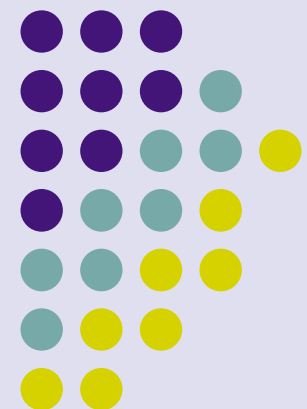


Charlotte South Corridor LRT

Bill Woodford
AECOM



Charlotte South Corridor LRT

The Big Picture



- Important markets / modeling approach
 - Traditional walk-access market / traditional model calibrated to existing bus system
 - New park-ride access market / park-ride nests and constants imported from Houston Park-and-Ride model
 - Special event ridership / off-model procedures based on event data
- What was forecasted to happen in opening year:
 - Walk access: 4,400 trips/day
 - Drive access: 3,100 trips/day
 - Special events: 1,700 trips/day
 - Total: 9,200 trips/day
- What actually happened:
 - Walk access: 10,800 trips/day
 - Drive access: 4,000 trips/day
 - Special events: Very significant
 - Total: 14,800 trips/day
- Conclusion: LRT attracted more choice-based walk-access (and feeder bus) trips than forecasted

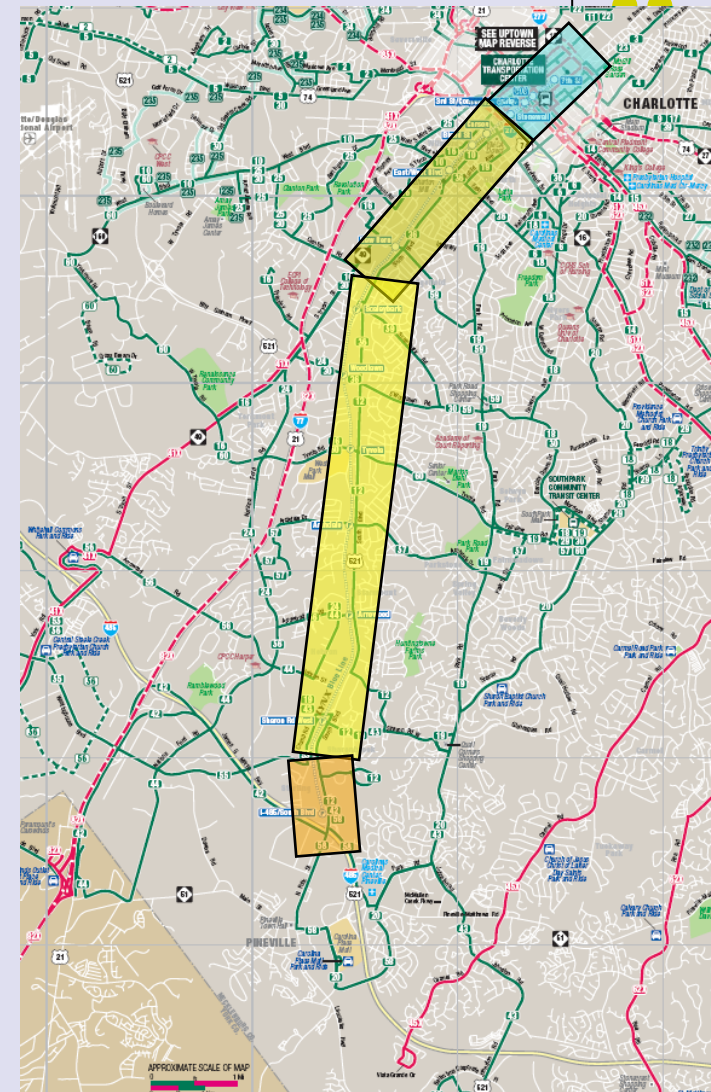
Charlotte South Corridor LRT

The Project



- New 9.6 mile light rail line along South Boulevard serving:

- | |
|------------------------------------|
| ● Uptown Charlotte (CBD) |
| ● 4 stations |
| ● Walk egress / bus transfer |
| ● Southend |
| ● 4 stations |
| ● Walk access / bus transfer |
| ● Inner PNR Stations |
| ● 6 stations |
| ● PNR / walk access / bus transfer |
| ● I-485 PNR |
| ● PNR / walk access / bus transfer |





