A METHOD FOR IDENTIFYING RESIDENTIAL QUALITY AREAS

A thesis submitted in partial satisfaction of the requirements for the degree of Master of Arts in Geography

by

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ABSTRACT

A METHOD FOR IDENTIFYING RESIDENTIAL QUALITY AREAS

by

Dominic Samuel Harveston
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Can residential land use in American cities be differentiated on the basis of quality? Through an examination of pertinent literature, it was decided that an operational definition of residential quality could be provided by the construction of an index based on housing value and condition data from the U. S. Census. The index is used to identify five categories of residential quality: (1) low quality, (2) low-middle quality, (3) middle quality, (4) high-middle quality, and (5) high quality areas. The results of this index are plotted at city block and census tract levels of generalization for Long Beach, California. The city block level proved to be superior to the tract level because it allowed for maximum detail and identification of residential transition zones in unplanned areas. Quality areas are examined by testing hypotheses dealing with: (1) distribution of population, (2) mobility of population, (3) occupations, (4) head of household income, (5) ethnic composition, (6) age of population, (7) structural age, and (8) nonresidential land use. Comments on these hypotheses are arrived at through
an analysis made from maps and simple correlations. It is shown that residential areas can be differentiated areally, and that a value and condition index provides a reasonably objective and comparable method. Testing the index through the use of hypotheses adds insight into residential quality; for example, it was discovered that non-white areas are practically all lower-middle or lower quality areas, that high quality areas are nearly totally occupied by whites, and that the poorest area of the city, that surrounding the central business district, is dominated by elderly persons.
CHAPTER I
OBJECTIVES

Urban Geographers agree that cities are divided into functional areas; that is, areas with homogeneous land use mixes that are dominated by such functions as housing, manufacturing, business, and recreation. Several scholars have put forth general models describing the overall areal pattern of such functional areas. Chief among these are the descriptive models of Burgess (concentric circles), Hoyt (sectors), and McKinzie, and Harris and Ullman (multiple nuclei). More abundant than the general works, however, are studies dealing with individual functional areas; for example, with the central business district, manufacturing districts, or residential areas. This inquiry is of the second type, and focuses on residential areas.

Urban residential areas differ; for example, there are apartment clusters, slums composed of single family homes, and mansion areas. Residential areas can be

identified or differentiated in numerous ways, among which are structural materials, house types, and ethnic background of inhabitants. One of the most significant bases for differentiating residential areas, however, is housing quality. The published literature on residential areas has dealt little with residential quality, referring to it only vaguely or inadequately.² The U. S. Census Bureau and the American Public Health Association have considered residential quality, but only in an indirect and general manner, with the result that the actual differentiation of residential areas on the basis of quality lies buried and uninterpreted.

It seems a definition of quality is in order. The dictionary defines quality as having to do with the character of something in respect to excellence, fineness, grade of excellence etc.³ When dealing with this concept in the city, any number of things could indicate residential quality: for example, street width, frequency of garbage collection, house color, and dwelling unit value. In this thesis the criteria used to evaluate residential quality are: housing value, structural condition, population density, mobility of population, occupational structure, income of head of household, ethnic composition, age of population, structural age, and areal relation of

²This will be a subject of Chapter II.

residential areas to non-residential land use. A comparable operational definition of residential quality will be offered in Chapter III.

This study has two main purposes. First, to answer the question: Is residential land use in the American city areally differentiated on the basis of quality? If such residential quality areas do exist, then a series of hypotheses of geographical significance can be examined; namely, that residential quality areas vary with, (1) housing value, (2) structural condition, (3) distribution and density, (4) mobility of population, (5) occupational structure, (6) head of the household income, (7) ethnic composition, (8) age composition of the population, (9) structural age, and (10) distribution of non-residential land uses.

The second purpose of this study is to develop a reasonably objective and comparable measure of residential quality. This requires an operational definition, and although the concept of quality has aesthetic and therefore subjective attributes, a definition embodying a reasonable degree of objectivity is sought. This requires that the components of the operational definition of residential quality be measurable and available for all individual housing units in a given study area. Therefore, the chief source of data is the U. S. Census.4

4U. S. Bureau of the Census, U. S. Census of Population and Housing 1960, Tracts and Blocks, Final Reports, PHC (1)
Long Beach, California is used as a study area. This city was chosen because the author is acquainted with it and because it is near Northridge, California, the author's base of operations.

This thesis has three remaining parts: Chapter II deals with background literature, Chapter III presents the procedure developed for measuring residential quality, Chapter IV is the case study, Chapter V is devoted to a conclusion and suggestions for further research.

and HC (3) nos. 82 and 48, U. S. Government Printing Office, Washington, D.C.
CHAPTER II
EVALUATION OF THE LITERATURE

This chapter presents an evaluation of the literature dealing with residential land use and serves three purposes: first, to examine ways by which various criteria have been used to indicate aspects of residential quality; second, to consider the adequacy of the published literature dealing with both residential quality in particular and with residential areas in general; and, third, to examine various techniques used to identify and analyze aspects of residential land use. The published literature may be broken down into five parts: (1) general theories, (2) natural and social areas of the city, (3) descriptive studies of particular cities, (4) methodological studies, and (5) studies of Long Beach.

General Theories

The studies of Burgess, Hoyt, McKenzie, and Harris and Ullman are important milestones in the study of the city. These works differentiate the functional areas of the city, and thus include residential areas in their land use categories.

Burgess recognizes several residential areas in his concentric zone concept: the zone of working men's homes, the residential zone, and commuters' zone.\(^5\) He also

\(^5\)Burgess, p. 107.
recognizes different ethnic areas; such as old Chicago's Little Sicily, The Black Belt, The Ghetto, and Deutchland. A major criticism of his theory is that it uses Chicago of the early 1920's as a model for all cities. This is not desirable because Chicago is only one city, and the processes involved in city molding may vary from city to city and certainly change through time. Hoyt's ideas on urban areal development were based on studies of the location and growth characteristics of residential rental districts. Different rental districts appeared to expand sectorally outward from the city center and to retain their rental level throughout. Hoyt saw this tendency as a framework for analyzing overall urban expansion.

In this study of land use in central Boston, Walter Firey, while highlighting the importance of social values and ideals in land use decisions, pointed out how both of the above theories are not true in all cases, and that while you can find most theories to be generally true, seldom are they iron clad.

The Multiple Nuclei theory which was first put forth by McKenzie and followed by Harris and Ullman, is probably the most realistic of those discussed here.

6Burgess, p. 107.
7Hoyt, p. 1.
9McKenzie, p. 50. Harris and Ullman, pp. 7-17.
because it shows a dispersed and multicentered type of landscape pattern. It does not, however, satisfactorily differentiate types of residential regions or give a method for delimiting them. The above studies present theories that are associated with the identification of the overall functional structure of the city and not just residential areas. The remainder of this chapter discusses studies that deal specifically with residential areas.

**Natural and Social Areas**

The concept of natural and social areas resulted from early attempts to conceptualize and establish methods of differentiating residential areas.

**Natural Areas**

Paul Hatt defines natural areas as follows:

> There are two general emphases in the definition of the concept of natural areas. One of these views the natural boundaries enclosing a homogeneous population with a characteristic moral order. The other emphasizes its biotic and community aspects and describes the natural area as a spatial unit inhabited by a population united on the basis of symbiotic relationships.10

In the same article, he makes another important distinction concerning natural areas:

> A distinction should be made here between natural areas as logical, statistical

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constructs integrated within a plan for research and the concept of (classical ecology) natural areas as a series of spatial and social forecasters which act as coercive influences upon all who inhabit the geographically and culturally defined areas.\textsuperscript{11}

These comments, of Hatt, are important since one is a method of identifying an area where there are similar residential characteristics, and the other is determining that residential characteristics must be a certain way.

**Social Areas**

Shevky and Bell write:

Our term 'Social Area' reveals the manner in which we group one set of units on the basis of their similarity with respect to their social characteristics. The concepts of the natural area and subculture are not unrelated to our concept of social area, for we view a social area as containing persons with similar social positions in a larger society. The social area, however, is not bounded by the geographical frame of reference as the natural area, not by implications concerning the degree of interaction between persons in the local community as the subculture. We do claim, however, that the social area generally contains persons having the same level of living, the same way of life, and same ethnic background; we hypothesize that persons living in a particular type of social area would systematically differ with respect to characteristic attitudes and behavior from persons living in another type of social area.\textsuperscript{12}

Although the work on social areas by Shevky and Bell has a great deal of merit, it is difficult to agree with their

\textsuperscript{11}Hatt, p. 427.

statement that persons from one social area will necessarily differ from persons in a different type of social area. It is easy to agree, however, with the notion that in a given residential area there is a similar level of living and the level of living can differ from place to place.

The social areas of Shevky and Bell seem to be the same as Hatt's natural area in that they are both inhabited by a population united by symbiotic relationships. More will be said later concerning the work of Shevky and Bell. The warning given by Hatt that, "This concept used as a logical statistical construct integrated with a plan of research," is a good one, and any other use of these concepts is dangerous.

