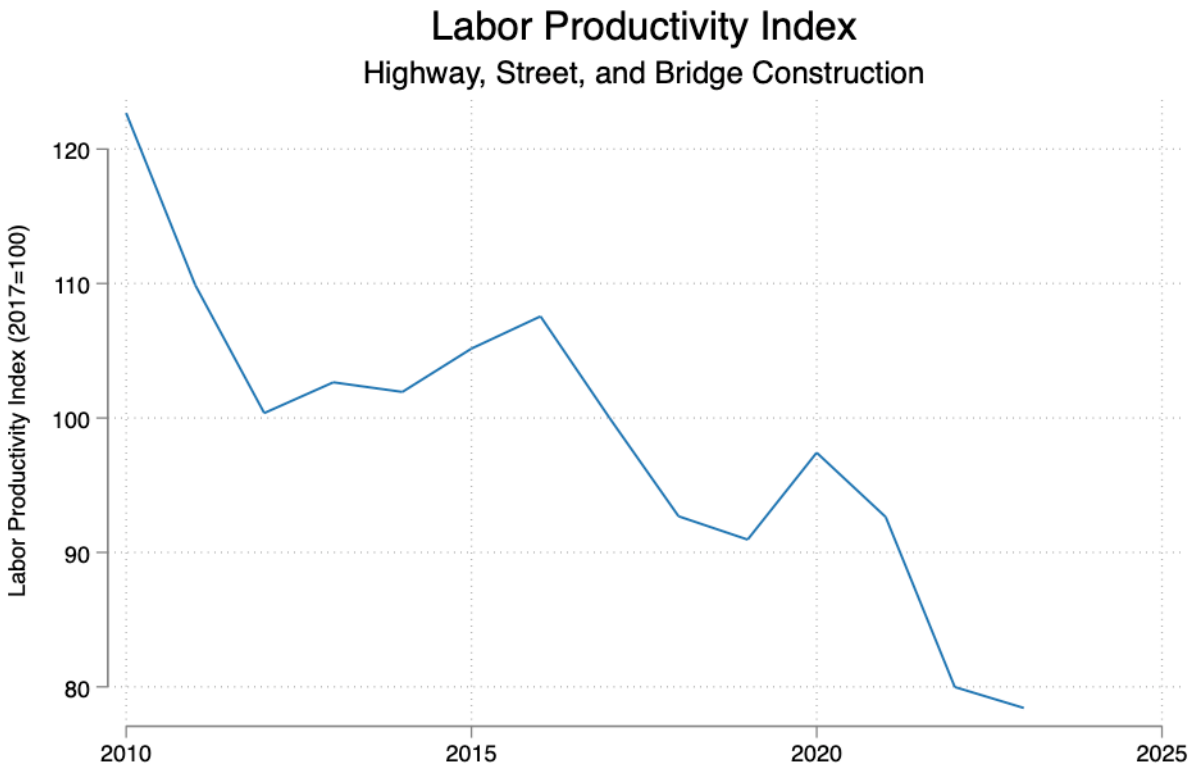
Figure 13: Annual Percentage Changes in Unit Labor Costs in the Highway, Street, and Bridge Construction Sector (National Averages)



Source: U.S. Bureau of Labor Statistics

A final concern about the number of jobs and their associated wages is the productivity of labor in the Highway, Street, and Building construction sector. Over the past five years, the labor productivity has steadily declined. If labor productivity in this sector is indexed at 100 in 2017, labor productivity in 2023 is at 78.42. Figure 14 depicts labor productivity in this sector from 2010 through 2023 with 2017 being equal to 100. The interpretation of Figure 13 is that labor productivity in this sector has been falling for some time and the trend does not appear to be turning around.

