



CHAPEL HILL TRANSIT
Town of Chapel Hill
6900 Millhouse Road
Chapel Hill, NC 27514-2401

phone (919) 969-4900 *fax* (919) 968-2840
www.townofchapelhill.org/transit

**CHAPEL HILL TRANSIT PUBLIC TRANSIT COMMITTEE
NOTICE OF COMMITTEE MEETING AND AGENDA
SEPTEMBER 25, 2014 – 11:00 A.M. to 1:00 P.M.
CHAPEL HILL TRANSIT – FIRST FLOOR CONFERENCE ROOM**

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**MEETING SUMMARY OF A REGULAR MEETING OF THE PUBLIC TRANSIT COMMITTEE
1ST FLOOR TRAINING ROOM, CHAPEL HILL TRANSIT**

Tuesday, August 26, 2014 at 11:00 AM

Present: Jim Ward, Chapel Hill Town Council
Ed Harrison, Chapel Hill Town Council
Damon Seils, Carrboro Alderman
Bethany Chaney, Carrboro Alderman
Cheryl Stout, UNC Public Safety
Than Austin, UNC Transportation Planner
Jeff McCracken, UNC Public Safety

Absent: Matt Czajkowski, Chapel Hill Town Council

Staff present: Brian Litchfield, Transit Director, Rick Shreve, Administrative Analyst, Roger Chapin
Assistant Transit Director - Operations, Julie Eckenrode, Assistant to the Carrboro Town Manager

Guests:

1. The Meeting Summary of June 24, 2014 was received and approved.
2. **Employee Recognition** – Damon Seils introduced Julie Eckenrode, the new Assistant to the Town Manager for Carrboro. Brian recognized Carmen Cole who is retiring August 31st after 32 years of service to the Town and Chapel Hill Transit. The Committee wished her well. Brian also introduced Roger Chapin, Chapel Hill Transit’s new Assistant Transit Director-Operations.
3. **Consent Items**
 - A. July Financial Report – Rick reviewed this report and noted some increase in repair expenditures recently. He will track this to determine if it is a trend.
4. **Discussion Items**
5. **Information Items**
 - A. Estes Park Bus Service Update – Brian reviewed this item and updated the Partners on a new arrangement that has been approved by the owners of Estes Park and the Town of Chapel Hill. The Town of Carrboro is currently reviewing. The new agreement would give CHT access for 10 years. It was determined that there needs to be a conversation with the owners regarding the reinstatement of Section 8 vouchers. There was concern about repairs being made if the Section 8 vouchers were not reinstated, but it was noted that repairs of some sort would still need to be made. There is a Memorandum of Understanding in place between CHT and the owners of the apartments, but Carrboro is not included. It was noted that an MOU would need to be in place as well for the proposed work to be completed.

Staff will work to facilitate discussion with the apartment owners regarding Section 8 vouchers and the repairs needed.

- B. North South Corridor Study Update – Brian reviewed the current status. Once the tier 1 analysis is complete it will be forwarded to the Policy committee and then to the Partners for review.
- C. Long Range Financial Sustainability Plan Update – Rick reviewed the plan update with the Partners. The Build Your Transit Tool will debut on September 15th. Capital needs are the focus at this time. Another update from the consultants is due next week and it will be forwarded to the Partners for discussion and to determine if the consultants will need to attend the September or October meeting. UNC reiterated that fleet capital costs are the highest priority and Carrboro noted that training opportunities need to be evaluated along with the staffing needs.
- D. Regional Branding Study Update – Brian reviewed this and noted that Triangle Transit will attend the September meeting to provide recommendations for feedback.
- E. FTA Triennial Review Update – Brian noted it will be 6-8 weeks before a final report is received.

6. Departmental Monthly Report

- A. Operations - Provided for the Partners
- B. Director – Brian reviewed for the Partners. He noted that a regional FTA Grant application was submitted in August for bus purchase and that CHT is working on a joint bus procurement with Durham and Triangle Transit.

7. Future Meeting Items

8. Partner Items

9. Next meeting – September 25, 2014

10. Adjourn

The Partners set a next meeting date for September 25, 2014

3A. August Financial Report

Staff Resource: Rick Shreve, Budget Manager

- The August Financial Report will be provided to the Partners at the September 25, 2014 meeting.

4A. Regional Branding Study

Action: 1. Receive information and provide staff and Triangle Transit with feedback.

Staff Resource: Brian Litchfield, Director

- A presentation on the Regional Branding Study will be made at the September 25, 2014, meeting by Triangle Transit's Director of Communications and Government Affairs Damien Graham.

Background

- The Partners Committee received a presentation from Triangle Transit staff on Phase I of the Regional Branding Study during their September 17, 2013 meeting and agreed to participate in Phase II of the study along with four other transit systems: CAT, C-TRAN, DATA and Triangle Transit.
 - The scope of services for Phase II included - using the baseline and market research collected in Phase I of the Study, Clean Design will perform the following next tasks:
 - Brand exploration – this should include discovery phase, target audience, stakeholder interviews, and color theory
 - Provide ways in which we can enhance and create value for the image of transit and the new brand
 - Provide suggested color scheme and design changes – the transit partner agencies want to maintain their basic color schemes so selection of a new regional logo will have to take this into consideration
 - Naming or umbrella brand options – this could range from one regional brand with emphasis on the local provider or emphasis on the regional brand with mention of local provider
 - Implementation costs and timeline for rolling out new brand recommendations
- The Partners Committee received an update on Phase II of the Regional Branding Study during their January 28, 2014 meeting from Triangle Transit staff and Clean Design.
- Since January Clean Design has worked with Triangle Transit and a stakeholder group team to identify and recommend a brand name, logo and bus design for the transit systems participating in the study.

Recommendation

- Partners discuss the information provided in the presentation and provide staff and Triangle Transit with feedback.

Attachment

- Memorandum from Triangle Transit Staff on Regional Branding Study. The memorandum was shared with the Partners Committee during the August 26, 2014 Partners Meeting. The following is a link to the presentation referenced in the memo: <https://www.dropbox.com/s/hltodmrhvenyty/Transit.Partner.PresentationFINAL%20%281%29%20%281%29.pdf>

Memorandum

To: Chapel Hill Transit Partners
CC: Brian Litchfield, Than Austin
From: Damien Graham – Director of Communications and Public Affairs, Triangle Transit
Date: 9/23/2014
Re: Regional Branding

Regional Branding Study

In 2013, five of the area transit providers – Chapel Hill Transit, Triangle Transit, Capital Area Transit (CAT), Durham Area Transit Authority (DATA), and Cary Transit (C-Tran)- got together and asked the questions, “Would our customers benefit from having a more unified brand that tied our services together in a more significant way and if so, what would that look like?”

The group of transit providers agreed to pursue the matter further and after some discussion, it became clear that professional consultants would be needed to help guide us through this evaluation process. A representative from each of the transit partners would serve on a “Transit Stakeholder Committee” to help provide feedback and guidance to the consultant throughout the process. We collectively agreed that we should divide the process into two phases. Phase I would be to collect survey information to gauge where we are with our various brands and is there interest/ benefit to having a more regional brand. Additionally, we wanted the consultant to collect case studies from transit agencies from around the country who have tried regional branding.

Depending on the information we received from Phase I, the transit partners would get together again, share the information with the various boards and then decide if we should move forward with Phase II. The focus of Phase II would be to work more closely with the consultant to work on bus and logo designs and naming convention recommendations.

NC DOT, as an interested party, joined the five transit partners and put out an RFP and agreed to hire the team of FGI Research and Clean Design to complete Phase I of the regional branding study. FGI completed a survey of 1000 people from across the Triangle. Clean Design investigated several different agencies and compiled a

list of four specific examples that seemed most analogous to our scenario. The total cost of Phase I was \$74,500, with \$50,000 coming from NC DOT and the remainder split between the transit partners.

Once the information was compiled, presentations were made to key staff and boards from each of the transit partner organizations for review and consideration. The transit stakeholder group reconvened and unanimously agreed to move forward to Phase II of the study. The cost of Phase II was \$66,000 with \$30,000 coming from NC DOT and the remainder split between the transit partners.

After several months, multiple meetings with the stakeholder team, additional outreach and feedback from our riders, Clean Design presented three naming conventions and six design concepts to the transit stakeholder group. The stakeholder group deliberated and finally selected one naming convention and one core design concept.

One of the key challenges to this exercise was to see if we could find a brand name and design that demonstrated a more unified connection between the systems but at the same time, allowed for local identify and flavor. The stakeholder group believes we have found a solution that addresses this key challenge.

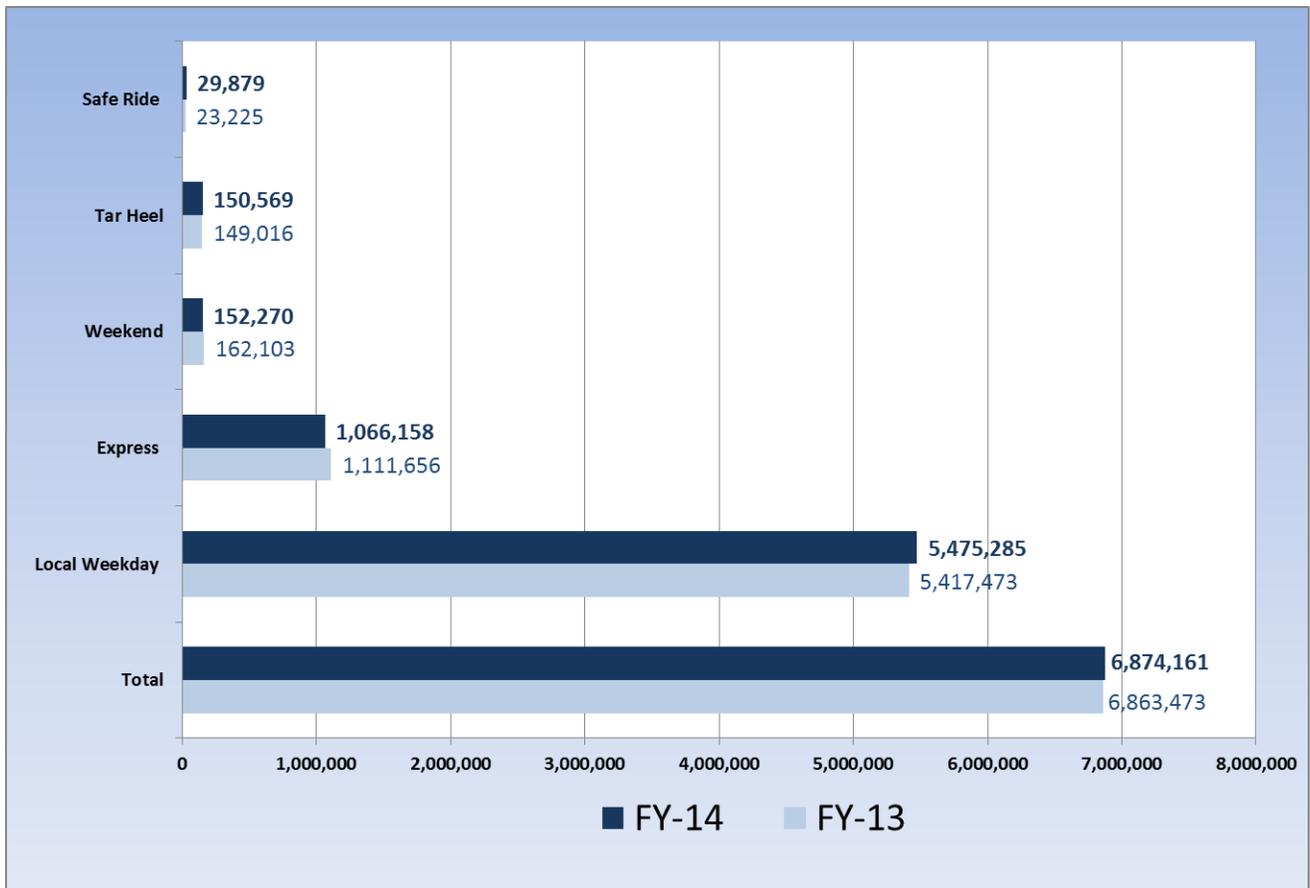
Please review the accompanying powerpoint presentation for more information about the project background and its methodology, and recommendation for naming convention and bus and logo design.

4B. FY13-14 Performance Report

Staff Resource: Mila Vega

In FY2013 there were 249 Weekday Service Days and in FY2014 there were 250. Due to the similarity of service days, the total ridership was expected to remain about the same. The total ridership showed a slight increase from 6,863,473 in FY2013 to 6,874,161 in FY2014. Additional minimal increases in ridership occurred in Safe Ride, Tar Heel and Local Weekday. A decrease in ridership was recorded in Weekend service (minus about 10,000 total rides); however, there were less weekend service days in FY14.

Overall, FY14 maintained comparatively similar ridership to FY13.



August ridership is currently being developed. The staff is working on resolving technical difficulties associated with the data download.

	FY12-13	FY13-14
Weekday Service Days	249	250
Safe Ride Service Days	88	91
Saturday Service Days	57	56
Sunday Service Days	35	33
Tarheel Express Service Days	26	28
FCX	437,449	497,633
HU	135,209	114,495
JFX	197,166	131,349
CPX	151,476	135,749
CCX	132,192	120,343
DX	31,165	25,246
PX	26,998	41,343
A	288,181	313,369
CL	43,566	45,052
CM	151,319	155,736
CW	196,248	217,947
D	458,130	457,903
F	229,773	227,765
G	192,308	228,498
HS	33,652	41,951
J	907,784	901,485
N	134,352	149,088
NS	833,427	819,699
NU	300,880	314,325
RU	323,804	343,326
S	473,202	386,002
T	266,130	256,927
U	441,346	478,441
V	143,372	137,770
SAFE G	3,055	4,366
SAFE J	7,793	8,378
SAFE T	12,377	17,134
Weekday Fixed Route Total	6,552,354	6,571,322
Change from previous year (%) weekday		0%
CM	4,215	6,890
CW	10,464	13,507
D	18,144	17,001
NU (sat)	20,760	15,262
T	17,209	18,385
U (sat)	27,023	27,920
FG	10,122	9,356
JN	11,558	11,595
NU (sun)	20,978	16,488
U (sun)	21,628	15,867
Weekend Fixed Route Total	162,103	152,270
Change from previous year (%) weekend		-6%
Total Fixed Route Passenger Trips	6,714,457	6,723,592
Change from previous year (%)		0%
Tar Heel Express/Special Service	149,016	150,569
All Service Categories Ridership	6,863,473	6,874,161
Change from previous year (%)		0%

5A. Long Range Financial Sustainability Plan Update

Staff Resource: Rick Shreve, Budget Manager
Brian Litchfield, Director

- An update on the Long Range Financial Sustainability Plan will be provided to the Partners at the September 25, 2014 meeting.

5B. North-South Corridor Study Update

Staff Resource: Mila Vega, Service Planner

Overview

The Tier 1 Analysis of the North-South Corridor Study was completed by the consultant team. The alternatives being carried forward into detailed definition and evaluation are No Build, BRT Low, and BRT High operating along MLK Jr., Boulevard/Columbia Street/US 15-501 from the Eubanks Road P&R Lot or a future P&R site northeast of I-40 through downtown Chapel Hill to Southern Village at Dogwood Acres Drive (see Attachment 1).

The next step is the detailed definition of alternatives. The following elements will be included in the detailed definition of alternatives: service plan, stop spacing, stop facilities, transit vehicles, technology and customer information, identity and branding and maintenance facility.

The main differentiator between the alternatives will be runningways: mixed traffic, dedicated center lane or dedicated side lane.

	No Build	BRT in Mixed Traffic	BRT in Dedicated Side Lane	BRT in Dedicated Center Lane
Service Plan	IN PROGRESS			
Stop Spacing	No changes to existing stop location or spacing	Station locations altered to maximize ridership activity and community development impact. Fewer overall stations for rapid transit line. Stations generally spaced 1/2 mile to 1 mile apart.		
Stop Facilities	No changes from existing	Station shelters and associated facilities to include level boarding, customer information, seating, and other features.		
Runningway	Operates in mixed traffic		Operates in dedicated side-running lane throughout corridor	Operates in dedicated center-running lane throughout corridor

	No Build	BRT in Mixed Traffic	BRT in Dedicated Side Lane	BRT in Dedicated Center Lane
Transit Vehicles	Uses existing 40- and 60-foot bus vehicles	Uses 60-foot articulated buses with right-door loading		Uses 60-foot articulated buses with right- and/or left-door loading
Technology / Customer Info	Uses existing technology and customer info	Integration of next-bus variable message signs at stations, online/mobile customer information, and traffic-signal priority for bus vehicles in corridor		
Identity and Branding	No modifications to service branding	Unique identity and branding elements integrated into vehicles, stations and associated service materials		
Maintenance Facility	Utilizes existing maintenance facility	May require expansion of existing or new maintenance facility		

The study has a significant public outreach component. The public can engage via the project website (www.nscstudy.org), Town E-newsletter, social media, MindMixer (online community forum), community events, and public meetings. Several public meetings will be held in October:

- Oct. 21 UNC Student Union
- Oct. 22 Town Council Chambers
- Oct. 23 UNC Hospitals

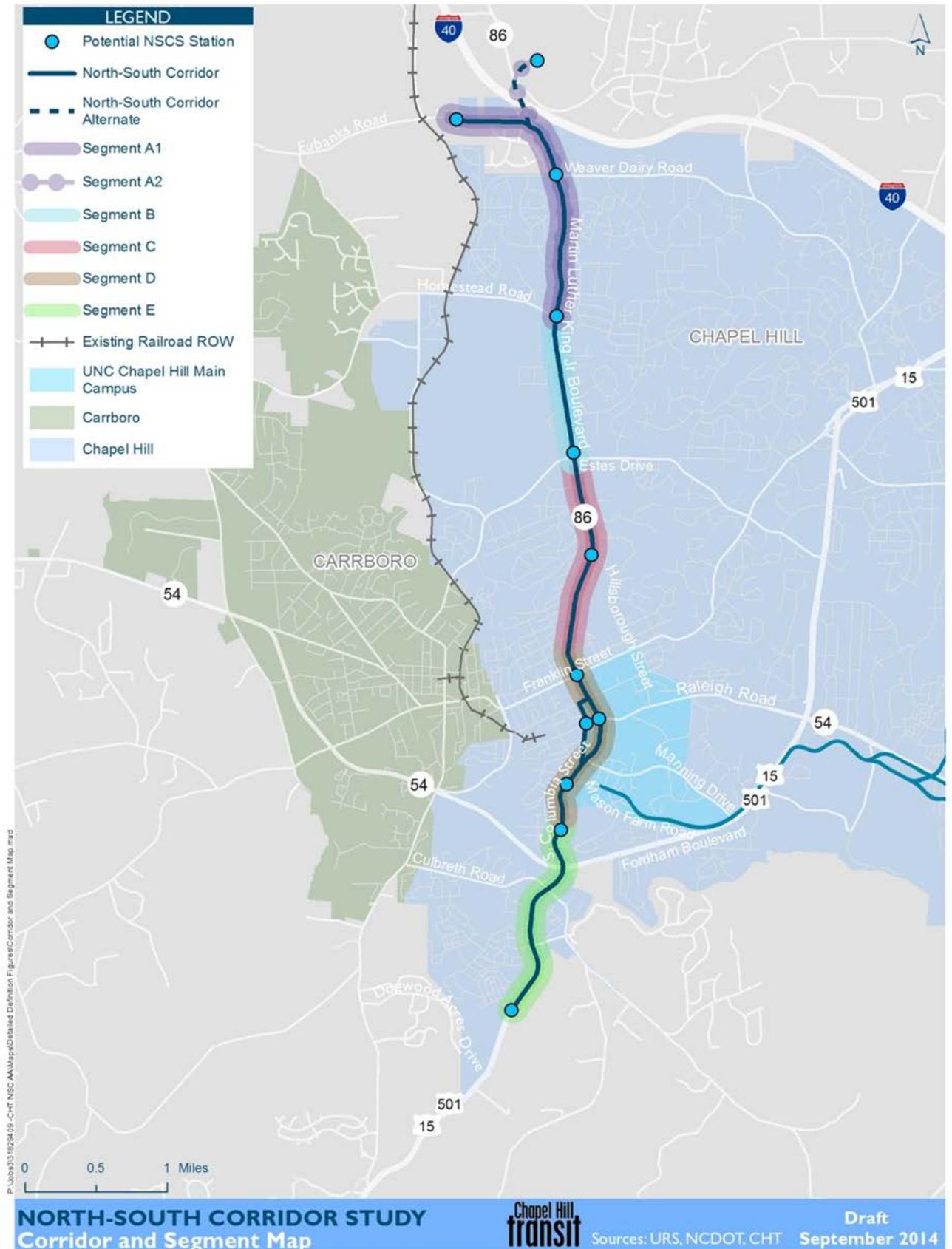
On September 12th, Brian Litchfield gave a presentation about the study at the Bike-In Movie event. Additional outreach is planned for October 5 at the FestiFall.

Next Steps

- Detailed Definition of Alternatives Report
- Policy Committee – October 1, 2014
- Public Open Houses

Attachment(s)

1. Tier 1 Results Map
2. Tier 1 Report
3. Project Process



Chapel Hill transit

**Tier 1 Analysis
August 21, 2014**

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1. Introduction

1.1 Project Description

The North-South Corridor Study (NSCS) is an 18-month project that is being led by Chapel Hill Transit (CHT) in coordination with the Chapel Hill Transit Partners, which includes the Town of Chapel Hill (ToCH), the Town of Carrboro (ToC) and the University of North Carolina - Chapel Hill (UNC).

