

Ideopolis: Knowledge Cities

A Review of Quality of Life Measures



the work foundation

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Summary

This paper reviews the literature on quality of life and cities, with an emphasis on the links between quality of life and economic success. It finds that:

- Quality of life is a vague term that is difficult to define. Generally, it can be taken as the contextual conditions that allow individuals to be happy. It varies by place and is determined by the preferences of the individual.
- Happiness is a fashionable term, but is extremely subjective and depends on genetic factors as well. For some, this implies that government policy should aim to improve quality of life rather than the more subjective 'happiness'.
- There is some evidence that quality of life can improve city competitiveness through attracting labour and firms, although it is not the only important factor. It has been suggested that quality of life is particularly important in the knowledge economy, although the evidence on this is inadequate. Arguments for the importance of quality of life tend to focus on the footloose nature of capital and corporations are seen are more footloose, the shift to the idea of an 'entrepreneurial city' and the growing primacy of human capital in the modern economy.
- A range of quality of life indices have been produced, offering a view on which areas provide the best and the worst quality of life. There are four main ways of producing quality of life indices:
 - Basic rankings – which list places by a range of factors (such as employment, crime or income) chosen by some theoretical or, more likely, practical justification
 - Perceptual measures – where a focus group or survey is held and people are simply asked to rate their quality of life
 - Studies which link rankings and perceptions – where people's perceptions are linked in some way to objective data, to produce weighted rankings
 - Econometric analysis – through which different areas are treated as providing different sets of quality of life attributes, and these are then mapped onto variables such as house prices or rents to establish the value people place on them

- Quality of life rankings are characterised by variability – the results of studies vary according to the methodology, data, spatial scale and variables included. Where studies have been carried out more than once, they are unstable and the results often vary over time. These studies tend to favour smaller towns and cities. There are three main types of study:
 - UK City Studies – Scottish areas tend to do well, but there is little consistency
 - International City Studies – Tend to be in developed countries, particularly Switzerland, Australia and Canada. Vienna and Zurich do well
 - Cross-country studies – Smaller, northern European countries tend to do well. These include Denmark, Norway, Finland and the Netherlands
- Questions remain as to the extent to which any new quality of life policy would differ from normal government policy, and whether quality of life should be a government objective. There is also a need for a greater understanding of what attracts different people to places, in particular knowledge workers.

1. Introduction

There is a common perception that cities offer a poor quality of life. Pollution, congestion and crime are all perceived as urban problems, whereas the countryside is viewed as cleaner, safer and friendlier. When people move to the country, or retire to the seaside, they are seen as moving to improve their 'quality of life'. The government has reinforced this perception with the 2000 Urban White Paper, which argued that poor quality of life in urban areas is driving out-migration (Urban Taskforce, 2000). But whether cities do offer poor quality of life depends in large part on how we define it. Most people live in cities, attracted by opportunities for wide and varied consumption, employment and the desire to live close together. We may complain about it, but we are also drawn to it.

Cities offer a range of quality of life factors. Edward Glaeser et al. (2001) argue that these derive from four basic interrelated amenities. The first, variety of goods and services, derives from the size of the city. A large number of people in a concentrated area provides a market for specialised goods and entrepreneurs willing to capitalise on economies of scale to provide them. The second is the physical setting of the city. Cities can be beautiful, with major architecture or local style. The third, good public services, is more debateable, but it is clear that major hospitals are more likely to be sited in a large city than a small village. Again, the size and concentration allow more specialised services. The final amenity is speed of access to the previous three. Cities are concentrations and so allow access to more areas. Add to these the traditional reasons people live together, such as being close to more friends and family than might be possible elsewhere, and the economic factors that encourage concentration, like the greater volume of employment in a diverse range of occupations. All these factors enhance quality of life, and all these are derived from the agglomeration that creates cities.

Quality of life in cities is important. In the UK, almost 90% live in urban areas (Denham and White, 1998). Any efforts to improve the quality of life of city dwellers requires an understanding of their urban nature.

Quality of life also provides a way cities can compete nationally and internationally. Factors of production have been made increasingly mobile through phenomena such as political change, reductions in transport costs and, associated, improved technology. Businesses are

increasingly seen as 'footloose': able to move from place to place in search of low prices, rare factors and subsidies. Meanwhile, city governments are still fixed in specific places. This imbalance has been addressed by the idea of the 'entrepreneurial city' (Hall and Hubbard, 1998) and the shift in city government styles from managerialism (looking after economic activity) to entrepreneurialism (actively promoting economic activity). Cities are looking for new ways to embed economic activity into their localities.

Previously, mobile business was fixed to specific localities through legal restrictions, such as high import tariffs preventing external entry to the market. Alternatively, the industry may have been nationalised and so its location was determined politically rather than by market factors. But these interventions are increasingly seen as anachronistic in a global free market. Given a perceived shift in emphasis in economic development from fixed capital to human capital, it is instead regarded as important to attract and create high levels of human capital (Florida, 2002). Similarly, given international economic integration and the increasing importance of footloose industries, cities are competing to attract mobile businesses. Quality of life is one way in which this happens, and this may be more important given the shift to the knowledge economy.

As such, quality of life should be an important selling point for cities. This is more important in the US where factors of production, such as labour and capital, are relatively mobile (Cheshire and Magrini, 2004), and is reflected in the profusion of US quality of life rankings (or indices). The seminal city ranking in the US was the Places Rated Almanac, first published in 1981. This book ranks US metropolitan areas through a variety of 'quality of life' criteria, from house prices to 'the arts'. The almanac has led to a variety of similar studies, all taking advantage of the high labour mobility of the US and the lack of information on other places. Similar exercises now take place internationally, allowing expatriate executives to move to nice places (e.g. Mercer, 2005) or within countries to allow people to move to nice areas (e.g. King and Keating, 2002).

This review aims to set out these arguments on quality of life, cities and competition. It is part of the Ideopolis project, a research project looking at knowledge cities. The preliminary definition for an Ideopolis is 'a city whose economic success is driven by knowledge and that has a high quality of life'. But this definition does not define quality of life and, as this paper will argue, quality of life is a hard concept to define. There is a need for a deeper, more subtle understanding of quality of life factors and how they relate to knowledge industries and their location in cities. It is also intended to inform the methodology behind the quality of life survey

which will comprise part of the Ideopolis project. In this review, to avoid issues around definition, city is used interchangeably with urban area.

