

THE IMPORTANCE OF QUALITY OF LIFE IN THE LOCATION DECISIONS OF NEW ECONOMY FIRMS

David Salvesen
Henry Renski

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Center for Urban and Regional Studies
Hickerson House, CB# 3410
University of North Carolina at Chapel Hill
Chapel Hill, NC 27599

TEL: (919) 962-7045
FAX: (919) 962-2518
E-MAIL: salvesen@unc.edu

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EXECUTIVE SUMMARY

Traditionally, the location decisions of firms have been driven primarily by factors such as land costs, labor costs and access to materials and markets. Today, however, quality of life for employees is becoming an important factor as well, particularly for knowledge-based industries such as telecommunications, computers, entertainment, and biotechnology that are part of the so-called New Economy. In the New Economy, knowledge, rather than natural resources, is the raw material of business.

An increasing number of firms are seeking locations that will attract and retain a well-educated work force. Thus, areas offering cultural and recreational amenities (e.g., theaters and bike trails) could have a competitive advantage over places that do not.

This study consists of two parts: (1) a review of the literature on business location, focusing specifically on the links between location decisions and quality of life, and (2) a pilot study on business location decisions in the Raleigh-Durham-Chapel Hill (Triangle) region of North Carolina. The pilot study included interviews with ten firms that recently located to the Triangle region.

The literature review and pilot study suggest that quality of life is becoming an increasingly important consideration in modern business location decisions. This is particularly true for high-technology firms that are less tied to traditional location factors such as transportation costs, proximity to raw materials, and cheap labor. It is also likely that firms in other sectors will become more sensitive to quality of life factors as the diffusion of information technology and other global forces continue to push the United States toward a more knowledge- and technology-intensive economy.

Still, despite the initial buzz surrounding quality of life, there is, as of yet, little empirical evidence of the effectiveness of an economic development strategy based on quality of life. The research on the importance of quality of life is too anecdotal and generalized to provide a strong policy foundation, while the literature on the impacts of the new technologies on business location remains largely speculative.

In general, there is a great need for more empirical research into the relationship between quality of life and business location decisions. There have been no major survey studies of industrial location in well over a decade. Recently, however, the interest in quality of life as an economic development strategy has grown considerably. Policy makers see quality of life strategies as a potentially effective means of business development while furthering other developmental goals such as reducing congestion, improving air and water quality, preserving the local natural environment and open space, and upgrading cultural and recreational amenities for residents. However, to inform policy, local decision makers need to know how specific quality of life factors influence business location choice and how the importance of quality of life varies by industry, firm size, and corporate function.

This report should be helpful to economic development researchers and practitioners who are interested in understanding the importance of quality of life in the business location decisions of firms in the New Economy.

INTRODUCTION

The New Economy has become a hot topic in both the academic and popular media in recent years. Yet, like so many other popular catch phrases, the actual meaning of the New Economy is unclear. The term New Economy became a popular explanation for the seemingly paradoxical and historically unprecedented economic expansion of the 1990s, during which the U.S. experience the longest period of economic growth in modern history, but it did so without rampant inflation. This was all made possible by a burst of innovative, productivity-enhancing technologies that allowed firms to keep excess employment and product inventories down. The prospects of productivity gains coupled with declining computer cost kept businesses investing in new equipment (Horan, Chinitz, and Hachler, 1996). What emerged was a leaner business firm, able to respond quickly to changing economic circumstances and remain stable under fluctuating economic conditions. The most optimistic observers prophesied the end of the business cycle, claiming that technology had led to the dawn of a New Economy.

The New Economy has come to symbolize an entire new paradigm for economic behavior and human life in general made possible through new technologies. The United States had already been moving toward a more knowledge-oriented and service based economy. The rapid proliferation of new technologies accelerated this shift. The rapid advancement in computing power, fiber optics and satellite communications brought an “information revolution” that generated entirely new forms for media and commerce and expanded the possibilities for reaching a global audience without every leaving the home. One new type of commerce, e-commerce, seemed to create commercial value out of information and streams of electronic transactions. At the start of the 1990s, only the most technologically sophisticated were regular users of the Internet. By the end of the decade, nearly everyone was logged on and surfing the web, exchanging emails with friends and clients and meeting with others in virtual chat-rooms.

The recent slowdown of the American economy and the burst of the dot com bubble has cooled much of the early fever over the New Economy. But the debate still smolders, although in a slightly altered form. The debate over the death of the business cycle has shifted from prophecies of perpetual growth to the speed of recovery (Landefeld and Fraumeni, 2001). New Economy proponents claim that the technology-driven cost cutting and leaner firms of the 1990s will dampen the current recession and lead to quick recovery (U.S. Department of Commerce, 2000). Skeptics question whether the boom of the 1990s was nothing more than another cyclical peak whose time has passed.

Despite the popular rhetoric over the New Economy, most academics remain cautious and critical. There is no denying that the high growth/low inflation of the 1990s was unprecedented, or that the information technology (IT) revolution has expanded the possibilities for remote human interaction. What is debated is whether these changes will herald a fundamental and permanent shift in economic behavior, or whether they were just a temporary anomaly brought on by a flurry of innovation and speculation.

Technology can change the ways in which people live and do business. The forces of technological change do not proceed evenly through the course of time, but cluster in bursts of

rapid change as innovations spur the creation of other technological developments (Office of Technology Assessment, 1995). Periods of rapid advancement can have profound impacts on the spatial distribution of economic activity within a relatively short period of time. For example, the early 20th Century was marked by many technological marvels such as the widespread distribution of electricity, internal combustion engines and assembly–line production technologies. These developments spawned the ascendancy of new industrial cities that became the engines of economic growth for decades to come. As these new centers grew, other places rooted in obsolescent industries and technologies began the slow and gradual process of decline.

Many liken the recent developments in IT to the massive revolutions in transport and other technologies in the early 20th century. Modern developments in computer and IT are generating entirely new modes of communication and offering new possibilities for economic transactions that are freed from traditional space and time constraints (Atkinson, 1998). These developments could significantly reshape America’s industrial geography. New technologies have enabled more and improved means of communication, reducing the necessity of proximity in many forms of human transaction. Some researchers have even gone so far as to proclaim the ‘death of distance’ and the dawn of a world where knowledge workers interact via telephone or satellite from across the globe, friends and family converse mainly through email, and people shop predominantly from on–line retailers (Cairncross, 1997).

As researchers attempt to assess the significance of changing technology on economic behavior, local policy makers seek guidance for developing effective economic development policies to ensure a stable role for their communities in the years ahead. Traditional state and local economic development strategies are based on an implicit view of the business firm as a cost–minimizing agent. By offering tax abatements, interest–free development bonds, or other cost reducing incentives, local officials seek to stimulate local investment by reducing the costs of business and thus luring investment away from other areas. Despite the continued popularity of fiscal incentives, most empirical research indicates that they are relatively ineffective in altering business location decisions (for example, see reviews by Blair and Premus, 1987; and Morgan, 1964). Over the long run these strategies may do more harm than good. Incentives drain scarce fiscal resources that could be spent on other development strategies, such as upgrading infrastructure, providing for local education, developing local amenities – in general, improving the local quality of life (QOL).

A growing body of research suggests that QOL is becoming an increasingly important consideration in modern business location decisions. This is particularly true for high–technology firms that are less tied to traditional location factors such as transportation costs, proximity to raw materials, and cheap labor. It is also likely that firms in other sectors will become more sensitive to quality of life factors as the diffusion of information technology and other global forces continue to push the U.S. toward a more knowledge– and technology–intensive economy. The pilot study suggests that quality of life, among other factors, influences business location decisions and is viewed by firms as important in attracting and retaining a high–quality work force.

With this in mind, planning and economic development theorists are extolling the virtues of a QOL and amenities based approach to local economic development. They see QOL as a

unifying paradigm that satisfies the need for attracting business investment while simultaneously working to improve the lives of existing and future residents. Many local officials have followed suit, incorporating a QOL-based agenda into their development and urban revitalization strategies. Starting in the early 1980s, many cities have made massive investments in civic improvements and rebuilding the inner-city as a center for culture and recreation. Although the evidence is largely anecdotal, it is apparent that many cities have been successful in attracting tourists, shoppers, fun-seekers, residents and even businesses back to downtown (McNulty et al., 1984). Suburbs, small cities and even rural areas are starting to get into the QOL act through the provision of residential amenities designed to cater to the sensibilities of professional households and other highly sought after knowledge workers.

Despite the initial buzz surrounding quality of life and numerous case study success stories of urban revitalization, there is, as-of-yet, little empirical evidence of the effectiveness of an economic development strategy based on quality of life. The research on the importance of quality of life is too anecdotal and generalized to provide a strong policy foundation, while the literature on the impacts of the new technologies on business location remains largely speculative.

Scope of the Paper

The purpose of this paper is not to debate the existence or non-existence of the New Economy, but rather to explore a narrower issue – how recent technological changes are changing business location requirements. Of particular interest is whether businesses are becoming more sensitive to QOL factors in their location decisions as a result of these changes. We examine this issue primarily through a review of the recent literature and through several interviews with small business owners based in the Research-Triangle area of North Carolina, a leading region in pharmaceuticals, university research, information technology, and other knowledge-intensive industries. There have been several recent papers that review empirical studies on the importance of quality of life factors to business location decisions (Blair and Premus, 1987; Dissart and Deller, 2000; Gottlieb, 1994; Segedy, 1997). Rather than replicate these studies, our review attempts a broader synthesis of how recent technological changes will alter business location decisions and the relative importance of QOL. We will assess both what is known and, perhaps more importantly, what is not known about the forces shaping our spatial distribution of economic activity. We hope this knowledge will provide a useful foundation upon which to build future empirical study. Our work should be of greatest interest to policy makers and researchers interested in the possible spatial impacts of new technologies, and what these changes mean for urban and regional economic development.

