

Using NHTS Add-On Data to Estimate the NC Statewide Model & Interstate Travel

NHTS Data for Transportation Decision Making Workshop

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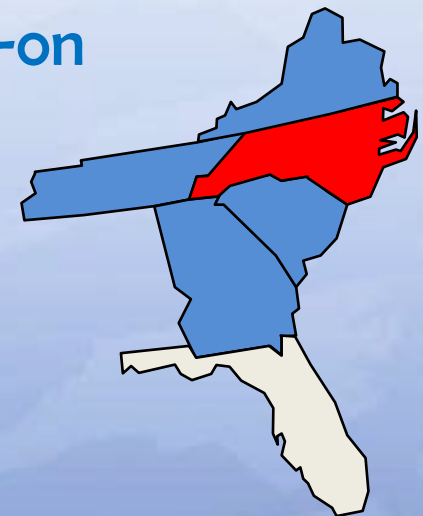


Overview

- **Why NHTS Data in NC?**
- **High Level Comparison to Other States**
- **Breaking Down NHTS in NC**
- **Interstate Flow Analysis**
- **Future Improvements**

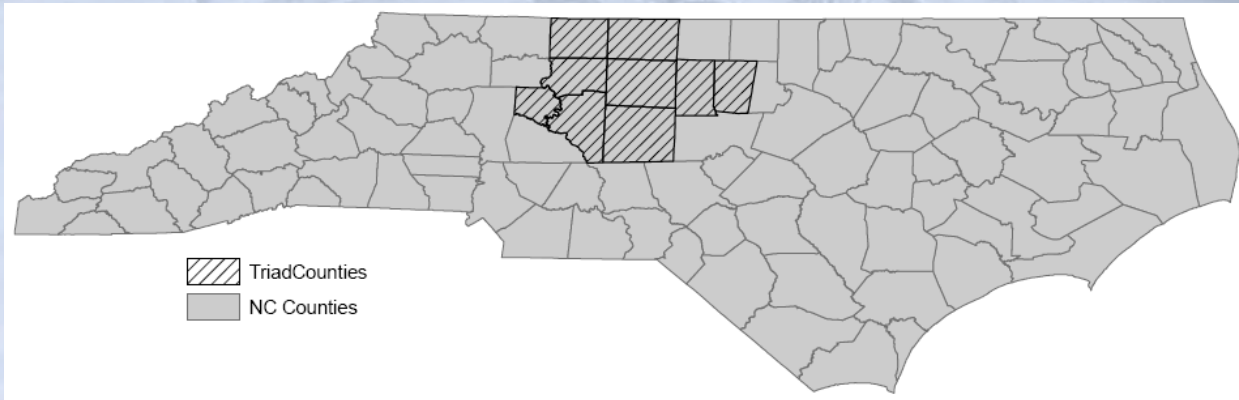
Why NHTS Data in NC?

- **Statewide Model Development**
 - Traditionally Based on Regional Surveys
 - Need Rural component
 - Regional modeled areas different from smaller/rural
 - Best sample distribution ever for NC
 - Aligns perfectly with base year
 - Ability to look at regional differences
- **East Coast States buy-in to NHTS Add-on**
 - Could compare/contrast to others
 - Recent survey
 - Allows for border analysis of flows
 - Consistent dataset