Figure 14: Labor Productivity Index in Highway, Street, and Bridge Construction

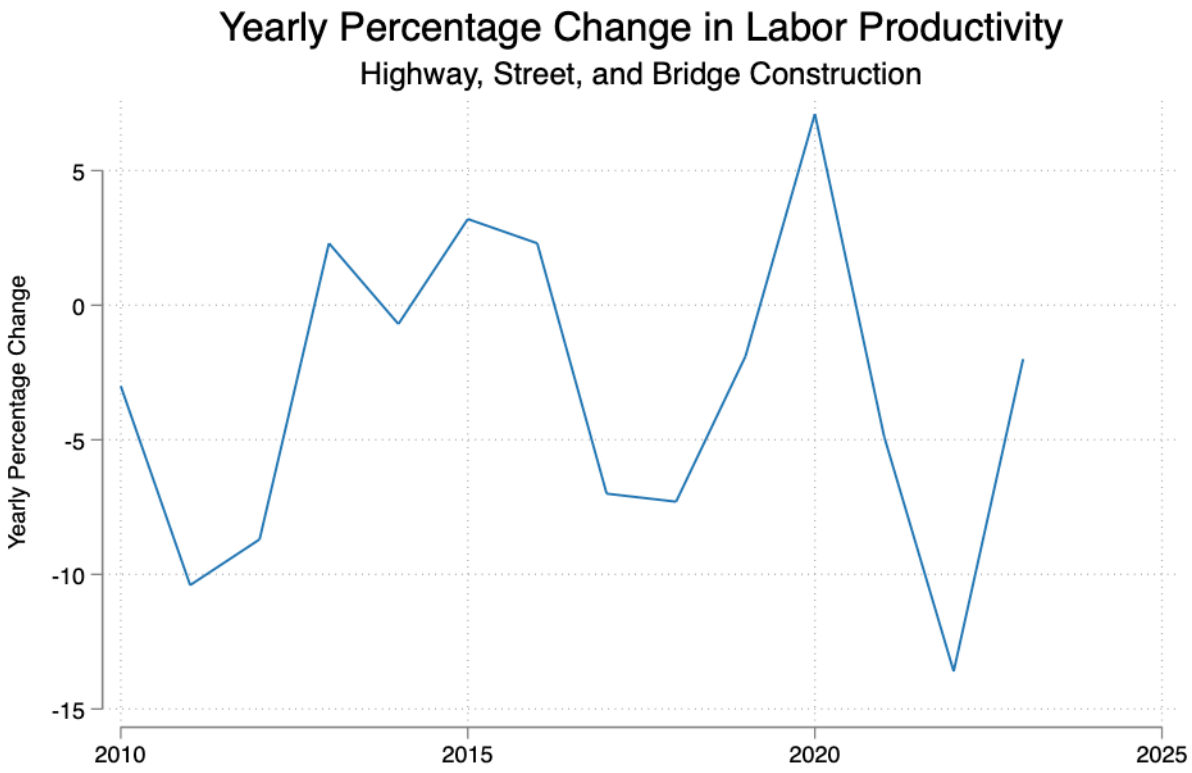


Source: U.S. Bureau of Labor Statistics

Indeed, from 2010 through 2023 total productivity declined by 36%. Figure 15 depicts the annual change in labor productivity in this sector from 2010 through 2023. As total labor productivity falls, wages also tend to fall and higher skilled labor has greater incentive to look

for employment elsewhere. This is another potential reason why the 2010 job predictions might be incorrect in the current environment.

Figure 15: Yearly Percentage Change in Labor Productivity in Highway, Street, and Bridge Construction (National Averages)



Source: U.S. Bureau of Labor Statistics

- Impact on Northern Beltline Projections: Applying the updated FHWA data, the report suggests that the actual temporary job creation potential during the construction of the Northern Beltline would be significantly lower than the 2010 projections.