Charlotte South Corridor LRT

Before

Charlotte South Corridor

Forecasting Model



- Four step model calibrated to 1999/2000 on-board survey
- Separate nests for walk and drive access for
 - Local Bus
 - Express Bus
 - Premium (LRT)
- Calibrated to match existing CATS bus volumes
- Premium Park-and-Ride – to – CBD constants:
 - Based on Houston model (Bus PNR)
 - Largely eliminated calibrated negative constants for PNR
 - LRT forecasts compared to aggregate model (developed by Phoenix MPO) to confirm reasonableness

Charlotte South Corridor LRT

1999-2000 Transit Markets



1999-2000 Transit Survey

	CBD			Non-CBD			Total		
	Walk	Drive	Total	Walk	Drive	Total	Walk	Drive	Total
HBW - Income 1	1,583	10	1,593	4,304	4	4,308	5,887	14	5,901
HBW - Income 1	2,658	23	2,681	3,773	8	3,781	6,431	31	6,462
HBW - Income 3	1,857	318	2,175	2,157	32	2,189	4,014	350	4,364
HBW - Income 4	1,508	1,140	2,648	1,249	27	1,276	2,757	1,167	3,924
HBW - Total	7,606	1,491	9,097	11,483	71	11,554	19,089	1,562	20,651
HBO - Income 1	1,249	0	1,249	3,261	3	3,264	4,510	3	4,513
HBO - Income 1	530	13	543	1,907	49	1,956	2,437	62	2,499
HBO - Income 3	337	10	347	1,219	19	1,238	1,556	29	1,585
HBO - Income 4	312	37	349	910	43	953	1,222	80	1,302
HBO - Total	2,428	60	2,488	7,297	114	7,411	9,725	174	9,899
NHB	823	60	883	2,759	23	2,782	3,582	83	3,665
Total	10,857	1,611	12,468	21,539	208	21,747	32,396	1,819	34,215
HBW - Income 1	13%	0%	13%	20%	0%	20%	17%	0%	17%
HBW - Income 1	21%	0%	22%	17%	0%	17%	19%	0%	19%
HBW - Income 3	15%	3%	17%	10%	0%	10%	12%	1%	13%
HBW - Income 4	12%	9%	21%	6%	0%	6%	8%	3%	11%
HBW - Total	61%	12%	73%	53%	0%	53%	56%	5%	60%
HBO - Income 1	10%	0%	10%	15%	0%	15%	13%	0%	13%
HBO - Income 1	4%	0%	4%	9%	0%	9%	7%	0%	7%
HBO - Income 3	3%	0%	3%	6%	0%	6%	5%	0%	5%
HBO - Income 4	3%	0%	3%	4%	0%	4%	4%	0%	4%
HBO - Total	19%	0%	20%	34%	1%	34%	28%	1%	29%
NHB	7%	0%	7%	13%	0%	13%	10%	0%	11%
Total	87%	13%	100%	99%	1%	100%	95%	5%	100%

- 60% Home-Based Work purpose
- 65% Attracted to non-CBD locations
- CBD: Even income distribution, more work trips, more drive access
- Non-CBD: Lower income distribution, more non-work, few drive access

Charlotte South Corridor LRT

Opening Day Forecast



Derived 2006 (Opening Day) Boardings

South LRT Boardings	Work Trips		Non Work trips		Total trips		Grand
	Walk	Drive	Walk	Drive	Walk	Drive	Total
Modeled In Bound - South LRT	1,565	4,138	753	472	2,319	4,610	6,929
Modeled Out Bound - South LRT	1,540	8	556	20	2,096	28	2,124
Ramp up in PNR market		(1,382)		(164)	0	(1,546)	(1,546)
Induced NHB/Event LRT Trips							1,700
Total Modeled Demand	3,105	2,764	1,310	328	4,415	3,092	9,207

Charlotte South Corridor LRT 2007 CATS System "Before" Survey



CATS
CHARLOTTE AREA TRANSIT SYSTEM

2007 Transit Rider Survey

26726

Please take a minute to help us plan for your transit needs by filling out this survey.
Return the completed survey to the surveyor and you will receive a **FREE FOUR-RIDE TICKET** (while supplies last).

All personal information is confidential and **WILL NOT** be shared or sold.

Print letters/numbers clearly in upper case: A B C 1 2 3 Fill bubble with: ●

○ Fill bubble if you have already completed a survey on another trip and then continue filling out this survey.

