

Alabama Statewide Freight Study and Action Plan

COOSA-ALABAMA RIVER IMPROVEMENT ASSOCIATION

2010 Annual Meeting

Mobile, Alabama

February 26, 2010

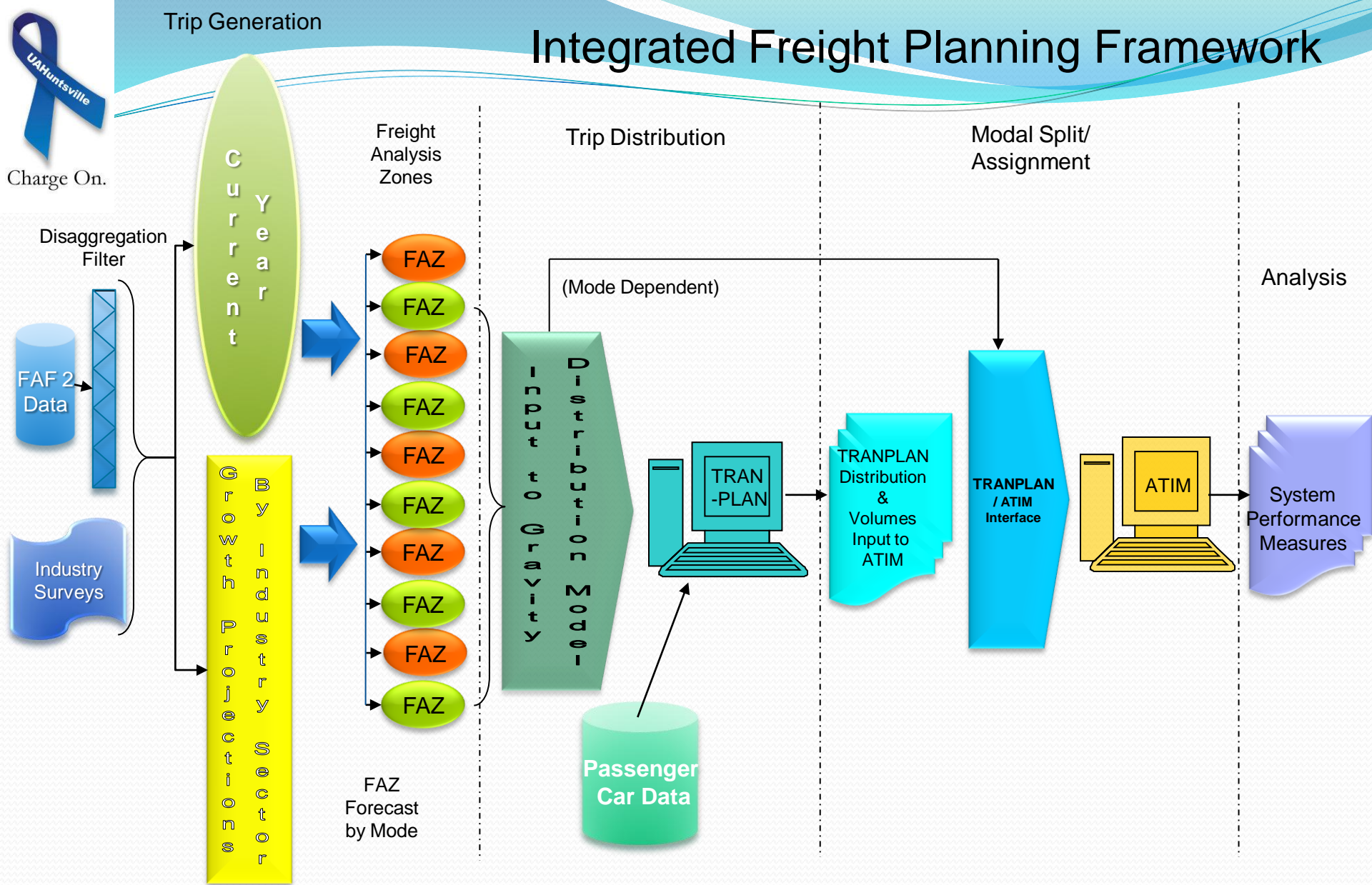


Charge On.

It all starts
with the
data...



Charge On.



