Hampton Roads Regional Competitiveness

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Hampton Roads
Regional Competitiveness

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ABSTRACT

The Hampton Roads Regional Competitiveness Report provides a comprehensive review on literature and data concerning regional competitiveness and mechanisms for achieving productivity growth. This report outlines three applications of the theoretical models that indicate the source of regional productivity growth. It also identifies a host of difficulties that arise when attempting to follow growth patterns from other successful regions. Evidence suggests that each region's path to sustained growth is unique, growing organically on regional strengths and economic clusters. In reviewing both the failures and successes of development efforts across the globe it is evident that the most important aspects in achieving sustainable growth are to focus on developing a culture and environment that is built upon regional strengths, invests in education, encourages entrepreneurship and business growth, and has an effective system of governance.

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1. Introduction

Regional Competitiveness = Regional Economic Growth. At its most basic level, competiveness compares the ability and performance of two or more entities in achieving a particular goal. At first glance, one might assume that regional competitiveness refers to the ability for one region to compete with another region for scarce resources. This is not the case. While there are times when one or more regions will be in direct competition with each other for a factory, a corporate headquarters, or a military installation, the degree of success in that singular endeavor would not define a region to be regionally competitive. Conversely, often the success of one region will contribute to growth in a neighboring region, as wealthier trading partners often can provide prosperity and stimulate growth in "competing" regions. The term "regional competitiveness" might thus be somewhat of a misnomer in that regions do not so much compete with one another, but instead strive to be vibrant and productive economic engines. For the purpose of this report, regional competitiveness simply refers to the ability of a region to improve its economic condition.

Throughout history, there have been countless attempts to bring prosperity to a clan, a colony, a kingdom, a country, and to a region. Most of these attempts have a common purpose, which is to improve and enhance the quality of life for the community's residents. Governments are increasingly recognizing the importance of quality education, public safety, access to healthcare, access to housing, healthy environments, and sound governance in achieving a high quality of life. A cornerstone in achieving high scores for these quality of life measures is ensuring that a community's residents have quality employment in highly productive occupations. The focus on attracting (and retaining) high quality employment has developed into the field of economic development. More recent economic development efforts have moved past business attraction to include the development of entrepreneurs and incubators that foster new business growth and development.

Throughout the country and throughout the world there are many examples of regions that have enacted economic development strategies that have delivered strong economic growth. These regions have prompted the HRPDC to evaluate growth strategies and the potential for success as it relates to Hampton Roads. The purpose of this study is twofold: 1) explore the factors and conditions that contribute to economic growth, and 2) determine which successful growth strategies might be applicable to the Hampton Roads region.

The theoretical and empirical literature reviews uncovered a great deal of information on what makes regions competitive, how regions "compete", and what factors contribute to regional success. The literature reviews also revealed the difficulties is developing targeted approaches towards regional competitiveness based on the successes achieved in other regions. Highlights of the literature reviews include:

- Regions differ from companies in that competition among firms often results in a zero-sum game, whereas competition among regions often creates success in "competitor" regions.
- Regional competitiveness is not about competing, but rather about increasing regional productivity.
- The 3 basic concepts of regional competitiveness are:
    - Regions as sites of export specialization
    - Regions as sources of increasing returns
    - Regions as hubs of knowledge
- Causal relationships between economic development efforts and successes in productivity have proved very difficult to prove.
- Each region is unique with respect to industrial specializations, competitive advantages, access to workforce, quality of workforce, and access to capital stock. Unique regions require unique growth strategies particularly tailored to the specific region.
- Education is tied to wage and productivity growth over and above the direct effect of those who have received/benefitted from their education.
- Business relocations account for only a very small fraction of employment growth, with the majority of growth coming from the establishment of new businesses and business expansion.
- Competition between metropolitan regions is more advantageous to regional growth than competition between the localities which comprise the metropolitan area.

This report identifies several action areas that would enable Hampton Roads to improve its regional competitiveness and increase its capacity for growth.

- A continued focus on education, recognizing that while there will be leakages of educated workers in the near term, an educated/motivated workforce has far greater potential to drive the regional economy. This includes efforts focusing on the improvement of secondary schools, improved results from technical

training/college graduates, and specialty instruction at all levels of education tied to the region's competitive advantages.

- A continued focus on quality of life, including the basic mandates of government, public safety, a healthy living environment, and comprehensive plans that provide growth management strategies. This also includes regional amenities, some of which are natural (temperate climate and water resources), and some which are created through private or governmental action (sports facilities, music venues, high quality schools). This encourages educated local population to stay in the region and makes it easier for local businesses to recruit outside talent.
- Work on building a greater framework for regional cooperation to capitalize on economies of agglomeration, with particular focus on uniform regulations regarding business formation, tax structure, and land use. Continued exploration for partnerships and MOUs on the provision of services across jurisdictions might provide a higher level of service with lower costs. An independent review on shared services may assist in further understanding the potential benefits among the region's localities.
- A continued focus on the use of clusters to promote regional economic development. A strong cluster strategy will follow rather than lead private sector investment, but will help provide support where there are large externalities or group effects (where no individual business could fund a training program for a labor shortage, but without additional labor economic growth could not occur in the industry) and allow full potential growth to be achieved. This will require analysis of each of the possible sectors identified in the region, as well as better understanding of the support that localities can provide in the short and medium term. One example of a highly successful effort is Virginia Beach's effort with the biotech community.
- Lastly, work to develop a regional incubator. The first efforts in this direction are being conducted by the Hampton Roads Partnership with Innovate! Hampton Roads. The primary question concerns whether this will merely coordinate existing incubators, which is a worthy goal in its own right, or begin to determine a regional policy for incubators. There are several agencies that support small businesses, and a regional incubator needs to focus on businesses that have the potential for fast growth and support their efforts with the best talent available.

This document suggests many indirect efforts for initial implementation rather than any specific direct action to encourage growth. Extensive economic development research reveals that the most successful approach to long-term sustained growth is achieved by creating and maintaining healthy economic and social environments, while capitalizing

on competitive/comparative advantages. Singular direct approaches that might appear to be the "silver bullet" tend to be flawed and ineffective, utilizing vast amounts of scarce resources. The focus on healthy governance, maintaining amenities, the expansion of regional cooperation, cluster analysis, and the review of existing incubator efforts lends focus to a sustained approach..

Hampton Roads has performed well over the past decade. This region does struggle with institutional issues resulting from the coordination of 16 localities with 16 different electorates, however significant progress in cooperation has been made over the years. This region experiences regional cooperation in a unique way because of the natural harbor that forms the center of Hampton Roads, differentiating this area from regions comprised of one county (San Diego) to those which integrate multiple counties across several states (New York and D.C.). This region has experienced income growth over the past decade that is one of the most impressive in the nation (largely due to the military). This region has the Chesapeake Bay and the Ocean, and while there are important challenges presented by each (both environmental and transportation issues), they are the envy of much of the country. One metric that the region has not excelled in is population growth, which threatens political power at the state and national level; however, economic development should not revolve around more jobs and more people, rather better jobs and a higher quality of life for those that choose to live in the region.

2 Theoretical Literature Review

2.1 Introducing Regional Economic Development and Competitiveness

The terms "competitiveness" and "economic development" are widely used, often with little agreement or understanding regarding their definitions. It is therefore imperative that this section begin by defining each concept in a clear and precise manner.

2.1.1 Regional Economic Development

Regional economic development often serves as a primary goal for both state and local government, as well as regional business groups; unfortunately, the term has rarely been given a precise definition. Confusion exists about whether economic development refers to a combination of processes, policies, and marketing, or if it refers to a goal to be obtained.

One aspect of economic development focuses on quantitative dimensions. These measures tend to be popular for publications and news sources as they seem straight forward. Typically these numbers measure dimensions such as growth in gross regional product, employment growth, or change in the unemployment rate. A better set of quantitative measures will examine per capita incomes and other quality of life measures to better indicate the changing experience of the average participant in the regional economy.

As more informative quantitative measures are examined (and better quantitative results are achieved), it also becomes clear that qualitative measures of economic development are also extremely important for analysis. Once basic levels of employment and income have been met, individuals begin to prioritize issues including equity, sustainability, and quality of life. These qualitative aspects complicate traditional measures of economic development as statistics on crime, school quality, and environmental health issues need to be assessed even though they fall outside the typical purview of economic development professionals. For the purpose of this report, this comprehensive perspective of economic development will be defined as:

> Regional economic development results when a region has stimulated employment opportunities that improve the community through enhancing an individual's economic conditions and the regional quality of life.

For the purpose of this document, regional competitiveness will be determined as the process through which the region improves the economic condition through achieving the goals of economic development.

2.1.2 Competitiveness

At an organization level, competitiveness is about understanding the tactics central to improving the well-being and individual wealth of an organization. While natural endowments and the current state of the capital and labor stock will determine productivity, private and public regional leaders, wishing to enhance economic development, will adopt policies that maximize a region's endowments while minimizing the impact of factors that are less beneficial to growth. Understanding the idea of competiveness, particularly as it applies to regional competitiveness, will enable a clearer understanding of the applicability of the concept to Hampton Roads.

Microeconomic Perspective of Competitiveness

Microeconomics studies the individual actor, or firm, and assessing the competitiveness of a firm is accomplished through examining the dynamics of its market share and profit margin. With properly incentivized managers, a firm works to enhance profitability on both the short and long term time horizon by managing and growing the company's capital, labor, and resource stocks; the focus will be maximizing the real (present value) return on investment. A company that effectively competes will produce goods and services that meet the quantity and quality requirements of the open markets, knowing that this will allow the firm to expand either its market share or profit margin.

Macroeconomic Perspective of Competitiveness

Because macroeconomics aggregates individual actors, defining competitiveness at this level introduces complexity and controversy, muddling the usage of competitiveness as a policy goal. Many economists question the applicability of the competiveness term at the regional or national level. Nobel Laureate Paul Krugman calls the application of competitiveness at the national level a "dangerous obsession" that is essentially "meaningless", and he raises several key concerns about the macroeconomic use of the term:

1. Nations and firms are not analogous, and while unsuccessful firms will ultimately go out of business, there is no equivalent end game for a region that fails to develop 'competitiveness'
2. Firms often compete in a zero-sum game where growth in the market share of one firm will come at the expense of another firm's share, while success of one country or region creates, rather than destroys, opportunities for others

3. Competitiveness has no greater meaning than productivity, and thus growth in the standard of living is strongly correlated with growth in productivity, and there is no need to complicate the idea with the addition of the term competitiveness

Another telling criticism of the term competitiveness results from defining the term by desired outcomes, rather than establishing the factors that determine long-run competitiveness. The focus of competitiveness should deal with identifying the best practices rather than chasing short-run measurables, because achieving growth at the consequence of developing long-term imbalances will result in national/regional recessions. While these criticisms are valid, reducing the analysis to merely productivity would leave significant gaps in the discussion, therefore this study will examine the factors that lead to competitiveness.

A region's ability to be competitive obviously relates to the productivity of its companies and citizens, but as well it requires high quality of life to keep the local workforce in place and to allow businesses to recruit new workers to the region.

2.1.3 Regional Competitiveness

> Regional competitiveness is defined as the ability of a region to produce goods and services that meet the test of the market while generating high incomes and employment levels despite being exposed to external competition; regional competitiveness is a long term goal that should be worked toward, while current qualitative and quantitative analysis will measure progress toward that goal.

This definition presupposes that a competitive region will be comprised of individual competitive firms who successfully compete in the market based on price or quality. A weakness of this definition results from the assumption that the interests of regional firms will coincide completely with that of the region, and the issues of agency (i.e. individuals acting in ways that both benefit them **and** hurt the region) will need to be touched upon. Also, a region will contain both competitive and uncompetitive firms, and regional conditions will affect those firms beyond their own individual competitiveness. This definition develops the key idea that the region should aid the productivity and competitiveness of its firms, and should encourage the translation of those productivity gains into higher regional incomes.

It remains important to note the differences between competitiveness at the national and regional level. Regions do not have access to all of the tools that allow a nation to adapt to changes in trade, especially the trade rate mechanisms that engender price-wage flexibility. Regions also do not possess national borders; this allows capital and labor to flow freely to and from a region, which can cause short-term frictional issues for the

economy. Some economists who specialize in regional competitiveness theorize that this distinction forces regions to attain not just comparative advantages, but also absolute advantages or risk losing the building blocks for economic growth.[1] Absolute advantage happens when an economy has a productivity advantage (encompassing all costs of production) as compared to any other producer; this is different from comparative advantage which relates to the benefits of specialization.

2.2 Applications of the Theoretical Models

There are several different schools of economic theory that have developed their own models for economic development and regional competitiveness, but in the final analysis, all models lead to three basic conceptions of regional competitiveness. These three models are 1) regions as sites of export specialization; 2) regions as sources of increasing returns; and 3) regions as hubs of knowledge.

2.2.1 Regions as Sites of Export Specialization

Early conceptions of regional economics focused on firm location decisions. The neo-classical focus on production functions led economists to review each region's provision of production "inputs", and because each region has its own unique and specific factor endowments (factor endowments are those resources that already exist in the region at the present time period), they either attracted developed industries suited to their region or developed businesses suited to their factor endowments. This theory leads regions to compete through advertising their unique factors, and some will go further to attempt to alter or grow their factor endowments. However, this basic neoclassical framework fails to identify how a region develops through trade.

Neo-Keynesian models seek to fill this void by developing the role of regional exports in economic growth. This focuses on a region's basic sector industries that bring outside money into the economy and have an expansionary effect through the region's money multiplier.

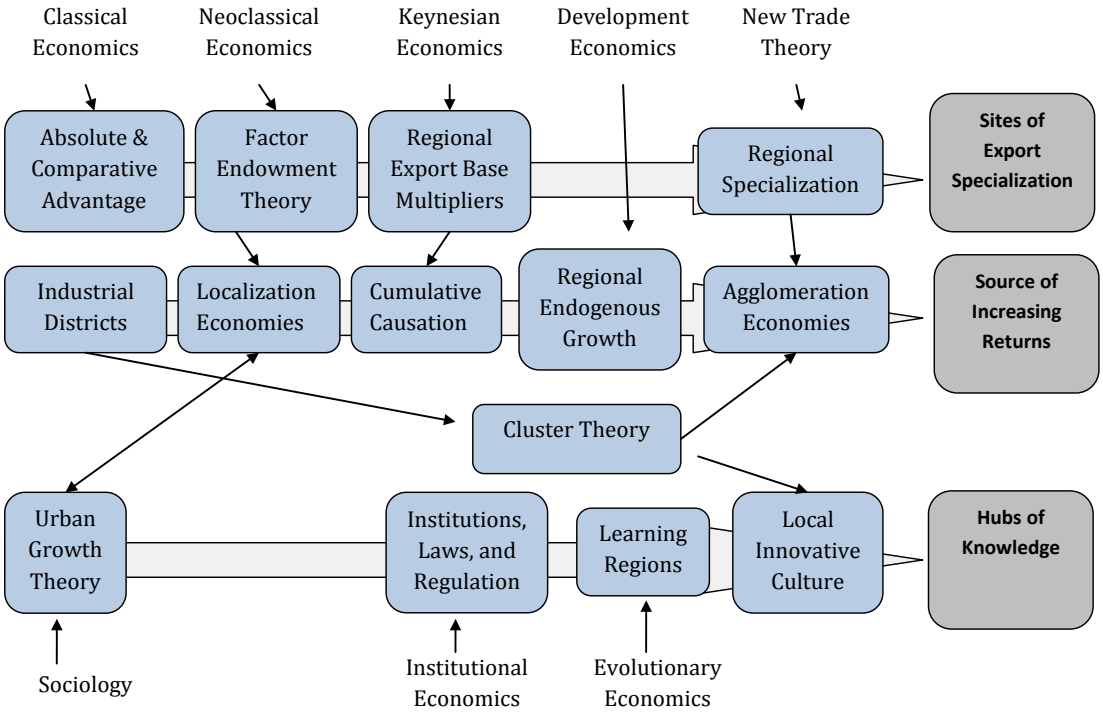
These export-oriented industries bring in dollars from outside the geography and cancel out the leakages that naturally occur in an open economy. The difficulty lies in the policy choices to be made from this analysis, as demand side factors outside of product/service quality are outside the control of regional actors. This leaves business leaders and policy analysts looking at supply side factors which affect production costs and the regional competitiveness including: wage costs, capital costs, raw materials, intermediate inputs, and the state of technology in the area.

[1] Campagini 2002

This end-state or basic model leads to the analysis that regions have a set amount they export, and except for stochastic shock changing the region's factor endowments (a stochastic shot is a random or outside action that would significantly change the region's factor endowments, i.e. gold is discovered or a wave of highly skilled immigrants enters the region), any distortion or change to trade patterns would be quickly equalized through both demand and supply functions.

The Interaction of Economic Frameworks and Theories

Figure 1: This shows how the several different economic frameworks develop into many different theories of economic growth. These theories lead to three possible end states or applications. This section focuses on these end-states rather than the framework or theories. This figure demonstrates how the complex interactions lead to three basic end-states.



2.2.2 Regions as Sites of Increasing Returns to Scale

Continuing with the Neo-Keynesian idea that regional exports are the key to economic growth, if there are returns to scale, then once a region begins a path of economic development it will continue indefinitely. There is a virtuous cycle (one where positive results in one economic sphere enable other benefits to accrue, which supports the initial growth) where growth allows investment in productivity, and productivity growth lowers

per unit wages in the region. Wages will increase, as will productivity, but on the whole, unit costs will be lowered increasing external quantity demanded which engenders additional growth. This cycle will continue as increases in the quantity demanded will cause the firms to invest that growth back into increased productivity under open market conditions. In this cycle, quality could substitute for quantity.

The key to this end state is the assumption that increasing returns to scale results in a large advantage for regions that first develop a cluster in an industry, whether development of that cluster was through initial asset allocation or through chance. The region starts with a competitive advantage in a particular industry cluster, and then high demand from either local sources, or driven by the region's competitiveness on the broader market encourages technical innovation as firms work to meet high demand efficiently. As the firms hire more workers to aid in meeting demand, it encourages individuals who are motivated or have job skills relating to the industry to migrate to the region. Also, technological spillovers are generally characterized as a geographically localized phenomena, so once that lead has been established, the region will continue to benefit from the increasing returns to scale and it will be difficult for other areas to meet the first mover advantage.

Turning to the sources of increasing returns to scale, there are four mechanisms that typically affect this process. One, as specialized production continues in the region, there is a cumulative build-up of a local pool of specialized labor with industry specific skills. Second, firms accumulate industry specific fixed capital that embodies the innovations and technical advances achieved in the region, and this specific capital increases worker productivity. The third mechanism is the growth of specialized support firms that act as suppliers of either services or inputs to the industry, and help lead to specialization of labor between firms (e.g., if the firm can obtain computer chips cheaply from a company such as Intel or AMD, then the firm can focus on computer assembly rather than investing in chip technology). Lastly, as firms grow, it increases the scope of job specialization within the firm, leading to greater returns to scale.

2.2.3 Regions as Hubs of Knowledge

This concept was first developed in 1890 by Alfred Marshall, the first neoclassical economist who developed economic analysis into a coherent system, and this concept has continued to play a role in regional economic development theory, eventually developing into the cluster theory, which currently dominates Economic Development. Regions function as 'Hubs of Knowledge' as the skills and know-how grow not only in the production process, but also in how suppliers and producers develop working relationships and become better equipped to serve one another's needs. Socialization

between several different producers and suppliers leads to a regional culture of innovation in that specialty. The regional learning process spurs external returns to scale, as being in the same market as other firms in an industry increases an individual firm's productivity (tying them to the market). These innovations and firm level benefits are driven by the range of interactions between contractors, suppliers, customers, competitors, and labor pools.

Another method that regions act as hubs of knowledge is through both the size/diversity of a region, as well as the culture and institutions that define the region. There has been extensive work on Urban Growth Theory positing that raw city size has an impact on the innovation and creativity of a region. While little empirical evidence supports this particular view, certain soft factors such as entrepreneurial energy, a shared vision of leadership, and a clearly understood regulatory environment can affect regional growth.

2.3 Geographic Clusters

The term geographic (or industrial cluster) was popularized by Harvard Professor Michael Porter 20 years ago, and has been one of the central ideas around regional economic development and competitiveness since that time. The industrial cluster theory suggests that the regional economy is comprised of a series of economic clusters, and that policy strategies should focus on working with the entire industry cluster rather than allowing individual firms to perform rent seeking[2] activities.

Cluster theory will be further developed in its own section as well as a review of the current state of identified clusters or potential clusters in Hampton Roads.

[2] Rent seeking activities are those where a company seeks benefits from the government not out of economic necessity, but rather because they are trying to increase their profit margin at the expense of the tax payers.

3. Empirical Literature Review of Economic Competitiveness

It bears repeating that while economists continue to develop empirical analysis of regional competitiveness, there remain a number of limitations and complicating factors that make definitive results difficult to produce.

One issue results from the level of complexity of a regional economic system preventing the establishment of clear causal relationships. A second problem relates to system complexity concerns and the issue of simultaneous causality. One example of this is greater research spending might result in GDP growth, but more GDP growth could also cause more research spending. Lastly, the data quality and quantity drops as researchers move from the national to the state and regional level, and this restricts the level of modeling that can be accomplished. Some of the data at the regional level comes from surveys and third party vendor sources, which reduces the credibility of the research and may produce inconsistent results. It is also difficult to combine data from multiple sources without creating bias or introducing errors.

The empirical research into regional competitiveness comprises two branches: studies that examine competitiveness as an aggregate effect of multiple actors, and those that try to assess a particular driver's role in competitiveness. Much of the recent effort has revolved around taking regions with similar factor endowments, (resources such as capital, labor, and land) and studying the different policies and growth rates between the regions.

One effort was the Second Report on Economic and Social Cohesion, which found that different regions are at different stages of development and require different socioeconomic structures. As a result it is difficult to weigh the importance of the various components of competitiveness because regions are at different levels of advancement; this further restricts the data and subject areas that can be examined when conducting analysis. Major results from this study found that competitiveness in general relied on a mix of these factors:

- Employment and productivity level of those employed.
- Employment concentration in sectors (highest productivity in business and financial activities)[1]
- Demographic trends including outward migration and aging populations (both of which reduce productivity)
- Investment in capital stock

[1] This remains true despite the decline in returns to financial activities as a result of the recession.

- Investment in knowledge assets
- Infrastructure endowments (they note that a minimum level of infrastructure is necessary for growth, but also note that this minimum appears specific for each region).
- Level and nature of education

Another significant effort came from Barclays Bank PLC which developed a report titled Competing in the World. This report compared fifteen competitive regions around the world and attempted to identify the factors that make these regions competitive. It is dangerous to generalize from the 15 most developed regions in the world to all other regions because most of those regions are at a significantly different level of development and thus will have different tactics for increasing their competitiveness and productivity. Only a small number of generic success factors were found to occur in all the regions studied. While several of the conclusions cited in the analysis were not applicable to regional development on the scale of Hampton Roads, the most salient conclusion identified success when continuous public and private investment focused on a small range of activities built upon preexisting strengths.

When the components of regional competitiveness are discussed in mainstream media and in public policy journals, the ideas of Richard Florida relating high quality amenities to economic growth are perhaps among the most widely cited. In his bestselling book The Rise of the Creative Class, Florida focused on the relationship between talent, diversity and growth, and posits that highly creative cities (that are full of individuals that either have high degrees of human capital or provide regional amenities, including artists and musicians) have seen higher levels of growth. He uses simple regression analysis to support his theory that talent is attracted to growth, but also to regional amenities and openness; businesses will follow talent to the regions after talented individuals have located in those places. Florida's analysis fails to deal with the issue of simultaneous causality, and he admits in his own work, that "future research is required to determine the precise nature of the relationships and direction of causality amongst these factors."[2]

Edward Glaeser, whose research focuses on the relative importance of cities in driving national economic development, and whose data Mr. Florida used to support his research, does a thorough job analyzing his work. Dr. Gleaser agreed with the thesis that cities need to think about providing lifestyle advantages to the residents as declining transportation costs mean that there are fewer places that have advantages in production. This builds on his early work on the death of distance, and how falling transportation

[2] Florida 2000

costs render factor endowments in terms of natural resources less important. He finds that many of the policy recommendations advocated by The Rise of the Creative Class are not supported by research, and rather that the level of human capital is the most important variable in the growth of cities.[3]

Gleaser's own work on the rise of the skilled city examines the population growth differences between cities with and without highly educated population, and attempts to answer questions about how the mechanism between education and growth interacts. Particularly he lists three possible explanations: the consumer city where well educated individuals group together for pleasure, the information city where those individuals group together because it improves the flow of ideas, and the reinventing city where cities only survive by adapting their economies to new technology. Employing a highly sophisticated empirical analysis which utilizes instrumental variables, Gleaser finds that the education level of the population is tied to wage growth and population growth for the population *independent* of private wage growth. Stated more simply, a 1% increase in the college educated population increases regional average wages by 0.6-1.2% **excluding** private wage gains (i.e. the increase in more educated individuals would be expected to earn higher wages, but even controlling for those new higher wages, the average wage level increases).[4] Furthermore, his research indicates that educating induces productivity growth leading to economic development, and that amenities (i.e. the consumer city or creative city) appear to be unrelated to economic development. This would argue against pursuing an economic development strategy that focuses on amenities development alone.

It is also valuable to look at efforts to measure the sources of regional job growth as it relates to firm dynamics and specific economic development efforts.

One analysis of state job dynamics found that on average only 1.9% of job gains and 2.0% of job losses in a year were attributable to business relocations; this contrasts with 41.8% of job gains being derived from expansion of existing businesses, and the final 56.3% from the development of new establishments.[5] This analysis was conducted by Jed Kolko, a researcher with the Public Policy Institute of California, a non-partisan think tank based in San Francisco. Another interesting result from this study is that high cost/high tax San Francisco lost the most net jobs to migration, but that these job flows were small relative to other employment dynamics. Furthermore, interregional and interstate firm relocations were small compared to births and deaths in each individual region in

[3] Glaeser 2004
[4] Glaeser and Saiz 2003
[5] Kolko 2010

California. The conclusion reached by this analysis argues against development policies that pursue new companies, as such policies result in a race to the bottom in terms of tax revenues and often provide little benefit in terms of growth. While there are specific instances of the windfall relocation, in aggregate this strategy produces limited results.

Economic researchers have also analyzed the use of targeting strategy to encourage economic development. Targeting strategy came into vogue in the 1970's during the economic downturn, when various cities and states tried to pick specific industries with which they wanted to become involved, and offered a series of incentives, subsidies, and other inducements to encourage the formation of a targeted industrial sector. This is very similar to efforts taken during the past decade and a half to target specific clusters for recruitment to a region (biotech, semiconductors, etc.), failing to let the marketplace lead by subsidizing artificial advantages. These efforts rarely produce the desired results as policy makers tend to chase the latest vogue idea, giving up on previous efforts as they fail to present any benefits. Terry Buss did a survey of efforts in Industry Targeting in 1999, and found that targeting reports gave contradictory results, and came to erroneous conclusion based on poor data sources. The example is given of Youngstown Ohio which had three different studies developing targeted industry strategies for the region which all produced very different (and faulty) results:

- One study suggested that Youngstown could not support High Tech businesses with a labor force composed of former steelworkers; several months later a high tech industry relocated to the region
- Another study identified a high growth sector, wooden toy manufacturing, for targeting; however, it failed to note that all of the growth (and sector employment) was concentrated in one firm. Furthermore, that the growth was a temporary increase in employment to fulfill a one year contract.
- A third study recommended heavy investment in basic and specialty steel, only to find that 15,000 jobs were lost within 6 years of the report.[6]

The lesson is that understanding which industries are poised to grow requires extensive analysis, and that attempts to anticipate the market often lead to the poor use of public dollars.

Lastly, there have been numerous studies that have examined the benefits of economic incentives for businesses to relocate to an area; these include tax credits, subsidies, and enterprise/empowerment zones. Largely, the ratio of benefits to costs of these types of

[6] Buss 1999

policies tends to vary significantly with specification used by the particular economist, often reflecting the economic framework in which he was trained. Many studies that examine the impacts of such work find no to negligible impact for these incentive programs, and that they do not pay for themselves at either the state or regional level.[7] While it is difficult to draw a firm conclusion based on the papers reviewed to this point, it appears quite clear that taxes are often a small factor in the location decisions of large investments[8], and that the majority of employment growth is a result of local growth and expansion.[9]

What type of location decision a firm makes forms the key question with regard to how tax policies impact that decision. There are two types of decisions; deciding between several regions (intermetropolitan) and deciding amongst sites within a metropolitan area (intrametropolitan). This quote summarizes the research on this topic,

> One way to summarize the effects of taxes on location decisions is to compute the elasticity of business activity with respect to tax liabilities, defined as the percentage change (or percentage difference) in business activity divided by the percentage change (or percentage difference) in tax liabilities. For intermetropolitan location decisions, the elasticity is between -0.10 and -0.60: a 10 percent increase in taxes in a particular metropolitan area decreases business activity in the metropolitan are between 1 percent and 6 percent. For intrametropolitan location decisions, the elasticity is between -1.0 and -3.0. If an individual municipality increases its taxes by 10 percent, business activity in the municipality decreases between 10 percent and 30 percent. The elasticity for the intrametropolitan decision is larger because different locations within a metropolitan area are better substitutes than location in different metropolitan areas.[10]

This indicates that there are greater risks and fewer rewards in trying to game the tax rates between localities in Hampton Roads, leading to a decrease in regional tax levels and a sub-optimal tax policy without significantly improving regional economic activity. The coordination of tax policy would enable the region to strategically formulate an optimal tax structure that competes with other regions, while serving the revenue needs of the member localities.

[7] Thompson 2010
[8] Carlton 1979, Bartik 1991
[9] Koko 2010
[10] O'Sullivan 2000, P75

4 Cluster Analysis

4.1 The Waves of Economic Development Theory

Cluster analysis increasingly dominates the attention of regional economists and economic development professionals. Cluster analysis can be thought of as the third wave of economic development techniques, following the first wave of business attraction and the second wave of industrial retention and expansion strategies that developed in the 1980's.[1]

The first wave of economic development strategies used elements including subsidized loans and direct payments to firms for relocation expenses, as well as a mix of tax breaks to bring new businesses to the area. This first wave often is referred to as smokestack chasing, and though it may be a highly visible economic development option, there are limitations to using this as an economic development strategy. One limitation derives from the competition between regions and localities for businesses, and rather than trying to attract businesses based on resources and labor force capability, it often becomes a race to the bottom by offering tax breaks and subsidies that are equal to the benefit of having that business in the region; this creates no additional value to the region. A second limitation derives from the level of business attraction that needs to occur in order to have a significant impact on a well-developed regional economy.

Second wave strategies focused on indirect attempts to create or expand existing business, including developing business incubators and providing technical assistance to help local business grow or expand. One of the most common ways that second wave economic development policies manifested themselves is through enterprise zones and tax increment financing districts.

While the first two waves focus on individual firms, cluster strategies focus on developing industry wide policies that support the development of networks and clusters comprised of firms, workers, and social connections. While third wave economic development strategies do not eliminate the first two techniques, they give a specific purpose and focus to the use of these techniques. The key to third wave programs is a supportive economic development marketplace rather than direct payments to specific firms, focusing government efforts on the development/enrichment of soft infrastructure.[2] Examples of soft infrastructure include a developed financing system for entrepreneurs, a labor force that is well adapted to industry needs, and social networks that further both industry clusters and the economy as a whole. Furthermore, Bradshaw (1993) argued that both

[1] Herbers 1990
[2] Bradshaw and Blakely 1999

multifunctional and multijurisdictional networks were the key to economic development. The focus on creating supportive opportunities locally for the growth and birth of businesses also fits empirical evidence that 95% of job gains come from the expansion of existing businesses and the birth of new establishments, rather than relocation by other companies.[3]

4.2 History of Cluster Based Analysis

Alfred Marshall first developed the ideas of agglomeration economies in 1920 with his seminal work, Principles of Economics. Marshall outlined the forces that create geographic economies, identifying a trio of externalities that would drive the development of industrial districts (his term for what we now call Clusters): Labor Market Pooling, Supplier Specialization, and Knowledge Spillovers. These forces drive external returns to scale, and have been explored in the literature review. Cluster analysis allows the economist to determine if external returns to scale exist in an industry as it pertains to a particular geography (typically a region). This allows the correct policy tools to be developed to support/encourage the cluster.

While Marshall was one of the first to develop these ideas (Adam Smith discussed them as well in the Wealth of Nations in 1776), the popularity of cluster theory in economic development is directly attributed to Michael Porter's The Competitive Advantage of Nations (1990). Not only did he explain the determinants of cluster development, but he also developed strategies for governments to positively and actively influence the development of clusters.

In 2004, the Hampton Roads Planning District Commission developed and released a regional cluster study. In that study, HRPDC defined a cluster as:

> "A cluster is a geographical concentration of industries that have co-located in order to gain performance advantages or efficiencies."

This definition of industrial clusters (also called innovation clusters) does not limit its application significantly; this is typical of most definitions of industrial clusters, and this trait has been one of the attractions of using it as an economic development tool because it has allowed agencies to adapt it to their own purposes. Individuals and firms have tried to use cluster development theory to gain benefits from states and localities as they work to become a targeted industry. This can be seen in continued efforts of particular sectors to capture tax benefits and subsidies through lobbying, and through development efforts in some regions to develop a cluster in a favored industry. These efforts almost always

[3] Muro and Firk 2011

lead to short and long-term imbalances that leave little benefit to the citizens in return for the money spent. These methods typically focus on the development of capacity in terms of industrial parks or actual factory production without developing a sustainable market presence for the industry.

