



Population, Housing and Employment Projection
**Cleveland-Bradley County Strategic Plan
25-Year Population, Housing and
Employment Projections**

Submitted to

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GENERAL LIMITING CONDITIONS

Every reasonable effort has been made to ensure that the data contained in this report are accurate as of the date of this study; however, factors exist that are outside the control of AECOM and that may affect the estimates and/or projections noted herein. This study is based on estimates, assumptions and other information developed by AECOM from its independent research effort, general knowledge of the industry, and information provided by and consultations with the client and the client's representatives. No responsibility is assumed for inaccuracies in reporting by the client, the client's agent and representatives, or any other data source used in preparing or presenting this study.

This report is based on information that was current as of April 2010 and AECOM has not undertaken any update of its research effort since such date.

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This study is qualified in its entirety by, and should be considered in light of, these limitations, conditions and considerations.

Project Overview and Conclusions

AECOM Economics was tasked with assembling a comparative analysis of residential, households, and employment population forecasts for 5, 10, 20, and 25 year planning periods (to 2035). These projections were calibrated against major investment patterns such as corporate relocations, industrial expansions, residential development trends, economic development recruitment, etc. We also considered the relevant characteristics of the resident markets including age composition, migration patterns, household and income characteristics.

Employment projections were calibrated against automotive industry effects on the demographic and economic profile by evaluating trends of comparable communities and by using economic multipliers generated by IMPLAN¹ to estimate potential spinoff jobs over the planning period.

The report is one of a series of background reports prepared for the Cleveland-Bradley County *Growth and Demand Assessment*. The results of our analysis in Table 1 project the following changes in population, households and employment in Bradley County over the next 25 years. In total, the county is expected to add over 32,000 residents, 14,000 households, and 19,000 jobs.

Table 1: Bradley County 25-Year Growth Projections

	CAGR	Population Change	Total Population	Household Change	New Households
2010			98,520		39,910
2015	1.64%	8,351	106,871	3,951	43,861
2020	1.10%	6,016	112,887	2,758	46,619
2030	1.04%	12,250	125,136	4,945	51,564
2035	0.95%	6,076	131,212	2,502	54,066
		<u>32,692</u>		<u>14,156</u>	

	Employment Change	Total Employment
2010		48,810
2015	5,700	54,510
2020	4,649	59,159
2030	6,027	65,186
2035	3,051	68,237
	<u>19,427</u>	

Source: AECOM, 2010.

¹ IMPLAN is a product of the Minnesota IMPLAN Group, Inc. (MIG). More on this model can be found at the company's website www.implan.com.

Initial Comparative Forecasts

As the first step in developing the population projections, AECOM considered forecasts recently published by the University of Tennessee Center for Business and Economic Research (UT CBER), Woods & Poole Economics, and ESRI. These forecasts for Bradley County are presented in Table 2 and compared to growth forecasts for neighboring Hamilton County. The variation in the range of estimates warranted further investigation.

Table 2: Population Compound Annual Growth Rate (CAGR) Comparisons

Bradley County Population CAGR				
	2015	2020	2030	2040
UT CBER	1.07%	0.69%	0.80%	
Woods & Poole Economics	1.04%	1.02%	0.97%	0.89%
ESRI	1.10%			
Hamilton County Population CAGR				
	2015	2020	2030	2040
UT CBER	0.10%	0.04%	0.03%	
Woods & Poole Economics	0.40%	0.43%	0.44%	0.43%
ESRI	0.70%			

Source: UT CBER, Woods & Poole Economics, ESRI, AECOM, 2010

The UT CBER estimates likely understate the future growth in Bradley and Hamilton counties for a couple of reasons. First of all, the forecasts exclude population in-migration impacts associated with the new Volkswagen assembly plant in Chattanooga, scheduled to begin production in 2011. Secondly, the population projections rely on migration patterns in Tennessee from 1990 to 2005; therefore, the more future migration diverges from the recent past, the less accurate the projections will be.

As detailed in Table 3, net migration has accounted for a significant portion of Bradley County's growth in the very recent past, and the County is well aware this trend will continue.

Table 3: Components of Bradley County Population Change 2000 to 2008

	Totals	Change	%
2000 Census	87,965		
Births	9,665		
Deaths	(6,625)	3,040	35.7%
International Migration	783		
Domestic Migration	4,870	5,653	66.5%
Group Quarters & Other	(186)	(186)	-2.2%
2008 Population	96,472	8,507	100.0%
CAGR 2000 - 2008	1.16%		

Source: UT CBER, AECOM, 2010.

Hamilton County

Since the 3,000-acre Enterprise South industrial park is within a convenient commuting distance from Bradley County, we wanted a better understanding of relevant growth forecasts for Hamilton County. Woods & Poole CAGRs included in Table 2 appear low compared to the pending employment impacts of Enterprise South. In fact, Woods & Poole projects a loss of 6,000 manufacturing jobs between 2010 and 2040, so it appears the forecasts do not contemplate automotive-related job demand.

The Chattanooga-Hamilton County Regional Planning Agency (RPA) shared their growth forecasts which include the full-buildout of Enterprise South. CAGR estimates in Table 4 show remarkable variation compared to the results in Table 2. The RPA predicts Hamilton County will grow at an annual rate of 1.27 percent from 2010 to 2035 whereas UT CBER estimated annual growth at less than 1.00 percent.

Table 4: Hamilton County Population, Household and Employment Projections

Year	Households	Population	Employment
2010	145,020	338,387	200,810
2015	157,864	367,433	226,326
2025	179,351	415,905	251,404
2035	200,806	464,348	276,463
<i>2010-35</i>	<i>55,786</i>	<i>125,961</i>	<i>75,653</i>

Population CAGR	
2010-15	1.66%
2015-25	1.25%
2025-35	1.11%
<i>2010-2035</i>	<i>1.27%</i>

	Households	Persons Per HH		Jobs Per HH	
2010-15	12,844	2010	2.33	2010	1.38
2015-25	21,487	2015	2.33	2015	1.43
2025-35	21,455	2025	2.32	2025	1.40
<i>2010-2035</i>	<i>55,786</i>	2035	2.31	2035	1.38

Source: Chattanooga-Hamilton County Regional Planning Agency, AECOM, 2010.

Bradley County Projections

Further Review of Initial Estimates

Although it is likely the Woods & Poole estimates exclude the regional impacts of a new auto assembly plant, they do represent a baseline model constructed on national econometrics. Since population growth rates are close to or exceed 1.0 percent, we were curious as to the new employment² sectors generating the growth. The complete Woods & Poole profile for Bradley County is shown in Table 5. Further analysis revealed the following:

- Strong growth in the Health Care, Real Estate, and Accommodation and Food Service sectors.
- Manufacturing jobs are projected to decline by 2,140 from 2010 to 2040; however, recent new job announcements include Wacker Polysilicon at 500 jobs; Schering-Plough at 106 jobs and the Whirlpool expansion at 500 jobs.
- Decline in jobs per household from 1.41 in 2000 to 1.19 in 2030. The post-2007 decline may be influenced by the 9.3 percent spike in 2010 unemployment. [In comparison, 2010 to 2040 jobs per household ratios in Hamilton County are fairly consistent at +1.81 indicating that model does not suggest a disproportional increase in resident population, out-commuting or unemployment.]
- A modest, gradual decline in persons per household from 2.56 in 2000 to 2.43 in 2030.
- No growth in the Retail sector. [Retail job growth assumptions are revised later in this report.]

These factors and the revisions to certain growth assumptions are discussed in the remaining sections of this report.

² The employment data in the Woods & Poole database are complete measure of full- and part- time jobs by place of work.