Planning Factors – Value of Shipments, Personal Income, Population/Employment
Industry Sector Analysis

Data Sources

- Federal Highway Administration's Freight Analysis Framework Version 2.2
 - National origin-destination database
 - Estimates commodity flows (SCTG) between regions by mode
 - 2002 base year, forecasts to 2035
- Value of Sales Database
 - AL county employment and value of sales by industry (NAICS)



FAF2 Database Screenshot

Origin	Ost	Destination	Dst	Commod	Port	Mode	2002	2035
AL Birmi	AL	SW Asia	SW	Coal-n.e.c.	TX rem	Rail	0.32	0.0945
AL Birmi	AL	SW Asia	SW	Coal-n.e.c.	TX rem	Truck	0.002	0.0006
AL Birmi	AL	SW Asia	SW	Chemical prods.	TX rem	Truck	0.006	0.0289
AL Birmi	AL	SW Asia	SW	Coal-n.e.c.	TX-Beaumon	Rail	0.01	0.003
AL Birmi	AL	SW Asia	SW	Coal-n.e.c.	TX-Corpus Cf	Rail	0.34	0.1004
AL Birmi	AL	SW Asia	SW	Coal-n.e.c.	TX-Corpus Cf	Truck	0.002	0.0006
AL Birmi	AL	SW Asia	SW	Nonmetal min. prods.	VA rem	Truck	0.02	0.1075
AL Birmi	AL	SW Asia	SW	Base metals	VA rem	Truck	0.31	0.3551
AL Birmi	AL	SW Asia	SW	Machinery	VA rem	Other Intermoc	0.02	0.0271
AL Birmi	AL	SW Asia	SW	Machinery	VA rem	Truck	0.43	0.5835
AL Birmi	AL	SW Asia	SW	Mixed freight	VA rem	Truck	0.01	0.0185
AL rem	AL	Americas	AM	Other ag prods.	AL rem	Truck	0.02	0.055
AL rem	AL	Americas	AM	Coal-n.e.c.	AL rem	Pipeline & Unki	0.1	0.1562
AL rem	AL	Americas	AM	Coal-n.e.c.	AL rem	Truck	0.05	0.0781
AL rem	AL	Americas	AM	Chemical prods.	AL rem	Truck	0.15	0.7892
AL rem	AL	Americas	AM	Base metals	AL rem	Truck	0.004	0.0221
AL rem	AL	Americas	AM	Machinery	AL rem	Pipeline & Unki	0.009	0.0213
AL rem	AL	Americas	AM	Machinery	AL rem	Truck	0.12	0.2845
AL rem	AL	Americas	AM	Mixed freight	AL rem	Pipeline & Unki	0.002	0.0024
AL rem	AL	Americas	AM	Mixed freight	AL rem	Truck	0.17	0.2022
AL rem	AL	Americas	AM	Live animals/fish	AL-Mobile	Truck	0.02	0.0438
AL rem	AL	Americas	AM	Cereal grains	AL-Mobile	Truck	0.45	0.6215
AL rem	AL	Americas	AM	Other ag prods.	AL-Mobile	Pipeline & Unki	0.03	0.0648
AL rem	AL	Americas	AM	Other ag prods.	AL-Mobile	Truck	0.51	0.61



FAF2 - AL Commodity Flows

- For all modes, all commodities, base year and forecast
 - Determine flows into AL
 - Determine flows out of AL
 - Determine import through Port
 - Determine exports through Port
- Separate by mode
 - Truck
 - Rail
 - Water
 - Air
 - Others [“other intermodal”, “pipeline & unknown”]



Economic Data

	A	B	C	D	E	F	G	H	I	J	K	L
1	Value of Sales - Autauga											
2	SCTG	NAICS	Industry Name/Manufacturing Group	# of EMP	2002 Value of Sales (\$1000)	2002 Value of Sales/EMP	2002 Value of Sales (multiplied by \$1000)	2002 Value of Sales/EMP	2002-2005 Growth Factor	2005 Value of Sales	2005-2035 Growth Factor	2035 Value of Sales
3	1	111	Animals	277	\$4,787	\$17	\$4,787,000	\$17,282	1.020	\$4,883	1.491	\$7,280
4	2	112	Crops/Grains	277	\$8,129	\$29	\$8,129,000	\$29,347	1.034	\$8,405	1.402	\$11,785
5	25	113	Logging		\$3,775		\$3,775,000		1.017	\$3,839	1.182	\$4,538
6	10,11,12	2123	Stone, Gravel, Sand, Clay	60	\$10,166	\$169	\$10,166,000	\$169,433	1.029	\$10,461	1.530	\$16,005
7	Sum of Agriculture/Mining Data by County			614	\$26,857	\$72	\$26,857,000	\$216,061		\$27,588		\$39,608
8												
9	27	322	Paper	750	\$319,500	\$426	\$319,500,000	\$426,000	0.991	\$316,625	1.397	\$442,324
10	Sum of Manufacturing Data by County			750	\$319,500	\$426	\$319,500,000	\$426,000		\$316,625		\$442,324
11												
12	County Total		Manufacturing	750	\$319,500	\$426	\$319,500,000	\$426,000	0.991	\$316,625	1.397	\$442,324
13												
14	Sum of All County Data			1364	\$346,357	\$254	\$346,357,000	\$253,927		\$344,213		\$481,933
15												
16	Value of Sales - Baldwin											
17	SCTG	NAICS	Industry Name/Manufacturing Group	# of EMP	2002 Value of Sales (\$1000)	2002 Value of Sales/EMP	2002 Value of Sales (multiplied by \$1000)	2002 Value of Sales/EMP	2002-2005 Growth Factor	2005 Value of Sales	2005-2035 Growth Factor	2035 Value of Sales
18	1	111	Animals	599	\$7,701	\$13	\$7,701,000	\$13,856	1.020	\$7,855	1.491	\$11,712
				599	\$71,053	\$118	\$71,053,000	\$118,000		\$73,469	1.402	\$103,011