One other fact that natural and social area concepts fail to recognize is the presence of physical boundaries, such as major highways, walls around communities, etc. This topic will be discussed further in another part of this study.

**Descriptive and Methodological Studies**

In the past, geographers, as well as others who study city residential patterns, have been content with describing particular residential areas, but they have not usually provided a general and reasonably objective method useful in situations other than the one with which they are

13 Hatt, p. 427.

14 Hatt, p. 427.
This is not a universal crime, however, and it must be pointed out that several useful techniques have been devised. First, a look at some works that are descriptive in nature.

Several studies may be classed as social geographies. Such efforts almost always discuss the residential areas of the city in question. Two examples are The Social Geography of Belfast by Emerys Jones and "The Social Geography of Dublin," by Joseph P. Haughton. Jones' work on Belfast is indeed a landmark in the field, but it leaves much to be desired. The work provides a good history of the growth of Belfast and much information on the physical geography of the residential areas. In the section on residential areas, the city is divided into popular local divisions and labeled with popular local area names. This, of course, is an arbitrary and subjective method for delimitating the residential areas of Belfast. Jones, however, does identify the valuation of

15 The articles by C. T. Phillips and Emerys Jones, as well as others to follow, are examples.

16 The articles by H. W. Green and Richard Morrill, as well as others to follow, are examples of those illustrating a technique.


dwelling units cartographically, thereby indicating the amenities and desirability of different parts of the city.\textsuperscript{21} His main discussion of Belfast is not along these lines, but along those mentioned earlier.\textsuperscript{22} If Jones were to combine his chapters on religion, population, and residential Belfast, he would probably have a much better study of the city's residential patterns. The book contains sections on the city history, central business district, industrial and residential sections, and theories of growth. It would be more aptly entitled An Urban Geography of Belfast. Haughton's work on Dublin is methodologically similar to Jones on Belfast, except much shorter.

Coy T. Phillips in, "The City Pattern of Durham, N.C."\textsuperscript{23} has a commendable idea for delimiting neighborhoods by grades. His grades are high, middle, and declining. He divides the white and Negro residential areas and then grades them separately. This approach is not desirable because a high-class white district is not the same as a high-class Negro district. This, however, is not the major weakness of Coy's article. His major fault is that his grades are entirely subjective and probably apply only to Durham.

\textsuperscript{21}Jones, p. 103.
\textsuperscript{22}Jones, pp. 1-26.
There have been several ecological studies, such as Edward D. Beynon's, "Budapest: An Ecological Study." This article, like others similar to it, is preoccupied with historical growth and with the distribution of population. This article adds little to the problem of delimiting residential patterns.

The studies just discussed present little or no methodology that can be applied in a reasonably objective manner in any city. The following studies, on the other hand, all present some technique which could be useful in delimiting and differentiating residential areas.

Howard Whipple Green published "Cultural Areas in the City of Cleveland" in 1931. This was one of the first studies of areas within the city based on the use of census data. Green used census tracts as the unit from which to build his cultural areas, a technique which can obviously be repeated.

Several years later (1949-1955) Shevky and Bell published their well-known and often criticized statement on, "Social Analysis." They, too, used census tracts as the building blocks of their social areas. They used a typology of three factors: social rank, urbanization, and

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26 Shevky and Bell, p. 5.
segregation for delimiting social areas. The use of these factors in delimiting social areas is a good one, but Shevky and Bell's method produced some confusing and possibly dangerous results. Hawley and Duncan commented on this danger when they wrote:

Presumably the physical features of a sub-area (speaking of a given social area in the typology) may either mold the human occupants to a common type or they may select occupants of a given type.27

Shevky's typology appears to have implications of determinism.

Shevky and Bell have one other shortcoming; this is the use of tract data instead of the smaller and more revealing block data. Several comparisons based on block data have been made between the early work of Green and that of Shevky,28 but it seems Shevky and Bell were unaware of them. In a criticism of the Shevky and Bell index, the Cowgills stated:

In all of the criticism leveled at the Shevky-Bell indices, no one has pointed out the flaw which is fatal to all of them. This is not to be found in the formula at all but in the units of measurement on which the formula are applied."29


28Shevky and Bell, p. 17.

The Cowgills suggested that block data be used because census tracts are too general, and thus a great deal is lost when the social areas are plotted. In real life, social areas or residential patterns are not coincident with tract or even block boundaries; therefore, the smaller the basic data area unit is, the more accurate the patterns will be. It seems strange that Shevky and Bell were not aware of this and did not bother to mention it at all.

In his book *The American City: An Urban Geography*, Raymond Murphy writes, "Population data by blocks from the Census of Housing represent the most detailed city population data available. But this very degree of detail is a handicap for a choropleth map. The resulting map would be very fine-grained, consisting of such small unit areas as to present a confusing picture that would obscure the broad general elements of the pattern." Several scholars who have worked on the city disagree with this position; a fact pointed out below and again in succeeding chapters.

As far back as 1935, Fisher, Ratcliff, and Philipson pointed out the advantages of using blocks as the basic unit in their study of housing in Peoria, Illinois. In

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the presentation of his sector theory, Homer Hoyt\textsuperscript{32} also used blocks. It is curious that neither Shevky and Bell nor the Cowgills mention these works.

Richard Morrill and Robert Klove also used blocks in their studies. Klove\textsuperscript{33} used them to delimit areas of blight in Chicago, and Morrill\textsuperscript{34} in a study of the expansion of Seattle's Negro ghetto. Morrill showed the expansion of the ghetto by the use of changes of percent of Negroes per block through time.

Both Robert Novak and George Carey used census tracts in dealing with Manhattan Island Patterns;\textsuperscript{35} however, in these studies census tracts correspond to blocks. This is unusual, but when present is beneficial to research. For example, Carey's use of factor analysis in delimiting residential patterns is a good one, but is applicable only in a city such as New York where blocks and tracts coincide.\textsuperscript{36}

\textsuperscript{32}Hoyt, p. 2.


\textsuperscript{36}Carey, p. 551.
A chief disadvantage of block data is that it is available only in the census of housing. Since the census of population does not include block data, much of the socially relevant data collected for the census of population is not available at the block level.

Robert K. Middleton measured residential quality through the use of block values. He used the city of Bloomington, Illinois, as an example and came up with a pattern that appeared similar to that proposed by McKenzie and Harris and Ullman. He also proposed an ideal residential pattern which looked like a combination of the concentric zones of Burgess and the sector theory of Hoyt. Middleton broke value down into four categories: high, upper moderate, lower moderate, and low. His idea is a good one, but is limited to the value of dwellings per block, and says nothing about the people who live in the dwellings.

Harold Creveling, in his study of the "Social Geography of Worcester," was interested solely in the distribution and delimitation of cultural groups. He paid little attention to the quality of the dwellings of different culture groups. When he did mention housing, it


His data came entirely from interviews in the field. Interview locations were determined by the use of a quarter mile grid superimposed over the street pattern, and were conducted near the intersection of the grid lines and at the center of each square. The value of this type of interview pattern or survey as compared to the use of a one per block type will be discussed later (see appendix B).

J. Tait Davis studied middle class housing in the central city. He based his delimitation of middle class areas on the distribution of a ratio of dwellings and income in the city; he used ratios of median values. While he admits that there are dangers in using median ratios, he states that such ratios are still indicative of trends. This is a good idea. The quarrel is not with his idea of delimiting middle class areas through the use of this ratio, but with a statement he made concerning the boundaries he set up. Davis writes:

An interesting feature of the housing patterns in most of the cities considered here is the frequent absence of a transition zone between different types of housing. In more cases than not, housing values represent plateaus separated from

39Creveling, pp. 16-19.
40Creveling, p. 17.
42Davis, p. 240.
each other by sharp value escarpments.

... Value traverses reinforce a conclusion that the boundaries between middle class housing and higher class areas tend to be as sharp and narrow.\textsuperscript{43}

There is reason for disagreement with his statement because of his data selection procedure, one taking a sampling of blocks from census tracts and classifying the entire area of each tract as a result of the sample.\textsuperscript{44} Why did he not just plot the entire tract data as provided or plot all the blocks as provided in the census? By doing this he probably would have obtained different results.

B. T. Robson conducted a study that dealt with the application of the classical models discussed earlier to both 19th century and 1961 patterns.\textsuperscript{45} He found that although they apply well to the past, they do not apply as well to the present. His method of delimiting the areas was based on private dwelling value ratings, and the level of generalization was the British enumeration district, the equivalent of the U.S. Census tract.

**Studies of Long Beach Residential Patterns**

Few studies have been made of housing condition and residential patterns in the city of Long Beach. In 1940,

\textsuperscript{43} Davis, p. 249.

\textsuperscript{44} Davis, p. 242.

the U. S. Census Bureau compiled a series of maps dealing with rent rates, but these maps were made for only certain sections and not for the entire city. They were not of direct value for this thesis because of their focus on 1940 patterns, and we are concerned with 1960 patterns.