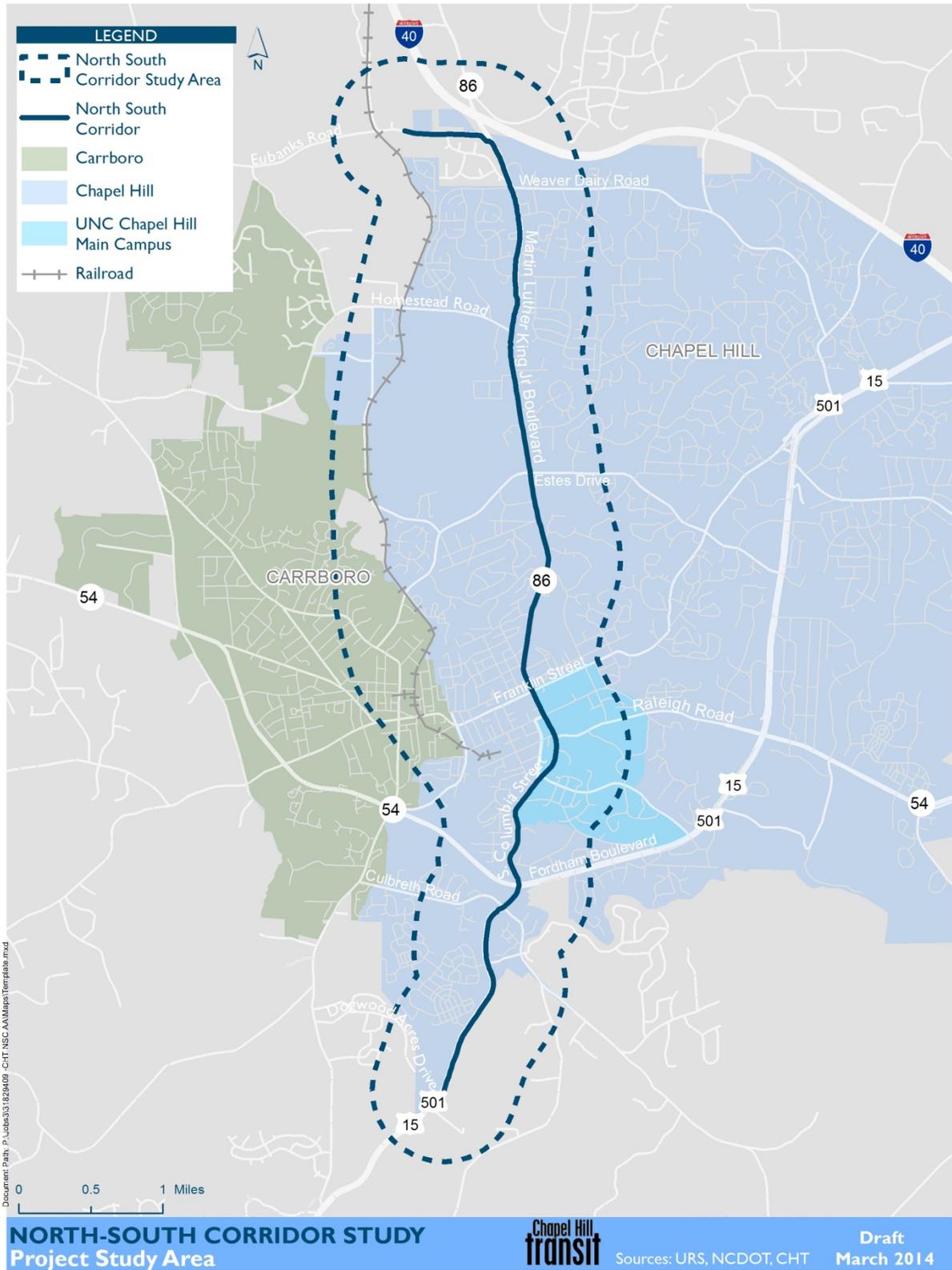
The project, which is being funded through a combination of federal (Federal Transit Administration [FTA]) and local funds, will identify and evaluate a series of transit investment alternatives for implementation within the study corridor (see Figure 1-1), which runs along the Martin Luther King, Jr. Boulevard (Historic Airport Road/NC Hwy 86), South Columbia Street, and US 15-501 South. This corridor, which is approximately 7.3 miles long, has its northern terminus at Eubanks Road and Martin Luther King, Jr. Boulevard and its southern terminus at US 15-501 near the Southern Village mixed-use development.

The study will expand on previous planning work to identify a locally-preferred transit investment alternative that facilitates safe, efficient and expanded levels of mobility within the increasingly busy study corridor, and to improve connectivity between the corridor and the Research Triangle region. Additional reasons for this study include improving connections with other local and regional transit routes (including the planned Durham-Orange Light Rail line), supporting future development within the corridor, increasing transit mode share and ridership to the UNC campus/hospital, and improving multi-modal connectivity options between the new Carolina North campus on the northern end of the study corridor, Southern Village at the southern end of the corridor, and the rest of the study corridor.

Following a multi-phase, iterative alternative development and evaluation process that is supported by extensive public engagement activities, the Chapel Hill Transit Partners will recommend the Locally Preferred Alternative (LPA) to the Chapel Hill Town Council for adoption. The LPA will be the transit investment alternative that best meets the purpose and need for the project (as defined in this report) and is competitive for funding through the FTA's New/Small Starts capital funding program. The Town Council will submit the LPA to the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO) for adoption and integration into its *2040 Metropolitan Transportation Plan*.

The study is scheduled for completion in September 2015.

Figure 1-1: North-South Study Corridor



1.2 Project Purpose and Need

The **purpose of the North-South Corridor Study** is to identify and implement the transit investment strategy that will accommodate anticipated growth in travel demand within the corridor, support mobility options that match emerging demographic trends and preferences within the corridor, leverage the existing transportation infrastructure to improve connectivity within the corridor, and encourage sustainable development patterns that reduce reliance on single-occupant vehicles.

Project needs are summarized below and are defined in further detail in sections 2 through 6 of this report.

- **Project Need #1: Chapel Hill Transit ridership has increased by more than 20 percent between 2005 and 2012, and buses often operate at capacity during weekday peak hours on multiple routes.** Demand is straining capacity, which is reducing operational efficiency and resulting in schedule slippage and bus stacking. Investment in transit system capacity will ensure that existing rider demand is accommodated and future rider demand is supported.
- **Project Need #2: Chapel Hill is comparatively young, but its fastest-growing demographic is over age 65.** In 2010, the median age of Chapel Hill residents was 25.6; the median age of US residents was 37.2. From 1970 to 2012, the over-65 age group increased the most relative to all other age groups (from 4.5 percent to 9.4 percent). Academic research and industry experience has found that both of these demographic groups are increasingly choosing transit for either lifestyle/environmental/economic reasons (Millennials) or mobility reasons (senior citizens).
- **Project Need #3: Major development opportunities at the northern and southern ends of the corridor will fundamentally reshape mobility patterns and needs within the corridor.** The adopted 2020 Chapel Hill Comprehensive Plan designates several development focus areas along the corridor. The Town has approved several new developments within the corridor, including Carolina North, and is reviewing several others for approval. This level of development will expand the number of key activity generators within the study corridor and result in increased travel demand as more people seek to access them.
- **Project Need #4: Multi-modal transportation investments are necessary to accommodate anticipated increases in travel demand resulting from planned development within the corridor.** Recent technical analyses completed as part of the Carolina North development have forecast that – in the absence of mitigation measures - corridor roadways will reach unacceptable levels of congestion by 2030. The scale of roadway expansion required to mitigate this congestion is unlikely to be financially feasible, environmentally sensitive, or aligned with Chapel Hill’s vision for growth.
- **Project Need #5: Chapel Hill – and the surrounding region – has demonstrated a commitment to sustainable growth strategies in their adopted plans and policies.** Chapel Hill’s 2020 Comprehensive Plan calls for a transportation system that accommodates transportation needs and demands while mitigating congestion, promoting air quality, supporting affordable housing goals, sustainability and energy conservation. Transit service also plays a critical role in increasing access to services. High-capacity transit system investment that leverages existing transportation facilities while reducing reliance on single-occupant vehicles will be necessary to achieve these goals.

1.3 Project Goals and Objectives

The following six goals and related objectives have been established for the NSCS. These will be utilized for the development of evaluation criteria used in comparing the alternatives for the corridor.

Table 1-1: Project Goals and Objectives

Goal	Objectives
Increase the efficiency, attractiveness and utilization of transit for all users	<ul style="list-style-type: none"> • Provide reliable, frequent service that improves the experience of existing customers • Provide capacity for future growth • Provide improved passenger amenities and infrastructure • Ensure safe and comfortable transit services and facilities for all users
Improve multi-modal connectivity between the northern and southern portions of the study corridor	<ul style="list-style-type: none"> • Provide frequent, high-capacity, one-seat transit connections between key study corridor activity generators • Improve pedestrian and non-motorized access to corridor stations • Ensure sufficient park-and-ride access to the system
Enhance connectivity of the corridor to the regional transportation network	<ul style="list-style-type: none"> • Support regional planning efforts for a more balanced, multi-modal transportation network in the region • Coordinate with existing and planned transit services • Ensure connectivity to services connecting travelers to destinations within and beyond the study corridor • Provide for acceptable traffic operations and parking options in the corridor • Enhance connections to non-motorized transportation
Support land use and development patterns that reflect the vision for growth contained in local and regional plans and policies	<ul style="list-style-type: none"> • Support the economic development and revitalization efforts of local communities • Support regional economic development through enhanced access to employment concentrations • Support institutional and key stakeholder planning efforts, particularly strategic growth planning for UNC Chapel Hill • Support local and regional goals for compact, mixed-use development along the corridor
Contribute to regional equity, sustainability and quality of life	<ul style="list-style-type: none"> • Promote a more efficient and sustainable transportation system that reduces energy usage, pollution and costs of living • Increase mobility and accessibility for transit-dependent populations • Provide opportunities for place making and enhanced character in corridor communities
Develop and select an implementable and community-supported project	<ul style="list-style-type: none"> • Define and select transit improvements with strong public, stakeholder and agency support • Define and select transit improvements that are cost-effective and financially feasible, both in the short- and long-term • Define and select transit improvements that are competitive for Federal Transit Administration funding

1.4 Alternative Development and Evaluation Process

In order to evaluate the different transit modes and alignment options and identify a preferred alternative, the North-South Corridor Study will follow a three-step method.

- The first step (“Tier 1 Analysis”) will entail the assessment of each mode and alignment relative to overall implementation viability.
- The second step (“Detailed Evaluation”) will assess the modes and alignments that passed the Tier 1 Analysis.
- The alternative(s) that fares best against the detailed criteria in this second step will be identified as Preferred Alternative(s) and further refined in the third step (“Refine LPA/Small Starts Analysis”). The Locally Preferred Alternative will be identified at the conclusion of the third step.

The evaluation criteria associated with each step are a combination of quantitative and qualitative performance measures. The Tier 1 Analysis phase (which this report documents) has applied fewer and broader measures, including information from previous corridor studies.

The Detailed Evaluation phase will apply more and finer performance measures, and the third step will evaluate the Preferred Alternative(s) against federal criteria to determine the Locally Preferred Alternative. This three-step process will result in the identification of an LPA that not only meets locally-identified project purpose and needs, but that is also competitive for federal funding.

Table 1-2: Project Goals and Project Needs

Project Goal	Project Needs				
	Increasing transit ridership	Demographic trends	Planned development patterns	Increasing travel demand	Adopted plans and policies
Increase the efficiency, attractiveness and utilization of transit for all users	X			X	
Improve multi-modal connectivity between the northern and southern portions of the study corridor	X	X	X	X	
Enhance connectivity of the corridor to the regional transportation network	X	X	X	X	

Project Goal	Project Needs				
	Increasing transit ridership	Demographic trends	Planned development patterns	Increasing travel demand	Adopted plans and policies
Support land use and development patterns that reflect the vision for growth contained in local and regional plans and policies					X
Contribute to regional equity, sustainability and quality of life	X	X	X	X	X
Develop and select an implementable and community-supported project	X	X	X	X	X

2. Tier 1 Screening

The Tier 1 Analysis was structured to efficiently identify the alternatives that do not meet the project purpose and need or goals and objectives, and to remove them from further consideration in future phases of the project. This initial level of screening focuses on two areas:

- Transit modes
- Alignments

The analysis followed a two-step process: first, transit modes were subjected to evaluation; second, the alignments were subjected to evaluation.

This initial screening is intended to rely on readily available information and focus on high-level, qualitative assessment of modal and alignment options as a means to evaluate a comparatively large number of alternatives. In cases where there is not sufficient information to dismiss modes or alignments from further consideration, those options were recommended for continuation into the Detailed Definition and Evaluation phase of the project.

A series of evaluation criteria were developed to assess each alternative's ability to meet the stated project purpose and need, and its ability to ultimately be competitive for federal funding. Each of the modal and alignment options were evaluated against the criteria and rated as "pass" or "not pass."

The performance of the alternatives against each evaluation criteria was then aggregated, and an overall assessment of "pass" or "defer" was assigned to each alternative. An alternative that received one or more "not pass" rankings was assigned an overall assessment of "defer." An overall assessment of "defer" means that the mode or alignment does not meet the stated purpose and need for the North-South Corridor Study and will not be carried forwarded into more detailed definition and evaluation project phases, but may meet the needs of future studies conducted in the area and region.

The evaluation criteria for the Tier 1 Analysis and their relationship with the goals of the project are shown in Table 2-1.

Table 2-1: Project Goals and Tier 1 Evaluation Criteria

Tier 1 Evaluation Criteria		Project Goals					
		Increase the efficiency, attractiveness and utilization of transit for all users	Improve multi-modal connectivity between the northern and southern portions of the study corridor	Enhance connectivity of the corridor to the regional transportation network	Support land use and development patterns that reflect the vision for growth contained in local and regional plans and policies	Contribute to regional equity, sustainability and quality of life	Develop and select an implementable and community-supported project
Evaluation of Modes	Ridership capacity	X	X	X		X	X
	Consistency with local plans and policies				X	X	X
	Economic development				X	X	X
	Environmental impacts					X	X
	Capital costs	X					X
	Community support	X	X	X	X	X	X
Evaluation of Alignments	Land use				X	X	X
	Multi-modal and regional connectivity	X	X	X			X
	Environmental impacts				X	X	X
	Community support	X	X	X	X	X	X

3. Transit Modes

Transit can be provided through a variety of modes; however, not all modes are appropriate for all environments, so the first step of this Tier 1 Analysis was to identify the modes that are appropriate for the study corridor and to screen out those that are not.

The modes under consideration in this Tier 1 Analysis are shown in Table 3-1.

Table 3-1: Transit Modes

Mode	Typical Characteristics	Example Service
No Build	<ul style="list-style-type: none"> Mixed traffic operations Frequent (10 minute) peak service; 30- to 60-minute service off-peak Single (40-foot) and articulated (60-foot) low-floor, diesel buses Stops spacing varies between ¼-mile and a half-mile Stations vary between shelters and concrete pads 	<p>Chapel Hill, NC</p> 
BRT Low	<p>Substantial corridor-based investment that emulates rail fixed guideway service, including:</p> <ul style="list-style-type: none"> Defined stations Traffic signal priority for transit vehicles Frequent bidirectional service for a substantial part of weekday and weekend days At the discretion of the FTA, any other features that support the transit investment (the majority of which does not operate in a separated right-of-way during peak periods) Typical corridor length of five to 20 miles 	<p>Kansas City, MO MAX</p> 
BRT High	<ul style="list-style-type: none"> Exclusive bus lanes Level boarding at high quality stations 60-foot buses that have multiple doors, sleek styling, and onboard visual/automated next stop announcements Wide stop spacing (typically one mile) and frequent, seven-day-a-week service Branded service through use of a distinct name, logo, color scheme, bus wrap, and set of visual identifiers Off-board fare payment Signal priority “Real time” bus arrival information available at stations and through web/mobile apps on desktop computer or smartphone Typical corridor length of five to 20 miles 	<p>Cleveland, OH HealthLine</p> 

Mode	Typical Characteristics	Example Service
Streetcar	<ul style="list-style-type: none"> • Rail tracks embedded within mixed traffic lanes • Overhead electrical system • Level boarding at high-quality stations • Single car trains • Stops spaced ¼ - ½ mile apart • Frequent service • Off-board fare payment • Signal priority • “Real time” bus arrival information available at stations and through web/mobile apps on desktop computer or smartphone • Typical corridor length of two to five miles 	<p>Portland, OR Streetcar</p> 
Light Rail	<ul style="list-style-type: none"> • Exclusive rail corridor or tracks embedded within lane of roadway • Overhead electrical system • Level boarding at high-quality stations • One to four car trains • Stops spaced one mile apart • Frequent service • Off-board fare payment • “Real time” bus arrival information available at stations and through web/mobile apps on desktop computer or smartphone • Typical corridor length of 10 to 20 miles 	<p>Minneapolis, MN Hiawatha</p> 
Commuter Rail	<ul style="list-style-type: none"> • Operates in a dedicated right-of-way, typically a freight corridor • Diesel engine trains with three to ten cars • Stops spaced two to five miles apart • Frequent peak-hour service; infrequent off-peak and weekend service • Off-board fare payment • Typical corridor length of 20 to 80 miles 	<p>Chicago, IL Metra</p> 

In this step of the analysis, transit modes were screened based on the following criteria, which are a subset of the criteria identified in Table 3-2.

Table 3-2: Screening Criteria – Transit Modes

Criteria	Screening Output	Data Sources and References
Ridership capacity	Quantitative evaluation of each modes’ ability to efficiently accommodate existing transit ridership within the corridor	Quantitative evaluation of existing transit ridership in the corridor compared with typical transit capacity of each mode
Consistency with local plans and policies	Qualitative evaluation of each mode’s compatibility with local and regional plans and policies (land use and transportation)	Qualitative assessment of how each mode complements local and regional planning efforts (land use and transportation)
Economic development	Qualitative evaluation of each modes’ ability to catalyze and support economic development within the corridor	Qualitative assessment based on demonstrated ability of modes to catalyze economic development in communities across the country
Environmental impacts	Qualitative evaluation of each mode’s ability to contribute to regional equity, sustainability and quality of life	Qualitative assessment based on demonstrated ability of modes to contribute to regional equity, sustainability and quality of life
Capital costs	Quantitative analysis of per-mile capital costs that are typical of each mode	Based on average per-mile capital costs of similar projects constructed around the country
Community support	Qualitative evaluation of mode compatibility from stakeholder interviews, public open houses, online surveys, meetings, and outreach activities	Qualitative assessment of community support for the alignment based on public involvement activities to date

3.1 Ridership Capacity

3.1.1 Screening Methodology

The introduction of new transit service would likely increase transit mode share (and ridership) within the North-South corridor. In advance of a more detailed ridership forecasting that will happen in future phases of this project, this analysis compares ridership on existing fixed route transit service within the corridor (Routes A, G, N, NS, NU, T) to the typical average weekday ridership modes under evaluation.

The ridership capacity screening is done for two reasons. First, it is important that a mode is capable of accommodating existing transit ridership and the anticipated growth in ridership that will be generated by new service. Second, it is also important that ridership is matched to the typical capacity of the mode. Therefore, it is desirable to identify the modes that meet estimated ridership demand without a significant excess of capacity (which results in higher operating and maintenance costs).

3.1.2 Data Sources and References

Ridership for existing transit service with the North-South corridor was sourced from September 2012 ridership data provided by Chapel Hill Transit. Typical average weekday ridership was calculated from this data. Average weekday ridership for the modes under consideration was drawn from the experiences of transit agencies across the country.

3.1.3 Screening Results

The results of the ridership capacity screening are in Table 3-3.

Table 3-3: Screening Results: Ridership Capacity

Existing Corridor Transit Service	Mode Alternatives	Number of Riders per Average Weekday	Overall Assessment
Routes A, G, N, NS, NU, T	No Build	9,789	Pass
	BRT Low	500 to 20,000	Pass
	BRT High	7,000 to 50,000	Pass
	Streetcar	500 to 20,000	Pass
	LRT	7,000 to 50,000	Pass
	Commuter rail	4,000 to 70,000	Pass

3.2 Consistency with Local Plans and Policies

3.2.1 Screening Methodology

A qualitative evaluation of each mode’s compatibility with local and regional plans was conducted. These plans (listed below in Section 3.2.2) were selected because they guide the region’s long-term transportation goals and/or their land use goals. Each of these plans was reviewed to determine if the proposed modes for the North-South corridor are consistent with their objectives.

3.2.2 Data Sources and References

The following plans were included in the review of local and regional plans. Several plans were reviewed, however most did not discuss a mode for higher capacity transit along the North-South Corridor.

- Chapel Hill, *Chapel Hill Bike Plan*, 2014.
- Capital Area MPO and Durham-Chapel Hill-Carrboro MPO, *2040 Metropolitan Transportation Plans*, 2013.
- Chapel Hill, *Chapel Hill 2020 Comprehensive Plan*, 2012.
- Orange County, *Orange County Bus and Rail Investment Plan*, 2012.
- Chapel Hill, *Downtown Development Framework*, 2010.
- Chapel Hill and Carrboro, *2035 Long Range Transit Plan*, 2009.

- Orange County, *Orange County 2030 Comprehensive Plan: Transportation Element*, 2008.
- Chapel Hill, *Chapel Hill Bicycle and Pedestrian Action Plan*, 2004.

3.2.3 Screening Results

Table 3-4 outlines the results of the screening and which modes support the visions for growth that are described in local plans and policies.

Table 3-4: Screening Results: Consistency with Local and Regional Plans

Mode Alternative	Evaluation	Fulfills Criterion
No Build	Continuation of existing CHT service in the corridor is consistent with local and regional plans.	Pass
BRT Low	<ul style="list-style-type: none"> • The <i>2040 Capital Area MPO and DCHC MPO 2040 Metropolitan Transportation Plans</i> recommend BRT on the Chapel Hill MLK Jr. Boulevard Corridor. • The <i>Chapel Hill and Carrboro 2035 Long Range Transit Plan</i> envisions BRT along MLK Jr. Boulevard as an option for a “modified high investment service concept.” • The <i>Orange County Bus and Rail Investment Plan</i> recommends enhanced bus services (including exclusive lanes and other preferential treatment) in the MLK Jr. Boulevard / US 15-501 corridor 	Pass
BRT High	<ul style="list-style-type: none"> • The <i>2040 Capital Area MPO and DCHC MPO 2040 Metropolitan Transportation Plans</i> recommend BRT on the Chapel Hill MLK Jr. Boulevard Corridor. • The <i>Chapel Hill and Carrboro 2035 Long Range Transit Plan</i> envisions BRT along MLK Jr. Boulevard as an option for a “modified high investment service concept.” • The <i>Orange County Bus and Rail Investment Plan</i> recommends enhanced bus services (including exclusive lanes and other preferential treatment) in the MLK Jr. Boulevard / US 15-501 corridor 	Pass
Streetcar	The <i>Chapel Hill and Carrboro 2035 Long Range Transit Plan</i> notes that streetcar on MLK Jr. Boulevard could be an option for a “High Investment Corridor.”	Pass
Light Rail	The <i>Chapel Hill and Carrboro 2035 Long Range Transit Plan</i> notes that light rail on MLK Jr. Boulevard could be an option for a “High Investment Corridor.”	Pass
Commuter Rail	None of the local plans recommend commuter rail for the North-South Corridor.	Not Pass

3.3 Economic Development

3.3.1 Screening Methodology

Each of the modes under consideration for the study corridor have been previously constructed and operated in communities around the country. Based on case study research, the demonstrated ability of each of the modes to generate economic development is shown below in the screening results.