Table 5: Bradley County Demographic Projections by Woods & Poole Economics

Bradley County, TN	1990	2000	2007	2010	2015	2020	2025	2030
Population	73,990	88,190	95,280	98,520	103,750	109,160	114,660	120,200
Population Growth	6,220	14,200	7,090	10,330	5,230	5,410	5,500	5,540
CAGR	0.88%	1.77%	1.11%	1.11%	1.04%	1.02%	0.99%	0.95%
Households	27,750	34,440	38,210	39,910	42,580	45,080	47,410	49,530
Persons Per Household	2.67	2.56	2.49	2.47	2.44	2.42	2.42	2.43
Total Employment	1990	2000	2007	2010	2015	2020	2025	2030
Farm	1,030	1,140	980	990	970	960	950	930
Forestry, Fishing & Other	230	200	270	260	270	290	300	310
Mining	100	100	140	140	140	140	140	140
Utilities	40	40	90	80	80	80	80	80
Construction	2,280	2,570	3,300	2,850	2,990	3,140	3,290	3,440
Manufacturing	12,880	13,300	9,170	8,260	7,910	7,560	7,200	6,840
Wholesale Trade	1,540	2,410	2,070	2,160	2,200	2,240	2,270	2,300
Retail Trade	4,400	5,320	5,430	5,240	5,260	5,280	5,280	5,270
Transportation & Warehousing	830	1,250	1,140	1,080	1,140	1,190	1,240	1,290
Information	340	390	390	520	520	520	520	520
Finance & Insurance	930	1,410	1,680	1,580	1,680	1,780	1,880	1,980
Real Estate & Rental & Lease	720	1,170	1,780	1,680	1,960	2,290	2,650	3,070
Professional & Tech Services	1,030	1,390	1,550	1,700	1,840	1,990	2,150	2,310
Management & Enterprises	160	290	310	240	250	260	280	280
Administrative & Waste Services	1,100	2,140	3,290	2,810	3,070	3,340	3,630	3,920
Educational Services	550	760	1,130	1,210	1,370	1,540	1,720	1,930
Health Care & Social Assistance	2,600	3,380	5,220	5,720	6,540	7,460	8,470	9,600
Arts, Entertainment & Recr.	300	410	370	340	340	350	350	350
Accommodation & Food Services	1,750	2,260	3,200	3,060	3,450	3,870	4,320	4,810
Other Services	2,690	3,260	3,310	3,290	3,310	3,310	3,310	3,300
Federal Civilian Government	270	280	240	240	250	260	270	270
Federal Military Government	450	350	320	320	320	320	320	320
State and Local Government	3,600	4,810	4,590	5,040	5,250	5,460	5,650	5,840
Total Employment	39,820	48,630	49,970	48,810	51,110	53,630	56,270	59,100
Job Growth	8,220	8,810	1,340	180	2,300	2,520	2,640	2,830
Jobs Per Household	1.43	1.41	1.31	1.22	1.20	1.19	1.19	1.19
Unemployment Rate of Bradley County Workforce		3.6%	4.6%	9.3%				

Note: The 2010 unemployment rate is assumed to equal the 2009 Q3 rate.

Source: Woods & Poole Economics, EDIS, AECOM, 2010.

Real Estate and Health Care Sectors

Employment increases in the Real Estate and Health Care sectors were derived from the Woods & Poole econometric model. Although we agree these sectors are likely to experience job gains, the projected changes may overstate Bradley County's capture. In Table 6, we adjust the projected employment in the Real Estate and Health Care Sectors for consistency with 2000 per capita ratios. As a result, Real Estate sector jobs are projected to grow from 1,170 in 2000 to 3,360 in 2040, a gain of 2,190 jobs. Whereas Health Care sector jobs are expected to grow from 3,380 in 2000 to 10,490 in 2040, a gain of 7,110 jobs.

However as we address countywide employment impacts from announced corporate relocations and expansions, any related spinoff gains will be posted to these sectors.

Table 6: Real Estate and Health Care Employment Projections

	1990	2000	2007	2010	2015	2020	2025	2030	2040
Population	73,990	88,190	95,280	98,520	103,750	109,160	114,660	120,200	131,390
Real Estate & Rental & Lease Per Capita	720 0.0097	1,170 0.0133	1,780 0.0187	1,680 0.0171	1,960 0.0189	2,290 0.0210	2,650 0.0231	3,070 0.0255	4,060 0.0309
Health Care & Social Assistance Per Capita	2,600 0.0351	3,380 0.0383	5,220 0.0548	5,720 0.0581	6,540 0.0630	7,460 0.0683	8,470 0.0739	9,600 0.0799	12,210 0.0929
Revised at 2010 Ratio:									
Real Estate & Rental & Lease Per Capita					1,770 0.0171	2,060 0.0189	2,410 0.0210	2,780 0.0231	3,360 0.0255
Health Care & Social Assistance Per Capita					6,020 0.0581	6,880 0.0630	7,840 0.0683	8,880 0.0739	10,490 0.0799
Net Change in Job Projection:									
Real Estate & Rental & Lease					(190)	(230)	(240)	(290)	(700)
Health Care & Social Assistance					(520)	(580)	(630)	(720)	(1,720)
Revised Job Projection:									
Real Estate & Rental & Lease					1,770	2,060	2,410	2,780	3,360
Health Care & Social Assistance					6,020	6,880	7,840	8,880	10,490

Source: Woods & Poole Economics, AECOM, 2010.

Growth Model Revisions - Round #1

New Manufacturing Jobs

Announced New Employment

In all likelihood, the Woods & Poole model does not explicitly factor in the 500 new Whirlpool employees and the 100 new Schering-Plough employees. Likewise, the model probably does not anticipate the 2013 opening of Wacker Polysilicon and its 500 new employees. Moreover, the Woods & Poole projections do not project spinoff employment impacts related to these 1,100 jobs.

The new and expanded businesses will make certain purchases from local vendors who will then make other local purchases including payroll. The employees of all the businesses will spend their earnings at local retailers and will purchase certain personal and professional (legal, medical, etc.) services. To roughly estimate the spinoff employment associated with these new and expanded facilities, we used the well-known IMPLAN economic modeling system calibrated for Bradley County.³ Because trade flow data is not established for industries new to the local economy, spinoff employment for Wacker Polysilicon and Schering-Plough was limited to impacts from new employee spending.

As reflected in Table 7, the 1,100 new employees will generate additional demand for 669 jobs in the various occupations identified below. Employment sectors in the initial growth model (Table 5) will be revised to reflect these 1,769 new jobs expected prior to 2015.

³ AECOM Economics did not perform an economic impact analysis but used information provided by the Cleveland-Bradley County Chamber of Commerce to prepare these preliminary estimates.

Table 7: Spinoff Jobs from New and Expanded Bradley County Manufacturers

Occupation	Jobs
Management occupations	30
Business and financial operations occupations	25
Computer and mathematical science occupations	9
Architecture and engineering occupations	6
Life, physical, and social science occupations	2
Community and social services occupations	9
Legal occupations	4
Education, training, and library occupations	13
Arts, design, entertainment, sports, and media occupations	8
Healthcare practitioners and technical occupations	34
Healthcare support occupations	19
Protective service occupations	4
Food preparation and serving related occupations	73
Building and grounds cleaning and maintenance occupations	25
Personal care and service occupations	22
Sales and related occupations	104
Office and administrative support occupations	123
Farming, fishing, and forestry occupations	3
Construction and extraction occupations	10
Installation, maintenance, and repair occupations	32
Production occupations	40
Transportation and material moving occupations	74
	669

Source: IMPLAN (MIG), AECOM, 2010.

New Industrial Jobs

The Compass Campaign of the Cleveland-Bradley Chamber of Commerce is actively pursuing a 300- to 500- acre industrial park which will house approximately 19 new companies and 1,900 new employees at 100 employees per business. In addition to the new and expanded manufacturers, the County hopes to benefit from spinoff demand created by the new Volkswagen assembly plant in Chattanooga and other Enterprise South employers. However, estimating the level of possible demand and the timing thereof present a challenge.

In the 2007 report *Looking for Opportunity in Tennessee's Manufacturing Sector*,⁴ statewide manufacturing jobs were projected to decline from 400,100 in 2006 to 390,400 in 2016. On the other hand, statewide transportation equipment manufacturing jobs, which include auto assembly and parts, were expected to increase by 7,100 employees from 62,800 in 2006 to 69,900 in 2016. In

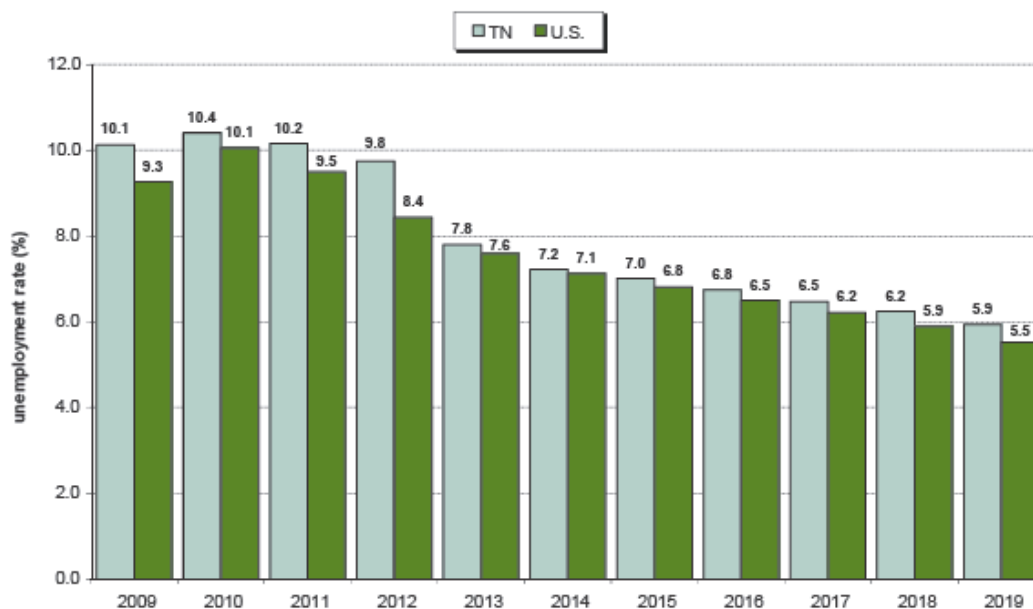
⁴ UT CBER, *Looking for Opportunity in Tennessee's Manufacturing Sector*, 2007.

