Niagara Frontier Urban Area Freight Transportation Study

Technical Memorandum No. 1

Economic Development and Growth Evaluation

GBNRTC

GREATER BUFFALO-NIAGARA
REGIONAL TRANSPORTATION COUNCIL
Buffalo-Niagara Falls Metropolitan Planning Organization (MPO)

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Prepared for:
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INTRODUCTION

1.1 Overview

The Niagara Frontier Urban Area Freight Transportation Study Technical Memorandum #1 is the first of five technical papers. This document is comprises an economic overview of the region. The economic overview of the region and application of WSA's Economic Development and Growth Evaluation tool explores the competitiveness of the region, establishing the strengths and weaknesses, and identifying future opportunities for expanding economic performance by investing in efficient freight transportation.

1.2 Project Deliverables

Technical Memorandum #1 is the first of five technical papers and a final report. The papers are:

1. Technical Memorandum #1
   - Economic overview of the region

2. Technical Memorandum #2
   - Air cargo system profile
   - Highway system profile
   - Rail system profile
   - Marine system profile
   - Cross-border freight system profile
   - Preliminary identification of opportunities

3. Technical Memorandum #3
   - Rail traffic profile
   - Truck traffic profile
   - Marine cargo traffic profile
   - Cross-border traffic flow profile
   - Projected future rail volume
   - Projected future truck volume
   - Projected future port traffic

- Projected future cross-border flows

4. Technical Memorandum #4
   - CIMS tool development
   - Highway capacity and congestion evaluation
   - Rail capacity and congestion evaluation
   - Maritime requirements evaluation
   - Air cargo requirements
   - Air cargo diversion potential
   - Medium and long range improvement projects

5. Technical Memorandum #5
   - Public and private benefits
   - Economic analysis
   - Cost-benefit analysis
   - Sensitivity analysis

6. Final Report

ECONOMIC EVALUATION

2.1 EDGE Analysis Overview

The Greater Buffalo-Niagara Regional Transportation Council commissioned a study to examine freight transportation in the Niagara Frontier region and its role in the regional economy. The study will provide a comprehensive assessment of the relationship between the sufficiency of transportation infrastructure and services and economic conditions and opportunities occurring within the Buffalo-Niagara region. The Niagara Frontier region continues to be a critical freight transportation hub that is well served by an extensive highway, rail, port and aviation network. The Niagara Frontier is also home to four key international border highway crossings: The Peace Bridge in downtown Buffalo, the Rainbow and Whirlpool bridges in Niagara Falls and the Lewiston-Queenston Bridge. These border crossings connect with principle Canadian highways in southern Ontario Province. In New York, these border crossings provide access to the region's principal trade highways including I-90 (NYS Thruway), I-190, I-290 and U.S. Route 219 (currently being upgraded into a north/south trade corridor to Pennsylvania and other states). **Figure 2-1** illustrates the study region.

Figure 2-1: Greater Buffalo-Niagara Study Area

To fully assess and understand the effects of the transportation system on current and potential users requires a basic understanding of the current economic performance in the region, the existing transportation system and markets served, and expectations among various users.

Therefore, this analysis will focus on how the global economy, global trade and patterns, and changes in logistics are having an impact on the region's economic competitiveness, especially as it relates to transportation within the Study Area. Opportunities for the Buffalo-Niagara Region are identified as a result of these changes.

The economic performance of region has been uneven across various industry sectors as the economic base has shifted from heavy manufacturing to more light manufacturing and logistics and trade based industries. While competitive conditions vary across industries, in general the area's strengths include a strategic geographic location as a gateway to major economic markets in both Canada and the U.S.; a skilled labor force; a system of multi-modal transportation assets including the Port of Buffalo, the Greater Buffalo-Niagara International Airport, the Niagara Falls International Airport, and rail corridors served by two Class 1 railroads; relatively low cost of living; and a growing tourism base. These strengths, combined with expanding opportunities arising from increasing global trade and changing trade lanes, present opportunities that can potentially be capitalized on by improved freight transportation efficiencies and an integrated strategic land use development plan. The purpose of this report is to explore the competitiveness of the region relative to global markets, establishing the strengths and weaknesses, and identify future opportunities for expanding economic performance by investing in efficient freight transportation.

This report consists of four sections. Following this introductory section, the second section examines the changing economic base of the region and identifies employment gaps and surpluses relative to competitive regions. The third section discusses the expansion of the global economy and trends that are shaping how regions will compete in the future. The fourth section provides an assessment of the role of transportation in economic development and identifies the impact of the transportation system on future development.

2.2 Economic Performance of the Buffalo-Niagara Region

A principal objective of economic development is to increase job opportunities and income levels for area residents, by supporting economic growth – including the retention and expansion of existing business, as well as the development and attraction of new business. To effectively pursue these objectives, county, municipal and other public economic developers must focus and target their efforts towards those types of business that represent the best prospects for local economic growth. By assessing the relative competitiveness of local facilities and resources for

serving those types of business, it is also possible to identify priorities for local improvements that can best help to attract and grow these target industries.

Economic development in the region is supported by a number of economic development agencies and trade organizations in the region:

- Amherst Industrial Development Agency
- Buffalo Economic Renaissance Corporation
- Buffalo Niagara Enterprise
- Empire State Development Corporation
- Erie County Industrial Development Agency
- Hamburg Development Corporation/Hamburg Industrial Development Agency
- Lackawanna Community Development Corporation
- New York Business Development Corporation
- Lancaster Industrial Development Agency
- Tonawanda Development Corporation
- West Seneca Development Corporation
- World Trade Center Buffalo Niagara

The purpose of this element of the current study is to conduct an economic base and diversification analysis for both Erie County and Niagara County. To do so, this report sets out to define key concepts involved in evaluating the area's economic performance, identifying targets for further economic development and defining priorities for improving local economic competitiveness. It specifically defines concepts and terms included in the analytical tool used to conduct the economic base and competitive analysis for these two counties – WSA-EDGE, Economic Development and Growth Evaluation tool. WSA-EDGE is a framework developed by Wilbur Smith Associates (WSA) to assess economic development with an emphasis on the role of transportation.

2.2.1 Overview of the Study Process

The WSA-EDGE analysis process serves two related purposes, each aimed at identifying under-performing industries and competitive disadvantages inhibiting attracting these industries. The process consists of the following elements:

- ***Economic Profile:*** A description of the current socio-economic conditions and economic indicators in the Buffalo-Niagara region and benchmark reference regions.
- ***Economic Base Analysis:*** An evaluation tool to assess current economic conditions and likely future trends. This includes quantifying both the mix or concentration of industries and the performance of that industry relative to benchmark regions.
- ***Competitiveness Assessment:*** A benchmarking tool to aid in evaluating industries for which the region has a competitive advantage and the shortcomings of the region with regards to attracting industries for which the region has a disadvantage.

In addition to the traditional population and labor force information included in an ***economic profile***, this component of the assessment includes other important economic development factors. Because many factors are necessary but not sufficient in themselves to attract industries, the analysis examines several categories of competitive elements including:

- Labor costs;
- Energy costs;
- Tax burdens;
- Availability of labor (i.e., "work base");
- Worker skill levels;
- Housing costs; and
- Water, air, rail and highway transportation access
- Real estate availability and cost

The ***economic base analysis*** aspect of the EDGE system provides baseline economic profiles, trends and employment gap estimate by industry. If the industry is under-performing, it is identified as having an employment gap and the closing of that gap may represent a business attraction potential. An area is classified as having an employment gap if either (a) that industry's share of local employment is significantly lower than its corresponding share in an economically comparable area, or (b) a local employment change in that industry has lagged behind that industry's national average performance. This element of the economic assessment is based on location quotient and shift-share analysis and is commonly referred to as economic base analysis. In addition, the economic base analysis evaluates potential local business growth/attraction for each industry based on estimates of the projected growth assuming that the regional performance in that industry matched national growth rates. The sum of potential new jobs over the study period for all industries represents the overall business attraction potential of the region.

