Spatial Pattern of Dimensional Urban Socioeconomic Status: 
A Case Study of Moradabad City using GIS Techniques

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Abstract
The present study is empirical in its treatment of the theme of inquiry. A large number of variables containing numerical information on population and its socio-economic status, environmental conditions of life and use of city space are analysed in the present investigation. Thus, considerable data have gone into the analysis. Since there is no single comprehensive source of the required information, various sources both primary and secondary are explored to this effect. This analysis is based on household sample data including 37 variables on, education, occupation, income ethnic recreation and facilities. The processing has involved some simple and some complex techniques are also used to classify wards and indicators into groups like nested means and standard deviation methods, and factor analysis.

Introduction
The purpose of the study has been to examine the urban social areas reveal a variety of housing, social, economic and ethnic characteristic an important theme in current urban social geography. The study of their characteristics and areal differentiation within the city milieu may throw light on the prevailing social condition. Such a study may contribute to the exposition of social well-being and socioeconomic status present in different part of the city and may be fruitful to urban planners, administrators, geographers and sociologist such studies are relatively rare in India. Study of this kind therefore is necessary to understand environmental degradation and quality of life, but these investigations have been few and inadequate. In this paper an attempt is being made to analyse the spatial pattern of human living condition in the city of Moradabad. It is an attempt outline in brief theoretical and conceptual framework to identify the main component of quality of urban life in the
Indian context.
It is an attempt to analyse and describe the nature of social characteristic. The major part of article is concerned with outlining the results of a study of the quality of urban life inMoradabad in which dimensions underlying the social structure are described and their spatial pattern analysed. In order to analyse the socio-economic status ofMoradabad, thirty seven variables are selected which the author thinks are indicative of the quality of life.

Study Area
Roughly rectangular in shape, the Moradabad district is situated on the right bank of the Ram Ganga River and the biggest district of newly created Moradabad division. It lies between latitude 28º19´ and 29º16´ N and longitude 78º13´ and 78º59´ E, covering geographical area of 3646.5 Sq. Km. and population of 296,52,93 persons according to 1991 census.

The main objectives
The principal objective of present study is to quantitatively analyze socio-economic structure of Moradabad.
(1) To study the physical characteristics of the area, which provides a basic factors have helped in making the particular environment.
(2) To assess the socio-economic status and study work in the concern field in 2009-2010.
(3) To assess the factors which governs the quality of life or social environment measured in term of material and housing condition, territorial stress, amenities and infrastructure, education and recreation, of the sample households in different wards of the city.
(4) To assess the social problems among different socio-economic groups of the sampled household and the respondents view towards its improvement.

Data used and Methodology
The present study is empirical in its treatment of the theme of inquiry. A large number of variables containing numerical information on population and its socio-economic statues, thus, considerable data have gone into the analysis. Since there is no single comprehensive source of the required information, various sources both primary and secondary are explored to this effect. The data for studying the household characteristics as well as conditions of dwelling which form the immediate environment in which population lives were drawn with the help of questionnaire from a comprehensive household survey of the 70 wards of Moradabad city. Data has been collected on the basis of questionnaire and interview method. Arrangement of the data
and then data has been converted into tables. The data and information thus collected and were computed by factor analysis technique and on the basis of factor score spatial distribution of socio economic status have shown. Finally maps are digitizing by applying the GIS techniques. Socio-Economic Status The socioeconomic status of the family was classified based on attributes of housing condition, education, occupation, per capita income, and ownership of consumer durables like a car, television, etc, in the household (Singh et al 1997d). Per capita income was calculated by dividing the total income of the family by the number of family members. Socio-economic status (SES) 1 was the highest social class and SES 5 the lowest social class. Socioeconomic status of Moradabad city. This dimension structure alone explains 29.45 per cent of the total variance. An examination of the highest loadings on this factor suggests that the variables with positive loadings are income, three ethnic variable one demographic and three educational variables. These variables can be regarded as the basic indicants of the socio-economic status. The higher status is associated with the positive sign of the loading which represent a high level of social and economic well being. On the other hand, variables representing lower status are negatively loaded on this factor, Thus very low income (below Rs. 1500) per month and low income household (1599-3000) per month, load negatively are Medium income household (3000-6000) per month, high income (6000-10000 Rs.) per month and very high income household (above 10,000 Rs.) per month. All load high and positively on this factor. Besides these caste Hindus shows a positive relationship with dimension caste. Other is associated positively with this factor. Variable present attending nurseries and primary schools load positively. The highest positive loading is shown by medium income household (.883) which is followed by female under 5 years (.872) and percent cast other (.807) and percent attending high school (.798) In the social and economic setup of India education is not only a means of getting a respectable job but also a mark of social status. This explains not only the high loadings of educational variable on this factor but also a high association with the income variable as income determines the levels of access to education, the higher the income the greater the number of children going to school. These dimensions have the high negative loading of female 22-60 age groups and positive loading (.503). Highest negative association with income very low (below 1500 Rs.) per month (-746) can be understood in terms of association these variables to the level of socio-economic status of the population. The relationship of income with the socio-economic status is direct and so is the case of professional and managerial workers as their special skills earn large income. Literacy in the situation of mass illiteracy as in India is sign of socioeconomic status. However it takes on an added significance in the case of females as, due to certain social taboos and poverty which even prevent education of male, female literacy is very low Therefore, a high rate of female literacy
characteristic high status social group. (Table 1).

