

The Five Pillars of Economic Development: A Study of Best Practices for the Roanoke Valley

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Introduction

For more than fifty years the primary model of regional economic development has been the so called ‘base theory’ model. This model suggests that regional economic growth is fueled largely by a region’s base sector and the production and employment activities this base sector provides. This base sector consists of businesses that are located within the region but produce for markets outside of the region. When the base sector does well and flourishes, so does the region, so the model assumes. Consequently, a region’s economic health is dependent on the health of its base sector. Firms that are located within the region but produce goods and services and provide jobs that target markets within the region are considered non-basic. Given the importance of the base sector to a region it is not surprising that economic development policies have sought to strengthen the base sector. This is typically done by offering incentives to businesses that are part of the base sector and by actively recruiting base sector businesses.

There are two interesting assumptions that underlie the base model: (1) It places key importance on export oriented businesses and (2) it places no importance on the household sector or the demand side of the economic equation. Both assumptions are questionable. First, consumption within a region fuels a region’s economy. By preventing dollars from leaking outside of the region and making it attractive for people to spend their money within the region, a region’s economy can benefit significantly. The effect of such regional spending is called the multiplier effect. This so-called multiplier effect is strengthened as the economic impact of one additional dollar spent in a region increases when that dollar cycles through the region’s economy. Secondly, jobs and production are no longer co-located as a rule. A company located in the Roanoke Valley may have a workforce consisting of software engineers located in India or of textile workers located in Mexico. Moreover, many of the so-called creative class workers, that is the work force of well educated, innovation oriented men and women who garner above average wages, can work from wherever they choose to live (Florida 2004). Many link into their work site via the internet, they telecommute or they commute to their real job site only

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occasionally while relying largely on a virtual job site. For innovation oriented businesses who want to draw on clusters of this creative class work force the incentive equation has changed dramatically. These businesses must be able to offer amenities that are attractive to this highly educated, highly mobile and highly creative work force. And some of these amenities are outside of the business sector's control. Businesses can offer attractive fitness centers and coffee shop type break rooms, but their influence is limited when it comes to attractive outdoor activities and social amenities like an active arts scene or an international restaurant scene.

So how does a region attract this kind of creative class workforce and those kinds of innovation oriented businesses that are driving the new, post manufacturing economy? Certainly not by relying on the traditional tool box of base sector incentive oriented development policies. Successful economic development strategies in the new economy are dramatically different. They must focus on amenities and on improving a region's Quality of Life (QoL). They must generate a sustainable level of demographic growth to support a region's economic, social, cultural and recreational activities, but they must avoid growth rates that place undue pressure on infrastructural resources and thus diminish the Quality of Life. To do that one must first take a closer look at the evasive concept of 'Quality of Life' and operationalize it by identifying indicators that provide a measure of a region's QoL. Such measures form the basis for assessing a region's strength and weaknesses and for identifying strategies for improving specific aspects of a region's QoL.

This is the approach the study takes that is presented here. Part I offers a review of the literature on economic development and compares the traditional base theory approach to newer QoL based approaches to economic development. Part II reviews past QoL studies and identifies five indicator categories that lend themselves to measuring a region's QoL. Within each of these five categories specific indicators are identified that can be used to compare Roanoke's Quality of life to that of other regions. Part III compares Roanoke's MSA with the MSAs of ten other communities that exhibit sustainable rates of demographic growth in the 1 to 2% per year range. The results of the comparison indicate that the Roanoke region has some strong assets in terms of its natural environment and recreational potential; however, it also exhibits some deficits particularly in retail and entertainment. Part IV uses a narrative format to outline a possible future development scenario for Roanoke based on the identified strengths and weaknesses and identifies potential strategies for achieving a sustainable rate of economic growth for the region.

Part I: Economic Development Theory – Rethinking the Past

Regional economic development is a rather practical field. Its reference point is a geographic region rather than a national economy (macroeconomics) or individual businesses and households (microeconomics). It is generally concerned with identifying patterns and strategies that improve a region's economic condition. Yet even practically oriented fields and strategies tend to have a theoretical basis that provides a rationale for why things work a certain way. Regional economic development is no exception. For the past fifty years the field has been dominated by the so called 'base theory' model. This model suggests that a region's economic growth can be approximated by its base sector activity. Distinguishing between base (export oriented) and non-base (regional consumption oriented) economic activities, base theory assumes that a region's economic well-being depends on the health of its base sector. This sector is comprised of local businesses that are dependent upon external markets. For example, Boeing builds and sells airplanes to companies and countries all over the world. Since its business depends almost entirely on non-local markets (Boeing does not sell planes to local households) it is very dependent on exporting its products. Manufacturing and extraction-oriented businesses like logging, mining or automobile manufacturing are generally also considered part of the base sector because their fortunes depend largely upon non-local markets.

The ratio of total employment (base plus non-base) to base sector employment provides a first approximation for the value of the so called 'multiplier effect'. The multiplier is central to economic base theory. The more employment growth and increased expenditures in the base sector, the more economic growth will occur in the region as additional workers or higher expenditures create increased demand (induced effect) and benefit other businesses in the region (indirect effect). The multiplier thus provides a measure of the total economic impact caused by a change in base sector activity: the ratio of total industry income changes (including the initial industry induced changes) to the change in income directly attributable to the base industry (Eadinton and Redmand, 1991). The larger the multiplier, the larger the impact the base industry has on the region's economy. The base sector is therefore considered the "engine" of the local economy. As Andrews (1953) points out: "...if the exporting functions decline in activity,...an eventual downturn adjustment to total community population is almost certain to result." (p.162).

The logical conclusion to the base theory model is that the key to a region's development lies in its ability to attract and retain a core of businesses that generate exportable goods and services. Yet this is only partially correct. Since the size of the multiplier (and hence the ability

of any industry to create economic growth) depends on the rate at which an additional dollar spent is actually recycled within a region's economy, growth ultimately depends on how much of what consumers want to buy is offered within the region. If there is no demand, and consumers or local businesses seek to spend their money elsewhere, or if goods that meet local demand are imported rather than locally produced, the multiplier effect is reduced. Growth, therefore, does not necessarily follow a stimulus of the base sector. Sustained growth can only be achieved if non-base activities are developed as well (Perloff and Wingo 1968; Krikelas 1992). This is particularly true in our post-industrial age where suppliers can be located half way across the globe and contracted services can be provided in India or Mexico by a work force that spends its wages far outside the region.

Given the prominence of the base theory model it is not surprising that policy makers and economic development experts have devised various incentive strategies to attract base sector businesses. Such incentives have ranged from job creation programs to tax breaks to advertising a region's business climate to lower environmental regulations and a low-cost workforce. Support for these strategies has also come from long established economic location theory that focuses on cost factors (labor, land, transportation, energy costs etc.) as the primary driver of location decisions (Weber 1909; Hoover 1948). Particularly during the past twenty years, however, the success of such incentive programs has been called into question. Their ability to stimulate a region's economy seems inconclusive at best.

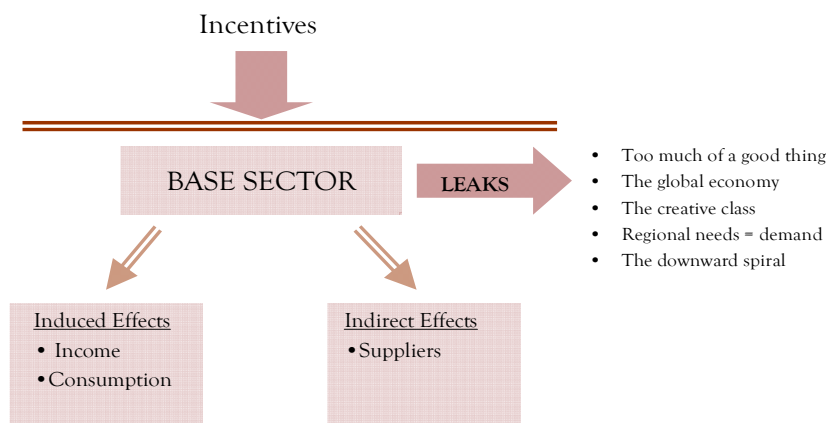
One reason is that there can be too much of a good thing. Regions that have relied too heavily on one economic sector have found themselves exceedingly vulnerable to outside shock with little opportunity for the region's work force to migrate into other sectors to soften the impact of one sector's economic downturn (O'Hara and Vazquez 2001). As previously mentioned, export-oriented industries have become more mobile and more global; dispersing any multiplier effects and any benefits they may have on a region's labor force and secondary business growth across the globe. Moreover, high paying manufacturing jobs have been in a steady decline while location independent jobs in the so-called creative sector have increased. Such jobs are populated by knowledge-based workers who can choose where to live, provided a strong technology backbone links them to their job site. This new workforce enjoys above

average wages that can provide a regional consumer base capable of stimulating regional demand and adding to a region's multiplier effect.²

And even proponents of the base model have cautioned against too much reliance on export oriented industries. Long-term, sustained growth is only possible if non-base industries that serve the region and its work force and that meet local demand are developed (Krikelas 1992). Several studies have also called those factors into question that have traditionally been considered critical for business location decisions. When it comes to decisions about where to locate, purely economic considerations appear to be losing in importance while quality of life factors appear to have gained in importance. This appears to be particularly true for business retention rather than location decisions (Blair and Premus 1987; Birch et al. 1995, Harris 2001). And finally, by competing with other regions for businesses through such measures as lowering environmental standards or foregoing taxes, a region may actually impede its natural resource base and infrastructure and thus undercut the very assets that support its quality of life. An example is the tourism industry. Here, large import requirements, high levels of foreign ownership and negative environmental impacts have more than offset the potential benefits of large employment and income multipliers (Vazquez 2001).

Figure 1:

Traditional Regional Development Framework



² For instance, according to Florida (2004) the average salary of a member of the Creative Class was almost \$50,000 in 1999, compared to \$28,000 for a so-called Working Class member and \$22,000 for a member of the Service Class (pg 76)

These concerns have generated a search for alternative models of regional economic development. Some alternative models have stressed “revitalization” or “beautification” efforts. These models played an important role in the revitalization efforts of the 1970s. As O’Hara (2001) points out, some models followed the rationale of “commerce follows customers”. Urban and rural centers across the country sought, for example, to improve their appeal by building parking garages. Yet some of these strategies failed to take a region’s specific context into account relying instead on ‘cookie-cutter’ approaches. Successful examples, however, have not only increased consumer demand and thus the multiplier within a region, but they can also improve a region’s commercial potential by appealing to businesses that seek to attract and retain a qualified workforce (Harrison 1974; Spratlen 1991). A number of empirical studies seem to support the benefits of this alternative development approach (Mueller 1982; Blomquist et al. 1988; Deavers 1989; Duffy 1994; Adams and Fletcher 1997); several other studies support and broaden it. These studies have documented the important role various Quality of Life related factors play in stimulating and sustaining a region or community’s economic growth (Gottlieb 1994; Halstead and Deller 1997; Dissart and Deller 2000; Deller et. al 2001).