2009, just two years later, General Motors announced the closing of the Spring Hill plant affecting approximately 2,200 employees.

The *State's Economic Outlook January 2010*⁵ offers a more current perspective. Statewide manufacturing jobs are expected to decline from 322,400 in 2009 to 301,900 in 2019; whereas, transportation equipment jobs are projected to post a gain of 4,400 from 43,300 in 2009 to 47,700 in 2019. Improvements in technology and automation increase manufacturing production but constrain job growth. Many manufacturing sectors face continued contraction, and the study anticipates another economic downturn prior to 2019. The projected annual unemployment rate from 2009 to 2019 is shown in Figure 1.

Over the next decade, the statewide unemployment rate is expected to gradually improve from 10.4 percent to 5.9 percent, still higher than the U.S. average of 5.5 percent.

Figure 1: Statewide Unemployment Rate 2009 to 2019



The Volkswagen Assembly Plant and Enterprise South

As a framework for understanding the potential employment and population impacts of the Volkswagen assembly plant at Enterprise South, we profiled the historical growth rates of other auto assembly plant communities. As seen in Table 8, CAGR during the plant opening period ranged from a low of 0.10 percent in Madison County, Alabama (2001 to 2010) to 3.3 percent in Madison County, Mississippi (1991 to 2000).

⁵ UT CBER, *The State's Economic Outlook January 2010*, 2010.

Table 8: Historical and Prospective Growth Rates for Auto Assembly Counties in the Southeast

Auto Maker	City	County	State	Date	Initial Jobs Estimate	1971 to	1981 to	New Plant Opened		2011 to	2021 to	
						1980	1990	1991 to 2000	2001 to 2010	2020	2030	
Toyota	Huntsville	Madison	AL	2001	860	New Jobs	15,430	57,130	29,810	28,120	41,550	49,611
						New Population	10,700	42,380	37,860	53,030	58,130	59,590
						Population CAGR	0.6%	2.0%	1.5%	1.8%	1.6%	1.4%
						New Households	14,060	24,150	19,080	26,190	28,670	25,730
						New Jobs Per New Household	1.10	2.37	1.56	1.07	1.45	1.93
Hyundai	Montgomery	Montgomery	AL	2002	2,000	New Jobs	25,230	25,970	25,350	9,620	17,590	17,840
						New Population	29,300	12,050	13,870	3,090	9,440	10,380
						Population CAGR	1.6%	0.6%	0.6%	0.1%	0.4%	0.4%
						New Households	17,710	8,790	8,620	3,603	5,357	3,220
						New Jobs Per New Household	1.42	2.95	2.94	2.67	3.28	5.54
Honda	Talladega	Lincoln	AL	1999	1,500	New Jobs	3,050	1,590	3,520	3,130	4,970	5,420
						New Population	8,760	260	6,160	1,690	9,100	9,440
						Population CAGR	1.3%	0.0%	0.8%	0.2%	1.1%	1.0%
						New Households	5,250	2,410	4,170	1,820	5,030	4,430
						New Jobs Per New Household	0.58	0.66	0.84	1.72	0.99	1.22
Mercedes	Tuscaloosa	Tuscaloosa	AL	1994	1,500	New Jobs	11,910	18,900	18,340	13,320	14,300	16,160
						New Population	21,090	13,290	14,090	19,090	24,880	25,670
						Population CAGR	1.7%	0.9%	0.9%	1.1%	1.3%	1.2%
						New Households	13,760	8,580	9,170	11,120	13,680	12,520
						New Jobs Per New Household	0.87	2.20	2.00	1.20	1.05	1.29
Nissan	Canton	Madison	MS	2000	4,000	New Jobs	2,240	9,970	17,780	21,371	11,779	15,600
						New Population	11,660	12,550	20,800	20,400	20,850	21,290
						Population CAGR	3.3%	2.7%	3.3%	2.4%	2.0%	1.7%
						New Households	5,070	6,560	8,040	8,430	8,490	7,660
						New Jobs Per New Household	0.44	1.52	2.21	2.54	1.39	2.04
BMW	Greer	Greenville	SC	1992	1,900	New Jobs	48,340	56,920	60,420	26,360	30,000	32,960
						New Population	46,910	32,750	59,230	63,760	35,520	37,380
						Population CAGR	1.8%	1.1%	1.7%	1.6%	0.8%	0.8%
						New Households	27,520	21,380	26,400	31,700	20,700	17,860
						New Jobs Per New Household	1.76	2.66	2.29	0.83	1.45	1.85
BMW	Greer	Spartanburg	SC	1992	1,900	New Jobs	23,760	23,250	18,570	8,330	14,570	16,110
						New Population	29,110	23,910	26,820	30,340	21,220	22,420
						Population CAGR	1.6%	1.1%	1.1%	1.1%	0.7%	0.7%
						New Households	16,940	14,550	12,970	16,160	12,830	11,120
						New Jobs Per New Household	1.40	1.60	1.43	0.52	1.14	1.45

Note 1: Date represents the announcement date for the new assembly plant.

Note 2: Jobs = Employment by Place of Employment

Source: *Economic Impact of BMW on South Carolina*, Woods & Poole Economics, AECOM, 2010.

More CAGR consistency was experienced in the counties reflected in Table 9.

Table 9: 1991 to 2000 CAGR for Southeastern Counties with New Auto Assembly Plants

Lincoln County, AL	1.30%
Spartanburg, SC	1.60%
Montgomery County, AL	1.60%
Tuscaloosa County, AL	1.70%
Greenville County, SC	1.80%
Madison County, AL*	1.80%

Note 1: Madison County CAGR 2001-2010; plant opened in 2001.

Source: Woods & Poole Economics

Next, we profiled regional spinoff employment stimulated by new auto assembly plants by comparing the corresponding employment multipliers. Understanding the multiplier assumed for the new Volkswagen assembly plant in context with that of other communities provides a useful frame of reference. For example as shown in Table 10, for every 1.00 auto assembly job in Tennessee an additional 3.87 jobs are created for a total of 4.87 jobs.

Table 10: Motor Vehicle and Parts Manufacturing State Employment Multipliers

RIMS II Total Employment Multipliers

Motor Vehicle, Body, Trailer and Parts Manufacturing
 Geography: State

<i>Southeastern States</i>	<u>Multiplier</u>
Alabama	5.30
Kentucky	5.20
Tennessee	4.87
South Carolina	4.60
Mississippi	4.17
Georgia	4.02
<i>Other States:</i>	
Missouri	5.43
Ohio	5.37
Michigan	5.19
Wisconsin	5.15

Source: UT CBER, BEA, AECOM, 2010.

In August 2008, UT CBER published the *Economic and Sales Tax Revenue Effects of Volkswagen's Location of its Automobile Assembly Plant in Chattanooga, Tennessee*,⁶ the results are presented in Table 11.

When production begins in 2011, Volkswagen anticipates 2,000 on-site employees. Estimated regional employment of 11,477 is expected with Tennessee capturing approximately 9,582 or 83 percent. The 9,582 new jobs in Tennessee represent a 4.79 multiplier, consistent with the findings in Table 11. Certain jobs will be connected with the plant's vendor purchases (i.e. parts), or indirect effects. Other jobs are created by the spending of new payroll dollars by employees at the Volkswagen plant and its suppliers, or induced effects. To roughly estimate manufacturing sector jobs associated with the new assembly plant, we must apportion the additional 7,582 jobs. Since the UT CBER report did not provide the breakdown and since we were not engaged to perform an economic impact analysis of the new facility, we applied an allocation percentage similar to the results in South Carolina from the BMW plant.⁷

This approach reveals approximately 4,549 new employees will be generated by inter-business spending. Of course, that is a rough estimate. The goal is to provide a reasonable correlation between the regional demands of the new Volkswagen plant and potential Bradley County industrial employment.

⁶ UT CBER, *Economic and Sales Tax Revenue Effects of Volkswagen's Location of its Automobile Assembly Plant in Chattanooga, Tennessee, 2008*.

⁷ In the 2002 report, *Economic Impact of BMW on South Carolina* published by Division of Research at the Moore School of Business at the University of South Carolina, 55 percent of the additional jobs are indirect and 45 percent are induced.

