



**An Onboard Survey
Of users of
Triangle Transit**

2009

A study conducted by:



In cooperation with



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Introduction

Survey Data Collection

A survey was conducted onboard Triangle Transit buses from November 1 through 7, 2009. Survey data collection occurred onboard the buses. Temporary workers were used for this purpose under the supervision of CJI Research Corporation and Transit Marketing staff. Surveyors wore both ID badges and smocks identifying them in large print as “Transit Survey” workers. This uniform helps riders visually understand the purpose of the interviewers approaching them.

Survey personnel accompanied drivers at the beginning of the shifts and rode the buses for an entire run. They approached all riders rather than a sample of riders. Thus, the bus was in effect a sample cluster point within which all were surveyed. Survey personnel handed surveys to riders and asked them to complete the survey. They also provided pencils to the potential respondents.

At the end of the run, the survey personnel placed the completed surveys in an envelope marked with the route and the run and reported to the survey supervisors who completed a log form detailing the run.

Sample

A random sample of runs was drawn from a list of all Triangle Transit runs. This initial sample was examined to determine whether the randomization process in the relatively small universe of all runs had omitted any significant portion of the Triangle Transit system’s overall route structure. The sample was adjusted slightly to take any such omissions into account.

The resulting total sample size is 2,478 useable responses. When all respondents were included, this sample had a sample error level of $\pm 1.9\%$. If a sub-sample were used, sample error would increase somewhat, though with such a large overall sample this would affect the findings only in very rare circumstances in which only very small sub-segments of the ridership were being examined separately. This does not occur in the report presented here.

Participation Rates

A total of 4,618 Triangle Transit riders were approached and asked to participate in the survey. Of these, 1,532 said they had already completed a survey. Another 494 were unwilling to participate. Thus the total “effective distribution,” defined as a rider accepting the survey materials and agreeing to

	Response rates		
	Totals	% of total persons approached	% of total persons approached for the first time
Completions	2478	54%	80%
Language barrier	58	1%	2%
Rider under 16	56	1%	2%
Refusals	494	11%	16%
Already completed previously	1532	33%	
Total approached	4618	100%	100%

complete a survey form, was 3,086 persons. Of these, 2,478 returned a useable survey form, for an effective participation rate of 80%.

Questionnaire

The questionnaire was self-administered. It is reproduced in Appendix A.

The questionnaires were serial numbered so that records could be kept for the route and day of the week on which the questionnaire was completed. This is a more accurate method than asking riders which route they are riding when completing the survey.

Analysis

Analysis consists primarily of cross tabulations and frequency distributions. Tables were prepared in SPSS, ver 16 and charts in Excel 2007.

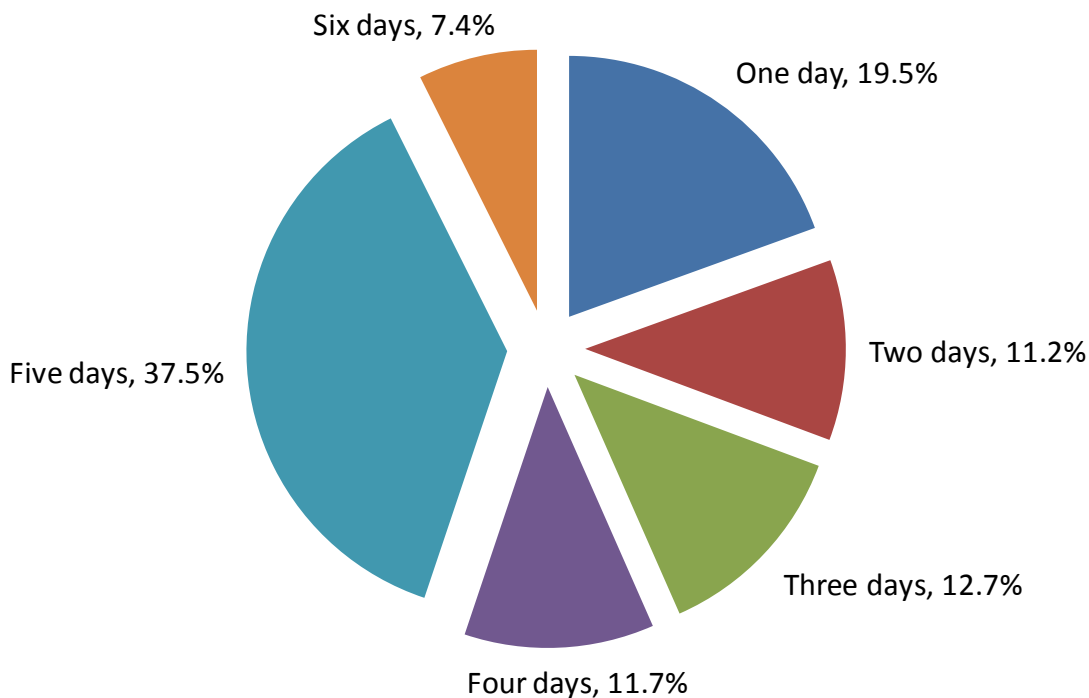
With a few exceptions, all percentages are rounded to the nearest whole number. In a few cases, when this could have caused important categories to round to zero, or when comparisons between charts would appear inconstant if tenths were not included, percentages are carried to tenths. Rounding causes some percentage columns to total 99% or 101%. This is not an error and should be ig

Rider Profile

Figure 1 Frequency of Using Triangle Transit

Q1 How many days in the past seven days have you ridden Triangle Transit?

(Source: Triangle Transit Onboard Survey, 2009)



Frequency of Using Triangle Transit

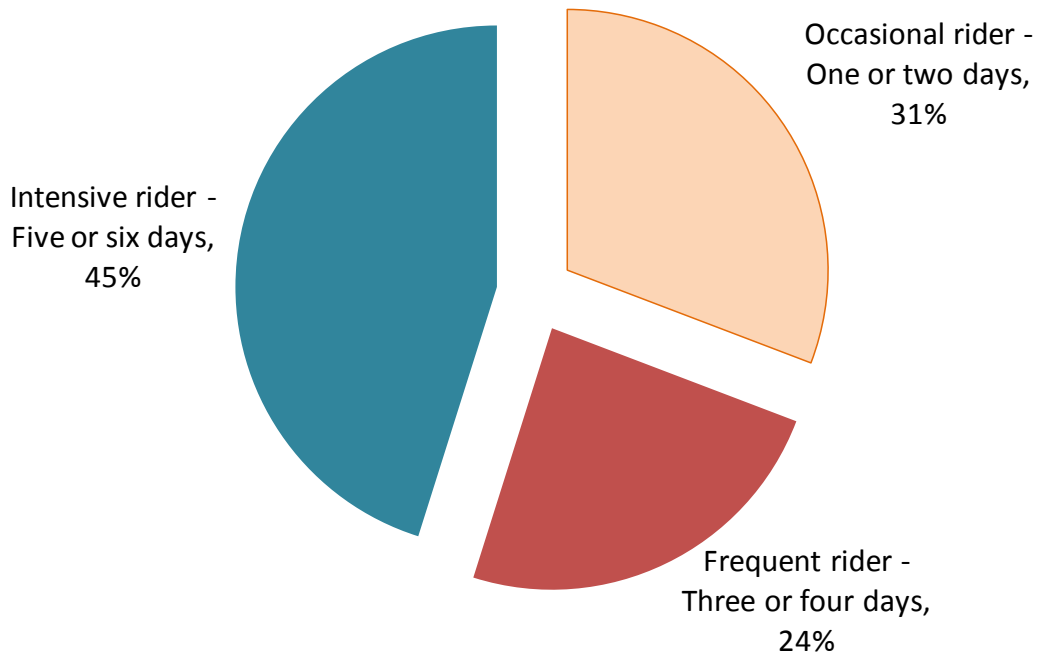
More Triangle Transit riders travel five days a week (38%) than follow any other pattern. Another 7% travel six days a week – i.e., every day on which service is offered. Somewhat fewer travel only one or two days a week (30.7%). The balance (24.3%) travel three or four days a week.

Thus we can define three groups, or segments, of the ridership market by the frequency with which they ride: Intensive users (five or six days), frequent (three or four days), and occasional (one or two days).

Figure 2 Compressed Measure of Frequency of Using Triangle Transit

Q1 How many days in the past seven days have you ridden Triangle Transit?

(Source: Triangle Transit Onboard Survey, 2009)



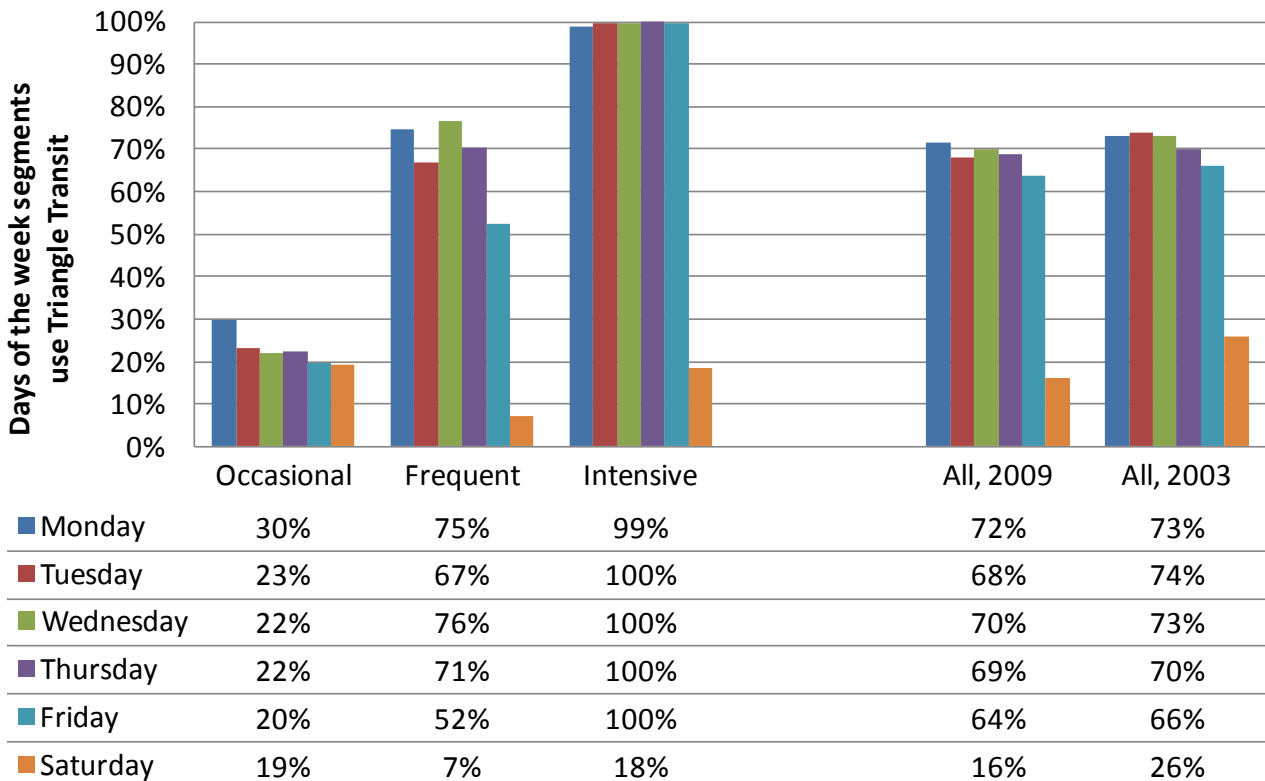
Rider segments

For purposes of further analysis the riders are grouped into three sets, or "segments," depending upon how frequently the riders use Triangle Transit. We refer to them as:

- "Occasional riders," who use Triangle Transit one or two days a week (31%)
- "Frequent riders," who use Triangle Transit three or four days a week (25%)
- "Intensive riders," who use Triangle Transit five or six days a week (45%)

Figure 3 Days of the Week Triangle Transit was used in the past week

Q1 During the past seven days, which days have you ridden Triangle Transit? (Source: Triangle Transit Onboard Surveys, 2003 & 2009)



Days of the Week Triangle Transit was used in the past week

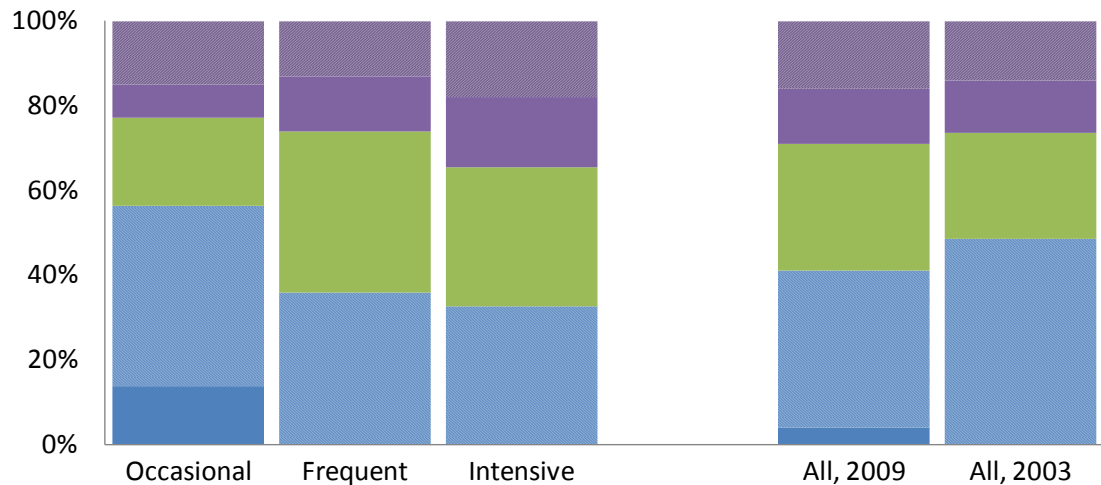
Between 2003 and 2009, ridership has been fairly consistent in terms of the days of the week on which Triangle Transit is used. The primary change has been the percent saying that they used it on a Saturday, which decreased by ten percentage points from 16% to 26%.

For some reason, occasional riders are more likely to use Triangle Transit on Monday than on other days. Frequent riders are unlikely (only 7%) to use Triangle Transit on Saturday and they are less likely to use it on Friday than any other day of the week. Intensive riders, virtually by definition, tend to use it every day of the week.

Figure 4 Length of Time Using Triangle Transit

Q2 How long have you been riding Triangle Transit?

(Source: Triangle Transit Onboard Surveys, 2003 & 2009)



More than 4 years	15%	13%	18%	16%	14%
3 - 4 years	8%	13%	17%	13%	12%
1 - 2 years	21%	38%	33%	30%	25%
Less than 1 year	43%	36%	33%	37%	48%
This is the first time	14%	0%	0%	4%	

Duration of ridership

Of all Triangle Transit riders, 37% said they had been using it for less than a year, and another 4% said that this was the first time using it, for a total of 41% beginning to use it only very recently¹. In 2003, the questionnaire did not allow for the rider to indicate that this was his or her first trip on Triangle Transit. However, 48% said that they had been using it for less than one year, slightly more than the total of 41% found in 2009. Given the relatively recent origins of Triangle Transit service in 2003, this change makes sense intuitively.

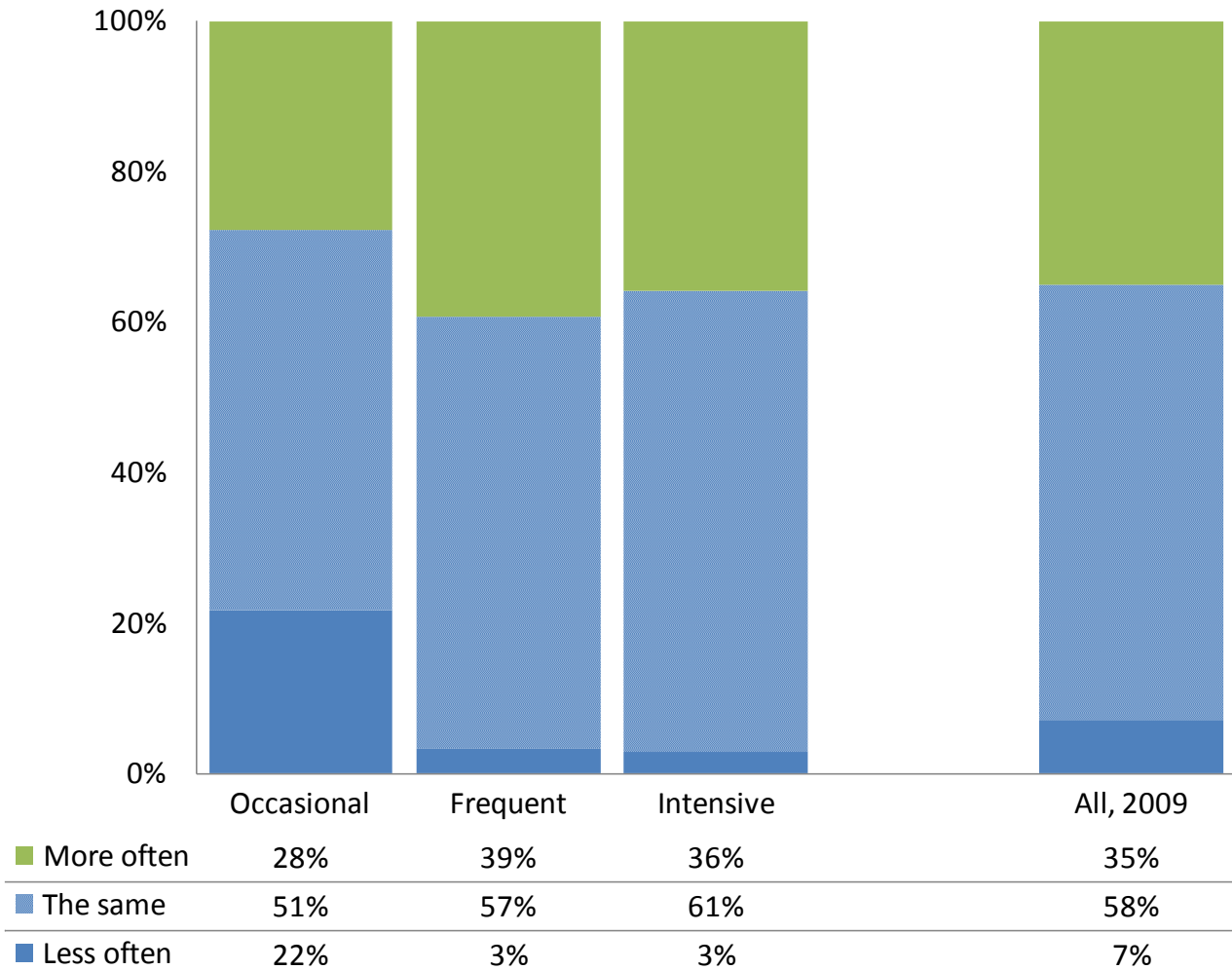
By definition, occasional riders are the riders most likely to indicate that they were on their first trip. They are also more likely than the other segment to have been riding for less than a year. Frequent and intensive riders are much more likely than occasional riders to have been riding for two years or more.

¹ In the self-administered survey onboard the buses, 41 of the 2,478 respondents said this was their first time using Triangle Transit, but then also said they had used it more than one day of the past seven days. On the survey form, the question preceding the question on recency of use referenced the frequency of use "during the past seven days." Thus, in this context, we assume that those 41 respondents meant that this *past week* was the *first week* during which they used Triangle Transit rather than the *first trip* they had made on it. Therefore, they were recoded as using it for less than one year.

Figure 5 Current Use of Triangle Transit versus One Year Ago

Q3 Compared to one year ago, do you now ride Triangle Transit . . .

(Source: Triangle Transit Onboard Survey, 2009)



Use of Triangle Transit in 2009 compared to one year prior

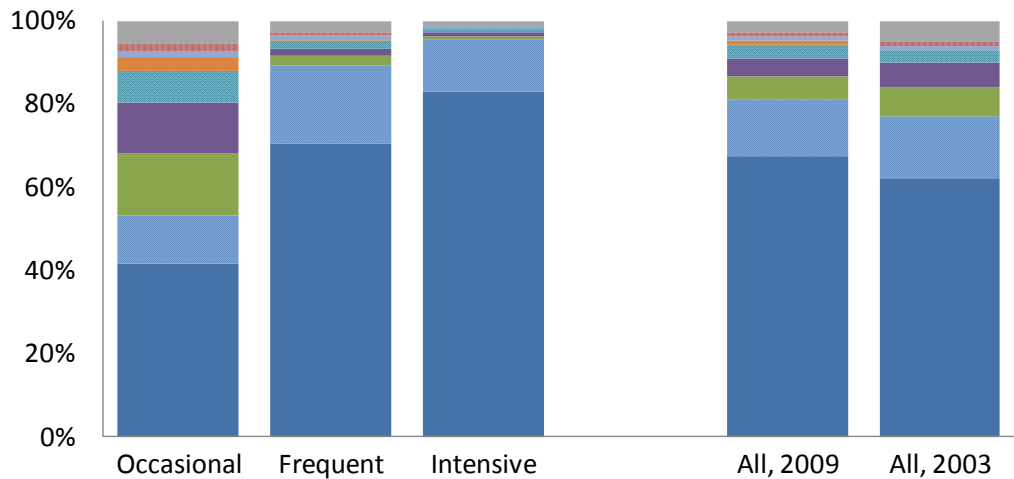
Riders were asked whether compared to one year ago they now ride Triangle Transit more often less often or about the same amount. Of occasional riders, 22% said they were riding it less often. This suggests that they had perhaps been in one of the other rider segments in the past because they rode more frequently. Many riders in each segment said that they now ride Triangle Transit more frequently than in the past year. For example, 36% of intensive riders, 39% of frequent riders, and 28% of occasional riders all said they use it more often.

Of the entire ridership measured in 2009, 58% said they use Triangle Transit about the same amount as they did a year previously, 35% said they use it more often, and only 7% said they use it less often.

Figure 6 Primary Trip Purpose

Q4 What is the *one main* purpose of this bus trip?

(Source: Triangle Transit Onboard Surveys, 2003 & 2009)



	Occasional	Frequent	Intensive	All, 2009	All, 2003
Other	5%	3%	1%	3%	5%
Social services	2%	1%	0%	1%	1%
Middle or high school	1%	1%	1%	1%	1%
Airport (na in 2003)	3%	0%	0%	1%	
Doctor / medical visit	7%	2%	1%	3%	3%
Social visit or recreation	12%	2%	1%	5%	6%
Shopping	15%	2%	1%	5%	7%
College / vocational school	12%	19%	13%	14%	15%
Work	42%	71%	83%	67%	63%

Primary purpose of the trip

Most Triangle Transit riders in 2009, as in 2003 (67% and 63%, respectively) said they were taking the bus to or from work on the day they were surveyed. Another 14% in 2009, and 15% in 2003, indicated that they were making a trip to college or vocational school. The balance were making various types of trips for social visits, shopping and other purposes. Airport service was not offered as a response option in the 2003 survey, but in 2009 it was, and 1% indicated that they were making a trip to the airport (The airport trip question specifically asked whether they were going to or from the airport "for a plane trip").

As one would expect, the frequent (71%) and intensive rider (83%) segments were much more likely than occasional riders to indicate they were going to or from work. The frequent riders were more likely than the other two segments to indicate they were making trips to college or vocational school (19%). Occasional riders were the only ones who reported making trips to the airport for the purpose of making an airplane trip.

Figure 7 Home to work trips, by Zip Code

Percent of all employed riders traveling between specified Zip Codes for work

Home Zip	Work Zip														Total
	27599	27514	27601	27707	27709	27695	27703	27705	27701	27516	27602	27610	27710	27513	
27713	4.7%	1.7%	0.2%	0.8%	0.5%	0.1%	0.1%	0.4%	0.1%	0.4%	0.1%	0.0%	0.0%	0.0%	9.1%
27707	1.4%	1.2%	0.1%	0.9%	0.4%	0.3%	0.4%	0.6%	0.2%	0.2%	0.1%	0.0%	0.4%	0.0%	6.2%
27511	0.3%	0.2%	0.4%	0.1%	0.6%	0.4%	0.1%	0.1%	0.3%	0.0%	0.4%	0.2%	0.0%	0.4%	3.5%
27514	0.6%	2.2%	0.1%	0.1%	0.1%	0.4%	0.2%	0.3%	0.2%	0.1%	0.0%	0.1%	0.2%	0.1%	4.7%
27606	0.4%	0.2%	0.1%	0.1%	0.2%	0.7%	0.2%	0.1%	0.0%	0.1%	0.1%	0.2%	0.2%	0.2%	2.8%
27705	0.9%	0.1%	0.3%	0.2%	0.1%	0.1%	0.2%	0.4%	0.1%	0.0%	0.1%	0.1%	0.1%	0.0%	2.7%
27610	0.1%	0.1%	0.1%	0.4%	0.2%	0.0%	0.0%	0.2%	0.2%	0.0%	0.0%	0.7%	0.0%	0.1%	2.1%
27516	0.1%	0.4%	0.2%	0.3%	0.0%	0.1%	0.1%	0.0%	0.1%	0.5%	0.3%	0.0%	0.1%	0.0%	2.2%
27701	0.4%	0.5%	0.1%	0.1%	0.1%	0.3%	0.1%	0.3%	0.6%	0.1%	0.1%	0.0%	0.0%	0.0%	2.7%
27278	1.1%	0.8%	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.1%	2.7%
27517	0.1%	0.4%	0.2%	0.1%	0.1%	0.1%	0.0%	0.1%	0.1%	0.3%	0.0%	0.1%	0.4%	0.0%	2.0%
27513	0.4%	0.1%	0.3%	0.0%	0.4%	0.1%	0.0%	0.1%	0.2%	0.1%	0.3%	0.0%	0.1%	0.4%	2.5%
27510	0.1%	0.2%	0.4%	0.1%	0.1%	0.3%	0.0%	0.1%	0.1%	0.2%	0.1%	0.0%	0.0%	0.0%	1.7%
27703	0.3%	0.0%	0.2%	0.4%	0.1%	0.1%	0.6%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	2.0%
27603	0.3%	0.1%	0.1%	0.1%	0.0%	0.0%	0.3%	0.1%	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	1.3%
27607	0.3%	0.1%	0.1%	0.1%	0.1%	0.0%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	0.1%	0.1%	1.4%
27704	0.2%	0.4%	0.1%	0.2%	0.0%	0.1%	0.1%	0.2%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	1.5%
Total	11.7%	8.7%	3.1%	4.0%	3.0%	3.2%	2.7%	3.2%	2.6%	2.4%	1.9%	1.5%	1.7%	1.4%	51.1%

Trips between home and work – limited Zip Codes

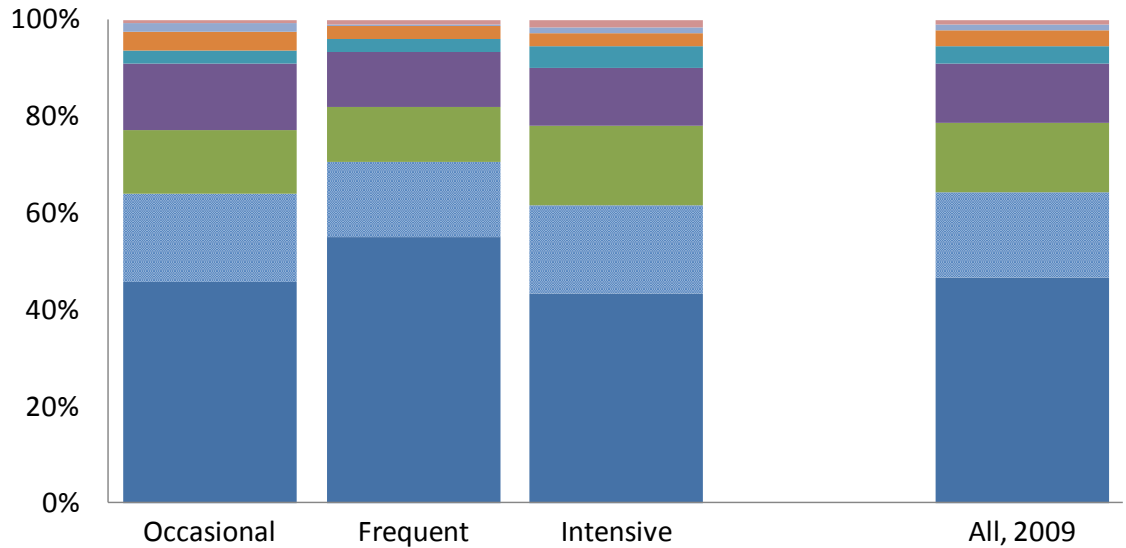
Riders were asked their residential and work Zip Codes. They provided 164 residential and 126 work Zips, far too many to include in a table relating the two. However, the pairing of 14 work zip codes and 17 residential zip codes accounts for 51.1% of all employed riders. The Zip data are complicated by the regional nature of the system, and by the fact that the ridership includes students and others from distant locations. Thus, the summary table is the only reasonable way to present the data here².