Even when targeted industry strategies have been applied at a national scale, as has been done in Taiwan and Japan, they have eventually led to long term imbalances. These ideas really began to capture worldwide attention with the Japanese growth miracle and the later development of the "Asian Tigers" (rapidly growing South-East Asian Economies). Japan has still not recovered from the bank and fiscal issues created as it developed its major export sectors of electronics and automobiles, and the Asian financial crisis of 1997 and subsequent accumulation of foreign capital demonstrate other consequences of those policies. An example particular to Taiwan relates to efforts to jumpstart a biotechnology industry for the last 28 years, but while it lags many of its neighbors in biotechnology, it leads the world in concentration of biotech parks (their occupancy rate is less than 20%).[4]

4.3 The Purpose of Cluster Analysis

A cluster-based approach holds many attractions as Hampton Roads works to recover from the great recession. Both economic theory and empirical analysis support cluster analysis in that highly educated workforces foster innovation, and when that innovation focuses on particular industries, there exists far more opportunity for adoption. Strong employment in an industry (with multiple firms) also enhances entrepreneurship in that industry, as there are several opportunities for re-employment if a new venture does not succeed. Also, as a cluster develops, its growth snowballs until the industry saturates the region, as suppliers and servicers for those industries co-locate to improve communication and distribution.

Another appeal of industry clusters revolves around their support of the three end states of economic development identified in the literature review. The stronger an industry develops in a region compared to national levels, the far greater its ability to be a region of export specialization. As the industry develops, and suppliers and the labor force co-locate, there are external returns to scale for the industry. Lastly, there are agglomeration effects and knowledge spillovers that develop the region into a hub of knowledge for that industry.

One consequence of understanding development through a process of cluster development is that it discourages the quest for a diverse economy. This policy goal stems

[4] Chaiang Hoang-yung. May 22, 2010. "Why another empty biotech park?" Taipei Times. Accessed June 24th 2011 <http://www.taipeitimes.com/News/editorials/archives/2010/05/22/2003473566>

from the desire to develop a resilient economy that can withstand shocks to the economic system. Unfortunately, there are no real diverse economies. Strong clusters create a backfill of services that create the appearance of a diverse economy, but reality confirms theory in that regions specialize in providing specific services. New York is the most economically powerful city in the world, and has a strong tourism industry because of the amenities that grew to support its large clusters, but it is a financial and trade capital and when those industries suffer, the entire New York MSA suffers.

4.4 Identifying Clusters

Clusters are unique to each region, and to the attributes upon which regional economies base themselves. Efforts to identify clusters (both existing and emerging) should focus on the region's strengths to the extent possible.

Identifying clusters requires a technical analysis that evaluates existing and growing industry collections, as opposed to the creation of a favored industry. Thus identification efforts should focus on data to the extent it is available and empirical analysis of the data (including looking at input-output tables, regional productivity in industry areas, inter industry linkages, regional supply quotients, and regional factor costs).

The simplest methods to evaluate clusters relates to analysis of location quotients for a region. Location quotients measure a region's labor force concentration in a particular industry or cluster relative to that of the nation, and changes in that location quotient indicate growing clusters (either because of local or national forces). Optimally, a region will have a growing cluster in an area where employment benefits from strong growth nationwide; the best example of this would be Silicon Valley, which was an overnight success story that had been developing for forty years. When computing experienced a boom it led to huge growth in the Silicon Valley IT firms, which then led to growth for the entire economy.

There are two significant problems with these techniques. The first is that they rely on North American Industry Classification System codes (NAICS codes- an industrial classification system) to identify industry employment, and assume that industry employment defines the cluster. Unfortunately, some firms will serve roles that could be classified as several different industries at a single site, but only report one code for that employment. This also leads to questions about services that are provided internally to a firm or are outsourced to another company. A manufacturing company that lays off its 25 person security force and hires an outside firm that employed 25 people to provide that service would indicate a 25 person decline in manufacturing employment, while the underlying economics of the cluster would not have changed at all.

The other, more significant problem is identifying which NAICS codes belong in a cluster. In the appendix there is a list of NAICS codes for each of the clusters considered for analysis. Unfortunately, there are both suppliers and customers in the region that do not fit under those NAICS codes, which leaves out a significant portion of industry activity. This means that a materials supplier for a sensor company, or the healthcare equipment manufacture that purchases a sensor would not be included in the cluster analysis. Furthermore, there are clusters that do not fit within the extensive NAICS classification system and therefore are almost impossible to measure when using available data; this is particularly true for the modeling and simulation industry.

A soft analysis of clusters would bypass the aforementioned data issues in that it would require direct contact with each of the businesses in a cluster and survey them about their supply and distribution chains. It would also require information about their competitors, labor supply issues, and other governmental issues that might be challenging the firms in the cluster at this time. This effort would be very time intensive, but clusters (especially new clusters) develop over generations. A simple, or even extensive data analysis cannot always capture the relevant information regarding an industry's structure; a lesson learned in Youngstown as identified in the empirical literature review of this report.

4.5 Clusters in Hampton Roads

This section examines clusters that have been identified by other regional documents or sources as potential clusters in Hampton Roads. These come from the Hampton Roads Cluster Study by the HRPDC, the Vision Hampton Roads CEDS (Comprehensive Economic Development Strategy) plan for the region\, and discussion with regional economic development analysts. Location quotients and projected national growth in employment are used where applicable, but as noted in the previous subsection, this data is not always accurate or available.

4.5.1 Growing Cluster Opportunities

Coastal Energy: This cluster has not yet developed, but unlike some of the other undeveloped clusters in the region, there are strong development possibilities over the medium-term. Hampton Roads with its harbor, central position in the mid-Atlantic, and heavy naval construction experience, presents a strong opportunity to develop the infrastructure for offshore energy. There are also possible opportunities for the development of energy off the coast of Virginia specifically. This industry is probably in the greatest need for immediate analysis. Some of this will occur with the Hampton Roads Energy Alternatives Report currently being developed by the HRPDC.

Modeling and Simulation (M&S): The importance of this industry and its potential for growth within the region and the state has been recognized since it was established. Unfortunately, little objective data is available because modeling and simulation efforts are spread across multiple industry sectors. The industry in Hampton Roads has experienced a set back with the uncertainty related to the closure of Joint Forces Command (JFCOM), however, there remains opportunity for diversification of the client base

Sensors: Sensor clusters are similar to M&S in that it is a difficult industry to measure because they are often an intermediary product for many other highly technical products (healthcare sensors, security devices, and defense application to name a few). There are significant opportunities for growth as the robotics and healthcare industries are poised for future growth nationally.

Tourism: Tourism has long been one of the basic sector industries in the Hampton Roads economy, and has experienced growth both in terms of employment and share of national employment over the past decade. Tourism will continue to grow in the region and nationally, but unfortunately few tourism occupations provide high wages, resulting in less regional growth then other clusters might provide. Another issue with relying on this cluster for long term growth results from the seasonal nature of tourism in Hampton Roads, preventing it from being a large source of stable employment. This is an important industry regionally, and can be considered one the region's primary "exports".

Technical Services: The technical services cluster includes firms that do engineering and design work, as well as scientific and research testing. Hampton Roads has seen significant growth in employment, increasing from 27,428 in 1990 and 39,741 in 2000 to 51,883 technical services industry jobs in 2010. This industrial cluster is expected to see significant growth nationally, increasing by 93% over the next 30 years according to REMI employment projections. Hampton Roads has significant concentrations in both the engineering services and the computer system design services components of this cluster.

Transportation & Warehousing: Water transportation employment has seen a significant increase compared to the nation over the past twenty years, and while that employment growth has slowed over the past decade, the region still had 4.73 times the national average in water transportation employment. Hampton Roads has also experienced growth in the warehousing and storage industry over that time period. Hampton Roads strength in transportation stems from one of the largest natural harbors in the world and is supported by U.S. Army Corps of Engineers' maintenance of those channels. Overall private employment in transportation and warehousing reached 12,649 in 2010. This is an

especially valuable industry in that it employs workers with a diverse level of educational attainment, and provides a relatively high income.

4.5.2 Other Identified Clusters

Aerospace Manufacturing: The aerospace manufacturing industry was identified in the Vision Hampton Roads plan as a possible area of growth, and this was a largely a result of the regional assets related to this industry in the NASA Langley Research Center and the National Institute of Aerospace. Most of the industry assets are tied to the defense presence in the region, but the development of a new cluster is a long term process.

Biotech/Bioscience: Identified in Vision Hampton Roads, this industry has several resources in place with Eastern Virginia Medical School providing healthcare research, and regional universities researching a variety of topics in the bioscience arena.

Electrical Equipment Manufacturing: Electrical equipment manufacture grew in Hampton Roads over the past decade, increasing employment 2,349 and increasing the regional share of national employment throughout the decade. While electrical component manufacturing continues to shift throughout the country, long term employment in the industry is expected to decline nationally because of productivity gains in manufacturing and off-shoring by large companies. It is not unreasonable based on the evidence to suspect that Hampton Roads will maintain or grow its share of the industry; it is unlikely to prove a major source of growth.

Information Technology: Hampton Roads does not have a large IT manufacturing base, and has only 12% of the national average concentration in semiconductor manufacturing, and 8% of the national average concentration of computer manufacturing (the region also has below average employment in software publishing). Hampton Roads employs a significant number of IT personnel that provide services to other industries, however, it is difficult to track the true extent of IT employment as many IT positions are reported as industrial employment in the industry which they serve. The region has higher than national concentrations in all computer and mathematical science operations, and 19,820 workers in Hampton Roads conformed to those classifications in 2009 (2.7% of employed persons); nationally 2.5% of the population are employed in these occupations.

Motor Vehicles and Parts: This was identified in the Hampton Roads Cluster Study as a potential growth area, due both to the large national employment in the automobile and parts manufacture industry, the high wages that accrue to the workers in the industry, and presence of the Ford Plant in Hampton Roads. Since 2004 the Ford Plant has closed. The region has experienced growth relative to the nation in Motor Vehicle Parts Manufacturing (Location Quotient increased from 1.11 in 2000 to 1.41 in 2010), but this is

coupled with a decrease in employment regionally and nationally. This cluster has lost 40% of its employment between 2000 and 2010.

Robotics: This is another industry identified by Vision Hampton Roads as one that could experience future growth in the region, based on the presence of several manufacturing companies in the region, as well as the modeling and simulation presence which is able to provide some of the software development components of this cluster. This is a cluster that is difficult to measure with NAICS codes, but could develop over time in the region.

Senior Industries: This was identified as a growing industry in the Hampton Roads Cluster Study because of the aging of the baby boomers and Hampton Roads natural amenities. Data on the benefits of focusing on this cluster were difficult to establish in 2004, but increasing the number of seniors relative to the baseline actually decreased regional average salaries against the baseline according to the Cluster Study. Hampton Roads has actually experienced less growth in its 65+ population than either the state or the nation have experienced, which indicates that this might not be a particular area of strength for the region. Hampton Roads is approaching the national employment concentration levels in nursing and residential care facilities.

Ship and Boat Building/Repair: Ship and boat building/repair in Hampton Roads focuses mainly on Department of Defense projects in the region. This is an important cluster, employing both highly skilled engineers and technical workers with vocational training. Unfortunately, because of the anticipated path of defense spending, it is difficult to see this cluster being a source of long term growth for the region. Private sector ship building has long been in decline nationwide because of low cost competition from other countries for private manufacture, but Hampton Roads will continue its role as a supplier of the Navy's most important vessels, including aircraft carriers and submarines. The region's location quotient for ship building and repair was 14.41 in 2010, signifying that the concentration of employment for this industry is 14 times higher than the national average.

4.6 Policy Efforts with Clusters

Key policy ideas surrounding clusters reflect more advice on what not to do than practical advice on growing clusters.

One issue is avoiding targeted industry or targeted cluster strategies where attempts are made at great expense to *quickly* grow a cluster that does not exist. While there are a limited number of examples of new plants moving and creating a totally new industry in a region (the automobile industry in various southern towns, or Boeing in North Charleston, but even here there was existing industry upon which to build).

A second pitfall results from giving benefits to specific firms to aid the cluster. Any efforts to support a cluster should be industry wide, in terms of helping to provide training or helping to attract a key supplier to the region. The key element that government can provide a cluster is access and mediation; that is access to officials to hear what issues are preventing or growing the cluster, and mediation and coordination across the several government departments (and across the local governments).

An example of a positive cluster effort currently taking place within the region is "Biotech at the Beach", which has provided a forum for regional biotech companies to gather together, cross-pollinate new ideas, and network. Many of the people who attend these meetings are not part of the biotech industry, and some are not part of the region, but this increases the visibility and growth opportunities to the entire cluster.

5. Regionalism, Governance, and Economic Competitiveness

Any complete discussion of regional competitiveness must address the issue of governmental structure. The structural aspects of governance within a region will affect the ability of a region to plan, compete, and respond to economic threats and opportunities. While it is not the purview of this document to address issues with respect to the structure of government within the region, it is important to understand how the region's structure might impact regional competitiveness.

Regions have been the focus of economic development in both Europe and the United States for the past twenty years. Regions, often known by a Metropolitan Statistical Area (MSA) but other times having other designations (such as Hampton Roads), share labor markets, natural resources and a significant extent of their infrastructure. Regions often cross local and state political boundaries, providing incentive for localities to work toward a higher level of collaboration and capitalize on the synergies and efficiencies that result in shared efforts. Researchers and analysts have now come to recognize regions as the level at which the majority of economic integration takes place.[1]

The Hampton Roads region has several unique structural features that set this region apart from other metro areas across the country. There are two statewide policies in Virginia that lend complexity to regional planning and collaboration. First, Virginia is the only state in the union in which cities and counties form exclusive units of government. Comparatively, throughout the U.S. metro areas have other political arrangements that enable towns/cities/boroughs to exist under one municipal government, where in Virginia such an arrangement would require a change in state code. Second, Virginia is a Dillon Rule state. The Dillon Rule can be expressed as:

> "Municipal corporations owe their origin to, and derive their powers and rights wholly from, the legislature. It breathes into them the breath of life, without which they cannot exist. As it creates, so may it destroy. If it may destroy, it may abridge and control."[2]

There are aspects of the Dillon Rule that can be considered beneficial, such as ensuring a level of uniformity which prevents local governments from acting in an arbitrary and capricious manner. As this system relates to regional competitiveness, however, state control prevents localities from expressing self-determination on a variety of issues, which can limit the scope of regional cooperation. Virginia's rather unique governmental structure has resulted in a diffusion of political power at the regional level. In comparing

[1] Muro and Fikiri 2011
[2] Clinton v Cedar Rapids and the Missouri River Railroad, (24 Iowa 455; 1868).

the top 100 most populous metro areas, Hampton Roads ranked 97th in terms of diffused political concentrations (based on population); the Richmond area ranked 95th and Northern Virginia -Washington D.C. ranked 98th.[3]

In addition to policy issues, there are also geographic and settlement aspects unique to Hampton Roads that impact the region's ability to compete. Hampton Roads is not centered around one central city, but has developed along employment and housing opportunities in multiple jurisdictions. The region has one of the world's finest natural harbors, a host of maritime resources, large defense installations, research centers, and tourism draws that have resulted in a multi-nucleic region with employment opportunities widely dispersed throughout the region. Hampton Roads differs from other regions that are focused on a central city, whether it is a case of a central political institution surrounded by smaller counties and towns (like Indianapolis), or a central city (or two-tier system of local government) that serves as the focus of several surrounding but still economically significant regions (such as New York or Washington D.C.). The unique geographic and settlement pattern in Hampton Roads has resulted in a region with multiple forms of government, but remains highly integrated, and very inter-dependent. As an example, in evaluating the percentage of workers who work outside their jurisdiction of residence, Hampton Roads ranked 13th highest of 393 metro and micropolitan areas.[4]

There are clear benefits of increased regional cooperation, but these will have to be balanced on the whole with the traditions and value sets represented by each locality. There are several areas for potential gains with respect to increased regional cooperation. Such areas include:

1. The regional provision of services can sometimes lead to a more efficient provision of resources. There are duplicated services administratively for a host of publically provided goods, including schools, public safety, libraries, and other administrative functions. This does not indicate that all of these should be integrated regionally, as different cities and counties will need to maintain a level of service consistent with the desires of their citizens. There are still areas for cost savings in nonproprietary functions, and greater coordination has already been

[3] Diffusion index calculated through summation of the squared term for the distribution of population for each component county in the metropolitan statistical area using 2008 and 2010 data from the U.S. Census Bureau.

[4] Percentage of workers who worked outside their county/jurisdiction of residence calculated for regions with available data using U.S. Census American Community Survey data from 2005-2009.

demonstrated across all of these services, including the wastewater treatment, solid waste, regional jails, and regional schools cooperating on WHRO.

2. Pooled resources would allow for unified efforts that have the opportunity to be both independently successful as well as transformative for the region. This holds particularly true with the development of incubators and the encouragement of clusters. This already takes place at regional workforce development centers, but further effort to encourage stage two businesses would likely require more funds then any one locality has the ability to provide. Further, combined efforts would allow for full support of growth companies and entrepreneurs, while a decentralized system would diffuse the managerial talent that counseling these companies requires.

3. Coordinated planning of shared infrastructure would allow for more efficient use of infrastructure dollars. This already takes place with the HRTPO and its work in planning transportation infrastructure, as well as cooperative efforts on regional airport authorities, the Virginia Port Authority, and with wastewater treatment. There exists a role for cooperation on region wide land use and settlement patterns, as both sprawl and increased density have consequences for infrastructure development. Furthermore, because of national environmental regulations and increasing oil prices there will be advantages in encouraging density. While density planning now could ease the infrastructure burden, the impact of concentrated economic development may require a discussion on revenue sharing.

4. Economies of scale can be developed through cooperation between localities on issues of a regional scope in areas such as the environment, emergency planning, and water provision. There are also regional efforts on education that support the development of clusters as part of workforce development, and these programs require further attention to develop a regional plan of action.

5. Uniform and consistent standards across the region can simplify planning efforts, increase interoperability, and increase efficiencies in business. There are many examples where Hampton Roads has already succeeded in this arena, such as with regional construction standards and emergency management.

When reflecting on the unique governmental systems developed by each state, economists often look to the states as experiments in democracy. In a similar fashion, one could evaluate each locality as an experiment in the planning and provision of

services as it relates to a region. There is a role for competition between the localities that encourages an efficient provision of services; there is also a role for cooperation as localities attempt to capitalize on regional synergies and economies of scale. In studying the reasons how and why mobile individuals and firms choose to locate within a city (referred to as agglomeration economics), David Schleicher of George Mason University noted two competing paradigms. The first paradigm is based on the famed "Tiebout model" that rose to prominence when Charles Tiebout published an article titled *A Pure Theory of Local Expenditures* in 1956. In essence, the Tiebout model suggests that people will locate in areas that best reflect their preference for public services and public policies, encouraging competition among local governments. While there are efficiencies encouraged through competition, problems can also arise. For example, competition for tax revenues among localities can result in a "race to the bottom" where localities are forced to lower or eliminate tax rates, thus reducing limited options for raising revenues. The second paradigm references "the New Economic Geography", which asserts that businesses and individuals base their location decisions on where other businesses and individuals decide to locate. Even if all governments offer identical policies, businesses or individuals will base their location decisions on efficiencies, access to information, and proximity to larger and more specialized consumer and labor markets.[5] Schleicher posits that there is an inverse relationship between the agglomeration efficiencies of the new economic geography and the gains achieved through sorting as in the Tiebout paradigm. If Schleicher's assumption is correct, increased competition among localities will reduce the efficiencies brought about by the co-location of individuals and businesses.

Many businesses, organizations, and politicians have recognized the benefits of increased collaboration and the sometimes destructive aspects of competition. Over the years there have been several attempts to increase regional cooperation among localities throughout the Commonwealth. The Hahn Commission on regionalism in 1968 resulted in the creation of planning district commissions to address issues of regional significance, while the Regional Competitiveness Act passed by the General Assembly in 1996 provided funding to the Hampton Roads Partnership to bring public and private leaders together to improve regional economic competitiveness. Localities in Hampton Roads are continuously exploring ways to increase efficiencies through shared services, working through regional organizations such as the Hampton Roads Planning District Commission, the Hampton Roads Transportation Planning Organization, the Hampton Roads Economic Development Alliance, and the Hampton Roads Military and Federal Facilities Alliance. Localities also rely on Memoranda of Understanding (MOU) to collaborate on areas where specific cooperative action is called for. Further discussion on

[5] Glaeser 1998, Schleicher 2010

common goals, centralized planning, shared agendas, and revenue sharing should be balanced on the cultural, political, and economic aspirations of the citizens and governments that comprise Hampton Roads.

6 Comparing Regions that are Competitive

In analyzing regional competitiveness, one often looks to successful regions as role models for development. Silicon Valley features highly on the list of areas that regions often wish to emulate. Further discussion will demonstrate that these techniques have several flaws, as development is often complicated and idiosyncratic. Furthermore many of the decisions that led to a highly productive region were made more than a generation ago and thus looking at the current culture for a development roadmap presents several issues.

Another method for helping to identify successful regions involves a survey of competitive regions across the nation and the globe for shared features, in the belief that these shared features drive the success of these areas. This method has complications driven by selective bias, by only examining successful areas, researchers often overlook that the very features demonstrated by competitive regions are hosted by a myriad of unsuccessful regions as well. There are also difficulties determining which aspects are products of a successful region, and which aspects enable regional competitiveness.

This section will also examine how Hampton Roads compares to several elements that are commonly described as signifiers of a competitive region, as well as directly comparing Hampton Roads maturity in those areas to regions that have experienced strong growth within the United States.

6.1 Silicon Valley

How can a region become a high tech powerhouse? This is the question that business leaders and politicians have asked themselves for over half a century. Unfortunately many areas have had difficulties replicating the experience, as there are several unique conditions that lead to the rise and continued success of that area. The shining examples of success typically result from a confluence of people and events, those that are planned and those that are unplanned. These people and these events, coupled with the correct timing can result in an economic boom, becoming the envy, the study, and the example for many competitor regions. The reality is that such success is virtually impossible to replicate. The following example of Silicon Valley offers some insight as to how the region came to achieve success.

Many times knowledge is thought to be centered in a firm, but Silicon Valley was one of the clearest examples of knowledge that appeared and developed in a certain region, and this occurred despite the fact that knowledge wants to be free and moves quickly throughout the world (this means that it is increasingly difficult to create a region based

on a specific technology, though it may be created through the agglomeration of a specific workforce). A considerable portion of this knowledge in Silicon Valley was embodied with individuals with specific skills and capabilities that moved throughout the region pollinating several different firms with that information. In 1971 Dan Hoefler coined the term Silicon Valley with regards to the variety of electronics firms (particularly those involved in semiconductor manufacturing) located in the Santa Clara Valley, though it has broadened to include all the high tech enterprises in that region.

The story of Silicon Valley started in a quiet agricultural community known for its fruit orchards that was called the Valley of Heart's Delight. In 1891, a railroad tycoon named Leland Stanford founded a west coast university designed to match the elite universities on the East Coast, but also to have a practical focus. Stanford University had an early focus on science and Engineering, with the first president and various faculty members investing in Technology Transfer as early as 1909 (turning university research into marketable products).

A graduate named Cyril Elwell launched a radio company in 1909 using $500 from University president David Jordan to found Federal Telegraph Company, which would both influence research at the university as well as the first technology company in the area.

Another important figure at the University, Frederick Terman, joined the faculty in 1927. While he started as an electrical engineering professor focused on radio research, he went on to become the chairman of the electrical engineering department, dean of the engineering school, and provost of Stanford. One of his primary goals was to create business around Stanford to keep graduates from having to move back east for jobs (the region lost Federal Telegraph in 1931, when it moved to New Jersey to be closer to its labor force and customers). While he went back to the Boston Area during World War II to help with military research, Terman returned to Stanford after the war, and helped to found the Stanford Research Institute that focused on applied research, and Stanford Industrial Park to support new technology firms. He also encouraged graduate programs to accept local engineers to strengthen the ties between the University and businesses.

An impressive list of companies was created through Stanford's efforts, including Varian Associates, Hewlett Packard, and CISCO. Further, many other companies opened research parks in that area because of the technology available in the region, including IBM and Xerox as well as Fairchild Semiconductor.

Another development that aided the region was the location of Moffett Airfield in Sunnyvale, which was obtained through a visionary process where local citizens

purchased 1000 acres and gifted it to the Navy in 1931 to out-compete other regions. The Moffett Airfield led to significant aeronautical research in the region, especially as it related to communication and technology. This allowed federal dollars to flow to Stanford, and encouraged defense research in the region, including Lockheed Lab, the Air Force Satellite Test Center, and eventually ARPAnet in 1969 (the precursor of the internet).

It is necessary to note that much like American manufacturing, Silicon Valley has begun moving more and more production offshore, and this includes software development.[1] This has allowed the companies in that region to thrive as they gain more technological growth with a lower level of investment.

This history lesson illustrates that many of the decisions that lead the rise of Silicon Valley were made over 50 years ago, and even as the region had minor success leading up to being a successful region, the success that was noted in the 1970's, 80's, and 90's was less a function of current policies than a cultural and knowledge legacy stretching back to 1890 and Leland Stanford's wish for a practical university. This also makes attempts to quickly replicate the success of Silicon Valley problematic, as that region benefited from visionary policies by academics and industrialists that were years ahead of their time, and even then the results only manifested themselves after the course of decades (recall that as late as 1931 you had major companies leaving Silicon Valley because of a lack of a competent workforce).

6.2 Studies

The literature review identified the host of difficulties inherent with observing what makes a competitive country, state, or regional economy. Clearly the complexity of the system makes determining cause and results of economic development difficult at best. One example of this would be an area with low taxes that is growing rapidly, and this could indicate that low taxes lead to rapid growth, or that an area that is experiencing rapid growth can collect sufficient revenue with a lower tax rate. This example does not include several complicating issues such as education, amenities, and industrial clustering.

Another problem with these studies results from the selection of which examples to observe (though notably this is less an issue with state level studies, as they tend to include all fifty states). Often, researchers will select either a region or several regions that have experienced rapid growth, and will use them as an example of how a region should structure itself. This would ignore unsuccessful regions that pursue a similar set of

[1] Norr 1999

policies, and that complicates high quality analysis. Using the Silicon Valley example above, China has set up science parks in each of its provinces in the hope of creating a Chinese Silicon Valley (of particular note is Zhongguancun Science Park, home to thousands of high-tech enterprises)[2]; however, determining the success of each of the science parks will be impossible for many years, and it is likely that using the one size fits all strategy across China's 1.3 billion people will lead to several failures.

Does this mean that these policies were failures? Or, if one of the science parks becomes the next Silicon Valley that these attempts to develop were a good idea? Unfortunately most of the analysis on these topics reflects ideological bias rather than a systematic understanding of development.

The value to be obtained from reviewing these cross country and cross region analysis results from an understanding of the common ways to measure success, and societal markers in successful regions. While economic literature suggests better discrete measures of regional growth, real life statistics and analysis tend to be inconclusive. Lastly, there is an element to marketing success, such as the CNBC study that ranks Virginia #1 for business.

6.2.1 Rich States, Poor States by the American Legislative Exchange Council[3]

This study tries to examine the winners and the losers in terms of economic growth, and associate that growth with tax rates, budgetary issues, and pension liabilities in the state. One example of this is their lists of the 10 winner states and the 10 loser states where they analyze the top marginal tax rate and the average tax burden for each of the states. This leads to analysis that ignores amenities or the changing nature of employment in the state, and focuses on state level tax, budget, and employment policies as the sole determinant of economic growth.

6.2.2 Enterprising States: Recovery and Renewal for the 21st Century[4]

This study examines states on a further array of factors, and focuses on basic ideas of clustering with a focus on developing high tech jobs (Virginia ranked 1st in High-tech Share of All Businesses on this ranking, and this led to 8th ranking for Entrepreneurship and Innovation). While the focus Science, Technology, Engineering, and Mathematics jobs are featured in many blueprints of economic development, it is often overlooked that the highest value added product that the U.S. exports is actually cigarettes. It is also

[2] Bamboo Innovation. (May 5th,2011) *The Economist*. <http://www.economist.com/node/18648264?story_id=18648264>
[3] Can be accessed at <http://www.alec.org/AM/pdf/tax/11rsps/RSPS_4thEdition1.pdf>
[4] Can be accessed at <http://www.uschamber.com/sites/default/files/reports/ES2011-full-doc-web.pdf>

notable that many of the measures on this survey use very broad category data (Virginia's Cluster as identified by this document is Business & Financial Services, which is a super-sector industry rather than an area that could be targeted). While many of the details identified in this survey are related to economic growth (educational attainment, productivity growth, and broadband availability) many of the other measures are the results of growth rather than the cause of growth (per capita income growth, job growth, etc.)

6.2.3 Cities of Opportunity by Price Waterhouse Cooper[5]

This analysis looked at 26 worldwide cities to estimate the elements that lead to cities experiencing economic growth in a competitive environment. This document ranked cities by indicator categories rather than providing an over-all rank. Selection bias appears evident in this study as the authors attempted to choose cities from a mixture of geographies and economic life cycles (in both developing and developed economies); picking out 26 cities inevitably creates bias. This study attempted to analyze cities based on some elements that are quite typical of these studies (intellectual capital & innovation, transportation and infrastructure) and others that are becoming part of the new measurement standards, if somewhat subjective (health, safety, and security, sustainability, and lifestyle assets).

6.2.4 Best-Performing Cities 2010: Where America's Jobs Are Created and Sustained by the Milken Institute[6]

This document looks at snapshots of the current performance of U.S. cities, and uses this snapshot to understand the underlying structural performance of regional economies. This report notes that tracking performance over the short term and during a recession will have distortionary effects on the report (they specifically note the impact of Defense Base Realignment and Consolidation (BRAC)).

They rank the cities based on jobs, wages & salaries, and technology output over a 5 year span to estimate the growth of the city, and also use the 12 month job growth performance as well as latest year's performance to estimate the direction of these regional economies. There are significant issues with this methodology, not least of which is the time horizon for the current indicators swing over a large time span (from 2007-8 to Apr 2009-2010) and the long term data at five years seems to be too short to capture underlying productivity trends. Lastly, while they claim to be output based, the

[5] Can be accessed at <http://www.pwc.com/us/en/cities-of-opportunity/2011/pdfdownload.jhtml>
[6] Can be accessed at <http://www.milkeninstitute.org/publications/publications.taf?function=detail&ID=38801250&cat=resrep>

methodology also looks at the high-tech location quotient and growth in that single sector without firm empirical evidence to support that choice.

6.3 Comparing American Cities

One should be extremely cautious in drawing any systematic conclusions from such data driven cross-region analysis, however, it is enlightening to use such analysis as a benchmark with which to compare the Hampton Roads economy. The American Community Survey features a variety of data which various researchers suggest might impact the economic growth of the region. Economics staff restricted this data to the 102 metropolitan areas that have populations greater then 500,000, as smaller regions have a significantly different growth profile then Hampton Roads.

Also, to see if there are any general trends that can be established within U.S. regions, a list of the top 11 performing MSAs was compiled, and this list also provides a useful comparison to Hampton Roads; the top eleven were selected instead of the top ten because this allowed the calculation of a true median value. Utilizing data from the Bureau of Economic Analysis Data, 25-year annualized growth rates (1984-2009) were calculated for personal income growth and employment growth within the 102 MSA's having populations greater than 500,000. Those annualized growth rates were added together to create an economic performance index to determine the top 11 performing MSAs.

Economic Performance Index

		Employment		Per Capita Income			
Rank	Area Name	Annualized Growth Rate	Median Growth Rate	Annualized Growth Rate	Median Growth Rate	2009 Population	Economic Performance Index
1	Las Vegas	5.47%	5.61%	3.97%	4.41%	1,902,834	9.44%
2	McAllen TX	4.11%	4.65%	4.47%	5.00%	741,152	8.58%
3	Provo, UT	4.11%	4.63%	4.05%	4.30%	555,551	8.16%
4	Cape Coral-Ft. Meyers, FL	3.40%	4.36%	4.47%	4.66%	586,908	7.87%
5	Austin TX	3.59%	4.60%	3.98%	5.25%	1,705,075	7.57%
6	Raleigh-Cary, NC	3.51%	4.27%	4.02%	4.74%	1,125,827	7.53%
7	Boise, ID	3.37%	4.02%	4.16%	5.28%	606,376	7.53%
8	Durham-Chapel Hill, NC	2.78%	3.09%	4.63%	5.10%	501,228	7.41%
9	Orlando, FL	3.37%	3.85%	4.01%	4.77%	2,082,421	7.38%
10	Salt Lake City, UT	2.82%	3.33%	4.37%	4.82%	1,130,293	7.19%
11	Ogden-Clearfield, UT	2.87%	3.13%	4.28%	4.77%	541,569	7.15%
64	Virginia Beach-Norfolk-Ne	1.32%	1.47%	4.37%	4.53%	1,674,498	5.69%

Source: Bureau of Economic Analysis

A quick review of the top 11 demonstrates that five of them are just above the 500,000 population threshold, demonstrating that smaller cities often have an easier time growing quickly (they also tend to have an easier time declining quickly as they don't have the economic momentum that developed regions possess). Another element to note is several of the cities have started a decline that has yet to fully manifest itself in the data, and while those declines do not render meaningless the long term trends, they do suggest that the models of growth established by Las Vegas and Cape Coral are not sustainable.

Education Levels

	Hampton Roads		Largest 102 MSAs		Top 11 Performing MSAs		
	Value	Rank	Median	Mean	Median	Mean	Med. Rank
% of Population in Some Kind of Schooling	31.0%	20	27.5%	27.6%	25.5%	27.0%	69
% Population over 25 with Graduate Degree	10.0%	58	10.3%	10.8%	9.4%	10.5%	69
% of Population over 25 w/ High School Equivalency or Greater	89.4%	24	87.3%	86.3%	87.4%	85.9%	51
% of Population over 25 w/ Bachelors or Greater	27.2%	68	28.5%	29.4%	27.8%	30.2%	59

Source: American Community Survey 2009

Hampton Roads has a diverse educational achievement compared to the average MSAs, with a high percentage of the population either enrolled in school or college and a high percentage with high school equivalency, but lower levels of Graduate Degree attainment and Bachelors attainment then the typical MSA. It should be noted that the top performing MSAs all had below average levels attainment in all four of these education categories.