Economic Data

- Use public sources:
 - Economic Census, mining & forestry reports, etc.
- Collate county employment and VoS data by zone
- Determine county weights for each zone

1	Zone				1	1	1	1	1	1	1	1	2
2	SCTG	NAICS	Industry Name	FAF2 Abbr.	Bibb	Blount	Chilton	Cullman	Jefferson	Shelby	St. Clair	Walker	
3	1	112	Animals	Live animals/fish	2.82%	20.00%	8.21%	48.77%	4.52%	4.98%	6.42%	4.28%	1.56%
4	2	111	Crops	Cereal grains	0.92%	15.81%	19.87%	21.22%	3.87%	20.31%	15.40%	2.61%	1.56%
5	3	111	Other ag prods.	Other ag prods.	0.92%	15.81%	19.87%	21.22%	3.87%	20.31%	15.40%	2.61%	1.56%
6	4	311	Animal feed	Animal feed	0.00%	22.62%	0.00%	9.69%	55.18%	0.00%	0.00%	12.51%	0.00%
7	5	311	Food	Meat/seafood	0.00%	22.62%	0.00%	9.69%	55.18%	0.00%	0.00%	12.51%	0.00%
8	6	311	Food	Milled grain prods.	0.00%	22.62%	0.00%	9.69%	55.18%	0.00%	0.00%	12.51%	0.00%
9	7	311	Food	Other foodstuffs	0.00%	22.62%	0.00%	9.69%	55.18%	0.00%	0.00%	12.51%	0.00%
10	8	312	Beverage	Alcoholic beverages	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%
11				Tobacco prods.				0.00%	100.00%	0.00%	0.00%	0.00%	0.00%



Disaggregation – Truck Mode

- Take FAF2 commodity flows (Annual kilotons)
- Disaggregate them to counties using value of sales weights
- Convert annual kilotons to daily trucks
- Flows for Port of Mobile added to Mobile County



Results

- Daily trucks per county per commodity
 - Production 2002
 - Production 2035
 - Attraction 2002
 - Attraction 2035
- “Sanity check”
- Iterations



Rail Summary

- Flows allocated to rail lines based on destination
- Port of Mobile input for allocations
- Flows in annual kilotons

4			2002			2035		
5	Commodity	NAICS <input type="button" value="v"/>	CN	CXS	NS	CN	CXS	NS
6	Crops	111	2.675	2.700	0.025	3.925	4.190	0.050
7	Animals	112	0.005	0.005	0.000	0.004	0.004	0.000
8	Logging	113	0.000	103.080	0.000	0.000	11.940	5.930
9	Coal+	212	166.477	4192.302	4081.302	187.743	5400.063	5366.900
10	Food	311	251.503	1026.588	995.643	421.457	1838.387	2037.695
11	Apparel	315	0.080	1.805	1.785	0.075	1.180	1.165
12	Wood Product Mfg	321	184.983	464.515	214.682	174.613	568.762	473.775
13	Paper	322	1048.856	1149.265	842.993	1947.341	2508.102	2990.939
14	Coal-n.e.c.	324	7.008	69.953	71.153	23.317	79.627	93.850
15	Chemical	325	1092.902	1592.077	707.725	3564.994	4017.139	4179.410
16	Plastics	326	170.525	289.235	115.040	351.397	522.707	541.570
17	Nonmetallic Minerals	327	2612.871	1780.291	323.120	6069.288	4618.428	5666.665
18	Primary Metal	331	405.789	485.958	198.547	1716.956	1901.754	1805.908
19	Fabricated Metal	332	1.055	0.870	0.285	2.285	1.735	0.790
20	Machinery	333	27.101	38.022	16.278	47.333	75.568	71.315
21	Electrical Equipment	335	2.655	4.445	1.780	2.885	4.505	4.400
22	Transportation Equipment	336	41.070	105.755	74.695	29.937	92.599	90.805
23	Furniture	337	1.725	3.240	1.515	1.905	4.390	4.380