² The Zip Codes in the data set itself have been geocoded. Thus, Triangle Transit will be able to utilize these results at a more detailed level.

Figure 8 Bus Systems Used in Current Trip

Q5 Which bus systems do you use during this trip?

(Source: Triangle Transit Onboard Survey, 2009)



Bus System	Occasional	Frequent	Intensive	All, 2009
Greyhound / Trailways	1%	1%	2%	1%
Duke Transit	2%	0%	1%	1%
Wolfline	5%	3%	3%	4%
C-Tran	3%	3%	5%	4%
Chapel Hill Transit	16%	13%	14%	14%
DATA	15%	12%	19%	16%
CAT	21%	17%	21%	20%
Triangle Transit only	52%	61%	51%	53%

Use of other area bus systems

Almost half of all Triangle Transit riders (47%) indicated that during their current trip they were also using another bus system. Conversely, 53% indicated they were using Triangle Transit only. Of all riders, most were using CAT (20%), DATA (16%), or Chapel Hill Transit (14%). A small number were using other systems.

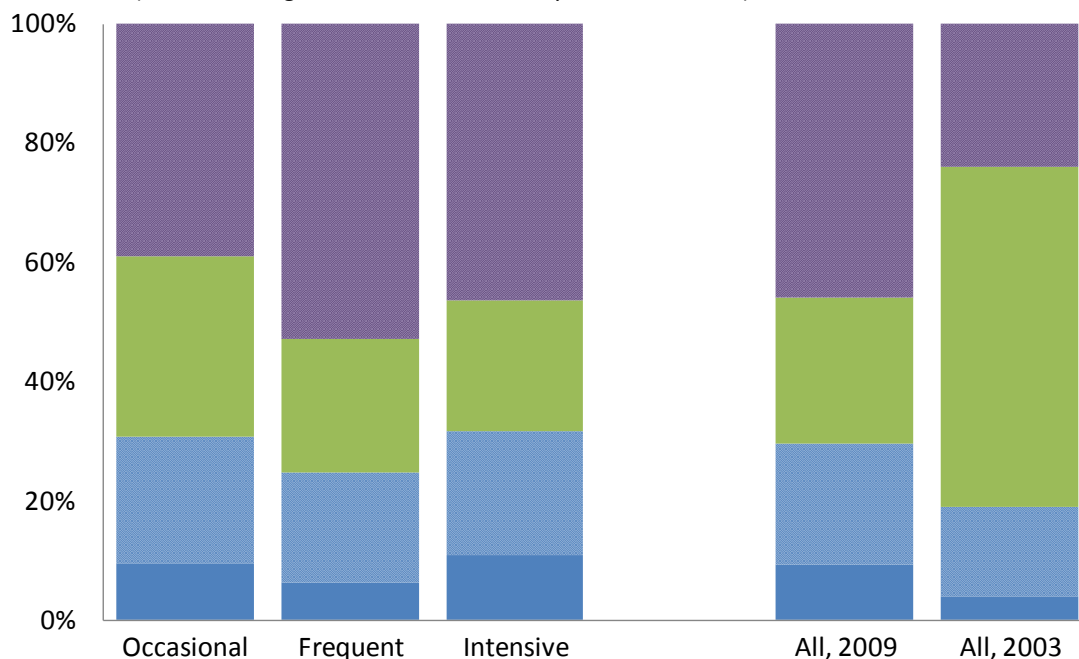
Frequent riders (61%) were more likely than others to say they used only Triangle Transit for their trip. This was an additional 10% above the 51% of intensive users, and 9% above the occasional users.

Frequent users often use transit to commute because it saves them money and avoids traffic in spite of the fact that they are more likely to have an alternative. (See Figure 18.) This means that their trips need to be simple and convenient or they will use their alternative. Transferring is obviously less convenient than not transferring. Of course, 100% of those who must change between systems are, by definition, transferring, while many of those using only one system do not transfer at all. Thus it makes sense that frequent rider would be less likely to change between systems, just as they are less likely to transfer at all (53% make no transfer at all compared to 46% of intensive and 39% of occasional Triangle Transit riders; see chart on following page).

Figure 9 Number of Bus Changes in Current Trip

Q6 In making this trip in one direction, how many times do you have to change buses?

(Source: Triangle Transit Onboard Surveys, 2003 and 2009)



■ No change of bus	39%	53%	46%	46%	24%
■ Once	30%	22%	22%	25%	57%
■ Twice	21%	19%	21%	20%	15%
■ Three or more times	9%	6%	11%	9%	4%

Transferring

Riders were asked the following question: "In making this trip in one direction, how many times do you have to change buses (including Triangle Transit and other systems in the region, and any change of bus you may have already made)?"

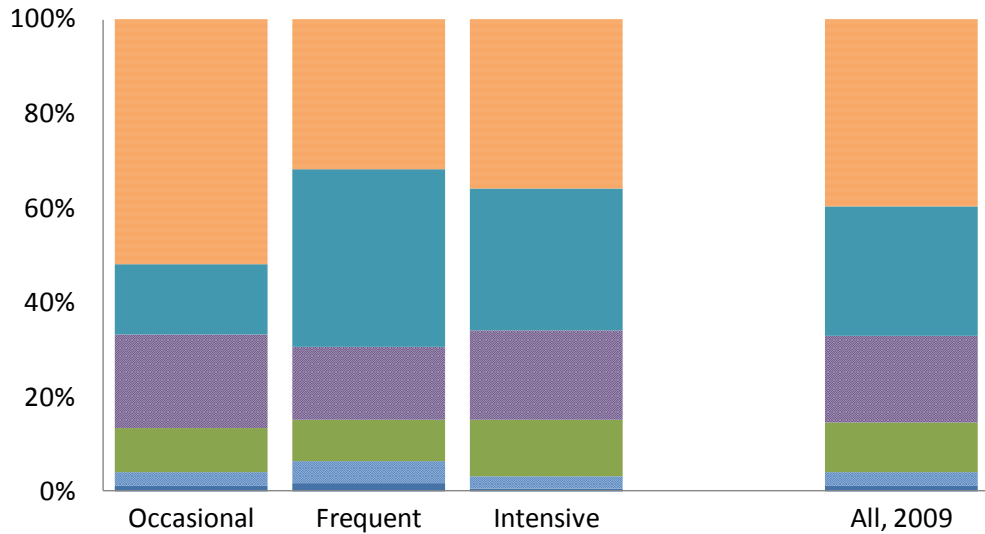
In 2003, only 24% indicated that they make no change of bus. In 2009, 46% indicated they made no change of bus. However, the wording in 2003 was significantly different, in that it did not include a reference to other systems in the region. Thus, the change may not be indicative of a real change in transferring.

With 46% indicating in 2009 that they make no transfer, this means that 54% do make a transfer. Comprising that 54%, 25% said they transfer only once, whereas another 20% transfer twice and 9% three or more times. Transfers of all types are less common among the frequent riders (47%), than among intensive riders (54%), or occasional riders (60%).

Figure 10 Mode to Bus Stop

Q8 How do you usually get from home to the nearest Triangle Transit bus stop?

(Source: Triangle Transit Onboard Surveys, 2003 & 2009)



Walk	52%	32%	36%	40%
Drive	15%	37%	30%	27%
Local bus other than Triangle Transit	20%	15%	19%	18%
Dropped off	9%	9%	12%	11%
Bike	3%	5%	3%	3%
Other	1%	2%	1%	1%

How riders get to the bus stop

As one would expect, riders most commonly walk to their bus stop, 40% in 2009. Many others, 27%, said they drive to a bus stop. Still others, 18%, indicated that they take a local bus other than Triangle Transit.

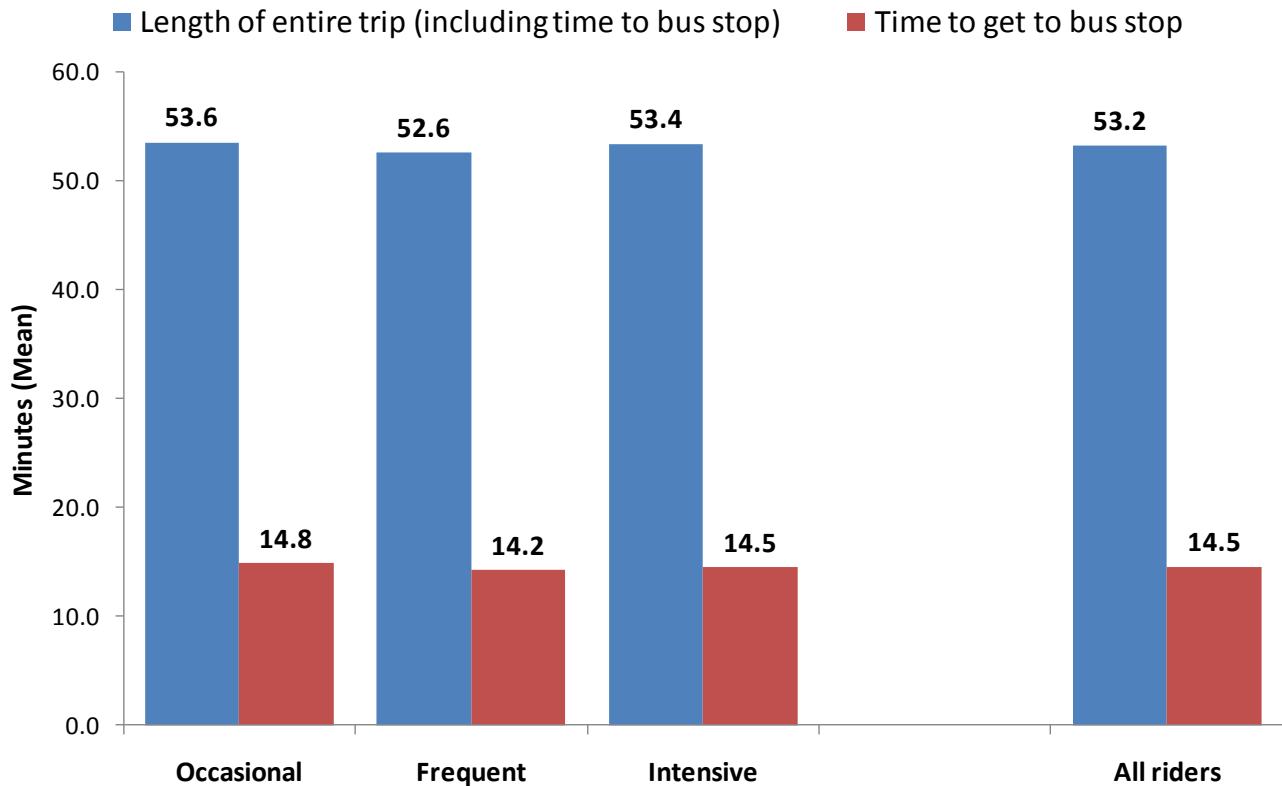
Occasional riders (52%) are much more likely than others to indicate they walked to their stop. Frequent riders (37%) and intensive riders (30%) are much more likely than occasional riders (15%) to drive to the bus stop.

In 2003, 53% indicated they walked to their stop and only 16% said they drove. Again on this question, the data are not entirely comparable between 2003 in 2009 because the category "dropped off," was included among the responses in 2009, but was not in 2003. However, it does appear that the category involving driving to the stop has increased.

Figure 11 Duration of Total Trip and Time to Bus Stop

Q9 How many minutes does this one-way trip usually take . . . ?
Q10 How many minutes does it usually take to get from home to the nearest Triangle Transit bus stop?

(Source: Triangle Transit Onboard Survey, 2009)



Duration of the total trip and time it takes to get to the bus stop

Riders were asked the following two questions:

- "Door to door, how many minutes does this one-way trip usually take from where you start to your final destination including the time to get to and from the bus stop?"
- "About how many minutes does it usually take you to get from home to the nearest Triangle Transit bus stop?"

The chart above shows the mean number of minutes given in response to each question.

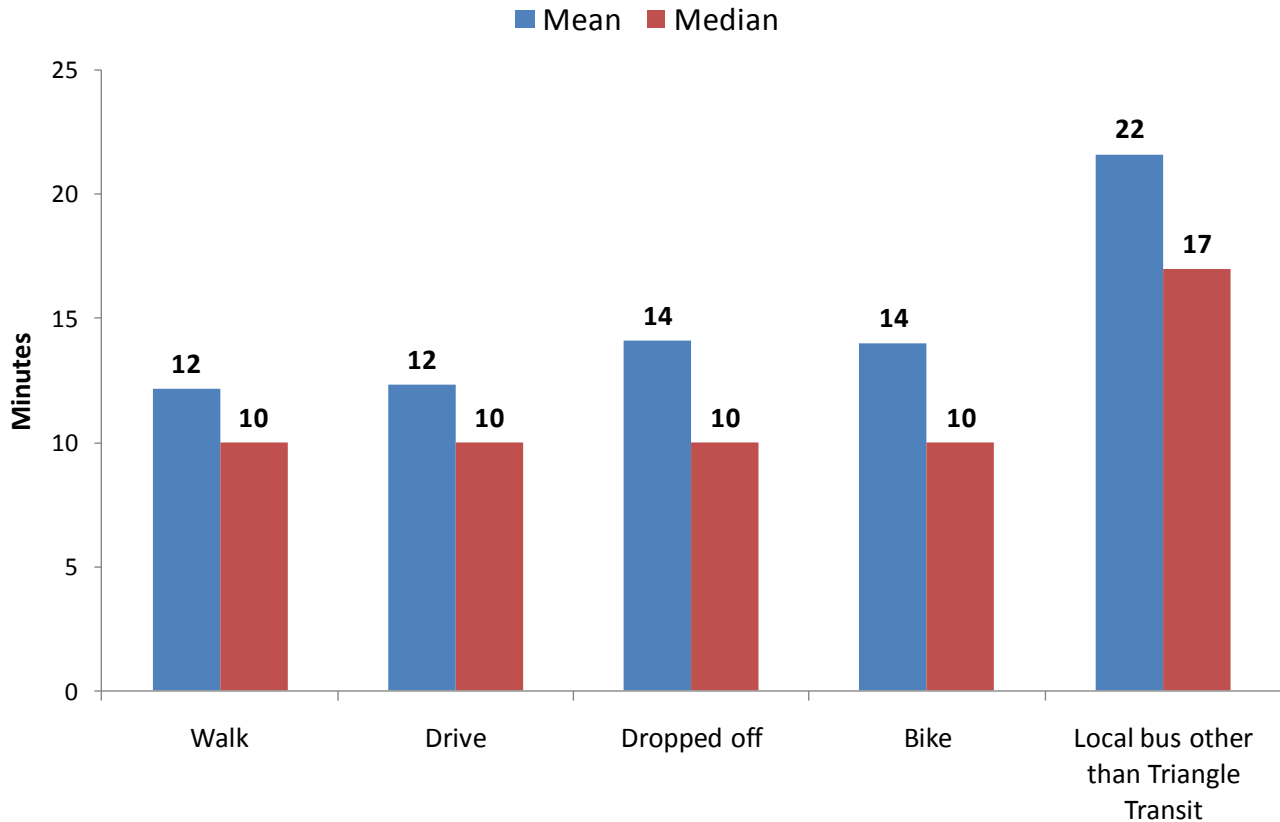
For all riders the total trip averages 53.2 minutes, while the time to get to the bus stop averages 14.5 minutes. Of course, these are estimates, not formal measurements.

The three market segments average about the same trip length. The range varies by less than one minute from 52.6 minutes for the frequent riders to 53.5 minutes for the occasional riders. All three segments also take about the same amount of time (ranging only from 14.2 to 14.8 minutes) to get to their bus stops.

Figure 12 Time to Bus Stop by Mode

Q10 How many minutes does it usually take to get from home to the nearest Triangle Transit bus stop?

(Source: Triangle Transit Onboard Survey, 2009)



Time to get to the bus stop, by mode used to get to the stop

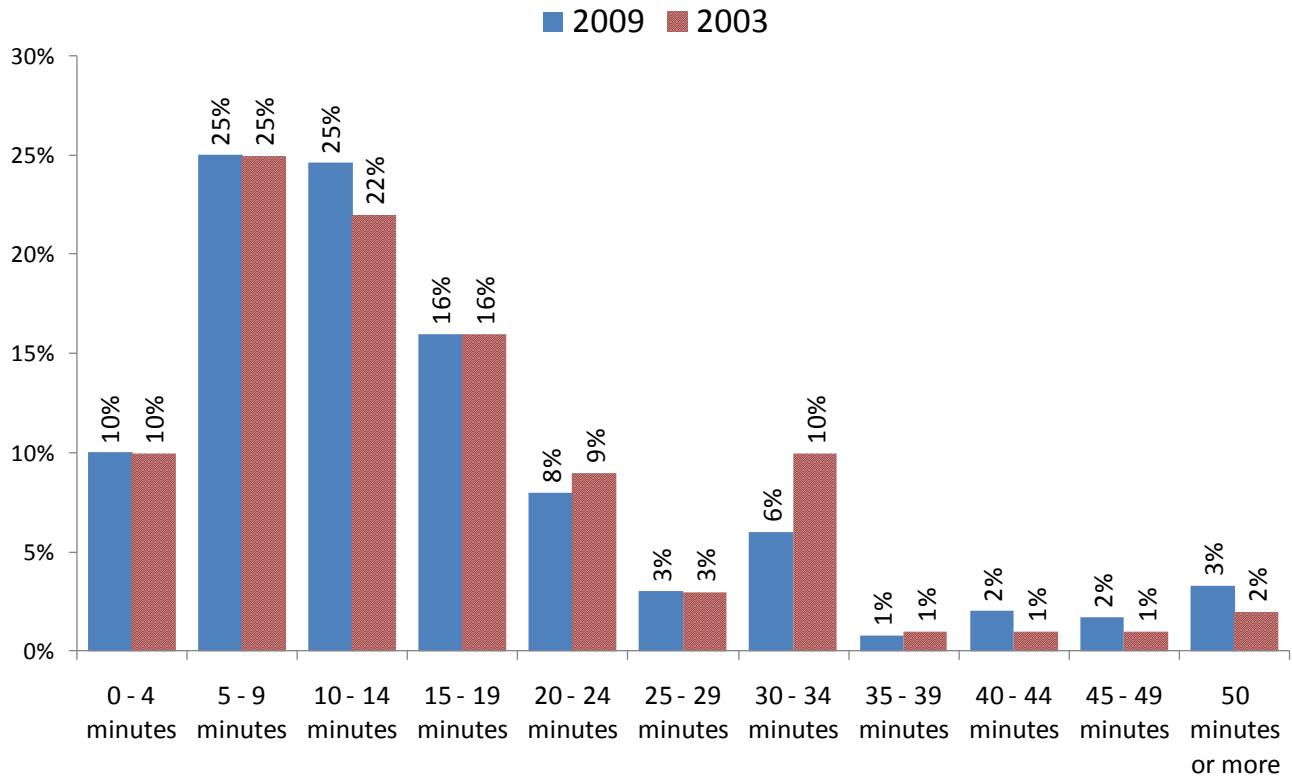
It is interesting to note that regardless of whether the respondent indicated he or she walks or drives, the mean time to get to the stop is 12 minutes and the median is 10 minutes. Similarly, the averages are the same for those who are dropped off or who bicycle, with 14 minutes as the mean and 10 minutes as the median.

The longest duration to get to the bus stop is, as one would expect, found among those taking a local bus other than Triangle Transit. That group averages 22 minutes to get to the bus stop and 17 minutes is the median.

Figure 13 Time to Bus Stop: 2003 versus 2009

Q10 How many minutes does it usually take to get from home to the nearest Triangle Transit bus stop?

(Source: Triangle Transit Onboard Surveys, 2003 & 2009)



Time to the bus stop: 2003 versus 2009

The distribution of minutes to the bus stops is similar in 2009 to what it was in 2003. The primary differences are at the very long trips to get to the bus. There apparently was a diminution of those making trips up about 30 to 34 minutes and a slight increase in those making longer trips to get to the bus. This probably reflects the increased number of people driving to their stop.

Figure 14 Time on the bus

Travel Time Using Triangle Transit				
Frequency of Riding Triangle Transit Buses		[A] Q9 How many <u>minutes</u> does this one-way trip usually take from where you start to your final destination including the time to get to and from the bus stop?	[B] Q10 About how many <u>minutes</u> does it usually take to get from home to the nearest Triangle Transit bus stop?	[A - B] Time spent on the bus trip after boarding, and including time to destination from the stop (Q9-Q10, computed at individual level)
Occasional (1 or 2 days)	mean	54	15	37
	median	45	10	35
	std dev	32	14	33
Frequent (3 or 4 days)	mean	53	14	38
	median	50	10	40
	std dev	26	13	26
Intensive (5 or 6 days)	mean	53	15	38
	median	50	10	37
	std dev	28	14	29
All riders	mean	53	15	38
	median	50	10	37
	std dev	29	14	29

How much time is spent on the bus?

In the table above, we look in more detail at the time statistics. The table shows for each market segment, and for all respondents, the mean, median, and standard deviation for total trip and time to the bus stop. The table also shows the approximate amount of time spent on the bus trip after boarding. (This is computed at an individual level and not from the cells in the table.) The time on the bus trip after boarding is derived by subtracting the minutes it takes for the total trip minus the time it takes to get to the bus stop.

For ease of reading the table, all numbers are rounded.

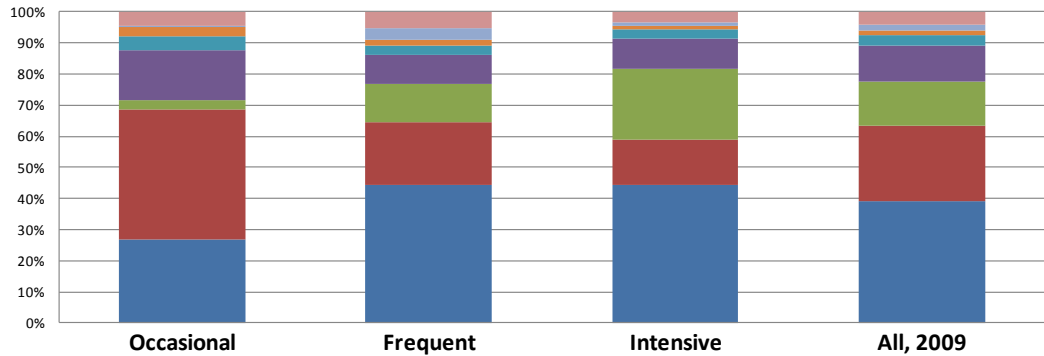
Notice that once a rider is on board, the remainder of the trip averages between 35 and 40 minutes, including the time to get to the final destination from the final bus stop. For both frequent and intensive riders, the total trip takes an average of 53 minutes. Half of each of these groups spend longer than 50 minutes and half spend fewer than 50 minutes (i.e. this is the median). The same holds true for all riders.

The standard deviation provides a shorthand way to understand the range within which most trip lengths fall. Just over two-thirds (68%) of riders fall within plus or minus one standard deviation of the mean. Thus, for example, for all riders roughly 2/3 take between one minute and 29 minutes to get to get to their bus stops (i.e., 15-14, and 15+14). Similarly roughly 2/3 of the riders spend between 24 minutes and 82 minutes on their total trips.

Figure 15 Fare Media

Fare media used

(Source: Triangle Transit Onboard Survey, 2009)



Other	5%	5%	4%	4%
\$25 value card	0%	4%	1%	2%
Senior/disabled cash fare	3%	2%	1%	2%
10 ride pass	4%	3%	3%	3%
Day pass	16%	9%	10%	12%
30 day pass	3%	12%	23%	14%
Cash fare	42%	20%	15%	24%
GoPass	27%	44%	44%	39%

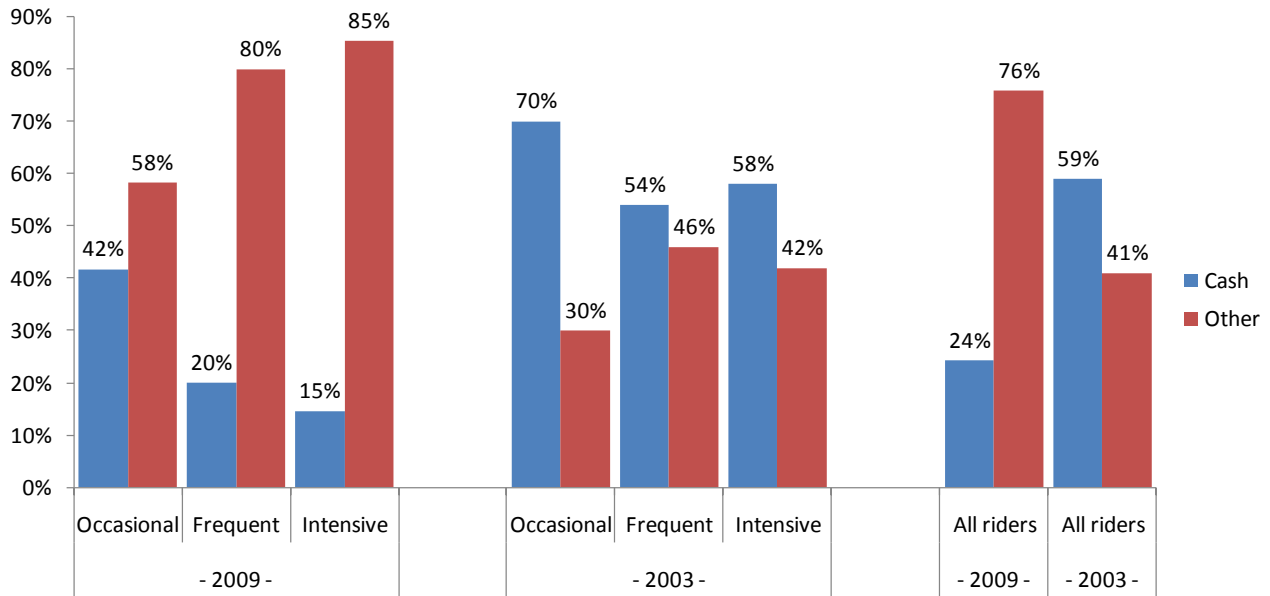
Fare media used

Most riders use various fare media other than cash. Only 26% indicated they use cash, including those who pay full cash fare and those who pay a senior or disabled cash fare. The most frequently used pass is the so-called "GoPass" which is used by 39% of the riders. The 30 day pass (14%) and the single day pass (12%) are also fairly widely used.

Occasional riders are more likely (42%) than frequent (20%) or intensive riders (15%) to pay a full cash fare. Intensive riders, conversely, are more likely (23%) than the other segments to use a 30 day pass.

