

BENEFITS OF TRANSIT IN NORTH CAROLINA

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Project Sponsor: NCDOT



Public Transportation Group

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NCDOT Public Transportation Division, April 2016 • www.ncdot.gov/nctransit



75.4 MILLION
TRIPS PROVIDED IN 2015



\$1.019 BILLION
STATEWIDE BUSINESS OUTPUT

Expenditure-related economic contribution refers to statewide economic effects supported by the capital and operational expenditures of North Carolina's transit systems.



\$802 MILLION
ANNUAL BENEFIT OF HAVING A TRANSIT OPTION
IN NC COMMUNITIES

Transportation cost savings — using transit instead of other modes
Affordable mobility options — benefit from having transit services available

PUBLIC TRANSPORTATION

PROVIDES

- Economic benefits to communities
- Health benefits
- Access to work, education, training, medical transportation, shopping and tourism

REDUCES

- Individual transportation costs
- Congestion and delays
- Road construction and maintenance



TRANSIT FUNDING

Every \$1 the state of North Carolina invests in transit generates approximately \$7 of total investment in North Carolina from federal, state and local sources.



More than **11,000 JOBS**
are supported by transit
system operations and capital
investments which results in
\$416 MILLION in wages



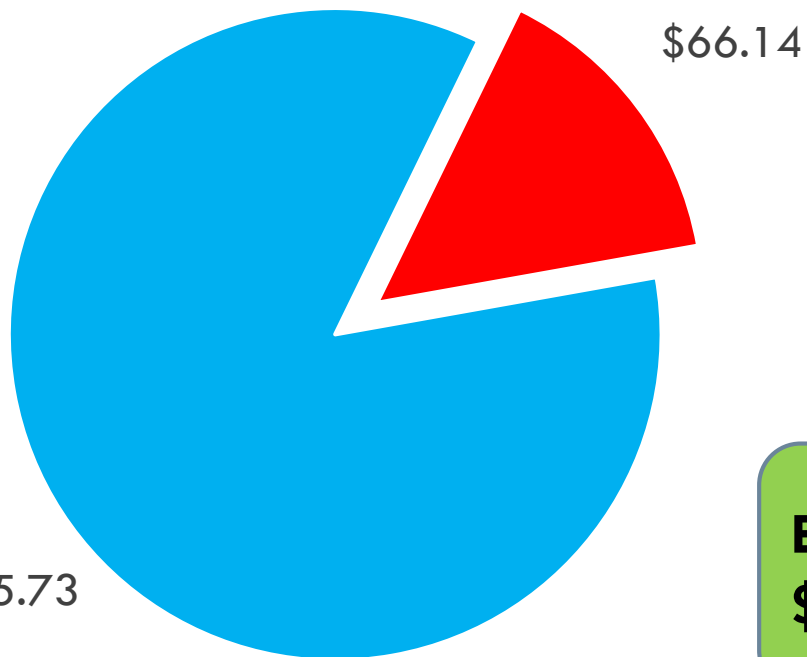
Source: *Economic Benefits of Transit* research conducted for NCDOT/PTD by the Institute for Transportation Research and Education at North Carolina State University, April 2016.

Summary

- Consistent methodology for estimating the benefits of public transportation to stakeholders
- Contained in a single-page handout
- Designed to be updated annually
- Calculated at the individual transit system level
- Can be aggregated to regional and state levels

State Funding Leverage

Total Revenues



- \$66 million in State funds
- Helps bring in \$376 million in Federal and Local funds

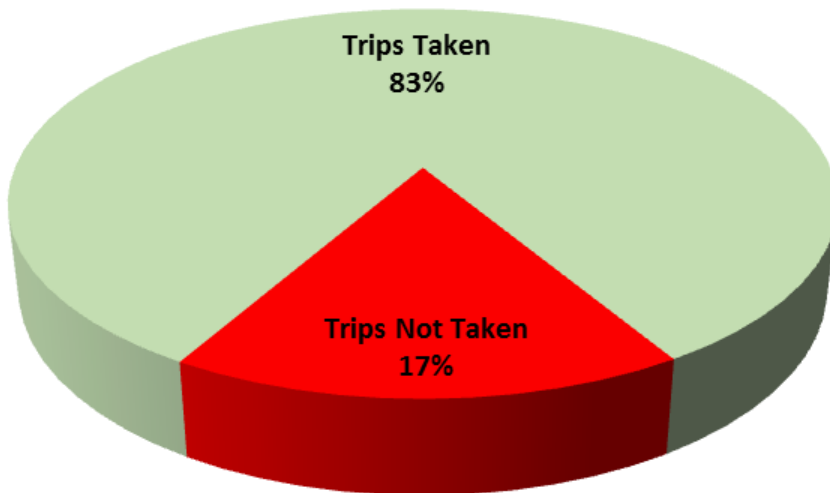
Every \$1 of State Investment results in \$7 of direct investment

■ State (millions) ■ Federal (millions)

Purpose of Study

What are the economic and mobility benefits created by public transportation in North Carolina?