Longmoor and Young, sociologists, conducted a study of juvenile delinquency and population mobility in Long Beach. They concluded that the city's land use structure conformed to the concentric zonal pattern. This may be true, but information gathered for this study indicated that it seems unlikely that clear concentric patterns really do exist in Long Beach.

In 1955, the Long Beach Civic League conducted what they called a comprehensive community survey. This proved to be a rehash of 1950 census data for the city as a whole, and not useful here.

In February of 1967, the Long Beach Community Welfare Council presented a compilation of 1960 census data concerning population characteristics of low income areas in


Although these data were not presented on maps, they were presented by areas of the city called "Health and Welfare Planning Districts." Each district is composed of several census tracts and as such were too general for use in this study.

**Implications of the Literature For This Study**

An examination of the literature published led to acceptance of the assumption that residential quality could be meaningfully measured on the basis of housing value and structural condition. This position was enhanced by the ready availability of value and condition data at the city block level of generalization. Examination of the literature also illustrated the inadequacy of most published studies of both residential quality in particular and residential areas in general, and led to some conclusions about ways by which aspects of residential land use have been identified and analyzed.

The assumption that residential quality could be identified on the basis of housing value and structural condition merits further discussion.

In the past the use of value has been the most popular means of indicating housing and residential quality. It was used by Hoyt, Davis, Middleton, Robson, and

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The validity of using value as the chief indicator of residential quality areas is perhaps best stated by Roland Jones:

On the basis of a sample survey in Herford (England) it was found that the lack of correlation between social status and the value class of the house occupied amounted to no more than ten percent at a maximum.51

It should be added that value data is probably the easiest to obtain because it is readily available in the U. S. Census and from most city governments. Also, such data are workable in cartographic form.

The use of the criteria of condition is admittedly close to value but it is also an indicator of dwelling upkeep and as such provides a little more information about the people in each house. Condition was used as an indicator by both Klove and Shevky; Klove in his technique for delimiting blighted areas52 and Shevky in his Social Area Analysis.53 The American Public Health Association also provides an appraisal technique for delimiting housing quality. In their technique the condition of

50Hoyt, p. 50; Davis, p. 239; Middleton, p. 352; Robson, p. 122.


52Klove, p. 35

53Shevky and Bell, p. 1.
dwelling units is considered to be an important factor in the assessment of health conditions in a community.

The use of dwelling unit value and condition as basic criteria in this study is further enhanced by their availability at the city block level of generalization for all housing units. This has been discussed at some length and will be elaborated further in the following chapters. It is conceivable that these two criteria verify and strengthen each other as indicators of residential quality. It is also logical to combine condition and value into a simple index of residential quality. By doing this the concept of residential quality takes on a greater degree of objectivity.

The following chapters will deal with the development of such an index of residential quality, and with questions that could be asked concerning such residential quality areas.
CHAPTER III

THE DELIMITATION OF RESIDENTIAL QUALITY AREAS

The purpose of this chapter is two fold: first, to develop a method for measuring residential quality and thus for determining residential quality areas, and second, to establish a procedure for evaluating residential quality areas once they are identified.

Source of Data and Level of Generalization

Urban residential quality in Long Beach can be examined on the basis of published statistics at least at three levels of generalization: (1) by health and welfare planning districts, (2) by census tracts, and (3) by city blocks. To illustrate differences between these three levels of generalization one housing trait value is examined at all three levels. The areal patterns produced are shown in Figures 1, 2, and 3.

In Figure 1 the mean values of dwelling units are presented by health and welfare planning districts. It can be seen that this reveals gross patterns and that little detailed information can be derived. This areal unit was rejected because of its generality.

When the same value data is plotted in tract form (Fig. 2) certain patterns begin to appear. Although there are still extremely large areas of $10,000 to $15,000 units, several areas of $10,000 or less appear in the city. One area of $10,000 or less appears near the geographic center.
VALUE BY SOCIAL WELFARE DISTRICTS

FIGURE 1

10,000 AND BELOW
10,001 TO 15,000
15,001 TO 20,000
20,001 TO 25,000
25,001 TO 35,000
35,001 AND ABOVE

SOURCE DATA: U.S. BUREAU OF THE CENSUS
Figure 2. Value Areas by Dwelling Units (Tract Data).
Figure 3. Value Areas By Dwelling Unit (Block Data).
VALUE AREAS BY DWELLING UNIT

- 10,000 and Below, VS
- 10,011 to 15,000, V2
- 15,001 to 20,000, V3
- 20,001 to 25,000, V4
- 25,001 to 35,000, VS
- 35,001 and Above, VS

SOURCE Data: U.S. BUREAU OF THE CENSUS
BASE MAP COMPILLED FROM U.S. DEPT. OF ENGINEERING MAP 31 - 30 - 64
of the city, and another in the western portion. The areas of $15,000 to $20,000 diminish as detail becomes more pronounced. Also, appearing at this level of generalization in an area of $35,000 and up dwelling units are to be found. Plotting of data in tract form reveals more details than the welfare and planning areas, but tract patterns are still quite general, and do not reveal the areal details sought in this study.

Plotting dwelling values based on block data is more revealing still, and perhaps is the best method available short of plotting every unit. Figure 3 discloses great detail. A comparison of Figures 2 and 3 reveals that areas of lower value housing in the northern section of the city are evident in Figure 3 but not in Figure 2. Tract data indicates that there are extensive areas of $15,000 to $20,000 values, but block data indicates that this category is not so extensive. The block data map also indicates a greater incidence of higher value housing than the tract map; for example, along the beach front and in the eastern portion of the city. Figure 2 indicates that much of the city is occupied by $10,000 to $15,000 values, and this fact is conclusively established by Figure 3. It is, however, the clearer picture that is obtained at the two extremes of the value categories that is of greatest importance here.

Health and welfare districts are not used in this study because of their generality. Block data is used
wherever available because of their detail. However, in some instances, particularly with regard to population characteristics, block data are unavailable. In such cases, tract data are used. As stated in Chapter I, the chief source of data will be the U.S. Census of Housing and Population. The few instances when this is not the case are noted.

Identification of Residential Quality Areas

It is here assumed that residential quality can be meaningfully measured on the basis of housing value and structural condition. The reasons for this assumption were presented in Chapter II. However, it still remains to be demonstrated how these two criteria can be identified, measured, and combined into a workable index of residential quality. This is the purpose of the next section of this chapter.

A Map of Housing Value

When plotting housing value at tract and block levels of generalization, the values are divided into categories.

54 The census bureau publishes housing data in block form. The smallest level of generalization at which population data is published is the census tract. It, however, can be obtained from the census bureau at a cost that is prohibitive to the private individual. The chief source will be the U.S. Bureau of the Census, U.S. Census of Population and Housing, Tracts and Blocks, Final Reports, PHC (1) and HC (3) nos. 82 and 48, U.S. Government Printing Office, Washington, D.C., 1961.
each of which is given a code number (Figure 3). They are: Value 1 or \( V_1 = 10,000 \) and less in value, \( V_2 = 10,001 \) to \( 15,000 \), \( V_3 = 15,001 \) to \( 20,000 \), \( V_4 = 20,001 \) to \( 25,000 \), \( V_5 = 25,001 \) to \( 35,000 \), \( V_6 = 35,001 \) and above. The mean values for tracts and blocks are indicated as being in one of the above classifications. These categories of residential value were arrived at through consultation with the Long Beach City Assessor and a member of the Long Beach Board of Realtors who, along with the author, felt that these categories provided a meaningful differentiation of residential value areas of the city of Long Beach (Figures 2 and 3).\(^{55}\) An attempt was also made to measure dispersion of value through the use of standard deviations from the mean but was rejected because the value data appears in the Census in the form of mean value per block and tract. It is felt that the standard deviation from the mean of the means is not desirable because of its generality.

**A Map of Structural Condition**

The structural condition of houses per block is given in the U.S. Census in three grades: that is, the number of houses that are (1) sound, (2) deteriorating, or (3) delapidated. Structural conditions for each block

\(^{55}\)Camiell Kendell, Board member, Long Beach Board of Realtors, May 10, 1967, Leo Tonderault in the office of the Long Beach City Assessor, May 10, 1967, consultation with both of the above.
are identified in this study in the following manner (Figure 4). If all houses on a block are found to be sound, it is classed as a C1 block. If some houses are sound and some are deteriorating, the block is a C2 block. If the block contains houses that are sound, deteriorating, and delapidated, then the block is listed as a C3, but if houses are sound and delapidated, it is C4. If deteriorating and delapidated houses are present, it is a C5 block. When dealing with tract data, tracts are identified by the highest relative percentage of block types per tract (Figure 5). For example, if a tract has all C1 blocks, it is a C1 tract. If the tract has some C3 and C2 blocks as well, it is listed according to which type of condition is most prevalent relative to its percentage, so it may be a C2 or C3 tract.

