BUSINESS ANALYTICS
Center for Economic Research and Entrepreneurship

Dalton State College

Spring 2014 • Volume 3 • Number 1

Business Analytics is a biannual publication released by Dalton State College's Center for Economic Research and Entrepreneurship.

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In This Issue...

Dr. Brent A. Evans, Editor

I am pleased to present the newest installment of *Business Analytics*, a biannual publication detailing the economic standing of northwest Georgia and the surrounding areas. In this issue, we turn our focus to the transportation industry. With prominent rails, interstate highways, and the world's busiest airport, it is no surprise that transportation is a major economic sector for our regional economy.

The first article, authored by **Dr. Larry Johnson**, Dean of the School of Business, introduces the role of transportation and logistics and its broad effects on Northwest Georgia and the Southeast, as a whole. Dr. Johnson presents cluster maps, which indicate the foothold our region has on the sector.

The second article, written by **Dr. Brent Evans**, Assistant Professor of Economics, details the history of regional transportation and its effect on our landscape and the economy. Taken together, these two articles provide a nice snapshot of the transportation and logistics industry.

Taking a more technical approach, **Dr. Sunny Park**, Assistant Professor of Management Information Systems, examines the role of "Big Data" in our economy and the connectivity between Big Data and the transportation and logistics industry. Lastly, **Mr. Travis Hayes**, Instructor of Economics, provides the data for our perpetually updated "Economic Dashboard," which indicates a continued recovery in labor markets.

We hope you enjoy this edition of our publication. For questions, comments, or suggestions regarding this issue, contact Dr. Brent Evans at baevans@daltonstate.edu or 706.272.4488. For small business assistance, call the Center for Economic Research and Entrepreneurship at 706.272.4580 or you may visit our website, http://www.daltonstate.edu/cere/ ■

Transportation and Logistics Bring Economic Opportunity

Dr. Larry Johnson
Dean, Dalton State
School of Business

What do Amazon in Chattanooga, UPS in Atlanta, and the new Lowe's Distribution Center near Calhoun all have in common? Location! Northwest Georgia is in a region with one of the nation's largest number of industries related to warehousing, transportation, and logistics.

Atlanta, located at the southernmost portion of the Eastern Appalachian Mountains, has long been a favorite turning point between the southern U.S. and the eastern Atlantic region. Located along ancient trading routes of Native Americans, it became a major highway and transportation hub in its early days. Highways and rail from Atlanta to Chattanooga along with the Tennessee River waterway later on gave the South access to the Midwest. Today this region gives transportation companies the ability to reach one-half of the U.S. population in one day's truck drive.

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Transportation and Logistics...

(Continued from page 1)

We again use the Cluster Mapping Project to show the prominence of transportation and logistics in the region (Map 1). The industry employs approximately 74,000 workers with an average annual income of $48,280 as of 2010. As a low-cost transportation center, the transportation and warehousing industry serves the needs of manufacturers who produce bulky or heavy products that are prevalent in the region, such as flooring and heavy construction machinery. The transportation and warehousing industries also support the agricultural and timber sectors. Low-cost access to midwestern grain fields via rails and barges along the Tennessee River spawned the poultry industry in the Southeast, while the forestry industry thrives, in part, due to our relatively close proximity to major cities.