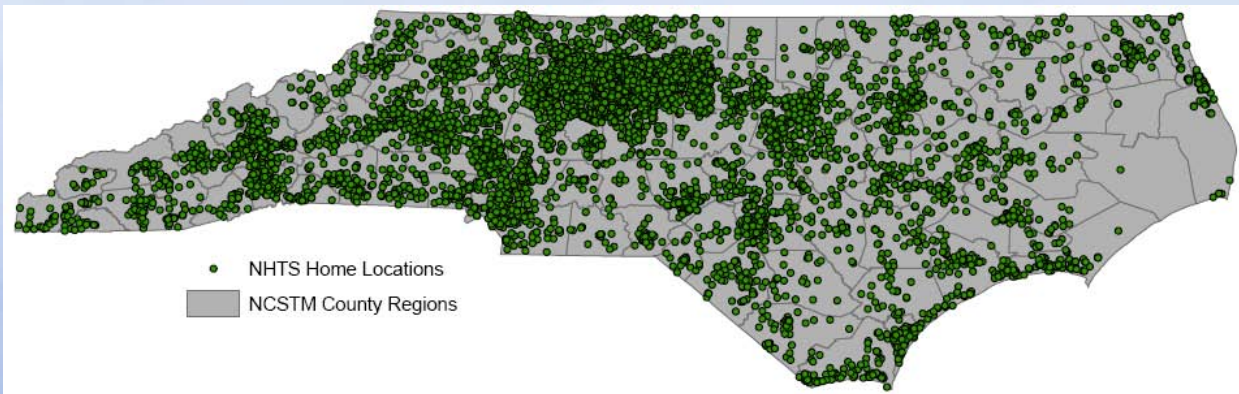


NHTS Distribution

NHTS add-on surveys processed for the State and Triad Region



Statewide coverage of households



Why NHTS Data in NC?

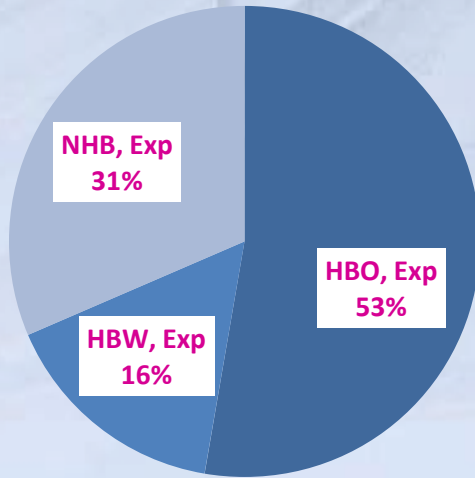
Comparison to Other States

Counts & Expanded Trips

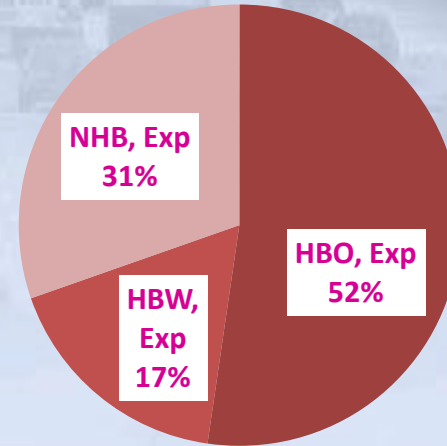
	GA	SC	TN	VA	NC Combined	NC Statewide	NC Triad
Trips Weekday, Expanded	8,631,415,264	3,968,782,892	5,395,382,500	6,759,372,722	8,166,683,660	7,204,643,564	1,091,373,343
Trips Weekday, Count	40,919	26,771	12,681	83,328	57,809	30,856	28,189
HH, Expanded	3,625,311	1,624,068	2,434,683	2,961,083	3,575,062	3,158,780	481,579
HH, Count	7,929	4,917	2,552	15,231	10,864	5,929	5,161
HBO, Exp	4,276,417,307	2,008,960,307	2,646,604,903	3,459,424,462	4,230,434,483	3,742,151,132	551,482,245
HBW, Exp	1,401,251,557	607,060,337	841,227,110	1,145,748,969	1,268,517,703	1,116,783,885	178,968,701
NHB, Exp	2,783,126,545	1,266,488,848	1,777,492,080	2,008,491,630	2,526,771,028	2,226,017,632	335,161,895
HBO, Count	21,339	14,333	6,458	43,570	30,511	16,245	14,893
HBW, Count	5,472	3,323	1,753	11,916	7,472	3,966	3,695
NHB, Count	13,376	8,646	4,216	26,301	18,792	10,075	9,098