Although the above method for identifying structural condition is used here, the following alternative method was considered; namely, to differentiate structural conditions on the basis of a broad standard/sub-standard classification. This method was rejected as a meaningful indicator of structural condition because by plotting only sub-standard housing, on the one hand, and standard housing, on the other hand, the important gradations between good and poor housing would be overlooked. The result would not be the description of several grades of housing needed here. The excessive generality of such a broad standard/sub-standard classification can be shown by
its comparison with the approach used in this study.

Sub-standard housing is plotted here in two levels of generalization, tracts and blocks. When plotted in tract form, that is, by including tracts that are equal to or greater than the city-wide percentage of sub-standard housing, which is 6.5 per cent of all dwelling units, Figure 6 is produced. Areas of sub-standard housing plotted on tract maps coincide with the C2 and C3 areas found in the structural condition map. This indicates a high correlation between two different methods of plotting approximately the same thing. However, a correlation between sub-standard housing and still-poorer housing can be seen by comparing Figures 6 and 7. A map of housing condition (Figure 5) reveals that C3, C4, and C5 areas are all indicated as sub-standard on Figure 6. The blocks indicated as C2 are not all indicated as sub-standard on Figure 7, however, and this is because the C2 blocks, which include both sound and deteriorating houses, have only one or two substandard houses and the rest of the units are in good condition.

In this study, blocks are classed as sub-standard only if they contain five or more dwelling units that are deteriorating or delapidated. The choice of five as a critical value was based on a field survey of all blocks containing sub-standard units, for from such observations

56 Ullman, p. 10.
SUBSTANDARD HOUSING AREAS

FIGURE 6

SOURCE DATA: U.S. BUREAU OF THE CENSUS

6.5% OR MORE SUBSTANDARD UNITS
SUBSTANDARD HOUSING AREAS

- AREAS OF 5 OR MORE DETERIORATING AND DELAPIDATED HOUSING UNITS

SOURCE DATA: U.S. BUREAU OF THE CENSUS
BASE MAP COMPILED FROM LONG BEACH DEPT. OF ENGINEERING MAP 11-19-66
this appeared to be a meaningful and consistent break between standard and sub-standard blocks. A comparison of the maps of structural condition (Figure 5) and sub-standard housing (Figure 6) bears this out. By using the method of differentiation developed here which is based on the number five, some blocks on which the majority of houses are classed as sub-standard by the census bureau are not considered to be sub-standard. Therefore, the approach adopted here does allow for recognition of what might be termed transition blocks. Although the standard/sub-standard method of plotting conditions is not being totally discarded, a method that includes a greater variety of housing conditions is preferred. For a consideration of still another method for delimiting areas with varying housing conditions see Appendix A.

The Residential Quality Area Index and Map

Thus far, this chapter has dealt with techniques that indicate areal patterns of value and condition, but their combined strength in the form of an index has not been considered. Value and condition were examined individually prior to consideration of an index for two reasons: first, so that the components of the index could be thoroughly understood, and second, so that comparisons of the individual condition and value maps could precede the development of a composite map based on an
objective and comparable index.

Compilation of the index and plotting of its values on a map was done in the following way. A value and condition classification was assigned to each block in the city and plotted on separate maps (Figures 3 and 5). These classifications were then combined into one symbolic statement and plotted block-by-block on a fresh map. A code thus emerges that identifies the condition and value of the dwellings on each block, and residential quality is therefore operationally defined. An example of this procedure involves block number two in tract 5715 (Figure 8). Information given in Figure 9 shows that this block has some houses that are sound and some that are deteriorating; therefore, it would be listed as a C2 block. It can also be seen from Figure 9 that the average house value is $11,000 and therefore falls into the V2 value category. This block is then entered on the Residential Quality Area map as a C2V2 block. Such a procedure was used for each block in Long Beach, and provided a possibility of 30 different combinations, or types of blocks. Of the possible 30, eight types did not occur, and others were virtually impossible. The remaining 22 types are divided into five categories to facilitate their mapping. The final five categories were arrived at through extensive field observations, the objective of which was to determine which combinations were similar in reality. The Residential Quality Area Classification is
The accuracy of these categories and the resultant areal patterns proved to be close to reality. This was verified by posting the Residential Quality Area Maps based on blocks and tracts (Figures 11 and 12) in the Long Beach City Hall and in all ten Long Beach City Post Offices. This was done to see if the areal pattern of residential quality areas on the map corresponded with the ideas held by the residents of the city. The general opinion of those individuals that commented on the map was that it gave an accurate picture of residential quality in Long Beach. Especially favorable comments came

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57Posted on January 18, 1968, approximately 150 people commented. Twenty-five were totally disregarded as pranks and the others were considered.

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<table>
<thead>
<tr>
<th>Residential Quality Area Classification</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>High quality residential areas</td>
<td>C1V4, C1V5, C1V6, C2V6</td>
</tr>
<tr>
<td>High middle quality residential areas</td>
<td>C1V3, C2V4, C2V5</td>
</tr>
<tr>
<td>Middle quality residential areas</td>
<td>C1V2, C1V1, C2V2, C2V3</td>
</tr>
<tr>
<td>Low middle quality residential areas</td>
<td>C2V1, C3V4, C3V3, C4V2</td>
</tr>
<tr>
<td>Low quality residential areas</td>
<td>C3V2, C3V1, C5V2, C5V1, C4V1, C3V5, C5V1</td>
</tr>
</tbody>
</table>

Source: Compiled by author
Figure 9. Example map of city Blocks and Tracts from Census.
# City Block Characteristics

## Table 2. Characteristics of Housing Units, by Blocks: 1960—Con.

<table>
<thead>
<tr>
<th>Blocks within contract</th>
<th>Total population</th>
<th>With all plumbing facilities</th>
<th>Lacking some or all facilities</th>
<th>Total</th>
<th>With all plumbing facilities</th>
<th>Lacking some or all facilities</th>
<th>Delapidated</th>
<th>Total</th>
<th>Average value (dollars)</th>
<th>Average completion year of dwelling (years)</th>
<th>Averages per room</th>
<th>Owner occupied</th>
<th>Renter occupied</th>
<th>Occupied by non-white 1.01 or more per room</th>
</tr>
</thead>
<tbody>
<tr>
<td>59 ........................</td>
<td>92</td>
<td>65</td>
<td>45</td>
<td>45</td>
<td>24</td>
<td>2</td>
<td>2</td>
<td>10</td>
<td>140000</td>
<td>5.0</td>
<td>34</td>
<td>65</td>
<td>3.0</td>
<td>4</td>
</tr>
<tr>
<td>57 ........................</td>
<td>102</td>
<td>60</td>
<td>40</td>
<td>40</td>
<td>25</td>
<td>2</td>
<td>2</td>
<td>20</td>
<td>20000</td>
<td>5.8</td>
<td>16</td>
<td>65</td>
<td>3.2</td>
<td>1</td>
</tr>
<tr>
<td>59 ........................</td>
<td>60</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>21</td>
<td>2</td>
<td>2</td>
<td>23</td>
<td>22000</td>
<td>6.1</td>
<td>2</td>
<td>64</td>
<td>3.2</td>
<td>2</td>
</tr>
<tr>
<td>42 ........................</td>
<td>154</td>
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<td>72</td>
<td>72</td>
<td>17</td>
<td>2</td>
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<td>5.0</td>
<td>55</td>
<td>73</td>
<td>2.7</td>
<td>1</td>
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<tr>
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<td>153</td>
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<td>82</td>
<td>82</td>
<td>18</td>
<td>2</td>
<td>2</td>
<td>18</td>
<td>16000</td>
<td>5.0</td>
<td>55</td>
<td>66</td>
<td>3.2</td>
<td>2</td>
</tr>
</tbody>
</table>

Note: Total population contains no persons in group quarters unless preceded by asterisk (*); one asterisk (**) denotes less than 10 percent, two asterisks (***) 10 percent or more.
AREAS OF RESIDENTIAL QUALITY

SOURCE DATA: U.S. BUREAU OF THE CENSUS
from Mr. Paul Ullman of the Long Beach Community Welfare Council. City government officials that were asked for their opinion of the map agreed that it gave an accurate distribution and revealed a great deal about the city. All, however, requested not to be quoted or mentioned in this thesis. A note of disagreement was registered by three real estate agents that operate primarily in the poorer quality areas.58

**Can Residential Quality Areas Be Meaningfully Interpreted?**

A method for identifying residential quality areas has been outlined, and maps of such areas presented. However, the problem of analyzing, interpreting, and evaluating these residential quality areas remains. This is approached here by considering a series of hypotheses which are intended to give further insights into the residential areas as well as test their validity. These hypotheses are concerned with: (1) population density and distribution, (2) mobility of the population, (3) occupational structure, (4) head of the household income, (5) ethnic composition, (6) age composition of the population, (7) structural age of housing, and (8) non-residential land uses.

58These Real Estate agents objected to the poor light the map cast on their areas of business.
As noted previously it is necessary to use tract data for measurements for which block data are not available, although block statistics are more desirable. A natural question at this point is, how can the use of tract data be avoided? This can be achieved in two ways: by purchasing block data from the census bureau at a cost prohibitive to most individuals, or by surveying. Two survey techniques were experimented with in this study and are discussed in appendix B.

