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A STUDY OF THE INTRA-URBAN MOBILITY OF
CONDOMINIUM DWELLERS IN THE CITY OF WINDSOR

by

EROS FIACCONI

A Thesis
submitted to the Faculty of Graduate Studies
through the Department of Geography in partial fulfillment
of the requirements for the degree of Master of Arts
at the University of Windsor

Windsor, Ontario Canada

1976

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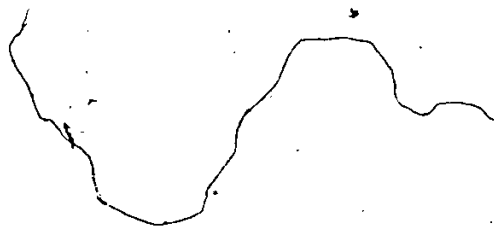


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CHAPTER I

INTRODUCTION

The history of man has been primarily one of migration. Initially, most migrating movements were of a forced nature often in pursuit of essential food supplies. Today, migration is predominantly a voluntary process which provides a means of betterment for both the individual and his household,

Migration may be broadly defined as a change of residence. Two subsets based on distance of the move emerge from this definition. The first of these is commonly referred to as "inter-urban" migration. Among the causes of this "long distance" movement are major changes of employment, political pressures or a number of equally radical alterations in an individual's way of life.

The second subset, "intra-urban" migration, is a much more frequent occurrence in which residential change takes place within a city or metropolitan region. The causes of this type of move are often more composite and subjective than for the former. Factors related to a household's aspirations, perceptions and socio-economic status may play a much more significant role in inducing intra-urban moves than in inducing inter-urban moves. Consequently, analysis of "intra-urban" mobility is made much more difficult with the result that theory and model building have been kept simple in structure and few in number.

The Ontario Association of Housing Authorities has stated that Canadians are the most mobile population in the world. The average length of residency in any

one dwelling is four to five years (Ontario Association of Housing Authorities, 1964). Such a high turnover rate of housing may result in extremely unstable neighbourhoods. Rossi (1955), Simmons (1968), and Moore (1970) have pointed out the significance of intra-urban mobility in altering the socio-economic and demographic composition of various sectors of the city. Such a change, if it occurs rapidly, may render specific facilities such as schools and playgrounds prematurely obsolete. The cost of replacing these facilities is often borne by the public.

Knowledge of why people move provide planners and public officials with some insights required to determine where rapid compositional changes are likely to occur. The same information is also beneficial in understanding the housing needs of the population. This knowledge alone, however, is not sufficient to render an accurate account of intra-urban mobility. It is also necessary to understand the household decision-making process as well as the effect of intra-urban mobility on the housing market.

Numerous studies have been undertaken in attempt to understand the decision-making process, many of which have experienced considerable success (Butler, et. al., 1969; Brown and Moore, 1970; Clark, 1966; Wolpert, 1965; Brown and Holmes, 1971; etc.) Few individuals, however, have sought to examine the effects of migration on the housing market, in particular, the method by which vacated accommodation is redistributed within the market.

The in-migration of households into newly created accommodations precipitates a series of interrelated moves referred to as vacancy chains. The analysis of vacancy

chains provides not only an understanding of housing redistribution but more importantly, provides the possibility of determining what welfare benefits accrue to households which have been affected. This latter information is particularly significant in policy-making decisions.

The best method of extracting information on intra-urban mobility and the functioning of the housing market is through empirical research. The problems involved in data collection, however, often restrict the conclusions of the study to vague generalizations of the process being examined. The majority of studies conducted on mobile people have employed aggregate data supplied by the census. The use of such information often precludes the inclusion of many significant variables into the study framework because they may be lost or disappear due to aggregation. Furthermore, census material does not permit the user to distinguish households by common characteristics (i.e. middle class families, families in an early stage of the life cycle, etc.) or house type should the researcher wish to limit the scope of study.

A major problem with research not utilizing census material is found in the selection of the sample. Often the sample represents a conglomerate of dwelling types and households. It is the belief of the author that such unnecessary aggregation hampers proper analysis. The decision to move is often the result of the household's dissatisfaction with the specific dwelling unit it is occupying. If possible, research should concentrate on detailed analysis of specific house types as well as on the residents occupying them. Moore (1970) and Simmons (1969) have suggested the potential implications and significance

of studying specific subsectors of the urban population. On the basis of the discussion just presented, it was felt that this research should concentrate on one such subsector of Windsor's housing and population - the condominium and its dwellers.

For the purpose of this study, a condominium is defined as follows:

"Conveyance of title transfers to the mortgagor clear and full ownership (fee simple) of a specific unit within a building and a shared interest and responsibility in the common elements, the land, structural columns, girders, halls, elevators, heating services, parking areas, etc."

(Smith, 1972)

It is readily apparent from this definition that "concominium" need not refer solely to residential ownership. However, in this study, the term will refer only to residential tenure, in particular, row housing. "Row housing" is defined by the C.M.H.C. as

"a one family dwelling unit in a row of three or more attached dwellings separated by common or party walls extending from ground to roof."

(Klein, 1972)

In the decade following their formal birth in Canada, the use of condominiums has experienced remarkable growth.¹ In 1971, for instance, this type of dwelling accounted for 10% of all new housing starts in the country (C.M.H.C., 1972). A.E. Diamond, discussing the housing

shortage in Canada, has stated that "this method of owning property may have a marked effect on the situation". Others have expressed this opinion as to the future of condominiums (Ontario Association of Housing Authorities, 1965; Smith, 1972; C.M.H.C. 1972; Klein, 1972; Burke, 1972). As Canada continues to become increasingly urbanized and land costs rise, one method by which housing costs can be kept down and in the reach of the middle class is through medium and high density housing. While high rise and other multiple family accommodations may be inadequate or unsuitable for families in certain stages of the life cycle, row house condominiums are not. They have the distinction of retaining the essential characteristics of a simple family dwelling² while remaining less expensive.

As this form of housing continues to accommodate an increasingly greater proportion of Canadians, the need for study is apparent. To date, the literature on condominiums is comprised primarily of historical and legal treatises (see "Bibliography of Condominium Literature", Vance, 1974). There have been virtually no empirical studies which have focused on the inhabitants. The minority of studies which have examined the residents have not employed a scientific method of analysis. This renders the findings inapplicable to policy decision-making as well as model building. There is a serious lack of empirically derived knowledge of condominiums. This, coupled with their increasing importance in our society, warrants consideration.

This research will attempt a detailed examination of the condominium and its residents in Windsor in the overall context of intra-urban migration and the housing turnover process. Its completion will hopefully provide



additional insights into intra-urban mobility, condominiums, housing needs and the functioning of the city as a whole.

The characteristics of the households participating in the chain of moves will first be examined in aggregate and subsequently by position in the vacancy chain. This latter approach will permit comparisons of household characteristics by link. Factors inducing mobility will also be reviewed followed by a series of hypothesis tests utilizing the Mann-Whitney Sign Rank Test in order to determine whether improvements in housing have occurred as a consequence of the move. The multiplier effect and the spatial properties of the vacancy chains are the final areas of concern since they will provide the means of relating this study to the general housing market in the city of Windsor.

The specific objectives of this study are as follows:

1. to identify the characteristics of households living in row house condominiums in the city of Windsor
2. to compare the socio-economic and demographic characteristics of households by position in the vacancy chain in order to determine whether vacated housing has been occupied by individuals who are significantly different from those who previously resided in the same dwelling
3. to determine why households move
4. to assess the improvement or deterioration in the housing circumstance as a consequence of the move
5. to determine what the multiplier effect of condominiums is and how it compares with single family housing of different price ranges

6. to determine housing cost and tenure status changes as a result of migration
7. to investigate the spatial properties of the vacancy chain begun by in-migration into new row house condominiums.

This investigation will assume the following format. Chapter II will review the literature as it applies to the various subthemes of this research in order to establish the approach to be taken. Chapter III describes the study area, sampling techniques and the methodological procedures employed in analysing the data. The findings are interpreted in Chapter IV and where necessary, pertinent hypotheses are generated and tested. The following chapter (V) presents the result of a series of multivariate techniques employed on the data in order to possibly strengthen selected findings which have emerged in the previous chapter. Finally, a complete summary of the findings and conclusions are presented in Chapter VI.

Chapter I - Footnotes

1. The condominium is a very old form of tenure. Babylonian documents have recorded its existence as far back as 2,000 years B.C. (Smith, 1972). During the middle ages, the condominium emerged as a dominant form of housing in Europe due to the shortage of space within the mediaeval walls. The enactment of the Code Napoleon in 1804 ensured condominium growth officially recognizing it as a distinct form of tenure. Nevertheless, it was not until after World War I that modern legislation regarding condominiums began in Europe. The need for condominiums and related legislation arose because of the critical housing shortage brought on by the war. Since then, condominium legislations has been enacted in every major European nation.

North America was much slower in adopting condominiums than was Europe, the primary reason being that North America has never had to face as serious a housing shortage as had Europe. Nevertheless, the housing laws in Canada and ~~the U.S.~~ have made possible the existence of condominiums. However, until proper legislation dealing specifically with this type of tenure was enacted, loans and mortgages from the government and other lenders were virtually impossible to obtain. In the mid-1960's, amendments to the National Housing Act of Canada made specific mention to condominiums. Since housing in Canada is largely the responsibility of the provincial government, proper legislation has been uneven throughout the country. Such provinces as British Columbia and Ontario which felt a need for this type of housing due to overall shortages in the market have been first and foremost in their legislation.

The use of condominiums has gained momentum in these provinces.

2. They have individual identity, direct relationship to the outside at ground level and are purchasable.

CHAPTER II

REVIEW OF LITERATURE

2.1 Introduction

The decision to relocate is a multivariate process. In most instances, the household is the principal decision-making unit although friends, real estate agents, land developers, planners and politicians exert considerable influence. They often provide limits as to what is available and where. Despite the significance of these individuals in the overall context of urban mobility, "research has focused almost exclusively on the household" (Moore, 1972). Studies would be greatly improved and considerably more realistic if the effects of extra-household influence could be included in their conceptual framework. However, the quantity of data required and the number of variables and time involved have precluded their inclusion in most empirical research. For the reasons just cited, this study will not attempt to rectify the situation, but rather will examine only the household.

In studying intra-urban mobility, the most common method of pursuit has been to divide the behaviour into subsets. Simmons (1968) subcategorized the process into the following three parts: 1) studying who moves, 2) why they move, and 3) where they move to. The majority of studies, however, look at movement behaviour in two phases: a) the decision to seek a new residence and b) the search for and selection of the new residence (Arminger, 1961; Brown and Moore, 1970; Butler, et. al., 1969; Wolpert, 1965).

2.2 The Decision to Seek a New Residence

One of the most theorized concepts in the decision

to seek a new residence is that of place utility (Wolpert, 1965). Wolpert defines the concept as the "net composite of utilities which are derived from the individual's integration at some position in space (location)" (Wolpert, 1965; Brown, Horton, and Wittick, 1970). In simple terms, it can be viewed as a "measure of the attractiveness or unattractiveness of an area relative to alternative locations as perceived by the individual decision maker" (Simmons, 1968; Brown and Longbrake, 1970). The concept maintains that when the place utility of one residence is maximized relative to all others within its capability, the household is content. Unless a move is forced upon it, such as through the destruction of the dwelling, the household will have no intention of moving. However, when a location begins to lose its relative utility, the household is placed in a state of stress (Wolpert, 1965). In resolving this stressful situation, the household may seek to relocate or cope with the stress in some manner so that it does not have to move (Wolpert, 1965; Simmons, 1968).

Caprio (1972) believes that in addition to place utility, it is necessary to identify the relationship of housing satisfaction and qualitative change. He states that this is a function of three factors which are: 1) the perception of housing demand by the household, 2) the socio-economic status of the household, and 3) the aspirations of the household and the utility they derive from their present dwelling. Aspirations and utility are the most subjective and as such, their specifications in empirical and operational terms have not been very well accomplished (Moore, 1972; Brown, Horton, and Wittick, 1970; Caprio, 1972; Lansing and Barth, 1964).

Pickvance (1973), on the other hand, believes that

the decision to seek a new residence is dependent upon the following five classes of variables: 1) household characteristics, 2) housing values, 3) neighbourhood characteristics (both of site and location), 4) dwelling unit characteristics, and 5) central government policy affecting access to different types of dwellings (p. 280). This last point falls into the realm of higher level decision-making which has been virtually eliminated from most studies conducted by geographers, sociologists and psychologists. The remaining four variables, however, have received a relatively extensive treatment on an individual basis. For instance, Rossi (1955) concentrated on life cycle stages as a variable influencing mobility. The work of Simmons (1968), Sabagh (1969), and Speare (1970, 1974) have similarly dealt with family characteristics as a determinant of mobility. The work of these researchers complements and confirms many of the findings brought to light by Rossi in 1955. Long's study in 1964 found that age of family is a significant determinant of a household's mobility inclination. This finding was significant in confirming that of an earlier study by Kish and Lansing (1957) in which both life cycle and prior tenure status were tested as variables affecting mobility. Clark agrees that life cycle changes are probably the most powerful forces inducing mobility. Nevertheless, he admits that the local environment is also an important influence (Clark, 1971). Brown and Longbrake (1970) share similar views noting the significance of isolating environmental characteristics which are related to the decision to seek a new residence. In the past, research relating migration to environment or neighbourhood was almost exclusively a concern of sociologists (Michelson, 1966, 1969 (a); Onibokun, 1973). Recently, however, geographers and other social scientists

have come to realize its significance in helping to explain mobility (Clark, 1971; Brown and Moore, 1970). Lynch (1960) and Tilly (1967) emphasize that it is the neighbourhood which is in sharpest focus for most urban residents. Onibokun (1973) adds that the environment subsystem composed of physical, social and psychological variables external to the dwelling and its tenants have a marked effect on satisfaction due to that household's interaction with it (p. 314). This view was earlier presented by Michelson based on his findings in 1969 (Michelson, 1969 (a), (b)). In examining the length of intra-urban moves, Clark (1971) notes that distance of the move is significantly explained by the neighbourhood variable. A household moving because of dissatisfaction with its particular dwelling unit and not with its neighbourhood will often move shorter distances than one whose dissatisfaction is with the neighbourhood. Popenoe (1973) feels that this is not always applicable. In his opinion, the above pertains only to the least mobile sector of the population since they have the greatest ties with their neighbourhood. Individuals with the highest mobility, however, are not expected to be influenced as much by the neighbourhood. Their short duration in a particular residence precludes the formation of any significant links (Popenoe, 1973: 36-37).

The main drawback of the neighbourhood approach is that only a few studies "have been able to comprehensively identify and scientifically characterize in operational terms the chain of environmental factors which determine people's relative satisfaction with their accommodation" (Onibokun, 1973: 461)

The above studies may be categorized into two themes: structural or socio-psychological (Sabagh, Van Arsdol

and Butler, 1969). The structural approach examines family life cycle, occupational and status hierarchies and the interaction of individuals with their environment. The socio-psychological theme, on the other hand, focuses on family needs, values and aspirations (Sabagh, Van Arsdol and Butler, 1969). Due to the difficulty in quantifying the factors of which it is composed, the socio-psychological theme has received superficial consideration. Nevertheless, Lisk (1974) and Little and Hill (1967, (b)) have attempted to define equations from which to predict behaviour based upon attitudes. Similar studies have focused on the learning process as a means of determining the search patterns of mobile people (Golledge, 1967).

2.3 Search for and Selection of a New Residence

The search for and selection of a new residence has received considerable attention (Brown and Holmes, 1971; Johnston, 1967, 1969; Clark, 1970; Marble and Nystuen, 1963; Morrill and Pitts, 1967; Horton and Reynolds, 1969; Adams, 1967; Simmons, 1968). Brown and Holmes (1971) state that the primary constraint in the search for a new residence is the household's awareness space defined as "the set of locations within the urban area about which the migrant has some knowledge" (Brown and Holmes, 1971: 328). Adams, however, advocates the notion of the mental map whereby each individual evolves an image of the city based upon his interactions with it (Adams, 1967). He further maintains that the map is sectoral in shape and controls the individual's search behaviour during relocation. This viewpoint is supported by the findings of Lynch (1960) and Orleans (1967). Nevertheless, the research of Johnston on Minneapolis and Brown

and Holmes on Cedar Rapids does not uphold the "mental map" theory.

Despite the attempts of these studies to explain the search behaviour of mobile individuals, there still exists "considerable ambiguity about the expected spatial form of search space" (Brown and Holmes, 1971).¹

2.4 Workplace Location as a Determinant of Residential Relocation

The notion of workplace location as a determinant of residential relocation has been one of the central themes in economic research on intra-urban mobility (Kain, 1962: Detroit; Wheeler, 1967: Pittsburgh; Taaffe, Garner and Yeats, 1963; Hoover and Vernon, 1960). The basic assumption of this theory is that the "rent" or cost of occupancy of a site declines with distance from an activity center (Schnore, 1954). Given the above assumption, a household will tend to locate at a point beyond which further savings in rent are insufficient to compensate for increasing transport costs to the center. Schnore (1954), Kain (1962), Alonso (1964) and Getis (1969) believe that the historical importance of the C.B.D. has been overemphasized and that workplace location may not be that significant a determinant of mobility or location (Getis, 1969: 55). Nevertheless, the results of many studies have shown that location of workplace goes far to explain residential location (Wingo, 1961; Kain, 1962 (a), (b); Lowry, 1964). In Chicago, for instance, a study by Taaffe, Garner and Yeats (1963) found that 50% of people worked in the same area in which they lived. Today, there is much disagreement as to whether or not workplace location is really that significant a variable. Most authors concede that work-

place is very important in explaining inter-urban moves but as an explanatory variable in the intra-urban case, it becomes very obscure (Moore, 1972; Heighes, 1968; Simmons, 1968; Rossi, 1955). The findings of a study conducted by Catanese (1971) indicated that income was the most significant statistical measure of socio-economic factors related to residential mobility. This in conjunction with his other findings implies that the journey to work is becoming a less significant factor (Catanese, 1971: 337). A study by Kaiser and Weiss in 1969 on residential mobility factors found no evidence that households improve accessibility as a result of moving. Stegman (1969) concludes that the moving behaviour of 4/5's of households is beyond jurisdiction of accessibility based models. He adds that only 6% of all moves of the people interviewed were made for reasons of locating closer to work (p. 25).

The discussion presented implies that workplace location is not a significant factor in determining intra-urban mobility. In terms of long distance migration, however, workplace still remains the dominant factor.

2.5 Filtering Theory

Although not a primary concern of this research, a brief review of the controversial literature on filtering is required in order to better understand related concepts.

The main underlying theme in filtering is the notion that housing depreciates in quality and value over time as a result of obsolescence, deterioration and the creation of surplus housing. As new accommodation is placed on the market through construction, the older "deteriorated" supply of housing is made available to successively lower income groups in the city.

Generally, filtering attempts to examine the relationship between changes in quality, prices and occupancy which occurs in the housing stock through the addition of new accommodation. Inherent in this simplistic overview of the concept are a number of complex variables. It is in attempting to quantify the effects of these variables and in particular, the welfare benefits accruing from the process, which have resulted in controversy. To date, an all encompassing definition of filtering for the purpose of quantification has not emerged.