Table 11: Estimated Statewide Job Creation from the New Volkswagen Assembly Plant

UT CBER Assumed Employment Multiplier

Volkswagen Auto Assembly Plant in Chattanooga

Total Employment Impact	11,477
Jobs at Volkswagen Plant	2,000
Employment Multiplier	5.74

UT CBER Assumed Employment Multiplier For
Volkswagen Auto Assembly Plant in Chattanooga
Adjusted for Non-Tennessee Suppliers

Total Employment Impact	11,477
State of TN Capture Rate	83%
Total TN Employment Impact	<u>9,582</u>
Jobs at Volkswagen Plant	2,000
TN Employment Multiplier	4.79

Breakdown of Volkswagen State Employment Impact:

Jobs at Volkswagen Plant	2,000
Estimated Indirect Jobs - 60%	4,549
Estimated Induced Jobs - 40%	<u>3,033</u>
Indirect and Induced Jobs	<u>7,582</u>
Total Volkswagen State Employment Impact	<u>9,582</u>

Source: UT CBER, BEA, AECOM, 2010.

As shown in Table 12, we compiled announced suppliers, using a number of published sources, to evaluate job capture to date. Also reflected in Table 12 is the reported capacity of 10,000 employees in Enterprise South at buildout with about half, or 5,500, on the Volkswagen site and West Campus.

Table 12: Enterprise South Volkswagen Assembly Plant Supplier Relationships

	<u>Jobs</u>	<u>Acres</u>	
Hamilton County			
<i>Enterprise South</i>			
Volkswagen AG	2,000	1,309.0	<i>Times Free Press 2-6-10</i>
Supplier Park - 446,000 SF			
6 Companies/16 Components	500	41.0	<i>Times Free Press 2-6-10</i>
VW Plant and Supplier Park	2,500	1,350	
West Campus	3,000	207	Jobs calculated on developable acreage
Initial 1,600 Acres	5,500	1,557	
Remaining Developable Acres	5,000	1,443	Jobs Estimated by Chattanooga RPA for
<i>Total Enterprise South</i>	<u>10,500</u>	<u>3,000</u>	<i>Enterprise South</i> at buildout = 10,035
Gestamp Corp.- 225,000 SF	230	<u>49.7</u>	<i>Times Free Press 2-17-10</i>
Tuftora Automotive Carpet	20		<i>Chattanooga Area Chamber of Commerce</i>
<i>Announced Suppliers in Nearby Counties:</i>			
Delphi Corp.		Columbia TN	<i>Automotive News 2-2-09</i>
Magna International		Clinton, TN	<i>Automotive News 2-2-09</i>
SL Tennessee	300	Clinton, TN	<i>Times Free Press 2-6-10</i>
<i>Other Announced Suppliers:</i>			
ThyssenKrupp Waupaca		Waupaca, WI	<i>Times Free Press 10-7-09</i>
McKechnie Vehicle Components		Lexington, KY	<i>Times Free Press 10-7-09</i>
Continental AG		Fletcher, NC	<i>Times Free Press 10-7-09</i>
<i>Location of Current Volkswagen Suppliers:</i>			<i>Times Free Press 10-7-09</i>
U.S.	58		
Mexico	34		
Canada and World	8		

Source: AECOM, 2010.

In Table 13, we considered the number of new transportation equipment manufacturing jobs created within a reasonable drive time from Enterprise South. From 2005 to 2008 McMinn, Wilson, Dyer, and Smith counties have experienced job gains totaling 3,759 from new automotive parts suppliers.

Table 13: Change in Transportation Equipment Manufacturing Jobs by Place of Work

TN County	Establishments			Employees		
	1997	2005	2008	1997	2005	2008
Rutherford	13	17	22	8,135	10,361	9,814
Blount	11	13	10	2,733	3,178	3,385
Knox	28	26	26	2,165	3,491	2,506
Hamblen	8	12	9	2,150	2,743	2,339
Monroe	9	13	13	1,554	2,871	2,264
McMinn	0	5	5	0	0	1,751
Bedford	6	7	7	1,308	1,482	1,729
Davidson	41	27	17	4,981	3,283	1,683
Anderson	12	15	13	1,623	1,516	1,355
Putnam	6	4	9	2,129	1,742	1,284
Coffee	6	7	9	744	1,468	1,278
Sumner	18	14	18	2,328	1,809	1,180
Wilson	0	4	7	0	0	964
Shelby	36	26	20	2,204	1,344	795
Robertson	9	12	12	547	817	786
Dickson	0	6	6	0	875	719
Madison	7	6	4	1,021	799	716
Montgomery	4	5	4	357	943	671
Dyer	0	4	7	0	0	630
Hamilton	11	10	14	596	716	630
Gibson	8	6	4	1,183	1,425	625
Smith	0	4	5	0	0	414
Giles	0	4	5	0	543	369
White	0	3	4	0	422	357
Marshall	0	5	4	0	1,058	276
Sullivan	6	7	8	341	205	255
Franklin	0	3	4	0	137	243
Williamson	0	6	9	0	169	233
Campbell	11	10	7	236	261	173
Grainger	0	3	3	0	60	45
Crockett	0	1	3	0	0	36
Hardin	0	3	3	0	15	12
Laudon	0	6	4	0	704	ND
Decatur	0	3	2	0	38	ND
Remainder	0	81	87	0	0	0
Totals	250	378	384	36,335	44,475	39,517
Total of McMinn, Dyer, Wilson and Smith Transportation Job Increases						3,759

Note 1: McMinn County: Johnson Controls 720 and DENSO 1,000 reported in 2008

Note 2: Wilson County: TWR Automotive 505 and TACLE Seating 120 reported in 2008

Note 3: ND = No data available.

Note 4: No Transportation Equipment manufacturing workers reported for Bradley County.

Source: Bureau of Labor Statistics, AECOM, 2010.

While economic growth in the region over the next decade is apparent, our research indicates that industrial park recruitment is more likely between 2015 and 2020 as the economy recovers and as the indirect effects of Volkswagen ripple through the regional economy. For purposes of this engagement, we have assumed Bradley County will attract 760 employees, or 40 percent of the New Industrial Park's capacity, by 2015 with the remaining 1,140 new employees arriving at the park between 2020 and 2030. At this stage of the analysis, the projections consider new employment at the sector level rather than spatially. This growth may occur in a New Industrial Park or a portion may occur in existing county facilities with excess capacity.

As discussed earlier, the indirect and induced employment impacts of these 1,900 new employees must be considered. We used the IMPLAN model to estimate spinoff employment impacts with the results shown in Table 14. An additional 600 new employees are expected from 2010 to 2015 for a total of 1,360 (760 direct + 600 indirect/induced = 1,360). In total, 3,400 employees are expected for the county (1,900 + 1,501 = 3,400).

Local and regional economic development initiatives and national economic conditions ultimately drive the rate of growth, so accurately predicting the extent and timing are nearly impossible. Whereas synergistic tenant recruitment can accelerate a site's lease-up, competition from other communities and a lagging economy can impede the process.

Table 14: Spinoff Employment Impacts in Bradley County from 1,900 Industrial Employees

Occupation	Total Jobs	40%
Management occupations	84	34
Business and financial operations occupations	72	29
Computer and mathematical science occupations	30	12
Architecture and engineering occupations	21	8
Life, physical, and social science occupations	11	4
Community and social services occupations	13	5
Legal occupations	9	4
Education, training, and library occupations	47	19
Arts, design, entertainment, sports, and media occupations	34	14
Healthcare practitioners and technical occupations	45	18
Healthcare support occupations	22	9
Protective service occupations	33	13
Food preparation and serving related occupations	48	19
Building and grounds cleaning and maintenance occupations	50	20
Personal care and service occupations	54	22
Sales and related occupations	153	61
Office and administrative support occupations	272	109
Farming, fishing, and forestry occupations	4	2
Construction and extraction occupations	29	12
Installation, maintenance, and repair occupations	63	25
Production occupations	275	110
Transportation and material moving occupations	132	53
	1,501	600
Total Indirect and Induced Employment Impacts from Wacker Polysilcon, Schering-Plough and the New Industrial Park	2,170	

Source: IMPLAN (MIG), AECOM, 2010.

Jobs Per Household

For this initial round of projection revisions, we adjusted the total number of jobs to yield the following jobs per household ratios:

- 2015 1.27
- 2020 – 2035 1.30

In 2007, the ratio was 1.31, but the county's unemployment rate was only 4.6 percent. Although the Wood's & Poole estimate of approximately 1.20 from 2015 to 2040 (Table 5) appears too conservative, we remained cautious in developing this assumption based on the statewide unemployment rate trends provided in Figure 1.

Revised Growth Model – Round #1

The Woods & Poole projections in Table 5 are revised in Table 15 with the following assumptions:

1. Modifications to growth rates in the Real Estate and Health Care sectors as detailed in Table 6 were incorporated; however, specific growth impacts from the revisions described below were also recognized.
2. Direct employment gains of 1,100 from Wacker Polysilicon, Whirlpool and Schering-Plough along with indirect/induced employment of 669 for a total of 1,769.
3. Direct employment of 760 and indirect/induced employment of 600 for a total of 1,360 during 2010 to 2015 associated with new industrial employment. The full impact of the 1,900 new industrial jobs is 3,400.
4. Jobs per household ratio of 1.27 in 2015 and 1.30 thereafter.