More recent movements such as “smart growth”, “livable cities”, “sustainable communities” and “new urbanism” follow a similar rationale as the revitalization and beautification approaches. These newer movements, however, place even greater importance on environmental factors and have a more cautious view of growth itself. The common feature of these quality based models of development is the inclusion of a region’s context specific factors such as its natural resources or demographic characteristics. And indeed, for development strategies to be successful, context specific social, demographic, cultural and environmental factors must become the focus of development efforts (Wilson 1985; Power 1996; O’Hara 1998; O’Hara 1999; O’Hara 2001a; 2001b).³ In fact, attention to context specific factors forms the strengths of these newer models. Yet it also constitutes their key challenge. The traditional base theory model of economic development neglects context specific considerations and therefore it is easily measured and generalized. One of the challenges of a context specific approach to

³ Tourism can serve as an example. Since tourism could take many different forms depending on the particular context, the effectiveness of tourism strategies depends most likely on special characteristics of a particular region rather than on generalizable development concepts. For example, in small local communities the increase in public services and infrastructure resulting from increased tourism expenditures could result in higher property values, while in communities where these services are already in place, the impact could be insignificant. Given these complexities, it becomes very difficult to generalize the results of any study examining the impact of tourism. To draw conclusions for a theoretical body of literature regarding the effects of tourism thus becomes extremely difficult (Vazquez 2001).

economic development is finding appropriate success measures that make the elusive concepts of 'Quality of Life' more operational. O'Hara formulates five key categories (along with a set of economic and demographic background data). Each of these five categories can be described by a set of specific indicators. These key categories are (1) the environment incl. recreational opportunities and aesthetics, (2) education, (3) health care and wellness, (4) social and cultural amenities ranging from retail to entertainment and the arts, and (5) technology and transportation as key factors in providing a location independent work force with access to both virtual and real work sites.

The idea of including broader, non-economic categories in engineering and measuring economic success is not simply a regional or community based idea either. There are many large-scale efforts to rethink economic development and its progress measures as well. Traditional economic models that focus on strictly economic measures are easier to communicate than those drawing on multiple indicators categories. Yet such models also reduce the amount of information taken into account and therefore tend to be less accurate. For example, in measuring economic progress at a national level we rely on GDP or GDP per capita as a measure. GDP measures final goods and services produced in dollars. This is an 'output' measure, but not a measure of how well our nation and its people are actually doing. Yet more complex measures that better reflect whether our available resources are actually improving or declining, whether our infrastructure is better or worse, whether our environmental quality is improving or in decline, whether the education levels of our population and the quality of our work force is improving, such considerations are simply not part of the GDP. More complex measures like the Indicator of Sustainable Economic Welfare (ISEW) or the Genuine Progress Indicator (GPI) include many of these added categories and give a more complete picture of how our nation, its economy and its workforce are actually doing. Yet they are rarely used (see Cobb et al. 1999, O'Hara 1999) despite the fact that these more detailed measures can offer better guidance to policy makers about strategies that can improve a nation's welfare.

And qualitative considerations are even more relevant for regional development decisions. The scale of regional development makes the use of purely economic measures as the sole indicators for whether a region's well-being is actually increasing or in decline all the more questionable. To adequately inform policy makers about the impact of economic development decisions, various measures of a region's long term viability and well-being are needed. Such measures must be able to take a community's assets and growth potential into consideration

rather than being limited to economic success measures alone. The so called ‘social indicator approach’ views development as a multi-dimensional process that can only be appropriately measured by considering multiple dimensions of development and by using multiple indicators to capture these multiple dimensions. Table 1 offers a list of five indicator categories based on the work of O’Hara and others (see for example Russett et al. 1964; Rosi and Gilmartin 1980).

And just as the exclusive use of economic measures have raised concerns, so too has growth itself. What level of economic growth is sustainable in the long run? What level maintains a region’s Quality of Life rather than undermining it? These questions have not been explored much despite the clear shift from ‘growth’ to ‘sustainable growth’ goals during the past two decades. What constitutes a sustainable level of growth continues to be elusive. What is evident, however, is that regions with negative or slow population growth rates suffer economically. Regions with excessively high growth rates on the other hand experience infrastructure problems, traffic congestion, negative environmental impacts and the like. While it is impossible to generalize the impact of a specific rate of growth, especially when it comes to environmental impacts that tend to be quite context specific, a population growth rates between 1 and 2 % appears to be high enough to sustain a region’s economic vitality yet low enough to avoid the kind of problems fast growing areas experience

Table 1: Selected Categories and Compatible Objective Indicators of Regional Development

<i>Indicator Category</i>	<i>Potential Specific Indicators</i>
Health Care	<ul style="list-style-type: none"> ○ Life expectancy ○ Physicians per capita ○ Hospital beds per capita.
Education	<ul style="list-style-type: none"> ○ Literacy of the population over 15 ○ Students enrolled in Higher Education per capita. ○ Women in Higher Education per capita. ○ Ratio of Men to Women in Higher Education.
Technology	<ul style="list-style-type: none"> ○ Internet Access ○ Highway Access ○ # of Airports within driving distance.
Environment	<ul style="list-style-type: none"> ○ Air and Water quality indicators. ○ Land availability and land quality indicators.
Amenities	<ul style="list-style-type: none"> ○ Acres of parks per capita. ○ Food stores per capita. ○ Movies theaters (and other type places) per capita. ○ Restaurants per capita.

Part II: Indicator Selection - Getting Valid Information

Quality of Life (QoL) based approaches to development have enjoyed growing popularity over the past twenty years among academics and practitioners alike. In the academic literature, there is growing evidence that suggests that QoL factors can be a significant element in the location decisions of businesses and capital. For instance, the much quoted study by Fothergill and Gudgin (1982) in the UK concluded that environmental quality is a significant factor in industrial location decision. Surveys of decision-makers in industry, such as those conducted by Healey and Baker (1993) across Europe, provide further evidence. Of the largest 500 companies in the European Union surveyed, about 10 per cent included QoL factors amongst the three most important attributes in their location decisions. Surveys conducted in the U.S. in the late 1980s also concluded that QoL factors were a primary consideration in the location and expansion decisions of business (Malecki, 1984, 1985; Brotchie et al., 1985; Hart and Denison, 1987).

QoL factors also seem to be a critical determinant in consumers' decision to relocate. For instance, Findlay and Rogerson (1993) identified QoL factors as significant reasons in the location decisions of more than 70 per cent of all households. Findlay and Rogerson's interview revealed that QoL factors were more important than employment opportunities, cost of living or family ties. And the reverse is true as well. Several studies have shown that a poor Quality of Life may be of significance in the out-migration from cities and regions (Keeble and Gould, 1985; Bolton and Chalkley, 1989; Keeble, 1990). For instance, Williams and Jobse (1990) found in their analysis of migration patterns across the United States that QoL factors rather than economic factors are key in explaining why people leave urban areas across the country.

Among practitioners the QoL movement has focused more on strategies and success measures than on identifying patterns and theories. A growing number of communities, for example, have adopted QoL indicator studies to track and influence their progress toward development goals. A popular term for QoL approaches to development is "community-indicators". Over 1000 Community Indicator studies have been conducted around the world to date. One of the earliest studies dates back to 1985, when Jacksonville, Florida published its first QoL Indicator report (Jacksonville Community Council 1985). Back then Jacksonville used 36 indicators; today the report includes 114 indicators (Jacksonville Community Council 2005). Table 2 offers a sample of communities that have issued recent QoL indicator reports.

Table 2: Sample of Cities with recent QoL Indicator Reports

City/Region	Most Recent Study	# of Indicators Used
Cincinnati, OH	2005	14
Chattanooga, TN	1992	23
Chicago, IL	2002	40
Baltimore, MD	2003	40
San Mateo, CA	2005	45
Boulder, CO	2000	50
Denver, CO	2004	50
Burlington, VT	2004	52
South Hampton Roads, VA	2003	53
San Monica, CA	1999	66
Seattle, WA	1998	70
Jacksonville, FL	2004	119

A widely publicized example is Chattanooga, Tennessee. The uncontrolled growth of heavy industry (including steel and coal) along the Tennessee River had created serious air and water pollution problems for the city. A serious decline in its industrial base during the 1970s exacerbated Chattanooga's problems. By then the city had one of the worst air quality records of any city in the U.S. and experienced population decline. Vision 2000, Chattanooga's first indicator project was born out of deep concern for the city. It articulated redevelopment efforts and specific revitalization and beautification goals to reverse the city's decline. One of the projects main focal points was to promote economic development without undermining the city's quality of life. Chattanooga's "visioning" process identified six broad categories of goals: people, places, play, work, government, and future alternatives. Vision 2000 was expanded to "ReVision 2000" and complemented by planning efforts launched by the Chattanooga Hamilton County Regional Planning Agency (CHCRPA) and entitled "Future Community Planning Process" (Parr 1998). The city's 2020 Plan provides aesthetic goals, a comprehensive development plan and policy measures such as zoning ordinances and building codes that are consistent with the aesthetic and development goals. Progress has been monitored through Hamilton County's "indicators of community well-being" spearheaded by the Metropolitan Council for Community Services, and Chattanooga's United Way (Metro Council 1998) yet it was the coordinated effort of many organizations and agencies that ultimately yielded results.

After losing more than 10% of its population during the 1980s and early 90s the city has experienced annual population growth rates of 0.67% per year between 1999-2003.

Another success story is Burlington, Vermont. Burlington has won numerous national awards as a livable city that offers an active, high quality lifestyle. Much of Burlington's success is the result of the city's 'Legacy Project', a sustainable development initiative that was initiated in 1999 and is supported by businesses, neighborhood organization, faith groups, environmental groups, government officials and social service agencies. The project sought to "help preserve those qualities that we cherish most about our city and to identify issues and trends that we must address to improve the quality of life for every resident" (The Burlington Legacy Project, pg. 1). Thousands of residents participated in formulating a common vision for Burlington's future through surveys, public hearings, focus groups, and community discussions. The result was an action plan and implementation process whereby 'The Legacy Project' provides the conceptual framework that connects many diverse initiatives in five key areas: economy, governance, neighborhoods, youth and life skills; and environment. Each of these five areas has 30-year goals, subsections with indicators to measure progress toward each subsection's goals and priority actions to implement the identified goals.

A more recent example that is closer to home for Roanoke is the Hampton Roads project. The region published its first report entitled "Investment in Priorities: Visions and Indicators" in May 2000. The report provides data for fifty social indicators that offer information about the community and can serve as a base line for establishing community priorities that can then be supported by public and private initiatives. In 2002 Hampton Roads issued a Regional Report Card. A second edition of the "Visions and Indicators" report was published in 2003. The report has positioned the region to undertake a series of coordinated development initiatives that can move the region forward toward its stated objectives.

If one analyzes the broad range of QoL studies that communities across the country have undertaken, certain patterns become evident. According to Swain and Hollar (2003), for example, QoL studies have four distinct starting points. First, they may start from an economic perspective and expand traditional economic indicator approaches to capture non-economic aspects of a community's Quality of Life. Secondly, they take the environment as their starting point and argue that human well-being is influenced not only by social and economic, but also by environmental factors. Such studies include economic, social and environmental indicators but place particular importance on environmental quality measures. A third approach focuses on

“community health”. Health is typically very broadly defined and may include economic prosperity, social well-being, environmental quality, public safety and other elements that impact the collective health of a community. And finally a fourth approach has its roots in the “benchmarking” movement of the 1990s. Typically benchmarking studies were conducted at the larger-scale, strategic planning level (i.e. State level) with a focus on influencing policies to bring about desired changes.

