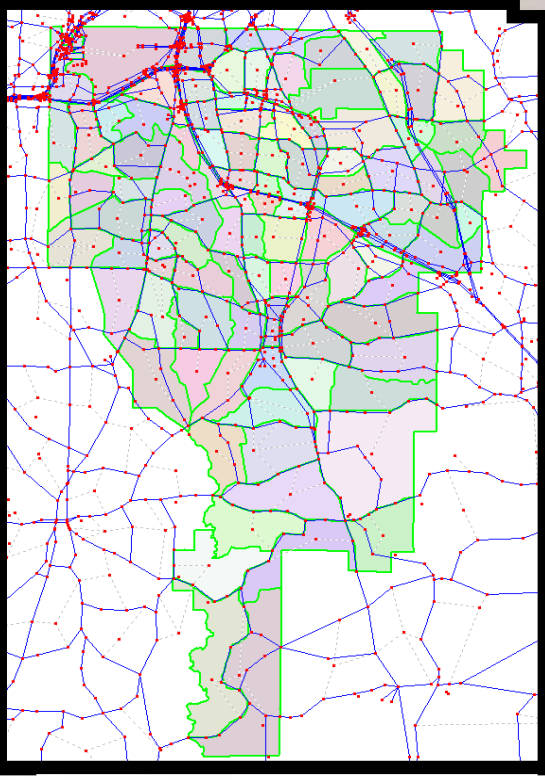
Clayton County Model Modification Documentation



CONNECTING CLAYTON
Clayton County
Comprehensive Transportation Plan

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1.0 Introduction

Transportation demand modeling is a process that allows planners and engineers to predict future travel patterns within a defined study area. In order to update and provide recommendations for the Clayton County Comprehensive Transportation Plan, the study team is conducting transportation modeling exercises based on the Atlanta Regional Commission's (ARC) 20-county demand model. This report documents an overview of revisions made to the Clayton County portion of the ARC regional travel demand model in order to better access conditions within the county.

Therefore, this document focuses on the procedures used to modify the ARC regional travel demand model and the subsequent ability of the model to 'predict' actual transportation conditions within the county.

2.0 Model Review

The Atlanta Regional Commission is responsible for maintaining an updated travel demand computer model for the Atlanta metro region. This model is used throughout the region for transportation planning purposes and includes socioeconomic characteristics, population projections, employment activities and existing roadway and traffic variables.

The travel demand modeling files were obtained from ARC staff for use with the Clayton County Comprehensive Transportation Plan. A year 2005 model was used as the control, or the basis, for evaluating model performance and determining model modifications. The intent of these model modifications are to provide more detail within Clayton County that can also be incorporated into future year model sets (years 2010, 2020, and 2030) to better predict future conditions.

As the basis of evaluating the model structure within Clayton County, an extensive review process was conducted focusing on Transportation Analysis Zones (TAZs) and the accuracy of the model's roadway network in replicating the conditions of the actual major roadways in Clayton County.

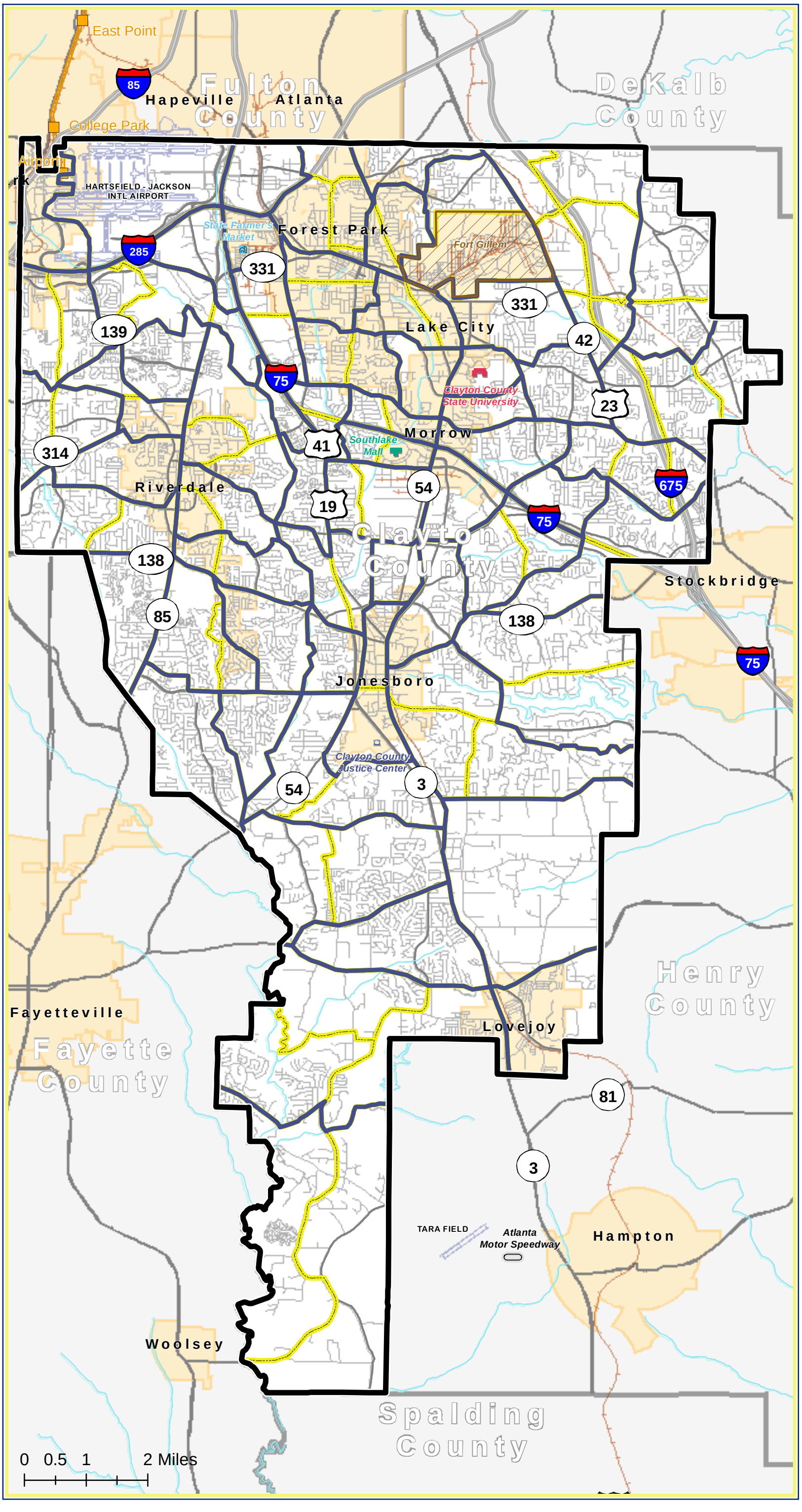
2.1 Transportation Analysis Zones

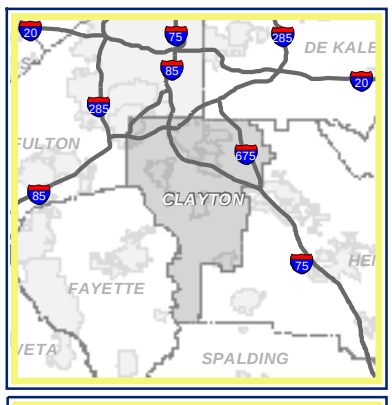
The ARC travel demand model employs a series of grouped socioeconomic data sets to estimate travel demand within Clayton County. These data sets include employment and population estimates represented in the model through a series of geographical areas, or traffic analysis zones. A review of the TAZ structure was conducted to determine those TAZs which would be appropriate for 'splitting'. The process of 'splitting' TAZs refers to decreasing the sizes of TAZs by forming new multiple TAZs in the place of a once larger TAZ. The TAZ sizes and structure in the ARC travel demand model are appropriate in the context of analyzing the larger ARC region, but for a County Transportation Plan that focuses on a single county, it is appropriate to 'split' TAZs. The logic behind this process is to focus on those TAZs which are either disproportionately large in geographical size, have non-homogenous land use types, and/or represent areas or neighborhoods that are not actually connected via the roadway system. This last example is typically true when a TAZ is bisected by a major roadway or a natural feature such as a river.