The paper is structured as follows. First, quality of life is defined and distinguished from other related concepts. Second, it shows why quality of life is important to urban competitiveness. Third, it sets out how quality of life can be measured and how city league tables are compiled. Fourth, the components of quality of life are drawn out. Here, links are made between the quality of life literature and that on happiness – these are linked too little. Fifth, the results of these studies are summarised – a range of studies are included to show that which cities are chosen is dependent on the methodology (and the variables used). In conclusion, an argument is made that quality of life is an important area for spatial competitiveness, but one which most urban policies should be addressing anyway. Finally, several gaps in the literature are highlighted.

2. What is Quality of Life?

Quality of life is a broad, nebulous concept. How it can be measured depends on its definition, but many studies do not define it. Its meaning is often either taken as axiomatic or undefined and left to be interpreted from later statements (for example Wong, 2001). A few serious definitions have been suggested. Perhaps the best are the most vague, as they at least avoid missing out potentially important factors. For example, Eurofound (2004: 1) define quality of life as: “a broad concept concerned with overall well-being within society”. A more specific and academic definition is made by Lane (1996: 259): “Quality of life is properly defined by the relations between two subjective or person-based elements and a set of objective circumstances. The subjective elements of a high quality of life comprise: (1) a sense of subjective well-being and (2) personal development, learning, growth”.

The definition itself depends on the philosophical approach used, and this establishes how it can be measured. Brock (1993, cited in Diener and Suh 1997) divides quality of life into three main philosophical approaches. The first defines it according to a set of characteristics derived from ‘normative ideals’. This might include philosophy or religion. These characteristics may then be used to define quality of life. So a US quality of life concept may differ from a European one. For example, in some studies the local road network is used as a positive measure, whereas the reality is more complicated: some people prefer to be near large roads to allow them to move around more easily, others prefer relative isolation.

The second defines quality of life as satisfaction of preferences. Here, quality of life is defined as the ability of someone to obtain most of what they desire. It is assumed that, given a fixed budget constraint, individuals will maximise their personal utility by spending in the manner from which they derive the most pleasure. This idea underlies the hedonic pricing methods of establishing quality of life rankings.

The third philosophical approach defines it through the experience of individuals. Simply, if an individual says they are happy then they are assumed to be so. This question may be phrased in many different ways, but may just involve a question such as ‘how happy are you?’ This fits most clearly into the subjective wellbeing work, as discussed later.

Quality of life as distinct from sustainability, happiness, life satisfaction

Quality of life is often used interchangeably (or confused) with other terms including sustainability, happiness or life satisfaction. Helburn (1982, cited in Rogerson 1988) distinguishes quality of life from happiness in that it refers to: “the degree to which the necessary conditions for happiness in a given society or region have been obtained”. Quality of life is the context from which happiness, subjective wellbeing and life satisfaction derive. These vary according to the interplay with individual characteristics, which might be influenced by genetics, lifestyle choices or personality. So quality of life measures refer to the conditions in place that either hinder or permit happiness, they do not account for the intangibles themselves. Foley (2004) argues that this is a justification for aiming to improve quality of life rather than happiness, which is subjective or genetic and so beyond the scope of policy interventions.

The distinction between happiness, subjective wellbeing and life satisfaction is less clear. Happiness is generally the most media friendly term. Layard (2005: 12) refers to happiness as simply: “feeling good – enjoying life and wanting the feeling to be maintained”. Subjective wellbeing is defined the same way, and so is generally considered just a less catchy term for happiness (Argyle, 1996). Life satisfaction is similar, the difference generally arising from the question asked. For example, “How satisfied are you with your life?” as opposed to “How happy are you?” The term sustainability is also linked. The UK Sustainable Development Strategy (2005) sets out the meaning of sustainability as “a better quality of life for everyone, now and for generations to come”.

In practice, therefore, how quality of life is defined is a product of the organisation defining it. Sustainable development can be defined to incorporate a quality of life element, and quality of life indicators have then been collected with reference to sustainability. Health organisations may define quality of life with a health slant; the UK sustainable development indicators look at quality of life with an environmental focus.

This implies that quality of life indicators are both subjective and vague and so are often incomparable. But quality of life indicators do have some value, and the variation in the definition of quality of life does at least address the subjectivity of the concept itself. Indicators

are important for what they do show, but there is a need to disaggregate their components and match them against individual preferences.

3. Quality of Life and City Competitiveness

Quality of life can be seen as important to cities for at least three reasons: because the majority of the population live in cities; because quality of life can help to attract skilled labour, and; because it can help attract investment or mobile firms. There has been some speculation that quality of life is increasingly important to knowledge industries, which are less tied to specific places, and so are more attracted to those that offer a high quality of life. However, the evidence base is limited with the importance of quality of life to knowledge industry relocation depending in large part on how 'quality of life' is defined. Furthermore knowledge industries are still, to a large extent, tied to place.

This section reviews the evidence relating quality of life to migration and capital, and concludes with examples of how cities market themselves using quality of life.

Why quality of life matters

Given the perceived increase in the mobility of both workers and firms, there is a general argument that entrepreneurial local governments can use quality of life as a means of attracting both. Linked to this is the changing role of cities, which are increasingly seen as places of consumption as well as production. If consumption is more important and people are freer to work in a range of places, quality of life amenities such as art galleries, theatres or nightclubs gain importance as ways of attracting people. This perception has been reinforced by the idea that people will pay more for good quality of life, with evidence that these quality of life factors are an influence on house prices (Cheshire and Sheppard, 1995), and on wages (Roebuck, 1972).

This phenomenon, it is argued, is particularly acute in knowledge industries. So while many industries, such as personal service industries or extractive industries, are fixed in place according to the location of the client or the resource, knowledge workers and firms are seen as footloose, their financial performance being independent of location. Advances in ICT have allowed 'knowledge' to be transmitted globally at little or no cost (Salvesen and Renski, 2002). So whereas, for example, manufacturing industry is more dependent on transport costs and so access to markets, 'knowledge' can be produced anywhere and transported easily. This suggests that footloose firms will look for other factors when choosing where to situate, including a high quality of life for staff, and leads to the conclusion that knowledge industries will be more attracted by quality of life than non-knowledge industries.