These four starting points indicate different motivations for QoL indicator studies, yet they all share the common goal of improving human well-being now and in the future, and of defining measures that help assess progress toward that goal. The process of identifying multiple indicators to measure a community’s progress thus must begin with a clear and compelling vision for a community’s future and with the motivation to work toward a common goal. Many communities have such a vision for a successful future yet typically it is not explicitly articulated but instead remains hidden, which leaves ample room for generalities, lack of accountability and just doing what has always been done. However, when a goal is identified, and strategies to move toward the goal are articulated, then it becomes relatively easy for policy makers to clearly define and articulate their vision through a set of indicators that communicate the common vision and invite a wide range of organizations and citizens into the process of sharing common information and working toward a common goal. Indicators can indeed tell a graphic story about specific aspects of life and well-being in a community. QoL studies thus can serve a critical role in getting a community to work together, and get on track in moving toward measurable outcomes rather than being stuck in generalities.

Given their power to tell a story and to set a common direction, indicators must meet the following objectives: 1) they must measure the current status of a community’s quality of life or well being 2) they must measure the progress towards a community’s vision and goals. Indicators in and of themselves do not provide any direction about how to accomplish improvements in a community’s QoL. But, as Swain and Hollar (2003) argue, indicators do “...raise consciousness among citizens and decision makers, to reconfigure priorities among issues most deserving of community attention, and to shape the agenda for public consideration of action and allocation of resources” (pg. 797).

Given the critical role they play for a community's development and direction, the selection of indicators should meet a set of particular criteria. Indicators should be:⁴ :

- 1) valid and important
- 2) relevant to setting policies
- 3) understandable
- 4) outcome and asset orientation
- 5) anticipatory and pro-active
- 6) readily available,
- 7) representative

Validity and importance – indicators must measure an attribute of the community that members of the community deem important in light of the community's vision and goals. If there is widespread disagreement about a particular indicator, then the indicator is probably not going to be very useful to inform policy changes in the community. Yet many indicators would receive broad support in most communities. For example, most would probably agree to include indicators like the unemployment rate, crimes committed, income per capita etc. in their list of progress measures. For most of these indicators their impact on the community's Quality of Life would be indisputable. Yet consider for example an indicator like "housing prices". Some might consider an increase in housing prices as positive while others might consider it a negative. When there is disagreement about an indicator's validity it will likely be of limited use.

Policy relevance – indicators must measure attributes that can be influenced through policy changes or other action steps. Factors such as weather or the proximity to water, although quoted quite frequently in popular ratings of "best places to live", are not very useful indicators. After all, a community has little or no ability to influence such indicators but must simply take them as an asset or characteristic.

Understandability – indicators must measure aspects of the community's Quality of Life in a way that most citizens can easily understand and interpret. This does not necessarily mean that indicators must be constructed using simplistic methods. For instance, to measure the quality of the water scientist might use methodologies that most residents and policy makers might not

⁴ These criteria are partly based on the recommendation of the Jacksonville Community Council and its long experience in conducting indicators studies.

understand. Nevertheless, most residents do understand that there is a connection between water quality and the community's Quality of Life.

Outcome and asset orientation – indicators must measure the actual condition of the Quality of Life (e.g. crime rate) rather than the response to its quality (e.g. number of police officers). Ideally, indicators should also measure a community's assets or positive contributions to its Quality of Life rather than its liabilities. It is easier to communicate when an increase in the indicator trend line leads to an improvement in the community's Q of L than when the increased trend line implies deterioration. .

Anticipation – indicators must measure factors that allow the community to be proactive rather than reactive. This means indicators must be able to express the community's goals and aspirations rather than measuring past trends.

Availability – indicators must measure assets, characteristics and features for which information is readily available. If data must first be collected, or can only be attained at considerable cost, or is only available from sources that lack credibility, then the usefulness of the data is limited and questionable at best.

Representative – indicators must measure important dimensions of previously determined goals and objectives. Selected sets of indicators that each measures a particular category or QoL aspect must be representative of that specific QoL aspect. All indicators taken together then cover all major dimensions of a community's Quality of Life.

This last criterion is quite important since the various indicators or "elements" of a QoL study actually complement each other to communicate the community's vision. Since this vision varies from community to community, different communities will choose different indicators to measure progress toward their expressed vision. For instance, Jacksonville collects indicators in nine different categories, while Chicago chooses to use six categories. As discussed in the previous section of this report (Part II) most studies use at least five basic categories that capture a community's Quality of Life. They are: Social and Cultural Amenities, Education, Health and Wellness, Environment and Recreation, and Technology and Transportation. Table 3 lists the five categories and the indicators chosen in each category for the study presented in this report. The study's approach and results are described in the subsequent chapter.

Table 3: Indicators selected.

<u>SOCIAL AND CULTURAL AMENITIES</u>
of Movie Theatres (within 15 miles)
of independent Movie Theatres
of Theatre Companies
of Libraries
of Museums accredited by AAM (within 30 miles)
of Restaurants (within 15 miles)
of Highly regarded Restaurants (based on customer satisfaction)
Ethnicities represented in the restaurant mix
Restaurant Diversity Index
of Free-standing Coffee Shops
of Bars (within 15 miles)
Bar Diversity Index
of restaurants in 2 mile radius
of bars in the 2 mile radius.
of Bookstores
of Independent bookstores
of Retail stores
of High-end \$\$\$ fashion/department stores
of Health Food stores
<u>EDUCATION</u>
% of population with four-year or graduate degree
% of population with one or more year of college
% of population in degree seeking post-secondary programs
% of school age students enrolled in private schools
Public high school graduation rate
Public high school dropout rate
Ranking of area public high schools
% of public school teachers with advanced degrees
Student : teacher ratio in public schools
Achievement test scores (ACT/SAT) for high school seniors
Eight grade reading level
Eight grade math level
Tenth grade reading level
Tenth grade math level
<u>HEALTH AND WELLNESS</u>
of Area hospital and clinics
of Hospital beds per 1000 of population
of Assisted living facility spaces per 1000 of population
of Non-assisted living, retirement community spaces available
of Physicians per 1000 of population
of dentists per 1000 population

Ranking of area hospitals
% of people without health insurance all ages
% of people under 18 without health insurance
<u>ENVIRONMENT AND RECREATION</u>
of Golf courses (public and private) within 30 miles
of hiking trails within 50 miles
of Beeches within 50 miles
of recreational facilities per capita.
of docks and marinas per capita.
Air Quality
Water Quality
Vehicle miles traveled per capita
<u>TECHNOLOGY AND TRANSPORTATION.</u>
Distance from city center to regional Airport
of Airlines serving the area
of Flights per day
of Passenger flights per day
of Destinations served by direct flights
of Passengers flying in/out of region per day
Vehicle ownership per capita
of People per day using public transportation
of Commuters with 25 minutes or less commuting time
Average weekday miles of regional bus service available
of internet providers per capita
Total Number of Indicators: 61

Part III: Measuring Quality of Life – A comparison of 11 communities

Since a high Quality of Life is critical to a region’s success in attaining a desirable level of population growth and in stimulating its economy, the key question is: what can a region do to improve its Quality of Life? What constitutes a high Quality of Life? What regions have succeeded in attaining a desirable level of population growth and in attracting the creative class work force that is so critical to today’s economy? To answer these questions we have designed a study that compares Roanoke’s MSA⁵ to the MSAs of ten other communities from around the country. Eight of these communities exhibit rates within the desirable range of 1 to 2% per year; two might be considered threshold communities that are on their way, with population growth

⁵ Roanoke MSA includes the following counties: Botetourt County, Craig County, Franklin County, Roanoke County, Roanoke city and Salem city.

rates of less than 1%, but higher than Roanoke’s 0.26% annual rate of growth. How did we identify these exemplary communities? First, like Roanoke, they are not metropolitan areas. Secondly, they are located all over the country in order to eliminate specific geographic or environmental factors that might influence demographic change. For example, not all communities are located in the mountains or in costal areas or in the so called good weather regions of the south. Third, they have not necessarily had a long standing history as destination points or as rapid growth areas. Instead they immerged as areas with solid year round populations and desirable rates of growth. Table 4 shows the selected comparison communities, their population size and population growth rates.

Table 4

Selected Comparison Communities

MSA	Population (2003)	Annual Population Growth Rate (1999-2003)
Roanoke	290,218	0.26%
Ann Arbor, MI	335,805	1.38%
Asheville, NC	382,566	1.19%
Charleston, SC	572,411	1.20%
Chattanooga, TN	486,519	0.67%
Colorado Springs, CO	569,519	1.90%
Fargo, ND	178,908	0.87%
Madison, WI	525,079	1.36%
Portland, ME	507,376	1.32%
Rochester, MI	172,340	1.69%
Saratoga Springs, NY	209,818	1.04%

Conducting a comparison study of communities from various states and counties has its challenges. It requires that the indicators used are available for all of the selected comparison communities. A comparison study like the one presented here also contradicts the main premise of the quality of life approach to some extent. For example, the indicator categories used in this study are based on a general set of quality of life categories and selected indicators within each of these categories. This means that the criteria used in selecting these indicators was not whether Roanoke has a particularly interest in the information selected or whether the information is consistent with Roanoke’s goals. As a matter of fact, Roanoke did not provide us

with a stated vision for its future that could then be assessed by using indicators consistent with this vision. Instead, the study draws on new knowledge in regional development, on empirical studies from other regions and on the general premise that stimulating its economy and attaining a population growth rate of 1 to 2% per year are desirable goals for Roanoke. Future studies that are concerned only with Roanoke may well select a different set of indicators that provide more detail in those areas that are of particular interest to Roanoke’s stated vision and goals.

To provide additional information about the selected comparison communities, a set of background indicators was collected that provides a wide range of information about the 11 selected MSAs. These range from information about the various regions’ climate, to demographic information, to information about safety and economic conditions. Table 5 lists the selected background indicators.

Table 5: Background Indicators

Climate – what’s the area like?

- High temp in July
- Low temp in January
- Annual Precipitation (inches)

Demographics – who lives here?

- Total Area
- Total Population (2000)
- Population Growth per year (1999 - 2003)
- White/Caucasian
- Black/African American
- Hispanic/Latino Origin
- Asian
- American Indian
- Foreign born
- % of population from out of state

How safe is the area and how strong is its economy?

- Average annual wage (mean earnings)
- Median household income
- Income available per person
- Poverty (based on census data)
- Unemployment Rate (as % of labor force)
- Percentage of Workforce between 20 – 35
- New housing starts 1999 to March 2000
- Affordability of single family home
- Number of Corporate headquarters
- Gross regional product
- Number of new business start-ups
- Economic diversity index
- Serious Crimes/capita
- Property Crimes/capita
- Violent Crimes/capita

Despite the careful selection of the comparison communities, they do vary in size. To assure a fair comparison of the amenities, health services, environmental assets etc. available in each

community indicators are calculated on a per capita basis wherever possible. For example, the number of restaurants available are measured as the number of restaurant seats available for each type of restaurant and divided by the population; physicians, hospital beds etc. are measured as the number of providers/ beds per thousand of the population. As a result, smaller MSAs are not placed at a disadvantage simply because they may not have the number or diversity of venues due to their size. And when it comes to amenities such as restaurants, music venues, theatres etc. a larger number of venues may not necessarily constitute an advantage per se. While a certain amount of diversity and variety offered is desirable, so is a certain level of density. Empty restaurant seats and empty seats in a blues bar do not portray the image of a thriving community. Several indicators included in the ‘social and cultural amenities’ category seek to address this tension between diversity and density. Indicators such as the number of restaurants in a 2 mile radius and the number of bars in a 2 mile radius attempt to measure the ‘urban feel’ or urban density of a community. Other suitable measures might be the number of condominiums or apartments in ‘mixed use’ retail and residential buildings. However, this type of data is not available consistently for all the selected communities.