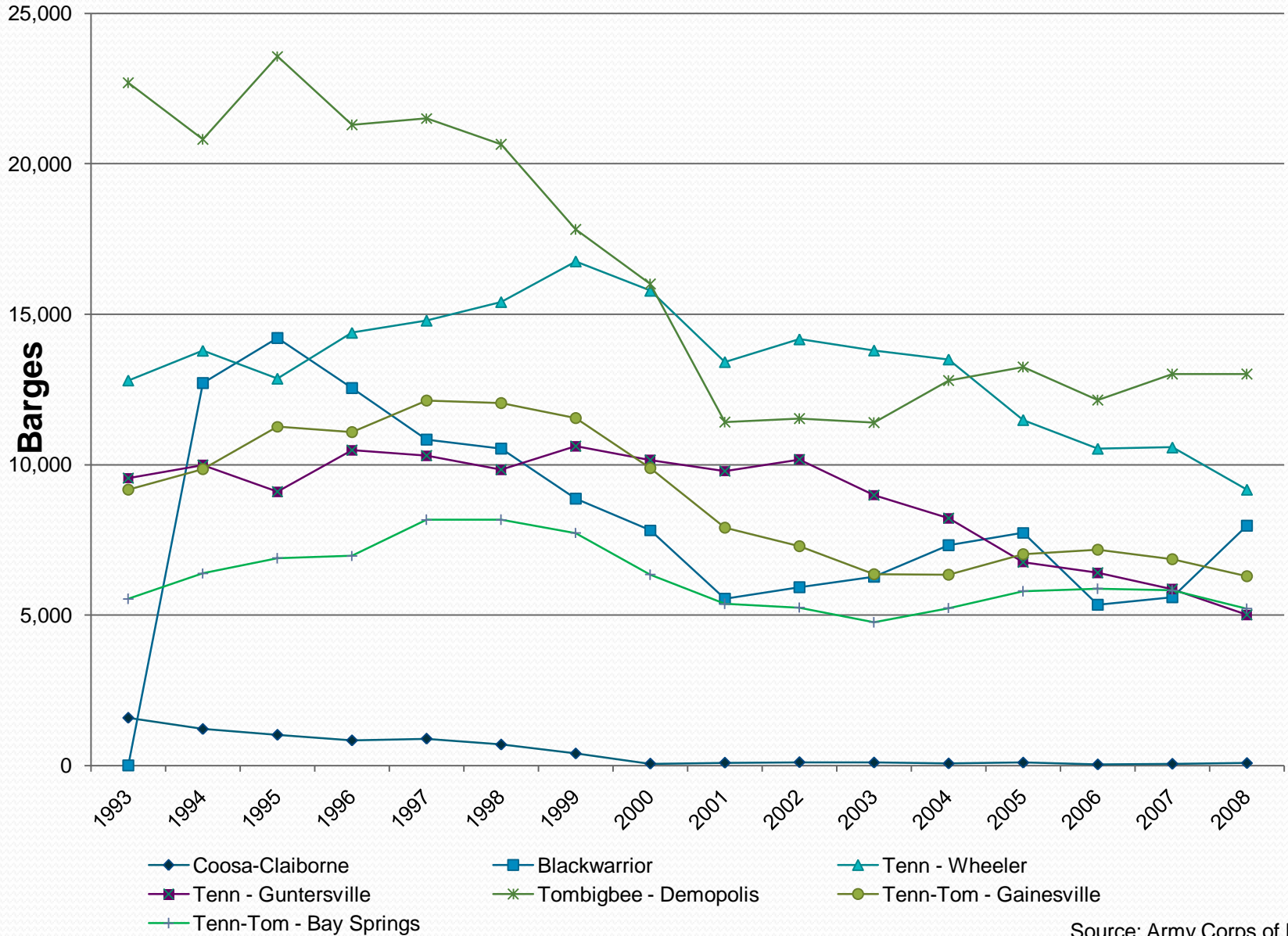
Water Summary

- Commodity flows allocated to waterways based on destination.
- Unlikely destinations removed

