



Central New Jersey Route 1 Research Study



Background: Route 1 Corridor

- ◆ Traffic volumes in the Corridor are estimated to increase by 55% by Year 2020
- ◆ Only 2% of work trips are currently made by transit, primarily due to lack of service availability
- ◆ NJ TRANSIT's Forecasting Department estimates 31,200 weekday trips on the BRT
- ◆ BRT could reduce auto person trips by an estimated 11,000
- ◆ BRT would support smart growth in the Corridor

Research Goals

- ◆ Gather travel and demographic input required for ridership forecasting
- ◆ Identify important attributes of BRT
 - ◆ All-day survey of corridor bus routes
 - ◆ Focus groups with people who live and work in the Route 1 BRT service area
 - ◆ Conjoint Analysis (trade-off) to identify BRT features

Background: Bus

- ◆ Routes included in the survey:
 - ◆ **Route 600**
(Princeton Forrestal Village to Trenton Rail Station)
 - ◆ **Route 603**
(Lawrence Center to Mercer Mall)
 - ◆ **Route 605**
(Quakerbridge Mall to Montgomery Center)
 - ◆ **Route 606**
(Rider University to Princeton Care Center)



Methodology of Bus Survey

- ◆ All-day onboard survey of all inbound and outbound buses along the corridor from April 24 to 27, 2007
- ◆ Surveys were collected on-board and via mail
- ◆ A total of 643 completed questionnaires returned from 2,264 customers (28.4%)
- ◆ Census, no sampling error
- ◆ Margin of error is 3.9%
- ◆ Results at 95% confidence interval



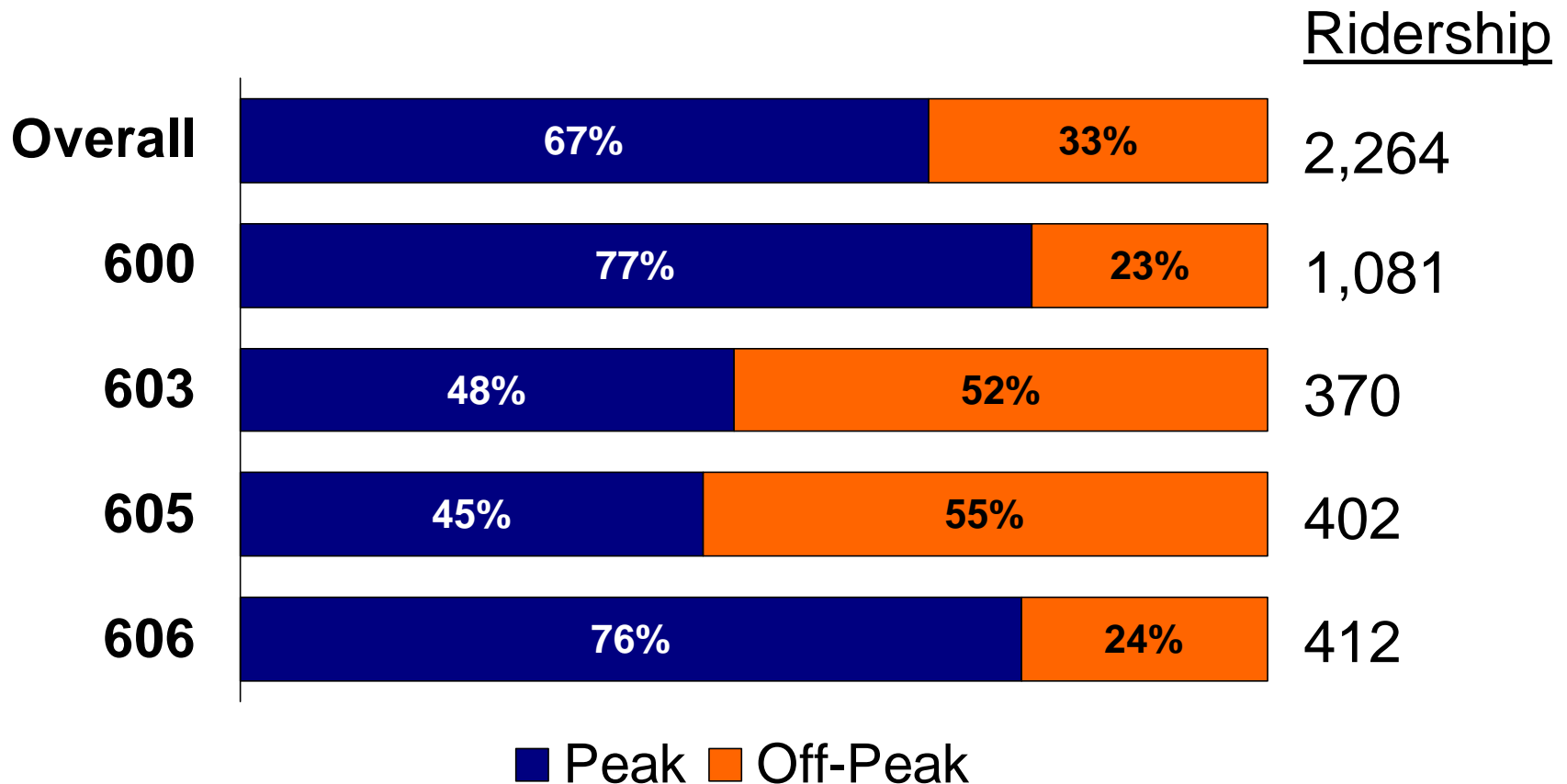
600 Bus Route is Most Utilized in the Study Area