Basic Demographics

	Hampton Roads		Largest 102 MSAs		Top 11 Performing MSAs		
	Value	Rank	Median	Mean	Median	Mean	Med. Rank
Median Age	34.7	75	36.3	36.5	33.6	32.9	88
% Population over 18	75.9%	48	75.7%	75.3%	73.4%	72.3%	84
% of Population over 65	11.6%	58	12.0%	12.5%	9.6%	10.7%	93

Source: American Community Survey 2009

Hampton Roads population tends to be slightly younger than the average population across the United States, with a significantly younger Median Age indicating that much of the 18+ population are closer to 18 then 65. Hampton Roads also has a relatively low dependency ratio, with 11.6% of the population over 65, and another 23.1% of the population under 18. Most of the high achieving MSAs skew younger than average, likely because the job growth they have experienced attracts a younger workforce.

Household and Family Size

	Hampton Roads		Largest 102 MSAs		Top 11 Performing MSAs		
	Value	Rank	Median	Mean	Median	Mean	Med. Rank
% Family Households	67.0%	35	66.2%	66.7%	67.3%	70.0%	30
% of Household Families with Children	31.4%	41	30.6%	31.1%	34.5%	35.4%	17
Average Household Size	2.59	50	2.59	2.65	2.72	2.89	26
Average Family Household Size	3.15	55	3.17	3.24	3.39	3.43	26
Births Per 1000 Women 15-50	59	40	57	58	63	65	26

Source: American Community Survey 2009

Another telling statistic is that top performing MSAs typically have expanding families, and the birth rate and family size are higher for the top performing then the average large MSA.

Mobility of Population

	Hampton Roads		Largest 102 MSAs		Top 11 Performing MSAs		
	Value	Rank	Median	Mean	Median	Mean	Med. Rank
% Veteran Status Population Over 25	17.2%	2	9.7%	9.8%	8.9%	8.9%	65
% Same House 1 Year Ago	81.3%	88	84.2%	84.0%	82.2%	81.8%	80
% Moved Within State in Past Year	5.2%	4	3.0%	3.0%	3.4%	3.2%	35
% Moved Between States in Past Year	4.4%	4	2.3%	2.4%	3.0%	3.1%	24
% Moved from Abroad in Past Year	0.8%	12	0.5%	0.6%	0.7%	0.7%	22

Source: American Community Survey 2009

This data set indicates the mobility of all citizens in a metropolitan area of a relatively short (1 year) time horizon. Theory would indicate that a growing city would have a highly mobile population, with new individuals migrating to the region to take advantage of an expanding job market. You can see that Hampton Roads has a high level of mobility in the region, but it is difficult to say to what extend the military drives that trend, versus private labor market migration. As would be expected with a region having close ties to the military and the largest naval base in the world, Hampton Roads has the second highest percentage of veterans of any large MSA.

Median Income, Health Insurance, & Poverty

	Hampton Roads		Largest 102 MSAs		Top 11 Performing MSAs		
	Value	Rank	Median	Mean	Median	Mean	Med. Rank
Median Hhld Income	$55,209	35	$51,167	$52,714	$53,505	$51,346	43
Mean Hhld Income	$69,196	43	$67,842	$69,694	$68,779	$67,126	46
% Hhlds with Foodstamp Benefits	7.9%	75	9.9%	10.0%	7.6%	9.7%	78
% Civilian Population w/ Health Insurance	88.3%	31	86.8%	85.8%	83.3%	81.3%	73
% of Families below Poverty Level	7.8%	78	9.8%	10.0%	9.2%	10.7%	63

Source: American Community Survey 2009

This table indicates the relative level of health of the population in terms of income, poverty, and access to healthcare. The self-reported household incomes in Hampton Roads are higher than the levels found in the high achieving metros, suggesting that high achieving metropolitan areas tend to grow from lower levels of income, and thus are benefiting from "catch-up" growth.

Foreign Born Population

	Hampton Roads		Largest 102 MSAs		Top 11 Performing MSAs		
	Value	Rank	Median	Mean	Median	Mean	Med. Rank
% US Native	94.2%	30	91.8%	88.8%	88.5%	86.4%	66
% Born in State of Residence	48.4%	79	61.0%	58.8%	51.4%	47.8%	75
% Foreign Born	5.8%	75	8.2%	11.2%	11.5%	13.6%	37
% Foreign Born Who Enter U.S. 2000 or Later	33.1%	62	35.9%	35.8%	39.9%	37.8%	35

Source: American Community Survey 2009

The Hampton Roads population tends to skew to native born persons to a much greater extent than other metropolitan regions, and many economists including Richard Florida indicates that this has negative impacts on diversity and economic growth. While the high achieving MSAs have much higher levels of foreign born population, overall they are not in the top 10 for immigration.

Commuting Patterns

	Hampton Roads		Largest 102 MSAs		Top 11 Performing MSAs		
	Value	Rank	Median	Mean	Median	Mean	Med. Rank
% Drive Alone	82.4%	22	79.7%	78.7%	77.2%	77.2%	71
% Who Carpool	8.9%	75	9.7%	10.1%	11.2%	11.3%	20
% Who Use Public Tranpsportation	1.4%	64	1.8%	3.0%	2.6%	2.0%	36
% Who Walked	2.4%	38	2.1%	2.4%	1.8%	2.1%	65
% Who Worked at Home	3.4%	72	4.0%	4.1%	5.1%	5.0%	21
Mean Commute Time	23.2	61	23.8	24.3	22.6	23.2	67

Source: American Community Survey 2009

Lastly, some economists suggest that cities that have well developed public transportation and are walkable have higher levels of growth, but no distinct pattern emerges. This exercise demonstrates the difficulty of tying economic growth to any one factor, as well as the difficulty in trying to establish the economic "competitiveness" of a region by looking at a broad selection of data. The eleven cities that have experienced the strongest economic growth over the past 25 years demonstrate no clear pattern on any of these markers for economic competitiveness or growth. This does not argue against working to improve a region's performance in any and all of these features, but the reality is that cross regional comparisons offer little opportunity to demonstrate paths to

success. Each region needs to determine its own best path to economic growth and competitiveness.

7 Data Analysis

The following section provides a data review for the purpose of measuring productivity, determining trends in future productivity, and delivering basic recommendations regarding the potential for productivity gains. Data at the regional level is derived from multiple sources that are frequently released at a lag of several (and sometimes more) time periods. Analysis shows that productivity growth was significant in the last decade, but that the region faces several challenges for future growth.

7.1 Bureau of Economic Analysis Data- GDP, Employment, and Income

The Bureau of Economic Analysis releases the highest quality readily available data on income, employment and GDP estimates on a local and regional level; unfortunately the data typically has a lag of 18 months – 2 years. The 2009 data release in April 2011 confirmed previous trends relating to income and employment growth in Hampton Roads. The region's employment only grew by 5.7% between 2000 and 2009 (an annualized rate of 0.62 percent). During that same period, income grew by 56.5% (5.10 percent annualized), and per capita income increased by 47.7% (4.43 percent annualized); that is the fifth highest increase in income among MSAs with populations over 500,000 (102 MSAs in all). Typically a low rate of employment growth coupled with a high rate of income growth signals that a region has experienced significant productivity growth during that time period, however two data points make that result seem less clear.

First, Hampton Roads had only 5.7% employment growth during that time frame, and as noted during the empirical and theoretical literature reviews, it is rare to not experience significant increases in employment as productivity increased by that amount. As a comparison, the other top ten areas for per capita income growth (excluding New Orleans which has experienced anomalies due to Hurricane Katrina) grew by 13% between 2000 and 2009.

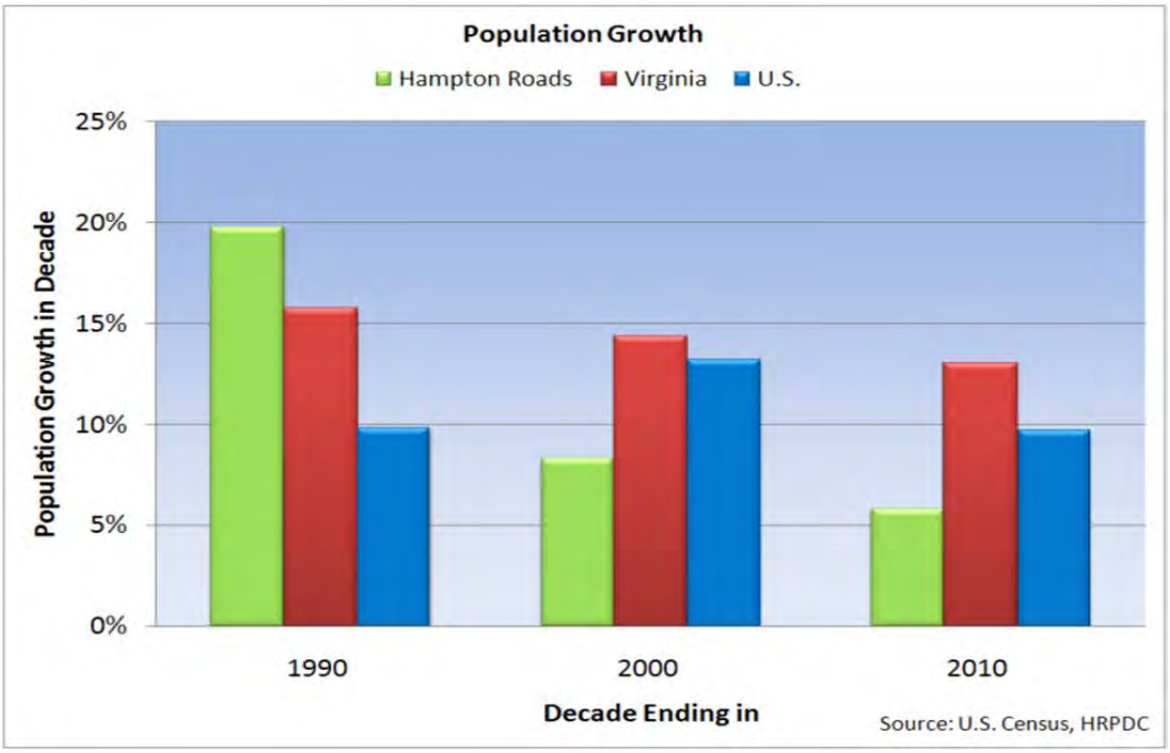
The other factor that makes productivity growth seem like a less likely factor for the region's strong per capita income growth is the presence of the military. Increases in military income and payments do not correlate to productivity gains in the same manner as private sector wages, and thus increased military wages do not necessarily indicate increases in the region's productivity. From 2000 to 2009, military wages and benefits increased by 71.4%, subtracting out military income growth only lowers growth in Hampton Roads to 53.8% between 2000 and 2009. This does not account for growth in federal contract salaries however.

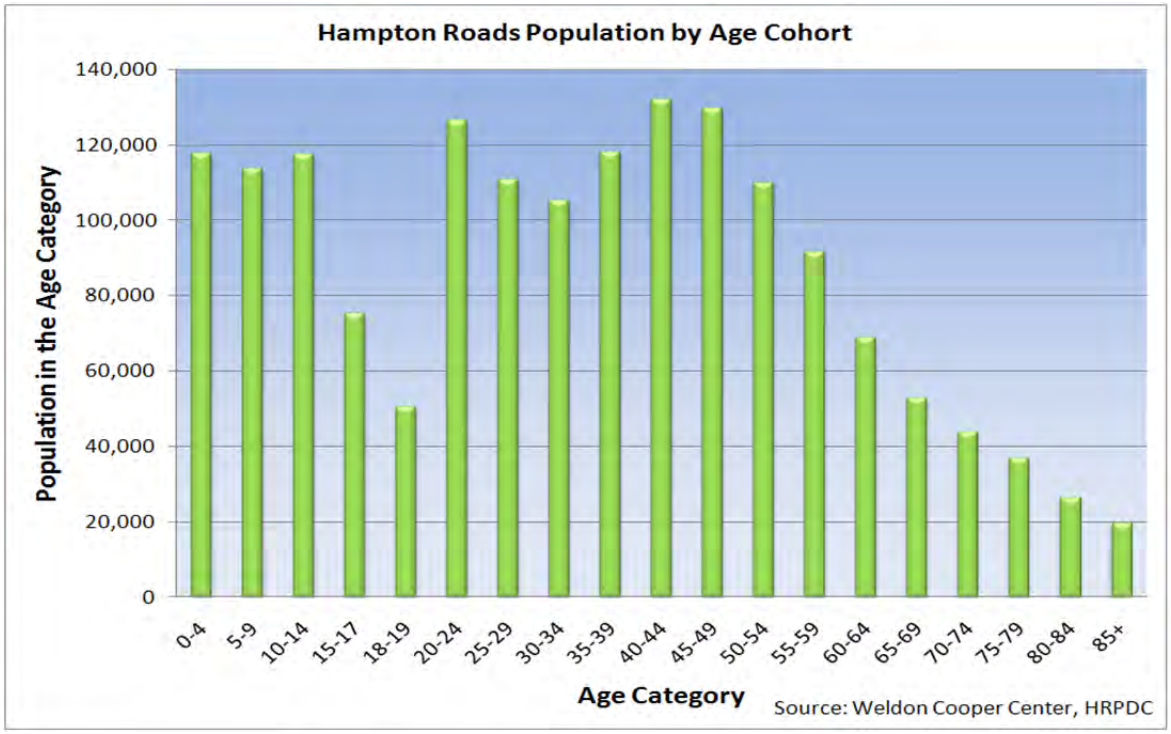
A better measure for productivity growth comes from real per capita gross regional product, as gross regional product attempts to measure all economic activity in the region. Hampton Roads still grew quickly compared to the other top MSAs, experiencing a 12% increase in per capita real gross regional product(GRP) between 2001 and 2009(this is significantly less than income growth because it is reported in real terms, and has been adjusted for inflation using the BEAs chain-weighted index). Hampton Roads had the 17th highest GRP growth rate from 2001 – 2009 when compared to the top MSAs. In spite of a decade of strong growth, Hampton Roads remains below the national average in terms of per capita gross product, ranking 47th out the 102 MSAs with population greater than 500,000. In 2009, per capita gross product in Hampton Roads was $42,521, 95.1% of the average value for all MSAs.

7.2 Population Dynamics and Productivity

Hampton Roads' population last outgrew the U.S. and Virginia between the 1980 and the 1990 census, and since that time, Hampton Roads has only increased by 14.6% versus 24.1% for the nation and 29.2% in Virginia. More troubling, research in the Hampton Roads Data Book indicates that the population regularly experiences out migration as the rate of natural increase (births-deaths) is greater than population growth in Hampton Roads. It is difficult to estimate what impact military families play in this population dynamic, but even accepting their role in creating out migration, regions that experience significant productivity gains tend to experience employment increases along with the income increases.

Another key point for analysis comes from the aging profile of the region. A region in which the population ages rapidly could expect to see negative productivity shocks as highly skilled/experienced workers retire and possibly exit the labor force. This would normally be particularly worrisome in a population that increased as slowly as Hampton Roads, it does not seem that an unbalanced pattern has been established. The baby boom population is slightly larger than the 25-39 age cohorts, but not to such an extent that other labor force adjustments will not be able to maintain equilibrium.


Population Growth
Hampton Roads
Virginia
U.S.
25%
20%
15%
10%
5%
0%
Population Growth in Decade
1990
2000
2010
Decade Ending in
Source: U.S. Census, HRPDC


Hampton Roads Population by Age Cohort
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
Population in the Age Category
0-4
5-9
10-14
15-17
18-19
20-24
25-29
30-34
35-39
40-44
45-49
50-54
55-59
60-64
65-69
70-74
75-79
80-84
85+
Age Category
Source: Weldon Cooper Center, HRPDC

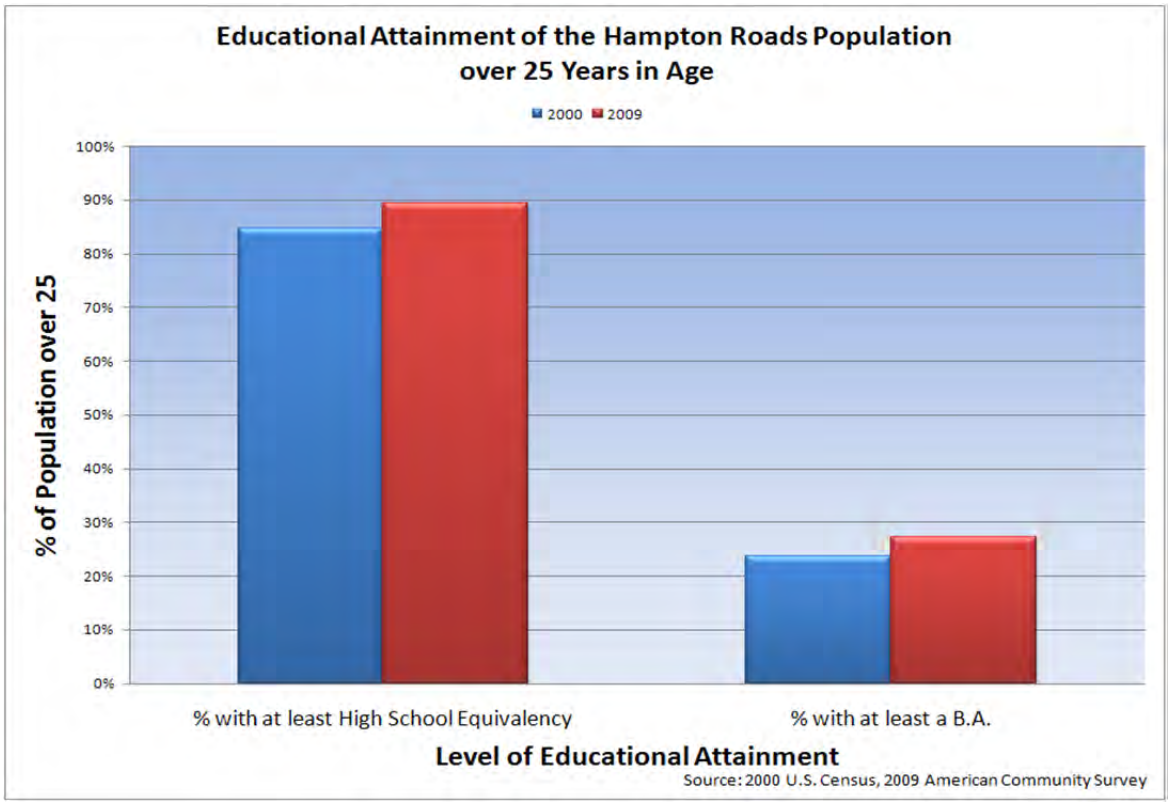
7.3 Education and Productivity

As the empirical section established with the work of Glaeser and Saiz (2003) as well as Richard Florida (2000, 2002) to a lesser extent, education is both correlated with growth and causally related to growth. Education is correlated with growth in region wide wages, as Glaeser and Saiz estimated that an additional 1% that graduate from college leads to a 0.6%-1.2% increase in wages.[1] The theory that regions are "hubs of knowledge" stresses the relationship between education and regional competitiveness. According to the Census Bureau, 89.4%[2] of the population of Hampton Roads (over the age 25) has completed high school equivalency or greater, which is 22nd highest completion rate among the 102 large MSAs. The completion rate is significantly higher than the 80.3%[3] which complete high school equivalency on time in the region. This correlates to the region's numerous career paths for students who have high school degrees (ports, enlisted personnel, retail), providing a strong incentive for residents of Hampton Roads to complete GED programs even if they do not graduate from high school.

The American Community Survey indicates that only 27.2% of Hampton Roads' population has graduated from college, which is only 67th out of the top 100 MSAs. The average for MSAs is 28.8% and the national average is 27.9%. The region's below average ranking is likely related to both strong career paths for individuals in the region who have high school educations as well as out migration by those who obtain college educations, which represents a challenge to the region as it looks for ways to improve growth.

While both the percentage of the region's population who have attained high school equivalency and the percentage of the population who have attained at least a bachelor's degree has increased between 2000 and 2009, and has surpassed the US averages, the level of education attainment in growing MSAs is typically higher still (U.S. averages with at least high school 2000-80.4%, 2009-85.3%; U.S. with at least a bachelor's 2000-24.4, 2009-27.9%) .

[1] This number actually understates the gain, they controlled for the private returns to education, so that does not include the high wages that the 1% would receive because they are college graduates.
[2] 2009 American Community Survey
[3] Virginia Department of Education, HRPDC



7.4 REMI data: Location Quotients, Regional Purchase Coefficients, and Relative Production Costs

A comprehensive understanding of the regional economy is a component to assessing the region's growth potential. Income and employment statistics can provide a snap shot of the region's wellbeing and track progress. More detailed information, such as regional purchase coefficients, relative production costs, and industrial multipliers, provide greater insight into the dynamics of the regional economy.

In 2001, HRPDC purchased REMI (Regional Economic Models, Inc.), one of the most advanced and sophisticated dynamic forecasting and policy analysis tools available on the market. The commission's REMI model allows for in-depth econometric analysis specifically calibrated to the Hampton Roads economy. The nationally renowned model contains 169 unique industry sectors containing complete inter-industry and trade flow structures. The model's equations are routinely updated, as are local and national data sets available from the Bureau of Labor Statistics, the Bureau of Economic Analysis and the Census Bureau.

Information contained in the REMI model provides a degree of insight into the region's economy. In the table below there are location quotients (regional intensity of industry employment relative to the nation), relative labor costs vs. the nation, relative productions costs vs. the nation, and the percentage of non-labor inputs that are purchased locally (or regional purchase coefficient). When there is a low regional purchase coefficient, there are opportunities for vertical integration of industry, where suppliers could be recruited to this region to both add to the supply chain and increase cooperation throughout clusters. Alternatively, where relative labor costs and relative productions costs are low, there are opportunities for horizontal expansion in the industry, recruiting competitors to take advantage of a low cost environment.

REMI Data on Highly Concentrated Industries

Industry	Location Quotient	Relative Labor Cost	Relative Production Costs	Regional Purchase Coefficient
Ship and boat building	14.42	79.3%	86.3%	52.9%
Seafood product preparation and packaging	5.62	91.0%	93.4%	18.8%
Other chemical product and preparation manufacturing	4.91	109.1%	99.8%	41.5%
Water transportation	4.73	165.1%	106.6%	3.5%
Forestry; Fishing, hunting, trapping	4.35	25.9%	85.5%	11.8%
Lessors of nonfinancial intangible assets (except copyrighted works)	3.75	81.7%	100.6%	95.7%
Apparel accessories and other apparel manufacturing	3.51	82.6%	91.3%	9.4%
Rubber product manufacturing	2.81	114.9%	101.4%	23.9%
Other textile product mills	2.54	94.0%	97.2%	4.4%
Scenic and sightseeing transportation and support activities for transportation	2.52	108.9%	102.0%	43.7%
Dairy product manufacturing	2.17	101.7%	96.5%	12.3%
Agriculture, construction, and mining machinery manufacturing	2.15	83.4%	97.0%	11.7%
Veneer, plywood, and engineered wood product manufacturing	2.04	106.4%	95.2%	41.7%
Other food manufacturing	1.88	109.2%	105.7%	6.5%
Beverage manufacturing	1.75	150.5%	101.9%	27.5%
Railroad rolling stock manufacturing	1.73	77.2%	89.7%	5.4%
Sawmills and wood preservation	1.71	101.2%	97.4%	26.7%
Architectural, engineering, and related services	1.66	101.7%	100.6%	46.1%
Electronic and precision equipment repair and maintenance	1.64	105.6%	101.6%	92.2%
Museums, historical sites, and similar institutions	1.61	105.9%	94.4%	88.3%
Metal ore mining	1.54	70.6%	78.9%	4.6%

Source: REMI, HRPDC

This chart contains the listing of all the industries in the region that have location quotients greater then 1.5, meaning that the concentration of industry employment in Hampton Roads is 150% of the national average. These are areas where you would expect to be able to identify clusters by pure data analysis, but clearly further examination is required before you can make a determination on any of these categories (metal ore mining clearly would not be a cluster that one would expect to develop in Hampton Roads despite it having lower labor and production costs).

Hampton Roads does have high location quotients for apparel and accessories and other textile mill products combined with low labor costs. Since the regional purchase

coefficient is below 10% for the both of these industries this could possibly be a cluster; however, total employment for these two industries in Hampton Roads is only 1,100, and national employment is expected to decline by 50% over the next decade.

Another way to analyze these data sets looks at the same data but for the highest employment in Hampton Roads.

REMI Data on High Employment Industries in Hampton Roads

Industry	Total Employment	Relative Labor Cost	Relative Production Costs	Regional Purchase Coefficient
Retail trade	103,582	91%	95%	93%
Food services and drinking places	64,115	92%	96%	98%
Construction	52,640	97%	96%	86%
Real estate	43,814	118%	95%	89%
Offices of health practitioners	27,381	107%	104%	96%
Wholesale trade	24,603	82%	94%	53%
Hospitals	19,140	94%	95%	75%
Business support services; Investigation/security services; Other support	19,127	94%	97%	77%
Elementary & secondary schools; colleges, universities, & professional schools	19,012	97%	98%	76%
Services to buildings and dwellings	18,482	111%	102%	86%
Architectural, engineering, and related services	17,092	102%	101%	46%
Nursing and residential care facilities	15,847	101%	99%	91%
Computer systems design and related services	15,746	99%	101%	49%
Employment services	15,463	115%	102%	86%
Monetary authorities, credit intermediation, and related activities	14,658	88%	94%	33%
Religious organizations; Grantmaking and giving services, and social advocacy c	13,270	106%	101%	67%
Accommodation	12,434	78%	89%	48%
Ship and boat building	11,413	79%	86%	53%
Personal care services	9,968	103%	99%	94%
Amusement, gambling, and recreation industries	9,445	109%	99%	38%
Management of companies and enterprises	9,428	79%	95%	70%
Child day care services	9,307	93%	95%	16%
Scenic and sightseeing transportation and support activities for transportation	8,864	109%	102%	44%
Individual, family, community, and vocational rehabilitation services	8,275	115%	107%	13%
Private households	7,840	130%	119%	63%
Management, scientific, and technical consulting services	7,807	95%	99%	32%

Source: REMI, HRPDC

Using the list of industries that employ large amounts of labor in the region allows analysis to identify opportunities to enhance efficiency that would have a large effect on the economy. As noted, while the region has a low regional purchase coefficient for computer systems design, there is no infrastructure in place that indicates IT manufacture would move into the region.

Another methodology for examining growth industries in the region consists of conducting a shift share analysis of all the industries in the region. A shift share analysis compares the share of growth of a particular industry within a region over a period of time. Comparing the shift-share analysis for industries across the Hampton Roads region with national shift-share analysis provides insight regarding growth trends for each particular industry.

The industries of interest are where the local industry is growing, and the national industry is growing. If the employment in a local industry is shrinking as a share of regional employment totals, this might indicate an unproductive local industry, or a decrease in demand for the good/service being produced (although this could be because of local or national factors). When the regional industry employment is expanding and national employment shrinks this indicates that the region has begun dominating a declining industry, a pattern that doomed many rust belt towns and currently troubles Michigan.[4] There are exceptions to this rule, as Hampton Roads continues to command an increasing share of the nation's ship building employment even as national employment declines, but the U.S. Navy drives this industry's employment in the U.S., rendering it outside normal market rules.

REMI Data and Shift Share Analysis

Industry	HR Employment	HR % Growth 00-10	US % Growth 00-10	HR Location Quotient	Shift Share 00-10*
Child day care services	9,307	14.74%	1.06%	1.17	13.5%
Offices of health practitioners	27,381	30.95%	15.43%	1.17	13.4%
Amusement, gambling, and recreation industries	9,445	24.59%	10.23%	1.04	13.0%
Private households	7,840	29.74%	18.17%	0.64	9.8%
Architectural, engineering, and related services	17,092	20.48%	10.17%	1.66	9.4%
Real estate	43,814	65.52%	52.60%	1.15	8.5%
Nursing and residential care facilities	15,847	19.02%	10.36%	0.97	7.8%
Computer systems design and related services	15,746	13.10%	13.03%	1.47	0.1%

Source: REMI, HRPDC

This table includes all of the industries that increased both local and regional shares of employment, have employment of greater than 7,500 positions, and had positive shift share values showing the regional industry expanded more than the national industry. Some of those are areas where growth would not be expected to continue or where growth would have negligible impact on the overall economy (real estate, private household employment). Other industries are tied to healthcare expansion including nursing facilities and offices of health practitioners, but further analysis would be required to determine whether this is growth that caught the region up to national trends, or if there are other regional factors that caused employment to increase more quickly than the nation.

Another element to consider when examining the region's industry mix and when advocating for the expansion or recruitment of businesses are the industrial employment

[4] "And you know the surest way to go broke? Keep getting an increasing share of a shrinking market. Down the tubes. Slow but sure." Lawrence Garfield. 19913 Other People's Money

multipliers. Industry employment multipliers (not to be confused with firm or income multipliers) estimate the impact that employment in one industry has on employment in other industries. As an example, the architectural, engineering and related services industry in Hampton Roads has an industrial employment multiplier of 1.754. One could interpret this to mean that every 1,000 architectural jobs in the region, supports approximately 754 additional jobs through both indirect and induced employment. Industries with high employment multipliers are coveted for their ability to generate additional employment opportunities. A complete listing of Hampton Roads industrial employment multipliers estimates are in Appendix N.

As noted in the empirical section, this type of analysis only allows for the preliminary identification of opportunities, and it takes a wealth of local knowledge and social capital to develop viable applications of public policy. There appears to be opportunities linked with supplies for architectural, engineering and related services, as well as in monetary authorities, credit intermediation, & related activities. These would be fields that could be added to stable clusters for examination.

8 Policy Recommendations from Economic Competitiveness

Hampton Roads boasts a strong economy and an excellent quality of life. Over the past decade, unemployment rates have remained well below the national average, while per capita income growth has soared. Looking ahead, there appears to be several challenges that could significantly impact the region's wellbeing. Perhaps the most pressing and relevant challenge is the threat to defense spending and employment in the region, both as the overall level of defense spending declines and other regions work to get defense assets and personnel relocated to their economies.

As the region continues to pursue economic growth, it will be important to review and consider policies that might encourage long term gains in productivity; endogenous growth that will grow out of the labor force, innovation, and social capital present in the region. Such policies might broadly fall under two categories 1) continued and improved provision of the basic functions of local governance, and 2) the development of policies that target endogenous growth.

8.1 Enhanced Competitiveness through Good Governance

Most of the key items for achieving optimal economic growth fall under the basic provision of services that cities and counties already provide; the role of these areas in providing long term economic growth provides yet another argument for investment in these areas. The role of these factors in economic growth through productivity enhancement as it relates to workforce development has been laid out in both empirical studies and theoretical analysis.

8.1.1 Education: The most important factor for long term economic growth comes from a highly skilled workforce (in economic parlance, a population with high human capital).

High School Education. This encompasses all of the steps between birth and high school, but improved outcomes for the region's population are essential for economic growth. The 2007 recession demonstrated that individuals with a lower level of education have much higher unemployment rates, and that extended periods of unemployment cause a decline in human capital, which those without high school educations cannot afford. This results in a population unable to find quality employment, causing large declines in economic growth. It is also true for all regions that the least educated are also the least likely to go through economic

migration, meaning that a failure to educate any one child creates a regional problem for generations.

Further, high school education should create a flexible workforce that can develop itself for the needs of any particular job market. There will be students that come out of high school with vocational training prepared to enter the workforce, as well as students ready to get further workforce training at the local community colleges or through four year colleges/universities. While it is true that the region will experience leakages of these talented students as they relocate throughout the country, there will be a large proportion of these highly trained students that will return to the region, providing a driving force for economic growth.

College Education. There also exists a pressing need for high quality college education in a thriving metropolis, and the region has a good mix of private and public four year colleges, as well as three strong community colleges and several graduate programs. One key area where the region can support its colleges is by advocating as a region for additional funds for these institutions both from the state and from the nation, particularly in advocating for additional research dollars for these institutions.

Another potential area for advancement concerns developing the region's college students as part of the fabric of the community. Providing incentives and opportunities for graduates to stay in the region is on par with having high quality institutions of learning. While the quality of life in the region will also impact location decisions, there exists a role for encouraging local businesses and nonprofits to engage these college students with internships and other projects focusing on the local community.

8.1.2 Quality of Life

Numerous variables impact the standard of living within the region. Quality of life encompasses crime rates, the environment, good governance, and regional amenities. Like education, quality of life already features prominently on most policy maker's minds and all of these issues already receive a significant amount of attention. While the primary driver for policies related to quality of life tends to reflect the wants/needs of the region's residents, attention might be given to regional policies that retain and attract highly educated professionals.

Crime rates. Unfortunately, individuals think of crime as generally a neighborhood or local problem; however true this is for residents of a region, the outside perception is created by what is seen on the news. This means that even one contained high crime area can color the perception of an entire region, which might impact the expansion of economic opportunities in the region. This particularly reflects on recruitment of experienced employees to the region, who will be concerned with the quality of schools and the crime rate.

Environmental Quality. This clearly affects the quality of life, but like crime there tends to be a greater reaction to poor air or water quality rather than a positive reaction associated with really strong environmental stewardship. Efforts should continue to meet regional, state, and U.S. standards of environmental quality.