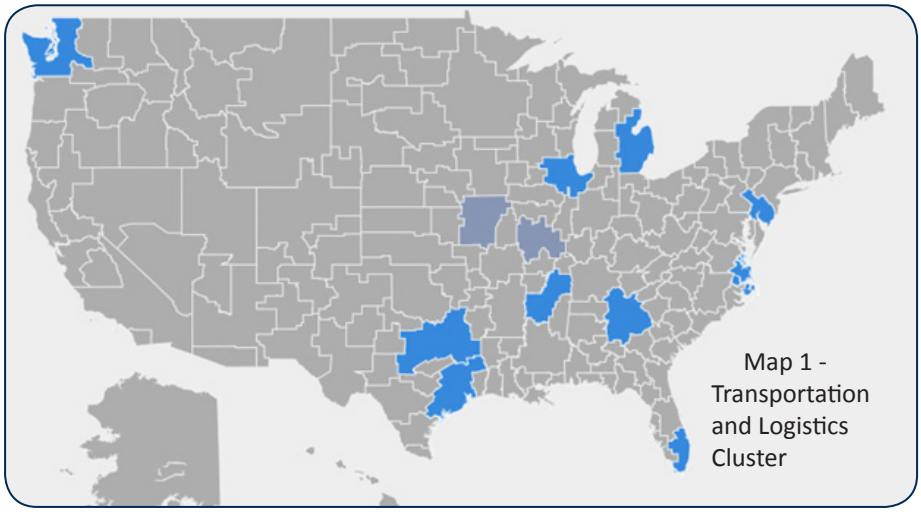
There are two major sub-clusters within the Transportation and Logistics Cluster: Transportation Arrangement and Warehousing (Map 2) and Transportation Support and Operations (Map 3). While not shown on the maps, Atlanta (home to Hartsfield-Jackson International Airport) is also an air transportation hub for both passengers and cargo.

The Cluster Mapping Project is publicly available at http://clustermapping.us or you may contact our Center for Economic Research and Entrepreneurship (CERE) at (706)272-4580 or e-mail us at cere@daltonstate.edu for information.

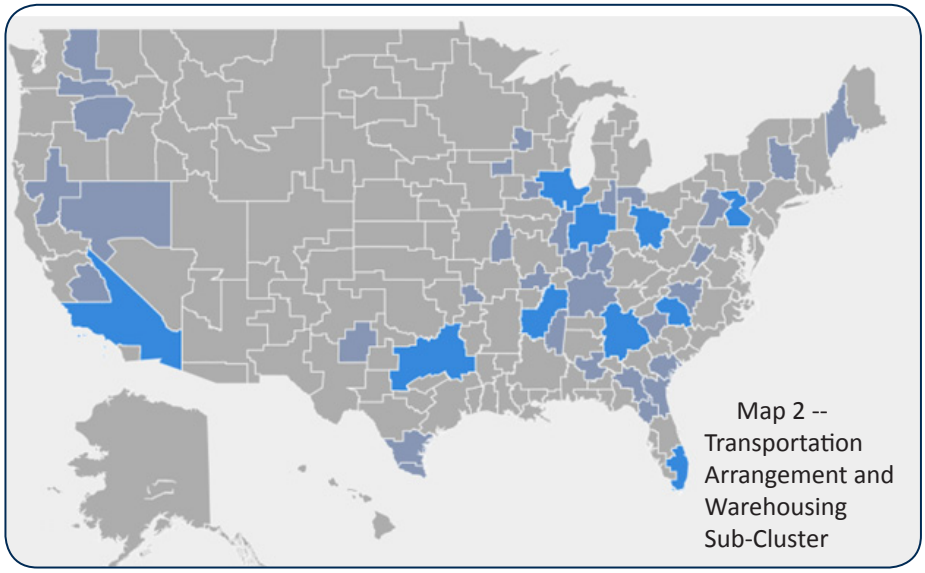
References: Michel E. Porter; "Clusters and the New Economics of Competition"; *Harvard Business Review*, November-December 1998. ■

High cluster specialization/ high share

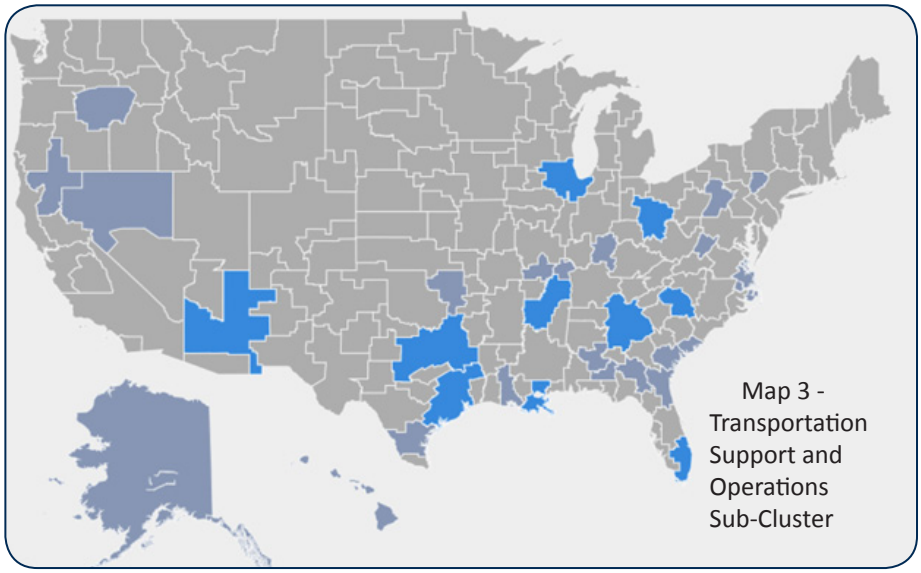
High cluster specialization/ moderate share