Empirical research on filtering has taken two approaches based upon the manner in which the addition of new housing into the market is considered. One approach is to examine the household as it "filters up" into better housing while the other studies deteriorating housing as it "filters down" to lower income groups. A definition of filtering has emerged based on each approach. For instance, Fisher and Winnick (1951) define filtering as "a change over time in the position of a given dwelling unit or groups of dwelling units within the distribution of housing rents and prices in the community as a whole" (p. 16). This definition relates filtering to the housing market rather than to the occupants. The conclusions of Grebler's 1952 study of New York support this approach.

Smith (1964) and Kirkland (1968), however, attempt to define filtering on the basis of occupancy changes in the housing stock. According to this definition, filtering occurs when a dwelling is presently occupied by a household whose income level is lower than that of the former occupants.

A third definition relates filtering to prices in general rather than to other housing on the market (Lowry,

1960). This interpretation implies the use of index numbers and the determination of an appropriate base year from which to relate all prices. According to Lowry, housing has filtered down if the price and rent of a group of dwelling units increases at a lower rate than prices in general.

In summary, the inability of social scientists to arrive at a consensus on the definition of filtering has left the field open to considerable criticism. The value of empirical research in this field is dependent upon its applicability to all definitions of filtering. As this is a major drawback, nevertheless, the greatest criticism has arisen in determining the surplus of new housing required to provide welfare benefits. According to Silver (1971), the quantity of new housing required on the market before welfare benefits could begin to filter down to lower income groups would have to be enormous. He further maintains that much of this surplus housing must sell below the prevailing market prices in order to precipitate the filtering process. This situation is not likely to occur, however, since the very surplus of housing required to set the filtering process in motion would provide a check on the total housing production in the area (Lowry, 1966).

2.6 Vacancy Chain Analysis

Recently, a new approach to the study of housing turnover has emerged. Vacancy chain analysis, as it is commonly referred to, differs from filtering in two respects: 1) it does not attempt to measure welfare benefits and 2) it examines the immediate impacts of surplus housing as opposed to filtering whose effects are measured only over extended periods of time.

The research employing vacancy chain analysis is capable of providing information on mover and neighbourhood characteristics as well as on the multiplier effects of various house types. The multiplier effect is simply defined as the total number of moves or the length of a vacancy chain which is generated by the creation of a new vacancy in the housing market (White, 1971). Through empirical research, it has been found that the value of the multiplier effect is dependent upon house type, price (rent), and whether it is a public or private venture (Kristoff, 1965; Adams, 1973; Watson, 1974; Lansing, Clifton and Morgan, 1969). This knowledge is beneficial in policy decision-making by helping to determine which housing by types and prices should be encouraged in order to maximize the relocation opportunities of individuals in the lower strata of income capability.

Empirical research on vacancy chains was pioneered by Kristoff in his 1965 study of 64 dwelling units in New York. No attempt was made at that time to stratify the sample housing by type or cost. The results revealed a multiplier effect of 2.4 indicating that 154 families were able to make adjustments in their housing as a result of the 64 new dwelling units.

The first attempt at stratifying the sample housing by type and cost was made by Lansing, Clifton and Morgan (1969). Seventeen standard metropolitan statistical areas with a population in excess of 200,000 were used as the study area. Housing which initiated the vacancy chains was divided in the following manner: 40% were apartments; 60% were single family housing. The findings and conclusions of this study provided significant insights into the vacancy creation capability of different forms of housing. Generally,

it was found that the multiplier effect for single family dwellings was greater than for apartments. Nevertheless, high priced apartments were found to have approximately the same multiplier effect as low priced single family dwellings. The respective values were 3.9 and 3.8. On the basis of this research, it would appear that cost (price) of housing is a much better indicator of vacancy producing capabilities than is house type.

Possibly the greatest disadvantage of this study lies in its inapplicability to planning at the local level. By aggregating the data of the 17 S.M.S.A.'s, the results tend to reflect the national situation more so than that at the municipal or neighbourhood level.

A more detailed and sophisticated analysis of vacancy chains was conducted in 1972 by J.S. Adams and the students of the Geography Department at the University of Minnesota. The Minneapolis-St. Paul metropolitan area was chosen as the study area. Housing for the purpose of analysis was broken, by type, location and nature (public or private). Of the 418 vacancy chains examined, 303 were public housing projects and 115 were private (65 single family units and 50 row townhouses). Vacancy chains begun by public housing projects had the lowest multiplier effect (1.6), the privately sponsored townhouses had a slightly higher value (2.1), and the single family accommodations experienced the longest vacancy chains with a multiplier effect of 2.4 (Adams, et. al. 1973: 6-8).

Criticism of vacancy chain analysis has been minimal. Some of the difficulties are noted by Brueggeman (1974). He states that this methodology examines the distribution of rent and prices in the turnover of housing at one point in

time with the result that only short term effects can be observed (Brueggeman, 1974: 319). In addition, he adds that price changes are observed only on the housing directly affected by the move with the result that generalizations on the whole market cannot be made (ibid., p. 320). Kristoff does not feel that this criticism is justified. He is of the opinion that Brueggeman has made the error of assuming that the information obtained from vacancy chain analysis is used to determine and explain filtering. Kristoff has clearly stated that the process which he is reporting "should not be confused with filtering" (Kristoff, 1965: 243). He adds that as long as the type of data being collected from vacancy chain studies remains the same (crowding indices, rent to income ratios, and dwelling quality as perceived by the individual or interviewer), it is conceded that direct inferences regarding filtering cannot be made. This, however, does not preclude the use of this methodology since the data obtained is useful in other respects.

In reply to Brueggeman's earlier criticism, Kristoff states "unless we obtain facts about how high level new construction affects all segments of the population (i.e. those left behind as well as those moving into new housing), we do not have a basis for intelligently answering public policy questions" (Kristoff, 1974: 321).

2.7 Deficiencies of Aggregate Data

Brown and Moore (1970) state that "existing aggregate-level models do not possess a high degree of predictive power" (p. 1). Much of the research on small area population characteristics and change have been constrained by their use of aggregate-level data, particularly the

decentennial census (Moore and Gale, 1973: 137). Consequently, the results do not provide sufficient insights into the structure of change at the household level upon which to base planning and policy decisions (ibid.). Yet, the central issue in most urban planning situations is the estimation and explanation of changes in these small areas (Moore and Gale, 1973: 135). It has been empirically proven that factors and characteristics vary from subarea to subarea as well as from subgroups to subgroups (Brown and Moore, 1970: 4). The best method of data collection, therefore, is to conduct detailed studies of the environmental condition and behavioral responses at the individual level (ibid.).

2.8 Summary

Clearly from a Canadian viewpoint, the literature is deficient in empirical research of Canadian content. It is hoped that studies similar to this will move towards filling this void.

On the basis of the American experience, it would appear that the best approach to studying intra-urban mobility is to consider the behaviour in two phases: a) the decision to seek a new residence, and b) the search for and selection of a new residence. In studying the first phase, considerable success has been obtained by examining mobility in terms of socio-economic, demographic (life cycle considerations), and environmental categories. Unfortunately, few researchers have attempted to consider these factors simultaneously. In fact, until the late 1960's, the environmental impacts on mobility were exclusively the concern of sociologists.

One of the most theorized concepts in the decision

to seek a new residence has been that of "place utility" (Wolpert, 1965). This approach advances the notion that a household is constantly evaluating its place utility relative to other locations. When one location loses its perceived utility, the household is placed in a state of stress. Often, the only solution is to relocate. Embodied in the concept of place utility are factors which are both tangible (the environment, the specific unit) and intangible (aspirations, values). Since the intangible factors are associated with difficulties in quantification, their inclusion in empirical research has been limited.

In studying the second phase (the search for and selection of a new residence), two concepts have emerged, that of the individual's awareness space (Brown and Holmes, 1971) and that of the mental maps (Adams, 1967). The success obtained with either approach is questionable. Brown and Holmes (1971) conclude that "there is still considerable ambiguity about the expected spatial form of search space".

This study will seek to incorporate socio-economic, demographic and environmental variables in its structural framework in order to determine why households have moved. Place utility will be examined through hypothesis testing. Improvements or deterioration in various aspects of the housing circumstance will be noted and conclusions regarding place utility will be advanced.

Workplace location, as a determinant of residential relocation, has received considerable attention from economists. The results of recent studies on this subject imply that the significance of workplace location in inducing mobility or in determining where relocation will take place is decreasing. The influence of this factor on the sample

population of this study will be reviewed.

The housing turnover process has been examined primarily in the context of the filtering theory or vacancy chain analysis. Filtering attempts to measure the welfare benefits accruing to individuals as a result of the construction of surplus housing and the simultaneous decline in value of the existing stock. A great deal of criticism has been directed at filtering because there has yet to emerge an all encompassing definition from which to measure the welfare benefits. Furthermore, it is not certain how much new construction is required before the benefits of filtering can be realized. The general consensus is that far too much new housing is required. That being the case, the situation could never be realized since before the required amount of excess housing is created, the market mechanism would have precluded its construction.

Vacancy chain analysis is a relatively new approach to the study of the housing turnover process. Its focus is on the immediate impact of new vacancies and does not attempt to measure the welfare effect. This method is capable of providing considerable information on movers, neighbourhoods, and dwelling characteristics as well as on the multiplier effect of various house types. Through empirical research, it has been found that the size of the multiplier is primarily dependent upon house type, price, and whether it is a public or private development. A major disadvantage of the vacancy chain analysis approach as seen by its critics is that by examining the turnover of housing over a short period of time, only short term effects can be observed. Furthermore, by studying only the housing involved in the vacancy chain, gen-

eralizations about the whole market cannot be made. The proponents of this approach, however, find this criticism inapplicable and add that only through such a procedure can a better understanding of the housing turnover process at the local level be obtained.

It was felt that vacancy chain analysis was the best means of fulfilling the objectives of this study. Such an approach permits comparisons of individuals at different links of the chain to be made as well as providing an understanding of intra-urban mobility through information such as distance and direction of movement. A series of hypotheses will be generated and tested by the chi square method in attempting to determine in what respects households differ by link.

Finally, the literature emphasized the disadvantages associated with using aggregate data in studies whose main interest is not with regional but with the local situation. This study has attempted to circumvent these disadvantages by using only data collected on an individual basis by means of a door-to-door interview.

CHAPTER II - FOOTNOTES

1. For a more detailed consideration of this topic, refer to Johnston (1967) and Adams (1967).

CHAPTER III

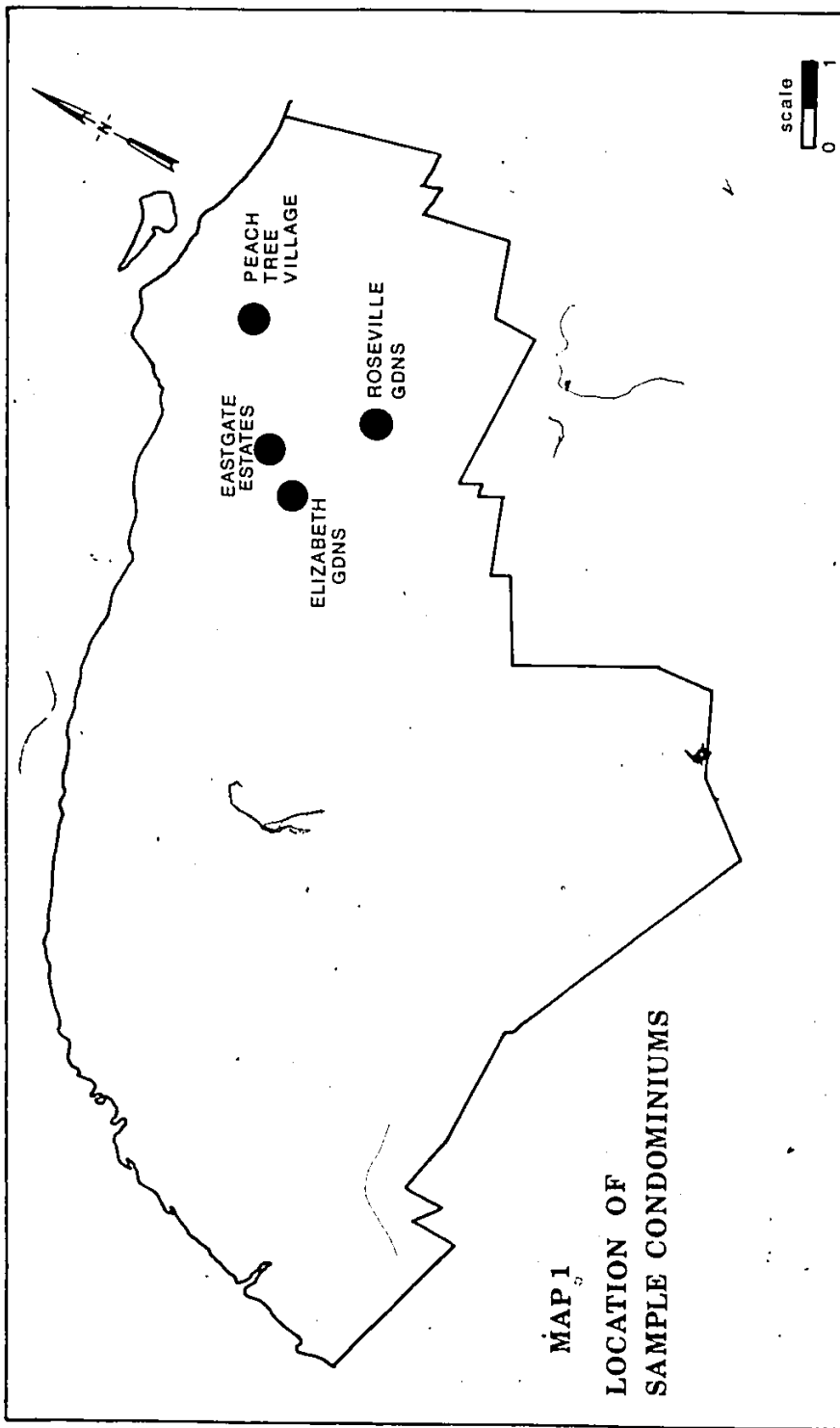
RESEARCH METHODOLOGY

3.1 Study Area

The city of Windsor, with a population in excess of 200,000, is ranked among the twelve largest metropolitan areas in Canada. Although its labour force is significantly skewed towards blue collar employment, its use as a representative Canadian sample is not jeopardized since it exhibits similar characteristics in other respects.

In 1974, the period in which this study was being formulated, four condominium developments existed in Windsor accounting for 950 household units. Of this, approximately 280 were apartments while the remaining consisted of row house dwellings. All four developments are located within a one mile radius of each other in the newly developing areas of southeast Windsor (See Map 1).

Unit costs were found to vary according to number of bedrooms and the development in which they were located. Generally, however, the cost of each unit averaged about \$23,000 with down payments as low as \$600. At Eastgate Estates, for instance, down payment for a three bedroom house valued at 23,000 was \$1,500 (Windsor Star, November 8, 1973). Monthly mortgage payments including interest, principal and taxes amounted to \$227. According to C.M.H.C., housing cost should not exceed 27% of the total family income. In order to be able to afford housing similar to the example presented, total family income for one year need not exceed \$10,100. On the basis of these figures, it would appear that the form of housing being investigated is within the means of a lower middle income household.



MAP 1
LOCATION OF
SAMPLE CONDOMINIUMS

3.2 Sample Size and Data Collection

Due to time constraints and costs involved, a full universe sample was unrealistic. It was necessary therefore to obtain a listing of the addresses of condominium row houses from which to draw a representative sample. This information was furnished by the City of Windsor Directory. By means of stratified random sampling techniques in conjunction with the table of random numbers, sixty-seven addresses representing 10% of the universe population were extracted for interview purposes. The breakdown of the sample by development is as follows: Elizabeth Gardens - 11; Eastgate Estates - 13; Peachtree Village - 8; and Roseville Gardens - 35 (total 67).

The questionnaire schedule administered was an adapted version of the one used by R. Dzus a year previously (See Appendix 1). It was hoped that by implementing the same questionnaire, comparison of his results to this and subsequent studies could be carried out at a later date. The questionnaire itself had been prepared on the basis of a literature review and field work.

The first set of questions were designed to enable the interviewer to extract the socio-economic and demographic characteristics of the household. In addition, information on rent, tenure status, type of dwelling, and location was also requested. Interspersed throughout were open-ended questions which permitted the respondent to elaborate on those queries which by their wording may have been subject to interpretation.

Semantic differential questions were devised in order to aid in determining pre-move and post-move perceived place utility. Each question illicited a response related to some aspect of the housing circumstance. The interviewee.

was able to choose from a set of bi-polar adjectives the one he felt best described the situation being examined. Two identical sets of 26 semantic differential questions were used. The first set examined pre-move place utility and the second, post-move utility. In this research, place utility (housing circumstance) was defined in terms of three parameters: dwelling unit features, neighbourhood characteristics and accessibility considerations. Each of the 26 semantic differential questions was grouped on the basis of the parameter which it helped to define. For example, a question related to satisfaction/dissatisfaction with the number of rooms in the present dwelling would be considered as being part of the "dwelling unit features" parameter.

The questionnaire was administered in the fall of 1974. The sixty-seven households extracted for sample purposes were interviewed first. The dwellings vacated by these people were visited next and the residing household was interviewed. This procedure continued for all links until the chain was completed. In order to achieve the best possible response rate, dwellings were visited as frequently as three times and at varying times of the day and evening. A chain was considered to have terminated when one of the following occurred: 1) the resident household refused to cooperate; 2) the household had come from outside the study area; 3) the dwelling unit had been removed from the housing market; and 4) a member of the still resided in the former dwelling.

In all, sixty-seven vacancy chains were traced resulting in a total of 100 interviews being conducted. The initial 67 households which consisted exclusively of condominium dwellers constituted link 1. The terms "condominium

dwellers" and "link 1 households" will be used interchangeably in the remainder of this research. Link 2 was made up of 26 cases and link 3, 8 cases. The small number of cases comprising link 3 impose severe limitations on their applicability. In most instances, the statistical techniques employed in analysing the raw data of links 1 and 2 cannot be readily applied to link 3. Nevertheless, the findings of link 3 will be included since they may be used to help strengthen any relationships which may occur between links 1 and 2. In other instances, link 2 and 3 results will be aggregated for comparison with link 1.

3.3 Methodology and Statistical Techniques

Map interpretation will be fundamental in interpreting migration flows through urban space. Origin-destination maps will provide a visual verification of any spatial relationships which may emerge. Heiges (1968) has indicated that such maps provide additional insights and constitute an important aspect of any migration study. Graphical interpretation will be limited to a "tenure status change" flow chart.

A large segment of the data will be analysed by means of percentages (cumulative and regressive) and means.

The following series of hypotheses have been generated to determine if the socio-economic and demographic characteristics of households in link 1 differ significantly from those in link 2. These will be tested by means of an N x M chi square test. The hypotheses are:

1. H_0 - there is no significant difference in sex of household between households in link 1 and 2.

2. H_0 - there is no significant difference in age of household head between households in links 1 and 2.
3. H_0 - there is no significant difference in the number of children per household between links 1 and 2.
4. H_0 - there is no significant difference in the number of children older than 14 years between households in links 1 and 2.
5. H_0 - there is no significant difference in educational attainment between household heads in links 1 and 2.
6. H_0 - there is no significant difference in income between households in links 1 and 2.

The chi square test of the form

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^k \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

where O_{ij} = observed number of cases categorized in the i th row of the j th column

where E_{ij} = number of cases expected under H_0 to be categorized in the i th row of the j th column

will be used to test the above.