Route	One-Day Ridership	Percent
600	1,081	48%
603*	370	16%
605	402	18%
606*	412	18%
Overall	2,264	100%

*Only a segment of these routes were surveyed, as the remaining segments were outside the study area



Majority of Bus Ridership is at Peak Times



Number of rider trips per day is double the ridership

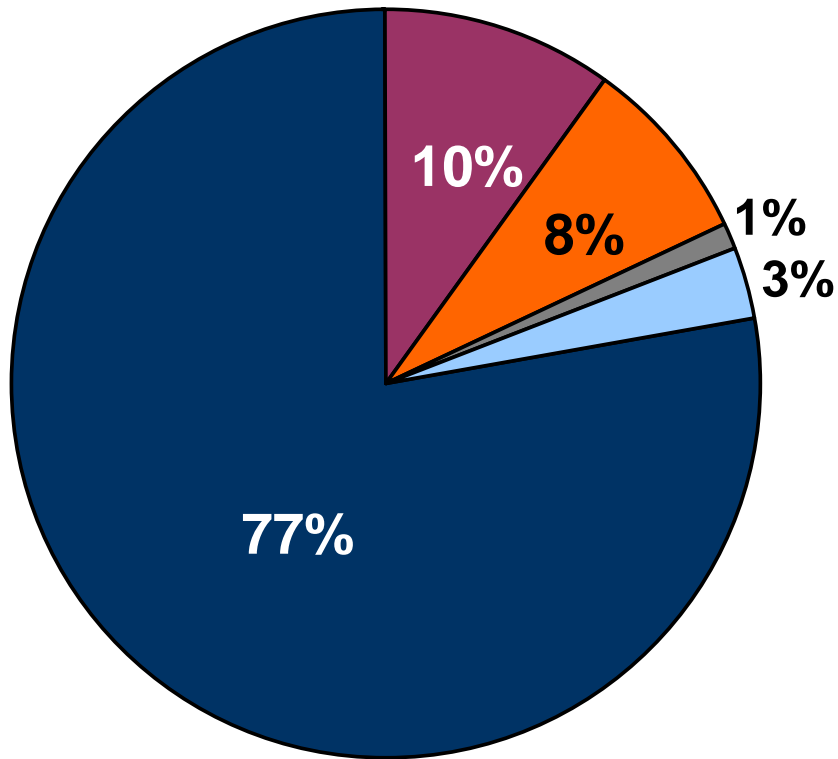
Bus Ridership Flows

Boarding Town	# of Riders	Deboarding Towns
Overall	1,615	Princeton (32%), Trenton (31%), Lawrence (14%)
Princeton	613	Trenton (35%), Princeton (34%)
Lawrence	355	Trenton (57%), Princeton (19%)
Trenton	307	Princeton (45%), Lawrence (26%), Trenton (19%)
West Windsor	183	Princeton (38%), Plainsboro (35%)
Plainsboro	82	West Windsor (63%), Princeton (17%)
Montgomery	15	Princeton (100%)
Hamilton	13	Princeton (50%), Plainsboro (29%), Lawrence (21%)