Table 6: Comparison of Background Indicators

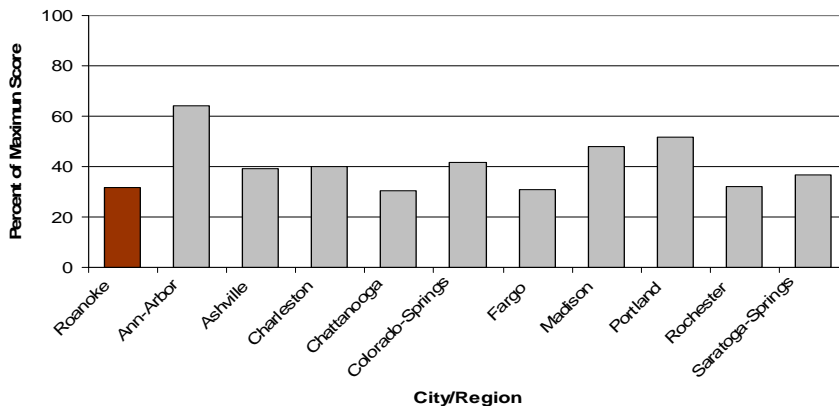
MSA	People from Out of State	Violent Crime per capita	Income Per Capita	Unemployment Rate	Poverty Rate
Roanoke	8.00%	0.004	\$29,795	4.1%	15.9%
Ann Arbor, MI	11%	0.018	\$27,024	3.6%	17.9%
Asheville, NC	13%	0.003	\$27,797	4.7%	14.1%
Charleston, SC	14%	0.001	\$28,814	3.7%	8.8%
Chattanooga, TN	14%	0.003	\$30,736	3.2%	15.0%
Colorado Springs, CO	15%	0.007	\$30,804	3.3%	15.5%
Fargo, ND	16%	0.003	\$31,689	3.5%	7.8%
Madison, WI	17%	0.001	\$32,952	3.1%	11.8%
Portland, ME	17%	0.003	\$35,191	2.9%	16.6%
Rochester, MI	18%	-	\$35,471	2.8%	19.1%
Saratoga Springs, NY	23%	0.005	\$38,323	3.0%	8.7%

A review of the background indicators reveals some interesting information (see Table 6). When one compares the percentage of the population that comes from out of State, Roanoke ranks lowest among the comparison communities with 8% of the population from out of state. The highest is Colorado Springs with 23% of the population. Roanoke’s ranking is more competitive in ‘violent crimes’ and ‘poverty rate’ with ranks numbers of 7 and 8 respectively

within a relatively close field. Roanoke ranks comparatively low in household incomes even compared to the other comparison communities located in the south. This suggests that Roanoke households do not have the expendable income more characteristic of ‘creative class’ households. However, adjusted for cost of living, Roanoke household incomes move from the last position to 8th of the 11 communities included in this study.

To compare the selected communities a score is calculated for each of the five QoL categories. The score is a composite of the indicators included in each of the five categories. A score of 100, the highest possible, indicates an ‘ideal’ community that ranks first in all the different indicators included in a category. A comparison of Roanoke with the other ten selected communities shows that Roanoke’s performance varies considerably between the five quality of life categories. For instance, Roanoke is weakest in the ‘social and cultural amenities’ category. As the comparison data shows, Roanoke cannot compete with the selected comparison communities in this category. This is despite its perceived strengths in a variety of cultural indicators within this category such as theatres, the opera, symphony, museums. These relative strengths are outweighed by some considerable weaknesses. Roanoke ranks last in restaurant diversity, last in bars/music venues, 10th in restaurant density (restaurants within 2 miles - an urban-feel-indicator), and 10th in high-end retail. Particularly the last indicator is of serious concern since it suggests ‘leakages’ of disposable income from the Roanoke region to other regions that offer more desirable retail options. Figure 2 shows how Roanoke compares in the composite score of all indicators within the social and cultural amenities category⁶.

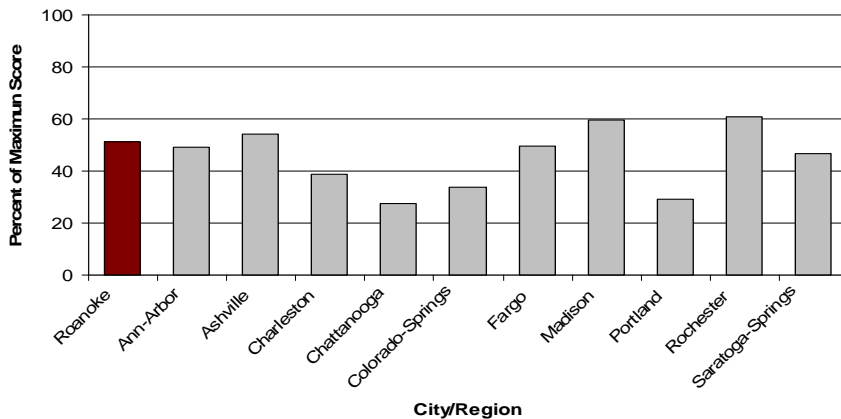
Figure 2: Comparison of Social and Cultural Amenities



⁶ Please see the Appendix for a more detail description of how these scores were calculated. Roanoke ranks last in ‘social and cultural amenities’ followed closely by Fargo, ND and Chattanooga, TN.

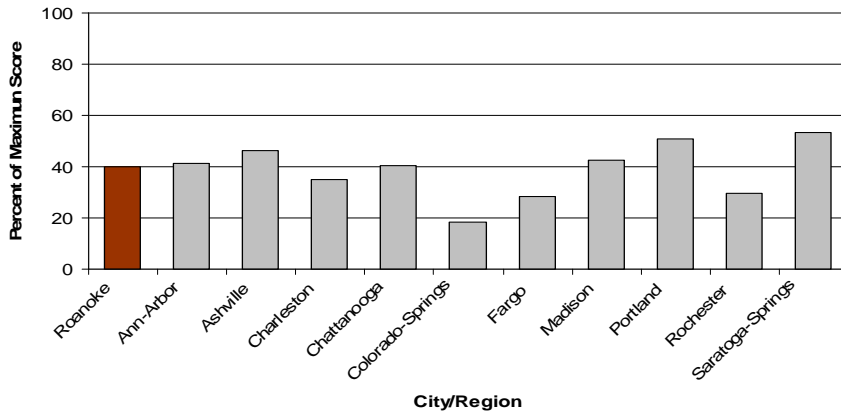
Roanoke receives high marks in education, despite the fact that some of the comparison communities are home to large research universities and very strong school systems (Madison, WI; Ann-Arbor, MI). Roanoke ranks 4th in the overall education score and first in its student to teacher ratio. The strong performance of the region’s school systems shapes the overall score in the ‘education’ category since the majority of indicators within this category describe school performance. Yet the category also includes other indicators that are more broadly descriptive of a region’s educational attainment such as the percentage of the population with a four-year college or graduate degree, the percentage of the population with one or more years of college, and the percentage of the population in post-secondary programs. The data suggests that an area’s educational success does not simply depend on the presence of a large research university within a region. Instead, more complex factors seem to be at work in a community’s support of a competitive education system and in placing a high value on education.

Figure 3: Comparison of Education.



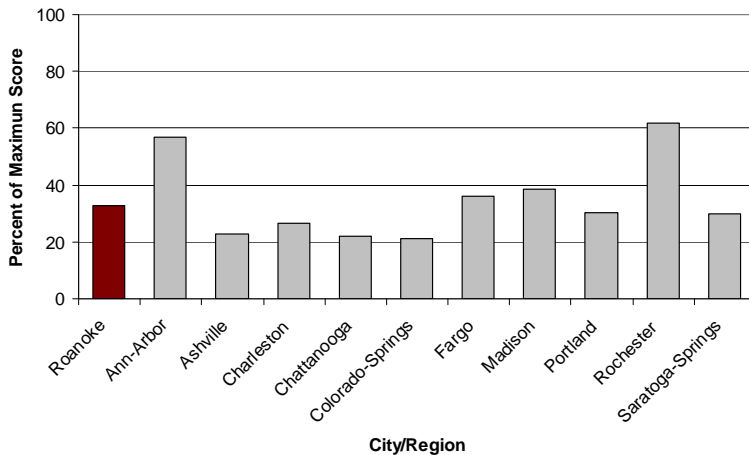
An exception to the high overall marks in ‘education’ are Roanoke’s city schools. When comparing Roanoke’s city schools to the city schools of the comparison communities, Roanoke ranks only 7th of the 11 city school systems. The lower rankings appear to be the result not only of lower performing schools, but also of a lower representation of a college educated population within the city. This illustrates that Roanoke lacks behind other regions in attracting a college educated population to its urban center. Two communities with particularly high percentages of college educated residents within their urban centers are Rochester and Colorado Springs. This is likely reflective of a more mixed-use coexistence of residential and commercial properties and a higher degree of gentrification in those urban centers.

Figure 4: Comparison of Education using only Roanoke’s City schools



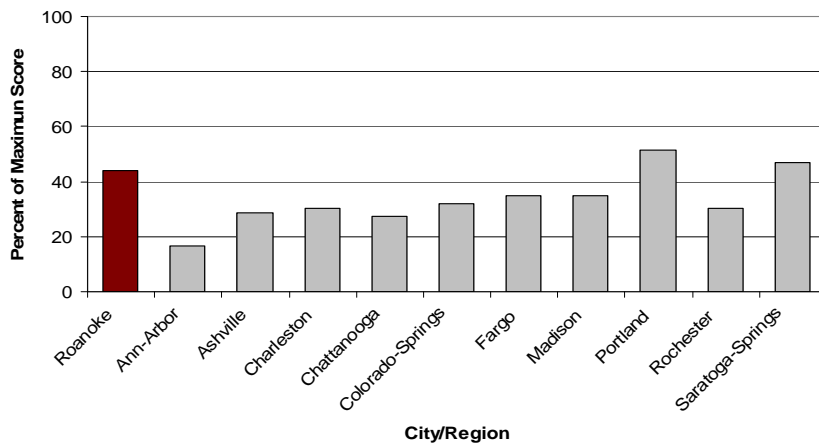
The set of indicators in the category ‘health and wellness’ measures primarily the availability of medical services within the regions. In addition, the category includes indicators that assess the medical coverage of a region’s residents. Roanoke ranks 5th in this category which is a strong result given the unusually strong medical services available in several of the selected comparison communities. For example, Rochester, MN is home to the Mayo Clinic, Madison, WI, is home to a large research university with its medical school facilities; the same applies to Ann Arbor, MI. Given this unusually strong sample, Roanoke’s rank indicates a very competitive medical system. Especially strong indicators within this category are the ‘Number of Hospital Beds per person within 15 miles’ and the ‘Number of Assisted Living Retirement Communities and Homes within 30 miles’ of the city. Roanoke ranks 1st and 2nd respectively in these two categories.