In the base ARC travel demand model, Clayton County is represented by 62 TAZs, identified as zones 1322 through 1383, out of a total of 2027 TAZs within the Atlanta metro region. As a result of analysis of the TAZ structure, an additional 45 TAZs are recommended to better accurately reflect Clayton County conditions, resulting in a total of 107 Clayton County TAZs. **Table 2.1** indicates the correlation of the original TAZs to the modified TAZ structure while the geographical distribution of the new TAZ structure is provided in **Figure 2.1**. In the physical splitting of the TAZs, census block boundaries were analyzed within a Geographical Information Systems (GIS) database to ensure that the TAZ boundaries did not bisect any census block boundaries, thus ensuring that all split TAZs were consistent with census units of data.

Table 2.1
Correlation of Original to Modified Clayton County TAZs

ORIG TAZ	SPLIT TAZs				
1322					
1323					
1324	2028				
1325	2029	2030			
1326					
1327					
1328					
1329	2031	2032	2033		
1330					
1331	2034				
1332	2035				
1333	2036				
1334	2037				
1335	2038				
1336					
1337					
1338	2039				
1339	2040				
1340	2041				
1341	2042				
1342					
1343					
1344					
1345					
1346					
1347	2043				
1348	2044	2045	2046	2047	2048
1349	2049				
1350	2050	2051			
1351					
1352					
1353	2052	2053			
1354	2054	2055			
1355	2056				
1356	2057				
1357	2058				
1358	2059				
1359					
1360					
1361	2060				
1362					
1363	2061				
1364					
1365					
1366					
1367					
1368					
1369	2062				
1370	2063				
1371					
1372	2064	2065			
1373	2066				
1374					
1375	2067				
1376					
1377	2068				
1378					
1379	2069				
1380	2070				
1381					
1382	2071	2072			
1383	2073				





Legend

- Interstates
- Major Roads
- Local Roads
- Railroads
- MARTA Stations
- MARTA Railways
- Rivers & Streams
- Cities
- Counties
- Study Area
- Existing TAZs
- Proposed Splits

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FIGURE 2-1
MODIFIED TAZ
LOCATIONS

CLAYTON COUNTY COMPREHENSIVE TRANSPORTATION PLAN

2.2 Roadway and Transit Network

The ARC model maintains a listing of roadway attributes for all facilities in the highway network. These attributes include link distance, number of lanes, capacity, posted speed and facility type. Their function is to define the characteristics of a roadway for travel assignment purposes and to establish the basic parameters by which a facility functions within the model. All Clayton County roadway links were reviewed for consistency, reasonableness and accuracy to local conditions.

A review of the highway link attributes indicated several functional classification coding anomalies along major roadways such as I-75. I-285, SR 54, Old Dixie Highway, SR 42, and Tara Boulevard. Although no other coding errors were found, other network issues became apparent. These focused mostly on the roadway coverage of the model (whether certain roads are included in the model or not) and the 'loading points', known as centroid connectors, of the TAZs. As the centroid connectors are meant to represent major entrances into residential neighborhoods or employment areas, none of the loading point locations were determined to be wrong. However, it was determined that additional loading points would be appropriate to more accurately represent Clayton County conditions. Both of these concerns were to a certain degree symptomatic of the original TAZ structure, and thus were determined to be rectifiable in the TAZ splitting process.

In addition, the transit network was reviewed to determine whether coding revisions would be necessary. All transit routes within Clayton County were determined to be coded correctly, with the exception of the absence of Georgia Regional Transportation Authority Express Route 441, which provides express bus service from the Clayton County Justice Center to Midtown Atlanta. However, additional review indicated that this route has only been in service since January 23, 2006 and thus, it's absence in the 2005 coded network is appropriate.

3.0 Model Modifications

Based on the model review, it was determined that an additional 45 TAZs would need to be added to the model structure and, in coordination, various roadways in Clayton County would need to be added as well as an update of the centroid connector locations. This section summarizes the technical modifications necessary to incorporate these changes into the model structure.

3.1 Transportation Analysis Zone Modifications

To incorporate the modified TAZ structure into the ARC model, two major tasks were completed. The first task focused on a GIS spatial analysis to determine how to distribute socioeconomic data (population and employment) from the original TAZ structure into the modified TAZ structure. The second task consisted of modifying various model input and parameter files so that the additional TAZs could be considered in the model stream.

3.1.1 Socioeconomic Data

The original ARC model includes two input files ('nwtaz' and 'hshld') that contain socioeconomic data representing the population, household, and employment data characteristics of the TAZs. As part of the TAZ splitting process, it is necessary to re-distribute this data into the modified TAZs, while maintaining the control total values of the original TAZs.

To complete this task, a GIS spatial analysis was conducted to ensure that the control total values of each dataset are consistent and that the distribution of the data is reasonable. Using the original TAZ boundaries, the acreage for land uses that support population and employment were determined based on generalized land use data for Clayton County. **Table 3.1,** on the next page, presents the population/employment assignments used for Clayton County based on their land use categories.

After determining the land use acreage for the original TAZ boundaries, the total employment and population from the original socioeconomic data was divided by the number of acres of appropriate land use to determine an *'employment per employment land use acre'* density value and a *'population per population land use acre' density value*'. Using the updated TAZ boundaries, the acreage for land uses that support population and employment was determined based on generalized land use data as described in **Table 3.1**. In the last step, the density value from the original TAZ and the land use acreage from the updated TAZ boundaries were used to re-assign population and employment for the years 2005, 2010, 2020, and 2030. **Tables 3.2** through **3.4** indicate the redistributed population, household, and employment inputs for the modified TAZ structure.