Absence of Public Transportation



62.6 million trips would be taken via other modes

Individual transportation costs
Congestion and delay
Road maintenance and construction
Health impacts

12.8 million trips would not be taken

Delayed medical treatment
Work productivity
Education/training
Shopping and tourism

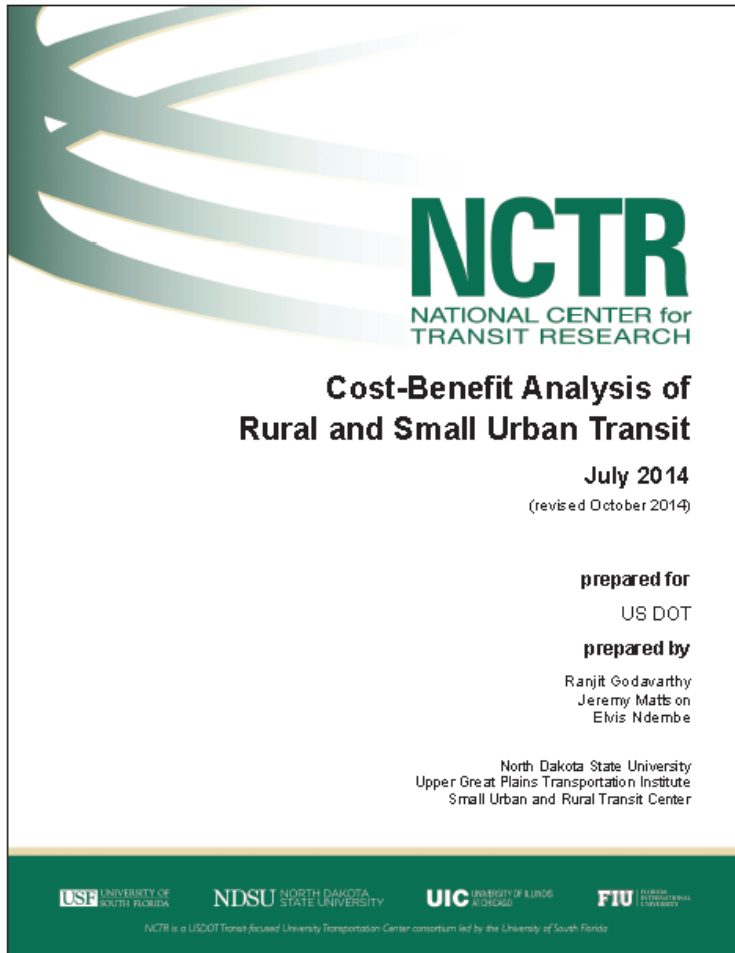
Lost Economic Contribution

Wages
Business output
Jobs
Value added/State product

Research Approach Overview

- Utilize existing, accepted methodologies
- Update with current information and known values for North Carolina
- Take conservative path to estimate the **minimum** contributions
- Combined data and methods from multiple resources:
 - Small Urban and Rural Transportation Center (SURTC), at Upper Great Plains Transportation Institute, North Dakota State University
 - Center for Urban Transportation Research (CUTR), University of South Florida
 - TTI at Texas A&M University
 - NC Operating Statistics Data (compiled annually by ITRE)
 - TREDIS

Resources—National Center for Transit Research, SURTC, North Dakota State University



- Recent methodology for estimating benefits from rural and small urban transit
- Peer reviewed and presented at 2015 Transportation Research Board Annual Meeting
- Additional national presentations

<http://www.ugpti.org/resources/reports/downloads/2014-07-cost-benefit-analysis.pdf>

Resources—Center for Urban Transportation Research (CUTR), University of South Florida

- Methodology for estimating benefits for urban fixed- route
- Developed for Florida DOT