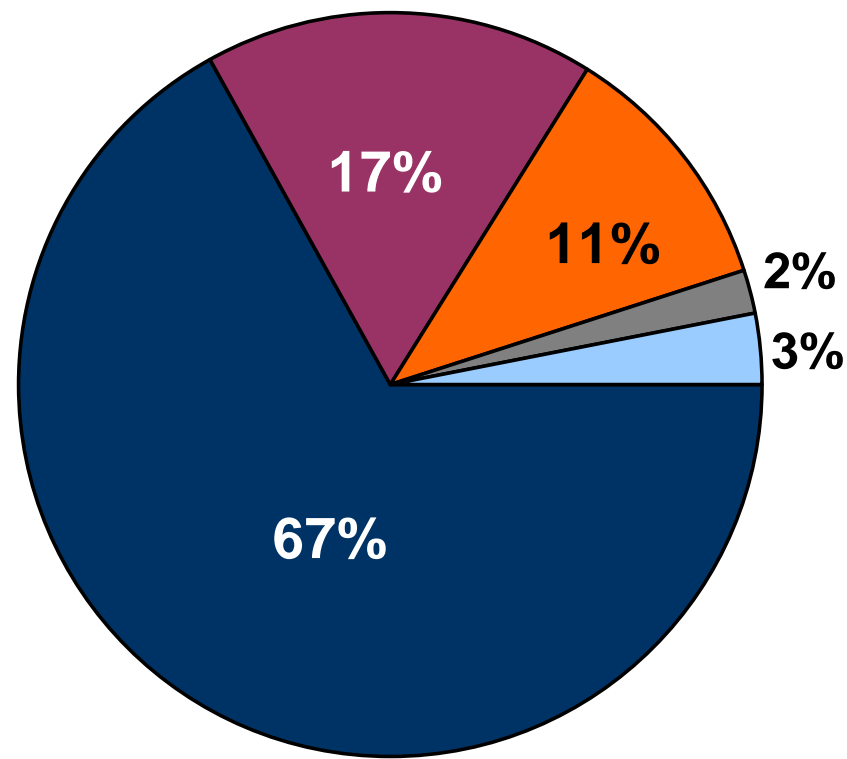


Majority of Riders Walk to/from the Bus Stop

To Bus Stop

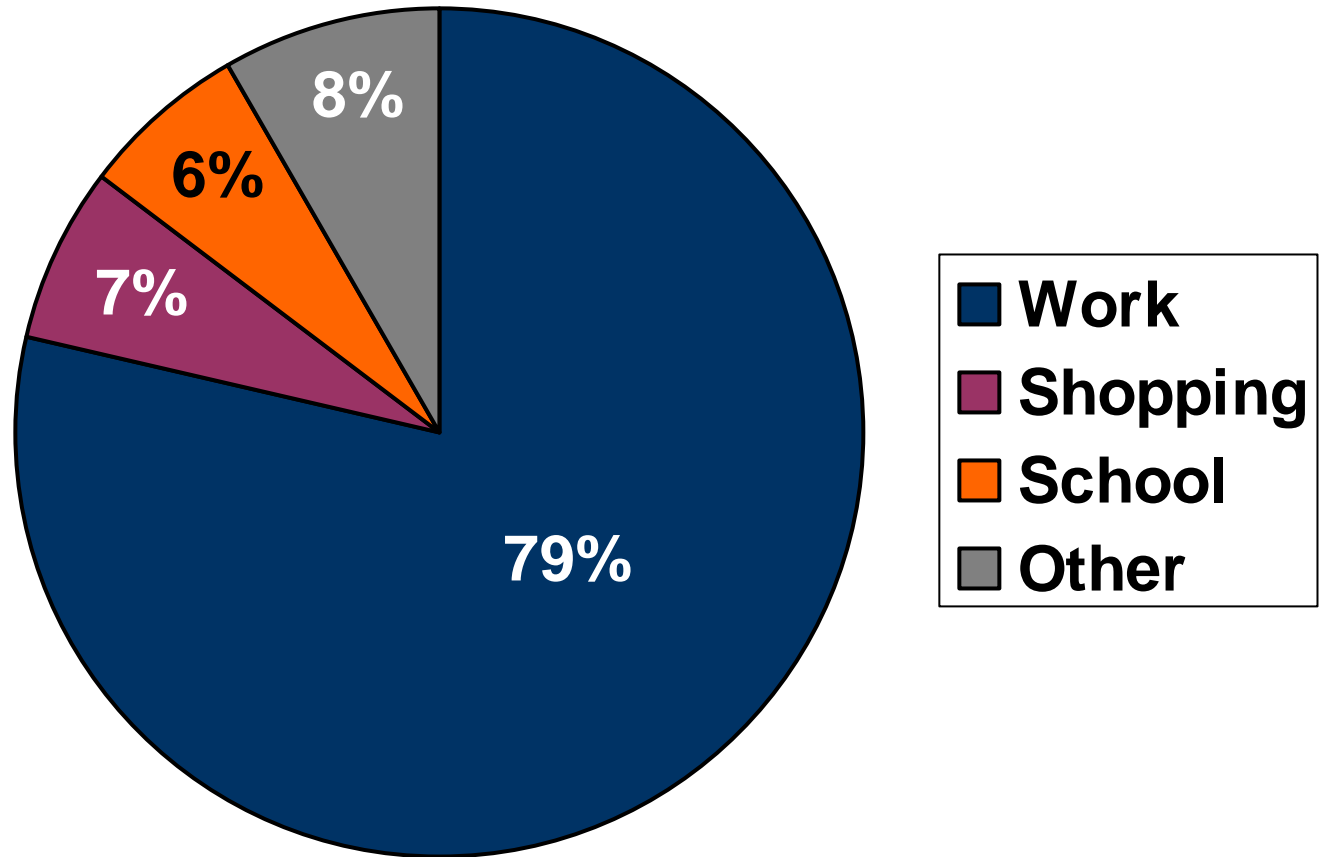


From Bus Stop

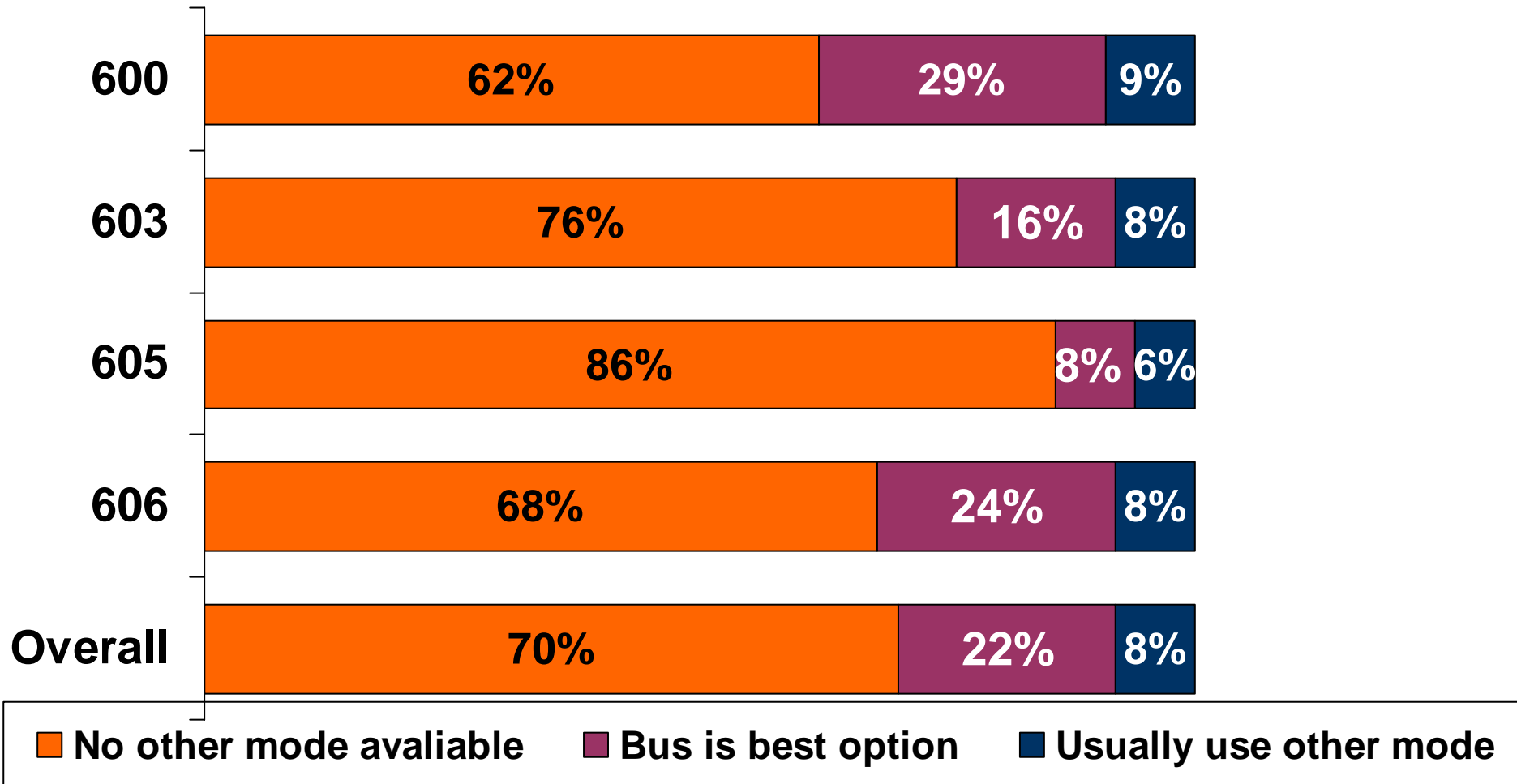


■ Walked Only ■ Another Bus ■ NJT Train ■ RiverLINE ■ Other

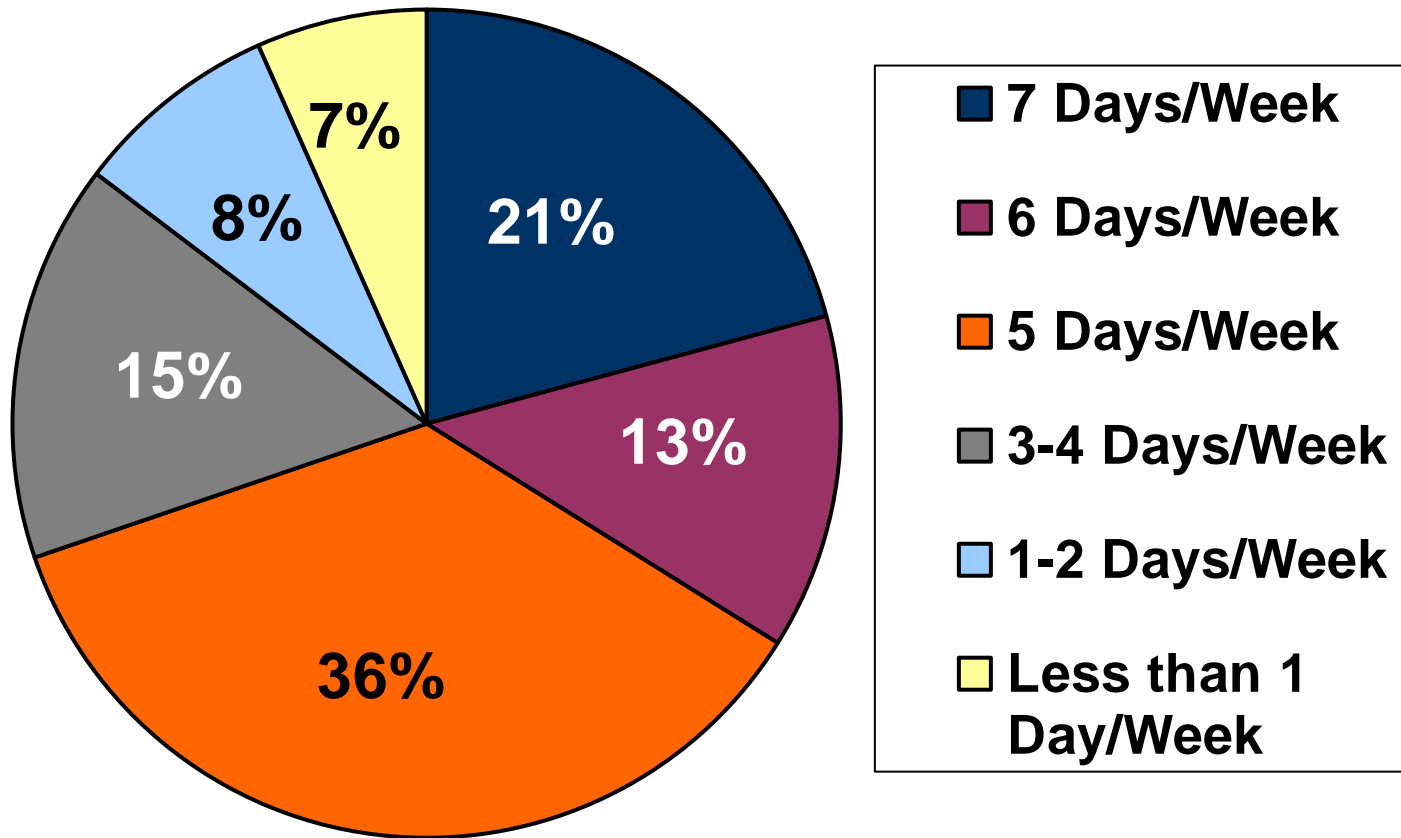
Majority of Bus Customers are Making Work Trips



Majority of Bus Riders Have No Other Way to Travel



Most Bus Customers Travel 5-7 Days Per Week



Most Important Bus Improvements

	Choice	Overall