The evidence on quality of life, migration and investment

The evidence to support this conclusion is less compelling however; while some exists, it is limited and does little to narrow down specific types of industry or migrant. There is evidence that quality of life is a factor in where firms choose to locate. Rogerson (1999) cites Healy and Baker's (1993) study of the EU's 500 largest companies. Of these, 10 per cent included quality of life factors among the most important reasons for moving to an area. Potter and Moore (2000) conducted a survey of 876 firms, looking at their reasons for locating in UK Enterprise Zones. Around 18.2% of inward investors and 17.6% of other firms give "physical environment" as being a factor in location choice. But, despite this evidence, it is acknowledged to be only one factor; others, such as inducements, proximity to markets, business costs and, perhaps crucially, labour force may be far more important (Wong, 2001).

When it comes to knowledge industries specifically, the argument that they are more drawn to quality of life than other sectors is half right. The literature demonstrates that knowledge industries are more attracted to quality of life. However, it also shows that knowledge industries are far from placeless – they depend on knowledge spillovers arising from agglomerations of similar industries, contact with like-minded people, or technological spillovers from universities. For example, Gottlieb (1994) found US high-tech firms prioritised the presence of a university conducting strong research in the firm's field and the availability of skilled labour above other factors. Knowledge industry is still very much tied to place¹.

The evidence is also slight regarding quality of life being an attraction for knowledge workers. There is a general anecdotal certainty that quality of life matters for the highly skilled (e.g. Finegold et al. 2004). Similarly, Butler argues that for middle class migration, "A key determinant in that decision is 'quality of life': not only the cultural and transport infrastructures, but also education and the opportunities for social reproduction, which are always at the heart of middle

¹ A corollary derives from the definition of 'knowledge workers'. As Ritter (1990) has pointed out, when the key decision makers move with the firm, a firm is more sensitive to quality of life issues. If the key decision makers in a firm are classified as 'knowledge workers', the impact may be greater.

class anxiety.” (Butler, 2004:270). Similarly, Loewendahl (2001) has argued that high quality of life has been a factor behind the success of the French Technopoles.

When quality of life is defined as including employment, there is some evidence that knowledge – and other - workers are attracted to particular places because of the employment they offer. One study for the Department of Trade and Industry (2002) concluded that highly skilled migrants were most likely to be drawn to “centres of excellence” in their specialism. Quality of life as a factor was included through proxies such as employment, learning about other cultures, earnings and standard of living. But, as almost anything can be included under the term ‘quality of life’, including economic, social and political factors, it is difficult to distinguish between quality of life and other factors.

Overall there is little specific evidence linking knowledge workers, quality of life and particular places, and what work has been done is largely associational, rather than looking at actual preferences. Richard Florida has done work on the “creative class”, arguing that they are attracted by tolerance and low barriers to entry for human capital. This has been tested by Florida using various regression analysis techniques. But by removing some areas from his models (Las Vegas and Sarasota) his ‘bohemian’ correlations become insignificant (Glaeser, 2004). Similarly, Demos (2003) have produced a paper listing the cities young professionals should prefer. But this paper links innovation in the form of patents, tolerance in the form of BME population and gay friendliness through the services provided to gay people. At no point does it ask the young professionals. Both types of study look at the type of area where knowledge workers live, not what attracts them to the areas themselves.

The continuing importance of place

Thinking about quality of life in cities, an optimistic argument is that local quality of life is beneficial in two ways: If a high quality labour force attracts business, and labour is attracted to quality of life, then by targeting quality of life cities can attract both. Furthermore, quality of life may provide a positive means of urban competition, benefiting locals without disadvantaging nearby cities, even if the strategy does not result in attracting business. While investing in quality of life may do little harm, the importance of quality of life is limited, as what evidence there is still places importance on traditional location factors such as proximity to markets:

quality of life is in many cases a 'would like' for firms when choosing locations, rather than a 'must have'.

Quality of life and city marketing

The dual incentive role of quality of life – attracting businesses and the people who work in them - has been recognised, to a great extent, by the ways cities market and develop themselves.

Manchester City Centre's 2001 Strategic plan demonstrates the motives for cities:

“The vision for Manchester is for it to be a European regional Capital with a quality of life and urban environment that is attractive for all who want to live, work, shop, play, and invest there.”²

Most local authorities include quality of life in their local plans. Regional development agencies also highlight it. Highlands and Islands Enterprise offer “a quality of life that is second to none”³.

But in this work, quality of life is often couched in terms of qualities that would be more appropriate for rural areas. The City of Chester talks about the quality of life deriving from the cities art galleries, but shows a picture of nearby countryside⁴. Again, quality of life is seen as about leisure and consumption, while the survey work on quality of life (see below) often uses factors such as employment and income. This creates confusion both about definition and about the types of policies that could impact positively (or negatively) on quality of life.

² Cited in: McKinnon, J. G. (2002) Manchester City Centre Best Value Review Final Report,

³ See www.hie.co.uk

⁴ <http://www.chestercc.gov.uk/main.asp?page=790>

4. Measuring Quality of Life

It is possible to isolate four basic methodologies for producing quality of life rankings. Each suffers from its own problems and has its own benefits. The first uses objective data: indices are produced ranking scores on existing data, such as wages, traffic congestion. The factors are chosen on the basis of some justification by the author, which might be an explanation for each factors inclusion in turn or a more complete theoretical framework.

The apparent strength of such rankings is that they appear objective because of their use of official data, but there is clear bias in the choice of variables. For example, a US study argues: “Our list doesn’t include categories like proximity to the opera, average number of ballet recitals per month, or driving distance to the nearest poetry reading. Chances are your shop foreman doesn’t care.” (King and Keating, 2002: 46). In many, particularly the more media friendly rankings, variable choice and weighting are ad-hoc (Burnell and Galster, 1992). There is a problem of how people relate to different factors, given the variety in preferences. Finally, these methods have been criticised for being reductionist, with the wide differences in the results between perceptual and statistical indicators highlighting these limitations (Rogerson, 1999).

The second is a subjective measure involving surveys or focus groups. Questions ask perceptions of a variety of measures including wellbeing itself or the factors which decide quality of life. For example, the European Union’s Urban Audit (2005) asks people to rate how satisfied they are with public transport, how integrated they feel immigrants are, and so on. The levels of satisfaction are ranked giving the quality of life index. Or they may come in the form of simply asking people to estimate their quality of life. Eurobarometer (Urban Audit, 2005) asks: “On the whole, are you very satisfied, fairly satisfied, not very satisfied, or not at all satisfied with the life you lead?” These measures are important because they account for the subjective. These studies normally take place internationally and seem largely consistent with the same countries scoring highly using the first method.