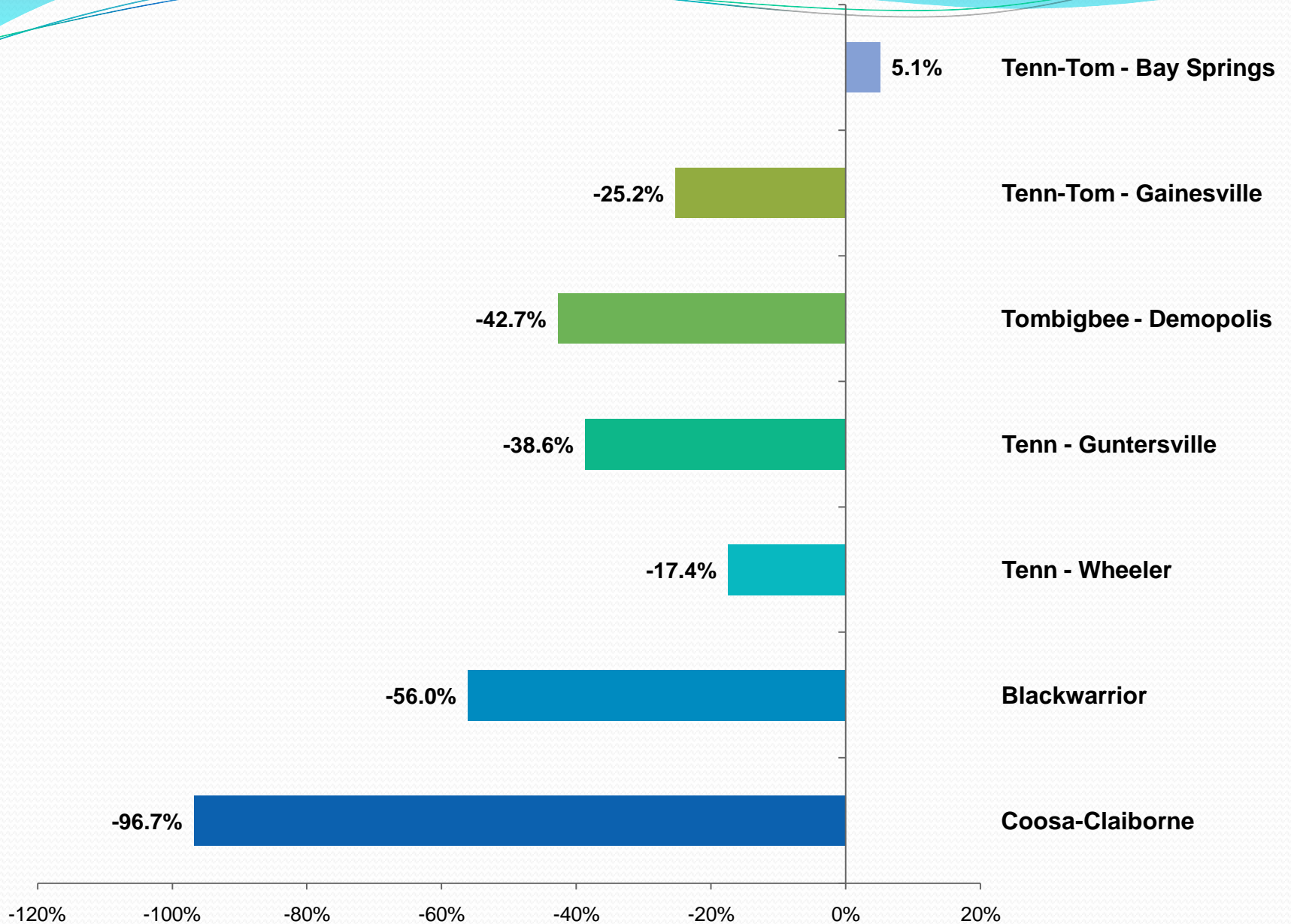
SCTG <input type="checkbox"/>	2002			2035		
	Tenn-Tom	W-Intercoastal	E-Intercoastal	Tenn-Tom	W-Intercoastal	E-Intercoastal
111	2417.84			6428.22		
211	2025.43	1287.46		2710.41	3359.64	
212	33.15			8.3854		
311	91.36			174.24		
312	0.024			0.0203		
321	0.21			0.55		
322	0.36		0.044	0.26		
324	83.87	220.02		175.83	80.45	
325	243.97	935.1		298	1304.3	
327	861.35			1807.25		
331	99.77	410.33		518.56	652.8	
339	0.01			0.12		



