QUALITY OF LIFE: A MULTIDIMENSIONAL ASSESSMENT OF WELL-BEING IN THE NATIONAL CAPITAL TERRITORY OF DELHI

ABSTRACT SUBMITTED TO THE UNIVERSITY OF DELHI FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

PREETI KAPURIA

DEPARTMENT OF BUSINESS ECONOMICS UNIVERSITY OF DELHI SOUTH CAMPUS NEW DELHI JULY 2012
Quality of Life: A Multidimensional Assessment of Well-being in the National Capital Territory of Delhi

Abstract

1. Introduction

Cities with their chaotic and clumsy development are considered a living negation of the concept of ‘good quality of life’. In spite of this, our present, and even more our future, is urban. Urban living is seen as preferable even with all its problems and pathologies (overloading, oversizing, ungovernability, etc.) because of the greater access to material and immaterial goods and services. City life is appealing because of its diversity. Great cities offer access to a wide range of cultural experiences, job opportunities and things to see and do. In this regard, urban living may be accepted, not as an inevitable ill, but as the object of planning strategy which aims at maximizing well-being. The benefits and costs of urban growth have raised the need to study the degree to which the necessary conditions for satisfaction with urban living exists in a given society or region. As a result, greater emphasis is now given to the assessment of quality of life in urban areas.

Quality of life could mean different things to different people, encompassing such notions as “well-being” centred on the individual to “good place” centred on the location. ¹ Quality of life is a vague and a difficult concept to define, widely used, but with little consistency. The lack of a standard definition has led to the interchangeable use of the term quality of life with other concepts, such as well-being, level of living, way of life, life satisfaction, happiness, and morale to name a few. “Some scholars put quality of life on a continuum; others argue that quality of life is a multidimensional concept.”² But most scholars recognize that quality of life is dependent on the exogenous (objective) facts of a person’s life and the endogenous (subjective)

¹ Dissart and Deller (2000: 135).
² Ibid., 136.
perception that a person has of these factors and of himself or herself. According to Szalai (1980) life quality refers to the degree of excellence or satisfactory character of life. A person’s existential state, well-being, satisfaction with life is determined on the one hand by exogenous (‘objective’) facts and factors of his life and on the other hand by the endogenous (‘subjective’) perception and assessment he has of these facts and factors, of life and of himself.

In the field of economics, quality of life is often associated, also sometimes from the individual perspective, with the concept of his/her social well-being. A major contribution in this field of research comes from the work of Nobel Laureate Amartya Sen (1987, 1993). Sen considers income and consumption as components of quality of life, but emphasizes assessing quality of life in terms of the capability of individuals to achieve valuable functionings: “capabilities (....) are notions of freedom, in the positive sense: what real opportunities you have regarding the life you lead.”3 “In assessing the quality of life, Sen argues, we must be concerned with intrinsic values-things that are valuable in themselves- rather than instrumental ones which are means to other ends. Positive freedoms and valuable functionings are amongst the chief objects of intrinsic importance. [...] Well-being- valuable states of being- is part of his conception of valuable functioning, and the quality of life is to be judged, in part, in terms of ability to achieve well-being.”4

“What mainly characterises Capability Approach with respect to other multidimensional approaches of well-being is that it is not simply a way to enlarge the evaluative well-being to variables other than income, but it is a radically different way to conceive the meaning of well-being.” 5

---

3 Sen (1985:36).
5 Chiappero-Martinetti (2000:3).
Attempts are being made to study the capability dynamics by locating people and groups in time. These studies allow one to consider whether or not a person or group situated at some point in time might become poor in the future. Literature on the Capability Approach has just started to explore such ‘vulnerability’. Applications of the Capability Approach have also used techniques to capture the vagueness of notions such as poverty, well-being and inequality more explicitly than other work on multidimensional measurement. Undoubtedly, the richness of such theoretical argumentation is not easy to translate into practical terms.

To conclude, quality of life cannot be defined exactly, and therefore one may likely to choose to study various facets and dimensions of the term rather than attempt to define it explicitly. What is implied by quality of life varies according to the way the term is operationalized in each study. However, from the vast majority of studies reviewed on quality of life it can be concluded that there are three alternative approaches to measure and define quality of life: 1) social indicators approach, 2) subjective well-being, and 3) economic indices.

