

The Economic Impact of CityBus



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Executive Summary

Purpose of the Study

CityBus commissioned Wilbur Smith Associates (WSA) to conduct a study to assess the economic impact of transit in Lafayette. Accordingly, this report provides a quantitative analysis of benefits generated by the transit system, including the Wabash Trolley. This study seeks to address the question: What is the contribution of the transit system to the Lafayette regional economy? Roughly speaking, “contribution to the regional economy” means the sum of all economic activity, which can be traced to transit. Economic benefit analysis is the widely used methodology for estimating that contribution. The four categories of benefits include: Operating, Congestion, Affordable Mobility and Neighborhood Development benefits.

What CityBus Means to the Local Economy

A summary of the benefits are provided below. As can be seen, the impacts are substantial and represent a rate of return of nearly 5 to 1 when comparing the total income impact to CityBus’ operating budget of \$6.99 million.

Summary of Economic Benefits of CityBus on the Local Economy

Category of Impact	Income	Employment
Travel efficiency	\$8,239,321	429
Mobility	\$10,846,002	564
Operational	\$11,624,062	395
Wabash Trolley	\$3,718,349	193
TOTAL	\$34,427,733	1,582

How Transit Gives Rise to Economic Benefits

Methods of analysis developed by the federal government identify four ways in which transit can create measurable economic value.¹ These are summarized in Exhibit 1.

The economic benefit study was conducted using methods and tools established by the Federal Transit Administration². The methodology is described below.

¹ See methodology on the report by the Federal Transit Benefit, “Transit Benefit 2000” published by the office of Budget and Policy, 2000.

² See David Lewis *Policy and Planning as Public Choice: Mass Transit in the United States*, Ashgate, 1999;

Transit affects the regional economy in diverse ways.

Congestion Relief Benefits

Traffic congestion dilutes the regional economy. Traffic delays reduce work hours and worker productivity. They add to the amount of gas and oil people need to buy at the expense of goods and services they highly value. Congestion causes accidents with tragic costs in the form of death and injuries as well as property damage, it adds pollution of air and water, and it increases pollution in terms of noise. Economic savings thus arise whenever someone uses transit in lieu of making a rushhour car trip.

Affordable Mobility Benefits

Many transit passengers do not have access to an automobile. Transit-dependent customers forego mobility and employment and spend a considerably higher portion of their income on transportation (taxis, mainly) at the expense of food, clothing, housing and other staples. In creating an affordable transportation alternative, transit thus raises the economic standard of living of disadvantaged members of the community. Affordable mobility also reduces pressure on health and social services by reducing the amount of in-home care.

EXHIBIT 1: HOW TRANSIT CREATES ECONOMIC VALUE

- **Enterprise Benefits:** *As a regional business enterprise, transit generates employment and income for workers and suppliers;*
- **Congestion Relief Benefits:** *Transit can help reduce congestion-related accidents, delays, extra gas and other auto-related expenses, and environmental emissions;*
- **Affordable Mobility Benefits:** *Transit generates a higher economic standard of living for low income households; and it fosters budgetary savings in non-transportation social services;*
- **Neighborhood Development Benefits:** *Transit can act as a spur to urban and sub-urban economic development.*

Neighborhood Development Benefits

Transit in Lafayette contributes measurably to the availability of neighborhood amenities whose purpose and economic value extends beyond the purpose and the economic value of mobility per se. Economists call these benefits “neighborhood effects.” They include shorter walking or wheeling distances to shops and offices, safer pedestrian access, the ability of households to sustain desired lifestyles with fewer automobile-related expenses, joint and diverse land-uses, and others.

Research indicates that the market value of residential property reflects the economic value of the neighborhood; value that reflects the quality of amenities, jobs, the sense of safety and well-being and other locational attributes. This report does not include a quantification of such benefits, making the overall estimated benefits in this report highly conservative. However, interviews with property owners and tenants provide some anecdotal evidence on the impact on real estate in downtown.

1.0 Overview of the Analysis of Economic Impacts of Transit

Economic benefit analysis has been applied extensively in assessing the contribution of airports to regional economies. Economic benefit studies have also been used to determine the prospective contribution to the region of new industrial plants or major projects under consideration. These studies, in particular as applied to initiatives in so-called Enterprise Zones, have figured prominently in the decision-making process for approving grants and tax breaks to project sponsors. States and local jurisdictions have relied on benefit analysis to gauge the effectiveness of projects in promoting economic development. Only very recently has economic benefit analysis been applied to transit systems in an attempt to assess their contribution to regional economies.

Transit benefits the regional economy through several channels, not only through the chain of service suppliers and users. First, transit serves to manage congestion especially during peak periods in the urban areas. Transit travel results in a reduction in private vehicle miles traveled thus directly saving resources, which are more productively spent elsewhere in the economy. Moreover, fewer private vehicles result in less congested conditions for all travelers. This also yields resource savings and their redirection to better, more efficient uses. Second, transit provides low cost travel opportunities to many lower income households. This translates into employment and spending opportunities for many individuals. Transit is also found to result in a direct reduction in welfare and social service budgets as affordable mobility serves to reduce the need for even more costly social services. Third, there is a direct benefit of transit on household income for properties located near transit stops. This benefit, which serves to increase property values, is the equivalent of a direct income supplement for thousands of households whose residences are located in the proximity of transit.