Map 1 - Transportation and Logistics Cluster



Map 2 -- Transportation Arrangement and Warehousing Sub-Cluster



Map 3 - Transportation Support and Operations Sub-Cluster

Transportation and the Regional Economy: A Historical Overview

Dr. Brent A. Evans

The Western and Atlantic Railroad (W&A), which was developed in the 1830s, connected Atlanta and Chattanooga and would prove to have a highly significant role in the formation of the region. As the first railroad system in the region, its completion allowed for rapid growth and population explosions. In fact, Atlanta owes its sheer existence to the Western and Atlantic. At the southernmost point of the W&A, a town formed. Appropriately, this town was named "Terminus." Terminus would grow into the ninth most highly populated metropolitan area in the United States. Although the city has changed names (first "Terminus," then "Marthasville," and finally "Atlanta"), its current moniker can be traced back to the original railroad—Atlanta being a feminine form of the word "Atlantic."

For those who have studied the Civil War, the W&A line between Atlanta and Chattanooga is familiar territory. Cities formed along the route include (from south to north), Marietta, Kennesaw, Cartersville, Calhoun, Resaca, Dalton, and Ringgold. These towns, and many surrounding towns, were home to most of Georgia's Civil War battles—many of these battles occurring during Sherman's Atlanta Campaign, which preceded his "March to the Sea." The most infamous conflict of the Atlanta Campaign is certainly the Battle of Chickamauga, the second bloodiest battle of the entire war, with 34,624 casualties. The railway was also home to one of the most interesting events of the civil war—the "Great Locomotive Chase"—in which Union volunteers absconded with a train and destroyed portions of the railway, while Confederates closely pursued in trains and on foot.

Taken collectively, the strategies and fighting that occurred along the W&A made it one of the most important transportation routes of the Civil War. In addition to these battles, the lines were used for countless shipments of provisions and for the transportation of soldiers. Without a doubt, much of the formation and history of Northwest Georgia can be traced back to the W&A railroad.

The Carpet Industry (1917 to Present)

The same railroads that brought the Civil War to Northwest Georgia are also partially responsible for the region's emphasis on flooring. In 1917, bedspread-producer Catherine Evans Whitener collaborated to form the Evans Manufacturing Company. Because of extensive railroad traffic, the company was able to expand. The techniques used in bedspread production were soon used for other products, including carpet. By the 1930s, much of the process had become mechanized and Dalton's "Carpet Boom" began in earnest.

Dalton continues to experience high volume locomotive traffic, a clear reminder of the city's roots.

By 1952, Dalton's carpet industry was the third largest consumer of Georgia cotton. The following excerpt from the Carpet and Rug Institute illustrates the role of transportation in invigorating the industry:

> Sales were created by correspondence or by taking spreads to department stores, but by far the most famous and enjoyable way to buy a spread was on "Bedspread Alley," U. S. Highway 41 between Dalton and Cartersville. This stretch of the major north-south highway got its nickname because of the bedspreads the tufters hung on clotheslines to dry in the breeze and sun.
>
> The salesmen and tourists enjoyed seeing the colorful, gaudy spreads and enjoyed the novelty of buying them "off the line." The most popular pattern to the travelers, outselling all others twelve to one was the Peacock–feathered birds facing each other and spreading tails over the breadth of the spread. This "Bedspread Alley" phenomenon lasted into the '70s, and even now a few spreads can be seen on lines just south of Dalton.