Blue sectors in Table 15 reflect specific changes in employment assumptions. Because the number of jobs per household was adjusted to more closely approximate historical levels and the economic recovery, the original population projections in Table 5 are unaltered.

These revisions impact Bradley County job growth projections as follows.

<u>Year</u>	<u>Original</u>	<u>Revised</u>	<u>Change</u>
2015	2,300	5,265	2,965
2020	2,520	4,528	2,008
2025	2,640	3,029	389
2030	2,830	2,756	-74

Table 15: Revised Growth Model – Round #1

Bradley County, TN	1990	2000	2007	2010	2015	2020	2025	2030
Population	73,990	88,190	95,280	98,520	103,750	109,160	114,660	120,200
Population Growth	6,220	14,200	7,090	10,330	5,230	5,410	5,500	5,540
CAGR	0.88%	1.77%	1.11%	1.11%	1.04%	1.02%	0.99%	0.95%
Households	27,750	34,440	38,210	39,910	42,580	45,080	47,410	49,530
Persons Per Household	2.67	2.56	2.49	2.47	2.44	2.42	2.42	2.43
Total Employment	1990	2000	2007	2010	2015	2020	2025	2030
Farm	1,030	1,140	980	990	975	967	957	937
Forestry, Fishing & Other	230	200	270	260	270	290	300	310
Mining	100	100	140	140	140	140	140	140
Utilities	40	40	90	80	80	80	80	80
Construction	2,280	2,570	3,300	2,850	3,069	3,274	3,424	3,574
Manufacturing	12,880	13,300	9,170	8,260	8,060	7,875	7,515	7,155
Wacker Polysilicon					500	500	500	500
Whirlpool					500	500	500	500
Schering-Plough					100	100	100	100
New Industrial Park					760	1,900	1,900	1,900
Wholesale Trade	1,540	2,410	2,070	2,160	2,200	2,240	2,270	2,300
Retail Trade	4,400	5,320	5,430	5,240	5,469	5,613	5,613	5,603
Transportation & Warehousing	830	1,250	1,140	1,080	1,267	1,396	1,446	1,496
Information	340	390	390	520	541	559	559	559
Finance & Insurance	930	1,410	1,680	1,580	1,680	1,780	1,880	1,980
Real Estate & Rental & Lease	720	1,170	1,780	1,680	1,815	2,135	2,485	2,855
Professional & Tech Services	1,030	1,390	1,550	1,700	1,922	2,140	2,300	2,460
Management & Enterprises	160	290	310	240	314	374	394	394
Administrative & Waste Services	1,100	2,140	3,290	2,810	3,302	3,735	4,025	4,315
Educational Services	550	760	1,130	1,210	1,402	1,600	1,780	1,990
Health Care & Social Assistance	2,600	3,380	5,220	5,720	6,114	7,022	8,282	9,022
Arts, Entertainment & Recr.	300	410	370	340	362	392	392	392
Accommodation & Food Services	1,750	2,260	3,200	3,060	3,542	3,991	4,441	4,931
Other Services	2,690	3,260	3,310	3,290	3,310	3,310	3,310	3,300
Federal Civilian Government	270	280	240	240	250	260	270	270
Federal Military Government	450	350	320	320	320	320	320	320
State and Local Government	3,600	4,810	4,590	5,040	5,267	5,497	5,687	5,877
To Balance to Jobs Per HH Ratio					544	613	762	1,128
Total Employment	39,820	48,630	49,970	48,810	54,075	58,603	61,632	64,388
Job Growth	8,220	8,810	1,340	180	5,265	4,528	3,029	2,756
Jobs Per Household	1.43	1.41	1.31	1.22	1.27	1.30	1.30	1.30
Unemployment Rate of Bradley County Workforce		3.6%	4.6%	9.3%				

Source: Woods & Poole Economics, AECOM, 2010.

Growth Model Revisions – Round #2

Expected Growth in Bradley County Out-Commuters

Thus far the analysis has not specifically addressed potential changes in Bradley County out-commuting patterns from jobs expected at the new Volkswagen assembly plant, other Enterprise South employers and key employment centers in Hamilton County. Major revisions to commuting assumptions must be separately calculated since changes will naturally skew historical in-county jobs per household ratios.

According to the U.S. Census, 5,614 Bradley County residents commuted to Hamilton County in 2000, representing 3.1 percent of workers in Hamilton County.

Table 16: Bradley County Commuting Patterns

State	County	To Bradley	From Bradley
TN	Polk	2,396	300
TN	McMinn	2,391	1,114
TN	Hamilton	2,371	5,614
TN	Meigs	916	59
TN	Monroe	210	39
GA	Catoosa	215	121
GA	Walker	104	59
GA	Whitfield	92	1,240
GA	Murray	96	373
TN	Rhea	102	105
		8,893	9,024

Source: U.S. Census 2000 County-To-County Worker Flow Files, AECOM, 2010.

In Table 17, we performed a series of calculations to derive the potential number of new Bradley County residents who will out-commute to major employment centers in Hamilton County.

Using projections provided by the Chattanooga-Hamilton County Regional Planning Agency, Hamilton County is expected to add almost 76,000 workers by 2035. These estimates include the full buildout of Enterprise South. Due to Bradley County’s proximity to Enterprise South, recent trends in out-commuting, and the county’s appealing quality of life, it is quite possible that Bradley County will capture a greater proportion of commuting workers than in 2000. In fact, the county may parallel the rates of Catoosa County, GA (6.7 percent in 2000) or Walker County, GA (5.0 percent in 2000).

For this study, we assumed 3,800 or 5.0 percent of new Hamilton County workers will live in Bradley County. If we compare these 3,800 workers to the 33,981 new workers expected in Hamilton

County's major employment centers, then 11.2 percent of those new employees are projected to live in Bradley County.

Table 17: Estimates of New Bradley County Out-Commuting Residents

Employment Forecast For Hamilton County

New Jobs	2011 - 2015	25,516
	2016 - 2025	25,078
	2026 - 2035	25,059
	Total	75,653

2000 Bradley County In-Commuter % 3.1%
(As % of Total Hamilton County Jobs)

Bradley County In-Commuter Capture Rate Comparisons:
(As Percentage of New Hamilton County Jobs)

3.1%	2,300
4.0%	3,000
5.0%	3,800
6.0%	4,500

Growth Forecasts For Hamilton County's
Employment Centers/In-Commuting TAZ Zones

New Jobs	2011 - 2015	15,906
	2016 - 2025	9,037
	2026 - 2035	9,038
	Total	33,981

Estimated Bradley County In-Commuter Capture:

5.0%	3,800
------	-------

Bradley County In-Commuter Capture as % of Job Growth
of In-Commuting TAZ Zones Job Growth 11.2%

Estimated New In-Commuters from Bradley County

2011 - 2015	1,800
2016 - 2025	1,000
2026 - 2035	1,000
Total	3,800

Note 1: TAZ Zone 177 includes Enterprise South with a total employment projection of 10,035.

Note 2: % of 2000 Jobs with In-Commuters from Catoosa County, GA 6.7% and Walker County, GA 5.0%.

Source: Chattanooga-Hamilton County Regional Planning Agency, 2000 Census AECOM, 2010.

Recognizing the Bradley County growth model already incorporated a portion of out-commuters, we calibrated the baseline at 0.064 per capita or 6.4 percent as shown on Table 18. This percentage was applied to the population projections in Table 15. Next we applied a reasonable ratio of jobs per household. The 3,800 new workers are likely to generate less than 3,800 new households because spouses/housemates may also work in Hamilton County. After estimating the number of new households, the average persons per household rate was applied to yield the projected Bradley County gross population impact. By subtracting the baseline out-commuting estimate, we arrived at the net population impacts for the Bradley County growth model.

Based on these assumptions, we must increase the 2035 Bradley County population estimate by 5,541 and the number of new households by 2,280. Over half, or 3,151 new residents, is expected by 2015. Incremental population and household changes for 2015, 2020 and 2030 are shown in Table 18.