The concept of “well-being” suffers from the same type of definitional problem as quality of life. The definition of well-being varies within individual disciplines. From an economic standpoint well-being can be defined or measured in two ways: 1) purely in terms of objective indicators, and 2) subjective well-being, which can be defined and measured as both satisfaction with life in general (unidimensional) and satisfaction with different aspects, or domains, of life (multidimensional). In this regard, subjective well-being is similar to quality of life models that combine objective and subjective dimensions: since there exist important associations between how individuals describe their levels of satisfaction with observable conditions of both themselves and the society they live in.

In this backdrop, the thesis provides measures of people’s evaluative reactions to their lives and society by providing two distinct accounts of quality of life that can together be termed as subjectively perceived quality of
life as against a completely objective perception. The aim is to capture the multidimensional nature of quality of life and well-being and quantify it for the purposes of empirical research. There are, however, problems of measurement arising mainly from the complex and vague nature of the concepts.

2. **Approaches to examine quality of life**

This thesis aims at examining the quality of life of people living in different parts of the National Capital Territory (NCT) of Delhi. Quality of life is quantified using three approaches. The first approach combines an assessment of the living conditions of the households in Delhi with an account of the vagueness of poverty. The notion of ‘vulnerability’ is introduced to depict the living conditions of households.

In the second approach, quality of life is measured in terms of individual assessment of well-being following Amartya Sen’s Capability Approach. Finally, in the third approach, an account of quality of life is provided by estimating the extent of access both the rich and the poor households, living in different parts of Delhi, have to basic services and how this access and the resulting satisfaction varies as locational attributes change.

Even though the second and the third analyses are considered as distinct pieces of research, they are, however, fundamentally related; at the centre of both the approaches, it is the human life and the state of its existence that is being discussed. Also, these two approaches address the same basic question: What makes a good life? On the one hand, it is the availability of basic services that are important for ensuring a certain quality of life, and on the other (as per Sen’s approach) good life includes many intrinsically important functionings. These functionings include everything from basic material such as being in good health and being adequately fed to others such as ability to act freely.
This thinking is in line with the view Dasgupta and Weale (1992: 119) have about the measures of quality of life:

“Measures of quality of life can take one of two forms: they can reflect the constituents of well-being, or alternatively, they can be measures of the access people have to the determinants of well-being. Indices of health, welfare, freedom of choice, and more broadly, basic liberties, are instances of the first; those indices which reflect the availability of food, clothing, shelter, potable water, legal aid, education facilities, health care, resources devoted to national security, and income in general, are examples of the latter. In principle it does not matter which route we take. Changes in a suitable aggregate of either the constituents, or the determinants, can be made to serve as a measure of changes in the quality of life in a society.”

The constituents of well-being, which Dasgupta and Weale talk about, correspond to the various functionings (defined in the Sen’s Capability Approach) based on which the individual assessment of well-being is examined in this thesis. While the determinants of well-being correspond to the extent of access people have to basic services translated into their quality of life.

Some of the services that are considered important for this research work are: availability of medical facilities and schooling options close-by, availability of green spaces in the neighbourhood, access to piped water on premises, adequacy of transport services, quality and ease of market facilities in the vicinity, condition of roads in the neighbourhood, regular maintenance services in the neighbourhood, and law and order situation in the locality. Precisely, seven basic services are considered. Also, people’s perception about their economic status and working conditions, social interactions and leisure activities, health status, psychological distress, if any, and sheltering situation
is sought (these five functionings are the basis) to measure well-being in consistence with Sen’s Capability Approach.

3. Measurement of quality of life and well-being

The notions of ‘well-being’ or ‘poverty’, ‘quality of life’ are intrinsically complex and vague. This is mainly due to the fact that these concepts involve a number of interrelated variables, dimensions and spaces with no clear cut boundaries between them. The degree of complexity increases as the number of dimensions, and the level of specifications of each dimension, grow. Vagueness relates to the idea that there is no clear cut borderline between those who are ‘poor’ (in terms of any particular indicator be it income or an indicator that depicts quality of life) and ‘non-poor’. In between these two extreme positions there is ambiguity and people belong to the set of poor and non-poor to some degrees. The idea of vagueness as a lack of clear-cut vagueness relates very well with the concept of indeterminacy and fuzziness.

In terms of the measurement issue, there is a range of multivariate techniques for dealing with multidimensionality, while the choice of tools to account for vagueness is limited. Chiappero-Martinetti (2008) emphasizes that the fuzzy sets theory is a better tool to account for vagueness as well as complexity compared to other techniques which are based on classical, bivalent logic and probability theory.