Regional Amenities. This includes a general set of positive features about the region that make it an enjoyable area in which to live. There is significant literature concerning developing regional amenities as a path to economic development, particularly by Richard Florida. While it is clear that amenities play a role, it is not clear that amenities developed through policy efforts (bike paths, operas, museums, art districts) are more important than geographic amenities from which Hampton Roads already benefits, including the region's abundant water resources, captivating history, mild temperature, and excellent beaches.

Good Governance. Of all the factors which one can control, the single most important aspect of sustained long-term growth is good governance. The policies and decisions made by elected officials set the backdrop for the region's economic climate. Decisions on infrastructure, tax policy, service provision, coordination, zoning, and public safety will ultimately determine the extent to which the private sector can capitalize on regional assets.

8.2 Active Methods of promoting regional competitiveness

Throughout the waves of economic development theory, there have been attempts to encourage economic development first by business attraction and later through supporting entrepreneurial behavior. These efforts have rarely achieved the desired affects over the long term. As noted in the literature review, there are three main avenues of regional growth-

1. Regions as sites of export specialization

2. Regions as sites of increasing returns to scale
3. Regions as hubs of knowledge

Often these attempts at economic development have given little thought to how the region fits into one of these three models and out of which aspect regional competitiveness should develop. As noted, industrial cluster theory moved into this gap between theory and policy and has helped regions understand the mechanism of economic growth. Unfortunately, this has also led to efforts to 'pick' clusters for regional development (and national development) rather than to support strengths that are already found in the community.

Hampton Roads would benefit from an in depth analysis of the clusters that appear to be in the process, or have already formed in the region, including:

- Fully developing the NAICS codes associated with the cluster (as it pertains to the region) both for firms in the cluster, as well as for those firms that are suppliers and customers of the firms in the cluster but might not be outside the typical industry definitions for that cluster. This will be more or less effective depending on how well each individual cluster matches with NAICS codes,
- Full surveys of the businesses in the cluster to obtain better understanding of the obstacles to further growth in the cluster. Information about the supply and distribution chains would allow for better modeling through use of the NAICS codes.
- Modeling the economic impact of further growth in the industry, and better estimating the expected level of growth.
- Targeting firms that are significant suppliers that are currently outside of the region, and use that information to develop proposals for locating/relocating operations in this region.
- Investigating and implementing policies that helps to encourage/nurture a culture of entrepreneurship in regional industries that have demonstrated the capacity for growth.
- Invest in social capital and infrastructure, following the basic model demonstrated by Biotech at the Beach. Individual jurisdictions could play a more active role in encouraging companies to participate in these efforts by supporting collaborative efforts and gatherings that result in the cross-pollination of ideas/information. Part of these efforts might involve providing government access to firms in the cluster to make sure that these cooperatives benefit the cluster and the region in a mutually beneficial manner.

- Literature suggests no set policy prescriptions for all regions, nor for any particular type of cluster. The action will have to be measured to fit the unique circumstances of Hampton Roads, using smaller programs rather than large efforts to steer cluster development.[1]

8.2.1 Incubators as a method of Economic Development

Entrepreneurship has been a watch word of economic development since the second wave of economic development, and communities have tried different efforts to energize and motivate their citizens to operate as entrepreneurial capitalists.

Unfortunately, entrepreneurship that involves starting a new business with growth potential gets tangled up with jobless entrepreneurs (those who go into business for themselves, and employ no one else) and small business owners that will have limited impact on employment. There was also a common fallacy that small businesses created the lion's share of employment growth, when recent research has demonstrated that it is **new** businesses that create most of the nation's employment growth (they also create a significant portion of the newly unemployed).[2] There are several institutions that are either non-profit or are publicly funded that support small businesses (SCORE and the Small Business Administration to name two), but there needs to be an institution that focuses on high growth businesses.

Fortunately, business incubators took hold in the 1980's, included in and pushed by an education plan designed by the U.S. Small Business Administration designed, and now incubators serve as a major part of the economic development frontier. Unfortunately, it was a great idea that did so well in this region that there are now seven business incubators in the region, that are only now beginning to coordinate action under Innovate! Hampton Roads. There has also been a tendency to make incubators place-specific rather than support-specific, and thus efforts have related around economic development for one community or even one building instead of focusing on creating businesses in the region that best help clusters develop and entrepreneurs succeed.

There are also efforts by the regional universities and the medical school to spin off the research that their professors and students have developed.

Hampton Roads could benefit from a regional incubator that serves the entire region with a focus on creating fast and extensive employment growth that is not place-specific to the

[1] Cortright 2006
[2] Muro and Fikri 2011

region, because it recognizes that employment growth in one locality extends benefits throughout the region.

This incubator could-

- Focus on connecting regional institutions to help entrepreneurs find the best location.
- Help identify the labor force needs of the entrepreneur and help create connections.
- Focus on business with the potential for fast and extensive employment growth (which will require it to counsel some businesses to go to other organizations for assistance).
- Assist with federal and state grants where applicable, and secure funding where it is not. This funding will need to be a mix of public and private funds that will either aid entrepreneurs to market themselves to angel investors, or allow the incubator to act as an angel investor in return for an ownership share in the business. Angel investors are those that provide the funds to develop prototypes and business plans before the company has developed sufficiently to access venture capital or bank money.
- Such an incubator would benefit from operating independently, as there can be tremendous pressure to attempt to help all of the regional businesses rather than focusing on specific businesses that would benefit from the incubator. This incubator would focus on high growth businesses (stage two companies) and thus would require the ability to steer non-growth businesses to other agencies when appropriate.
- Leadership of a regional incubator would benefit from direct entrepreneurial experience, one who is familiar with social capital and the necessity of productivity growth.

Innovate! Hampton Roads has begun a process of reviewing the regional incubators and trying to develop a regional plan of economic gardening, i.e. planting new businesses and encouraging the growth of others. This process should be supported in the short-term, and evaluated to learn how well it is meeting the needs of the region.

8.3 Conclusion

To be a competitive region means that the region will be composed of firms that compete on the international market, and that means taking efforts that allow firms to be competitive. This includes supporting existing clusters to take advantage of external

return to scales[3] and knowledge specialization. It also means supporting new and growing businesses that will best bring a culture of innovation to those clusters.

Ultimately, most of productivity and growth gains in the region will be driven by having a population with a higher level of education and/or adaptable skill sets. This requires increased education, as well as jobs and amenities that encourage citizens to locate in the region.

While relocations are satisfying and are a good symbol of the success of a region, it is important to recognize that they are not a driving force for economic growth in an economy as developed as Hampton Roads. Evidence shows that while interventionist policies that attract businesses can help areas with lower levels of economic development, well developed economies grow through entrepreneurial capitalism. Two of the four, soon to be five, Fortune 500 companies in Hampton Roads are the recent results of such entrepreneurial growth, Dollar Tree was started in 1993 and Amerigroup in 1994.[4]

It is also worth noting that these companies are not large manufactures, but rather work in the trade sector of the economy. Manufacturing output continues to grow in the United States, but it also growing in productivity so that overall manufacturing employment declines. Hampton Roads will develop clusters locally that serve as basic sector industries, but they will be exporting services, ideas, or even management techniques rather than goods. It is quite possible that the next Fortune 500 company in Hampton Roads is not even in a cluster that has been identified yet, and thus the importance of basic good governance that allows businesses to thrive and citizens to educate themselves is paramount to any economic development process.

[3] External Returns to Scale, similar to the concept *network externalities,* are benefits to the firms in an industry which accrue as the size of the industry in a geographic region expands. This includes suppliers that locate in the region, shared labor pooled, and pooling of knowledge resources.

[4] Smithfield Foods 216, Norfolk Southern 261, Dollar Tree 390, Amerigroup 396, Huntington Ingalls will be around 350 if it maintains sales at current 2011 Q1 levels.

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Appendix

Apendix A- NAICS Codes and Clusters

Cluster	NAICS Code	Industry Category
Auto	3361	Motor Vehicle Manufacturing
	3362	Motor Vehicle Body and Trailer Manufacturing
	3363	Motor Vehicle Parts Manufacturing
Ships	3366	Ship and Boat Building
Elec Equip	3341	Computer and Peripheral Equipment Manufacturing
	3342	Communications Equipment Manufacturing
	3343	Audio and Video Equipment Manufacturing
	3344	Semiconductor and Other Electronic Component Manufacturing
	3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing
	3346	Manufacturing and Reproducing Magnetic and Optical Media
	3351	Electric Lighting Equipment Manufacturing
	3352	Household Appliance Manufacturing
	3353	Electrical Equipment Manufacturing
	3359	Other Electrical Equipment and Component Manufacturing
Tourism	4871	Scenic and Sightseeing Transportation, Land
	4872	Scenic and Sightseeing Transportation, Water
	4879	Scenic and Sightseeing Transportation, Other
	7111	Performing Arts Companies
	7112	Spectator Sports
	7113	Promoters of Performing Arts, Sports, and Similar Events
	7115	Independent Artists, Writers, and Performers
	7121	Museums, Historical Sites, and Similar Institutions
	7131	Amusement Parks and Arcades
	7132	Gambling Industries
	7139	Other Amusement and Recreation Industries
	7211	Traveler Accommodation
	7212	RV (Recreational Vehicle) Parks and Recreational Camps
	7213	Rooming and Boarding Houses

Cluster	NAICS Code	Industry Category	Notes
Port	4811	Scheduled Air Transportation	
	4812	Nonscheduled Air Transportation	
	4821	Rail Transportation	
	4831	Deep Sea, Coastal, and Great Lakes Water Transportation	
	4832	Inland Water Transportation	
	4841	General Freight Trucking	
	4842	Specialized Freight Trucking	
	4881	Support Activities for Air Transportation	
	4882	Support Activities for Rail Transportation	
	4883	Support Activities for Water Transportation	
	4884	Support Activities for Road Transportation	
	4885	Freight Transportation Arrangement	
	4889	Other Support Activities for Transportation	
	4931	Warehousing and Storage	
	53113	Lessors of Miniwarehouses and Self-Storage Units	
	541614	Process, Physical Distribution, and Logistics Consulting Services	
Seniors	6216	Home Health Care Services	
	6231	Nursing Care Facilities	
	6233	Community Care Facilities for the Elderly	
	6239	Other Residential Care Facilities	
	6241	Individual and Family Services	
IT	5112	Software Publishers	
	5182	Data Processing, Hosting, and Related Services	
	5415	Computer Systems Design and Related Services	
	5191	Other Information Services	
Tech Serv	5413	Architectural, Engineering, and Related Services	
	54142	Industrial Design Services	
	54133	Engineering Services	
Mod&Sim	333319	Other Commercial and Service Industry Machinery	
Sensors	334418	Printed Circuit Assembly (Electronic Assemply) Manufacturing	
	3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	
	561621	Security Systems Services (except Locksmiths)	
	541712	Research and Development in the Physical, Engineering, and Life Sciences (except Biotechnology)	
	339112	Surgical and Medical Instrument Manufacturing	

Cluster	NAICS Code	Industry Category	Notes
Energy	211111	Crude Petroleum and Natural Gas Extraction	Energy Gen
	211112	Natural Gas Liquid Extraction	Energy Gen
	213111	Drilling Oil and Gas Wells	Energy Gen
	213112	Support Activities for Oil and Gas Operations	Energy Gen
	221119	Other Electric Power Generation	Energy Gen
	3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	Wind Manf
	3353	Electrical Equipment Manufacturing	Wind Manf
	3359	Other Electrical Equipment and Component Manufacturing	Wind Manf
Biomed	325411	Medicinal and Botanical Manufacturing	Drug and Chems
	325412	Pharmaceutical Preparation Manufacturing	Drug and Chems
	325413	In-Vitro Diagnostic Substance Manufacturing	Drug and Chems
	325414	Biological Product (except Diagnostic) Manufacturing	Drug and Chems
	339116	Dental Laboratories	Labs and R&D
	541380	Testing Laboratories	Labs and R&D
	541711	R&D in Biotechnology	Labs and R&D
	541712	R&D in the Physical, Engineering, and Life Sciences (except Biotech)	Labs and R&D
	334510	Electromedical and Electrotherapeutic Apparatus Manufacturing	Med Equip & Sup
	339112	Surgical and Medical Instrument Manufacturing	Med Equip & Sup
	339113	Surgical Appliance and Supplies Manufacturing	Med Equip & Sup
	339114	Dental Equipment and Supplies Manufacturing	Med Equip & Sup
	339115	Ophthalmic Goods Manufacturing	Med Equip & Sup
Healthcare	6211	Offices of Physicians	
	6212	Offices of Dentists	
	6213	Offices of Other Health Practitioners	
	6214	Outpatient Care Centers	
	6215	Medical and Diagnostic Laboratories	
	6216	Home Health Care Services	
	6219	Other Ambulatory Health Care Services	
	6221	General Medical and Surgical Hospitals	
	6222	Psychiatric and Substance Abuse Hospitals	
	6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	
	6231	Nursing Care Facilities	
	6232	Residential Mental Retardation, Mental Health and Substance Abuse Facilities	
	6233	Community Care Facilities for the Elderly	
	6239	Other Residential Care Facilities	
	6241	Individual and Family Services	
	6242	Community Food and Housing, and Emergency and Other Relief Services	
	6243	Vocational Rehabilitation Services	
Aerospace	3364	Aerospace Product and Parts Manufacturing	
Robotics	332999	All Other Miscellaneous Fabricated Metal Product Manufacturing	
	541712	Research and Development in the Physical, Engineering, and Life Sciences (except Biotechnology)	

Appendix B- CAGR+ Ranking of Top 102 MSAs

	Total Employment	Employment		Per Capita Income			
Rank	Area Name	25 CAGR*	25 Med**	25 CAGR*	25 Med Gr**	2009 Pop	CAGR+***
1	Las Vegas-Paradise, NV	5.47%	5.61%	3.97%	4.41%	1,902,834	9.44%
2	McAllen-Edinburg-Mission, TX	4.11%	4.65%	4.47%	5.00%	741,152	8.58%
3	Provo-Orem, UT	4.11%	4.63%	4.05%	4.30%	555,551	8.16%
4	Cape Coral-Fort Myers, FL	3.40%	4.36%	4.47%	4.66%	586,908	7.87%
5	Austin-Round Rock-San Marcos, TX	3.59%	4.60%	3.98%	5.25%	1,705,075	7.57%
6	Raleigh-Cary, NC	3.51%	4.27%	4.02%	4.74%	1,125,827	7.53%
7	Boise City-Nampa, ID	3.37%	4.02%	4.16%	5.28%	606,376	7.53%
8	Durham-Chapel Hill, NC	2.78%	3.09%	4.63%	5.10%	501,228	7.41%
9	Orlando-Kissimmee-Sanford, FL	3.37%	3.85%	4.01%	4.77%	2,082,421	7.38%
10	Salt Lake City, UT	2.82%	3.33%	4.37%	4.82%	1,130,293	7.19%
11	Ogden-Clearfield, UT	2.87%	3.13%	4.28%	4.77%	541,569	7.15%
12	Seattle-Tacoma-Bellevue, WA	2.31%	2.78%	4.82%	5.79%	3,407,848	7.13%
13	North Port-Bradenton-Sarasota, FL	2.52%	3.90%	4.52%	4.88%	688,126	7.04%
14	Phoenix-Mesa-Glendale, AZ	3.28%	4.07%	3.65%	4.52%	4,364,094	6.94%
15	Charlotte-Gastonia-Rock Hill, NC-SC	2.58%	3.63%	4.31%	5.10%	1,745,524	6.89%
16	Nashville-Davidson-Murfreesboro-Franklin, TN	2.44%	2.66%	4.45%	4.57%	1,582,264	6.89%
17	Sacramento-Arden-Arcade-Roseville, CA	2.62%	3.13%	4.22%	4.94%	2,127,355	6.83%
18	El Paso, TX	2.05%	2.22%	4.77%	5.29%	751,296	6.81%
19	San Antonio-New Braunfels, TX	2.39%	2.50%	4.40%	5.13%	2,072,128	6.79%
20	Houston-Sugar Land-Baytown, TX	2.19%	2.73%	4.58%	5.47%	5,867,489	6.78%
21	Madison, WI	2.18%	2.29%	4.56%	4.60%	570,025	6.74%
22	Riverside-San Bernardino-Ontario, CA	3.54%	3.52%	3.18%	3.78%	4,143,113	6.72%
23	Jacksonville, FL	2.31%	3.20%	4.39%	4.67%	1,328,144	6.70%
24	Washington-Arlington-Alexandria, DC-VA-MD-WV	2.04%	2.13%	4.66%	4.77%	5,476,241	6.70%
25	Atlanta-Sandy Springs-Marietta, GA	2.79%	3.52%	3.87%	4.74%	5,475,213	6.66%
26	Oxnard-Thousand Oaks-Ventura, CA	2.14%	2.07%	4.49%	5.47%	802,983	6.63%
27	Charleston-North Charleston-Summerville, SC	2.02%	2.59%	4.61%	5.12%	659,191	6.62%
28	Tucson, AZ	2.43%	2.86%	4.19%	4.35%	1,020,200	6.62%
29	Baton Rouge, LA	1.86%	2.33%	4.71%	4.64%	786,947	6.57%
30	San Diego-Carlsbad-San Marcos, CA	2.08%	2.17%	4.45%	4.54%	3,053,793	6.53%
31	Colorado Springs, CO	2.31%	2.74%	4.20%	4.65%	626,227	6.52%
32	Albuquerque, NM	2.33%	2.09%	4.18%	4.36%	857,903	6.51%
33	Portland-Vancouver-Hillsboro, OR-WA	2.34%	2.84%	4.14%	4.69%	2,241,841	6.48%
34	Jackson, MS	1.69%	1.92%	4.79%	5.07%	540,866	6.48%
35	Little Rock-North Little Rock-Conway, AR	1.73%	1.99%	4.69%	5.14%	685,488	6.41%
36	Portland-South Portland-Biddeford, ME	1.61%	1.72%	4.75%	4.94%	516,826	6.36%
37	Tampa-St. Petersburg-Clearwater, FL	2.09%	3.09%	4.21%	4.70%	2,747,272	6.29%
38	Knoxville, TN	2.09%	2.37%	4.20%	4.04%	699,247	6.29%
39	Birmingham-Hoover, AL	1.56%	2.15%	4.73%	5.12%	1,131,070	6.29%
40	Columbia, SC	1.85%	2.17%	4.43%	4.61%	744,730	6.28%
41	Dallas-Fort Worth-Arlington, TX	2.39%	3.04%	3.87%	4.66%	6,447,615	6.25%
42	Omaha-Council Bluffs, NE-IA	1.67%	2.01%	4.57%	4.94%	849,517	6.24%
43	Palm Bay-Melbourne-Titusville, FL	2.08%	2.52%	4.14%	3.81%	536,357	6.22%
44	Des Moines-West Des Moines, IA	1.95%	2.03%	4.27%	4.78%	562,906	6.21%
45	Miami-Fort Lauderdale-Pompano Beach, FL	2.04%	2.83%	4.12%	4.29%	5,547,051	6.17%
46	Indianapolis-Carmel, IN	1.95%	2.61%	4.21%	4.31%	1,743,658	6.16%
47	Memphis, TN-MS-AR	1.62%	1.95%	4.52%	4.95%	1,304,926	6.13%
48	Columbus, OH	1.96%	2.09%	4.16%	4.27%	1,801,848	6.12%
49	Denver-Aurora-Broomfield, CO	1.86%	2.11%	4.24%	4.87%	2,552,195	6.10%
50	Greenville-Mauldin-Easley, SC	1.78%	2.50%	4.32%	4.86%	639,617	6.10%

Rank	Total Employment Area Name	Employment 25 CAGR*	Employment 25 Med**	Per Capita Income 25 CAGR*	Per Capita Income 25 Med Gr**	2009 Pop	CAGR+***
51	Lakeland-Winter Haven, FL	1.81%	2.09%	4.24%	4.19%	583,403	6.05%
52	Baltimore-Towson, MD	1.28%	1.79%	4.74%	5.15%	2,690,886	6.02%
53	Minneapolis-St. Paul-Bloomington, MN-WI	1.74%	2.08%	4.21%	5.19%	3,269,814	5.95%
54	Bridgeport-Stamford-Norwalk, CT	0.77%	1.57%	5.11%	6.53%	901,208	5.89%
55	Richmond, VA	1.65%	2.06%	4.22%	4.68%	1,238,187	5.88%
56	Louisville-Jefferson County, KY-IN	1.46%	2.02%	4.40%	4.40%	1,258,577	5.86%
57	Augusta-Richmond County, GA-SC	1.53%	1.67%	4.32%	4.25%	539,154	5.85%
58	Chattanooga, TN-GA	1.48%	1.91%	4.35%	5.07%	524,303	5.83%
59	Harrisburg-Carlisle, PA	1.44%	1.30%	4.33%	3.92%	536,919	5.77%
60	Modesto, CA	2.00%	2.18%	3.75%	3.43%	510,385	5.75%
61	Kansas City, MO-KS	1.55%	1.81%	4.18%	4.60%	2,067,585	5.73%
62	Cincinnati-Middletown, OH-KY-IN	1.53%	1.62%	4.18%	4.75%	2,171,896	5.71%
63	San Francisco-Oakland-Fremont, CA	1.11%	1.91%	4.59%	4.84%	4,317,853	5.70%
64	Hampton Roads	1.32%	1.47%	4.37%	4.53%	1,674,498	5.69%
65	Albany-Schenectady-Troy, NY	1.16%	1.23%	4.52%	4.63%	857,592	5.69%
66	Boston-Cambridge-Quincy, MA-NH	0.80%	1.47%	4.82%	5.03%	4,588,680	5.63%
67	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	1.00%	1.26%	4.58%	4.57%	5,968,252	5.58%
68	Tulsa, OK	1.23%	1.57%	4.33%	5.66%	929,015	5.56%
69	Pittsburgh, PA	0.85%	0.90%	4.67%	4.94%	2,354,957	5.52%
70	Lancaster, PA	1.47%	1.56%	4.01%	4.89%	507,766	5.48%
71	Grand Rapids-Wyoming, MI	1.68%	2.05%	3.74%	4.30%	778,009	5.42%
72	Worcester, MA	0.98%	1.21%	4.41%	4.44%	803,701	5.39%
73	Stockton, CA	1.79%	2.17%	3.60%	3.88%	674,860	5.39%
74	Honolulu, HI	1.04%	1.44%	4.33%	4.42%	907,574	5.37%
75	Chicago-Joliet-Naperville, IL-IN-WI	1.11%	1.66%	4.25%	5.11%	9,580,567	5.36%
76	New York-Northern New Jersey-Long Island, NY-NJ-PA	0.82%	1.45%	4.53%	5.47%	19,069,796	5.34%
77	Scranton-Wilkes-Barre, PA	0.78%	1.02%	4.56%	4.84%	549,454	5.34%
78	Akron, OH	1.21%	1.70%	4.11%	4.57%	699,935	5.32%
79	Oklahoma City, OK	1.14%	1.85%	4.14%	4.42%	1,227,278	5.28%
80	Bakersfield-Delano, CA	1.92%	2.01%	3.35%	3.53%	807,407	5.27%
81	Fresno, CA	1.57%	1.90%	3.70%	3.97%	915,267	5.27%
82	Allentown-Bethlehem-Easton, PA-NJ	1.19%	1.25%	4.08%	4.38%	816,012	5.27%
83	New Haven-Milford, CT	0.68%	1.12%	4.52%	4.48%	848,006	5.20%
84	Hartford-West Hartford-East Hartford, CT	0.66%	1.01%	4.53%	4.45%	1,195,998	5.19%
85	Milwaukee-Waukesha-West Allis, WI	0.94%	1.25%	4.24%	4.59%	1,559,667	5.18%
86	Wichita, KS	1.15%	1.66%	4.01%	4.56%	612,683	5.16%
87	Providence-New Bedford-Fall River, RI-MA	0.62%	0.84%	4.55%	4.67%	1,600,642	5.16%
88	Poughkeepsie-Newburgh-Middletown, NY	1.21%	1.29%	3.92%	4.56%	677,094	5.13%
89	Greensboro-High Point, NC	1.16%	1.79%	3.95%	4.64%	714,765	5.11%
90	San Jose-Sunnyvale-Santa Clara, CA	0.79%	1.37%	4.31%	5.33%	1,839,700	5.10%
91	St. Louis, MO-IL	0.91%	1.32%	4.15%	4.82%	2,828,990	5.07%
92	Los Angeles-Long Beach-Santa Ana, CA	1.00%	1.61%	3.93%	4.33%	12,874,797	4.93%
93	New Orleans-Metairie-Kenner, LA	0.12%	0.83%	4.80%	4.70%	1,189,981	4.91%
94	Springfield, MA	0.56%	0.95%	4.30%	4.52%	698,903	4.86%
95	Buffalo-Niagara Falls, NY	0.53%	0.71%	4.18%	4.39%	1,123,804	4.71%
96	Rochester, NY	0.72%	0.68%	3.91%	3.95%	1,035,566	4.63%
97	Syracuse, NY	0.56%	0.38%	4.07%	4.15%	646,084	4.63%
98	Detroit-Warren-Livonia, MI	0.67%	1.33%	3.78%	3.72%	4,403,437	4.45%
99	Cleveland-Elyria-Mentor, OH	0.54%	1.16%	3.90%	4.16%	2,091,286	4.44%
100	Dayton, OH	0.31%	0.38%	3.79%	3.68%	835,063	4.11%
101	Toledo, OH	0.56%	1.04%	3.51%	3.81%	672,220	4.07%
102	Youngstown-Warren-Boardman, OH-PA	0.20%	0.42%	3.80%	3.65%	562,963	3.99%

*Compound Annual Growth Rate, also known as the annualized growth rate, for the 25 year period from 1984-2009

**Median Annual Growth Rate, taken from the 25 year period from 1984-2009

***CAGR+ is the sum of the 25 year CAGR for Employment and Per Capita Income Between 1984 and 2009

Appendix C- Households and Fertility

Geography	% Family Households		% of Household Families with Children		Average Household Size		Average Family Household Size		Births Per 1000 Women 15-50	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Akron, OH	63.1	86	27	89	2.43	89	3.07	81	47	94
Albany-Schenectady-Troy, NY	62.5	91	26.5	92	2.44	87	3.07	80	49	85
Albuquerque, NM	64.8	69	31.1	48	2.53	67	3.12	65	69	14
Allentown-Bethlehem-Easton, PA-NJ	69.1	19	29.8	62	2.58	55	3.11	68	61	35
Atlanta-Sandy Springs-Marietta, GA	68.1	27	34.2	18	2.86	18	3.49	17	57	48
Augusta-Richmond County, GA-SC	69	22	31.7	34	2.57	56	3.14	60	69	13
Austin-Round Rock, TX	62.9	88	32.4	26	2.72	26	3.39	26	62	29
Bakersfield, CA	74.5	7	40.7	4	3.2	4	3.7	5	66	16
Baltimore-Towson, MD	65	66	29.5	66	2.61	43	3.26	40	57	49
Baton Rouge, LA	67.4	29	31.9	32	2.59	49	3.14	59	60	37
Birmingham-Hoover, AL	67.1	31	29.6	64	2.48	77	3.07	79	55	60
Boise City-Nampa, ID	70.1	17	35.5	15	2.68	34	3.18	46	80	6
Boston-Cambridge-Quincy, MA-NH	62.2	93	28.4	80	2.6	48	3.28	37	46	98
Bradenton-Sarasota-Venice, FL	62.2	96	19.6	102	2.33	99	2.91	100	55	62
Bridgeport-Stamford-Norwalk, CT	68.4	26	33.9	19	2.67	35	3.26	39	48	88
Buffalo-Niagara Falls, NY	60.5	101	26.8	90	2.36	97	3.04	86	47	96
Cape Coral-Fort Myers, FL	66.4	46	23.2	101	2.43	90	2.95	95	63	26
Charleston-North Charleston-Summerville, SC	64.2	78	28.6	77	2.6	47	3.24	42	65	20
Charlotte-Gastonia-Concord, NC-SC	67	34	32.9	23	2.54	62	3.13	63	56	54
Chattanooga, TN-GA	66.8	40	28.6	76	2.46	83	3.03	87	62	30
Chicago-Naperville-Joliet, IL-IN-WI	66.1	52	31.5	38	2.77	22	3.47	18	58	45
Cincinnati-Middletown, OH-KY-IN	66.2	49	31	49	2.6	46	3.2	43	61	33
Cleveland-Elyria-Mentor, OH	62.8	89	27.8	86	2.44	86	3.1	76	46	100
Colorado Springs, CO	67.7	28	32.5	24	2.58	52	3.13	62	65	22
Columbia, SC	65.3	63	31.5	39	2.52	69	3.12	66	59	41
Columbus, OH	63.8	80	31.7	37	2.54	64	3.14	61	55	58
Dallas-Fort Worth-Arlington, TX	69.3	18	36.2	13	2.88	17	3.49	16	63	25
Dayton, OH	64.4	76	27.8	85	2.38	95	2.94	97	63	27
Denver-Aurora-Broomfield, CO	63.5	83	30.6	51	2.59	51	3.26	41	57	50
Des Moines-West Des Moines, IA	65.5	60	32.4	25	2.45	84	3.02	90	66	18
Detroit-Warren-Livonia, MI	65.9	55	30.4	55	2.63	39	3.31	31	55	56
Durham-Chapel Hill, NC	61.1	100	28.7	75	2.4	92	3.02	91	50	81
El Paso, TX	74.8	6	38.5	7	3.06	9	3.65	7	63	24
Fresno, CA	71.5	10	38.1	9	3.17	5	3.77	4	80	5
Grand Rapids-Wyoming, MI	69	21	33	22	2.65	36	3.19	44	61	34
Greensboro-High Point, NC	65.4	61	29.7	63	2.46	81	3.05	85	55	61
Greenville-Mauldin-Easley, SC	67	36	29.3	69	2.54	66	3.1	73	57	53
Hampton Roads Value	67	35	31.4	41	2.59	50	3.15	55	59	40
Harrisburg-Carlisle, PA	63	87	26.1	94	2.38	96	2.99	93	53	72
Hartford-West Hartford-East Hartford, CT	66.2	51	30.4	54	2.51	72	3.09	77	47	93
Honolulu, HI	70.4	15	30.1	57	2.84	19	3.36	28	66	17
Houston-Sugar Land-Baytown, TX	71.1	12	36.6	11	2.89	16	3.46	19	71	9
Indianapolis-Carmel, IN	65.6	59	31.7	36	2.55	59	3.17	49	55	57
Jackson, MS	65.8	57	31.4	42	2.64	38	3.28	36	59	39
Jacksonville, FL	66.9	37	30.1	58	2.58	54	3.15	56	51	74
Kansas City, MO-KS	66.2	50	32.1	30	2.58	53	3.17	47	57	51
Knoxville, TN	63.7	81	26.4	93	2.4	93	2.99	92	48	90
Lakeland-Winter Haven, FL	69.1	20	27.3	87	2.56	58	3.06	82	71	10

Geography	% Family Households		% of Household Families with Children		Average Household Size		Average Family Household Size		Births Per 1000 Women 15-50	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Lancaster, PA	71.3	11	29.4	67	2.62	41	3.1	71	73	8
Las Vegas-Paradise, NV	65.6	58	32	31	2.71	29	3.3	32	58	46
Little Rock-North Little Rock-Conway, AR	66.7	42	29.1	72	2.5	73	3.1	75	51	76
Los Angeles-Long Beach-Santa Ana, CA	68.4	25	33.5	20	3.05	11	3.69	6	54	63
Louisville-Jefferson County, KY-IN	66.5	43	29.5	65	2.46	82	3.02	89	59	43
Madison, WI	58.2	102	27.1	88	2.32	100	2.91	101	46	101
McAllen-Edinburg-Mission, TX	80.2	2	46.7	2	3.35	2	3.84	2	86	3
Memphis, TN-MS-AR	66.8	38	31.1	46	2.65	37	3.28	35	107	1
Miami-Fort Lauderdale-Pompano Beach, FL	64.9	67	28.3	81	2.76	24	3.45	21	54	64
Milwaukee-Waukesha-West Allis, WI	63.4	84	29.4	68	2.52	70	3.17	52	53	70
Minneapolis-St. Paul-Bloomington, MN-WI	64.5	71	31.5	40	2.55	60	3.17	50	57	52
Modesto, CA	75.2	5	38.2	8	3.14	6	3.63	8	92	2
Nashville-Davidson--Murfreesboro--Franklin, TN	66.4	45	31.1	47	2.6	45	3.16	53	53	71
New Haven-Milford, CT	66	54	30.5	53	2.56	57	3.17	48	46	99
New Orleans-Metairie-Kenner, LA	65.3	62	29	73	2.69	33	3.36	30	53	68
New York-Northern New Jersey-Long Island, NY-NJ-PA	66	53	30.5	52	2.75	25	3.43	22	50	78
Ogden-Clearfield, UT	78.2	3	43.3	3	3.13	7	3.57	12	76	7
Oklahoma City, OK	64.7	70	29.9	61	2.54	65	3.15	57	65	21
Omaha-Council Bluffs, NE-IA	64.4	75	31.9	33	2.54	63	3.16	54	67	15
Orlando-Kissimmee, FL	66.7	41	29.1	71	2.77	23	3.39	25	53	67
Oxnard-Thousand Oaks-Ventura, CA	74.4	8	36.7	10	3.05	10	3.52	14	61	31
Palm Bay-Melbourne-Titusville, FL	66.5	44	24.5	100	2.4	94	2.94	96	50	82
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	65.2	65	30	60	2.63	40	3.3	33	49	83
Phoenix-Mesa-Scottsdale, AZ	67	32	32.3	28	2.92	15	3.57	13	58	44
Pittsburgh, PA	61.6	99	24.7	99	2.29	101	2.92	99	49	86
Portland-South Portland-Biddeford, ME	64	79	26.6	91	2.41	91	2.97	94	58	47
Portland-Vancouver-Beaverton, OR-WA	64.4	74	30.4	56	2.61	42	3.19	45	53	69
Poughkeepsie-Newburgh-Middletown, NY	70.3	16	35.2	16	2.81	21	3.38	27	54	65
Providence-New Bedford-Fall River, RI-MA	64.5	72	28.5	78	2.53	68	3.17	51	39	102
Provo-Orem, UT	80.9	1	47.5	1	3.9	1	4.18	1	69	12
Raleigh-Cary, NC	67.3	30	34.5	17	2.7	31	3.26	38	50	79
Richmond, VA	66.8	39	30.6	50	2.55	61	3.1	72	49	84
Riverside-San Bernardino-Ontario, CA	75.3	4	39	5	3.28	3	3.78	3	64	23
Rochester, NY	63.2	85	28.5	79	2.44	85	3.06	84	47	95
Sacramento--Arden-Arcade--Roseville, CA	67	33	32.2	29	2.72	27	3.29	34	54	66
Salt Lake City, UT	70.6	14	36.2	12	3.03	12	3.62	10	65	19
San Antonio, TX	68.7	24	33.1	21	2.92	14	3.58	11	60	36
San Diego-Carlsbad-San Marcos, CA	65.9	56	31.3	43	2.82	20	3.45	20	52	73
San Francisco-Oakland-Fremont, CA	61.6	97	28.1	83	2.72	28	3.43	23	48	87
San Jose-Sunnyvale-Santa Clara, CA	70.9	13	35.8	14	2.99	13	3.52	15	61	32
Scranton--Wilkes-Barre, PA	63.6	82	25.7	95	2.25	102	2.83	102	51	77
Seattle-Tacoma-Bellevue, WA	62.2	94	29.3	70	2.48	78	3.08	78	55	59
Springfield, MA	62.2	95	28	84	2.47	79	3.11	70	47	92
St. Louis, MO-IL	66.3	47	30.1	59	2.48	76	3.06	83	59	42
Stockton, CA	73.1	9	38.7	6	3.1	8	3.62	9	70	11
Syracuse, NY	62.8	90	28.2	82	2.43	88	3.03	88	50	80
Tampa-St. Petersburg-Clearwater, FL	61.6	98	25.4	97	2.47	80	3.13	64	48	89
Toledo, OH	64.5	73	28.9	74	2.5	74	3.12	67	51	75
Tucson, AZ	62.3	92	25.6	96	2.71	30	3.42	24	62	28
Tulsa, OK	66.3	48	31.7	35	2.51	71	3.1	74	60	38
Washington-Arlington-Alexandria, DC-VA-MD-WV	64.8	68	31.2	45	2.7	32	3.36	29	55	55
Wichita, KS	65.3	64	31.2	44	2.49	75	3.11	69	85	4
Worcester, MA	68.8	23	32.3	27	2.6	44	3.14	58	47	91
Youngstown-Warren-Boardman, OH-PA	64.4	77	25	98	2.33	98	2.92	98	47	97