Many empirical studies employing migration data have found chi square to be the best technique for analysis (McGinnis, 1968). It allows a greater range of possibilities since it is simple, free of many assumptions (such as normality) and extremely flexible. It also permits testing of nominal and ordinal scale data which are abundant in migration studies. In order to comply with all the require-

ments of the test, it was necessary in some instances to collapse cells in the contingency tables due to insufficient representation.

The remaining series of hypotheses have been generated on the basis of the semantic differential questions which examine pre-move and post-move place utility (See Appendix 2). Since the data is ordinal, parametric testing could not be performed. A review of the applicable non-parametric tests resulted in the choice of the Wilcoxon Matched Pairs Signed Ranks Test. This test is a more powerful version of the simpler sign test and enables the researcher to predict the direction of the difference (Siegel, 1956). Three variations of the test are available depending upon the size of "n". In so far as this research is concerned, only the following two versions were required.

In those cases where $N < 25$

T = the smaller sum of like-signed ranks
if T observed is found to be equal to or less than T critical under a particular significance level for the observed N value, the null hypothesis may be rejected.¹

When the value of N is greater than 25, the following variant of the test may be used:

$$Z = \frac{T - \mu_T}{\sigma_T} = \frac{T - N(N+1)/4}{\sqrt{\frac{N(N+1)(2N+1)}{24}}}$$

where T = the smaller sum of like-signed ranks

N = size of the sample excluding those cases in which the difference between the two samples is 0

When the value of Z has been determined, reference to the appropriate table will enable the researcher to calculate the probability associated with the occurrence under H_0 of the Z calculated (ibid.).

The Wilcoxon Matched Pairs Sign Rank Test is one of the most powerful of the non-parametric tests. "When the assumptions of the parametric T test are met, the power efficiency of this test assumes 95.5%" (Siegel, 1956: 83).

Chapter IV of this study will implement two multivariate techniques - factor analysis and regression analysis. Factor analysis was employed on the results of the 51 semantic differential questions in order to reduce the data into more manageable groupings and to simultaneously extract a series of underlying factors. Data extracted from the 51 variables had limited applicability for the following reasons: 1) it could not be used in analysis requiring interval scale data; 2) the total number of variables was too great for generalized analysis.

A new series of variables was generated by standardizing the factors obtained. These "new variables" in addition to the original variables of the integral scale were used in regression analysis.

In general, "regression analysis enables the researcher to study linear relationship between a set of independent variables and a number of dependent variables while taking into account the interrelationships among the independent variables" (Nie, Bent and Hull, 1970). The linear relationship generated can then be used to predict values of the dependent variable. The difference between the value of the dependent variable and the value predicted by the independent variables is termed the residual. The regression equation in its formalized

version is as follows:

$$y = a_1x_1 + a_2x_2 + a_3x_3 + \dots + c + r$$

where y = dependent variable

x's = independent variables

a's = regression coefficients

c = constant

r = residual

The purpose of employing regression analysis in the study was to attempt to obtain a series of equations which could best explain a select number of dependent variables.

CHAPTER III - FOOTNOTES

1. For method of implementation, see Siegel, 1956, page 77.

CHAPTER IV

INTERPRETATION OF SURVEY EVIDENCE

4.1 Introduction

A fundamental objective of this study is the identification of Windsor's condominium dwellers and those filling the vacancies left by them. Knowledge of the characteristics of people choosing certain residence types will provide planners, developers and public officials with the information required to ensure that adequate numbers of various house types are made available on the market.

This chapter will assume the following format.

The characteristics of all the households that participated in this chain of moves will be examined first followed by a disaggregated review of the households by link. This latter treatment will enable between link comparisons to be made through the generation and testing of hypotheses. The analysis will then turn to an examination of why people move supplemented by related hypothesis testing. This is followed by place utility considerations, additional hypothesis testing, multiplier effects of condominium housing, tenure status considerations and the change in cost of accommodation due to relocation. The final concern of this chapter is with the spatial aspects of the chain moves.

4.2 Socio-Economic Characteristics of Movers in Aggregate

This section will examine the socio-economic characteristics of the movers in aggregate in an attempt to define a subpopulation characterized by households in a mobility chain begun by the availability on the market of purchasable condominium row housing.

Table 1 presents the demographic characteristics of the movers. The majority (91%) of household heads are males. Of the 9% heads which are female, 44% are divorced and 33% are separated. In only one case (11%) was the female head married and the situation arose from the fact that the husband was a student.

Unmarried persons account for a relatively high proportion of household heads. As will be pointed out later in this chapter, most of these individuals are found in the second and third links of the chain where housing is primarily rental in nature and inferior in quality to that in link 1. Rental accommodation is more attractive to single individuals and newly starting households than purchasable units because of the economics and lack of commitment involved. Consequently, if much of the housing in this particular vacancy chain consists of rental housing, the possibility of having unmarried and single households is expected to be great.

Education and occupation statistics are often used as measures of social status. Table 2 lists occupations in descending order of perceived social status as employed in the 1971 Census of Canada. It is readily apparent that almost half (45.9%) of household heads occupy the two lowest positions (housewives excluded) on the occupation scale. These figures reflect to some extent the nature of Windsor's labour force which, as already has been noted, is heavily skewed towards blue collar employment.

In the case of spouses, 54% are listed as being housewives, another occupation whose perceived status is low.

Educational attainment figures complement the

Table 1

<u>Sex of Household Head</u>	<u>Marital Status of Head</u>	<u>All Heads</u>	<u>Female Heads</u>
Male	Married	84%	11%
	Widowed	0%	0%
	Divorced	4%	44%
	Separated	4%	33%
	Single	8%	11%
Female			

Table 2

Occupation Status

<u>Occupation</u>	<u>%</u>	<u>Head</u>	<u>Cumulative</u>	<u>%</u>	<u>Cumulative</u>
Managerial	9.4	9.4	9.4	1.0	1.0
Professional and Technical	8.3	17.7	17.7	6.0	7.0
Clerical	10.4	28.1	28.1	8.0	15.0
Sales	8.3	36.4	36.4	1.0	16.0
Service and Recreation	12.5	48.9	48.9	9.0	25.0
Transportation and Communications	4.2	53.1	53.1	0.0	25.0
Farm and Other Primary	-	-	-	-	-
Craftsmen	21.9	75.0	75.0	2.0	27.0
Labourers	24.0	99.0	99.0	2.0	29.0
Housewives	1.0	100.0	100.0	54.0	83.0
Missing	-	-	-	17.0	100.0

above observation since over half the heads occupy the three lowest positions. A correlation coefficient of $-.3787$ between educational attainment and occupational status was found to be significant at the $.001$ level (See Table 3).

At the time of the interview, 93% of household heads had full-time employment (See Table 4). Of the three cases who reported not working, two informed that this was a temporary situation. Employment status reflects to some degree economic and financial stability which is seldom associated with transient or undesirable households. It can be concluded, therefore, that the sample was a stable group.

Income distribution at the time of the interview is expressed in Table 5. Fifty percent of all households fall within the 3 income categories ranging from \$7,280 to \$13,520 per annum, often referred to as lower middle income. However, the single largest income category into which 20% of all households fall is the \$13,520 to \$15,600 per annum bracket. An additional 22% of households earn more than \$15,600. This may reflect the high proportion of households which have more than one member employed at full time occupation (See Table 4).

The correlation between occupation of the head and household income is extremely low (-0.0008) indicating that little relationship exists between these two variables. While some of this may be explained by the high proportion of households with two or more wage earners, much may be a reflection of Windsor's high paying unskilled occupations characterized by automotive and related occupations. Such occupations which have a low position on the occupation scale nevertheless pay the equivalent of jobs located

Table 3

Educational Attainment (Total Sample)

<u>Education</u>	<u>%</u>	<u>Head</u>		<u>Spouse</u>	
		<u>%</u>	<u>Cumulative</u>	<u>%</u>	<u>Cumulative</u>
Some Primary	0.0	0.0	0.0	2.4	2.4
Primary Complete	7.0	7.0	7.0	9.6	12.0
Some Secondary	51.0	58.0	58.0	41.0	53.0
Secondary Complete	8.0	66.0	66.0	19.3	72.3
Some Vocational	8.0	74.0	74.0	3.6	75.9
Vocational Complete	4.0	78.0	78.0	13.3	89.2
Some University	8.0	86.0	86.0	7.2	96.4
University Complete	10.0	96.0	96.0	3.6	100.0
Professor	4.0	100.0	100.0	0.0	100.0

Table 4

Employment Status of Head

<u>Status</u>	<u>%</u>
Full Time	93%
Part Time	4%
Not Working	3%

Table 5

Total Household Income Per Year

<u>Income Range</u>	<u>Regressive %</u>	<u>%</u>	<u>Cumulative %</u>
Less than \$5,200	100	3	3
\$5,200 - \$7,280	97	5	8
\$7,280 - \$9,360	92	16	24
\$9,360 - \$11,440	76	15	39
\$11,440 - \$13,520	61	19	58
\$13,520 - \$15,600	42	20	78
\$15,600 - \$17,680	22	9	87
\$17,680 - \$19,760	13	3	90
More than \$19,760	11	10	100

further up the scale.

The age of the family head and spouse in addition to the number and age of children provide an accurate account of the life cycle stage in which a household is found. A great deal of the literature attributes intra-urban migration to this factor. Changes in family size and composition, lubricated by expanding family income, impose a number of stressful situations which can often be remedied by moving.

The movers in the study are characterized by relatively young family heads and spouses (See Table 6). Over 21% of heads and 38% of spouses are 25 years of age or under. These figures in themselves would lead one to assume that the households are in a very early stage in the life cycle. The number of children per household would therefore be expected to be few. Table 6 indicates that this is the case since 44% of households have fewer than two children. A correlation coefficient of .3122 significant at the .001 level exists between age of head and number of children thereby strengthening the observation already made. The life cycle theory which states that those families in the youngest stage are the most mobile is upheld by these statistics and will be made even clearer when households are considered by links.

This section has examined the characteristics of the movers in aggregate in an attempt to define that universe of households who have been influenced by the presence of vacant condominiums in the city of Windsor. They are characterized by a high proportion of married individuals, young households with few children, medium income, low perceived occupational status and educational attain-

Table 6

Age of Head and Spouse by Category for the Sample in Aggregate

<u>Categories</u>	<u>Head</u>		<u>Spouse</u>	
	<u>%</u>	<u>Cumulative %</u>	<u>%</u>	<u>Cumulative %</u>
20 - 25	21.0	21.0	38.1	38.1
26 - 35	54.0	75.0	50.0	88.1
36 - 45	22.0	97.0	8.3	96.4
46 - 55	3.0	100.0	3.6	100.0
56+	0.0	100.0	0.0	100.0

<u>Mean Age</u>	31.42	years	28.77	years
<u>Median</u>	29.66	years	27.50	years
<u>Minimum</u>	20.00	years	20.00	years
<u>Maximum</u>	52.00	years	48.00	years

ment.

4.3 Characteristics by Link

The approach now shifts from an examination of the movers in aggregate to a more specific and detailed look at the characteristics of the movers in each link of the chain.

4.3.1 Demographic Characteristics

Table 7 relates the sex of the household head to the position attained by the household in the vacancy chain. It is apparent that a greater proportion of females occupy the head position in link 2 than in link 1. This is largely a reflection of the marital status of the households. Links 2 and 3 are characterized by a greater proportion of single heads (See Table 8). In link 3, these single heads consist solely of persons who have never been married (single). Single heads in link 2, however, reflect to a greater degree unsuccessful marriage since in over 15% of the cases, the head has been either separated or divorced. A correlation between sex and marital status of head revealed a coefficient of $-.5593$ (significant at .001 level) add-further strength to the observation thus far cited.

A chi square test was run to determine whether a significant difference existed between link 1 (condominium dwellers) and link 2 in terms of sex of head. The null hypothesis that no significant difference exists was rejected at the .05 level of significance.

In the traditional North American society, the contention has generally been that in a married situation, the male is often considered the head of the household. It

Table 7

Sex of Household Head

	<u>Link 1</u>	<u>Link 2</u>	<u>Link 3</u>
Male	94%	80.8%	100%
Female	6%	19.2%	0%

7

Table 8

Marital Status of Head
By Position in The Vacancy Chain

<u>Status</u>	<u>Position 1</u>		<u>Position 2</u>		<u>Position 3</u>	
	<u>%</u>	<u>Cum. %</u>	<u>%</u>	<u>Cum. %</u>	<u>%</u>	<u>Cum. %</u>
Married	91.0	91.0	65.4	65.4	85.7	85.7
Widowed	-	-	-	-	-	-
Divorced	4.5	95.5	3.8	69.2	-	-
Separated	1.5	97.0	11.5	80.7	-	-
Single	3.0	100.0	19.3	100.0	14.3	100.0

is no real surprise, then, that since link 1 has a higher percentage of married persons, it should also have a greater proportion of male household heads.

Age of household head and spouse coupled with figures on number of children provide a very good indicator of life cycle stage. Table 9 presents average age as well as tabulated values in percent for household head by age category. As expected, average age of household head increases with upward mobility through the vacancy chains. The average age for heads in link 1 (condominium dwellers) is 32 while that for links 2 and 3 is 30.8 and 27.6 respectively. The same basic trend is evident when examining the age of the spouse.

More striking comparisons are those to be made between links 1 and 2 with respect to percentage by age groupings. The proportion of individuals falling in the youngest age bracket in link 2 is almost three times that in link 1. As age bracket increases, the situation becomes reversed and a higher percentage of household heads in link 1 occupy these categories. The only exception occurs in the 45-55 age bracket. In this instance, link 2 has a higher proportion than link 1 and link 3 had absolutely no representation. A possible explanation for this may be that these families have come from outside the study area and are using these accommodations temporarily until a more suitable residence can be found. In one case, however, the respondent informed that the house belonged to his son and that he was minding it for a two year period.

In order to determine whether the differences thus far observed are significant, a chi square test was run between link 1 and 2 with respect to age of household

Table 9

Age of Household Head

<u>Categories</u>	<u>Link 1</u>		<u>Link 2</u>		<u>Link 3</u>	
	<u>%</u>	<u>Cum. %</u>	<u>%</u>	<u>Cum. %</u>	<u>%</u>	<u>Cum. %</u>
≤ 25	13.4	13.4	38.5	38.5	28.6	28.6
26 - 35	58.2	71.6	42.3	80.8	57.2	85.7
36 - 45	26.9	98.5	11.5	92.3	14.3	100.0
46 - 55	1.5	100.0	7.7	100.0	-	-
55+	0.0	-	0.0	-	-	-

<u>Mean</u>	32.045	30.846	27.6
<u>Median</u>	30.8	27.5	26.7

head. Link 3 results have again been omitted due to insufficient data. The chi square value obtained was significant at the .05 level resulting in the rejection of the null hypothesis that there is no difference. On the basis of this and previous observations, it would be reasonable to conclude that condominium dwellers (link 1), even though young, are at a more advanced stage of the life cycle than are those in either links 2 or 3. This will become more apparent once data related to number and age of children is examined. Tables 11 (a), (b), (c) and (d) relate percentage of children by number per household throughout the links. On the basis of the results already presented, the expectation is for more and older children in link 1 families than in those of links 2 and 3. This will strengthen the interpretations already made that condominium dwellers are at a more advanced stage in the family life cycle than are households in the remaining two links.

Table 10 presents the number of children per household by link number. The proportion of households in link 1 having more than one child is 62.8% as opposed to 42.3% for link 2 and 42.9% for link 3. A chi square test was again run to determine whether these differences were significant. The differences between the proportion of families in link 1 having a specified number of children was found to be significantly different from families in link 2 at the .01 level. This observation is further strengthened by examining the average number of children per household. Link 1 has a mean of 2.08 while links 2 and 3 have 1.08 and 1.42 children per household respectively. It is reasonable to assume on these bases that those households having the greatest number of children are at a

Table 10

Number of Children Per Household

<u>Number</u>	<u>%</u>	<u>Cumulative %</u>
0	20	20
1	24	44
2	29	73
3	20	93
4	3	96
5	3	99
+5	1	100

<u>Mean number of children per household</u>		<u>1.77</u>
Median	"	1.70
Minimum	"	0.00
Maximum	"	8.00

Table 11(a)

Number of Children per Household
by Position in the Vacancy Chain

	<u>LINK 1</u>		<u>Link 2</u>		<u>LINK 3</u>	
	<u>%</u>	<u>Cumulative %</u>	<u>%</u>	<u>Cumulative %</u>	<u>%</u>	<u>Cumulative %</u>
0	11.9	11.9	42.3	42.3	14.3	14.3
1	25.4	37.3	15.4	57.7	42.9	57.1
2	26.9	64.2	34.6	92.3	28.6	85.7
3	25.4	89.6	7.7	100.0	14.3	100.0
4	4.5	94.0	-	-	-	-
5	4.5	98.5	<u>NA</u>	-	-	-
>5	1.5	100.0	-	-	-	-
Mean		2.075	Mean	1.077	Mean	1.43

Table 11(b)

Number of Children 4-5 by Position in the Vacancy Chain

<u>NUMBER</u>	<u>%</u>	<u>LINK 1</u>	<u>LINK 2</u>	<u>%</u>	<u>%</u>	<u>Cumulative %</u>
		<u>Cumulative %</u>	<u>Cumulative %</u>			
0	29.9	29.9	46.2	42.9	42.9	42.9
1	44.8	74.7	30.7	76.9	28.5	71.4
2	17.9	92.6	23.1	100.0	14.3	85.7
3	7.4	100.0	-	-	14.3	100.0

Table 11(c)

Number of Children 6-14 by Position in the Vacancy Chain

0	50.7	50.7	76.9	76.9	57.1	57.1
1	26.9	77.6	19.2	96.1	42.9	100.0
2	17.9	95.5	3.9	100.0	-	-
3	3.0	98.5	0.0	-	-	-
4	0.0	98.5	0.0	-	-	-
5	1.5	100.0	0.0	-	-	-

Table 11(d)

Number of Children >14 by Position in the Vacancy Chain

0	86.4	86.4	96.2	96.2	100.0	100.0
1	6.1	92.5	3.8	100.0	-	-
2	4.5	97.0	-	-	-	-
3	1.5	98.5	-	-	-	-
4	1.5	100.0	-	-	-	-
5	-	-	-	-	-	-

more advanced stage in the life cycle since it is not common for newly formed families to have large numbers of children. However, while the assumption is well founded, its validity may be further strengthened by examining the proportion of families having a designated number of children by age groupings. Tables 11 (b), (c) and (d) present such figures. For the purpose at hand, it will suffice to examine only one of these tables in detail. Table 11 (d) (number of children > 14 years of age) has been selected since it appears to be the best indicator of this relationship. The percentage of families having no children in this age bracket is high in all three links indicating generally youthful families. However, it can be noted that only in link 1 is the percentage of families having these older children of any significant magnitude. Approximately 14% of condominium dwellers have children over 14 years of age. In contrast, only 3.8% of families in link 2 and 0% of families in link 3 have these older children. While the tabulated data displays impressing differences, a chi square test performed on this variable for links 1 and 2 and suggest different stages in the life cycle. Had the number of observations for link 3 been more representative, perhaps more conforming results would have been obtained. On the basis of the data presented, however, households in link 3 seem to differ very little from those in link 2. This would suggest that while demographic filtering seems to occur between households in links 1 and 2, no such filtering occurs between links 2 and 3.