The ***competitive benchmarking*** element of the analysis framework is an evaluation of potential growth through ratings of local area advantages and disadvantages for supporting business growth and attraction relative to a benchmark region. Advantages and disadvantages are based on key business location factors including: (1) costs of labor, materials, utilities, transportation and taxes, and the sensitivity of each industry to those cost factors; (2) size and characteristics of the local area's workforce, and the sensitivity of each industry to these labor force qualities; (3) access, times and costs for different modes of transportation (i.e., highway, air, rail, and marine), and the sensitivity of each industry to these access factors; and (4) quality and supply of local infrastructure and facilities to serve economic growth. Based on the competitive assessment, industries are rated as below average, average or above average targets for economic development. Essentially, the more closely an area's labor and infrastructure characteristics (e.g., wage rates, skill level, and transportation infrastructure) meet the operating requirements of each industry, the higher the probability of the region attracting firms in those industries.

In addition, for each industry for which there is a potential for additional business attraction, competitive weaknesses that need to be addressed are identified. The competitive benchmarking incorporated into WSA-EDGE represents each industry's sensitivity to different competitive factors based on the percentage of total cost attributable to that factor, the factors most important to an industry, and the strength of the local area relative to the reference area. For example, for warehousing and distribution industries, trucking costs represent a significant cost component. Therefore, efficient highway access to major population centers is a key location factor. If a region's highway system is inefficient as a result of congestion and or circuitous routes, the cost of doing business in that region for firms in the warehousing and distribution industry will be higher than in other regions. Thus, the region will have a key competitive disadvantage.

2.2.2 Local Economic Performance Analysis

The first step of the WSA-EDGE framework is to develop an economic profile of the region. This is used to establish the baseline conditions in Erie County and Niagara Counties and forms the basis for the economic base and competitive benchmarking assessments.

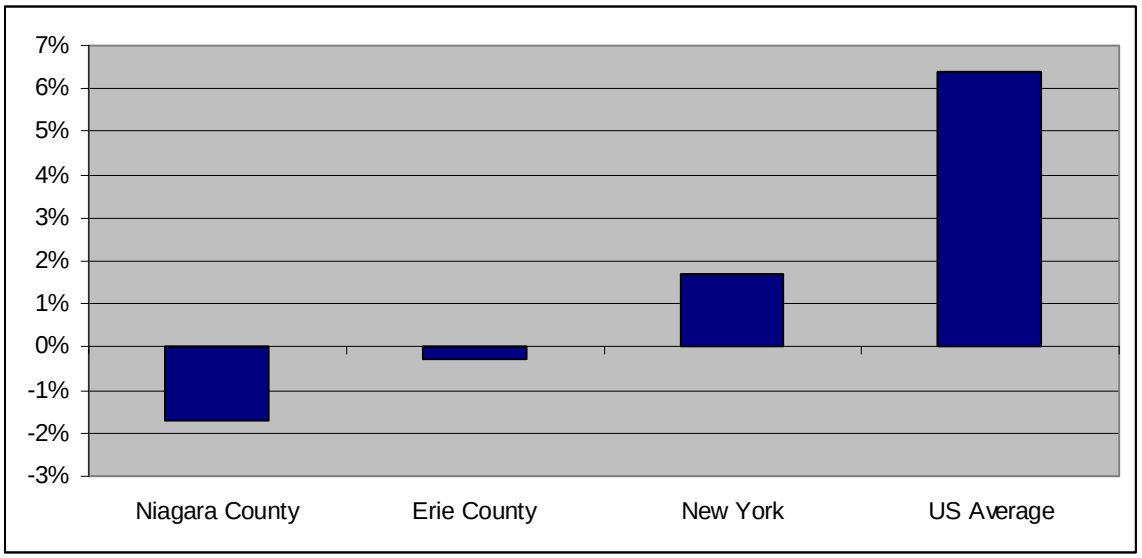
Economic Profile

The economic profile captures population and employment characteristics and includes population growth rates, median age, income data, employment composition and unemployment rates and educational attainment levels.

Population change is a leading indicator of a region's relative economic health. **Figure 2-2** compares the change in population for Erie and Niagara counties, the State of New York and the

U.S. Average. As can be seen, the study region has witnessed a decline in total population during a period when both the state as a whole and the U.S. have continued to grow. This trend is troublesome as population growth is necessary for sustainable economic growth as the population represents both a labor supply market and a market for final goods.

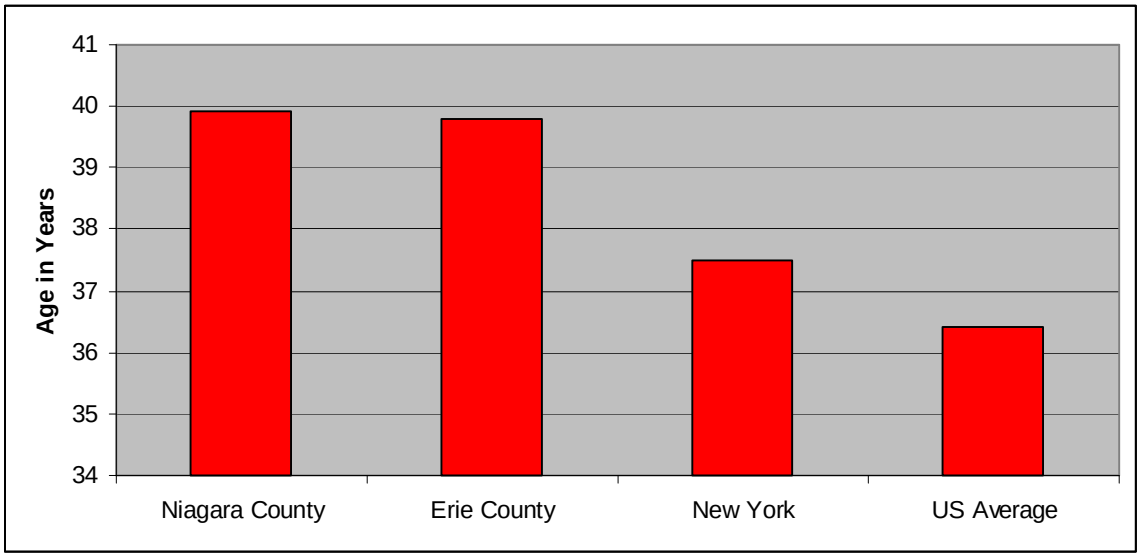
Figure 2-2: Percentage in Change in population, 2000-2006



Source: U.S. Bureau of Census, American Fact Finder

As a result of the population loss, the region's pool of available workers is shrinking. Compounding the problem of declining population is that the region's workforce has a higher median age than both the State of New York and the U.S. as whole. **Figure 2-3** indicates that the median age of the population in the study region is more than two and three years older than the statewide and national averages, respectfully.