The third combines the previous two. A survey or focus group is taken to judge the preferences of different areas by asking them what is important for their quality of life. This is then used to calibrate an index derived from objective measures. The Economist Intelligence Unit (EIU, 2004) used the survey results for 111 countries as a way of weighting the various determinants

of quality of life. A regression model is then used to calculate the explanatory power of the quality of life scores. Their model predicts 80% of perceived variation in quality of life. These models are useful because they include both perceptions and objective information.

The fourth model assesses the value people place on various quality of life factors through the price they are willing to pay, or their revealed preferences. There are many different procedures for this. Some use hedonic equations that treat areas as a package of different characteristics, so their contributions to differences in house prices or rents can be inferred. For example Berger et al (1987) use hedonic methods similar to the third type, as they are sometimes used to calibrate 'objective' quality of life measures. So for example, high humidity is valued with a disutility of -\$2,996, whereas high sunshine is valued at a mean of \$2,945 for each incremental unit. Ottaviano and Peri (2004) look at the rents people are willing to pay to live in cities, to assess whether people value diversity as a quality of life factor. Controlling for other factors which might be expected to increase rents, they still find people pay more in diverse areas.

While sophisticated, the revealed preference methods are limited. They suffer from omitted variable bias, in that again only measurable factors are included. This is highlighted by the difference in the factors which derive from the perception surveys as opposed to those used in hedonic surveys (although this problem is only avoided in perception studies). Similarly, they are likely to gloss over the subjective nature of market transactions – some may gain consumer surplus from living in a city with a long commute time if they are less averse to driving, while others may have different preferences.

Furthermore, not all measures capture welfare, as price signals tend to be bad at reporting increased quality (Offer, 1996). An example is technological change, which may make something cheaper while improving its quality. This would be reported in price indices as a decrease in value, when in fact welfare has improved. Krugman (1998) uses the example of Viagra decreasing the national accounts, as it will lead to an increase in welfare but a decrease in money spent on candlelit dinners.

Is quality of life determined by location or culture?

Quality of life is subjective. Research by MORI has demonstrated this from a sample of 2000 people. By gender, men rated low crime, job prospects, wages and the cost of living, access to culture, sports and leisure facilities and low pollution levels more than women. Women rated affordable decent housing, shopping facilities, education provision, activities for teenagers, facilities for young children and community activities more important. There were similar results for other breakdowns. Older people (over 55) rated health services, public transport and shopping facilities significantly more important than those aged 15-25. Younger people (15-25) found job prospects, activities for teenagers, education provision and sports and leisure facilities more important.

But it is also clear that it varies consistently with place. So Oswald (1997: 7) reports Eurobarometer finding that more than half of the population of Denmark being “very satisfied” against only one in ten Italians. While this may be criticised as reflecting cultural differences, the EIU (2004) find that the quality of life scores of immigrants closely reflect those of the host country, not their country of origin. Surveys can produce reasonable answers, as they are consistently correlated with other more elaborate measures for life satisfaction (Donovan and Halpern, 2002).

This leads to criticisms of place based quality of life rankings as the methodologies appear culturally (and linguistically) biased. There is some evidence against this. Linguistic differences in life satisfaction research have been shown to be minimal: French speaking Belgians identify more strongly with Flemish speaking Belgians than with French speakers in France (Donovan and Halpern, 2002). Studying happiness, Veenhoven (2000) checks the ranks of nations on three questions about happiness- the relative results for each nation across the three questions are small, implying that linguistic differences are minor.

5. Components of Quality of Life

The components used in a quality of life study are rarely given a theoretical justification. Most often, they are simply included as a list of subjects. The following section lists the themes included in 14 studies and relates these to more scientific studies from the happiness literature. The happiness literature tends to isolate individual factors for study, whereas quality of life studies tend to work with many variables at once. If quality of life is the conditions which must be in place to allow happiness, quality of life rankings should be informed, at least in part, from the literature on happiness.

The studies reported here use all four of the methodologies, and look at a range of spatial scales. Both EIU (2004) and Rogerson (1989) use a survey to weight objective data. Mercer, Money Magazine, UNDP, Kirsty and Phil, Experian, Country life and Calvert Henderson just use objective data, albeit sometimes weighted. Urban Audit, Eurofound and Cushman and Baker, Healy and Wakefield use survey data. Only Berger et al (1997) use multivariate analysis of revealed preferences. DETR (1999) details the variables seen as important by the government.

Studies have been included here if they list the factors which are included in their index. Even media exercises, such as Kirsty and Phil's Best and Worst Places to Live in the UK, have been included as they give a populist idea of what is regarded as important. It only includes a selection of studies. For reasons of space and methodology it does not include the plethora of US city rankings. The factors included in these give a reasonable view of what is considered as quality of life, although all studies are limited by data availability

In general, there are perhaps four sets of criteria used, coming under four broad domains:

- Work and Economics
 - Income
 - Work
 - Fairness
- Social and Cultural
 - Social Capital

- Crime
- Cultural Capital
- Freedom
- Human Factors
 - Human Capital
 - Health
- Physical Factors
 - Weather
 - Environment and pollution

These sections represent the most commonly used variables. These are limited by the available data, and depend on the definition of quality of life used.

Work and Economics

Income

Fig. 1 Income variables in Quality of life Rankings

	EIU	Mercer HR Cushman etc	Urban Audit	Kirsty and Phil	Money Magazine	Berger et al. DETR, 1999	UNDP	Calvert Henderson Experian	Eurofound	Country Life Magazine	Rogerson 1989
Generic Income/ National Income Measure								X		x	
Material wealth (GDPPPC)	x						x				
Economic regulations		x									
Top 25% of income growth					x						
Economic output (GVA per capita)						x					
Investment (Man invest as % of output)						x					
Fuel poverty						x					
Disposable income									x		

Figure 1 shows the use of income variables in some quality of life rankings. They are clearly prominent, particularly in cross-national studies as a measure of economic success.

The link between income and happiness is more subtle, with an apparent paradox: “How can it be that the relationship between life satisfaction and GDP per capita is so strong cross-sectionally (i.e. at one point in time), and yet decades of economic growth have led to very modest gains in life satisfaction? A similar paradox can be said to exist at the individual level, with wealthier people being significantly more satisfied, yet general increases in wealth having not driven up average satisfaction.” (Donovan and Halpern, 2002: 18.) There are many theories on why this might be the case, but a generally accepted view is that beyond a certain threshold, happiness is dependent on relative, not absolute, income – we care more about our income relative to our peers than the absolute value of our income.