Figure 5: Comparison of Health and Wellness



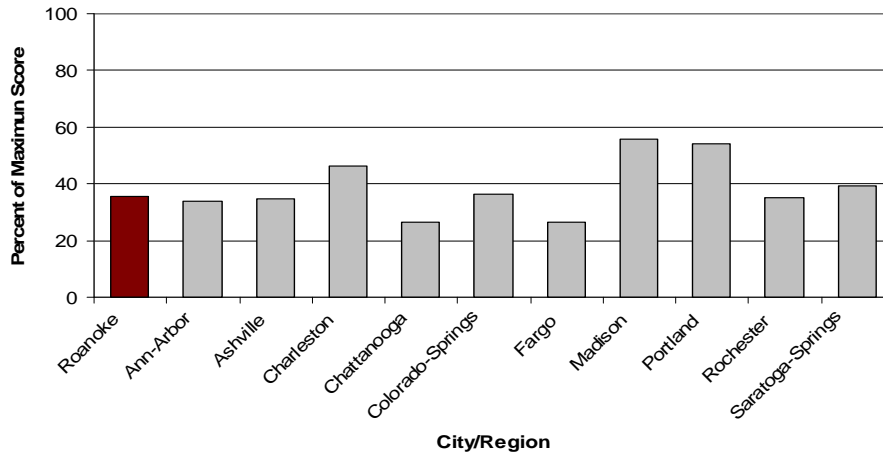
Roanoke’s strongest QoL category is the environment. This category includes both environmental quality indicators and indicators that describe the regions’ recreational opportunities. Roanoke ranks third in this category overall. Given the increasingly important role this category plays in QoL measures, this is a very strong result that points to one of Roanoke’s key assets. Within this category, indicators that capture outdoor recreation related assets are of particular value since those assets are of growing importance in our increasingly exercise conscious society. While the esthetics of a region’s environment also plays a role in this QoL category, this aspect is not included here since it is rather subjective and cannot be influenced through policies and development strategies. Unfortunately the list of indicators within this category is somewhat limited since it proved exceedingly difficult to find the same indicators for all of the selected comparison communities. Roanoke ranks second in hiking trails per capita and third in air quality among the selected comparison communities.

Figure 6: Comparison of Environment.



The final QoL category is technology and transportation. This category addresses both transportation issues within the region as well as its connections beyond the region. The majority of indicators in this category are transportation related. An interesting question is what indicators might be selected to represent a region’s technology infrastructure. A strong technology backbone is critical since it enables a tech-dependent work force to locate within a region while being able to connect to their job site via the internet. Only one technology related indicator (internet providers per capita) is included in the study since the available data varied widely between regions. Roanoke ranks 6th overall in this category and third in terms of distance from the region’s airport.

Figure 7: Comparison of Technology and Transportation.



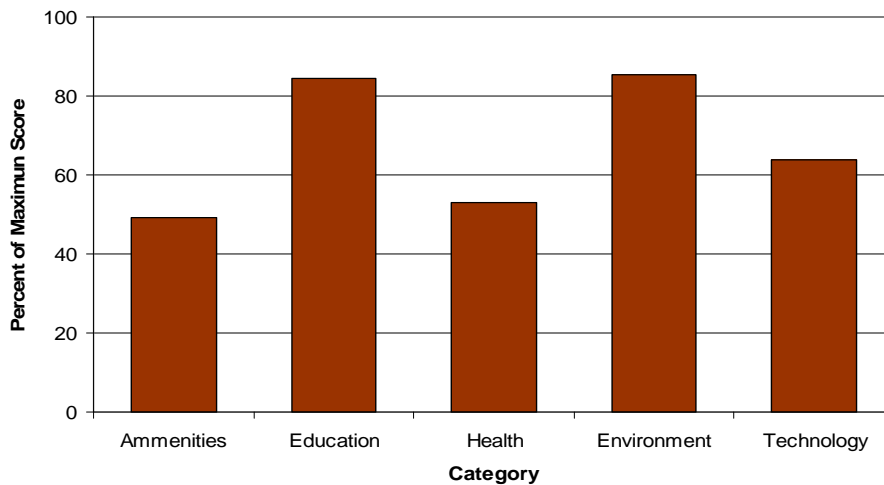
So what is Roanoke’s overall performance? There is neither a clear answer to this question, nor is the question itself helpful. Even if one adjusted for the difference in score numbers, which varies based on the number of indicators included in each category, Roanoke’s rank would depend on how much importance or weight is assigned to each of the five QoL categories. If education is deemed to be the most important aspect of how people in general and the creative class workforce in particular evaluate a region’s attractiveness then Roanoke’s weaknesses in other QoL categories might be deemed less serious and Roanoke might score relatively well overall. If however, social and cultural amenities were deemed most important then Roanoke’s overall score would be very weak. The input of relevant stakeholder groups within the region, as well as the opinion of the desired target group, is essential when one evaluates the relative importance of the different QoL categories and trade offs between the categories as well as indicators within the categories (O’Hara 1996; O’Hara , Shandas and, Vazquez 2000)

A more useful way of looking at the overall result is to see how Roanoke’s scores compare to the best performing communities. If one sets the highest ranking achieved within each of the five QoL categories at 100% then Roanoke can be compared to the highest performing community within each category (see Figure 8). This approach reveals relative strengths and assets as well as weaknesses or deficits that must be addressed.

The results show that Roanoke ranks particularly low in Social and Cultural Amenities with 49% of the maximum score achieved in this category (the highest scorer is Ann Arbor, MI). To be competitive, Roanoke must address the deficits that contribute to this low ranking and adopt strategies and policies to improve its performance. Based on the weakest indicators within

this category, Roanoke must pay particular attention to improving its high end retail options, bolstering restaurant diversity, attracting bar/ music venues, and improving its urban feel of the city center. Roanoke’s recent experience with such venues as Fresh Market and Panera appear to confirm the importance of strengthening the identified weaknesses. Both venues enjoyed enormously successful openings in the region, which indicates some unmet demand.

Figure 8: Roanoke’s score compared to the highest scorers



Roanoke’s strongest asset is the ‘environment and recreation’ category with 82% of the score of the highest performing community in this category (Portland, ME). However, the decisive question will be whether Roanoke can make this asset readily accessible to its residents. To rely simply on an existing asset may not be sufficient for Roanoke to turn its beautiful natural environment and recreational potential into a real competitive advantage. Walking and jogging trails, bike paths, access to water for fishing, kayaking and white water rafting, connecting trail systems and water front access to neighborhood sidewalks are all important strategies for making the region’s environmental assets accessible. To best capitalize on its natural beauty, the region may also have to vary the type of outdoor recreation access that is available within the region. The urban core might focus on parks and green spaces, waterfront walking trails and other moderate activities; the region’s suburban and semi-rural rings may focus on mountain biking, hiking and climbing and other more intensive recreational activities. Ideally both are connected to allow residents access to a range of alternatives from many neighborhoods within the region. The goal of developing Roanoke’s natural beauty into a strong regional asset thus cannot be achieved unless the region’s municipalities collaborate and coordinate their development efforts

and strategies. In addition, information about how to access to the region's outdoor amenities must be readily available at area hotels and information sources for new residents and visitors.

Roanoke performs very well in the category 'education' scoring 81% of the highest performer. This indicated that the region's school systems are competitive, with the exception of Roanoke's city schools. A strong school system serves undoubtedly as an attractive asset for families with school aged children; and at the very least strong schools do not pose a barrier to people's decision to locate in the Roanoke region. It is important to remember, however, that primary and secondary school education (the vast majority of the indicators examined here) may not be relevant to all segments of the population. Young single professionals and adults of retirement age may not be swayed by strong school performance records. They may instead be more interested in so called non-traditional post secondary education and in non-credit bearing educational offerings. In addition, more workforce-quality related indicators might be included in this category. This should prove easier once the main objective is no longer to compare Roanoke to ten other communities as is the case in this study.

A category that is often perceived as a liability for the Roanoke region, technology and transportation, appears to be the region's third strongest asset. Roanoke scores 64% of the highest scoring community in this category. Health and wellness ranks at 53% of the highest performer within the 11 comparison communities. This is an encouraging result, given the exceptionally strong comparison group. Recently announced changes at Carillion Medical, the region's largest health care provider, will only strengthen the competitiveness of this QoL category. As Carillion's plans to become a clinic are realized, the gap between Roanoke and the top performers within the competitive field of medical services in the 11 comparison communities will likely narrow.

So what might be the result of coordinated development efforts that will strengthen Roanoke's assets and address its deficiencies? What would a Roanoke region look like that has succeeded in addressing its deficits and in building on its strongest assets? What strategies might be used to achieve desirable development goals? What measures will the region use to judge whether its strategies are moving in the right direction and lead to the desired results? The following chapter will paint a picture of Roanoke's future by telling a story.

Part IV: Painting the Future – A Story about Roanoke’s Future Development

The idea of telling a story about a community’s or region’s future may be somewhat unusual, but it is not new. For example, the Governor’s commission for a Sustainable South Florida wrote a story about the future of the Everglades in 1995 (Correia 1995 pp. 3-7). This story was part of a document prepared to solicit public input to the Commission’s planning process. Instead of the usual report on the costs and benefits of particular development scenarios or other quantitative assessment methods typically used to assess land use alternatives, the Commission wrote a story about Anna and her son Edward who spend the day fishing in Florida’s Everglades and Kissimmee River system. The story took readers 20 years into the future and painted a picture of life in south Florida in the year 2015 and the steps taken in the late 1990s to restore South Florida’s unique ecosystem. The story’s details, such as the fishing boat’s electric motor, the recyclable equipment used by Anna and her son, the educational focus of the University system, zoning regulations, transportation systems and employment opportunities, are all part of describing a development scenario in story form. This story format is strikingly direct and communicable. It describes the vision of a sustainable South Florida in language that relates to the experience of South Florida residents. Instead of using the language of abstract valuation concepts and strategies familiar to economists and planners, it paints a vision of the future that is open to broad participation in the planning process. A story thus can help a region develop a compelling vision of the future. The details described in the story also point to planning details that can help a region identify suitable indicators that can measure progress toward the attainment of the vision. This is an essential step for a region and assures that efforts do not simply end with painting a vision but actually move toward implementing it and measuring progress toward its realization.

The story of Roanoke that follows is purely hypothetical. However, the details provided in the story are based on the analysis of the QoL data gathered in the comparison study and on the conclusion that a promising approach is to a) address the region’s deficits, b) build on its strengths and c) utilize some of its existing assets all in the interest of becoming a thriving community and region with a sustainable population growth rate of 1 to 2% per year.

The year is 2025. Roanoke is a thriving region with a healthy demographic mix of young singles, families with pre-school and school-aged children, and people of retirement age. Its ethnic mix and professional mix too exhibits a healthy diversity. Average family incomes indicate a solid level of disposable income and the region has been highly successful in keeping

this disposable income within the region. The region's annual population growth rate of 1.5% is spread across the region with Roanoke's urban core, suburban residential neighborhoods and more rural communities experiencing healthy but not overheating growth. The creative class workforce has discovered Roanoke as a destination, but the region has also been able to maintain its traditional manufacturing base.

Downtown Roanoke city forms the region's urban hub. The downtown area is vibrant and alive. A pedestrian area leads from Roanoke's market and forms the core of the downtown area, which is flourishing with interesting boutique style retail stores offering everything from high end clothing and shoes, art supplies, books and magazines, to health food and other specialty food stores. Food is actually a big focus of Roanoke's downtown. A coffee shop, bakery and deli are key features. A wide range of restaurants offer ethnically diverse food from high end dining to more affordable options. An evening in downtown Roanoke is an event. After dinner entertainment awaits diners in small coffee shops and bars that feature blues, jazz and blue grass music along with pool tables and dart games. Roanoke's arts scene has been consolidated and live theatre performances, gallery events, opera and symphony performances are well coordinated to assure a continuum of live entertainments that complement each other rather than competing for the attention of patrons. Loft style apartments and condominiums above downtown retail and restaurant venues form the reliable core of downtown customers who frequent its coffee shops, delis and specialty food stores. The downtown core consists of a walkable area of a roughly 2 mile radius. At its outer perimeter are aesthetic, brick faced parking garages that blend well into the historic city-scape.