The categories of benefits discussed above are characterized as follows:

- ◆ **Operational Benefits** - These benefits include the supply of services and the downstream uses due to transit, and, the re-spending of income in the regional economy.
- ◆ **Congestion Management Benefits** - Reduced congestion and fewer miles traveled by private vehicles result in greater economic productivity.
- ◆ **Affordable Mobility Benefits** - These are the benefits from providing low cost travel opportunities to lower income households. The benefits include income from employment made possible by transit, the economic value of the mobility benefit on low-income households, and, budget savings for social services due to low cost mobility enabled by transit.
- ◆ **Neighborhood Development Benefits** - This is the equivalent incremental income to households due to a close transit access. This benefit category is not quantified in this report and therefore the overall estimated benefits are considered conservative.

The following charts summarize the nature of the benefits associated with each of these four categories of benefits.

Economic Benefit Category	Description of Economic Impact
Congestion Relief	As more individuals use the transit system, fewer personal vehicles are used, resulting in fewer miles traveled by those vehicles. This gives rise to savings in operating costs, travel time, accidents and environmental emissions. Congestion relief benefits also accrue to non-transit users that remain on the road.
<i>Reduction in Private Vehicle Miles Travel</i>	The availability of transit provides for an alternative for some trips that would be taken by private vehicles; thus, reducing the spending on private costs and yielding additional disposable income for expenditures on other local goods and services.
<i>Increased Efficiency on Less Congested Roads</i>	Fewer private vehicles on the road as a result of CityBus translate into less congestion even for the non-users. This means reduced travel times and more efficient vehicle operations and resulting economic benefits.

Economic Benefit Category	Description of Economic Impact
Affordable Mobility Benefits	Increased access to travel for low income and disabled residents as well as the student population.
<i>Employment Value</i>	Transit allows people with no means of transportation to travel to and from work; thus contributing to the economic well-being of these individuals and reducing their dependence on social services. In addition, as they spend the income they earn from working, these expenditures ripple through the local economy to generate even more benefits.

Economic Benefit Category	Description of Economic Impact
Neighborhood Development Benefits	Proximity to transit can potentially have a positive effect on property values due to increased travel opportunities and increased access to the area for others.
<i>Increased rental income and capital stock due to transit</i>	Proximity to transit is an amenity that can lead to the ability of landowners to receive a rent premium on those properties. For owner occupied housing and business properties, the increase in property values imply an imputed increase in income due to transit.

Economic Benefit Category	Description of Economic Impact
Operational Benefits	Local economic activity, measures in terms of output, income and jobs that may be attributed to the operation of CityBus.
<i>Direct Impacts</i>	Economic activity that occurs as a direct result of operating the transit service that includes employment of staff and expenditures on supplies and services.
<i>Indirect Impacts</i>	Economic activity that results from expenditures at transit stops or transfer points made by the users of the transit system.
<i>Induced Impacts</i>	As income from the direct and indirect impacts are spent and re-spent in the local economy, additional income, output and jobs in the region.

This report summarizes each of the above categories of impacts above as they relate to CityBus and the Wabash Trolley service. It should be noted that no travel demand modeling or ridership modeling was completed as part of this study. Therefore, the results are based on historical and current data and represents an ex post study as opposed to the forecasting of future benefits.

2.0 Economic Impact Estimation

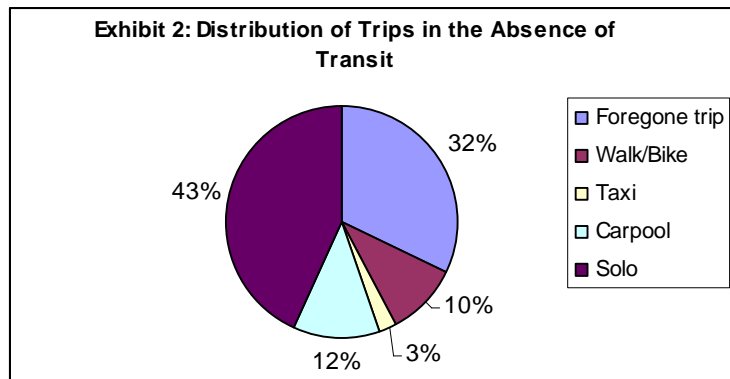
This section discusses the economic impact estimation of CityBus arising from travel efficiencies, increased mobility, and operational impacts.

2.1 Estimating Congestion Relief Benefits

The estimation of congestion relief benefits is a three step process consisting of:

- ◆ Determining the number of trips that would be taken via other modes in the absence of transit. These include solo driving, carpooling and taxi trips. Other categories include walking, biking and trips that are foregone; however these categories do not represent any additional congestion and will not be included in the calculation of congestion relief benefits of transit.
- ◆ Using the average trip length for transit services, the trips calculated in step one are converted into vehicle miles traveled (VMTs).
- ◆ Based on the number of VMTs, the associated costs with regards to travel time costs, vehicle operating costs, safety costs and emission costs are calculated.

Using 2004 transit ridership data combined with Census data regarding vehicle ownership and income levels, it is estimated that an additional 2.3 million highway/road trips would occur annually in the absence of transit. Exhibit 2 displays the allocation of transit trips to the various alternatives. As demonstrated, it is estimated that 43 percent of



of the transit trips would divert to solo surface roadway trips in the absence of transit, while 32 percent of the trips would be foregone. To the extent that the foregone trips represented trips to and from work, shopping, medical appointments and other activities, the loss of these trips result in loss of economic activity.