Studies have backed up this idea. Veenhoven (2000) finds national wealth has a convex pattern with reported happiness – diminishing in the extremes of income. Oswald (1997) has made a similar argument, that while happiness is growing with economic growth after a threshold the growth is very slight, implying a weak relationship at best. Lane (2000) has argued that

increased income in advanced economies does not promote wellbeing as most of the true determinants of happiness are externalities and are not included in price signals. In short, income has some impact on happiness but it is not dominant.

Work

Fig. 2 Employment Variables

	EIU	Mercer HR	Cushman etc	Urban Audit	Kirsty and Phil Money Magazine	Berger et al.	DETR, 1999	UNDP Calvert	Henderson	Experian	Eurofound	Country Life	Rogerson 1989
Employment	x				x	x			x	x	x		
Employment opportunities				x									
Ratio of average male/female earnings	x												
Working age people in workless Households							x						

Another factor clearly related to income is work. Most studies use an unemployment measure; some use a measure of employment as a percentage of the population of working age. Interestingly, the EIU uses two measures. They regard job security as important and also gender equality in earnings.

There is clear empirical evidence for the inclusion of unemployment as a quality of life factor. Oswald (1997) finds that unemployed people are significantly less happy than employed people. The increased leisure time does not compensate for non-pecuniary problems resulting from unemployment, such as lack of feeling useful and the sociability of work. This finding is replicated by Eurofound (2004) who find long term unemployment the most detrimental factor to quality of life. They find that those who are better paid regard their jobs as better. Controlling for income, Clark and Oswald (1994) find that job loss is considerably more important than other negative factors, such as divorce, in explaining happiness.

Fairness

Alesina et al. (2002) have found an association between high levels of inequality and decreasing life satisfaction in Europe, although not in the US. There is some evidence that fractionalised societies are less effective at providing public goods, as a wider spectrum are needed for people with different incomes and so providers are less able to predict demand or achieve economies of scale (Alesina et al, 2002). Given that many public services contribute to quality of life, this may reduce it.

However, only one indicator explicitly talked about inequality. The EIU used a ratio of female to male earnings as indicative of gender inequality (see figure 2).

Social and Cultural

Social Capital

Fig. 3 Social Capital and Societal Measures

	EIU	Mercer HR	Cushman etc	Urban Audit	Kirsty and Phil Money Magazine	Berger et al.	DETR, 1999	UNDP	Calvert Henderson	Experian	Eurofound	Country Life	Rogerson 1989
Social Measures													
Family life (Divorce rates)	x												
Dummy for high church/ union membership	x												
Socio-cultural environment (Censorship, limitations on personal freedom etc)		x											
Integration of immigrants				x									
Children in relatively low Income households							x						
Family and households											x		
Community life and social participation											x		

Social measures are often included in rankings as proxies for social capital. Family life, community participation and immigrant integration are all included. The EIU use a proxy

measure which accounts for either ‘high’ union membership or ‘high’ church membership, either of which is supposed to be an indicator of a vibrant associational life and so social capital.

It is clear that social relationships are key to individual life satisfaction, being more important than income and many other less subjective factors. First, single people across Europe are associated with lower levels of life satisfaction (Eurofound, 2004). Second, there is evidence in the UK that life satisfaction is higher among those who attend community groups more regularly (Donovan and Halpern, 2002). Third, and more subtly, an individual’s satisfaction with their community is also a significant influence on how they rate other quality of life variables – if they have good social networks they are likely to relate other items more favourably, even if they can be objectively judged as worse (for example through wages variables) (Turksever and Atalik, 2000).

Diversity of the population is theoretically important but rarely included in the indices. Here, only a perceptual question about immigrant integration has been included. There is some evidence that diversity increases the quality of life in a city. Ottaviano and Peri (2004) use data on wages and rents and show that people who live in ‘culturally diverse’ cities pay higher rents than those who do not. Similarly, Richard Florida argues that diversity of the population creates low barriers to entry for human capital; it is easier to be accepted. This can be seen as a quality of life effect.

Crime

Fig. 4 Crime variables

	EIU	Mercer HR Cushman etc	Urban Audit	Kirsty and Phil	Money Magazine	Berger et al.	DETR, 1999	UNDP Calvert Henderson	Experian	Eurofound Country Life	Rogerson 1989
Crime				x	x						x
Safety			x								
Violent Crime						x		x			x
Recorded robberies							x		x		
Vehicle related thefts							x				
Burglaries							x				

Crime is included in most quality of life studies. Normally this involves a generic or compound 'crime' variable. Violent crime is seen as particularly important, and for the perceptual Urban Audit survey 'how safe do you feel' is used. Rogerson (1997) found people rated violent and non-violent crime as the two most important factors for their quality of life.

Layard (2005) reports that crime is correlated with other social factors such as a lack of social links, but not directly to happiness. Although he does not report a direct correlation between crime and happiness, an indirect relationship is clear. Similarly, Alesina et al. (1999) find a correlation between crime and unhappiness across countries.

Cultural Capital

Fig. 5 Cultural and Amenity Variables

	EIU	Mercer HR	Cushman etc	Urban Audit	Kirsty and Phil Money Magazine	Berger et al.	DETR, 1999	UNDP Calvert	Henderson	Experian	Eurofound	Country Life	Rogerson 1989
Recreation (Restaurants, theatres, cinemas, sports and leisure etc)		x											
Consumer goods (Availability of food/daily consumption items, cars, etc)		x											
Lifestyle (Culture and leisure facilities, retail outlets, bars, cafes and restaurants, hotels nearby)					x								
Top 25% of arts spending						x							
Local identity (Distinctive architecture, links with writers/artists)													x
Cultural life/important historic buildings													x
Regular farmers market													x
Sporting or outdoor opportunities													x
Housing costs		x		x						x			
Housing Quality (% of unfit homes)							x						
Central city location						x							
Population density									x				
Proximity to regional centre												x	
Parks and open spaces					x								

Culture, amenity and lifestyle factors are among the most interesting, in part because there is such a diverse range of factors. Many are clearly subjective. Among the most interesting are

those used by Country Life magazine, as these include traditionally urban factors, such as shopping facilities and closeness to the facilities of a regional centre, in a rural ranking. Similarly, their variable for local identity is an interesting attempt to include perception information into an objective scale. Housing costs and quality is also seen as important, although this is only loosely an amenity factor. The happiness literature tends not to include these factors as they are difficult to measure.