Figure 16 Use of cash or other fare media, 2003 and 2009

Cash or other fare medium - 2003 and 2009
 (Sources: Triangle Transit Onboard Surveys, 2003 and 2009)



Comparing the use of cash and other fare media between 2003 and 2009

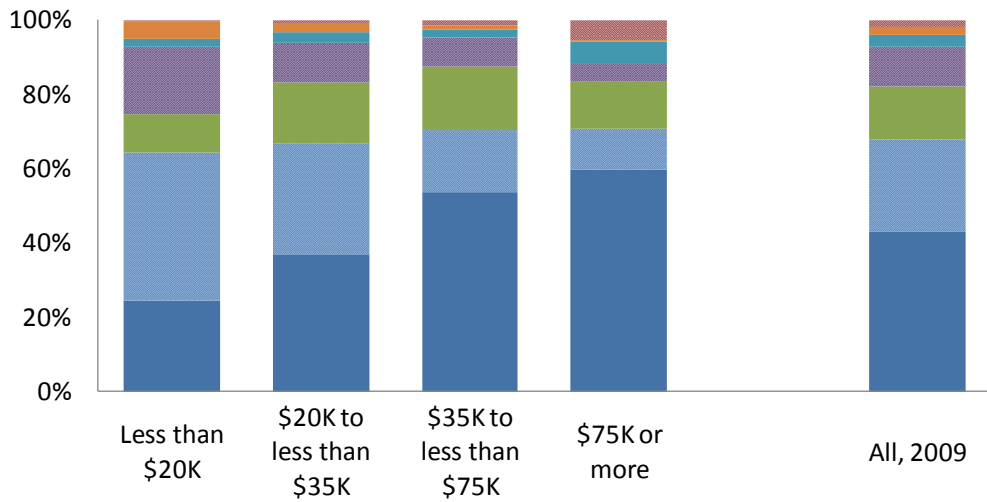
Although the fare categories were different in 2003 than they were in 2009, we can compare the percent using cash versus the percent using other fares, most of which are discounted. In 2003, 59% of those surveyed said they paid their fares in cash. By 2009, that had diminished to only 24%. This represents a major success in that the handling of cash is expensive and not conducive to rider retention.

In both 2003 and 2009 it was the occasional riders who were most likely to use cash. However even they diminished their use of cash from 70% of occasional riders to only 42% of occasional riders by 2009. Among intensive riders in 2003, 58% indicated they used cash, but that had dramatically diminished to only 15% by 2009.

Figure 17 Method of fare payment, by income

Q11 How did you pay the fare on the first Triangle Transit bus you boarded today?

(Source: Triangle Transit Onboard Survey, 2009)



■ \$25 value card	0%	1%	2%	5%	2%
■ Senior/disabled cash fare	4%	3%	1%	0%	2%
■ 10 ride pass	2%	3%	2%	6%	3%
■ Day pass	18%	10%	7%	4%	10%
■ 30 day pass	10%	15%	17%	13%	14%
■ Cash fare	38%	29%	16%	11%	24%
■ GoPass	23%	35%	52%	57%	41%

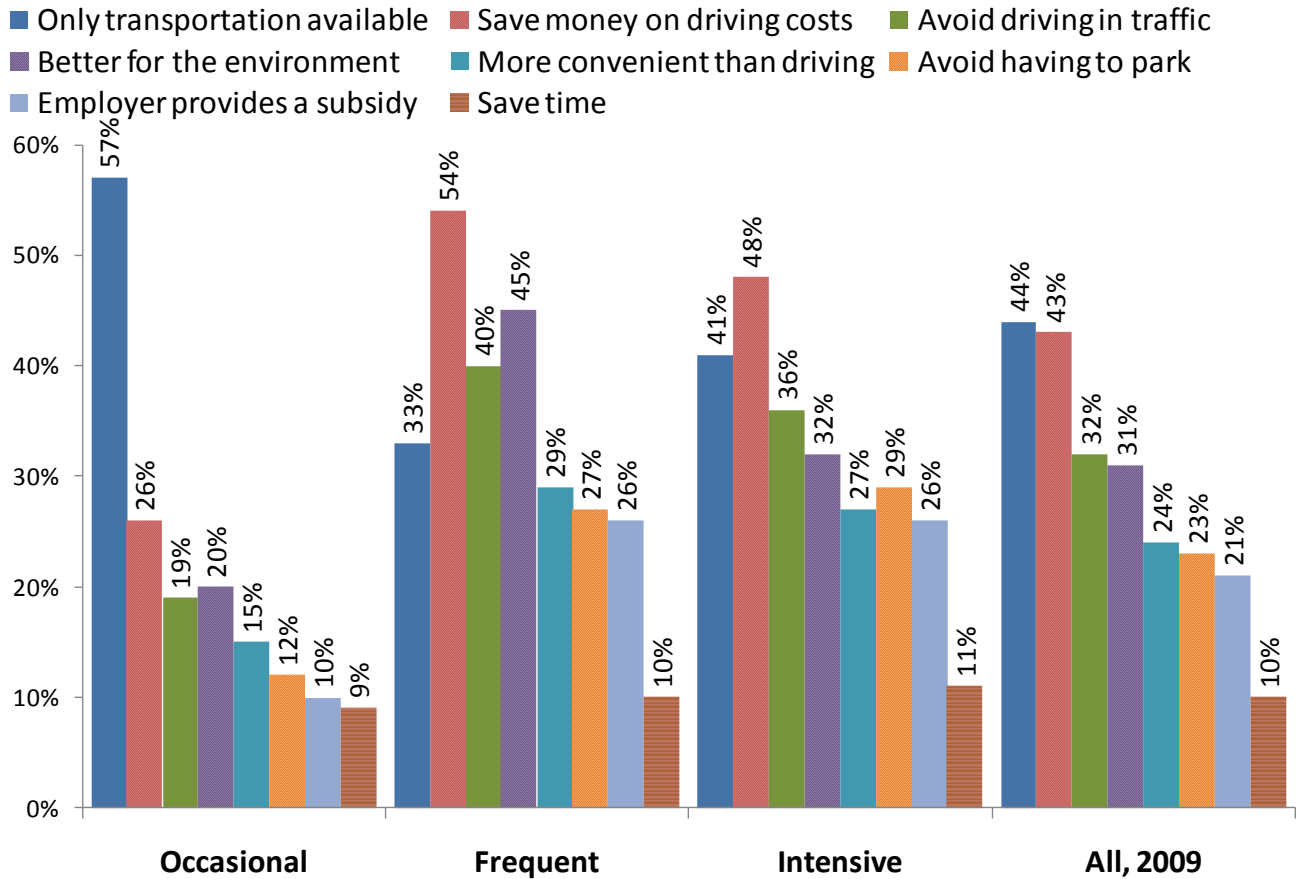
Income level and fare media used

Nationally, it is usually the case that those with the lowest incomes are the most likely to use a non-discounted cash fare. There are various reasons for this. One reason is that use of longer-term pass media such as a 30 day pass, for example, requires a significant outlay of cash which may not be available to a lower income household. In addition, many persons with lower income cannot enjoy steady work, and to purchase a pass in advance places resources at risk. Consequently, it may be a sensible decision to forgo the discount in order to avoid risk.

Figure 18 Reasons to Ride the Bus

Q29 Why did you choose to ride the bus today?

(Source: Triangle Transit Onboard Survey, 2009)



Reasons to ride the bus

For all riders, the top two reasons for using Triangle Transit are that it is the only transportation available to them (44%) and/or to save money on driving costs (43%). Another strong financial incentive for 21% of riders is that the employer provides a subsidy.

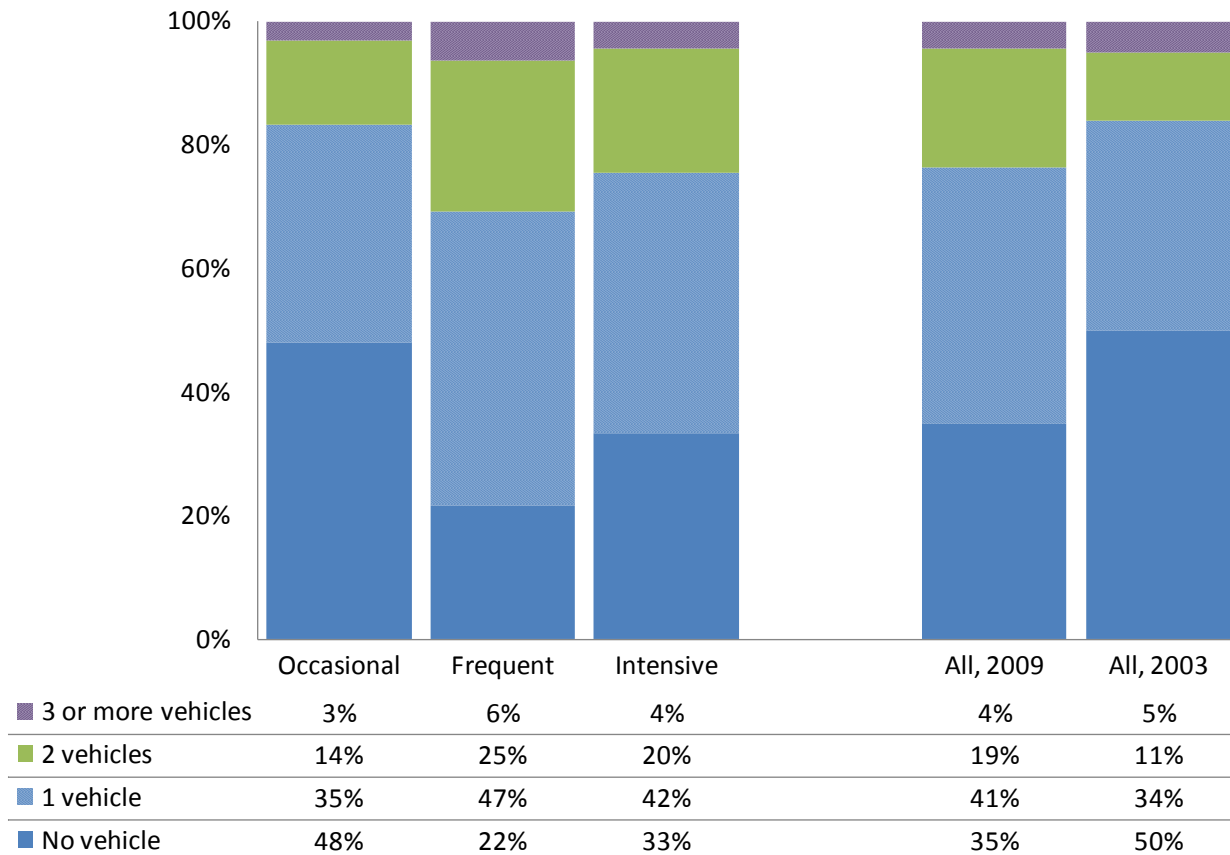
Less concrete motivations for roughly one-third of the riders include avoiding having to drive in traffic (32%) and having a sense that using public transportation is better for the environment (31%). Similarly some riders (24%) consider using transit more convenient than driving, while 23% use it to avoid parking, and 10% say that it saves them time.

For the frequent riders, saving money is the most commonly cited reason for using transit (54%), and more than one-fourth of the frequent riders (26%) say that their employer subsidizes their transit cost. For intensive riders, saving money and having their fares subsidized are important to 48% and 26% respectively. For most occasional riders, however, the dominant reason (57%) is that they lack an alternative.

Figure 19 Modal Choice

Q38 How many cars or other motor vehicles are available for you to use?

(Source: Triangle Transit Onboard Surveys, 2003 & 2009)



Modal choice

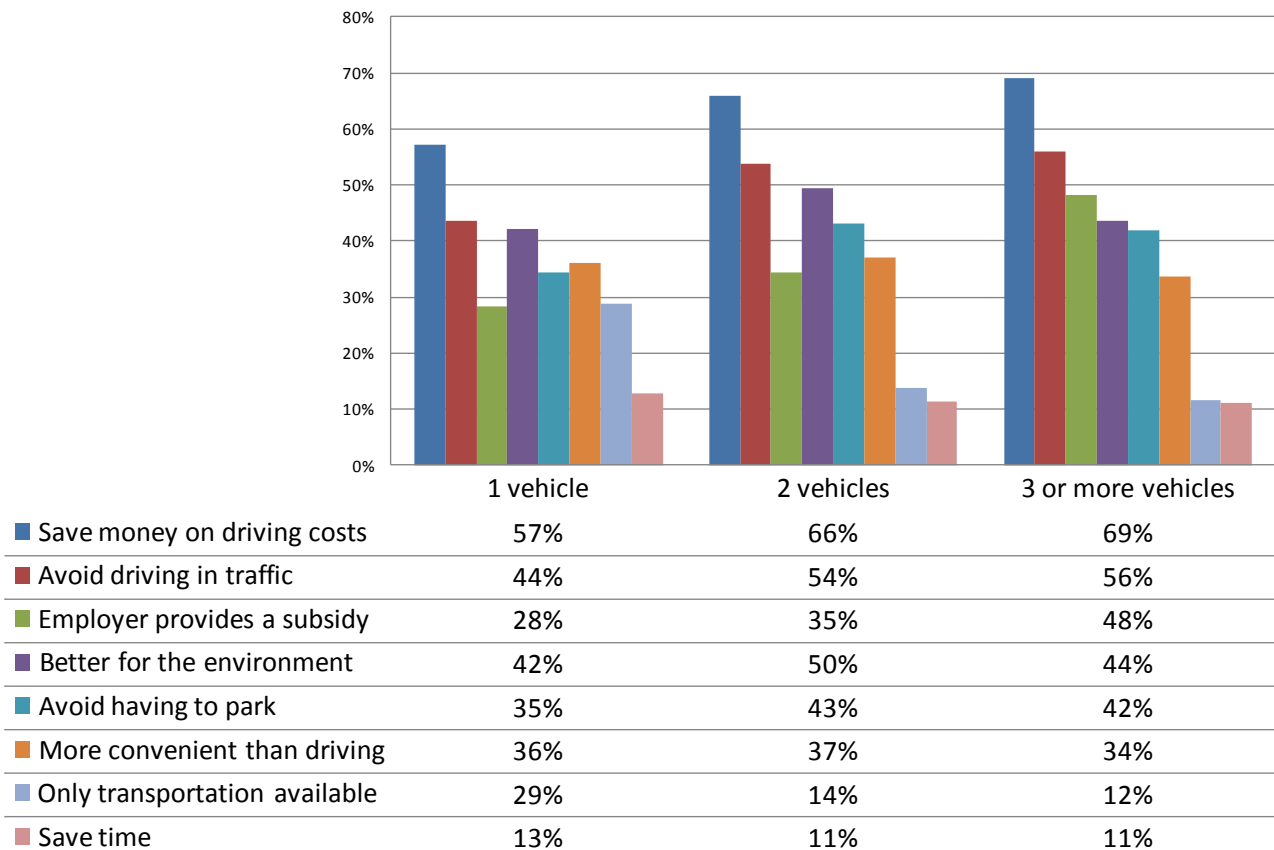
For many people, a primary reason to use public transportation is a lack of an alternative. In 2003, 50% of the riders indicated they had no vehicle available. With increasing numbers of people using Triangle Transit for work trips, the prosperity of the riders as a whole appears to have increased, and in 2009 only 35% indicated they had no vehicle available. This is a clear indication of a maturing system which is attracting regular commuting users.

The rider segment most likely to have modal choice is the frequent riders among whom 78% have at least one vehicle available to them, and only 22% say they lack a vehicle. Generally, we find that it is the most intensive users of transit who are the most transit dependent. In this case, however it is the occasional riders who are most likely (48%) to lack a vehicle compared to 33% of the intensive riders.

Figure 20 Reason to Ride Bus, by Vehicle Availability

Reasons for those with vehicles available to use Triangle Transit

(Source: Triangle Transit Onboard Survey, 2009)



Reasons to use transit cited by those who have vehicles available

For those who lack access to a vehicle the motivation to use transit appears self-evident. While arguably some of those without a vehicle use transit for ideological reasons, the dominant reason is a lack of income. For those with vehicles, the dominant motivation, regardless of the number of vehicles they have available, is to save money on driving costs. For example, of those with three or more vehicles available 69% said that saving money was their motive.

The second most frequently cited reason to use transit is to avoid driving in traffic. This was cited by 44% of those with one vehicle, 54% of those with two, and 56% of those with three vehicles.

Perhaps the most interesting statistic in this chart is the relationship between the number of vehicles and the percent citing an employer subsidy as a motive. Of those with one vehicle 28% said they use transit for this reason, while 35% of the two vehicles cite this as a reason, and 48% of those with three or more vehicles cite this as the reason.

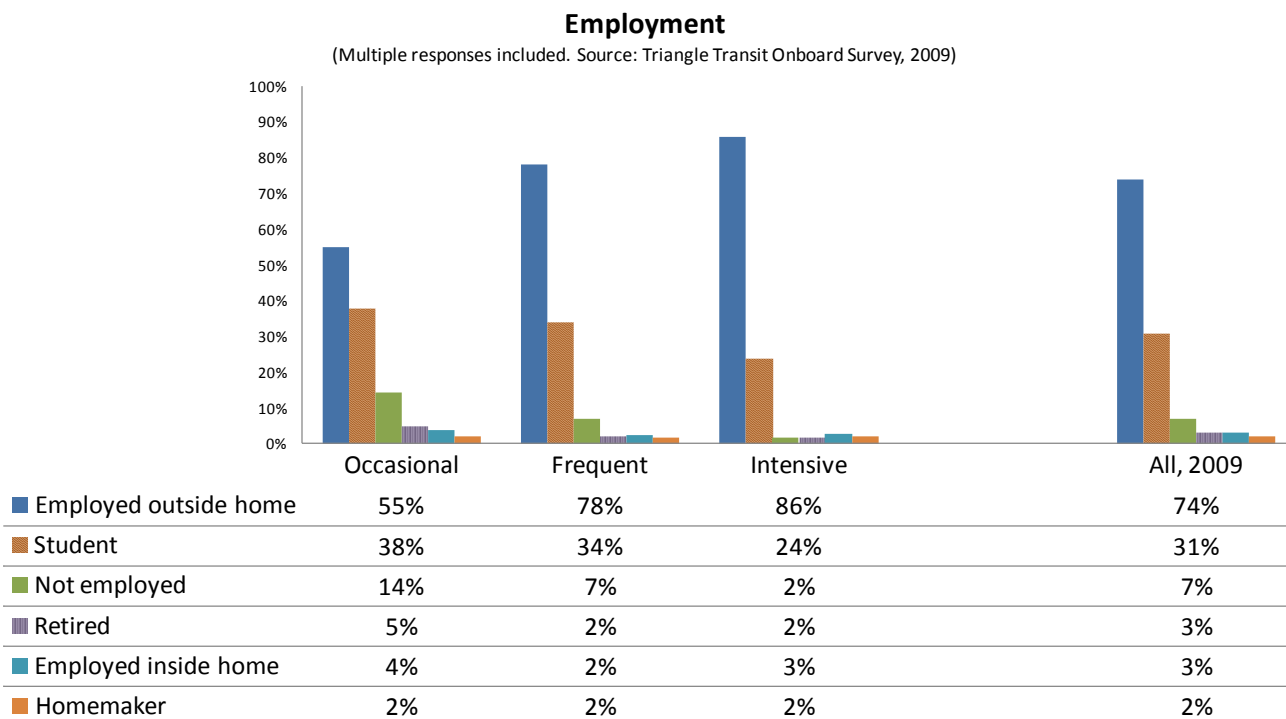
In some cases, regardless of the fact that a vehicle is normally available for the rider to use, it apparently was not available at the time of the trip because 29% of those who report having one vehicle available to them indicated that Triangle Transit was the only transportation available to them.

Similarly 14% of those with two vehicles, and 12% of those with three or more vehicles cited the same reason.

Avoiding having to park and the perception that using transit is more convenient than driving were also cited as reasons by substantial numbers of riders. Saving time, however, was cited by only a few. Typically we find that riders perceive the use of transit as involving a trade-off between time and money. They expect to spend some more time using transit but are willing to do so as long as it saves money. Typically, our research shows that transit trips are more attractive to discretionary riders and potential new riders if they take less than twice as long as a similar trip by automobile.

Demographics

Figure 21 Employment by segment



Riders' employment

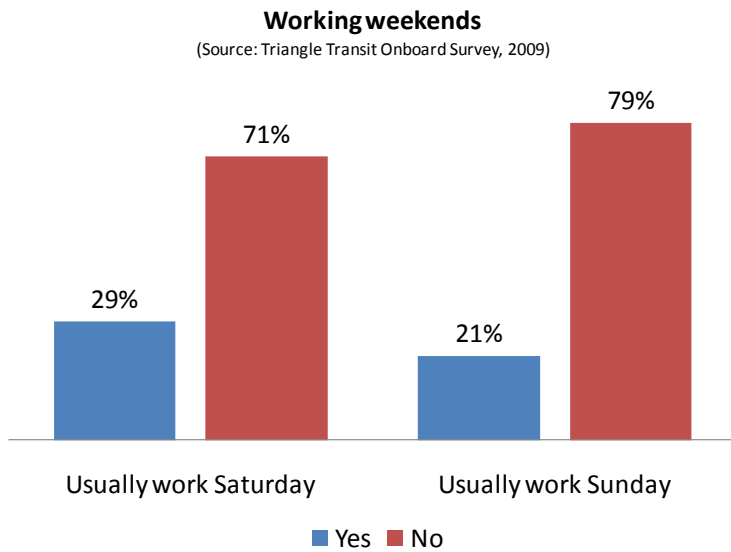
Of all Triangle Transit riders, 74% are employed outside the home and 3% are employed at home. Most of the others are students (31%). Some are both students and employed (respondents can be included in more than one category).

Employment outside the home is especially pronounced among the intensive and frequent users (86% and 78% respectively) and is less pronounced among occasional riders (55%). On the other hand, 38% of occasional riders are students compared to only 24% of intensive riders.

Of occasional riders, 14% indicated they are not employed, while this is true of only 7% of frequent and 2% of intensive riders. Relatively few riders are retired -- only 3% of all riders -- but they are more prevalent among occasional riders (5%) than the other rider segments.

The results of the employment questions from the 2009 and 2003 surveys are not entirely comparable because in 2003 the question was intended to have a single response, while the question in 2009 allowed multiple responses. (The reader may notice that for all of 2009, the employment categories sum to 116% because some people, mostly students, fall into two categories such as employed outside the home and student.) In 2003, 60% of respondents reported being employed and 26% reported being students, with the balance falling into the other categories. It would appear, then, that employment had increased from 60% to 74% among riders between 2003 and 2009. However, the increase may not be as great as that. In 2003, 21% of those who identified themselves as students said they were making trips to work, an indication they were employed. Yet when asked about employment, they identified themselves as being students, not employed persons, thus in that sense understating the level of employment. Adjusting the 2003 figure for employed students, it appears that employment then was 65% and that the real change in employment, while very substantial, is probably not 14% but 9%.

Figure 22 Working during off-peak periods



Commuting during the off-peak

The ability to get to and from work during off-peak periods influences rider retention. For this reason, those who were employed were asked whether they had to work on Saturdays, Sundays, and on how many legal holidays they had to work. The reason for this was to determine whether there are off-peak transportation needs for work purposes among Triangle Transit riders.

Of all employed riders, 29% said they usually work Saturdays, and 21% Sundays. Of all employed riders, 48% indicated they did not work on holidays, but 52% work on at least one or two holidays. A significant number, 18% said they must work from 6 to 10 holidays.

Number of Legal Holidays Worked

(Source: Triangle Transit Onboard Survey, 2009)

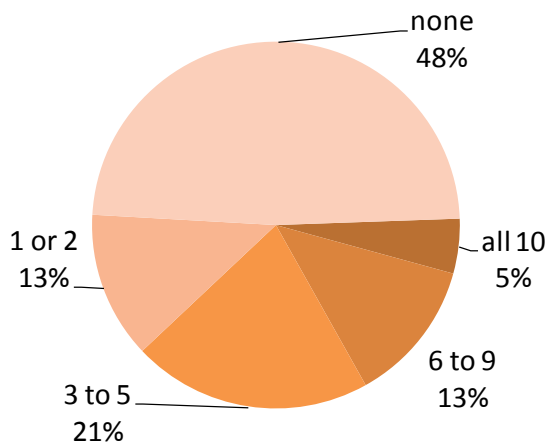
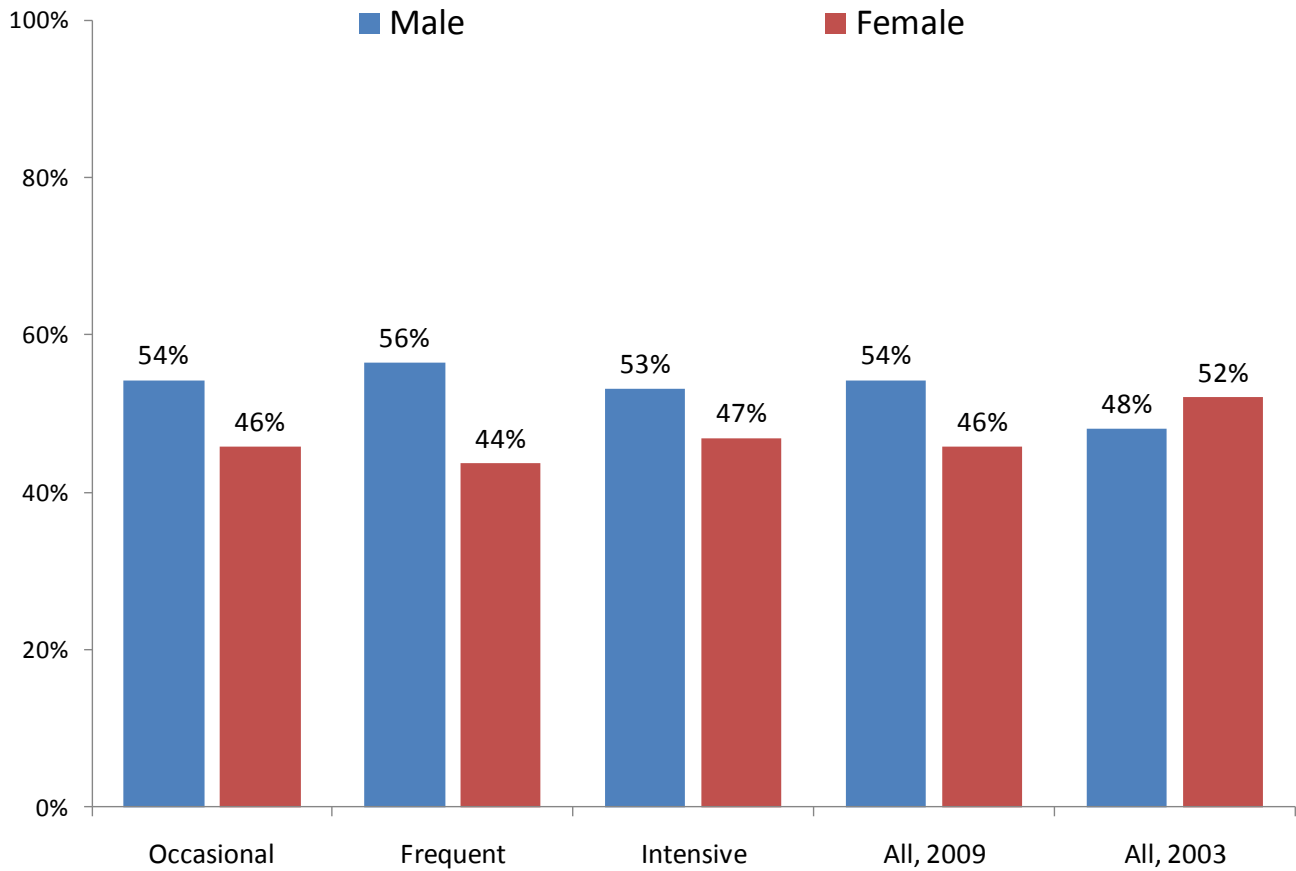


Figure 23 Rider Segment by Gender

Gender

(Source: Triangle Transit Onboard Survey, 2009)



Gender of the riders

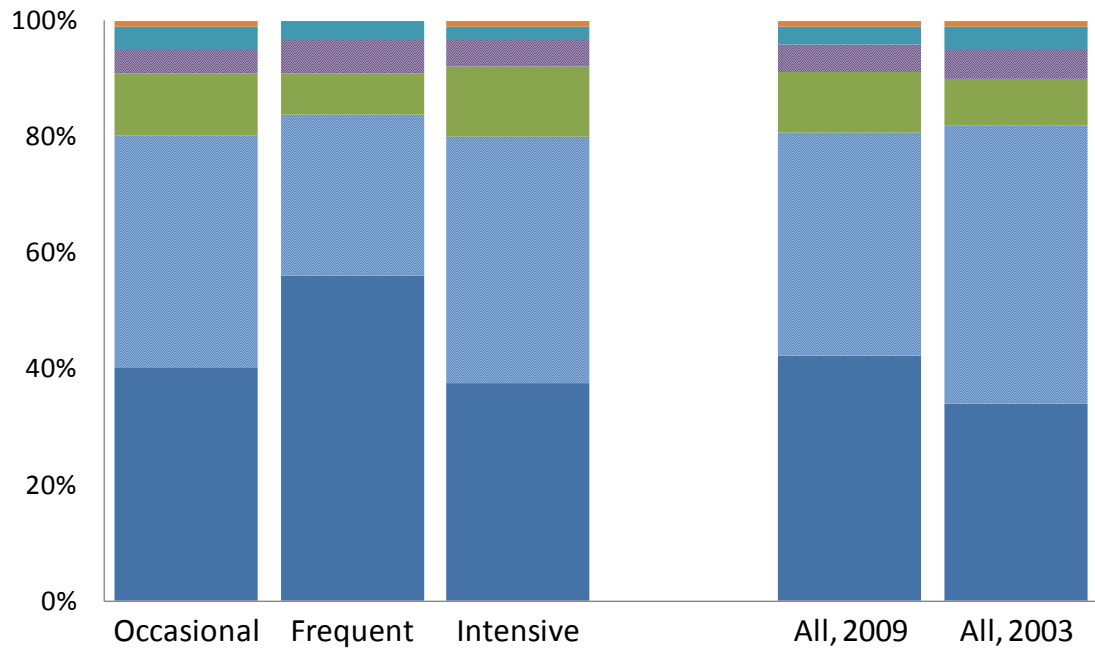
In 2003 52% of Triangle Transit riders were women and 48% for men. In 2009 that ratio is approximately reversed, with 46% women, and 54% men. This too is a reflection of the changing demographics of the ridership.