These additional 2.3 million road trips translate into an additional 10.3 million VMTs annually based on a conservative 5 mile average per trip (this includes single passenger and carpooling trips). The five mile average was based on journey to work data combined with transit route information and survey data. To the extent that the average trip is actually longer than 5 miles, the number of reduced VMTs as a result of transit is underestimated.

The last step consists of evaluating the different categories of costs associated with these additional VMTs. These costs consist of travel time savings, vehicle operating costs, safety costs and emission costs and are calculated as follows:

Travel time savings = (Number of vehicle hours) X (value of time)

Where: Number of vehicle hours = VMTs / average speed (45 MPH is assumed)
 Value of time = \$9.50 per hour based on avg hourly wage for
 representative ridership

Vehicle operating costs = (VMTs) X (Operating cost factor)

Where: Operating cost factor = \$0.405 which is the IRS allowance for personal
 vehicle use

Safety costs = (VMTs) X (value of reduced accidents)

Where: Value of reduced accidents = \$0.127 per VMT based on FHWA's HERS

Emission costs = (VMTs) X (value of reduced emissions)

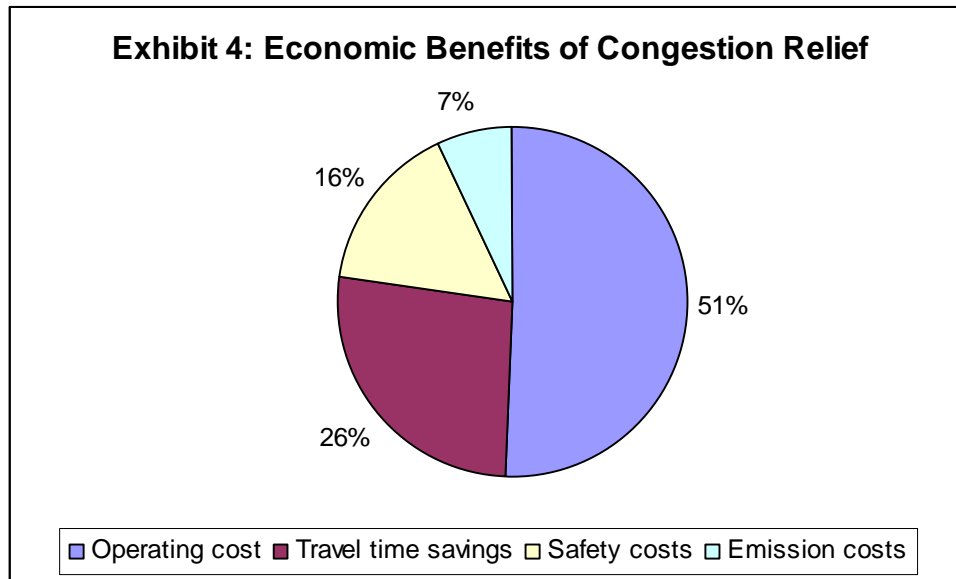
Where Value of reduced emissions = \$0.056 per VMT based on EPA guidelines

The congestion relief benefits of CityBus are represented by the avoided costs as calculated using the methodology outlined above. Exhibit 3 displays the results of this exercise. The total avoided costs represent additional income to the residents of Lafayette. As this additional income is spent and resented throughout the community, additional jobs are supported, thus giving rise to the employment impacts.

Exhibit 3: Congestion relief Benefits Associated with CityBus

Increase in VMT	10,310,926
Operating cost	\$4,175,925
Travel time savings	\$2,176,751
Safety costs	\$1,310,886
Emission costs	\$575,758
Income Impact	\$8,239,321
Employment Impact	429

As can be seen in Exhibit 4, vehicle operating costs avoidance gives rise to the majority of the economic benefits. This is due to the fact that these benefits represent direct out-of-the-pocket savings to CityBus riders.



2.2 Estimating Affordable Mobility Benefits

The provision of transit provides affordable mobility to residents with low incomes which in turn gives rise to economic benefits by allowing these individuals to reallocate their income for expenditures on other goods and services and providing them greater access to employment opportunities.

The calculation of affordable mobility benefits uses data from several sources including CityBus ridership information, U.S. Census Bureau and local information related to parking and taxi fees. The calculation of mobility benefits was conducted in two stages – first the estimation of the expenditure value of transit trips represented by the shift of expenditures to transportation as CityBus riders shift to other modes of travel in the absence of transit and secondly, the foregone employment as CityBus dependent riders have no means to travel to and from work in the absence of transit.

2.2.1 Expenditure Value Benefit

The expenditure value was calculated by using weighted average costs for switching to other modes as compared to the fare for CityBus. For simplicity, the regular fare per trip of \$1.00 was used in the analysis. Given that the actual weighted average of fares that would account for discounts and free ridership is lower than the \$1.00, the resulting expenditure value represents a conservative estimate. The weighted average cost for switching is calculated based on the percentage of shifted trips and the associated costs of those alternative modes represented by taxi, carpool, solo driving, foregone and other such as walking and biking for which no costs are incurred. The total weighted average cost of alternative modes, detailed in Exhibit 5, is \$3.85. The assumptions include an average taxi fare of \$12 based on a 5 mile trip, VOC for solo drivers, including parking, of \$7.30 and a shared VOC for carpoolers of \$3.15.