The following questions are about the **ONE-WAY TRIP** you are making **NOW!**

Example One-way Trip:
HOME (START) → BUS → TRANSFER TO ANOTHER BUS → WORK (END)

1. Did you have a **MOTOR VEHICLE AVAILABLE** to make **THIS ONE-WAY TRIP**? (If your car is in the shop or someone else is using your car right now, then you did **NOT** have a car available for this trip and must fill in "No".)

Yes No

2. What type of place are you **COMING FROM NOW?** (starting place of this one-way trip) (fill one bubble only)

Home Work Medical appointment/Hospital visit
 College/University (student only) Restaurant (eat meal) Shopping
 School (K-12) (student only) Recreation/Sightseeing/Sporting event Social visit/Church/Personal

a. What is the name of the **PLACE, BUSINESS OR BUILDING** you are **COMING FROM NOW?** Example: CHARLOTTE CITY HALL

Place Name _____

b. What is the **ADDRESS?** Example: 600 E TRADE ST
(Provide the **NEAREST INTERSECTION** if you don't know the **EXACT ADDRESS**.)

Address _____

Intersecting Street 1 _____ & Intersecting Street 2 _____

City _____ State _____ Zip _____

3. How did you get to the **VERY FIRST BUS** you rode on **THIS ONE-WAY TRIP?** (fill one bubble only)

Bicycled: → # blocks? [] [] Walked: → # blocks? [] [] Drove my car & parked: → # miles? [] []
 Rode with someone who parked Dropped off

4. If you **TRANSFERRED** to get to **THIS BUS**, which bus **ROUTE** did you use?

I did not transfer Bus Route Number/Name (specify): _____

Continue inside →

5. What is your **FINAL DESTINATION** which **ROUTE** will you use?
(specify): _____

6. How many miles do you drive to your **FINAL DESTINATION** on _____
 Drive my car: → # miles? [] []

7. What is the **FINAL DESTINATION** for this one-way trip? (fill one bubble only)

Medical appointment/Hospital visit
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10. How many registered **CARS, TRUCKS, or MOTORCYCLES** are in running condition and available to your household?

None 1 2 3 4 or more

11. Including yourself, how many **PEOPLE** live in your household?

1 2 3 4 5 or more

12. Of **ALL** the people who live in your household, **INCLUDING YOURSELF**, how many have a **VALID DRIVER'S LICENSE?**

None 1 2 3 4 5 or more

13. What is your **AGE?**

17 and under 18 - 24 25 - 64 65 + years of age

14. Are you... (fill the bubble that best describes you)

A student: Kindergarten through 12th Grade Not a student
 A student: Other (specify institution name): _____

15. Are you... (fill the bubble that best describes you)

Employed full-time (35 hours or more per week) Not currently employed and not retired
 Employed part-time (less than 35 hours per week) Retired

16. Do you have a **VALID DRIVER'S LICENSE?**

Yes No

17. What was your estimated combined **HOUSEHOLD INCOME** in 2006?

Less than \$15,000 \$25,000 - \$49,999 \$75,000 or more
 \$15,000 - \$24,999 \$50,000 - \$74,999

Thank you for helping us improve **YOUR** transit system.
Please provide us with your name and phone number in case we need to verify your survey.
Remember: All personal information is confidential and **WILL NOT** be shared or sold.

Name Telephone

RETURN the **COMPLETED SURVEY** to the **SURVEYOR**, OR drop it in any **MAILBOX** (no postage required).

Thank you!

Charlotte South Corridor LRT

2007 CATS System “Before” Survey



2007 Transit Survey

	CBD			Non-CBD			All		
	Peak	Off-Peak	Total	Peak	Off-Peak	Total	Peak	Off-Peak	Total
Home-Based Work	5,813	1,344	7,157	6,767	5,772	12,539	12,580	7,116	19,696
Other	999	1,246	2,245	5,808	10,401	16,209	6,807	11,647	18,454
Total	6,812	2,590	9,402	12,575	16,173	28,748	19,387	18,763	38,150
Home-Based Work	15%	4%	19%	18%	15%	33%	33%	19%	52%
Other	3%	3%	6%	15%	27%	42%	18%	31%	48%
Total	18%	7%	25%	33%	42%	75%	51%	49%	100%

Characteristics of transit market:

- Evenly split between work and non-work purposes
- 75% of customers travel to attractions outside CBD