It was the purpose of this chapter to provide methods for delimiting and partially interpreting residential quality areas.

The following chapter deals with the application of those methods to Long Beach, California.
CHAPTER IV
RESIDENTIAL QUALITY AREAS IN LONG BEACH

The method outlined in the previous chapter will be applied in Long Beach in three phases: (1) plotting of residential quality areas according to the index developed in the last chapter, (2) comparison of the index with some accepted methods of identifying residential areas (this phase will also serve to provide greater insight into, and understanding of, the residential quality areas outlined by the index), and (3) a summary of findings.

This study deals only with that area enclosed by the corporate limits of the city of Long Beach. It is of course realized that the residential areas of a city often extend beyond its corporate boundaries, but there must be a limit to the study area. And, as it is not the purpose here to deal with the entire Long Beach agglomeration, but simply to use the city as an example area, the corporate city was deemed adequate. This section deals with the areal distribution of the criteria of condition and value, and with the distribution of residential quality areas.

Distribution of Structural Condition and Unit Value

The separate maps of condition and value used in delimiting areas of residential quality corroborate the map of quality areas derived from the index. They will also
prove helpful in considering the hypothesis dealt with later in the chapter. Figures 1 through 3 were derived from the census of housing and discussed at some length in Chapter III. Figures 4 and 5 are derived from delimiting dwelling unit condition patterns. The areas of dwelling unit condition by tract are seen in Figure 4, which shows that the city has a large concentration of C3 and C2 tracts in the southwestern portion as well as two smaller concentrations in the north. The major part of the city is classified as having all sound dwellings.

When condition of dwelling units is plotted by blocks according to the code outlined on page 45, greater detail and clearer insights into the patterns of dwelling condition are obtained (Figure 5). Although there is a definite concentration of poorer conditions in the southern section of the city, it is clearly seen that these areas are interspersed with blocks of sound houses. Also observable is the fact that the areas of sound houses in the north are rather thoroughly mixed with blocks of poorer houses, and that the large eastern section of the city is sound for the most part.

Residential Quality Areas

A comparison of the maps of value and condition reveals a general areal correlation between areas of low value housing and areas that contain deteriorating and delapidated housed (Figures 3 and 5). Such a visual
comparison reveals only limited information, however. This requires a more penetrating method of identifying quality areas; a necessity that led to the development of a residential quality area index.

By combining value and condition of dwelling units into a single index, a more realistic picture of the areas distribution of residential quality is obtained at both the tract and block level of generalization (Figures 11 and 12). This areas pattern will be used as the chief indicator of residential quality in Long Beach. The accuracy of this index is revealed by the fact that the areal patterns produced are surprisingly close to reality, a conclusion born out by an extensive field check, and by commentary generated by posting the maps in the Long Beach City Hall and Post Offices.

Observation of Figures 11 and 12 reveals some interesting areal patterns. Before discussing those patterns it must be stated that these residential quality areas are only initial areas. These initial residential quality areas will be refined through further analysis. Nevertheless an introductory view of the detailed pattern of residential quality (Figure 12) reveals several unusual findings; namely, (1) that the greater part of the city is composed of middle quality housing; (2) that there are two major concentrations of high quality housing (one in the central section of the city and another in the southeast) and, (3) that two major concentrations of low
quality housing are located in the north and southwestern portions of the city.

**Appearance of Transition Zones**

The same broad Residential Quality Areas identified above can also be seen on a map based on tract data (Figure 11), a fact which might challenge some of the earlier stated advantages of block data. One of the chief facts that block maps reveal which tract maps do not, however, is the presence of a type of residential transition zone between core areas of differing residential quality.

Through the use of a guide map (Figure 13) on which the transition zones identified here are circled, such zones can be located and studied in Figure 12. The transition zone is especially noticeable in circled area number 1 where there is a gradual transition from a high-middle quality area to a middle quality, lower-middle quality, and finally to a lower quality area. A similar transition can also be seen in circled areas 2 and 3. Figure 11 reveals that such transition zones do not appear when tract data is used.

Further observation of Figure 11 in conjunction with Figure 14 reveals that there are several areas where there is no transition zone between Residential Quality Areas. Rather, there are abrupt changes in residential quality. These areas differ from those exhibiting a transition in two major ways: first, the areas shown in Figure 14 were
Figure 13. Guide Map to Residential Transition Zones. To be used in association with Figure 12. Residential Quality Areas based on Blocks.
Figure 14. Guide Map to areas of abrupt changes in residential quality. To be used in association with Figure 12. Residential Quality Areas based on blocks.
FIGURE 14
originally developed as tracts in which most of the houses were built at the same time or within a few years, and second, today they are walled to add an impression of exclusiveness. Such physical boundaries between residential areas eliminate transition zones. Those having transition zones are not walled communities, and they were not created by a land developer with a specific plan in mind.

Large open spaces between areas of residential quality such as an airport (Figure 12), also serve as boundaries between residential quality areas.

J. Tait Davis stated that transition zones do not exist between residential areas. Transition zones do in fact exist in Long Beach as proven by Figure 12.

Analysis and Interpretation of the Residential Area Map

It is important to ask "How does this method of identifying Residential Quality Areas compare with other methods developed for differentiating residential areas?" One way this can be answered is to compare the map developed here with other maps covering the same study area based on different criteria. It is also necessary to point out that although the Residential Quality Areas outlined here are very enlightening, such information tells us little about the people occupying these areas or

59 Davis, p. 249.
about other aspects of the urban environment.

Both differences enumerated above can be met by examining hypotheses concerning other aspects of residential quality. It is intended that by examining hypotheses a better understanding of the character of residential quality areas may be gained as well as testing the validity and workability of the condition and value index. The overall hypothesis to be tested is that the Residential Quality Areas delimited by the condition-value index, are correlated with residential quality or residential areas delimited by the following commonly used variables: (1) occupational structure, (2) head of household income, (3) ethnic composition, (4) population age composition, (5) structural age, and (6) distribution of non-residential land use. The several facets of this hypothesis will be examined on the basis of map comparison and correlations.

**Population Distribution**

The first facet of the overall hypothesis to be examined concerns population distribution. Is it true that heavily populated areas are also areas of poorer residential quality? The answer is "yes," a fact verified by a comparison of Figures 12 and 15.

**Mobility of Population**

One of the most important population characteristics concerns the mobility or tenure of people. It was
Figure 15. Population Distribution for 1960, (Block Data).
FIGURE 15
EACH DOT EQUALS 20 PERSONS

SOURCE: U.S. BUREAU OF THE CENSUS
hypothesized that home owners will be more quality conscious, will live in better quality areas, and will be long-term residents. It would also be natural to expect residents of poorer housing areas to be short in their stay, and for such areas to be predominantly occupied by renters. In order to examine this hypothesis, a map was constructed showing the distribution of renter and owner occupied units in the city. This is done on the basis of block data, and a block qualified as a rental block if 51% or more of the units were rentals. It was identified as an owner block if more than 49% were owner occupied units.60 This gives a seemingly accurate distribution of renter and owner occupied units in the city.

A map showing duration of residence and areas of movement since 1955 was also constructed with the use of tract data. It was compiled by listing a tract according to a ratio that identifies the tract percentage of movement over the city-wide percentage, and the highest positive ratio is the one that identifies the tract. This map will be used to test the hypotheses that residents of higher quality areas of the city make fewer moves than residents of lower quality areas, and that areas of low mobility also coincide with areas dominated by home owners.

By comparing Figures 12 and 16, it is evident that rentals coincide with areas of lower-middle and lower quality homes. There is, however, an exceptional area of higher quality units in the southeastern section of the city that is predominantly rentals. This is the area of choice beach frontage with teachers and students residing here. It can be said, however, that lower quality areas have units that are renter occupied, and that renter occupied units are often lower quality housing.

Figure 17 shows tenure or length of residence; it is apparent that (by a comparison with Figure 16) areas of movement since 1955, to a great extent, coincide with areas where rental units exist. This tenure map was constructed by listing a tract according to a ratio based on the tract's percentage of movement over the city-wide percentage of movement; the highest positive ratio was the one which identified the tract. In many instances, the areas of movement coincide with areas of lower quality housing, although this is not universal.

**Occupational Structure**

Occupation and income are the next characteristics of population to be discussed in relation to the index areas. Occupation is difficult to plot on a map. It is even difficult to discuss in terms of particular areas being inhabited by individuals who have similar occupations. There is often a tendency to refer to one particular area
Figure 16. Renters and Owners by Dwelling Unit (Block Data).
RENTERS & OWNERS (BY DWELLING UNIT)

- Areas where 3% or more of the units are renter occupied
- Areas where 4% or more of the units are owner occupied

City average is 26% renter occupied and 43% owner occupied

**Figure 16**
as occupied by doctors, laborers, or some other occupational group. This is unfortunate because it tends to make one forget that income groups rather than occupational groups tend to dominate particular areas. In order to compensate for this, occupations in each tract were broken down on the basis of percentages. These percentages were then put in ratios with the city-wide percentages for the same occupations. Those equal to or higher than the city-wide percentage were listed as the predominant occupation for particular tracts. Three occupations were recorded for each tract. The occupational classes from which the three were chosen were those from the census of population; namely, professional, managerial, clerical, sales, craftsmen, operatives, household workers, service workers, and laborers (Figure 18).