Exhibit 5: Calculation of Weighted Average Cost of Alternative Modes

Mode	Percentage of trips	Average cost	Weighted cost
Taxi	0.029	\$12.00	\$0.35
Solo	0.434	\$7.30	\$3.17
Carpool	0.12	\$3.15	\$0.33
Total Average Weighted Cost			\$3.85

The expenditure value is calculated as follows:

$$\text{Expenditure Value} = (\text{Price of alternative} - \text{Price of CityBus}) \times (\text{No. of Shifted Trips})$$

Where: Price of alternative = \$3.85
 Price of CityBus = \$1.00
 No. of shifted trips (to paying modes) = 2,300,588

The result is an expenditure value, which represents an income benefit, equal to nearly \$6.6 million. This translates into an employment impact of 341 full-time equivalent jobs as this income is spent on other goods and services in the community.

2.2.1 Foregone Employment Benefit

The estimation of the employment value of CityBus for low-income residents is determined by calculating the jobs lost when CityBus passengers forgo job related trips in the absence of transit services. The first step is to estimate the number of foregone work trips, which can be represented by:

$$\text{No. of foregone work trips} = (\% \text{ of work trips}) \times (\% \text{ of low income riders}) \times (\text{total number of foregone trips})$$

Where: % of work trips = 50% based on surveys
 % of low income riders = 35% based on Census data and Labor Force Participation data
 Total number of foregone trips = 1,275,455 (as calculated by WSA)

Given this, the number of foregone work trips in the absence of transit services is estimated to be over 223,000 annually. Assuming that 50% of the people using transit for transportation to and from work would lose their job without the availability of transit, the number of foregone jobs can be calculated as follows:

$$\text{No. of foregone jobs} = (\text{50\%} \times \text{the number of foregone work trips}) / 500$$

Where: The number of foregone work trips = 223,205
 500 = number of annual work trips per passenger based on 10 trips per week for a 50 week period.

Using this approach, the number of foregone jobs in the absence of CityBus is estimated to be 223 annually which translates into foregone annual income of nearly \$4.3 million using the average annual income of \$19,217 for service sector jobs.

2.2.3 Total Affordable Mobility Benefits

Combining the expenditure value benefits with the foregone employment benefits provides for an estimation of the total benefits of CityBus arising as a result of providing affordable mobility to the residents of Lafayette. Exhibit 6 summarizes the findings of this exercise. As can be seen, the impacts are significant and even more so when it is considered that a large part of these benefits are accruing to a disadvantaged sector of the economy.

Exhibit 6: Total Affordable Mobility Benefits of CityBus

Benefit Category	Income	Employment
Expenditure Value	\$6,556,676	341
Foregone Employment	\$4,289,325	223
Total Benefits	\$10,846,002	564

2.3 Estimation of Operational Benefits

This section of the report deals with the economic impact resulting from the operational expenditures of CityBus. This includes CityBus expenditures on salaries, operation and maintenance of vehicles, supplies and other local expenditures. The economic benefits will be measured in terms of income and employment benefits which can be attributed to the operation of the CityBus system.

The on-going operation of CityBus requires the purchase of inputs including labor, materials, equipment and services which are purchased from local suppliers. To the extent that these purchases result in investment from outside the region or improved efficiency in the use of resources inside the region, they will result in real economic growth in Lafayette.

The operational impacts consist of direct, indirect and induced impacts.

2.3.1 Direct Operational Benefits

The direct impacts refer to the earnings and employment benefits occurring as a result of the direct spending of CityBus. This includes the employment of staff and purchase of locally produced goods and services such as fuel and office supplies. Budget data was obtained from CityBus for the calculation of these benefits. It should be noted that only purchase of locally provided goods and services are included; therefore, we subtract the purchase of goods and services from outside the region.

From CityBus data, the total expenditure outlays are budgeted to be about \$6.99 million in 2005.³ At peak employment, CityBus employs 125 staff. After accounting for expenditures that occur outside the region, the direct operational impacts are calculated

³ This includes wages, salaries, retirement, taxes, general operating expenditures and operating and maintenance costs for vehicles. This does not include any capital expenditures.

to be \$4.56 million in output and \$3.88 million in earnings. Exhibit 7 summarizes the direct operational benefits of CityBus.

Exhibit 7: Direct Operational Benefits of CityBus

Direct Operational Benefits	Output (millions of \$)	Earnings (millions of \$)	Employment (full-time equivalent)
Total	\$4.56	\$3.88	125

2.3.2 Indirect and Induced Operational Benefits

Indirect impacts refer to the non-CityBus economic activity that occurs as result of the operation of CityBus. Specifically, these impacts result from the purchases by local firms who are the direct suppliers to CityBus. The expenditures of these firms on the labor and inputs necessary to produce the goods and services sold to CityBus generate additional earnings and jobs in the local economy.

Induced impacts refer to the multiplier effects on the local economy as the direct and indirect impacts ripple through the economy. Induced impacts represent the earnings and employment impacts that are generated by successive rounds of spending, or re-spending, in the economy. The Regional Impact Model (RIMS II) multipliers, developed by the U.S. Bureau of Economic Analysis, are used in the current study.

Exhibit 8 summarizes the indirect and induced operational impacts of CityBus. As can be seen, for every 1 direct job at CityBus, an additional 2.16 jobs are generated.

Exhibit 8: Indirect and Induced Operational Impacts of CityBus

Indirect and Induced Operational Benefits	Output (millions of \$)	Earnings (millions of \$)	Employment (full-time equivalent)
Total	\$7.07	\$6.01	270

2.3.3 Total Operational Benefits of CityBus

Total operational benefits of CityBus in terms of earnings and employment are \$9.89 million and 395 full-time equivalent jobs. The majority of these earnings and employment benefits accrue in the transportation and service industries. Exhibit 9 displays the total operational benefits.