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Big Data Analytics in Transportation and Logistics

Dr. Sunny Park

Big Data Analytic Trends

Due to radical advances in information technology (IT) and, in turn, significant cost-reduction in data management, most companies have massive amounts of data at their disposal. But, not many companies utilize it efficiently and effectively. "Big Data Analytics" is the scientific process of transforming large amounts of data (big data) into insightful information. Such information can promote a competitive advantage over competitors by providing critical inputs for improving decision-making. According to Dr. Tom Davenport, the President's Distinguished Professor of IT and Management at Babson College and author of the best-selling book, *Competing on Analytics*, leading companies are building their competitive strategies around data-driven insights.

Davenport argues that companies should become analytical competitors (organizations that use analytics extensively and systematically to out-think and out-execute competitors) and compete on analytics because many previous bases for for competition such as geographical advantage or protective regulation have been eroded by globalization, proprietary technologies can be rapidly copied, and breakthrough innovations in products or services are increasingly difficult to achieve.

In fact, the usage of Big Data Analytics is already common practice. According to *2014 IDG Enterprise Big Data* research, companies are intensifying their efforts to derive value through big data initiatives, with nearly half (49%) of 751 respondents already implementing big data projects or planning to do so in the future.

How Could Big Data Analytics Be Leveraged In Transportation and Logistics?

Like so many business segments, the transportation industry is facing many changes and challenges, including how to manage exponential growth in the amount of data, how to ensure operational excellence, and how to enhance customer experience. According to Kaduwela and Inbasekaran (2012), increased demands and costs for transportation will put tremendous pressure on transportation providers to be more efficient in their operations and to control costs as they scale. Kaduwela and Inbasekaran (2012) argue "the industry as a whole has to be creative and innovative in generating business value in terms of reducing operating costs and improving reliability, making Analytics a necessity."

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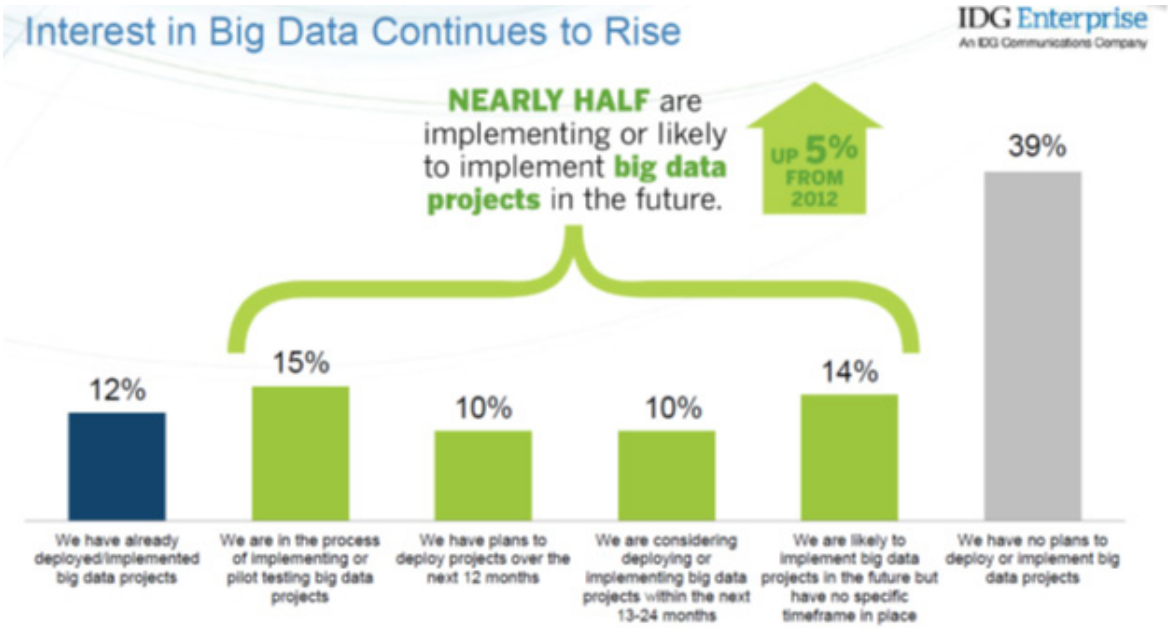

Big Data Analytics...