The hypothesis to be examined here is that the most predominant occupations found in higher quality areas are the managerial and professional ones, and that there is a higher rate of unemployment in lower quality areas. An answer may be derived by comparing Figures 17 and 18 with the maps of Residential Quality Areas (Figures 11 and 12). As expected, areas of higher quality housing are also areas of professional and managerial occupations. Areas of middle quality housing are the areas in which craftsmen and operatives reside. Areas of poorer housing are to a great degree those that are devoid of professional
RESIDENCE TENURE
FIGURE 17

SOURCE DATA: U.S. BUREAU OF THE CENSUS

SAME AS 1955
DIFFERENT PART OF LOS ANGELES LONG BEACH SMSA
OUT OF SMSA
FIGURE 18

1. PROFESSIONAL  6. OPERATIVES
2. MANAGERS       7. HOUSEHOLD WORKERS
3. CLERICAL       8. SERVICE WORKERS
4. SALES          9. LABORERS
5. CRAFTSMEN

SOURCE: U.S. BUREAU OF THE CENSUS
or managerial people; rather, they are dominated by sales or service occupations. Distribution of unemployment is probably more revealing because it shows a definite correlation between areas of unemployment and poorer quality housing and areas of renters (Figure 19).

Income of Head-of-the-Household

When occupation is plotted and compared with other phenomena there is an obvious point of confusion. This is the great discrepancy between occupational prestige and occupational pay. This refers to the fact that college professors and laborers can make the same income and live in different areas and have social prestige that is miles apart. So that the discrepancy between income and occupation may be resolved, it is here intended to examine the hypothesis that there is a positive correlation between income, occupation, and quality of residential areas.

Income is plotted for each tract in two ways. It is viewed by the use of inner quartile ranges of median family income, and although this is the most desirable statistical method of dealing with the distribution of income, it showed very little and the patterns were vague. However, by setting up arbitrary intervals from the median city-wide income and making the U.S. Census Bureau and the Public Health Income Requirement for poverty the upper limit of the lowest income, a seemingly meaningful
AREAS OF UNEMPLOYMENT

FIGURE 19

10.8% OR MORE UNEMPLOYMENT

SOURCE DATA: U.S. BUREAU OF THE CENSUS
distribution was arrived at. Four categories were used: (1) below $4,000, (2) $4,001 to $6,570, (3) $6,571 to $8,000, (4) $8,000 and above. These data will serve in the examination of whether or not patterns of income are related to areal patterns of occupation, unemployment, home ownership, and Residential Quality Areas.

Figure 20 reveals that the lowest income portion of Long Beach is in the southwest section. Incomes below the city median income but above the poverty income are also revealing. These areas are coincidental with areas of unemployment, rentals, and low quality housing, as seen by comparing the maps (Figures 12, 16, 19 and 20). So, too, areas of higher than the median income coincide with areas of middle and higher quality housing and home ownership. This is especially noticeable in areas of higher quality homes. This seems somewhat like saying rich men live in big houses. It is, however, important to the presentation of and understanding of residential quality patterns.

**Ethnic Composition**

Ethnic composition is a most difficult population characteristic to discuss and evaluate. As mentioned earlier, it is incorrect to say that an area made up of laborers is of poor quality just because laborers live there, for laborers with relatively high incomes live in high quality areas. It is held, therefore, that it is
Figure 20. Income (Tract Data).
incorrect to identify areas on the basis of their occupational structure when referring to residential quality. This is true when referring to ethnic composition of a city. This brings to mind the arguments presented against some studies of the city reviewed in Chapter II. As stated earlier, it is incorrect to say that one particular group of people creates a type of residential area or that residential areas of a particular type have only certain kinds of people. An iron clad statement like this is wrong at the outset because it implies that certain types of people must live in certain areas. Exceptions can nearly always be found. It is erroneous to suppose that because simple correlations of population characteristics can be seen in their distributions that they are causal. It is, however, acceptable to hypothesize that certain ethnic groups tend to inhabit particular Residential Quality Areas. Here the hypothesis that non-whites and whites with Spanish sur-name tend to inhabit areas of less than middle quality housing, and that whites live in better quality areas in the city of Long Beach will be examined.

Maps were used to identify ethnic concentrations, and they were constructed in the following way. The different ethnic percentages for each tract were computed as well as percentages for the entire city. A tract that was equal

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61Hatt, Shevky and Bell discussion in Chapter II.
to or greater than the city average was listed as a tract predominantly inhabited by that ethnic group. The entire city has a non-white population of 4.3%. This is divided between Negroes, Orientals, and American Indians.62 (The U.S. Census Bureau classifies Mexican Americans as whites with Spanish sur-name.) All non-whites who are not Negroes are generally referred to as non-whites other than Negro. This gives a city-wide Negro population percentage of 2.7% and a 1.5% for all other non-whites. This leaves a white population of 95.7% of the total. In the examination of racial groups, whites with Spanish sur-name were also included. A tract was listed as dominated by a particular racial group when, what is commonly referred to as a minority group, was equal to or greater than its city-wide population percentage. All other tracts are listed as white (Figure 21).

Also included is a map of the occurrences of two or more non-whites per block (Figure 22). This map is taken from block statistics, while the previously mentioned map of ethnic composition was compiled from tract statistics. Block statistics include only a white and non-white breakdown. Certain facts revealed by the block by block distribution, however, are most enlightening.

The hypothesis stated above will be evaluated in two ways: through the use of visual correlations between maps, and by the use of the tetrachloric (box) method, in which the actual numbers of tracts and blocks of the ethnic districts are correlated with the different Residential Quality Areas.

By an analysis made from Figures 7, 11, 12, and 19, it is seen that the Negro population lies almost entirely in the area of substandard houses. From Figures 10 and 11, most of the Negro population appears to be in the lower quality residential section, and is also almost entirely in the portion of the city that is predominantly occupied by renters. The Negro area is also one where unemployment rates are high and average family income is below $6,570 per year but above the poverty level of $4,000 per year. It must be pointed out that these correlations are not conducted exclusively in the Negro district, only that they all occur in it.

The two areas of whites with Spanish sur-name are located in the south central portion of the city and are also low quality housing areas where a predominance of renters prevails. Income is below the city-wide average and unemployment rates are high. Occupations are generally laborers, craftsmen, or operatives. There is also a period of less than five years' residence for most areas dominated by both Spanish sur-name and Negro populations. There are three sections of the city that are predominantly
occupied by those with Spanish sur-name that are of middle quality housing, of average income, and to a great extent owner occupied.

Areas occupied by non-whites other than Negro exhibit similar characteristics to the Negro and Spanish areas that are of poorer quality. It should also be noted that there are areas of white residents that are of low quality housing, have low income and a high rate of unemployment.

The use of tetrachloric correlations are more revealing than the visual correlations just made. Both tract and block data were analyzed by this method. 63

From the tetrachloric correlation seen in Figure 23, it is noted that there are 63 census tracts containing housing units in the city of Long Beach. Of these 63 tracts, 21 are non-white or are dominated by white with Spanish sur-name. Of these 21, there are 13 that are in the lower-middle or lower quality housing areas discussed earlier. Of the 13 poorer quality areas, 5 tracts are Negro, 6 are white with Spanish sur-name, and 2 are non-white other than Negro. These areas of poorer quality homes are rather similar in other respects; predominated by rentals, below the city's average income, and with high unemployment rates. With regard to the Spanish area in the northern portion of the city, the statement about

63 So that one may better understand the location of numbers discussed, a tract map of the city is included (Figure 24).
### Diagram of Residential Quality and Ethnic Groups (by Tracts)

<table>
<thead>
<tr>
<th></th>
<th>Middle Low, Low</th>
<th>Middle</th>
<th>Middle High, High</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHITE</td>
<td>9</td>
<td>15</td>
<td>18</td>
<td>42</td>
</tr>
<tr>
<td>NON-WHITE</td>
<td>13</td>
<td>8</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>TOTAL</td>
<td>22</td>
<td>23</td>
<td>18</td>
<td>63</td>
</tr>
</tbody>
</table>

**Figure 23**

*Source Data: U.S. Bureau of the Census*
CENSUS TRACTS

FIGURE 24

SOURCE DATA: U.S. BUREAU OF THE CENSUS
unemployment is not true. Noteworthy are the 8 non-white and Spanish tracts not in the areas of poorer quality housing; all are of middle quality housing but not upper-middle or higher quality residential areas. Only one of these 8 tracts is Negro; the rest are mixed or occupied by Spanish sur-name. Except for an area occupied by military housing, all are areas where the average income is above the city-wide average and predominantly occupied by owners of housing units. The one Negro tract is similar in all other respects to the other Negro Tracts.