Basic Trip Purposes

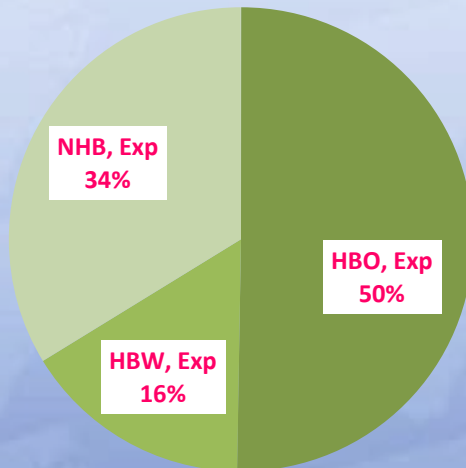
NC Purposes



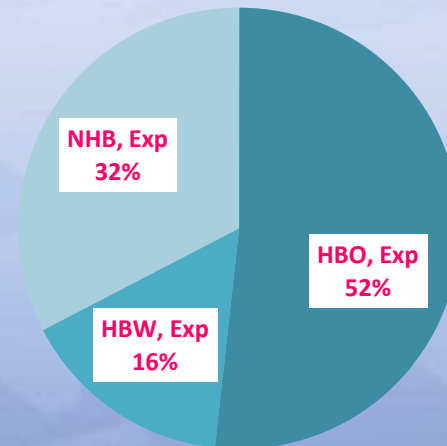
VA Purposes



TN Purposes

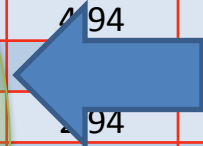


SC Purposes



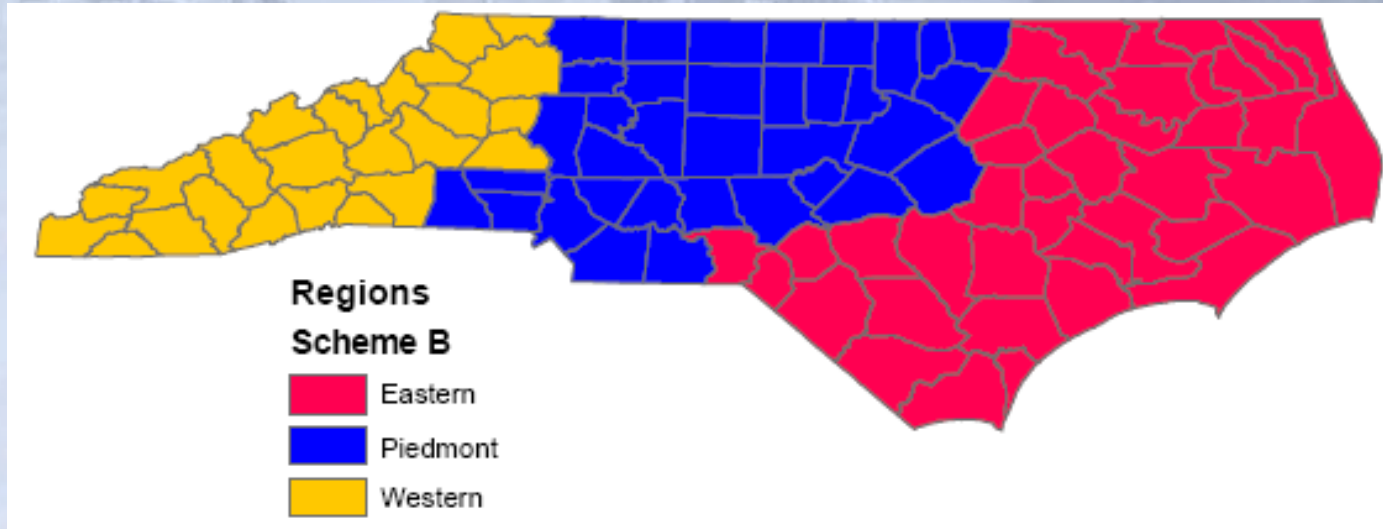
Trip Rate Comparison

Trip rate per HH	GA	SC	TN	VA	NC Combined	NC Statewide	NC Triad
Expanded	9.92	10.18	9.23	9.51	9.52	9.50	9.44
Count	5.16	5.44	4.97	5.47	5.32	5.20	5.46
HBO Expanded	4.92	5.15	4.53	4.87	4.93	4.94	4.77
HBW Expanded	1.61	1.56	1.44	1.61	1.48	1.55	1.55
NHB Expanded	3.20	3.25	3.04	2.83	2.94	2.94	2.90
HBO Count	2.69	2.91	2.53	2.86	2.81	2.74	2.89
HBW Count	0.69	0.68	0.69	0.78	0.69	0.67	0.72
NHB Count	1.69	1.76	1.65	1.73	1.73	1.70	1.76