Appendix D- Education

Geography	% of Population in Some Kind of Schooling		% Population over 25 with Graduate Degree		% of Population over 25 w/ High School Equivalency or Greater		% of Population over 25 w/ Bachelors or Greater	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Akron, OH	31.7	16	9.7	64	89.9	18	27.4	63
Albany-Schenectady-Troy, NY	33.1	5	14.8	9	90.4	14	33.2	25
Albuquerque, NM	28.6	38	12.2	27	86.4	68	29.4	47
Allentown-Bethlehem-Easton, PA-NJ	27.2	54	9.3	70	86.7	65	25.9	78
Atlanta-Sandy Springs-Marietta, GA	24.4	76	11.9	30	86.9	59	34.1	19
Augusta-Richmond County, GA-SC	26.1	65	8.9	78	84.4	80	22.8	89
Austin-Round Rock, TX	31.2	18	13.1	16	86.6	66	38.7	9
Bakersfield, CA	18.5	101	4.5	101	71.5	101	13.8	102
Baltimore-Towson, MD	30.3	29	14.8	10	88.1	42	34.7	16
Baton Rouge, LA	30.5	27	8.8	79	85.4	75	26.2	75
Birmingham-Hoover, AL	23.9	83	9.2	73	85.7	71	27.3	66
Boise City-Nampa, ID	24.1	80	8.7	80	89.7	21	27.8	59
Boston-Cambridge-Quincy, MA-NH	32.6	10	18.3	5	90.6	11	42.2	6
Bradenton-Sarasota-Venice, FL	22.7	91	10.7	43	89.7	20	27.7	61
Bridgeport-Stamford-Norwalk, CT	24.8	75	18.9	3	88.7	32	43.6	3
Buffalo-Niagara Falls, NY	31	21	12.5	25	88.8	29	28.2	53
Cape Coral-Fort Myers, FL	20.5	99	9.4	69	87.2	52	24.5	86
Charleston-North Charleston-Summerville, SC	30.1	32	10.3	50	87.1	55	31.1	36
Charlotte-Gastonia-Concord, NC-SC	24	81	10.1	57	86.7	64	32.4	29
Chattanooga, TN-GA	27.2	55	7.4	92	83	88	22.5	90
Chicago-Naperville-Joliet, IL-IN-WI	26.5	63	13	20	85.9	69	33.5	22
Cincinnati-Middletown, OH-KY-IN	26.7	61	10.5	49	87.6	47	28.5	52
Cleveland-Elyria-Mentor, OH	25.2	72	10.3	53	87.7	45	26.9	70
Colorado Springs, CO	28	45	13.5	13	93.5	2	35.6	13
Columbia, SC	31	22	11.6	32	88.3	37	30.8	40
Columbus, OH	28.9	36	11	39	89.8	19	33.3	24
Dallas-Fort Worth-Arlington, TX	22.1	93	9.8	63	81.9	91	30	43
Dayton, OH	32.9	6	10.7	40	88.6	35	24.8	83
Denver-Aurora-Broomfield, CO	24.8	74	12.9	22	88.8	28	37.6	11
Des Moines-West Des Moines, IA	23.8	84	9.3	72	91.9	7	33.8	21
Detroit-Warren-Livonia, MI	27.5	49	10.3	52	86.9	60	26.3	74
Durham-Chapel Hill, NC	43.2	2	21.8	2	86.9	57	44.3	2
El Paso, TX	25.3	71	6.9	94	71.7	100	20.4	94
Fresno, CA	24.2	79	6.8	95	71.9	99	19.8	95
Grand Rapids-Wyoming, MI	25.8	67	8.2	88	88.3	38	26.4	73
Greensboro-High Point, NC	29.2	34	7.5	90	83.6	84	25.8	79
Greenville-Mauldin-Easley, SC	31	23	9.8	61	83.6	83	27.9	57
Hampton Roads Value	31	20	10	58	89.4	24	27.2	68
Harrisburg-Carlisle, PA	27.7	48	10.5	48	88.8	31	28.5	51
Hartford-West Hartford-East Hartford, CT	31.8	14	15.3	8	88.9	26	34.7	15
Honolulu, HI	31.7	15	10.7	41	90.5	12	31.3	34
Houston-Sugar Land-Baytown, TX	20.5	98	9.5	68	80	94	27.9	58
Indianapolis-Carmel, IN	22.5	92	10.3	54	87.6	48	31.1	35
Jackson, MS	27.9	46	10.5	47	84.6	78	28.8	49
Jacksonville, FL	26.7	62	9	77	88.2	41	27.3	65
Kansas City, MO-KS	24.2	78	11.5	35	90	17	32.8	27
Knoxville, TN	30.5	28	9.8	62	87.4	50	29.2	48
Lakeland-Winter Haven, FL	19.7	100	5.6	99	81.8	92	17.9	98

Geography	% of Population in Some Kind of Schooling		% Population over 25 with Graduate Degree		% of Population over 25 w/ High School Equivalency or Greater		% of Population over 25 w/ Bachelors or Greater	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Lancaster, PA	23.4	86	8.2	89	83.2	86	23.7	88
Las Vegas-Paradise, NV	21.7	96	7.2	93	83	89	21.7	93
Little Rock-North Little Rock-Conway, AR	28	44	9	76	88.2	40	26	77
Los Angeles-Long Beach-Santa Ana, CA	28.7	37	10.3	51	77.6	96	30.2	41
Louisville-Jefferson County, KY-IN	23.1	89	9.6	67	86.8	63	24.9	82
Madison, WI	45.5	1	15.4	7	94	1	41	8
McAllen-Edinburg-Mission, TX	15.6	102	4.4	102	60.7	102	16.1	101
Memphis, TN-MS-AR	22.7	90	8.7	81	83.8	82	24.2	87
Miami-Fort Lauderdale-Pompano Beach, FL	27.4	52	10.1	55	82.5	90	27.8	60
Milwaukee-Waukesha-West Allis, WI	26.9	60	10.6	45	88.8	30	30.8	39
Minneapolis-St. Paul-Bloomington, MN-WI	27.5	50	12.4	26	92.5	5	37.6	10
Modesto, CA	21.4	97	4.9	100	74.4	98	16.3	100
Nashville-Davidson--Murfreesboro--Franklin, TN	25.6	68	10.1	56	86.9	61	31	37
New Haven-Milford, CT	30.6	26	14.7	11	87.6	46	32.7	28
New Orleans-Metairie-Kenner, LA	24	82	9.3	71	84.7	77	26.2	76
New York-Northern New Jersey-Long Island, NY-NJ	27.1	56	14.7	12	84.3	81	35.6	14
Ogden-Clearfield, UT	23.3	88	8.4	84	92.2	6	27.6	62
Oklahoma City, OK	30.2	31	9	75	87.2	53	27.2	69
Omaha-Council Bluffs, NE-IA	27.1	57	10.7	42	90.5	13	31.7	31
Orlando-Kissimmee, FL	27	58	8.3	85	87.4	51	26.6	71
Oxnard-Thousand Oaks-Ventura, CA	28	43	11.6	33	83.1	87	31	38
Palm Bay-Melbourne-Titusville, FL	30.8	25	10	59	90.7	10	25.1	80
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	28.3	41	12.9	21	88.2	39	32.3	30
Phoenix-Mesa-Scottsdale, AZ	24.3	77	9.7	66	84.6	79	27.3	67
Pittsburgh, PA	28.5	39	10.6	44	91	9	27.9	56
Portland-South Portland-Biddeford, ME	27.4	53	12.8	23	92.5	4	34.4	18
Portland-Vancouver-Beaverton, OR-WA	26.1	64	12	29	90.1	15	33.9	20
Poughkeepsie-Newburgh-Middletown, NY	28.4	40	13.3	14	88	43	30.1	42
Providence-New Bedford-Fall River, RI-MA	30.3	30	10.5	46	83.3	85	28.2	55
Provo-Orem, UT	37.1	4	11.2	36	93.2	3	33.3	23
Raleigh-Cary, NC	28	42	13.3	15	89.4	23	42.2	7
Richmond, VA	27.5	51	11.2	37	85.4	74	31.4	33
Riverside-San Bernardino-Ontario, CA	23.3	87	6.6	96	78.6	95	19.2	96
Rochester, NY	31.6	17	13	18	88.6	34	31.7	32
Sacramento--Arden-Arcade--Roseville, CA	31.9	13	9.8	60	87	56	29.7	45
Salt Lake City, UT	25.5	69	9.7	65	88.9	27	29.7	44
San Antonio, TX	25.4	70	9.1	74	81.5	93	24.8	84
San Diego-Carlsbad-San Marcos, CA	32.6	11	12.6	24	85.4	73	34.6	17
San Francisco-Oakland-Fremont, CA	32.3	12	16.9	6	86.9	58	43.5	4
San Jose-Sunnyvale-Santa Clara, CA	30.9	24	18.6	4	85.4	72	43.3	5
Scranton--Wilkes-Barre, PA	29.6	33	8.5	82	88	44	22.4	91
Seattle-Tacoma-Bellevue, WA	27.8	47	13	19	91.3	8	37.4	12
Springfield, MA	37.5	3	11.8	31	85.7	70	27.4	64
St. Louis, MO-IL	26.9	59	11.6	34	88.7	33	29.4	46
Stockton, CA	21.8	95	5.9	97	74.6	97	18	97
Syracuse, NY	32.7	9	12.1	28	89.3	25	28.6	50
Tampa-St. Petersburg-Clearwater, FL	25.8	66	8.5	83	86.5	67	24.6	85
Toledo, OH	32.9	7	8.2	87	87.6	49	22	92
Tucson, AZ	32.8	8	11.1	38	85.2	76	28.2	54
Tulsa, OK	21.9	94	7.5	91	87.2	54	25.1	81
Washington-Arlington-Alexandria, DC-VA-MD-WV	31	19	22.6	1	90	16	47.3	1
Wichita, KS	23.5	85	8.3	86	89.7	22	26.5	72
Worcester, MA	29.1	35	13.1	17	88.5	36	33	26
Youngstown-Warren-Boardman, OH-PA	24.9	73	5.8	98	86.9	62	17.6	99

Appendix E- Mobility

Geography	Veteran Status Population Over 25		Same House 1 Year Ago		Moved Within State in Past Year		Moved Between States in Past Year		Moved from Abroad in Past Year	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Akron, OH	10.1	39	87.1	15	3.5	31	0.9	99	0.4	79
Albany-Schenectady-Troy, NY	9.8	49	87.3	13	4	17	1.5	85	0.4	77
Albuquerque, NM	12.2	13	84.4	49	2.4	73	3	25	0.6	35
Allentown-Bethlehem-Easton, PA-NJ	9.7	50	86.7	18	2.8	56	2.4	48	0.4	69
Atlanta-Sandy Springs-Marietta, GA	8.8	69	82.5	73	5.3	3	2.8	32	0.5	52
Augusta-Richmond County, GA-SC	12.8	8	85.6	30	3.2	41	3.8	9	0.8	13
Austin-Round Rock, TX	8.9	65	78.4	100	6.1	1	2.8	31	0.7	25
Bakersfield, CA	8.4	80	78.9	96	3.8	27	1.6	78	0.6	44
Baltimore-Towson, MD	10.5	32	86.2	25	3.3	37	2.6	42	0.6	37
Baton Rouge, LA	8.5	78	83.8	55	3.2	45	2.2	55	0.4	70
Birmingham-Hoover, AL	10	41	84.8	41	3.2	43	1.8	73	0.2	96
Boise City-Nampa, ID	11	24	81.8	86	2.8	60	2.9	30	0.8	15
Boston-Cambridge-Quincy, MA-NH	7.5	89	86.1	27	3.1	46	2.4	46	0.9	11
Bradenton-Sarasota-Venice, FL	14.4	4	84.7	43	2.6	65	3.5	15	0.3	80
Bridgeport-Stamford-Norwalk, CT	6.3	95	90.9	1	0.7	100	1.8	75	0.7	30
Buffalo-Niagara Falls, NY	9.6	52	87.8	8	1.9	86	1.2	94	0.3	89
Cape Coral-Fort Myers, FL	13.7	6	82.4	74	2.2	81	3.5	16	0.4	64
Charleston-North Charleston-Summerville, SC	12.6	11	82.6	69	5.1	7	4.2	7	0.4	61
Charlotte-Gastonia-Concord, NC-SC	9.2	62	83.3	60	2.4	75	3.3	18	0.4	65
Chattanooga, TN-GA	10.8	29	84.9	39	1.7	91	3.6	13	0.1	99
Chicago-Naperville-Joliet, IL-IN-WI	6.7	93	87.5	10	1.8	87	1.7	77	0.6	43
Cincinnati-Middletown, OH-KY-IN	9.3	59	84.7	45	3.2	44	2.3	52	0.3	85
Cleveland-Elyria-Mentor, OH	10	40	86.3	23	2	84	1.2	93	0.4	78
Colorado Springs, CO	17.3	1	80	93	1.6	94	6	1	1.1	4
Columbia, SC	11.9	17	83.4	58	3.8	23	4.1	8	0.4	62
Columbus, OH	8.7	74	82.9	66	3.8	24	1.8	72	0.4	76
Dallas-Fort Worth-Arlington, TX	8	85	81.8	87	4.1	16	2.1	59	0.7	28
Dayton, OH	12.3	12	83.3	59	3.7	28	1.9	67	0.4	74
Denver-Aurora-Broomfield, CO	9.5	53	82.2	81	5.9	2	3.1	19	0.5	50
Des Moines-West Des Moines, IA	8.9	68	82.6	71	3.8	25	1.9	66	0.6	40
Detroit-Warren-Livonia, MI	8.3	82	86.3	24	2.8	57	1	98	0.6	48
Durham-Chapel Hill, NC	7.2	92	78.8	97	5.2	5	3.7	10	0.7	22
El Paso, TX	9.5	56	84	52	1	99	2.8	35	1.5	2
Fresno, CA	6.5	94	83.6	57	2.2	80	0.7	102	0.3	91
Grand Rapids-Wyoming, MI	8.8	73	85.4	35	3.2	42	1.1	96	0.3	90
Greensboro-High Point, NC	9.4	58	84.7	44	3	49	1.9	68	0.4	75
Greenville-Mauldin-Easley, SC	9.9	46	82.7	67	4	20	3.5	14	0.4	63
Hampton Roads Value	17.2	2	81.3	88	5.2	4	4.4	4	0.8	12
Harrisburg-Carlisle, PA	11.1	23	83.7	56	4	19	2	61	0.4	71
Hartford-West Hartford-East Hartford, CT	8.3	83	87.4	12	2.3	76	2.5	43	0.7	27
Honolulu, HI	11.6	19	83.1	62	0.7	101	4.7	3	1.5	1
Houston-Sugar Land-Baytown, TX	7.4	90	82.7	68	2.9	53	1.9	70	1	8
Indianapolis-Carmel, IN	9.4	57	82.9	65	4.3	13	1.7	76	0.5	56
Jackson, MS	9.1	63	82.1	82	4.9	8	2.4	44	0.1	100
Jacksonville, FL	13.8	5	82.5	72	3.4	36	2.7	37	0.4	68
Kansas City, MO-KS	10.3	36	82.3	78	3.3	39	3.6	12	0.5	49
Knoxville, TN	10	42	86.6	19	2.5	66	2.4	50	0.1	101
Lakeland-Winter Haven, FL	11.8	18	82.4	75	3.8	26	2.6	41	0.7	26

Geography	Veteran Status Population Over 25		Same House 1 Year Ago		Moved Within State in Past Year		Moved Between States in Past Year		Moved from Abroad in Past Year	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Lancaster, PA	9.7	51	87.4	11	2.1	83	1.5	86	0.5	58
Las Vegas-Paradise, NV	10.4	34	77.7	101	0.2	102	4.3	6	0.7	21
Little Rock-North Little Rock-Conway, AR	12	15	82	83	4.1	15	2.7	36	0.3	81
Los Angeles-Long Beach-Santa Ana, CA	5.2	101	86.1	28	1.7	88	0.9	101	0.7	31
Louisville-Jefferson County, KY-IN	10.8	26	86.3	21	2.6	64	2.4	49	0.3	84
Madison, WI	8.2	84	81.9	85	2.9	55	2.2	56	0.6	38
McAllen-Edinburg-Mission, TX	5.1	102	85.8	29	1.7	89	1.1	97	0.6	47
Memphis, TN-MS-AR	9.5	54	83.2	61	1.6	93	3	26	0.2	92
Miami-Fort Lauderdale-Pompano Beach, FL	6.2	96	85.1	38	2.2	79	1.6	82	1	9
Milwaukee-Waukesha-West Allis, WI	8.8	71	84	53	2.7	63	1.6	80	0.2	98
Minneapolis-St. Paul-Bloomington, MN-WI	8.6	76	85.5	34	4	18	1.9	65	0.5	55
Modesto, CA	7.6	88	81	90	3.1	48	0.9	100	0.8	20
Nashville-Davidson--Murfreesboro--Franklin, TN	9.3	60	82	84	3.7	29	2.9	28	0.4	67
New Haven-Milford, CT	7.9	86	87.5	9	1.4	96	2.2	58	0.6	39
New Orleans-Metairie-Kenner, LA	9	64	84.8	42	3.6	30	3	23	0.5	51
New York-Northern New Jersey-Long Island, NY-NJ	5.4	98	90.4	2	1.9	85	1.3	89	0.8	18
Ogden-Clearfield, UT	10.5	33	85.5	33	3.5	33	3	24	0.6	34
Oklahoma City, OK	11.5	20	80.2	92	4.5	12	3.1	20	0.4	66
Omaha-Council Bluffs, NE-IA	11.1	22	82.3	77	3	51	3.1	22	0.6	33
Orlando-Kissimmee, FL	9.9	45	82.2	80	4.1	14	2.3	51	0.8	17
Oxnard-Thousand Oaks-Ventura, CA	8.4	81	86.1	26	3.3	38	1.2	91	0.5	59
Palm Bay-Melbourne-Titusville, FL	16.8	3	85.2	36	1.7	90	2.7	39	0.3	82
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	8.6	75	88.7	3	2.2	77	2	63	0.4	72
Phoenix-Mesa-Scottsdale, AZ	9.8	47	78.4	99	1.6	95	3.5	17	0.7	23
Pittsburgh, PA	10.8	25	88	5	2.1	82	1.6	83	0.3	88
Portland-South Portland-Biddeford, ME	12.1	14	87	16	3.2	40	2.4	45	0.3	83
Portland-Vancouver-Beaverton, OR-WA	9.8	48	82.4	76	2.9	54	3.7	11	0.6	32
Poughkeepsie-Newburgh-Middletown, NY	8.6	77	88	6	2.4	72	2.3	53	0.3	86
Providence-New Bedford-Fall River, RI-MA	8.8	70	87.3	14	1.4	97	2.7	40	0.5	53
Provo-Orem, UT	5.3	100	77.6	102	3.5	34	5.1	2	1.1	5
Raleigh-Cary, NC	8.9	66	84.9	40	3.4	35	3.1	21	0.7	24
Richmond, VA	10.6	31	85.5	32	5.1	6	1.9	64	0.4	73
Riverside-San Bernardino-Ontario, CA	8.4	79	80.4	91	4.6	11	1.3	88	0.6	46
Rochester, NY	8.8	72	85.6	31	2.7	62	1.4	87	0.6	45
Sacramento--Arden-Arcade--Roseville, CA	10.1	38	78.7	98	4.9	10	1.5	84	0.5	57
Salt Lake City, UT	7.3	91	84.4	51	2.4	74	2.7	38	0.9	10
San Antonio, TX	12.6	10	81.2	89	3.1	47	2.4	47	0.5	54
San Diego-Carlsbad-San Marcos, CA	10.3	35	83	64	1.7	92	2.3	54	1.1	7
San Francisco-Oakland-Fremont, CA	6.2	97	85.2	37	3.9	22	1.2	90	0.8	19
San Jose-Sunnyvale-Santa Clara, CA	5.4	99	84.5	48	2.5	68	1.2	92	1.3	3
Scranton--Wilkes-Barre, PA	12	16	87.9	7	2.7	61	1.6	79	0.2	97
Seattle-Tacoma-Bellevue, WA	10.2	37	82.3	79	2.5	70	2.8	34	0.8	16
Springfield, MA	9.3	61	86.6	20	2.5	67	2	62	0.7	29
St. Louis, MO-IL	10.7	30	86.3	22	3.5	32	2.1	60	0.3	87
Stockton, CA	7.7	87	79.2	95	4.9	9	1.1	95	0.5	60
Syracuse, NY	10	43	84.4	50	2.9	52	1.8	74	0.6	42
Tampa-St. Petersburg-Clearwater, FL	12.6	9	83	63	2.8	59	2.9	29	0.6	36
Toledo, OH	8.9	67	84.5	47	3	50	1.9	69	0.2	95
Tucson, AZ	12.8	7	80	94	1.4	98	3	27	0.8	14
Tulsa, OK	10.8	27	82.6	70	4	21	2.8	33	0.2	93
Washington-Arlington-Alexandria, DC-VA-MD-WV	9.9	44	84.6	46	2.8	58	4.4	5	1.1	6
Wichita, KS	10.8	28	83.8	54	2.5	69	2.2	57	0.2	94
Worcester, MA	9.5	55	86.8	17	2.2	78	1.9	71	0.6	41
Youngstown-Warren-Boardman, OH-PA	11.3	21	88.5	4	2.4	71	1.6	81	0.1	102

Appendix F- Foreign Born Population

Geography	% US Native		% Born in State of Residence		% Foreign Born		% Foreign Born Who Enter U.S. 2000 or Later	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Akron, OH	96.4	11	76.8	9	3.6	92	33	63
Albany-Schenectady-Troy, NY	93.1	42	76.7	10	6.9	60	32.4	71
Albuquerque, NM	90.3	58	50.5	76	9.7	45	30.8	75
Allentown-Bethlehem-Easton, PA-NJ	92.3	48	65.3	31	7.7	55	27.7	81
Atlanta-Sandy Springs-Marietta, GA	87	73	47.4	81	13	30	41.8	23
Augusta-Richmond County, GA-SC	96.6	8	55.5	67	3.4	95	42.6	20
Austin-Round Rock, TX	85.4	76	56.2	65	14.6	27	39.9	35
Bakersfield, CA	80.3	86	63.1	42	19.7	17	25.1	94
Baltimore-Towson, MD	91.7	52	61	52	8.3	51	38.7	40
Baton Rouge, LA	96.8	6	78.4	5	3.2	96	40.1	33
Birmingham-Hoover, AL	96	16	75	15	4	87	48.1	6
Boise City-Nampa, ID	92.5	47	43.5	88	7.5	56	38.9	38
Boston-Cambridge-Quincy, MA-NH	84.2	79	59.1	58	15.8	23	35.8	52
Bradenton-Sarasota-Venice, FL	87.9	70	26.8	100	12.1	33	34	57
Bridgeport-Stamford-Norwalk, CT	80.3	85	44.1	87	19.7	18	37.2	42
Buffalo-Niagara Falls, NY	94.3	26	82	2	5.7	76	32.6	67
Cape Coral-Fort Myers, FL	85.5	75	26.2	101	14.5	28	40.4	31
Charleston-North Charleston-Summerville, SC	95.1	22	53.2	73	4.9	81	43	18
Charlotte-Gastonia-Concord, NC-SC	90.4	57	48.4	80	9.6	46	46.4	10
Chattanooga, TN-GA	96.6	9	56.9	61	3.4	94	34.5	55
Chicago-Naperville-Joliet, IL-IN-WI	82.8	82	63.1	41	17.2	21	27.7	80
Cincinnati-Middletown, OH-KY-IN	96.2	13	69	26	3.8	90	44.7	14
Cleveland-Elyria-Mentor, OH	94.4	25	74.6	17	5.6	78	24.3	96
Colorado Springs, CO	93.1	43	31.4	98	6.9	63	26.3	90
Columbia, SC	95.6	19	61.2	49	4.4	84	48.3	5
Columbus, OH	93.1	40	70.3	22	6.9	62	47	9
Dallas-Fort Worth-Arlington, TX	82.3	83	55	71	17.7	20	36.9	44
Dayton, OH	97	4	71.3	19	3	100	39.2	37
Denver-Aurora-Broomfield, CO	88.2	68	43.1	89	11.8	35	36.8	45
Des Moines-West Des Moines, IA	93.4	37	70.7	21	6.6	65	38.9	39
Detroit-Warren-Livonia, MI	91.1	54	75.2	14	8.9	49	36	51
Durham-Chapel Hill, NC	88.5	66	51.4	75	11.5	37	49.7	3
El Paso, TX	74.6	96	56.4	64	25.4	7	22.1	100
Fresno, CA	78.6	90	65.2	33	21.4	13	25.4	93
Grand Rapids-Wyoming, MI	93.7	34	78.2	7	6.3	68	36.3	48
Greensboro-High Point, NC	92.1	49	64.4	38	7.9	54	40.2	32
Greenville-Mauldin-Easley, SC	93.2	39	55.8	66	6.8	64	47.7	8
Hampton Roads Value	94.2	30	48.4	79	5.8	75	33.1	62
Harrisburg-Carlisle, PA	95.5	20	75	16	4.5	83	43.5	17
Hartford-West Hartford-East Hartford, CT	87.6	71	58.5	59	12.4	32	32.2	72
Honolulu, HI	80.8	84	52.5	74	19.2	19	26.9	87
Houston-Sugar Land-Baytown, TX	78.2	91	55.1	70	21.8	12	35.1	54
Indianapolis-Carmel, IN	94.2	29	68.3	27	5.8	73	53.9	2
Jackson, MS	97.7	2	76.6	11	2.3	101	63.2	1
Jacksonville, FL	92	50	46.2	85	8	53	33.6	60
Kansas City, MO-KS	94.2	28	53.9	72	5.8	74	43.6	16
Knoxville, TN	96.8	7	62.1	46	3.2	97	37.1	43
Lakeland-Winter Haven, FL	89.8	59	42.4	91	10.2	44	36.5	47

Geography	% US Native		% Born in State of Residence		% Foreign Born		% Foreign Born Who Enter U.S. 2000 or Later	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Lancaster, PA	95.7	18	75.6	13	4.3	85	44.9	13
Las Vegas-Paradise, NV	78.1	92	22.3	102	21.9	11	32.9	64
Little Rock-North Little Rock-Conway, AR	96.5	10	66.3	30	3.5	93	40.9	28
Los Angeles-Long Beach-Santa Ana, CA	65.6	100	49.3	77	34.4	3	23.5	98
Louisville-Jefferson County, KY-IN	95.9	17	67.6	28	4.1	86	49.1	4
Madison, WI	93.7	35	66.5	29	6.3	70	42.9	19
McAllen-Edinburg-Mission, TX	71	98	59.7	56	29	5	27.2	84
Memphis, TN-MS-AR	95.3	21	57.5	60	4.7	82	47.9	7
Miami-Fort Lauderdale-Pompano Beach, FL	62.9	102	32.3	96	37.1	1	30.8	74
Milwaukee-Waukesha-West Allis, WI	93.1	41	71.3	20	6.9	61	37.9	41
Minneapolis-St. Paul-Bloomington, MN-WI	90.9	55	64.6	37	9.1	48	41.7	24
Modesto, CA	79.1	88	62.7	43	20.9	15	31	73
Nashville-Davidson--Murfreesboro--Franklin, TN	92.8	45	56.4	63	7.2	58	44.9	12
New Haven-Milford, CT	88.9	61	63.5	40	11.1	42	32.8	66
New Orleans-Metairie-Kenner, LA	93	44	73.9	18	7	59	40.7	30
New York-Northern New Jersey-Long Island, NY-NJ	72.4	97	55.2	69	27.6	6	29	78
Ogden-Clearfield, UT	94.3	27	64.9	34	5.7	77	26.6	89
Oklahoma City, OK	92.8	46	61	51	7.2	57	39.3	36
Omaha-Council Bluffs, NE-IA	93.4	36	59.2	57	6.6	67	43.6	15
Orlando-Kissimmee, FL	84.2	80	32.8	95	15.8	24	32.5	68
Oxnard-Thousand Oaks-Ventura, CA	77.2	94	55.2	68	22.8	9	23.7	97
Palm Bay-Melbourne-Titusville, FL	91.5	53	31.3	99	8.5	50	21.8	101
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	90.7	56	63.8	39	9.3	47	36	50
Phoenix-Mesa-Scottsdale, AZ	84.6	77	36.1	93	15.4	26	34.1	56
Pittsburgh, PA	97	3	82.8	1	3	99	40.1	34
Portland-South Portland-Biddeford, ME	96.1	14	56.4	62	3.9	89	30.6	77
Portland-Vancouver-Beaverton, OR-WA	88	69	42.9	90	12	34	33.9	59
Poughkeepsie-Newburgh-Middletown, NY	88.9	62	70.1	23	11.1	41	27.4	83
Providence-New Bedford-Fall River, RI-MA	87.5	72	62.5	44	12.5	31	23.3	99
Provo-Orem, UT	93.4	38	61.5	47	6.6	66	41	27
Raleigh-Cary, NC	88.8	63	47.2	83	11.2	40	45.6	11
Richmond, VA	93.8	32	62.3	45	6.2	71	41.2	26
Riverside-San Bernardino-Ontario, CA	78.7	89	59.8	55	21.3	14	21.7	102
Rochester, NY	93.7	33	76.5	12	6.3	69	26.8	88
Sacramento--Arden-Arcade--Roseville, CA	83	81	61.2	50	17	22	28.8	79
Salt Lake City, UT	89.1	60	60.5	53	10.9	43	40.8	29
San Antonio, TX	88.7	65	64.9	35	11.3	38	27.1	85
San Diego-Carlsbad-San Marcos, CA	77.3	93	47.4	82	22.7	10	26.9	86
San Francisco-Oakland-Fremont, CA	70.5	99	48.8	78	29.5	4	25.8	92
San Jose-Sunnyvale-Santa Clara, CA	64.5	101	47.2	84	35.5	2	30.6	76
Scranton--Wilkes-Barre, PA	96.3	12	79.9	3	3.7	91	41.4	25
Seattle-Tacoma-Bellevue, WA	84.3	78	45.7	86	15.7	25	36.1	49
Springfield, MA	91.9	51	65.3	32	8.1	52	34	58
St. Louis, MO-IL	96	15	69.6	24	4	88	42.1	21
Stockton, CA	76.3	95	61.3	48	23.7	8	24.3	95
Syracuse, NY	94.7	23	79.8	4	5.3	80	33.5	61
Tampa-St. Petersburg-Clearwater, FL	88.4	67	34.7	94	11.6	36	32.4	70
Toledo, OH	96.9	5	77.8	8	3.1	98	35.4	53
Tucson, AZ	86.6	74	40	92	13.4	29	32.9	65
Tulsa, OK	94.6	24	59.8	54	5.4	79	42	22
Washington-Arlington-Alexandria, DC-VA-MD-WV	79.9	87	31.5	97	20.1	16	36.7	46
Wichita, KS	93.9	31	64.8	36	6.1	72	27.5	82
Worcester, MA	88.8	64	69.1	25	11.2	39	32.5	69
Youngstown-Warren-Boardman, OH-PA	97.8	1	78.3	6	2.2	102	26.3	91