Table 3.1
Land Use/Socioeconomic Data Correlation

Land Use	Name	Assignment
AF	Agricultural/Farming	50% Population / 50% Employment
COM	Commercial	Employment
IND	Industrial	Employment
INS	Public Institution	Employment
MHDR	High Density Residential	Population
MHP	Mobile Home Park	Population
MX	Mixed Use	50% Population / 50% Employment
PUB	Public	Employment
RES	Residential	Population
RR	Railroad	Employment
TCU	TCU	Employment
UCC	Under Construction Commercial	Employment
UCI	Under Construction Industrial	Employment
UCR	Under Construction Residential	Population
VAC	Vacant	50% Population / 50% Employment

Table 3.2
Clayton County 2005, 2010, 2020, and 2030 Population – Modified TAZ Structure

TAZ	2005 Population	2010 Population	2020 Population	2030 Population
1322	0	0	0	0
1323	12	8	0	12
1324	4,029	4,326	4,442	4,573
1325	1,390	1,265	1,172	1,343
1326	164	150	140	259
1327	105	99	113	147
1328	8	8	18	34
1329	2,085	2,066	2,000	2,020
1330	3,622	3,675	3,590	3,693
1331	3,082	3,128	3,054	3,142
1332	2,855	2,828	2,877	2,958
1333	1,549	1,523	1,466	1,467
1334	3,043	2,991	2,880	2,856
1335	1,111	1,112	1,140	1,172
1336	4,307	4,311	4,379	4,463
1337	2,494	2,497	2,539	2,584
1338	1,346	1,355	1,346	1,362
1339	142	143	142	144
1340	1,986	1,999	1,987	2,011
1341	1,856	1,901	2,048	2,046
1342	1,118	1,191	1,413	1,415
1343	1,948	1,874	1,920	1,955
1344	2,883	2,773	2,841	2,893
1345	2,062	1,984	2,033	2,070
1346	6,025	6,403	6,438	6,535
1347	494	538	629	639
1348	547	684	948	971
1349	1,952	2,159	2,481	2,677
1350	3,192	3,349	3,804	4,042
1351	1,584	1,566	1,572	1,597
1352	5,312	5,248	5,239	5,323
1353	2,871	3,259	3,697	3,781
1354	1,925	1,985	1,935	1,942
1355	3,861	3,943	3,879	3,985
1356	3,569	3,658	3,596	3,695
1357	2,425	2,676	2,916	2,990
1358	1,780	1,664	1,637	1,683
1359	7,713	8,421	8,595	8,897
1360	5,303	5,627	5,805	5,898
1361	1,802	1,808	1,853	1,910
1362	6,653	7,601	8,072	8,127
1363	5,265	5,715	6,118	6,355
1364	6,069	6,990	7,923	8,005
1365	8,667	8,982	9,404	9,688
1366	5,335	5,726	6,240	6,261
1367	719	957	1,850	1,902
1368	2,702	3,597	4,538	4,628
1369	3,288	3,405	3,493	3,572
1370	5,685	5,829	5,979	6,113
1371	6,579	6,744	6,919	7,074
1372	1,811	1,927	2,285	2,427
1373	1,551	1,739	2,320	2,544
1374	1,852	1,921	1,948	1,968
1375	2,371	2,460	2,491	2,515
1376	2,913	3,143	3,311	3,272
1377	5,768	6,222	6,549	6,471
1378	1,215	1,265	1,231	1,230
1379	2,526	2,594	2,525	2,518
1380	647	658	687	720
1381	2,712	2,730	2,825	2,938
1382	1,883	1,926	2,072	2,127
1383	2,748	2,801	2,801	2,810
2028	3,580	3,844	3,948	4,065
2029	1,734	1,578	1,463	1,676
2030	277	252	234	268
2031	2,823	2,798	2,708	2,735
2032	146	144	140	141
2033	975	966	935	944
2034	701	711	695	714
2035	1,736	1,720	1,750	1,800
2036	608	598	576	576
2037	3,344	3,288	3,166	3,139
2038	551	551	566	581
2039	959	965	958	969
2040	1,628	1,638	1,628	1,648
2041	3,141	3,161	3,142	3,180
2042	506	518	558	558
2043	3,458	3,772	4,404	4,478
2044	225	281	389	398
2045	909	1,137	1,574	1,612
2046	279	348	482	494
2047	219	274	380	389
2048	220	275	381	390
2049	917	1,014	1,165	1,257
2050	1,399	1,468	1,667	1,771
2051	3,046	3,196	3,629	3,857
2052	2,459	2,791	3,166	3,238
2053	1,620	1,839	2,086	2,133
2054	3,856	3,977	3,877	3,892
2055	3,622	3,735	3,641	3,655
2056	735	750	738	758
2057	1,037	1,063	1,045	1,074
2058	2,165	2,389	2,605	2,671
2059	2,145	2,005	1,972	2,027
2060	3,343	3,355	3,437	3,543
2061	2,333	2,532	2,711	2,815
2062	2,851	2,953	3,030	3,097
2063	4,181	4,286	4,397	4,495
2064	2,212	2,355	2,792	2,966
2065	1,693	1,802	2,137	2,269
2066	1,149	1,289	1,720	1,886
2067	1,295	1,344	1,360	1,374
2068	4,461	4,813	5,066	5,005
2069	3,342	3,432	3,341	3,332
2070	1,237	1,258	1,315	1,377
2071	1,949	1,993	2,145	2,202
2072	4,078	4,169	4,486	4,607
2073	2,545	2,593	2,594	2,603
Total	**155,011**	**162,931**	**171,456**	**175,634**

Table 3.3
Clayton County 2005, 2010, 2020, and 2030 Households – Modified TAZ Structure

TAZ	2005 Households	2010 Households	2020 Households	2030 Households
1322	0	0	0	0
1323	1	2	0	0
1324	1,738	1,839	1,953	2,057
1325	477	432	415	484
1326	58	56	54	102
1327	30	9	24	45
1328	2	1	18	29
1329	687	680	682	704
1330	1,136	1,149	1,165	1,221
1331	1,108	1,122	1,136	1,193
1332	1,002	979	1,035	1,085
1333	490	479	506	516
1334	1,011	993	976	987
1335	395	398	434	460
1336	1,642	1,653	1,727	1,797
1337	909	920	969	1,002
1338	436	438	449	466
1339	43	44	45	47
1340	671	680	701	725
1341	726	741	816	827
1342	400	425	541	557
1343	600	601	641	667
1344	1,028	1,032	1,111	1,165
1345	765	768	798	828
1346	1,970	2,121	2,216	2,295
1347	158	173	208	215
1348	194	240	344	362
1349	636	702	845	938
1350	1,097	1,149	1,349	1,463
1351	774	774	820	850
1352	1,835	1,839	1,892	1,965
1353	973	1,101	1,297	1,355
1354	688	700	708	727
1355	1,304	1,314	1,338	1,406
1356	1,268	1,280	1,312	1,375
1357	888	958	1,083	1,136
1358	645	642	656	687
1359	3,864	4,008	4,242	4,466
1360	2,013	2,116	2,265	2,354
1361	604	604	642	678
1362	2,524	2,802	3,087	3,174
1363	1,987	2,125	2,360	2,505
1364	2,284	2,486	2,925	3,017
1365	2,994	3,094	3,363	3,543
1366	1,632	1,793	2,046	2,099
1367	286	352	723	771
1368	1,086	1,350	1,749	1,818
1369	1,121	1,156	1,232	1,286
1370	1,902	1,945	2,064	2,157
1371	2,137	2,188	2,339	2,442
1372	617	645	789	854
1373	554	616	860	965
1374	704	740	780	810
1375	882	929	973	1,002
1376	951	1,020	1,109	1,120
1377	2,265	2,418	2,643	2,671
1378	664	686	701	720
1379	927	951	956	974
1380	261	266	292	312
1381	906	907	971	1,035
1382	650	671	749	787
1383	981	996	1,034	1,062
2028	1,545	1,634	1,736	1,828
2029	596	538	518	604
2030	95	86	83	96
2031	931	920	923	954
2032	48	47	48	49
2033	321	318	319	329
2034	252	255	258	271
2035	609	596	630	660
2036	193	188	198	202
2037	1,112	1,092	1,072	1,084
2038	196	198	215	228
2039	311	312	320	332
2040	499	502	520	538
2041	1,062	1,075	1,109	1,146
2042	198	202	222	225
2043	1,109	1,208	1,453	1,508
2044	80	98	141	148
2045	323	398	572	601
2046	99	122	175	184
2047	78	96	138	145
2048	78	96	138	145
2049	299	330	397	440
2050	481	503	591	641
2051	1,047	1,096	1,287	1,396
2052	833	943	1,111	1,161
2053	549	621	732	765
2054	1,378	1,403	1,419	1,456
2055	1,294	1,318	1,333	1,367
2056	248	250	254	267
2057	369	372	381	400
2058	793	856	968	1,014
2059	777	773	791	827
2060	1,120	1,122	1,192	1,257
2061	880	941	1,046	1,110
2062	972	1,002	1,069	1,115
2063	1,399	1,430	1,518	1,587
2064	754	788	964	1,043
2065	577	603	737	798
2066	410	456	637	715
2067	482	507	531	547
2068	1,752	1,870	2,044	2,066
2069	1,228	1,258	1,265	1,289
2070	500	508	558	597
2071	673	695	775	814
2072	1,407	1,453	1,622	1,704
2073	908	923	957	984
Total	**55,931**	**58,402**	**63,812**	**66,797**