Charlotte South Corridor LRT

2007 CATS System Before Survey



2007 Transit Survey

	CBD Peak				Non-CBD or Non-Peak				Total			
	Walk	Drive	Drop-Off	Total	Walk	Drive	Drop-Off	Total	Walk	Drive	Drop-Off	Total
HBW - Income 1	311	4	13	328	4,432	14	305	4,751	4,743	18	318	5,079
HBW - Income 1	434	56	23	513	3,721	52	353	4,126	4,155	108	376	4,639
HBW - Income 3	699	635	21	1,355	3,192	53	125	3,370	3,891	688	146	4,725
HBW - Income 4	1,086	2,310	223	3,619	1,121	376	138	1,635	2,207	2,686	361	5,254
HBW - Total	2,530	3,005	280	5,815	12,466	495	921	13,882	14,996	3,500	1,201	19,697
HBO - Income 1	134	0	0	134	4,557	12	280	4,849	4,691	12	280	4,983
HBO - Income 1	110	0	11	121	2,572	12	130	2,714	2,682	12	141	2,835
HBO - Income 3	67	0	0	67	1,629	12	160	1,801	1,696	12	160	1,868
HBO - Income 4	159	8	0	167	576	12	61	649	735	20	61	816
HBO - Total	470	8	11	489	9,334	48	631	10,013	9,804	56	642	10,502
HBU	0	0	0	0	2,062	51	193	2,306	2,062	51	193	2,306
NHB	405	50	56	511	4,392	128	615	5,135	4,797	178	671	5,646
Total	3,405	3,063	347	6,815	28,254	722	2,360	31,336	31,659	3,785	2,707	38,151
HBW - Income 1	5%	0%	0%	6%	32%	0%	2%	34%	24%	0%	2%	26%
HBW - Income 1	7%	1%	0%	9%	27%	0%	3%	30%	21%	1%	2%	24%
HBW - Income 3	12%	11%	0%	23%	23%	0%	1%	24%	20%	3%	1%	24%
HBW - Income 4	19%	40%	4%	62%	8%	3%	1%	12%	11%	14%	2%	27%
HBW - Total	44%	52%	5%	100%	90%	4%	7%	100%	76%	18%	6%	100%
HBO - Income 1	27%	0%	0%	27%	46%	0%	3%	48%	45%	0%	3%	47%
HBO - Income 1	22%	0%	2%	25%	26%	0%	1%	27%	26%	0%	1%	27%
HBO - Income 3	14%	0%	0%	14%	16%	0%	2%	18%	16%	0%	2%	18%
HBO - Income 4	33%	2%	0%	34%	6%	0%	1%	6%	7%	0%	1%	8%
HBO - Total	96%	2%	2%	100%	93%	0%	6%	100%	93%	1%	6%	100%
HBU					89%	2%	8%	100%	89%	2%	8%	100%
NHB	79%	10%	11%	100%	86%	2%	12%	100%	85%	3%	12%	100%
Total	50%	45%	5%	100%	90%	2%	8%	100%	83%	10%	7%	100%

- 50% Home-Based Work purpose
- Peak travel to CBD: Higher income distribution, more work trips, more drive access
- Other travel: Lower income distribution, more non-work, few drive access

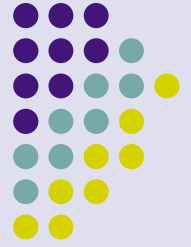


Charlotte South Corridor LRT

After

Charlotte South Corridor LRT

Implementation Progress



- South Corridor LRT opened 11/2007
- LRT and bus operations generally implemented as modeled
- Average weekday ridership April 2008 of 14,800 per day (16,500 in June 2008)
- Strong PNR market at southern stations
- Strong special event and non-work markets

Charlotte South Corridor LRT

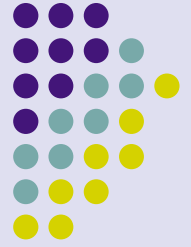
Interim Before/After Analysis



- Goal: Understand project success and update model to reflect current bus and LRT market acceptance
- Approach: Collect data on LRT usage, incorporate LRT and “before” bus survey into model, and test procedures for capturing customer response to LRT

Charlotte South Corridor LRT

April 2008 Rail Intercept Survey



- Intercept interview survey conducted on April 29th, 30th 2008 between 3:30 PM and 6:30 PM
- Survey conducted for southbound trains
- Conducted at 7th Street, CTC, and 3rd Street stations
- 903 usable survey records

Charlotte South Corridor LRT

April 2008 Rail Intercept Survey



STATION _____ SURVEYOR _____
 DATE _____ TIME _____

Hello, I am conducting a survey for CATS about the trip you are about to make right now. Please take a moment to answer a few questions for me about your trip to help CATS plan for your future transit needs.