Surrounding the urban core are well designed neighborhoods with a variety of single family homes, some with townhouses and rental properties interspersed. Roanoke's schools are top quality and families with preschool and school aged children are well aware of the area's quality education system. For the past ten years Roanoke students have scored above the national average in both reading and math at the 8th grade and 12th grade levels. Certified, high quality preschools are located throughout the region and families do not have to worry about excessive commuting times to find high quality child care. There is also never a loss for something to do. The region's neighborhoods are sprinkled with parks and playgrounds and safe neighborhood sidewalks and bike trails. Many neighborhoods have easy access to Roanoke's extensive green ways system that offers walking, running and biking trails as well as multiple access points to the Roanoke River. An especially popular feature is the Roanoke River Kayaking Park, which offers

great outdoor recreation for people of all ages. Interspersed throughout Roanoke's suburban ring are three shopping malls that have been extensively renovated. They offer a wide range of retail venues, including high end retail, in village-style mall designs that feature open air courtyards, walk ways, and side walk eateries instead of the big box type mall designs of the past.

The region's smaller cities have been able to develop their own distinct character. Salem, for example has a small but vibrant downtown of its own. Its character is shaped by Roanoke College with its many cultural and intellectual offerings that attract not only college students but patrons from throughout the region. Vinton and Botetourt have developed their own character as sports recreation and outdoor activities centers and 'trail-head' destinations with their own characteristic athletics and outfitter stores, hearty eateries with plenty of outdoor seating and various kinds of sports venues.

The region's glue is its beautiful environment and the richness of outdoor recreation activities it offers. Within walking distance from Roanoke's downtown citizens can access parks, walking and biking trails. A very popular feature is Roanoke's free biking program. The program was started ten years ago and was patterned after popular Dutch programs that offer free bikes in designated bike stands throughout the city to anyone who wants to use them; the bikes can simply be returned to other designated bike stands within the free biking area. Weekend hikes are easily accessible and signage directs residents as well as visitors to well marked trails. Every hotel within the region has colorful and informative maps available to direct visitors to the rich cultural and outdoor recreation options available. A ten mile stretch along the Blue Ridge parkway has been developed into a hiking and biking trail that allows parkway travelers to park their cars and enjoy the beautiful scenery more intimately on foot or bike. While it was logical for Roanoke to develop its beautiful natural environment, the region's signature identity as a top quality, multifaceted outdoor recreation resource was not achieved simply because of Roanoke's mountains, river valleys and spectacular vistas. It required the intentional collaboration and coordinated efforts of municipalities throughout the region. Everyone participated in exchanging concepts and ideas that enabled various communities within the region to develop their own signature assets while contributing to the overall identity and image of the entire region.

Given these extensive coordination efforts it is not surprising that Roanoke has been termed 'Vermont with Good Weather' or the 'Northern California of the East Coast' by several leading real estate publications. And despite its strong natural assets, the region did not simply earn these desirable labels by accident. Painting the image of a great community with downtown

pedestrian area, music festivals, great restaurants, theater performances, art shows, interesting and creative job options, great outdoor activities and livable neighborhoods took deliberate effort. It required that Roanoke defined its image well and was clear about what businesses it wanted to attract, what retail venues it needed to support and what restaurants and entertainment venues were consistent with its image and plans. Annual festivals and events too were carefully screened and selected. Roanoke understood that less is sometimes more since successful events must be image-consistent and they must have a certain density to appear well attended and vibrant rather than appearing run-of-the-mill and mediocre. The entire region carefully coordinated its advertising efforts to portray a consistent image of the region that would appeal to the creative class workforce and the creative class retirees that Roanoke sought to attract. In 2007 Roanoke launched a sustained five-year marketing campaign geared toward educating both external audiences and its local population about the benefit of becoming a region that has a distinct image and delivers what it advertises. The region also clearly understood that part of its success would depend on its ability to ‘plug leaks’ and to offer desirable retail and entertainment opportunities to its existing population so that dollars would remain within the region rather than leaving the region for other, more attractive destinations. In other words, Roanoke’s decision makers knew that focusing on strategies that would attract the creative class workforce would also benefit area residents and businesses that already lived and operated in the Roanoke region.

Roanoke’s distinctiveness and vibrancy has also attracted a variety of new high tech, research and design oriented, and ‘green’ businesses to the Roanoke region. One deliberate effort in particular earned Roanoke a reputation as a destination for green technology and green innovation oriented businesses, a fast growing sector within the global business landscape. Roanoke’s new no-emissions industrial park that opened in 2012 has been recognized as a model of industrial ecology and loop-closing. The park co-locates related businesses that can benefit from each others’ inputs or waste products. This innovative industrial park has in no small measure contributed to the region’s recognition as a green, innovative technology destination.

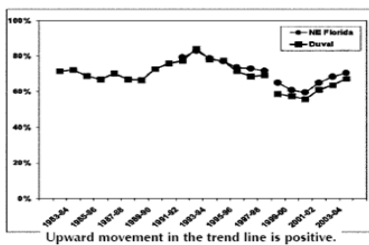
This latest example also illustrates the deliberate nature of Roanoke’s development strategies and the various compatible tools the region has used to earn its image and recognition. Recreation and trail systems, the zero-emissions industrial park, downtown condominiums and loft style apartments, a vibrant arts scene and a thriving downtown retail and entertainment scene all required incentive strategies, zoning regulations and policies. All these development tools were used very intentionally to assure that Roanoke made progress toward its stated vision.

A key element in achieving its success was Roanoke’s willingness to be accountable and to identify a common set of indicators that could be used as progress measures. Based on the indicators selected for the comparison study that had been conducted in 2005-06, Roanoke identified a broad range of indicators that have since been consistently used to measure progress toward Roanoke’s vision of being a vibrant, thriving and attractive community. A group of stakeholders had met initially in 2006 to identify this set of suitable indicators and while several have been revised since then, the core indicators continue to be in place and now offer almost 25 years of longitudinal data.

Yet while adopting common success measures created a common language for decision makers from municipalities, the business community, and the non-profit sector, it took more than the indicator selection to assure Roanoke’s development success. The region also had to communicate its success measures. As a result Roanoke began to publish its indicators in 2008 in a format that had been pioneered by Jacksonville, Florida (see figure 9) and that can be easily communicated to decision makers and the general public alike. A gold star indicates that an indicator is moving in the desired direction, while a red flag indicates a trend in the wrong direction and thus a need to pay attention and to change course.

Figure 9:

Example: Jacksonville



Source: Florida Department of Education

What other indicators affect this trend? *Unemployment rate, poverty, child abuse, School Board leadership, student conduct, foster care, and divorce.*

What does this trend affect? *This indicator strongly affects the trend of most other indicators in this document, too many to list separately.*

Public high school graduation rate:

Duval Co. 2005 Target: 78% **2003-04: 67.2%**
NE Florida 2005 Target: 80% **2003-04: 70.7%**

What does this measure? The number of students who graduate from Duval County/Northeast Florida high schools within four years, as tracked by student I.D. numbers.



Why is it important? One necessary stepping stone to ensure the eventual employment of youth is graduation from high school.

How are we doing? Statewide, the graduation rate was 71.6 percent.

	2003-04	2002-03
Baker	68.2%	67.3%
Clay	73.8%	75.4%
Duval	67.2%	63.7%
Nassau	81.1%	79.5%
St. Johns	78.3%	78.2%
NE Florida	70.7%	68.4%

Just as Roanoke was careful to pursue consistent and sustained marketing efforts that assured a consistent image of the region, so too it had to be clear and consistent in its communication within the region. Roanoke’s communication efforts within the region were well coordinated and consistent. Table 7 lists the initial set of indicators selected almost 20 years ago. These indicators served as a common set of success measures that helped all of the region’s stakeholders understand their respective roles and how they could contribute to the region’s overall success.

There were certainly many factors that contributed to Roanoke’s success. Yet key was no doubt the region’s ability to develop a compelling future vision and to adopt a common set of indicators, and thus a common language, that allowed the entire region to measure progress toward its vision. This process of establishing a common set of measures enabled the regions’ decision makers to select strategies and to allocate resources in such a way that progress toward the region’s vision could be achieved. It is this degree of collaboration and accountability that enabled Roanoke to achieve its compelling success.

Table 7: Roanoke 2025 - Indicators selected.

<u>BACKGROUND INFORMATION</u>
Population Growth per year (1999 - 2003)
% of the population that is foreign born
% of population from out of state
Average annual wage (mean earnings)
Personal income
Median household income
Income available per person
Poverty rate
Unemployment Rate (as % of labor force)
Percentage of Workforce between 20 – 35
New housing starts 0
Affordability of single family home
Number of Corporate headquarters
Number of new business start-ups
Gross regional product
Violent Crimes/capita
Property Crimes/capita
Serious Crimes/capita
Juvenile Arrest
Recidivism
<u>SOCIAL AND CULTURAL AMENITIES</u>
of Movie Theatres (within 15 miles)

of independent Movie Theatres
of Theatre Companies
of Libraries
of Museums accredited by AAM (within 30 miles)
of Restaurants (within 15 miles)
of Highly regarded Restaurants (based on customer satisfaction)
Ethnicities represented in the restaurant mix
of Free-standing Coffee Shops
of Bars (within 15 miles)
of restaurants in 2 mile radius
of bars in the 2 mile radius.
of Bookstores
of Independent bookstores
of non-chair retail stores within 2 miles/ 15 miles
of Retail stores
of High-end \$\$\$ fashion/department stores
of downtown mixed use housing start ups
of music venues
of visitors at image consistent festivals/ events
of Health Food stores
of Civic organizations
% of registered Voters
Voter Turnout
EDUCATION
% of population with four-year or graduate degree
% of population with one or more year of college
% of population in degree seeking post-secondary programs
% of school age students enrolled in private schools
Public high school graduation rate
Public high school dropout rate
Ranking of area public high schools
% of public school teachers with advanced degrees
Student : teacher ratio in public schools
Achievement test scores (ACT/SAT) for high school seniors
Certified Preschool spots per capita
Standards of Learning Third Grade Reading
Eight grade reading level
Eight grade math level
Tenth grade reading level
Tenth grade math level
Educational Attainment 18-65 years old.
Non-traditional programs
HEALTH AND WELLNESS
of Child Abuse and Neglect cases
Teen Pregnancy Rate
Obesity rate

Asthma rate
Infant Mortality rate
Immunization rate
of Area hospital and clinics
of Hospital beds per 1000 of population
of Assisted living facility spaces per 1000 of population
of Non-assisted living, retirement community spaces available
of Physicians per 1000 of population
of dentists per 1000 population
Ranking of area hospitals
% of people without health insurance all ages
% of people under 18 without health insurance
<u>ENVIRONMENT AND RECREATION</u>
Solid Waste & Recycling
Acres of Preserved Land
Air Quality
Water Quality
Vehicle miles traveled per capita
of parks per capita
of trail access points within 2 miles/ 15 miles
of water front access points within 2miles/ 15 miles
of Golf courses (public and private) within 30 miles
of hiking trails within 50 miles
of Beeches within 50 miles
of recreational facilities per capita.
of docks and marinas per capita.
<u>TECHNOLOGY AND TRANSPORTATION.</u>
of cars per 1000
Miles/minutes traveled to work
Traffic Fatalities
Distance from city center to airport
of Airlines serving the area
of Flights per day
of Passenger flights per day
of Destinations served by direct flights
of Passengers flying in/out of region per day
Vehicle ownership per capita
of People per day using public transportation
of Commuters with 25 minutes or less commuting time
Average weekday miles of regional bus service available
of internet providers per capita
Total Number of Indicators 102

V. Conclusions

Today's post industrial world and the growing interest in context specific sustainable development options have called traditional approaches to economic development into question. Successful development will increasingly depend on a region's ability to attract and retain successful businesses. Yet increasingly, it will also depend on a region's ability to attract and retain the so-called creative class work force, that is the group of well educated, innovation oriented men and women who garner above average wages and who can work from wherever they choose to live. Particularly, the innovation oriented business sector that seeks to draw on this creative class work force must be able to offer amenities that are attractive to this highly educated and highly mobile work force. And competition for this workforce is expected to increase further as the country's baby boomers retire and must be replaced by a far smaller demographic cohort.