States Patterns Very Similar

Region Trip Rates



	Region	Scheme B
No cleaning, no records lost	Eastern	12.65
	Piedmont	13.95
	Western	12.84
Cleaned data	Eastern	10.22
	Piedmont	8.22
	Western	9.42

Using all weekday trips

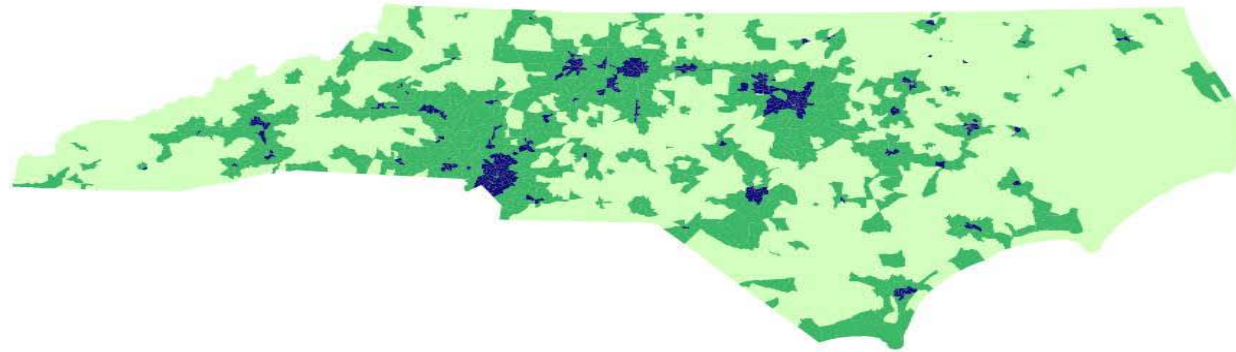
Urban/Rural Trip Rates

Using NHTS URBAN flag, and MPO boundary file. No clear patterns.

Purpose	Urban Cluster	Urban Area	Not in Urban Area	Non-MPO	MPO
HBO	4.42	5.43	4.75	5.10	5.49
HBW	1.28	1.40	1.58	1.57	1.64
NHB	2.38	2.97	2.79	3.00	2.97

Density Calculation

$$\text{Density} = (\text{Zone Households} + \text{Zone Employment}) / \text{Zone Area}$$