Analysis of Temporary Job Creation and Cost to Taxpayers

Certainly, the Northern Beltline project would produce some jobs – but that alone is not enough to justify the project, particularly when that actual job creation is significantly lower than the 2024 reevaluation claims. The first area to consider is the cost to taxpayers. The Ochs Center report estimated that the discounted costs to taxpayers would be $281,824 per job. Given that most of these jobs were expected to pay $35,000 or less per year, this is tremendously wasteful from a government budget perspective. In terms of updating these numbers for 2024, the cost per construction job has increased due to the rising cost of construction materials. As stated above, starting in 2020, there was a sharp increase in

Construction Cost index and a drop in highway, street, and bridge construction labor productivity.

What was already an inefficient use of taxpayer dollars has now become even worse. The rising construction costs would make this project even more costly to the American and Alabama taxpayers. Using the most recent Q2 Construction Cost Index of 185.4, these higher construction costs would increase the job cost from $302,326 to over $560,000 per job if the project was completed in 17 years. If the project was completed in 30 years, the cost per temporary construction job would rise from $456,016 to over $845,000 due to higher construction costs.

The next part of the job creation analysis is to analyze the value of the output from newly created jobs. Government projects should not exist simply to "create jobs," they should be hiring workers to create goods and services that citizens need. As shown earlier, there is no great need for a massive transportation project in northern Jefferson County. The area already has low levels of congestion, and many of the trips taken will not be at peak times. The area is expected to have low population growth in the coming years, especially compared to the areas south of Birmingham.

As such, there are two main reasons this is a wasteful project in terms of government spending: 1) it is extremely costly in terms of dollars spent per job created and 2) it would produce a transportation route in an area with a relatively low and slowly growing population. This project is largely based upon the hope that building a large beltway will somehow create economic growth. As discussed earlier, the research literature does not support this. In fact, a recent 21-year study using vector auto-regression showed the direction of causality is from economic development to transport infrastructure (Maparu & Mazumder, 2017).

Analysis of Permanent Job Creation

The 2010 CBER report states that the beltline, when completed, would produce 20,641 permanent jobs. Yet ALDOT itself shows that the beltline will only create 2,842 permanent jobs in Appendix L of its 2012 Reevaluation.

What's missing from both analyses is the aspect of job reallocation. Consistent evidence shows that interstate beltways lead to decreased growth in cities and increased growth in outlying areas (Brinkman & Lin, 2019). Therefore, while the Northern Beltline may produce some jobs in the project area, many of these will be reallocated from other areas in the Birmingham MSA. This is not true job creation, but simply geographical reallocation, meaning no net economic

growth. For example, this figure from Brinkman and Lin (2019) shows the devastating effect of interstate beltways on the Chicago city population.

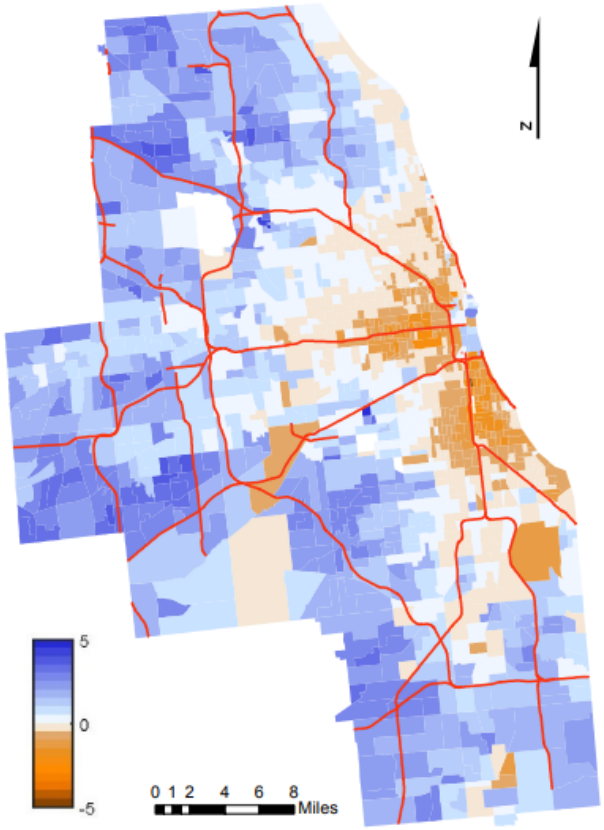


Figure 5: Central neighborhoods declined in population, especially near freeways

This map shows 1950–2010 changes in the natural logarithm of population for consistent-boundary census tracts in the Chicago metropolitan area. The geographic extent is determined by census tract data availability in 1950. Sources: NHPN, NHGIS.