4.3.2 Socio-Economic Characteristics¹

Income, educational attainment and occupational

status will now be examined since they provide the most accurate socio-economic indicators. The comparison of these variables by link will accomplish a twofold task. Firstly, it will bring to light any socio-economic differences which may exist between households in these links. Secondly, these differences will determine to what extent upward filtering has taken place. According to a number of proponents of the filtering theory, filtering is said to have occurred when the socio-economic status of the movers-out is higher than that of the movers-in for the same dwelling (Smith, 1964; Kirkland, 1968). Tabulated data and chi square tests will again be employed in analysing the findings.

4.3.3 Educational Attainment

Although not a very good surrogate for socio-economic status, this variable has been included to help provide a better understanding of the social status of the sample households by link. Table 12 establishes the distribution of households among defined education level categories by links for the household head. No clear pattern emerges indicating that little educational difference exists between household heads from one link to another. This is verified by the use of a chi square test whose computed value requires that we accept the null hypothesis that no significant difference exists. It should be noted, however, that the three links differ appreciably with respect to the highest levels of educational attainment. Approximately 18% of household heads in link 1 have either completed university or are engaged in graduate work. The corresponding percentages for links 2 and 3 are 7.8 and 0 respectively.

Table 12

Education of Head

		LINK 1	LINK 2	LINK 3
		%	Cum. %	%
Primary	(some)	0.0	0.0	0.0
Primary	(completed)	7.5	7.5	14.3
Secondary	(some)	46.3	53.8	57.1
Secondary	(completed)	11.9	65.7	71.4
Post Sec. Voc.	(some)	9.0	74.7	71.4
Post Sec. Voc.	(completed)	3.0	77.7	85.7
University	(some)	4.64	82.1	100.0
University	(completed)	11.9	94.0	0.0
Graduate		6.0	100.0	0.0

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4.3.4 Occupational Status

Occupational status presents yet another^o measure of socio-economic standing. Reference to Table 13 will reveal that the observed differences between links 1 and 2 are minimal. On the other hand, the differences in distribution of household heads among occupation categories between links 1 and 2 compared with link 3 are considerable. This may suggest that as link number increases, a greater proportion of principal wage earners are employed in occupations which are not highly rated on the occupancy scale. Conversely, fewer of these individuals (0%) occupy professional or managerial positions, both of which have a highly perceived social status. On the basis of what has just been presented, it seems that some occupational stratification can be found between links. Nevertheless, the degree to which this stratification occurs is questionable since the major differences are found in link 3 where the number of cases (7) are few and therefore least representative.

4.3.5 Income

Of all variables, income is perhaps the best socio-economic indicator since it is the most significant factor which imposes limitations on an individual's life style. Occupation and educational attainment are often used simply because income figures are difficult to obtain. They are often used as surrogates for income.

If stratification of any sort occurs among the links, it will be best pointed out by this variable since income governs the capability of a household to be able to afford different forms of housing. Table 14 establishes

Table 13

Occupation of Head

OCCUPATION	LINK 1		LINK 2		LINK 3	
	%	Cum. %	%	Cum. %	%	Cum. %
Managerial	10.6	10.6	8.7	8.7	-	-
Professional and Technical	9.1	19.7	8.7	17.4	-	-
Clerical	9.1	28.8	17.4	34.8	-	-
Sales	10.6	39.4	4.4	39.2	-	-
Service and Recreation	10.6	50.0	17.4	56.6	14.3	14.3
Transportation and Communications	4.5	54.5	4.4	61.0	-	-
Farm and Other Primary	-	-	-	61.0	-	-
Craftsmen	25.8	80.3	13.0	74.0	14.3	28.6
Labourers	19.7	100.0	21.7	95.7	71.4	100.0
Housewives	-	-	4.3	100.0	-	-

the distribution of households among defined income categories and mean household income by position in the vacancy chain. Mean household income is highest in link 1 as would be expected since households in this link are either owners or holders of a mortgage leading to ownership. An examination of cumulative percentages indicate that 25.7% of households in link 3 have weekly incomes of \$260.00 or less as opposed to 69.2% for link 2 and 52.2% for link 1. Conversely, 22.4% of households in link 1 have weekly incomes in excess of \$300.00 while comparative figures for link 2 and 3 are 19.3% and 14.3% respectively. It is readily apparent on the basis of this evidence that upward mobility through vacancy chains is accompanied by income capability. In other words, in order for a household in link 3 to be able to move into a dwelling associated with link 2, it will be necessary for that household to supercede a certain threshold income level. This may be more evident by comparing the income of movers-in to that of movers out for the same dwelling. Table 15 presents such a comparison. On the basis of the argument just presented, one would expect to find the income of movers-out to be at least equal to but more likely greater than that of movers-in. This would probably indicate that the movers-out had achieved and surpassed the income level required to maintain a dwelling unit in the link they were vacating. The income level of movers-in, however, is expected to be lower than that of movers-out for the same dwelling. The results for all movers in aggregate have been arrived at by summing the findings of link 2 with those of link 3. In 43% of the cases, in-movers had lower total incomes than out-movers, 36% had higher incomes and the remaining 21%

Table 14
Total Family Income by Position in the Vacancy Chain

INCOME RANGE	LINK 1		LINK 2		LINK 3	
	%	Cum. %	%	Cum. %	%	Cum. %
1. Under \$100/wk	1.5	1.5	11.5	11.5	-	-
2. \$100-\$140/wk	3.0	4.5	7.7	19.2	14.3	14.3
3. \$140-\$180/wk	10.4	14.9	30.8	50.0	14.3	28.6
4. \$180-\$220/wk	19.4	34.3	7.7	57.7	-	-
5. \$220-\$260/wk	17.9	52.2	11.5	69.2	57.1	85.7
6. \$260-\$300/wk	25.4	77.6	11.5	80.7	-	-
7. \$300-\$340/wk	9.0	86.6	11.5	92.2	-	-
8. \$340-\$380/wk	3.0	89.6	3.9	96.1	-	-
9. \$380+ /wk	10.4	100.0	3.9	100.0	14.3	100.0

Table 15

Total Household Income of Movers-in Compared to
Movers-out for the Same Dwelling at Successive Positions

INCOME	LINK 2		LINK 3		AGGREGATE	
	%	Cum. %	%	Cum. %	%	Cum. %
3 or more brackets higher	3	11.56	2	28.5	5	15.0
2 brackets higher	1	3.84	1	14.5	2	6.0
1 bracket higher	3	11.56	2	28.5	5	15.0
Same	5	19.21	2	28.5	7	21.0
1 bracket lower	6	23.06	0	0.0	6	18.0
2 brackets lower	3	11.56	0	0.0	3	10.0
3 or more brackets lower	5	19.21	0	0.0	5	15.0
TOTAL	26	100.0	7	100.0	33	100.0

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had equal incomes. This finding is considerably weaker than expected since the number of in-movers with higher incomes is almost the same as the number of in-movers with lower incomes. A disaggregated examination of the results by link may provide a better understanding of why the relationship for all movers was found to be so weak. The results for link 3 which were based on seven observations reveal that for all cases, the income of in-movers was equal to or greater than that of out-movers. There does not appear to be a logical explanation for this result. Possibly, the few cases upon which this finding was based do not provide a representative sample for all households at this position. Link 2, whose observations are based on 26 cases, may provide a more realistic sample. In this instance, only 26.9% of in-movers had higher incomes than out-movers. The remaining 73.1% of households had income equal to or lower than those of out-movers. This finding is more in agreement with the literature on filtering which maintains that vacated dwellings are made available to families of lower income capabilities (Smith, 1964; Kirkland, 1968).

The findings presented above serve to demonstrate two possibilities: 1) there may exist a threshold level of income which determines the position of a household in the vacancy chain; 2) income differs between households by position in the chain. A specific value for the income threshold, if it exists, cannot realistically be determined since its value is dependent upon the household's style of life which dictates the percentage of total income allocated to housing expenditures. However, it is not expected that this value varies considerably between households in the

same link.

In order to determine if assumption (2) (above) applied to this sample, the following hypothesis was generated:

H_0 : There is no significant difference in income between households by link.

On the basis of the calculated value of chi square (14.17), the null hypothesis was rejected. With 2 degrees of freedom, the difference in income between links was significant at the .01 level.

A logical question stemming from the above result is whether the difference in income may be attributed to the number of wage earners in the family. It has been shown thus far that neither educational attainment nor occupational status differed significantly between links. If this is the case, one might expect there to be a greater proportion of households in link 1 with two or more wage earners than in either links 2 or 3.

Table 16 presents comparative figures for the various links with respect to the number of wage earners per household. Contrary to expectations, it is apparent that the proportion of households with two or more wage earners decreases in moving up the chain. Whereas only 31.3% of households in link 1 have two or more wage earners, the figure rises to 50% at the third link. The significant income differences between the three links, therefore, cannot be explained by number of wage earners per household. It would appear that factors such as seniority or experience could provide the best explanation of this income differ-

Table 16

Number of Wage Earners Per Household

	<u>LINK 1</u>	<u>LINK 2</u>	<u>LINK 3</u>	<u>TOTAL</u>
One	42	9	3	54
	68.7%	56.2%	50%	65%
More than One	19	7	3	29
	31.3%	43.8%	50%	35%
TOTAL	61	16	6	83
	100.0%	100.0%	100.0%	100.0%

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ential. The higher average age of household heads in link 1 would imply that they have been in the work force longer than those in links 2 or 3. They might therefore be expected to occupy more senior positions. When coupled with their greater experience, the result would probably be a wage considerably higher than that of a younger individual with less experience and seniority.

A second possible explanation of the significant income differentials between links may stem from a consideration of the specific occupations of the households concerned. Perhaps a greater proportion of heads in link 1 have specific occupations whose pay is higher than that for wage earners further down the chain.

In this particular chain of moves, the first position is the predominant area of home purchases. Individuals in this link are older and have a longer period of time to become established and save sufficient money to purchase a home. In the second and third links, however, home ownership is rare (See Chart 1). Complete households at this stage are either newly formed or still financially unable to afford to buy a house. Consequently, links 2 and 3 may be best viewed as entry points for complete households (i.e. those not previously affected by divorce, separation, or death) into the private housing market. Since access to owner occupation is dependent on meeting the eligibility requirements of lending agencies and in particular by the size of the down payment and the factor of income against which mortgage and repayments will be assessed, both members of these households (links 2 and 3) are inclined to work in order to one day be able to qualify for home ownership. Furthermore, it is far easier for both the husband and wife

to be employed full time when there are no children in the family than when there are. Since the proportion of families having "0" children is greatest in the lower two positions, it seems logical on the basis of this argument that they also have the highest number of households with two or more wage earners.

This section has attempted to compare households by link with respect to selected socio-economic variables. Although in some instances the differences were not found to be significant or noticeable, it is felt that the following generalization can be made: tenure status and position in the vacancy chain would appear to be highly positively correlated with some of the household's demographic and socio-economic characteristics. In other words, demographic and socio-economic characteristics differ appreciably between links as well as with respect to tenure status.

4.4 Reasons for Relocation

The majority of social scientists studying urban mobility maintain that the housing turnover process is set into motion by the dissatisfaction of households with their living circumstances. Place utility theory established that households are constantly evaluating their housing circumstances (Wolpert, 1965). When dissatisfaction with a particular dwelling unit reaches a threshold level, the household is faced with a decision offering two alternatives. The household may consider remodelling and/or enlarging the existing housing to better meet its increased demands or alternatively, it may decide to move.

Studies have attempted to determine what the specific causes leading to mobility are. This unfortunately has resulted in the formation of a schism among the various

disciplines since each has concentrated on some particular cause and built a theory around it. For example, economists have focused their attention on workplace location as a determinant of residential location. Sociologists, on the other hand, have concentrated primarily on life cycle changes as being the factors most likely to induce mobility. It is felt, however, that no one reason may be cited as being the most significant. It is necessary to understand that mobility inclinations vary not only with time but also among households. Furthermore, prime lending rates, inflation, the land and housing market and other factors influence a household's decision to move.

This section will examine why households move on the basis of the response given by the sample households. Hypothesis testing will then take place to determine whether the household has significantly improved its circumstance with respect to the main reason given for having moved in the first place. For example, assume that ten households have cited "need for more rooms" as the major factor inducing mobility. Variables 26 and 66, semantic differential questions measuring "satisfaction with the number of rooms" in the former and present residence, would be compared. The statistical test employed in this instance is the Wilcoxon Matched Pairs Signed Rank Test.

The factors most often cited by households as the prime reason for moving are tabulated and presented in Table 17. The single most significant reason is "the need for more space". This, to a large degree, reflects changes in life cycle. With the arrival of new children, additional space to adequately house the family is required. As the children grow, the need for space increases and is reflected

Table 17

Reasons for Moving

REASON	LINK 1	LINK 2	LINK 3	TOTAL
1	18 26.9%	-	-	18 18%
2	4 6.0%	3 11.5%	1 14.3%	8 8%
3	16 23.9%	4 15.4%	1 14.3%	21 21%
4	16 23.9%	5 19.2%	2 28.6%	23 23%
5	1 1.5%	1 3.8%	-	2 2%
6	-	-	-	-
7	2 3.0%	3 11.5%	1 14.3%	6 6%
8	6 9.0%	4 15.4%	1 14.3%	11 11%
9	4 6.0%	6 23.1%	1 14.3%	11 11%
	67 100.0%	26 100.0%	7 100.0%	100 100%

REASONS

- 1. Job transfer; job related reason
- 2. Improve convenience of location
- 3. Want to own rather than rent
- 4. Need more space
- 5. Improve quality of house
- 6. Companionship for children
- 7. Move to a less expensive place
- 8. Change of marital status
- 9. Other

in their increased demand for privacy and habitable living space. What was considered adequate by the family at one time is now rendered inadequate. Continued residence under this perceptually crowded environment exerts tremendous pressures on each individual member of the family. The result may be frustration, lack of communication and overall tension.

The desire for home ownership was cited by 21% of those interviewed as being the single most important factor inducing mobility. This reason was expressed primarily by households in link 1 since housing in this position is predominantly for purchase. As noted earlier, dwellings in links 2 and 3 were of a rental nature. Desire for home ownership, therefore, could not have been a motivating factor for households in these two links.

In so far as home ownership is the ultimate goal of most North American households, a number of factors must exist before a household actually does consider buying a home. Economic stability is a prerequisite for achieving this tenure status. In addition, it is primarily a household seeking security and a stable environment in which to rear children who is most desirous of home ownership.

Households which meet most of these prerequisites are to be found in position one of the vacancy chain since they are characterized by higher income and a greater number of as well as older children. The degree to which these prerequisites are met by a household may be a factor in determining the specific house type into which a family will move. The primary constraint is the household's level of economic stability coupled with lending rates, mortgage eligibility and housing available at the time the decision

to move has been made.

Eighteen percent of households gave job related reasons as factors explaining why they moved. In all but one case, the move involved a distance of over 100 miles. On the basis of this evidence, it would appear that workplace location does not motivate intra-urban movement. As a factor explaining inter-urban migration, however, the workplace is highly significant and may often represent the only factor.

A number of households (8%) expressed the desire to improve the convenience of their location as a motivating force. While it may be argued that this factor closely parallels the one previously examined, "convenience of location" in this instance refers to a household's proximity to various commercial and social facilities within the urban area exclusive of workplace location. The interviewer was careful to ensure that a distinction between the two factors was made apparent to the interviewee. Single or small households whose tenure status is other than home ownership would most likely offer this response in answering why they moved. Such households in their flexibility are much more apt to relocate within the city in order to meet their changing life style. The same may also apply to households of a larger, more stable composition but these factors would probably assume a lower position in the household's list of priorities and would not in themselves induce a move.

Change in marital status is a less prominent factor in explaining the cause of the move than would have been expected (Murie, 1974). Only 11% gave this as being the most important reason. While it may be argued that a

change in marital status is in most cases likely to result in a move, the fact that the results of this study do not support this may simply indicate that the proportion of new households in the vacancy chain are few or that some couples were living together prior to being married.

The desire to move to a less expensive residence was cited by 6% of the households as being the most important factor. This was expressed primarily by those individuals who had recently experienced a marital breakdown. This situation was accompanied by a decrease in total family income and the realization that the present accommodation had now become too expensive for the remaining spouse to maintain. It would appear that "move to a less expensive dwelling" is but a surrogate for the "marital status" factor since the initial cause of the move was not that the cost of housing increased but that family income decreased. This was a direct consequence of the marital breakdown. This may help to explain why the "marital status" factor was not as dominant as expected.

In summary, four primary factors explain why people move: changing needs for space, desire for home ownership, occupation and marital status change.

Job related factors were of significance only in link 1 where 26.9% of households moved primarily for that reason. The "desire to own" and the "need for more space" figured prominently as well (See Table 17).

In link 2, no single factor could be deemed the most important. "Marital status" increased in significance as a mobility factor from link 1 as did the "desire to move to a less expensive place". The increased prominence of these two factors tended to decrease the overall signifi-

cance of other factors more prominent in link 1 resulting in a more even distribution in the frequency in which factors were cited.

Link 3, which is restricted by sample size, shows a more even distribution than link 2. The "need for more space" is evident as being the most important factor but the reliability of this data should again suggest careful interpretation of this observation.

Three factors have shown some relationship throughout the links. Factor #2 (improve convenience of location) increased in significance in going from link 1 to link 3. This again reflects the more transient character of households in link 3 who are able to move much more frequently in order to meet changing social and economic needs.

Factor #3 (desire to own) shows decline in importance downward through the vacancy chains and reflects to some degree the nature of housing associated with each link.

Factor #7 (move to a less expensive place) assumed an increasing importance as the chain got longer. This may be attributed to a breakdown of the household, in particular, the marital relationship. The remaining spouse finds that his or her income alone is insufficient to maintain the dwelling unit and he or she must relocate to a less expensive residence.

4.5 Related Hypothesis Testing

This section will test a number of hypotheses related to the discussion just presented. In particular, each hypothesis will be structured to answer the following question: "If a household has expressed dissatisfaction

with some aspect of its previous accommodation as being the primary factor behind its move, does the new housing provide an improvement?" For example, assume that a household has stated that it relocated because of a need for more space. It would be reasonable to assume that after the move, the household will be more pleased with the amount of space than before the move. In order to be able to make such comparisons, it is necessary to have a means of measuring a household's perceived satisfaction (or convenience) before and after the move. Semantic differential questions which measured the premove as well as the postmove perceived housing situation furnished this information. In order to determine whether the differences noted before and after the move were significant, the Wilcoxon Matched Pairs Signed Rank Test was used.

The first series of hypotheses will concern themselves with the subsample of households who cited "the need for more room" (space) as a reason for moving. The tests will attempt to determine whether these residents have improved their housing circumstance with respect to space requirements as a result of the move. Three questions reflecting dwelling unit space considerations were included in the questionnaire. They are:

1. satisfaction/dissatisfaction with the number of rooms in the dwelling unit
2. satisfaction/dissatisfaction with the size of rooms in the dwelling unit
3. satisfaction/dissatisfaction with the amount of storage space in the dwelling unit.

Test of Hypothesis #1

H_0 : There is no significant improvement in satisfaction with the number of rooms after the move.

H_1 : There is a significant improvement in satisfaction with the number of rooms after the move.

T calculated = 0 N = 20

T critical @ .005 level = 38

Since T calculated \leq T critical, the null hypothesis is rejected. In conclusion, there is a significant improvement in satisfaction with the number of rooms after the move.