Vagueness and indeterminacy are fundamental properties of the fuzzy sets theory, which is a precise, well-specified, accurate tool for dealing with vagueness. Significant attempts have been made to analyze such vagueness using fuzzy sets theory. Compared to a crisp sets theory, fuzzy sets theory offers a broader class of aggregation functions for combining elementary sets—complement, union, intersection, and averaging operators—and the

---

appropriate aggregation operator can be chosen according to different contexts and purposes.

In this thesis the fuzzy sets theory is used to measure quality of life in the city of Delhi. Using fuzzy set theoretic poverty measures, living conditions of households in Delhi are depicted. Further, by assigning membership degrees to a given fuzzy set, quality of life is measured: 1) in terms of individual assessment of well-being in conjunction with the Capability Approach, and 2) with reference to the access of households to certain basic services in Delhi.

4. Research questions and overview of thesis

Research questions
This thesis answers the following research questions:

1. Should income be the only criterion to identify poverty /depict living conditions or we need other indicators to supplement income?
2. If one is to follow a multidimensional approach, instead of income or consumption based approach to estimate well-being, can we still expect misleading results? Accompanying questions are:
   i. In what respect is notion of well-being vague?
   ii. How can vagueness be captured in any estimation of well-being?
3. How does well-being vary among different socio-economic groups if one is to measure it according to Sen’s Capability Approach?
4. Is the quality of life of households assessed in terms of access to and satisfaction from basic services identical across Delhi or does it vary? Do locational attributes and economic condition matter in characterizing the quality of life of households?

Objectives of the study
Based on the research questions, the specific objectives of the study are:

1. To compare results from an income-based approach to analyzing poverty/ living conditions with that of social indicators approach.
2. To depict the living conditions of households in different parts of Delhi by capturing the intrinsic vagueness in the concept of poverty.

3. To evaluate how individuals’ value their ‘beings and doings’, and how individual assessment of well-being varies across socio-economic groups and between subsets and sets of functionings.

4. To characterize the quality of life of households across Delhi based on the extent of access different economic groups of households have to basic services, and how the access varies as locational attributes change.

**Hypotheses**

The thesis proposes to test the following hypotheses:

1. Income is the most accurate indicator of poverty and people’s living conditions.

2. Vagueness of poverty has no bearing on the estimates of living conditions.

3. Well-being achievements can be explained primarily on the basis of economic condition of the individuals.
   
   3.1 The degrees of achievement in any functioning or in subsets of functionings are independent of individuals’ characteristics: age, gender, present status of individuals, their nature of employment, level of education and marital status.

4. The extent of access to basic services is comparable between colonies approved by the Delhi Development Authority, colonies within the Delhi Cantonment Board and the New Delhi Municipal Council on the one hand and colonies that are unauthorized and for low income group on the other.

4.1. The extent of access to basic services is comparable between colonies approved by the Delhi Development Authority, colonies within the Delhi Cantonment Board and the New Delhi Municipal Council on the one hand and colonies that are unauthorized and for low income group on the other.

4.2. The extent of access to basic services in the lowest categories of colonies (i.e., F and G) and the best categories of colonies (i.e., A and B) cannot be differentiated.
4.3. The highest and the lowest economic classes have similar access to and satisfaction from basic services.

The chapters in the thesis are organized as follows.

In the introductory chapter, a review of alternative approaches to define quality of life is presented and its linkages to the concept of well-being are investigated. The latter part of the chapter, examines the intrinsically complex and vague nature of concepts of quality of life and human well-being and suggests a mathematical tool to capture this vagueness and complexity.

Chapter-2 presents a brief history of Delhi dating back to 1450 BC; the earliest reference to its settlement, expansion in Delhi’s urban area since 1901, trends in urbanization of Delhi and a brief note on the civic administrative divisions in the National Capital Territory of Delhi. The latter part of the chapter explains the survey process using relevant maps.

In chapter-3 an analytical framework is developed to capture vagueness that arises when we try to quantify ‘well-being’ or ‘quality of life’. An assessment of the living conditions of households in Delhi with an account of the vagueness of poverty is presented. The vagueness relates to the idea that there is no clear cut borderline between those who are ‘poor’ (in terms of any particular indicator be it income or an indicator that depicts quality of life), and ‘non-poor’. In between these two extreme positions there is ambiguity and people belong to the set of the poor and non-poor to some degrees. Using the 2001 Census of India data on housing amenities which has many relevant indicators of living conditions in Delhi, we draw a contrast between estimates based on ‘income’ poverty and those based on ‘human’ poverty. From the 2001 Census of India data on houses, household amenities and assets given in the H-series of the Census, we take five dimensions to depict the living conditions of households in the nine districts of the National Capital Territory of Delhi. These dimensions are: source of drinking water,
type of fuel used for cooking, source of lighting, type of latrine in the premises and specified asset availability. In addition, the extent of green cover (relative area under green area) in each of the nine districts is also taken as an indicator of living conditions. Notions like ‘definitely poor’ and ‘extremely vulnerable’ are introduced to explain how vagueness can be analyzed using fuzzy poverty measures. This sets the basis for using fuzzy set theoretic approach in analyzing quality of life in the subsequent chapters.