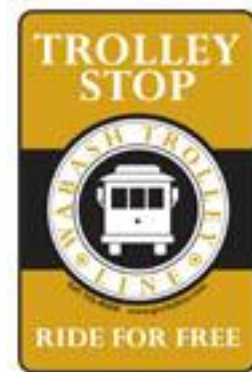
Exhibit 9: Total Operational Benefits of CityBus

Total Operational Benefits	Output (millions of \$)	Earnings (millions of \$)	Employment (full-time equivalent)
Total	\$11.63	\$9.89	395

3.0 Economic Impact of Wabash Trolley

Increased transit services affect travel behavior in many ways. In turn, these changes in travel behavior have impacts on a region’s economy. Many of transit’s benefits such as reducing pollution, increasing mobility and accessibility, increasing property values and reducing transportation costs are generally recognized by a community. However, the magnitude of these benefits in terms of the impact they can have a region’s economy are often not recognized.

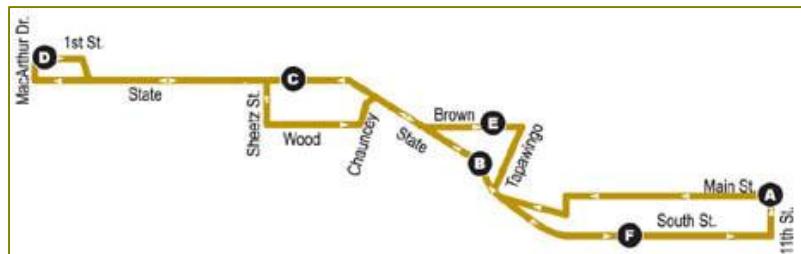
The purpose of the current study is to examine the economic benefits of one component of the public transit system in Lafayette, Indiana- the Wabash Trolley Service. The following is a summary of that effort and is organized as follows. The next section provides and overview of the trolley service and annual operations. Section 3 provides a description of benefit classes and Section 4 describes the methodology for quantifying the direct benefits of the service. A conclusion is provided in Section 5.



3.1 Overview of the Wabash Trolley Service

The Wabash Trolley Line is a free service, running two trolley cars, connecting downtown Lafayette with West Lafayette and Purdue University. It operates Monday through Saturday with hours varying by season. The trolley route currently extends from 11th and Main in downtown Lafayette to 1st and MacArthur in West Lafayette.

The service, implemented in July 2003, has experienced significant growth in ridership with month over month growth rates averaging 28% for the first two months in 2005. In 2004, total passenger count was 292,145 or an average of 35 passengers per hour of operation.

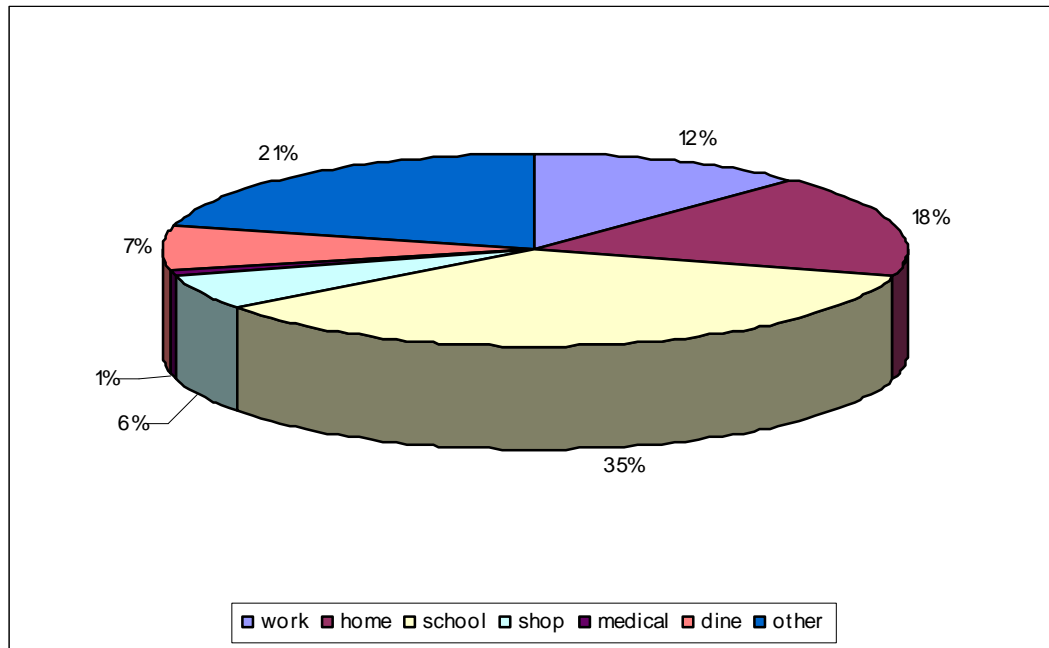


Existing Passenger Survey

As part of the current effort, a face-to-face passenger survey was conducted. The survey was conducted over a four day period consisting of one Wednesday, on Friday, one Saturday and one Monday with surveyors riding the trolley between 11 am – 2 pm each day and 4 pm to 9 pm on Friday. A total of 393 valid survey responses were recorded.

Based on our survey, attending classes was the most common reason for using the trolley, with 35% of the passengers falling into this category. As can be seen in Exhibit 10, transport to medical appointments and commuting to work were also significant uses of the service.