A further issue raised here is about city size. Rogerson (1997) find their quality of life ranking dominated by smaller cities, and conclude that a settlement size of around 120,000 people is optimum. Country Life magazine argue for a place which is both ‘an island of tranquillity’ but must be close to a regional centre of some size. ONS (2004) compare 14 large and 10 medium sized cities, where large means a population greater than 250,000 and medium means between 50,000 and 250,000. In large cities unemployment was higher, demographic dependency higher and commuting to work longer. People living in medium sized cities were more likely to vote. Methodology also plays a part, with the choice of variables meaning they are often biased towards medium size urban centres (Bunell and Galster, 1992). How these factors are weighted depends on the size of the areas included: large towns have high levels of crime; rural areas have poor infrastructure and limited amenities.

Freedom

Fig. 6 Political variables

	EIU	Mercer HR	Cushman etc	Urban Audit	Kirsty and Phil	Money Magazine	Berger et al.	DETR, 1999	UNDP	Calvert	Henderson	Experian	Eurofound	Country Life	Rogerson 1989
Political stability (EIU index)	x														
Political/Civil liberties (Indices of)	x														
Political and social environment (political stability, crime, law enforcement etc)		x													
Human rights										x					
National security										x					

The inclusion of freedom is common in US international studies; perhaps more than any other variable it reflects the values of the researcher. It is hard to measure, and reflects other factors such as national income.

However, there is an empirical link between freedom and happiness. Donovan and Halpern (2002) report a general positive correlation between the level of “freedom” a country enjoys and its level of life satisfaction. Freedom is defined in terms of democracy, as the wellbeing of the population of different Swiss Cantons is linked to the number of referenda. They note that freedom and economic success may be endogenous determinants of each other; the direction of causation is unclear. Similarly, Frey and Stutzer (2000) find direct democracy and local autonomy raise wellbeing across US states. Veenhoven (2000) conducts a comparative study of happiness for 44 nations in the early nineties. His analysis is more sophisticated, including three measures of freedom: economic, political and private. Again, happiness is correlated with freedom, with economic freedom the most significant. This relationship is robust when controlling for the effects of national income.

Health

Fig. 7 Health Variables

	EIU	Mercer HR	Cushman etc	Urban Audit ruristy and Phil	Money Magazine	Berger et al.	DETR, 1999	UNDP	Calvert Henderson	Experian	Eurofound Country Life Magazine	Rogerson 1989
Health		x							x		x	
Within 30 miles of major teaching hospital					x							
Health (Life Expectancy)	x			x		x	x					
Health Provision												x

Health is generally included in quality of life surveys. Life expectancy is most commonly used, although the two measures here of service provision – proximity to a teaching hospital and the generic provision – are also seen as very important.

There is evidence to support the intuitive idea that happiness increases with health. For example, Eurofound have found some evidence that subjective life quality increases with health (Eurofound, 2004). But there is also evidence that health increases with happiness. Layard (2005) reports a study on a convent of nuns: “the amount of positive feeling that a nun revealed in her twenties was an excellent predictor of how long she would live”.

Human Capital and Education

Fig. 8 Human Capital Variables

	EIU	Mercer HR	Cushman etc	Urban Audit	Kirsty and Phil	Money Magazine	Berger et al.	DETR, 1999	UNDP	Calvert	Henderson	Experian	Eurofound Country Life Magazine	Rogerson 1989
Education	x			x	x							x	x	
Teacher-pupil ratio							x							
Working age people without qualifications								x						
Education (% of 19 year olds with level 2 qualifications)								x		x				
Adult literacy rate (2/3), combined primary, secondary and tertiary enrolment ratio (1/3)											x			

There is also a correlation between education and wellbeing, although this is mainly due to the better educated being healthier, earning more and having higher social capital (Donovan and Halpern, 2002). The effect of education alone is insignificant.

Education is included in most rankings as a factor although it differs in importance according to the age of the respondent (see above, MORI, 2002). For example, older people tended to value education less. General achievement variables are included in most studies, but other factors include those measuring education, those without qualifications and teacher-pupil ratio.

Weather

Fig. 9 Weather and Climate Variables

	EIU	Mercer HR Cushman et al	Urban Audit Kirsty and Phil	Money Magazine	Berger et al.	DETR, 1999	UNDP Calvert Henderson	Experian	Eurofound	Country Life Rogerson 1989
Weather and Climate	x									x
Climate and geography (Latitude)	x									
Precipitation			x		x					
Humidity					x					
Heating degree days					x					
Cooling degree days					x					
Wind speed					x					
Sunshine			x		x					

Weather is included in a few studies, but it is most often included in studies using revealed preference methods, of which Berger et al. (1987) is the only included here. Rain and sunshine are two reasonable proxy measures.

A body of mainly US empirical work studies the influence of weather on quality of life. First, by using the hedonic equations method shown earlier. Second, through calibrating weather variables into models of human migration. It generally assumed that weather is a reasonable component of quality of life (Rappaport, 2004).

But this is apparently contradicted by the rankings of the top quality of life cities, which place cities such as Vancouver (with relatively high rainfall) above cities such as Miami (with generally better weather). This is due firstly to weather being just one of many factors in quality of life. But, there is also evidence that while weather matters internally to countries, it is unimportant internationally. In the EU, there is evidence that population growth through migration responds to a variety of weather factors on a national level but not internationally (Cheshire and Magrini, 2004).

Environment and Pollution

Fig. 10 Environment and Pollution Variables

	EIU	Mercer HR	Cushman etc	Urban Audit Kirsty and Phil	Money Magazine	Berger et al.	DETR, 1999	UNDP	Calvert Henderson	Experian	Eurofound Country Life Magazine	Rogerson 1989
Pollution			x									
Visibility						x						
Total suspended particulates						x						
Effluent discharge						x						
Landfill waste						x						
Superfund sites (Contaminated ground)						x						
TSD Sites (Hazardous waste)						x						
Climate change (CO ² emissions)							x					
Air quality (Days when pollution Moderate/high)							x					
River water quality							x					
Wildlife (% change in farmland and woodland bird population indices)							x					
Land use (% of brownfield developments)							x					
Waste (Household waste, recycling)							x					
Energy								x				
Environment								x				
Pollution levels												x
Coast/Great Lakes						x						
Quality of landscape											x	

A small range of studies use a wide range of environmental variables. These are generally determined by data availability. A more interesting although subjective exercise was undertaken by Country Life, who looked at perceptions of landscape quality.