The gender balance is approximately the same across the three rider segments.

Figure 24 Ethnicity

Ethnicity

(Source: Triangle Transit Onboard Surveys, 2003 & 2009)



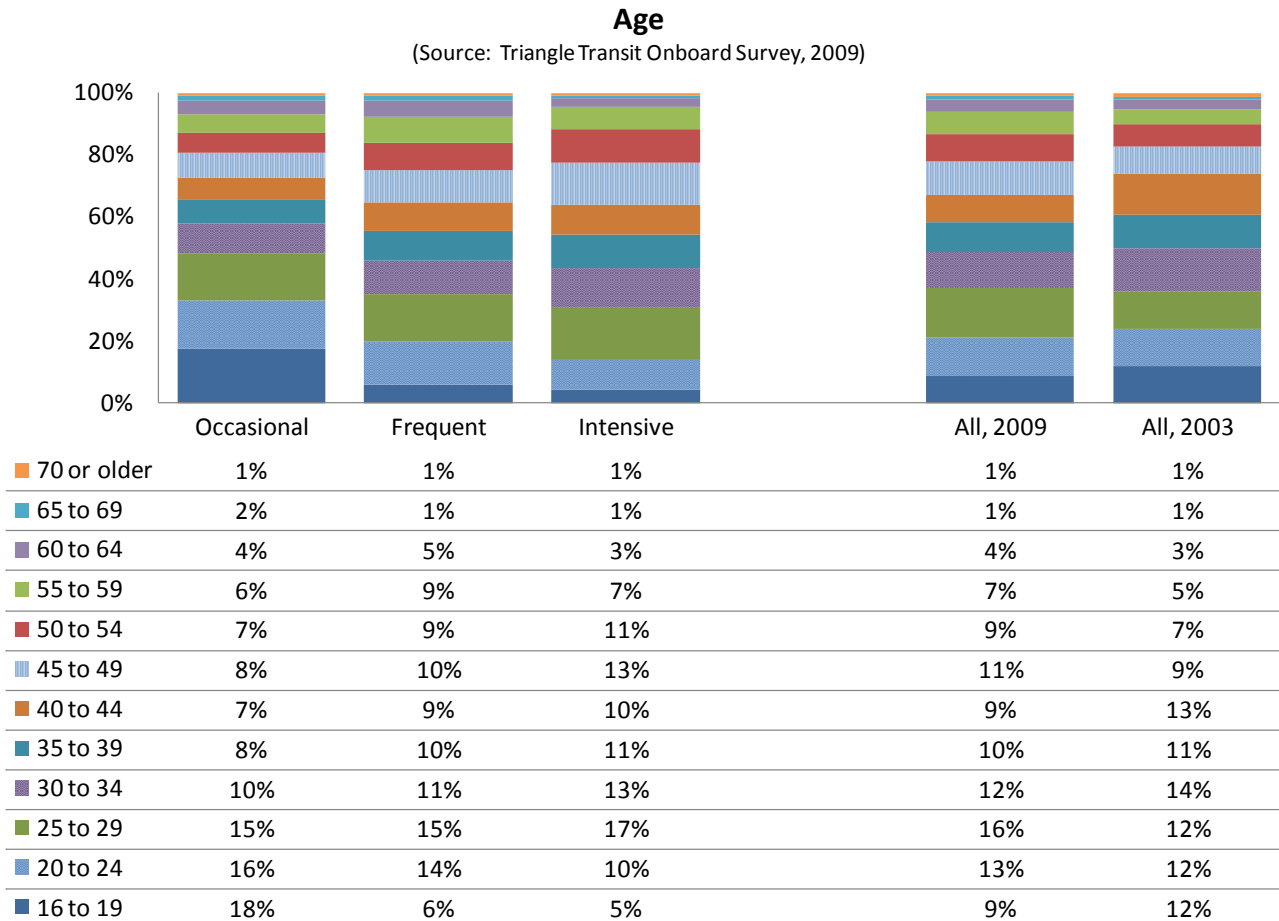
■ Native American	1%	0%	1%	1%	1%
■ Other	4%	3%	2%	3%	4%
■ Hispanic	4%	6%	5%	5%	5%
■ Asian	11%	7%	12%	10%	8%
■ African-American	40%	28%	43%	39%	48%
■ White	40%	56%	38%	43%	34%

Ethnicity

Perhaps the most striking change in the demographics of the ridership between 2003 and 2009 is the change in ethnicity. In 2003 34% of the riders identified themselves as white and 48% as African-American. In 2009 that ratio is almost reversed, with 43% identifying themselves as white and 39% as African-American. Other ethnic groups changed very little, although there may have been an increase of 2% among Asians.

The distribution of ethnicity differs between the frequent riders and the other two segments. While of the frequent riders, only 28% identified themselves as African-American, among the occasional riders and intensive riders 40% and 43%, respectively, identified themselves as African-American.

Figure 25 Age in sets of five years



Age of riders

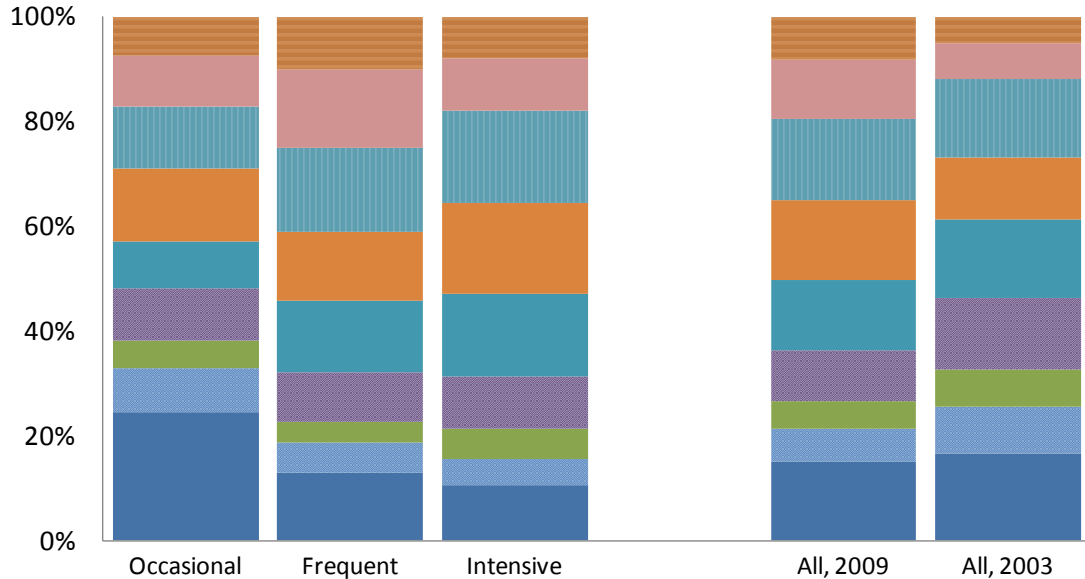
The largest proportion of riders are under 40 years of age. In 2003, 61% were 39 years or younger, and in 2009 60% fall into that same age group. At the older end of the age spectrum, 60 and older, in 2003 only 5% and in 2009 only 6% were in that older group.

Within the rider segments, intensive riders tend to be older than frequent riders, who in turn tend to be older than occasional riders. For example, 18% of occasional riders are in the age group 16 to 19, but this is true of only 6% of frequent riders and 5% of intensive riders. Similarly a total of 59% of occasional riders are 34 years old or younger, but only 46% of frequent riders and 45% of intensive riders fall into that age bracket.

Figure 26 Income

Income

(Source: Triangle Transit Onboard Survey, 2009)



More than \$100K	7%	10%	8%	8%	5%
\$75K to less than \$100K	10%	15%	10%	11%	7%
\$50K to less than \$75K	12%	16%	18%	16%	15%
\$35K to less than \$50K	14%	13%	17%	15%	12%
\$25K to less than \$35K	9%	14%	16%	13%	15%
\$20K to less than \$25K	10%	10%	10%	10%	14%
\$15K to less than \$20K	5%	4%	6%	5%	7%
\$10K to less than \$15K	8%	6%	5%	6%	9%
Less than \$10K	25%	13%	11%	15%	17%

Income

A comparison of all riders in 2003 and 2009 reveals that the household incomes of riders have increased. There has been relatively little wage inflation during this period. Therefore, wage inflation does not account for this. What has occurred is that more middle and upper middle income persons are using the bus. Thus, in 2003 a total of 39% reported household incomes of \$35,000 or greater, while in 2009 the comparable figure was 50%.

Figure 27 Demographics in table format

Demographics	Occasional	Frequent	Intensive	Total, 2009	Total, 2003
Gender					
Male	54%	56%	53%	54%	48%
Female	46%	44%	47%	46%	52%
Age					
16 to 19	18%	6%	5%	9%	12%
20 to 24	16%	14%	10%	13%	12%
25 to 29	15%	15%	17%	16%	12%
30 to 34	10%	11%	13%	12%	14%
35 to 39	8%	10%	11%	10%	11%
40 to 44	7%	9%	10%	9%	13%
45 to 49	8%	10%	13%	11%	9%
50 to 54	7%	9%	11%	9%	7%
55 to 59	6%	9%	7%	7%	5%
60 to 64	4%	5%	3%	4%	3%
65 to 69	2%	1%	1%	1%	1%
70 or better	1%	1%	1%	1%	1%
Mean	34	38	38	37	36
Median	30	36	37	35	34
Income					
Less than \$10,000	25%	13%	11%	15%	17%
\$10,000 to less than \$15,000	8%	6%	5%	6%	9%
\$15,000 to less than \$20,000	5%	4%	6%	5%	7%
\$20,000 to less than \$25,000	10%	10%	10%	10%	14%
\$25,000 to less than \$35,000	9%	14%	16%	13%	15%
\$35,000 to less than \$50,000	14%	13%	17%	15%	12%
\$50,000 to less than \$75,000	12%	16%	18%	16%	15%
\$75,000 to less than \$100,000	10%	15%	10%	11%	7%
more than \$100,000	7%	10%	8%	8%	5%
Ethnicity					
White	40%	56%	38%	43%	34%
African-American	40%	28%	43%	39%	48%
Asian	11%	7%	12%	10%	8%
Hispanic	4%	6%	5%	5%	5%
Other	4%	3%	2%	3%	4%
Native American	1%	0%	1%	1%	1%

Demographics in detail

The demographics which we have already reviewed are contained in the table above. The purpose of the table is simply to place all of the demographics in one compact representation. The table requires no further comment.

Customer Satisfaction

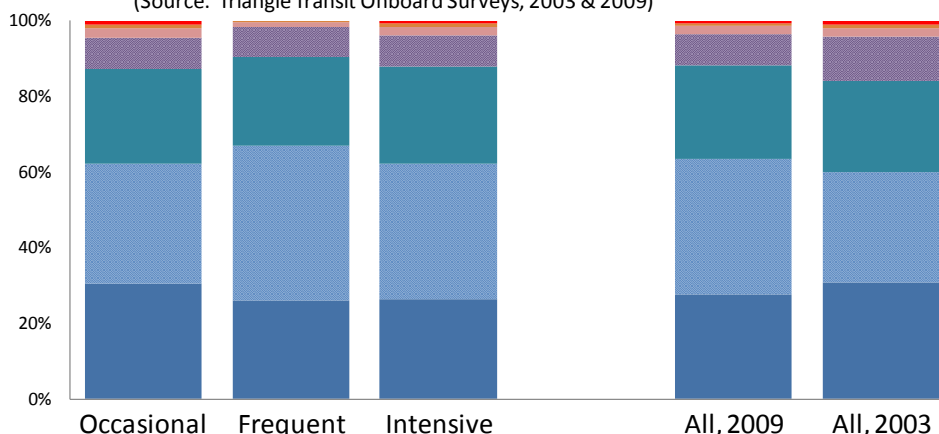
Introduction to the customer satisfaction chapter

In this section of the report, we present various charts that provide varied perspectives on the same customer satisfaction data. We consider percentages, means, correlations, and problem reports, all of which provide certain perspectives on the data. While this may appear repetitive, it serves to explore the data thoroughly. Near the end of the section a table of "impact scores" is presented which, in effect, sums it all up. At the very end of the section is a three page table containing all of the ratings as percentages.

Figure 28 Satisfaction Ratings by Rider Segment

Q25 Overall, how do you rate Triangle Transit?

(Source: Triangle Transit Onboard Surveys, 2003 & 2009)



	Occasional	Frequent	Intensive	All, 2009	All, 2003
1 Very poor	1%	0%	1%	1%	1%
2 Near very poor	1%	0%	1%	1%	1%
3 Low middle	2%	1%	2%	2%	2%
4 Middle	8%	8%	8%	8%	12%
5 High middle	25%	24%	26%	25%	24%
6 Near excellent	32%	41%	36%	36%	29%
7 Excellent	31%	26%	26%	28%	31%

Overall system satisfaction by rider segment

The satisfaction score for Triangle Transit service overall has changed somewhat, though not dramatically, since 2003. In 2003, 31% rated it excellent, compared to 28% in 2009. However, while 29% rated it near excellent (i.e. "6") in 2003, that percentage increased to 36% in 2009. The percent giving only a mid-level score decreased from 12% to 8%. In other words the slight decline in the top score is more than balanced by an improved score in the "near excellent" category.

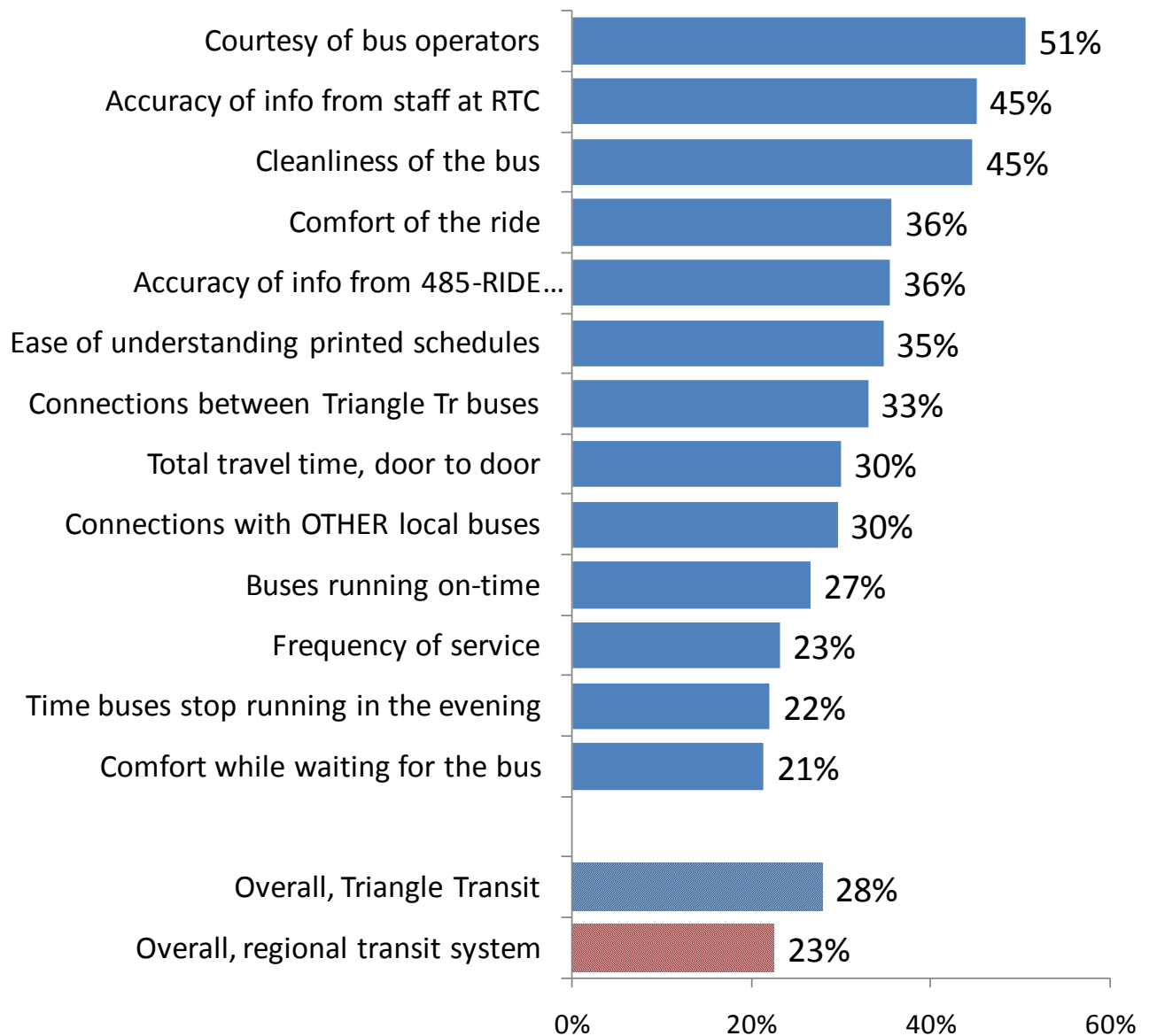
Although the top percent decreased from 31% to 28%, we believe that the combination of the top two percentages, which rose from 60% to 64%, is a substantial achievement for Triangle Transit. The reason is that in systems undergoing a rapid growth in the employment and income of ridership, ridership as a whole sometimes becomes more critical of service. That has not happened at Triangle Transit, and we interpret that as a significant accomplishment.

We can also see in this chart that the segments differ primarily in the degree of their positive scores. Occasional riders more readily provide excellent scores and the more frequent riders have a greater tendency to provide near excellent scores. For all three segments, however, the scores are quite positive.

Figure 29 Top Satisfaction Scores

Triangle Transit Service Excellent Ratings

(Source: Triangle Transit Onboard Survey, 2009)



Satisfaction scores

Figure 29 above presents our first look at more detailed customer satisfaction scores. The chart, for convenience, includes only the top score. In this case, because the customer satisfaction ratings scale ranged from 1 to 7 (seven being the best score), only scores of seven are reported here. Mean scores and other scores will be reported in later charts.

The most important aspect of this chart is the rank order of the various elements. As is fairly typical of such studies, the top several items involve courtesy and performance of staff and cleanliness of the buses. By the same token, the items at the bottom of the list are also fairly typical. Comfort while waiting for the bus encompasses shelters, benches and other amenities. With only 21% offering a top score in that respect we must conclude that customers are not terribly satisfied, at least in a relative sense. The time buses stop running in the evening is perennially a problem for many riders, particularly the intensive users, and most particularly for those who must work in the evening. Continuing to work up the chart from the bottom, we see that frequency of service and on-time performance are the next two items on the list and both win less than 30% in the top category.

A series of items fall in the middle range between 30% and 36% in the top score in category. The lowest of these, both 30% in the top category, involve connections with other local buses and total travel time door-to-door. Again, these concerns are endemic to all bus systems which must operate in traffic and are particularly problematic in systems which rely heavily on transfers. Related to the intersystem transfer challenge is the challenge of making connections with other Triangle Transit buses.

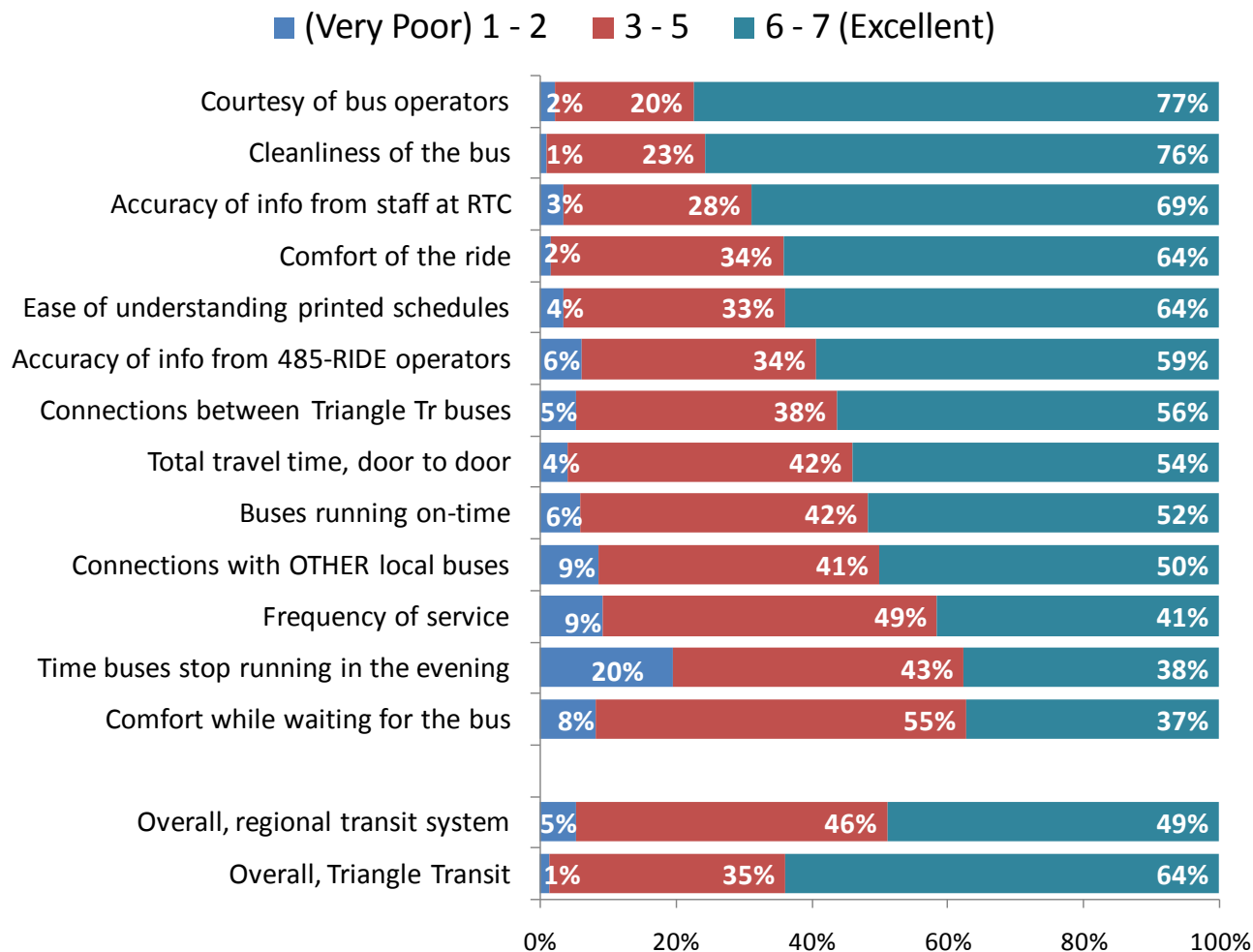
In terms of the overall performance of Triangle Transit and of the overall regional transit system, 28% give Triangle Transit a rating of "excellent," and 23% give the overall regional system a rating of "excellent." It is important to recognize that in responding to questions about service "overall," respondents are often reluctant to give a perfect score (in this case a 7) because there is always fault to be found with something. The tendency in rating individual aspects of service is more precise. People are willing to give top scores and in some cases very low scores on specific items, but are reluctant to do so on the global, overall rating. As a result, people will often give a score next to the highest (in this case a "six"). In fact, that is precisely what we saw in Figure 28 and will see in a later chart when we combine rating scores (Figure 30).

All in all, these ratings are not surprising and are fairly typical of ratings found in other all bus systems.

Figure 30 Distribution of Satisfaction Ratings

Triangle Transit Service Ratings

(Source: Triangle Transit Onboard Survey, 2009)



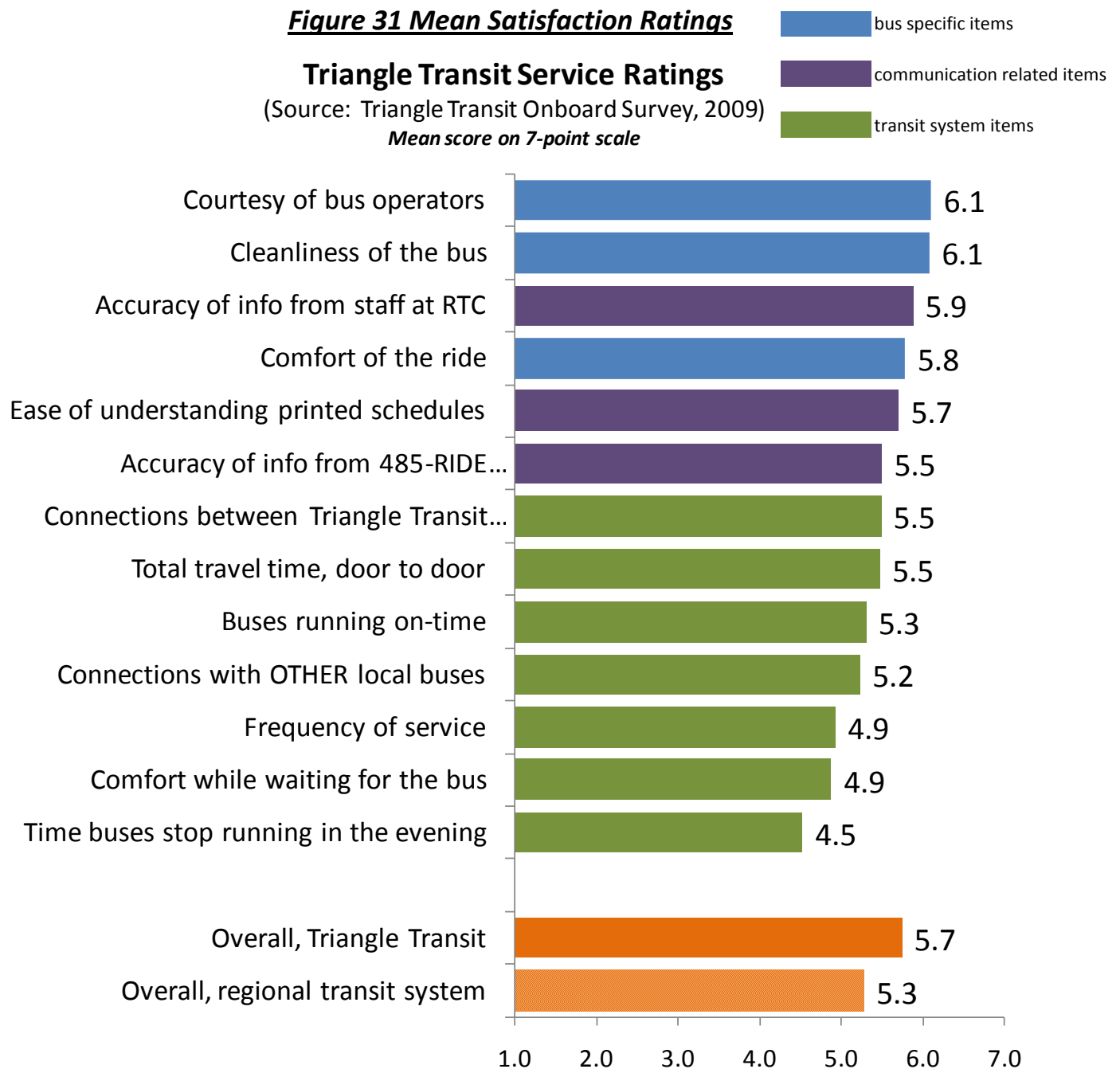
Satisfaction ratings in perspective

It is worth examining satisfaction scores from several perspectives. In the chart above, the top two scores are combined and the bottom two scores are combined. The middling scores, between three and five, can be considered neither extremely positive nor extremely negative, but rather C+ to C-. The scores of six or seven represent either excellent or nearly excellent scores and simply present another way to consider the results. The rank order does not change, but here we can see that the lower scored items were not low because they were rated as very poor (with one exception) but primarily because so many scores were in the middle, between three and five.