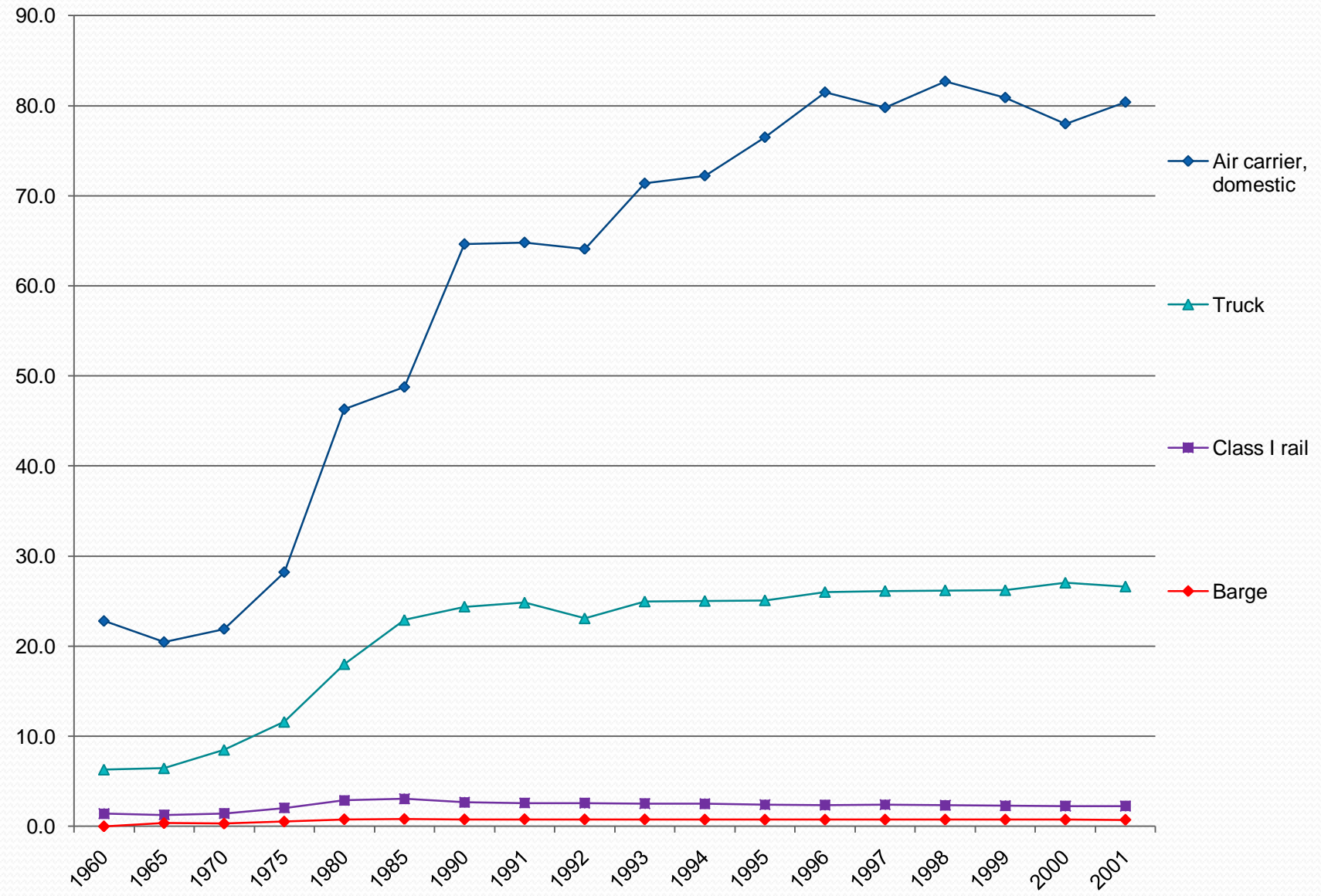
Total Barge Traffic



Change in Barge Traffic - 1993 to 2008



Average Freight Revenue Per Ton-mile (Current ¢)



Source: Bureau of Transportation Statistics

Limitations

- Only 2 FAF2 zones for AL
 - Mobile, Huntsville are in the same zone
- FAF2 does not indicate rail lines used
- Some FAF2 estimates of flows by mode are unlikely according to industry professionals
 - Overestimates coal via truck, for example
- Use publicly available data



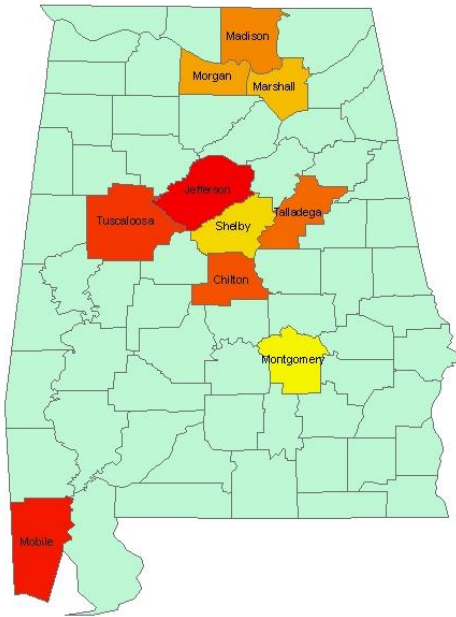
Moving from the
Data to what it
shows and what
we do with it...



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Top Counties for Truck Movements – Base Year