Rogerson (1989) found that people regarded pollution levels as important to their quality of life. Welsch (2002) uses cross-country data and evidence from panel surveys to assess the relationship between environmental preferences and quality with reported happiness. Urban air pollution is significantly and measurably correlated with subjective well-being. A German citizen would require compensation of around \$1900 US dollars a year to accept the levels of urban air pollution (nitrous oxide) accepted by Japanese people living in urban areas.

What's missing?

The above list is fairly comprehensive. Only a few factors are not included here, but may well be important. There is room for expanding some of the more interesting indicators included in the country life survey - local identity or distinctiveness may well be important, as Jane Jacobs (1961) famously argued about successful inner cities. Some evidence links marriage to happiness (Blanchflower and Oswald, 2004). Although it is hard to see how place might affect this, the proportion of married people may be correlated to happiness. Place might affect the number of couples with young children who live there through making it easy for them to do so, and cultural mores of a place may have some impact, but it is unlikely a city could or should impact on marriage. MORI (2002) highlight some factors that are not included here: specific activities for young children, some specific public services such as road care, shopping facilities (although these are partly covered by proximity to large cities).

6. Cities with a High Quality of Life

There are a plethora of studies ranking cities according to their quality of life. Many are based on a dubious and often absent methodology. This section presents the results of a selection of these studies. Those included here are based on some sort of stated methodology, which at least includes the characteristics included or the studies cited. It does not include studies without these, such as the “Jet Smile” study of happiness⁵ (a study of around 2,000 people looking at how happy they felt themselves to be, but published with little methodological detail).

These studies cover a range of scales and areas. The results of five UK studies are reproduced here. The first, the Teleconomy and Henley Management Centre Urban Behaviours study from 2003⁶ looks at the quality of life in cities specifically for 15-35 year olds. The study is based on perception data for five categories (Public Transport Efficiency and Value, Services/Amenities, Appearance/Cleanliness, Low or Reasonable Crime Levels, Entertainment Value). For each of these categories, respondents were asked to rank their city on a scale from Poor to Excellent. Counting those rating their city Good or Excellent, Leeds comes top with Birmingham and Manchester close behind.

The Kirsty and Phil⁷ rating ranks according to five categories: crime, education, environment, lifestyle and employment. The exact methodology, whether weights were used or not, is not included. Experian use a similar methodology, rating Local Authority areas.

Using a similar methodology for a wide area Rogerson (1997) looked at all UK urban areas and Rogerson et al. (1989) looked solely at the 38 largest UK cities. The studies used a two stage methodology. First, a national opinion survey of 2225 adults was used to calibrate the study. This was interesting in itself, with views differing according to factors such as age. For example, 73.8% of 25-44 year olds viewed education as ‘very important’ to quality of life, against only 32.5% of over 65 year olds. Next, this survey was then used to weight the objective measures of quality of life according to importance.

⁵ Available from http://www.smile-at.co.uk/Jet_Smile-at_happiness_study.htm

⁶ Available from: <http://www.teleconomy.com/waves/prog/urban/>

⁷ Available from: <http://www.channel4.com/4homes/ontv/bestandworst/>

Fig. 11 UK Quality of Life Rankings

	Rogerson et al.	Rogerson	Telescopy	Kirsty and Phil	Experian
Areas	UK's 38 largest cities	All UK urban areas	8 UK Cities	Areas, not cities	District not cities
Method	Perceptual/ Objective	Perception/ Objective	Perceptual	Objective	Objective
1	Edinburgh	Dumfries	Leeds	Epsom and Ewell	Chiltern
2	Aberdeen	Livingstone	Birmingham	City of Westminster	Wokingham
3	Plymouth	Kendal	Liverpool	Harrogate	Hart
4	Cardiff	Hereford	Manchester	Ashford, Kent	South Bucks
5	Motherwell	Inverness	Sheffield	Stratford-on-Avon	Ceredigion
6	Bradford	Eastleigh	London	East Hertfordshire	Waverley
7	Reading	Letchworth	Leicester	South Cambridgeshire	Elmbridge
8	Stoke	Havant	Bristol	Mole Valley	Mole Valley
9	Middlesbrough	Guildford		Guildford	Rushcliffe
10	Sheffield	Perth		West Oxfordshire	Surrey Heath

These UK rankings tend to prejudice cities at the expense of smaller urban areas. Larger cities have levels of crime, pollution and costs that rule them out (Rogerson, 1997). It is for similar reasons (in particular cost of living) that removes the South East from consideration in many studies, despite population growth in the area.

There is little consistency in the results, although the “Celtic Fringe” areas of the North and the East of the UK tend to perform well. More northerly cities are likely to be more affordable. The North-South divide is, for the purposes of these studies, often reversed, with the northern cities seen as outperforming the south in terms of quality of life. There is some evidence that those in the North West tend to downplay the value of quality of life in location choice, whereas those in the East regard it as more important (Wong, 2001). This may be because they have already

achieved it, or because it is less important to those who are worried about other factors such as employment.

Fig. 12 International Urban Quality of Life Rankings

	Mercer HR QoL Survey		EIU		Cushman et al.		Urban Audit		Sufian
Area	Worldwide, large cities		Worldwide, large cities		European Cities		Sample of 31 EU Cities		Large urban areas
Meth od	Objective		Perception al and objective		Perceptual		Perceptual		Econometric
1	Geneva	1	Melbourne	1	Barcelona	1	Malaga	1	Montreal
2	Zurich	-	Vancouver	2	Stockholm	2	Copenhagen	2	Seattle
3	Vancouver	3	Perth	3	Paris	3	Leipzig	2	Atlanta
4	Vienna	4	Vienna	4	Munich	4	Vienna	4	Dallas
5	Frankfurt	4	Toronto	5	Madrid	5	Braga	4	Houston
6	Munich	4	Geneva	6	Zurich	6	Luxembourg	4	Essen-Dortmund
7	Dusseldorf	4	Zurich	7	Geneva	7	Barcelona	4	Detroit-Windsor, USA/Canada
8	Auckland	8	Adelaide	8	Amsterdam	8	Stockholm	8	Melbourne
9	Bern	8	Brisbane	9	Lisbon	9	Munich	9	Toronto
10	Copenhagen	8	Sydney	9	London	10	Rennes	10	Tokyo
	Sydney	8	Copenhag en	9	Oslo			10	San Francisco
		8	Dusseldorf					11	Manchester, UK
		8	Frankfurt						(Birmingham 14)
		8	Oslo						
		8	Montreal						

A second group of studies look at international urban areas. For obvious reasons, these tend to focus only on the largest or most prominent cities. Figure 12 illustrates the rankings for five, which use different methodologies.