The remainder of this paper is organized into six sections and a conclusion. Section II provides a primer on the economic theory of business location decisions. Understanding business location theory is important because it remains the dominant perspective of most academic researchers in the field and lies at the heart of traditional industrial recruitment policies. Section III describes how location decisions are made by business, what is also known as the industrial site selection process. Both business location theory and the site selection process are well known and understood by many scholars and policy makers, and therefore the review of this material will be brief. Section IV reviews a selected set of empirical studies of business location decisions and examines how location requirements vary according to industry-

specific requirements, corporate function, firm size, and other firm-specific characteristics. Particular attention is given to the location preferences of high-tech industries. Section V discusses how recent technological changes are expected to affect business location requirements in the near future. Section VI provides a more detailed account of the influence of quality of life factors as a location determinant and which QOL factors are most influential to business location decisions. Section VII explores the use of quality of life as an economic development strategy. Finally, the paper concludes by summarizing the major findings of our study, offering suggestions for areas for future research, and commenting upon the prospects for an amenity-based local economic development strategy.

INDUSTRIAL LOCATION THEORY

Location theory has a long and rich historical tradition, its early development is associated with authors such as Weber (1929), Hoover (1948), Lösch (1954), among others. Traditional economic theory views the business firm as an optimizing agent that selects a location to maximize profits. Although simplistic, the profit maximization perspective has withstood the tests of time and proven to be a useful construct for understanding business location behavior. In this framework, the firm is an economic entity that takes a combination of inputs and, through the production process, reconfigures these inputs to produce some type of good. Typical inputs include raw materials, physical and financial capital, and labor. Materials, capital, and labor are represented by their price (wages for labor) at any location. Factors that are not available on-site must be imported, and the cost of transport is typically assumed to increase with shipping distance and weight. The availability and cost of these inputs are likely to vary over geographic space. A firm's optimal location is determined by the combined cost of each input (including transport costs) weighted by the importance of the input to production. If market demand for the firm's product is spatially invariant, or if there are zero transportation costs in bringing the good to market, the profit maximization problem reduces to that of minimizing input costs. If market demand varies across space, the firm must also consider spatial variations in revenues and the costs of transporting goods to market from any location.

Most of the early work on industrial location focused primarily on the minimization of transport costs (Blair and Premus, 1987) and the historical legacy of viewing the location process as a search for the least-cost location is still prevalent in the work of most industrial recruiters. The optimization paradigm need not be restricted to traditional cost factors. Any factor that could potentially affect the costs of production at a particular site can be incorporated into a firm's location decision. Some of these factors may directly affect the cost of doing business at a particular site, such as state and local taxes, property values, site construction costs, stringency of local environmental regulations (including clean-up for brownfield sites), strength of local labor unions, and worker compensation laws. Indirect cost factors may also have a potentially large impact on a firm's bottom line, such as the ease and efficiency of the local permitting process, community attitudes toward business, quality and availability of infrastructure and government services, availability of post-secondary educational institutions to name but a few. Quality of life factors such as recreational and cultural amenities, regional climate, or local environmental quality may also be considered indirect cost factors. Historically the emphasis of the economic literature has been on testing the importance of direct cost factors although attention has recently shifted to the study of less tangible considerations. The specific findings of some of these empirical studies will be reviewed in greater detail in a later section of this paper.

THE INDUSTRIAL SITE-SELECTION PROCESS

Although a useful construct for modeling firm behavior, theoretical models of firm location often fail to appreciate the complexity or richness involved in actual business location decisions. Theoretical models are a simplification of reality. The applicability of these models ultimately rests upon the validity of their simplifying assumptions. Profit maximization models typically assume that firms are rational economic actors operating in an environment of perfect competition and information. In reality, location decisions are not entirely rational, information is imperfect and costly, and large firms often engage in strategic bargaining with local governments when considering alternate sites. Theoretical models reveal little about the process of location choice itself – how decisions are actually made and how decision makers evaluate the trade-offs among different locations. This information is vital for policy makers wishing to take a proactive role in the development of their communities.

Firms approach major relocation and expansion decisions with caution. The decision to expand or relocate is best understood as a strategic decision, part of the larger corporate planning process (Blair and Premus, 1987; Cohen, 2000). Firms are not as mobile as assumed in theoretical models and the opportunity costs associated with moving are high. Planning, building and operating at a new location is expensive and risky, involving a considerable redistribution of existing resources, and dedication of resources for many years to come. For this reason, the first preference of many firms is to remain or expand at or near an existing site, unless some fundamental deficiency prohibits local expansion or makes operation at the existing location unacceptable.

Lacking perfect information and foresight, many corporations engage in a formal site selection process whereby alternative sites are examined and evaluated according to a limited set of key criteria. This is especially true for large businesses seeking to expand or re-locate existing operations. In a limited number of cases, businesses will contract with site-selection specialists to help them find a suitable location for production, but most often, companies make location decisions on their own (Cohen, 2000).

It is just not feasible to evaluate all possible sites according to all potential operational criteria. The site selection process is designed to limit consideration to the most relevant factors for the most likely candidate locations, while making sure that all viable alternatives are considered (Ritter, 1990). The recent development and proliferation of massive electronic databases of regional characteristics permit a much more comprehensive analysis than in the past, enabling firms to evaluate a wider range of criteria and locations, but for most firms the process still remains largely incremental and limited in scope (Blair and Premus, 1987).

To limit the search and information to reasonable parameters, the site selection is carried out in several rounds of elimination, with each successive round involving the collection of more detailed information and the consideration of more criteria. First, the site selection team develops a list of criteria important to the successful operation of the new facility, taking into account its overall role in corporate strategy. The list is often divided into “must-haves” and “would-like” criteria (Blair and Premus, 1987). The must-haves are elements that the firm cannot do without, they are instrumental if the firm wishes to remain profitable or achieve the

strategic objectives that motivated the move in first place. The would-like list includes factors that are desirable, but less instrumental than the factors on must-have list. The must-haves and would-likes are often negative attributes: things the firm wishes to avoid, such as a high-degree of unionized labor or an unfavorable climate. Eliminating locations because they lack essential elements is far easier than assessing and comparing perceived advantages (Ritter, 1990).

The next step is to gather information about potential locations and compare them against the “must have” and would-like” list. Failure to satisfy the must-haves knocks a location out of contention. Often, many locations are deemed acceptable according to the must-have list, in which case the firm begins consideration of would-like characteristics. As the search goes on, more locations are eliminated and the list of evaluated criteria is expanded and viewed with increasing stringency. Locations vary greatly in the existence, strength, and the quality of their would-like attributes. Rarely does one location stand out above all others. As the firm weighs the advantages and disadvantages of each site against one another, it also evaluates the relative importance of the would-like factors to corporate strategy.

When several locations match on the most important attributes, seemingly idiosyncratic or insignificant factors can play a large role in deciding the ultimate choice (Schmenner, 1982). For example, most government fiscal incentives are small when compared to total operations costs for large manufacturing facilities. For this reason, most researchers believe that tax incentives make little difference in influencing corporate choice. However, Bartik (1991) found that finalists in many location searches are often so close in terms of profitability based on traditional cost and market factors that variations in local incentives could potentially make the difference in final location choice.

In addition to the “must have/would like” rounds of elimination, the location search is typically carried out in different stages of geographic specificity, with each succeeding stage focusing on a smaller geographic area. The first stage looks across broad regions, with regions typically defined as states or multi-state areas (i.e. the South-Atlantic, Midwest, etc.). There is often enough variation among regions on key criteria to warrant an initial choice at such a broad level. With the region selected, the search becomes increasingly focused on smaller geographic units. The final stage of analysis considers the attributes of particular communities and/or alternate sites. There are usually multiple suitable sites available within the larger region. Important location criteria often differ between the regional and site-specific stages of analysis (Blair and Premus, 1987). An attractive site situated in an unattractive region may not even be evaluated, and policies aimed at improving site-specific attributes will be less effective if the larger region has fundamental deficiencies. For this reason, both Myers (1987a) and Gottlieb (1994) advocate a coordinated approach to improve the overall QOL for the entire region. Localities within the same state are most likely to be in competition against one another, and therefore state-level resources aimed at improving particular sites may be wasteful. Many economic development professionals are beginning to recognize the hierarchical nature of the site selection process and are designing their economic development organizations accordingly. For instance, North Carolina is divided into seven regional partnerships, each constituting a large and relatively homogenous geographic entity. The partnership staff is responsible for marketing its region as a whole.

EMPIRICAL STUDIES OF BUSINESS LOCATION DECISIONS

There have been many empirical studies aimed at identifying the common factors that influence the location decisions of businesses. A certain portion of any firm's business location choice is likely to be conditional to the peculiar circumstances of the firm. Despite the inherent subjectivity, the empirical literature has been able to detect much empirical regularity across firms. Most businesses have requirements in common with other firms that are in the same or related industries, perform a similar corporate function, are of similar size, or share a common level of technological sophistication and/or maturity.

Revealed and Stated Preference Studies

There are two classes of empirical studies of business location: revealed preference (econometric) studies and stated preference (survey) studies. Revealed preference studies use statistical techniques to examine correlations between the distribution of economic activity and variations in regional attributes. This technique is primarily useful for researchers wishing to test theory and determine the statistical significance of a limited number of variables while controlling for outside factors. The data for revealed preference studies usually comes from governmental secondary data sources, such as the U.S. Census Bureau. The nature of the data puts strict limitations on the researcher (Calzonetti and Walker, 1991). To ensure respondent confidentiality, records of individual firms are generally not released for public use. Instead, the research must use general measures of economic activity, such as employment or establishment growth by industry, measured across broad geographical units such as Metropolitan Statistical Areas (MSAs) or states. Aggregate measures capture changes in local economic activity that may arise from a variety of sources, such as firm births, deaths, relocations, and in the case of employment measures, layoffs and on-site expansions. Furthermore, relocating firms that conducted an explicit location search may comprise only a small share of these aggregate outcomes (Calzonetti and Walker, 1991).

There has also been an historical bias in revealed preference studies in favor of costs and other "quantifiable" factors over less tangible location factors such as quality of life. Part of this bias reflects the academic interests of economists, and part reflects the limitations of secondary data sources. Secondary data sources do not routinely measure many factors related to site selection forcing researchers to proxy measures to value intangible factors. It is also difficult to develop adequate quantitative proxy measures for qualitative phenomena, such as quality of public services (including education), public infrastructure and amenities, or the region's quality of life. Government expenditures are a common proxy for public services, but these measures are imperfect because cost does not necessarily represent quality of output. In a worst-case scenario, high costs may reflect government inefficiency in service provision rather than superior quality of service. Despite the persistent difficulty in measuring QOL and other soft factors, there have been notable improvements in proxy measures as researchers have become more and more interested in the role of qualitative factors in economic outcomes (for example, see Blomquist et al., 1988).