The development context for each of these modes is important to consider. Some of the modes under consideration are more successful in dense, urban areas; others can work well in rural areas. The case studies reviewed for this analysis include the HealthLine BRT in Cleveland, the MAX mixed-traffic BRT in Kansas City, the Portland Streetcar, and Dallas’ DART light rail system. These example systems have been successful in generating economic development activity because the transit mode and its service characteristics match the land use and development market it serves (e.g., implementing a streetcar in a rural area will not result in development outcomes that rival Portland’s Pearl District).

The overall economic development assessment compares each mode’s typical development context with the existing and projected development context of the North-South corridor.

3.3.2 Data Sources and References

This analysis relied on case study research of each mode’s demonstrated ability to catalyze economic development in communities around the country.

3.3.3 Screening Results

The results of the economic development screening are in Table 3-5.

Table 3-5: Screening Results Economic Development

Mode Alternative	Demonstrated Modal Impacts on Development	Typical Development Context	Overall Assessment for Viability in the North-South Corridor
No Build	Low	Suburban, urban	Pass
BRT Low	Low-Medium	Suburban, urban	Pass
BRT High	High	Suburban, urban	Pass
Streetcar	High	Densest urban	Pass
LRT	High	Suburban, urban	Pass
Commuter Rail	Medium	Suburban, urban	Pass

3.4 Environmental Impacts

3.4.1 Screening Methodology

The modal environmental impacts screening is based on how the surrounding neighborhoods and existing transit customers would be impacted by the construction and operation of the various modes under consideration for implementation within the North-South corridor. Potential impacts could include air quality, noise, vibration, visual blight (ex. catenary wires or new and unfamiliar vehicles), and traffic congestion during construction. Additionally, consideration is also given to each mode’s ability to contribute to regional equity, sustainability and quality of life.

3.4.2 Data Sources and References

The potential environmental impacts analysis is based on the typical environmental characteristics of the modes under consideration in the North-South corridor, as experienced by other communities around the country.

3.4.3 Screening Results

The results of the screening for environmental impact by mode are presented in Table 3-6.

Table 3-6: Screening Results: Potential Environmental Impacts for Mode Alternatives

Mode Alternative	Potential Environmental Impacts	Overall Assessment
No Build	The existing CHT service on MLK, Jr. Boulevard/Columbia Street/US 15-501 is anticipated to continue, with no programmed improvements; environmental impacts will not change from the existing conditions.	Pass
BRT Low	The operation of a BRT Low route is very similar to a conventional bus and the current corridor CHT service. Because of this, environmental impacts such as air quality, noise and vibration, and visual blight are not anticipated.	Pass
BRT High	BRT High operates in a dedicated right-of-way for a majority of its alignment. Construction may be necessary to create the dedicated travel lanes and facilities; this may negatively impact those who live near MLK, Jr. Boulevard/Columbia Street/US 15-501 and those who use it. As this is still a bus-based system, negative impacts to air quality, noise and vibration and visual blight are not anticipated. A BRT High route does efficiently move passengers and may have a positive contribution to the regional equity, sustainability and quality of life.	Pass

Mode Alternative	Potential Environmental Impacts	Overall Assessment
Streetcar	While streetcar systems operate within mixed traffic, construction will be necessary to embed the tracks within the right-of-way. Construction activities may have temporary negative impacts on corridor residents, businesses and visitors. Streetcars can produce additional noise and vibration beyond what a bus or BRT system produces. Additionally, there will be overhead catenary wires to electrify the vehicles, which could be visually displeasing for corridor residents and users. A streetcar system does efficiently move passengers and may have a positive contribution to the regional equity, sustainability and quality of life.	Pass
Light Rail	LRT operates in a dedicated right-of-way. Construction will be necessary for the separated travel lanes, track and facilities; this may negatively impact those who live near MLK, Jr. Boulevard/Columbia Street/US 15-501 and those who use it. LRT can produce additional noise and vibration above what a bus or BRT system produces. Additionally, there will be overhead catenary wires to electrify the vehicles, which could be visually displeasing for corridor residents and users. LRT does efficiently move passengers and may have a positive contribution to the regional equity, sustainability and quality of life.	Not Pass
Commuter Rail	A commuter rail system operates in a dedicated right-of-way, typically an existing freight rail corridor. Construction will likely be necessary to upgrade tracks and construct new facilities; this may negatively impact those who live near MLK, Jr. Boulevard/Columbia Street/US 15-501 and those who use it. Commuter rail can produce additional noise and vibration above what a bus or BRT system produces. Commuter rail does efficiently move passengers and may have a positive contribution to the regional equity, sustainability and quality of life.	Pass

3.5 Capital Costs

3.5.1 Screening Methodology

The typical capital costs of the modes under evaluation vary significantly. A qualitative assessment of the financial viability of implementing each of the transit modes was based on typical per-mile capital costs.

3.5.2 Data Sources and References

Typical capital costs per mile were sourced from the transit capital projects that are included in the FY 2014 Annual Report of Funding Recommendations for the FTA’s New/Small Starts Program. The range and average capital costs shown in Table 3-7 reflect the costs reported by all of the projects by mode.

The capital costs shown for the No Build alternative are drawn from professional experience. For purposes of this evaluation criterion, the BRT Low and BRT High modes were combined into one BRT mode because the information necessary to identify the sample projects as High or Low is unavailable at this time, and the cost difference between the High and Low alternatives is unlikely to be a major differentiator at this level of analysis and evaluation.

The broad range of costs demonstrates the variability that can result from design, engineering and construction decisions. This range does, however, still enable a high-level qualitative analysis of which modes are not considered to be financially viable within the context of the North-South Corridor Study.

3.5.3 Screening Results

Table 3-7: Screening Results: Capital Costs

Modes	Average Capital Cost per Mile	Range of Capital Cost per Mile	Overall Assessment
No Build	<\$1,000,000	\$500,000 - \$1,500,000	Pass
BRT	\$17,000,000	\$2,000,000 - \$63,000,000	Pass
Streetcar	\$50,000,000	\$48,000,000 - \$53,000,000	Not Pass
Light Rail	\$262,000,000	\$64,000,000 - \$964,000,000	Not Pass
Commuter rail	\$29,000,000	\$11,000,000 - \$68,000,000	Not Pass

Note: The Durham-Orange Light Rail Transit Project, which is currently completing the federal environmental clearance process, is estimated to cost \$105 million per mile (in year of expenditure dollars). This is significantly less than the \$262 million per mile average capital cost for Light Rail shown in Table 3-7.

3.6 Community Support

3.6.1 Screening Methodology

In addition to technical analyses, community input is a critical element in defining and evaluating transit alternatives. Even if an alternative is technically sound and financially feasible, but does not meet the transportation needs and preferences of potential riders, it will not attract users and will not ultimately be a successful investment. In order to attract users and be successful, the Locally Preferred Alternative must reflect the priorities of the study corridor transportation network users, as expressed through community outreach activities.

3.6.2 Data Sources and References

Public involvement is a critical component of the NSCS. Two project open houses were held to introduce the project to corridor stakeholder and members of the general public, and to solicit feedback on the draft Purpose and Need Report. Additionally, participants were asked to provide high-level input regarding existing corridor conditions and potential mode and alignment preferences.

Wednesday, March 26, 2014
 11:30 am - 1:30 pm
 Stone Cultural Center
 UNC Chapel Hill Main Campus
 150 South Road
 Chapel Hill, NC

Wednesday, March 26, 2014
 4:30pm – 7:00 pm
 Chapel Hill Public Library
 100 Library Drive
 Chapel Hill, NC

The meetings were advertised through an announcement on the project website (<http://nscstudy.org/>) beginning February 24th, ads onboard 50 CHT buses between March 10th and 26th, posting of the public meeting on Facebook between March 12th and 26th, tweets on Twitter every two days between March 12th and 26th, and emails from the Town of Chapel Hill to more than 3,000 recipients on March 10th and 24th. A total of 20 attendees came to the two open houses.

The open house format consisted of a series of stations with descriptive boards, which included a project introduction, summary of each of the five project need statements, an overview of the transit modes that will be under consideration, and information related to project next steps.

Attendees were provided with a one-page handout that requested input on existing corridor conditions and potential alignments, preferred modes, and general comments.

Potential modes

Attendees were asked to rank their top three preferred modes on their individual comment sheets. Moderate BRT (which is a level of BRT investment that falls between BRT Low and BRT High) was ranked in the top three most frequently and received the greatest number of “most preferred” rankings. Five of the six remaining modes (No Build, BRT Light (similar to BRT Low), BRT Comprehensive (similar to BRT High), Streetcar, and Light Rail) received multiple rankings within the top three preferred modes; Commuter Rail was not ranked as a preferred mode by any of the attendees.

3.6.3 Screening Results

Table 3-8: Screening Results: Community Support

Mode Alternative	Evaluation	Overall Assessment
No Build	Very limited community support expressed	Pass
BRT Low	Strong community support	Pass
BRT High	Strong community support	Pass
Streetcar	Community support	Pass
Light Rail	Community support	Pass
Commuter Rail	No specific community support expressed	Not Pass

3.7 Summary of Initial Screening: Modes

Table 3-9 summarizes the results of the initial screening of modes. Modes with one or more “not pass” rating will be removed from further definition and evaluation in subsequent phases of the study. As shown in Table 3-10, the No Build, BRT Low, and BRT High are recommended for more detailed definition and evaluation in subsequent project phases.

Table 3-9: Summary Results of the Initial Screening of Modes

	Ridership Capacity	Consistency with Local Plans and Policies	Economic Development	Environmental Impacts	Capital Costs	Community Support
No Build	Pass	Pass	Pass	Pass	Pass	Pass
BRT Low	Pass	Pass	Pass	Pass	Pass	Pass
BRT High	Pass	Pass	Pass	Pass	Pass	Pass
Streetcar	Pass	Pass	Pass	Not Pass	Not Pass	Pass
LRT	Pass	Pass	Pass	Not Pass	Not Pass	Pass
Commuter rail	Pass	Not Pass	Pass	Pass	Not Pass	Not Pass

Table 3-10: Modes for Detailed Definition and Evaluation of Alternatives

Modes	Overall Assessment
No Build	Pass
BRT Low	Pass
BRT High	Pass
Streetcar	Defer
LRT	Defer
Commuter Rail	Defer

The deferment of Streetcar, Light Rail and Commuter Rail from further consideration as part of the North-South Corridor Study is not intended to indicate that these modes should not be considered and recommended as investments in other corridors throughout the region. Their deferment reflects that these modes are not a good match to the North-South Corridor’s stated purpose and need. As the Durham-Orange Light Rail Project becomes operational and as corridor and regional conditions change, these modes may – in future years - become appropriate for detailed consideration within the North-South Corridor.

4. Alignments

The North-South corridor stretches from CHT’s Eubanks Road park-and-ride lot to Dogwood Acres Drive. The MLK, Jr. Boulevard/Columbia Street/US 15-501 alignment has been divided into five segments to facilitate the comparison of alignment alternatives along the length of the corridor and facilitate the development of more detailed definition and evaluation of alignments in future project phases. The rail alignment is split into two segments: the first stretches from the Eubanks Road park-and-ride lot to Franklin Street; the second stretches from Franklin Street to the planned Durham-Orange light rail end-of-line station. The segment boundaries are identified in Table 4-1 below; maps depicting the corridor segment and alignment alternatives are included as Figure 4-1. Table 4-2 describes the evaluation criteria that were applied to the alignments under consideration.

Table 4-1: Chapel Hill Corridor Segment Boundaries

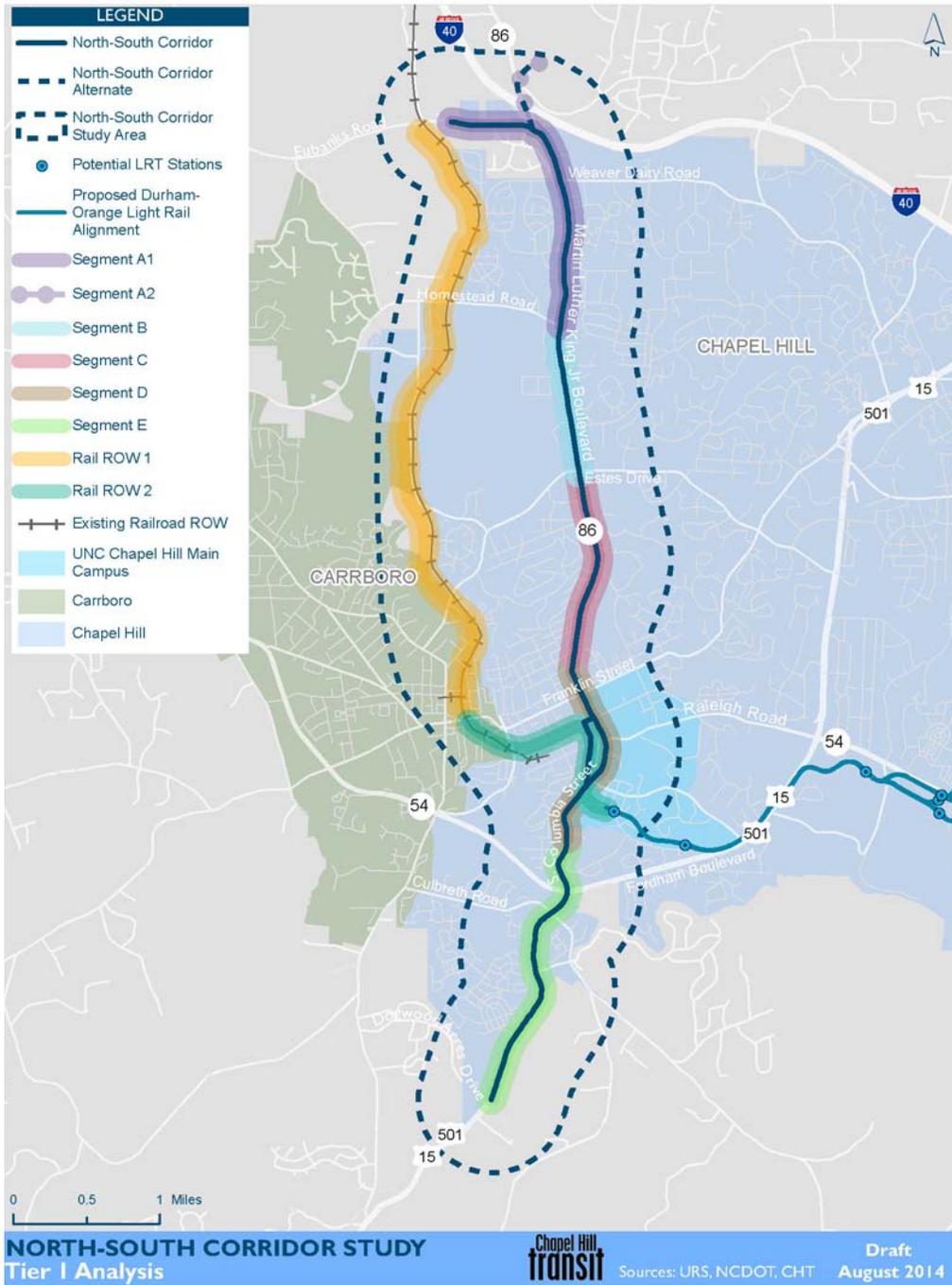
Corridor Segment	Boundaries
Segment A1	Existing Eubanks P&R to Homestead Road along Martin Luther King, Jr. Boulevard
Segment A2	Relocated P&R (east of I-40) to Homestead Road along Martin Luther King, Jr. Boulevard
Segment B	Homestead Road to Estes Drive on Martin Luther King, Jr. Boulevard
Segment C	Estes Drive to Franklin Street to Martin Luther King, Jr. Boulevard
Segment D	Franklin Street to Fordham Boulevard along Columbia Street
Segment E	Fordham Boulevard to Dogwood Acres Drive on US 15-501
Rail ROW 1	Eubanks Road P&R to Franklin Street
Rail ROW 2	Franklin Street to Durham-Orange LRT end-of-line station

Table 4-2: Screening Criteria: Alignments

Criteria	Screening Output	Data Sources and References
Land Use	Qualitative evaluation of each alignment's compatibility with existing and future land use and transit service	Qualitative assessment of the degree to which transit service within each alignment is compatible with existing and future land use
Multi-Modal and Regional Connectivity	Qualitative assessment of each alignment's ability to provide multimodal connectivity to key activity generators within the corridor and to the regional transportation network	Qualitative assessment of multi-modal mobility improvements provided by each alignment within the corridor and to the regional network
Environmental Impacts	Qualitative assessment of potential environmental impacts of transit service within the alignments	Qualitative assessment based on anticipated construction activity and transit operations impacts along the alignments

Criteria	Screening Output	Data Sources and References
Community Support	Qualitative evaluation of alignment compatibility from stakeholder interviews, public open houses, online surveys, meetings, and outreach activities	Qualitative assessment of community support for the alignment based on public involvement activities to date

Figure 4-1: Corridor Segment Map



4.1 Land Use

4.1.1 Screening Methodology

Several local and regional plans were selected for review in preparation for screening the alignments against this criterion because they outline land use goals and plans throughout the corridor. Each of these plans was reviewed to determine if the proposed alignments for the North-South Corridor are consistent with the land use objectives of these plans. Evaluation was done by segment, rather than the whole corridor, to highlight differences between the alignment alternatives and to support future designs.

4.1.2 Data Sources and References

The following plans were specifically included in the review of land use in local and regional plans.

- Chapel Hill, *Chapel Hill Northern Area Task Force Report*, 2007.
- Chapel Hill, *Chapel Hill Land Use Plan, Comprehensive Plan*, 2012.
- Chapel Hill, *Chapel Hill 2020 Comprehensive Plan*, 2012.
- Chapel Hill, *Downtown Development Framework*, 2010.

4.1.3 Screening Results

The results of the screening of alignments for consistency with land use plans are presented in Table 4-3.

Table 4-3: Screening Results: Alignments Consistent with Land Use Plans

Segment	Evaluation	Fulfills Criterion
Segment A1	<ul style="list-style-type: none"> • Segment A1 begins in the existing CHT Eubanks Road park-and-ride lot and then continues along Eubanks Road before turning onto MLK Jr. Boulevard until Homestead Road. Land uses are typically lower-density commercial, residential and open space/rural. In the <i>Chapel Hill Land Use Plan</i> this area is designated as a Development Opportunity Area and a Future Focus Discussion Area. • One goal for this segment in the <i>Chapel Hill Northern Area Task Force Report</i> encourages “development that supports an active pedestrian environment and promotes transit use.” It is recommended that the area around Focus Area 1 (between Millhouse Road and Eubanks) be developed as a transit-oriented village with high-density residential and mixed-use retail/office. The recommendations for Focus Areas 2 and 3 (north and south of Weaver Dairy Road) include MLK Jr. Boulevard serving as a high capacity transit corridor and will include mixed-use developments. The recommendations for Focus Area 4 (to Homestead Road) include transit-oriented development with a residential focus. • The <i>CH 2020 Future Focus Discussion Area 2</i> (North MLK Jr. Boulevard/I-40) states that anticipated development of higher-capacity bus service could support new development opportunities. 	Pass
Segment A2	<ul style="list-style-type: none"> • Segment A2 would originate in a relocated Eubanks Road park-and-ride facility in an area that is currently designated as a conservation area; construction and operation of a transit facility at this site would require a change in current land use. • The land use plans and policies are generally the same for Segment A2 and Segment A1. 	Pass
Segment B	<ul style="list-style-type: none"> • Segment B runs along MLK Jr. Boulevard between Homestead Road and Estes Drive. This area is mostly lower-density residential subdivisions and neighborhoods and along the eastern edge of the Carolina North planned development site. In the <i>Chapel Hill Land Use Plan</i> this area is designated as a Future Focus Discussion Area. In Future Focus Area 3, this area is anticipated for future investment in higher capacity bus service and should be coordinated with the potential development. 	Pass

Segment	Evaluation	Fulfills Criterion
Segment C	<ul style="list-style-type: none"> • Segment C travels along MLK Jr. Boulevard between Estes Drive and North Street. This segment begins to transition from low-density residential to medium-density residential. This segment is also within Future Focus Area 3; the future land uses planned for this segment encourage higher capacity bus service along with increased development. 	Pass
Segment D	<ul style="list-style-type: none"> • Segment D runs through the town center and UNC campus. The <i>CH 2020 Land Use Plan</i> envisions this area remaining as a commercial center, university facilities and low-density residential. • This segment runs near several historic districts, including the Cameron-McCauley Historic District, the Franklin-Rosemary Historic District, the Gimghoul Historic District, the West Chapel Hill National Register District, the Chapel Hill National Register District, the Gimghoul Neighborhood National District, the Old Chapel Hill Cemetery, and the Rocky Ridge Farm National Historic District. • These types of land uses are compatible with most transit modes that are proposed for this corridor. 	Pass
Segment E	<ul style="list-style-type: none"> • Segment E runs from just north of Fordham Boulevard to approximately Dogwood Acres Drive. The land uses described in <i>CH 2020 Land Use Plan</i> are primarily open space and medium- to high-density residential. This segment is also designated as Future Focus Area 6. The general principles for Focus Area 6 include minimizing traffic impacts on neighborhoods surrounding US 15-501; plan for increased use of transit; preserve and enhance natural resources; and develop US 15-501 as a “Green Gateway.” • Adding higher capacity transit service to this area is in compliance with the land use goals of preserving the natural environmental and minimizing traffic impacts. 	Pass
Rail ROW 1	<ul style="list-style-type: none"> • This segment begins near the intersection of Eubanks Road within the existing freight rail ROW and continues south within the existing freight corridor to Franklin Street. This segment is surrounded by low- to medium-density residential and institutional uses at the Carolina North planned development site. • This segment runs near the Cameron-McCauley Historic District and the West Chapel Hill National Register District. • There are no recommendations for this segment to be used as a transit corridor in relevant land use plans. 	Pass

Segment	Evaluation	Fulfills Criterion
Rail ROW 2	<ul style="list-style-type: none"> • This segment begins at Franklin Street and would terminate at Durham-Orange light rail’s planned end-of-line station east of Columbia Street. The extension of the existing freight rail alignment would go through areas where the planned future land use is currently low-density residential. Rail transit operation through these neighborhoods is not consistent with existing and proposed land use plans. • This segment runs near several historic districts, including the Cameron-McCauley Historic District, the Franklin-Rosemary Historic District, the Gimghoul Historic District, the West Chapel Hill National Register District, the Chapel Hill National Register District, the Gimghoul Neighborhood National District, the Old Chapel Hill Cemetery, and the Rocky Ridge Farm National Historic District. 	Not Pass

4.2 Multi-Modal and Regional Connectivity

4.2.1 Screening Methodology

Successful transit service not only transports riders between two points, it efficiently connects riders to both major and minor activity generators within a corridor and creates linkages with the existing and planned transportation network. An analysis of major and minor activity generators within the North-South corridor (cultural facilities, educational and historic institutions, recreational attractions) shows that these destinations tend to be clustered in downtown Chapel Hill, and are often within walking distance of each other. Major developments, however, are planned for the northern and southern ends of the corridor. This analysis was designed to determine whether any of the alignments under consideration serve a significantly greater number of existing/planned activity generators or provide higher levels of connectivity to the existing/planned transit network than the other alignments under consideration.