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According to Dr. Davenport's *Competing on Analytics* and a white paper by IBM (*IBM Information Agenda* for the travel and transportation industry), Big Data Analytics could be leveraged in the transportation segment by:

- Capacity Planning: Optimizing its workforce, available assets, routes, and yields
- Demand-Supply Matching: Aligning services to customer needs and optimizing pricing for demand
- Location Analysis: Reducing costs of inventory, energy, waste, and fraud
- Modeling: Monitoring and maintaining identity and access management
- Routing: Finding the best path for a delivery vehicle (known as the traveling salesman problem)
- Scheduling: Creating optimal maintenance schedules while complying with industry and government regulations
- Customer Service: Creating brand affinity

While focusing on maintenance cost saving opportunities, Kaduwela and Inbasekaran (2012) provided several practical areas where the transportation segment could utilize Big Data Analytics:

- Scheduled Maintenance: Maximize component life and reduce repair costs by determining optimal time intervals and scopes between scheduled maintenance events
- Unscheduled Maintenance: Minimize out-of-service time and improve asset utilization by root-cause analysis, repair versus replace analysis, quality of fix comparisons, and recurrent event models
- Predictive Maintenance: Prevents costly failures by real-time condition monitoring and detection
- Parts Inventory Management: Reduce supply chain costs by multi-echelon inventory optimization across location with service level constraints
- Warranty Analytics: Reduce warranty leakage for operators and owners by statistical techniques and data mining for early warning and detecting emerging issues

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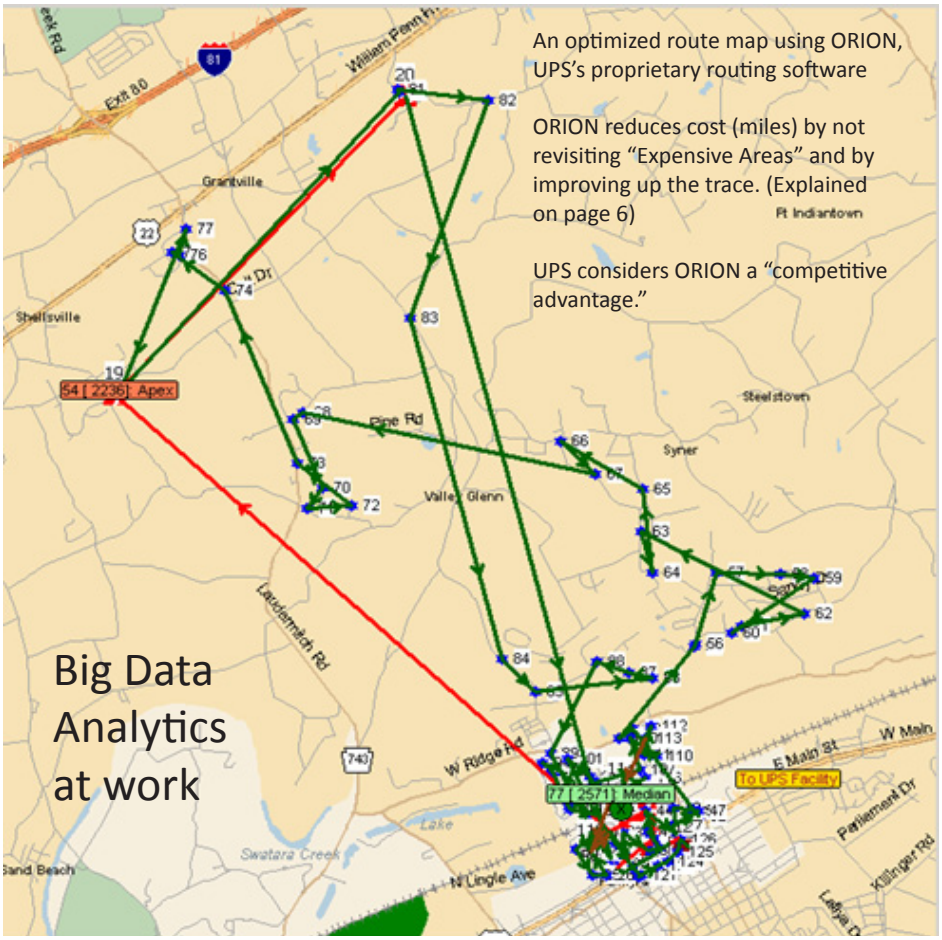

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Big Data Analytics...