Test of Hypothesis #2

H_0 : There is no significant improvement in satisfaction with the size of rooms after the move.

H_1 : There is a significant improvement in satisfaction with the size of rooms after the move.

T calculated = 9 N = 15

T critical @ .005 level = 16

Since T calculated \leq T critical, the null hypothesis is rejected. The results indicate that there is a significant improvement in perceived satisfaction with the size of the rooms after the move.

Test of Hypothesis #3

H₀: There is no significant improvement in satisfaction with the amount of storage space after the move.

H₁: There is a significant improvement in satisfaction with the amount of storage space after the move.

T calculated = 15.5 N = 18

T critical @ .005 level = 28

Since T calculated \leq T critical, the null hypothesis is rejected. The results indicate that there is a significant improvement in the perceived satisfaction with the amount of storage space in the new dwelling.

The results of the three hypotheses just tested help strengthen the notion that the need for more space plays a significant role in intra-urban mobility. Unlike a number of factors whose influence is felt only at certain times of the day, the space factor is constantly exerting an influence. While the "perceived space" continues to exceed the "perceived space requirements", the household is not consciously aware of the factor. However, when space requirements exceed "perceived space available", stressful situations arise which may only be eliminated through the expansion of the existing dwelling unit or through relocation. When the decision to relocate has been made, the household will tend to place the "perceived space requirement" high on its list of priorities in selecting the new dwelling.

The final series of hypotheses will examine the convenience factor. A number of households expressed the "desire to improve the convenience of their location" as a factor inducing mobility. Seven hypotheses have been formulated based on seven variable pairs (before and after) which examined convenience of location. In a number of cases, the test could not be completed since the "N" was too small (i.e. ≤ 5).

Test of Hypothesis #4

H_0 : There is no significant improvement in the household's convenience to the home of its best friend after the move.

H_1 : There is a significant improvement in the household's convenience to the home of its best friend after the move.

T calculated = 2.5 N = 6

T critical @ .025 level = 0

Since T calculated $>$ T critical, the null hypothesis is accepted. The results indicate that there is no significant improvement in the household's convenience to the home of its best friend after the move.

Test of Hypothesis #5

H_0 : There is no significant improvement in the household's convenience to downtown after the move.

H_i : There is a significant difference in the household's convenience to downtown after the move.

T calculated = 2 N = 5

T critical at this "N" is not given, therefore the determination of significance is not possible.

Although computation cannot take place, the fact that T calculated is greater than 0 would indicate that perhaps the null hypothesis should be accepted. On this basis, it may be concluded that no significant improvement has occurred after the move.

Test of Hypothesis #6

H_0 : There is no significant improvement in the convenience of a household to a park or playground after the move.

H_i : There is a significant improvement in the convenience of a household to a park or playground after the move.

T calculated = 6.5 N = 6

T critical @ .025 level = 0

Since T calculated > T critical, the null hypothesis is accepted. The results indicate that no significant improvement in the convenience of a household to a park or playground has occurred after the move.

Test of Hypothesis #7

H_0 : There is no significant improvement in the convenience of a household head to his place of employment after the move.

H_1 : There is a significant improvement in the convenience of a household head to his place of employment after the move.

T calculated = 0 $N = 6$

T critical @ .025 level = 0

Since T calculated \leq T critical, the null hypothesis is rejected. The results indicate that the household head has improved the convenience of his dwelling to his place of employment.

Test of Hypothesis #8

H_0 : There is no significant improvement in the convenience of a household to an elementary school after the move.

H_1 : There is a significant improvement in the convenience of a household to an elementary school after the move.

T calculated = 3 $N = 5$

T critical at this "N" is not given, therefore testing cannot be undertaken.

On the basis of the evidence used in testing this

hypothesis, it would seem that the null hypothesis is maintained although a statistical level of significance for this conclusion cannot be obtained.

Test of Hypothesis #9

H_0 : There is no significant improvement in a household's convenience to a clinic or hospital after the move.

H_1 : There is a significant improvement in the household's convenience to a clinic or hospital after the move.

T calculated = 1 N = 7

T critical @ .025 level = 2

Since T calculated \leq T critical, the null hypothesis is rejected. The results indicate that a significant improvement in the household's convenience to a clinic or hospital has occurred after the move.

Test of Hypothesis #10

H_0 : There is no significant improvement in a household's perceived convenience to a favorite shopping centre after the move.

H_1 : There is a significant improvement in a household's perceived convenience to a favorite shopping centre after the move.

T calculated = 0 N = 5

T critical at this "N" is not given, therefore testing cannot be undertaken.

No definite conclusion can be arrived at in this instance since both the null hypothesis and the alternate hypothesis seem to be maintained by the data. Windsor, however, is reasonably well endowed with shopping centres which are situated on or near major arterials (Lauzon Road, Howard Avenue). These locations render them accessible to most of Windsor's population. Significant improvement in convenience to these facilities after the move is not expected unless prior to relocating, the shopping centre was relatively inaccessible.

The results of the seven hypotheses just tested serve to indicate the degree to which the convenience factor is satisfied after the move. A generalization at this point based solely on the results obtained would be neither realistic nor accurate.

Of those hypotheses which were tested (4), two showed that a significant improvement had occurred and two indicated the opposite. As expected, the convenience of a household to the location of its best friend did not improve. It is highly unlikely that any household would tend to relocate within an urban area simply to be closer to friends. The expense involved would in most cases preclude this as a primary mobility factor. As a secondary factor, however, it may be significant in aiding the individual to reduce the total number of possible alternatives.

In assessing why there was no significant improvement in perceived convenience to a park or playground, two possibilities emerge. If this facility had been extremely convenient to the former residence, it would be unlikely that an improvement would have been realized after the move. Depending on the exact proximity of this facility prior

to the move, the post-move situation might indicate that convenience had in fact worsened.

The second possibility suggests that proximity to a park or playground may be of relevance only to a small percentage of the sample households (i.e. families with small children). Households which had no interest in the location of this facility relative to their residence would probably have illicit responses such as "does not apply" or "don't care". These "neutral" replies would have reduced the overall significance of the responses which registered either positive or negative improvements.

Perceived convenience to a clinic/hospital and to the head of household's place of employment showed significant improvement after the move. Improved convenience to the former facility (clinic/hospital) appears to be best explained as an accident of sample concentration since it is inconceivable that a family would want to intentionally locate close to a clinic or hospital. Perceived improvement in the convenience to workplace location will require a more detailed explanation. Accessibility to work is an ever present factor which may, if distance is great, produce stress. According to the findings of Butler et. al. (1969), accessibility was important in the decision to move only in those cases where the individuals lived more than 40 minutes from work. It would appear that in so far as the eight sample households used in the testing of this hypothesis are concerned, distance to place of employment prior to the move was significant. When the opportunity (relocation) arose, these households may have willingly sought to locate closer to work.

This subsection has tested a number of hypotheses

related to specific before and after move housing circumstances. The primary purpose was to determine whether households improved their dwelling circumstance with respect to the factor which they stated had induced the move. In most instances, an improvement had occurred. Factors which were not important to the household or which could not be improved due to the household's circumstance at the time of the move showed no significant change.

4.6 Place Utility

Intra-urban mobility as Rossi has stated is a process whereby a household adjusts its housing to meet its changing requirements for space. This simple generalization may be expanded to include not only changing space requirements but also changing attitudes, economic status, social status and numerous other factors.

A fundamental aspect in the study of intra-urban migration is attempting to determine whether filtering is occurring in the housing market and more importantly, whether moving households are benefiting as a result of the move. A flawless methodology for measuring filtering (economic) has not emerged. Nevertheless, this does not preclude the possibility of measuring perceived filtering. If the housing turnover process can be viewed in terms of perceived place utility gains and losses, the task of quantification is made easier.

Wolpert has stated that households are continually evaluating their overall housing circumstance. When dissatisfaction with one or more particular aspects of the present housing surpasses a certain threshold level, the family is faced with a major decision. In many instances,

the solution is to move. The previous section has examined why households move and whether the new accommodation has solved the stressful situation i.e. the cause for the move. The problem now is to determine whether the new housing is an overall improvement over the previous. Semantic differential questions have again been used to measure perceived place utility changes. They will compare pre-move and post-move responses to select questions related to housing circumstances. Such an examination, while not measuring true economic filtering, does nevertheless provide a good indication of perceived or cognitive filtering.

Three parameters of place utility have been selected for scrutiny: dwelling unit characteristics, neighbourhood characteristics and accessibility considerations. A series of seven to eight semantic differential questions were formulated in conjunction with each parameter in order to cover as many aspects of the housing circumstance as possible. Each question was transformed into hypothesis form for testing. The Wilcoxon Matched Pairs Sign Rank Test was employed in determining whether a perceived improvement had occurred after the move. Only the results of the tests will be presented and discussed (See Table 18). The actual statement and testing of hypotheses have been included in Appendix 2.

4.7 Aggregate Results

The results for the sample in aggregate reflect the significance of parameter 1 (dwelling unit features) whose perceived satisfaction improved with respect to all variables after the move.

Parameter 2 (neighbourhood characteristics) re-

Table 18

PARAMETER 1

Dwelling Features

<u>FEATURE</u>	<u>POST-MOVE</u>		<u>MORE SATISFIED (YES/NO)</u>		
	<u>TOTAL SAMPLE</u>		<u>LINK 1</u>	<u>LINK 2</u>	<u>LINK 3</u>
Number of rooms	yes .01		yes .01	no .01	no .025
Interior Appearance	yes .01		yes .01	no .01	no .01
Size of rooms	yes .01		yes .01	yes .01	no .025
Exterior Appearance	yes .05		no .01	no .01	no .025
Amount of Storage Space	yes .01		yes .01	no .01	yes .025
Size of Yard/ Grounds	yes .05		no .01	yes .01	no .025

Table 18 (cont'd)

PARAMETER II

Neighbourhood Characteristics

FEATURE	POST-MOVE		MORE SATISFIED (YES/NO)		LINK 3
	TOTAL SAMPLE	LINK 1	LINK 2	LINK 3	
Amount of Traffic	yes .01	yes .01	no .01	no .025	
Property Taxes	-	-	-	-	
Air Pollution	no .01	yes .05	no .01	-	
Quality of Services/ Utilities	no .01	no .01	no .01	-	
Safety on Streets	yes .01	yes .01	no .01	-	
Quality of Education	no .05	no .01	no .01	-	
General Appearance of Neighbourhood	no .01	no .01	no .01	-	
Availability of Parks	no .01	no .01	no .01	-	
Friendliness	yes .01	yes .05	no .01	-	

Table 18 (cont'd)

PARAMETER III Accessibility Considerations

<u>FEATURE</u>	<u>POST-MOVE</u>		<u>MORE CONVENIENT (YES/NO)</u>		
	<u>TOTAL SAMPLE</u>		<u>LINK 1</u>	<u>LINK 2</u>	<u>LINK 3</u>
To Home of Best Friend	no .01	no	.01	no	.01
Downtown	no .01	no	.01	no	.01
Park/Playground	yes .05	no	.01	no	.01
Head of Household: Place of Work	no .01	no	.01	no	.01
Elementary School	yes .01	yes	.01	no	.01
Clinic/Hospital	yes .01	yes	.01	no	.01
Favorite Shopping Center	yes .01	yes	.01	yes	.01

vealed improved satisfaction with regards to three of the eight variables of which it consisted. Two of these variables (quality of services/utilities, quality of education) were incorporated to provide a method of checking the efficiency of the interview schedule since they are not truly variable over the study area. No improvement was noted with respect to these.

The three variables which showed a significant improvement were satisfaction with 1) "amount of traffic", 2) "safety on streets", and 3) "friendliness". A good understanding of traffic circulation and high frequency accident locations would be required before the first two of these could be explained. Improved satisfaction with friendliness, however, would seem to indicate that these individuals moved into a neighbourhood in which they had friends. A second alternative suggests that if the move originated in a neighbourhood of transients and undesirables and culminated in one of greater stability, the perceived friendliness of the new neighbourhood would be greater.

Parameter 3 (accessibility considerations) showed improved convenience to those facilities associated with children i.e. elementary schools, parks/playgrounds. While perceived convenience to downtown remained the same or deteriorated, perceived convenience to a favorite shopping centre improved. The trend away from downtown shopping is made relatively apparent (See Table 18). Even though actual mileage (distance) may often be the same to both the favorite shopping centre and downtown, the latter is frequently associated with congestion and difficulty in parking, both of which tend to make it appear less convenient.

4.8 Disaggregated Findings

4.8.1 Parameter 1

Households in link 1 showed the greatest overall perceived improvement. This was particularly evident with respect to parameter 1 (dwelling features) in which case perceived satisfaction improved for four of the six variables tested. The two variables which showed no improvement were "satisfaction with the exterior appearance of the dwelling" and "size of yard or grounds". It would appear that in order to understand why "satisfaction with the exterior appearance of the dwelling" did not improve, one must be knowledgeable of the aesthetic appearance of the sample condominiums. The architectural design and site layout varied minimally throughout each development. This situation would hardly have evoked a sense of individuality in the residents. Consequently, even though new, the very similarity and lack of identity of each unit may have illicited apathetic or negative responses regarding the outside appearance.

The size of most private yards in each development was extremely small and often merged into larger, common areas without a visual break (fence). Due to heavy use, especially during the summer months, these common areas might appear crowded and/or noisy. For these and other less apparent reasons, residents may have responded negatively when asked whether "satisfaction with size of yard or grounds" had increased.

Link 2 households were significantly more satisfied with only two of the six variables which made up parameter 1 - "size of yard or grounds" and "size of rooms". For many households in link 2, the move was one which or-

iginated in relatively small, multiple unit apartment buildings or shared single family dwellings and culminated in larger single occupancy single family dwellings. This may help to account for the increased perceived satisfaction with both size of rooms and yard although it offers no explanation as to why these households were not significantly more satisfied with "amount of storage space" or "number of rooms". The answer to this may lie in a more detailed understanding of the specifics of the dwelling unit into which they moved.

Link 3 households showed significant improvement only with respect to the "amount of storage space" variable. Being so far down the vacancy chain, the relative change from one dwelling unit to another is often imperceptible. Households at this position would most probably move for reasons other than dwelling feature improvements such as to be more convenient to activity centres.

4.8.2 Parameter 2

The findings indicated that link 1 households were significantly more satisfied with four of the seven variables constituting parameter 2 (neighbourhood characteristics). These are: satisfaction with "the amount of traffic", "air pollution", "safety on streets", and "friendliness". Link 2 households, however, revealed no improved satisfaction as did those in link 3.

The following discussion will employ the results obtained for link 1 in order to demonstrate how a respondent's answers to questions related to parameter 2 may have been influenced by the following three factors: nature (type) of housing, design and location.

All dwelling units in link 1 are located in large developments and designed in such a manner as to create the impression of being a distinct neighbourhood. Streets or driveways on the development are primarily for tenant use only. Consequently, traffic is expected to be much lighter than on comparable city streets. This would probably explain why households in this link are significantly more satisfied with the "amount of traffic" as well as "safety on streets".

Each of the four condominium developments used in the study are situated at the southeast end of Windsor. As opposed to Windsor's west end, this area experiences less visible air and olfactory pollution. Even though levels on any day may differ slightly from one part of Windsor to another, the fact that pollution emitting industries are not located close by would probably make perceived pollution appear to be less. By being located in the east end, link 1 households are more apt to indicate that a significant improvement in satisfaction has occurred with respect to the "level of air pollution" for the reasons just cited.

The condominium concept with its shared facilities and limited privacy space may be a significant factor in eliminating the communication and contact barrier which is often associated with medium and high density residential environments. Negative feelings, suspicion and even fear may arise as a result of isolation. Consequently, when these individuals are asked whether they are more satisfied (dissatisfied) with the "friendliness" of the neighbourhood into which they moved, the reply is often negative because enough contact has not occurred in order to induce a more

positive response. In condominiums, especially those of a row house nature, individuals are forced into personal contact in areas such as the children's playgrounds, swimming pool or day care centre. Originating in non-condominium environments, even this mild contact might induce households to inform that they are more satisfied with the "friendliness" of their new neighbourhood.

4.8.3 Parameter 3

As was the case with parameters 1 and 2, households in position one showed the most overall improvement with respect to parameter 3 (accessibility considerations). Significant improvements in convenience were found to have occurred to three of the seven variables tested - convenience to an "elementary school", "clinic/hospital" and "favorite shopping centre". Households in link 2 showed improvement only to the favorite shopping centre while the results for link 3 indicated that no improvement had occurred at all.

Accessibility considerations reflect two aspects of distance - absolute and perceived. Absolute distance refers to the actual mileage separating two locations in space. Distance which relates to time involved in getting from point A to B, on the other hand, is referred to as perceived distance. This measure of distance is influenced by factors such as time of day, congestion and speed limit, all of which appear to render the destination less accessible. In most instances, perceived distance takes priority over absolute distance when accessibility from home to a specific activity is considered. Households located close to downtown would experience greater congestion and more frustration in travelling to any activity

which is situated outside the core area than would one located at the periphery of the city. The location of most of Windsor's condominium developments close to major arterials such as Lauzon Road and Tecumseh Avenue would render most activities outside the urban core fairly accessible. This helps to explain why link 1 households responded more favorably to parameter 3 than did those in links 2 or 3.

In addition to the idea of perceived distance having influenced the results obtained, absolute distance also plays a major role. Elementary educational facilities in the four sample developments have been planned to be physically close to residents. Schools in older more established neighbourhoods remain situated where they have always been. If, as a result of compositional changes in the neighbourhood, demand for these schools shifts by a few blocks, the students will probably have to walk the extra distance. Limited space in conjunction with high land costs would preclude the demolition of an existing school and the erection of a new one a few blocks away.

The final concern of this section is with variable 88, a measure of overall improvement/deterioration of the housing circumstance as a consequence of the move. The results obtained for this variable have provided the best measure of perceived filtering for the purpose of this examination. In answering this question, it was necessary for each household to evaluate those aspects of the new housing circumstance which were most significant to them.

The results have been tabulated in Table 19. The overwhelming majority of households have indicated that their housing circumstance improved as a result of the move. For 12% of the households, the circumstance was felt to be the same

Table 19

Overall Improvement/Deterioration of the Housing

Circumstance as a Result of the Move

Extremely Improved	32
Moderately Improved	37
Slightly Improved	8
No Change	12
Slightly Deteriorated	5
Moderately Deteriorated	1
Extremely Deteriorated	5
Total	<u>100</u>

as before. In only 11% of the cases did the household feel that a deterioration had occurred. This was expressed primarily by households which had recently experienced a marital breakdown and who were forced to relocate into a more modest residence. Of the 77% of households which indicated that an improvement had occurred, 32% informed that it had been an extreme improvement while 37% stated that it had been moderate. This evidence coupled with that previously presented would suggest that perceived upward filtering has probably occurred since in over 75% of the cases, households felt that their overall housing circumstance had improved as a result of moving. If nothing else, these results demonstrate that households which moved achieved greater residential satisfaction in terms of their overall place utility.

This section has examined place utility considerations as well as having attempted to determine whether or not perceived filtering has occurred. The housing circumstance was examined in terms of three parameters. The greatest perceived improvements were found to have occurred with respect to parameter 1 (dwelling features). The results obtained for parameters 2 and 3 were comparable in that significant improvements were noted with respect to only two or three variables of which they consisted. In so far as accessibility considerations are concerned, the findings are consistent with the literature which states that accessibility is becoming a less significant factor in determining where a household will relocate.