In light of this increasingly competitive environment, many businesses have already begun to offer attractive workplace amenities. Yet their influence is limited when it comes to attractive outdoor activities and social and cultural amenities such as a good restaurant mix, music venues, and high end retail. Regions that seek to attain a sustainable level of both population influx and a sustainable level of business growth must be aware of the relevance of such Quality of Life related factors, and must be able to offer their residents and prospective residents the amenities they seek. Yet improving a region's Quality of Life pro-actively has not been the traditional focus of institutions charged with meeting regions' economic development goals such as development corporations, chambers and municipalities. To shift focus requires a fresh look at development strategies, policies and performance measures. A critical first step in this process is to determine what aspects of a community's Quality of Life are strong and what aspects need improvement.

This study examined Roanoke's competitiveness in five key QoL categories: (1) social and cultural amenities, (2) education, (3) environment and recreation, (4) health and wellness and (5) technology and transportation. A comparison group consisting of ten MSAs that, like Roanoke, represent non-metropolitan areas forms the basis for assessing Roanoke's performance. Despite the fact that the comparison communities are non-metropolitan areas, they exhibit sustainable rates of population growth of 1 to 2 percent annually. This rate of growth does not exert undue pressure on a region's infrastructure, traffic etc. but it is large enough to offers positive growth opportunities to area institutions from businesses to cultural organizations.

The comparison study, using 61 indicators in five QoL categories plus 28 background indicators, shows that Roanoke has some strong assets as well as some considerable weaknesses. Its strongest asset is its natural beauty and the recreational assets its beautiful environment offers. Roanoke reaches 82% of the score of the top performer in this category. Yet to turn its beautiful natural environment and recreational potential into a real competitive advantage Roanoke must turn this asset into a readily accessible resource for its residents and visitors. To rely simply on the area's natural beauty may not be enough. Instead, intentional strategies must be adopted such as creating walking and jogging trails, bike paths, parks with access to the Roanoke River for fishing, kayaking and white water rafting. To best capitalize on its natural beauty, the region might also develop complementary strategies of developing urban core green spaces along with suburban trail systems and more space intensive activities like mountain biking, hiking and climbing in its outer, more rural areas.

Ranked only slightly lower than the 'environment and recreation' category is the region's education system. With the exception of Roanoke's city schools, education forms the region's second strongest asset, a promising basis for successful QoL based development strategies.

Roanoke's weak-point are its social and cultural amenities. Its score in this category is less than half of that of the highest scoring community in the comparison group. This is despite some relative strengths in various indicators within this category such as theatres and museums. These stronger assets, however, are outweighed by some considerable weaknesses. Roanoke ranks last in restaurant diversity, last in bars/music venues, 10th in restaurant density (restaurants within 2 miles - an urban-feel-indicator), and 10th in high-end retail. This also raises concerns about some possible 'leakages' of disposable income from the Roanoke region to other regions that offer more desirable options in this important category.

To improve its overall quality of life, Roanoke must build on its asset and address its deficits. This will require deliberate development strategies that are significantly different from those that were successful in the old economy. Successful strategies in the new economy must focus on identifying indicators that are well-suited to assess a region's strength and weaknesses and to measure progress toward clearly stated Quality of Life goals. Analyzing QoL Data is key in this regard. It can identify important directions for action and for needed policies that can improve a region's development potential and advance its goals.

Yet QoL goals are complex. People seek a mix of things that contribute to their Quality of Life and a simplistic focus on one asset or one category alone is not likely to succeed. Instead,

communities have been most successful in employing QoL strategies when they have succeeded in developing a compelling vision that enjoys the broad-based support of many community stakeholders and when all decision makers within a region cooperate to maximize success. Likewise, policy tool must be diverse. Traditional incentive strategies alone are not likely to be sufficient. Instead, multiple, well coordinated strategies such as mixed use zoning, prudent land use regulations, green space development, and social and cultural support strategies are needed to successfully advance a region's overall quality.

And finally, developing the area's Quality of Life and improving its development potential does not happen over night. It requires deliberate communication and collaboration; it requires that a common set of indicators is identified so that progress can be monitored over time; it requires that strategies are developed assessed and re-envisioned and re-assessed to assure that the selected indicators do indeed move in the right direction.

Roanoke's strong assets indicate that its development potential is substantial. It's long-term and recent residents take rightful pride in this region. The region is, therefore, well positioned to build on the joint efforts of private, public, and non-for-profit stakeholders to develop a comprehensive, Quality of Life based development strategy that assures the regions' success.

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Appendix 1: Calculation of the Diversity Index

As part of the indicators of Social and Cultural Amenities we included a measure of diversity of the restaurant mix as well as the retail mix for each region. This diversity index was developed following the most popular index of ‘economic diversification’ use by regional economists. In that field the “index” has been used to measure the concentration of different economic sectors (Siegel 1995, Kort 1981, Attaran 1987, Smith and Gibson 1987, Deller and Chicoine 1989, Malizia and Ke 1993. In our framework, the index is used to measure the concentration of amenities mix (e.g diversity of establishments). In this context restaurant (or retail) diversity is defined as follows:

$$D(E_1, E_2, \dots, E_n) = \sum_{i=1}^n E_i \log_2 E_i$$

where ‘n’ is the number of different establishment-types (e.g. Mexican food) and ‘E_i’ is the proportion of total establishments in the i-th establishment category; log₂ is the logarithm to the base 2. The maximum value ‘D’ can take is reached when all establishment types, E_i, show equal contributions to the region’s overall mix. The greater the number of establishment types contributing to the region’s total establishment mix, the greater the value D can take. In this study, we use a total of 16 different restaurant types to calculate the restaurant diversity index and 5 retail types to calculate the retail diversity index (see Appendix B for a list of all the types used). With this many restaurant types, the maximum value the restaurant index can take is 2.77, while the maximum value the retail index takes with 5 different type of establishments is 1.61. Table A1.1 shows both the restaurant diversity and retail diversity results for the 11 communities. In order to conduct a reasonable comparison across all communities the results are presented as a % of total maximum diversity.

Table A1.1: Restaurant Diversity Index

MSA	Retail Diversity Index (as a % of the maximum)	Restaurant Diversity Index (as a % of the maximum)
Roanoke	61%	63%
Ann-Arbor	66%	71%
Ashville	63%	68%
Charleston	60%	70%
Chattanooga	65%	68%
Colorado-Springs	62%	72%
Fargo	68%	59%
Madison	66%	69%
Portland	62%	73%
Rochester	62%	64%
Saratoga-Springs	58%	70%

Appendix 2: Raw Data.

Table A2.1: Social and Cultural Amenities (all numbers are on a “per capita” basis unless otherwise indicated).											
	Roanoke	Ann-Arbor	Ashville	Charleston	Chattanooga	Colorado-Springs	Fargo	Madison	Portland	Rochester	Saratoga-Springs
CINEMA AND THEATER											
Movie-Theaters	0.002	0.008	0.002	0.003	0.004	0.001	0.004	0.003	0.003	0.002	0.001
Independent-Movie-Theaters	0.000	0.002	0.001	0.001	0.000	0.000	0.001	0.001	0.001	0.000	0.000
Theatre-Companies	0.003	0.007	0.003	0.000	0.000	0.002	0.000	0.002	0.002	0.001	0.003
RESTAURANTS											
15-20 miles from city center											
American	0.037	0.070	0.039	0.037	0.054	0.041	0.027	0.032	0.032	0.022	0.022
Asian	0.001	0.005	0.002	0.002	0.002	0.002	0.000	0.002	0.002	0.000	0.001
Pizza	0.042	0.161	0.037	0.036	0.051	0.034	0.055	0.041	0.081	0.041	0.063
Seafood	0.010	0.012	0.007	0.029	0.011	0.004	0.002	0.005	0.034	0.002	0.005
Chinese	0.017	0.043	0.007	0.024	0.021	0.020	0.016	0.016	0.024	0.015	0.014
Mexican	0.015	0.029	0.017	0.013	0.028	0.032	0.027	0.015	0.007	0.014	0.006
Hamburgers	0.031	0.060	0.028	0.032	0.049	0.027	0.025	0.024	0.027	0.016	0.011
Italian	0.010	0.026	0.006	0.007	0.009	0.013	0.009	0.012	0.016	0.009	0.015
Japanese	0.004	0.010	0.004	0.005	0.006	0.008	0.000	0.004	0.003	0.000	0.001
Coffeehouse	0.001	0.004	0.001	0.003	0.000	0.006	0.000	0.003	0.002	0.002	0.001
Deli	0.035	0.051	0.022	0.028	0.037	0.022	0.018	0.021	0.024	0.021	0.017
Desserts	0.007	0.026	0.008	0.010	0.009	0.009	0.006	0.006	0.032	0.005	0.013
Health-Food	0.000	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000
Indian	0.001	0.003	0.002	0.000	0.000	0.001	0.001	0.001	0.003	0.002	0.001
Irish	0.001	0.003	0.000	0.001	0.000	0.001	0.002	0.001	0.001	0.000	0.000
Steakhouse	0.003	0.008	0.002	0.002	0.004	0.003	0.003	0.003	0.002	0.002	0.000
Restaurant Diversity (% of max)	63%	71%	68%	70%	68%	72%	59%	69%	73%	64%	70%
2 miles from city center											
American	1.500	3.000	3.750	2.000	1.750	3.250	0.250	1.250	2.750	2.000	0.750
Asian	0.000	0.500	0.250	0.000	0.250	0.000	0.000	0.500	0.250	0.000	0.000
Pizza	2.000	5.000	2.000	2.000	1.750	3.500	2.500	3.750	7.000	3.000	3.750
Seafood	1.250	1.000	1.250	4.750	0.500	0.500	0.250	1.250	4.000	0.250	0.250
Chinese	0.250	2.250	0.750	0.750	0.250	1.500	1.500	1.500	1.000	1.750	1.000
Mexican	1.500	1.500	1.750	0.250	1.250	2.750	2.750	1.750	1.250	1.500	0.250
Hamburgers	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000
Italian	0.750	2.500	1.250	1.250	0.750	1.000	0.000	3.250	2.750	1.500	1.500

Table A2.1: Social and Cultural Amenities (all numbers are on a “per capita” basis unless otherwise indicated).