Figure 2-3: Median Age of Population, 2005

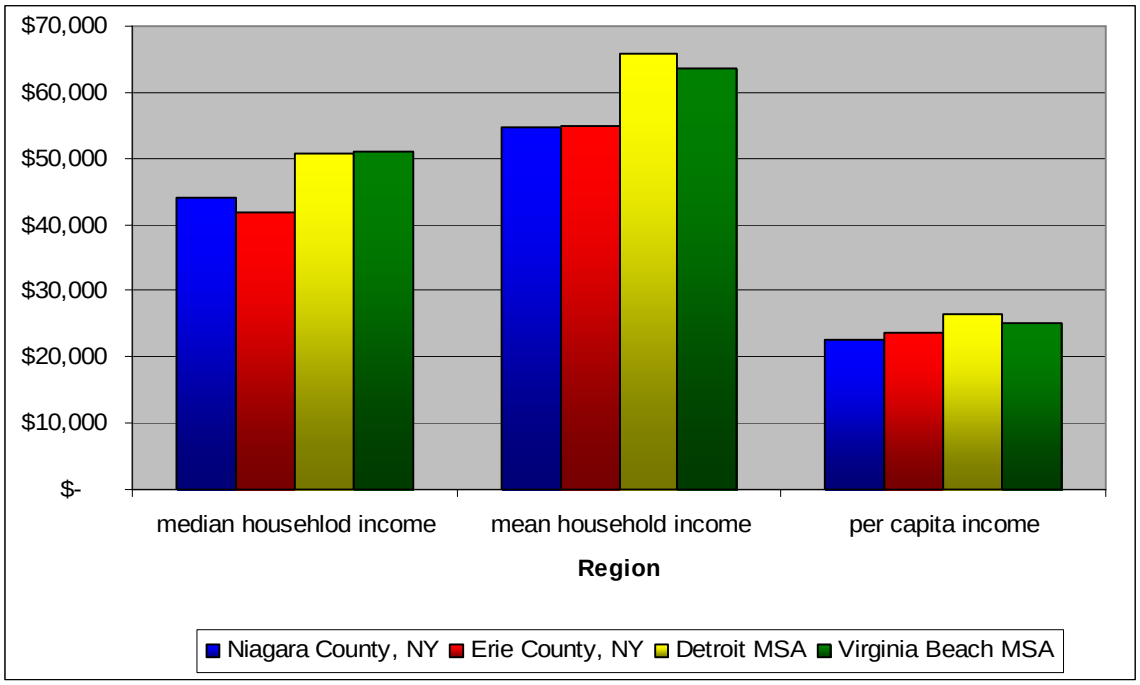


Source: U.S. Bureau of Census, American Fact Finder

Given the disparity in economic bases within the State of New York and that the New York City MSA skews the statistics within the State, the remainder of the economic profile compares economic conditions in the study region with that of potential competing regions, the Detroit and Virginia Beach-Norfolk MSAs. Detroit has been selected as it is a competing metro area for Canadian and auto-manufacturing based economic activity. The Virginia Beach-Norfolk MSA is a comparable metro area with demonstrated success in leveraging its geographic position and multi-modal assets.

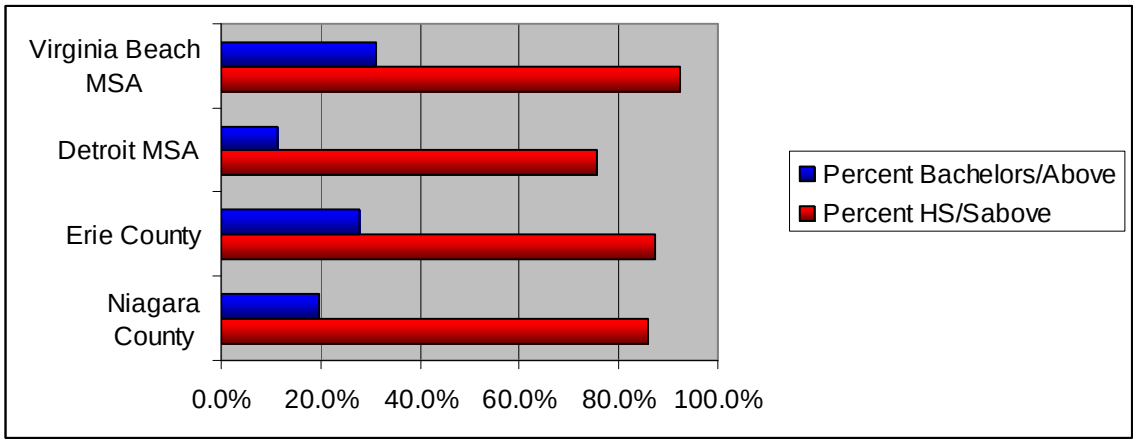
Figure 2-4 illustrates the relative performance of the study region with regard to income level. As can be seen, both Niagara and Erie County lag behind the comparative regions in all three-income measures – median household income, mean household income and per capita income. Additional data, however, is necessary to determine the underlying drivers of lower income. For example, that Niagara County also has a lower percentage of its population with at least a bachelor degree (see **Figure 2-5**), which tends to support the hypothesis that the lower income is related to lower worker skill level. However, the level of educational attainment in Erie County is similar to that in comparative regions, indicating that there are other factors affecting wage rates and thus income levels.