A most interesting fact is that the 8 white lower-middle and lower quality residential areas show up readily as a result of this correlation technique. There are three concentrations: (1) north Long Beach, (2) south central Long Beach, (3) southwestern Long Beach just west of the central business district. The northern section is similar to the south central section in income and occupation as seen by a comparison of the maps. Both are generally below the city-wide income level, and the occupations are operative or craftsmen. Unemployment incidence is higher in the south central area than that of the north area.

The most noticeable area of low quality that is populated by whites is just west of the central business district. This is the lowest quality area in the entire city. An explanation of this will appear in the next section.
dealing with population age and structural age.

As mentioned earlier, the tetrachloric technique of correlation would also be used to analyze block data. Since block data only differentiates between white and non-white populations, it is not possible to differentiate between Negroes and other non-whites except by assuming that those blocks that are non-white and in the same area of the city that the tract data indicates as being Negro are in fact Negro occupied. Such an assumption was verified by field observation.

From Figure 25 it is clear that there are 3,739 blocks in the city that contain housing units; 3,437 are white and 302 are non-white. Of the 302 blocks of non-white population, 105 or 34.7% of the blocks are in areas of lower-middle or lower quality housing. This is a substantial number when compared to the 8.2% of the white population that lives in such poorer quality housing. It can also be seen through a comparison of Figures 24 and 16 that the areas of non-white population are predominantly rental areas indicating a high percentage mobility. The purpose here is not to make a definite statement that non-whites create a low quality residential area when they move in. From the evidence just presented, however, it would seem more likely that they move into areas that are already low quality, possibly with the intention to move out when their personal lot improves and they can afford to live in a higher quality area.
## Diagram of Residential Quality and Ethnic Groups (by blocks)

<table>
<thead>
<tr>
<th></th>
<th>MIDDLE, LOW</th>
<th>MIDDLE, HIGH</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHITE</td>
<td>3142</td>
<td>285</td>
<td>3437</td>
</tr>
<tr>
<td>NON-WHITE</td>
<td>197</td>
<td>105</td>
<td>302</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3339</td>
<td>409</td>
<td>3739</td>
</tr>
</tbody>
</table>

**Figure 25**

Source data: U.S. Bureau of the Census
Population Age and Structural Age

In the previous section on ethnic composition, the most noticeable area of low quality populated by whites is just west of the central business district (Figure 12). It also has the lowest income ratio, the greatest amount of unemployment, and is marked by almost 100% rentals. This area is inhabited by the elderly and has the highest average age in the city, 60 years. It is without a doubt the worst area of the city and may be called a slum. From this evidence, it can be hypothesized that concentrations of older population coincide with areas of poorer quality housing. This portion is one of the original developments of residential land use in the city, and as a result, has a great many old buildings which partially accounts for the poor condition. There are two interesting diversions from the topic of race that are necessary here to corroborate the statements just made concerning the age of residents and buildings.

It can be seen from Figures 10, 22, and 26A and B (the median age of men and women by tracts), that the area around the central business district indeed has the largest concentration of elderly in the city. It would be interesting to hypothesize for another paper that the

POPSULATION AGE MALES

FIGURE 26A

SOURCE: DATA FROM U.S. BUREAU OF THE CENSUS

- 19 - BELOW
- 20 - 29
- 30 - 39
- 40 - 49
- 50 - ABOVE
Figure 26B. Population Age Females, (Tract Data).
truly poor areas of our major cities in America are those inhabited by the older population. It is at least true in Long Beach.

A map of structural age by tracts is also included to verify the statement that this same area is the oldest in the city with regard to structural age (Figure 27). This was not included as a major characteristic in the discussion because this factor is usually indicated by condition of the building. One interesting fact noted from this map is the vast difference in age of structures when viewed as a progression from the southeastern portion of the city, first to the north, and then to the east.

Non-Residential Land Uses

There are two hypotheses to be examined here: first, that the traditional theories of Burgess and Hoyt (see pp. 5 & 6 for comments and sources) apply to Long Beach's residential pattern, and second, that poorer areas of the city coincide with the fringes of the central business district and the industrial sections.

The answer to the first hypothesis is that they do not. This can be seen by comparing Burgess' concentric circles and presumably what he indicates are poorer housing areas, to the actual distributions of Long Beach shown in the index map (Figure 12). Hoyt's sector theory obviously does not apply as can also be seen by observing the condition and value index map.
Regarding the second hypothesis, the answer is, "not necessarily true." Figures 12 and 28 reveal that the central business district and the southern industrial section are areas of less than middle quality housing. There are areas of poorer housing in the geographic center of the city that are nowhere near the central business district. It is also observed that strip commercial developments pass through a number of different quality residential areas.

By looking at the northeastern section of the Negro area, it is clear that a concentration of poorer quality housing lies near and next to the oil fields. It can also be seen that poorer areas in the northeastern part of the city lie adjacent to an industrial area and along railroad tracks. Better quality areas are located near the colleges and golf courses. There are, however, some middle quality areas along the eastern edge of Signal Hill oil fields (Figures 12 and 28).

An interesting point is that the lowest quality areas are found within the central business district or those areas immediately surrounding it, and are areally associated with concentrations of highest average population age and oldest structural age.

Summary

In this chapter a Residential Quality Area Index was applied to the city of Long Beach. In this manner the
Figure 28. General Land Use Map, Long Beach, California. This map is to be used in identifying non-residential land uses.
EXISTING GENERALIZED LAND USE
LONG BEACH, CALIFORNIA
index, developed in Chapter III, was analyzed and tested. The index was based on housing condition and value and allowed for the identification of five categories of residential quality: high quality areas, high-middle quality, middle quality, low-middle quality and low quality areas.

Middle quality areas are those where the units are generally of sound condition and the values are below $15,000 with few instances of the house values over $20,000. Middle quality, as indicated on Figure 11, covers the largest area in the city. For the most part, people in these sections are home owners and have modest incomes that group around the city's average of $6,570 per year. Occupations varied but have heavy emphasis on craftsmen and operatives. As far as ethnic composition is concerned in these areas, it can be said that all ethnic minority groups are found in middle quality areas. Negroes, however, occupied only small areas of middle quality housing. Spanish speaking people, on the other hand, occupied several large areas of middle quality housing. Most middle quality areas are occupied by whites. Although middle quality areas comprise the largest proportion of the city, interest is often not centered here, but upon the extremes of residential quality.

High quality and high-middle quality areas are considered together in this summary. There are two major
high quality areas in Long Beach; one in the central portion of the city and the other in the southeast. There are several high-middle quality areas, as can be seen from Figures 11 and 12.

Highest quality areas are those with all structures of sound condition and values of over $20,000, most often well over $35,000. These are areas of people with professional and managerial occupations, high incomes, and a high rate of home ownership. According to the data gathered here, such areas are almost exclusively occupied by whites.

There are several areas of high-middle quality in the city and have values of more than $20,000 but less than $35,000. These are generally structurally sound but with some deteriorating older homes. Occupants of these areas, as in those of high quality, are of the professional and managerial group along with some of the better paid craftsmen. With the exception of the beach area, most of the people are home owners. White people also predominate. In the eastern portion of the city a large area of high-middle quality units can be found. This is a concentration of tract type homes developed for a specific market and built at relatively the same time by the same company. It is interesting to contrast this area to the non-planned areas of the same quality housing and population makeup which occur in the western and south-eastern portions of the city. The chief difference is in
the borders. The unplanned areas possess a transition zone, while the planned areas do not.

Possibly the most obvious residential patterns in Long Beach, as in most cities, are associated with the areas of poorer or lower quality housing. Such areas include the index categories of lower quality and lower-middle quality. These are areas well above the city-wide unemployment percentage, and the income for those who are working is generally lower than the city-wide average. Although there is some home ownership, most residents are renters. These areas are inhabited by people of all ethnic groups. Most of the Negro district in the city lies within lower quality areas. Out of 302 blocks inhabited by non-whites, 34.7% are in low quality areas. Of the grand total of 490 lower quality blocks, 21.4% of these are occupied by non-whites. This is a staggering fact when we consider that only 4.3% of the total population and a total of 8% of the blocks in the city are non-white. It should be emphasized that the majority of the non-white population in Long Beach is Negro.

The remaining 78.6% of the low quality blocks in the city are inhabited by both whites and whites with Spanish surname. There are three main areas of low quality housing inhabited by whites with Spanish surname: one in the northern portion of the city and the other two in the south-central section of the city, one extending west from the southern portion of the Negro district and the
other just east of the Negro district.

Perhaps the lowest quality area in the entire city is that just west of the central business district. This is the area of worst housing conditions, lowest incomes, and highest average age. This is the section inhabited by elderly persons.