	Roanoke	Ann-Arbor	Ashville	Charleston	Chattanooga	Colorado-Springs	Fargo	Madison	Portland	Rochester	Saratoga-Springs
Japanese	0.250	1.750	1.250	1.250	0.500	1.250	0.000	1.750	0.750	0.000	0.250
Coffeehouse	0.500	1.000	1.000	0.750	0.250	0.500	0.250	1.000	1.000	1.000	1.500
Deli	2.750	2.250	0.500	2.500	2.500	1.500	1.000	3.000	1.250	0.500	1.500
Desserts	0.500	1.000	0.750	1.500	0.500	0.000	0.750	1.000	0.500	0.500	1.000
Health-Food	0.000	0.500	0.250	0.000	0.000	0.500	0.000	0.000	0.250	0.000	0.250
Indian	0.500	1.000	0.000	0.000	0.000	0.000	0.000	0.250	1.000	0.500	0.250
Irish	0.000	0.000	0.000	0.500	0.250	0.250	0.000	0.000	0.250	0.000	0.000
Steakhouse	0.000	0.500	0.500	0.000	0.000	0.250	0.000	0.500	0.250	0.250	0.000
Rated-8.5-or-higher	11%	6%	9%	16%	6%	11%	8%	6%	12%	6%	18%
BARS											
Bars	0.003	0.023	0.004	0.014	0.003	0.008	0.009	0.006	0.012	0.006	0.000
Clubs	0.000	0.006	0.000	0.001	0.000	0.002	0.001	0.001	0.001	0.001	0.002
DJ	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lounge	0.001	0.011	0.001	0.008	0.005	0.007	0.001	0.002	0.004	0.005	0.000
Pub/Tavern	0.001	0.010	0.001	0.004	0.002	0.004	0.007	0.007	0.006	0.001	0.003
Tavern	0.001	0.032	0.009	0.019	0.017	0.025	0.054	0.064	0.018	0.019	0.026
Bars Downtown (2 miles)	1.000	1.750	1.500	1.250	0.000	1.750	1.000	2.000	1.750	2.000	2.250
BOOKSTORES											
Bookstores	0.005513	0.0113161	0.00052	0.0013976	0.001644335	0.001755868	0.00112	0.00267	0.00276	0.002321	0.001906414
Independent-Bookstores	0.002757	0.007147	0.00209	0.0013976	0.001644335	0.001053521	0.00112	0.0019	0.00197	0.002321	0.000953207
Health Food Stores	0.002067	0.0023823	0.00261	0.0010482	0.000822167	0.001404694	0.00224	0.00114	0.00237	0.002321	0.001906414
RETAIL-STORES											
Computers-&-Internet	0.001	0.001	0.000	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Health-Services-&-Facilities	0.002	0.013	0.002	0.001	0.005	0.000	0.006	0.001	0.013	0.006	0.003
Home-&-Garden-Products	0.063	0.175	0.026	0.058	0.098	0.053	0.087	0.062	0.089	0.085	0.051
Home-Entertainment	0.032	0.089	0.004	0.027	0.044	0.027	0.029	0.034	0.046	0.020	0.018
Sports-&-Recreation	0.014	0.043	0.004	0.022	0.025	0.013	0.021	0.018	0.028	0.020	0.010
Retail Diversity (% of max)	61%	66%	63%	60%	65%	62%	68%	66%	62%	62%	58%
High End Stores											
Macy's	0	0.0005956	0.00105	0.0003494	0	0	0	0	0.00079	0	0

Table A2.1: Social and Cultural Amenities (all numbers are on a “per capita” basis unless otherwise indicated).											
	Roanoke	Ann- Arbor	Ashville	Charleston	Chattanooga	Colorado- Springs	Fargo	Madison	Portland	Rochester	Saratoga- Springs
Jcrew	0	0.0011912	0.00105	0.0010482	0.000411084	0.000702347	0	0.00076	0.00118	0	0.000953207
Banana Republic	0	0	0	0	0	0	0	0	0	0	0
<u>MUSEUMS AND LIBRARIES</u>											
Museums	0.012	0.020	0.007	0.009	0.009	0.011	0.012	0.007	0.013	0.003	0.014
Libraries	0.019	0.039	0.016	0.013	0.016	0.011	0.019	0.030	0.037	0.022	0.014

Table A2.2: Education (all numbers are on a “per capita” basis unless otherwise indicated).

	Roanoke	Ann-Arbor	Ashville	Charleston	Chattanooga	Colorado-Springs	Fargo	Madison	Portland	Rochester	Saratoga-Springs
Population 25 Years and Over with One or More Years of College, No Degree/person	5.580	3.326	4.748	2.623	5.622	13.117	9.746	6.224	3.676	10.233	1.608
Population 25 Years and Over with Four-Year or Graduate Degree/person	4.835	22.698	9.346	6.527	7.200	23.938	21.707	22.614	9.860	26.372	4.936
Percent of School-Age Students Enrolled in Private Schools	9	21	12	24	18	14	11	15	15	17	15
Public High School Graduation Rate	97	92	95	77	84	82	95	90	68	91	89
Public High School Dropout Rate	9	0	5	3	6	0	4	3	8	3	1
Student-to-Teacher Ratio in Public Schools	14	14	12	14	0	17	16	13	12	18	14
% of students in each school meeting or exceeding (MATH) (average for all schools in region)	54	55	45	67	0	16	39	68	16	58	95
% of students in each school meeting or exceeding (READING) (average for all schools in region)	68	75	69	76	0	43	55	51	46	76	91
Students per teacher (average for all schools in region)	13	17	14	14	0	16	14	13	13	14	13

Table A2.3: Health and Wellness (all numbers are on a “per capita” basis unless otherwise indicated).

	Roanoke	Ann-Arbor	Ashville	Charleston	Chattanooga	Colorado-Springs	Fargo	Madison	Portland	Rochester	Saratoga-Springs
Number of Area Hospitals and Clinics Within 15 Miles	0.00276	0.00357	0.00261	0.00419	0.00411	0.00281	0.00559	0.00190	0.00197	0.00348	0.00191
Number of Hospital Beds Within 15 Miles/person	0.00531	0.00474	0.00314	0.00329	0.00449	0.00212	0.00381	0.00282	0.00202	0.00693	0.00140
Number of Top-Ten Ranked Specialties by Hospitals Within 15 Miles	0.00000	0.00179	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01509	0.00000
Number of Top-Twenty Ranked Specialties by Hospitals Within 15 Miles	0.00000	0.00834	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01741	0.00000
Number of Top-Thirty Ranked Specialties by Hospitals Within 15 Miles	0.00000	0.00953	0.00000	0.00000	0.00000	0.00000	0.00000	0.00114	0.00000	0.01857	0.00000
Number of Top-Fourty Ranked Specialties by Hospitals Within 15 Miles	0.00000	0.00953	0.00000	0.00035	0.00000	0.00000	0.00000	0.00267	0.00000	0.01857	0.00000
Number of Top-Fifty Ranked Specialties by Hospitals Within 15 Miles	0.00000	0.00953	0.00000	0.00035	0.00000	0.00070	0.00000	0.00267	0.00000	0.01857	0.00000
Number of Physicians Within County	0.26739	2.17388	0.56147	0.93569	0.56072	0.53554	0.69086	1.04061	0.67327	3.59290	0.40988
Number of General Practice Dentists	0.031	0.081	0.036	0.038	0.029	0.068	0.057	0.032	0.017	0.055	0.018
State Personal Health Care Expenditures per Capita	3,284	3,676	3,535	3,529	3,808	3,331	3,881	3,845	4,025	3,845	4,706
Percent Uninsured Individuals in County, All Ages	6.700	9.100	12.300	15.000	11.700	13.800	7.600	8.100	5.700	7.500	6.900
Percent Uninsured Individuals in County, Ages Under 18	5.300	6.900	9.800	12.900	6.800	0.000	5.900	4.500	2.500	4.400	4.200
Number of Assisted Living Retirement Communities and Homes Within 30 Miles	0.011	0.008	0.004	0.002	0.002	0.002	0.004	0.002	0.004	0.002	0.010

Table A2.4: Environment and Recreation(all numbers are on a “per capita” basis unless otherwise indicated).

	Roanoke	Ann-Arbor	Ashville	Charleston	Chattanooga	Colorado-Springs	Fargo	Madison	Portland	Rochester	Saratoga-Springs
ENVIRONMENTAL QUALITY											
Percentage of Monitored Days in 2004 when Air Quality was Good	96.17	56.71	71.71	64.48	50.00	93.99	96.72	88.52	85.52	82.68	94.79
Percentage of Monitored Days in 2004 when Air Quality was Moderate	3.83	41.92	28.29	34.97	48.78	6.01	3.28	11.07	14.48	16.76	4.66
Maximum AQI during 2004	85.00	114.00	91.00	104.00	151.00	69.00	77.00	109.00	88.00	141.00	129.00
Water Use	0.131521	0.104026	0.205932	1.314427	0	0.270386	0.131882	0.277392	0	0.296907	0.098086124
RECREATION											
# Golf Courses per capita	0.011026	0.010721	0.006796	0.00594	0.013977	0.007023	0.014533	0.011427	0.017738	0.020889	0.004766035
Hiking Trails per capita	0.021363	0.000596	0.008365	0.000699	0.003289	0.005619	0	0.001143	0.004336	0	0.002859621
Beaches per capita	0	0	0	0.001747	0	0	0	0	0.001577	0	0.001906414
Recreational Facilities	0.035146	0.013103	0.030322	0.021663	0.03042	0.024231	0.010061	0.013712	0.032717	0.019728	0.001906414
Docks and Marinas	0.010337	0	0	0.01153	0.009455	0.000702	0	0.000381	0.023257	0	0

Table A2.5: Technology and Transportation (all numbers are on a “per capita” basis unless otherwise indicated).

	Roanoke	Ann-Arbor	Ashville	Charleston	Chattanooga	Colorado-Springs	Fargo	Madison	Portland	Rochester	Saratoga-Springs
Distance from city to airport	5.51	0.00	14.75	12.82	13.93	13.38	4.53	6.29	5.00	9.55	45.00
# of airlines serving airport	5.00	0.00	5.00	6.00	5.00	8.00	3.00	10.00	6.00	2.00	11.00
# of direct flight destinations	12.00	0.00	9.00	14.00	8.00	13.00	3.00	12.00	13.00	4.00	17.00
Drove Alone	0.80	0.63	0.76	0.74	0.80	0.80	0.84	0.66	0.71	0.76	0.75
Carpooled	0.12	0.08	0.14	0.12	0.13	0.12	0.08	0.10	0.11	0.11	0.10
Public Transportation	0.03	0.07	0.02	0.04	0.02	0.01	0.01	0.07	0.04	0.04	0.02
Walked	0.02	0.16	0.03	0.07	0.02	0.03	0.04	0.11	0.89	0.05	0.08
Other	0.0120	0.0270	0.0120	0.0200	0.0090	0.0130	0.0110	0.0380	0.0160	0.0110	0.0090
Mean Travel Time (Minutes)	19.30	18.80	17.80	20.10	19.80	21.00	14.70	18.30	18.70	14.70	23.50
Vehicle Ownership	0.87	0.91	0.88	0.85	0.87	0.94	0.92	0.88	0.82	0.92	0.82
Internet Providers	0.0131	0.0191	0.0084	0.0073	0.0127	0.0140	0.0134	0.0076	0.0158	0.0081	0.0057