Table 18: New Out-Commuter Impacts on Bradley County Population Projections

2000 Ratio of Bradley County Commuters to Hamilton County to Total Bradley County Population:

Out-Commuters to Hamilton County	5,614
2000 Bradley County Population	88,190
Out-Commuters per Capita	0.064

Estimated Baseline Bradley County Out-Commuters to Hamilton County:

2000	88,190	0.064	5,614
2010	98,520	0.064	6,272
2015	103,750	0.064	6,605
2025	114,660	0.064	7,299
2035	125,671	0.064	8,000

Net Increase 2010 to 2035 at Baseline Rate 1,728

Estimated New Bradley County Out-Commuters to Hamilton County

Year	New Hamilton Commuters	Assumed Jobs Per HH	Assumed Households	Persons Per Household	Bradley County Out- Commuter Impact	Less Baseline	Bradley County Out-Commuter Population Impact
2015	1,800	1.3	1,417	2.44	3,454	(333)	3,121
2025	1,000	1.3	787	2.42	1,904	(695)	1,210
2035	1,000	1.3	787	2.43	1,911	(701)	1,210
	3,800		2,992		7,269	(1,728)	5,541
					100%	23.8%	76.2%

Year	Estimated In-Commuter Net Population Impact	Persons Per Household	Assumed Households	Cumulative Population	Cumulative Households
2015	3,121	2.44	1,281	3,121	1,281
2020	606	2.42	251	3,727	1,531
2030	1,210	2.42	500	4,936	2,032
2035	605	2.43	249	5,541	2,281
	5,541		2,281		

Source: 2000 U.S. Census, AECOM, 2010.

Secondary Employment Impacts

These new Bradley County residents will create additional spinoff employment in the county as they spend money on groceries, household items, apparel, doctors, and other typical consumer expenditures. Once again, we used IMPLAN to determine the potential number of jobs the county could expect from the local spending of these new residents. Table 19 presents the spinoff job impacts.

By 2035 approximately 918 new jobs will be needed in Bradley County to serve these new residents. As shown in Table 18, most of these jobs are in the service sectors.

Table 19: Net New Bradley County Out-Commuter Employment Impacts in Bradley County

Occupation	Bradley County Job Impacts			
	2015	2020	2030	2035
Management occupations	17	17	26	36
Business and financial operations occupations	14	14	22	30
Computer and mathematical science occupations	4	4	6	8
Architecture and engineering occupations	1	1	2	2
Life, physical, and social science occupations	1	1	2	2
Community and social services occupations	9	9	14	19
Legal occupations	3	3	5	6
Education, training, and library occupations	13	13	20	27
Arts, design, entertainment, sports, and media occupations	4	4	6	8
Healthcare practitioners and technical occupations	34	34	53	72
Healthcare support occupations	18	18	28	38
Protective service occupations	3	3	5	6
Food preparation and serving related occupations	71	71	110	150
Building and grounds cleaning and maintenance occupations	16	16	25	34
Personal care and service occupations	20	20	31	42
Sales and related occupations	69	69	107	146
Office and administrative support occupations	73	73	114	154
Farming, fishing, and forestry occupations	2	2	3	4
Construction and extraction occupations	4	4	6	8
Installation, maintenance, and repair occupations	17	17	26	36
Production occupations	12	12	19	25
Transportation and material moving occupations	30	30	47	63
	435	435	677	918

Source: IMPLAN (MIG), AECOM, 2010.

Revised Growth Model – Round #2

The final revisions to the growth model are shown in Table 20 and incorporate the net new Bradley County out-commuters and the corresponding secondary job impacts. The new Bradley County out-commuting resident impacts are reflected separately.

Table 20: Bradley County Growth Model – Round #2

Bradley County, TN	Bradley County Growth Model - Round #1					Bradley County Net New Out-Commuter Impacts					Bradley County Growth Model - Round #2				
	2010	2015	2020	2030	2035	2010	2015	2020	2030	2035	2010	2015	2020	2030	2035
Population	98,520	103,750	109,160	120,200	125,671		3,121	3,727	4,936	5,541	98,520	106,871	112,887	125,136	131,212
Population Growth	10,330	5,230	5,410	11,040	5,471		3,121	606	1,210	605		8,351	6,016	12,250	6,076
CAGR	1.11%	1.04%	1.02%	0.97%	0.89%							1.64%	1.10%	1.04%	0.95%
Households	39,910	42,580	45,080	49,530	51,784		1,281	1,539	2,034	2,281		43,861	46,619	51,564	54,066
Persons Per Household	2.47	2.44	2.42	2.43	2.43	2.47	2.44	2.42	2.43	2.43	2.47	2.44	2.42	2.43	2.43
Total Employment	2010	2015	2020	2030	2035	2010	2015	2020	2030	2035	2010	2015	2020	2030	2035
Farm	990	975	967	937	922		2	3	4	4	990	977	970	941	926
Forestry, Fishing & Other	260	270	290	310	325						260	270	290	310	325
Mining	140	140	140	140	140						140	140	140	140	140
Utilities	80	80	80	80	75						80	80	80	80	75
Construction	2,850	3,069	3,274	3,574	3,739		21	27	38	44	2,850	3,090	3,301	3,612	3,783
Manufacturing	8,260	8,060	7,875	7,155	6,795		12	15	22	25	8,260	8,072	7,890	7,177	6,820
Wacker Polysilicon		500	500	500	500						0	500	500	500	500
Whirlpool		500	500	500	500						0	500	500	500	500
Schering-Plough		100	100	100	100						0	100	100	100	100
New Industrial Park		760	1,900	1,900	1,900						0	760	1,900	1,900	1,900
Wholesale Trade	2,160	2,200	2,240	2,300	2,310						2,160	2,200	2,240	2,300	2,310
Retail Trade	5,240	5,469	5,613	5,603	5,535		89	114	164	190	5,240	5,558	5,727	5,767	5,725
Transportation & Warehousing	1,080	1,267	1,396	1,496	1,574		30	38	55	63	1,080	1,297	1,434	1,551	1,637
Information	520	541	559	559	549		1	1	2	2	520	542	560	561	551
Finance & Insurance	1,580	1,680	1,780	1,980	2,080						1,580	1,680	1,780	1,980	2,080
Real Estate & Rental & Lease	1,680	1,815	2,135	2,855	3,145		16	20	29	34	1,680	1,831	2,155	2,884	3,179
Professional & Tech Services	1,700	1,922	2,140	2,460	2,625		22	28	41	46	1,700	1,944	2,168	2,501	2,671
Management & Enterprises	240	314	374	394	399		17	22	31	36	240	331	396	425	435
Administrative & Waste Services	2,810	3,302	3,735	4,315	4,620		73	93	133	154	2,810	3,375	3,828	4,448	4,774
Educational Services	1,210	1,402	1,600	1,990	2,210		13	17	24	27	1,210	1,415	1,617	2,014	2,237
Health Care & Social Assistance	5,720	6,114	7,022	9,022	9,827		61	78	112	129	5,720	6,175	7,100	9,134	9,956
Arts, Entertainment & Recr.	340	362	392	392	392		4	5	7	8	340	366	397	399	400
Accommodation & Food Service	3,060	3,542	3,991	4,931	5,481		71	91	130	150	3,060	3,613	4,082	5,061	5,631
Other Services	3,290	3,310	3,310	3,300	3,275						3,290	3,310	3,310	3,300	3,275
Federal Civilian Government	240	250	260	270	275						240	250	260	270	275
Federal Military Government	320	320	320	320	320						320	320	320	320	320
State and Local Government	5,040	5,267	5,497	5,877	6,042		3	4	6	6	5,040	5,270	5,501	5,883	6,048
To Balance Jobs Per HH at 2007 Level		544	613	1,128	1,664						0	544	613	1,128	1,664
Total Employment	48,810	54,075	58,603	64,388	67,319		435	556	798	918	48,810	54,510	59,159	65,186	68,237
Job Growth	180	5,265	4,528	2,756	2,931		435	121	242	120		5,700	4,649	6,027	3,051
Jobs Per Household	1.22	1.27	1.30	1.30	1.30		0.34	0.36	0.39	0.40		1.24	1.27	1.26	1.26

Source: Woods & Poole Economics, AECOM, 2010.

The final results are summarized in Table 21. While the CAGRs vary considerably from the unrevised Woods & Poole estimates in Table 5, they are within range of other counties in the Southeast affected by auto assembly plants (Tables 8 and 9).

Furthermore, population increases and CAGRs must be evaluated in relation to a county's total population. With a 2010 population of 335,320, Hamilton County is three times larger than Bradley County, so adding 8,000 residents to Hamilton County produces a much smaller CAGR than adding 8,000 residents to Bradley County.

Although a substantial growth is projected to occur by 2015, a slowdown in the national and state economic recovery or in regional job creation could shift Bradley County's growth forward to the 2016 to 2020 time frame.

Table 21: Bradley County 25-Year Growth Projections

	CAGR	Population Change	Total Population	Household Change	New Households
2010			98,520		39,910
2015	1.64%	8,351	106,871	3,951	43,861
2020	1.10%	6,016	112,887	2,758	46,619
2030	1.04%	12,250	125,136	4,945	51,564
2035	0.95%	6,076	131,212	2,502	54,066
		<u>32,692</u>		<u>14,156</u>	

	Employment Change	Total Employment
2010		48,810
2015	5,700	54,510
2020	4,649	59,159
2030	6,027	65,186
2035	3,051	68,237
	<u>19,427</u>	

Source: AECOM, 2010.

Appendix

Woods & Poole Economics, Inc.