Top Counties for Truck Movements Base Year



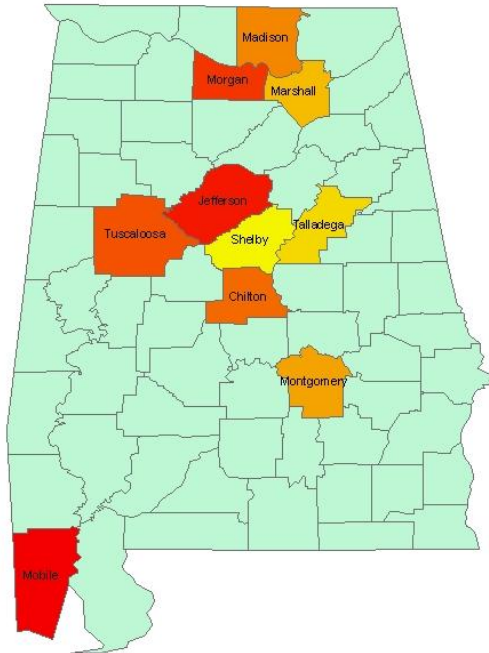
County	Total Daily Trucks	Top Commodity	Second Commodity	Third Commodity
Jefferson	19800	Base Metals	Coal-n.e.c.	NonMetal Mineral Products
Mobile	16598	Fuel Oils	Coal-n.e.c.	NonMetal Mineral Products
Tuscaloosa	9302	Nonmetallic Minerals	Fuel Oils	Coal-n.e.c.
Talladega	7769	Gravel	Natural Sand	Logs
Chilton	7450	Wood Products	Gravel	Natural Sand
Madison	6027	NonMetal Mineral Products	Waste/Scrap	Electronics
Morgan	5277	Fertilizers	Basic Chemicals	Base metals
Shelby	4181	NonMetal Mineral Products	Waste/Scrap	Textiles/Leather
Marshall	3800	Animal Feed	Other Foodstuffs	Wood Products
Montgomery	3595	Misc. Manufactured Products	Waste/Scrap	Wood Products



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Top Counties for Truck Movements – Future Year

Top Counties for Truck Movements Future Year



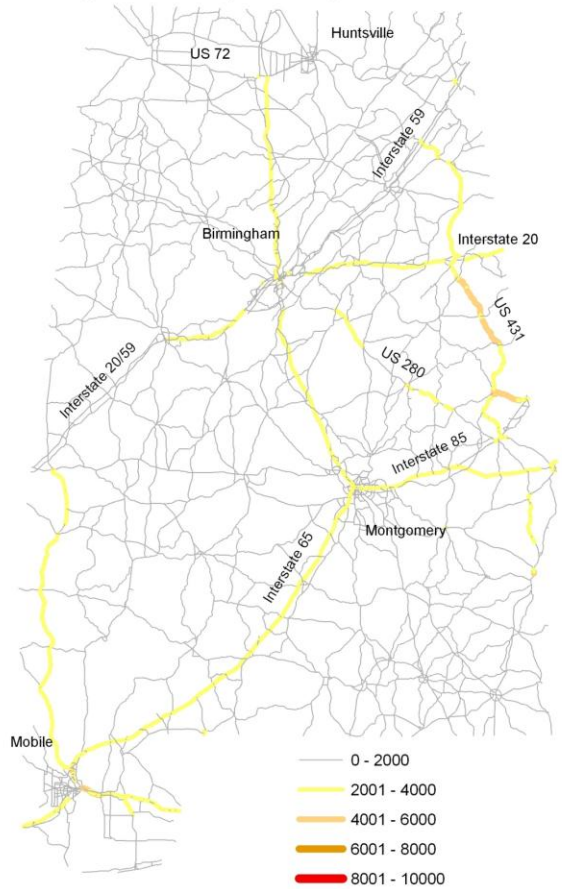
County	Total Daily Tucks	Top Commodity	Second Commodity	Third Commodity
Jefferson	42973	Waste/Scrap	Fuel Oils	Coal-n.e.c.
Mobile	40478	Gasoline	Fuel Oils	Coal-n.e.c.
Tuscaloosa	19597	Gasoline	NonMetallic Minerals	Fuel Oils
Morgan	15826	Fertilizers	Base Metals	Wood Products
Chilton	13242	Wood Products	Gravel	Natural Sand
Talladega	12828	Gravel	Natural Sand	Logs
Madison	12686	NonMetal Mineral Products	Waste/Scrap	Electronics
Shelby	9204	NonMetal Mineral Products	Waste/Scrap	Cereal Grains
Montgomery	8541	Waste/Scrap	Wood Products	Misc. Manufactured Products
Marshall	8138	Other Foodstuff	Animal Feed	Wood Products



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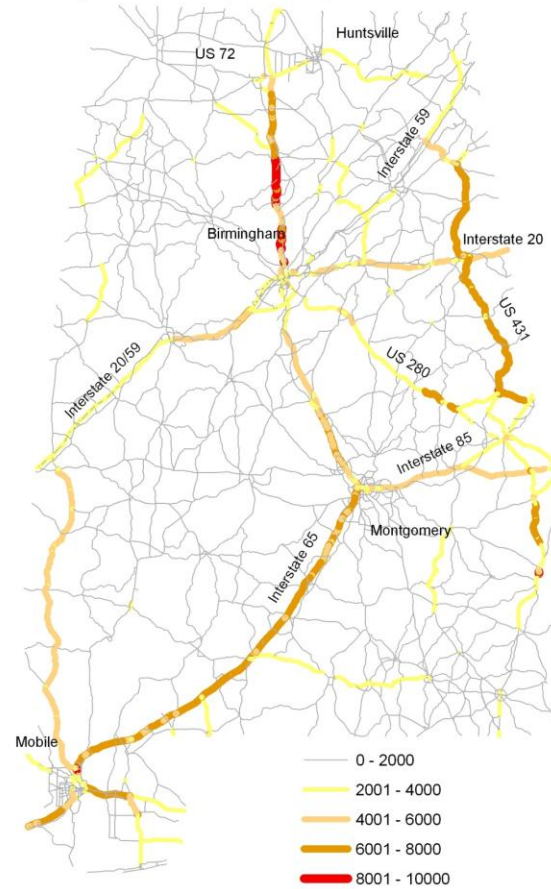
Trucks Per Lane Per Day