- 1: A) Where are you coming from right now?
 WORK HOME ANOTHER LOCATION

B) And where is that located?

 *Oh, you don't know the exact address, then please tell me the nearest intersection or the zip code?
 _____ OR _____

- C) How did you get here? Did you:
 WALK or BIKE
 TAKE THE BUS _____ (Oh, you took the bus, what route was that?)
 GET DROPPED OFF
 DRIVE AND PARK YOUR CAR

- 2: Right now, which station are you going to?
 7TH STREET CTC/ARENA 3RD ST/CONV. CTR.
 STONEWALL CARSON BLAND
 EAST/WEST NEW BERN SCALEYBARK
 WOODLAWN TYVOLA ARCHDALE
 ARROWOOD SHARON RD. W I-485

- 3: A) Are you going to your:
 HOME WORK ANOTHER LOCATION

B) And where is that located?

 *Oh, you don't know the exact address, then please tell me the nearest intersection or the zip code?
 _____ OR _____

- C) When you get off the train how will you get to your destination?
 WALK or BIKE
 DRIVE YOURSELF
 TAKE THE BUS ____ (Oh, you are going to take the bus, what route will you take?)
 GET PICKED UP

Now I will ask you a couple of final questions in order to best group your survey responses:

- 4: A) How many cars are available to your household?
 0 1 2 3 4 OR MORE
- B) What range does your combined household income fall between?
 LESS THAN \$15,000 \$15,000 But Less Than \$25,000
 \$25,000 BUT LESS THAN \$50,000 \$50,000 BUT LESS THAN \$75,000
 \$75,000 OR MORE

Charlotte South Corridor LRT Intercept Survey Results



2007 Transit Survey

	CBD			Non-CBD			All		
	Peak	Off-Peak	Total	Peak	Off-Peak	Total	Peak	Off-Peak	Total
Home-Based Work	5,813	1,344	7,157	6,767	5,772	12,539	12,580	7,116	19,696
Other	999	1,246	2,245	5,808	10,401	16,209	6,807	11,647	18,454
Total	6,812	2,590	9,402	12,575	16,173	28,748	19,387	18,763	38,150
Home-Based Work	15%	4%	19%	18%	15%	33%	33%	19%	52%
Other	3%	3%	6%	15%	27%	42%	18%	31%	48%
Total	18%	7%	25%	33%	42%	75%	51%	49%	100%

2008 LRT Survey

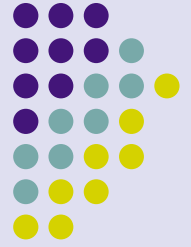
	CBD			Non-CBD			All		
	Peak	Off-Peak	Total	Peak	Off-Peak	Total	Peak	Off-Peak	Total
Home-Based Work	3,545	1,551	5,096	1,610	1,226	2,836	5,155	2,777	7,932
Other	1,305	2,049	3,354	1,490	2,024	3,514	2,795	4,073	6,868
Total	4,850	3,600	8,450	3,100	3,250	6,350	7,950	6,850	14,800
Home-Based Work	24%	10%	34%	11%	8%	19%	35%	19%	54%
Other	9%	14%	23%	10%	14%	24%	19%	28%	46%
Total	33%	24%	57%	21%	22%	43%	54%	46%	100%

Key findings (2008 LRT as compared to 2007 System survey):

- Much higher non-work trip making to CBD
- One LRT line attracts more off-peak CBD trips than entire bus system (and nearly as many peak CBD trips)

Charlotte South Corridor LRT

Peak HBW Trips to CBD



2007 Transit Survey Peak HBW Trips to CBD

	Walk	PNR*	KNR	Total
Income 1	311	4	13	328
Income 2	434	56	23	513
Income 3	699	635	21	1,355
Income 4	1,086	2,310	223	3,619
Total	2,530	3,005	280	5,815
Income 1	5%	0%	0%	6%
Income 2	7%	1%	0%	9%
Income 3	12%	11%	0%	23%
Income 4	19%	40%	4%	62%
Total	44%	52%	5%	100%