The Woods & Poole Economics, Inc. database contains more than 900 economic and demographic variables for every county in the United States for every year from 1970 to 2040. The strength of the Woods & Poole economic and demographic projections stems from the comprehensive historical county database and the integrated nature of the projection model. The projection for each county in the United States is done simultaneously so that changes in one county will affect growth or decline in other counties. For example, growth in employment or population in Houston will affect growth in other metropolitan areas. This reflects the flow of economic activity around the country as new industries emerge or relocate in growing areas and as people migrate, in part because of job opportunities. The county projections are developed within the framework of the United States projections made by Woods & Poole. The U.S. projection is the control total for the 2010 regional projections.

The employment data used by Woods & Poole comprise the most complete definition of jobs by county; therefore, Woods & Poole data may be higher than that from other sources because they measure more kinds of employment. There are three commonly used government sources for employment data: the Bureau of Labor Statistics (BLS), the Bureau of the Census and the National Income and Product Accounts (NIPA). The BLS establishment data are generally much lower than Woods & Poole because agricultural workers, the military, proprietors, households, and miscellaneous employment are not included; the exclusion of proprietors from BLS data is the most significant difference. Data from the Census (and some survey data from the BLS) are based on employment by place of residence and differ fundamentally in concept from Woods & Poole employment data by place of work.

Expanded Review of Retail Sector Jobs

Although the initial projections in the Woods & Poole model anticipate minimal growth in the retail sector, adjustments in Round #1 increased retail jobs by 295 while Round #2 adjustments increased retail jobs by an additional 190 for a total of 485 new retail jobs through 2035. The projections reflect 0.13 retail jobs per household in 2010 with the trend continuing through 2035 when the ratio dips slightly to 0.11.

Retail square feet per retail employee range from 500 SF for specialty shops to over 1,000 for superstores. Assuming the majority of new demand is convenience/neighborhood, then 242,500 SF could be anticipated [485 x 500 SF = 242,500]. This calculation is for illustrative purposes and assumes existing retail is fully absorbed in square feet and sales dollars. Population ranges typically needed to support various types of shopping centers are presented below. In comparison, 32,700 new residents are expected in Bradley County from 2010 to 2035.

	Population	Typical GLA
Neighborhood	3,000 - 40,000	60,000
Community	40,000 - 150,000	180,000
Regional	150,000+	500,000
Super Regional	300,000+	1,000,000

To inform the community about retail leakage, we prepared the following graphs which illustrate retail dollars currently spent by Bradley County residents outside of Bradley County.



Bradley County, TN

Counties: Bradley County, TN

Site Type: Geography

Summary Demographics

2009 Population	97,364
2009 Households	39,098
2009 Median Disposable Income	\$37,486
2009 Per Capita Income	\$22,742

Industry Summary

Industry Summary	Demand (Retail Potential)	Supply (Retail Sales)	Retail Gap	Leakage/Surplus Factor	Number of Businesses
Total Retail Trade and Food & Drink (NAICS 44-45, 722)	\$860,574,125	\$721,071,381	\$139,502,744	8.8	779
Total Retail Trade (NAICS 44-45)	\$742,883,411	\$619,154,724	\$123,728,687	9.1	595
Total Food & Drink (NAICS 722)	\$117,690,714	\$101,916,657	\$15,774,057	7.2	184

Industry Group	Demand (Retail Potential)	Supply (Retail Sales)	Retail Gap	Leakage/Surplus Factor	Number of Businesses
Motor Vehicle & Parts Dealers (NAICS 441)	\$186,206,957	\$148,515,548	\$37,691,409	11.3	133
Automobile Dealers (NAICS 4411)	\$164,330,570	\$136,030,926	\$28,299,644	9.4	82
Other Motor Vehicle Dealers (NAICS 4412)	\$12,225,664	\$1,712,989	\$10,512,675	75.4	10
Auto Parts, Accessories, and Tire Stores (NAICS 4413)	\$9,650,723	\$10,771,633	\$-1,120,910	-5.5	41
Furniture & Home Furnishings Stores (NAICS 442)	\$23,824,040	\$13,100,024	\$10,724,016	29.0	33
Furniture Stores (NAICS 4421)	\$16,558,350	\$6,968,125	\$9,590,225	40.8	19
Home Furnishings Stores (NAICS 4422)	\$7,265,690	\$6,131,899	\$1,133,791	8.5	14
Electronics & Appliance Stores (NAICS 443/NAICS 4431)	\$19,057,118	\$6,824,539	\$12,232,579	47.3	32
Bldg Materials, Garden Equip. & Supply Stores (NAICS 444)	\$29,512,787	\$34,770,647	\$-5,257,860	-8.2	38
Building Material and Supplies Dealers (NAICS 4441)	\$24,407,740	\$32,029,029	\$-7,621,289	-13.5	31
Lawn and Garden Equipment and Supplies Stores (NAICS 4442)	\$5,105,047	\$2,741,618	\$2,363,429	30.1	7
Food & Beverage Stores (NAICS 445)	\$136,421,847	\$59,992,211	\$76,429,636	38.9	50
Grocery Stores (NAICS 4451)	\$135,023,699	\$58,621,512	\$76,402,187	39.5	38
Specialty Food Stores (NAICS 4452)	\$1,398,148	\$1,370,699	\$27,449	1.0	12
Beer, Wine, and Liquor Stores (NAICS 4453)	\$0	\$0	\$0	0.0	0
Health & Personal Care Stores (NAICS 446/NAICS 4461)	\$33,030,054	\$42,967,287	\$-9,937,233	-13.1	53
Gasoline Stations (NAICS 447/4471)	\$138,909,740	\$163,300,041	\$-24,390,301	-8.1	43
Clothing and Clothing Accessories Stores (NAICS 448)	\$29,595,156	\$18,645,957	\$10,949,199	22.7	58
Clothing Stores (NAICS 4481)	\$22,238,708	\$15,853,177	\$6,385,531	16.8	40
Shoe Stores (NAICS 4482)	\$2,999,866	\$2,006,570	\$993,296	19.8	10
Jewelry, Luggage, and Leather Goods Stores (NAICS 4483)	\$4,356,582	\$786,210	\$3,570,372	69.4	8
Sporting Goods, Hobby, Book, and Music Stores (NAICS 451)	\$13,739,252	\$5,204,383	\$8,534,869	45.1	40
Sporting Goods/Hobby/Musical Instrument Stores (NAICS 4511)	\$5,899,578	\$2,466,627	\$3,432,951	41.0	31
Book, Periodical, and Music Stores (NAICS 4512)	\$7,839,674	\$2,737,756	\$5,101,918	48.2	9

Data Note: Supply (retail sales) estimates sales to consumers by establishments. Sales to businesses are excluded. Demand (retail potential) estimates the expected amount spent by consumers at retail establishments. Supply and demand estimates are in current dollars. The Leakage/Surplus Factor presents a snapshot of retail opportunity. This is a measure of the relationship between supply and demand that ranges from +100 (total leakage) to -100 (total surplus). A positive value represents 'leakage' of retail opportunity outside the trade area. A negative value represents a surplus of retail sales, a market where customers are drawn in from outside the trade area. The Retail Gap represents the difference between Retail Potential and Retail Sales. ESRI uses the North American Industry Classification System (NAICS) to classify businesses by their primary type of economic activity. Retail establishments are classified into 27 industry groups in the Retail Trade sector, as well as four industry groups within the Food Services & Drinking Establishments subsector.