Appendix G- Commuting

Geography	% Drive Alone		% Who Carpool		% Who Use Public Tranpsportation		% Who Walked		% Who Worked at Home		Mean Commute Time	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Akron, OH	86.6	1	5.9	102	1.4	66	2.2	48	3.2	87	23.2	62
Albany-Schenectady-Troy, NY	79.2	59	8.4	90	2.8	31	3.9	12	4.5	33	22	82
Albuquerque, NM	78.7	65	10.9	29	1.6	55	1.6	74	4.8	27	23.3	58
Allentown-Bethlehem-Easton, PA-NJ	82.2	25	9.1	68	1.3	69	2.5	36	4.1	44	26.7	21
Atlanta-Sandy Springs-Marietta, GA	77.2	70	10.5	34	3.7	21	1.4	86	5.6	9	30.1	5
Augusta-Richmond County, GA-SC	84.4	6	9.6	55	0.5	95	1.9	57	2.7	100	23	64
Austin-Round Rock, TX	76	79	10.5	35	2.8	29	1.8	60	5.9	8	24.9	37
Austin-Round Rock, TX	76	79	10.5	35	2.8	29	1.8	60	5.9	8	24.9	37
Bakersfield, CA	75.5	85	17.2	1	0.9	80	1.7	68	3	93	23.6	53
Baltimore-Towson, MD	76.8	76	9.2	67	6.2	11	2.9	28	3.9	58	29.7	8
Baton Rouge, LA	82.3	23	11.1	21	1	77	1.8	64	2.8	98	26	25
Birmingham-Hoover, AL	83.6	12	11.2	18	0.7	87	1.3	93	2.7	101	26.2	22
Boise City-Nampa, ID	79.4	57	9.1	69	0.6	93	1.8	65	5.1	21	20.8	95
Boise City-Nampa, ID	79.4	57	9.1	69	0.6	93	1.8	65	5.1	21	20.8	95
Boston-Cambridge-Quincy, MA-NH	68.5	98	8	96	12.2	4	5.1	4	4.3	38	28.4	10
Bradenton-Sarasota-Venice, FL	80.4	44	9.2	65	0.7	90	1.1	99	5.6	10	22.6	68
Bridgeport-Stamford-Norwalk, CT	73.4	93	7.9	99	9.6	6	3.5	20	4.4	37	27.3	16
Buffalo-Niagara Falls, NY	81.2	38	8.8	79	3.6	23	3.1	27	2.3	102	21.1	92
Cape Coral-Fort Myers, FL	73.9	87	15.8	2	0.7	86	1.3	92	6.1	5	25.8	27
Cape Coral-Fort Myers, FL	73.9	87	15.8	2	0.7	86	1.3	92	6.1	5	25.8	27
Charleston-North Charleston-Summerville, SC	81.6	30	9.2	64	1.5	59	1.9	56	3.5	67	24.3	44
Charlotte-Gastonia-Concord, NC-SC	79.5	55	10.9	28	1.9	49	1.6	73	5.4	15	25	36
Chattanooga, TN-GA	84	10	9.5	58	0.7	89	2.2	49	2.8	97	22.1	79
Chicago-Naperville-Joliet, IL-IN-WI	70.9	96	8.8	81	11.5	5	3.2	24	4	50	30.7	4
Cincinnati-Middletown, OH-KY-IN	81.1	40	9.6	57	2.4	40	2.2	47	3.8	62	24	50
Cleveland-Elyria-Mentor, OH	81.5	31	8.2	92	3.8	19	2.3	41	3.4	73	24.4	42
Colorado Springs, CO	76.9	75	9.5	60	1.2	73	4.6	6	6.2	2	22.3	74
Columbia, SC	81.6	29	8.7	84	0.6	94	1.5	83	5.4	16	23.6	52
Columbus, OH	83.3	14	7.9	97	1.4	65	2.1	52	4.1	45	22.5	72
Dallas-Fort Worth-Arlington, TX	81.2	36	10.3	43	1.5	58	1.4	87	4.1	48	26.1	23
Dayton, OH	84.3	7	7.7	100	1.5	61	2.3	44	3.3	79	20.9	94
Denver-Aurora-Broomfield, CO	75.6	84	9.5	61	4.6	15	2.1	50	6.2	3	26.8	19
Des Moines-West Des Moines, IA	80.1	46	11.1	22	1.7	54	1.8	63	4.2	41	19.7	101
Detroit-Warren-Livonia, MI	84	9	8.6	88	1.6	56	1.7	67	3.1	89	26	26
Durham-Chapel Hill, NC	73.5	92	12.2	9	3.8	18	3.8	14	5.4	13	22.6	67
Durham-Chapel Hill, NC	73.5	92	12.2	9	3.8	18	3.8	14	5.4	13	22.6	67
El Paso, TX	79.4	56	10.4	37	2.2	45	2.5	35	2.8	96	23	63
Fresno, CA	77.6	69	10.6	32	1.3	67	2.4	39	3.9	59	21.5	88
Grand Rapids-Wyoming, MI	82.8	19	9.7	52	1.1	76	1.4	89	4	54	22.1	80
Greensboro-High Point, NC	81.8	28	10.3	42	1.4	62	1.5	79	3.8	63	22.3	75
Greenville-Mauldin-Easley, SC	83.3	16	9.7	51	0.7	88	2	55	3.4	75	22.1	78
Hampton Roads Value	82.4	22	8.9	75	1.4	64	2.4	38	3.4	72	23.2	61
Harrisburg-Carlisle, PA	80.3	45	9.9	48	1.3	68	3.6	19	3.6	65	21.7	86
Hartford-West Hartford-East Hartford, CT	81.4	33	8.7	85	2.8	30	2.2	46	4	51	22.5	73
Honolulu, HI	66.9	99	13.7	5	7.5	9	5.3	3	3.2	84	27.1	17
Houston-Sugar Land-Baytown, TX	78.8	63	12.1	10	2.2	44	1.5	77	3.4	76	27.6	14
Indianapolis-Carmel, IN	83.8	11	8.7	82	1	79	1.6	76	3.7	64	24.2	47
Jackson, MS	84.8	4	9.6	54	0.3	98	1.5	84	3	94	22.7	66

Geography	% Drive Alone		% Who Carpool		% Who Use Public Tranpsportation		% Who Walked		% Who Worked at Home		Mean Commute Time	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Jacksonville, FL	79.7	51	11.3	17	1.2	71	1.6	75	4	52	25.5	32
Kansas City, MO-KS	82.5	21	8.9	74	1.2	75	1.5	80	4.3	39	22.6	70
Knoxville, TN	85.2	2	8.2	91	0.3	99	1.3	95	3.3	82	21.8	85
Lakeland-Winter Haven, FL	79.7	52	12.9	6	0.2	101	0.7	101	4	55	25.6	31
Lancaster, PA	78.9	62	9.7	53	0.9	82	4	11	4.9	24	22	83
Las Vegas-Paradise, NV	79.5	54	10.3	44	3.2	25	1.8	59	3.3	80	23.5	54
Las Vegas-Paradise, NV	79.5	54	10.3	44	3.2	25	1.8	59	3.3	80	23.5	54
Little Rock-North Little Rock-Conway, AR	82.8	20	10.7	31	0.8	85	1.1	98	3.3	83	22.8	65
Los Angeles-Long Beach-Santa Ana, CA	73.6	89	10.8	30	6.2	10	2.6	32	4.8	26	27.9	12
Louisville-Jefferson County, KY-IN	82.1	27	9.6	56	2.4	39	1.7	66	3.1	88	23.2	60
Madison, WI	73.5	91	8.7	87	4.5	16	5.8	2	4	49	21.1	90
McAllen-Edinburg-Mission, TX	77.2	71	12.3	8	0.2	102	1.5	85	4.1	47	21.1	89
McAllen-Edinburg-Mission, TX	77.2	71	12.3	8	0.2	102	1.5	85	4.1	47	21.1	89
Memphis, TN-MS-AR	82.8	18	10.3	40	1.5	57	1.3	91	3.1	91	23.5	55
Miami-Fort Lauderdale-Pompano Beach, FL	77.7	68	10.4	38	3.5	24	1.8	58	4.5	36	26.7	20
Milwaukee-Waukesha-West Allis, WI	79.7	50	9.3	63	3.7	22	2.9	29	3.2	86	22.1	81
Minneapolis-St. Paul-Bloomington, MN-WI	78.1	67	8.8	80	4.7	14	2.3	40	4.6	30	24.3	45
Modesto, CA	80.1	47	11.1	23	0.8	84	1.7	70	4.1	46	26.1	24
Nashville-Davidson--Murfreesboro--Franklin, TN	82.1	26	10.3	41	1.2	72	1.1	97	4.3	40	25.8	28
New Haven-Milford, CT	79.2	60	8.1	94	3.8	20	3.6	18	3.8	61	23.5	56
New Orleans-Metairie-Kenner, LA	78.3	66	11.2	19	2.7	34	2.6	33	2.9	95	24.7	41
New York-Northern New Jersey-Long Island, NY-NJ	50.4	102	7	101	30.5	1	6.3	1	3.9	56	34.6	1
Ogden-Clearfield, UT	79	61	11.7	12	2.7	32	1.2	96	4.2	42	21.9	84
Ogden-Clearfield, UT	79	61	11.7	12	2.7	32	1.2	96	4.2	42	21.9	84
Oklahoma City, OK	83.3	15	10.4	36	0.4	96	1.7	71	3.1	90	21.1	91
Omaha-Council Bluffs, NE-IA	81.2	39	10.9	27	0.9	81	2.5	37	3.4	71	19.8	100
Orlando-Kissimmee, FL	80.8	43	9	73	1.8	52	1	100	4.9	25	27	18
Orlando-Kissimmee, FL	80.8	43	9	73	1.8	52	1	100	4.9	25	27	18
Oxnard-Thousand Oaks-Ventura, CA	77	73	12.6	7	1.2	70	2.3	45	5.1	20	24	49
Palm Bay-Melbourne-Titusville, FL	84.1	8	8.1	93	0.3	100	0.6	102	4.6	32	22.6	69
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	73.6	90	7.9	98	9.3	7	3.7	15	3.9	57	28	11
Phoenix-Mesa-Scottsdale, AZ	76.2	78	12	11	2.3	41	1.8	62	5.3	18	25.6	29
Pittsburgh, PA	77	72	9.4	62	5.8	13	3.7	16	3.2	85	25.4	33
Portland-South Portland-Biddeford, ME	78.8	64	9.1	70	1.2	74	3.9	13	5.4	12	23.3	57
Portland-Vancouver-Beaverton, OR-WA	71.6	95	9.9	50	6.1	12	3.2	25	6.1	4	24.8	39
Poughkeepsie-Newburgh-Middletown, NY	73.3	94	11.1	25	4.4	17	4.3	9	4.9	23	32.2	3
Providence-New Bedford-Fall River, RI-MA	81.3	35	8.7	86	2.7	35	2.8	31	3.6	66	24.3	46
Provo-Orem, UT	73.8	88	11.2	20	2.6	36	5.1	5	5.3	17	20.9	93
Provo-Orem, UT	73.8	88	11.2	20	2.6	36	5.1	5	5.3	17	20.9	93
Raleigh-Cary, NC	80	48	10.2	45	1	78	1.5	81	6	7	24.3	43
Raleigh-Cary, NC	80	48	10.2	45	1	78	1.5	81	6	7	24.3	43
Richmond, VA	81.2	37	9.5	59	2	47	1.3	90	4.7	29	24.9	38
Riverside-San Bernardino-Ontario, CA	74.5	86	15.6	3	1.8	51	2	54	4.6	31	30	6
Rochester, NY	81.5	32	8.8	78	1.9	50	3.4	21	3.3	77	20.3	98
Sacramento--Arden-Arcade--Roseville, CA	75.8	82	11.6	13	2.7	33	1.8	61	5.4	14	25.6	30
Salt Lake City, UT	76.3	77	11.5	14	3	28	2.3	42	4.7	28	22.1	76
Salt Lake City, UT	76.3	77	11.5	14	3	28	2.3	42	4.7	28	22.1	76
San Antonio, TX	79.3	58	11.4	15	2.3	42	2	53	3.4	74	25.1	35
San Diego-Carlsbad-San Marcos, CA	75.8	81	9.9	49	3.1	27	2.8	30	6.6	1	23.9	51
San Francisco-Oakland-Fremont, CA	61.9	101	10.2	46	14.6	2	4.4	7	6	6	28.6	9
San Jose-Sunnyvale-Santa Clara, CA	75.7	83	11.1	24	3.1	26	2.1	51	4.5	35	24.1	48
Scranton--Wilkes-Barre, PA	81.4	34	11.3	16	0.6	91	3.4	22	2.7	99	21.5	87
Seattle-Tacoma-Bellevue, WA	69.5	97	11	26	8.7	8	3.6	17	5.1	19	27.4	15
Springfield, MA	79.9	49	9.2	66	2	48	4.2	10	3.8	60	22.6	71
St. Louis, MO-IL	82.2	24	9	71	2.5	38	1.6	72	3.5	69	24.8	40
Stockton, CA	77	74	14.1	4	2	46	1.5	78	4	53	29.8	7
Syracuse, NY	79.6	53	8.9	76	2.3	43	4.4	8	3.4	70	20.6	97
Tampa-St. Petersburg-Clearwater, FL	80.8	42	9	72	1.4	63	1.4	88	5.5	11	25.3	34
Toledo, OH	83.6	13	8.7	83	1.5	60	2.3	43	3.3	78	19.9	99
Tucson, AZ	75.9	80	10.1	47	2.5	37	2.6	34	5	22	23.2	59
Tulsa, OK	82.9	17	10.3	39	0.6	92	1.5	82	3.3	81	20.8	96
Washington-Arlington-Alexandria, DC-VA-MD-WV	66.1	100	10.6	33	14.1	3	3.2	23	4.5	34	33.4	2
Wichita, KS	84.8	3	8.8	77	0.4	97	1.3	94	3.1	92	18.6	102
Worcester, MA	81.1	41	8.4	89	1.8	53	3.2	26	4.1	43	27.7	13
Youngstown-Warren-Boardman, OH-PA	84.5	5	8	95	0.9	83	1.7	69	3.5	68	22.1	77

Appendix H- Income, Health Insurance, and Poverty

Geography	Median Hhld Income		Mean Hhld Income		% Hhlds with Foodstamp Benefits		% Civilian Population w/ Health Insurance		% of Families below Poverty Level	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Akron, OH	47482	68	60668	82	12	19	88.4	30	10.2	45
Albany-Schenectady-Troy, NY	57677	23	73357	27	7	84	92.1	9	5.7	99
Albuquerque, NM	46824	72	61059	80	10.6	40	83.1	75	11.8	19
Allentown-Bethlehem-Easton, PA-NJ	56802	27	70284	38	8.1	71	90.4	19	7.6	81
Atlanta-Sandy Springs-Marietta, GA	55464	34	75127	24	8.6	67	80.8	88	10.3	41
Augusta-Richmond County, GA-SC	42146	95	56825	96	12.2	17	85.1	62	14.3	6
Austin-Round Rock, TX	56218	30	74990	25	8.1	72	79.5	94	9.5	57
Bakersfield, CA	47368	69	61768	77	12.5	15	79.6	92	18.1	3
Baltimore-Towson, MD	65392	10	85431	8	7.4	79	89.9	22	6.8	86
Baton Rouge, LA	47814	66	64161	62	17.5	3	84.8	63	10.8	36
Birmingham-Hoover, AL	44868	88	63555	66	10.7	37	87.7	39	10.5	40
Boise City-Nampa, ID	48284	62	60447	86	8.9	62	83.3	73	9.5	59
Boston-Cambridge-Quincy, MA-NH	69334	6	93220	5	7.8	76	95.3	3	6	97
Bradenton-Sarasota-Venice, FL	45377	83	63035	68	6.1	94	81.6	84	9.8	52
Bridgeport-Stamford-Norwalk, CT	79063	3	125185	1	5.7	95	89.1	26	5.4	101
Buffalo-Niagara Falls, NY	45811	79	60684	81	13.8	12	92.1	7	10.9	34
Cape Coral-Fort Myers, FL	45353	84	64509	61	7.6	78	79.7	91	8.2	73
Charleston-North Charleston-Summerville, SC	48246	63	63686	65	10.1	50	83	77	11.6	23
Charlotte-Gastonia-Concord, NC-SC	51267	51	72717	32	10.3	47	84.3	68	10.2	43
Chattanooga, TN-GA	40697	100	57471	95	14.9	9	86	58	13.8	8
Chicago-Naperville-Joliet, IL-IN-WI	58729	21	79647	17	10	51	85.6	60	9.6	55
Cincinnati-Middletown, OH-KY-IN	51832	49	68762	47	10.4	44	88.2	32	9.2	62
Cleveland-Elyria-Mentor, OH	45395	81	62245	74	12.9	14	88.5	29	11.1	31
Colorado Springs, CO	55176	36	69390	40	6.7	86	86.5	53	8	74
Columbia, SC	47615	67	62331	71	10.8	35	86.8	48	10	49
Columbus, OH	50773	53	66943	54	11.6	23	87.3	44	11.3	26
Dallas-Fort Worth-Arlington, TX	54539	37	75803	23	7.8	77	76	98	10.9	33
Dayton, OH	45157	85	59043	92	11.3	28	87.9	35	10.3	42
Denver-Aurora-Broomfield, CO	59007	20	78399	20	5.4	97	84.7	64	8.7	67
Des Moines-West Des Moines, IA	56576	29	73179	29	10.2	48	92	10	7.3	84
Detroit-Warren-Livonia, MI	48535	61	64781	59	14.3	10	87.1	46	12	18
Durham-Chapel Hill, NC	49902	57	68593	48	9	60	86	59	9.9	50
El Paso, TX	36146	101	49621	101	20.1	2	71.8	101	20.3	2
Fresno, CA	45661	80	61437	79	15.2	7	80.1	89	16.6	4
Grand Rapids-Wyoming, MI	47150	70	60638	83	13.1	13	88.1	33	11.6	22
Greensboro-High Point, NC	41272	98	58281	94	11.5	27	82.6	80	12.1	17
Greenville-Mauldin-Easley, SC	43283	93	58834	93	10.4	45	83.3	72	11.2	30
Hampton Roads Value	55209	35	69196	43	7.9	75	88.3	31	7.8	78
Harrisburg-Carlisle, PA	53036	44	66778	56	6.5	89	91	16	6.4	92
Hartford-West Hartford-East Hartford, CT	65698	9	84461	10	8.7	65	92.4	6	6.6	90
Honolulu, HI	67744	8	82290	12	7.2	80	94.3	4	7.5	82
Houston-Sugar Land-Baytown, TX	54146	40	76626	22	9.7	54	75.4	99	12.2	16
Indianapolis-Carmel, IN	50410	54	67598	52	9.8	53	86.4	54	10.6	38
Jackson, MS	44104	89	59355	90	11.9	21	84.5	66	13.7	10
Jacksonville, FL	50010	56	66385	57	9.4	55	83.2	74	10.6	39
Kansas City, MO-KS	54521	38	70479	37	8.5	68	86.8	49	7.9	75
Knoxville, TN	45156	86	59428	89	11.2	30	89.1	25	11	32
Lakeland-Winter Haven, FL	41911	96	54499	99	10.5	42	83	76	13.7	9

Geography	Median Hhld Income		Mean Hhld Income		% Hhlds with Foodstamp Benefits		% Civilian Population w/ Health Insurance		% of Families below Poverty Level	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Lancaster, PA	55673	31	66814	55	6.1	93	86.8	50	6.3	95
Las Vegas-Paradise, NV	53505	43	68779	46	7.2	82	77.7	97	9.2	63
Little Rock-North Little Rock-Conway, AR	45967	77	60577	85	11.3	29	86.3	55	10.9	35
Los Angeles-Long Beach-Santa Ana, CA	58525	22	82000	13	5.6	96	78.5	96	11.5	24
Louisville-Jefferson County, KY-IN	46786	73	62127	75	11.9	20	87.6	41	11.2	28
Madison, WI	56709	28	73350	28	6.2	91	93.1	5	5.8	98
McAllen-Edinburg-Mission, TX	30460	102	43612	102	31	1	64	102	31.8	1
Memphis, TN-MS-AR	43633	91	59545	88	17	4	83.7	69	15.1	5
Miami-Fort Lauderdale-Pompano Beach, FL	45946	78	67080	53	11.1	32	74.4	100	11.5	25
Milwaukee-Waukesha-West Allis, WI	52024	48	68914	45	9.2	59	90.1	20	10.2	44
Minneapolis-St. Paul-Bloomington, MN-WI	63114	13	80613	15	6.1	92	90.9	17	6.3	93
Modesto, CA	48716	60	62281	73	9.4	57	81.9	83	14.1	7
Nashville-Davidson--Murfreesboro--Franklin, TN	51066	52	68223	50	11.6	24	86.7	52	9.5	58
New Haven-Milford, CT	60601	15	78703	18	10.2	49	91.3	12	9.1	64
New Orleans-Metairie-Kenner, LA	46219	76	64748	60	14.3	11	81.2	87	11.6	21
New York-Northern New Jersey-Long Island, NY-NJ	62887	14	91732	6	10.6	39	87.1	47	10	47
Ogden-Clearfield, UT	60208	17	71845	33	7.1	83	86.8	51	6.2	96
Oklahoma City, OK	45109	87	61883	76	10.9	34	82.1	81	11.2	29
Omaha-Council Bluffs, NE-IA	52277	47	68414	49	8.7	66	87.8	37	7	85
Orlando-Kissimmee, FL	46946	71	64148	63	8	74	78.8	95	9.8	51
Oxnard-Thousand Oaks-Ventura, CA	71723	5	91112	7	4.8	99	83.5	70	7.7	80
Palm Bay-Melbourne-Titusville, FL	45391	82	60632	84	8	73	83.4	71	7.9	77
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	60065	18	80876	14	8.9	61	90	21	8.4	69
Phoenix-Mesa-Scottsdale, AZ	52796	45	69634	39	9.3	58	82.1	82	10.7	37
Pittsburgh, PA	46349	75	62329	72	10.6	38	91.4	11	8.8	66
Portland-South Portland-Biddeford, ME	53849	41	69032	44	10.4	43	90.8	18	5.7	100
Portland-Vancouver-Beaverton, OR-WA	55521	33	71471	35	12.1	18	85.2	61	8.4	70
Poughkeepsie-Newburgh-Middletown, NY	69148	7	84463	9	6.6	88	89.4	24	7.5	83
Providence-New Bedford-Fall River, RI-MA	54202	39	70802	36	10.5	41	91	15	8.4	71
Provo-Orem, UT	57476	24	71702	34	6.7	85	87.6	42	8.9	65
Raleigh-Cary, NC	59316	19	76763	21	6.4	90	86.2	57	7.9	76
Richmond, VA	55609	32	73039	30	8.3	69	87.2	45	7.8	79
Riverside-San Bernardino-Ontario, CA	53815	42	69213	42	8.2	70	79.5	93	12.4	14
Rochester, NY	50346	55	65062	58	10.9	33	92.1	8	8.2	72
Sacramento--Arden-Arcade--Roseville, CA	57361	25	74089	26	7.2	81	87.4	43	9.4	60
Salt Lake City, UT	57138	26	72993	31	6.7	87	84.4	67	6.7	88
San Antonio, TX	47955	65	63925	64	11.1	31	80	90	12.6	13
San Diego-Carlsbad-San Marcos, CA	60231	16	80504	16	3.4	102	83	78	8.5	68
San Francisco-Oakland-Fremont, CA	73825	4	101570	4	3.6	100	88.1	34	6.5	91
San Jose-Sunnyvale-Santa Clara, CA	84483	2	108685	3	3.4	101	87.7	40	6.6	89
Scranton--Wilkes-Barre, PA	41823	97	55580	98	11.7	22	91.1	13	9.8	53
Seattle-Tacoma-Bellevue, WA	64028	11	82728	11	8.8	63	87.9	36	6.7	87
Springfield, MA	49177	59	63247	67	16.2	5	96.2	2	11.3	27
St. Louis, MO-IL	51691	50	68086	51	11.5	26	89.5	23	9.7	54
Stockton, CA	52789	46	69225	41	9.4	56	82.9	79	11.8	20
Syracuse, NY	49630	58	62418	70	11.5	25	91.1	14	9.6	56
Tampa-St. Petersburg-Clearwater, FL	44061	90	60216	87	8.8	64	81.5	85	10	48
Toledo, OH	43324	92	56099	97	15.4	6	87.7	38	12.7	12
Tucson, AZ	43137	94	59229	91	12.4	16	84.6	65	12.8	11
Tulsa, OK	46412	74	62747	69	10.4	46	81.3	86	10.1	46
Washington-Arlington-Alexandria, DC-VA-MD-WV	85168	1	109552	2	5.3	98	89	27	4.9	102
Wichita, KS	48202	64	61593	78	10.8	36	86.2	56	9.4	61
Worcester, MA	63360	12	78416	19	9.8	52	96.4	1	6.3	94
Youngstown-Warren-Boardman, OH-PA	40920	99	53182	100	14.9	8	88.7	28	12.3	15

Appendix I- Age

Geography	Median Age		% Population over 18		% of Population over 65	
	Value	Rank	Value	Rank	Value	Rank
Akron, OH	39.3	17	77.6	21	13.9	26
Albany-Schenectady-Troy, NY	39.5	15	78.7	8	14	23
Albuquerque, NM	35.4	62	75.3	60	12.2	49
Allentown-Bethlehem-Easton, PA-NJ	40.2	10	77.3	25	15.1	12
Atlanta-Sandy Springs-Marietta, GA	34.4	81	73.1	86	8.5	100
Augusta-Richmond County, GA-SC	36.1	55	74.8	68	12.6	42
Austin-Round Rock, TX	32.5	93	74.7	72	7.9	101
Bakersfield, CA	30.3	99	69	98	9	94
Baltimore-Towson, MD	37.8	34	76.9	30	12.5	43
Baton Rouge, LA	33.4	89	75.1	64	10.6	77
Birmingham-Hoover, AL	37.3	44	75.9	47	13	36
Boise City-Nampa, ID	33.6	88	72.5	90	10.4	85
Boston-Cambridge-Quincy, MA-NH	38.4	29	78.4	11	12.9	37
Bradenton-Sarasota-Venice, FL	48.1	1	81.6	1	26.8	1
Bridgeport-Stamford-Norwalk, CT	39.3	18	75.2	62	13.2	33
Buffalo-Niagara Falls, NY	40.5	9	78.5	10	15.8	10
Cape Coral-Fort Myers, FL	44.6	3	79.6	4	22.7	2
Charleston-North Charleston-Summerville, SC	35	70	76.7	34	11.4	62
Charlotte-Gastonia-Concord, NC-SC	35.1	69	73.7	82	10	90
Chattanooga, TN-GA	38.9	23	77.1	29	14.6	17
Chicago-Naperville-Joliet, IL-IN-WI	35.4	64	74.6	73	11.2	66
Cincinnati-Middletown, OH-KY-IN	36.9	47	75.4	56	12.2	47
Cleveland-Elyria-Mentor, OH	40.2	11	76.7	33	14.9	13
Colorado Springs, CO	35.2	67	74.1	77	9.8	92
Columbia, SC	35.2	66	75.5	53	11.3	64
Columbus, OH	34.7	77	75.4	59	10.5	79
Dallas-Fort Worth-Arlington, TX	33	90	71.9	91	8.6	96
Dayton, OH	38.6	27	77.2	27	14.7	16
Denver-Aurora-Broomfield, CO	35.4	63	74.9	67	10.1	87
Des Moines-West Des Moines, IA	35	71	74.4	76	11.3	65
Detroit-Warren-Livonia, MI	38.7	26	75.8	49	12.8	38
Durham-Chapel Hill, NC	34.2	84	77.4	24	10.7	75
El Paso, TX	30.6	97	68.5	99	10.5	82
Fresno, CA	30.5	98	69.9	97	9.8	91
Grand Rapids-Wyoming, MI	35.1	68	74.5	74	11.3	63
Greensboro-High Point, NC	37.7	38	76.2	41	13.2	34
Greenville-Mauldin-Easley, SC	37.5	40	76.2	43	12.7	40
Hampton Roads Value	34.7	75	75.9	48	11.6	58
Harrisburg-Carlisle, PA	39.5	16	78.2	15	14.5	18
Hartford-West Hartford-East Hartford, CT	39.6	13	77.7	19	14.1	22
Honolulu, HI	37.3	42	77.8	18	14.9	14
Houston-Sugar Land-Baytown, TX	32.9	91	71.5	92	8.5	99
Indianapolis-Carmel, IN	35.4	65	74	78	10.8	73
Jackson, MS	34.3	83	73.5	83	11.1	69
Jacksonville, FL	36.7	48	75.7	51	11.9	53
Kansas City, MO-KS	36.2	52	74.8	69	11.7	57
Knoxville, TN	38.8	25	78.1	17	14.4	20
Lakeland-Winter Haven, FL	38.9	24	75.9	46	17.6	5

Geography	Median Age		% Population over 18		% of Population over 65	
	Value	Rank	Value	Rank	Value	Rank
Lancaster, PA	37.8	37	75.2	61	14.8	15
Las Vegas-Paradise, NV	34.5	79	73.7	81	10.7	74
Little Rock-North Little Rock-Conway, AR	35.5	61	75.2	63	12	51
Los Angeles-Long Beach-Santa Ana, CA	34.6	78	74.7	71	10.8	70
Louisville-Jefferson County, KY-IN	37.8	36	76.2	42	12.7	39
Madison, WI	34.9	72	78.9	7	10.5	83
McAllen-Edinburg-Mission, TX	27.6	101	63.5	102	9.6	93
Memphis, TN-MS-AR	34.8	74	72.9	87	10.5	81
Miami-Fort Lauderdale-Pompano Beach, FL	39.2	19	77.4	22	15.9	9
Milwaukee-Waukesha-West Allis, WI	37	46	75.4	55	12.5	44
Minneapolis-St. Paul-Bloomington, MN-WI	36	56	75.4	58	10.5	78
Modesto, CA	32.6	92	70.8	93	10.5	84
Nashville-Davidson--Murfreesboro--Franklin, TN	35.5	60	75.5	54	10.5	80
New Haven-Milford, CT	38.5	28	77.4	23	13.9	25
New Orleans-Metairie-Kenner, LA	37.5	39	76.4	38	12.2	48
New York-Northern New Jersey-Long Island, NY-NJ	37.8	35	76.8	32	13	35
Ogden-Clearfield, UT	30	100	68	100	9	95
Oklahoma City, OK	34.2	85	74.9	65	12	50
Omaha-Council Bluffs, NE-IA	34.3	82	73.8	80	11.1	68
Orlando-Kissimmee, FL	36.1	53	76.2	40	13.3	30
Oxnard-Thousand Oaks-Ventura, CA	36.6	49	73.9	79	11.8	56
Palm Bay-Melbourne-Titusville, FL	44.8	2	80.1	2	20.8	3
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	38	32	76.5	36	13.3	29
Phoenix-Mesa-Scottsdale, AZ	33.7	86	72.8	88	11.4	60
Pittsburgh, PA	42.3	4	79.9	3	17.3	8
Portland-South Portland-Biddeford, ME	41.2	7	79	6	14.5	19
Portland-Vancouver-Beaverton, OR-WA	36.4	51	76.2	44	10.8	71
Poughkeepsie-Newburgh-Middletown, NY	38.1	31	74.8	70	11.5	59
Providence-New Bedford-Fall River, RI-MA	39.6	12	78.2	16	14.2	21
Provo-Orem, UT	23.3	102	65.2	101	6.5	102
Raleigh-Cary, NC	34.5	80	73.4	84	8.6	98
Richmond, VA	37.3	43	76.3	39	11.9	54
Riverside-San Bernardino-Ontario, CA	32.1	95	70.6	94	10.1	86
Rochester, NY	39.6	14	77.7	20	13.9	24
Sacramento--Arden-Arcade--Roseville, CA	35.9	58	74.9	66	11.9	52
Salt Lake City, UT	30.9	96	70.6	95	8.6	97
San Antonio, TX	33.7	87	72.6	89	11.2	67
San Diego-Carlsbad-San Marcos, CA	34.7	76	75.8	50	11.4	61
San Francisco-Oakland-Fremont, CA	38.2	30	78.4	12	12.4	46
San Jose-Sunnyvale-Santa Clara, CA	35.7	59	75.4	57	10.8	72
Scranton--Wilkes-Barre, PA	42	6	79.4	5	17.8	4
Seattle-Tacoma-Bellevue, WA	36.5	50	77.2	28	10.6	76
Springfield, MA	39	21	78.3	14	13.8	27
St. Louis, MO-IL	37.9	33	76.1	45	13.2	32
Stockton, CA	32.2	94	70	96	10.1	88
Syracuse, NY	38.9	22	77.3	26	13.7	28
Tampa-St. Petersburg-Clearwater, FL	40.6	8	78.5	9	17.3	7
Toledo, OH	37.4	41	76.8	31	13.3	31
Tucson, AZ	37.2	45	76.6	35	15.1	11
Tulsa, OK	36	57	74.4	75	12.6	41
Washington-Arlington-Alexandria, DC-VA-MD-WV	36.1	54	75.6	52	10	89
Wichita, KS	34.9	73	73.1	85	11.9	55
Worcester, MA	39.2	20	76.4	37	12.5	45
Youngstown-Warren-Boardman, OH-PA	42.2	5	78.3	13	17.4	6

Appendix J- Hampton Roads Employment, Industry Employment %, and Growth in Industry Employment % (REMI)