Figure 2-4: Comparative Income Measures, 2005



Source: U.S. Bureau of Census, American Fact Finder

Figure 2-5: Educational Attainment Levels, 2006

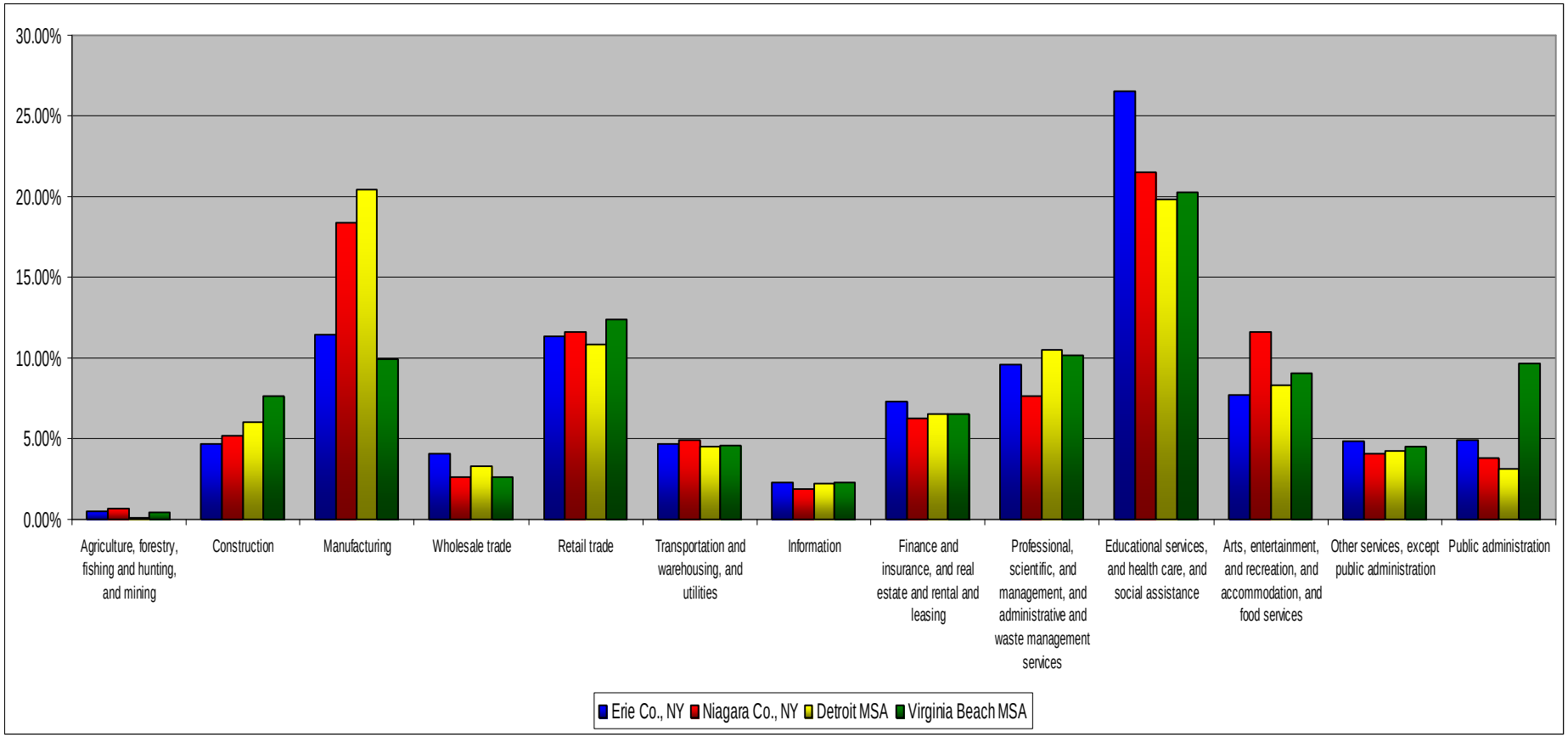


Source: U.S. Bureau of Census, American Fact Finder

Another potential explanation for the income differences is the industrial composition of the region relative to the comparison regions. **Figure 2-6** presents the industrial breakout of employment for the study counties and the comparative MSAs for 2005. The Detroit MSA and Niagara County are both relatively more dependent on manufacturing based employment, which has contributed to economic slowdowns for each of the respective areas. In addition, Niagara

County experiences a higher percentage of employment in leisure and tourism related industries such as arts, entertainment and accommodations. Often these jobs are lower paying and can be seasonal. Erie County boasts a relatively high percentage of employment in education and health services, a national growth sector. Interesting is the fact that construction related employment in both Erie and Niagara County represent a smaller share of total employment than in the comparative regions. Again, this does not bode well for the economy as higher employment levels in the construction industry signals a growing economy and increases in capital investment. The employment mix and its trend will be covered in more detail in the economic base section that follows the economic profile.

Figure 2-6: Employment Mix by Major Industry Sector, 2005



Source: U.S. Bureau of Census

Economic Base Analysis

The WSA-EDGE analysis system contrasts current and historic performance of the Erie County and Niagara County employment structure with that of the target areas, Virginia Beach-Norfolk, VA and Detroit, MI. Based on employment in the comparison area, the potential for new jobs is assessed at the 2-digit NAICS industry level. The first step of the analysis is to calculate the economic concentration ratio for each industry in the Erie and Niagara County and compare them to the benchmark regions. This ratio is referred to as the Location Quotient (LQ).

Location quotients are useful for identifying industries that may be under-represented in a region. The lower the concentration, the more likely it is that a region is not meeting the industrial demands of the local market. This signals a potential for greater future job growth in the under-developed sectors.

WSA-EDGE LQ analysis is used to estimate the expected number of jobs in Erie County and Niagara County if performance of local industries was equal to the Virginia Beach-Norfolk MSA or the Detroit MSA. The differential between expected jobs and actual jobs provide an estimate of the employment potential in Erie and Niagara Counties under the right conditions for growth of any given industry.

A second evaluation uses Shift/Share Analysis (SS) techniques to compare the performance of industries within Erie County and Niagara County with national trends in the performance in the same sectors. The SS provides a way to identify the sectors that are growing or declining in the study region and to compare their performance with a standard represented by the national average. Those local industries lagging in growth are both economic weaknesses and potential future growth opportunities.

The WSA-EDGE tool calculates the shift/share as the ratio of percent change in the number of employees in each sector for Erie County and Niagara County and to the percent change for the U.S. over the past ten years. The ratio indicates whether the local industry is growing (declining) faster (slower) than the industry nationwide, or if the local sector is moving in an opposite direction (e.g., declining while the national industry is growing).

To simplify understanding of the trend ratios, and to avoid the tendency to over interpret the data, EDGE categorizes each sector as follows:

- Under-performing (less than average)
- Average performing
- High performing (higher than average)

Industries are consider under-performing if employment is growth is less than the national average, declining faster than the national average or declining regionally while growing nationally. Industries are considered average if regional employment is growing or declining at about the same rate as national employment. Finally, industries are considered high performing if regional employment is growing at a faster rate or declining at a slower rate than the national average, or growing regionally while declining nationally. A threshold of 10 percent is used to define faster and slower. If regional growth rates are within 10 percent of the national rates, performance is considered average.

Figure 2-7 provides an assessment of the shifting of the economic base for the two counties in the study region. As can be seen, from 2000 to 2005, the study region lost significant manufacturing jobs as well as wholesale and retail trade jobs. While the loss in manufacturing jobs is following a national trend, the loss in the wholesale and retail jobs is counter to what is happening nationally. The retail sector is most likely a result of decreased population and economic distress. However, the loss in wholesale trade jobs is especially troublesome for the region given its geographic location, multi-modal assts and potential as a logistics hub for Canadian-U.S. trade.

Sectors that experienced increases include professional and scientific and tourism based sectors. This bodes well for the economy as it demonstrates a transition away from an economy that is overly dependent on manufacturing to one that is more service based.

Figure 2-8 displays the high and low performing industries based on the analysis. For the purpose of the Niagara region analysis, the interest is in identifying industries for which freight transportation is a key growth driver. Notable is that the trucking and warehouse industry is identified as under performing in both Niagara and Erie County, while the transportation services and commodities brokers category is identified as performing above average in Erie County. It is not uncommon for an industry to be identified as under performing in one county while performing above average in the other, in effect being in balance for the region. However, the appearance of regional balance masks a true measure of economic performance.

Figure 2-7: Change in Employment by Sector, 2000-2005

	Erie County, NY		% Change,	Niagara County, NY		% Change,
	2005	2000	2000-2005	2005	2000	2000-2005
Agriculture, forestry, fishing and hunting, and mining	2,101	1,499	40.2%	656	919	-28.6%
Construction	19,501	19,178	1.7%	5,064	5,058	0.1%
Manufacturing	47,949	62,253	-23.0%	18,018	21,043	-14.4%
Wholesale trade	17,187	18,677	-8.0%	2,544	3,461	-26.5%
Retail trade	47,563	50,932	-6.6%	11,414	12,892	-11.5%
Transportation and warehousing, and utilities	19,700	22,211	-11.3%	4,830	5,404	-10.6%
Information	9,595	10,234	-6.2%	1,807	2,285	-20.9%
Finance and insurance, and real estate and rental and leasing	30,579	28,687	6.6%	6,131	4,598	33.3%
Professional, scientific, and management, and administrative and waste management services	40,282	34,656	16.2%	7,462	6,813	9.5%
Educational services, and health care, and social assistance	111,203	110,315	0.8%	21,115	21,592	-2.2%
Arts, entertainment, and recreation, and accommodation, and food services	32,419	32,343	0.2%	11,376	8,095	40.5%
Other services, except public administration	20,422	19,547	4.5%	3,962	4,813	-17.7%
Public administration	20,679	20,642	0.2%	3,701	3,837	-3.5%
Total	**419,180**	**431,174**	**-2.8%**	**98,080**	**100,810**	**-2.7%**

Figure 2-8: Classification of Industry Performance

Erie County		Niagara County	
Under performing	**Above average performance**	**Under performing**	**Above average performance**
Agricultural services	Rubber and plastics	Stone, clay, and glass	Lumber and wood
Oil and gas extraction	Stone, clay, and glass	Fabricated metal products	Rubber and plastics
Forestry	Fabricated metal products	Metal mining	Transportation equipment
Metal mining	Transportation equipment	Oil and gas extraction	Wholesale - durables
Nonmetallic minerals	Water transportation	Nonmetallic minerals	Hotels, other lodging
General contractors	Transportation by air	Trucking & warehousing	Personal services
Heavy construction	Transportation services	Water transportation	Business services
Special trade contractor	Commodity brokers	Transportation by air	Amusement & recreation
Passenger transit	Holding and investments	Transportation services	Misc. manufacturing
Trucking & warehousing	Motion pictures	Nondep. institutions	
Food products	Electronic/electric equipment	Commodity brokers	
Furniture and fixtures	Services, other	Food products	
Printing and publishing		Paper products	
Petroleum and coal		Printing and publishing	
Industrial machinery		Chemical products	
		Petroleum and coal	
		Industrial machinery	
		Electronic/electric equipment	
		Instruments	

Combining the LQ and the SS provides for the interpretation of the overall industry performance and can be used to identify at risk employment as well as potential affected industries. For example, if the LQ for an industry is greater than one, coupled with an SS ratio that indicates national employment is growing and the region is performing at or better than the national average, than the indication is that local industry is strong. The same is true when the LQ is less than one, but the industry is growing both nationally and locally. If the LQ is greater than one and the regional employment is growing slower than the national average or declining, it indicates that the potential for local growth exists, but local industry needs support, most likely to mitigate a competitive disadvantage.