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• Labor Planning: Improve labor utilization by hierarchical forecast of labor needs
• Reliability Analytics: Extend component life by determining optimal replacement strategies and Weibull analysis

Implications for Northwest Georgia
There are a number of interesting cases of Big Data Analytics in the transportation sector in Georgia. For example, Delta Air Lines monitors and analyzes combined event streams from disparate applications to identify potential opportunities and and problems. UPS's proprietary routing software, called ORION (On-Road Integrated Optimization and Navigation), uses package-level detail and customized online map data to provide drivers with optimized routing information. ORION can enhance customer service and reduce miles driven by determining the most efficient delivery route. In 2013, use of ORION resulted in reductions of more thant 1.5 million gallons of fuel used and reductions of 14,000 metric tons of carbon dioxide emissions.

While many industry leaders like Delta and UPS use Big Data Analytics with mature analytical capability, carpet manufacturers, using localized analytics, seem to be in the early stages of developing analytical capacity. They have recognized the benefits of Big Data Analytics and are trying out analytics in a series of small steps with disconnected and narrow focus. This may be due to their IT infrastructures (many carpet companies have disjointed IT platforms), organizational cultures, or leaders' passions.

However, I do not necessarily recommend a radical approach for carpet manufacturers, although an enterprise-wide initiative is often needed in order to succeed with Big Data Analytics. Despite its drawbacks, there are also important advantages to taking the "prove-it" path. When transporting carpet and in similar situations, initial applications should be fairly tactical, small in scale, and limited in scope. As workers in the industry attain experience using analytics, they can gain valuable insights that can build momentum in favor of moving to higher stages of Big Data Analytics within their organizations. I would like to conclude my recommendations for those in the early stages of Big Data Analytics by echoing Dr. Davenport's:

• Find a sponsor and a business problem that can benefit from analytics
• Implement a small, localized project to add value and produce measurable benefits
• Document benefits and share the news with key stakeholders
• Continue to build a string of localized successes until the organization has acquired enough experience and sponsorship to progress to the next stage. ■

CERE
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The Center for Economic Research and Entrepreneurship aids small business development and growth by providing in-depth and meaningful research, information on economic and business trends, and assistance to chambers of commerce, local businesses, economic development organizations, and service organizations. Among CERE's community offerings are workshops on entrepreneurial activity. To schedule a workshop, call the School of Business at 706.272.4580.

Workshop I: **Recognizing and Creating Entrepreneurial Opportunities**
This workshop is designed for anyone who is interested in starting a business. It will focus on the benefits, costs, and reasons to become an entrepreneur. Participants will explore how entrepreneurs find opportunities to start new businesses by creatively exploiting changes in their careers and personal lives and by recognizing opportunities where others see problems. Participants will review paths to small business ownership, learn how to explore the feasibility of a business idea, how to find a competitive advantage, and how to determine the value of a business.

Workshop II: **Exploring Your Market**
This workshop is designed for the individual who is interested in self-employment and wants to explore the feasibility and potential for a new business venture. In this session, participants will be taught how to research their markets before opening a business and how to gather information from both primary and secondary sources. And because market research helps business owners to know their customers and how those customers decide to buy, participants will be taught how to make marketing research an integral part of a business. Finally, there will be a review of successful market segmentation strategies that are designed to help businesses develop a market positioning strategy and ultimately a marketing plan.

Transportation and Regional...

(Continued From page 3)

Travelers prepare to board at the futuristic international terminal of Atlanta's Hartsfield-Jackson airport.