Table 3.4
Clayton County 2005, 2010, 2020, and 2030 Employment – Modified TAZ Structure

TAZ	2005 Employment	2010 Employment	2020 Employment	2030 Employment
1322	35,788	36,235	36,878	39,788
1323	3,739	3,969	4,235	4,923
1324	1,920	2,176	2,730	3,261
1325	1,231	1,372	1,567	1,852
1326	2,377	2,597	2,754	3,088
1327	3,081	3,014	3,201	3,762
1328	4,832	5,291	5,442	6,258
1329	1,248	1,412	1,697	2,182
1330	927	980	1,076	1,173
1331	1,044	1,104	1,242	1,408
1332	1,123	1,083	1,079	1,246
1333	1,689	1,668	1,668	1,793
1334	328	418	440	566
1335	481	536	615	709
1336	1,172	1,247	1,452	1,713
1337	945	995	1,129	1,283
1338	100	96	98	110
1339	1,969	2,003	2,037	2,135
1340	4,130	4,280	4,255	4,411
1341	941	896	879	983
1342	1,301	1,436	1,527	1,774
1343	1,237	1,167	1,176	1,368
1344	1,157	1,009	908	1,061
1345	301	270	272	333
1346	541	467	577	2,299
1347	3,206	3,184	3,272	3,601
1348	1,361	1,344	1,640	1,832
1349	72	73	91	149
1350	69	70	89	154
1351	4,358	4,376	4,298	4,649
1352	731	764	845	1,002
1353	56	82	260	672
1354	1,183	1,192	1,274	1,373
1355	598	595	599	622
1356	258	264	287	322
1357	135	148	216	320
1358	347	376	451	577
1359	257	298	374	540
1360	1,126	1,257	1,549	1,909
1361	385	410	450	513
1362	502	527	654	830
1363	743	800	896	1,126
1364	199	219	302	431
1365	265	238	263	343
1366	59	64	88	119
1367	588	630	725	1,299
1368	468	486	517	798
1369	281	242	228	309
1370	223	202	206	297
1371	372	322	315	416
1372	265	274	292	338
1373	142	202	258	332
1374	3,014	3,144	3,436	4,221
1375	787	923	1,132	1,480
1376	235	219	252	369
1377	1,042	1,198	1,411	1,795
1378	777	795	820	938
1379	343	381	450	569
1380	1,216	1,260	1,358	1,489
1381	1,960	2,014	2,137	2,320
1382	538	539	618	744
1383	394	544	859	1,378
2028	2,226	2,522	3,166	3,781
2029	428	477	544	644
2030	701	782	892	1,055
2031	200	226	272	350
2032	180	204	245	315
2033	778	881	1,058	1,361
2034	1,086	1,148	1,291	1,464
2035	1,102	1,064	1,060	1,224
2036	1,798	1,777	1,776	1,910
2037	58	75	79	101
2038	408	455	523	603
2039	696	664	676	764
2040	303	308	313	329
2041	729	756	751	779
2042	898	855	839	939
2043	453	449	462	508
2044	949	938	1,144	1,278
2045	901	890	1,086	1,213
2046	746	737	899	1,004
2047	371	367	447	500
2048	239	236	288	322
2049	71	72	91	149
2050	180	183	234	404
2051	52	52	67	116
2052	35	51	163	420
2053	51	74	236	610
2054	2,755	2,776	2,966	3,197
2055	1,200	1,210	1,293	1,393
2056	831	826	831	863
2057	123	126	137	154
2058	82	90	131	195
2059	54	58	70	90
2060	325	347	380	433
2061	0	0	0	0
2062	344	295	279	377
2063	165	150	152	220
2064	213	221	235	273
2065	263	273	291	337
2066	96	137	176	225
2067	1,111	1,302	1,597	2,088
2068	644	741	872	1,111
2069	254	281	332	421
2070	2,208	2,287	2,467	2,705
2071	732	733	841	1,011
2072	229	229	263	317
2073	434	598	945	1,515
Total	**95,883**	**98,645**	**104,191**	**120,423**

3.1.2 Model File Modifications

In order for the ARC travel demand model to understand and accept the TAZ splits, modifications were necessary to several model parameters and input file as well as various changes to the model script. These changes included renumbering all references to the original TAZ structure, external nodes, and necessary changes to the model's roadway network to incorporate revised centroid connections to the modified TAZs as well as changes to incorporate additional roadway coverage within Clayton County, which is discussed in **Section 3.2.** **Table 3.5** indicates the input and parameters files requiring modification to appropriately incorporate the modified TAZs into the modeling process.

Table 3.5
Modified Model Files

Input Files	Parameters Files
ARC{year}HWY1.NET	CMHEXT.PRN
HSHLD[year}g.dat	DELTAAM.TRP
NWTAZ{year}g.prn	DELTAMD.TRP
PNRCODE{year}1.DAT	DELTAPM.TRP
PNRCODE{year}2.DAT	DELTANT.TRO
	EEPC00.VTT
	EETRK00.VTT
	EXTERNALCOUNTIES.DBF
	EXTERNALS.DBF
	GRIDS{number of TAZs}.DBF
	IEPCSTA.DAT
	IETRKPER.DAT
	PCTSCH.TXT
	NWTAZ00G.PRN
	TAZ{number of TAZs}_REALCENTROID.DBF
	TRUCK ZONES.DBF

3.2 Network Modifications

In addition to the TAZ splits, it was necessary to modify the model's roadway network to facilitate the new TAZ structure. This process consisted of adding new centroid connections to the modified TAZs based on existing access points into the areas and neighborhoods represented by the modified TAZs, and the addition of new roadways so that the roadway coverage was applicable to the new TAZ structure and/or represented relatively major roadway connections not included in the original model network. **Table 3.6** indicates the new roadways added into the model network.

Additional network modification was conducted to update functional classification revisions within Clayton County based on GDOT requests and subsequent concurrence by the Clayton County Technical Coordinating Committee (TCC) member, documented in an ARC memorandum dated September 26, 2007. This consisted of revising Upper Riverdale Road from an urban collector street to an urban minor arterial, Lamar Hutcheson Parkway from an urban local street to an urban collector street, and Rountree Road/Church Street from an urban local street to an urban local collector. In addition, to these updates, the functional classification anomalies noted earlier in this report were rectified.