In chapter-4 quality of life is measured in terms of individual assessment of well-being in consistence with Sen’s Capability Approach. In the Capability Approach, well-being is seen as a broad and fuzzy concept that is intrinsically complex and vague in the sense that it is not possible to contain within clear and unquestionable boundaries. Moreover, well-being achievements, such as healthy living or education and knowledge, or participation to the social life can be better described in terms of partial fulfilment more than an “in or out” conditions. Fuzzy sets theory is considered as a useful tool for the treatment of “inexact knowledge” and approximate reasoning. The chapter explains in detail how this theory can be used to provide an account of the level of achievements in terms of certain well-being dimensions. The unit of analysis is an individual and the data are drawn from the survey carried out in 2009 at 36 different locations in the National Capital Territory (NCT) of Delhi covering 330 households corresponding to 1,267 individuals aged 18 years and above.

In the last approach and assessment of the quality of life, presented in chapter-5, the focus is not directly on individuals per se, but on the geographical dimension of quality of life i.e., comparing different locations according to a number of indicators that are assumed to reflect quality of life of households in those areas. The unit of analysis in this case is a household and the data are drawn from the same household survey conducted in 2009 comprising 330 households in the National Capital Territory of Delhi. The indicators, in this context, are a few important services that people need to
have access to. The access to basic services in the city of Delhi is studied in three respects (also referred to as locational attributes): at the district level; following the colony-status classifications of the Municipal Corporation of Delhi under which each of the surveyed colonies can be placed; and according to the categorization of colonies/locations as per the Municipal Valuation Committee- III. Using fuzzy sets theory, the objective is to estimate 1) the extent of access households have to basic services and the satisfaction that households derive from these services, and 2) how satisfaction and the access varies (a) as locational attributes change, (b) between the rich and the poor households.

Chapter-6 presents a synthesis and conclusions.

5. Results and conclusions

The indicators and measures selected, in the thesis, for monitoring different accounts of quality of life can help in identifying what is going well and where improvements are required. These findings can guide in evaluating policies, decision making and planning strategies for improving the quality of life of people living in the city of Delhi. There is a considerable difference between the picture of poverty that emerges from examining asset ownership (proxy for income) alone and that which emerges from the use of social indicators, which are motivated by the Capability Approach and other accounts of quality of life.

The picture of poverty that one gets from looking at income alone is rather narrow. It does not adequately reflect the living conditions of households. It only gives a partial view of poverty and household circumstances. There is a need to supplement this indicator with other indicators of poverty, as has been shown in the analysis. We need to separate out human poverty from income poverty. Further, poverty estimates can be enriched if distinction is made between people who are ‘definitely’ poor and
those who are ‘extremely’ vulnerable. Furthermore, in the Capability Approach, the notion of poverty is considered intrinsically vague (or imprecise) and complex. Fuzzy set theoretic approach is a useful technique to capture vagueness present in the concept of poverty that, if not addressed appropriately, may lead to imprecise estimates of the living conditions of households. Fuzzy sets allow for gradual transition from one state (most disadvantaged or full deprivation) to another (most privileged or full achievement) and are appropriate for modelling preferences and outcomes that are ambiguous.

From the second set of analysis based on the individual assessment of well-being, it can be concluded that the Capability Approach provides a very rich theoretical background to study individual well-being. The application of the Capability Approach (like the one presented in the thesis) empirically demonstrates the accuracy of policy advice that arises from a reliance on functionings rather than monetary measures, and suggests that these replace or at least supplement standard income measures. Individual assessment of well-being helps to highlight deprivation conditions (i.e., separated/divorced or widow/widower) otherwise hidden in the income inequality or poverty analysis, when the household is assumed as the unit of analysis. Similarly, differences in the levels of deprivation between male and female, young and elderly, within occupational groups and levels of education can remain unnoticed in the analysis based on the composite indices.