Stated preference studies are the preferred method for researchers interested in studying the site selection process. Survey studies go directly to the corporate decision makers and ask them specifically to rank the importance of different locational attributes. The researcher does not infer the importance of factors based upon aggregate measures of economic change as in econometric studies (Calzonetti and Walker, 1991). Surveys and interviews can gather a greater depth of information than possible through secondary data sources. Through surveys the researcher can inquire into a greater number of criteria and include open-ended questions to identify seemingly idiosyncratic, subjective or atypical factors (Schmenner, 1982). They can also question directly about the relevance of qualitative factors without the need of proxy measures and distinguish criteria that are separately important at the regional and site selection stages. In the analysis of firm-level data, the researcher can relate locational factors to individual plant characteristics and isolate plant-specific factors from those that are common to firms sharing membership in the same industry, corporate function, plant size, ownership structure or other commonality. Lastly, survey results can easily be presented as ordered rankings of location criteria to indicate the strength of preference across respondents. These results are much more straightforward for policy-makers to understand than coefficient estimates developed through sophisticated econometric techniques.

The survey approach has several weaknesses. Survey studies are expensive, time consuming, and often difficult to implement. Most corporate surveying is done within a single state or sub-state region, because of state or regional funding sources. Surveys conducted over a narrow geographic scope may not be applicable to other regions and may bias results due to the self-selection of businesses to particular geographic areas. Gottlieb (1994) recognizes that preference surveys always include an implicit evaluation of their existing location and should not be used to compare the pure preferences of two groups. For example, Love and Crompton (1999) found that firms that relocated within Colorado ranked quality of life lower than firms that relocated from out-of-state. The authors argue that since Colorado is favored with natural beauty and abundant recreational amenities, firms relocating in-state might take these things for granted in their survey responses and choose to focus on deficiencies of the region. On the other hand, Johnson and Rasker (1995) found that businesses in the Yellowstone National Park region gave the highest rankings to scenic beauty and recreational amenities and that older firms gave significantly higher rankings to quality of life factors than more recent arrivals. In this case, it is likely that the self-selection of firms that located in the Yellowstone region may have resulted in a more positive evaluation of amenities than would be the general case. It is also possible that local concerns about over-development, deforestation, or the industrialization of Yellowstone compelled existing businesses to rank environmental factors highest in the hope of protecting these resources. In any case, localized respondent bias limits the applicability of survey findings to other regions. Overcoming this bias requires careful wording of survey questions and, preferably, the use of random or stratified sampling techniques with surveyed firms pulled from a range of locations.

The validity of survey findings is also threatened by low response rates, the adequacy of the sample frame, and improper completion of questionnaires. Corporate decision makers give a low-priority to filling out surveys. Despite follow-up calls and reminders, many studies still suffer from painfully low response rates. If the response rate is too low, the sample may not be representative. Furthermore, the survey should be limited to firms that have recently undergone

a site selection decision. Developing a representative list of newly relocated firms can be difficult. For example, in our pilot study we found that several firms that had relocated to the Research Triangle area within the last two years already had gone out of business. With the passing of time, many decision makers leave the firm or forget about the original reason prompting the location choice. It is also difficult to correctly identify the key decision maker within the firm. Even if the decision maker is identified, there must be assurances that the correct person answered the questionnaire. It is also possible that a respondent will intentionally misrepresent their answers in hopes of skewing policy in their favor. For example, a business owner may inflate the importance of tax incentives as a determinant of site selection in their response, hoping that government will continue to offer more and larger incentives. These and other types of respondent bias are very difficult to identify and control in surveys.

Evidence from Empirical Studies

The evidence from empirical studies largely confirms the conventional wisdom of the traditional profit maximization models. Firms primarily choose locations that satisfy the input requirements, access to markets, and the balance of the costs of these factors given transport costs. This is particularly evident in older empirical studies. In a review of empirical studies of the 1940s, 1950s and early 1960s, Morgan (1964) found that traditional factors such as market access, labor costs, and raw materials were the most commonly mentioned by manufacturers. Yet, these traditional factors are becoming relatively less important to firm location decisions as a result of changes in production and communications technologies, faster and cheaper forms of transport, and overall changes in the industrial composition of the United States. In a more recent review of the empirical literature, Blair and Premus (1987) found productivity, education, taxes, community attitudes toward business and other quality of life factors are increasingly recognized as influential, although they still lagged behind traditional factors on most accounts.

Quality of life factors are predominantly viewed as “would-like” items for most firms, becoming important when other production costs are similar across two or more locations (Ryans and Shanklin 1989; Ritter, 1990). Some believe that QOL factors are important considerations from the onset, particularly for high tech and other knowledge intensive sectors of the economy (Myers, 1987a, 1987b). Love and Crompton (1999) believe that both perspectives are likely to be partially correct, depending upon the peculiarities of the industry or firm.

There appears to be a general consensus among researchers on the most important factors driving industrial location decisions when measured on a broad cross-section of businesses. Some of the most comprehensive work on the industrial site selection process has been conducted by Roger Schmenner (1982). In his study of Fortune 500 companies, Schmenner found that favorable labor climate was the most important factor. His study also stressed the importance of proximity to markets for many firms, while QOL and government incentives were found to be of relatively lesser importance. A Fortune Magazine survey (1977) of the 1000 largest corporations found labor availability to be the most important factor in the choice of location for the most recently sited plants, with access to markets the most important consideration for future plant sitings. An Industrial Week (Goldstein, 1984) survey of 1000 executives found transportation to be the most important locational factor, followed by worker productivity, unionization, and tax credits/exemptions. QOL and education were described as

becoming increasingly important, but had much lower rankings. Most of the surveys on business location decisions were conducted in the late 1970s and early 1980s. There have been few comprehensive surveys of business location decisions over the past decade.

The rankings vary when businesses are classified by industry sector, corporate function, size or technological intensity. Retail and personal service businesses locate to maximize sales revenue rather than to minimize transportation costs (Cohen, 2000). The location of retail and personal service firms are largely dictated by existing and anticipated patterns of target residential populations, particularly affluent households with greater disposable income. There is also a tendency for specialty retail and personal service establishments to cluster in specialty shopping or entertainment districts, typically in or near the downtowns of major urban centers. Such agglomerations of similar activities tend to attract more patrons than if they were spread across a larger area.

In general, corporate headquarters tend to locate in the central business districts of world-class cities, such as New York or San Francisco, although several recent high-profile relocations of corporate headquarters to suburban campuses have some questioning the continued advantage of the downtown as corporate hub. Corporate headquarters are usually found in cities with excellent airline connections, an abundance of professional support services, and a variety of amenities that appeal to the sophisticated tastes of the managerial elite (Cohen, 2000). There are several reasons why headquarters are located downtown. Managerial elites and executives prefer the amenities and lifestyle of the big city. Location in the CBD may also minimize commuting times from a variety of locations in the metropolitan area as suburban commutes continue to become more and more congested. The downtown setting also offers a variety of restaurants for luncheon meetings and abundant entertaining opportunities for out-of-town clients (Fortune, 1977). Having a downtown address in a major city is also seen as more prestigious by some firms. Downtowns also offer more opportunities for the face-to-face exchange of information and ideas so as to keep abreast of the latest developments. Large law offices and other major professional service industries also find downtowns appealing, primarily for proximity to their corporate and government clients.

Large-scale manufacturing branch plants are the most sensitive to the locational cost-differentials, and therefore are most sensitive to the traditional economic factors of location, such as labor costs, proximity to markets or raw materials, transport costs, utilities and so on. Tax and other policy-related variations may also be important to cost-sensitive manufacturing plants, but the empirical evidence on this point is less clear. Most researchers believe that taxes and other fiscal incentives become a consideration in the location of when regions are matched on most other criteria, or when businesses are evaluating specific sites once a region has been selected.

Quality of life is generally of lesser importance for traditional manufacturing sectors. For example, in a study of comprised largely branch plants in the South Atlantic states, Hekman and Greenstein (1985) found state and local industrial climate, labor productivity, transportation, land availability and cost to be the dominant factors, while QOL factors were given generally lower rankings. Granger and Blomquist (1999) found that manufacturers that are more labor-dependent (measured as annual payroll divided by annual value added) are more attracted to high-amenity urban locations.

The Location of High-Tech Industry

Except for the recent setbacks in the computer and telecommunications industries, high-technology firms have been a fast-growing sector of the domestic economy and are highly prized by economic development officials. High-tech industries also serve as an indicator of changing location requirements of other economic sectors, as these other sectors become more technology and knowledge oriented in their production processes (Cortright and Mayer, 2001). High-technology firms are usually defined by large expenditures for research and development and a high percentage of employees that are scientists, engineers and technicians. High-tech industries are also more science-based in that they bring scientific advances to the marketplace in the form of new products and production methods (Premus, 1982).

The availability and cost of technical labor is perhaps the most important determinant of location for high-tech firms, followed by proximity to universities (Schmenner, 1982; Premus, 1982). Premus (1982) also found taxes, cost of living and transportation an important regional determinant of high-tech location. In a review of the site selection literature, Gottlieb (1994) found the presence of skilled labor or a local university engineering program with strengths in the firm's field are commonly cited as top location factors for high-tech firms. High-tech firms also consistently give higher ranks to QOL factors than do other firms, and QOL factors frequently rank higher than traditional factors for high-tech companies (Blair and Premus, 1987). For example, Stafford (1983) found that quality of life ranked seventh out of ten factors for all plants in choice of region, but third out of ten for high-tech firms. When the sample is restricted to only R&D facilities Lund (1986) found that QOL was the most highly ranked factor among high-tech R&D facilities whereas all R&D facilities ranked QOL third out of six.

High-technology manufacturing is more concentrated in metropolitan areas than less technology intensive industries (Herzog and Schlottman, 1991), although it may become more geographically dispersed over time as the technology matures and production becomes more routine (Schneider and Kim, 1996). Within metro areas, much of the growth in high-technology employment has been in the suburbs (Herzog and Schlottman, 1991; OTA, 1995; Schneider and Kim, 1996).