Table 3.6
New Roadways In Model Network

Roadway
Arrowhead Boulevard
Brown Road
Evans Drive
Harper Road
Hendrix Drive
Holiday Boulevard
Hule Road
Kendrick Road
Lees Mill Road
Meadowbrook Lane
Norman Drive
North Avenue
Old Rex-Morrow Road
Phillips Drive
Roundtree Road
Smith Street
South Avenue/Springdale Road
Webb Road
West Street
Wilkins Road

4.0 Model Output

The final step of the model modifications within Clayton County was to check and compare the model output from the modifications and the original ARC model. This analysis focused on the predictive capability of the model in replicating actual 2005 conditions as indicated by traffic counts and transit ridership.

4.1 Traffic Volumes

The 'TOTALVOL' attribute of the model output represents the model's predicted daily traffic volume on the model's roadway links. As a result, the 2005 model's output was compared with traffic counts conducted in 2005. This analysis was applied in two ways: (1) to all count locations categorized by their functional classification within Clayton County to determine the model's overall predictive ability and (2) to a series of strategically located screenlines. A screenline is an imaginary line drawn across a geographical area to determine if the sum of all model predicted traffic volumes matches, with reasonability, actual traffic counts.

4.1.1 Countywide

The model volumes were compared to the 2005 counts for both the original ARC model and the modified model, and categorized by functional classification. As shown in **Table 4.1**, the total deviation of the model volume to GDOT counts in the original model is 1.7 percent, with the deviation changing to only - (0.1) percent with the modified model signifying that the modified model has slightly better predicative capabilities within Clayton County. In addition, the modified model results in a better performance of interstates, major arterials, and minor arterials within Clayton County, although there is a slight decrease of collector roadways. However, the performance of all functional classifications in the modified model are well within Federal Highway Administration standards. The performance of all count locations is provided in the **Appendix**.

Table 4.1
Model Volume to GDOT Count Comparison by Functional Classification

Functional Class	GDOT 2005 AADT	Original Model Volume	Original Model Deviation	Modified Model Volume	Modified Model Deviation	FHWA Target (+/-)
Interstates	1945372	1864635	**-4.2%**	1865856	**-4.1%**	**7%**
Major Arterials	1047236	1128480	**7.8%**	1120144	**7.0%**	**10%**
Minor Arterials	1350352	1436196	**6.4%**	1369390	**1.4%**	**15%**
Collectors	201106	193912	**-3.6%**	184492	**-8.3%**	**25%**
Total	**4544066**	**4623223**	**1.7%**	**4539882**	**-0.1%**	**N/A**

FHWA Targets Source: FHWA Calibration and Adjustment of System Planning Models

4.1.2 Screenline Crossings

Screenline crossings were set up at various strategic points throughout Clayton County to capture the model's ability to predict all traffic volumes crossing certain areas of the county. The locations of these screenlines are provided in **Figure 4.1**. As indicated in **Table 4.2**, the modified model has a major improvement in the deviation of the model volumes to the 2005 AADT at all screenline locations, from (-5.5) percent to only (-0.07) percent. Likewise, the performances of all the individual screenlines improve with the modified model, with the exception of Screenline 4. All screenlines are within screenline deviation standards established in the National Cooperative Highway Research Program (NHCRP) Report 255.

Table 4.2
Model Volume to GDOT Count Screenline Comparison

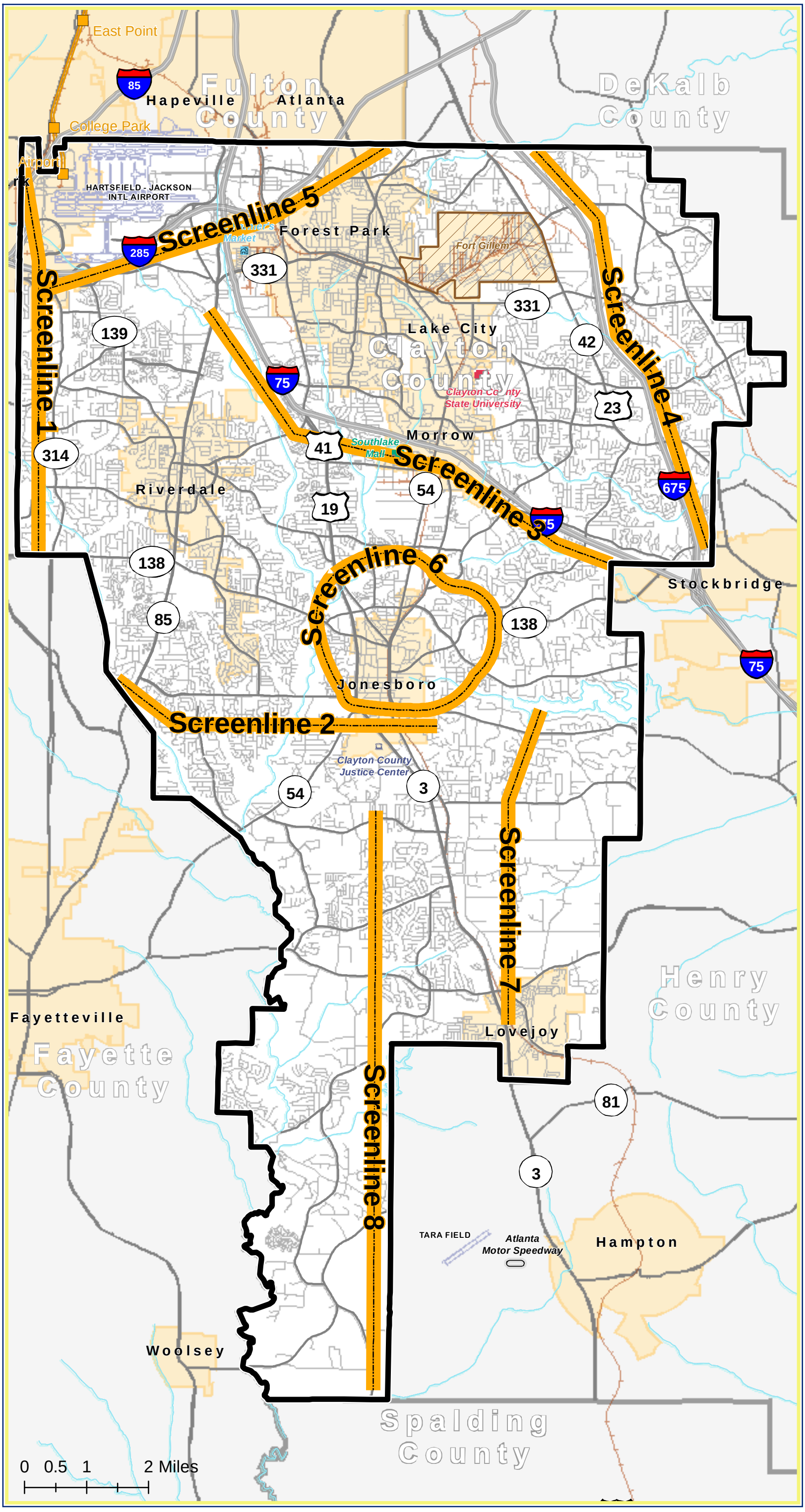
Screen/Cordon Line	Location	Original ARC 2005 Model			Modified 2005 Model		
		2005 AADT	Model Volume	Deviation	2005 AADT	Model Volume	Deviation
Screenline 1	Western Boundary of Clayton: Traveling to/from Fulton	291,480	260,098	-10.77%	291,480	282,253	-3.17%
Screenline 2	South of Flint River Road and Jonesboro	115,260	110,486	-4.14%	115,260	117,612	2.04%
Screenline 3	West/South of I-75	211,050	221,778	5.08%	211,050	214,509	1.64%
Screenline 4	East of I-675	91,244	85,668	-6.11%	91,244	100,432	10.07%
Screenline 5	South of I-285	323,210	301,508	-6.71%	323,210	330,367	2.21%
Screenline 6	Entering/Exiting Central Jonesboro	237,990	226,648	-4.77%	237,990	231,090	-2.90%
Screenline 7	East of Tara Boulevard (southeastern part of Clayton County)	33,560	28,604	-14.77%	33,560	28,748	-14.34%
Screenline 8	West of Tara Boulevard (south-central part of Clayton County)	22,080	18,036	-18.32%	22,080	21,735	-1.56%
TOTAL		1,325,874	1,252,826	-5.51%	1,325,874	1,326,746	0.07%