In term of transportation intensive and trade-based industries, including the logistic sector itself, strong potential for new growth in Erie County was identified in the following industries:

- Trucking and warehousing
- Water transportation
- Transportation equipment

Potential for building on recent growth in Erie County was identified in the following industries:

- Wholesale, non-durables goods
- Transportation services
- Commodity brokers
- Transportation by air

For Niagara County, strong potential growth was identified in the following transportation and trade related industries:

- Trucking and warehousing
- Water transportation
- Transportation by air
- Commodity brokers
- Transportation services

Interestingly, the two-county region's transportation and logistics sector itself is at a disadvantage, along with the wholesale, non-durable goods industry. Based on projected industry growth trends and the performance of the region's economy, the region could potentially add an additional 27,000 jobs in these industries over the next ten years. This represents about a 6.5 percent increase in the current employment levels.

Competitive Benchmarking Comparison

The competitive benchmarking of WSA-EDGE framework includes an assessment of a broad set of area attributes for each industry in which there is a potential for further business growth and attraction, as identified in the economic base portion of the analysis. Competitive benchmarking identifies disadvantages that need to be addressed if Erie County and Niagara County are to attract additional businesses in the potential growth industries identified in the economic base assessment. The competitive disadvantages identified in WSA-EDGE process are categorized based on each industry's sensitivity to different factors and for those factors most important to an industry, their relative competitiveness to the comparison regions.

Factors assessed in the competitiveness analysis include total production costs; labor costs; land/office costs, energy costs; taxes; availability of labor (i.e., "work base"); skill level of workers; access to water, air, rail and highway transportation facilities; tax burden; and availability of broadband telecommunications access. In other words, the WSA-EDGE model identifies sets of industries that are appropriate targets for business attraction by matching Erie County and Niagara County labor and infrastructure characteristics (e.g., wage rates, education levels, airport access) with operating requirements of each industry.

For those industries that are currently underperforming in Niagara and Erie Counties, but could offer future growth opportunities, the WSA-EDGE model identifies the nature of current disadvantages that need to be overcome in order to effectively promote more local business activity. Competitive disadvantages are categorized as primary and secondary based on the relative degree to which the industry relies on a specific input factor. A factor is categorized as causing a primary disadvantage if that factor is very important to the competitiveness of a specific industry (e.g., labor costs in labor intensive industries) and Niagara and Erie Counties' disadvantage is large relative to the comparison areas of Detroit and Norfolk.

A factor is categorized as causing a secondary competitive disadvantage if either: 1) the competitive element is used intensively by a specific industry (e.g., labor costs in labor intensive industries) and the competitive disadvantage is moderate compared to Norfolk and Detroit; or 2) that competitive element is not critical to the competitiveness of a specific industry (e.g., labor costs in capital-intensive automated industries) and the competitive disadvantage is significant or even large relative to Norfolk and Detroit. **Figure 2-9** and **Figure 2-10** display the results for Erie and Niagara Counties, respectively.

Three areas of potential disadvantages were identified for each county: energy costs, taxes and skill level of workers. It is important to note that these disadvantages are assessed based on the

benchmark regions in general and not necessarily any single region that presents the most competition for a specific industry.

Key findings include that for transportation related industries, fuel cost appears to be a primary competitive disadvantage while availability of skilled labor force is identified as a secondary disadvantage. Again, these findings are based on quantitative analysis and are being further explored during stakeholder interviews to assess their validity.

Figure 2-9: Competitive Disadvantages for Erie County, by Industry

SECTOR	ENERGY COSTS	TAXES	SKILLED WORKERS
Metal mining			S
Oil and gas extraction			S
General contractors		S	
Heavy construction		S	
Special trade contractor		S	
Lumber and wood	P		
Petroleum and coal	P		P
Leather products		P	
Transportation equipment			S
Water transportation	P		S
Pipelines, excl nat. gas	P		S
Communications			S
Electric, gas services			P
Wholesale - durables			S
Depository institutions		P	S
Nondep. institutions			S
Insurance carriers			S
Insurance agents, broker			S
Real estate		P	
Holding and investments			P
Legal services			P
P=Primary Disadvantage; S=Secondary Disadvantage			

Source: WSA EDGE Analysis

Figure 2-10: Competitive Disadvantages for Niagara County, by Industry

SECTOR	ENERGY COSTS	TAXES	SKILLED WORKERS
Metal mining			S
General contractors		S	
Heavy construction		S	
Special trade contractor		S	
Food products	P		
Printing and publishing			S
Stone, clay, and glass	P		
Transportation equipment			S
Instruments			P
Water transportation	P		S
Transportation by air	P		S
Transportation services	P		
Communications			S
Nondep. Institutions			S
Commodity brokers			P
Insurance carriers			S
Insurance agents, broker			S
Real estate		P	
Holding and investments			P
Legal services			P
Engineering & mgmt			S
P=Primary Disadvantage; S=Secondary Disadvantage			

Source: WSA EDGE Analysis

The disadvantages will be addressed in a subsequent technical memo addressing economic impacts.

Limitations of Analysis

The techniques for economic base assessment and competitive benchmarking facilitated by the WSA-EDGE framework are intended to be used and viewed as "tools" for economic development practitioners, planners and analysts. They do not replace the need for local understanding and on-the-ground assessments.

All analysis systems have limitations and it is important to recognize those limitations at the onset. The most notable limitations of this analysis are identified below:

- ***Definition of Study Area:*** Definition of the study area will directly influence the outcome of the analysis. Ideally, the study area would be determined based on economic

interdependence and therefore extend beyond the U.S. border to include the Niagara-Hamilton-Toronto region. However, due to the funding source and resources available, the study area for the current effort is restricted to Erie County and Niagara County.

- ***Benchmarking Region:*** By definition, any rating of business performance and area competitiveness has a reference basis for comparison or a benchmark. The basis for comparison may be an adjacent or surrounding area, the rest of the state or some other defined region that is comparable or representative of achievable goals. The basis for comparison for the current effort is the Detroit MSA and Virginia Beach-Norfolk MSA. By benchmarking against the Detroit, a competing metro area for Canadian and auto-manufacturing based economic activity is considered, whereas the comparison to the Virginia Beach-Norfolk MSA, a comparable metro area with demonstrated success in taking advantage of its geographic position and multi-modal assets is considered.
- ***Business Classification vs. Occupational Classification:*** Most all of currently-available measures of business concentration and trends are based on classification of businesses by industry. Analysis of business concentration and trends can be very useful to help identify relative strengths and weaknesses of a region. However, all industry classification systems share the common limitation in that they do not distinguish between a company's administrative office and jobs and its production functions. In other words, industrial classifications are categorized by industry as opposed to occupation. As a result of this limitation, the analysis may not recognize some specialized local strengths or weaknesses that focus on occupational elements as opposed to industry based elements.
- ***Detail on Area Competitiveness:*** The analysis relies on empirical data that is readily available, to the extent possible. The level of available detail is stronger for some economic development factors than for others; therefore, some of the data relies on subjective input as opposed to directly measurable data. As a result, the characterization of some regional competitive factors in the Niagara-Buffalo study are will be stronger and more defensible than in others.