Industry	H.R.'s Employment 2000	2010	Hampton Roads % Emp 2000	2010	% Growth 00-10*
Forestry; Fishing, hunting, trapping	585	2,202	0.08%	0.29%	244.33%
Logging	89	96	0.01%	0.01%	-2.14%
Support activities for agriculture and forestry	460	648	0.07%	0.09%	28.81%
Oil and gas extraction	425	219	0.06%	0.03%	-52.99%
Coal mining	20	354	0.00%	0.05%	1559.98%
Metal ore mining	22	401	0.00%	0.05%	1561.44%
Nonmetallic mineral mining and quarrying	72	784	0.01%	0.10%	889.47%
Support activities for mining	2	58	0.00%	0.01%	2531.27%
Electric power generation, transmission, and distribution	2,334	1,934	0.34%	0.26%	-24.25%
Natural gas distribution	694	428	0.10%	0.06%	-43.67%
Water, sewage, and other systems	71	45	0.01%	0.01%	-41.56%
Construction	58,341	52,640	8.47%	6.99%	-17.53%
Sawmills and wood preservation	599	833	0.09%	0.11%	27.11%
Veneer, plywood, and engineered wood product manufacturing	498	855	0.07%	0.11%	56.93%
Other wood product manufacturing	599	474	0.09%	0.06%	-27.71%
Clay product and refractory manufacturing	172	126	0.02%	0.02%	-33.15%
Glass and glass product manufacturing	736	419	0.11%	0.06%	-47.95%
Cement and concrete product manufacturing	1,149	1,029	0.17%	0.14%	-18.19%
Lime, gypsum product manufacturing; Other nonmetallic mineral product manufacturing	802	578	0.12%	0.08%	-34.12%
Iron and steel mills and ferroalloy manufacturing	298	104	0.04%	0.01%	-67.93%
Steel product manufacturing from purchased steel	528	153	0.08%	0.02%	-73.46%
Alumina and aluminum production and processing	362	144	0.05%	0.02%	-63.58%
Nonferrous metal (except aluminum) production and processing	399	192	0.06%	0.03%	-56.04%
Foundries	810	346	0.12%	0.05%	-60.95%
Forging and stamping	160	124	0.02%	0.02%	-28.84%
Cutlery and handtool manufacturing	6	13	0.00%	0.00%	117.09%
Architectural and structural metals manufacturing	1,234	958	0.18%	0.13%	-29.06%
Boiler, tank, and shipping container manufacturing	591	264	0.09%	0.04%	-59.21%
Hardware manufacturing	17	15	0.00%	0.00%	-19.40%
Spring and wire product manufacturing	6	15	0.00%	0.00%	124.31%
Machine shops; turned product; and screw, nut, and bolt manufacturing	619	434	0.09%	0.06%	-35.97%
Coating, engraving, heat treating, and allied activities	189	128	0.03%	0.02%	-38.02%
Other fabricated metal product manufacturing	189	213	0.03%	0.03%	2.97%
Agriculture, construction, and mining machinery manufacturing	1,429	2,466	0.21%	0.33%	57.69%
Industrial machinery manufacturing	238	284	0.03%	0.04%	8.97%
Commercial and service industry machinery manufacturing	306	281	0.04%	0.04%	-16.19%
Ventilation, heating, air-conditioning, and commercial refrigeration equipment manufacturing	577	225	0.08%	0.03%	-64.36%
Metalworking machinery manufacturing	383	483	0.06%	0.06%	15.18%
Engine, turbine, power transmission equipment manufacturing	220	280	0.03%	0.04%	16.13%
Other general purpose machinery manufacturing	644	689	0.09%	0.09%	-2.35%
Computer and peripheral equipment manufacturing	381	84	0.06%	0.01%	-79.77%
Communications equipment manufacturing	579	176	0.08%	0.02%	-72.23%
Audio and video equipment manufacturing	-	-	-	-	-
Semiconductor and other electronic component manufacturing	1,334	247	0.19%	0.03%	-83.09%
Navigational, measuring, electromedical, and control instruments manufacturing	1,671	426	0.24%	0.06%	-76.72%
Manufacturing and reproducing magnetic and optical media	-	-	-	-	-

Industry	H.R.'s Employment 2000	2010	Hampton Roads % Emp 2000	2010	% Growth 00-10*
Electric lighting equipment manufacturing	109	207	0.02%	0.03%	74.64%
Household appliance manufacturing	61	161	0.01%	0.02%	140.00%
Electrical equipment manufacturing	1,040	1,016	0.15%	0.13%	-10.70%
Other electrical equipment and component manufacturing	614	965	0.09%	0.13%	43.64%
Motor vehicle manufacturing	-	-	-	-	-
Motor vehicle body and trailer manufacturing	695	93	0.10%	0.01%	-87.83%
Motor vehicle parts manufacturing	4,575	3,047	0.66%	0.40%	-39.12%
Aerospace product and parts manufacturing	4	2	0.00%	0.00%	-49.31%
Railroad rolling stock manufacturing	28	205	0.00%	0.03%	557.15%
Ship and boat building	10,680	11,413	1.55%	1.51%	-2.33%
Other transportation equipment manufacturing	533	229	0.08%	0.03%	-60.71%
Household and institutional furniture and kitchen cabinet manufacturing	1,482	893	0.22%	0.12%	-44.95%
Office furniture (including fixtures) manufacturing	147	106	0.02%	0.01%	-33.92%
Other furniture related product manufacturing	106	147	0.02%	0.02%	26.42%
Medical equipment and supplies manufacturing	1,014	934	0.15%	0.12%	-15.85%
Other miscellaneous manufacturing	1,987	1,394	0.29%	0.19%	-35.85%
Animal food manufacturing	-	-	-	-	-
Grain and oilseed milling	70	40	0.01%	0.01%	-47.83%
Sugar and confectionery product manufacturing	105	56	0.02%	0.01%	-51.04%
Fruit and vegetable preserving and specialty food manufacturing	15	9	0.00%	0.00%	-45.56%
Dairy product manufacturing	439	1,448	0.06%	0.19%	201.72%
Animal slaughtering and processing	4,336	1,433	0.63%	0.19%	-69.80%
Seafood product preparation and packaging	430	1,230	0.06%	0.16%	161.54%
Bakeries and tortilla manufacturing	1,582	803	0.23%	0.11%	-53.58%
Other food manufacturing	1,545	1,610	0.22%	0.21%	-4.80%
Beverage manufacturing	2,227	1,683	0.32%	0.22%	-30.90%
Tobacco manufacturing	116	102	0.02%	0.01%	-20.07%
Fiber, yarn, and thread mills	-	-	-	-	-
Fabric mills	490	154	0.07%	0.02%	-71.22%
Textile and fabric finishing and fabric coating mills	1,240	57	0.18%	0.01%	-95.79%
Textile furnishings mills	238	219	0.03%	0.03%	-15.87%
Other textile product mills	452	901	0.07%	0.12%	82.28%
Apparel knitting mills	209	10	0.03%	0.00%	-95.52%
Cut and sew apparel manufacturing	354	140	0.05%	0.02%	-63.86%
Apparel accessories and other apparel manufacturing	1,478	263	0.21%	0.03%	-83.74%
Leather, hide tanning, finishing; Other leather, allied product manufacturing	-	-	-	-	-
Footwear manufacturing	-	-	-	-	-
Pulp, paper, and paperboard mills	233	-	-	-	-
Converted paper product manufacturing	3,281	2,161	0.48%	0.29%	-39.80%
Printing and related support activities	2,415	1,932	0.35%	0.26%	-26.88%
Petroleum and coal products manufacturing	190	78	0.03%	0.01%	-62.30%
Basic chemical manufacturing	74	44	0.01%	0.01%	-45.93%
Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing	100	44	0.01%	0.01%	-59.36%
Pesticide, fertilizer, and other agricultural chemical manufacturing	72	59	0.01%	0.01%	-25.95%
Pharmaceutical and medicine manufacturing	113	115	0.02%	0.02%	-7.08%
Paint, coating, and adhesive manufacturing	15	71	0.00%	0.01%	337.65%
Soap, cleaning compound, and toilet preparation manufacturing	102	105	0.01%	0.01%	-5.91%
Other chemical product and preparation manufacturing	3,166	2,209	0.46%	0.29%	-36.23%
Plastics product manufacturing	2,405	991	0.35%	0.13%	-62.36%
Rubber product manufacturing	532	1,765	0.08%	0.23%	203.42%
Wholesale trade	23,441	24,603	3.40%	3.27%	-4.07%
Retail trade	105,849	103,582	15.37%	13.75%	-10.56%
Air transportation	1,258	346	0.18%	0.05%	-74.87%
Rail transportation	1,114	907	0.16%	0.12%	-25.61%
Water transportation	1,179	1,726	0.17%	0.23%	33.79%
Truck transportation	5,768	5,189	0.84%	0.69%	-17.78%
Couriers and messengers	1,154	1,070	0.17%	0.14%	-15.24%
Transit and ground passenger transportation	2,219	2,190	0.32%	0.29%	-9.80%
Pipeline transportation	30	10	0.00%	0.00%	-68.19%

Industry	H.R.'s Employment 2000	2010	Hampton Roads % Emp 2000	2010	% Growth 00-10*
Scenic and sightseeing transportation and support activities for transportation	13,736	8,864	1.99%	1.18%	-41.02%
Warehousing and storage	3,242	4,828	0.47%	0.64%	36.12%
Newspaper, periodical, book, and directory publishers	3,549	3,915	0.52%	0.52%	0.80%
Software publishers	174	202	0.03%	0.03%	6.36%
Motion picture, video, and sound recording industries	1,148	1,874	0.17%	0.25%	49.23%
Data processing, hosting, related services, and other information services	469	2,951	0.07%	0.39%	475.03%
Broadcasting (except internet)	1,715	2,286	0.25%	0.30%	21.82%
Telecommunications	2,683	5,560	0.39%	0.74%	89.44%
Monetary authorities, credit intermediation, and related activities	22,288	14,658	3.24%	1.95%	-39.89%
Funds, trusts, and other financial vehicles	153	180	0.02%	0.02%	7.84%
Securities, commodity contracts, and other financial investments and related activities	6,392	7,311	0.93%	0.97%	4.55%
Insurance carriers	5,886	7,007	0.85%	0.93%	8.80%
Agencies, brokerages, and other insurance related activities	4,541	4,613	0.66%	0.61%	-7.14%
Real estate	24,194	43,814	3.51%	5.82%	65.52%
Automotive equipment rental and leasing	1,108	1,126	0.16%	0.15%	-7.10%
Consumer goods rental and general rental centers	1,587	1,847	0.23%	0.25%	6.41%
Commercial and industrial machinery and equipment rental and leasing	500	643	0.07%	0.09%	17.67%
Lessors of nonfinancial intangible assets (except copyrighted works)	521	657	0.08%	0.09%	15.33%
Legal services	5,978	7,016	0.87%	0.93%	7.26%
Accounting, tax preparation, bookkeeping, and payroll services	5,061	6,423	0.73%	0.85%	16.01%
Architectural, engineering, and related services	12,966	17,092	1.88%	2.27%	20.48%
Specialized design services	727	1,003	0.11%	0.13%	26.16%
Computer systems design and related services	12,725	15,746	1.85%	2.09%	13.10%
Management, scientific, and technical consulting services	5,487	7,807	0.80%	1.04%	30.04%
Scientific research and development services	4,481	4,985	0.65%	0.66%	1.68%
Advertising and related services	1,460	1,612	0.21%	0.21%	0.90%
Other professional, scientific, and technical services	3,355	5,252	0.49%	0.70%	43.07%
Management of companies and enterprises	9,865	9,428	1.43%	1.25%	-12.65%
Office administrative services; Facilities support services	2,619	3,195	0.38%	0.42%	11.53%
Employment services	15,010	15,463	2.18%	2.05%	-5.84%
Business support services; Investigation and security services; Other support services	18,328	19,127	2.66%	2.54%	-4.61%
Travel arrangement and reservation services	1,493	1,901	0.22%	0.25%	16.39%
Services to buildings and dwellings	16,152	18,482	2.35%	2.45%	4.59%
Waste management and remediation services	1,668	1,656	0.24%	0.22%	-9.27%
Elementary & secondary schools; Junior colleges, colleges, universities, & professional schools; Other educational services	13,413	19,012	1.95%	2.52%	29.56%
Offices of health practitioners	19,111	27,381	2.78%	3.63%	30.95%
Outpatient, laboratory, and other ambulatory care services	3,362	4,687	0.49%	0.62%	27.43%
Home health care services	3,439	4,906	0.50%	0.65%	30.40%
Hospitals	20,283	19,140	2.95%	2.54%	-13.75%
Nursing and residential care facilities	12,170	15,847	1.77%	2.10%	19.02%
Individual, family, community, and vocational rehabilitation services	6,447	8,275	0.94%	1.10%	17.33%
Child day care services	7,414	9,307	1.08%	1.24%	14.74%
Performing arts companies; Promoters of events, and agents and managers	1,108	2,352	0.16%	0.31%	94.01%
Spectator sports	189	437	0.03%	0.06%	111.09%
Independent artists, writers, and performers	1,925	3,262	0.28%	0.43%	54.90%
Museums, historical sites, and similar institutions	692	1,125	0.10%	0.15%	48.64%
Amusement, gambling, and recreation industries	6,929	9,445	1.01%	1.25%	24.59%
Accommodation	9,703	12,434	1.41%	1.65%	17.13%
Food services and drinking places	53,902	64,115	7.83%	8.51%	8.72%
Automotive repair and maintenance	6,559	6,522	0.95%	0.87%	-9.11%
Electronic and precision equipment repair and maintenance	1,612	1,604	0.23%	0.21%	-9.07%
Commercial and industrial equipment (except automotive and electronic) repair and maintenance	1,719	1,695	0.25%	0.22%	-9.90%
Personal and household goods repair and maintenance	1,155	1,312	0.17%	0.17%	3.82%
Personal care services	7,566	9,968	1.10%	1.32%	20.43%
Death care services	771	993	0.11%	0.13%	17.67%
Drycleaning and laundry services	2,335	2,642	0.34%	0.35%	3.40%
Other personal services	803	1,022	0.12%	0.14%	16.24%
Religious organizations; Grantmaking and giving services, and social advocacy organizations	12,573	13,270	1.83%	1.76%	-3.53%
Civic, social, professional, and similar organizations	2,762	3,311	0.40%	0.44%	9.57%
Private households	5,523	7,840	0.80%	1.04%	29.74%

Appendix K- US Employment, Industry Employment %, and Growth in Industry Employment % (REMI)

Industry	US Employment 2000	US Employment 2010	US % Employment 2000	US % Employment 2010	% Growth 00-10*
Forestry; Fishing, hunting, trapping	96,833	98,563	0.07%	0.07%	-3.37%
Logging	176,686	130,327	0.13%	0.09%	-29.98%
Support activities for agriculture and forestry	577,848	604,851	0.41%	0.41%	-0.63%
Oil and gas extraction	325,497	424,999	0.23%	0.29%	23.95%
Coal mining	79,970	104,172	0.06%	0.07%	23.66%
Metal ore mining	43,036	50,908	0.03%	0.03%	12.29%
Nonmetallic mineral mining and quarrying	125,403	113,822	0.09%	0.08%	-13.84%
Support activities for mining	183,147	252,022	0.13%	0.17%	30.63%
Electric power generation, transmission, and distribution	449,196	391,564	0.32%	0.27%	-17.25%
Natural gas distribution	124,811	108,531	0.09%	0.07%	-17.45%
Water, sewage, and other systems	47,774	50,175	0.03%	0.03%	-0.30%
Construction	9,540,345	9,085,259	6.85%	6.19%	-9.60%
Sawmills and wood preservation	147,906	94,740	0.11%	0.06%	-39.19%
Veneer, plywood, and engineered wood product manufacturing	127,222	81,444	0.09%	0.06%	-39.23%
Other wood product manufacturing	389,253	254,833	0.28%	0.17%	-37.85%
Clay product and refractory manufacturing	90,666	51,043	0.07%	0.03%	-46.56%
Glass and glass product manufacturing	142,532	89,099	0.10%	0.06%	-40.66%
Cement and concrete product manufacturing	234,495	199,116	0.17%	0.14%	-19.39%
Lime, gypsum product manufacturing; Other nonmetallic mineral product manufacturing	100,840	86,526	0.07%	0.06%	-18.54%
Iron and steel mills and ferroalloy manufacturing	135,366	83,895	0.10%	0.06%	-41.17%
Steel product manufacturing from purchased steel	72,592	52,458	0.05%	0.04%	-31.40%
Alumina and aluminum production and processing	99,665	67,084	0.07%	0.05%	-36.10%
Nonferrous metal (except aluminum) production and processing	96,095	90,304	0.07%	0.06%	-10.79%
Foundries	216,884	124,004	0.16%	0.08%	-45.72%
Forging and stamping	140,383	97,388	0.10%	0.07%	-34.14%
Cutlery and handtool manufacturing	80,451	45,687	0.06%	0.03%	-46.09%
Architectural and structural metals manufacturing	442,177	362,861	0.32%	0.25%	-22.10%
Boiler, tank, and shipping container manufacturing	108,284	87,787	0.08%	0.06%	-23.04%
Hardware manufacturing	50,688	26,002	0.04%	0.02%	-51.30%
Spring and wire product manufacturing	82,076	42,083	0.06%	0.03%	-51.33%
Machine shops; turned product; and screw, nut, and bolt manufacturing	382,854	337,925	0.27%	0.23%	-16.21%
Coating, engraving, heat treating, and allied activities	183,555	132,669	0.13%	0.09%	-31.39%
Other fabricated metal product manufacturing	337,854	265,927	0.24%	0.18%	-25.28%
Agriculture, construction, and mining machinery manufacturing	226,171	223,175	0.16%	0.15%	-6.33%
Industrial machinery manufacturing	165,220	105,678	0.12%	0.07%	-39.28%
Commercial and service industry machinery manufacturing	150,310	101,683	0.11%	0.07%	-35.78%
Ventilation, heating, air-conditioning, and commercial refrigeration equipment manufacturing	195,847	123,949	0.14%	0.08%	-39.92%
Metalworking machinery manufacturing	279,968	185,095	0.20%	0.13%	-37.24%
Engine, turbine, power transmission equipment manufacturing	112,229	95,764	0.08%	0.07%	-19.00%
Other general purpose machinery manufacturing	355,324	251,298	0.26%	0.17%	-32.86%
Computer and peripheral equipment manufacturing	300,195	199,331	0.22%	0.14%	-36.97%
Communications equipment manufacturing	236,699	110,625	0.17%	0.08%	-55.63%
Audio and video equipment manufacturing	51,448	21,937	0.04%	0.01%	-59.52%
Semiconductor and other electronic component manufacturing	678,499	388,624	0.49%	0.26%	-45.63%
Navigational, measuring, electromedical, and control instruments manufacturing	483,175	412,731	0.35%	0.28%	-18.91%
Manufacturing and reproducing magnetic and optical media	62,606	30,846	0.04%	0.02%	-53.23%

Industry	US Employment 2000	US Employment 2010	US % Employment 2000	US % Employment 2010	% Growth 00-10*
Electric lighting equipment manufacturing	88,948	53,737	0.06%	0.04%	-42.65%
Household appliance manufacturing	107,449	60,726	0.08%	0.04%	-46.35%
Electrical equipment manufacturing	213,171	143,053	0.15%	0.10%	-36.30%
Other electrical equipment and component manufacturing	193,755	132,110	0.14%	0.09%	-35.27%
Motor vehicle manufacturing	299,554	139,971	0.22%	0.10%	-55.64%
Motor vehicle body and trailer manufacturing	180,921	114,395	0.13%	0.08%	-39.98%
Motor vehicle parts manufacturing	831,325	419,388	0.60%	0.29%	-52.11%
Aerospace product and parts manufacturing	523,683	494,413	0.38%	0.34%	-10.38%
Railroad rolling stock manufacturing	33,090	23,016	0.02%	0.02%	-33.97%
Ship and boat building	156,267	154,212	0.11%	0.11%	-6.32%
Other transportation equipment manufacturing	42,573	50,151	0.03%	0.03%	11.83%
Household and institutional furniture and kitchen cabinet manufacturing	477,704	312,102	0.34%	0.21%	-37.98%
Office furniture (including fixtures) manufacturing	182,871	109,761	0.13%	0.07%	-43.02%
Other furniture related product manufacturing	58,603	44,605	0.04%	0.03%	-27.75%
Medical equipment and supplies manufacturing	323,327	330,225	0.23%	0.23%	-3.04%
Other miscellaneous manufacturing	489,235	395,831	0.35%	0.27%	-23.19%
Animal food manufacturing	55,389	49,635	0.04%	0.03%	-14.93%
Grain and oilseed milling	65,497	60,177	0.05%	0.04%	-12.78%
Sugar and confectionery product manufacturing	93,697	71,123	0.07%	0.05%	-27.94%
Fruit and vegetable preserving and specialty food manufacturing	199,927	174,256	0.14%	0.12%	-17.26%
Dairy product manufacturing	141,101	130,123	0.10%	0.09%	-12.46%
Animal slaughtering and processing	516,494	520,869	0.37%	0.35%	-4.27%
Seafood product preparation and packaging	45,888	42,622	0.03%	0.03%	-11.83%
Bakeries and tortilla manufacturing	326,170	301,344	0.23%	0.21%	-12.30%
Other food manufacturing	151,916	166,589	0.11%	0.11%	4.10%
Beverage manufacturing	177,756	187,653	0.13%	0.13%	0.22%
Tobacco manufacturing	32,447	23,591	0.02%	0.02%	-30.98%
Fiber, yarn, and thread mills	80,350	29,437	0.06%	0.02%	-65.22%
Fabric mills	195,660	59,722	0.14%	0.04%	-71.02%
Textile and fabric finishing and fabric coating mills	105,676	53,422	0.08%	0.04%	-52.01%
Textile furnishings mills	117,869	47,637	0.08%	0.03%	-61.63%
Other textile product mills	100,717	69,199	0.07%	0.05%	-34.78%
Apparel knitting mills	77,262	32,227	0.06%	0.02%	-60.40%
Cut and sew apparel manufacturing	414,235	172,650	0.30%	0.12%	-60.43%
Apparel accessories and other apparel manufacturing	38,211	14,610	0.03%	0.01%	-63.70%
Leather, hide tanning, finishing; Other leather, allied product manufacturing	42,291	18,460	0.03%	0.01%	-58.56%
Footwear manufacturing	30,811	15,100	0.02%	0.01%	-53.47%
Pulp, paper, and paperboard mills	191,782	109,675	0.14%	0.07%	-45.71%
Converted paper product manufacturing	415,026	289,455	0.30%	0.20%	-33.79%
Printing and related support activities	871,641	595,721	0.63%	0.41%	-35.12%
Petroleum and coal products manufacturing	121,999	102,493	0.09%	0.07%	-20.25%
Basic chemical manufacturing	189,798	119,685	0.14%	0.08%	-40.14%
Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing	136,606	94,200	0.10%	0.06%	-34.54%
Pesticide, fertilizer, and other agricultural chemical manufacturing	48,155	27,459	0.03%	0.02%	-45.87%
Pharmaceutical and medicine manufacturing	276,839	274,831	0.20%	0.19%	-5.76%
Paint, coating, and adhesive manufacturing	79,485	56,067	0.06%	0.04%	-33.04%
Soap, cleaning compound, and toilet preparation manufacturing	133,584	105,696	0.10%	0.07%	-24.89%
Other chemical product and preparation manufacturing	129,151	87,689	0.09%	0.06%	-35.55%
Plastics product manufacturing	763,841	546,327	0.55%	0.37%	-32.10%
Rubber product manufacturing	221,331	122,551	0.16%	0.08%	-47.44%
Wholesale trade	6,270,776	6,063,626	4.50%	4.13%	-8.21%
Retail trade	18,455,350	17,636,977	13.25%	12.02%	-9.28%
Air transportation	625,530	494,086	0.45%	0.34%	-25.02%
Rail transportation	209,900	182,848	0.15%	0.12%	-17.30%
Water transportation	57,206	71,027	0.04%	0.05%	17.87%
Truck transportation	2,034,450	2,080,640	1.46%	1.42%	-2.91%
Couriers and messengers	775,199	772,411	0.56%	0.53%	-5.41%
Transit and ground passenger transportation	558,411	677,917	0.40%	0.46%	15.25%
Pipeline transportation	47,100	39,291	0.03%	0.03%	-20.81%

Industry	US Employment 2000	US Employment 2010	US % Employment 2000	US % Employment 2010	% Growth 00-10*
Scenic and sightseeing transportation and support activities for transportation	616,226	683,772	0.44%	0.47%	5.34%
Warehousing and storage	542,160	707,865	0.39%	0.48%	23.94%
Newspaper, periodical, book, and directory publishers	871,439	671,096	0.63%	0.46%	-26.89%
Software publishers	277,150	262,235	0.20%	0.18%	-10.18%
Motion picture, video, and sound recording industries	428,698	430,561	0.31%	0.29%	-4.66%
Data processing, hosting, related services, and other information services	665,149	487,575	0.48%	0.33%	-30.41%
Broadcasting (except internet)	360,562	356,568	0.26%	0.24%	-6.12%
Telecommunications	1,428,289	1,045,910	1.03%	0.71%	-30.48%
Monetary authorities, credit intermediation, and related activities	2,891,230	3,145,262	2.08%	2.14%	3.27%
Funds, trusts, and other financial vehicles	90,143	108,440	0.06%	0.07%	14.20%
Securities, commodity contracts, and other financial investments and related activities	2,144,213	2,450,941	1.54%	1.67%	8.51%
Insurance carriers	1,634,070	1,591,646	1.17%	1.08%	-7.53%
Agencies, brokerages, and other insurance related activities	1,073,945	1,222,743	0.77%	0.83%	8.08%
Real estate	4,596,519	7,389,083	3.30%	5.03%	52.60%
Automotive equipment rental and leasing	249,809	235,092	0.18%	0.16%	-10.66%
Consumer goods rental and general rental centers	441,385	363,550	0.32%	0.25%	-21.81%
Commercial and industrial machinery and equipment rental and leasing	125,736	146,248	0.09%	0.10%	10.42%
Lessors of nonfinancial intangible assets (except copyrighted works)	33,039	34,160	0.02%	0.02%	-1.85%
Legal services	1,627,133	1,884,475	1.17%	1.28%	9.94%
Accounting, tax preparation, bookkeeping, and payroll services	1,306,091	1,509,649	0.94%	1.03%	9.72%
Architectural, engineering, and related services	1,729,061	2,006,672	1.24%	1.37%	10.17%
Specialized design services	339,761	389,074	0.24%	0.27%	8.71%
Computer systems design and related services	1,751,754	2,085,826	1.26%	1.42%	13.03%
Management, scientific, and technical consulting services	1,161,468	1,855,140	0.83%	1.26%	51.63%
Scientific research and development services	690,035	898,490	0.50%	0.61%	23.61%
Advertising and related services	708,369	661,769	0.51%	0.45%	-11.32%
Other professional, scientific, and technical services	709,779	940,240	0.51%	0.64%	25.75%
Management of companies and enterprises	1,801,743	1,885,338	1.29%	1.28%	-0.67%
Office administrative services; Facilities support services	397,492	662,095	0.29%	0.45%	58.12%
Employment services	4,315,073	3,819,615	3.10%	2.60%	-15.97%
Business support services; Investigation and security services; Other support services	2,118,890	2,502,205	1.52%	1.70%	12.10%
Travel arrangement and reservation services	358,459	294,632	0.26%	0.20%	-21.97%
Services to buildings and dwellings	2,372,491	2,960,006	1.70%	2.02%	18.44%
Waste management and remediation services	340,740	393,576	0.24%	0.27%	9.65%
Elementary & secondary schools; Junior colleges, colleges, universities, & professional schools; Other educational services	2,825,824	4,041,901	2.03%	2.75%	35.78%
Offices of health practitioners	3,764,471	4,577,531	2.70%	3.12%	15.43%
Outpatient, laboratory, and other ambulatory care services	867,278	1,205,882	0.62%	0.82%	31.99%
Home health care services	755,053	1,211,079	0.54%	0.83%	52.26%
Hospitals	4,033,120	4,479,217	2.89%	3.05%	5.43%
Nursing and residential care facilities	2,734,104	3,178,569	1.96%	2.17%	10.36%
Individual, family, community, and vocational rehabilitation services	1,416,852	2,178,437	1.02%	1.48%	45.96%
Child day care services	1,455,390	1,549,435	1.04%	1.06%	1.06%
Performing arts companies; Promoters of events, and agents and managers	496,138	587,830	0.36%	0.40%	12.47%
Spectator sports	301,696	315,998	0.22%	0.22%	-0.57%
Independent artists, writers, and performers	767,619	953,830	0.55%	0.65%	17.96%
Museums, historical sites, and similar institutions	115,402	136,170	0.08%	0.09%	12.01%
Amusement, gambling, and recreation industries	1,518,260	1,763,012	1.09%	1.20%	10.23%
Accommodation	1,980,697	1,949,898	1.42%	1.33%	-6.55%
Food services and drinking places	8,593,825	10,215,874	6.17%	6.96%	12.85%
Automotive repair and maintenance	1,433,605	1,467,841	1.03%	1.00%	-2.80%
Electronic and precision equipment repair and maintenance	177,909	191,056	0.13%	0.13%	1.94%
Commercial and industrial equipment (except automotive and electronic) repair and maintenance	267,673	309,011	0.19%	0.21%	9.59%
Personal and household goods repair and maintenance	218,620	232,955	0.16%	0.16%	1.15%
Personal care services	1,023,509	1,314,911	0.73%	0.90%	21.96%
Death care services	152,959	176,127	0.11%	0.12%	9.31%
Drycleaning and laundry services	442,714	425,674	0.32%	0.29%	-8.72%
Other personal services	309,236	363,393	0.22%	0.25%	11.55%
Religious organizations; Grantmaking and giving services, and social advocacy organizations	2,008,905	2,282,980	1.44%	1.56%	7.88%
Civic, social, professional, and similar organizations	975,865	1,061,402	0.70%	0.72%	3.25%
Private households	1,926,899	2,398,584	1.38%	1.63%	18.17%

Appendix L- Hampton Roads Location Quotients and Shift Share (REMI)

Industry	HR Location Quotients 1990	2000	2010	Shift Share 00-10*
Forestry; Fishing, hunting, trapping	0.98	1.22	4.35	256.4%
Logging	0.11	0.10	0.14	39.8%
Support activities for agriculture and forestry	0.32	0.16	0.21	29.6%
Oil and gas extraction	0.21	0.26	0.10	-62.1%
Coal mining	0.04	0.05	0.66	1242.4%
Metal ore mining	0.10	0.10	1.54	1379.5%
Nonmetallic mineral mining and quarrying	0.16	0.12	1.34	1048.4%
Support activities for mining	0.00	0.00	0.04	1914.3%
Electric power generation, transmission, and distribution	1.03	1.05	0.96	-8.5%
Natural gas distribution	1.15	1.13	0.77	-31.8%
Water, sewage, and other systems	0.51	0.30	0.18	-41.4%
Construction	1.19	1.24	1.13	-8.8%
Sawmills and wood preservation	0.85	0.82	1.71	109.0%
Veneer, plywood, and engineered wood product manufacturing	0.77	0.79	2.04	158.2%
Other wood product manufacturing	0.40	0.31	0.36	16.3%
Clay product and refractory manufacturing	0.28	0.38	0.48	25.1%
Glass and glass product manufacturing	0.78	1.04	0.92	-12.3%
Cement and concrete product manufacturing	1.23	0.99	1.01	1.5%
Lime, gypsum product manufacturing; Other nonmetallic mineral product manufacturing	1.50	1.61	1.30	-19.1%
Iron and steel mills and ferroalloy manufacturing	0.34	0.44	0.24	-45.5%
Steel product manufacturing from purchased steel	1.58	1.47	0.57	-61.3%
Alumina and aluminum production and processing	0.70	0.73	0.42	-43.0%
Nonferrous metal (except aluminum) production and processing	0.77	0.84	0.41	-50.7%
Foundries	0.75	0.76	0.54	-28.1%
Forging and stamping	0.23	0.23	0.25	8.0%
Cutlery and handtool manufacturing	0.01	0.01	0.06	302.7%
Architectural and structural metals manufacturing	0.79	0.56	0.51	-8.9%
Boiler, tank, and shipping container manufacturing	0.69	1.10	0.59	-47.0%
Hardware manufacturing	0.09	0.07	0.11	65.5%
Spring and wire product manufacturing	0.02	0.02	0.07	360.8%
Machine shops; turned product; and screw, nut, and bolt manufacturing	0.39	0.33	0.25	-23.6%
Coating, engraving, heat treating, and allied activities	0.27	0.21	0.19	-9.7%
Other fabricated metal product manufacturing	0.16	0.11	0.16	37.8%
Agriculture, construction, and mining machinery manufacturing	0.74	1.28	2.15	68.3%
Industrial machinery manufacturing	0.22	0.29	0.52	79.5%
Commercial and service industry machinery manufacturing	0.39	0.41	0.54	30.5%
Ventilation, heating, air-conditioning, and commercial refrigeration equipment manufacturing	0.60	0.60	0.35	-40.7%
Metalworking machinery manufacturing	0.21	0.28	0.51	83.5%
Engine, turbine, power transmission equipment manufacturing	0.27	0.40	0.57	43.4%
Other general purpose machinery manufacturing	0.32	0.37	0.53	45.5%
Computer and peripheral equipment manufacturing	0.21	0.26	0.08	-67.9%
Communications equipment manufacturing	0.69	0.49	0.31	-37.4%
Audio and video equipment manufacturing	NA	NA	NA	NA
Semiconductor and other electronic component manufacturing	0.18	0.40	0.12	-68.9%
Navigational, measuring, electromedical, and control instruments manufacturing	0.45	0.70	0.20	-71.3%
Manufacturing and reproducing magnetic and optical media	NA	NA	NA	NA