Exhibit 10: Purpose of Wabash Trolley Trips



A majority of the passengers, 56%, reported riding the trolley daily and 31% reported using the service weekly. The fact that 87% of the passengers are regular users of the service indicates high passenger satisfaction and loyalty to the service (see Exhibit 11).

As can be seen in Exhibit 12, when asked if the existence of the Wabash Transit service made it more likely that they would go downtown, 68% said yes. Even more supportive of the service was the fact that 78% percent of the respondents indicated that the trolley was a positive factor in choosing where they lived (see Exhibit 13). The popularity of the trolley with individuals living downtown could lead to the willingness of tenants/owners to pay a premium for downtown real estate; thus, leading to an increase in property values. Although this was reinforced by the telephone interviews of downtown landlords and residents, there is insufficient data at this time to quantify the impact. Evidencing the support of the trolley and its success in providing customer satisfaction is the fact that 97% of the respondents indicated that the trolley service was needed. It should be noted however, that only 33% supported an expansion of the service.

Exhibit 11: Frequency of Ridership on the Wabash Trolley

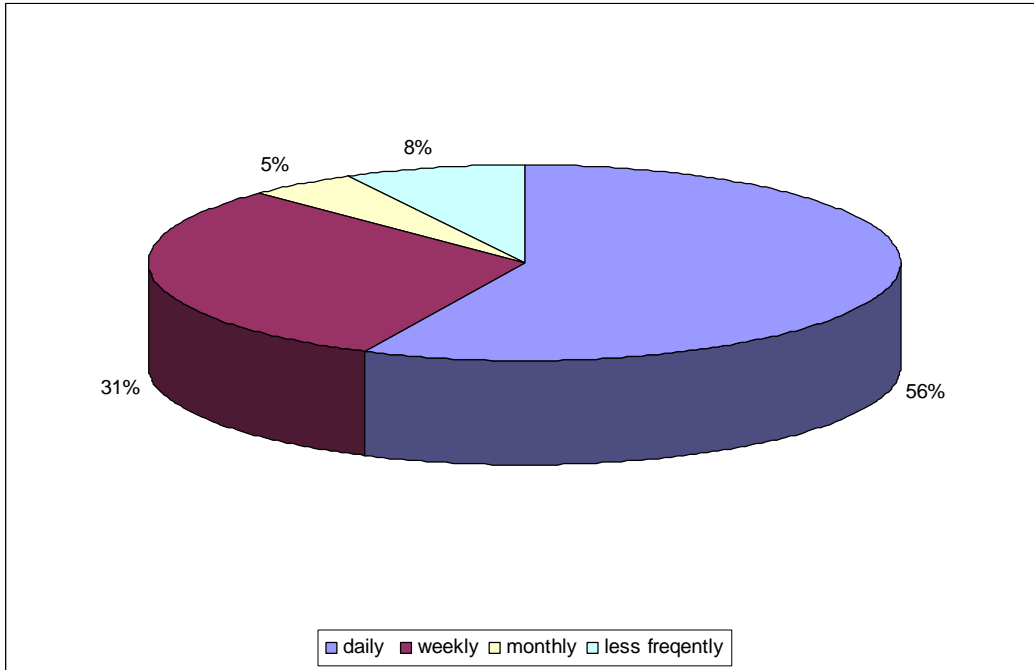


Exhibit 12: The Impact the Wabash Trolley has on the Likelihood of Passengers to Visit Downtown Lafayette