Just as the railroads helped form the cities of Northwest Georgia, highways catalyzed the expansion of Northwest Georgia's textile industry. Today, 70 percent of the world's tufted carpet is produced in and around Northwest Georgia. It is hard to imagine that such success could have been attained without the substantial railroad system northwest Georgia enjoyed, and still utilizes today.

Interstate and International

In the late 1930s, Franklin D. Roosevelt suggested the development of an interstate road system, partially based upon the success of the German autobahns. However, it wasn't until the 1950s that the idea became realized. Georgia was among the states to quickly adopt the interstate system—much to the dismay of business owners along traditional travel routes such as highway 301 in Southeast Georgia, which had become heavily travelled by northerners visiting the gulf coast. However, Northwest Georgia and Chattanooga have certainly experienced enhanced growth due to these highways.

Of course, residents also have the option of traveling through the skies. Hartsfield-Jackson Atlanta International Airport (ATL)—created in 1925—has been the world's busiest airport since the late 1990s. In 2013, ATL served more than 94 million customers, nearly 13 percent more than the world's second busiest airport in Beijing, China. In May 2012, Atlanta opened its new international terminal—Maynard H. Jackson International Terminal.

With 1.2 billion square-feet Interstate and International and a cost of $1.4 billion, the terminal houses eight different airlines. According to ATL general manager, Louis Miller, the addition was needed because "we've got to look toward the future". Indeed, the future promises challenges and innovation and certainly, transportation will continue to shape the physical features and economy of the region.

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The Dalton Train Depot (now the Dalton Depot Restaurant and Trackside Tavern) was identified as the official center of the city of Dalton in 1847. All land within a one-mile radius was considered part of Dalton. Just 15 years later, tens-of-thousands of Civil War soldiers passed through the depot en route to the Battle of Chickamauga, the Battle of Resaca, and various others. ■

Economic Dash Board, Spring 2014
By: Travis Hayes

County	Catoosa	Dade	Gordon	Walker	Whitfield	**Region**	**State**	**National**
Number Employed, Feb. 2014	31,935	7,400	23,392	29,821	37,579	130,127	4,397,094	145,266,000
Number Employed, Jan. 2014	31,928	7,398	23,333	29,814	37,508	129,981	4,394,904	145,224,000
Number Employed, Feb. 2013	31,922	7,397	23,458	29,809	37,774	130,360	4,354,014	143,464,000
Number Unemployed, Feb. 2014	1,862	481	1,991	2,041	3,510	9,885	340,250	10,459,000
Number Unemployed, Jan. 2014	1,762	476	2,078	2,021	3,965	10,302	352,146	10,236,000
Number Unemployed, Feb. 2013	2,162	614	2,545	2,307	4,569	12,197	412,599	12,047,000
Labor Force, Feb. 2014	33,797	7,881	25,383	31,862	41,089	140,012	4,737,344	155,725,000
Labor Force, Jan. 2014	33,690	7,874	25,411	31,835	41,473	140,283	4,747,050	155,460,000
Labor Force, Feb. 2013	34,084	8,011	26,003	32,116	42,343	142,557	4,766,613	155,511,000
Unemployment Rate, Feb. 2014	5.5%	6.1%	7.8%	6.4%	8.5%	7.1%	7.2%	6.7%
Unemployment Rate, Jan. 2014	5.2%	6.0%	8.2%	6.3%	9.6%	7.3%	7.4%	6.6%
Unemployment Rate, Feb. 2013	6.3%	7.7%	9.8%	7.2%	10.8%	8.6%	8.7%	7.7%
Initial Unemployment Claims Feb. 2014	291	41	772	534	1,890	3,528	40,322	1,354,000
Initial Unemployment Claims Jan. 2014	331	88	852	675	2,738	4,684	58,091	1,332,000
Initial Unemployment Claims Feb. 2013	153	29	532	180	1,066	1,960	38,696	1,420,000
Population	62,825	16,142	52,800	64,799	93,835	290,401	9,992,167	316,128,839

Sources:
Georgia Department of Labor, U.S. Department of Labor, Bureau of Labor Statistics, U.S. Census Bureau, and georgia.gov

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