2.3 Competing in the Global Economy

2.3.1 The Growth in Global Trade

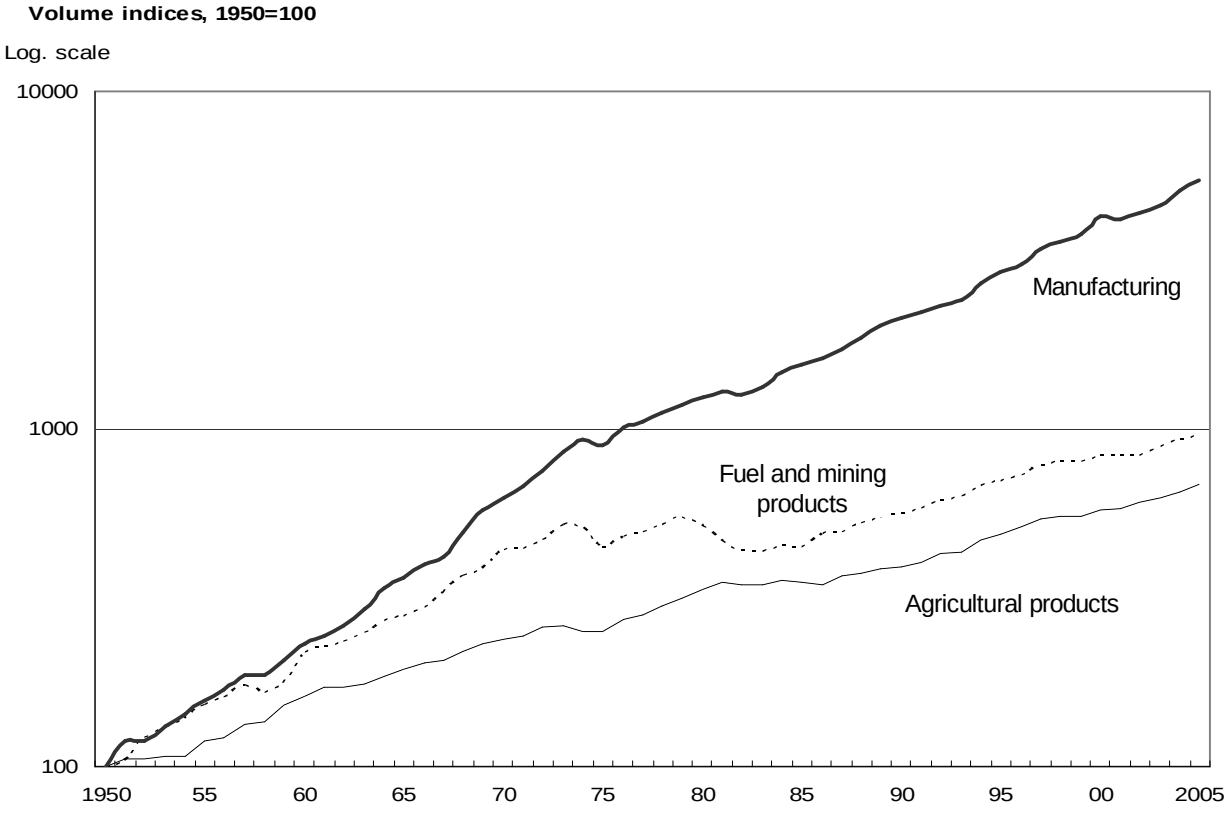
Over the last several decades, economic activity has been shifting from industrialized countries to developing countries such as China, India, Indonesia and countries throughout South America. The growing importance of trade in the U.S. and Canadian economies is a reflection of world

economic trends. Between 1960 and 1999, world merchandise trade (exports and imports) grew at an average annualized rate of over 10 percent (in 2002 dollars).[1] This trend toward globalization has also been a significant element of recent growth in the domestic economies. The growth in world trade, its significance in the bi-national economy, and the changing characteristics of trade partnerships can be traced to a number of factors, including:

- Liberalization of world trade policies;
- The growth of multinational trade blocks and multinational corporations; and
- Accelerated adoption of advanced information technologies.

Figure 2-11 summarizes the growth in trade by major product group. As can be seen, there has been significant growth in agricultural goods and fuels and mining products but the most dramatic increased has been in the trade of manufacturing goods.

Figure 2-11: World Merchandise Trade by Major Product Group



Source: Developing Countries' Goods Trade Share Surges to 50 Year Peak. World Trade Organization Press Release: April 14, 2005.

[1] Merchandise Trade Section, Statistics Division, World Trade Organization

Canada and the U.S., following the global trend of increasing trade, have experienced significant growth in the trade of goods and services. **Figure 2-12** demonstrates that the growth in the trade has been increasing significantly since the turn of the century with imports growing faster than exports in terms of both value and volume.

Figure 2-12: Growth in North American Trade

	Value in Billions $	Annual Percentage Change							
		Value				Volume			
	2005	2000-05	2003	2004	2005	2000-05	2003	2004	2005
Exporters									
North America	1,478	4.0%	5.0%	14.0%	12.0%	1.5%	1.5%	8.0%	6.0%
Canada	359	5.0%	8.0%	16.0%	14.0%	1.0%	-1.0%	7.0%	3.5%
Mexico	214	5.0%	3.0%	14.0%	14.0%	-	-	-	-
U.S.	904	3.0%	5.0%	13.0%	10.0%	1.5%	3.0%	8.5%	7.0%
Importers									
North America	2,285	6.0%	8.0%	16.0%	14.0%	4.0%	4.5%	10.5%	6.0%
Canada	320	5.0%	8.0%	14.0%	15.0%	3.5%	4.0%	8.5%	9.0%
Mexico	232	5.0%	1.0%	15.0%	12.0%	-	-	-	-
U.S.	1,732	7.0%	9.0%	17.0%	14.0%	4.5%	5.5%	11.0%	5.5%

Source: World Trade Organization. International Trade Statistics 2006; World Trade Developments in 2005.

A significant portion of the growth in international trade in North America can be attributed to trade within North America as Canada, the United States and Mexico trade extensively with each other. NAFTA has been a pivotal driver of trade increases since its implementation in 1994. Total two-way trade between the United States and NAFTA partners grew a remarkable 111 percent between 1993 and 2003, while total two-way trade between the United States and the rest of the world grew by 79 percent.[2] Bilateral trade between the United States and Canada totals, on average, $1.4 billion per day in goods, services and investment income. This represents the most significant trade volume between any two countries in the entire world.[3]

The growth of global trade and multinational trade blocks has also led to integration of production and distribution activities across national boundaries through the growth of multinational corporations and corporate trade alliances. Companies seek competitive advantages by expanding their operations to take advantage of local labor market conditions, availability of infrastructure, favorable tax policy and access to markets and distribution networks.

[2] NAFTA 10 Years Later. Overview. U.S. Department of Commerce, International Trade Administration, Office of Industry Trade Policy.

[3] U.S. Department of State: Bureau of Western Hemisphere Affairs. February 2007. Background notes: Canada.