More Buses/More Frequent	43%	36%
More Routes/Trips/Stops/Expanded Service	11%	23%
On-time/Reliable	20%	21%
Good Service/No Change	8%	9%
Improved/Expanded Weekend Service	7%	8%
Better/More Courteous Drivers	3%	5%
Better Scheduling With Trains/Other Buses	10%	5%



Demographic Profile of Bus Riders

Demographic	600	603	605	606	Overall
Female	45%	61%	72%	61%	55%
Average Age	37 years	40 Years	41 Years	42 years	39 years
Black	39%	60%	27%	56%	44%
Hispanic	10%	13%	17%	13%	12%
Management/ Professional	33%	12%	22%	13%	24%
Average Household Income	\$51,400	\$25,200	\$39,200	\$41,700	\$43,400



Focus Group Research Background & Methodology

- ◆ Conducted four focus groups in July 2007
- ◆ Focus group composition included:
 - ◆ 85% auto drive to work
 - ◆ 10% drive/drop at Princeton Train
 - ◆ 5% bus rider
- ◆ Demographics: White, male, professionals with average household income of \$95K
- ◆ Participants completed questionnaires as part of the focus group/conjoint research sessions

Focus Group Results

- ◆ Significant variation in peak Travel Time
 - ◆ “Depending on traffic, the trip can take 10 minutes to 30 minutes”
 - ◆ “My trip would take 15 minutes on the weekend, but it ends up taking a half hour to 45 minutes during a weekday”

Focus Group Results

- ◆ What do you like about your commute?
 - ◆ “I like being on my own schedule”
 - ◆ “My car is quiet, and I don’t have to listen to everyone else talking”
- ◆ What do you dislike about your commute?
 - ◆ “Traffic has gotten worse on Route 1 over the past few years”