Key findings

- LRT customers have higher average incomes
- LRT customers more likely to PNR

2008 Intercept Survey Scaled to Total Peak HBW Trips to CBD

	Walk	PNR*	KNR	Total
Income 1	67	14	0	81
Income 2	102	35	0	137
Income 3	240	349	26	615
Income 4	337	2,345	30	2,712
Total	746	2,743	56	3,545
Income 1	2%	0%	0%	2%
Income 2	3%	1%	0%	4%
Income 3	7%	10%	1%	17%
Income 4	10%	66%	1%	77%
Total	21%	77%	2%	100%

Charlotte South Corridor LRT

LRT Forecasts Based on Before-Survey Model Calibration



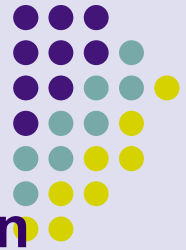
Weekday Year 2008 Observed and Modeled Ridership

		Observed	No Guideway Preference	30% Rail IVTT Discount Reduced Transfer Penalty	30% Rail IVTT Discount Reduced Transfer Penalty and LRT Preference	LRT Preference Constants (minutes)				Other
						HBW&HBO Peak				
						Income 1&2	Income 3	Income 4 CBD	Income 4 non-CBD	
Peak	Walk/KNR	5,000	2,241	3,294	5,289	15	22	22	22	20
	PNR	2,950	1,439	1,711	2,777	15	20	25	20	20
	Total	7,950	3,680	5,005	8,066					
Off-Peak	Walk/KNR	5,800	2,059	2,994	5,431	15	22	22	22	27
	PNR	1,050	703	868	1,329	15	20	25	20	20
	Total	6,850	2,762	3,862	6,760					
Total	Walk/KNR	10,800	4,300	6,288	10,720					
	PNR	4,000	2,142	2,579	4,106					
	Total	14,800	6,442	8,867	14,826					

- Model previously scrubbed for trip table and travel time skim problems – generally replicates observed ridership patterns but with large negative transit constants
- Calibrated model underestimates ridership across the board by 50% or more without inclusion of special guideway effects
- Very heavy LRT preference factors/constants required to match observed ridership

Charlotte South Corridor LRT

LRT Forecasts Based on Before-Survey Model Calibration



Station	April APC Counts			Model w/ Guideway Constants		
	Peak	Off-Peak	Daily	Peak	Off-Peak	Daily
7th Street	504	545	1,049	869	404	1,273
CTC	1,479	1,534	3,013	1,933	1,365	3,298
3rd Street	751	372	1,123	241	150	391
Stonewall	180	78	258	561	192	753
CBD Stations	2,914	2,529	5,443	3,604	2,111	5,715
Difference				24%	-17%	5%
Carson	107	90	197	157	161	318
Bland	124	134	258	169	176	345
East-West	254	331	585	331	467	798
New Bern	236	339	575	225	267	492
Southend Stations	721	894	1,615	882	1,071	1,953
Difference				22%	20%	21%
Scaleybark	369	307	676	264	299	563
Woodlawn	395	465	860	513	612	1,125
Tyvola	399	349	748	445	679	1,124
Archdale	264	312	576	378	365	743
Arrowood	557	512	1,069	538	657	1,195
Sharon West	803	577	1,380	545	410	955
Inner PNR Stations	2,787	2,522	5,309	2,683	3,022	5,705
Difference				-4%	20%	7%
South I-485	1,498	941	2,439	898	555	1,453
Difference				-40%	-41%	-40%
Total	7,920	6,886	14,806	8,067	6,759	14,826
Difference				2%	-2%	0%

- Large constants appear to attract too many short trips and too few long PNR trips at Sharon West and South I-485