Within subgroups of population there is inequality in the functionings achievements. There is a gender disparity, mainly in leisure activities like going to malls and cinema halls, and economic status and working conditions. Women are seen to have relatively higher levels of satisfaction with sheltering situation, their economic status and working conditions, while men visits malls and cinema halls more often than women.
Similarly, performance on various functionings is related to the nature of job of individuals. Casual and daily wage earners have relatively lower levels of satisfaction with their economic status and work situation compared to individuals in government jobs. They also have very low levels of achievements on many functionings, like social interactions and leisure activities and the housing condition and satisfaction with housing. Also, the extent of variation in the levels of achievement between these two categories depends on the nature of functioning considered.

Huge disparities exist among different economic classes with the richest performing well in leisure activities, social interactions, sheltering situation, economic satisfaction and working conditions. Going to malls and cinema halls have the lowest performance for the elderly people, non-literate, poor, casual and daily wage earners, and widow or widower. Interestingly, elderly people have a high level of satisfaction with their sheltering situation.

Economic status and work situation improves with the level of education, age, household size and economic class. Casual and daily wage earners have relatively lower levels of satisfaction with their economic status and work situation compared to individuals in government jobs. The divorced or separated also find it difficult to make their needs meet. Lastly, satisfaction with shelter situation and quality of housing varies a great deal with household size. This result does not come as a surprise that individuals with one room house have lower satisfaction compared to somebody living in a house with five or more rooms.

The third part of the analysis of this thesis is focused on examining the extent of access people living in different parts of Delhi have to basic services provided by three civic administrative divisions of the National Capital Territory (NCT) of Delhi. Determining the extent of access to basic services is not a crisp outcome that divides the elements of a given universe into two groups: those that certainly have access and those that certainly do not have
access. There will be cases where access is partially achieved: a sharp, unambiguous distinction between the two opposite cases certainly exists. Using fuzzy set logic one can determine the access in the in-between zone where the access is partial. In an urban environment access to basic services is largely dependent on where the household is located. In order to have a better understanding of how accessibility varies as locational attributes change, nine colony-status classifications are taken under which each of the surveyed colonies can be placed. In addition, categorization of colonies according to MVC-III is also taken into account.

Of the seven services selected, satisfaction from and access to transport services in Delhi is the poorest. The percentage of households that are fully satisfied with the existing transport services is only around 6 per cent, while about 13 per cent of the sample population is not at all satisfied or does not have access to these services. On the other hand, 75 per cent of the population is fully satisfied with the local market facilities in their respective locations. Following this are the services like availability of green spaces in the neighbourhood (27.8 per cent have complete satisfaction), safety (24 per cent find their localities completely safe), and sheltering provision (22 per cent consider housing locations and structure of the housing completely satisfying).

Besides, the rich households have improved access to mostly all the services than poor households. Though, the variation in the extent of access between the rich and the poor is not always high.

Looking at a detailed picture across districts and various categories of locations, it seems that both North and North-East districts are poor (though in relatively different degrees) in terms of availability of certain services like, regular maintenance and condition of the roads in the neighbourhood, presence of green spaces close-by and their up-keep, law and order situation, accessibility to the nearest metro station, adequacy of transport services,
satisfaction with the quality and ease of local markets, availability of piped water on the premises and the available schooling options in the vicinity. New Delhi, on the other hand, seems to be doing well in providing most of these services. It turns out that the status of the locality and its categorization by the Municipal Corporation of Delhi (MCD), have an important role in ensuring that certain basic services are made available to the households living in these locations. For example, a majority of poor services are found in resettlement colonies for low income group including Jhuggi-Jhopri colonies (RCLOW), colonies in special areas which are part of old development (SPAREA), unauthorized colonies and urbanized villages, while the best services are found in colonies located under the other two civic bodies like the Delhi Cantonment Board (DCB), the New Delhi Municipal Council (NDMC), and also in colonies set-up by the Ministry of Rehabilitation (MoR) at the time of partition in 1947. The access to and satisfaction with services is, by far, greater in colonies formally recognized by the civic administrative divisions of the NCT of Delhi compared to informal set-ups.

In addition to the above mentioned classifications of localities, the categorization of localities done by the Municipal Valuation Committee (MVC-III) in 2010 is also taken into consideration. The Committee has ranked different localities in Delhi on a scale from A to G, with G being the lowest on the scale. Considering these rankings, the results do not come as a surprise when it is observed that poor services are found in F and G categories of areas, whereas localities belonging to category A, DCB and NDMC areas have a relatively better provision of services.

The results clearly distinguish among these classifications and emphasize on these aspects as important factors influencing the availability of services.
References