Research and development (R&D) facilities, an important subset of the high-tech industry, have been the focus of several notable studies (Malecki and Bradbury, 1992; Harding, 1989; Lund, 1986). The location decision for R&D facilities is dominated by the need for communication with other units of the firm and access to technical and professional workers (Harding, 1989; Lund, 1986). Operating costs are rarely a major consideration in the location of a research lab. The largest costs are often compensation for researchers whose salaries are set to national scales (Harding, 1989). The need for close interaction between R&D, marketing and administration has historically tied the location of many R&D facilities to close proximity with corporate headquarters. Firms with only one R&D facility nearly always have them located near the corporate headquarters while firms with more than one R&D facility are also likely to have at least one facility near headquarters (Harding, 1989; Howells, 1990). R&D facilities are highly sensitive to quality of life issues mostly due to their need to recruit and maintain "knowledge workers" (Ritter, 1990). R&D facilities are drawn to major research universities to recruit graduates and provide up-to-date training for employees (Malecki and Bradbury, 1992; Harding,

1989). Universities tend to provide cultural and recreational opportunities that appeal to knowledge workers and are otherwise unavailable outside of the largest urban areas. Proximity to research universities also offers opportunities to engage in direct collaborative research between industry and university faculty. This may be of great importance for cutting-edge sectors, such as bio-tech, that are more science-based and where the product development and testing requires frequent interaction. Some researchers argue, however, that many R&D facilities maintain ties with distant major research universities for access to research information and employee recruitment and therefore do not necessarily need to be within close proximity (Howells, 1986; Malecki and Bradbury, 1992).

Region Versus Site Selection

As mentioned previously, the formal site selection process is usually conducted in stages, starting with the choice of a general region and ending with the selection of a specific site within that region. It is important for policy makers to differentiate regional, community and/or site-specific factors, because the effectiveness of different policy instruments varies at different stages of the search. Cohen (2000) provides the following examples of regional and site-specific attributes:

Regional attributes:

- Access to major roads
- Skill level and suitability of the labor market
- Availability and cost of housing
- Adequacy of transportation systems
- Access to suppliers and contractors
- Proximity to natural resources
- Presence of competitors
- Position within the market for the company's products
- General taxation and tax policies of the state
- Workers compensation costs

Site attributes:

- Road/rail/truck access
- Presence or absence of tax liens
- Title complexities
- Cost and availability of water, sewer and solid waste disposal
- Telecommunications capacity
- Possible environmental remediation

Few studies distinguish among the factors relevant to selection of the region from those that are relevant to the selection of the particular site or community. Revealed preference studies are almost universally restricted to regional attributes because of their reliance on secondary data reported in aggregate geographic units. Most stated preference studies do not make an explicit distinction between site and regional criteria, and it is often unclear whether the respondent was thinking of regional or site selection when ranking different factors. This is especially true when the survey form uses vague and general terminology. For example, "local property taxes" are

clearly a site or community factor, and “state tax policies” are clearly regional, but the more general “tax burden” is less clear.

To make a distinction between regional and site factors, Schmenner, Huber, and Cook (1987) developed a two-staged logit model for 114 new plants for large companies that underwent a multi-state site search. Lower labor-union activity, lower building costs, warmer climates, and lower population densities were found significant at the first stage (regional level), but the researchers could not determine a significant determinant of location choice at the second stage (site level). In his study of 691 high-tech firms, Premus (1982) found that proximity and cost of technical and skilled labor was an important factor at both the regional and site level choice. He also found that taxes, good schools, space for expansion, local transportation, and recreational and household amenities were also considered important at the site-specific level of search. From a national survey of new manufacturing plants recorded in Dunn and Bradstreet, Calzonetti and Walker (1991) reported that markets and labor were tied as the most important regional factors, followed by land and taxes. For the local search, markets were the major factor, followed by unions, highways, wages and livability. Based upon his review of the site-selection literature, Haug (1991) concluded that availability of plant and office sites, property costs, construction costs, community attitudes and ample space for expansion are also critical site factors.

THE SPATIAL IMPACTS OF TECHNOLOGICAL CHANGE

Technological change alters the geography of industry in two fundamental, but interrelated, ways. The first is the aggregate change in industrial composition that results from shifts in consumer demand. Growing demand from both households and businesses for new technologies and products stimulates the growth of industries supplying these technologies, and spawns entirely new industries. In general, the creation of new products makes older products and technologies obsolete and the industries producing older technologies must either modernize or face decline. Because particular industries tend to concentrate in space, the rise and fall of industry fortunes is often paralleled by regional growth and decline. For example, the employment of the traditional U.S. manufacturing base has steadily eroded for the past half century, resulting in the slow and steady decline of the factory towns of the industrial Midwest and Northeast. As these sectors wane, knowledge intensive sectors such as research and development, advanced producer services, and high-tech manufacturing are emerging as the driving force behind American economic power. Areas with an early advantage in these breakthrough industries, such as California's Silicon Valley, Austin, Texas and the Research Triangle region of North Carolina, have been blessed with strong economic growth over the past several decades, although they have suffered setbacks recently.

The second effect of technological change results from the application of new technologies in production and/or service provision. New methods of production alter the relative importance of inputs and thus the location requirements of firms. For example, a factory that once selected a location near cheap labor now has greater need to be near engineers that can operate and maintain the capital equipment of their largely automated production lines. The potential spatial impacts of the information technology (IT) revolution has captured the imaginations and interests of researchers, but most of the work remains theoretical, anecdotal and speculative (DeMichelis, 1995–96). The IT revolution is just too recent and rapidly evolving to make accurate predictions based upon empirical evidence. Many of the information technologies at the forefront of the New Economy were originally developed in the late 1960s and 1970s, but only recently have these technologies been widely adopted (Atkinson, 1998).

The major debate is whether the continued diffusion of IT will lead to further concentration or dispersal of economic activity. Historically, the location of many cities was determined by natural advantages such as waterways and harbors, but industry and commercial activity concentrated in a small number of cities because of agglomerative benefits associated with physical proximity among firms, suppliers, and customers (Glaeser et al., 1992). Modern information technologies allow economic activities to be physically separated, yet functionally close, thus reducing the necessity of physical proximity (Johnson, 1991). If the traditional advantages of urban agglomerations can be replaced by remote forms of communication, many believe that desire for low-cost locations will disperse economic activity and result in further deterioration of the economic base of cities and inner suburbs, with growth continuing to spread to the urban fringe, smaller urban centers, and possibly rural areas (Atkinson, 1998; OTA, 1995). The affect is somewhat similar to the improvements in ground and air travel over the 20th century that fueled the growth of metropolitan suburbs and the decline of the central city. The difference is that IT transactions need not necessarily be constrained to within reasonable travel

distances, opening the possibilities for an even more diffuse pattern of spatial location than seen in the past.

The fact that IT allows for the further dispersal of many economic transactions does not ensure deconcentration. There are many solid arguments in favor of a greater concentration of economic activity as a result of the proliferation of IT, although none go so far as to predict a massive revival of the dense urban settlements of yesteryear. Many argue that technological change is increasing the importance of agglomeration economies. Some believe that the proliferation of IT is shortening product life cycles, forcing firms to continually innovate in response to swift changes in consumer preferences (Markusen, 1996; Barkley and Hirschberger, 1992). Innovation thrives in a more open and diverse environment where there is a continual influx of ideas facilitated by the formal and informal exchange of ideas across people, firms and industries (Jacobs, 1969). Innovative firms favor core locations close to markets, suppliers, and a skilled, adaptable work force. It is likely that communications technologies work in both directions, concentrating some and dispersing other economic activities, leading to the consolidation of managerial and administrative functions in a handful of world-class cities while other functions are spread to less expensive locales (Moss, 1998; Gaspar and Glaeser, 1998).

The core of this debate relates to the ascendancy of new modes of communication and whether these are substitutes or complements to spatial proximity. In his book *E-Topia* (1999), W.J. Mitchell classifies the possible modes of communication as being either local or remote, and synchronous or asynchronous (Table A). Face-to-face interaction offers the most intense, high-quality, potentially enjoyable interaction, but it is also the most expensive option both in opportunity and direct costs. Asynchronous and remote forms communications are both far less direct and intense than direct personal contact, but they are also far cheaper in most situations. Asynchronous communication allows contact across time, reducing the need for coordination of the parties involved. Remote communication removes the distance barrier, removing the need for a direct physical presence.

Table A: Modes of communication, costs and benefits

	Synchronous	Asynchronous
Local	<i>Face to face meeting</i> Requires transportation Requires coordination Intense, personal Very high cost	<i>Leaving handwritten message</i> Requires transportation Eliminates coordination Displaces in time Reduces cost
Remote	<i>Telephone, Video Conferencing</i> Eliminates transportation Requires coordination Displaces in space Reduces cost	<i>Email, Telephone Message</i> Eliminates transportation Eliminates coordination Displaces in time and space Very low cost

Source: W.J. Mitchell, *E-Topia* (1999)

Improvements in IT expand the possibilities for more remote and asynchronous types of communication. To reduce costs, firms will likely substitute more expensive forms of communication (i.e. synchronous–local) with less expensive, more–remote forms. Improved remote communication also permits new forms of corporate organization and control. Historically, corporate headquarters, research and development, back–office administrative and clerical functions, and manufacturing facilities had to be located within relative proximity to ensure coordination and proper oversight. Advances in telecommunications technologies have greatly reduced the constraints of distance, and are permitting the spatial separation of corporate functions (Cohen, 2000; Ewers, 1995; Harding, 1990). The quick and reliable transmission of information frees each function to locate in optimal location according to its own production requirements (Office of Technology Assessment, 1995).

Despite the greater use of remote and asynchronous methods of communication, many functions still depend on face–to–face interaction. Firms with these needs will continue to find it advantageous to remain in a central city or other area of urban agglomeration. Functions with relatively low cost pressures and high communication needs are best suited to the central city (Harding, 1990). Face–to–face communication is essential where there is a need for on–going collaboration and where instructions can be easily misunderstood (Gasper and Glaeser, 1998). As such, corporate headquarters are likely to favor downtown locations that maximize opportunities for interaction, in spite of the high real estate costs. The need for concentration is also likely to remain in other areas of professional service such as accounting, law, and consulting. R&D facilities also have high information requirements and may prefer the urban setting. The most advanced R&D facilities may find it advantageous to locate closer to research universities where there is potential for collaboration with groundbreaking researchers and access to highly skilled recent graduates and graduate students.