4.2.2 Data Sources and References

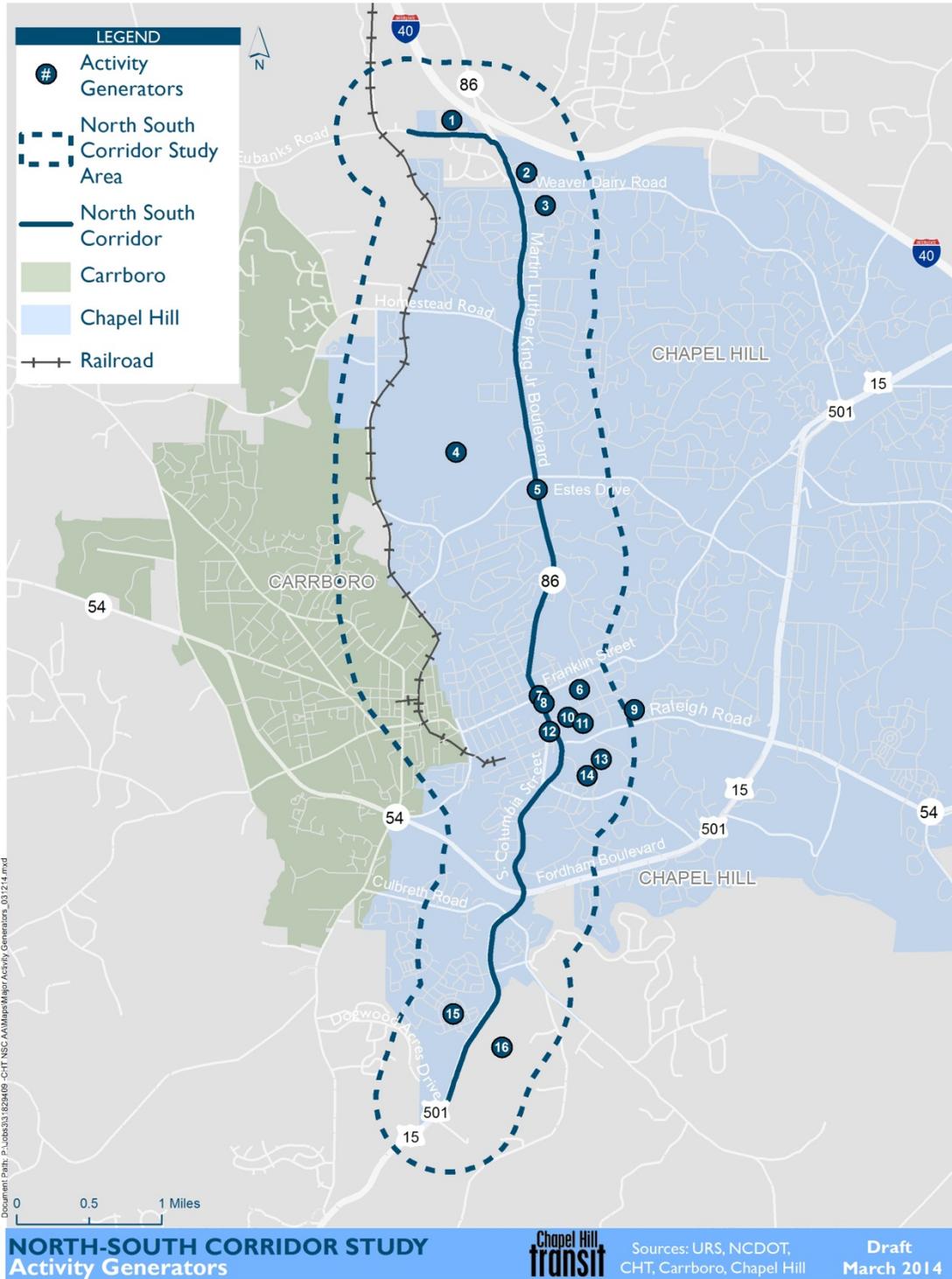
The locations of the region’s key activity generators were identified and are shown in Table 4-4 and Figure 4-2.

Table 4-4: Key Activity Generators

Map Key	Key Activity Generator	Status
1	The EDGE Mixed-Use Development	Proposed
2	Chapel Hill North Shopping Center	Existing
3	Timberlyne Shopping Center	Existing
4	Carolina North	Planned
5	Chapel Hill – Carrboro YWCA	Existing
6	Morehead Planetarium and Science Center	Existing

Map Key	Key Activity Generator	Status
7	Franklin Street (including the 123 West Franklin redevelopment)	Existing / Planned
8	Ackland Art Museum	Existing
9	PlayMakers Repertory Company	Existing
10	Memorial Hall	Existing
11	University of North Carolina – Chapel Hill	Existing
12	Carolina Inn	Existing
13	Kenan Stadium	Existing
14	University of North Carolina Hospitals	Existing
15	Southern Village	Existing
16	Obey Creek Development	Proposed

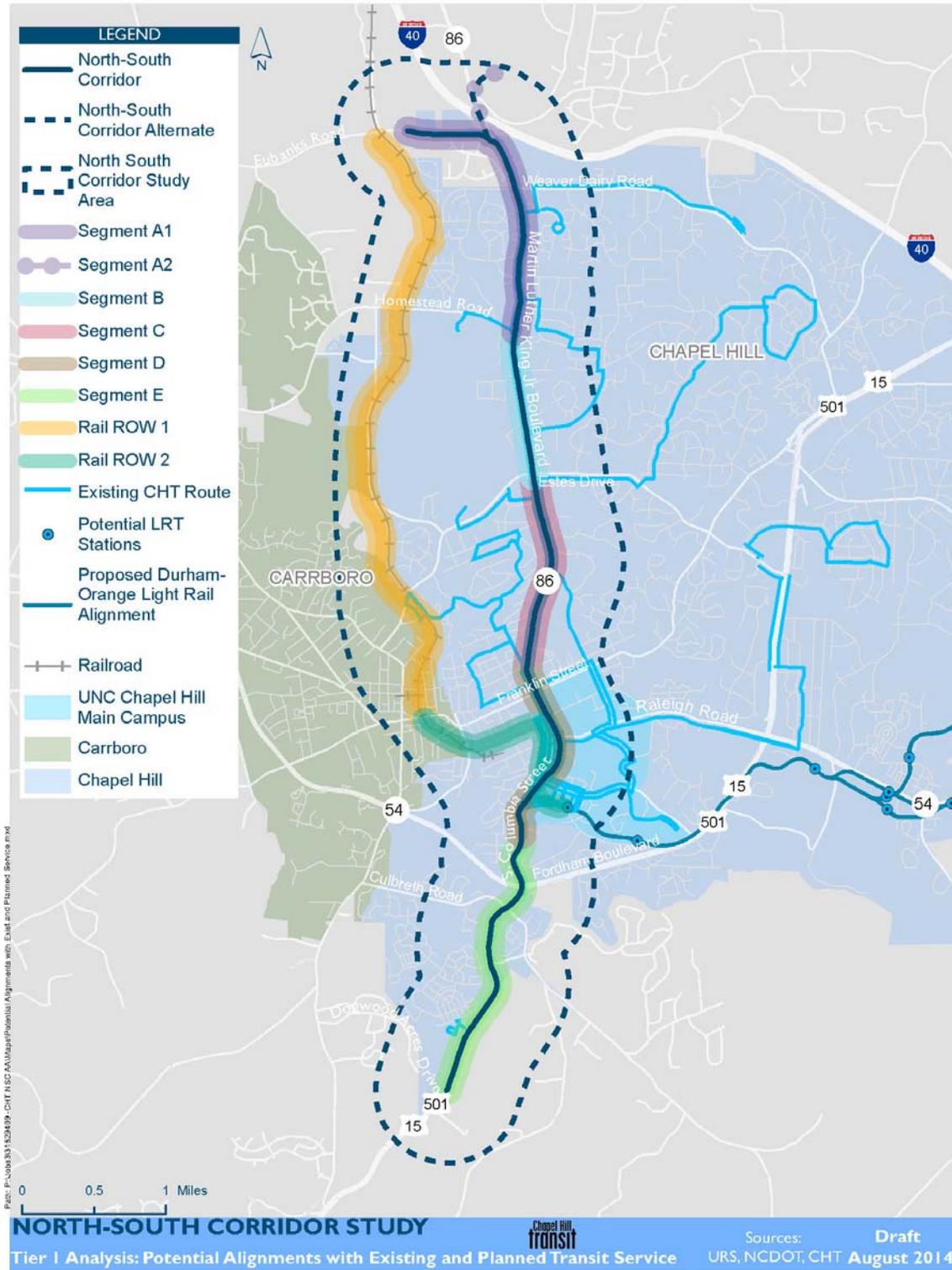
Figure 4-2: Key Activity Generators in the Corridor



In addition to understanding the location of key activity generators within the corridor, it is important to assess how each of the alignments under consideration would interact with the existing and planned

transit network, and to evaluate the degree to which these interactions would support local and regional connectivity.

Figure 4-3: Potential Alignments with Existing and Planned Transit Service



4.2.3 Screening Results

The results of the screening for mobility and connectivity by alignment are presented in Table 4-5.

Table 4-5: Screening Results: Mobility and Connectivity

Segment	Evaluation	Overall Assessment
Segment A1	Segment A1 would offer connectivity to the NS, T and A routes. This segment also provides direct connectivity to the proposed development site that is currently known as The EDGE.	Pass
Segment A2	Like Segment A1, this segment offers connectivity to the NS, T and A routes, but its location across I-40 may result in a barrier to access for pedestrians and bicyclists trying to access the site from the proposed development site known as The EDGE.	Pass
Segment B	Segment B provides direct access to the NS, A, T and G routes, as well as the planned Carolina North development.	Pass
Segment C	Segment C provides direct access to the NS, T, A, G, NU and N routes and to the Chapel Hill - Carrboro YWCA.	Pass
Segment D	Segment D provides direct access to the NS, T, A, G, NU and N routes, and the planned Durham-Orange light rail line. Segment D also includes the greatest number of key activity generators within the corridor, including downtown Chapel Hill and UNC's main and medical campuses.	Pass
Segment E	Segment E provides direct access to the NS route, Southern Village, and the Obey Creek development site.	Pass
Rail ROW 1	Rail ROW 1 provides access to the NS and N routes, and would provide access to The EDGE development site and the western side of the Carolina North development site. This alignment misses the cluster of key activity generators in downtown Chapel Hill.	Not Pass
Rail ROW 2	Rail ROW 2 provides access to the NS, T, A, G, NU and N routes, and to the planned Durham-Orange light rail line, and the key activity centers in downtown Chapel Hill. This segment also provides good connectivity to Carrboro.	Pass

4.3 Environmental Impacts

4.3.1 Screening Methodology

When a proposed alignment is completely within an existing right-of-way, environmental impacts are generally minimal, but can include socio-economic considerations, such as environmental justice, neighborhood and community facilities, cultural resources, Title VI compliance and visual and aesthetic resources. Natural impacts such as biological resources, endangered species, wetlands and flood plains are typically minimally impacted by construction within an existing right-of-way.

If an alignment cannot be accommodated within the existing right-of-way and requires land acquisition for transit-supportive facilities, such as vehicle storage and maintenance facilities and park-and-ride lots and stations, further analysis will be required to determine specific impacts related to both social, economic and natural resources.

4.3.2 Data Sources and References

The potential environmental impacts analysis is based on the modes under consideration and the location of each proposed alignment alternative for the North-South corridor.

4.3.3 Screening Results

The results of the screening of environmental impacts by alignment are presented in Table 4-6.

Table 4-6: Screening Results: Environmental Impacts of Alignments

Segment	Environmental Impacts	Overall Assessment
Segment A1	Segment A1 begins in the existing CHT Eubanks Road park-and-ride lot and then continues along Eubanks Road before turning onto MLK, Jr. Boulevard until Homestead Road. Land uses are typically lower-density commercial, residential and open space/rural, which are unlikely to be significantly adversely affected by transit investment within the segment. Depending on the preferred mode and subsequent design decisions, the construction of passenger facilities could require land acquisition. Minimal environmental impacts are anticipated for modes that can be accommodated in the existing right-of-way.	Pass

Segment	Environmental Impacts	Overall Assessment
Segment A2	Segment A2 would originate in a relocated Eubanks Road park-and-ride facility in an area that is currently designated as a conservation area. Depending on the preferred mode and subsequent design decisions, construction of the park-and-ride lot and transit passenger facilities may result in some minimal adverse impacts, the extent of which would be studied and mitigated as part of the environmental review and engineering process.	Pass
Segment B	Segment B travels along MLK, Jr. Boulevard between Homestead Road and Estes Drive through lower-density residential subdivisions and neighborhoods (which are accessed off of MLK, Jr. Boulevard) and passes along the eastern edge of the Carolina North planned development site. Depending on the preferred mode and subsequent design decisions, the construction of passenger facilities could require land acquisition. Minimal environmental impacts are anticipated for modes that can be accommodated in the existing right-of-way.	Pass
Segment C	Segment C travels along MLK, Jr. Boulevard between Estes Drive and North Street. This segment continues the pattern of residential and commercial land uses, but densities are comparatively higher than found in the northern portion of the corridor. Depending on the preferred mode and subsequent design decisions, the construction of passenger facilities could require land acquisition, which could result in environmental impacts. Minimal environmental impacts are anticipated for modes that can be accommodated in the existing right-of-way.	Pass
Segment D	Segment D continues the transition to higher density development patterns as the alignments passes through the commercial center of downtown Chapel Hill and through UNC's main campus and medical facilities. Depending on the preferred mode and subsequent design decisions, the construction of passenger facilities could require land acquisition, which could result in environmental impacts. Minimal environmental impacts are anticipated for modes that can be accommodated in the existing right-of-way.	Pass

Segment	Environmental Impacts	Overall Assessment
Segment E	<p>Segment E marks the transition back to comparatively lower-density residential and commercial uses before terminating at Southern Village at Dogwood Acres Drive. The existing ROW between approximately Mason Farms Road and Fordham Boulevard is the narrowest of the whole corridor; any environmental impacts that would be associated with transit investment in this segment may be magnified because of the existing ROW constraints. Depending on the preferred mode and subsequent design decisions, the construction of passenger facilities could require land acquisition, which could result in environmental impacts. Minimal environmental impacts are anticipated for modes that can be accommodated in the existing right-of-way.</p>	Pass
Rail ROW 1	<p>The Rail ROW 1 segment would begin near the intersection of Eubanks Road with the existing freight rail ROW and continue south within the existing freight corridor to Franklin Street. The alignment is adjacent to open space and lower-density residential subdivisions, and would pass along the western edge of the Carolina North planned development site. Depending on the preferred mode and subsequent design decisions, the construction of passenger facilities could require land acquisition, which could result in environmental impacts. Minimal environmental impacts are anticipated for modes that can be accommodated in the existing right-of-way.</p>	Pass
Rail ROW 2	<p>The Rail ROW 2 alignment would stretch from the southern end of Rail ROW 1 at Franklin Street and would terminate at Durham-Orange light rail's planned end-of-line station east of Columbia Street. The extension of the existing freight rail alignment to meet the planned LRT end-of-line station would likely result in significant adverse environmental impacts from the introduction of on-street rail service through established historic residential neighborhoods.</p>	Not Pass

4.4 Community Support

4.4.1 Screening Methodology

As previously discussed, community input is a critical element in defining and evaluating transit alternatives. Even if an alternative is technically sound and financially feasible, but does not meet the transportation needs and preferences of potential riders, it will not attract users and will not ultimately be a successful investment. In order to attract users and be successful, the Locally Preferred Alternative must reflect the priorities of the study corridor transportation network users, as expressed through community outreach activities.

4.4.2 Data Sources and References

As previously discussed, two open houses were held in March 2014. Participants were asked to provide input related to both mode and alignment, as well as given the opportunity to provide general input. Relevant comments related to alignments included:

- “I park at Eubanks or Southern Village and work at the School of Public Health. An express bus from Eubanks/Southern Village to the campus/hospital would be the best solution for me.”
- “I’d like to see rapid transit at peak hours especially and if RR corridor could be used, any mode of appropriate rail. East-West feeders are important - particularly North at Eubanks and Homestead, where there are new developments planned in an early planning stage.”
- “Needs to be considered in a broad regional context. Need to insure good connections to other - existing and new East/West routes.”

In addition to the public meetings that were held in March 2014, project stakeholders and members of the public have had the option to submit ideas or thoughts about the project through the project website and the MindMixer website.

Relevant ideas and feedback received through MindMixer include:

- “Give everyone examples and ideas of where we can go and what we can do using the bus, both within and connected by bus from the corridor. Add limited evening service from population centers like Southern Village to downtown with a kind of express bus leaving at around 6:30 or so and returning between 10 and 11; try it at least.”
- “The Martin Luther King Jr. Corridor is so heavily congested at peak hour that having a dedicated, reliable transit network would be fantastic.”
- “We need to provide connections to the future Carolina North development.”
- “Need to have better connections along Franklin using transit.”

4.4.3 Screening Results

Table 4-7: Screening Results – Community Support

Segment	Evaluation	Overall Assessment
Segment A1	Community support expressed	Pass
Segment A2	Limited community support expressed	Pass
Segment B	Community support expressed	Pass
Segment C	Community support expressed	Pass
Segment D	Community support expressed	Pass
Segment E	Community support expressed	Pass
Rail ROW 1	Limited community support expressed	Pass
Rail ROW 2	Limited community support expressed	Pass

4.5 Summary of Initial Screening: Alignments

Table 4-8 summarizes the results of the initial screening of alignments. Alignments with one or more “not pass” overall ratings will be removed from further definition and evaluation in subsequent phases of the study. As shown in Table 4-9, the Segments A1, A2, B, C, D, and E are recommended for more detailed definition and evaluation in subsequent project phases.

Table 4-8: Summary Results of the Initial Screening of Alignments

	Land Use	Multi-Modal and Regional Connectivity	Environmental Impacts	Community Support
Segment A1	Pass	Pass	Pass	Pass
Segment A2	Pass	Pass	Pass	Pass
Segment B	Pass	Pass	Pass	Pass
Segment C	Pass	Pass	Pass	Pass
Segment D	Pass	Pass	Pass	Pass
Segment E	Pass	Pass	Pass	Pass
Rail ROW 1	Pass	Not Pass	Pass	Pass
Rail ROW 2	Not Pass	Pass	Not Pass	Pass

Table 4-9: Alignments for Detailed Definition and Evaluation of Alternatives

Segment	Overall Assessment
Segment A1	Pass
Segment A2	Pass
Segment B	Pass
Segment C	Pass
Segment D	Pass
Segment E	Pass
Rail ROW 1	Defer
Rail ROW 2	Defer

While east-west transit connections between Chapel Hill and Carrboro are an important element of the region’s transportation network, it was determined that investment in the Rail ROW 2 segment would not meet the stated Purpose and Need for transit investment in the North-South Corridor, whose travel market is north-south oriented. This determination does not preclude or minimize the need for additional investment in east-west transit connections between Carrboro and Chapel Hill, which may be considered in future projects.

5. Findings and Recommendations

To support the detailed definition and evaluation of modes recommended for further study following this initial screening, the following alternatives will be developed to facilitate ridership forecasting, service plan development, and cost estimating.

5.1 Modes Recommended for Detailed Definition and Evaluation

- No Build
- BRT Low
- BRT High

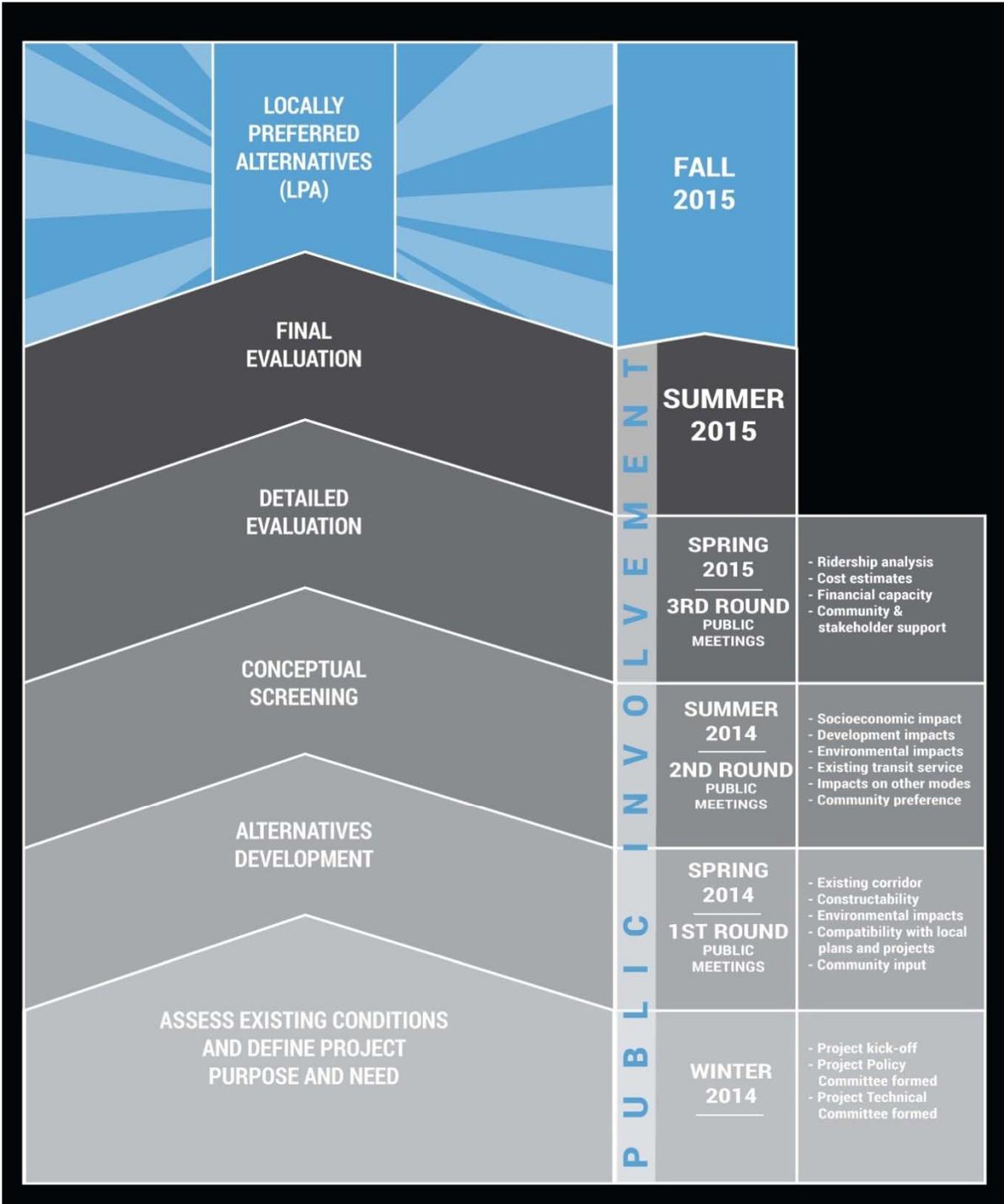
5.2 Alignments Recommended for Detailed Definition and Evaluation

- Segment A1
- Segment A2
- Segment B
- Segment C
- Segment D
- Segment E

The detailed definition of these alternatives will be documented under separate cover, and will address the aspects listed below. At the planning level, the type of information developed is still relatively high-level and are still focused on comparison and order of magnitude. During environmental review, advanced concept design, and preliminary engineering, when there are more refined information such as base mapping and utility surveys, the level of detail increases with the identification of a preferred alternative.