The one exception is evening hours for bus service. On that aspect of service, 20% give scores of one or two. This interest in greater evening service is generally coupled with a desire for more weekend service. That is, the interest is really in off-peak service more than it is in specifically evening service. Thus, while of all riders 20% score the time buses stop running an evening as very poor, 27% of those who say they have to work most Saturdays and 29% of those who have to work most Sundays scored it as very poor.

Figure 31 Mean Satisfaction Ratings

Triangle Transit Service Ratings
(Source: Triangle Transit Onboard Survey, 2009)
Mean score on 7-point scale



Satisfaction scores expressed as means

Another way to express satisfaction scores is to use the arithmetic mean. The mean has the advantage of taking into account the entire distribution of scores, not only the top score. However, the reader will notice that the rank order is very similar to that which is obtained by using only the top score. Using the mean, we find several things of interest:

- First the overall scores for both Triangle Transit and the region appear much better in this light. Clearly, while the top scores were relatively few, the upper middle scores brought the total score up. Triangle Transit scores 5.7, which is rather good for an all-bus system. The overall

regional transit system is, understandably because of the need to transfer, somewhat lower on the scale at 5.3.

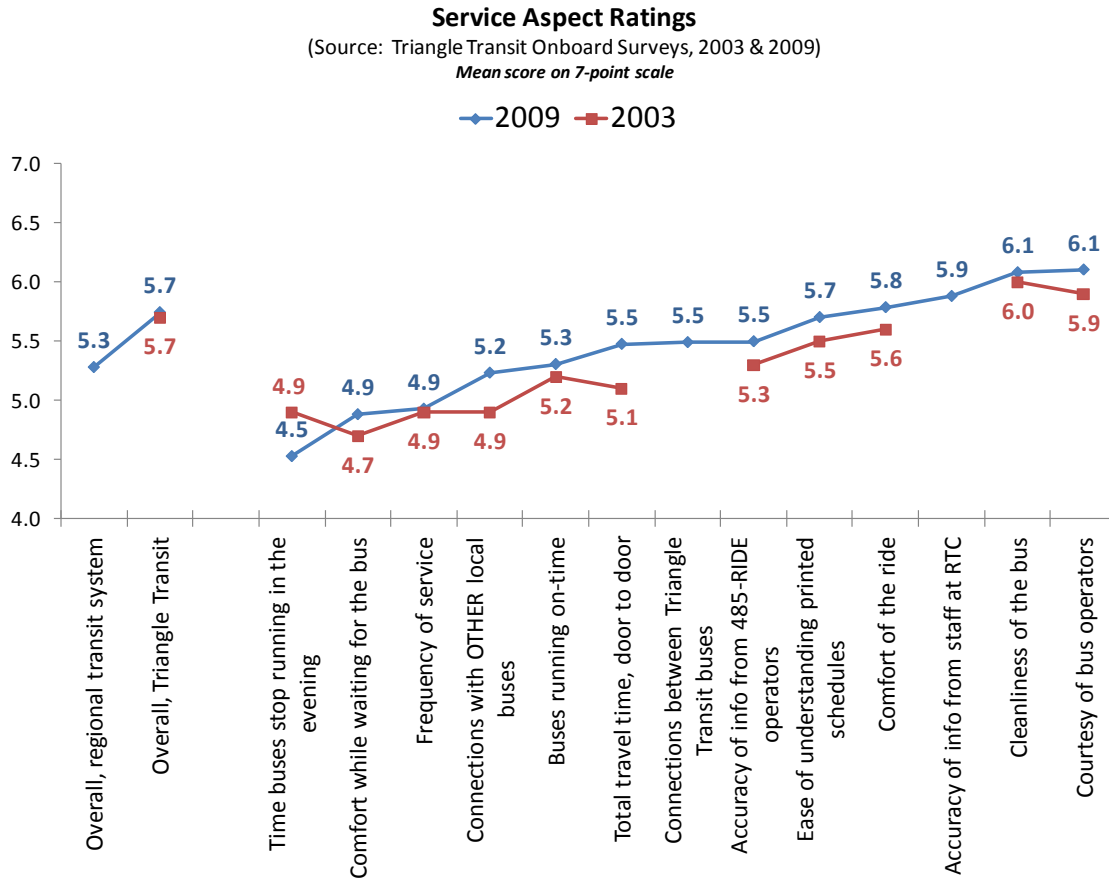
- Using the mean, we also see that the time buses stop running in the evening displaces comfort while waiting for the bus as the low-scoring item. In the era of the "24/7" economy this has become a major concern in virtually all of the systems that the CJI team has studied.
- We also see some continuity between the two tables. For example, frequency of service, connections with other local buses, and on-time performance are all in similar positions regardless of whether they are measured by the mean or top score percentage.

In short, we can conclude that central issues for Triangle Transit involve evening service, shelters, frequency of service, and making connections. The difficulty with identifying these as the primary challenges is, of course, that they are the most difficult to resolve.

This chart is also broken into three color-coded sets. Some items are related to the nature of the customers' experience on the bus with operator courtesy, bus cleanliness, and comfort of the ride. These are in blue. Others have to do with information, including the accuracy of information from the staff of transit center, the ease of understanding printed schedules, and the accuracy of information from the telephone information system. These are in a deep purple. The other items involve the entire transit system, and these are in green.

Notice that the items at the top of the list are bus-specific or information-oriented, and those toward the bottom of the list are systemic. To repeat a point, this is inevitable and much of what is criticized by customers at the systemic level is either beyond the control of Triangle Transit or, under current rules, is difficult to fund (evening hours, and plentiful shelters, for example).

Figure 32 Comparison of Mean Ratings, 2003 and 2009



Comparing scores in 2003 with those in 2009

Many of the same questions that were asked in 2003 were asked again in 2009. In the figure above we consider changes in the mean scores. When a question was asked in 2009 that had not been asked in 2003 there is a blank within the line.

Notice that most of the scores rose from 2003 to 2009. Riders were generally more satisfied. One notable exception is that the score for the time buses stop running in the evening declined from 4.9 to 4.5. Other scores increased or remained the same. Remaining the same were the overall rating of Triangle Transit, which remained at 5.7; frequency of service, which remained at 4.9; buses running on time, which changed only from 5.3 to 5.2; and cleanliness of the bus, which changed only from 6.1 to 6.0.

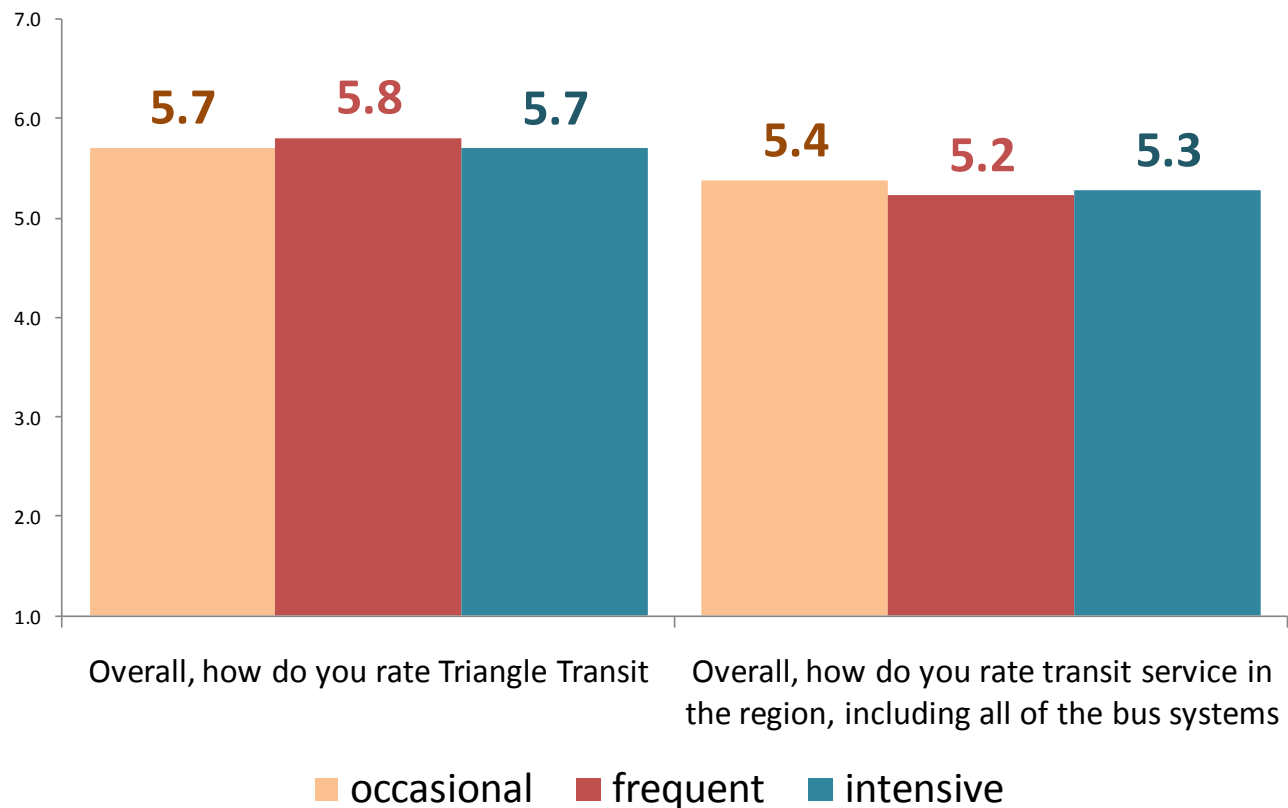
Several minor increases, rising by only .2, include comfort while waiting for the bus, which rose very slightly from 4.7 to 4.9; accuracy of information from the telephone information operators (from 5.3 to 5.5); ease of understanding schedules (from 5.3 to 5.5); comfort of the ride (from 5.6 to 5.8); and courtesy of the bus operators (from 5.9 to 6.1).

Larger increases included making connections with other local buses, which went from 4.9 to 5.2, and total travel time door-to-door which went from 5.1 to 5.5.

Figure 33 How the Ridership Segments Compare in Terms of Their ratings of Overall Service of Triangle Transit and Transit in the Region

Mean overall service ratings, by segment

(Source: Triangle Transit Onboard Survey, 2009)

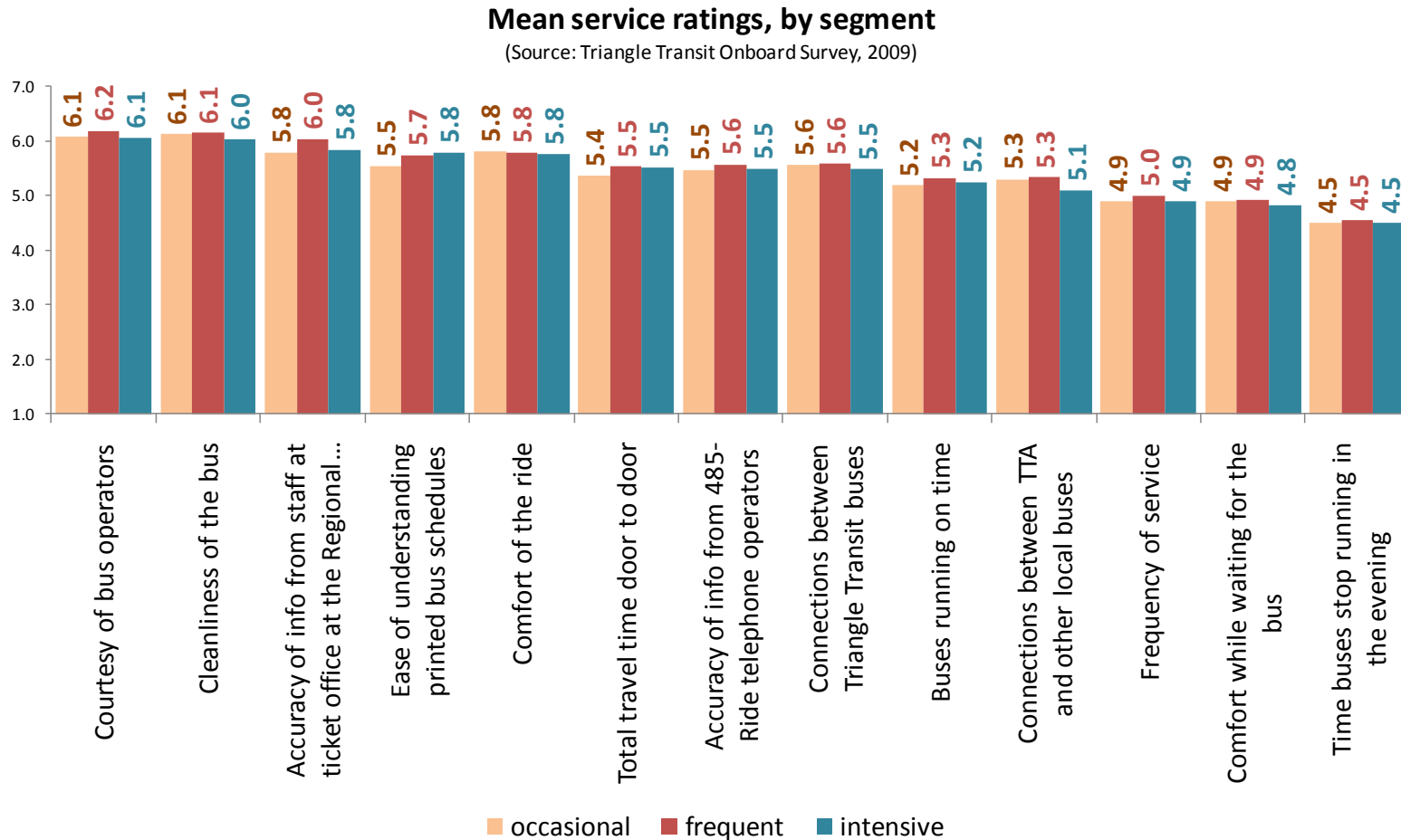


Comparing mean ratings of overall service among the segments

The transit rider segments do not differ in any meaningful way in terms of their ratings of Triangle Transit or regional transit services. On a scale of 100 points, a rating of 5.7 would be equivalent to score of 82. This is a good performance and fairly typical of overall ratings of all-bus systems.

As one would expect, the regional services rate somewhat lower. The reasons to expect that are that services of the several systems differ, and regional travel inherently requires transfers and is less convenient than local travel within a system.

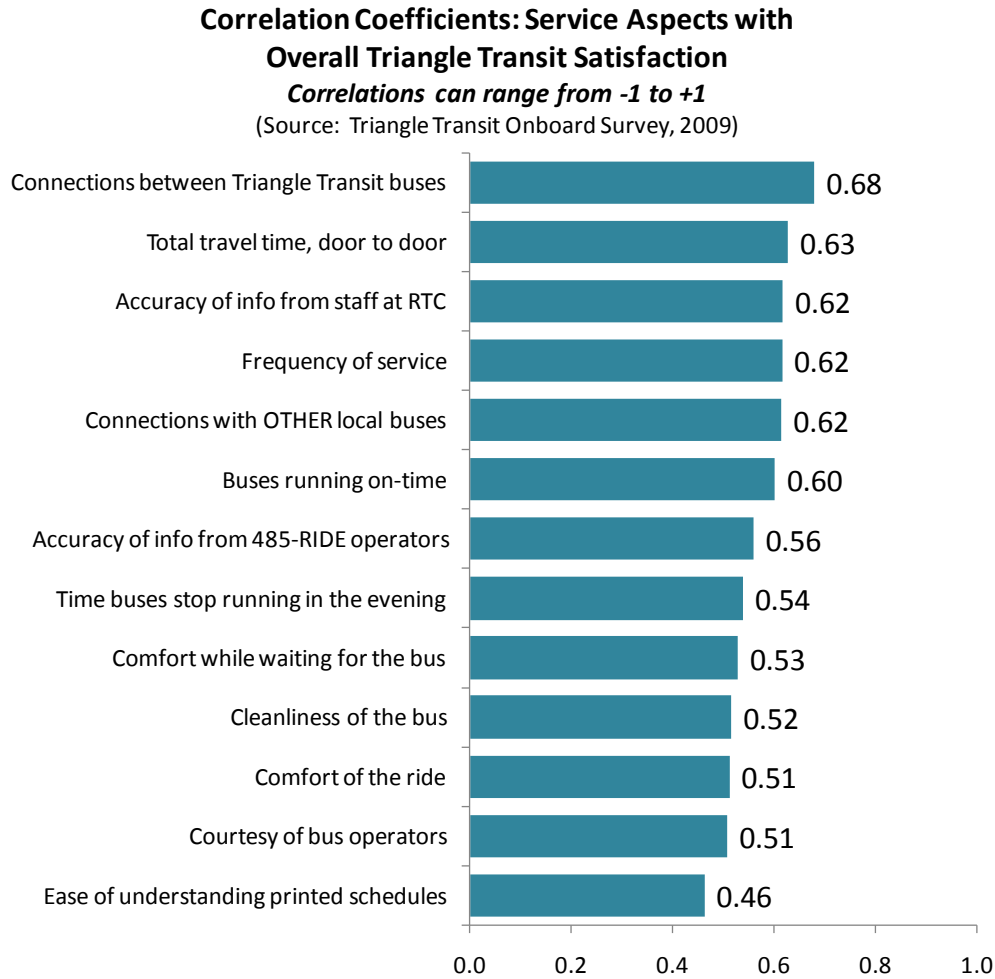
Figure 34 How the Ridership Segments Compare in Terms of Their Service Ratings



Comparing mean scores among the segments

The three segments are in agreement in terms of service satisfaction. Differences in the mean scores tend to be only one tenth on most service elements. The primary exception is ease of understanding printed schedules. On that element, occasional riders are slightly less satisfied. That is quite understandable because they would be more likely to be unfamiliar with the system and with reading schedules.

Figure 35 Relationship Between Service Aspects and Overall Satisfaction



The correlation between satisfaction with Triangle Transit service overall and individual aspects of service

The chart above requires a bit of explanation. The numbers in the chart represent correlation coefficients. These coefficients can vary from -1 to +1. They measure the strength of relationship between two variables. A coefficient zero near would mean there is no relationship. A score relatively close to +1 means there is a very strong positive relationship.

Several of these factors are strongly and positively correlated with overall satisfaction. Certainly connections between Triangle Transit buses, total travel time, accuracy of information from transit center staff, frequency of service, connection with other local buses, and buses running on time are all .6 or higher being that all are important to overall satisfaction. This is not to say that the others, such as the time the bus stopped running in the evening, comfort while waiting for the bus, and so forth, are not important. However, as variables explaining why some people are satisfied and why others are not, the items at the top of the list are simply currently more important.

Figure 36 Relationship between Service Elements and Overall Satisfaction, by Segment

<i>The strongest (.6 and above) relationships are highlighted for each aspect of service within segment lists</i>	Correlation of Service Elements with Triangle Transit Overall Satisfaction		
	Occasional	Frequent	Intensive
Connections between Triangle Transit buses	0.74	0.66	0.65
Accuracy of info from staff at RTC	0.68	0.54	0.59
Connections with OTHER local buses	0.68	0.56	0.59
Frequency of service	0.66	0.64	0.58
Accuracy of info from 485-RIDE operators	0.65	0.55	0.52
Total travel time, door to door	0.64	0.60	0.63
Buses running on-time	0.62	0.56	0.61
Comfort while waiting for the bus	0.60	0.47	0.52
Time buses stop running in the evening	0.57	0.55	0.51
Courtesy of bus operators	0.56	0.45	0.49
Cleanliness of the bus	0.54	0.51	0.50
Ease of understanding printed schedules	0.52	0.50	0.39
Comfort of the ride	0.52	0.51	0.53

Relationship between Service Elements and Overall Satisfaction, by Segment

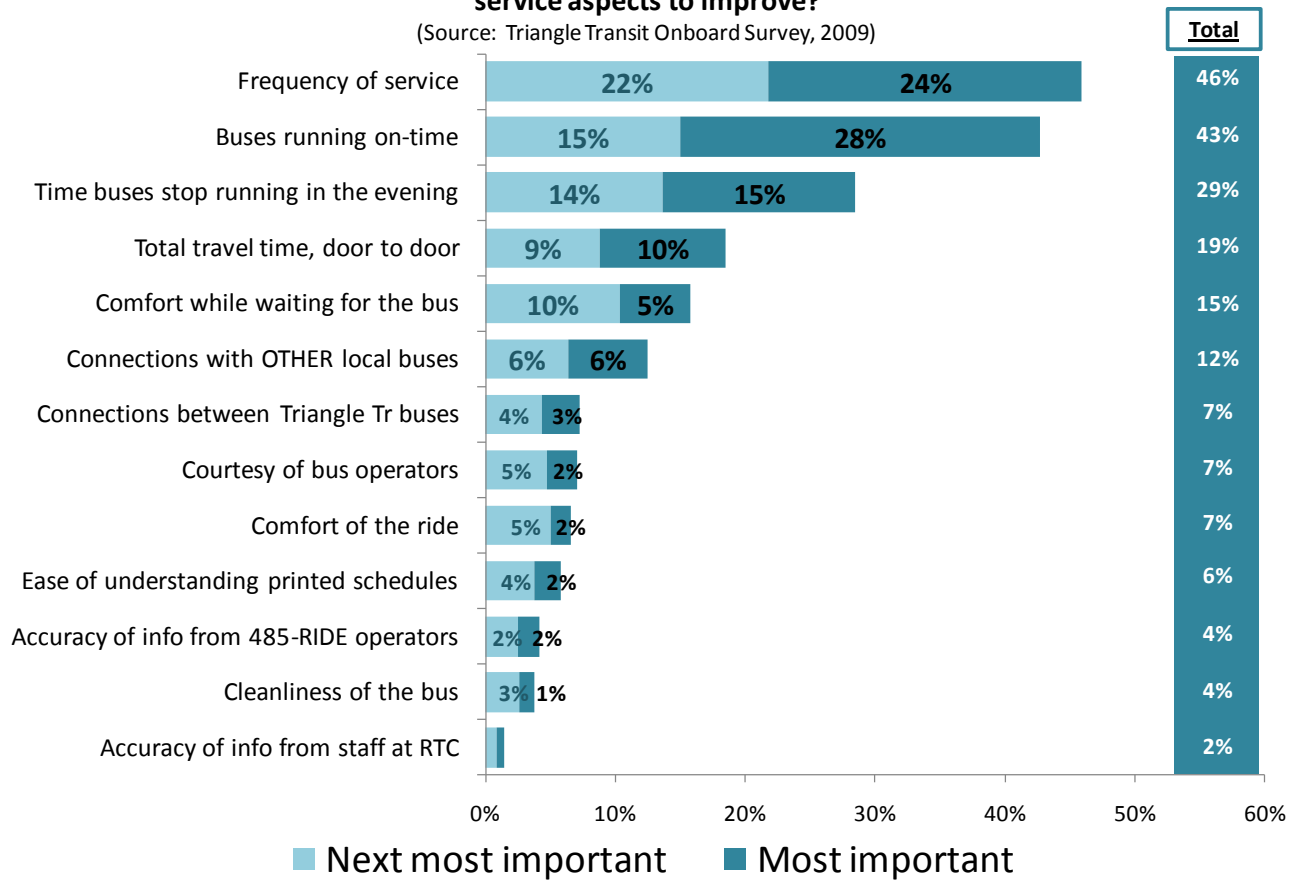
An examination of the correlations within each segment of the overall Triangle Transit service rating with the several specific elements of service reveals an interesting pattern.

- While every aspect of service is important to all segments (with only three exceptions correlations are all above .5), some stand out. For example, two elements are strongly related to overall satisfaction across segments: Connections between Triangle Transit buses and total travel time. These are bottom-line satisfiers or dissatisfiers.
- It is interesting also that the association of making connections between Triangle Transit buses with overall satisfaction is strongest for occasional riders. The probable reason for this is that while many riders have to transfer, the transfer rate is highest for the occasional riders. While 61% of them transfer, 47% of frequent riders and 54% of intensive riders do so.
- The occasional riders' overall attitude toward Triangle Transit service varies with a wide variety of elements. By definition, they are less accustomed to using the service and apparently any one of a series of items is strongly related to their overall satisfaction.
- To the frequent riders, besides the two elements already mentioned, frequency of service is a key variable in their satisfaction.
- To the intensive users, on-time performance emerges as a key.
- To the intensive users, the ease of reading printed schedules (.39) is not especially relevant to overall satisfaction. Their travel patterns make them fairly expert in using the system.
- While provider courtesy is of obvious importance to any service business, for frequent and intensive users in particular, courtesy of drivers is not strongly correlated with overall satisfaction. The reasons are, first that courtesy is very highly rated by all, and second that for the more frequent users, the trip itself is the key, not interaction with the driver.

Figure 37 Areas for Improvement

Q27 What would be the two most important service aspects to improve?

(Source: Triangle Transit Onboard Survey, 2009)



What do riders say is most important to improve?

Riders were asked which two of the several elements of service would be the most important to improve. Their responses are summarized in the chart above.

Frequency of service received the most mentions as first or second most important to improve, with a total of 46%. Buses running on time was second with a total 45%. We would note that buses running on time received somewhat more responses as the single most important item to improve, but in terms of the total most important and next most important it was second to frequency of service. These are, of course, fundamental to all transit riders and it is not surprising that they are both relatively low on the satisfaction scales and relatively high on the service improvement measure.

The time buses stop running in the evening is also mentioned by a substantial percentage of the ridership (29%), but this is an aspect of service that is important to only a subgroup of the total ridership -- i.e., those who need to travel in the evening, a category which would exclude many routine 9-to-5 commuters.