A similar situation already exists for Birmingham.

Conclusions

The job creation number from the 2010 CBER report is radically overstated. The CBER report incorrectly lists jobs in terms of job-years rather than the number of actual jobs created in any one year. The number of temporary construction jobs is overstated, as construction costs have spiked since 2020. The 2010 CBER report states the project will produce 69,535 construction period jobs, while the updated estimate is it will produce only 1,040 construction jobs in any one year for a thirty-year project.

The projection for permanent jobs is subject to many factors that were not considered in the CBER analysis, yet ALDOT showed that the beltline will only create 2,842 permanent jobs. First,

many of these permanent jobs will simply be job reallocation within the region. Second, existing businesses in the beltline path may be negatively affected by construction and have reduced access during the construction period. Third, the wages and specific jobs produced from the beltway is largely hypothetical as no specific business openings are known to be related to the beltline.

7. Other Transportation Alternatives

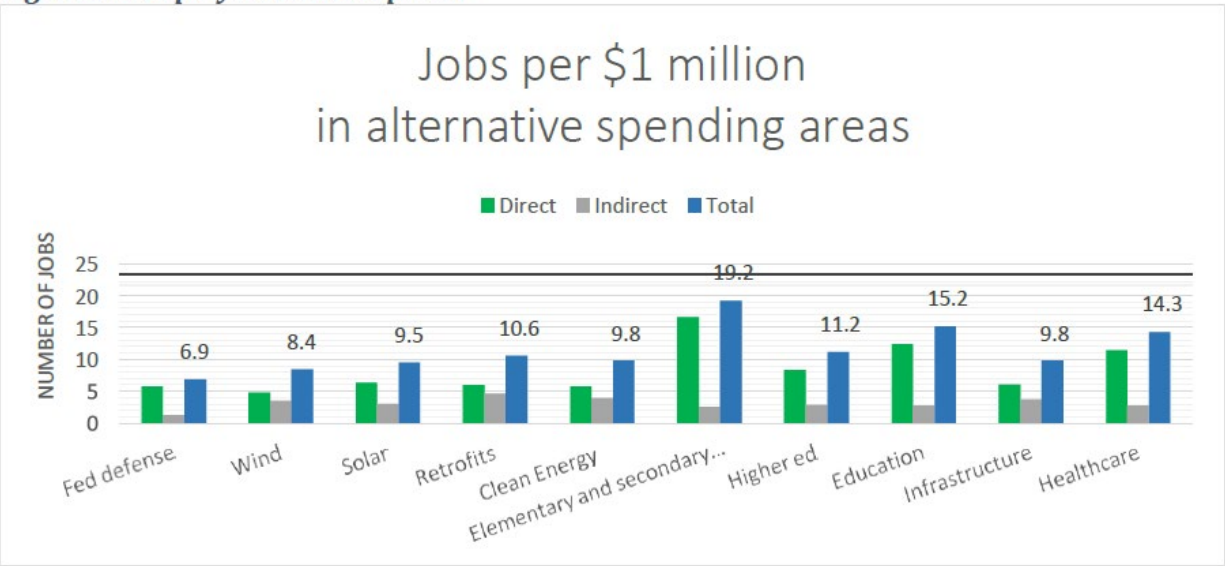
Given the over $5 billion price tag for the Northern Beltline, it would be important to consider other transportation and non-transportation uses of the funds. While a small portion of the federal funds has been designated for a small section of the road, the entire project will cost a lot more than what has been currently allocated. Birmingham is already in a unique situation, with three major interstates converging in the area: I-22, I-65, and I-20. Therefore, Birmingham is already connected to regional trading partners in various directions. Directing the more than $5 billion towards one type of transportation (interstate) only is an inefficient use of funds and ignores the benefits of a broader diversified portfolio of transportation projects in the Birmingham-Hoover MSA. The 2012 Ochs Center report highlights the many different transportation projects in the Birmingham area that would bring greater value than the beltline. Interstate travel is only one type of travel. An optimal transportation policy would invest in all types of needed transportation including automobile travel, public transit, biking, and walking. Directing all of these taxpayer funds to an interstate beltline only will neglect these other modes of transportation and the residents they serve.