- **Stop locations:** for purposes of identifying the number of stop facilities and estimating ridership, run times, and capital and operations and maintenance costs of these facilities
- **Service plan and operations**
- **Runningway:** assumes that any improvement will be accommodated within existing ROW; explain cost implications
- **Vehicles**
- **Stop amenities**
- **Technology suite**

Attachment 3 Project Process



← We are here

6A. Operations

Staff Resource: Tyffany Neal, Demand Response Operations Manager
Nick Pittman, Fixed Route Operations Manager

Operations

- Staff is participating in the Event Management Team preparing for Halloween on Friday, October 31, 2014. As in past years, Chapel Hill Transit will adjust service to accommodate the Halloween celebration on Franklin Street. An update on our service adjustments will be provided during the October Partners meeting.
- Chapel Hill Transit will be providing shuttle service to the 2014 Carrboro Music Festival on Sunday, September 28, 2014 from 12:00 noon until 9:00 p.m. The shuttle will run every 10 to 15 minutes, providing continuous and fully accessible service between the Carrboro Park & Ride and the Carrboro Music Festival site. The shuttle will make stops along Main Street between the Carrboro Town Hall and the ArtsCenter. Parking will be free at the Carrboro Plaza Park & Ride during the hours of the Carrboro Music Festival.
- On Sunday, October 5, 2014, Chapel Hill Transit will reroute the NU along West Rosemary Street to provide service to Festifall from 11:30 a.m. - 6:47 p.m. During this time the NU will make stops at the Festifall entrance on West Rosemary. Riders may board at any stop along the NU route or park and ride from the 725 Lot (725 Martin Luther King Jr. Blvd) during the hours of Festifall. Staff is working with UNC to notify customers.

Demand Response – Tyffany Neal

- Demand Response's On-Time Performance (OTP) for the month of August 2014 – 92%.
- Demand Response's Cancellations for the month of August 2014 – 24.7%.
- Demand Response had two (2) Missed Trips in August 2014 - 0.05%.
- The EZ Rider Advisory Committee (EZRAC) just completed the final set of draft policies for revision this month. EZRAC also completed the draft revision for the EZ Rider certification application. Tyffany will prepare the documents for the Partners to review in the upcoming months.
- Demand Response recently promoted an EZ Rider Operator, Mark Rodgers, to a Transit Supervisor – Demand Response.
- We recently conducted interviews for the position of Administrative Assistant – Demand Response and are in the process of making a final decision.

Fixed Route – Nick Pittman

- Recently, customer Tim Hill wrote to CHT to explain an event that he witnessed on our vehicle that was driven by Operator Michael Purdie. In his email he said:

“My name is Tim Hill and I'm writing to you about an experience I had while riding the JFX line on August 18th. While I was on the bus we were arriving at a stop and there was a kid running down the street in the pouring rain chasing after another bus he just barely missed. The kid looked like a UNC student new to the area and obviously just missed his bus. The bus driver, Michael Purdy, immediately got the kids attention and asked if he was trying to catch the bus that just left and he said he was - Michael then immediately radioed to the bus just a short distance away and got the driver to stop for the few seconds it took the student to transfer. The next bus for that kid was just under an hour. (also, Michael did it in such a way that it wasn't dangerous or inconvenient to other riders - just thought I should add that in case he wasn't supposed to do something).

I was very impressed by Michael's kindness as he truly went above his duties and helped a citizen out. As if that wasn't enough, I noticed he genuinely greeted every passenger that was getting on or off the bus - again, above and beyond what I imagine his duties require.

I just wanted to share this with you as I imagine everyone is all too quick to mention the negative experiences but not the ones that are positive. Thank you so much for a wonderful transit system and please pass word to Mr. Purdy that I appreciate his professionalism and extraordinary outlook.”

- Fixed Route recently promoted Operators, Melissa Tillman and Joe McMiller, to Transit Supervisor – Fixed Route.
- Fixed Route currently has six (6) trainees in our new hire training class. They are expected to graduate in early October 2014.
- Fixed Route's On-Time Performance (OTP) for the month of June 2014 – 83%;

6B. Director

Staff Resource: Brian Litchfield

- The Director's Report will be provided to the Partners at the September 25, 2014 meeting.



CHAPEL HILL TRANSIT
 Town of Chapel Hill
 6900 Millhouse Road
 Chapel Hill, NC 27514-2401

phone (919) 969-4900 fax (919) 968-2840
www.townofchapelhill.org/transit

CHAPEL HILL TRANSIT PUBLIC TRANSIT COMMITTEE

FUTURE MEETING ITEMS

September 25, 2014

October 21, 2014 11:00 a.m.	
Action Items	Informational Items
	AA Study Update Financial Sustainability Study Update Triennial Review Update FY 16 Budget Schedule
November 18, 2014 11:00 a.m.	
Action Items	Informational Items
	Financial Sustainability Study Update AA Study Update Safety Update
January 27, 2015 11:00 a.m.	
Actions Items	Informational Items
	Financial Sustainability Study Update AA Study Update Safety Update

<u>Key Meetings/Dates</u>
TCC Meeting – October 22, 2014 9-11AM, Committee Room, Durham City Hall
TAC Meeting – September 10 October 8, 2014 9-11AM, Committee Room, Durham City Hall
APTA Annual Meeting & Expo-October 12-15, 2014, Houston, TX

WHO'S ON BOARD

2014

MOBILITY
ATTITUDES
SURVEY



Prepared for **TransitCenter** Submitted by RSG

TransitCenter™

TransitCenter is an independent civic philanthropy dedicated to sparking innovations and supporting policies that improve public transportation. We believe new approaches to mobility and access are needed to shape the urban landscape and bolster the vitality of our cities. We empower transportation thinkers and policymakers, commission and conduct research, convene events, and produce publications in order to inform and improve the practice of planning, financing, and operating transit.

Board of Directors

Rosemary Scanlon, Chair
N. Venu Gopal
Eric S. Lee
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RSG applies state-of-the-art modeling and analytics to inform our clients' strategy and planning, helping organizations make critical decisions with confidence.

Since our founding in 1986, RSG has brought cutting-edge research to industry practices and instilled a culture of academic discipline and collaboration. Born in academia, we have infused the intellectual rigor and scholarship of our three founders—all distinguished Dartmouth College professors—into the real-world challenges of our diverse clientele.

We are driven by intellectual engagement and respect for our colleagues and clients. Each employee actually owns shares in the company and works hard to make RSG successful. We genuinely enjoy our work and take pride in consistently delivering innovative results with detailed recommendations that have a real and important impact on our clients' decisions and success.

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Transit is personal.

LETTER FROM THE EXECUTIVE DIRECTOR

In 2013, advocates, planners, and policymakers were abuzz with the 10.7 billion rides taken on transit, an all-time U.S. record. Yet the discussion focused too much on the sheer number of rides, without a deep look at the riders themselves, and particularly the changing attitudes that are propelling recent ridership increases. We commissioned this survey to take that deeper look.

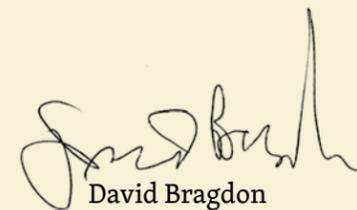
Americans interact with public transit every day, whether or not they are one of those 10.7 billion rides. Their opinions of it are shaped throughout childhood, over each commute home, at every bus stop, and in every traffic jam. Transit is personal. Unlike the sewer systems, the power grid, and telecommunications infrastructure, transit can evoke pride, frustration, and even fear. It can shape our most personal decisions about where we live and work.

To improve transit for the public, we—elected officials, policymakers, transit and transportation managers, and advocates—need to better understand public attitudes towards transit. With this significant sample of 12,000 representative Americans and the insight and expertise of our contractor RSG, we now have a snapshot into the perceptions of transit in 2014.

This snapshot reveals some surprises that may be even more significant than the ridership figures. For example, age is a bigger factor than what part of the country you live in when it comes to your attitude toward transit. Yet despite all the ballyhoo about young people being attracted to transit because of smartphones and apps, it turns out they think the most important attraction of transit is its reliability and speed. They prioritize having a bus that comes frequently over an app that tells them it's coming in an hour. And because you can't really talk about transportation without ultimately talking about land use, our survey also yielded significant insights about community design: According to our scientifically selected respondents, more Americans would like to live in mixed-use, walkable neighborhoods than actually do live in such places. That's significant news not just for transit planners, but for the real estate industry as well.

These responses energize our efforts and shape our future work. Whether you are one of the "Sons and Daughters of Suburbia," "Willing and Waiting" or a "Career-Driven Commuter," transit can and must improve to better suit your needs. And this effort is just the start. This survey will only become more valuable as we continue to reach out to all Americans and chart these changes in attitudes over time.

We thank our contractors Resource Systems Group (RSG, Inc.) and M&R Strategic Services for their professionalism in conducting this work. Additionally, I add my personal thanks to the Board of TransitCenter who early on recognized the importance of rigorous research to better inform public policies about transportation.



David Bragdon
Executive Director

Key Findings

Age is key.

Feelings about public transportation and urbanism vary much more by age than they do by region, with respondents under 30 the most enthusiastic about transit and the most likely to ride it.

While Millennials are embracing transit, Baby Boomers are shunning it.

Despite having grown up taking transit and being encouraged to do so, Baby Boomers have become averse to riding on trains and buses. Meanwhile, Millennials, who grew up riding in their parents' cars, are turning to transit in large numbers.

Parents are not averse to transit.

Starting a family doesn't have to mean giving up the transit pass. Parents are just as likely as non-parents to use transit (when factors like age and place of residence are controlled for).

Higher education does not have a big effect on transit use.

Americans with a bachelor's or graduate degree are no more or less likely to use transit than those who have not finished college (when other variables are controlled for). Current students are, unsurprisingly, much more likely to take transit than non-students who are otherwise similar to them.

People care most about the basics of transit service.

Travel time, reliability, and cost are much more important than features like Wi-Fi.

People who are offered transit benefits from an employer use them.

People offered pre-tax transit commuting benefits from their employers are over five times as likely to take transit regularly as employed persons who are not receiving benefits.

Personal values and personality characteristics have a considerable effect on travel preferences.

Core personality traits affect travel choices directly as well as indirectly, by affecting the type of neighborhood you choose to live in.

The top predictor of whether or not you use transit is what type of neighborhood you live in.

This is especially interesting when you consider that:

Many Americans would prefer to live in a different type of neighborhood than they do now.

Suburban, residential neighborhoods are the most common type of neighborhood that respondents live in, but mixed-use suburban neighborhoods (with a mix of housing, shops, and businesses) are the most desired. In fact, there is unmet demand for mixed-use urban, suburban, and small-town neighborhoods across all age groups. In short, while not all Americans want to move into inner cities, there is widespread demand for walkable cities, suburbs, and towns with more variety of residential and retail.

Executive Summary

The goal of this study is a definitive understanding of the differences in attitudes and behaviors among the US population with respect to public transportation and neighborhood choice. We aim to understand which characteristics and beliefs are behind those differences. To that end, we conducted a large online survey (11,842 respondents) across 46 Metropolitan Statistical Areas (MSAs) in the United States. The selected MSAs span the full geography of the U.S. and include some cities with well-developed transit systems and others with less developed transit system. The sample also ensured minimum quotas for all age groups, allowing the study to compare different generations, geographies, and neighborhood types.

The results reveal that the most important factors in determining whether someone is at least an occasional transit user are:

- **High population density of home neighborhood**
(POSITIVE EFFECT)
- **Being employed or a student**
(POSITIVE EFFECT)
- **Being an ethnic minority**
(POSITIVE EFFECT)
- **High-quality local transit**
(POSITIVE EFFECT)
- **High income**
(NEGATIVE EFFECT)

Surprisingly, **education level and the presence of children in the home do not appear to have a strong association with transit use either way** when the other variables are controlled for. This suggests that despite high rates of transit use in college, most former students do not

continue to ride transit after that experience. People with kids, meanwhile, may be just as willing as others to take transit when it is available in their neighborhoods.

We are able to explore what factors generally draw people to public transportation. **Travel time, reliability, and cost appear to be more important than “flashy” features like Wi-Fi.** Additionally, **people who are offered pre-tax transit commuter benefits by their employers are over five times as likely to take transit regularly** as employed persons who are not receiving benefits.

The large sample size allows for comparisons across geography, age group, quality of local transit, levels of transit use, levels of population density, and other characteristics. **We see the most variation across age groups.** Behavior changes considerably along the age spectrum, even when controlling for other factors such as employment, household income, and neighborhood type.

A central topic of this report is the behavior and attitudes of the Millennial generation as compared to older Americans. Whether the apparent change in travel preferences among Millennials is the result of a true generational change in attitudes—rather than a product of economic or social circumstances—is a topic of fierce debate. We see behavioral evidence to suggest that such a shift is indeed taking place: **Parents of school-age children who are under 30 are, it appears, more likely than parents of school-age children over 30 to use public transit, even when controlling for income.**

In addition to the links between demographics and behavior, the study also explores how attitudes and upbringing

Our analysis establishes a connection between deeply held values and travel behavior.

affect one’s propensity to use public transportation. Our analysis establishes a connection between deeply held values and travel behavior, contributing to the broad conversation on what motivates an individual’s travel preferences. While the type of neighborhood you live in emerges as the biggest single predictor of mode-choice, **personal values and attitudes have a considerable effect on travel preferences.** Values influence travel choices directly as well as indirectly, through an effect on neighborhood choice.

In an effort to identify distinct “types” of travelers, we use a statistical technique to group the sample into seven distinct groups based on their values and attitudes with respect to transit and housing. In particular, we identify a group of environmentally conscious, outgoing people, largely in their 30s and 40s, who are open to taking transit but find the service inconvenient or inadequate. We conclude that policymakers and transit providers could most easily increase transit ridership by focusing on this group.

We also look at the role of upbringing in mode choice. Investigating the childhood circumstances and travel patterns of Millennials (defined in the report as people under 30) and Baby Boomers (over 60) leads us to a paradox: **The Millennial generation seems to be defying its sheltered, suburban upbringing by delaying the acquisition of a driver’s license and choosing transit. Meanwhile, Baby Boomers, who grew up using transit and were encouraged to do so, are defying their upbringing by avoiding transit now.**

Finally, we explore data surrounding each respondent’s neighborhood type. The questionnaire asked a series of questions about the respondent’s current, childhood, and ideal home locations. From this data, we are able to infer that **many respondents wish they lived in mixed-use neighborhoods, towns, and suburbs, rather than the residential areas they currently occupy.** We draw the conclusion that land-use and housing policy would better serve Americans if it were to favor mixed-use development.

Are new trends in transportation a fad, or the result of deeply held beliefs?

In recent years, a great amount of research and media attention has gone into understanding what factors lead people to use public transportation. There has been a particular interest in characterizing and explaining the transportation choices of Millennials. This generation born in the mid-80s to late 90s came of age during a major recession and has revealed a taste for urban living and public transportation. Millennials have been a frequent topic of scholars and journalists, who have published hundreds of articles documenting changes in attitudes and travel behavior.

This study, however, goes beyond Millennials. The goal of this study is a more definitive understanding of the differences in attitudes and behaviors among various markets and populations than what other research to date has allowed. Further, we aim to understand what characteristics and beliefs underlie those differences. Finally, we wish to determine whether positive attitudes related to transit and urbanism reach areas outside of dense, transit-friendly cities. The survey instrument and sampling plan for this study were designed with those objectives in mind.

The web-based survey instrument used for this study asks a variety of questions that provide insight into travel behavior. In addition to questions about demographics,

geography, and travel behavior, we asked respondents about their attitudes toward different housing styles and modes of transportation. We also asked questions related to personality, beliefs, and the respondent's childhood neighborhood and experiences with transit growing up. This allows us to take a nuanced approach to describing the motivations behind locational choice and travel behavior. The attitudinal variables also help us to understand trends in transportation; is what we are seeing a fad, or the result of deeply held beliefs?

The study is designed to allow for comparison between groups across the country. The study was not designed to answer questions about the general characteristics or behavior of the population, such as "What percentage of the U.S. population takes public transportation?" Questions like these are already satisfactorily answered by publically available data sources, such as those provided by the U.S. Census Bureau. Instead, the study is designed to address questions about what characteristics lie behind differences in behavior, questions such as "How do attitudes toward transit in the South differ from those held by people living in the West?" and "What factors characterize young people who choose to use transit compared to those who don't?"

Sampling

This study uses a large sample of 11,842 respondents, which is larger than we have seen in the literature from other studies investigating generational travel behavior. The survey was administered entirely online to participants in an e-rewards program that provides incentives for taking surveys. The recruitment methods used comply with or exceed market research industry standards, such as those published by the global research society ESOMAR. These e-rewards online panels help to minimize some of the biggest problems associated with online sampling, namely self-selection bias (since panelists do not sign up for surveys about a specific topic) and “junk mail” perceptions. They also allow for tremendous control in geography and other respondent characteristics.¹ Respondents were selected and invited to participate based on age and geography (by home zip code).

We sought specific numbers of respondents in each of several categories. This technique, known as quota sampling, ensures a sufficient number of responses in each category to make meaningful statistical comparisons possible. For example, while the South may be more populous than the Midwest, we collected the same number of responses from each region. This allows us to compute statistics on the population of each region with a similar degree of accuracy.

The large and diverse sample allows us to look deeply at a number of questions relating to transit use and urbanism. We have the ability to gauge the importance of certain attitudes on mode choice and home-location choice. Some research has gone into quantifying the importance of attitudes, experiences, and personality characteristics in determining transit use, but these studies are often hampered by small

or unrepresentative samples or are just focused on one particular generation (e.g., Millennials), thereby making comparisons impossible.²

We selected forty-six Metropolitan Statistical Areas (MSAs) to include in the study (Figure 1), geographically distributed throughout the country. For sampling purposes, we defined five “regions” and two levels of transit service. Four of the five regions—the South, West/Southwest, West Coast, and Midwest—were defined geographically. A fifth “region” was created to differentiate cities with mature and widely used transit systems—namely, New York City, Chicago, San Francisco, Philadelphia, and Washington, DC—which we refer to as “Traditional Cities.” The two transit-service levels are defined as “transit progressive” and “transit deficient,” and within each region we sought equal numbers of respondents from each type.

Transit-progressive cities were differentiated from transit-deficient cities using commuting transit-mode data from the U.S. Census Bureau. The threshold was not constant nationwide; instead, the cities with the best transit service in each region were defined as transit progressive. No such distinction was made for the “traditional cities,” which were all considered transit progressive.

1. Joel R. Evans and Anil Mathur, “The value of online surveys,” *Internet Research* 15, no. 2 (2005): 195–219.
2. For example: “Millennials & Technology: A Survey Commissioned by Zipcar,” last modified February 27, 2013, http://www.slideshare.net/Zipcar_Inc/millennial-slide-share-final-16812323.
A. Nordlund and K. Westin, “Influence of values, beliefs, and age on intention to travel by a new railway line under construction in northern Sweden,” *Transportation Research Part A: Policy and Practice* 48 (2013): 86–95, doi: 10.1016/j.tra.2012.10.008.

The two transit service levels are defined as “transit progressive” and “transit deficient.”



FIGURE 1: MAP OF SAMPLED METROPOLITAN STATISTICAL AREAS

	Transit Progressive	Transit Deficient
REGION	MSAS FOR REGION	MSAS FOR REGION
Traditional Cities	Washington, DC Chicago New York San Francisco Philadelphia Boston	n/a
South	Raleigh Miami Atlanta Gainesville Savannah Durham Charlotte	Tampa Nashville Richmond Little Rock Knoxville
West/Southwest	Denver Salt Lake City Las Vegas Austin Reno Phoenix	El Paso Albuquerque Dallas/Fort Worth Boise Colorado Springs
West Coast	Portland Seattle Los Angeles	Fresno Stockton Redding Riverside
Midwest	Minneapolis/St. Paul Milwaukee Ames Madison Cleveland	Detroit Kansas City Des Moines Indianapolis Columbus
SUBTOTAL	7,200 Responses	4,800 Responses
TOTAL	12,000 Responses	

TABLE 1: SAMPLED CITIES

SEGMENT	< 30 Yrs Transit Progressive	< 30 Yrs Transit Deficient	30–60 Yrs Transit Progressive	30–60 Yrs Transit Deficient	> 60 Yrs Transit Progressive	> 60 Yrs Transit Deficient	TOTAL
Traditional Cities		800		800		800	2,400
South	400	400	400	400	400	400	2,400
West/Southwest	400	400	400	400	400	400	2,400
West Coast	400	400	400	400	400	400	2,400
Midwest	400	400	400	400	400	400	2,400
						TOTAL	12,000

TABLE 2: SAMPLING GOALS

Within each category, we sought approximately equal numbers of respondents of each gender and ensured that respondents came from a variety of self-reported neighborhood types (urban, suburban, rural, etc.). By focusing only on metropolitan statistical areas, we avoided respondents living in deep rural areas who would have no reasonable access to transit; in other words, even those in “rural” areas live within a modest distance (usually not more than an hour’s drive) of a city. Including these suburban and peri-urban (on the fringe between the suburbs and the countryside) areas differentiates

this study from many that have come before it, which have generally focused only on cities themselves. This allows us to investigate how geography affects transit attitudes; are people in suburbs less inclined to take transit, or do they simply lack transit service?