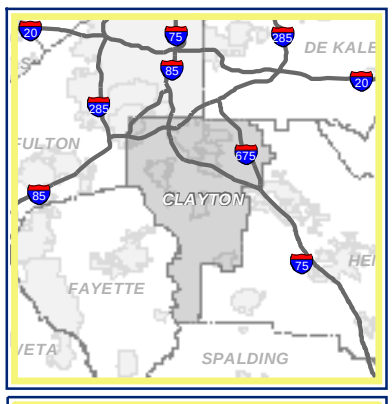
4.2 Transit Ridership

Transit ridership output data from the model was analyzed and compared to actual ridership data available for those transit routes directly serving Clayton County. As shown in **Table 4.3**, when comparing the model's overall performance system, the modified model appears to actually reduce the model's predictive capability. However, focusing on the individual routes shows that with the exception of Route 500 (which has the same result as the original model) and Route 503, the modified model actually improves the route-level predictive capabilities. In essence, the seemingly good overall result of the original model is misleading, driven by low and high extreme deviation negating each other. In contrast, the modified model is generally more accurate at the route level.

Table 4.3
Model Ridership to C-Tran and GRTA Ridership Comparison

Route	Average 2005 Ridership	Original Model	Original Model Deviation	Modified Model	Modified Model Deviation
C-Tran Route 500	73	2	-97.3%	2	-97.3%
C-Tran Route 501	991	608	-38.6%	633	-36.1%
C-Tran Route 502	410	598	45.9%	402	-2.0%
C-Tran Route 503	2142	2,056	-4.0%	1,733	-19.1%
C-Tran Route 504	1037	1,483	43.0%	1,236	19.2%
GRTA 440	434	375	-13.6%	396	-8.8%
Total	**5,087**	**5,122**	**0.7%**	**4,402**	**-13.5%**





Legend

- Interstates
- Major Roads
- Local Roads
- Railroads
- MARTA Stations
- MARTA Railways
- Rivers & Streams
- Cities
- Counties
- Study Area
- Existing TAZs
- Proposed Splits

N W E S

FIGURE 4-1
CLAYTON COUNTY
SCREENLINES

5.0 Conclusions

Overall, the modified model performs slightly better or the same in predicting actual Clayton County conditions than the original model. Despite any implied limited benefit to the modified model, the splitting of TAZs and functional class re-coding of major roadways within Clayton County still provides a more accurate set of inputs into the model as well as more detail to analyze socioeconomic growth changes which will be useful for future model functions in the Comprehensive Transportation Plan. As such, the next step is to apply this modified model to future years (2010, 2020, and 2030) and scenarios in order to access, predict, and recommend future transportation needs of Clayton County.

APPENDIX

Roadway Name	From	To	Count Station	GDOT 2005 AADT	Original Model Volume	Original Model Deviation	Modified Model Volume	Modified Model Deviation
Hastings Bridge Rd	TALMADGE RD	MCDONOUGH RD	1	10650	6216	-41.6%	6132	-42.4%
Peach Blossom Trail	MCDONOUGH RD	CARDINAL RD	5	41590	34957	-15.9%	38381	-7.7%
Tara Blvd	FLICKER RD	IRON GATE BLVD	7	39520	34685	-12.2%	37872	-4.2%
MAIN ST	N MAIN DT	S MAIN CT	9	14650	12219	-16.6%	10291	-29.8%
Peach Blossom Trail	OLD DIXIE HWY	LOVEJOY RD	41	25600	29737	16.2%	29419	14.9%
Tara Blvd	IRONGATE BLVD	OLD POSTON RD	43	40680	40650	-0.1%	42623	4.8%
SR 42	BEG HENRY 151	OFF FR I-675	54	17310	11452	-33.8%	10973	-36.6%
Fayetteville Rd	FLINT RIVER	FLINT RIVER	67	20350	24970	22.7%	26176	28.6%
Fayetteville Rd	MUNDYS MILL RD	WINN DIXIE DR	69	15850	18535	16.9%	20721	30.7%
SR 85	CAMP CREEK	HELMER RD	94	28410	36564	28.7%	38829	36.7%
SR 85	CHASE RIDGE APTS	SR 138	96	36530	45566	24.7%	39109	7.1%
SR 138	W FAYETTEVILLE RD	SR 85	112	25760	24015	-6.8%	27327	6.1%
SR 138	TAYLOR RD	ROUNDTREE RD	113	28310	33586	18.6%	31772	12.2%
SR 138	SUGARLAND DR	CIBONEY DR	125	14340	14707	2.6%	13637	-4.9%
SR 138	MT ZION RD	SR I-675 N	126	39010	46991	20.5%	45759	17.3%
SR 138	TO I-675 N	DANIEL DR	127	41940	50735	21.0%	50671	20.8%
West Fayetteville Rd	JONESBORO RD	BENTWATER CT	158	13440	7267	-45.9%	9052	-32.6%
SR 85 North	BETHSAIDA RD	CHERYL LEIGH DR	158	16030	26911	67.9%	28433	77.4%
I-75 North	BEG HENRY 151	MT ZION BLVD	185	135000	118319	-12.4%	116727	-13.5%
I-75	MOUNT ZION BLVD	CENTRAL OF GA	187	137840	132981	-3.5%	132430	-3.9%
Wildwood Rd	HALL RD	WOOLSEY RD	212	860	6904	702.8%	5734	566.7%
Fortson Rd	WILDWOOD RD	FORTSON RD	213	1790	6094	240.4%	5567	211.0%
Woolsey Rd	FLINT RIVER	HAMPTON RD	214	2910	1201	-58.7%	2119	-27.2%
Hampton Rd	WOOLSEY RD	OLD WELL CT	218	930	2352	152.9%	4193	350.9%
McDonough Rd	TARA RD	LOVEJOY STATION	221	12750	8175	-35.9%	7533	-40.9%
McDonough Rd	TARA BLVD	HUNTERS LN	223	10280	9659	-6.0%	10453	1.7%
Mundy's Mill Rd	SR 54	TARA BLVD	225	7540	4000	-46.9%	4275	-43.3%
Rex Rd	REX CIR	REX CIR	236	7370	7830	6.2%	11110	50.7%
Anvilblock Rd	BOULDERCREST RD	OFF FR I-675 NB	245	9510	10916	14.8%	10594	11.4%
Anvilblock Rd	OFF FR I-675 SB	OLD DUNN CT	247	17290	10581	-38.8%	10916	-36.9%
Mount Zion Rd	CONKLE RD	MT ZION PKWY	252	12520	4145	-66.9%	5079	-59.4%
Mount Zion Rd	FIELDER RD	SR 138	254	9870	12307	24.7%	9568	-3.1%
Fielder Rd	SR 138	LOIS LA	256	5100	5211	2.2%	4718	-7.5%
Fielder Rd	MT ZION RD	BABBLING BROOK DR	261	11670	17109	46.6%	15587	33.6%
Mount Zion Rd	OFF FROM I-75 S	MT ZION RD	271	40020	32212	-19.5%	35782	-10.6%
Walt Stephens Rd	CAMP AVE	SPIVEY RD	272	6570	4110	-37.4%	4767	-27.4%
Noahs Ark Rd	S MAIN ST	AUSTIN LN	274	6060	7176	18.4%	7396	22.0%
Flint River Rd	SR 85	FLINTRIVER RD	281	14530	16507	13.6%	16469	13.3%
Flint River Rd	SR 85	DORSEY ROAD	282	11760	10442	-11.2%	10662	-9.3%
Bethsaida Rd	BETHSAIDA RD	W FAYETTEVILLE RD	287	4750	5629	18.5%	2971	-37.5%
Bethsaida Rd	ROBERTS DR	W FAYETTEVILLE RD	289	10170	4584	-54.9%	5942	-41.6%
Bouldercrest Rd	PANOLA RD	MITCHELL RD	292	4570	4773	4.4%	6004	31.4%
Bouldercrest Rd	ANVILBLOCK RD	TILSON RD	294	5030	7439	47.9%	5903	17.4%
I-675	STOCKBRIDGE RD	NB675 OFF RMP TO SR42	367	53630	65020	21.2%	64774	20.8%
I-675	SR 42	NB675 OFF RMP TO ELLENWOOD	369	62720	75358	20.1%	71412	13.9%
I-675 N	ELLENWOOD ROAD	SB675 ON RMP FR ANVILBLOCK	371	69460	68481	-1.4%	68950	-0.7%
I-675 North	ANVIL BLOCK RD	END DEKALB 089	373	73340	75484	2.9%	75192	2.5%
North Bridge Rd	PANHANDLE RD	CYPRESS LN	377	3080	4761	54.6%	8916	189.5%