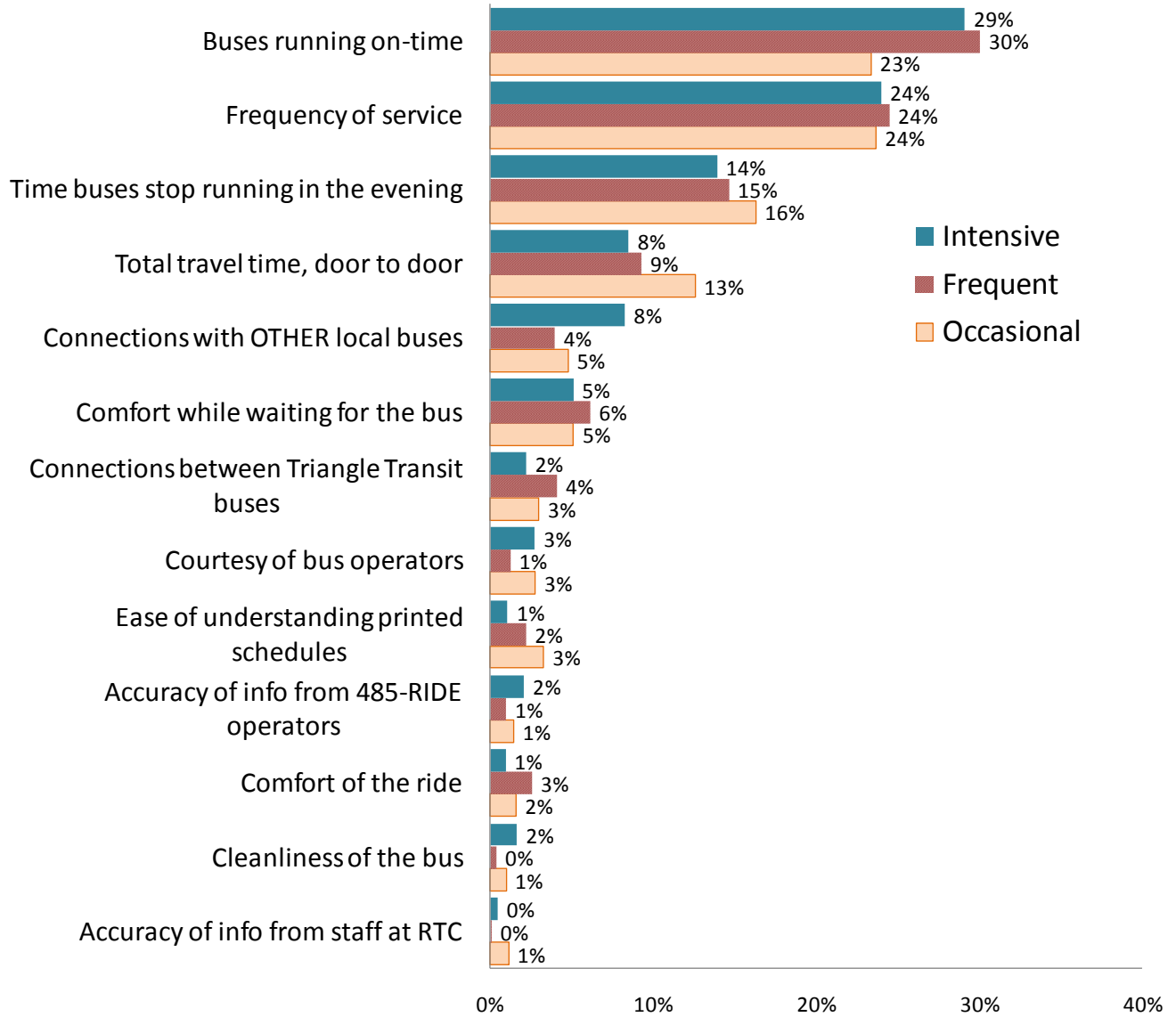
It is interesting that although connections between Triangle Transit buses are highly correlated with overall satisfaction, they are relatively low on the list in terms of the need to improve. This suggests

that when there is a problem it has some effect, but that compared to most other aspects of service is relatively less important to improve. The reader may recall that in the lists of satisfaction ratings it is consistently in the middle of the ranked listings.

Figure 38 Areas for Improvement by Rider Segment

Q27 What is the most important service aspect to improve?

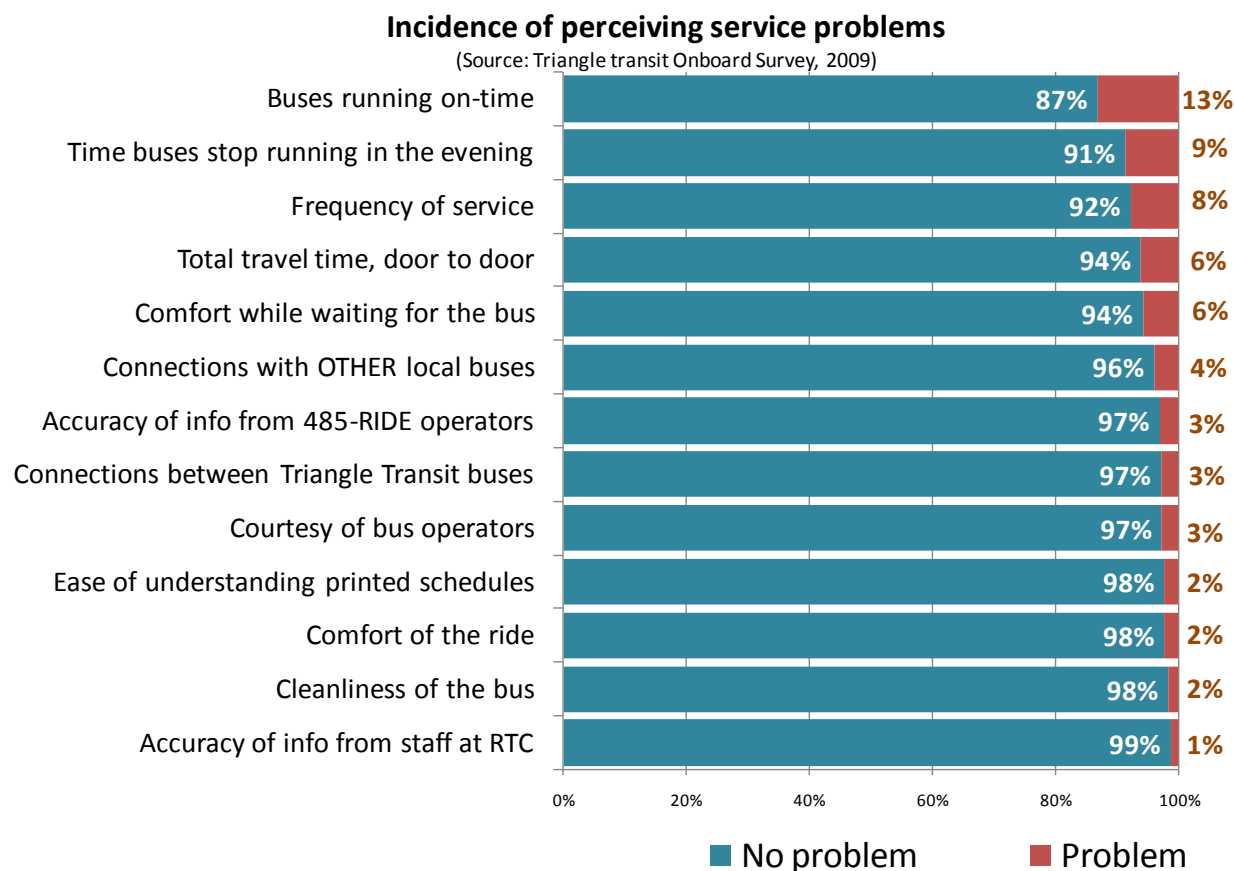
(Source: Triangle Transit Onboard Survey, 2009)



Do the rider segments agree on what is most important to improve?

Although the rider segments show some differences in their judgment of what service is most important to improve, the rank order of their judgments is for practical purposes the same. For all three segments buses running on time is considered the most important element to improve, followed by frequency of service, and then by the time buses stop running in the evening.

Figure 39 Service Aspect Problem Incidence



Incidence of experiencing problems with service

Riders were asked whether they had experienced a problem with each element of service within the previous 30 days. This question was asked for two purposes. First it offers another measure of perceived service quality, and it does so within a limited time such that future measurements will be possible. Second, it is a necessary part of the computation of *impact scores* to be reported in a table later in this report.

First, notice that the maximum number of people reporting a problem was 13%. This means that 87% had not noticed a problem. All other problems were reported by fewer than 10%. The top three are the same ones cited as needing improvement, on-time performance, the time buses stop running in the evening, and frequency of service.

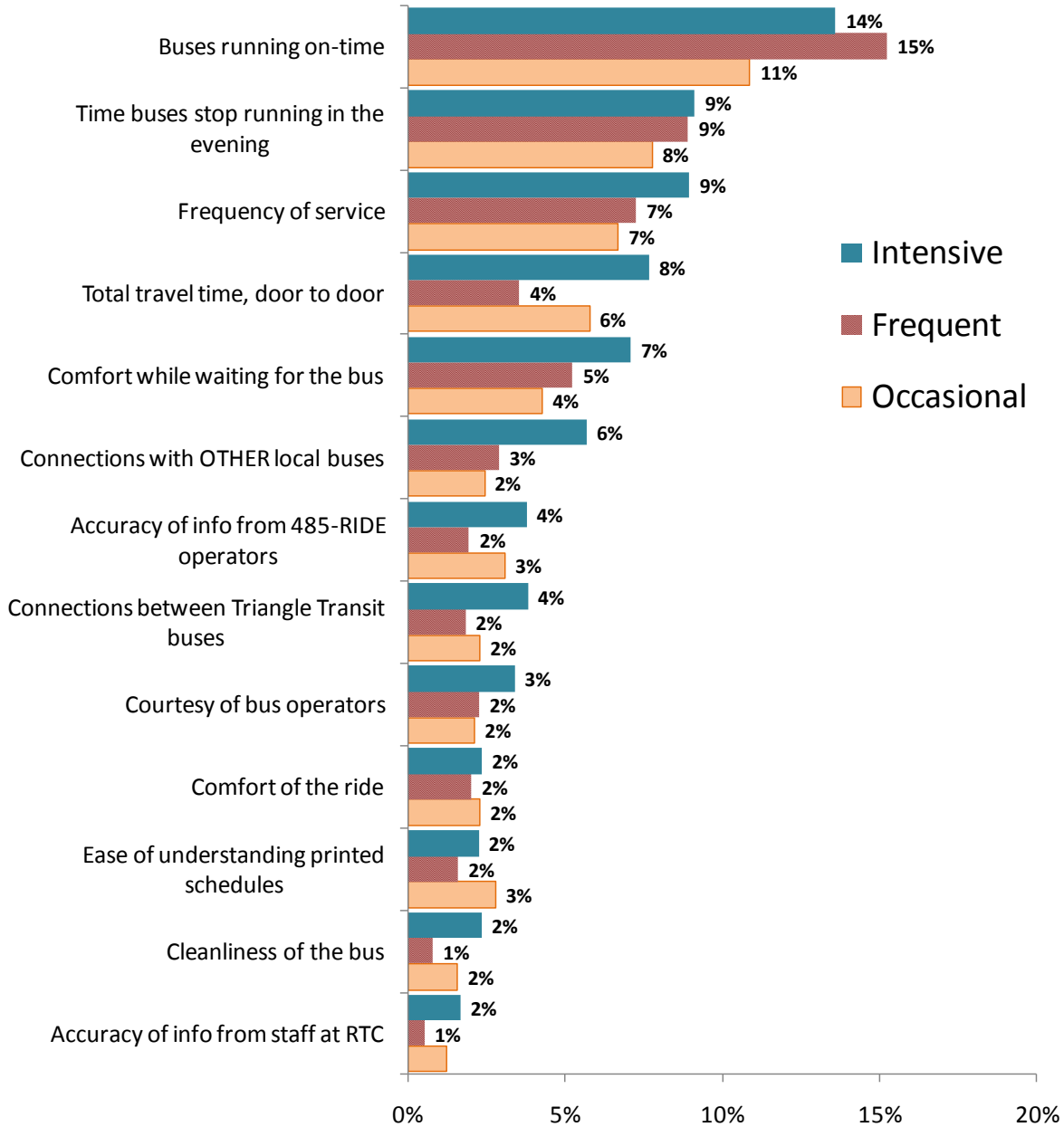
More than 95% of all riders said that they had encountered no problems with eight of the thirteen services listed. More than 5% of riders reported problems with comfort while waiting for the bus, total travel time door-to-door, and the top three already mentioned.

Figure 40 Problem Incidence by Rider Segment

Triangle Transit Survey - Problem Incidence

-- Past 30 days --

(Source: Triangle Transit Onboard Survey, 2009)



Incidence of problems by rider segment

As one would expect, problems tended to be reported more frequently by those who use the bus more frequently. Thus, for example while 14% of intensive users and 15% of frequent users reported problems with buses running on-time, somewhat fewer (11%) of the occasional riders observed that

problem. There are some exceptions to this rule. For example, 8% of intensive riders and 6% of occasional riders, but only 4% of frequent riders indicated they had a problem with total travel time. This is understandable, because the frequent riders tend to be making work trips and doing so very routinely, while the others segments are making trips that are more diverse in nature.

Figure 41 Impact of Problems on Triangle Transit Satisfaction

<u>Impact scores:</u>	Impact of Problems on TTA Satisfaction				
	Percent indicating problem in past 30 days	Rating with problem in past 30 days	Rating with no problem in last 30 days	Satisfaction decline when problem experienced [C - B]	Impact score [A * D]
	[A]	[B]	[C]	[D]	[E]
Buses running on-time	13%	3.74	5.73	1.99	0.25
Time buses stop running in the evening	8%	2.61	5.03	2.42	0.20
Frequency of service	8%	3.23	5.27	2.04	0.16
Comfort while waiting for the bus	5%	2.99	5.14	2.15	0.11
Total travel time, door to door	5%	3.58	5.68	2.11	0.11
Connections with OTHER local buses	4%	3.09	5.67	2.58	0.10
Accuracy of info from 485-RIDE operators	3%	3.14	5.87	2.74	0.09
Connections between Triangle Transit buses	3%	3.46	5.83	2.36	0.06
Ease of understanding printed schedules	2%	3.42	5.99	2.58	0.06
Courtesy of bus operators	3%	4.24	6.26	2.03	0.05
Comfort of the ride	2%	4.21	5.82	1.61	0.04
Cleanliness of the bus	2%	4.20	6.11	1.91	0.03
Accuracy of info from staff at RTC	1%	4.15	6.00	1.85	0.02

Impact scores

One purpose of using *impact scores* is to create a metric that can be tracked quickly and inexpensively³. These scores include two elements:

- A satisfaction measurement based on a mean rating on a seven point scale.
- The second aspect of this scoring is a measurement of the percentage of riders who report having had a problem with each aspect of service in the past thirty days. The percentage recalling a problem is a useful measurement to track over time. One key to this metric is the time limitation – the past thirty days. Without this limit, many riders recall any problem they ever encountered. That response makes it impossible to measure change over time.

Impact scores combine the two measurements described above: (a) the mean rating of a service by all riders and (b) the percent reporting a problem during the previous thirty days. By examining the difference between the mean rating scores of those who report a problem and those who do not, we find the extent of the difference, or gap, between the two sets of riders, and thus obtain a rough measure of the degree of difference caused by the problem. This initial measurement does not,

³ The impact score concept was developed in a TCRP study and is described in detail in *TCRP Report 47: A Handbook for Measuring Customer Satisfaction and Service Quality*.

however, tell us how widespread the problem is. Therefore, we determine the percent of the ridership who report having observed a problem in the past thirty days and multiply that percentage times the gap. The result is an “impact score” which is, in effect, a measurement of the degree to which problems encountered by riders impact negatively on the attitudes of riders.

To achieve a perfect or (more realistically) a near perfect score (a score at or near zero, which would mean that the factor had zero negative impact) the transit system would have to have almost no reported problems. It would also mean that all or almost all respondents scored the service as excellent on the rating scale.

Conversely, scoring at or near the worst possible score would require that all or almost all of those with a problem score the service “1” (the worst score on the scale of 1 - 7) and all or almost all of those with no problem score the service “7”, and that all or almost all would report having had a problem. An unlikely situation at best.

Realistically, negative impact scores are normally very small decimal numbers less than one. Very poor scores are rare because most riders are relatively positive, and few report having encountered problems worth mentioning.

Here we find confirmation of the information shown in previous charts. The decline in satisfaction, for example, among those who experienced the problem with on-time performance was 1.99 on the seven point scale. Mean satisfaction score from those with a problem was 3.74, but for those not reporting problem was 5.73, the difference being 1.99. Since 13% experienced the problem, the percent expressing a problem times the gap measurement equals .25. That is the impact score.

Essentially, the impact score table is a compact guide to what would make a difference to riders in their assessment of Triangle Transit service.

The scores in this case are all well below one because 87% or more of respondents reported no problem, and satisfaction scores on a seven-point scale tended to be five or higher.

While the impact score is one element of this table to consider, there is another as well. Notice the data in column D which is a measurement of the satisfaction decline when a problem is experienced. We can call this a gap score. Notice that, although the impact score for buses running on-time is high, the reason is not that its gap score is high but rather that more riders reported a problem with that than with any other aspect of service. In fact, the highest gap score is 2.74, which is for the accuracy of information from 485-RIDE operators. In other words, when riders perceive information they are given to be inaccurate, there is a major impact. However, very few people (3%) indicated that they had had such a problem. Thus, the total impact on the system is low. But the impact on the rare individual who experiences a problem is high. The same is true for making connections with other local buses and with making connections between Triangle Transit buses.

Detailed listing of customer satisfaction ratings

On the following three pages is a lengthy table displaying all of the customer satisfaction scores. The table is provided for reference and requires no further comment.

Figure 42 Detailed Customer Satisfaction Ratings, by Segment

Details of customer satisfaction ratings

		Segment based on frequency of TTA ridership			
		occasional	frequent	intensive	all riders
Rate: Total travel time door to door	Very poor	3%	1%	2%	2%
	Near very poor	2%	2%	2%	2%
	Low middle	6%	3%	5%	5%
	Middle	14%	12%	13%	13%
	High middle	27%	29%	24%	26%
	Near excellent	21%	25%	25%	24%
	Excellent	28%	28%	31%	29%
Rate: Buses running on time	Very poor	4%	2%	2%	2%
	Near very poor	4%	4%	4%	4%
	Low middle	9%	6%	8%	8%
	Middle	14%	13%	13%	13%
	High middle	19%	23%	25%	23%
	Near excellent	22%	27%	23%	24%
	Excellent	28%	25%	25%	26%
Rate: Courtesy of bus operators	Very poor	1%	1%	1%	1%
	Near very poor	1%	1%	2%	1%
	Low middle	3%	2%	2%	2%
	Middle	6%	4%	7%	6%
	High middle	12%	13%	14%	13%
	Near excellent	26%	28%	26%	26%
	Excellent	51%	52%	49%	50%
Rate: Time buses stop running in the evening	Very poor	12%	8%	10%	10%
	Near very poor	8%	10%	9%	9%
	Low middle	11%	12%	12%	12%
	Middle	19%	16%	15%	16%
	High middle	15%	17%	18%	17%
	Near excellent	12%	18%	15%	15%
	Excellent	24%	19%	20%	21%
Rate: Frequency of service	Very poor	5%	2%	5%	4%
	Near very poor	5%	6%	4%	5%
	Low middle	11%	10%	11%	11%
	Middle	19%	19%	19%	19%
	High middle	19%	22%	22%	21%
	Near excellent	17%	22%	16%	18%
	Excellent	24%	20%	23%	23%

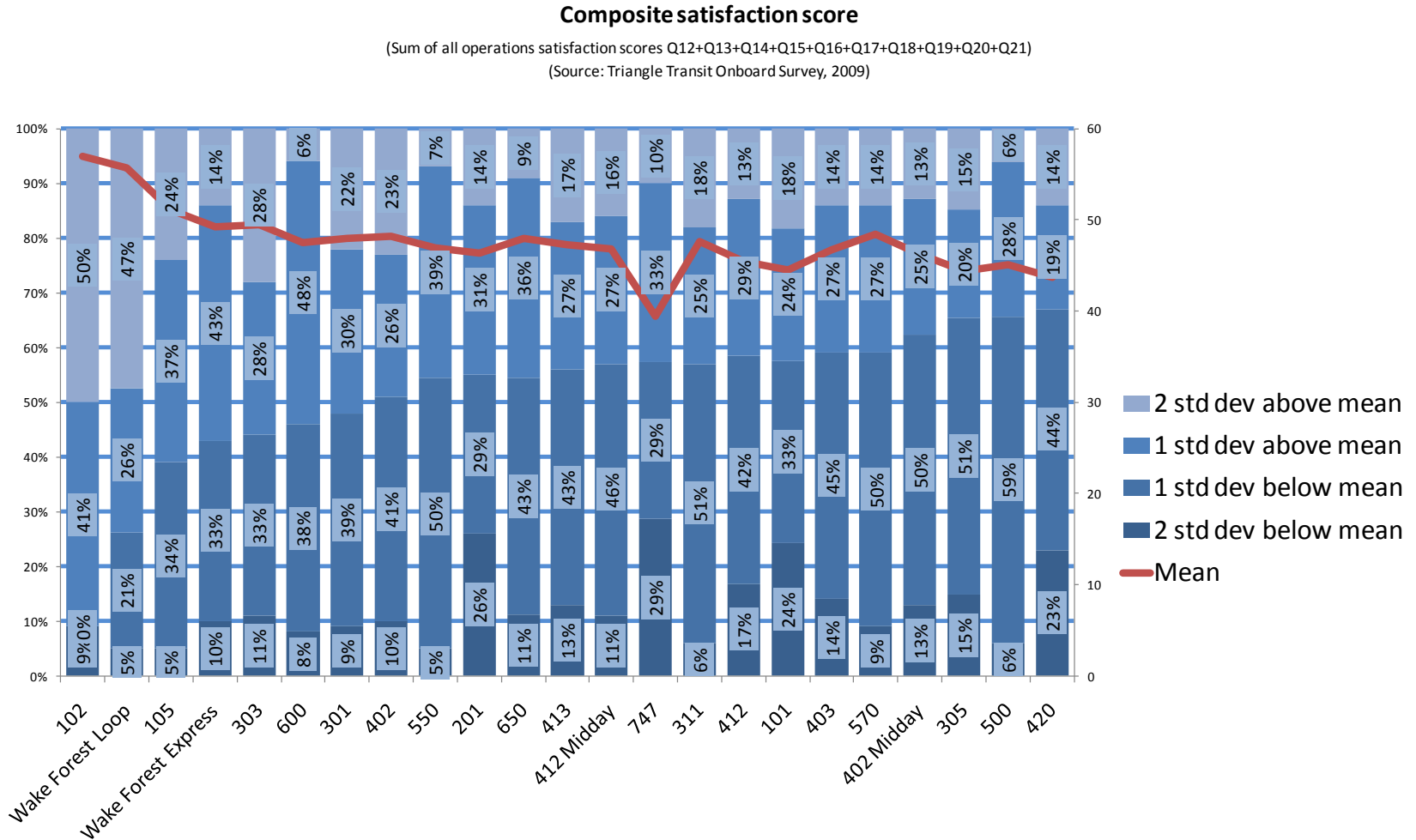
Details of customer satisfaction ratings (continued)

		Segment based on frequency of TTA ridership			
		occasional	frequent	intensive	all riders
Rate: Comfort of the ride	Very poor	1%	0%	1%	1%
	Near very poor	1%	1%	1%	1%
	Low middle	3%	4%	4%	4%
	Middle	9%	9%	8%	9%
	High middle	22%	22%	23%	22%
	Near excellent	26%	31%	30%	29%
	Excellent	38%	33%	34%	35%
Rate: Cleanliness of the bus	Very poor	1%	0%	1%	0%
	Near very poor	0%	1%	0%	0%
	Low middle	1%	1%	2%	2%
	Middle	6%	4%	5%	5%
	High middle	15%	15%	19%	17%
	Near excellent	29%	34%	30%	30%
	Excellent	48%	45%	43%	45%
Rate: Comfort while waiting for the bus	Very poor	4%	2%	3%	3%
	Near very poor	6%	5%	6%	6%
	Low middle	10%	9%	12%	11%
	Middle	21%	21%	19%	20%
	High middle	20%	28%	24%	24%
	Near excellent	16%	16%	16%	16%
	Excellent	23%	19%	20%	21%
Rate: Connections between TTA and other local buses	Very poor	4%	3%	5%	4%
	Near very poor	4%	3%	5%	4%
	Low middle	5%	7%	6%	6%
	Middle	17%	11%	16%	15%
	High middle	19%	24%	22%	21%
	Near excellent	19%	23%	19%	20%
	Excellent	32%	28%	27%	29%
Rate: Connections between Triangle Transit buses	Very poor	3%	2%	2%	2%
	Near very poor	2%	2%	2%	2%
	Low middle	3%	5%	5%	4%
	Middle	14%	11%	14%	13%
	High middle	21%	21%	22%	22%
	Near excellent	22%	25%	22%	23%
	Excellent	35%	34%	32%	33%

Details of customer satisfaction ratings (continued)

		Segment based on frequency of TTA ridership			
		occasional	frequent	intensive	all riders
Rate: Ease of understanding printed bus schedules	Very poor	3%	2%	1%	2%
	Near very poor	2%	1%	2%	2%
	Low middle	4%	3%	3%	4%
	Middle	13%	8%	8%	10%
	High middle	20%	21%	19%	20%
	Near excellent	26%	31%	29%	28%
	Excellent	33%	34%	38%	35%
Rate: Accuracy of info from 485-Ride telephone operators	Very poor	3%	4%	3%	3%
	Near very poor	2%	4%	3%	3%
	Low middle	8%	5%	5%	6%
	Middle	13%	9%	12%	11%
	High middle	17%	14%	20%	18%
	Near excellent	19%	25%	24%	23%
	Excellent	38%	39%	34%	36%
Rate: Accuracy of info from staff at ticket office at the Regional Transit Center	Very poor	2%	1%	3%	2%
	Near very poor	2%	2%	1%	1%
	Low middle	3%	3%	2%	3%
	Middle	11%	6%	8%	9%
	High middle	17%	14%	18%	17%
	Near excellent	18%	26%	27%	24%
	Excellent	47%	49%	41%	45%
Rate: Overall, how do you rate Triangle Transit	Very poor	1%	0%	1%	1%
	Near very poor	1%	0%	1%	1%
	Low middle	2%	1%	3%	2%
	Middle	9%	8%	8%	9%
	High middle	26%	23%	26%	25%
	Near excellent	32%	40%	35%	35%
	Excellent	29%	26%	27%	27%
Rate: Overall, how do you rate transit service in the region, including all of the bus systems	Very poor	2%	0%	2%	1%
	Near very poor	3%	5%	3%	4%
	Low middle	6%	6%	6%	6%
	Middle	12%	14%	14%	13%
	High middle	26%	25%	27%	26%
	Near excellent	24%	31%	27%	27%
	Excellent	27%	18%	21%	22%

Figure 43 A Composite Satisfaction Measure, by route



Composite satisfaction score, by route

Another way to think about satisfaction is as a composite. (We provide Figure 43 as much to illustrate the capacity of this data set for further analysis of this type as for its inherent usefulness.) Two types of satisfaction were measured – satisfaction with operational, bus or route specific elements such as on time performance, the transfer process, and so forth, and communications items such as the ease

Sample size at route level	
	Unweighted n
102	28
Wake Forest Loop	35
105	232
Wake Forest Express	51
303	81
600	73
301	194
402	196
550	98
201	39
650	58
413	310
412 Midday	51
747	40
311	61
412	197
101	43
403	299
570	25
402 Midday	55
305	77
500	88
420	92
Routes excluded from chart due to small sample size	
470	16
49	11
46	10
47	9
670	7
42	2

of reading schedules. A composite satisfaction measurement is shown in Figure 43. It consists of a simple sum of the following questions (numbered in the list as on the survey instrument):

12. Total travel time, door to door
13. Buses running on-time
14. Courtesy of bus operators
15. Time Triangle Transit buses stop running in the evening
16. Frequency of service
17. Comfort of the ride
18. Cleanliness of the bus
19. Comfort while waiting for the bus
20. Connections between Triangle Transit and other local buses (CAT, CHT, C-Tran, DATA, Duke, Wolfline)
21. Connections between Triangle Transit buses

An index such as this can be used to encapsulate riders' overall impressions of their trips. It is not "pure" in a logical sense since every element has equal weight, and we know that in the real world of local travel they do not. However, they provide a snapshot that may be useful in thinking about service.

→ Figure 43 shows different statistics on its two axes. The mean score for each route is shown as a red line on one axis. The mean has a possible maximum of 70 (i.e., 10 items x 7), and in the data actually vary from 44 to 57.

→ The chart shows in columns on the other axis, the percent of the samples scoring each item above or below the mean by one or two standard deviations. The standard deviation is, of course, a relative measure of dispersion around the mean, not an absolute measurement. In this sense, it tells us the relative levels of satisfaction of riders on the several routes. One standard deviation above the mean is desirable, and two is excellent.

→ The table at the left shows for each route, the number of rider respondents on which the scores are based. Several routes, shown at the bottom of the table, were excluded because there were so few rider-respondents that the route could not be examined in isolation.