Charlotte South Corridor LRT

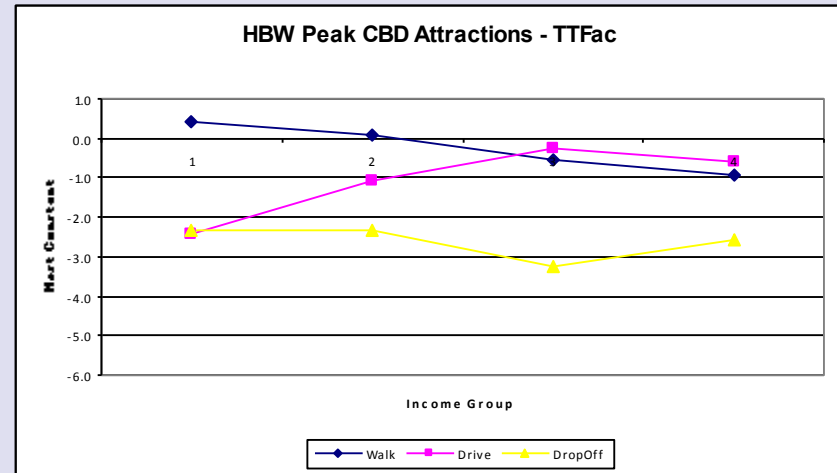
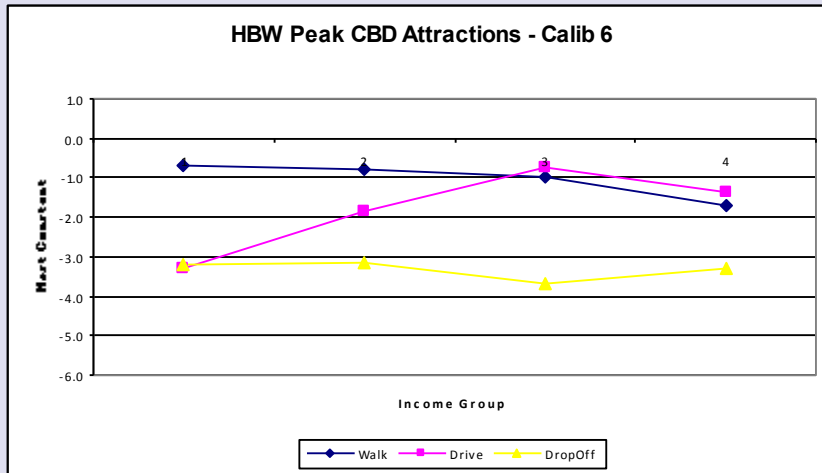
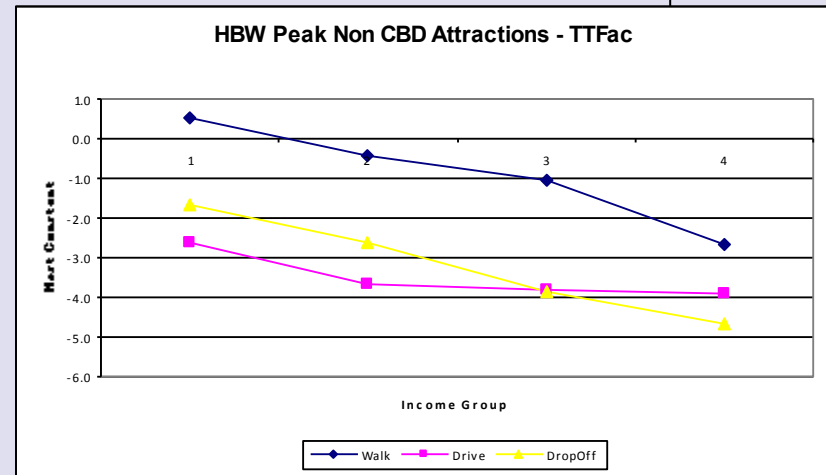
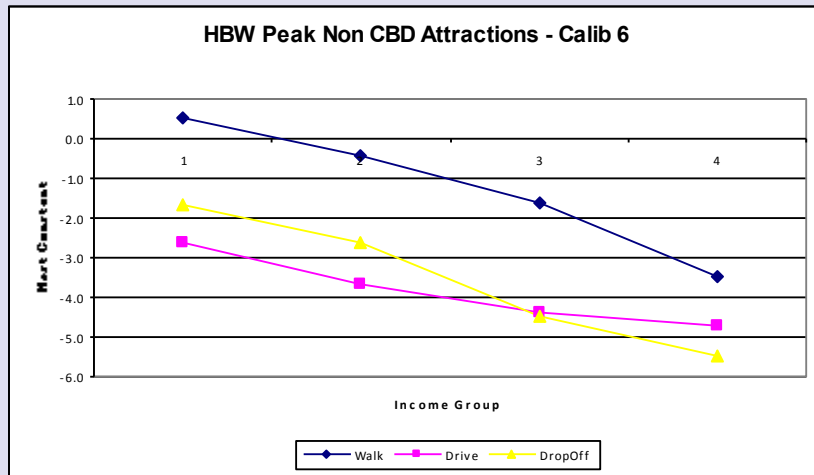
Alternate “Choice Set” Approach