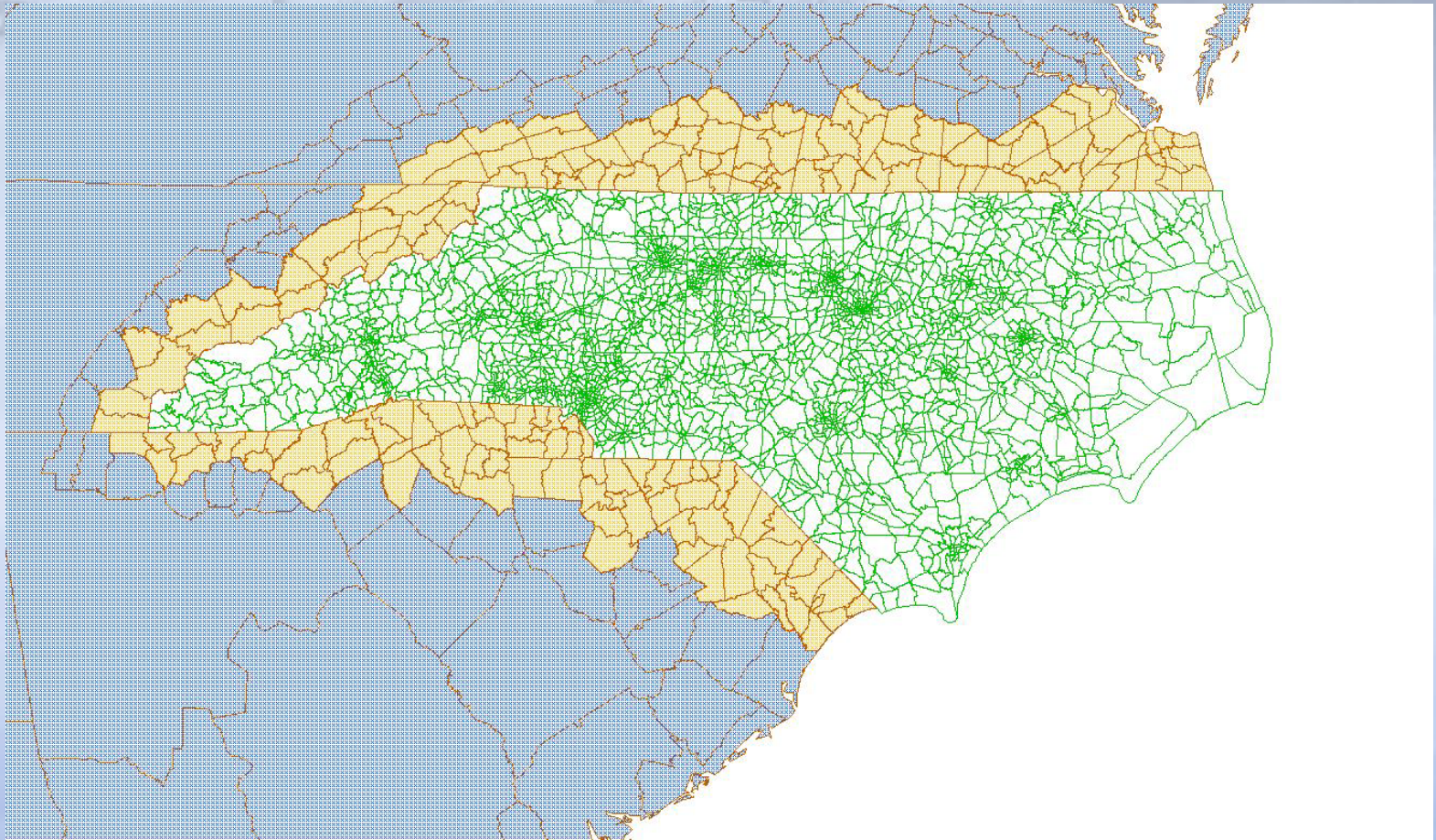


Density	Total	HBO	HB\$	HBW	NHB	NHBW
Rural	9.92	3.33	1.40	1.62	2.14	1.24
Suburban	10.83	4.19	1.55	1.62	2.06	1.22
Urban	9.78	3.86	1.30	1.57	1.76	1.17

Trip Rates & Trip Length by Region and Activity Density

	Trip Rates	TRIP LENGTHS				
Eastern		HBO	HBS	HBW	NHB	NHBW
Rural	9.92	10.11	9.64	14.51	7.21	8.70
Suburban	11.80	6.96	5.96	9.93	4.82	6.62
Urban	8.58	4.10	3.19	8.23	4.03	6.40
Piedmont						
Rural	12.75	8.66	8.82	16.88	5.35	7.80
Suburban	11.44	6.87	6.38	13.09	5.20	7.44
Urban	10.47	4.75	3.64	8.54	4.30	5.99
Western						
Rural	9.53	8.01	9.07	13.06	4.71	7.66
Suburban	10.78	6.38	6.38	10.24	5.21	5.75
Urban	6.54	5.00	3.21	8.68	3.90	6.60