**Table 1**: Socio-Economic Status in Moradabad city in 2009-2010

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Variable name</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1</td>
<td>Per cent caste Hindus population.</td>
<td>0.526</td>
</tr>
<tr>
<td>X2</td>
<td>Per cent Muslim population.</td>
<td>0.231</td>
</tr>
<tr>
<td>X3</td>
<td>Per cent schedule caste.</td>
<td>0.479</td>
</tr>
<tr>
<td>X4</td>
<td>Per cent others.</td>
<td>0.807</td>
</tr>
<tr>
<td>X5</td>
<td>Per cent household with very low income.</td>
<td>-0.746</td>
</tr>
<tr>
<td>X6</td>
<td>Per cent houses with low income.</td>
<td>0.342</td>
</tr>
<tr>
<td>X7</td>
<td>Per cent house with medium income</td>
<td>0.883</td>
</tr>
<tr>
<td>X8</td>
<td>Per cent house with very high income</td>
<td>0.731</td>
</tr>
<tr>
<td>X9</td>
<td>Per cent house with high income.</td>
<td>0.627</td>
</tr>
<tr>
<td>X10</td>
<td>Per cent attending nurseries and primary schools.</td>
<td>-0.406</td>
</tr>
<tr>
<td>X11</td>
<td>Per cent attending middle level and high schools.</td>
<td>0.798</td>
</tr>
<tr>
<td>X12</td>
<td>Per cent attending intermediate.</td>
<td>0.109</td>
</tr>
<tr>
<td>X13</td>
<td>Per cent graduate postgraduate / technical.</td>
<td>0.512</td>
</tr>
<tr>
<td>X14</td>
<td>Per cent household with T.V. ownership percent male literate</td>
<td>0.433</td>
</tr>
<tr>
<td>X15</td>
<td>Per cent house with female literate</td>
<td>-0.024</td>
</tr>
<tr>
<td>X16</td>
<td>Per cent house with washing machine percent T.V. ownership</td>
<td>0.307</td>
</tr>
<tr>
<td>X17</td>
<td>Per cent house with telephone connection</td>
<td>0.472</td>
</tr>
<tr>
<td>X18</td>
<td>Per cent automobile ownership</td>
<td>-0.385</td>
</tr>
</tbody>
</table>
X19 Per cent male population -0.265

X20 Per cent female population -0.349

X21 Sex ratio 0.325

X22 Birth rate 0.401

X23 Death rate 0.267

X24 Population per room (persons per room) 0.203 X25 Room density ratio (no of rooms n a house) -0.352 X26 Population density. 0.465

X27 House density (congestion ratio / house per hectare) -0.495

X28 Per cent female under 5 years 0.126 X29 Per cent male under 5 years 0.872 X30 Per cent male 6-21 years 0.413

X31 Per cent female 6-21 years 0.508

X32 Per cent male 22-60 years -0.249 X33 Per cent female 22-60 years -0.743 X34 Per cent male above 69 years 0.328 X35 Per cent female above 60 years 0.022

X36 Cinema hall per 1000 population. -0.572

X37 Restaurant per 1000 population 0.146

**Source: by author**

Moderate positive loading of population density(.465)per cent female 22-60 yr age group (.508) moderate negative loading of congestion ratio, (income per 1000 of population (-496) reveals the
association of variable with socio-economic status. Their meager incomes place them in a socio-economic category that is the lowest on the scale. Association of Muslim with high loading on socio-economic status is quite indicative their place in the city. Ethnicity, the population of the city can be divided into three major groups: the caste Hindu, Muslim and schedule castes and caste others. For the reason of rigid caste stratification of the Hindus society with no chance of social mobility the scheduled caste population has always been add to the bottom of the socio-economic status. Despite much effort made by the government and other organizations their lot has not improved to the extent to make any significant change in their socio-economic status as a community, historically, Muslims have been dominant in this city politically as well as culturally. In fact after independence a major part of the Muslim elite migrated to Pakistan. In addition the abolition of zamindari varies and adversely affected a majority of Muslim populace who has been basically dhalayya and chillaye. This explains the relative significant loading of Muslims on this dimension, Positive and marginally significant loading of female 22-60 age group, male 6-21 age groups, and population per room. On the socio-economic status is perhaps typical of cities in the developing countries and reflect a differential patter of fertility behavior of the different social strata. The population of India shows a bottom heavy age structure which is characteristic of the growing populations in most of the developing countries. This is mainly due to the generally high fertility and relatively low mortality rates.

Conclusion

Fig. 2 exhibits spatial pattern of this dimension of socioeconomic status in the city of Moradabad. Figure shows that ten wards of the city score very high on this dimension. The factor score of these wards is above 1.00 standard deviation from the mean. In other words socioeconomic condition in these is good. These wards are concentrated in the outer zone of the city. Socioeconomic status of these wards is high because of high loading of income and two educational variables. The high socioeconomic status is found in fourteen wards of the city. These wards are located in the south eastern belt and some are in the northern part. The category of medium socioeconomic status obtains in twenty eight wards of the city. The factor scores in these ward ranges between 1 0.5 standard deviation around the mean. The spatial pattern of these ward is difficult to describe broadly it appears sectoral. Most of the wards of this category form north eastern running belts that extend from the southern to the northern zone. Two wards of this level are found situated west of the city and one in the centre of the city. The wards of this level of socioeconomic status are populated by a population whose economic status varies from very high to medium however majority of the population belong to medium income group.
The category of very low component score includes twelve wards. A cluster of ward number; 7, ward 20, ward 6, ward 21, and ward 4, 8 and ward number 53 are situated northwestern part of the city. These are situated in newly developed areas and include a large number of well planned colonies. This category is also characteristic of ward number, 57, 56, 32 and 60. These are found in the core centre of the city.

References

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