- The conventional approach requires implausibly large constants
- Alternative hypothesis: LRT has increased population of travelers who consider transit to be an option
 - Awareness of transit
 - Social acceptability
 - Other
- Approach:
 - Feed mode choice model with person trip containing only those trips where travelers are willing to choose transit
- Test Implementation:
 - Limit rail guideway effects to 30% time discount + 12 minutes
 - Limit ***transit*** income constants to gradual decline in high income travelers willingness to ride transit
 - Find proportion of trip table willing to consider transit to match pre- and post-rail ridership results

Charlotte South Corridor LRT

Limited Income Constants



Charlotte South Corridor LRT

Calibrated Fraction of Trips Considering Bus Transit



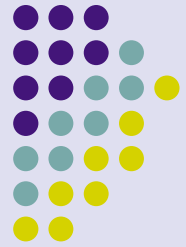
Trip Purpose	Inc1		Inc2		Inc3		Inc4	
	CBD	Non-CBD	CBD	Non-CBD	CBD	Non-CBD	CBD	Non-CBD
HBW Peak	55%	100%	55%	100%	71%	56%	53%	45%
HBW Off-Peak	100%	100%	54%	75%	36%	43%	18%	20%
HBO Peak	100%	100%	54%	75%	36%	43%	18%	20%
HBO Off-Peak	100%	100%	54%	75%	36%	43%	18%	20%
NHB Peak**	36%	43%						
NHB Off-Peak**	50%	50%						
HBU Peak**	75%	75%						
HBU Off-Peak**	75%	75%						

*** NHB and HBU Purpose trip tables are not stratified by income group*

Note: Calibrated Fraction of Trips Considering Rail=100% for all cells

Charlotte South Corridor LRT

Modeled Station Volumes for Alternative Methods

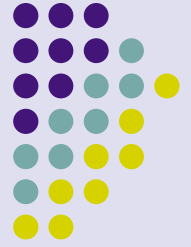


Station	April APC Counts			Model w/ Guideway Constants			Model w/ Choice Set Approach		
	Peak	Off-Peak	Daily	Peak	Off-Peak	Daily	Peak	Off-Peak	Daily
7th Street	504	545	1,049	869	404	1,273	679	581	1,260
CTC	1,479	1,534	3,013	1,933	1,365	3,298	1,655	1,295	2,950
3rd Street	751	372	1,123	241	150	391	240	209	449
Stonewall	180	78	258	561	192	753	452	332	784
CBD Stations	2,914	2,529	5,443	3,604	2,111	5,715	3,026	2,417	5,443
Difference				24%	-17%	5%	4%	-4%	0%
Carson	107	90	197	157	161	318	137	109	246
Bland	124	134	258	169	176	345	154	138	292
East-West	254	331	585	331	467	798	283	370	653
New Bern	236	339	575	225	267	492	221	229	450
Southend Stations	721	894	1,615	882	1,071	1,953	795	846	1,641
Difference				22%	20%	21%	10%	-5%	2%
Scaleybark	369	307	676	264	299	563	302	360	662
Woodlawn	395	465	860	513	612	1,125	494	599	1,093
Tyvola	399	349	748	445	679	1,124	435	616	1,051
Archdale	264	312	576	378	365	743	386	426	812
Arrowood	557	512	1,069	538	657	1,195	509	575	1,084
Sharon West	803	577	1,380	545	410	955	543	394	937
Inner PNR Stations	2,787	2,522	5,309	2,683	3,022	5,705	2,669	2,970	5,639
Difference				-4%	20%	7%	-4%	18%	6%
South I-485	1,498	941	2,439	898	555	1,453	1,014	862	1,876
Difference				-40%	-41%	-40%	-32%	-8%	-23%
Total	7,920	6,886	14,806	8,067	6,759	14,826	7,504	7,095	14,599
Difference				2%	-2%	0%	-5%	3%	-1%

- Choice set approach also improves model performance for short trips and long PNR trips (at South I-485)

Charlotte South Corridor LRT

Conclusions



- Introduction of LRT had impact on selected markets not fully explained by time and cost changes
- Alternative approaches for capturing fixed guideway preferences may yield better forecasts and a more plausible explanation than mode specific constants
- TCRP H-37 will research values of unmeasured attributes in fixed guideway transit including possible impacts on choice sets