After removing some low-quality responses, including those from people who provided invariant responses to the battery of attitude questions and/or completed the survey in less than five minutes, the final usable sample size was 11,842.

Predictors of Transit Ridership

As a first step, we sought to identify characteristics that are associated with transit use. In other words, what types of people use transit? For the purposes of this analysis, we define a transit user as someone who uses public transportation at least once per week for any purpose. Table 3 and Figure 2 show the results of a regression model. In Figure 2, we see that the likelihood of being a transit user declines as a person gets older and eventually levels off. People under 40 are more likely than average to be transit users, with people over 40 less likely. In Table 3, we see the effects of several other variables.

The model helps to quantify some of the more important factors in determining whether someone is likely to be a transit user. It is a linear model, meaning it only helps to identify overall trends in how a variable relates to transit use. Greater population density is associated with more transit use,

and higher incomes are associated with less. Employed persons are more likely to use transit, and students are nearly 10% more likely to use transit as others in similar situations. Ethnic minorities (described as “nonwhite”) are more than 13% more likely to use transit, all other things being equal. A college degree is not itself a significant predictor of transit use.

Notably, according to the model, having children does not have a significant effect on the likelihood of taking transit. This is an important finding; those living with children and with access to transit are as willing to use transit as others who live in similar areas but do not have children. An important policy implication is that communities that are traditionally regarded as family-centric, and therefore as favoring cars, may in fact be ripe for transit service.

Having children does not necessarily make people less likely to ride transit.

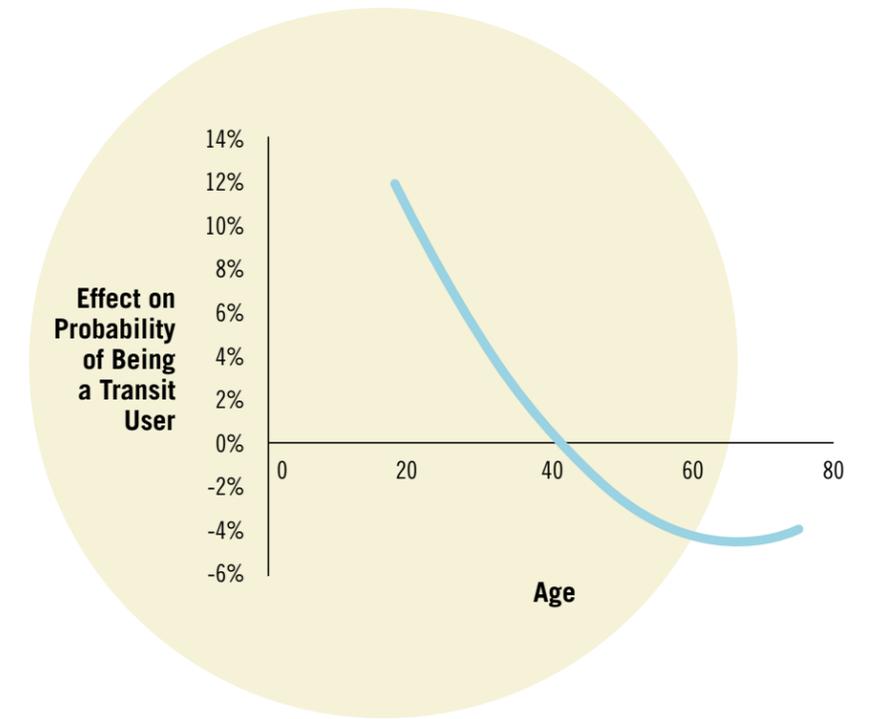


FIGURE 2: AGE AND TRANSIT USE

EFFECT ON PROBABILITY OF BEING A TRANSIT USER

4.1%	for every doubling of zip code population density*
-1.4%	for every doubling of income*
6.6%	if respondent is employed full-time*
9.8%	if respondent is a student*
0.0%	if respondent lives in the Midwest
0.3%	if respondent lives in the South
-0.2%	if respondent lives in the West/Southwest
2.5%	if respondent lives on the West Coast*
11.1%	if respondent lives in one of the “traditional cities” (the New York, Washington, Boston, Philadelphia, San Francisco, and Chicago regions)*
13.1%	if respondent is nonwhite*
-0.9%	if respondent has a bachelor’s or graduate degree
0.6%	if respondent has children at home

see chart above for effect of respondent’s age

*denotes statistical significance

TABLE 3: EFFECT ON PROBABILITY OF BEING A TRANSIT USER

Predictors of Transit Ridership

WHO'S RIDING TRANSIT?

In the charts below, we break out general transit use and transit commuting by several important categories. We can derive two major takeaways from Figure 3. First, we see that the “traditional cities” have the greatest share of transit users and commuters, followed by the West Coast cities. We also see that respondents under 30 are by far the most likely to use transit across all regions, with those over 60 the least likely. In Figure 4 and Figure 5, we see a marked difference in ridership based on race and ethnicity, with African Americans the most likely transit users and those of Hispanic or Latino origin much more likely than average to use transit.

Figure 6 shows an interesting trend with respect to income; while transit ridership

generally falls with increasing income, those in the highest income category (\$150,000+ in annual household income) are more likely to use transit than those in all but the lowest income group. Very high-income people are more likely to live in large and dense cities like New York, Chicago, DC, and San Francisco, where transit is a more viable option; their location, rather than mere personal preference for public transportation, explains why some wealthy people are more likely to use transit.

Regardless of how the sample is segmented, about twice as many people take transit occasionally as people who commute primarily by transit. The general consistency of this ratio can be seen in the figures below.

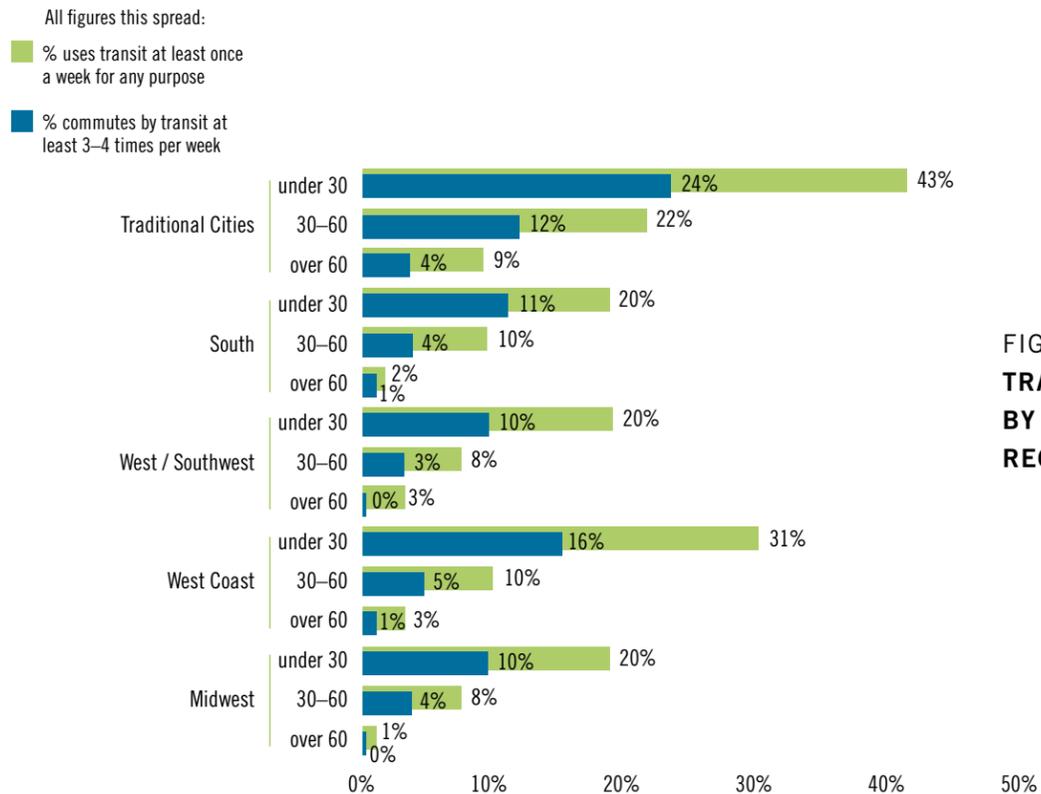


FIGURE 3:
TRANSIT USE
BY AGE AND
REGION

FIGURE 4:
TRANSIT USE
BY RACE

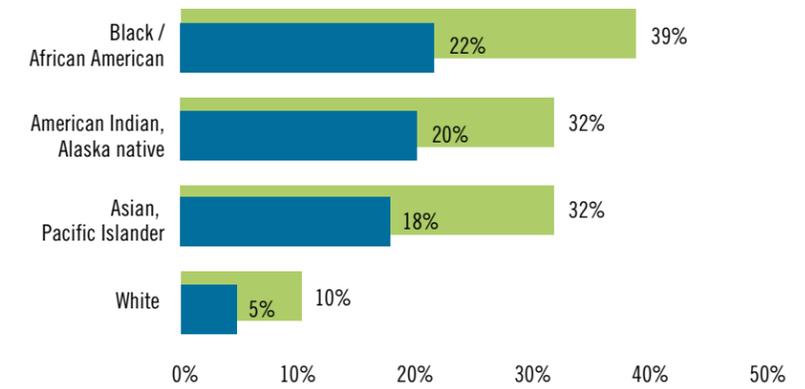


FIGURE 5:
TRANSIT USE
BY HISPANIC OR
LATINO ORIGIN

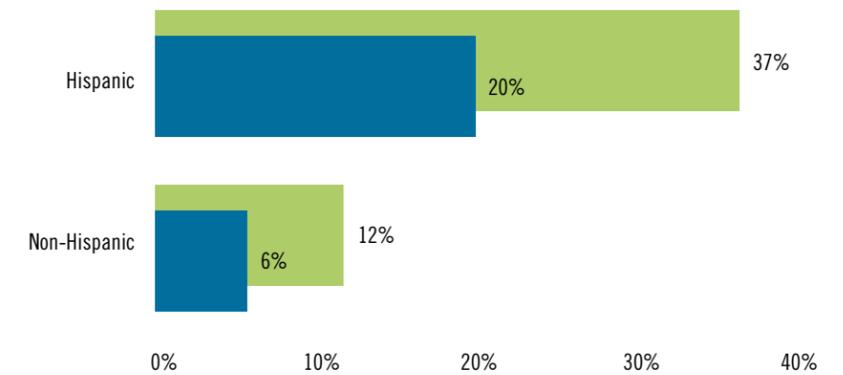
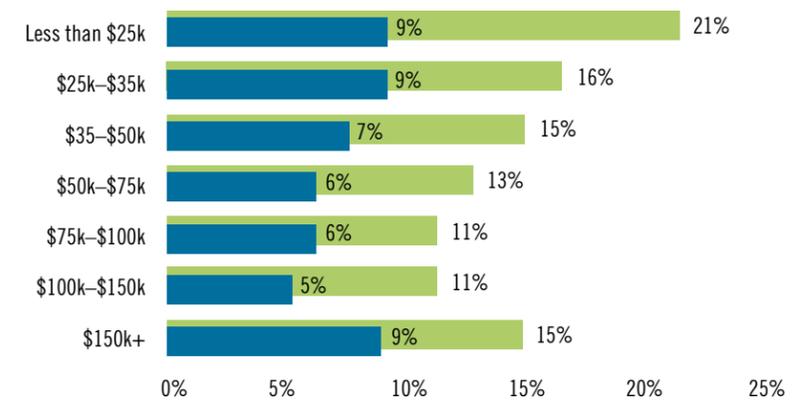


FIGURE 6:
TRANSIT USE
BY INCOME



Predictors of Transit Ridership

ATTITUDES

In addition to the demographic and geographic characteristics explored above, the survey asked a range of questions about attitudes and experiences. These questions reveal some interesting differences between those who use transit and those who do not. Respondents were asked to evaluate statements on a five-point scale (strongly agree to strongly disagree), as shown in the example below.

Table 4 shows the results of another regression model with all of the same variables as the previous model, plus several variables based on attitudes. All of these are binary variables based on the questions described above. Respondents who agree or strongly agree are coded as a 1 and all others as a 0. The coefficients can be interpreted to mean that, all other things being equal,

agreeing or strongly agreeing with the statement is associated with the indicated increase or decrease in the chances of being a transit user. In short, the regression model allows us to determine the importance of the attitudes in predicting transit use when controlling for other factors (age, income, etc.).

Interestingly, a desire to stay connected through communication technologies had no significant association with transit use. This may be because, while riders can be productive on transit, they find themselves just as or more able to use technology in the car. Additionally, a desire to minimize transportation costs was not associated with any increase in transit use; in other words, while people with low incomes are more likely to take transit, it is not generally seen as a way to save money.

According to the model, people are more likely to be transit users if they:

- Like social environments
- Like to try new things
- Like to be productive while traveling
- Grew up taking transit
- Dislike driving

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Most people who are important to me would prefer to drive less.	<input type="radio"/>				

FIGURE 7: RESPONSE SCALE

EFFECT ON PROBABILITY OF BEING A TRANSIT USER

1.4%	I like being out in the community where other people are out and about, like in parks or a shopping area*
-1.1%	It is important for me to have access to communication technology (cellular, Wi-Fi, etc.) throughout the day
2.7%	I like to make productive use of my time when I travel*
-0.2%	It is really important to me to minimize transportation costs when planning a trip
4.8%	I am happiest when trying new things*
4.2%	I grew up in a neighborhood that had convenient transit services*
6.5%	Leaving the driving to someone else is desirable for me*
5.8%	I took public transportation because I had no other options available to me*

*denotes statistical significance

TABLE 4: REGRESSION WITH ATTITUDE VARIABLES

Predictors of Transit Ridership

COMMUTING CHOICES

One of the best predictors of commuting choice in the sample is the distance to and from work. Figure 8 shows that commutes between .5 and 2 miles are the most likely to be taken by transit, with the share of car commuting generally rising as distance increases. Some people commute by other modes (walking, biking, vanpooling, etc.), and some commute by different modes

depending on the day; for this reason, the totals for each distance category may add up to more or less than 100%. Figure 9 shows that a high percentage of commuters who are offered transit benefits from their employers commute by transit at least three times per week. Among those who are not offered such benefits, very few regularly commute by transit. This is true in transit-progressive cities as well as transit-deficient cities.

FIGURE 8:
AUTO AND TRANSIT
COMMUTING BY
DISTANCE TO WORK

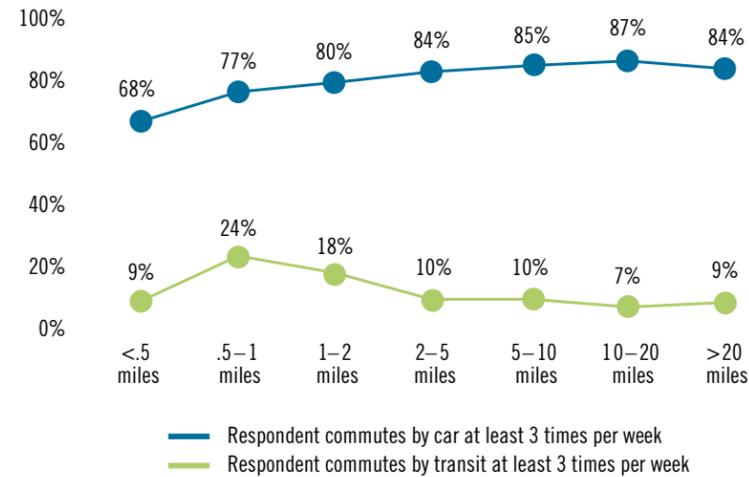
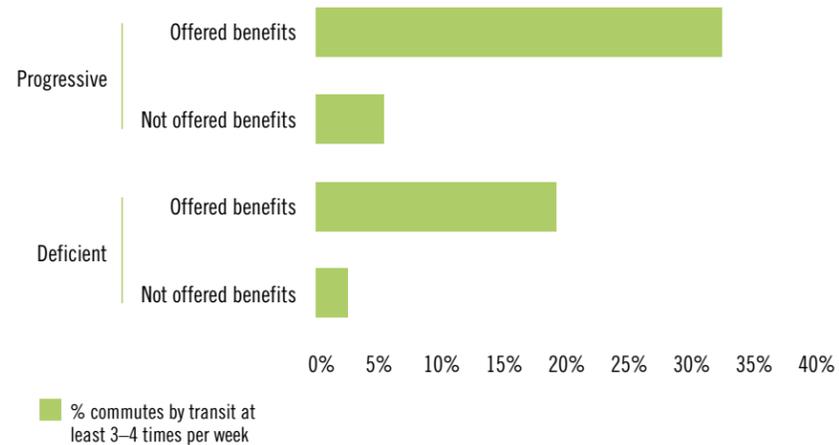


FIGURE 9:
TRANSIT BENEFITS
AND COMMUTING



Transit benefits are associated with much higher ridership, even in transit-deficient cities.

MODE-CHOICE FACTORS

We asked two sets of questions related to the motivations behind choosing a certain mode of travel. The first set asks what factors might get the respondent to ride public transit more often. The second set asks, more generally, what factors go into the respondent’s mode choice. We have ranked these responses by various segments, and the widest variation is across age categories.

For the transit questions (shown in Figure 10), shorter travel times, closer stations/stops, cost, and reliability top the list for all age groups. The Under 30 group is more concerned (though not terribly

concerned) about the availability of Wi-Fi/cellular service. The younger respondents are less concerned about the proximity of stations to their home or workplace than older respondents. For the general factors affecting the choice of modes of transportation (Figure 11), the 30–60 and Over 60 groups move in lockstep, while the Under 30 group is more concerned with reliability and cost than older respondents. Transit agencies can interpret these results as showing that the basics of travel time, cost, and reliability are more important than “flashier” features like Wi-Fi.

The basics of travel time, cost, and reliability are more important than “flashier” features like Wi-Fi.

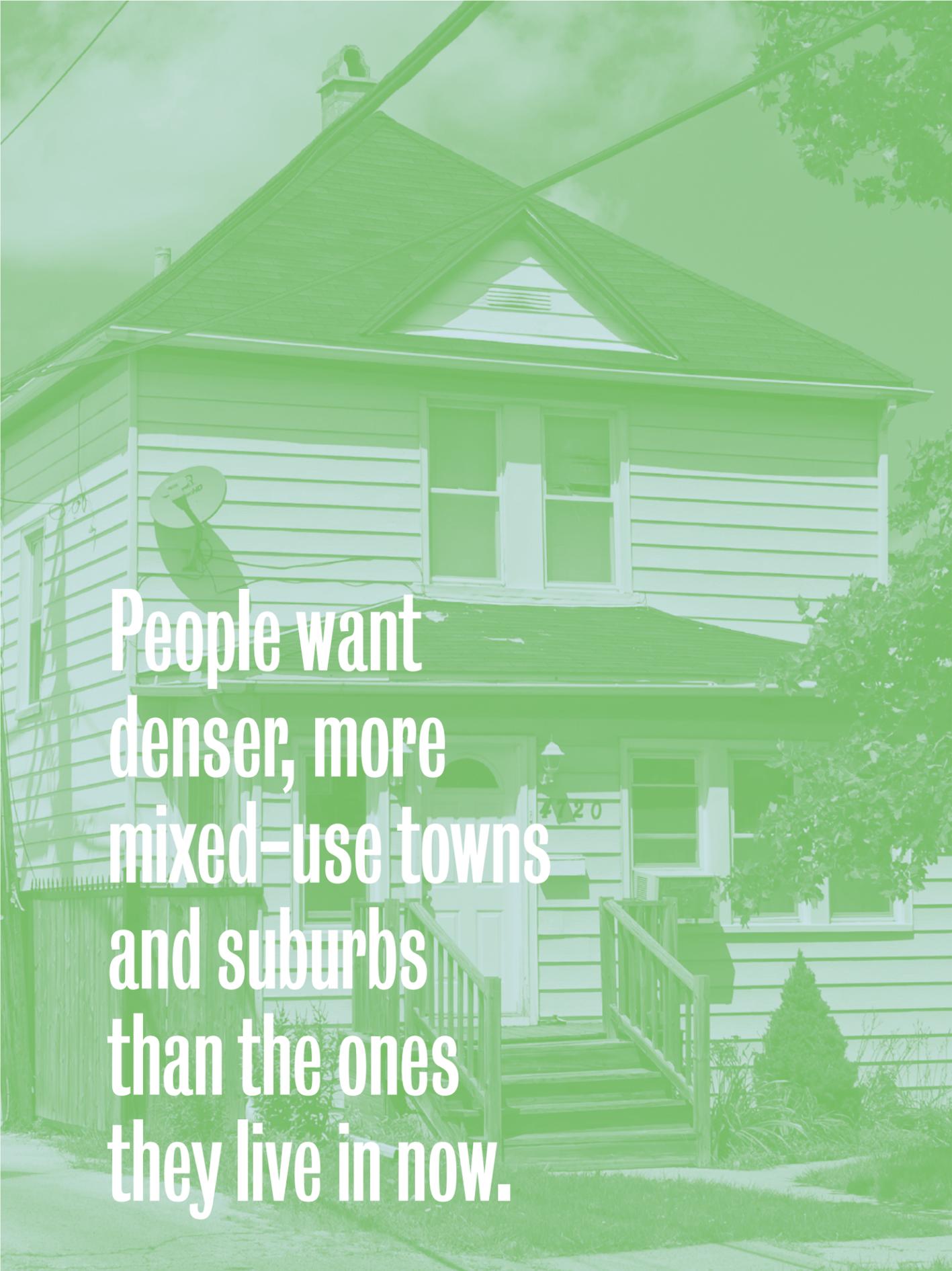
I WOULD RIDE TRANSIT MORE IF...	UNDER 30 (RANK)	30-60 (RANK)	OVER 60 (RANK)
it took less time	1	1	1
stations/stops were closer to my home/work	4	2	2
it were clearly the less expensive transportation option	3	3	3
the travel times were more reliable	2	4	4
there were different transit modes available	7	5	5
it ran more frequently	8	6	6
the stops/stations were safer	6	7	7
the buses/trains were cleaner/nicer	5	8	8
the hours of operation were extended	10	9	11
there were more parking available at the station	12	10	9
the seats were more comfortable	11	11	10
it offered reliable access to Wi-Fi/cellular	9	12	12

FIGURE 10: POTENTIAL DRIVERS OF TRANSIT RIDERSHIP BY AGE

MODE-CHOICE FACTOR:	UNDER 30 (RANK)	30-60 (RANK)	OVER 60 (RANK)
Total travel time	2	1	1
Travel time reliability	1	2	2
Having a mode that allows me to be flexible in the times I travel	4	3	3
Traffic congestion	5	4	4
Cost	3	5	5
Environmental impact	6	6	6

FIGURE 11: GENERAL MODE-CHOICE FACTORS

Neighborhood Choices



People want denser, more mixed-use towns and suburbs than the ones they live in now.