The two European studies differ hugely. Cushman and Baker, Healy and Wakefield. (2004) use a perceptual survey, asking chief executives which cities they feel offer their staff the highest quality of life. All European cities were included, but the results are clearly dominated by those with a high profile. Urban Audit (2005) asked a series of perceptual questions; reported here are the results that stated in which cities the highest number of people rated their quality of life 'good' or 'excellent'. Only 31 cities were surveyed, and being an EU initiative, Urban Audit does not include Zurich or Geneva (Switzerland) or Oslo (Norway). Three cities are common to both rankings: Barcelona, Stockholm and Munich. Interestingly, their order is the same. Cushman et al. tend to have larger cities, whereas the Urban Audit has a number of smaller cities ranking highly (Malaga, Leipzig and Braga all have populations under a million but all perform highly).

The three studies which look at worldwide large cities are Mercer (2005) using objective measures, EIU (2004) weighting objective measures with a perception survey and Sufian (1993) who uses revealed preferences. There are some clear differences. Whereas Mercer and EIU have no US cities, Sufian rates five as among his top 10. Incomparability is a failure recognised with these studies. Where studies are repeated over time, the results may fluctuate. For example, the rankings produced by Money Magazine shows very little consistency over time in those cities it rates in its top 10 (McCann, 2004).

Fig. 13 National Quality of Life Rankings

	UNDP		Eurofound		Eurobarometer
Method	Objective		Perceptual		Perceptual
	1 Norway		1 Denmark		1 Denmark
	2 Sweden		2 Finland		2 Netherlands
	3 Australia		3 Austria		3 Sweden
	4 Canada		-Sweden		4 Luxembourg
	5 Netherlands		5 Ireland		5 Ireland
	6 Belgium		-Luxembourg		6 UK
	7 Iceland		7 Belgium		7 Austria
	8 United States		-Netherlands		8 Finland
	9 Japan		-Spain		9 Spain
	10 Ireland		10 UK		10 Belgium
			-Malta		

In cross-national studies Scandinavian and other northern European countries do well. Norway is top of the UNDP ratings, although it is not included in the others, which are for European Union states only.

For the two studies looking at the EU, Denmark is best in both. These studies are perceptual and based on self-classified answers. For Eurofound, two questions are used: ‘All things considered, how satisfied are you with your life these days?’ and ‘Taking all things together, how happy would you say you are?’. These are scaled on 1-10 and summed. Eurobarometer ask the question: “On the whole, are you very satisfied, fairly satisfied, not very satisfied, or not at all satisfied with the life you lead ?” The figures reflect the numbers who are very or fairly satisfied with their lives.

The results of the studies are similar. With the exception of Malta, which is equal to the UK in Eurofound’s survey, the same countries appear in both. Given the limited sample, this is unsurprising, but it is notable that France, Germany and Italy do not appear in the top 10 in

either. Denmark performs best in both as smaller, richer states with consensual democratic systems - such as the Netherlands, Austria and the Scandinavian states - do well.

7. Conclusion

Quality of life is as hard to define as it is important to do so. In this paper it has been argued that it is a positive way for a city to compete in the knowledge economy, by attracting human capital. It may also be a good goal for government policy, as it implies prioritising what local people value. Quality of life is subjective, and so remains somewhat intangible, rendering producing accurate rankings of cities difficult. Only across countries is there a consistent view of which countries perform best. This is probably appropriate, given the vague nature of the concept.

But there are still a wide range of unanswered questions deriving from the non-specific nature of quality of life and which are consequently under (or un-) explored). A first set relate to government policy and quality of life. The government have looked at issues of quality of life and collecting better indicators to assess it (e.g. DETR, 1999). Quality of life, when related to happiness, can be an excellent policy goal if it implies setting the prerequisites in place to allow people to be happy, and this entails a focus on people's desires. But there is an issue about the extent to which improving quality of life is simply a matter of government policy anyway? Rogerson (1997) demonstrates what people in the UK feel would improve their quality of life – people regard factors such as crime and healthcare as important to their quality of life, but government aims to improve these anyway. Is quality of life simply city marketing, and what policies improve quality of life specifically and how are these distinct from other policy? Is quality of life a new policy goal, or just a new way of judging the success of the old ones?

A second gap in the research derives from the problem of reverse causality: does quality of life enable economic growth or does economic growth allow quality of life? The answer is probably both. Economic growth allows a range of factors, principally employment, which are vital to quality of life and happiness. It allows good public services and is inversely related to crime - both allowing quality of life. Similarly, there is some evidence that quality of life allows economic development. But this is further complicated by the changes in preferences that accompany changes in income: The environmental Kuznets Curve demonstrated that preferences for a clean environment increased with national income.

But there is a lack of clarity about the links between the quality of life in a city and its productivity. This might include commuting times being lower and the associated benefits to

business and the population, less pollution or crime and the social benefits being better or the attraction of knowledge workers. Many of the factors which are regarded as improving the quality of life, such as education or good health services, are policy goals in their own right.

A third area for research derives from the tendency for devolved territories, such as local authorities, to compete for mobile investment factors. This is known as territorial competition (Cheshire and Gordon, 1998). In many cases, it is harmful for the overall welfare of the state, although it may be beneficial in the short term to the individual developed territories. So, for example, car manufacturers in Brazil were given inducements by state governments in Brazil, although they would have cited there anyway. But, were a state to invest in quality of life in a city, and fail to attract quality labour or capital, would this money be wasted? It depends, in part, on the extent to which the quality of life factors which may benefit local people. Given the increased adoption of quality of life indicators by local authorities, there is a research gap here.

A fourth, related, area is around differential opinions of quality of life. All studies are targeted at certain groups. Mercer (2005) is targeted at rich expatriates, while King and Keating (2002) cheerfully admit to targeting lower wage labour. Rogerson (1997) looks at age differentials in perceptions of quality of life. But, while it is recognised that quality of life is subjective, there is little work differentiating groups.

A related and important issue has been hinted at in the literature. McCann (2004) argues that liveable cities are created “for one class fraction”. It is clear that people have difference preferences, and location choice differs according to a variety of personal factors. Are quality of life indicators disenfranchising certain groups at the expense of others?

A fifth potential gap derives from quality of life and investment. As demonstrated above, there is some work on this. But, again, there is a lack of research relating this specifically to knowledge industries. This may relate to work on clusters and biotech firms. It would be interesting to insert quality of life factors into traditional models of firm investment decisions.

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