Roadway Name	From	To	Count Station	GDOT 2005 AADT	Original Model Volume	Original Model Deviation	Modified Model Volume	Modified Model Deviation
Thomas Rd	SR 54	FLINT RIVER RD	383	6380	3996	-37.4%	4087	-35.9%
Main St	OLD POSTEN RD	SMITH ST	1012	12210	10576	-13.4%	8814	-27.8%
Main St	SPRING ST	PINE CIR	1014	18710	10017	-46.5%	8732	-53.3%
SR 54	NORTH AVE	JONESBORO RD	1015	15000	11681	-22.1%	9093	-39.4%
North Main St	FAYETTVILLE RD	TARA BLVD	1018	10200	7067	-30.7%	7677	-24.7%
Tara Blvd	N MAIN ST	BATTLE CREEK RD	1021	59530	61436	3.2%	56316	-5.4%
Tara Blvd	JOHNSON RD	FLINT TRL	1023	70780	66426	-6.2%	57575	-18.7%
Tara Blvd	MT. ZION RD	TARA BLVD	1025	65140	73841	13.4%	71741	10.1%
Old Dixie Hwy	HOLIDAY BLVD	UPPER RIVERDALE RD	1027	19280	22878	18.7%	21014	9.0%
OLD DIVIE HWY (US 19/	I 75	HILLTOP DR	1029	21590	29472	36.5%	29534	36.8%
Old Dixie Hwy	MORROW RD	FIRST ST	1032	19010	32206	69.4%	28671	50.8%
Old Dixie Hwy	FOREST PKWY	CENTRAL AVE	1034	23760	47135	98.4%	42881	80.5%
Old Dixie Hwy	SOUTHPOINT DR	OFF FROM CD 4077OS	1036	33910	38216	12.7%	39092	15.3%
Old Dixie Rd	I-285	SOUTHWOOD PKWY	1038	16830	19897	18.2%	17492	3.9%
Tara Blvd	POSTON RD	SOUTH AVE	1045	44660	44488	-0.4%	40657	-9.0%
Tara Blvd	FAYETTEVILLE RD	NORTH AVE	1047	53870	52531	-2.5%	60569	12.4%
Tara Blvd	SR 138	SR 138	1048	55780	56949	2.1%	61355	10.0%
Tara Blvd	SOUTHLAKE PL	MUSEUM CIR	1049	58380	53741	-7.9%	55484	-5.0%
Roosevelt Hwy	BEG FULTON 121	NORTHWEST DR	1052	11150	6725	-39.7%	6658	-40.3%
SR 42	I-675	FIELDER RD	1056	20552	22649	10.2%	21267	3.5%
SR 42	LAKE HARBIN RD	DEASE DR	1058	11920	14431	21.1%	12652	6.1%
SR 42	REX RD	E CLAYTON DR	1061	13160	13545	2.9%	12534	-4.8%
SR 42	ELLENWOOD WOOD RD	OLD TONY RD	1063	14320	17642	23.2%	14183	-1.0%
SR 42	ANVILBLOCK RD	END DEKALB 089	1065	17350	17886	3.1%	15952	-8.1%
Fayetteville Rd	TARA BLVD	NORTH AVE	1072	7860	2607	-66.8%	5095	-35.2%
SR 138	FAYETTEVILLE RD	N MAIN ST	1074	8340	11742	40.8%	7324	-12.2%
SR 54	CECILIA CT	BATTLE CREEK RD	1076	23500	26546	13.0%	30104	28.1%
SR 54	CITIZEN PKWY	I-75	1078	32290	20825	-35.5%	36406	12.7%
SR 54	RAMP FR I-75 NB	MORROW RD	1081	35280	40234	14.0%	39469	11.9%
SR 54	OXFORD DR	HUIE RD	1083	25620	35589	38.9%	26789	4.6%
Jonesboro Rd	LAKELAND CIR	FOREST PKWY	1085	25480	35062	37.6%	31705	24.4%
SR 54	COURTNEY DR	WATTS RD	1087	24030	32711	36.1%	28722	19.5%
SR 54	DELORES WAY	ALPINE WAY	1089	23770	32926	38.5%	28546	20.1%
SR 54	KENNESAW PL	RUSKIN DR	1092	20960	27276	30.1%	27820	32.7%
SR 85	SCOTT RD	MAIN ST	1098	49515	54303	9.7%	54778	10.6%
SR 85	DENHAM ST	ROCK HILL RD	1101	50971	56962	11.8%	51643	1.3%
SR 85	AIRPORT SOUTH PKWY	LEES MILL RD	1103	52220	57220	9.6%	58824	12.6%
SR 138	STANEBROOK DR	MAGNOLIA CIR	1114	31130	32848	5.5%	29994	-3.6%
North Ave	TARA BLVD	WEST AVE	1116	7810	10460	33.9%	7470	-4.4%
Fayetteville Rd	TARA BLVD	N MAIN ST	1117	23600	18535	-21.5%	25225	6.9%
North McDonough St	N MAIN ST	N MCDONOUGH ST	1118	8020	5302	-33.9%	7709	-3.9%
SR 138	TARA RD	JONESBORO RD	1119	26300	38701	47.2%	41846	59.1%
SR 138	HWY 138	TARA BLVD	1120	15200	12296	-19.1%	13260	-12.8%
SR 138	S MCDONOUGH ST	WALT STEPHENS RD	1121	10060	11156	10.9%	9447	-6.1%
SR 138	WRIGHT CIR	THRAILKILL RD	1123	16760	24756	47.7%	21256	26.8%
Riverdale Rd	HWY 85	HIGGINS DR	1129	29740	23754	-20.1%	24086	-19.0%
Riverdale Rd	POPLAR SPGS RD	LAKE REGENCY ESTATES	1132	36310	32710	-9.9%	32684	-10.0%
Riverdale Rd	FLAT SHOALS RD	OFF FR I-285 N	1134	37370	34752	-7.0%	38051	1.8%
Riverdale Rd	I-285	OFF FR I-285 S	1136	33320	34788	4.4%	35633	6.9%