It is evident that households try to improve on that aspect of the housing circumstance which is most important to them. In so far as this sample is concerned, "dwelling unit features" appeared most significant. Since the housing

circumstance consists of a package of features, it is inconceivable that every aspect of the circumstance should improve after the move. Trade-offs based on priorities have to be made by the household. With regards to this sample, it would seem that improved convenience and neighbourhood features were traded off for what was perceived to be a better dwelling unit. Consequently, when asked to comment on the new housing circumstance (variable 88), over 75% indicated that an improvement had occurred. This led the author to conclude that perceived filtering had occurred.

4.9 The Multiplier Effect

The size of the multiplier provides a good indication of the extent to which benefits accruing from new construction are dispensed throughout an urban area. The number of individuals who are able to participate in the housing turnover is affected by the size of the multiplier. The determination of how the multiplier effect can be maximized, therefore, has become an integral part of the study of the vacancy chains. Past studies have indicated that the single most important factor affecting the multiplier is the characteristics of the dwelling unit which begins the chain, in particular, price and location of the dwelling. The very nature and structure of this study precludes comparative analysis of the multiplier effect based on these parameters since they do not vary in this sample. In addition to this factor, government policy and regulations such as mortgage subsidies geared to income housing etc. also affect the multiplier effect. The complexity and implications of these factors warrant separate study. They will therefore not be examined here since this is not the prime focus of this research.

For the purpose of this study, the multiplier has been considered in two ways in the hope of approaching the matter more realistically:

1. the gross multiplier effect which includes vacancies left outside the study area and unsuccessful interviews.
2. the local multiplier effect which excludes vacancies left outside the study area but which includes interview failures.

Such an approach recognizes that the calculated multiplier effect is often underestimated simply because of uncontrollable factors which bring vacancy chains to a premature end, e.g. in migration, unsuccessful interviews. In order to obtain the most realistic account of the multiplier effect that this study could provide, it was assumed that unsuccessful interviews had been completed. This approach, while not alleviating the problem of unsuccessful interviews, nevertheless circumvents the problem in order to provide a better overall indicator.

4.9.1 The Multiplier Effect for the Entire Study Area

The findings upon which the ensuing discussion will be based are to be found in Table 20.

A total of 67 vacancy chains were studied. When all known links were considered, it was found that 150 vacancies were created by the purchase of the 67 condominiums. This yielded a gross multiplier effect of 2.2 indicating that for every 10 condominiums purchased, approximately 22 households were able to make adjustments in their housing circumstance.

This figure, however, is not very realistic in so far as the study area is concerned since it includes the vacancies

Table 20

Multiplier Effect for the Study Area

<u>Vacancy Chain Length</u>	<u>Gross Multiplier Effect</u>	<u>Local Known Multiplier Effect</u>
1	0	25
2	51	31
3	16	11
	<hr/>	<hr/>
Total No. Chains	67	67
Total No. Links	150	120
Value of the Multiplier	2.24	1.8

created outside the study area, overestimate the true multiplier effect. In order to determine what the value of the local multiplier is, it is necessary to eliminate all those vacancies left outside the area of study since for the purpose at hand, these chains have been terminated. In so doing, the total number of vacancies applicable to the Windsor area was reduced to 120 since 30 of these or 20% of all vacancies were created elsewhere. The local multiplier now assumes a value of 1.8, a reduction of approximately 20%. For every 10 dwelling units purchased, only 18 are now affected, 10 by moving into the new dwellings and 8 by occupying vacancies left by them. If there were no unsuccessful interviews, it would be reasonable to assume that the value of the multipliers would have been slightly greater.

It is difficult to surmise whether the figure obtained for the local multiplier is indicative of condominium housing in the price range being examined. There have been few truly reliable studies which have examined condominium housing in this respect. Nevertheless, a study by Adams et. al. (1972) on related housing (freehold row townhouses) revealed a multiplier effect of 2.1. The difference in the calculated value of the multiplier effect between this study and that of Adams might be attributed to the different value-range of housing with which each study was concerned. Comparison of the multiplier figure obtained in this instance with that obtained for housing in other value ranges will serve to confirm previous speculations on the multiplier effect based upon the cost of housing. The values of the multiplier for dwelling units in the \$25,000 - \$30,000 and \$30,000 - \$35,000 price brackets have been obtained from the results of a study undertaken by Roman Dzus in 1974.

Comparison of these figures with those of the present study is felt to be valid because the assumptions and method of calculation of the multiplier are the same. The results are presented in Table 21. A strong positive relationship between value of housing and size of multiplier is readily apparent. This finding is consistent with the literature which concludes that as housing value increases, the multiplier effect becomes greater.

In order for a household to be able to afford a new dwelling unit, its disposable income must achieve a certain threshold level necessary to maintain it. Housing in the highest value range is available only to those individuals whose income has surpassed this threshold. Consequently, the higher the price of new housing, the higher would be the value of housing in the second link and so on down the chain. Similarly, the greater the value of this initial dwelling unit, the wider the spectrum of housing values below. Since the spectrum is greater with more expensive housing, it is logical that the number of households benefiting as a result of filtration will be larger and similarly, the links will be longer. This is analagous to the functioning of a multi-layered sieve in which the "filtering" effect is directly proportional to the number of layers of which it is comprised.

4.10 The Rent/Selling Price of Successive Housing Units

Theories of filtering and household adjustment place considerable importance on identifying changes in payment for accommodation. The nature, direction and volume of such movements is a vital aspect of housing behaviour. Table 22 examines the value of housing at each link of the chain.

Table 21

Value of Local Multiplier for
House in Different Value Ranges

<u>Value of Housing</u>	<u>Multiplier</u>
\$15,000 - \$25,000	1.8
\$25,000 - \$30,000	2.0
\$30,000 - \$35,000	2.5

Table 22

Value of Owner Occupied Dwellings at Successive Positions

<u>Position</u>	<u>Number of Dwellings</u>	<u>Value-range</u>
1	60	\$15,000 - \$25,000
2	7	\$15,000 - \$25,000
3	2	\$15,000 - \$25,000
Total	69	

Disregarding the number of owner occupied dwellings, it is readily apparent that the value range used in this instance is too wide to reveal any differences among housing values in the three positions. Since specific house prices were not requested, further analysis of the relationships of this data is not possible. It is believed, however, that house price does decline through the vacancy chains.

Rental rate per month is displayed in Table 23. Thirty-three households rented accommodations. In this instance, mean rent was made available so that comparison by link was possible. The relationship that had been expected for house price is revealed here and is found to be in accordance with the implications of the literature. Mean rent value exhibits an obvious inverse relationship with position in the vacancy chain. Seven cases in link 1 were found to be renting purchased condominium townhouses. This helps to explain why the mean rent for accommodation in this link is so high. The majority of these households had recently migrated from outside the study area and were most probably using these dwellings as a temporary residence.

4.11 Housing Cost Changes as a Consequence of Mobility

The primary difficulty encountered in comparing pre-move and post-move housing cost is the often simultaneous change in tenure status. A method of translating rental cost into housing value could not be determined. Consequently, differentials in housing cost changes for those households which also changed tenure status could not be evaluated. Table 24 presents tabulated data of cost adjustments for households whose tenure status remained the same. Such treatment unfortunately reduces

Table 23

Mean Monthly Rent at Successive Positions

<u>Position</u>	<u>Number of Units</u>	<u>Mean Rent/Month</u>
1	7	\$250
2	21	\$150
3	5	\$135

Table 24

Accommodation Cost Differentials of Movers
Who Did Not Change Tenure

COST ADJUSTMENTS	OWNERS			RENTERS			TOTAL
	Link 1	Link 2	Link 3	Link 1	Link 2	Link 3	
Up 3 or more brackets				2 40.0%			2 4.8%
Up 2 brackets	4 26.6%	1 100.0%		1 20.0%	2 12.4%		8 19.2%
Up 1 bracket	3 20.2%			1 20.0%	5 31.8%	1 25.0%	10 24.0%
Same	2 13.3%		1 100.0%	1 20.0%	6 37.2%	1 25.0%	11 26.2%
Down 1 bracket	4 26.6%				2 12.4%	1 25.0%	7 16.2%
Down 2 brackets						1 6.2%	
Down 3 brackets	2 13.3%					1 25.0%	4 9.6%
TOTAL	15 100.0%	1 100.0%	1 100.0%	5 100.0%	16 100.0%	4 100.0%	42 100.0%

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the number of cases which can be examined. This may result in weakening the reliability of the findings.

For owners and renters combined, increased costs seemed to be more prevalent than decreased costs. This coincides with the assertions of the life cycle model. However, when the data is disaggregated by tenure status, it becomes apparent that where owners are concerned, the proportion of households whose costs have increased is virtually the same as for those whose costs have decreased. This reflects particularly the situations in position 1 since the number of cases in position 2 and 3 is insufficient to suggest another interpretation. A large proportion of households in link 1 have come from outside the study area and their past housing costs were a reflection of the housing market in their former urban area. If the cost of housing in these outside markets was higher than that in the Metro Windsor area, the cost adjustments made as a consequence of the move would indicate a drop in expenditure. The reverse of this applies equally as well.

As far as renting households are concerned, the finding that housing costs increase after the move is upheld, especially in link 1 where no single household experienced a decrease in rent after the move.

It has been shown that movement into higher priced accommodation is relatively common but not universal. Where it does occur, it would appear to be important in releasing lower priced accommodations for other households.

4.12 Tenure Status: Past and Present

The main objective of this section is to identify and clarify movement behaviour based on tenure status.

Tables 25 and 26 present tenure status in the sample housing chain before and after the move. At the pre-move stage, 74% of households were renting, 20% were owner-occupier and 6% were not yet in the housing market. An almost complete inversion of the pre-move tenure status structure is evident in examining tenure status after the move. In this instance, the overwhelming majority (69%) are owner-occupier while only 31% are renters. In link 1, the percentage of owner-occupiers went from a pre-move low of 25.4% to a striking 89% after the move. The respective figures for link 2 are 7% and 27% while the number of post-move owners in link 3 doubled.

The nature of the data just presented precludes the possibility of examining the direction of movement within and between tenure status categories. Such an examination would reveal which are the "export" and which the "import" tenure categories although the conclusion is almost foregone. Table 27 presents a breakdown of the data by position in the vacancy chain on the basis of the direction of tenure status movement. For link 1, the majority of households who presently own their accommodation had previously rented although a substantial proportion had been former owner-occupiers. In only two cases did the tenure change from one of ownership to one of renting. In both instances, the households were from outside the study area and in all probability, were renting the condominium until their search behaviour had been satisfied in the new city. Of the households in position 1 who were renting, the majority had rented previously. For these individuals, the move to a townhouse may have represented an accommodation as opposed to tenure change.

Table 25

Tenure Status Pre-move

	<u>Total</u>	<u>Link 1</u>	<u>Link 2</u>	<u>Link 3</u>
Rent	74	48	21	5
Own	20	17	2	1
Other	6	2	3	1
<u>Total</u>	<u>100</u>	<u>67</u>	<u>26</u>	<u>7</u>
		100.0%	100.0%	100.0%

Table 26

Tenure Status Post-move

	<u>Total</u>	<u>Link 1</u>	<u>Link 2</u>	<u>Link 3</u>
Rent	31	7 11.0%	19 73.0%	5 71.0%
Own	69	60 89.0%	7 27.0%	2 29.0%
Other	-	-	-	-
Total	100	67 100.0%	26 100.0%	7 100.0%

Table 27

Changes in Tenure by Position

<u>TENURE STATUS</u> <u>CHANGE</u>	<u>TOTAL</u>	<u>Position in Sequence of Moves</u>		
		<u>LINK 1</u>	<u>LINK 2</u>	<u>LINK 3</u>
Rent, to Own	49	43 64.2%	5 20.2%	1 14.3%
Rent to Rent	25	5 7.5%	16 60.8%	4 57.1%
Own to Rent	3	2 2.9%	1 3.8%	- -
Own to Own	17	15 22.5%	1 3.8%	1 14.3%
Other to Own	3	2 2.9%	1 3.8%	- -
Other to Rent	3	- -	2 7.6%	1 14.3%
TOTAL	100	67 100.0%	26 100.0%	7 100.0%

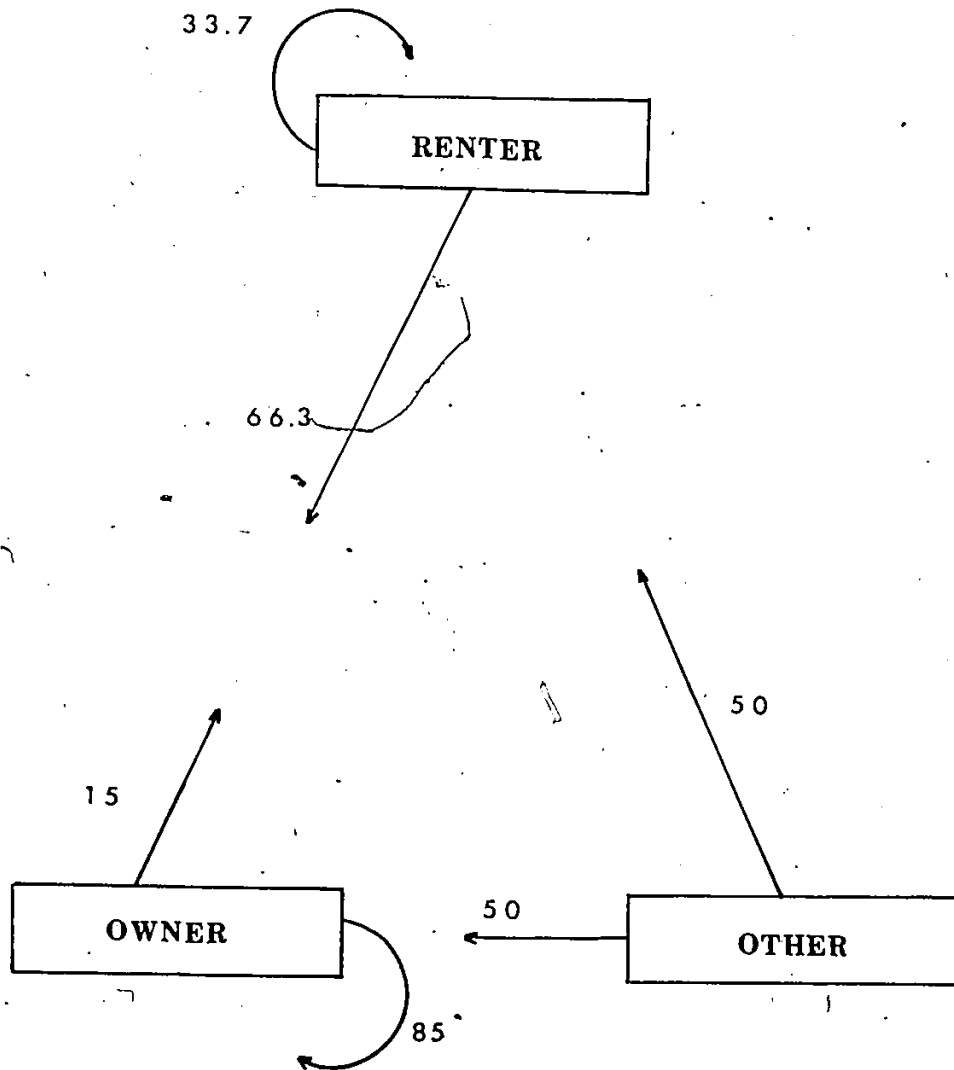
The greatest proportion (60.8%) of households in link 2 continued to rent although 70% of former renters did become owners. Three of the total six households in the sample which were not in the housing market prior to moving entered at this position in the vacancy chain. These individuals represented a substantial proportion (11.4%) of households in link 2.

The results for link 3 are somewhat hampered by small sample size. Nevertheless, the trend which began to emerge in link 2 is maintained. The majority of households did not change their primarily rental tenure status after having executed a move. The trend towards home ownership is not as evident as in the two higher positions even though an unusually high proportion of individuals in this position are owner-occupiers after the move.

Findings for the entire sample population are represented visually in Figure 1 in the form of a flow chart depicting tenure change. Since the number of renters, owners and "others" is not the same, directional values are quoted in percent. This performs the function of "standardizing" the results so that comparison are facilitated and rendered more meaningful. The major receiver of a tenure change is the owner-occupier status. Sixty-six percent of previous renters and 50% of new households (previously not in the market) became owner-occupiers. Only 15% of former owners, however, reverted to rental accommodations. In most cases, these individuals had experienced a decrease in total family income due to a death in the family or marital breakdown although in some cases, it may be explained by immigrants who rent temporarily in order to "feel" the new housing market. It was expected that a

FIGURE 1

DIRECTION OF TENURE
CHANGE IN PERCENT



greater percentage of households not previously in the market would have been absorbed by the rental component. This would have been more in compliance with the filtering theory. It must be kept in mind, however, that in dealing with such small samples (7 cases), the true nature of a process or relationship may not clearly emerge.

Figure 1 has served to point out the direction of tenure change in this sample. The results clearly indicate the desire for home ownership and the success households have had in attaining this through the housing turnover process. The pattern of net movement indicates that the owner-occupier sector is the major importer while the private, rented and especially "other" sectors are exporters. Movement within each is very important in maintaining the housing market structure.

4.13 Spatial Properties of the Housing Turnover

The study of vacancy chains is incomplete without an examination of the spatial aspects of intra-urban mobility. Such examinations help to determine among other things the trends in the housing turnover process as well as the location of unstable neighbourhoods. This will be of assistance in answering such questions as "How far do households move?" and "What is the direction of movement?". The answers to these questions are of particular interest to planners in that they furnish the information necessary to determine which areas of the city are expected to grow (stagnate) and consequently, the nature and magnitude of services to be provided.

4.14 The Distance Variable

Distance of the move is presented in Table 28

broken down by link. For the sample as a whole, an inverse relationship was found to exist between number (proportion) of households and distance of the move. Over 50% moved less than 3 miles.

When each position of the chain is considered separately, the results reveal that the number of short moves (≤ 1 mile) decreases in going down the chain. Only 14% of households in link 1 moved within a radius of one mile of their former residence. The comparative figures for links 2 and 3 are 35% and 43% respectively. The inverse of this also applies. Approximately 20% of households in link 1 moved a distance greater than 6 miles while representation from links 2 and 3 in this distance range was nil. In order to determine whether the differences in distance of the move are significant between links, a chi square test was used:

- H_0 : There is no significant difference between links in terms of origin destination distance.
- H_1 : There is a significant difference between links in terms of origin destination distance.