Trucks per Lane per Day in the Base Year



Data Source: FAF2 Database provided by the FHWA and Statewide Travel Demand Model provided by ALDOT

Trucks per Lane per Day in the Future Year



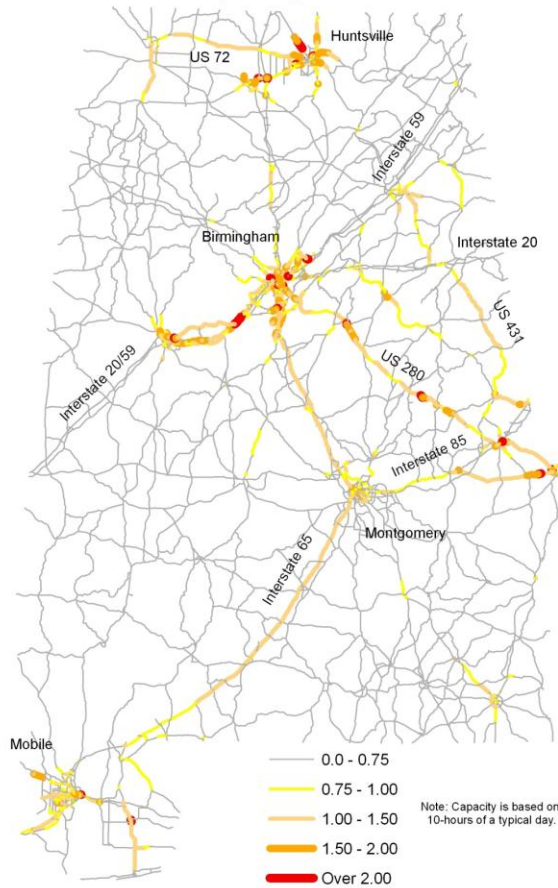
Data Source: FAF2 Database provided by the FHWA and Statewide Travel Demand Model provided by ALDOT



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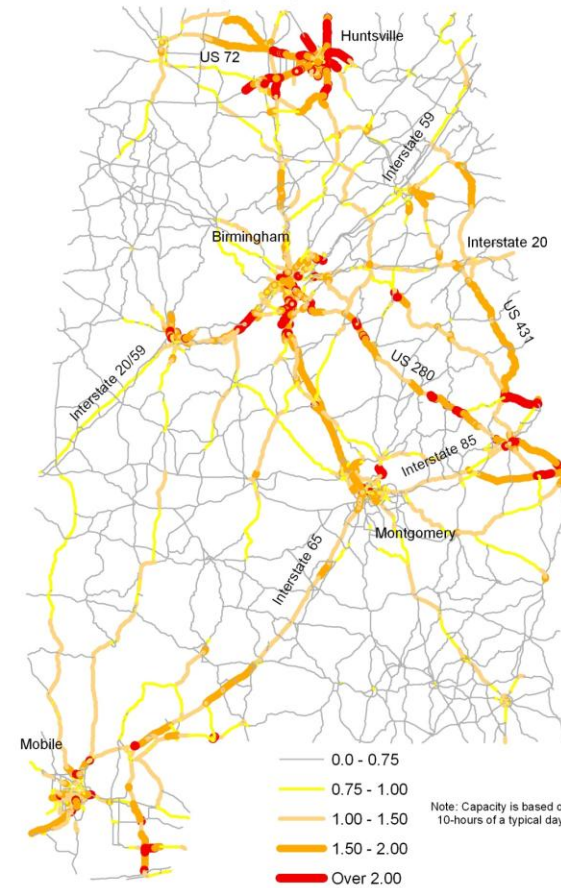
V/C Ratio

Volume to Capacity Ratio Base Year



Data Source: FAF2 Database provided by the FHWA and Statewide Travel Demand Model provided by ALDOT

Volume to Capacity Ratio Future Year



Data Source: FAF2 Database provided by the FHWA and Statewide Travel Demand Model provided by ALDOT



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Where do we go from here

- Examine the Location of Congestion
- Identify origin/destination points for vehicles
- Examine length of movement
- Examine commodities moved
- Begin examining possible alternatives



Questions?

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