<http://www.dot.state.fl.us/transit/Pages/EconomicsandCommunityBenefits.pdf>

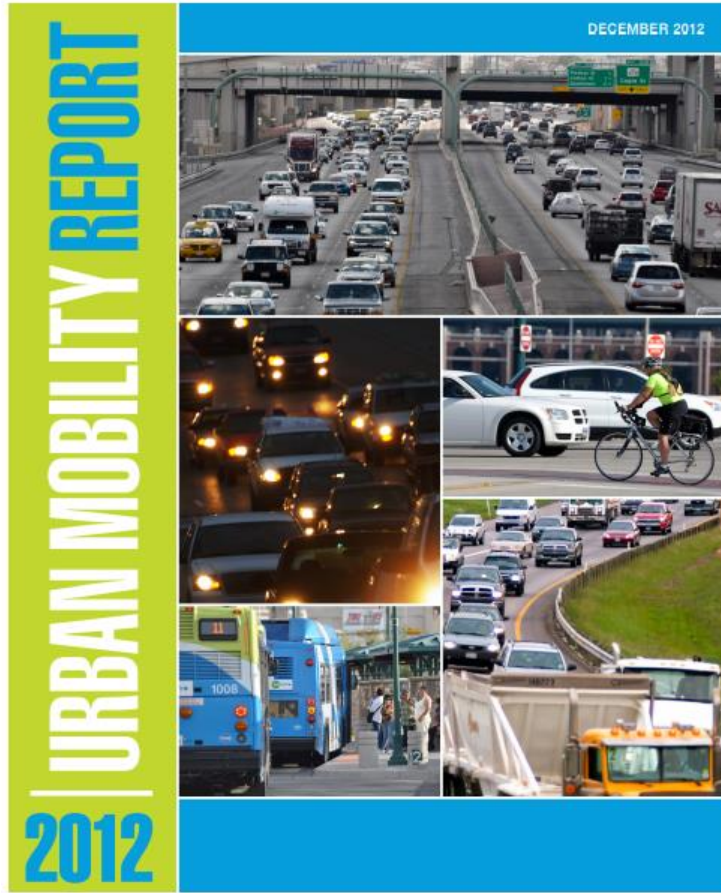
Economic and Community Benefits of Urban Fixed-Route Transit in Florida



Florida Department of Transportation | June 2011



Resources—Texas Transportation Institute at Texas A&M University



- Prominent national method for estimating congestion costs in urbanized areas

<http://d2dtl5nnlpfr0r.cloudfront.net/tti.tamu.edu/documents/mobility-report-2012.pdf>

Resources—NC Transit Operating Statistics



State-Wide Public Transportation FY 2015 NCDOT Public Transportation Division Public Transportation Operating and Financial Statistics Report

Pg 1

Systems By Type

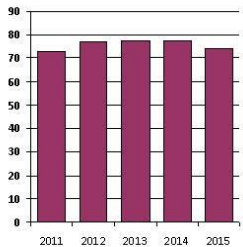
Consolidated Small City-Community:	1
Regional Urban:	2
Human Service:	2
Fixed Route in Small Cities:	2
Regional Community:	6
Consolidated Urban-Community:	5
Urban Single-City:	15
Community:	66
Total Public Transportation Systems:	99

Highlights

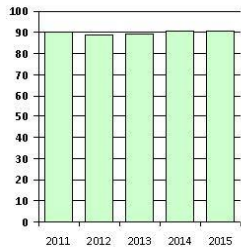
Total Passengers:	74,280,320
Total Hours:	5,513,786
Total Miles:	90,219,657
Total Federal Funding:	\$66,137,591
Total State Funding:	\$47,909,357
Total Other Funding:	\$17,896,963
Total Local Funding:	\$309,922,795
Total Funding:	\$441,866,705

- Collected annually by ITRE
- FY2015
- Most complete, accurate, and timely data available

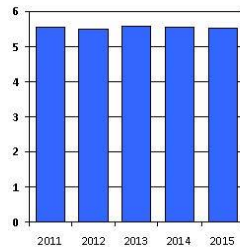
Passengers By Year In Millions



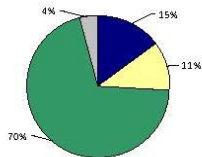
Miles By Year In Millions



Hours By Year in Millions

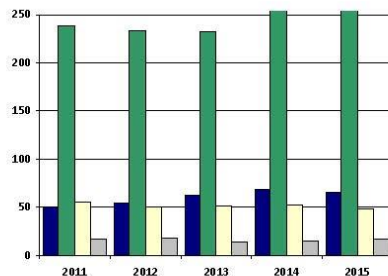


2015 Revenue Sources



Revenue Data Legend

Revenue Sources by Year in Millions



Data Summary

	2014	2015	% Change
Federal Revenue:	\$69,327,060	\$66,137,591	-5%
Local Revenue:	\$270,218,609	\$309,922,795	15%
State Revenue:	\$52,948,652	\$47,909,357	-10%
Other Revenue:	\$15,387,898	\$17,896,963	16%
Miles:	90,426,310	90,219,657	0%
Hours:	5,548,686	5,513,786	-1%
Total Passengers:	77,680,864	74,280,320	-4%

Resources—TREDIS



The screenshot shows the TREDIS website interface. At the top, the TREDIS logo is displayed in white on a blue background. Below the logo is a navigation menu with the following items: HOME (highlighted in yellow), PRODUCTS, FREE TOOLS, SUCCESS STORIES, RESOURCES, and CONTACT US. The main content area features a large, vibrant image of a city street at night with light trails from traffic. Overlaid on the bottom of this image is the text "TRANSPORTATION ECONOMICS" in a bold, black, sans-serif font.