A major factor that has facilitated the globalization of the world economy is the development and accelerated adoption of new information technologies. By reducing the cost of communication, information technology can assist in globalizing production and capital markets. Companies sought to outsource their operations around the world to take advantage of low-cost labor markets, raw material supplies, high-skill labor markets and access to distribution infrastructure, wherever these resources may present the greatest competitive advantage. This pattern of dispersed operations may occur through growth in multinational corporations with operating units throughout the world, or it may occur through alliances among firms in different parts of the world. In either case, advanced information technology facilitates the process by improving and speeding the information flow across global and corporate boundaries.

Perhaps the one area where the advancement of information technology has had the greatest impact is supply chain management. The integration of information and transportation has allowed companies to disperse their operations to take advantage of competitive conditions throughout the world while reducing inventories and meeting higher service requirements by managing their supply chain.

Implications for Transportation Systems

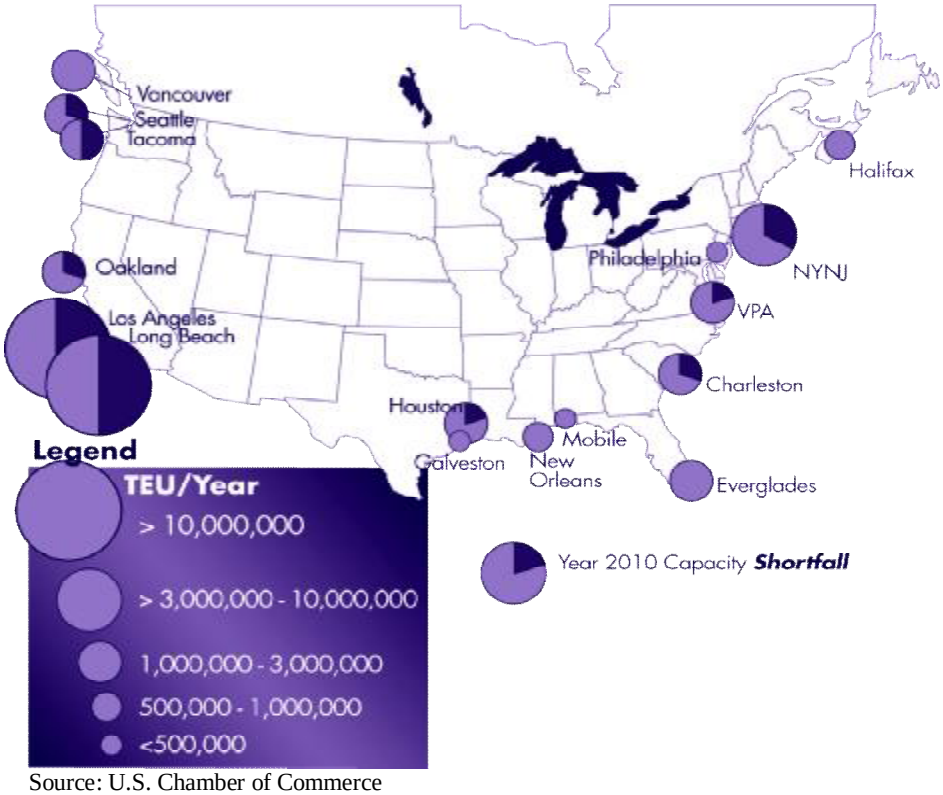
The globalization of the world economy has had significant implications for both worldwide and North American freight transportation. Changes in trade relationships have affected the domestic freight lanes that support world trade. For example, the growth in Pacific Rim trade, coupled with historically strong trading relationships with Europe, has benefited from the existence of the East-West transportation infrastructure in the U.S. and Canada. Through connections to this well-developed network, coastal ports have expanded their hinterlands and created import-export links well inland. In addition, NAFTA trade and trade with Latin America have increased demand for north-south corridors. As trade agreements have expanded and barriers have been reduced, trucks on the highways, trains on the railroads, ships in ports and planes carrying cargo have increased dramatically.

The increased outsourcing of business functions and the need to access global supply networks and markets have created far-flung supply chains for many industries. Transportation services have an increasingly crucial role in linking distant markets, functions and supply sources into coherent commercial networks. The ability of a region to compete in this global environment will hinge on its ability to efficiently accommodate these far-flung supply chains and to take advantage of changing trade lanes, the logistics revolution, and the shift toward a service based economy.

Changing Shipping Routes

The tremendous growth in trade combined with the increasing service demands of shippers and receivers, has led to a capacity deficiency in many of North America's key gateway ports. **Figure 2-13**, which displays the projected port capacity for North America's top sixteen ports, suggests that the majority of the continent's ports will experience capacity shortfalls by the year 2020. Notable is the fact that no such shortfall is projected for Halifax, indicating a potential to attract business away from other congested east coast ports.

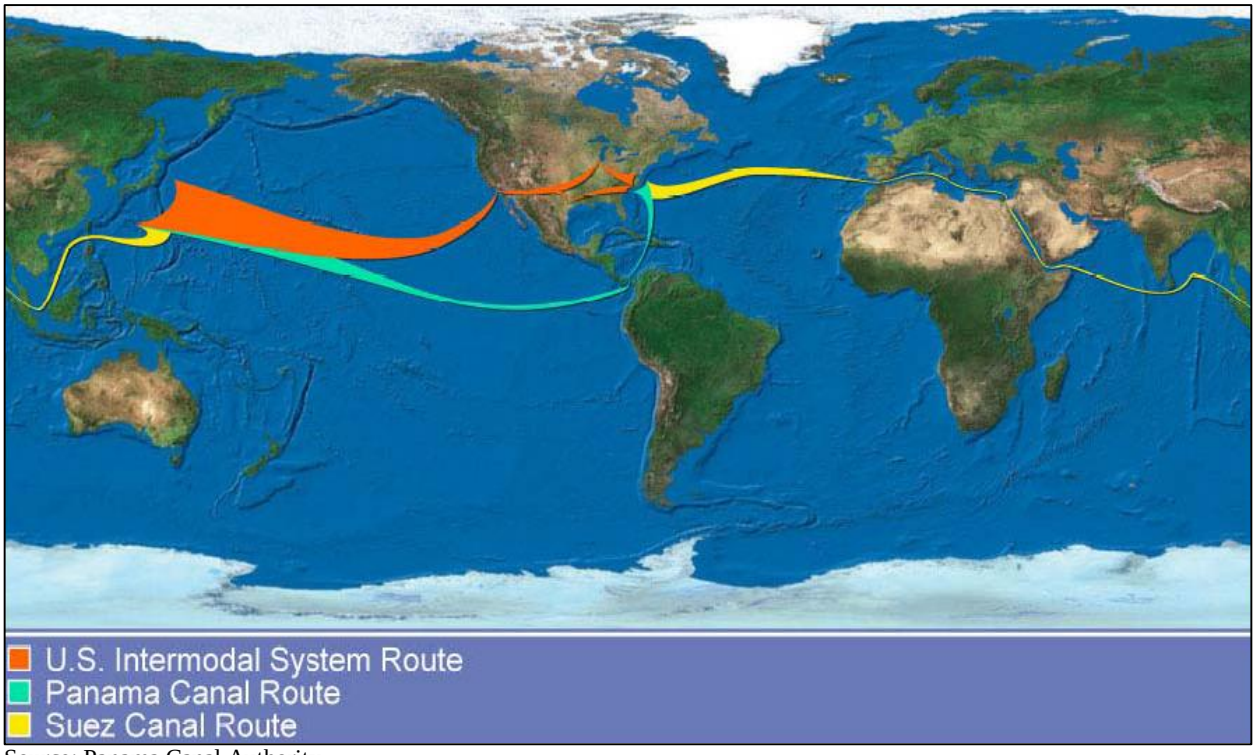
Figure 2-13: Capacity Shortfall for North American Ports in 2020



Source: U.S. Chamber of Commerce

The projected growth in global trade combined with the pending capacity crunch is fueling the investment in alternative trade lanes (as illustrated in **Figure 2-14**). Investments include the widening of the Panama Canal to accommodate larger ships, increasing use of the Suez Canal, the development of an all-intermodal port at Prince Rupert, and transshipment ports in the Gulf Coast and Caribbean. All of these investments provide potential strategic advantages for the Buffalo-Niagara region.