Routine service and production activities with relatively low–information requirements will continue to move out of the central business district. Back office functions in particular are becoming more footloose with the diffusion of IT (Richardson and Gillespie, 1996). Historically, the back office was similar to an assembly line for processing information (Moss, 1998). When information was mainly processed in paper form, these functions had to be located close to corporate headquarters or other managerial units. With information in electronic form routine back–office work can be easily divorced from front–office management functions. Back–office functions first were relocated to the suburbs and to small and mid–sized cities – places that combine cheaper land and labor costs with solid telecommunications infrastructure and abundant moderately skilled and articulate workers for clerical and customer service positions. More recently, several companies have moved such operations overseas.

Routine manufacturing operations have long abandoned the central city in search of cheap and abundant labor and relaxed environmental standards. Improved methods for remote control and coordination, cheaper goods transport, and loosened international trade barriers have acted in concert to intensify the spatial decoupling of manufacturing from corporate management (Scott, 1988). Over the past quarter–century, the most cost–sensitive manufacturing operations have found it most profitable to relocate to offshore production facilities or automate routine functions, eliminating many domestic jobs in low– and semi–skilled positions. The remaining manufacturing jobs require a greater degree of skill and technical know–how to operate

sophisticated machinery and equipment. In essence, firms in traditional manufacturing sectors are becoming more and more like their high-tech sector counterparts, in both productive inputs and in location requirements. As domestic manufacturing becomes more technology dependent, labor availability and QOL factors will likely take on an even greater importance.

The globalization of production is also intensifying quality and cost pressures and increasing the importance of speed and flexibility in production (Harding, 1990). In response, many domestic manufacturers have turned away from large-scale mass-production systems opting for more flexible forms of production, such as just-in-time (JIT) delivery systems. Flexible production enables firms to respond swiftly to changes in consumer demand and reduces the need to store and maintain large stockpiles of inventory. As a result, there is less need for large warehousing facilities, but a greater need for access to airports and major shipping nodes. Flexible production also requires more direct interaction between producers and customers, pushing producers closer to their markets and suppliers (Harding, 1990).

The Prospects for Rural Economic Development

Several writers describe great possibilities for a rural renaissance in the New Economy, and argue that technological change, corporate restructuring, and the growing emphasis on quality of life is likely to lure businesses and knowledge workers back to the nations small cities and towns. Daniels (1993) argues that technological and production changes such as telecommuting, “right-sizing” of resident corporate personnel, outsourcing and the geographic separation of corporate divisions offers an opportunity for many small and rural communities to get into the corporate location process by the marketing their amenities and high quality of life. The small town environment, reports Daniels, fosters “traditional values” that are attractive to professionals wishing to balance work, family, and community. Heenan (1991) similarly finds that QOL amenities found in small towns offer many advantages over the more traditional urban, suburban, and even edge city locations. He argues that decentralized firms tend to relocate into smaller, more amenity-rich communities, and do so at a lower cost (in terms of land, labor and taxes) than for comparable metropolitan sites. Rural places with sufficient telecommunications infrastructure and with high social and environmental amenities are well-suited for routine information processing activities, particularly back-office functions such as data processing (Johnson and Rasker, 1995).

Despite this hope and optimism for revival, it is somewhat doubtful that the IT revolution will result in an American rural renaissance at any appreciable scale. Several authors have cited a recent trend toward decentralization in American population patterns (OTA, 1995), but this decentralization has mainly been from the largest urban areas to smaller and mid-sized metropolitan areas, not to remote rural areas. For rural places, the most likely beneficiaries in the New Economy will be those places with particularly outstanding natural amenities or rural areas on the metropolitan fringe as a result of continued decentralization.

There is a common perception that a high quality of life is only available in rural areas, that is, it is purely a rural trait. It is true that some highly valued amenities (clean air, outdoor recreational opportunities, less traffic congestion, and greater public safety) are more common in rural areas, but other quality of life factors such as museums, concerts, parks, major sporting

venues, restaurants, and shopping districts are more likely to be found in highly diversified urban areas. There is some evidence that QOL factors associated with small places are more highly prized by professional workers. For example, in a national survey of R&D professionals, Malecki and Bradbury (1992) found that environmental quality, cost of housing, recreational opportunities, crime rate, climate, community attitudes and traffic congestion were the most important attributes in the valuation of an 'ideal' future location. Despite an implicit preference for a rural QOL, most high-tech and knowledge professionals choose to live in large metropolitan areas (Glasmeier, 1986; Markusen et. al., 1986). Furthermore, many employers have found it difficult to recruit, transfer and relocate highly skilled workers to remote locations (Glasmeier, 1986; Harding, 1989). Access to better job opportunities is the primary draw of professionals to larger urban areas (Herzog and Schlottman, 1986, 1989). These urban labor-pooling benefits are especially important for the dual-career professional couples (Malecki, 1987). Although perhaps not ideal, urban professionals and professional couples do show a favorable appreciation of the available urban amenities at their present location (Malecki and Bradbury, 1992).

Recognizing the growing importance of skilled workers and QOL factors in an increasingly technologically and knowledge-oriented economy does not mean that these are the only relevant factors to industrial location in the New Economy. There is no evidence that firms will seek out amenities to the exclusion of all other location factors (Gottlieb, 1994). This is consistent with the findings of our pilot study (see Appendix). Firms may be more cognizant of the QOL attributes of particular places, but certain amenities generally associated with threshold city size remain crucial. The bundle of agglomeration benefits offered by large metro-areas is likely to outweigh the singular QOL benefits of smaller places for most firms. Overall corporate needs are still best satisfied in larger metropolitan areas, and these areas also provide the best match between the entire spectrum of employer and employee requirements (Malecki and Bradbury, 1992).

Telework

The same advances in IT that are permitting corporate decentralization also allow for a separation between individual workers and the traditional workplace. Telework or telecommuting refers to the partial or complete substitution of an employee's normal working hours in a traditional office for the home or neighborhood telework center. The U.S. Congress' Office of Technology Assessment (1995) reports that three kinds of tasks are amenable to telework: routine information-handling tasks, mobile activities, and professional and other knowledge-related tasks. The prospect for widespread telecommuting has gained the attention of many transportation researchers as a possible relief for urban rush-hour congestion. The potential for telework has also spawned speculation of the death of the traditional office and the large-scale emergence of "lone-eagle" workers who reside in remote rural locations to satisfy lifestyle preferences and interact with co-workers and colleagues almost exclusively through remote contact. Others view a knowledge economy powered by electronic migrants who perform contract work on a per-job basis for corporate employers around the globe (Blakely, 2001).

Initial empirical evidence suggests that potential for telework to bring about sweeping changes in workplace and residential location patterns has largely been exaggerated (Handy and Mokhtarian, 1995). Even in the growing service industries of the New Economy, many jobs still rely on a direct physical presence (Salomon, 1996). Even for those with a job amenable to telework, many workers and managers have been reluctant to make the shift (OTA, 1995). Physical interactions around the office, including informal conversations by the water cooler, are still important to many kinds of work and organizations. Fears of social isolation and being forgotten by supervisors, the difficulties of managing large-scale tele-work schemes, the risk of losing both creativity and team spirit within organizations, and the economic precariousness of much freelance work have proven to be significant barriers (Gillespie, et. al., 1995; OTA, 1995). Those who do telecommute tend to work at home only two or three days a week, with the balance of their work done in an office (OTA, 1995).

Technological Change and Quality of Life

Quality of life is most important for “footloose” firms and industries (Sedegy, 1997). A company is footloose if its financial performance is relatively independent of its location (Love and Crompton, 1999). These firms are marked by a greater reliance on employees and less reliance on access to raw materials, land, labor capital and transport costs, utility rates, and other cost factors. By definition, a firm is amenity-oriented in its location-decision only if it is footloose (Gottlieb, 1994). The simplistic classification of a firm as being either footloose or non-footloose disguises the fact that there are degrees of “footlooseness.” Declining transport costs, the spread of global networks of telecommunications infrastructure, and other technological innovations have been equalizing regions on many traditional cost factors for many types of firms, thus freeing the firm to concentrate on other factors that remain spatially variant (Granger and Blomquist, 1999). Being relatively footloose does not guarantee that the firm will choose a QOL-rich region. In some cases, the footloose firm may choose to focus on QOL factors, while in others the firm may become hyper-sensitive to even minor cost differentials. As traditional costs equalize across regions, it is possible that fiscal incentives can have a relatively larger differential on a firm’s bottom line and tip the scales in favor of one location over another (Bartik, 1991).

Many researchers also contend that loosened traditional constraints will allow for decision makers to increasingly choose locations according to their own personal preferences. Personal preferences and other seemingly idiosyncratic factors often make the difference in the final choice of location (Blair and Premus, 1987; Glaser and Bardo, 1991). There is also an inter-relationship between preference of decision makers and high QOL. When the key decision makers relocate with the firm, QOL factors are given a higher ranking (Love and Crompton, 1999; Ritter, 1990).

What is not clear is how far a decision maker is willing to go to realize their own personal lifestyle preferences, when these preferences conflict with basic profitability and/or location preferences of key employees. Although a few contradictory cases exist, most researchers agree that personal preferences make a difference mainly in cases where regions are tied on critical factors. The major exception is perhaps the case of small businesses and start-up companies. Small businesses put higher emphasis on personal preference and QOL than large firms. These

firms do not typically engage in a comprehensive site search as do their larger counterparts, but rather tend to locate for proximity to the residence of the owner/founder of the firm (Galbraith and DeNoble, 1988; Haug, 1991). The potential contribution of small businesses to local economies should not be underestimated. Small firms are a large part of the U.S. economy. As the trend from large to small companies continues, the relative importance of QOL on business location decisions is expected to increase in importance (Love and Crompton, 1999). Smaller firms are often more innovative than larger firms. Although roughly half of all small business ventures fail within the first few years, those that survive often become a powerful source of future regional growth (Birch, 1987).