The level of rejection was chosen to be .05. The observed frequencies were taken from the field work and expected values were calculated from the formula. A 6 x 2 chi square table was used to test this hypothesis. At 5 degrees of freedom, chi square is 78. Since x^2 is greater than chi square, the null hypothesis is rejected. There is a significant difference between links in terms of distance of the move. This finding would suggest that the mental map

Table 28

Origin Destination Distance for Households Moving Within Windsor

<u>DISTANCE OF MOVE</u>	<u>TOTAL SAMPLE</u>	<u>POSITION 1</u>	<u>POSITION 2</u>	<u>POSITION 3</u>
<1 mile	16 23.04%	6 14.29%	7 35.0%	3 43.0%
>1 ≤ 2 miles	17 24.34%	12 28.57%	5 25.0%	- -
>2 ≤ 3 miles	5 7.90%	4 9.50%	1 5.0%	- -
>3 ≤ 4 miles	15 22.34%	7 16.67%	5 25.0%	3 43.0%
>4 ≤ 5 miles	4 5.84%	3 7.15%	1 5.0%	- -
>5 ≤ 6 miles	4 5.84%	2 4.75%	1 5.0%	1 14.0%
>6 ≤ 7 miles	3 4.34%	3 7.15%	- -	- -
>7 ≤ 8 miles	4 5.84%	4 9.50%	- -	- -
>8 ≤ 9 miles	- -	- 0.00%	- -	- -
>9 ≤ 10 miles	1 1.34%	1 2.38%	- -	- -
TOTAL	69 100.00%	42 100.00%	20 100.0%	7 100.0%

of individuals in position 1 of the chain encompasses a greater area than does that for households in the lower two positions. Since link 1 represents the major position of tenure transition (rent to own), it would appear that the search activity for these individuals is necessarily much more complex and wider in coverage. When an intra-urban move also involves an upward change in tenure, the household becomes more concerned than if it were to move into another rental unit primarily because of the large investment being made. Consequently, its search behaviour is expected to be spatially greater and better organized.

4.15 Distance to Downtown

This variable is significant in determining the nature of Windsor's growth trend. Table 29 presents tabulated data describing the change in distance to downtown as a result of the move. The "+" sign indicates that an increase in distance to downtown has occurred while the "-" sign indicates a decrease. A "0" indicates no change. The trend away from the downtown area is obvious. Sixty-four percent of households in link 1, 65% of households in link 2 and 57% of those in link 3 have indicated that their new accommodation is farther from downtown than their former. A substantial proportion (31%) of link 1 residence showed a decline in the distance to downtown after the move. This figure is surpassed only by that in link 3 (42.9%) where the difficulties of small samples are again encountered. The explanation as to why such a large segment of the link 1 households moved closer to downtown may lie in the fact that their previous residence may have been located near the periphery or in the extreme west end of the city.

Table 29

Change in Distance to Downtown
as a Result of Migration

<u>TOTAL SAMPLE</u>	<u>LINK 1</u>	<u>LINK 2</u>	<u>LINK 3</u>
+ 44 63.7%	27 64.3%	13 65.0%	4 57.1%
- 19 27.5%	13 31.0%	3 15.0%	3 42.9%
0 6 8.8%	2 4.7%	4 20.0%	- -
<u>69 100.0%</u>	<u>42 100.0%</u>	<u>20 100.0%</u>	<u>7 100.0%</u>

Consequently, any move would in all probability be more centrally oriented. Furthermore, many individuals who moved into the Roseville Gardens Condominium Project originated in the non-purchasable townhouses immediately to the east abutting Lauzon Road. Consequently, moving into accommodations in Roseville Gardens brought them closer to downtown.

Mean distance to downtown before and after the move (Table 30) by link serves to demonstrate that despite some households moving closer to the city centre, the present trend is centrifugal. Mean distance to downtown increased considerably for link 1 and 2 after the move. For households in link 3, however, the distance to downtown decreased slightly. For the sample in aggregate, distance to the C.B.D. after the move increased. These findings comply with those of past studies which have found that the general trend in intra-urban mobility is outward from the city centre.

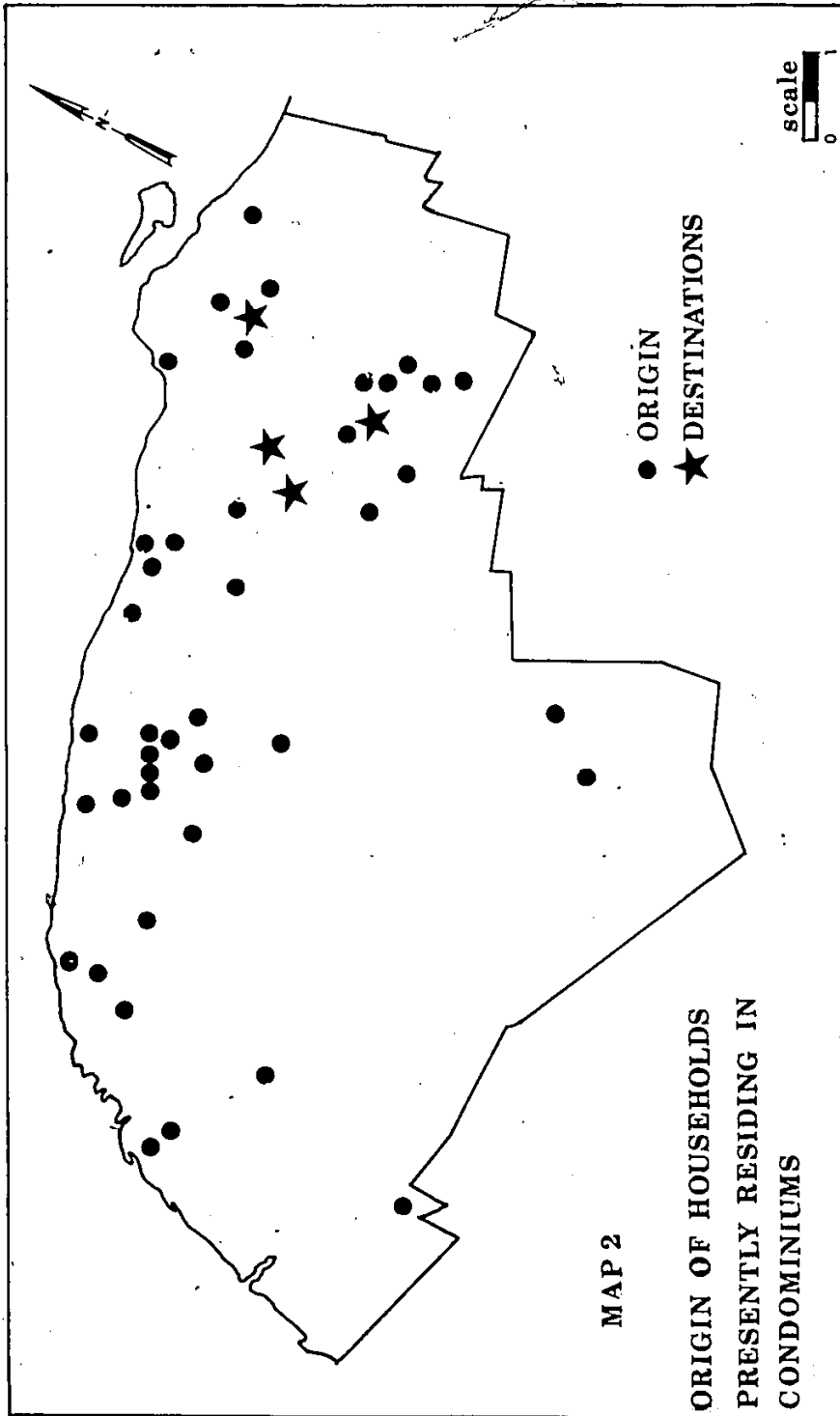
4.16 Migration Pattern and Areas of Housing Turnover

The migration pattern for households presently residing in position I of the vacancy chains is represented visually by Map 2. Since the location of condominiums does not vary substantially (they are all situated in the east quadrant of the city) within the study area, the direction of movement is primarily west to east. The greatest proportion of households moving into the condominiums originates in the central areas of Windsor within a 1.5 mile radius of the C.B.C.. Few individuals originated in the predominantly upper middle class areas of South Windsor. As noted earlier, a substantial number of households came from the Meadowbrook Lane - Hawthorne Crescent area which is characterized by lower income townhouses. The move into

Table 30

Mean Distance from Residence to Downtown
Before and After the Move

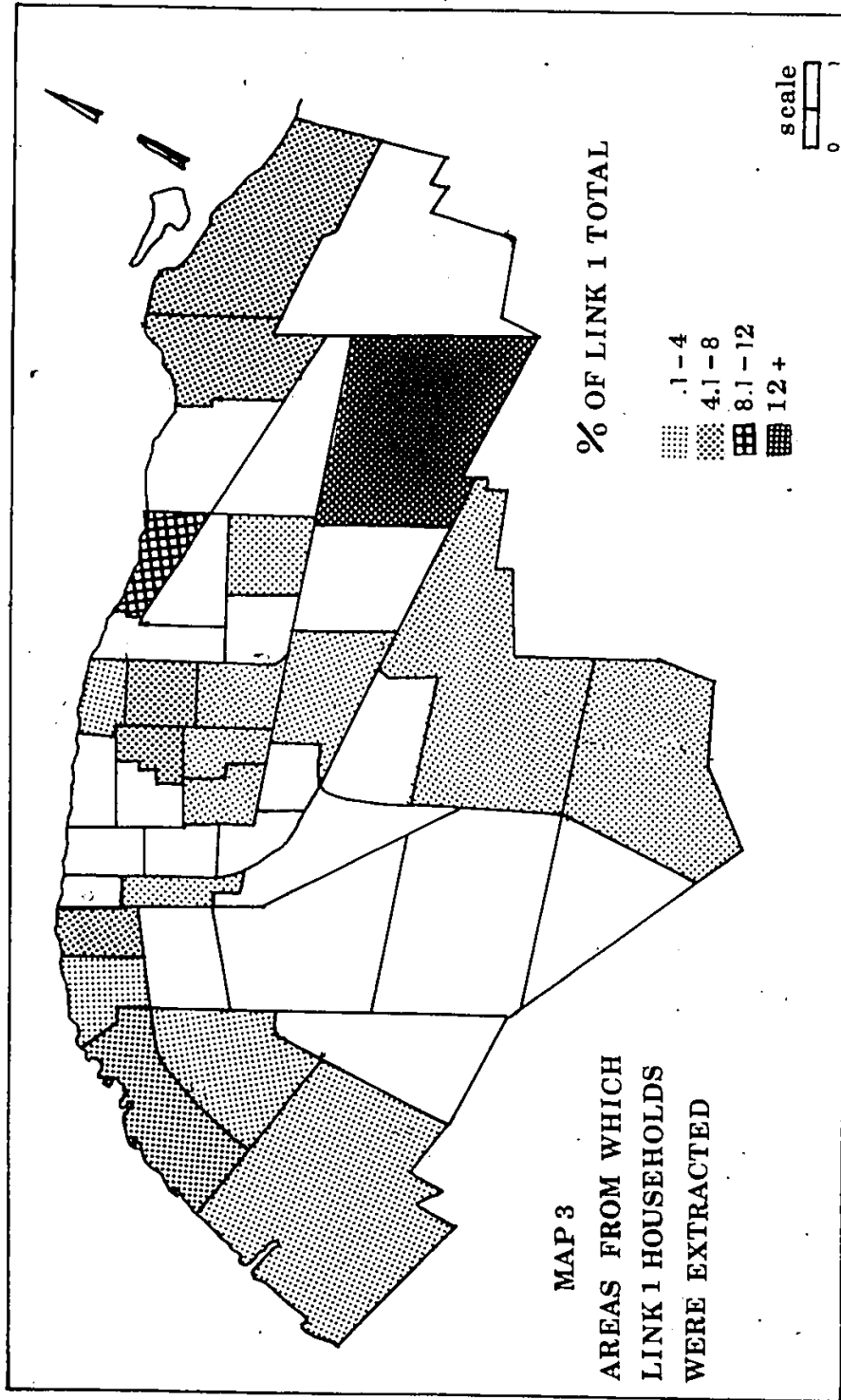
	<u>LINK 1</u>	<u>LINK 2</u>	<u>LINK 3</u>	<u>For Sample</u> <u>As A Whole</u>
<u>Before</u>	3.23 miles	2.50 miles	2.10 miles	2.61 miles
<u>After</u>	4.53 miles	3.29 miles	1.9 miles	3.24 miles

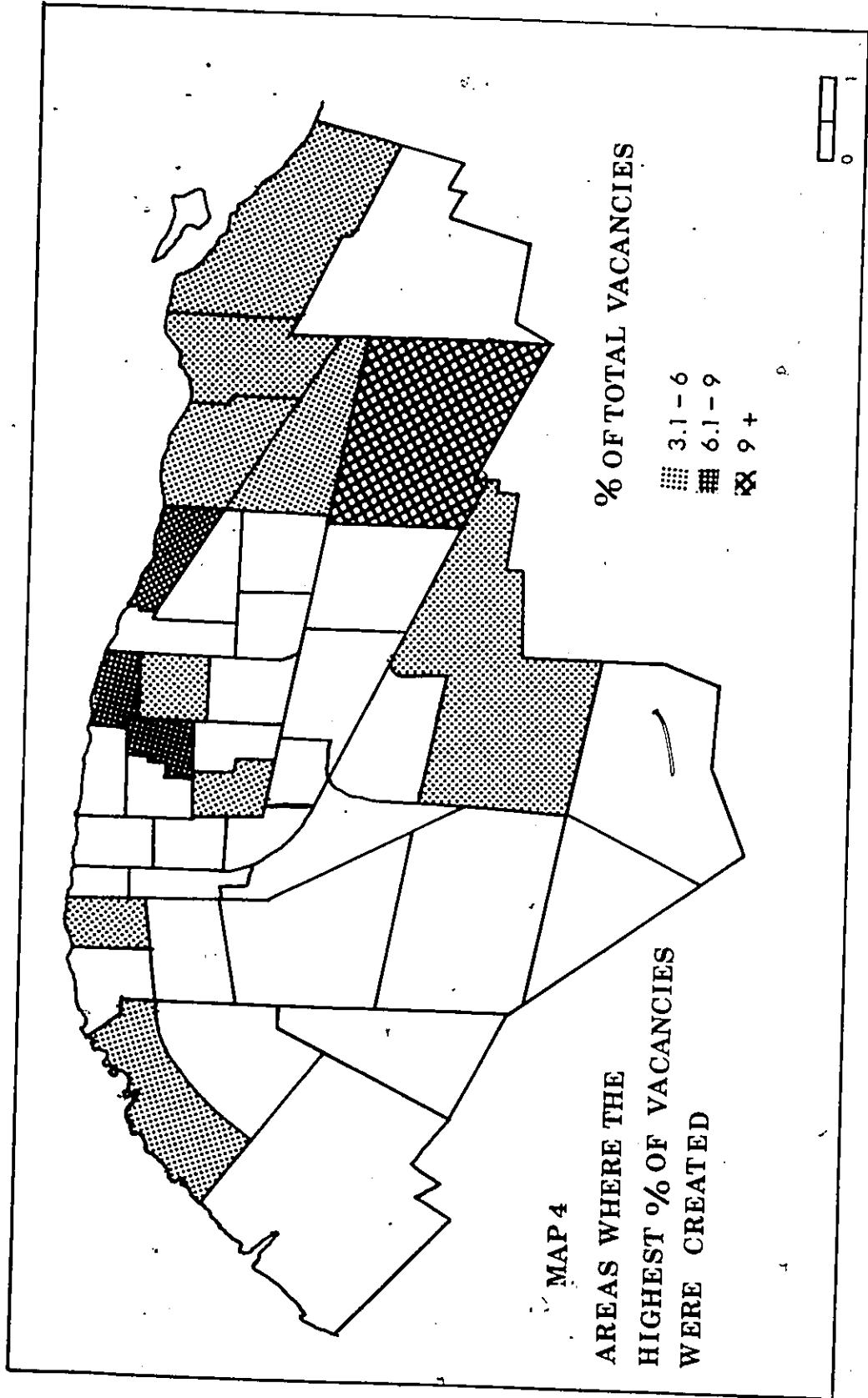


the condominium units for these individuals represents an increase in social status due to change in tenure.

Although the locations of the points of origin appear to be somewhat random, the distribution also reveals some clustering particularly in three areas. This may best be seen by examining Map 3 which indicates by percentage those census tracts from which present condominium residents have been extracted. The census tracts which did not supply any cases are designated by white space as opposed to varying shades of zipitone for those areas which did. Such treatment permits areas of clustering (if any) to stand out. Although not as readily discernible as anticipated, three areas of concentration may be identified: the core area, the northeast and the southeast area. It would appear that the mental map is an active phenomenon in the search behaviour of some of these individuals since the area of greatest extraction was the same as that in which was situated the largest condominium development. Furthermore, using Oulette Street as the bisecting point of the city, approximately 75% of vacancies were created in census tracts to the east of this line i.e. closer to the condominium subdivisions.

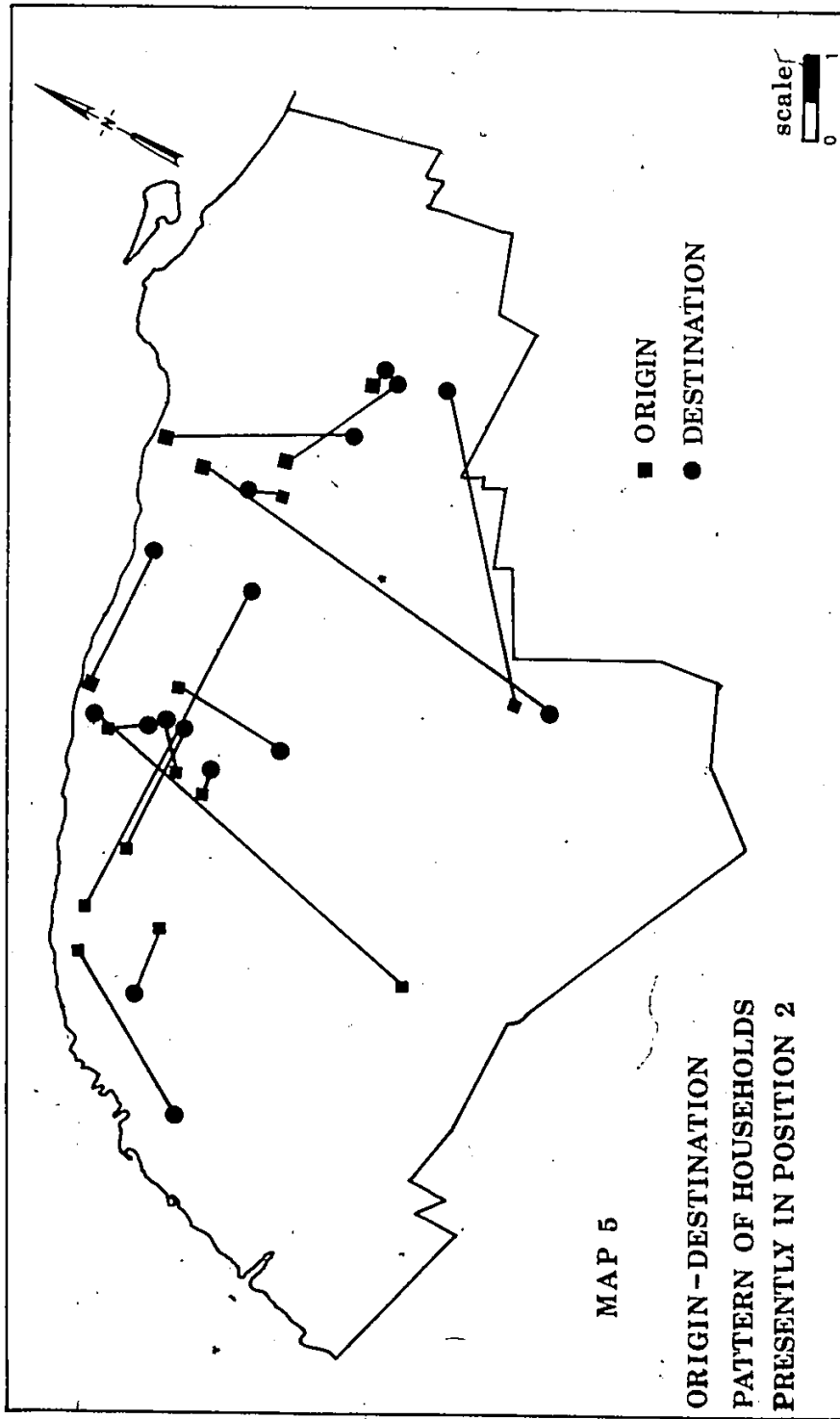
This map also serves to locate areas of high and low turnover although Map 4, which incorporates all vacancies including those created in the second and third links, provides for a more comprehensive analysis. In this instance, the east quadrant of the city is the prominent area of high turnover although the core area maintains a substantial proportion. This is in keeping with the theories which describe the core as being composed of transients and undesirables and experiencing the highest turnover. The west is least affected as is south Windsor. In the case of





south Windsor, the stability of the neighbourhood is reflected in this finding. With respect to west Windsor, the turnover rate may be low for a number of reasons. Much of the area in the southwest is being developed with new single family dwelling subdivisions. It is not expected that households living in these accommodations should have any desire to move into condominiums. This would represent a decline in perceived social status. A second factor in explaining the low turnover rate may relate to the nature of the occupant. Especially in northwest Windsor, the majority of dwellings are occupied by students, many of which are from out of town. Upon graduation, many return home leaving vacancies which are often filled by new students. A third possibility may be that west Windsor residents do not possess a very clear mental map of southeast Windsor. Consequently, during the search for a new residence, many households may exclude this area because of unfamiliarity.