Transportation and land use are inextricably linked, and any study of transit must also consider its context. We asked survey respondents to tell us about the living environments where they grew up, where they live now, and where they would live in an ideal world. Comparing responses to these questions provides us with a sense of how childhood experiences, current living situations, and personally held values all inform one another. Figure 12 shows a major disconnect between ideal neighborhood types and the types people currently occupy, which we explore further below.

To expand on the idea of a disconnect between where people live and where they would prefer to live, Figure 13 shows the percentage of respondents living in a given neighborhood type who view that same neighborhood type as ideal. The groups least likely to identify their current neighborhood type as their ideal are those who live in residential-only neighborhoods. This is true whether they are in urban, suburban, or small-town areas.

Similarly, those who grew up in mixed-use neighborhoods are more likely to value the same type of neighborhood later (Figure 14).

It is those in all-residential urban and suburban neighborhoods who are the most likely to reside in the same type of neighborhood currently as they did as children (Figure 15). In sum, the evidence suggests that many Americans wish they could live in more mixed-use communities, but find themselves unable to get out of the bedroom communities of their youth. This appears to be true in both transit-progressive and transit-deficient cities. This has important policy implications; Americans don't necessarily want cities, but better towns and suburbs with a mix of housing, shops, and businesses. Naturally, this has implications for public transportation, as mixed-use development tends to make transit more viable.

Neighborhood Choices

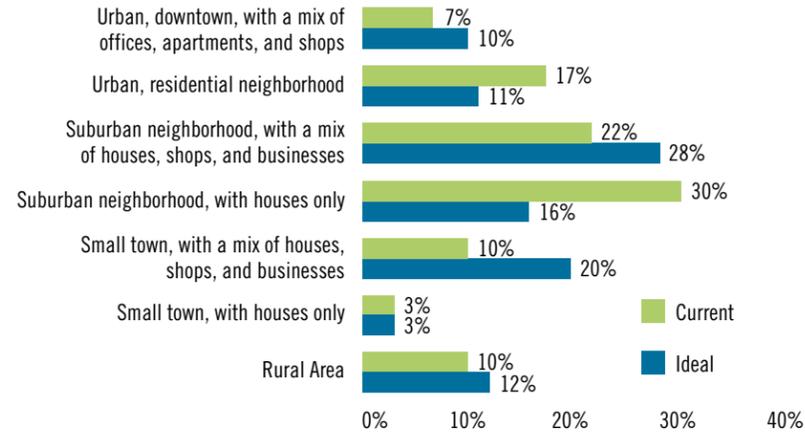


FIGURE 12:
CURRENT AND IDEAL NEIGHBORHOOD TYPE

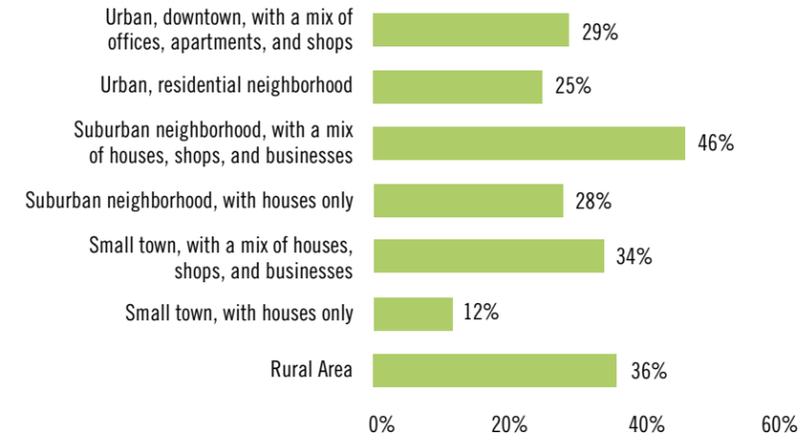


FIGURE 14:
CHILDHOOD VS. IDEAL NEIGHBORHOOD TYPE

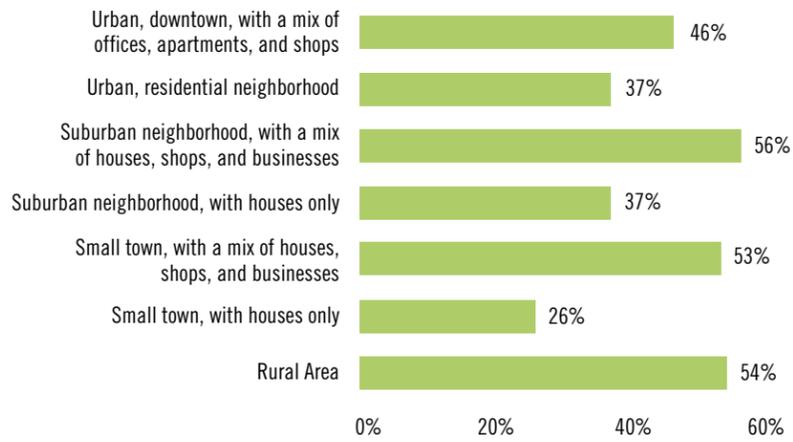


FIGURE 13:
CURRENT VS. IDEAL NEIGHBORHOOD TYPE

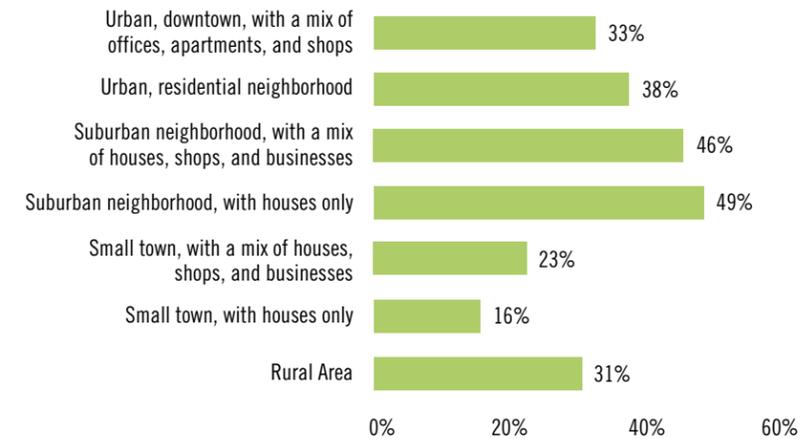


FIGURE 15:
CHILDHOOD VS. CURRENT NEIGHBORHOOD TYPE

Trading Places: Millennials and Boomers

Several recent studies have observed a trend in young people of putting off obtaining a driver's license much longer than previous generations.³ Our data show the same; respondents under 30, and especially those under 24, are the least likely to have obtained their license at age 16 or before (all respondents were over 16), as shown in Figure 16.

3. Alexa Delbosc and Graham Currie, "Causes of Youth Licensing Decline: A Synthesis of Evidence," *Transport Reviews* 33, no. 3 (2013): 271–290.

AS FIGURE 17 SHOWS, THE MILLENNIALS IN THE SAMPLE ARE:

- Less likely to have been encouraged to walk or bike by their parents
- Less likely to have grown up within walking or biking distance of a commercial district
- Less likely to have grown up near convenient transit services
- Less likely to have traveled by themselves on public transit as children
- More likely to have parents who thought it was unsafe for them to ride transit
- More likely to have had friends who considered it "uncool" to ride transit

FIGURE 16:
LICENSING AGE

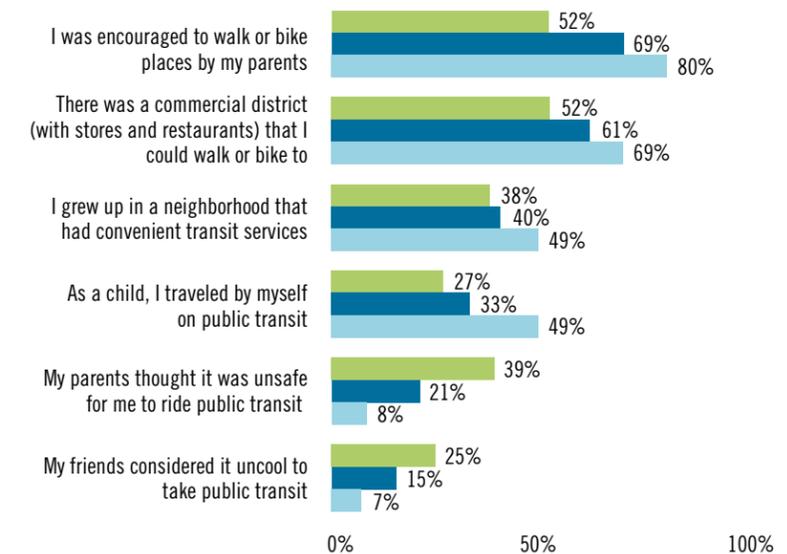
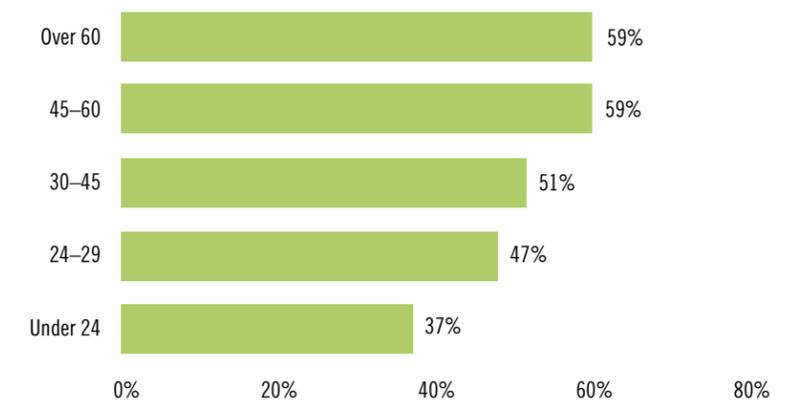


FIGURE 17:
CHILDHOOD EXPERIENCES BY AGE

Millennials are defying their upbringing by choosing transit.

Meanwhile, Baby Boomers are defying their upbringing by avoiding it.

Paradoxically, the cohort that is delaying getting a driver's license is the same cohort that grew up in the most car-centric environment. In other words, the Millennials are putting off driving and using transit more heavily (as shown in Figure 3) despite having been very accustomed to car travel and unaccustomed to transit in childhood. Furthermore, the under-30 age group is the most likely to wish to live in urban areas, as shown in Figure 18.

At the same time, the over-60 group shows very low rates of transit use despite growing up in a very transit-friendly environment. The Baby Boomer generation grew up in denser neighborhoods with more transit, were more likely to be encouraged to walk or bike, and less likely to see transit as a social stigma than younger people. Figure 18 shows that they are also the least likely group to want to live in urban areas. Millennials, it seems, are defying their upbringing by choosing transit. Meanwhile, Baby Boomers are departing from their upbringing by avoiding it.

Baby Boomers are less likely to want an urban environment, and they are less likely still to live in one, as shown in Figure 19. They are also the most likely group to have no access to public transportation where they live, as shown in Figure 20. Put simply, Baby Boomers don't live in—and largely don't want to live in—places well-served by transit.

This analysis raises three pressing questions. First, as the Baby Boomers age out of driving, how can their transportation needs be met in their current, non-urban setting? For those willing to relocate, what housing options are available to them in more transit-friendly environments? Finally, can we expect Millennials to continue to use transit as they age?

Trading Places: Millennials and Boomers

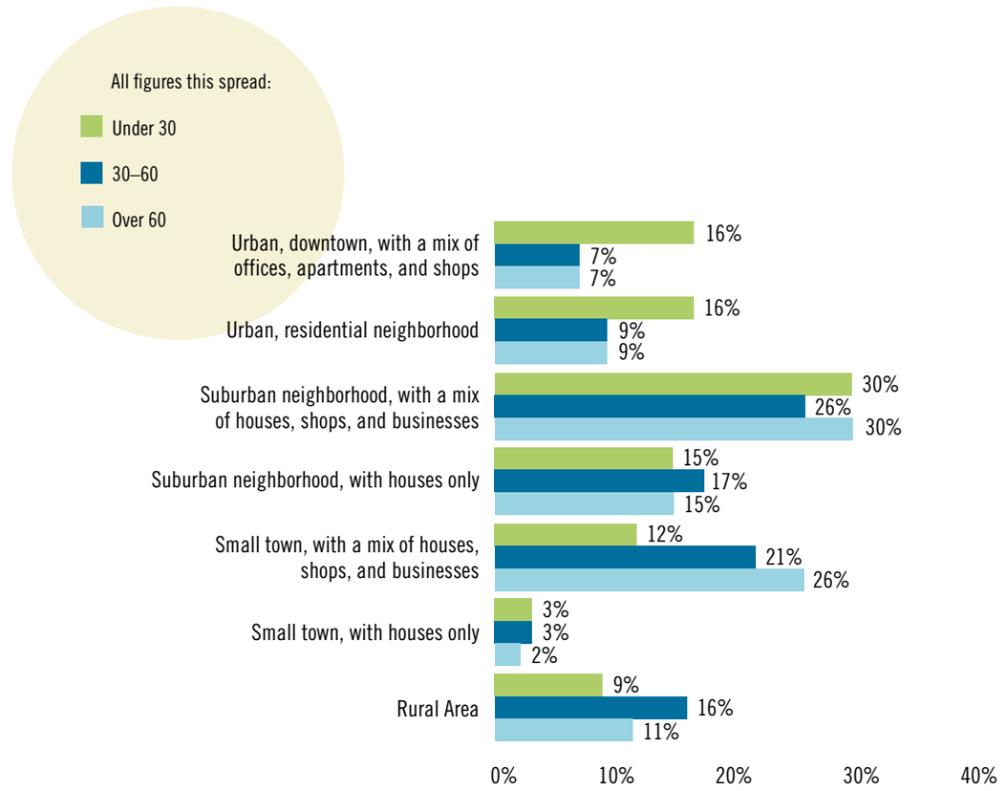


FIGURE 18:
**IDEAL
NEIGHBORHOOD
TYPE BY AGE**

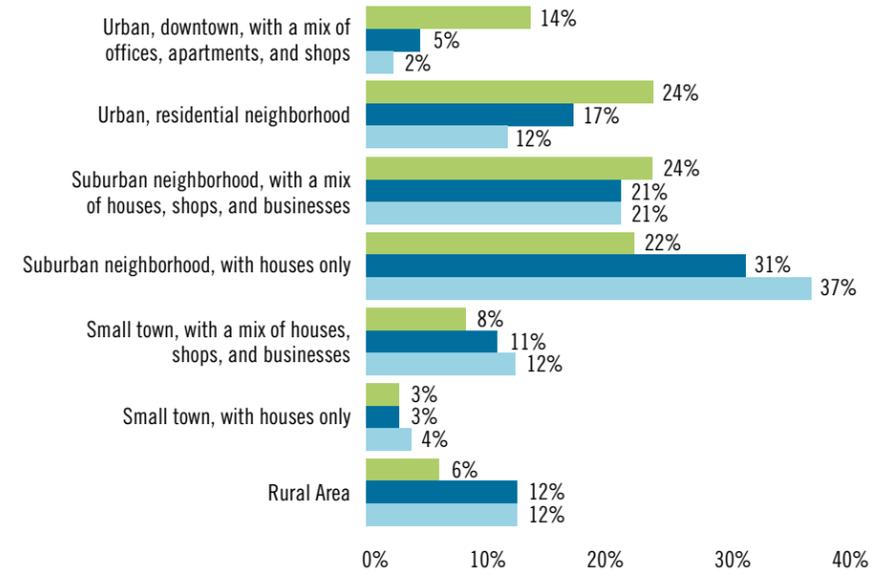


FIGURE 19:
**CURRENT
NEIGHBORHOOD
TYPE BY AGE**

Many Americans wish they could live in mixed-use communities, but find themselves unable to get out of the bedroom communities of their youth.

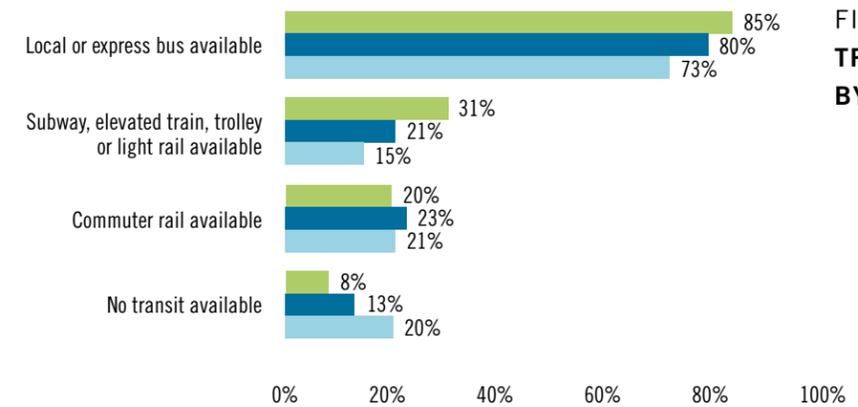


FIGURE 20:
**TRANSIT ACCESS
BY AGE**

GENERATIONAL CHANGE

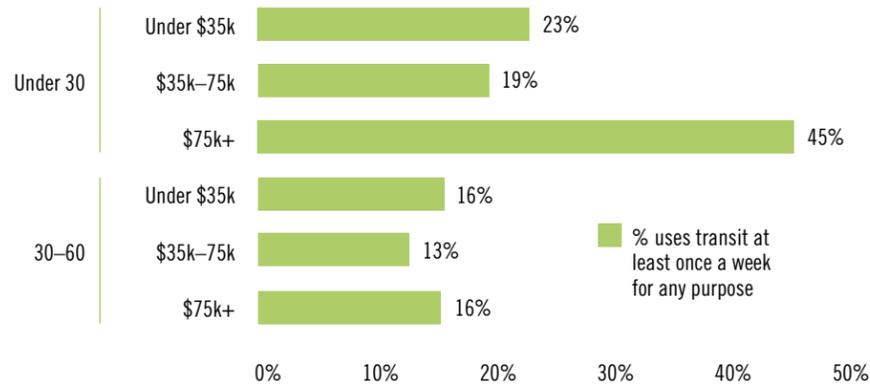
An open debate centers on whether the relatively high level of transit use among young people represents a true difference in values from older generations. It is often suggested that this trend is simply reflective of the economic reality, or the fact that most individuals' preferences change over time (and especially as they have children).⁴ The best way to evaluate a trend in opinions or attitudes is with longitudinal data (data collected over many years on the same group or comparable groups of people), but there is no reliable longitudinal data source that specifically looks at attitudes toward transit.

Another way to investigate generational change is to see how people from different age cohorts, but in similar life situations,

differ in their behavior. In Figure 21, we see the percentage of transit users (again defined as those using transit at least once per week for any purpose) among people with school-age children (5–15 years old) and compare Millennial parents to older parents across income levels. Those in the over-60 age group were omitted from this analysis, as there are very few with school-age children.

It is clear that at all income levels, the Millennial parents are more likely to be transit users than their older counterparts. This is evidence of a true change in attitudes toward public transportation. This shift is exceptional especially when considering the car-centric environment in which these Millennial parents were themselves reared.

FIGURE 21:
**TRANSIT USE
AMONG PARENTS OF
DIFFERENT AGES
BY INCOME**



At all income levels,
Millennial parents
of school-age
children are more
likely to be transit
users than their
older counterparts.

4. Robert Poole, "VMT Growth and the Millennial Generation," Surface Transportation Newsletter 116 (2013): <http://reason.org/news/show/surface-transportation-news-116>.

America's Transportation "Types"

The wants, needs, and attitudes of Americans are hugely variable. For the purposes of discussion and analysis, it is often useful to group a population into discrete categories that can be characterized and compared to one another. This provides a useful framework for discussing policy and culture.

In order to identify categories of Americans based on their attitudes toward transit use and urbanism, we employed a technique called latent class cluster (LCC) analysis. LCC analysis allows us to find groups of people who share many of the same attitudes based on the full range of questions in the survey. These clusters then allow analysis of the social characteristics of each group. People within these groups tend to be alike in terms of demographics and behavior; it is, however, important to note that the groups are identified based on common attitudes, not on objective characteristics like age or income.

We identified (and named) seven segments in our LCC analysis, as shown in Figure 22. In Table 5, we show a set of key characteristics for each segment. The segments are based on dozens of attitudinal questions; the "key attitudes" represented in Table 5 are just a subset of the questions upon which the segment classifications are based.

Table 6 provides a more qualitative assessment of the various segments.

The largest segment we have identified in the sample is the **Career-driven Commuters**. People in this group may or may not have children, but their housing and transportation decisions center on getting to and from work as quickly and conveniently as possible. They are not likely to have had positive experiences with transit as children. They are, however, likely to live in large cities for the improved job prospects and sometimes find transit to be their best option. As a group, this segment will be motivated to switch to transit only when it is the faster, easier option. They are not eager to try new things and do not experience any social pressures to take transit (be it friends/family wanting them to drive less or a desire to help the environment). Their primary concern is travel time.