QUALITY OF LIFE AND SITE SELECTION

Thus far, we have assembled considerable evidence regarding the importance of QOL to modern business location decisions. Quality of life factors are commonly cited as important factors to the location of firms, but still lag traditional cost and market access factors in their relative importance. Quality of life factors are also growing in their relative importance: factors which were rarely considered significant to business location decisions prior to the 1970s are becoming increasingly important as the composition of the U.S. economy shifts to more high-tech and knowledge intensive sectors (Blair and Premus, 1987). Globalization and technological change have increased competitive pressures in all sectors of the U.S. economy, leading to greater capitalization and the use of sophisticated productive methods (Harding, 1990). There is a growing dependency on skilled labor and less need for large pools of cheap labor.

Areas that are able to attract and retain skilled workers are most likely to be successful in the near future, and pools of highly educated and technically skilled labor can only be maintained in areas with an appealing QOL and favorable amenities (Schmenner, 1982). A high local QOL can also reduce labor force turn-over, a factor that is all the more critical because of the longer time frame it takes to get knowledge workers up to speed (Lyne, 1991). In this section we examine QOL in greater detail by reviewing studies that look specifically at QOL.

What is Quality of Life?

Up to this point, we have approached quality of life primarily as a singular entity, in large part because many of the more general studies of business location decisions often treat it as such. When defined in such a broad and generic manner QOL is a fairly meaningless tool for informing policy. It is inherently vague and subjective. Simply asking a firm or a person whether high QOL of life is important is pointless: the term will have a different meaning to each person, but in nearly all cases the overall response will be positive. To an executive, a high QOL may invoke visions of a large estate in a gated community with world-class golfing facilities and low property taxes. To another person, a high quality of life may mean a walkable community with bike trails and a solid public school system.

At present, there is no consensus on which factors should be included in a QOL analysis (Venable, 1991). Still, there is a great need for the concept of QOL to be more specifically defined by its component elements. Myers (1987b) recommends that communities begin internal monitoring of their local QOL to guard against deterioration of positive local resources that may deter future economic activity. There are many possible contributors to an area's overall quality of life: recreational amenities, cultural opportunities, environmental quality, climate and affordable living costs, to name but a few. Before communities begin tracking QOL indicators, they must first understand what it is they should be tracking and the relative importance of these individual elements to the overall QOL of a region. Rarely does one QOL factor sway business and residential decisions, but rather the entire bundle of offerings of a local area.

There is a general consensus among researchers that popular indices of regional QOL, such as the Places Rated Almanac, are exceptionally poor indicators, because they use arbitrary

rankings and fail to appreciate intra-metropolitan diversity (Gottlieb, 1994; Luger, 1996). Cushing (1997) notes that many studies use a broad definition of QOL contributors, including both traditional economic factors (income opportunities, employment opportunities, and cost of living) as well as local amenity factors (climate, quality of schools, and cultural and recreational opportunities). Other studies only include local amenities. Cushing argues the more restrictive definition is the more informative. At a minimum environmental quality and growth issues, local education quality and opportunities, and crime and public safety issues should also be included in QOL location studies, although perhaps listed under separate categories from amenities. These factors should be included primarily due to their policy relevance for local governments.

Which Quality of Life Factors are Important?

A few recent studies include a more in-depth analysis of the factors that contribute to local quality of life and provide a much more specific itemization of which of these factors singularly influence business location decisions. In general, there is little agreement or evidence over which QOL factors are most vital to economic development (Segedy, 1997; Kumcu & Vann, 1991). In a review of several of these studies, Gottlieb (1994) found environmental quality to be the highest-ranking QOL factor for both high-tech and non high-tech firms. He also found that cost of living, cost of housing, and commuting issues were often reported to be of greater relative importance while school quality, cultural amenities, and public safety to be of lesser relative importance to high-tech firms when compared against responses of all firms. Gottlieb explains his surprising findings as the likely result of location bias in survey studies, reflecting urgent problems at a firm's present location rather than criteria used to make choices between alternate locations. High-tech firms tend to locate in suburbs of large urban areas where traffic congestion and housing affordability are severe problems. The suburbs also tend to have relatively good schools and low crime. Several authors argue that high-tech firms are highly sensitive to push-factors such as crime, environmental degradation, and traffic congestion that make fast-growing areas less desirable to skilled workers, (Gottlieb, 1994; Myers, 1987a; Taylor, 1987).

Several studies measure the importance of quality of life factors in local development by surveying economic development professionals, rather than surveying particular firms. Surveying economic developers may be advantageous in that each usually can draw from a broader range of experiences than a business executive who may have experience with only a few actual site selections. Then again, the responses of economic developers may be biased by their professional orientation. Most economic developers continue to define their roles largely in terms of targeting large branch plants with incentives rather than developing long-term endogenous development strategies (Fusi, 1991), and may be more likely to view traditional recruitment tools more favorably in survey responses.

In general, economic developers are beginning to recognize the growing importance of quality of life factors and amenities to industrial site selection (Gottlieb, 1992), although they still regard cost-related issues as the most critical factors and QOL factors as primarily tie-breakers (Fusi, 1991). For example, in a recent survey study of local economic development policy-makers in England, Wong (2001) found that traditional factors (defined as physical resources, location, human factors, finance and infrastructure) tended to rank higher than

intangible factors such as institutional capacity, business culture, community identity and image. Wong also found that economic development professionals in the more high-tech areas give greater weight to QOL factors than their counterparts in the areas with a more traditional manufacturing base.

When QOL does become an important location factor, economic development professionals consistently rate education at or near the top of the list. In the 1991 Site-Selection Magazine survey of U.S. economic development professionals, 48% of respondents said that reasonable cost of living was the most important QOL factor, followed by proximity to colleges and universities, nature-oriented recreational opportunities, and quality of K-12 education (Fusi, 1991). In a survey of 50 Indiana communities, respondents ranked education as the most important QOL factor, followed by infrastructure, health and safety, public services and community life (Segedy & Truex, 1994).

Does Quality of Life Influence Location Decisions of Firms or Workers?

There is an implicit assumption of most researchers that QOL factors have little or no direct impact on business criteria that is truly independent from worker preferences. Most studies assume that while amenities enter the utility functions of residents directly, they only influence firm location decisions indirectly through their effects on employees and their families. Gottlieb (1994, 1995) defines amenities as location-specific, non-exportable goods or services that primarily benefit employees in their role as residents or commuters. Under this definition, the impact on businesses is necessarily indirect. The businesses themselves do not benefit from amenities and a high quality of life, but rather seek out high-amenity areas to satisfy labor-force requirements.

There are several alternative perspectives pertaining to how amenities and other QOL factors influence business location decisions through labor force preferences. Some authors emphasize the market power of skilled workers in an increasingly high-tech and knowledge-intensive economy (Herzog and Schlottman, 1991; Malecki and Bradbury, 1991; Lyne, 1988). The speed of technological change in conjunction with a reduction in the number of entrants into the U.S. labor force, particularly those with technical skills, have created a skills gap that places a major constraint on corporate location (Lyne, 1991). Corporations are finding it more difficult to find areas with a work force sufficient to staff many of their firm's facilities, and thus are drawn to areas that can attract and retain scarce and highly-skilled talent. In skills-short markets, location is one of few ways that companies can compete for talent without beginning a salary war (Harding, 1989).

Realizing their advantageous position, knowledge workers choose to reside in amenity-rich areas, and knowledge-intensive firms follow in order to gain access to deep pools of highly skilled labor. Knowledge workers are highly mobile and display strong locational preferences (Malecki, 1987; Malecki and Bradbury, 1991). Wage rates for professional workers are often set at national scales and tend not to vary significantly among local labor markets (Topel, 1986). Because compensation levels vary only slightly, professionals tend to distinguish locations according to quality of life factors rather than wage rates (Morgan and Sayer, 1988). Knowledge workers not only gravitate to areas with a high quality of life, but reinforce the local QOL advantages by advocating policies to improve local schools, upgrading recreation and cultural

amenities, and supporting growth management strategies that abate the adverse impacts associated with unconstrained development. Furthermore, the immigration of firms to areas where they can attract and retain skilled labor encourages further in-migration of skilled workers who benefit from a greater choice of local employers (Krugman, 1991).

An alternative, but compatible, perspective argues that local amenities can affect a firm's bottom line directly by lowering wages or reducing costly labor force turnover for key personnel (Granger and Blomquist, 1999; Gottlieb, 1994, 1995; Taylor, 1987). Taylor (1987) further notes that corporate executives are realizing that the quality of their employees' lives has a direct impact on their bottom line through absenteeism, loyalty, productivity and health-care costs. Under this model, workers will accept lower wages and higher housing costs to live in amenity-rich areas. Amenity-poor regions must offer higher wages and cheaper rents to retain workers. There is ample evidence that workers are willing to accept lower wages and higher rents in exchange for better amenities (Rosen, 1979; Roback, 1982). Firms view amenities as they would any other input into the production process, but unlike most other cost factors, the bundle of local amenities can only be altered by changing location. As profit maximizers, labor-intensive manufacturers will choose to locate in amenity-rich areas, and land-intensive manufacturers will tend to locate in amenity-poor regions (Granger and Blomquist, 1999).

In either perspective, the emphasis is on work force preferences, suggesting that the growing importance of QOL factors is unequivocally tied to the attraction and retention of workers. Several studies look at the migration decisions of knowledge workers, assuming that high-tech firms are influenced by the locational preferences of their employees. There is little doubt that attractive amenities are a major consideration in the location decisions of mobile households, although the relative importance of specific amenities is still subject to some debate (see Graves, 1983). For instance, Herzog and Schlottman (1991) found that high-technology workers were less likely to relocate in the face of lower home prices and property taxes, quality education, and higher levels of transportation accessibility. Highly skilled workers are also much more willing to pay for a high-quality public school or park system (Malecki, 1984; Rosenberg, 1985).

Very little empirical work has been conducted to test whether amenities attract firms directly or to link business location choice to worker residential preferences. Based upon a national survey of R&D facilities and their employees, Malecki and Bradbury (1991) found that firm preferences tended to closely match the preferences of their workers at the present location, indicating that firms were well aware of their employees' preferences. Quality of education and environmental quality were cited as the top two attributes that firms believe are most important to their employees. Firms and employees also gave high ranks to housing costs, recreational opportunities, climate, cost of living, presence of a university, and cultural amenities.