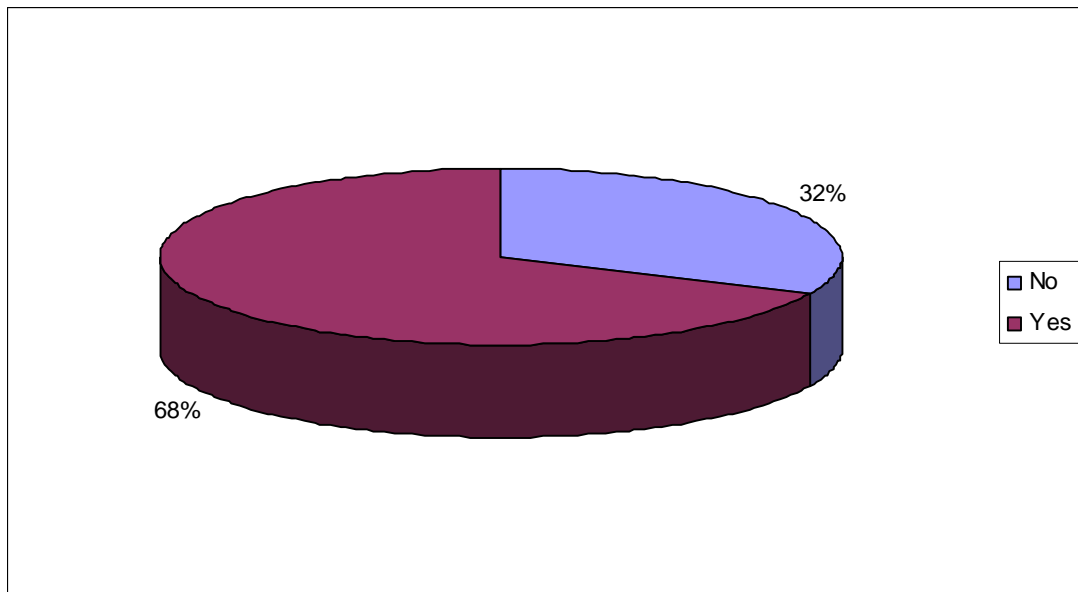
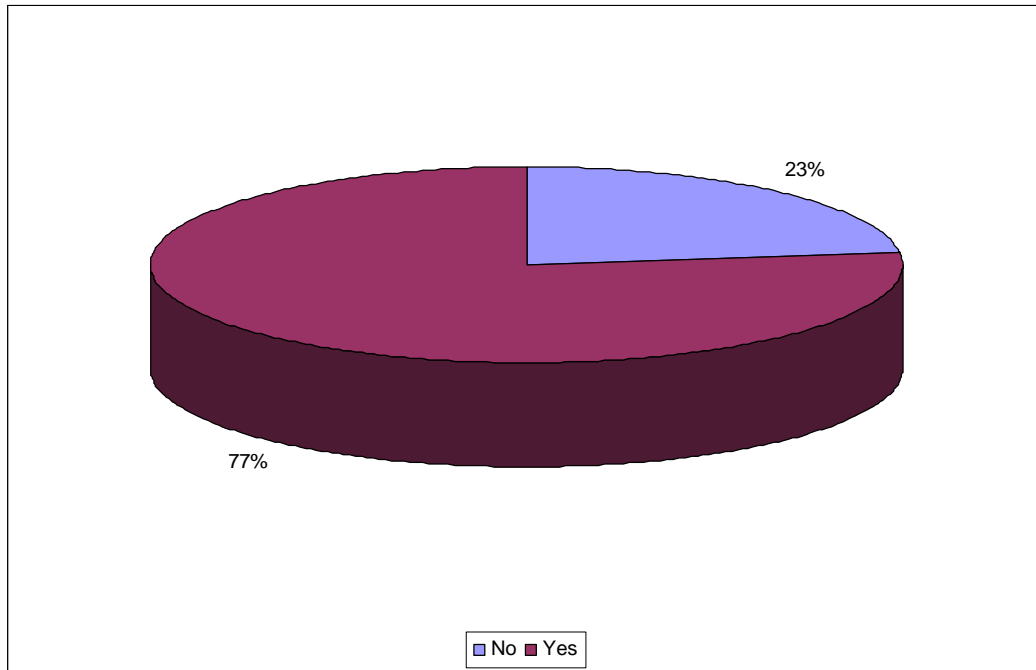


Exhibit 13: Percentage of Passengers that Indicated the Wabash Trolley was a Positive Factor in Choice of Residence



CityBus has identified the following ways in which the Wabash Trolley benefits the Greater Lafayette Region:

- ◆ **Enhances Downtown Viability.** A positive, growing downtown is key indicator of the economic growth and vitality of the entire community. The Wabash Trolley Line enhances all the positive things happening downtown, which have a direct impact on the community as a whole.
- ◆ **Supports Business Investment.** Business owners have invested millions in downtown Lafayette-West Lafayette. New hotels, the Wabash Landing and River Market developments, and dozens of new small businesses have created jobs and new economic activity, benefiting our entire community. The trolley supports downtown business owners who have made an investment in our community's future.
- ◆ **Generates a Positive Return on Investment.** Investment in public transportation provides essential support for a strong economy. A 1999 study of the economic impact of public transportation said the overall economic benefit can exceed costs by as much as six to one.

- ◆ **Links Purdue University with Downtown.** The Wabash Trolley Line links our community's most significant economic engine and largest employer with the downtown business districts, resulting in positive economic benefits for our entire community.
- ◆ **Spurs Redevelopment & Increased Property Values.** Demand for property along the Wabash Trolley Line will become stronger as Purdue students, faculty, staff, and others consider the downtown area as viable housing alternative. Redevelopment and higher property values will result in additional tax revenues for the cities.
- ◆ **Solves Congestion & Parking Problems.** Public transportation is a good solution for parking problems in dense areas such as the downtown and on campus. The Wabash Trolley Line carries between 600 and 1300 riders per weekday, which means fewer cars are on the road and taking up limited parking spaces.
- ◆ **Attracts Conventions & Visitors.** With two new hotels in the downtown area and improvements being made to campus accommodations, our community can attract large conventions that bring thousands of visitors annually. Free trolley rides are a needed amenity that will help attract conference attendees to our market, resulting in positive economic growth for our entire community.

3.2 Measuring the Impacts of Wabash Trolley Service

The current analysis focuses on quantifying the economic impacts associated with travel efficiencies - including vehicle operating cost savings, emissions impacts and time savings- and the impact of expenditures at local businesses by passengers on the trolley. The annual economic benefits of the Wabash Trolley arising from these sources total nearly \$3.7 million.

The annual economic benefits of the Wabash Trolley arising from travel efficiencies and expenditures at local businesses total nearly \$3.7 million.

3.2.1 Economic Impacts of Travel Efficiencies

Communities of varying size often have different goals and objectives for its transit programs and the public's expectations of the resulting economic impacts should be based accordingly. In smaller urban and rural areas, the role of transit may be fundamentally different. For example, transit may play a smaller role in preserving or adding highway capacity but a large role in providing mobility and access for individuals and household with no transportation options. Such is the case of the Wabash Trolley. This different role, however, does not mean that there is an absence of valid economic benefits arising from the service. They are just harder to quantify.

The travel efficiencies resulting for the Wabash Trolley give rise to estimated economic benefits totaling \$3.0 million annually.