Industry	HR Location Quotients 1990	2000	2010	Shift Share 00-10*
Electric lighting equipment manufacturing	0.34	0.25	0.75	204.5%
Household appliance manufacturing	0.14	0.12	0.52	347.3%
Electrical equipment manufacturing	1.08	0.99	1.38	40.2%
Other electrical equipment and component manufacturing	0.82	0.64	1.42	121.9%
Motor vehicle manufacturing	0.00	0.00	0.00	-100.0%
Motor vehicle body and trailer manufacturing	0.75	0.78	0.16	-79.7%
Motor vehicle parts manufacturing	0.98	1.11	1.42	27.1%
Aerospace product and parts manufacturing	0.00	0.00	0.00	-43.4%
Railroad rolling stock manufacturing	0.13	0.17	1.73	895.2%
Ship and boat building	18.79	13.83	14.42	4.3%
Other transportation equipment manufacturing	4.12	2.53	0.89	-64.9%
Household and institutional furniture and kitchen cabinet manufacturing	1.00	0.63	0.56	-11.2%
Office furniture (including fixtures) manufacturing	0.33	0.16	0.19	16.0%
Other furniture related product manufacturing	0.88	0.37	0.64	75.0%
Medical equipment and supplies manufacturing	0.71	0.63	0.55	-13.2%
Other miscellaneous manufacturing	0.50	0.82	0.69	-16.5%
Animal food manufacturing	NA	NA	NA	NA
Grain and oilseed milling	0.19	0.22	0.13	-40.2%
Sugar and confectionery product manufacturing	0.26	0.23	0.15	-32.0%
Fruit and vegetable preserving and specialty food manufacturing	0.01	0.01	0.01	-34.2%
Dairy product manufacturing	0.56	0.63	2.17	244.6%
Animal slaughtering and processing	1.50	1.70	0.54	-68.5%
Seafood product preparation and packaging	1.45	1.89	5.62	196.6%
Bakeries and tortilla manufacturing	1.12	0.98	0.52	-47.1%
Other food manufacturing	2.66	2.06	1.88	-8.6%
Beverage manufacturing	3.90	2.53	1.75	-31.1%
Tobacco manufacturing	0.73	0.72	0.84	15.8%
Fiber, yarn, and thread mills	NA	NA	NA	NA
Fabric mills	0.42	0.51	0.50	-0.7%
Textile and fabric finishing and fabric coating mills	2.40	2.37	0.21	-91.2%
Textile furnishings mills	0.27	0.41	0.90	119.3%
Other textile product mills	0.47	0.91	2.54	179.5%
Apparel knitting mills	1.08	0.55	0.06	-88.7%
Cut and sew apparel manufacturing	0.27	0.17	0.16	-8.7%
Apparel accessories and other apparel manufacturing	21.21	7.82	3.51	-55.2%
Leather, hide tanning, finishing; Other leather, allied product manufacturing	NA	NA	NA	NA
Footwear manufacturing	NA	NA	NA	NA
Pulp, paper, and paperboard mills	0.17	0.25	0.00	-100.0%
Converted paper product manufacturing	1.39	1.60	1.45	-9.1%
Printing and related support activities	0.57	0.56	0.63	12.7%
Petroleum and coal products manufacturing	0.26	0.32	0.15	-52.7%
Basic chemical manufacturing	0.08	0.08	0.07	-9.7%
Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing	0.17	0.15	0.09	-37.9%
Pesticide, fertilizer, and other agricultural chemical manufacturing	0.32	0.30	0.42	36.8%
Pharmaceutical and medicine manufacturing	0.15	0.08	0.08	-1.4%
Paint, coating, and adhesive manufacturing	0.05	0.04	0.25	553.6%
Soap, cleaning compound, and toilet preparation manufacturing	0.21	0.15	0.19	25.3%
Other chemical product and preparation manufacturing	5.86	4.96	4.91	-1.1%
Plastics product manufacturing	0.72	0.64	0.35	-44.6%
Rubber product manufacturing	0.36	0.49	2.81	477.3%
Wholesale trade	0.77	0.76	0.79	4.5%
Retail trade	1.17	1.16	1.14	-1.4%
Air transportation	0.35	0.41	0.14	-66.5%
Rail transportation	1.23	1.07	0.97	-10.0%
Water transportation	1.05	4.17	4.73	13.5%
Truck transportation	0.65	0.57	0.49	-15.3%
Couriers and messengers	0.48	0.30	0.27	-10.4%
Transit and ground passenger transportation	1.02	0.80	0.63	-21.7%
Pipeline transportation	0.08	0.13	0.05	-59.8%

Industry	HR Location Quotients 1990	2000	2010	Shift Share 00-10*
Scenic and sightseeing transportation and support activities for transportation	5.46	4.51	2.52	-44.0%
Warehousing and storage	0.62	1.21	1.33	9.8%
Newspaper, periodical, book, and directory publishers	0.49	0.82	1.14	37.9%
Software publishers	0.33	0.13	0.15	18.4%
Motion picture, video, and sound recording industries	0.46	0.54	0.85	56.5%
Data processing, hosting, related services, and other information services	0.34	0.14	1.18	726.4%
Broadcasting (except internet)	0.94	0.96	1.25	29.8%
Telecommunications	0.66	0.38	1.04	172.5%
Monetary authorities, credit intermediation, and related activities	1.34	1.56	0.91	-41.8%
Funds, trusts, and other financial vehicles	0.54	0.34	0.32	-5.6%
Securities, commodity contracts, and other financial investments and related activities	0.73	0.60	0.58	-3.7%
Insurance carriers	0.49	0.73	0.86	17.7%
Agencies, brokerages, and other insurance related activities	0.64	0.86	0.73	-14.1%
Real estate	1.18	1.06	1.15	8.5%
Automotive equipment rental and leasing	0.94	0.90	0.93	4.0%
Consumer goods rental and general rental centers	0.69	0.73	0.99	36.1%
Commercial and industrial machinery and equipment rental and leasing	0.89	0.80	0.86	6.6%
Lessors of nonfinancial intangible assets (except copyrighted works)	5.90	3.19	3.75	17.5%
Legal services	0.59	0.74	0.73	-2.4%
Accounting, tax preparation, bookkeeping, and payroll services	0.71	0.78	0.83	5.7%
Architectural, engineering, and related services	1.27	1.52	1.66	9.4%
Specialized design services	0.40	0.43	0.50	16.1%
Computer systems design and related services	2.84	1.47	1.47	0.1%
Management, scientific, and technical consulting services	1.30	0.96	0.82	-14.2%
Scientific research and development services	0.78	1.31	1.08	-17.7%
Advertising and related services	0.31	0.42	0.47	13.8%
Other professional, scientific, and technical services	0.84	0.96	1.09	13.8%
Management of companies and enterprises	1.13	1.11	0.97	-12.1%
Office administrative services; Facilities support services	0.98	1.33	0.94	-29.5%
Employment services	1.06	0.70	0.79	12.1%
Business support services; Investigation and security services; Other support services	1.44	1.75	1.49	-14.9%
Travel arrangement and reservation services	0.52	0.84	1.26	49.2%
Services to buildings and dwellings	0.88	1.38	1.22	-11.7%
Waste management and remediation services	0.78	0.99	0.82	-17.3%
Elementary & secondary schools; Junior colleges, colleges, universities, & professional schoo	0.81	0.96	0.92	-4.6%
Offices of health practitioners	0.99	1.03	1.17	13.4%
Outpatient, laboratory, and other ambulatory care services	0.85	0.78	0.76	-3.5%
Home health care services	1.49	0.92	0.79	-14.4%
Hospitals	1.08	1.02	0.83	-18.2%
Nursing and residential care facilities	0.81	0.90	0.97	7.8%
Individual, family, community, and vocational rehabilitation services	1.11	0.92	0.74	-19.6%
Child day care services	1.18	1.03	1.17	13.5%
Performing arts companies; Promoters of events, and agents and managers	0.40	0.45	0.78	72.5%
Spectator sports	0.13	0.13	0.27	112.3%
Independent artists, writers, and performers	0.31	0.51	0.67	31.3%
Museums, historical sites, and similar institutions	1.47	1.21	1.61	32.7%
Amusement, gambling, and recreation industries	0.93	0.92	1.04	13.0%
Accommodation	1.10	0.99	1.24	25.3%
Food services and drinking places	1.35	1.27	1.22	-3.7%
Automotive repair and maintenance	1.32	0.93	0.87	-6.5%
Electronic and precision equipment repair and maintenance	2.54	1.83	1.64	-10.8%
Commercial and industrial equipment (except automotive and electronic) repair and mainter	1.57	1.30	1.07	-17.8%
Personal and household goods repair and maintenance	1.16	1.07	1.10	2.6%
Personal care services	1.65	1.50	1.48	-1.3%
Death care services	1.09	1.02	1.10	7.7%
Drycleaning and laundry services	1.14	1.07	1.21	13.3%
Other personal services	0.60	0.53	0.55	4.2%
Religious organizations; Grantmaking and giving services, and social advocacy organizations	0.74	1.27	1.13	-10.6%
Civic, social, professional, and similar organizations	0.38	0.57	0.61	6.1%
Private households	0.70	0.58	0.64	9.8%

Appendix M- Hampton Roads Relative Labor Costs, Relative Production Cost, and Regional Purchase Coefficient (REMI)

Industry	Employ-ment	LQ	Relative Labor Cost	Relative Production Cost	Regional Purchase Coefficient
Forestry; Fishing, hunting, trapping	2,202	4.35	25.9%	85.5%	11.8%
Logging	96	0.14	53.8%	95.0%	1.7%
Support activities for agriculture and forestry	648	0.21	105.1%	140.8%	13.4%
Oil and gas extraction	219	0.10	32.9%	92.9%	0.2%
Coal mining	354	0.66	73.9%	85.0%	2.6%
Metal ore mining	401	1.54	70.6%	78.9%	4.6%
Nonmetallic mineral mining and quarrying	784	1.34	85.2%	86.5%	4.1%
Support activities for mining	58	0.04	38.1%	70.7%	0.3%
Electric power generation, transmission, and distribution	1,934	0.96	76.2%	97.3%	49.9%
Natural gas distribution	428	0.77	80.4%	113.1%	42.2%
Water, sewage, and other systems	45	0.18	44.9%	79.0%	3.7%
Construction	52,640	1.13	97.1%	95.7%	85.8%
Sawmills and wood preservation	833	1.71	101.2%	97.4%	26.7%
Veneer, plywood, and engineered wood product manufacturing	855	2.04	106.4%	95.2%	41.7%
Other wood product manufacturing	474	0.36	119.0%	98.6%	12.9%
Clay product and refractory manufacturing	126	0.48	100.8%	100.1%	4.3%
Glass and glass product manufacturing	419	0.92	137.5%	110.3%	17.4%
Cement and concrete product manufacturing	1,029	1.01	96.6%	98.0%	26.6%
Lime, gypsum product manufacturing; Other nonmetallic mineral product manufacturing	578	1.30	99.6%	98.9%	28.2%
Iron and steel mills and ferroalloy manufacturing	104	0.24	90.8%	103.2%	1.3%
Steel product manufacturing from purchased steel	153	0.57	112.0%	106.5%	4.3%
Alumina and aluminum production and processing	144	0.42	109.2%	105.2%	3.7%
Nonferrous metal (except aluminum) production and processing	192	0.41	104.0%	102.9%	1.2%
Foundries	346	0.54	109.9%	103.4%	8.0%
Forging and stamping	124	0.25	103.3%	103.4%	9.4%
Cutlery and handtool manufacturing	13	0.06	113.8%	107.0%	0.3%
Architectural and structural metals manufacturing	958	0.51	123.4%	104.4%	24.2%
Boiler, tank, and shipping container manufacturing	264	0.59	184.4%	119.2%	19.4%
Hardware manufacturing	15	0.11	112.2%	107.8%	1.5%
Spring and wire product manufacturing	15	0.07	136.0%	112.9%	1.9%
Machine shops; turned product; and screw, nut, and bolt manufacturing	434	0.25	115.6%	108.9%	10.4%
Coating, engraving, heat treating, and allied activities	128	0.19	122.6%	109.5%	7.3%
Other fabricated metal product manufacturing	213	0.16	129.5%	108.6%	3.9%
Agriculture, construction, and mining machinery manufacturing	2,466	2.15	83.4%	97.0%	11.7%
Industrial machinery manufacturing	284	0.52	102.4%	101.6%	3.5%
Commercial and service industry machinery manufacturing	281	0.54	135.0%	111.5%	6.0%
Ventilation, heating, air-conditioning, and commercial refrigeration equipment manufacturing	225	0.35	126.4%	108.5%	3.4%
Metalworking machinery manufacturing	483	0.51	109.9%	105.2%	4.2%
Engine, turbine, power transmission equipment manufacturing	280	0.57	95.8%	102.6%	2.5%
Other general purpose machinery manufacturing	689	0.53	95.0%	100.2%	3.4%
Computer and peripheral equipment manufacturing	84	0.08	89.6%	104.1%	0.3%
Communications equipment manufacturing	176	0.31	62.2%	105.7%	0.5%
Audio and video equipment manufacturing	-	-	-	-	-
Semiconductor and other electronic component manufacturing	247	0.12	105.0%	107.3%	1.6%
Navigational, measuring, electromedical, and control instruments manufacturing	426	0.20	105.6%	106.8%	1.2%
Manufacturing and reproducing magnetic and optical media	-	-	-	-	-

Industry	Employ-ment	LQ	Relative Labor Cost	Relative Production Cost	Regional Purchase Coefficient
Electric lighting equipment manufacturing	207	0.75	111.8%	106.0%	3.7%
Household appliance manufacturing	161	0.52	110.4%	103.9%	4.0%
Electrical equipment manufacturing	1,016	1.38	104.7%	102.6%	9.9%
Other electrical equipment and component manufacturing	965	1.42	92.0%	98.3%	11.8%
Motor vehicle manufacturing	-	-	-	-	-
Motor vehicle body and trailer manufacturing	93	0.16	190.4%	116.7%	11.3%
Motor vehicle parts manufacturing	3,047	1.42	131.9%	107.4%	21.4%
Aerospace product and parts manufacturing	2	0.00	127.5%	112.5%	0.0%
Railroad rolling stock manufacturing	205	1.73	77.2%	89.7%	5.4%
Ship and boat building	11,413	14.42	79.3%	86.3%	52.9%
Other transportation equipment manufacturing	229	0.89	81.7%	95.7%	1.2%
Household and institutional furniture and kitchen cabinet manufacturing	893	0.56	112.6%	102.1%	3.8%
Office furniture (including fixtures) manufacturing	106	0.19	99.6%	100.3%	1.0%
Other furniture related product manufacturing	147	0.64	125.7%	104.5%	6.0%
Medical equipment and supplies manufacturing	934	0.55	82.2%	93.2%	6.9%
Other miscellaneous manufacturing	1,394	0.69	80.8%	94.2%	1.2%
Animal food manufacturing	-	-	-	-	-
Grain and oilseed milling	40	0.13	95.7%	99.4%	0.4%
Sugar and confectionery product manufacturing	56	0.15	112.4%	99.2%	0.7%
Fruit and vegetable preserving and specialty food manufacturing	9	0.01	122.6%	100.0%	0.1%
Dairy product manufacturing	1,448	2.17	101.7%	96.5%	12.3%
Animal slaughtering and processing	1,433	0.54	103.5%	99.3%	2.6%
Seafood product preparation and packaging	1,230	5.62	91.0%	93.4%	18.8%
Bakeries and tortilla manufacturing	803	0.52	100.9%	100.8%	2.0%
Other food manufacturing	1,610	1.88	109.2%	105.7%	6.5%
Beverage manufacturing	1,683	1.75	150.5%	101.9%	27.5%
Tobacco manufacturing	102	0.84	109.7%	108.2%	14.3%
Fiber, yarn, and thread mills	-	-	-	-	-
Fabric mills	154	0.50	100.6%	101.1%	0.2%
Textile and fabric finishing and fabric coating mills	57	0.21	98.3%	97.8%	0.3%
Textile furnishings mills	219	0.90	133.3%	108.1%	0.9%
Other textile product mills	901	2.54	94.0%	97.2%	4.4%
Apparel knitting mills	10	0.06	57.9%	83.5%	0.2%
Cut and sew apparel manufacturing	140	0.16	98.9%	101.2%	1.0%
Apparel accessories and other apparel manufacturing	263	3.51	82.6%	91.3%	9.4%
Leather, hide tanning, finishing; Other leather, allied product manufacturing	-	-	-	-	-
Footwear manufacturing	-	-	-	-	-
Pulp, paper, and paperboard mills	-	-	-	-	-
Converted paper product manufacturing	2,161	1.45	113.9%	104.3%	34.8%
Printing and related support activities	1,932	0.63	105.9%	103.7%	35.7%
Petroleum and coal products manufacturing	78	0.15	99.0%	131.2%	1.0%
Basic chemical manufacturing	44	0.07	99.7%	102.7%	1.0%
Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing	44	0.09	103.1%	102.6%	1.1%
Pesticide, fertilizer, and other agricultural chemical manufacturing	59	0.42	93.6%	98.2%	5.4%
Pharmaceutical and medicine manufacturing	115	0.08	112.7%	100.4%	0.9%
Paint, coating, and adhesive manufacturing	71	0.25	87.2%	100.5%	3.1%
Soap, cleaning compound, and toilet preparation manufacturing	105	0.19	94.4%	103.2%	2.8%
Other chemical product and preparation manufacturing	2,209	4.91	109.1%	99.8%	41.5%
Plastics product manufacturing	991	0.35	113.4%	102.4%	11.7%
Rubber product manufacturing	1,765	2.81	114.9%	101.4%	23.9%
Wholesale trade	24,603	0.79	82.3%	93.6%	52.7%
Retail trade	103,582	1.14	90.7%	94.8%	93.2%
Air transportation	346	0.14	157.7%	146.2%	2.5%
Rail transportation	907	0.97	125.1%	103.8%	3.7%
Water transportation	1,726	4.73	165.1%	106.6%	3.5%
Truck transportation	5,189	0.49	115.7%	103.9%	8.8%
Couriers and messengers	1,070	0.27	141.8%	116.7%	7.0%
Transit and ground passenger transportation	2,190	0.63	96.0%	96.5%	21.1%
Pipeline transportation	10	0.05	127.5%	110.8%	0.1%

Industry	Employ-ment	LQ	Relative Labor Cost	Relative Production Cost	Regional Purchase Coefficient
Scenic and sightseeing transportation and support activities for transportation	8,864	2.52	108.9%	102.0%	43.7%
Warehousing and storage	4,828	1.33	98.2%	99.2%	5.0%
Newspaper, periodical, book, and directory publishers	3,915	1.14	102.9%	100.0%	39.5%
Software publishers	202	0.15	72.6%	94.2%	3.1%
Motion picture, video, and sound recording industries	1,874	0.85	46.5%	81.8%	1.5%
Data processing, hosting, related services, and other information services	2,951	1.18	83.0%	93.4%	44.0%
Broadcasting (except internet)	2,286	1.25	92.4%	97.5%	36.4%
Telecommunications	5,560	1.04	81.5%	95.2%	25.9%
Monetary authorities, credit intermediation, and related activities	14,658	0.91	88.5%	93.7%	33.3%
Funds, trusts, and other financial vehicles	180	0.32	126.7%	105.6%	13.7%
Securities, commodity contracts, and other financial investments and related activities	7,311	0.58	41.9%	61.4%	4.3%
Insurance carriers	7,007	0.86	77.8%	86.4%	9.1%
Agencies, brokerages, and other insurance related activities	4,613	0.73	83.9%	92.6%	9.3%
Real estate	43,814	1.15	117.9%	95.3%	89.3%
Automotive equipment rental and leasing	1,126	0.93	114.5%	102.3%	91.9%
Consumer goods rental and general rental centers	1,847	0.99	104.6%	99.4%	83.0%
Commercial and industrial machinery and equipment rental and leasing	643	0.86	86.5%	98.1%	71.8%
Lessors of nonfinancial intangible assets (except copyrighted works)	657	3.75	81.7%	100.6%	95.7%
Legal services	7,016	0.73	98.2%	96.6%	40.7%
Accounting, tax preparation, bookkeeping, and payroll services	6,423	0.83	78.6%	89.1%	41.0%
Architectural, engineering, and related services	17,092	1.66	101.7%	100.6%	46.1%
Specialized design services	1,003	0.50	87.7%	95.2%	25.8%
Computer systems design and related services	15,746	1.47	98.9%	101.0%	48.9%
Management, scientific, and technical consulting services	7,807	0.82	95.4%	98.7%	31.7%
Scientific research and development services	4,985	1.08	105.9%	101.4%	19.8%
Advertising and related services	1,612	0.47	75.5%	94.5%	20.3%
Other professional, scientific, and technical services	5,252	1.09	93.7%	89.1%	15.4%
Management of companies and enterprises	9,428	0.97	79.5%	94.6%	69.9%
Office administrative services; Facilities support services	3,195	0.94	73.2%	88.4%	17.5%
Employment services	15,463	0.79	115.3%	102.3%	86.5%
Business support services; Investigation and security services; Other support services	19,127	1.49	93.7%	97.4%	77.0%
Travel arrangement and reservation services	1,901	1.26	75.1%	89.0%	40.7%
Services to buildings and dwellings	18,482	1.22	111.3%	101.6%	85.9%
Waste management and remediation services	1,656	0.82	100.6%	96.7%	35.3%
Elementary & secondary schools; Junior colleges, colleges, universities, & professional schoo	19,012	0.92	96.6%	97.8%	76.3%
Offices of health practitioners	27,381	1.17	107.4%	103.7%	95.6%
Outpatient, laboratory, and other ambulatory care services	4,687	0.76	98.1%	100.9%	71.9%
Home health care services	4,906	0.79	99.9%	95.0%	73.9%
Hospitals	19,140	0.83	94.0%	95.3%	74.8%
Nursing and residential care facilities	15,847	0.97	101.1%	98.6%	91.4%
Individual, family, community, and vocational rehabilitation services	8,275	0.74	115.3%	107.0%	13.2%
Child day care services	9,307	1.17	92.8%	95.3%	15.6%
Performing arts companies; Promoters of events, and agents and managers	2,352	0.78	97.3%	95.7%	72.7%
Spectator sports	437	0.27	67.2%	80.4%	14.6%
Independent artists, writers, and performers	3,262	0.67	41.3%	69.3%	16.4%
Museums, historical sites, and similar institutions	1,125	1.61	105.9%	94.4%	88.3%
Amusement, gambling, and recreation industries	9,445	1.04	108.8%	98.8%	38.1%
Accommodation	12,434	1.24	78.1%	89.2%	47.9%
Food services and drinking places	64,115	1.22	91.8%	96.5%	98.3%
Automotive repair and maintenance	6,522	0.87	110.6%	101.4%	88.3%
Electronic and precision equipment repair and maintenance	1,604	1.64	105.6%	101.6%	92.2%
Commercial and industrial equipment (except automotive and electronic) repair and mainter	1,695	1.07	111.0%	102.1%	82.7%
Personal and household goods repair and maintenance	1,312	1.10	139.1%	105.2%	87.5%
Personal care services	9,968	1.48	102.7%	99.1%	93.8%
Death care services	993	1.10	105.7%	99.3%	84.7%
Drycleaning and laundry services	2,642	1.21	108.4%	100.8%	87.1%
Other personal services	1,022	0.55	88.2%	97.9%	40.6%
Religious organizations; Grantmaking and giving services, and social advocacy organizations	13,270	1.13	106.3%	100.6%	67.1%
Civic, social, professional, and similar organizations	3,311	0.61	89.1%	96.6%	30.5%
Private households	7,840	0.64	130.4%	119.0%	63.1%

Appendix N- Hampton Roads Employment, Location Quotients, and Industrial Employment Multipliers (REMI)

Industry	Employ-ment	LQ	Industrial Employment Multipliers
Forestry; Fishing, hunting, trapping	2,202	4.35	1.22
Logging	96	0.14	2.67
Support activities for agriculture and forestry	648	0.21	1.12
Oil and gas extraction	219	0.10	4.14
Coal mining	354	0.66	2.09
Metal ore mining	401	1.54	1.97
Nonmetallic mineral mining and quarrying	784	1.34	1.92
Support activities for mining	58	0.04	1.76
Electric power generation, transmission, and distribution	1,934	0.96	5.16
Natural gas distribution	428	0.77	4.52
Water, sewage, and other systems	45	0.18	3.97
Construction	52,640	1.13	1.46
Sawmills and wood preservation	833	1.71	2.10
Veneer, plywood, and engineered wood product manufacturing	855	2.04	1.95
Other wood product manufacturing	474	0.36	1.75
Clay product and refractory manufacturing	126	0.48	1.64
Glass and glass product manufacturing	419	0.92	2.32
Cement and concrete product manufacturing	1,029	1.01	1.81
Lime, gypsum product manufacturing; Other nonmetallic mineral product manufacturing	578	1.30	2.02
Iron and steel mills and ferroalloy manufacturing	104	0.24	2.49
Steel product manufacturing from purchased steel	153	0.57	2.12
Alumina and aluminum production and processing	144	0.42	2.57
Nonferrous metal (except aluminum) production and processing	192	0.41	1.98
Foundries	346	0.54	2.17
Forging and stamping	124	0.25	1.83
Cutlery and handtool manufacturing	13	0.06	1.79
Architectural and structural metals manufacturing	958	0.51	1.98
Boiler, tank, and shipping container manufacturing	264	0.59	2.35
Hardware manufacturing	15	0.11	2.16
Spring and wire product manufacturing	15	0.07	1.95
Machine shops; turned product; and screw, nut, and bolt manufacturing	434	0.25	1.76
Coating, engraving, heat treating, and allied activities	128	0.19	1.79
Other fabricated metal product manufacturing	213	0.16	1.90
Agriculture, construction, and mining machinery manufacturing	2,466	2.15	1.84
Industrial machinery manufacturing	284	0.52	1.91
Commercial and service industry machinery manufacturing	281	0.54	2.24
Ventilation, heating, air-conditioning, and commercial refrigeration equipment manufacturing	225	0.35	2.35
Metalworking machinery manufacturing	483	0.51	1.73
Engine, turbine, power transmission equipment manufacturing	280	0.57	2.29
Other general purpose machinery manufacturing	689	0.53	1.84
Computer and peripheral equipment manufacturing	84	0.08	3.97
Communications equipment manufacturing	176	0.31	3.17
Audio and video equipment manufacturing	-	-	-
Semiconductor and other electronic component manufacturing	247	0.12	2.61
Navigational, measuring, electromedical, and control instruments manufacturing	426	0.20	2.23
Manufacturing and reproducing magnetic and optical media	-	-	-

Industry	Employ-ment	LQ	Industrial Employment Multipliers
Electric lighting equipment manufacturing	207	0.75	1.89
Household appliance manufacturing	161	0.52	3.07
Electrical equipment manufacturing	1,016	1.38	1.84
Other electrical equipment and component manufacturing	965	1.42	1.83
Motor vehicle manufacturing	-	-	-
Motor vehicle body and trailer manufacturing	93	0.16	2.34
Motor vehicle parts manufacturing	3,047	1.42	2.69
Aerospace product and parts manufacturing	2	0.00	2.37
Railroad rolling stock manufacturing	205	1.73	1.80
Ship and boat building	11,413	14.42	1.75
Other transportation equipment manufacturing	229	0.89	1.67
Household and institutional furniture and kitchen cabinet manufacturing	893	0.56	1.99
Office furniture (including fixtures) manufacturing	106	0.19	1.65
Other furniture related product manufacturing	147	0.64	1.73
Medical equipment and supplies manufacturing	934	0.55	1.77
Other miscellaneous manufacturing	1,394	0.69	1.63
Animal food manufacturing	-	-	-
Grain and oilseed milling	40	0.13	2.46
Sugar and confectionery product manufacturing	56	0.15	2.13
Fruit and vegetable preserving and specialty food manufacturing	9	0.01	2.18
Dairy product manufacturing	1,448	2.17	2.23
Animal slaughtering and processing	1,433	0.54	1.67
Seafood product preparation and packaging	1,230	5.62	2.10
Bakeries and tortilla manufacturing	803	0.52	1.75
Other food manufacturing	1,610	1.88	2.26
Beverage manufacturing	1,683	1.75	3.08
Tobacco manufacturing	102	0.84	4.88
Fiber, yarn, and thread mills	-	-	-
Fabric mills	154	0.50	1.79
Textile and fabric finishing and fabric coating mills	57	0.21	1.68
Textile furnishings mills	219	0.90	1.55
Other textile product mills	901	2.54	1.36
Apparel knitting mills	10	0.06	1.32
Cut and sew apparel manufacturing	140	0.16	1.41
Apparel accessories and other apparel manufacturing	263	3.51	1.31
Leather, hide tanning, finishing; Other leather, allied product manufacturing	-	-	-
Footwear manufacturing	-	-	-
Pulp, paper, and paperboard mills	-	-	-
Converted paper product manufacturing	2,161	1.45	2.06
Printing and related support activities	1,932	0.63	1.69
Petroleum and coal products manufacturing	78	0.15	3.67
Basic chemical manufacturing	44	0.07	4.90
Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing	44	0.09	3.55
Pesticide, fertilizer, and other agricultural chemical manufacturing	59	0.42	3.35
Pharmaceutical and medicine manufacturing	115	0.08	3.29
Paint, coating, and adhesive manufacturing	71	0.25	2.48
Soap, cleaning compound, and toilet preparation manufacturing	105	0.19	3.33
Other chemical product and preparation manufacturing	2,209	4.91	3.16
Plastics product manufacturing	991	0.35	2.18
Rubber product manufacturing	1,765	2.81	1.99
Wholesale trade	24,603	0.79	1.74
Retail trade	103,582	1.14	1.35
Air transportation	346	0.14	2.62
Rail transportation	907	0.97	4.93
Water transportation	1,726	4.73	3.73
Truck transportation	5,189	0.49	1.71
Couriers and messengers	1,070	0.27	1.80
Transit and ground passenger transportation	2,190	0.63	1.26
Pipeline transportation	10	0.05	6.06

Industry	Employ-ment	LQ	Industrial Employment Multipliers
Scenic and sightseeing transportation and support activities for transportation	8,864	2.52	1.76
Warehousing and storage	4,828	1.33	1.41
Newspaper, periodical, book, and directory publishers	3,915	1.14	1.84
Software publishers	202	0.15	3.48
Motion picture, video, and sound recording industries	1,874	0.85	1.34
Data processing, hosting, related services, and other information services	2,951	1.18	2.35
Broadcasting (except internet)	2,286	1.25	2.42
Telecommunications	5,560	1.04	3.29
Monetary authorities, credit intermediation, and related activities	14,658	0.91	2.26
Funds, trusts, and other financial vehicles	180	0.32	8.96
Securities, commodity contracts, and other financial investments and related activities	7,311	0.58	1.27
Insurance carriers	7,007	0.86	1.75
Agencies, brokerages, and other insurance related activities	4,613	0.73	1.56
Real estate	43,814	1.15	2.02
Automotive equipment rental and leasing	1,126	0.93	2.22
Consumer goods rental and general rental centers	1,847	0.99	1.71
Commercial and industrial machinery and equipment rental and leasing	643	0.86	2.63
Lessors of nonfinancial intangible assets (except copyrighted works)	657	3.75	-
Legal services	7,016	0.73	1.60
Accounting, tax preparation, bookkeeping, and payroll services	6,423	0.83	1.28
Architectural, engineering, and related services	17,092	1.66	1.75
Specialized design services	1,003	0.50	1.31
Computer systems design and related services	15,746	1.47	1.69
Management, scientific, and technical consulting services	7,807	0.82	1.60
Scientific research and development services	4,985	1.08	2.41
Advertising and related services	1,612	0.47	1.49
Other professional, scientific, and technical services	5,252	1.09	1.32
Management of companies and enterprises	9,428	0.97	2.58
Office administrative services; Facilities support services	3,195	0.94	1.42
Employment services	15,463	0.79	1.36
Business support services; Investigation and security services; Other support services	19,127	1.49	1.27
Travel arrangement and reservation services	1,901	1.26	1.37
Services to buildings and dwellings	18,482	1.22	1.26
Waste management and remediation services	1,656	0.82	2.12
Elementary & secondary schools; Junior colleges, colleges, universities, & professional schools	19,012	0.92	1.34
Offices of health practitioners	27,381	1.17	1.71
Outpatient, laboratory, and other ambulatory care services	4,687	0.76	1.57
Home health care services	4,906	0.79	1.24
Hospitals	19,140	0.83	1.73
Nursing and residential care facilities	15,847	0.97	1.27
Individual, family, community, and vocational rehabilitation services	8,275	0.74	1.20
Child day care services	9,307	1.17	1.12
Performing arts companies; Promoters of events, and agents and managers	2,352	0.78	1.29
Spectator sports	437	0.27	1.37
Independent artists, writers, and performers	3,262	0.67	1.08
Museums, historical sites, and similar institutions	1,125	1.61	1.34
Amusement, gambling, and recreation industries	9,445	1.04	1.22
Accommodation	12,434	1.24	1.41
Food services and drinking places	64,115	1.22	1.18
Automotive repair and maintenance	6,522	0.87	1.46
Electronic and precision equipment repair and maintenance	1,604	1.64	2.46
Commercial and industrial equipment (except automotive and electronic) repair and mainter	1,695	1.07	1.65
Personal and household goods repair and maintenance	1,312	1.10	1.54
Personal care services	9,968	1.48	1.28
Death care services	993	1.10	1.52
Drycleaning and laundry services	2,642	1.21	1.43
Other personal services	1,022	0.55	1.63
Religious organizations; Grantmaking and giving services, and social advocacy organizations	13,270	1.13	1.30
Civic, social, professional, and similar organizations	3,311	0.61	1.42
Private households	7,840	0.64	1.08