In conclusion, it must be pointed out that only 13.1% of Long Beach's population are located in lower quality areas. This is not as high as one might have been led to believe if only tract data had been used. The use of block data provided a more realistic picture.
CHAPTER V
CONCLUSION, PRACTICAL IMPLICATIONS,
AND IDEAS FOR FURTHER RESEARCH

The purpose of this study was to answer the question, "Is residential land use in the American city areally differentiated on the basis of quality?" To answer this question it was necessary to provide an operational definition of residential quality, to apply this definition, and then test it. This was done by designing an index of residential quality based on housing value and structural condition. Residential Quality Areas were then plotted on a map. In turn, an overriding hypothesis of geographical significance was examined in relation to the different Residential Quality Areas. Matters included in the hypothesis were: mobility, population distribution, income, ethnic composition, age composition, structural age, and non-residential land uses.

This study has shown that a city can be areally differentiated on the basis of residential quality. It was also shown that the operational definition (and thus the method) used in this study was valid in this case study. Its validity when tested by the examination of hypotheses indicated that the index reflected well the areal pattern of other variables inherently associated with residential quality.

The Residential Quality Area Map was examined and
evaluated through the use of analyses made from maps and
tetrachloric correlations, techniques that may prove to
be of general value in examinations of residential areas.

The general findings of this study may be summarized
as follows: (1) Cities can be differentiated on the
basis of residential quality, (2) Housing value and
structural condition are indeed indicators of residential
quality, (3) Block data reveals residential quality better
than tract data, and (4) Residential transition zones
are present in unplanned areas.

Reasons for the areal extent of phenomena are not
easily or positively arrived at in cultural or urban
geography. Correlations are often of the areal extent
of phenomena such as population and income, and causative
answers are often given for the existence of one phenomena
because of the other's occurrence. Such simple correla-
tions as answers for existence cannot be easily given in
the study of cities. There are many exceptions and the
areas are continually changing. A similar view is held
of some physical phenomena. Correlations, however,
can be made of distributions of population characteristics
and better insights may be gained into the quality areas
and their similarities in distribution from place to

65Chorley, Richard J., "Geomorphology and General
Systems Theory," Theoretical Papers in the Hydrologic
and Geomorphic Sciences, Geological Survey Professional
Paper 500B, U.S. Government Printing Office, Washing-
ton, D.C., 1962, p. 16.
place-between or within cities. It must also be remembered when considering quality areas that they are not static phenomena as this index may indicate, but they are continually changing and growing. Here it is meant to provide a means only for identifying quality areas. Before it can be understood how they develop, they must be identified.

Some questions for further research may be: (1) How did these Residential Quality Areas and patterns develop? (2) Long Beach indicates that areas of ethnic groups other than plain white are of middle or poorer quality residential areas. Is this true for American cities as a whole? (3) Are the poorest areas of the American city occupied by the elderly, as in the case of Long Beach? (4) Is the fact that 13.1% of Long Beach is of lower quality housing and residential representative of the average American city.

While it was shown in this study that cities are differentiated areally on the basis of quality, complete explanations for the development of the differentiations were not attempted. Only where and how they differentiate was shown in detail, not why. It is important to note that the reasons why the areas are as they are cannot be obtained by the use of simple visual correlations and statistical distributions. A study of the processes involved in their development would then be the next logical step. This thesis, or studies similar to it,
might be the first part in a series of studies on individual cities. Subsequent works would then explain the different areas. In looking at these specific areas it would be a prime objective to observe the areas and try to understand the cultural traditions and social background of the people and how areas developed. These studies could then be compared. From this, it is possible that some of the reasons why people create different types of residential areas would emerge.
BIBLIOGRAPHY


Early in the research, consideration was also given to the use of a statistical technique of the standard deviation from the mean as a way of delimiting areas of differing housing conditions, the different deviations representing gradational categories. This was rejected, however, because it took into account only standard and sub-standard (deteriorating and dilapidated) dwelling units and it was felt that some sort of recognition of a difference between the conditions of housing (sound, deteriorating, and dilapidated) was necessary. A further objection was noted when using a standard normal distribution, the use of a standard deviation does not allow for the inequalities of blocks. It was then considered to use the standard areas only, a method that would indicate degrees or categories of substandardness by the numbers of standard deviations below the mean. This type would be constructed from block data using the actual numbers of substandard units per block. It was decided that if a block were one standard deviation from the mean, it would be in one category and if two standard deviations from the mean, another category, etc. The standard deviation of substandard units per block was computed for the city of Long Beach using $\sigma = \sqrt{\frac{\sum x^2}{N} - \left(\frac{\sum x}{N}\right)^2}$ as the formula. It was found that the mean was 2.113 or 2, and that the standard deviation was 29.244 or 29. Thus, for a block
to be listed as more than one standard deviation from the mean, it would have to have at least 31 houses on the block that are substandard. The fallacy of using this technique should be obvious at this point; that is, all blocks in the city do not contain at least 31 housing units. There may be a block somewhere in the city that contains 20 units, 15 substandard and 5 sound. This is obviously a substandard block, but it would fit in the standard or first category with the use of the standard deviation method. This also applies to the complete use of the curve. This standard deviation method could be used if it were done by a uniform number of houses per event set; that is, use a certain number of standard deviations per 100 units. This way all the sets in the event would be uniform. This then, would be an excellent form of indicating degrees of substandardness per uniform areas. This, however, is impossible with the information and data available in the census reports. A complete house to house census would be necessary as well as the location of each house.

One of the best methods in dealing with degrees of substandardness by blocks would be through the use of percentages and percentiles; they would show gradual changes of the increase and decrease of the condition by areas. This was not used here for two reasons; because of the element of a lack of time, and the fact that it would only show a twofold breakdown.
APPENDIX B

This study stresses the advantages of using block data instead of more general tract data. However, in several instances it has been necessary to use tract data because the block data are not published for the topics under study and, therefore, unavailable to most people. One way to overcome this shortcoming is through the use of a survey. Discussed here are two sample methods. The example area is composed of four census tracts in the southeastern section of Long Beach. These were chosen because it was known before hand that they contain a variety of phenomena, and that the data gathered would vary considerably.

Ruled out as totally impossible was a total census of the area. This would be costly and excessively time consuming. Also ruled out as impractical was the 25% sample survey used by the City of Long Beach in a previously mentioned study of the feelings of the citizens toward Urban Renewal. This survey is much larger than is necessary for a study of this type.

Another survey technique is the grid pattern method used by Harold Creveling in his study of culture groups in Worcester, Massachusetts.66 This was based on quarter mile grid squares superimposed over a street map of the city. Interviews or samplings were made at the

66Creveling, p. 11.
intersections of the grid squares and at the center of each. As a result, each person interviewed need speak only of an area 320 feet around himself. Creveling plotted the data he gathered by this method in the form of dot maps. Each dot or different symbol represented the information or fact gathered at that point where the dot was located. An example of this can be seen in Figure 29, a map of ethnic composition in the Long Beach sample area. This sample was taken in tracts 5772, 5771, 5770, 5751, 5752, (see Figure 24).

Instead of plotting the data gathered in the form of a dot map as he did, Creveling might have better presented his data in the form of a choropleth map. This can be done very easily by using the half way points between the different interview points as the extent of the information gathered from a point. This would, mentioned before, place the boundary lines 320 feet from the interview point. The result of plotting the data gathered in this method can be seen in map 30. This, as will be seen later, gives a realistic impression of the extent of the data.

A third map was based on a one interview per block survey. This one interview per block was chosen randomly by placing all the addresses of each block (square block) in a hat then drawing one address out and using that as the interview or sampling point for that block. The data gathered at that point was considered to be representative
BLOCKS
ETHNIC GROUPS

FIGURE 31

NEGRO
WHITE WITH SPANISH SUR-NAME
WHITE
NON-WHITE OTHER THAN NEGRO
MIXED
Figure 31. Blocks Ethnic Groups. Source: A survey taken in census tracts 5770, 5771, 5772, 5751, and 5752 in the city of Long Beach, California. For exact location in the city consult Figure 24.
of that block. This survey was conducted and the data concerning the ethnic composition plotted from this survey method can be seen in Figure 31.

As observed by a comparison of the three maps that dealt with the survey taken, the block-by-block survey is the most detailed and probably the most accurate. It can be seen that while the chloropleth mapping of the grid technique of survey is indicative of the racial distribution, it is not as accurate as the block method. Both appear to be more revealing than the dot map. Although the survey was concerned with the distribution of ethnic composition, many other facts or questions could be surveyed.
ETHNIC GROUPS

MID-POINTS

FIGURE 30

- White
- Negro
- White with Spanish surname
- Non-white other than Negro
Figure 30. Ethnic Groups Mid-Points. Source: A survey taken in census tracts 5770, 5771, 5772, 5751, and 5752 in the city of Long Beach, California. For exact location in the city consult Figure 24.
ETHNIC GROUPS
SURVEY DOTS
FIGURE 29

1 NEGRO
2 WHITE
3 WHITE WTH SPANISH SUR-NAME
4 NON-WHITE OTHER THAN NEGRO
5 MIXED
Figure 29. Ethnic Groups, Survey Dots. Source: A survey taken in census tracts 5770, 5771, 5772, 5751, and 5752 in the city of Long Beach, California. For exact location in the city consult Figure 24.