Figure 2-14: Changing Shipping Routes



Source: Panama Canal Authority

Expansion of the Panama Canal will allow the large post-Panamax ships to finally transit between the Pacific and Atlantic Oceans. With the port congestion in Southern California, the Canal becomes an attractive alternative for cargo moving to the U.S. east coast or mid-central states such as Ohio or Indiana. Similarly, the routes through the Suez Canal are becoming attractive alternatives for traffic to the U.S. east. The Suez will also play increasing role in world trade, as the Indian subcontinent becomes a significant trading partner with North America. The development of Prince Rupert into a major North American trade gateway will also benefit the Niagara region, as it could become an important intermodal gateway into the U.S.

The development of the Port of New York/New Jersey's port inland distribution network (PIDN) will allow the port to capitalize on the trends favoring the east coast. Through the planned network of inland terminals that includes the new Seneca Yard intermodal terminal coupled with dedicated transportation service, containers can move between the port and inland markets in an efficient and expeditious manner avoiding congestion at the port terminals.

Logistics Revolution

The integration of information and transportation to accommodate global supply chains gave rise to a logistics revolution. Just in time supply chains, electronic tracking along all transportation modes, multimodal shipping alternatives, and alternative distribution facilities and their uses are just some of the changes that have occurred, and are still occurring, in the economy.

Just in time supply chains is a system designed to maximize delivery and inventory efficiency. In many cases, just in time systems allow producers to deliver products and services directly to the customers based on their specified demands, typically bypassing intermediate distributors; thus, trucks on the highways and the containers on the rails have become the new warehouses.

As the U.S. economy becomes more service orientated and U.S. producers focus on more high-value or value-added products that are expensive to stock as inventory, companies are adopting modern supply chain management techniques with the following attributes:

- ***Demand Pull Supply Chains*:** The movement of product triggered by the consumer as opposed to the producer (supply-push).
- ***Customer-Focused Logistics*:** Tailoring the logistics system so that it responds to the unique needs and profitability requirements of each specific group of customers.
- ***Transportation Effectiveness*:** Leveraging the ability of integrated transportation to improve customer service and total supply chain cost performance.

Implications of the new supply chain systems include changing transportation systems, product ordering systems, product distribution, inventory management, inventory tracking, and warehousing methods, as well as many others. An increasingly efficient logistics system requires faster product and service ordering, and faster and reliable delivery of those products and services. Shippers often noted in the past that the most important factor in selecting transportation services is schedule reliability, followed closely by cost. In the future agility, defined as the ability to respond to changing demand or unexpected disruptions, will have greater importance. The implications of this for the Buffalo-Niagara region are that the ability to compete for jobs in the global economy will depend, in large part, on the region's ability to participate in a transportation system that meets these demands.

Structural Economy Changes

Developed countries, including Canada and the United States have seen structural changes in their economies that include an aging population, technology developments and improvements, and a shifting from a manufacturing base to a service base economy. Developing countries, by

definition, are changing the structure of their economies as well, moving towards manufacturing and striving to become globally competitive with developed countries. In general, the U.S. and Canadian economies are continuing to shift from basic, resource-oriented industries such as agriculture and basic manufacturing toward a more diverse industry mix including high value-added industries such as microelectronics and aerospace. This is true for the Buffalo-Niagara region as discussed in Section 2. In turn, demand for moving goods is shifting from bulk movements via rail, truckload and water to small, higher-value shipments via air freight, courier and less-than-truckload. This is particularly true in high-tech industries.

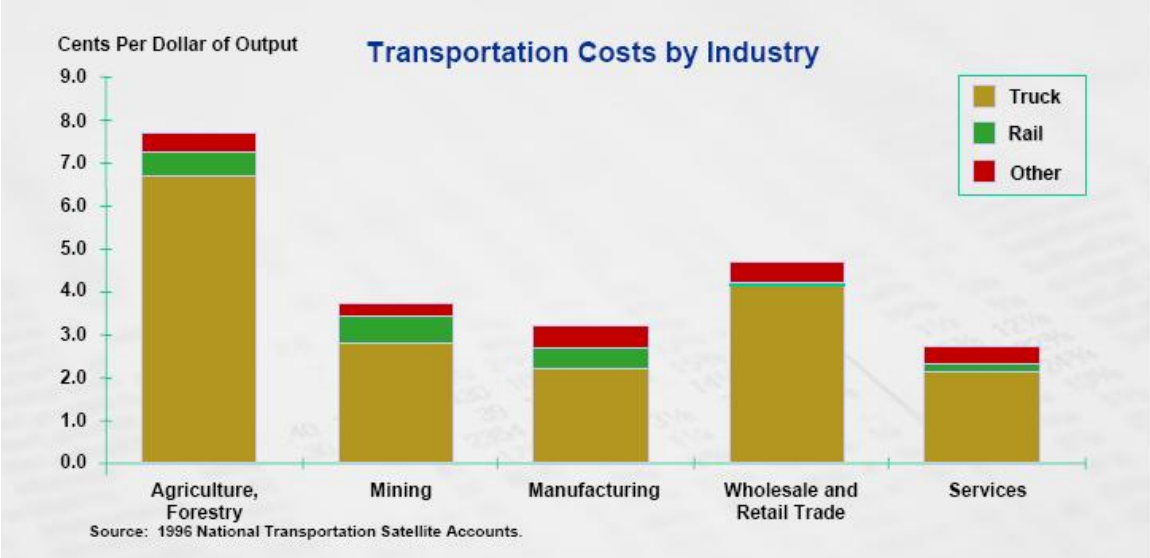
Several implications for transportation requirements arise from the increased emphasis on shipment predictability and reliability including increased demand for express package, air freight and customer-direct truck deliveries. Therefore, transportation system reliability will be a key issue not only for industry, but from an economic development perspective as well. Local, regional, and state development will be more dependent on access to high-quality, multi-modal transportation services – for both passengers and freight.

2.4 The Role of Freight Mobility Enhancing Economic Competitiveness and New Opportunities

As shown in **Figure 2-15**, all industries depend on a multi-modal transportation system. The data, based on the Transportation Satellite Accounts (TSAs) developed by the Bureau of Economic Analysis in cooperation with the Bureau of Transportation Statistics, depicts the expenditure on transportation by mode to produce a dollars worth of output in a specific industry. The TSAs are useful in identifying freight intensive industries as well as mode captive industries.

As is illustrated, agriculture industries spend the most on transportation as a percentage of total output, followed by wholesale and retail trade, mining and manufacturing. Data at a more detailed level is available in TSA documentation. Also of note is the fact that trucking constitutes the most significant transportation expenditure for all industries, indicating that efficient highway linkages are essential for meeting freight needs of all industries.

Figure 2-15: Transportation Costs by Industry



Since the TSA information was published, intermodal transportation has taken on an increasingly important role in the movement of freight. As a consequence, rail linkages and connectivity to the highway network are becoming as important as highway linkages alone.

Freight transportation plays a vital role in the economic well-being of the Buffalo-Niagara region. The ability to support efficient multi-modal freight mobility is not only critical for maintaining and enhancing economic competitiveness but it could serve as the vehicle for future economic development strategies. The analysis presented above has identified trade related industries a catalyst for future growth. Taking advantage of the opportunities presented by increasing global trade and the region's geographic location and multi-modal assets will require an understanding of the regional freight system, markets and global trade lanes.