- Webinar: Introduction to TREDIS – February 11th @ 1PM (EST)
- Come see us at TRB
- White Paper: Guide to the Different Uses of BCA, EIA and FIA
- TREDIS Freight Fueled by Transearch

- NCDOT preferred tool
- Estimates economic costs and benefits of transportation projects

Research Approach Overview

Utilize parallel approaches to provide a comprehensive picture of economic and mobility benefits

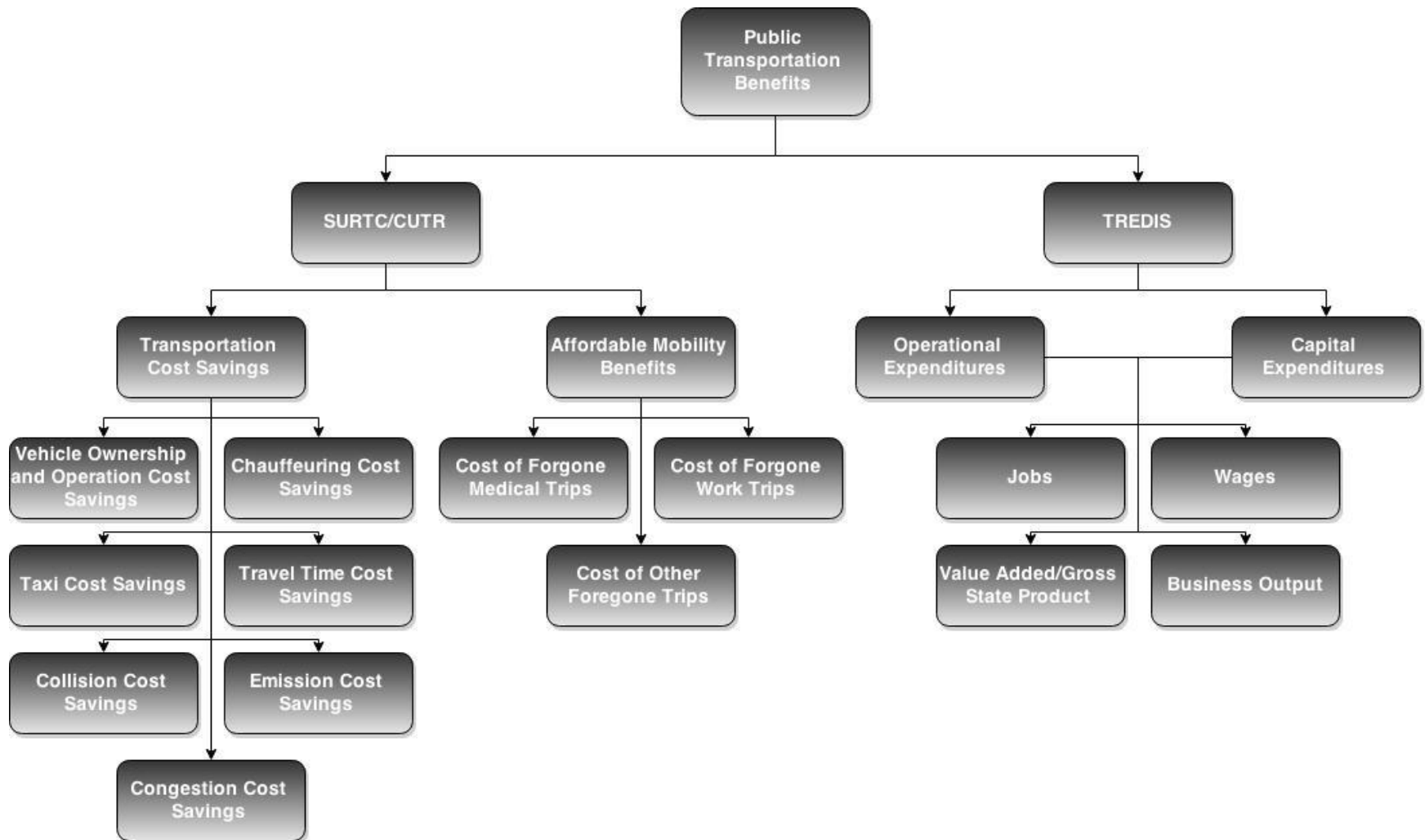
1. Transportation Cost Savings and Affordable Mobility Benefits:

- ▣ Methodology developed by SURTC
- ▣ Augmented by methodology for urban areas developed by CUTR
- ▣ Utilized information on congestion benefits in urban areas from TTI
- ▣ Applied NC Operating Statistics Data