Other correlates of rider satisfaction

What determines service satisfaction? Rider satisfaction of course may vary with the level of service quality. However, consumers are not blank slates. They experience service in ways that differ with their demographic backgrounds. This includes socio-economic status, a set of characteristics that changes as service changes and becomes more (or less) desirable to demographic segments.

Income provides a primary example of one element of demography. We saw in Figure 26 that income of Triangle Transit riders rose from 2003 to 2009. In 2003, 39% of rider households were earning \$35,000 or more, but by 2009, that had increased to 50%.

Since 50% of riders have incomes below \$35,000 and 50% \$35,000 and above, we can take that as a convenient point of comparing higher and lower incomes. However, since very young riders under the age of twenty would be expected to be students, to have relatively low incomes (presumably a temporary state in their life cycle), and for reason of their youth, not to be typical of the population with lower incomes. We therefore exclude them from the comparisons below.

Figure 44 Differences in use of Triangle Transit, by income level

Using Triangle Transit

Table includes only those 20 or older

	Income	
	< \$35,00	> \$35,000
In one direction of this trip, how many times do you have to change buses?		
No change of bus	32%	60%
One transfer	24%	23%
Two transfers	29%	13%
3 or more changes	15%	4%
Uses only Triangle Transit (no inter-system change)	76%	87%
Total time for the bus trip (mean minutes)	52.4	52.8
Time to the bus stop (Mean minutes)	17.4	12.5
How many cars or other motor vehicles are available for you to use?		
None	54%	14%
One	37%	47%
Two	8%	33%
3 or more	1%	7%

Those whose households earn \$35,000 or more are consumers of more convenient transit services than those with lower household incomes. For example, those riders from households earning \$35,000 or more are almost twice as likely (60% compared to 32%) not to transfer during their trips. And while 44% of those of lower income transfer two or more times, only 17% of those earning more than that transfer so frequently.

Similarly, while 76% of the riders earning less than \$35,000 use only Triangle Transit (thus avoiding inter-system transfers), 87% of those earning more than \$35,000 use Triangle Transit only.

While the total trip times for lower and higher income riders are essentially the same, the time to the bus stop is different. While the lower income group averages 17.4 minutes to the stop, the higher income group averages only 12.5 minutes.

In short, the relatively higher income rider takes trips that are more convenient. Or, conversely, he or she tends to avoid trips that are less convenient. Focus groups elsewhere have shown that this tends

to be true because they become accustomed to having financial power to make choices unavailable to persons with lower incomes.

Does this mean also that they are more critical of service? Yes.

When we relate income to the operational satisfaction score, we find an inverse relationship. In spite of the fact that the relatively higher income riders are making relatively more convenient trips, the tendency is for those with higher household incomes to score below the mean in operational satisfaction (61%) and for those with lower incomes to score above the mean (57%).

This is simply a matter of typical consumer behavior. However, it means that there is a paradox for public transit which has since the 1950's in the United States increasingly been associated with lower

Figure 45 Differences in satisfaction scores, by income

Overall operations satisfaction score - as percent scoring one or more standard deviations from the mean

Table includes only those 20 or older

		Income	
		<u>< \$35,00</u>	<u>> \$35,000</u>
Relative less satisfied	2 std dev below mean	11%	11%
	1 std dev below mean	31%	50%
	1 std dev above mean	32%	31%
Relatively more satisfied	2 std dev above mean	25%	8%

status travel. More convenient service now attracts riders with income, more social status, and more alternatives. Riders with more alternatives not only have the financial power to take advantage of those alternatives, but also have different expectations.

The advantages of higher incomes are not

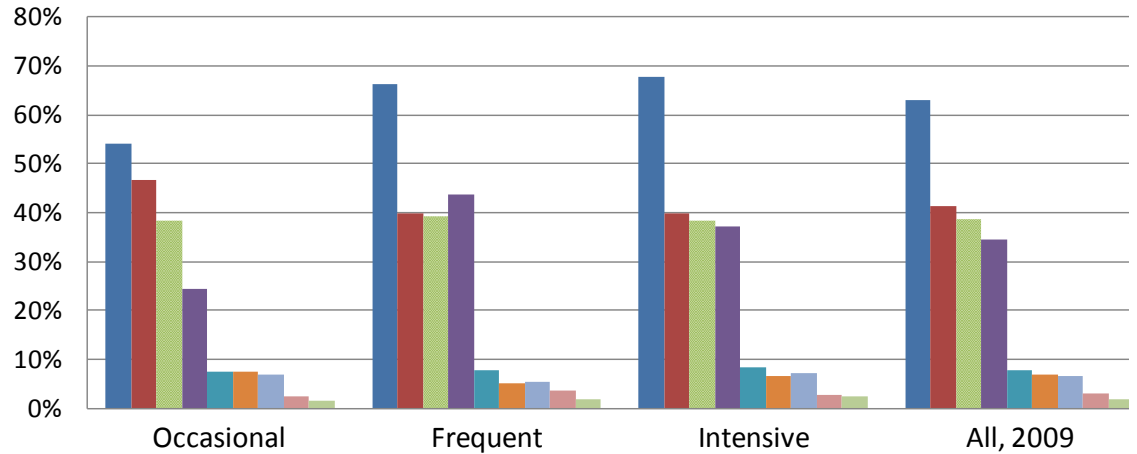
exercised only with respect to transportation. For example, as one would expect, of riders earning more than \$35,000, 91% are employed outside the home, compared to 73% of those with lower incomes. The more interesting fact is that with that level of employment and income come more privileges at work. For example, while 45% of those employed riders with lower incomes usually work on Saturdays, only 13% of those with higher incomes do. For Sunday the same ratio is 34% to 9%.

Communications

Figure 46 Communication Preference

Q28 How would you prefer to receive information about route and service changes?

(Source: Triangle Transit Onboard Survey, 2009)



■ Inside the bus	54%	66%	68%	63%
■ Website	47%	40%	40%	41%
■ At major bus stops	38%	39%	38%	39%
■ E-mail alert	24%	44%	37%	35%
■ Facebook	7%	8%	9%	8%
■ By phone	7%	5%	7%	7%
■ Text message	7%	6%	7%	7%
■ Other	2%	4%	3%	3%
■ Twitter	2%	2%	2%	2%

Preferred modes of communication

Riders were asked how they would prefer to receive information about route and service changes. They were free to cite multiple sources. Most riders (63%) said they prefer to receive such information inside the bus. This is particularly true, as one would expect, of those who spend more time on the buses – i.e., frequent and intensive riders (66% and 68%, respectively). However, 54% of even occasional riders said the same thing.

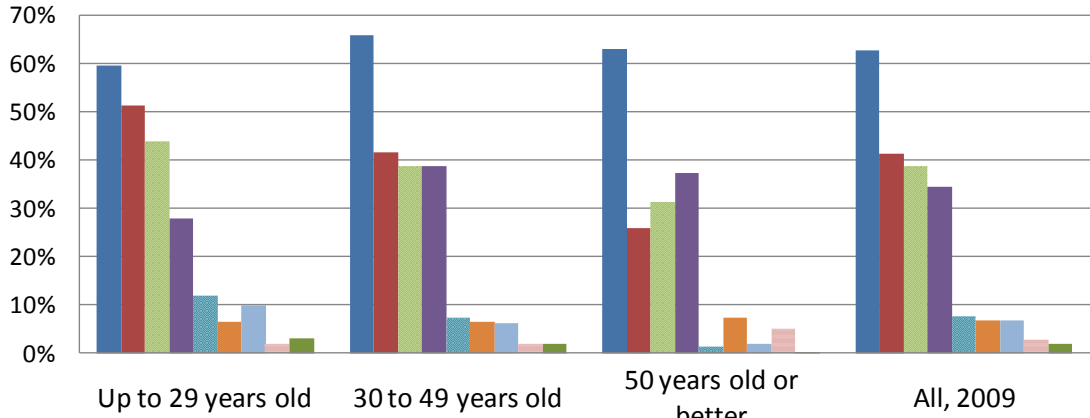
The second mode most often mentioned was the website. It was mentioned by 41% of riders. It is interesting to note that more of the occasional riders (47%) than the frequent or intensive riders (40%) cited the website as their preferred source of information.

Having information and major bus stops is preferred by almost as many (39%).

Figure 47 Communication Preference by Age

Q28 How would you prefer to receive information about route and service changes?

(Source: Triangle Transit Onboard Survey, 2009)



	Up to 29 years old	30 to 49 years old	50 years old or better	All, 2009
■ Inside the bus	59.6%	65.8%	63.2%	62.9%
■ Website	51.4%	41.6%	25.9%	41.4%
■ At major bus stops	43.9%	38.9%	31.4%	38.8%
■ E-mail alert	27.9%	38.8%	37.3%	34.5%
■ Facebook	12.1%	7.6%	1.4%	7.8%
■ By phone	6.5%	6.6%	7.3%	7.0%
■ Text message	9.9%	6.3%	1.9%	6.7%
■ Other	2.1%	2.0%	5.2%	3.0%
■ Twitter	3.1%	2.1%	.2%	2.0%

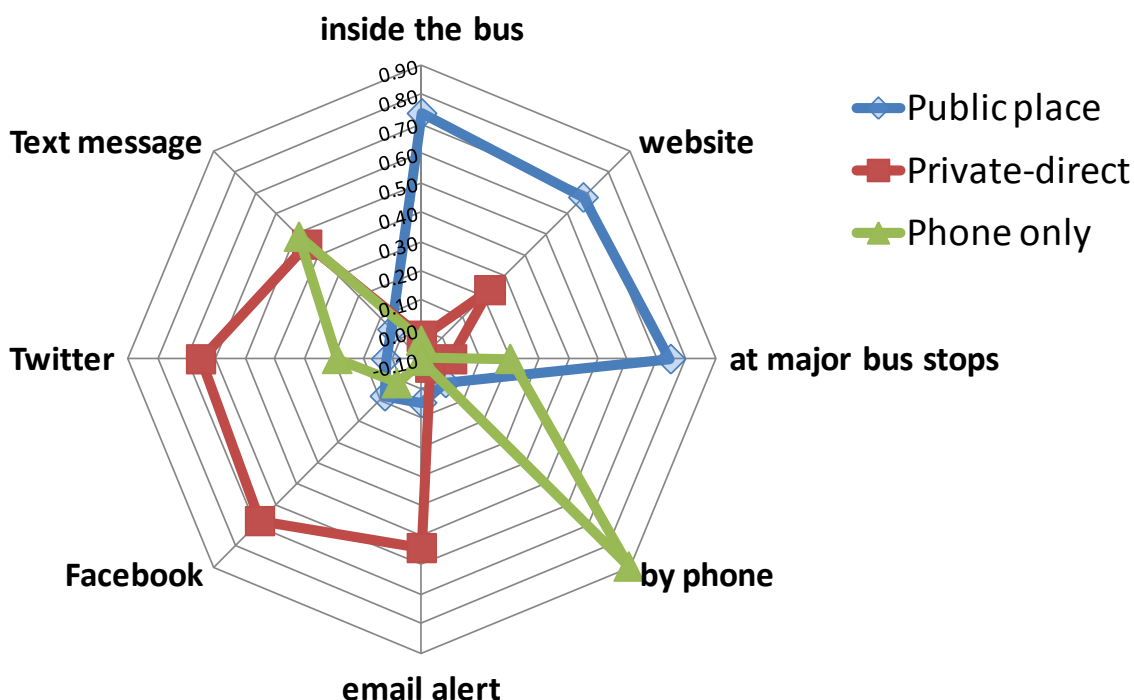
Age and service change communication preferences

Regardless of age, a clear majority of riders prefers to have information about service changes inside the bus. Younger riders, as one would expect, are more likely than older riders to prefer certain electronic modes of communication, including the website, Facebook, text message, and Twitter. However, those 29 years old and younger are somewhat less likely to prefer to have e-mail alerts.

Figure 48 Styles of Preference for Service Change Information Sources

Factor analysis of information source preferences

(Source: Triangle Transit Onboard Survey, 2009)



Styles of preference for service change information sources

Factor analysis is a statistical technique that enables us to observe underlying groupings of the attitudes in survey data when responses are not mutually exclusive. For information about service changes, there are three styles which characterize different people.

Q28. How would you prefer to receive information about route and service changes (choose all that apply)

The scores in the cells are "factor scores." They can vary from -1 to +1. They represent a measure of "cohesion" of each element with the whole construct.

	Public place	Private-direct	Phone only
inside the bus	0.73	-0.02	-0.04
website	0.68	0.23	-0.10
at major bus stops	0.75	0.00	0.20
by phone	0.01	-0.06	0.90
email alert	0.05	0.55	-0.09
Facebook	0.08	0.68	0.02
Twitter	0.02	0.65	0.19
Text message	0.04	0.45	0.49

The chart above shows those three groupings diagrammatically, showing both how they were mutually exclusive and how they overlap to a limited extent. The inset table shows the statistics underlined the chart above. The web of gridlines in the chart represents the "factor scores" on a scale from the lowest score shown in the table (-.06) to the highest score (+.9).

Both the table and the chart show that people who prefer to have information in relatively public sources such as inside the bus on the website or at major bus stops do not prefer to have information by phone

by e-mail alert, Facebook, or Twitter. In other words, if Triangle Transit were to switch to direct delivery methods for information and am not post messages inside the buses, on the website, or at major bus stops, it would not communicate with these people. We have already seen in previous charts that more people prefer to information inside the bus than any other mode of communication. Consequently such a move would be very disadvantageous.

Another group prefers to have information in a personalized, electronic manner via e-mail, Facebook, or Twitter. Some of that group also would prefer text messaging.

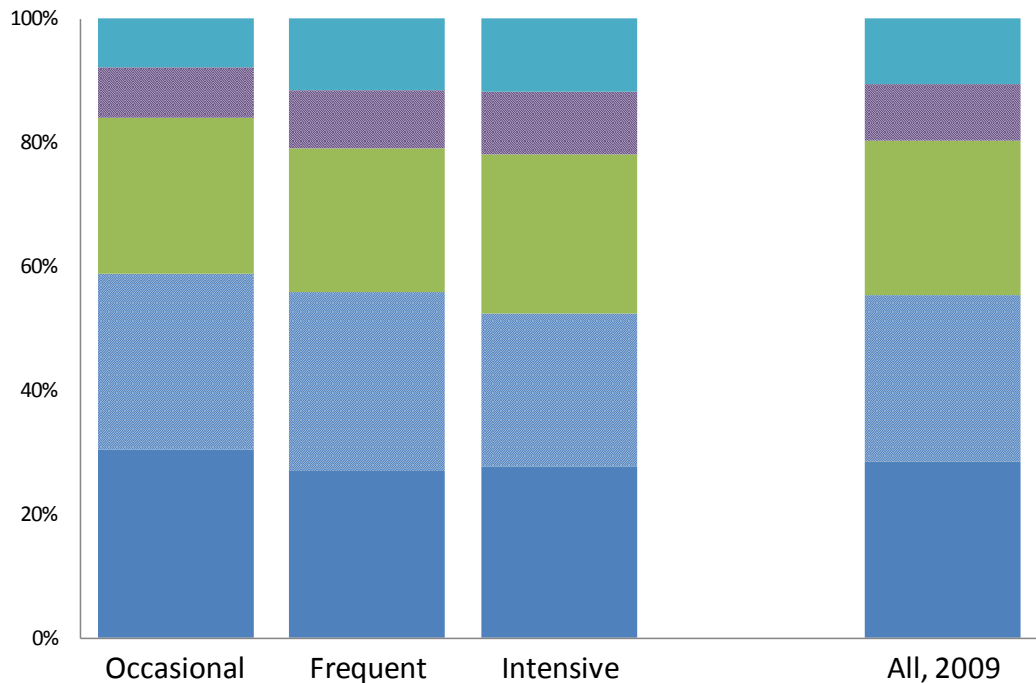
Finally, another group of riders prefers to have information directly by phone and, related to that (although not strongly) some would prefer to have the information by text message.

To reiterate, the factor analysis is not a measure of the size of these groups. The percent preferring each of these modes is ordered and presented earlier charts. What the factor analysis adds is simply a way to view the somewhat mutually exclusive preference profiles for receipt of information.

Figure 49 Website Visit Frequency

Q30 How many times have you visited the triangletransit.org or gotriangle.com websites in the past month?

(Source: Triangle Transit Onboard Survey, 2009)



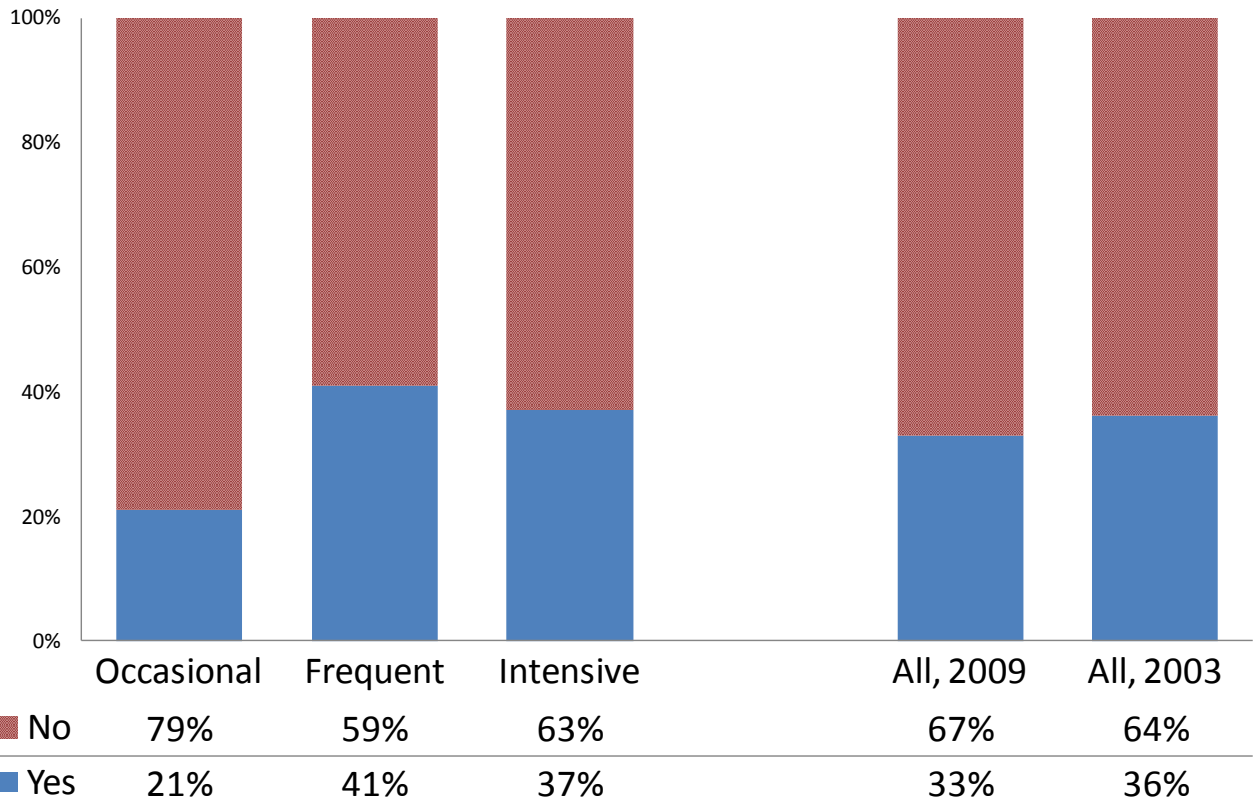
■ More than 10 times	8%	12%	12%	11%
■ 6 to 10 times	8%	9%	10%	9%
■ 3 to 5 times	25%	23%	26%	25%
■ 1 or 2 times	29%	29%	25%	27%
■ None	30%	27%	28%	28%

Use of the Triangle Transit and regional websites

The websites triangletransit.org and gotriangle.com are regularly used by the Triangle Transit clientele. Only 28% said they had not used these websites at least once in the past month and many had used the sites several times. The ridership segments vary relatively little in terms of their utilization, although as one might expect, the occasional riders were also less frequent users of the websites.

Figure 50 Desire Triangle Transit Email Alerts

Q31 Would you like to receive email alerts about Triangle Transit service?
 (Source: Triangle Transit Onboard Surveys, 2003 & 2009)



A desire to receive Triangle Transit e-mail alerts

Since 2003, the desire to receive e-mail alerts from Triangle Transit has not changed substantially. In 2003 36% said they would like to receive such alerts, while 64% said they preferred not to. These proportions are essentially the same in 2009. Now we find that 33% said they would prefer to receive e-mail alerts and 67% would not.

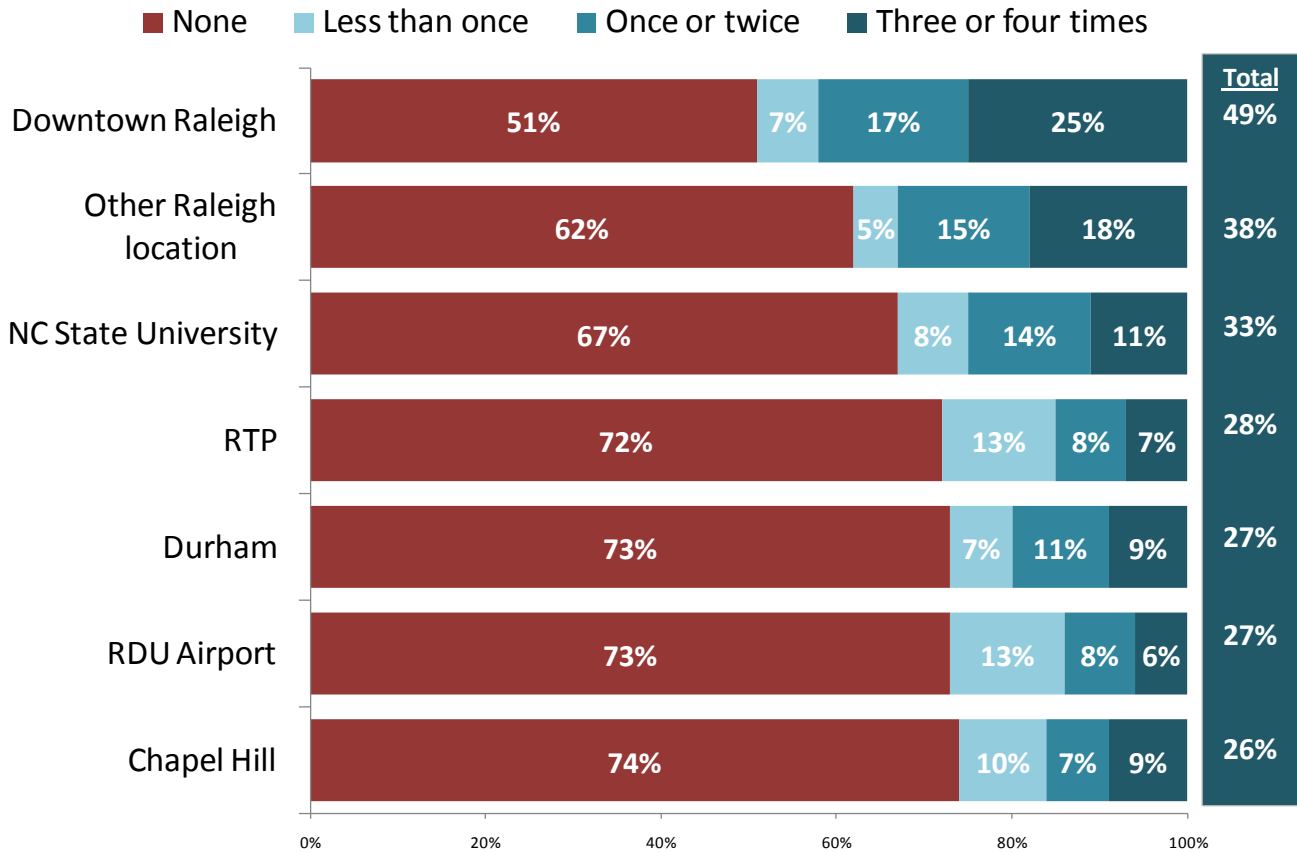
Occasional riders are less likely than others to want e-mail alerts. While 21% of occasional riders would like alerts, this is true of 41% of frequent and 37% of intensive users. Oddly, of the 2,150 respondents to the survey, 696 said they would like to receive email alerts, but only 538 of these provided an email address, while the other 158 wanted alerts but provided no email address. Perhaps some of them are already on a Triangle Transit email list, while perhaps others would like alerts but lack an email address. Or there may be other reasons.

Cary

Figure 51 Perceived Likelihood of Using Cary Saturday Service

If Saturday service were provided to and from Cary, how many Saturdays a month would you use it to go to . . .

(Source: Triangle Transit Onboard Survey, 2009, Cary component only)



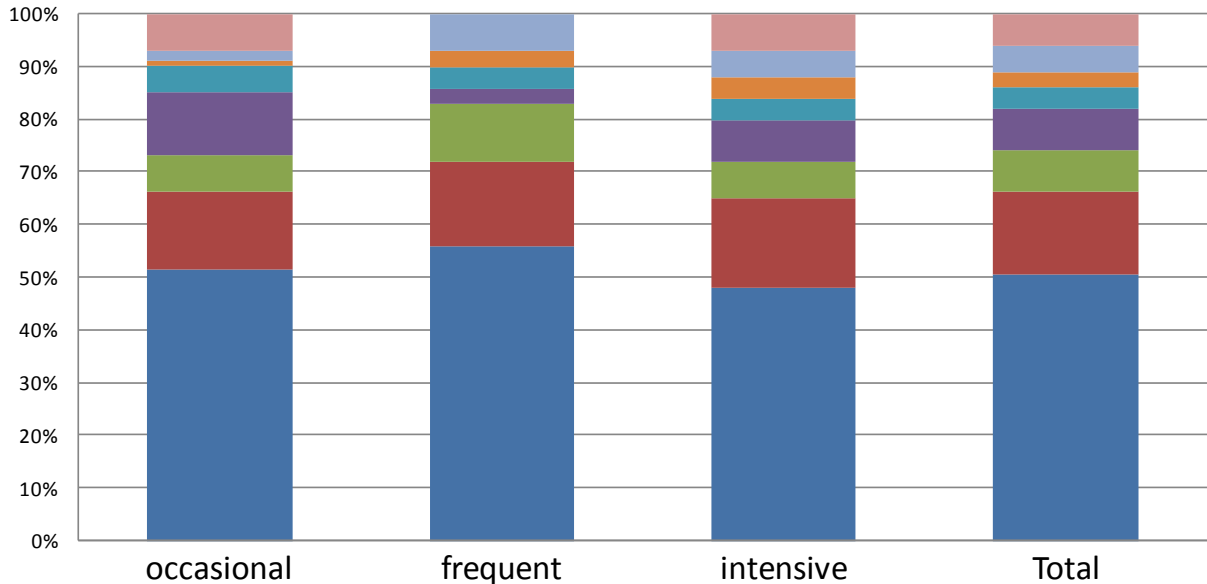
Perceived likelihood of using Saturday service between Cary and area destinations

Riders on routes serving Cary were provided with a special questionnaire (see appendix) which included the following question: "If Saturday service were provided to and from Cary, how many Saturdays per month would you use it to go to these locations?" The locations from which the rider could choose are shown in the chart above.

First, notice that the majority of Cary riders said they would not use the service at all. However 49% said they would use it to go to downtown Raleigh at least occasionally, and within that group, 25% said they would use it on three or four Saturdays per month. Raleigh appears to be the prime destination for Saturday travel by these riders because the second most popular response was other Raleigh locations.

Figure 52 Number of Cary Route Saturday Destinations

(Source: Triangle Transit Onboard Survey, 2009)



Number of destinations to which riders believe they would go from Cary on Saturdays

Seven	7%	0%	7%	6%
Six	2%	7%	5%	5%
Five	1%	3%	4%	3%
Four	5%	4%	4%	4%
Three	12%	3%	8%	8%
Two	7%	11%	7%	8%
One	15%	16%	17%	16%
None	52%	56%	48%	51%

The number of Cary Saturday route destinations to which people believe they would travel

The total number of different destinations riders thought they would go to on a Saturday if service were provided was computed by counting any positive response as an indication that the rider might travel to a particular destination. Since there were seven destinations offered, the numbers can vary between zero and seven.