Focus Group Results

- ◆ What is an Ideal Bus Service?
 - ◆ “Frequent service, 10-15 minutes during the peak”
 - ◆ “An express bus, with minimal stops”
 - ◆ “On-time service and good transfers”
 - ◆ “An ideal bus should operate like a train”

Focus Group Results

- ◆ Would you use a Route 1 BRT?
 - ◆ “I would use it, if it had dedicated lanes, picked me up near home and dropped me off near work”
 - ◆ “I would love to use it if it offered parking and helped get some of the cars off Route 1”



Conjoint/Trade-Off Background & Methodology

- ◆ Trade-off methods produce more robust, accurate measures of customer priorities
- ◆ In other words, trade-offs force decisions within a meaningful context—you can't have it all, so what's most important to you?
- ◆ Discrete choice experiment with a set of three to six service alternatives using Max/Diff: Sum of “bests” and Sum of “worst”

Conjoint/Trade-Off Findings

- ◆ Most Important BRT Features
 - ◆ Frequency of service 10-15 minutes peak, 20-30 off peak
 - ◆ BRT stop is within walking distance of work
 - ◆ Bus has its own Right of Way, takes 10 minutes less than current trips

Conjoint/Trade-Off Findings

- ◆ Next Most Important Features:
 - ◆ BRT within walking distance of home
 - ◆ Bus vehicle interior attributes (clean, comfortable)
 - ◆ Bus Cost vs. Auto Cost (Bus costs less by \$2 a trip). Value of time estimated to be \$14.50 per hour or \$0.24 per minute.
 - ◆ Real Time information while waiting for bus
 - ◆ Enclosed Stations & Waiting areas weather protected.

Conjoint/Trade-Off Findings

- ◆ Features that rated Neutral
 - ◆ 5 minute Bus time savings vs. Auto
 - ◆ Bus Propulsion (Hybrid)
 - ◆ Pre-Boarding Ticket Payment
 - ◆ Signal Priority or Queue Jump (minor time savings)
 - ◆ Quality of Walk (Sidewalks) to Work
- ◆ Less Important Features
 - ◆ Station Platforms level with Bus Floor
 - ◆ BRT Branding (i.e. Rt. 1 Express)
 - ◆ POP Fare Inspection
 - ◆ Sidewalks from home to Bus Stop.



Conclusions – Bus Survey

- ◆ Bus Route 600 carries the largest volume of customers (1,081 or 48%) in the corridor
- ◆ Majority (67%) of bus customers travel in the peak and make work trips (79%)
- ◆ Princeton, Trenton, & Lawrence are the major origin and destinations among bus customers in the corridor
- ◆ A significant percentage (70%) of customers travel 5 days a week or more
- ◆ If current routes are modified, current riders would require an affordable alternative as rider captivity is high and rider average income is low (\$43,400)

Conclusions – Bus Survey

- ◆ Majority of riders walk to their access points (77%) and from egress points (67%)
- ◆ High captivity (70% no other way to travel), low car availability rates (80% without car) coupled with low average household incomes (\$43,500), suggests a ridership that is transit dependent
- ◆ Route 600 customers have higher incomes with significant choice ridership, including significant use as a feeder to rail at Princeton Junction



Conclusions – Focus Groups

- ◆ Auto travelers don't like their commute, due to traffic, but feel public transportation is not a viable option
- ◆ Traffic on Route 1 is backed up consistently during rush hour, making a typical trip up to 3 times longer than during the non-rush hour
- ◆ Auto travelers like the idea of a BRT along Route 1 and many suggested that they would take it if there was a dedicated lane, the trip was convenient, and it stopped near work and home
- ◆ Travel time to work varies considerably during peak period depending on travel. Many participants change their work schedules to avoid traffic.

Conclusions – Conjoint

- ◆ BRT Features should include:
 - ◆ Frequent service: 10-15 min peak, 20 min off-peak
 - ◆ Stops within walking distance of work and home
 - ◆ Own right of way: takes 10 minutes less than current trip
 - ◆ Cost \$2 less than current auto cost
 - ◆ Bus vehicle interior (clean, comfortable)