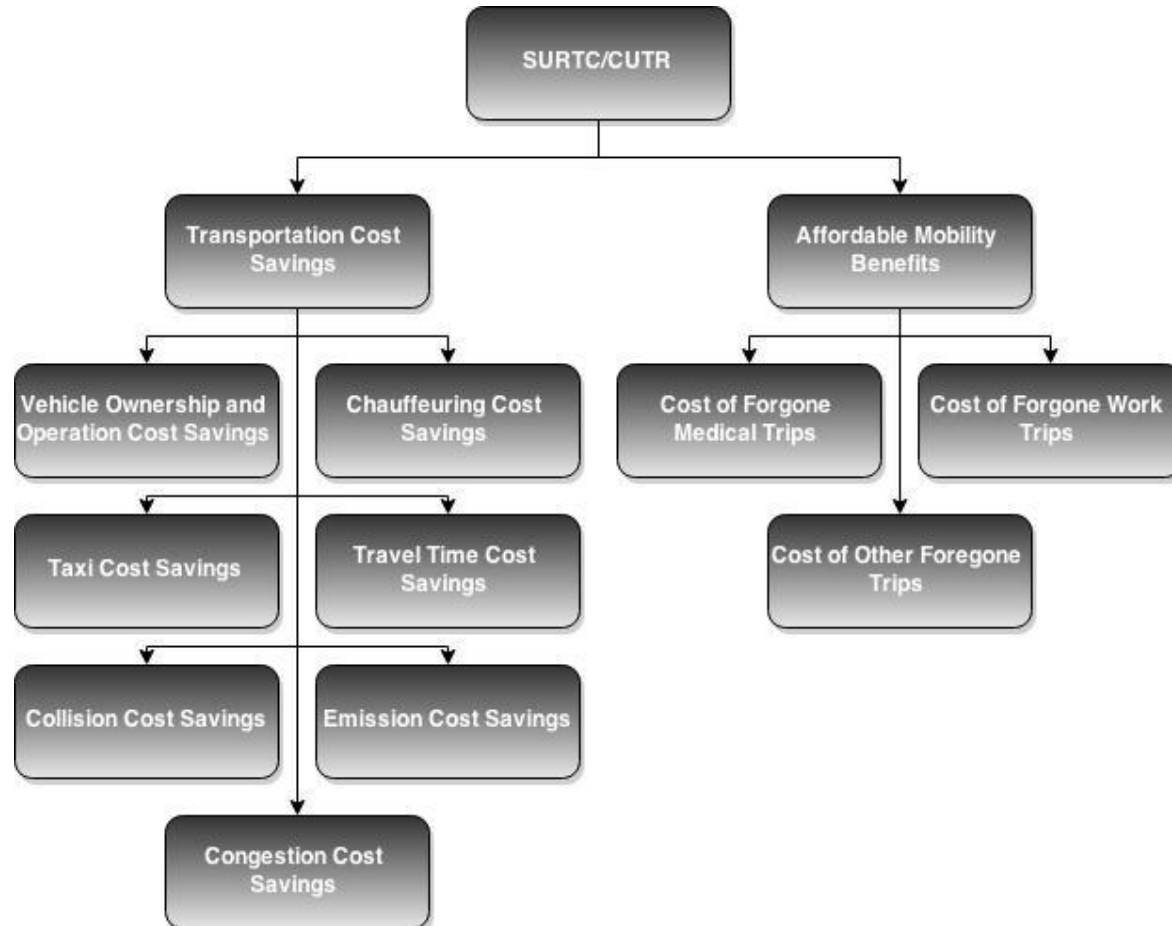
2. Economic Contributions Analysis

- ▣ Utilized TREDIS
- ▣ Applied NC Operating Statistics Data
- ▣ Focused on economic inputs/outputs

Overall Structure with Parallel Approaches



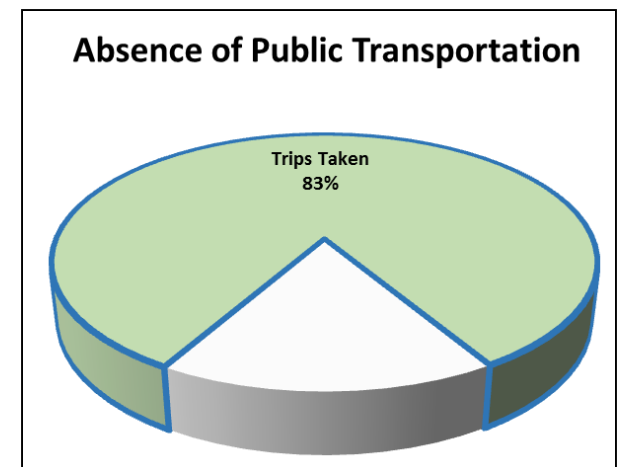
Method 1—Transportation Cost Savings and Affordable Mobility Benefits



Method 1—Transportation Cost Savings and Affordable Mobility Benefits

Transportation Cost Savings—calculates additional costs that travelers would incur from using other modes, if transit was not available