Roadway Name	From	To	Count Station	GDOT 2005 AADT	Original Model Volume	Original Model Deviation	Modified Model Volume	Modified Model Deviation
Riverdale Rd	W FAYETTEVILLE RD	W FAYETTEVILLE RD	1138	22490	37892	68.5%	38594	71.6%
Main St	OLD DIXIE HWY	HALE RD	1147	4470	8382	87.5%	4659	4.2%
Main St	NEW BURKS RD	EVANS ST	1149	6440	1992	-69.1%	795	-87.7%
Main St	ASH ST	COURTNEY DR	1152	7210	915	-87.3%	247	-96.6%
Thurman Rd	JONESBORO RD	CHURCH ST	1154	5690	9455	66.2%	7801	37.1%
West Fayetteville Rd	KING RD	CREEL DR	1161	18690	14084	-24.6%	12061	-35.5%
West Fayetteville Rd	E FAYETTEVILLE RD	SOUTH HAMPTON RD	1163	18160	11324	-37.6%	9679	-46.7%
West Fayetteville Rd	WALKER CREEK RD	RIVERDALE RD	1165	13390	16331	22.0%	16893	26.2%
Forest Pkwy	OFF FR I-75 SB	KENNEDY RD	1169	22960	27402	19.3%	17908	-22.0%
Forest Pkwy	OLD DIXIE HWY	PARK DR	1172	20770	31859	53.4%	30991	49.2%
Forest Pkwy	ASH ST	END AT HWY 54	1174	31090	36525	17.5%	28437	-8.5%
I-75	JONESBORO RD	OLD DIXIE HWY	1189	159640	128915	-19.2%	131245	-17.8%
I-75	TARA BLVD NB	FOREST PKWY	1192	184610	168760	-8.6%	165662	-10.3%
I-75	I-285	CD 4011OS END	1193	145910	193144	32.4%	195776	34.2%
I-75	FOREST PKWY	I-285 CD EB	1194	212790	200674	-5.7%	200374	-5.8%
I-75	AVIATION BOULEVARD	END FULTON 121	1195	162010	143573	-11.4%	146624	-9.5%
I-85	RIVERDALE RD	BEG OF CD	1198	149160	96654	-35.2%	98344	-34.1%
I-285	BEG FULTON 121	FR CD4077ON TO RP085D01	1201	137920	132398	-4.0%	132029	-4.3%
I-285	I-285 EB OFF RMP TO LOC	RIVERDALE RD	1207	127910	121662	-4.9%	123533	-3.4%
I-285	W FAYETTEVILLE RD	END FULTON 121	1209	133432	143212	7.3%	142784	7.0%
Forest Pkwy	OFF FR I-675 NB	ELLENWOOD INDUSTRIAL DRIVE	1227	15800	23972	51.7%	23924	51.4%
Forest Pkwy	SR 42	OFF FR I-675 SB	1228	17810	30398	70.7%	29972	68.3%
Forest Pkwy	BOULDERCREST RD	NO NAME	1229	10910	15795	44.8%	15913	45.9%
Rex Rd	MILL ST	PARK RD	1234	8350	8318	-0.4%	7088	-15.1%
Anvilblock Rd	TANNERS CH RD	SR 42	1249	13930	14981	7.5%	10698	-23.2%
Fielder Rd	BROOK LN	MACON HWY	1262	12830	14667	14.3%	14437	12.5%
Mount Zion Blvd	RIVER RD	SR 54	1263	18880	10053	-46.8%	4388	-76.8%
Mount Zion Rd	FIELDER RD	SR 54	1265	24110	15511	-35.7%	2332	-90.3%
Walt Stephens Rd	SR 138	RICHMOND LA	1269	10270	7904	-23.0%	11846	15.3%
Flint River Rd	TAYLOR RD	TARA BLVD	1283	13650	11144	-18.4%	9779	-28.4%
Morrow Rd	OLD DIXIE RD	LEDGEWOOD RD	1303	10940	7415	-32.2%	3997	-63.5%
Morrow Rd	ASH ST	HAMMACK CIR	1305	9010	8402	-6.7%	3224	-64.2%
Lake Harbin Rd	SR 54	MONICA DR	1307	12950	11635	-10.2%	8866	-31.5%
Lake Harbin Rd	MT ZION BLVD	KATIE LN	1309	11040	10280	-6.9%	7641	-30.8%
Valley Hill Rd	TARA BLVD	GREEN VALLEY DR	1312	5660	15446	172.9%	20713	266.0%
Valley Hill Rd	JONATHAN RD	SR 85	1314	11700	15211	30.0%	16532	41.3%
Upper Riverdale Rd	VALLEY HILL RD	TUXEDO TRL	1316	29210	27478	-5.9%	28329	-3.0%
Upper Riverdale Rd	HAYES DR	OLD DIXIE HWY	1318	36220	36752	1.5%	30101	-16.9%
Flat Shoals Rd	E FAYETTEVILLE RD	ISLEWORTH WAY	1321	5410	8253	52.6%	3033	-43.9%
Flat Shoals Rd	RIVERDALE RD	SR 85	1323	5450	1377	-74.7%	78	-98.6%
Conley Rd	GILBERT RD	OLD DIXIE HWY	1325	6930	16644	140.2%	14702	112.2%
Conley Rd	JONESBORO RD	BALLARD RD	1327	7450	16685	124.0%	14808	98.8%
Conley Rd	CONLEY RD	SWEETBRIAR LN	1329	3890	3187	-18.1%	3408	-12.4%
Battlecreek Rd	TARA BLVD	CHASE VILLAGE	1352	11360	7988	-29.7%	10902	-4.0%
Battlecreek Rd	JONESBORO RD	MOUNT ZION RD	1354	12990	15898	22.4%	11689	-10.0%
Fayetteville Rd	N MAIN ST	NORTH AVE	1356	5970	3024	-49.3%	2994	-49.8%
Rex Rd	SR 42	NORTH PKWY	1377	9426	4956	-47.4%	5659	-40.0%
Reynolds Rd	SR 54	REYNOLDS CT	1387	2900	1492	-48.6%	1538	-47.0%
Pine Ridge Rd	PHILLIPS DR	OLD DIXIE HWY	1389	4900	2344	-52.2%	4194	-14.4%
Flat Shoals Rd	CAMP AVE	W FAYETTEVILLE RD	1393	11550	8568	-25.8%	10696	-7.4%
Forest Pkwy	JONESBORO RD	SR 42	1397	16100	19548	21.4%	16512	2.6%
Rex Rd	N LAKE DR	REX RD	1399	7560	5419	-28.3%	5501	-27.2%
TOTAL				**4544066**	**4623223**	**1.9%**	**4539882**	**-0.1%**