Other Public Investments

The paper "Job Opportunity Cost of War" (Garrett-Peltier, 2017) by Heidi Garrett-Peltier investigates the economic trade-offs of government spending by analyzing the potential job creation associated with alternative spending priorities. The study utilizes a dynamic input-output model to compare the employment effects of shifting $1 billion in spending from the military sector to various civilian sectors, including education, healthcare, clean energy, and infrastructure.

The following figure shows the total number of jobs created in the various sectors:

Figure 1: Employment Multipliers



The findings reveal that reallocating spending to K – 12 education creates the largest number of total jobs.

Spending government funds in a sub-optimal way incurs a substantial opportunity cost in terms of forgone job creation. By redirecting these funds towards investments in education, and healthcare, the government could stimulate more robust and sustainable economic growth while addressing critical social and environmental needs.

Moreover, the study emphasizes the long-term economic benefits of investing in sectors like education and clean energy. These investments not only create immediate jobs but also contribute to a more skilled workforce, technological advancements, and a transition towards a more sustainable future, fostering greater economic growth and prosperity in the long run.

Investing in Alabama's K-12 education would certainly meet a greater need and create more jobs than the Northern Beltline project. The system is navigating a complex landscape of persistent challenges and emerging opportunities. One of the most pressing issues is the significant funding disparity between school districts. The state's heavy reliance on local property taxes for education funding creates a system where wealthier districts can provide significantly more resources and attract higher-quality teachers, while poorer districts struggle to meet basic needs. This disparity contributes to persistent achievement gaps between students from different socioeconomic backgrounds, hindering social mobility and perpetuating cycles of inequality Richard, 2018).

Another challenge facing Alabama's education system is a growing teacher shortage, particularly in critical subject areas like STEM fields and special education. This shortage makes it difficult for schools to attract and retain qualified educators, impacting the quality of instruction and student learning experiences (Mendiola, 2023). Investing in K-12 teachers would help meet this need while serving the children and their communities.

Investing in the Northern Beltline project would not produce the greatest number of jobs. Government spending on K-12 education would produce more jobs, while also meeting the current needs of children and their families. The large investment in the Northern Beltline project could be redirected elsewhere to create more jobs and also more long-term economic growth.

9. Conclusions

This report has shown that the over $5 billion investment into the Northern Beltline project is not a sound economic investment. Transportation projects should first and foremost serve the needs of the residents, workers, and businesses. Currently, there is little demand for more transportation in the Beltline project area. The project will not reduce congestion south of Birmingham or address other unmet transportation needs in the area.

The number of jobs that will be created is vastly overstated by the 2010 CBER report. The project will create a limited number of temporary jobs at a cost to the taxpayer of over $500,000 per job. The permanent jobs created by the project are unknown as many of these jobs will simply be relocations from other parts of the MSA area.

Directing all these taxpayer funds towards one type of transportation only is also inefficient. An optimal transportation policy involves public transportation. Other uses of these funds, such as widening I-20 or I-65, would be more in line with an optimal transportation policy. Alternative public investments such as investing in K-12 education would create more jobs and also contribute to long-term economic growth as compared to the Northern Beltline project.

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