The next largest group we have termed **Devoted Drivers**. These stalwarts of automobile travel are nearing retirement age and are satisfied with their car-centric, suburban lifestyle. According to their own responses, there is little that can be done to draw this group onto transit. The **Bohemian Boomers** serve as a foil to the Devoted Drivers. The two groups are demographically similar and represent roughly equal portions

22% Career-driven Commuters
 AGE RANGE OF MIDDLE 50%: 26–56
 DEMOGRAPHICS: Somewhat Diverse
 TRANSIT: Sometimes
 NEIGHBORHOOD: Urban
 CHILDHOOD: Non-Urban
 ECONOMICS: Somewhat Cost-Conscious
 ENVIRONMENT: Somewhat Concerned

20% Devoted Drivers
 AGE RANGE OF MIDDLE 50%: 55–70
 DEMOGRAPHICS: Not at all Diverse
 TRANSIT: Never
 NEIGHBORHOOD: Non-Urban
 CHILDHOOD: Somewhat Urban
 ECONOMICS: Not Very Cost-Conscious
 ENVIRONMENT: Unconcerned

19% Bohemian Boomers
 AGE RANGE OF MIDDLE 50%: 54–69
 DEMOGRAPHICS: Not at all Diverse
 TRANSIT: Rarely
 NEIGHBORHOOD: Somewhat Urban
 CHILDHOOD: Somewhat Urban
 ECONOMICS: Somewhat Cost-Conscious
 ENVIRONMENT: Somewhat Concerned

16% Willing and Waiting
 AGE RANGE OF MIDDLE 50%: 24–49
 DEMOGRAPHICS: Diverse
 TRANSIT: Often
 NEIGHBORHOOD: Urban
 CHILDHOOD: Somewhat Urban
 ECONOMICS: Cost-Conscious
 ENVIRONMENT: Concerned

12% Sons and Daughters of Suburbia
 AGE RANGE OF MIDDLE 50%: 28–59
 DEMOGRAPHICS: Not at all Diverse
 TRANSIT: Rarely
 NEIGHBORHOOD: Somewhat Urban
 CHILDHOOD: Non-Urban
 ECONOMICS: Somewhat Cost-Conscious
 ENVIRONMENT: Unconcerned

8% Metro Moms and Dads
 AGE RANGE OF MIDDLE 50%: 25–60
 DEMOGRAPHICS: Diverse
 TRANSIT: Often
 NEIGHBORHOOD: Urban
 CHILDHOOD: Urban
 ECONOMICS: Cost-Conscious
 ENVIRONMENT: Concerned

3% Cosmopolitan Youth
 AGE RANGE OF MIDDLE 50%: 23–31
 DEMOGRAPHICS: Very Diverse
 TRANSIT: Always
 NEIGHBORHOOD: Very Urban
 CHILDHOOD: Very Urban
 ECONOMICS: Very Cost-Conscious
 ENVIRONMENT: Very Concerned

FIGURE 22:
**LATENT CLASS
 CLUSTER SEGMENTS**

America's Transportation "Types"

CATEGORY	CLUSTER	Career-driven Commuters	Devoted Drivers	Bohemian Boomers	Willing and Waiting	Sons & Daughters of Suburbia	Metro Moms and Dads	Cosmopolitan Youth	
Demographics	Cluster Size	22%	20%	19%	16%	12%	8%	3%	Top ranked in row
	Average Age	41	60	59	36	44	41	29	2nd ranked
	% Single	36%	10%	13%	45%	28%	29%	50%	3rd or 4th ranked
	% Employed	60%	11%	8%	57%	64%	28%	65%	5th, 6th, or 7th ranked
	% Hispanic	7%	3%	3%	13%	6%	15%	29%	
	% White	85%	94%	92%	76%	88%	74%	56%	
	% Born in US	94%	95%	94%	91%	95%	87%	88%	
	% Earning Under \$50k/Year (Household)	32%	34%	33%	39%	32%	41%	36%	
	% With Kids at Home	24%	18%	21%	26%	26%	34%	32%	
Neighborhood Types	% Live in Urban Neighborhood	52%	34%	41%	56%	40%	53%	65%	
	% Transit-progressive Area	62%	56%	61%	62%	57%	61%	65%	
	% Want to Live in Urban Neighborhood	23%	13%	17%	28%	14%	29%	49%	
	% Grew Up in Urban Neighborhood	22%	26%	28%	29%	21%	35%	51%	
Transit Use	% Frequent Transit Users	13%	2%	5%	25%	6%	27%	64%	
	% Infrequent Transit Users	31%	16%	32%	35%	15%	33%	22%	
	% Used Transit as Child	33%	36%	44%	39%	28%	39%	41%	
	% With Positive Impression of Transit as Child	39%	40%	52%	48%	30%	59%	70%	
Car	% Driver's License	92%	96%	94%	89%	96%	90%	90%	
	% With Access to Car	84%	92%	91%	78%	90%	80%	86%	
	% With License at 16 Years Old	53%	58%	55%	44%	59%	37%	22%	
	% Can't Live without Car	28%	22%	27%	28%	22%	25%	24%	
	% Can't Live without Smartphone	29%	13%	14%	36%	23%	36%	51%	
Key Attitudes	I like being out in the community where other people are out and about, like in parks or a shopping area.	64%	54%	67%	78%	52%	83%	97%	
	I am happiest when trying new things.	43%	31%	37%	65%	35%	74%	97%	
	It is really important to me to minimize transportation costs when planning a trip.	64%	54%	64%	83%	67%	81%	96%	
	Most people who are important to me would prefer to drive less.	27%	18%	24%	40%	22%	57%	90%	
	I enjoy doing exciting things, even if they are dangerous.	33%	16%	21%	41%	27%	49%	85%	
	I would switch to a different form of transportation if it would improve air quality.	28%	13%	28%	54%	13%	67%	97%	
	It is important for me to have access to communication technology (cellular, Wi-Fi, etc.) throughout the day.	71%	57%	63%	82%	71%	82%	96%	

TABLE 5: SEGMENT CHARACTERISTICS

America's Transportation "Types"

	Career-driven Commuters	Devoted Drivers	Bohemian Boomers	Willing and Waiting	Sons & Daughters of Suburbia	Metro Moms & Dads	Cosmopolitan Youth
Age Range of Middle 50%	26–56	55–70	54–69	24–49	28–59	25–60	23–31
Transit	sometimes	never	rarely	often	rarely	often	always
Neighborhood	urban	non-urban	somewhat urban	urban	somewhat urban	urban	very urban
Technology	like technology	indifferent to technology	indifferent to technology	love technology	like technology	love technology	enamored with technology
Economics	somewhat cost-conscious	not very cost-conscious	somewhat cost-conscious	cost-conscious	somewhat cost-conscious	cost-conscious	very cost-conscious
Demographics	somewhat diverse	not at all diverse	not at all diverse	diverse	not at all diverse	diverse	very diverse
Environment	somewhat concerned	unconcerned	somewhat concerned	concerned	unconcerned	concerned	very concerned
Childhood	non-urban	somewhat urban	somewhat urban	somewhat urban	non-urban	urban	very urban
Social	like to be out and about	don't need to be out and about	like to be out and about	love to be out and about	don't need to be out and about	love to be out and about	live to be out and about
Miscellaneous	high earners	least likely to have kids at home	most likely group to use transit occasionally	most likely to say they can't live without their car	most likely to have had negative childhood impression of transit	most likely to have kids at home	most likely to be employed or in school

TABLE 6: QUALITATIVE SEGMENT CHARACTERISTICS

of the sample. But the Bohemians, who are slightly more likely to have grown up in an urban area, are more enthusiastic about cities and transit. This group may be ripe for using more transit, as about a third are infrequent users who could be converted to more frequent users. They are also on the cusp of retirement and may be looking to move into denser settings where transit is available.

The **Willing and Waiting** are dabbling in an urban lifestyle after a suburban youth. This group is grappling with competing priorities: They want to help the environment and enjoy urban amenities, but also to live in large homes. They enjoy being in cities and riding transit, but often still find themselves relying on the convenience of the automobile. They are different from the **Career-driven Commuters** in that they have a true preference for transit that simply isn't being catered to. This group will experience even greater uncertainty as their children reach school age: will they have the suburban, car-dependent lifestyle of their youth, or will they find themselves walking the kids to school before getting on the bus? If you build walkable communities and reliable public transportation, they will come.

In the same age group as the Career-driven Commuters, but with the habits of Devoted Drivers, are the **Sons and Daughters of Suburbia**. This group is highly car-dependent and has no interest in living in the city or riding transit, even if it were improved. They grew up with picket fences

and still haven't left, not even to improve their economic lot. The **Metro Moms and Dads** are from the same generation as the Sons and Daughters of Suburbia but cut from a different cloth; they are ethnically diverse and eager to live in urban areas and take transit. They are also the group most likely to earn under \$50,000 in annual household income and are less likely than most groups to have access to a car.

Transit-loving urban Millennials make up the last and smallest group, the **Cosmopolitan Youth**. While adventure-seeking, they are not necessarily single, and many of them have young children. People in this group were late to get their driver's licenses and seem to have a deeper affinity for smartphones than for cars. They are wildly enthusiastic about transit now, but it may be a challenge to keep them riding transit as they age.

The Willing and Waiting are perhaps the most important group to analyze. They represent a large portion of the sample and still have many years of intensive travel ahead of them. While they are the least likely to have a driver's license, they are also the most likely to choose their car as the possession they can't live without. This suggests a population that is largely interested in and ready to ride public transportation, but whose needs are, in many cases, not being met. Transit advocates and policymakers ignore the Willing and Waiting at their own peril, as they may be the gatekeepers of true change in how Americans live and travel.

The Importance of Values and Attitudes

The perceived change in culture and attitudes toward transit and urbanism may make transit in the U.S. increasingly important. It is first useful, however, to establish some baseline connections between attitudes, neighborhood type, and mode choice. These connections will allow us to answer two related questions that are central to our understanding of travel behavior:

- **How do values influence neighborhood choice?**
- **How do values and neighborhood type together influence mode choice?**

The theory of how these factors interact is described in Figure 23.

A person's travel behavior will be determined by his or her attitudes toward different travel modes, the characteristics of his or her neighborhood, and his or her core values and preferences. An individual's attitude toward different travel modes will be influenced by his or her core values as well as residential location (i.e., neighborhood type), which is itself influenced by the core values. The central idea of the theory is that our core values—who we are as people—have a tremendous impact on how we ultimately choose to travel as well as where we choose to live.

In order to quantify the effects described in Figure 23, we employed a technique called structural equation modeling (SEM). SEM allows us to simultaneously determine how a number of latent (unobserved) factors, such as the ones in Figure 23, relate to one another. Each of the factors in the model is made up of several questions asked in the survey. Those relationships are shown in Figure 24. Twenty questions form the basis for the variables in the model.

The output of the structural equation model is a set of normalized coefficients; in other words, we can directly compare the importance of each latent factor. The model is shown in Figure 24. Notice that some of the latent variables can affect the outcome—green travel behavior—in more than one way. For example, valuing the environment is associated with a more positive attitude toward transit, which in turn is positively associated with green travel. Valuing the environment is also associated with a more negative attitude toward automobiles, which are negatively associated with green travel.

By combining the direct and indirect effects, we can determine the total explanatory power of each latent variable. These combined effects are shown in Figure 25. Urban form (i.e., neighborhood type) is far and away the most important predictor of travel behavior; in other words, where you live is the most important thing in determining how you travel, even when controlling for your attitudes. This suggests that transit-oriented development and policies that promote density are the most powerful way to encourage transit use. However, attitudes toward transit/automobiles, the environment, risk-taking, and—most of all—toward community and urbanism all affect people's propensity to use greener methods of transportation. Taken together, this suggests that most people will abandon their cars not when they are enticed onto transit, but when they are able to move to a mixed-use neighborhood.

Our research suggests that most people will abandon their cars not when they are enticed onto transit, but when they are able to move to a mixed-use neighborhood.

The Importance of Values and Attitudes

Values Toward Environment

If everyone works together, we could improve the environment and future for the Earth. I like the idea of doing something good for the environment when I ride transit. I would switch to a different form of transportation if it would improve air quality.

Values Toward Privacy and House

Value a large house lot. Value having a private home location with adequate separation from others.

Values Toward Community/Urbanism

Value living in a community with a mix of people from different backgrounds. Value a community within walking distance of stores and services. Value proximity to public transportation.

Values Toward Productivity and Connection

Want ability to get work done while commuting. I am happiest when trying new things. Would ride transit more with reliable Wi-Fi

Population Density
Availability of Transit Service

Attitude Toward Autos

I love the freedom and independence I get from owning one more car. I need to drive my car to get where I need to go. I feel I am less dependent on cars than my parents.

Attitude Toward Transit

My family and friends typically use public transportation. I feel safe when riding transit.

Percentage of Trips Taken
by Modes Other Than Auto

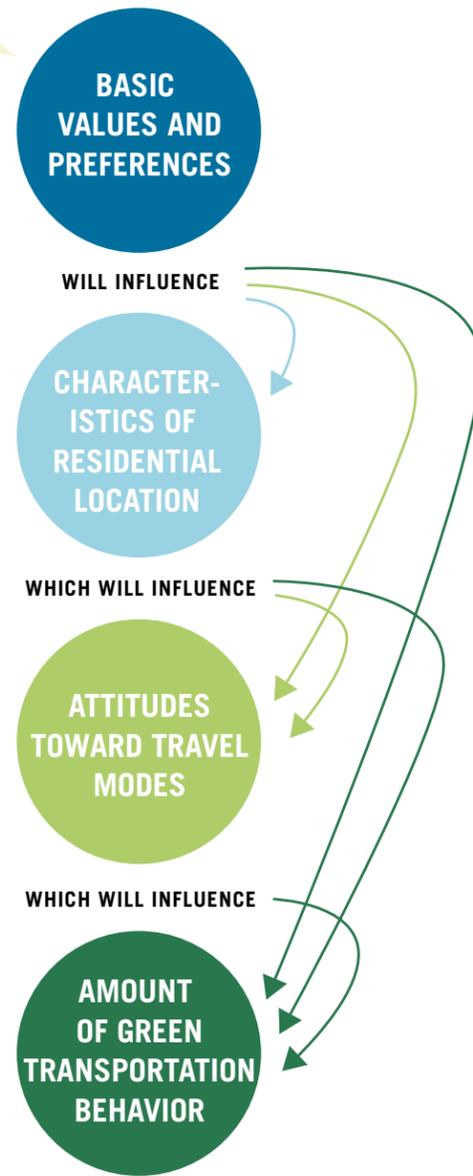


FIGURE 23:
DETERMINANTS OF
MODE CHOICE

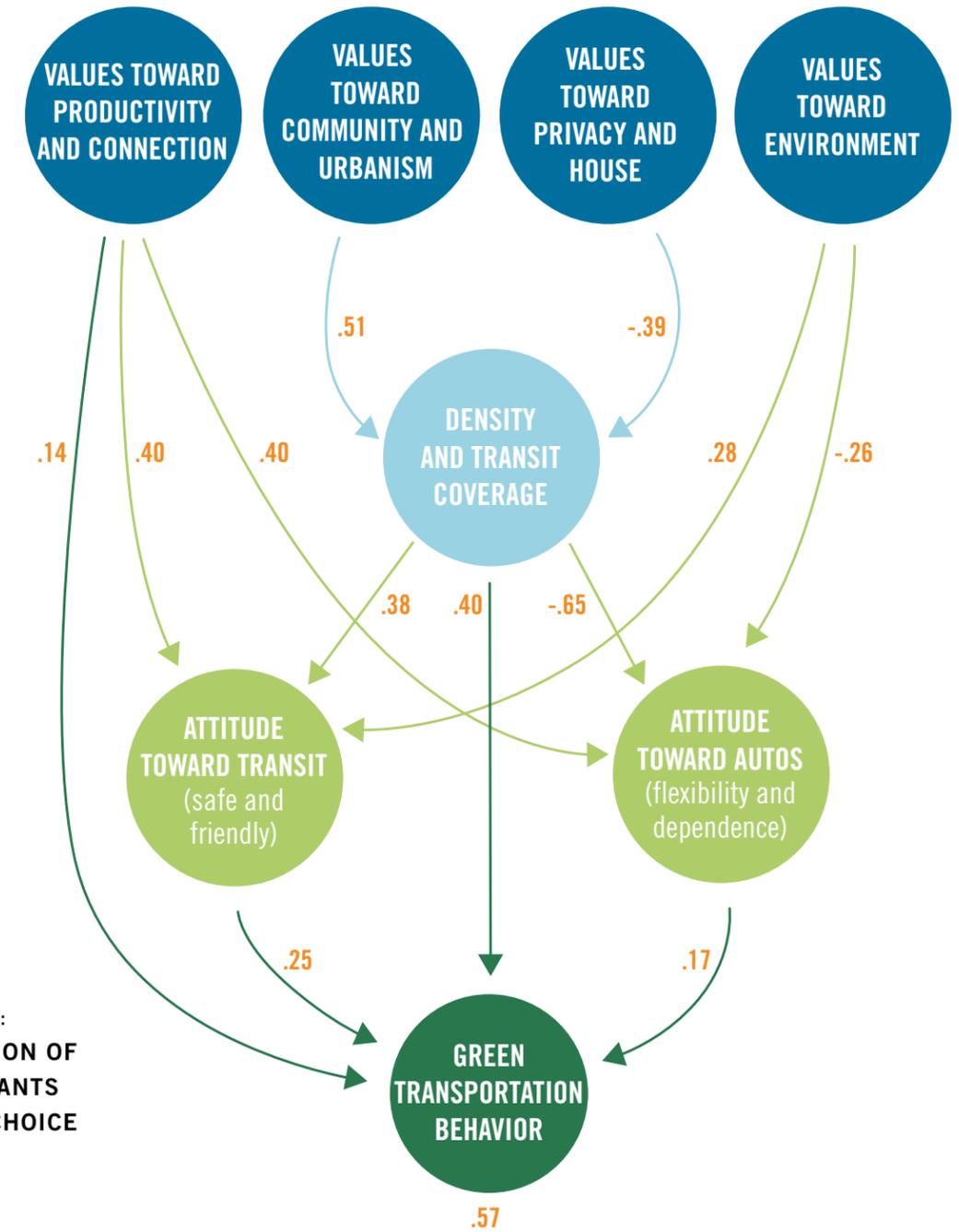


FIGURE 24:
COMPOSITION OF
DETERMINANTS
OF MODE CHOICE

The attractiveness of mixed-use neighborhoods is a major part of what drives people onto transit.

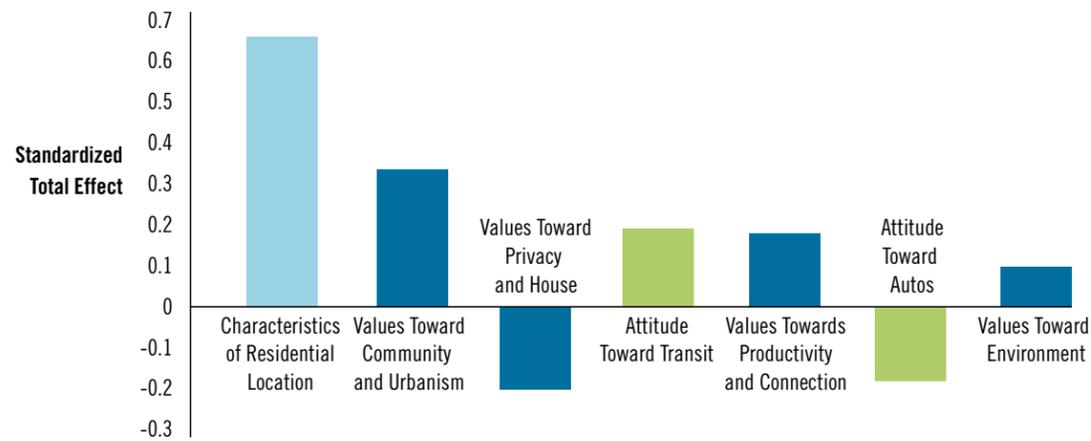


FIGURE 25:
TOTAL EXPLANATORY
POWER OF LATENT
VARIABLES

This study investigates two central questions: First, how do Americans differ from one another in how we use and think about public transportation? And second, how do our deeply held values and beliefs influence that behavior? The first question is straightforward; we can ask people how they travel and what they believe, and compare across categories. The second is complex; there are many confounding factors when trying to predict how thoughts and feelings affect behavior. One of our goals has been to establish evidence for a simple truth—that our deeply held values and attitudes have an important effect on the transportation and housing choices we make.

We’ve observed that it’s not how people feel about transportation modes so much as neighborhoods that is driving transportation choices. This observation, along with the knowledge that many Americans would be happier in neighborhoods that are not exclusively residential, leads to a powerful conclusion: it is not transportation policy per se but, rather, land-use and housing policies designed to encourage mixed-use development that have the potential to draw large numbers of people out of cars and onto transit.

The United States is a heterogeneous nation. Attitudes and behaviors related to transportation and housing vary by region, population density, and the availability of options. By far the greatest variation, however, is by age group. These differences are evident across all regions, in cities with great transit as well as poor transit, and in dense areas as well as sparse ones. That Millennials think and behave differently than older Americans is clear.

No one can say with any certainty whether Millennials will change—and in doing so abandon public transportation—as they come of age. There is some suggestive evidence here, however, that the differences between Millennials and older Americans are very deep. As the cohort ages and has children, at least some are surely considering whether they will ever return to the car-centric lifestyle of their youth. It is incumbent upon policy makers, transit agencies, and citizen groups to seize the moment by accommodating and capitalizing on these attitudes and bringing those maturing Millennials (and many slightly older adults) into a car-free middle age.

The Baby Boomers, meanwhile, are very suburban and very accustomed to driving. As members of that generation age, transporting them presents a serious challenge. What is to become of a senior who can no longer drive but has no access to quality public transportation? A storm may be coming for suburban transit providers. Those Boomers that choose to move into denser areas for increased access must also be accommodated, and urban transit systems would be wise to prepare for increased senior ridership.

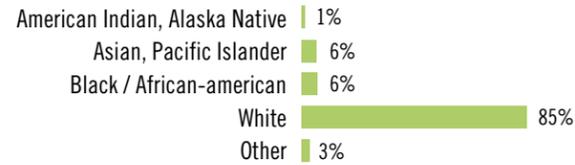
We hope that this study can be repeated over the years and the changes in both behavior and attitudes documented over time. Only then can we fully understand the changes taking place in the hearts and minds of American travelers. Our questionnaire was designed with this in mind, and we also recommend that governments invest in more frequent household travel surveys. Each time we ask the same set of questions, we will learn a great deal not only about the moment, but about the direction in which we are headed.

SAMPLE CHARACTERISTICS

Household Income



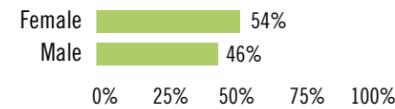
Race



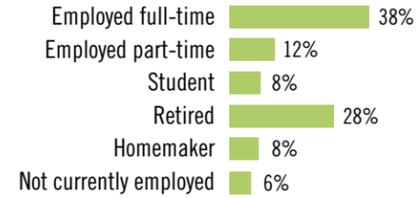
Hispanic Origin



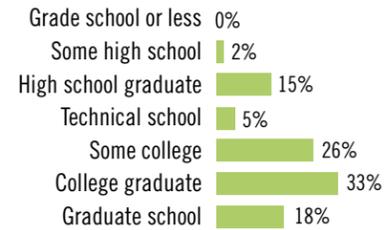
Gender



Employment



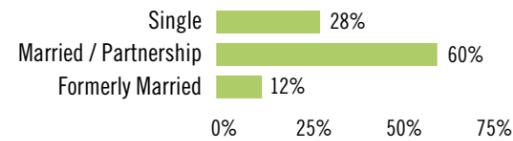
Education



Born Outside US



Marital Status



ATTITUDE TABULATIONS

A full appendix, containing tabulations of all the attitudinal questions in the survey, can be found online at transitcenter.org. The data are broken out by transit quality (progressive vs. deficient) and region in the first set of tabulations and by environment (urban vs. non-urban) and age in the second set.

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Thomas Hawk (page 8)
Eric Allix Rogers (page 24)



TransitCenter

137 Varick Street
Suite 503
New York, NY 10013
646-395-9104
www.transitcenter.org