Gottlieb (1995) provides a more direct test of whether firms evaluate employee preferences in the determination of their location choices. His hypothesis is that the firm selects a site to maximize amenities on behalf of employees in its commuter shed. His study is also among the few econometric studies that models location choice at a sub-metropolitan level, using data collected from 365 New Jersey municipalities on the location of engineering and professional service (SIC 87) firms. Gottlieb also generates a sizable list of independent

variables to measure business requirements, traffic conditions, crime, pollution, recreational opportunities, public education, and public services. His model accounts for the employee commuting by measuring amenities both within and across local municipalities as a declining function of distance from the worksite. The results are largely supportive of his hypothesis of the firm as an amenity-maximizing agent. Significant commuter-shed variables include proximity to rush-hour trains, property crime, toxic wastes and teachers per pupil. Violent crime is one of the few factors that influence firm location when evaluated at the work site.

Is Quality of Life a Regional or Site-Specific Factor?

If QOL is of greatest value to residents, then it follows that most QOL factors are most important at a regional or metropolitan stage of site selection. Workers can choose to live nearly anywhere within commuting distance from the worksite to satisfy their lifestyle preferences, allowing businesses to focus on the broader QOL attributes of the larger region. Although employees may prefer to live within a relatively short distance of the work-site, research suggests that workers are often willing to suffer longer commutes for better living conditions (Rogerson et al., 1989). There are almost always likely to be some decent areas to live within commuting distance of the worksite within a metropolitan area (Wong, 2001). Following this logic, several analysts recommend that a QOL-oriented economic development strategy would be more effective if it improved the overall attractiveness of the region through a coordinated strategy across localities (Gottlieb, 1994; Blair and Premus, 1987). Local efforts to improve residential amenities as a local business development strategy are likely to fall short of their intended goals. The firm is likely to be more attracted to a worksite with cheaper local taxes, property costs, and/or better local infrastructure than a community with a higher taxes but better residential amenities so long as the worksite is not plagued by high-levels of violent crime or other great disamenities. The major exception is perhaps small, owner-operated businesses where the choice of worksite is conditional upon the residence of the owner-manager (Halstead and Deller, 1997).

The fact that the amenities are valued most as a factor in residential location does not mean that localities should completely abandon QOL as a potential economic development strategy. QOL factors have spillover effects for neighboring jurisdictions. A firm may prefer low taxes and amenity expenditures at its immediate location, but it also considers residential amenities in neighboring areas (Gottlieb, 1995). The poor quality of life of one or a few localities is likely to impede the development of all other jurisdictions within the same metropolitan area. This is particularly true for a central city whose condition is likely to dominate perceptions of the entire region. Recent empirical work suggests that the fate of a central city and its suburbs remains inextricably bound and that a declining central city stifles the long-term development of its suburbs (Voith, 1998). The centrality of the traditional downtown makes it an ideal location for large-scale amenities such as museums, stadiums, zoos, and entertainment districts that require wide regional patronage to be viable. These centrally located, large-scale developments can have significant spillover benefits for the entire region. They may also have more localized benefits for the inner-city itself. Although beyond the focus of this study, existing anecdotal evidence suggests that many cities have successfully lured businesses and residents back to the inner city through their large-scale revitalization strategies (McNulty et al., 1985). Despite this, many suburban jurisdictions and suburbanites mistakenly

view themselves as largely isolated from their respective central cities. The recent growth of suburban and edge-city economies have further fostered this perception of independence. Many suburban workers now commute from suburb to suburb and have little direct contact with the urban center.

QUALITY OF LIFE AS AN ECONOMIC DEVELOPMENT STRATEGY

Quality of life is increasingly being viewed as a viable justification and operational paradigm for community planning efforts. QOL is an attractive concept for planners because it entails a comprehensive and proactive approach to local action. If effective, a shift to a QOL based economic development strategy offers a balance between a community's desires for business development and a diversified tax-base with other residential and community concerns. Under a QOL paradigm economic development expenditures become a long-term investment in the community, in other words, allowing local communities to have their cake and eat it too (Gottlieb, 1994). This is particularly attractive to advocates of sustainable development and smart growth, as residents grow increasingly concerned over the problems caused by unabated growth, such as traffic congestion, air quality, public safety and losing the feelings of community.

The arguments in favor of basing an economic development strategy on amenities and quality of life over traditional industrial recruitment strategies are based upon both equity and efficiency grounds. There is an intrinsic incompatibility between an amenity-based strategy and the traditional economic development strategies. Historically, economic development and amenity provision in local government have been separate functions. The goals of the two groups are often in conflict. The job of the economic developer is to attract growth while others work to clean up the congestion, pollution, or public safety hazards that are generated as a by-product of growth (Gottlieb, 1994). Many criticize the traditional tools of the economic developer to attract and retain business (i.e. grants, loans, abatements, etc...) as a waste of public monies that only work to the narrow benefit of a handful of firms (Love and Crompton, 1999; Segedy, 1997). Under an amenities paradigm, expenditures on abatements and incentives may be wasteful and possibly self-defeating. Tax abatements and incentives results in less money available for infrastructure, transportation systems, cultural amenities, education, and social equity, creating a downward cycle for future investment and lowering the quality of life for existing residents (Segedy, 1997). A switch to an amenities- and QOL-based strategy is not without equity concerns of its own. A local QOL strategy narrowly centered on providing residential amenities to attract professional workers and high-tech businesses may shift resources away from the region's low-skilled workers that are being left behind in the New Economy.

It is unclear whether a QOL strategy would be a more effective economic development strategy than traditional methods (Gottlieb, 1994). QOL advocates point to the mounting evidence that QOL factors are an important location determinant for both highly-skilled workers and footloose businesses. Although it is undeniable that QOL is important, the concept is too vague and subjective to warrant any claims as to its effectiveness as a policy strategy. Amenities are also much more of a long-term approach whose payoffs may not be felt for decades, making them a poor counter-cyclical development strategy (Gottlieb, 1994). Offering bonds, incentives, and subsidized training to help attract and retain businesses is much simpler and quicker than building community and combating sprawl. Lastly, as mentioned before, the residential mobility of households within a metropolitan area implies that the most effective amenity strategies would be regional, casting some doubt on the ability of individual communities to spur development by

upgrading residential amenities. A reasonable balance between taxes, amenities, and infrastructure is more likely to be successful approach than one that narrowly pursues amenities without regard to local business costs.

Wholesale abandonment of a traditional economic development strategy in favor of an active QOL strategy is likely to meet with strong resistance. While most economic development officials recognize the importance of local amenities in attracting jobs, few are committed to undertaking a widespread amenity strategy at the expense of more traditional tools (Gottlieb, 1994). Much of the profession remains mired in traditional thinking, although there is some evidence of a broadening of the profession in recent years. There is evidence that a “third wave” of economic development strategies is emerging. These strategies view the role of government as mainly enabling individual action or providing assistance as a stimulus for change, rather than as a direct provider of services (Eisinger, 1995). Some examples of emerging third wave strategies include job training and education, industrial modernization initiatives, community development, and developing industrial clusters to increase regional competitiveness. These changes are likely due to an awareness of the limitations of past policy efforts in light of the shift from an industrial to knowledge-based economy (Segedy, 1997). In general, third wave strategies are much more compatible with a QOL based strategies than traditional programs, but traditional strategies are far from dead. Along with the shift to third wave strategies, Eisinger (1995) also found evidence of a shift back toward traditional industrial recruitment methods as a response to political pressures for immediate results.

A focus on regional QOL requires closer coordination between economic developers and local planning personnel. It would also require a broader educational background for economic development professionals. Many economic developers come from a background in business and are ill-prepared to address wide-ranging issues such as growth management, education and community development that are likely to be central to a QOL program. Lastly, it would require a shift in the way that economic developers are evaluated and rewarded. The performance of economic developers is generally measured by the number of jobs created. Furthermore, the politics of economic development still strongly favors landing “big game” over long-range strategies whose payoff is rarely seen within a political term of office. An amenities strategy requires a much more solid commitment that must survive changing administrations and fluctuating business cycles.

CONCLUSIONS

The existence and scope of the New Economy is still hotly debated in academic and policy circles, but there is little doubt that new technologies, particularly those related to information technology, are likely to have widespread impacts on the spatial distribution of economic activity. The ultimate realization of these impacts is still uncertain. Thus far, only a handful of specific regions have emerged as “high-tech” centers, although there is evidence of the diffusion of high-tech industry across metropolitan areas as technologies mature.

In the past, high-tech and knowledge-intensive industries have demonstrated a distinct preference for metropolitan areas, particularly for suburban locations within these metropolitan areas. The agglomeration economies that provide the historical explanation for the concentration of activity in metropolitan areas remain important to modern business competitiveness. The agglomeration advantages of such areas are cumulative and historically dependent, making it unlikely that entirely new agglomerations will arise without a pre-established base upon which to build. It is doubtful that we will witness a massive rural renaissance in the near future. Although IT allows for a massive decentralization of both firms and individual workers through telework, the remaining advantages of agglomeration remain a strong force luring both workers and firms to co-locate in existing metropolitan areas.

The rapid proliferation of IT is leading to a decoupling of corporate functions, allowing each function to move to its own optimal location. Headquarters can remain in central cities, where corporate amenities abound, R&D functions can be moved closer to universities or areas with favorable quality of life that attract scientific workers, while back-office functions can be moved to smaller metros or suburban locations areas where land and semi-skilled labor are cheaper. The critical factor in the location of function in the New Economy is the trade off between communications needs and costs of location. Functions with great need for proximate communication will locate in cities, while functions with lower interaction needs can locate according to other requirements. Routine functions, such as back-office operations, are likely to be drawn to smaller metropolitan areas or suburban locations within these areas.

Quality of life factors has increased in importance to business location decisions in recent years, although they still lag traditional location factors when measured across all industries. Quality of life may still be thought of as “would-like” rather than “must-have” factors, whose value may be greatest when business executives must choose between regions that are fairly even on most cost and market access factors. There are several notable exceptions to this rule. Quality of life consistently ranks near the top of locational criteria for high-technology, R&D labs and other facilities that are more footloose in relation to traditional cost-sensitive location factors and place a greater emphasis on attracting and retaining skilled labor. Highly skilled workers are more mobile than other workers and often have market power over firms who desperately need their scarce talents. Quality of life is also critical as a location determinant for many small businesses for whom the choice of business location is contingent upon proximity to the residence of the owner/manager.