The estimation of economic benefits arising from travel efficiencies assumes that at least of portion of the vehicle operating cost savings will be spent on locally produced

goods and services. The travel efficiencies resulting for the Wabash Trolley give rise to estimated economic benefits totaling nearly \$3.0 million annually.

For the current study, the travel efficiency benefits were calculated to include:

- ◆ Parking
- ◆ Vehicle operating cost savings
- ◆ Safety benefits

It should be noted that travel time savings were not included because of the lack of data specific to the study region. To the extent that travel time savings do arise, the travel efficiency benefits are understated. In addition, the cost of vehicle ownership in terms of payments, insurance and interest is not used in these calculations even though our survey results indicate that a significant portion of passengers do not own a vehicle.

Using generally accepted procedures endorsed by the American Public Transit Association (APTA), the economic benefits were calculated using average savings for each of the categories and the number of passengers. In order to avoid double counting of benefits, the number of passengers used in the estimation was adjusted to account for the percentage that will be included in the analysis of passenger spending presented below. This adjustment is based on the assumption that the vehicle operating cost savings for passengers using the trolley specifically for a dining or shopping trip are used to finance a portion of their expenditures.

Specifically, the vehicle operating costs as a weighted average of the costs savings for passengers owning a car and those choosing an alternative method of transportation, including CityBus regular transit services. The weighted average savings per passenger is \$3.80, which translates into a total daily average total of nearly \$3,100. Applying the regional multiplier as obtained from the U.S. Bureau of Economic Analysis, this \$3,100 in daily vehicle operating costs savings for riders of Wabash Trolley gives rise to a total economic impact of \$3.0 million in income which supports 159 full-time equivalent jobs in the local economy.

3.2.2 Economic Impact of Expenditures by Passengers at Local Businesses

The Wabash Trolley allows for a connection between Purdue University and downtown Lafayette. The increased access to downtown businesses allows students, faculty and staff at the University to travel downtown for lunch, shopping and entertainment. In turn, part of these expenditures are used to pay employees at local businesses as well as buy supplies from local businesses and pay leases to local property owners.

The estimated economic impact arising from the Trolley's use to reach dining and shopping venues is \$0.7 million annually.

The estimation of economic impacts of the expenditures by passengers using the trolley specifically for shopping/dining are based on existing passenger survey results and have been extrapolated to the annual ridership population and is calculated using the following formula:

Economic Impact of Spending by Wabash Trolley Riders = (% of riders going shopping or dining X Total number of riders) X (Average expenditure per rider) X (regional retail multiplier)

Based on our survey, 13% of the 292,145 passengers use the Wabash Trolley for dining and shopping with average expenditures of \$10. Using these assumptions and a multiplier of 1.75, the estimated economic impact arising from the Trolley's use to reach dining and shopping venues is \$0.7 million annually.

3.3 Conclusion

The Wabash Trolley Service has been in operation for approximately 2 years and has enjoyed significant ridership growth and customer satisfaction. While the benefits of the trolley service are generally agreed upon, there had been no real effort to quantify the economic benefits.

The analysis revealed significant support for the Wabash Trolley service as well as significant economic impact for the greater Lafayette region, especially the downtown and University area. An examination of the quantifiable benefits arising from the travel efficiencies and savings combined with the increase in retail and commercial expenditures along the route reveal an annual income impact of over \$3.7 million. The results are summarized in Exhibit 14. It should be noted that this estimate is conservative in that it does not capture the impacts on the following:



- ◆ Land values for properties with access to the trolley service;
- ◆ Increased central city employment opportunities;
- ◆ Local education- college attraction;
- ◆ Benefits from providing mobility for poor, elderly and children; and
- ◆ Impact on conference and tourism events.

Exhibit 14: Economic Impacts of Wabash Trolley

Benefit Category	Income Impact	Employment Impact
Travel Efficiency Passenger Expenditure	\$3,053,719	159
	\$664,630	35
Total	\$3,718,349	193

4.0 Conclusion

Residents of local communities demand accountability for the expenditure of taxpayers dollars. As a public agency, CityBus must be able to demonstrate the value of the taxpayers dollars spent on public transit. Value is represented by the return on investment of taxpayers' dollars. By examining the economic benefits arising from the provision of CityBus services, the return on the investment can be evaluated.

This study was commissioned by CityBus to examine the economic impacts to the community as a result of the public transportation services provided by CityBus. Using methods established by the federal government, the economic impact of CityBus was estimated based on the following categories of impacts:

- ◆ Operating benefits;
- ◆ Congestion relief benefits; and
- ◆ Affordable mobility benefits

In addition, benefits accruing to downtown business as a result of the operation of Wabash Trolley were quantified. It should be noted that a potentially important class of benefits were not quantified for this report – neighborhood development impacts. These impacts arise as a result of increasing property values and expanded development attributable to the proximity of transit stations and the increased accessibility. Quantifying these benefits were beyond the scope of the current study but research indicates that the impacts can be significant. Therefore, the estimates of economic impact presented in this report should be considered conservative.

A summary of the benefits are provided in Exhibit 15. As can be seen, the impacts are substantial and represent a rate of return of nearly 5 to 1 when comparing the total income impact to CityBus' operating budget of \$6.99 million.

Exhibit 15: Summary of Economic Benefits of CityBus on the Local Economy

Category of Impact	Income	Employment
Travel efficiency	\$8,239,321	429
Mobility	\$10,846,002	564
Operational	\$11,624,062	395
Wabash Trolley	\$3,718,349	193
TOTAL	\$34,427,733	1,582