Source: ESRI and infoUSA®



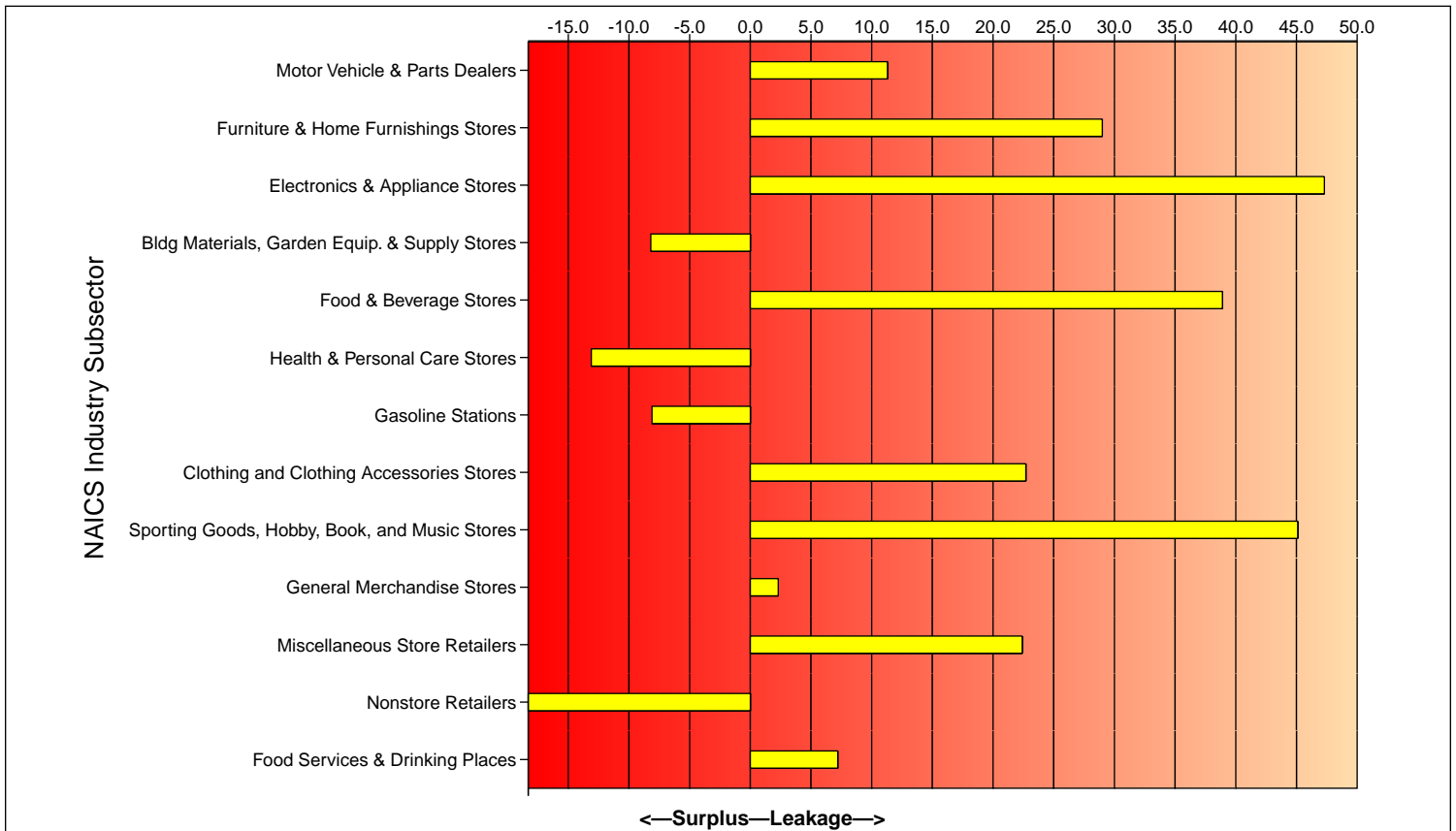
Bradley County, TN

Counties: Bradley County, TN

Site Type: Geography

Industry Group	Demand (Retail Potential)	Supply (Retail Sales)	Retail Gap	Leakage/Surplus Factor	Number of Businesses
General Merchandise Stores (NAICS 452)	\$109,563,398	\$104,603,833	\$4,959,565	2.3	27
Department Stores Excluding Leased Depts.(NAICS 4521)	\$68,466,500	\$56,160,957	\$12,305,543	9.9	13
Other General Merchandise Stores (NAICS 4529)	\$41,096,898	\$48,442,876	\$-7,345,978	-8.2	14
Miscellaneous Store Retailers (NAICS 453)	\$14,880,089	\$9,431,315	\$5,448,774	22.4	84
Florists (NAICS 4531)	\$1,225,044	\$927,738	\$297,306	13.8	11
Office Supplies, Stationery, and Gift Stores (NAICS 4532)	\$5,723,303	\$2,246,019	\$3,477,284	43.6	18
Used Merchandise Stores (NAICS 4533)	\$1,066,488	\$890,783	\$175,705	9.0	21
Other Miscellaneous Store Retailers (NAICS 4539)	\$6,865,254	\$5,366,775	\$1,498,479	12.3	34
Nonstore Retailers (NAICS 454)	\$8,142,973	\$11,798,939	\$-3,655,966	-18.3	4
Electronic Shopping and Mail-Order Houses (NAICS 4541)	\$0	\$8,406,465	\$-8,406,465	-100.0	1
Vending Machine Operators (NAICS 4542)	\$2,641,521	\$1,714,359	\$927,162	21.3	2
Direct Selling Establishments (NAICS 4543)	\$5,501,452	\$1,678,115	\$3,823,337	53.3	1
Food Services & Drinking Places (NAICS 722)	\$117,690,714	\$101,916,657	\$15,774,057	7.2	184
Full-Service Restaurants (NAICS 7221)	\$12,620,452	\$45,377,849	\$-32,757,397	-56.5	102
Limited-Service Eating Places (NAICS 7222)	\$94,021,505	\$52,510,654	\$41,510,851	28.3	63
Special Food Services (NAICS 7223)	\$4,631,199	\$2,414,783	\$2,216,416	31.5	10
Drinking Places - Alcoholic Beverages (NAICS 7224)	\$6,417,558	\$1,613,371	\$4,804,187	59.8	9

Leakage/Surplus Factor by Industry Subsector



Source: ESRI and infoUSA®

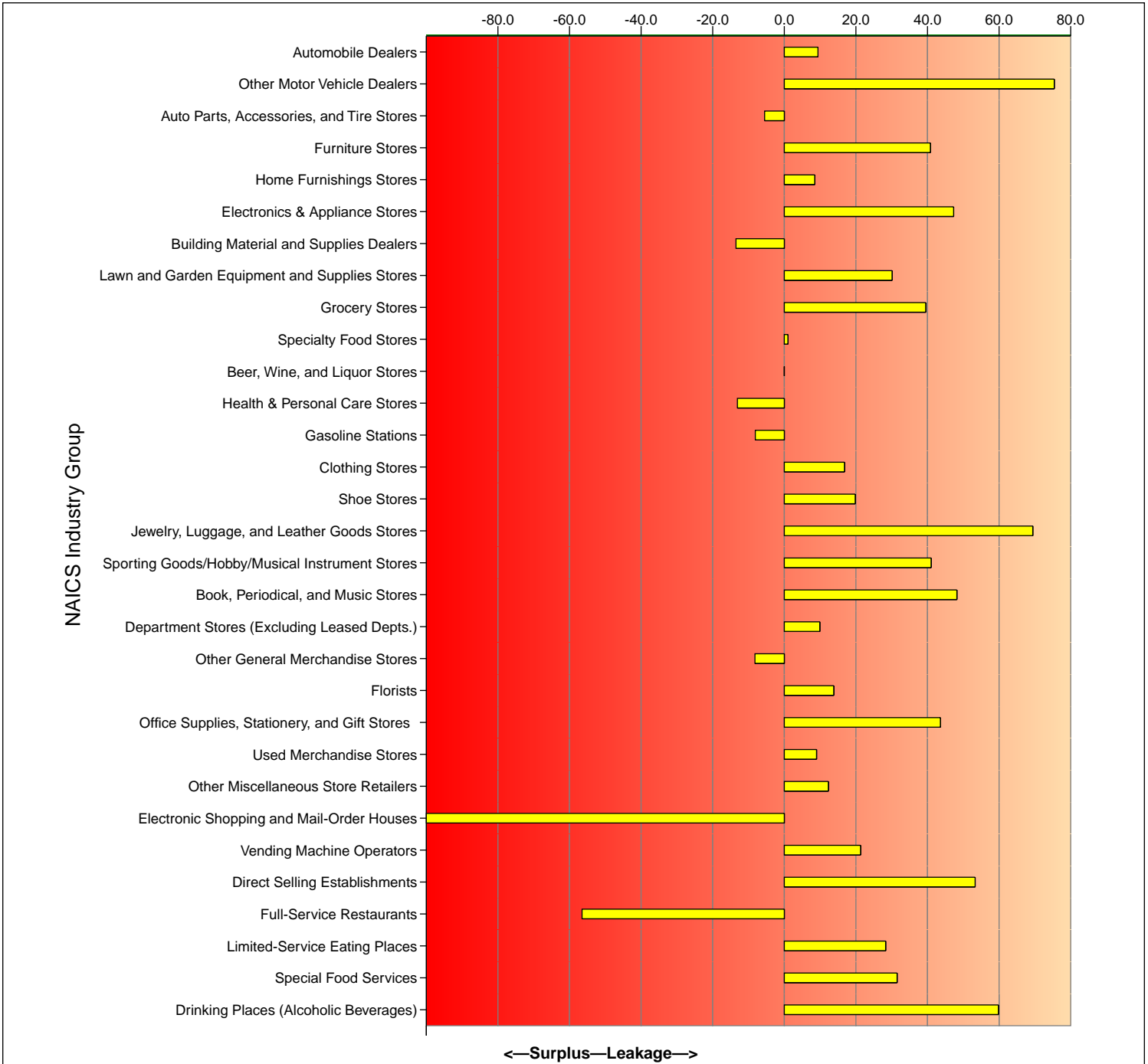


Bradley County, TN

Counties: Bradley County, TN

Site Type: Geography

Leakage/Surplus Factor by Industry Group



Source: ESRI and infoUSA®