- Savings from using transit vs. other travel modes (owning/maintaining a car to drive, having someone else drive, taking a taxi, walking, bicycling)
- Travel time savings—transit vs. other modes
- Accident cost savings—transit vs. other modes
- Emissions cost savings—transit vs. other modes
- Congestion cost savings—transit vs. other modes



Method 1—Transportation Cost Savings and Affordable Mobility Benefits

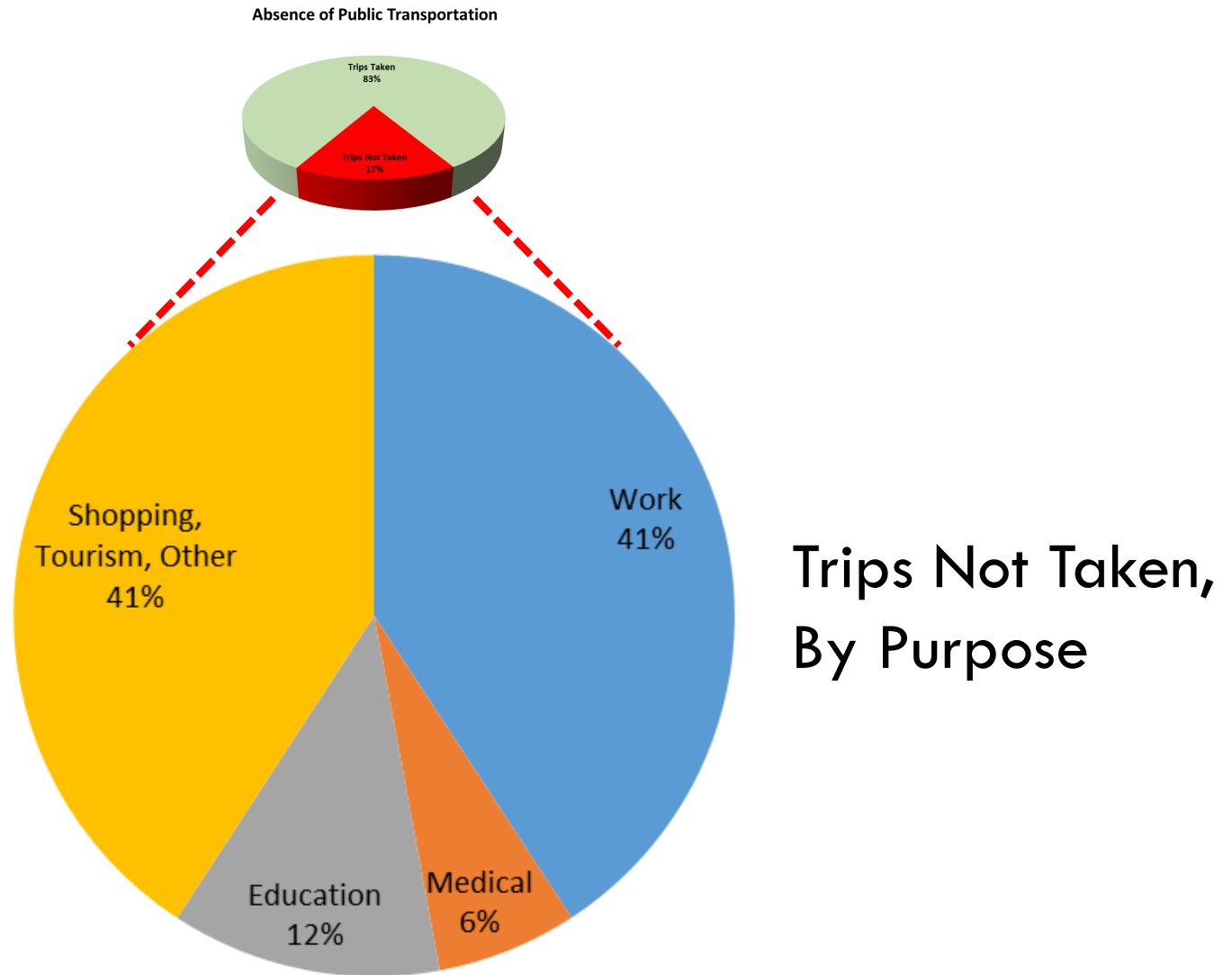
Affordable Mobility Benefits—calculates costs travelers would incur from not making trips if transit was not available

- Costs from poorer quality medical care resulting from fewer trips for healthcare (lack of preventive treatment resulting in aggravated conditions requiring expensive care)
- Costs from lack of income from work resulting from inability to travel to employment sites
- Costs from lack of educational and training opportunities, etc.