What we see is that predominantly riders do not expect to be traveling broadly to a large number of destinations. Rather, most riders believe they might go to one or two, or perhaps three destinations. Thus, 16% said they would probably go to one destination, while another 16% that they would go to two or three. A total of 18% appear to be very peripatetic in that they thought they would get to four or more destinations in the course of one month's Saturdays.

Figure 53 Cary route demography

Demographics of riders on the Cary and non-Cary routes

		<u>Non-Cary routes</u>	<u>Cary routes</u>
Ethnic/racial groups	African American	39%	34%
	Asian	10%	12%
	Hispanic	5%	8%
	White	42%	41%
	Native American	1%	0%
	other	3%	4%
<hr/>			
Total annual household income	less than \$10K	16%	17%
	\$10K to less than \$15K	6%	9%
	\$15K to less than \$20K	5%	3%
	\$20K to less than \$25K	10%	11%
	\$25K to less than \$35K	13%	14%
	\$35K to less than \$50K	15%	10%
	\$50K to less than \$75K	15%	15%
	75K to less than \$100K	11%	11%
more than \$100K	8%	9%	
<hr/>			
Age categories	19 or younger	9%	6%
	20 - 34	40%	37%
	35 - 49	29%	31%
	50 - 64	20%	25%
	65 +	2%	2%
<hr/>			
Employment	Employed for pay in your home	3%	3%
	Employed for pay outside the home	61%	67%
	Homemaker	2%	2%
	Retired	3%	2%
	Student	26%	21%
	Unemployed	6%	4%

The demography of Cary route users

Users of the Cary routes are very similar demographically to the users of all other routes. There may be a slight difference in age, with Cary route users being slightly older. They may also be a difference in terms of employment with Cary users more likely to be employed outside the home and less likely to be students or to be unemployed.

Appendix A: Basic Questionnaire

El cuestionario es imprimido en español del otro lado

triangletransit  To improve service, Triangle Transit would like to know how you use the bus! Please circle or write in your answers.

Please tell us about how you use Triangle Transit

- During the past seven days, which days have you ridden Triangle Transit?

Mon	Tue	Wed	Thur	Fri	Sat
-----	-----	-----	------	-----	-----
- How long have you been riding Triangle Transit?
 (1) This is the first time (2) Less than 1 year (3) 1-2 years
 (4) 3-4 years (5) More than 4 years
- Compared to one year ago, do you now ride Triangle Transit...
 (1) More often? (2) The same? (3) Less often? (4) Did not ride a year ago
- What is the one main purpose of this bus trip? (Please choose one)
 (1) go to or from work (2) go to or from shopping
 (3) attend middle, or high school (4) attend college or vocational school
 (5) go to or from social services (6) go to or from doctor or medical visit
 (7) social or recreational visit (8) go to or from the airport for a plane trip
 (9) Other: _____
- Which bus systems do you use during this trip? (All that apply)
 (1) Triangle Transit only (2) CAT (3) Chapel Hill Transit (4) C-Tran
 (5) DATA (6) Duke Transit (7) Greyhound/Trailways (8) Wolfline
- In making this trip in one direction, how many times do you have to change buses (including Triangle Transit and other systems in the region, and any change of bus you may have already made)?
 0-No change of bus 1 2 3 or more changes of bus
- If you transfer to or from another Triangle Transit route on this trip, which other route do you use? Rt. Number: _____
- How do you usually get from home to the nearest Triangle Transit bus stop?
 (1) Walk (2) Bike (3) You drive (4) You are dropped off
 (5) Local bus other than Triangle Transit (6) Other: _____
- Door to door, how many minutes does this one-way trip usually take from where you start to your final destination including the time to get to and from the bus stop?
 _____ Minutes
- About how many minutes does it usually take you to get from home to the nearest Triangle Transit bus stop?
 _____ Minutes

11. How did you pay the fare on the first Triangle Transit bus you boarded today?

- (1) One-way cash fare (2) A senior/disabled one-way cash fare (3) 30 day pass
 (4) \$25 value card (5) 10 ride pass (6) GoPass (7) Day pass (8) Other

In the past thirty days, how would you rate Triangle Transit on the following factors?

	Excellent	Very poor	Don't know or don't use	... In the past thirty days have you had a problem with this?
12. Total travel time, door to door	7 6 5 4 3 2 1	DK	Y N	
13. Buses running on-time	7 6 5 4 3 2 1	DK	Y N	
14. Courtesy of bus operators	7 6 5 4 3 2 1	DK	Y N	
15. Time Triangle Transit buses stop running in the evening	7 6 5 4 3 2 1	DK	Y N	
16. Frequency of service	7 6 5 4 3 2 1	DK	Y N	
17. Comfort of the ride	7 6 5 4 3 2 1	DK	Y N	
18. Cleanliness of the bus	7 6 5 4 3 2 1	DK	Y N	
19. Comfort while waiting for the bus	7 6 5 4 3 2 1	DK	Y N	
20. Connections between Triangle Transit and other local buses (CAT, CHT, C-Tran, DATA, Duke, Wolfline)	7 6 5 4 3 2 1	DK	Y N	
21. Connections between Triangle Transit buses	7 6 5 4 3 2 1	DK	Y N	
22. How easy it is to understand the printed bus schedules	7 6 5 4 3 2 1	DK	Y N	
23. Accuracy of information from 485-RIDE telephone operators	7 6 5 4 3 2 1	DK	Y N	
24. Accuracy of information from staff at the ticket office at the Regional Transit Center	7 6 5 4 3 2 1	DK	Y N	
25. OVERALL, how do you rate Triangle Transit?	7 6 5 4 3 2 1	DK		
26. OVERALL, how do you rate transit service in the region, including all of the bus systems?	7 6 5 4 3 2 1	DK		
27. Of the services listed above, which would be the <u>two most important</u> to improve? Please write in the question numbers: _____ Most important _____ Next most important				
28. How would you prefer to receive information about route and service changes? (All that apply)				

- (1) Inside the bus (2) Website (3) At major bus stops (4) By phone
 (5) E-mail alert (6) Facebook (7) Twitter (8) Text message
 (9) Other: _____

29. Why did you choose to ride the bus today? (All that apply)

- (1) Only transportation available to me (2) To save money on driving costs
 (3) To save time (4) To avoid having to park
 (5) To avoid driving in traffic (6) More convenient than driving
 (7) My employer provides a subsidy (8) Better for the environment

30. How many times have you visited the triangletransit.org or gotriangle.org websites in the past month?

- None 1 or 2 3 to 5 6 to 10 More than 10

31. Would you like to receive email alerts about Triangle Transit service? (1) No (2) Yes

(If "Yes") Your email address? _____

Please tell us about yourself

- How old are you? _____ Years old
- What is the zip code at your home? Zip: _____
- Please mark all of the following that apply to you. Are you:
 (1) Employed for pay outside your home (2) Employed for pay in your home
 (3) Student (4) Homemaker (5) Unemployed (6) Retired
- What is the zip code at your main job? Zip: _____
- If you are employed, do you usually have to work on:
Most Saturdays Yes No **Most Sundays** Yes No
- There are ten legal holidays a year. If employed, on how many holidays do you usually work?
 None 1 2 3 4 5 6 7 8 9 10
- How many cars or other motor vehicles are available for you to use?
 0 1 2 3 or more
- Are you female or male? (1) Female (2) Male
- Which do you consider yourself? (All that apply)
 (1) African American/Black (2) Asian (3) Hispanic
 (4) White (5) Native American Indian (6) Other: _____
- What is your total annual household income?
 (1) Less than \$10,000 (2) \$10,000 to \$14,999 (3) \$15,000 to \$19,999
 (4) \$20,000 to \$24,999 (5) \$25,000 to \$34,999 (6) \$35,000 to \$49,999
 (7) \$50,000 to \$74,999 (8) \$75,000 to \$100,000 (9) More than \$100,000

Comments: _____

Thank you! Please return this form to the surveyor on your bus.



Para mejorar el servicio, Triangle Transit quisiera saber cómo usa el autobús. Marque con un círculo o escriba sus respuestas.

Por favor, díganos cómo usa Triangle Transit.

- Durante los últimos siete días, ¿qué días ha usado el servicio Triangle Transit? Lun Mar Mié Jue Vie Sáb
- ¿Cuánto hace que viaja con Triangle Transit?
 - Esta es la primera vez
 - Menos de 1 año
 - Entre 1 y 2 años
 - Entre 3 y 4 años
 - Más de 4 años
- En comparación con un año atrás, ahora viaja con Triangle Transit
 - ¿Más que antes?
 - ¿La misma frecuencia?
 - ¿Menos que antes?
 - No usaba el servicio hace un año
- ¿Cuál es el principal motivo de este viaje en autobús? (Seleccione una opción)
 - ir o volver del trabajo
 - ir o volver de hacer compras
 - ir a la escuela secundaria o preparatoria
 - asistir a la universidad o escuela vocacional
 - ir o volver de servicios sociales
 - ir o volver de una visita al médico o por motivos de salud
 - visita social o recreativa
 - ir o venir del aeropuerto para un viaje en avión
 - Otro motivo _____
- ¿Qué sistemas de autobús usa durante este viaje? (Todas las opciones que apliquen)
 - Triangle Transit solo
 - CAT
 - Chapel Hill Transit
 - C-Tran
 - DATA
 - Duke Transit
 - Greyhound/Trailways
 - Wolfline
- Cuando realiza este viaje en una sola dirección, ¿cuántas veces tiene que cambiar de autobús? (Incluya Triangle Transit y otros sistemas de la región y cualquier cambio de autobús).
 - 0-Ningún cambio de autobús
 - 1
 - 2
 - 3 o más cambios de autobús
- Si efectúa un trasbordo de otra ruta de Triangle Transit o hacia otra ruta en este viaje, ¿qué otra ruta usa? Rt. Número: _____
- ¿Generalmente cómo va de su casa a la parada de autobús más cercana de Triangle Transit?
 - Caminando
 - En bicicleta
 - Manejando
 - Lo llevan
 - Autobús local que no es Triangle Transit
 - Otro: _____
- ¿Cuántos minutos le lleva en general este viaje de ida desde cuando sale de su casa hasta llegar a su destino final? Incluya el tiempo para ir y volver de la parada del autobús. _____ minutos
- ¿Aproximadamente cuántos minutos le lleva en general ir de su casa a la parada de autobús más cercana de Triangle Transit? _____ minutos

- ¿Cómo pagó el boleto del primer autobús de Triangle Transit que abordó hoy?
 - Boleto de ida en efectivo
 - Boleto de ida en efectivo para adultos mayores/discapacitados
 - Pase para 30 días
 - Tarjeta de \$25
 - Pase de 10 viajes
 - GoPass
 - Pase diario
 - Otro modo

¿Cómo calificaría el desempeño de Triangle Transit en los últimos 30 días en relación con los siguientes factores?

Factor	Boletería							En los últimos 30 días, ¿ha tenido un problema en este aspecto?		
	7	6	5	4	3	2	1	No sé	Sí	No
12. Tiempo total de viaje, de puerta a puerta	7	6	5	4	3	2	1	No sé	Sí	No
13. Puntualidad de los autobuses	7	6	5	4	3	2	1	No sé	Sí	No
14. Cortesía de los conductores	7	6	5	4	3	2	1	No sé	Sí	No
15. Hora en que dejan de dar servicio los autobuses de Triangle Transit en la noche	7	6	5	4	3	2	1	No sé	Sí	No
16. Frecuencia del servicio	7	6	5	4	3	2	1	No sé	Sí	No
17. Comodidad de los viajes	7	6	5	4	3	2	1	No sé	Sí	No
18. Limpieza de los autobuses	7	6	5	4	3	2	1	No sé	Sí	No
19. Comodidad mientras espera al autobús	7	6	5	4	3	2	1	No sé	Sí	No
20. Conexiones entre Triangle Transit y otros autobuses locales (CAT, CHT, C-Tran, DATA, Duke, Wolfline)	7	6	5	4	3	2	1	No sé	Sí	No
21. Conexiones entre autobuses de Triangle Transit	7	6	5	4	3	2	1	No sé	Sí	No
22. Facilidad para comprender los horarios impresos de los autobuses	7	6	5	4	3	2	1	No sé	Sí	No
23. Exactitud de la información suministrada por 485-RIDE los operadores telefónicos	7	6	5	4	3	2	1	No sé	Sí	No
24. Precisión de la información suministrada por el personal de la boletería del Centro de Transporte Regional	7	6	5	4	3	2	1	No sé	Sí	No
25. ¿Cómo clasifica a Triangle Transit en general?	7	6	5	4	3	2	1	No sé		
26. En general, ¿cómo califica el servicio de transporte en la región, incluyendo todos los sistemas de autobuses?	7	6	5	4	3	2	1	No sé		
27. De los que figuran arriba, ¿cuáles son los <u>dos</u> aspectos que sería <u>más importante</u> mejorar? Escriba los números de pregunta. _____ Más importante _____ Segundo más importante										
28. ¿Le gustaría recibir alertas por correo electrónico sobre el servicio de Triangle Transit? (1) No (2) Sí (Si responde "Sí") Dirección de correo electrónico: _____										

- Si el sábado se ofreciera un servicio de ida y vuelta hacia Cary, ¿cuántos sábados por mes lo usaría para ir a estos lugares?

A. No usaría este servicio de los sábados

B. Ítem el sábado a: Veces por mes (contando solo sábados)

Ítem	Nunca	Menos de 1	1 o 2	3 o 4
1. Centro de Raleigh	Nunca	Menos de 1	1 o 2	3 o 4
2. Univ. Estatal de NC	Nunca	Menos de 1	1 o 2	3 o 4
3. Otro lugar de Raleigh	Nunca	Menos de 1	1 o 2	3 o 4
4. RTP	Nunca	Menos de 1	1 o 2	3 o 4
5. Durham	Nunca	Menos de 1	1 o 2	3 o 4
6. Chapel Hill	Nunca	Menos de 1	1 o 2	3 o 4
7. Aeropuerto RDU	Nunca	Menos de 1	1 o 2	3 o 4

Acerca de usted

- ¿Qué edad tiene? _____ años
- ¿Cuál es su código postal? Código postal: _____
- Por favor marque todas las opciones que apliquen para usted. Usted:
 - Es empleado con paga fuera de su casa
 - Es empleado con paga en su casa
 - Estudiante
 - Ama de casa
 - Está des empleado
 - Jubilado
- ¿Cuál es el código postal de su principal lugar de trabajo? _____
- Si es empleado, ¿generalmente trabaja los siguientes días?

La mayoría de los sábados	Sí	No
La mayoría de los domingos	Sí	No
- Hay diez feriados nacionales por año. Si es empleado, ¿en cuántos feriados suele trabajar?

Ninguno	1	2	3	4	5	6	7	8	9	10
---------	---	---	---	---	---	---	---	---	---	----
- ¿Cuántos carros o algún otro tipo de vehículo tiene a su disposición? 0 1 2 3 o más
- ¿Es usted mujer o hombre? (1) Mujer (2) Hombre
- ¿Cómo se considera usted? (Todas las opciones que apliquen)
 - Afroamericano(a)
 - Moreno(a)
 - Asiático(a)
 - Hispano(a)
 - Blanco
 - Indio(a) nativo(a) de Estados Unidos
 - Otro: _____
- ¿Cuál es el ingreso o anual total de la familia?
 - Menos de \$10,000
 - Entre \$10,000 y \$14,999
 - Entre \$15,000 y \$19,999
 - Entre \$20,000 y \$24,999
 - Entre \$25,000 y \$34,999
 - Entre \$35,000 y \$49,999
 - Entre \$50,000 y \$74,999
 - Entre \$75,000 y \$100,000
 - Más de \$100,000

Comentarios: _____

Por favor entregue el formulario a los encuestadores que se encuentra en el bus. ¡Muchas gracias!



Appendix B: Cary Questionnaire

El cuestionario es imprimido en español del otro lado



To improve service,
Triangle Transit would
like to know how you use the bus!
Please circle or write in your answers.

Please tell us about how you use Triangle Transit

1. During the past seven days, which days have you ridden Triangle Transit?

Mbn Tue Wed Thur Fri Sat

2. How long have you been riding Triangle Transit?

- (1) This is the first time (2) Less than 1 year (3) 1-2 years
- (4) 3-4 years (5) More than 4 years

3. Compared to one year ago, do you now ride Triangle Transit...

- (1) More often? (2) The same? (3) Less often? (4) Did not ride a year ago

4. What is the one main purpose of this bus trip? (Please choose one)

- (1) go to or from work (2) go to or from shopping
- (3) attend middle, or high school (4) attend college or vocational school
- (5) go to or from social services (6) go to or from doctor or medical visit
- (7) social or recreational visit (8) go to or from the airport for a plane trip
- (9) Other _____

5. Which bus systems do you use during this trip? (All that apply)

- (1) Triangle Transit only (2) CAT (3) Chapel Hill Transit (4) C-Tran
- (5) DATA (6) Duke Transit (7) Greyhound/Trailways (8) Wolfline

6. In making this trip in one direction, how many times do you have to change buses (including Triangle Transit and other systems in the region, and any change of bus you may have already made)?

- 0-No change of bus 1 2 3 or more changes of bus

7. If you transfer to or from another Triangle Transit route on this trip, which other route do you use? Rt. Number: _____

8. How do you usually get from home to the nearest Triangle Transit bus stop?

- (1) Walk (2) Bike (3) You drive (4) You are dropped off
- (5) Local bus other than Triangle Transit (6) Other: _____

9. Door to door, how many minutes does this one-way trip usually take from where you start to your final destination including the time to get to and from the bus stop?

_____ Minutes

10. About how many minutes does it usually take you to get from home to the nearest Triangle Transit bus stop?

_____ Minutes

11. How did you pay the fare on the first Triangle Transit bus you boarded today?

- (1) One-way cash fare (2) A senior/disabled one-way cash fare (3) 30 day pass
- (4) \$25 value card (5) 10 ride pass (6) GoPass (7) Day pass (8) Other

In the past thirty days, how would you rate Triangle Transit on the following factors?

	Excellent							Very poor							Don't Know or don't use		In the past thirty days have you had a problem with this?	
	7	6	5	4	3	2	1	7	6	5	4	3	2	1	DK	Y	Y	N
12. Total travel time, door to door	7	6	5	4	3	2	1	DK	Y	N								
13. Buses running on-time	7	6	5	4	3	2	1	DK	Y	N								
14. Courtesy of bus operators	7	6	5	4	3	2	1	DK	Y	N								
15. Time Triangle Transit buses stop running in the evening	7	6	5	4	3	2	1	DK	Y	N								
16. Frequency of service	7	6	5	4	3	2	1	DK	Y	N								
17. Comfort of the ride	7	6	5	4	3	2	1	DK	Y	N								
18. Cleanliness of the bus	7	6	5	4	3	2	1	DK	Y	N								
19. Comfort while waiting for the bus	7	6	5	4	3	2	1	DK	Y	N								
20. Connections between Triangle Transit and other local buses (CAT, CHT, C-Tran, DATA, Duke, Wolfline)	7	6	5	4	3	2	1	DK	Y	N								
21. Connections between Triangle Transit buses	7	6	5	4	3	2	1	DK	Y	N								
22. How easy it is to understand the printed bus schedules	7	6	5	4	3	2	1	DK	Y	N								
23. Accuracy of information from 485-RIDE telephone operators	7	6	5	4	3	2	1	DK	Y	N								
24. Accuracy of information from staff at the ticket office at the Regional Transit Center	7	6	5	4	3	2	1	DK	Y	N								
25. OVERALL, how do you rate Triangle Transit?	7	6	5	4	3	2	1	DK										
26. OVERALL, how do you rate transit service in the region, including all of the bus systems?	7	6	5	4	3	2	1	DK										

27. Of the services listed above, which would be the two most important to improve? Please write in the question numbers:

_____ Most important _____ Next most important

28. Would you like to receive email alerts about Triangle Transit service?

- (1) No (2) Yes

(If "Yes") Your email address? _____

29. If Saturday service were provided to and from Cary, how many Saturdays a month would you use it to go to these locations?

A	Would not use this Saturday service at all			
B	Would go on Saturday to:			
	None	Less than 1	1 or 2	3 or 4
1. Downtown Raleigh	None	Less than 1	1 or 2	3 or 4
2. NC State Univ	None	Less than 1	1 or 2	3 or 4
3. Other Raleigh location	None	Less than 1	1 or 2	3 or 4
4. RTP	None	Less than 1	1 or 2	3 or 4
5. Durham	None	Less than 1	1 or 2	3 or 4
6. Chapel Hill	None	Less than 1	1 or 2	3 or 4
7. RDU Airport	None	Less than 1	1 or 2	3 or 4

Please tell us about yourself

30. How old are you? _____ Years old

31. What is the zip code at your home? Zip: _____

32. Please mark all of the following that apply to you. Are you:

- (1) Employed for pay outside your home (2) Employed for pay in your home
- (3) Student (4) Homemaker (5) Unemployed (6) Retired

33. What is the zip code at your main job? Zip: _____

34. If you are employed, do you usually have to work on:
Most Saturdays Yes No Most Sundays Yes No

35. There are ten legal holidays a year. If employed, on how many holidays do you usually work?

None 1 2 3 4 5 6 7 8 9 10

36. How many cars or other motor vehicles are available for you to use?

0 1 2 3 or more

37. Are you female or male? (1) Female (2) Male

38. Which do you consider yourself? (All that apply)
(1) African American/Black (2) Asian (3) Hispanic
(4) White (5) Native American Indian (6) Other: _____

39. What is your total annual household income?
(1) Less than \$10,000 (2) \$10,000 to \$14,999 (3) \$15,000 to \$19,999
(4) \$20,000 to \$24,999 (5) \$25,000 to \$34,999 (6) \$35,000 to \$49,999
(7) \$50,000 to \$74,999 (8) \$75,000 to \$100,000 (9) More than \$100,000

Comments: _____

Thank you! Please return this form to the surveyor on your bus.

Appendix C: Listing of responses to question 7:

Q7. If you transfer to or from another Triangle Transit route on this trip, which other route do you use?

Note: While many riders provided the numbers of Triangle Transit routes, others provided DATA or other routes.

FCX/S	0.10%	15 DATA	0.10%
0	0.40%	15 WAKE MWD	0.10%
1	2.90%	15C	0.20%
1 DATA	0.10%	16	0.50%
1 & 4	0.30%	165	0.20%
1, 15, 13C, 11	0.10%	18	0.10%
10	0.40%	19	0.30%
10,3	0.10%	2	0.30%
101	1.00%	2 6	0.00%
101 105	0.10%	2 CAT	0.20%
101, 470	0.10%	20	0.10%
101/105	0.10%	201	1.80%
1015	0.10%	201,413,650	0.10%
102	0.50%	203	0.20%
102 & 105	0.10%	213	0.10%
102 105 47	0.20%	236	0.00%
1042	0.10%	25	0.10%
105	12.40%	25C	0.10%
105 1 2	0.00%	25C-WFX-1002	0.10%
105 102	0.10%	28	0.00%
105 201 102	0.00%	2838	0.10%
105 301	0.20%	3	0.50%
105 4 12	0.10%	30	0.10%
105 402	0.20%	301	4.80%
105 403	0.20%	301 105	0.10%
105 412	0.10%	301 305	0.10%
105 413	0.20%	301 412	0.10%
105 413 412 570 470 F		301-303	0.00%
C CHAPELLAS	0.10%	301147	0.20%
105 49	0.20%	302 APEX	0.10%
105 747	0.20%	303	0.60%
105 CH-NS	0.00%	305	0.50%
105 TO 403	0.10%	305 303	0.00%
105 TRANSFER TO 403	0.00%	310	0.10%
105-402	0.30%	311	3.30%
105-47	0.20%	311 305	0.10%
105,402	0.20%	311 403	0.20%
105,747	0.10%	311-301	0.20%
105/403 OR 413	0.10%	311, 412	0.20%
105/413	0.10%	311/403	0.00%
105&413	0.20%	4	0.50%
108	0.10%	4 2	0.10%
11	0.50%	40	0.10%
11 DATA	0.10%	402	4.90%
110-11	0.10%	402 & 403	0.00%
1135	0.10%	402 105	0.10%
118	0.10%	402 403	0.20%
12	0.80%	402 403 105	0.10%
12,6,1,WFX	0.20%	402 403 412 413S	0.10%
13	0.20%	402 412	0.20%
15	0.50%	402 500	0.20%
15 15C	0.10%	402 500 550	0.20%

402 OR 412	0.20%	421	0.10%
402-42	1.30%	429	0.10%
402, 105	0.10%	46	0.70%
402, 311, 403	0.10%	46 OR 47	0.20%
4,024,034,124,135	0.00%	46 SHUTTLE	0.20%
402,412	0.10%	46/47/403/311	0.20%
402/3	0.20%	47	1.60%
402/412	0.60%	47 311 403	0.20%
403	4.50%	470	0.10%
403 105	0.10%	49	1.30%
403 412	0.10%	49CISCO	0.20%
403 413	0.30%	5	0.70%
403 47	0.20%	5 8	0.10%
403/413	0.40%	500	0.20%
4032	0.20%	500/CATZ	0.10%
41	0.20%	501 413	0.00%
410	0.10%	503	0.00%
4102	0.20%	54	0.10%
411	0.20%	550	0.60%
412	7.30%	550 & 102	0.10%
412 101	0.10%	550 XPRESS	0.10%
412 105	0.40%	560	0.10%
412 402	0.20%	570	0.10%
412 402 413 403	0.20%	6	0.90%
412 403	0.10%	6 2	0.10%
412 413	0.40%	6 C-TRAN	0.10%
412 413 470	0.10%	6 CARY	0.10%
412 S-101	0.10%	6 CAT	0.10%
412-101	0.10%	60 15	0.10%
412-105-101	0.10%	600	0.30%
412, 413	0.20%	650	0.50%
412,402	0.20%	670	0.40%
412?403	0.10%	7	0.80%
412/301	0.10%	7 2	0.00%
412/402	0.30%	7 5	0.10%
412/413	0.60%	7 OR 5	0.10%
4125	0.10%	734	0.00%
412S	0.10%	7380	0.10%
413	6.70%	744	0.10%
413 105	0.30%	747	1.80%
413 403	0.20%	747 105	0.10%
413 412	0.20%	761 10	0.00%
413 412 403 402	0.10%	778	0.10%
413 S	0.10%	8	0.40%
413, 301	0.10%	8 CAT	0.10%
413, 412	0.10%	10-Aug	0.10%
413/412	0.10%	9-Jan	0.30%
4135	0.20%	A	0.10%
413S	0.10%	A VAN TO CLAYTON, PLEASE	
42	1.80%	SEND US A BUS!	0.10%
420	0.40%	BUCK JONES	0.10%
420, 413, 105 & 104	0.10%	BUCKONE	0.10%

C TRAN	0.00%	F	0.40%
CAPITAL 1	0.20%	FHF	0.00%
CAPITAL BLVD	0.20%	G403	0.00%
CAPT BLVD	0.00%	J	0.30%
CAT	0.40%	J OR CW	0.00%
CAT 11C CTRAN	0.00%	N/A	1.70%
CAT 15	0.00%	NA	0.10%
CAT 19	0.00%	NO TRANSFER	0.20%
CAT1	0.10%	NONE	0.30%
CAT6	0.00%	NS	0.10%
CATS & DATA	0.00%	RALEIGH	0.10%
CH TRANSIT	0.10%	S TRAN	0.10%
CTRAN 3	0.00%	SHUTTLE 46	0.10%
CW	0.10%	SHUTTLE 47	0.10%
CW (CHT)	0.00%	T CH 2 DATA	0.00%
D	0.10%	T-CAT	0.10%
D BUS	0.00%	T-CHAPELLE	0.10%
DATA	0.00%	TTA	0.10%
DATA 1	0.00%	TTA 105	0.10%
DATA 10	0.20%	WF EXCH	0.10%
DATA 16	0.20%	WF EXP & #1	0.20%
DATA 3	0.10%	WHICHEVER GOES DOWNTOWN	
DON'T	0.10%	DURHAM	0.10%
DURHAM	0.30%	ZEBUHN	0.10%

Appendix D: Route Profiles