Interstate Analysis



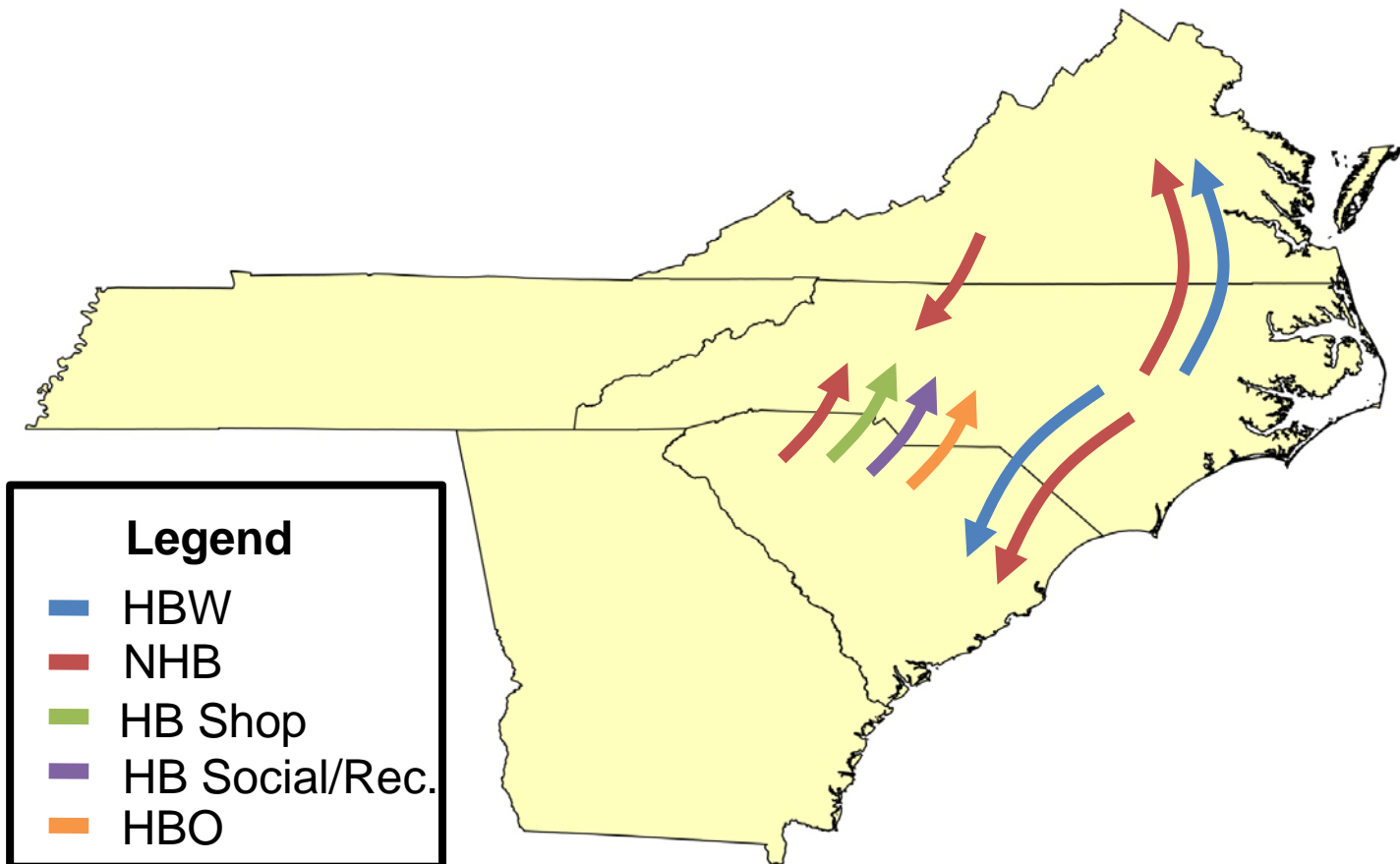
Buffer Zones for NC Statewide Model

Travel Between States

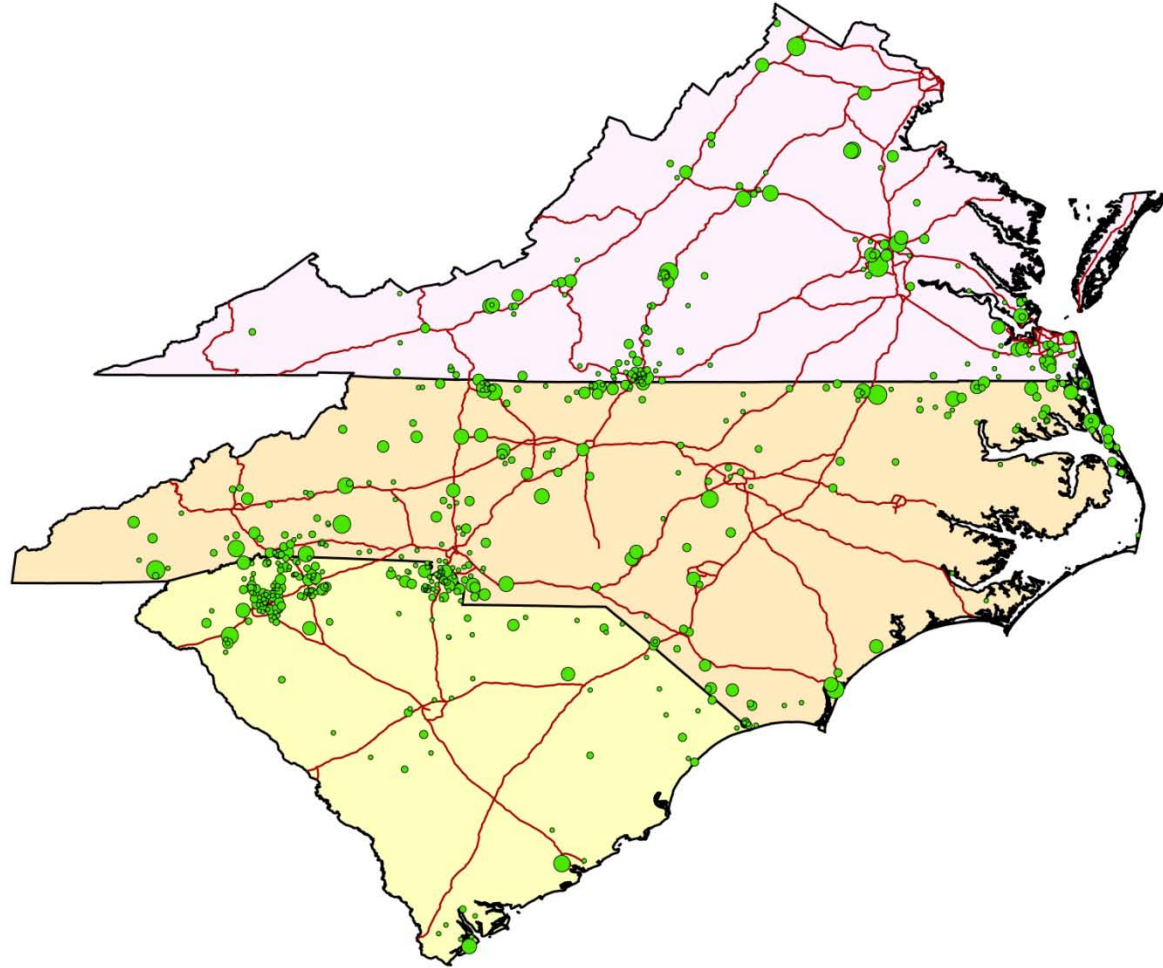
	All trips		HBW		HBShop		HB Soc Rec		HBO		NHB	
GA	91%	SC, Other	91%	SC, TN, Other	94%	SC, Other	93%	SC, Other	92%	SC, Other	90%	SC, TN, Other
NC	94%	Other	97%	SC, VA, Other	96%	Other	97%	Other	96%	Other	90%	SC, VA, Other
SC	95%	NC, Other	98%	Other	96%	NC, Other	97%	NC, Other	96%	NC, Other	93%	GA, NC, Other
TN	93%	Other	93%	VA, Other	95%	Other	95%	GA, Other	95%	Other	90%	TN, Other