Quality of life is almost always associated with residential lifestyle preferences in empirical work. Furthermore, most researchers assume that quality of life matters only indirectly to the firm's location choice through worker preferences. Workers can reside nearly anywhere within a metropolitan area and commute to the worksite and thus quality of life matters most to the firm when choosing a region and not a particular site. If, for example, amenities only matter to regional business location choice, policies aimed at improving local amenities at the expense of business needs will do little to attract business to the community itself, although there may be some generalized benefit if the local amenities help improve the overall image of the region.

In general, there is a great need for more empirical research into the relationship between quality of life and business location decisions. To our knowledge, there have been no major survey studies of industrial location in well over a decade. The research interest in large-scale survey studies of business location preferences peaked in the early to mid 1980's with the notable work done by Schmenner (1982), Premus (1982) and others. Since that time, the interest in QOL as an economic development strategy has grown considerably. Policy makers see QOL strategies as a potentially effective means of business development while furthering other developmental goals such as reducing congestion, improving air and water quality, preserving the local natural environment and open space, and upgrading cultural and recreational amenities for residents.

Empirical research into the economic potential of QOL has not kept pace with the growing need for policy guidance. Much of the recent evidence on the value of QOL to business location decisions has been based upon revealed preference studies using highly aggregated geographic units of analysis and generalized measures of QOL. While recent stated preference studies have become more specific in their measurement of QOL factors and amenities, the scope of analysis remains confined to single regions. Thus, these studies have limited application outside of their region of focus. Furthermore, recent changes in information technologies and in other modes of production have significantly altered the domestic economy. These technologies have the potential to dramatically revise the historical importance of physical proximity to businesses and workers. The location needs of businesses have changed. The survey findings from two decades ago may not be applicable in modern circumstances. Theory and the past experience of high-tech sectors of the economy provide clues as to the modern evolution of firm behavior, but without empirical backing these clues remain largely speculative.

Future survey research must include more precise measures of individual amenities and QOL factors. Early studies of business location decisions treated QOL as a holistic entity. QOL is a subjective concept with inherently favorable connotations. To inform policy, local decision-makers need to know how specific QOL factors influence business location choice. Survey research has been moving in this direction as QOL factors have taken center stage recent years. Future survey work needs to continue along this line of research and expand by investigating the influence of specific QOL factors as they differ by industry, firm size, and corporate function. Just as different industries and firms have different location preferences, so do workers. Recognizing the importance of knowledge workers to the New Economy, more research is needed to identify the specific factors that are most highly associated with a favorable QOL across different types of workers. Econometric studies need to continue to refine proxy measures of local amenities and QOL and to base their analysis at more disaggregated units of

spatial analysis. In recent years there have been great advances in the routine collection of disaggregated geo-referenced data driven by the growing use of geographic information systems (GIS) as a tool of local planning and governance.

Any additional research into business location and quality of life needs to respect the sequential nature of the site location decision process. Few studies attempt to distinguish the factors important for the choice of region from those important for the choice of the specific site, particularly in the context of specific QOL factors. A central assumption of the existing research is that QOL and amenities only matter to the residential preferences of workers, and as such amenities are only valuable as a regional development strategy. Although logically sound, this assumption remains largely untested and needs to be verified. A potentially fruitful line of research would be to investigate the relationship between spatial gradient of residential amenities and intra-metropolitan commuting – how far people are willing to commute in order to balance preferred residential amenities with their workplace location.

There has been relatively little research on whether QOL factors or other amenities influence the choice of a firm's location independent from worker location preferences. The single study to specifically address the issue of workplace amenities found that only violent crime had an affect on the firm's choice of a particular locality (Gottlieb, 1995). Amenities are almost always considered to be residential amenities, factors that offer direct benefits to residents but only indirectly to businesses. More attention needs to be paid to amenities and other factors that may have a differential impact on the location of residence and at the workplace. Workplace amenities may include more than just attributes that are attractive to residents. Localized workplace amenities are likely to include other business ventures, such as nearby restaurants, retail, and personal services (dry-cleaning, child-care, etc). Such concentrations of complementary business activity offer numerous possible benefits that may affect the site choice. The favorable mix of local area development offers convenience advantages for both the firms themselves and for the lifestyles of busy professional employees. Executives can hold lunch meetings or entertain clients in nearby eateries and clubs. Workers can drop off their children at day care in the morning, pick-up dry cleaning during their lunch break, and stop at the local grocer on the way home. Thus far, the rigorous measurement of such extremely localized agglomeration advantages has received scant attention in the empirical literature.

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APPENDIX A: PILOT STUDY OF BUSINESS LOCATION DECISIONS IN THE RALEIGH–DURHAM–CHAPEL HILL AREA OF NORTH CAROLINA

Introduction

This study contains two parts: a review of the literature and a pilot study of business location decisions. The purpose of the pilot study is to examine the actual location decisions of a small sample of firms that have recently located in the Raleigh, Durham and Chapel Hill (the Triangle) metropolitan area of North Carolina. The pilot study, though limited in scope, sheds light on the relative importance of quality of life, among other factors, in the location decisions of firms.

Sample Selection

For the pilot study, we contacted, by telephone, firms that had located in the Triangle within the last two years: from January 2000 to January 2002. Our sample of firms was derived from information provided by local Chambers of Commerce, from a local economic development firm that specializes in attracting new businesses to the Triangle, and from lists of new business permits from local jurisdictions. This approach resulted in an initial sample of over 200 new firms in the Triangle. There were some problems with this initial sample, however. Many firms registered with more than one Chamber of Commerce, so we ended up with some double listing of firms. Also, many firms in the initial sample had not yet opened for business or had gone out of business since opening in January 2000. And some of the “new” firms were actually old firms that had reorganized under new names. Other firms had changed their plans and decided not to move to the Triangle. Finally, for many of the firms listed, no telephone numbers were available. As a result, we whittled down the list to thirty-eight firms that met our criteria (located in the Triangle since January 2000 and involved in telecommunications, computing or consulting) and that could be readily contacted (i.e., had a listed telephone number). From this sample of 38 firms, we began contacting firms by telephone until we had 10 firms that agreed to be interviewed. This constituted our final sample. Thus, we did not attempt to conduct a comprehensive survey of businesses selected randomly from a large sample. Instead, we contacted a rather limited number of firms from the Triangle that met our criteria and spoke with ten of those who were willing to be interviewed. Again, the purpose of the pilot study was to gain some insight into the relative importance of quality of life in the location decisions of firms. Table 1 shows the number of each type of firm in the sample. Respondents, which in most cases were either the head of the firm or the director of human resources, were asked to identify the factors that were most important in making their business location decision.

Most of the firms in the sample were small—less than 50 employees. About half had less than 10 employees and only two had more than 30. Several of the firms were started by entrepreneurs who already were working (at another firm) in the Triangle. Others relocated from Georgia, Kentucky, New York, Virginia and as far away as England.

Table 1: Types of Firms Selected for the Pilot Study

Type of Firm	Number in Sample
Manufacturing	2
Consulting	2
Research and Development	2
Corporate Headquarters	1
Computer and Telecommunications	3

Interviews

The interviews contained structured and unstructured questions. An interview protocol was used to ensure some uniformity across interviews(see interview questions in Figure 1). Each respondent was asked about the type of business and length of time it had been located in the Triangle. In addition, respondents were asked to identify the main reasons for locating in this region, the importance of quality of life in the site selection process, and what quality of life means to them. Finally, we asked each respondent to rank, in order of importance to their location decision, the following factors: costs of land, cost of labor, coast of capital and quality of life.

Figure 1: Survey Questions

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1. How long has your firm been in its current location?
 2. Were you involved in making the decision to move the firm to the Triangle?
 3. What were the three main reasons why your firm chose to locate in the Triangle?
 4. How important was quality of life in your firm's site selection process?
 5. How does quality of life compare to other factors that were considered in your firm's decision to locate in the Triangle?
 6. What does quality of life mean to you?
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Responses

None of the respondents cited quality of life as being the most important factor in their business location decision. Several firms stated that quality of life was one of several important factors, including cost of land and the quality and cost of labor. "It's not just one thing," stated

one respondent, “it’s the mix.” Another respondent stated that “Quality of life wasn’t the most important factor, but if it [the Triangle] was a dump, we wouldn’t have come here.”

Other location factors cited as important include proximity to an international airport, a hospital system, universities, and to cultural and recreational opportunities. “We needed to be near an international airport and major highways, but access to restaurants, art, music, and entertainment was also important.” According to another respondent, “Sure, quality of life was important, but it wasn’t our only consideration. We also wanted to be near a major university and an airport with reasonable airfares.” Two firms stated that while quality of life was not the most important factor in deciding where to locate the firm, quality of life factors had become important in attracting and retaining good employees.

The meaning of quality of life varied among respondents. To some, quality of life meant a safe environment, mild climate, short commutes and low cost of living relative to income. To others, it meant access to cultural, recreational and professional opportunities.

A number of traditional factors in business location theory were also mentioned as important. Two respondents indicated that they had initially located in the area because a local university has a program that makes space available at below market rates. One, however, indicated that the cost of space was greater in the Raleigh–Durham–Chapel Hill area than elsewhere, but they came to the Triangle anyway because of access to a high quality work force. Two of the respondents stated that being near the founder’s home was important in choosing to locate in this area.

Conclusions

The literature review indicates that quality of life is becoming an increasingly important factor in business location decisions. The pilot study suggests that quality of life is just one of many factors firms consider in deciding where to locate. None of the firms interviewed in the study cited quality of life as the most important factor, although a number of respondents mentioned its importance to attracting and retaining employees. It appears that location decisions are generally based on a mix of factors, including costs of land, quality and cost of labor, access to decent transportation facilities, and in at least a few cases, proximity to a university and to the chief executive’s home. Also, quality of life means different things to different people.

Given the small sample size (10) in the pilot study, the findings can only be considered suggestive at best. A larger, more targeted study could examine in greater detail the importance of quality of life in the location decisions of firms. It could examine its importance by size, type (e.g., manufacturing or research) and location (central city, suburban, rural) of firms.