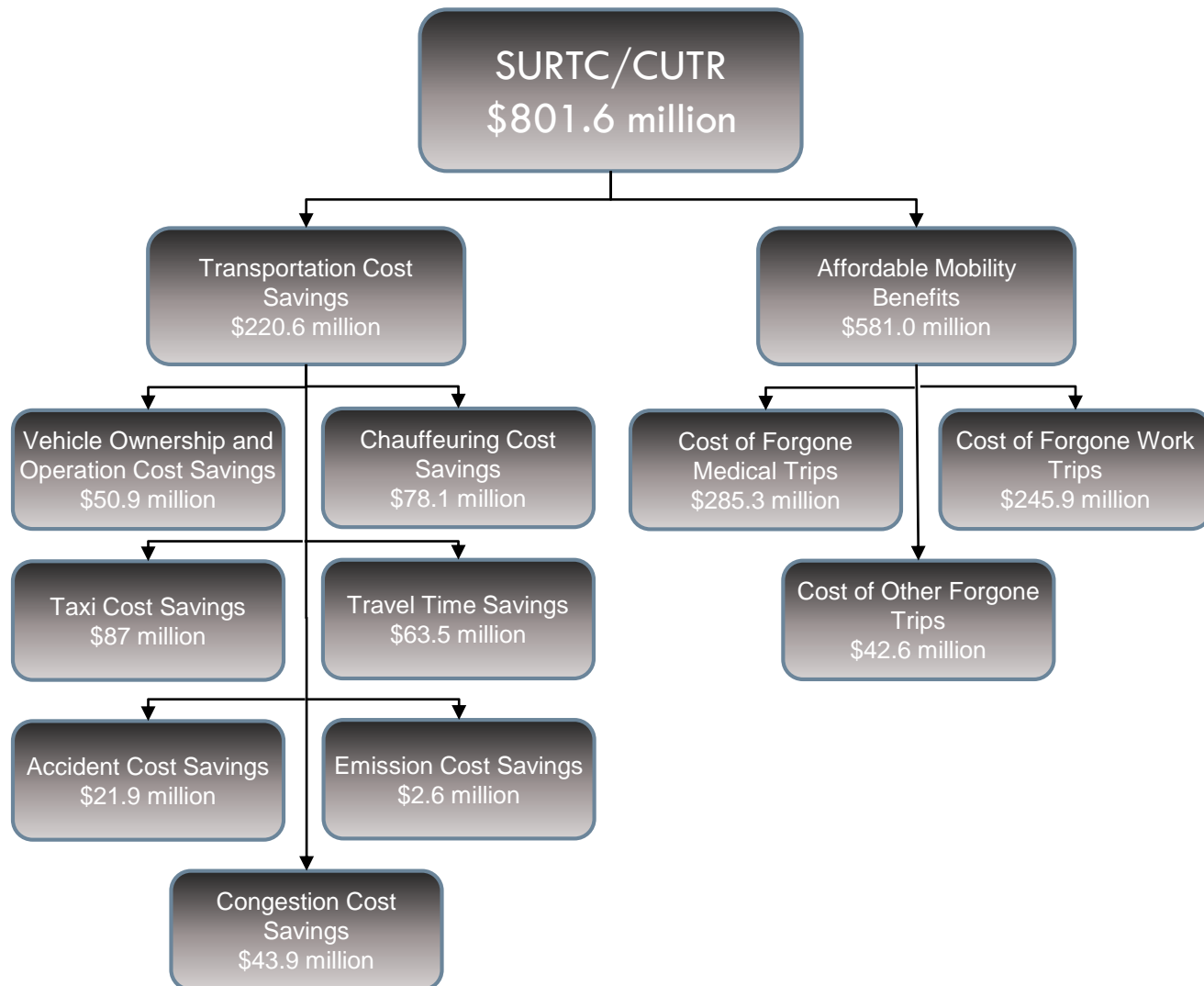
Absence of Public Transportation



Method 1—Transportation Cost Savings and Affordable Mobility Benefits



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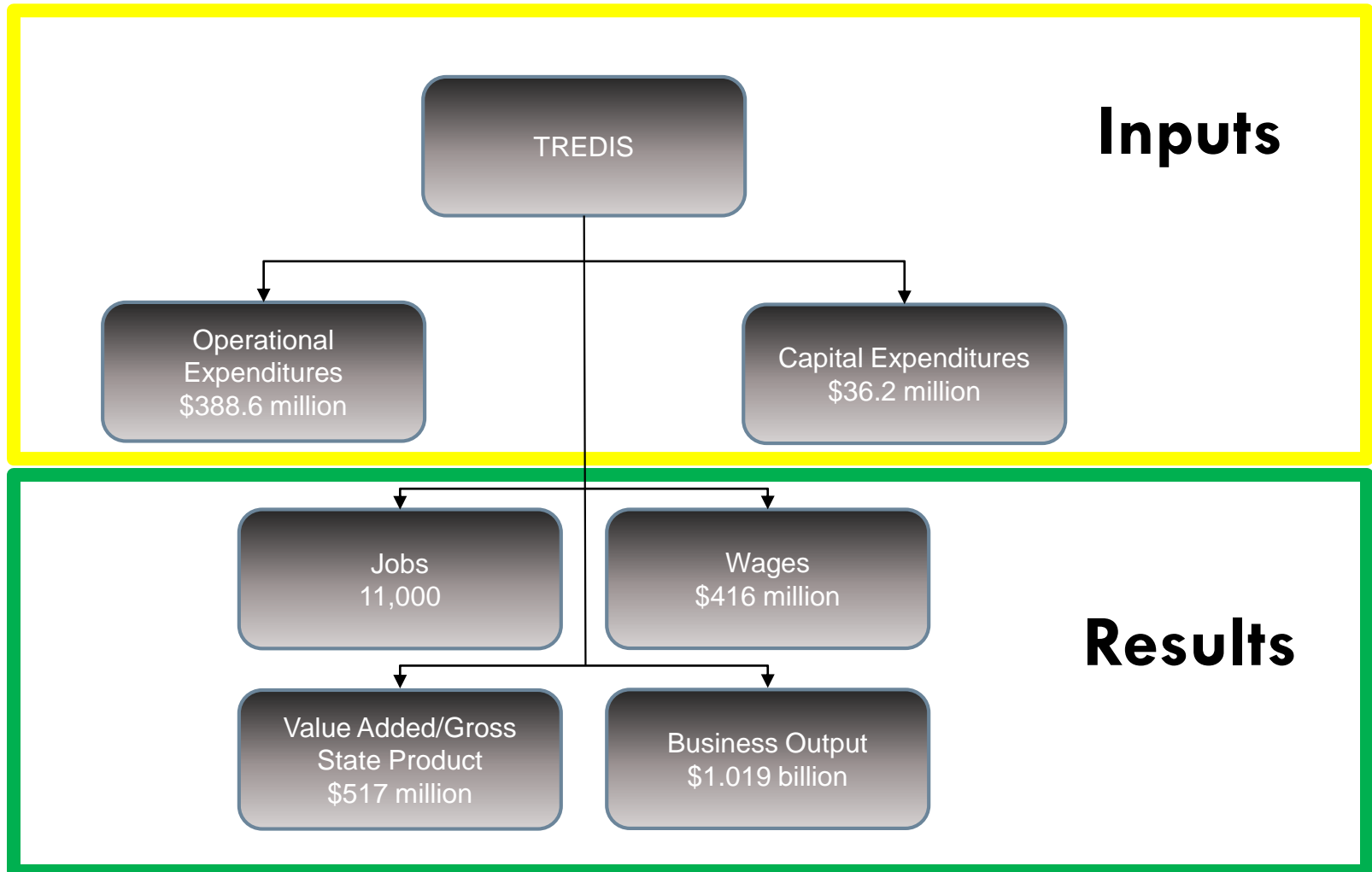


Method 2—Economic Contribution Analysis

Method 2: Economic Contribution Analysis

- Calculates
 - Jobs
 - Wages
 - Business Output
 - Value Added

Method 2—Economic Contribution Analysis



Method 2—Economic Contribution Analysis

System	Business Output	Value Added	Jobs	Wage Income
Rural Statewide	\$228,000,000	\$112,000,000	2,458	\$90,000,000
Small Urban Statewide	\$83,000,000	\$41,000,000	865	\$33,000,000
Urban Statewide	\$708,000,000	\$365,000,000	7,778	\$293,000,000
Statewide Public Transit	\$1,019,000,000	\$517,000,000	11,101	\$416,000,000

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Source: *Economic Benefits of Transit* research conducted for NCDOT/PTD by the Institute for Transportation Research and Education at North Carolina State University, April 2016.

Conservative Estimates- Additional Benefits Will Result from Including

- Parking costs
- Congestion savings for 6 of 17 urban transit systems and all small urban transit systems (rural ~ 0)
- Local land use investment (Lynx corridor)
- Value of trips carried by other providers
- No inflation adjustment from SURTC values (2012)

Next Steps

- Include benefits that are omitted (ex. parking)
- Collect and apply actual statistics instead of using estimates (ex. trip purpose percentages)
- Assess confidence in micro-level results
- Develop one impact figure by combining business output and annual benefit of having a mobility option
- Determine the viability of these outputs as performance measures

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Background—Transit System Categories

- Rural- 70 systems
 - ▣ Federal Section 5311 eligible
- Small Urban- 17 systems
 - ▣ Federal Section 5307 eligible
 - ▣ Serve urban areas with populations less than 200,000
 - ▣ AppalCART moved to this category by researchers due to unique service characteristics
- Urban- 17 systems
 - ▣ Federal Section 5307 eligible
 - ▣ Serve urban areas with populations greater than 200,000

Key Considerations

- Charlotte light rail included as fixed route
- CUTR reduced congestion benefits because it had specific knowledge concerning trip displacement
- Foregone trips and trip purposes for urban systems from CUTR, small urban and rural from SURTC