VA	91%	Other	89%	Other	96%	Other	93%	Other	94%	Other	86%	NC, Other

** % of trips within State

NHTS Interstate Flow Map



Travel Between States



Interstate Analysis

Future Improvements



Oversample Rural Areas

- Along the border of states
- Ask specific cross border question?
- Based on “gravity model” principle

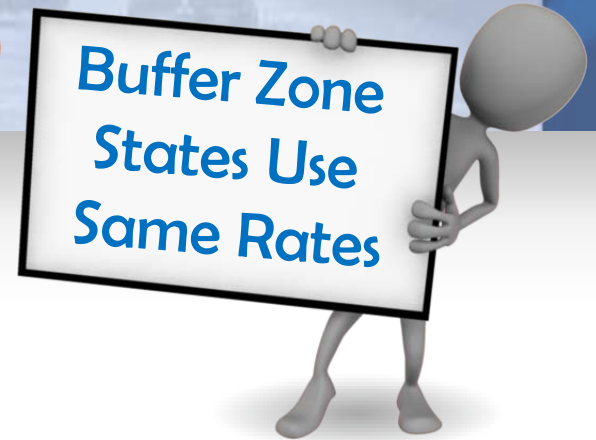
Departure Time
00:01
10:00
11:30



Web-based survey

- Instant geo-codeable locations
- Better feel for people to record trips
- Age of technology you are missing age groups?
- GPS sample for routes

Conclusions and Thoughts



Additional Thanks