Moore, Longbrake, Brown and Holmes have all concluded that most intra-urban mobility occurs within the neighbourhood or within a census tract. Of the 58 households whose movement could be plotted, it was found that in 60% of the cases, the move involved a crossing of census tracts. This figure coupled with the data of Table 28 would suggest that the above finding is not maintained in this research. It appears that the form of housing which offers tenure at a reasonable cost has a greater drawing power than similar rental accommodations. Consequently, even though a substantial proportion of moves occurred within census tracts, the fact that so many resulted in cross boundary movement suggests that the findings of the literature do not apply to Windsor.



The movement pattern of households presently residing in link 2 is presented in Map 5. Most moves originate in the core area and in the east. In only a few instances did the move originate in an outer, more expensive residential area. These may represent individuals who were previously living with their parents and upon entering the housing market were forced to seek accommodation in the less expensive central areas. It is difficult to ascertain the primary direction of movement. On the basis of this map, two observations regarding this group of households may be made: 1) the length of the move is shorter than that in the upper position of the chain; 2) although a tendency in outward movement is evident, the primary direction is lateral i.e. across rather than out.

4.17 Conclusion

Origin, distance and direction of movement for the sample population have been examined. The findings indicated that the areas of highest turnover are the central and eastern sectors of Windsor. Distance of the move decreases in going down the vacancy chains. The direction of movement varies from primarily an outward orientation at position 1 to a lateral orientation in position 2. Contrary to expectation, when the sample population is considered in aggregate, most moves involve a crossing of census tract boundaries. "Within census tract" moves are restricted primarily to households presently residing in position 2 although this finding is weak.

CHAPTER V

ADDITIONAL CONSIDERATIONS

5.1 Introduction

The purpose of this chapter is to employ a series of multivariate techniques on the data collected for this study. While a number of assumptions which will be made in analysing the data appear to be unrealistic, it is felt that the results obtained will shed further light and possibly add to the observations thus far presented. It should be noted at the outset that the inclusion of a section such as this is merely for experimental purposes although it was found to be beneficial as an academic exercise.

5.2 Factor Analysis

Factor analysis was run on the 51 semantic differential questions comprising the questionnaire. These variables measured three aspects of the accommodations before and after the move - dwelling unit characteristics, neighbourhood characteristics and accessibility considerations. It was hoped that a series of underlying factors could be obtained from which could be created a new set of variables for use in regression analysis. In their original form, the semantic differential questions could not be employed in regression analysis because they were of the ordinal scale.

The new variables created from the factors were arrived at using the formula

$$\text{Scale 1} = \text{Fsc}(\text{Var 1}) + \text{Fsc}(V2) + \text{Fsc}(V3) \dots$$

where Scale 1 represents the best estimate of

factor 1

where Fsc represents the factor score
coefficient

Computation was carried out by means of "compute" and "if" cards in accordance with the S.P.S.S. methodology. Input for the S.P.S.S. subprogram factor consisted of a rank order correlation matrix obtained from a separate program. The criterion employed in extracting significant factors was the eigenvalue. This figure was established at 1. On this basis, 16 factors explaining 67% of their common variance were extracted. The 16 factors were then rotated to obtain the orthogonal varimax solution. The variable make-up of each factor was arrived at using the varimax rotated factor matrix. This table in essence presents the correlation of each variable on each of the 16 factors rotated. When a correlation coefficient between a variable and a factor was greater than .5, it was assumed that that variable constituted a portion of that factor. When the variable make-up for each factor was determined, it was necessary to eliminate 3 factors since they were found to be inexplicable. The remaining 13 variables explained 60.1% of their common variance. Table 37 presents these factors on the basis of the variable names by which they will subsequently be referred. The 13 factors were then transformed into variables through the execution of the formula presented above. The values obtained by case were then introduced into the principal computer deck for the ensuing regression analysis.

Table 31

Factor Analysis Results

FACTOR

VARIABLE/NAME

Factor I	Satisfaction with dwelling feature of new place
Factor .II	Satisfaction with neighbourhood features of former residence
Factor III	Convenience of former place
Factor IV	Reasons for moving
Factor V	Satisfaction and convenience of new place to parks/playground
Factor VI	Property Taxes
Factor VII	Convenience of new place
Factor VIII	Satisfaction with traffic of former place
Factor IX	Satisfaction with traffic of new place
Factor X	Satisfaction with education of former residence
Factor XI	Satisfaction with neighbourhood features of new residence
Factor XII	Satisfaction with dwelling features of former residence
Factor XIII	Marital Status

5.3 Regression Analysis

For the purpose of this study, regression analysis was employed solely to obtain a predictive equation which explained the greatest amount of variance in the dependent variable. The F test provided in the computer output was utilized in determining which variables were significant. Although a large number of regressions were performed, only 5 emerged with meaningful results. Each of the 5 have been tabulated on pages . These are the subject of the following discussion.

Regression 1

Dependent Variable

"link number"

Rationale

It was hoped that by using link numbers as the dependent variable, a series of variables which identified households by link could be arrived at i.e. variable which best predicted link number. Four variables explaining 53% of the variance in the dependent variable were found to be significant (See Table 32). It appears that the variable which differentiates households most by link is the distance from the new residence to downtown. Tenure status is also significant in isolating households by position in the vacancy chain. These findings uphold those previously noted regarding households in this sample since those in link 1 were located furthest from downtown and were almost exclusively owner-occupiers. Households in the lower two links, however, were situated progressively closer to downtown and were primarily renters.

Regression 2

Dependent Variable "tenure status in the new residence"
Rationale The intention of using present tenure status as the dependent variable was to establish a set of criteria which best explained tenure status in the sample. Five variables explaining 63.4% of the variance in the dependent variable were found to be significant. The property tax variable accounted for the greatest explanation in the variance. Age of spouse and marital status of the head explained approximately 9%. It was hoped that demographic variables would figure more prominently. This would have suggested that significant demographic differences existed between individuals renting and those owning. Possibly, the elimination of the property tax variable would have resulted in the inclusion of more demographic and economic variables.

Regression 3

Dependent Variable "overall satisfaction of the new residence"
Rationale This variable is the best indicator of the household's attitude towards the new housing circumstance. Each component of the housing circumstance which is significant to the household is encompassed by the value of this variable. By using this as the dependent variable, an equation explaining the variation in overall satisfaction with a particular residence can be arrived at. This equation in effect would provide a series of variables which most influence how an individual will react towards his new housing circumstance.

Sixty-one percent of the variance in the dependent variable was explained by 6 significant variables.

The factor which explained the greatest percent of the variance was found to be satisfaction with the neighbourhood appearance in the new dwelling. This suggests that if all other variables were held constant, the degree of satisfaction experienced in the new dwelling would be related to the household's satisfaction with the neighbourhood appearance. Other variables which were found to be significant were satisfaction/dissatisfaction with the neighbourhood appearance of the former residence, street safety in the former residence, convenience of the new residence, and satisfaction/dissatisfaction with the convenience of the new place to a park or playground.

The results obtained in this instance seem to indicate that households, in evaluating their housing circumstance, tend to compare those features of their former residence which were most displeasing to them with those features of the new residence which most appealed to them. Consequently, the worse was their circumstance prior to the move, the greater is their satisfaction with the new accommodation after the move.

The remaining two regressions will examine the "overall satisfaction/dissatisfaction of the new residence" by position in the vacancy chain. The results of links 2 and 3 have been aggregated in this instance in order to obtain better representation.

Regression 4

Dependent Variable

"overall satisfaction/dissatisfaction of the new residence" for link 1 households

Rationale

The socio-economic, demographic and other characteristics which differ between links would suggest that variables explaining the variance in the "overall satisfaction" variable should also differ. If this is true, an examination by position in the vacancy chain would be most beneficial in providing a better understanding of this important variable.

Only two variables explaining 55% of the variance were found to be significant - neighbourhood satisfaction with the new residence and neighbourhood satisfaction with the former neighbourhood. This would appear to indicate that the correlation between these two variables and the dependent variable is high. This does not imply however that these two factors are the best predictors of overall satisfaction. The fact that only 55% of the variance in the dependent variable is explained by these two suggests that other variables which may not have been included in the regression analysis may be more significant. Nevertheless, as in the previous regression, there appears to be a relationship between former and present residence. It again seems that satisfaction/dissatisfaction with the new residence is dependent upon a comparison of pre-move and post-move situations.

The final regression analysis involves the same dependent variable but with a different set of cases i.e. the aggregate of households in positions 2 and 3 of the vacancy chain. In this instance, 71.3% of the variance in the dependent variable is attributable to 3 variables. The most significant variable which explains over 33% of the variance is again the "satisfaction/dissatisfaction with the neighbourhood appearance in the new residence". The number of rooms lost or gained due to moving was

found to explain 19% of the variance. It is not difficult to visualize why this variable should be so significant for this subpopulation. As noted earlier in this paper, the main differences between dwelling units before and after the move for households in the lower positions of the chain lies in the size of the units. A large number of these households moved for more space. Consequently, if the move resulted in a gain of rooms, the overall satisfaction of the household with its new dwelling would be great. The inverse also applies.

The "convenience of the new dwelling to a park or playground" explained the remaining 18% of the variance.

A regression analysis was performed in which the origin destination distance was used as the dependent variable. The variables which were found to be significant, however, were too unrealistic to lend an accurate interpretation to the evidence. Other regressions were also performed with similar results and consequently were not included.

Table 32

Regression 1

<u>DEPENDENT VARIABLE</u>	Link Number	<u>Change in R²</u>
<u>INDEPENDENT VARIABLES</u> (significant)		
1. distance from new place to downtown		.33717
2. tenure status, new residence		.10438
3. number of extra-familial dependents in the family		.05665
4. value of rent, former residence		.03863
TOTAL VARIANCE EXPLAINED		<u>.53684</u>
CONSTANT		3.27920

Regression 2

<u>DEPENDENT VARIABLE</u>	Tenure Status New Residence	<u>Change in R²</u>
<u>INDEPENDENT VARIABLES</u> (significant)		
1. property taxes		.47624
2. age of spouse		.06826
3. satisfaction and convenience of new place to parks/playgrounds		.03360
4. marital status of head		.02959
5. convenience of former place		.02628
TOTAL VARIANCE EXPLAINED		<u>.63398</u>
CONSTANT		2.62635

Table 32 (cont'd)

<u>Regression 3</u>	
<u>DEPENDENT VARIABLE</u>	Improvement/Deterioration of Housing Circumstance
<u>INDEPENDENT VARIABLES</u> (significant)	<u>Change in R²</u>
1. satisfaction with neighbourhood features of the new residence	.40446
2. satisfaction with neighbourhood features of the former residence	.08643
3. satisfaction with traffic in the former place	.03573
4. convenience of new place	.03078
5. satisfaction with the dwelling features of the new place	.02710
6. Satisfaction and Convenience of new place to parks/playgrounds	.02591
TOTAL VARIANCE EXPLAINED	.61042
CONSTANT	2.91561

<u>Regression 4</u>	
<u>DEPENDENT VARIABLE</u>	Improvement/Deterioration of Housing Circumstance (for Link 1)
<u>INDEPENDENT VARIABLES</u> (significant)	<u>Change in R²</u>
1. satisfaction with the neighbourhood features of the new dwelling	.46225
2. satisfaction with the neighbourhood features of the former dwelling	.08968
TOTAL VARIANCE EXPLAINED	.55193
CONSTANT	4.65051

Table 32 (cont'd)Regression 5

<u>DEPENDENT VARIABLE</u>	Improvement/Deterioration of Housing Circumstance (for Links 2 and 3 combined)	
<u>INDEPENDENT VARIABLES</u> (significant)		<u>Change in R²</u>
1. satisfaction with the neighbourhood features of the new residence		.33900
2. number of rooms lost or gained as a result of the move		.19229
3. satisfaction and convenience of new place to parks/playgrounds		.18242
TOTAL VARIANCE EXPLAINED		.71370
CONSTANT		2.36448

CHAPTER VI

CONCLUSION AND IMPLICATIONS OF THIS STUDY

6.1 Introduction

The prime focus of this research was on the condominium residents in Windsor. The indirect effects of the purchase of condominium units on the study area were equally of concern. A detailed examination of vacancy chains provided a substantial understanding of this aspect (condominium) of the housing market in Windsor. Intra-urban migration as a phenomenon related to the research sample was also examined. Hypothesis testing was used in conjunction with data tabulation in order to relate the findings of this study to those in the literature.

It was felt that the purposes of this research were fulfilled and that a number of interesting findings emerged.

6.2 Summary of Findings

6.2.1 Characteristics of Movers

The socio-economic characteristics of all the households in the chain of moves was examined in aggregate. It was found that most households are young, married, have few children, are in the medium income range and occupy relatively low perceived positions of occupational status and educational attainment.

The sample households were then examined by position in the vacancy chain. Hypothesis testing was utilized in determining whether significant socio-economic and demographic differences existed between links. It was found that links differed significantly in terms of age of household head, sex of head, average number of children and

income. In so far as income is concerned, the difference between links could not be attributed to the number of wage earners in the household. In accordance with Smith's (1964) and Kirkland's (1968) definition of filtering, these findings suggest that households have filtered up into better accommodations. Furthermore, it would appear that families in the lower positions of the vacancy chain are at a more youthful stage in the family life cycle. This is consistent with Rossi's (1955) life cycle theory as well as with the findings of Adams, et. al. (1973).

6.2.2 Mobility Inclinations

The reason why households moved was examined on the basis of the responses given to this question. It was found that four factors were most important in answering why people moved: changing needs for space, desire for home ownership, occupation and change in marital status. The significance of each of these factors was examined by position in the vacancy chain and was found to differ appreciably.

A series of hypotheses were formulated on the basis of the mobility reasons given in order to determine if households improved their accommodations with respect to that reason. A Wilcoxon Matched Pairs Sign Rank Test was used. Significant improvements were found to have occurred with respect to the following: satisfaction with number of rooms, size of rooms and amount of storage space for those individuals who stated that they moved because of a need for more space; convenience to the head of household's place of employment and to a clinic or hospital for those households who moved in order to improve the convenience

of their location.

6.2.3 Place Utility

Three parameters of housing, dwelling unit features, neighbourhood features and accessibility considerations, were established in examining place utility for the sample. The Wilcoxon Matched Pairs Sign Rank Test was employed to test hypotheses whose intent it was to determine whether significant improvements had occurred in place utility as a consequence of the move.

It was found that the greatest improvements occurred with respect to the "dwelling unit feature" parameter when the population was considered in aggregate. "Neighbourhood features" were second in importance while "accessibility considerations" showed the least improvement. When the data was disaggregated, it was found that households in link 1 experienced the greatest improvement in place utility. Perceived place utility improvement decreased in going down the vacancy chain.

The overall improvement/deterioration of the housing circumstance was then tabulated for detailed examination. Since this variable provides the best indicator of the new housing circumstance, it was found to be invaluable in making inferences about perceived filtering. In only 11% of the cases did the household feel that the housing circumstance had worsened. For the remaining 89% of the households, the situation had either remained the same or improved by varying degrees. This led to the conclusion that perceived filtering had occurred.

6.2.4 The Multiplier Effect

This research studied 67 vacancy chains. Fifty-

three relocation opportunities were created within the study area from the purchase of the 67 condominium row houses. This yielded a local multiplier of 1.8 which was approximately lower than that obtained by Adams, et. al. (1973) on similar type housing. The difference in multiplier values may be attributed to the selling price differential of the units in each of the two housing samples. The value of the multiplier was then compared with that created by housing in other value ranges in the city of Windsor. The findings of a study conducted by R. Dzus (1975) revealed a multiplier effect of 2.3 for dwellings valued between \$25,000 - \$30,000 and 2.5 for those between \$30,000 - \$35,000. A strong positive relationship was found between value of housing and size of the multiplier. This relationship is consistent with the findings of Lansing, Clifton and Morgan (1969) and those of Adams, et. al. (1971) in which value of the multiplier was dependent upon the selling price of housing which began the vacancy chain.

In conjunction with the examination of the multiplier effect, the rent/selling price of successive housing units was also studied. Mean rent value was found to exhibit an inverse relationship with position in the vacancy chain. On the basis of the literature, this finding was expected. Furthermore, since income was shown to decrease in going down the vacancy chain, housing costs would also be expected to decrease in order to be within the income capability of the lower income families.

When before and after move housing costs were compared, the results indicated that increased costs were more prevalent than decreased costs. The number of cases tested had been reduced because only those households whose tenure status had remained the same were considered. This

facilitated analysis since it would have been difficult to access whether housing costs had increased for an individual who prior to the move was paying rent and after the move had purchased a dwelling. A method of equating rental cost to value of housing was not readily available.

The trend in tenure status change after the move was towards home ownership. When all the households in the vacancy chain were examined, it was found that 74% rented, 20% owned and 6% had not entered the market prior to the move. The comparative figures after the move were 69% (owners) and 31% (renters) respectively. This reflected an obvious trend towards home ownership. The data was disaggregated in order to determine which were the "import" and which the "export" tenure categories. As expected, the owner-occupier tenure category received the greatest number of households. Sixty-six percent of previous renters and 50% of new households became owner-occupiers. Only 15% of former owners, however, reverted to rental accommodations. This tenure status (renting) can be viewed as the exporting sector. This finding would imply that rental accommodations play a significant role in the overall turnover of housing. It appears to provide a necessary interim period between the time when individuals leave home permanently and the time they and their families purchase homes. Once a home has been purchased, the tendency for a household to revert back to rental housing is almost eliminated.

6.2.5 Spatial Properties of the Housing Turnover The Distance Variable

For the sample in aggregate, an inverse relationship was found to exist between number (proportion) of

households and distance of the move. The greatest proportion moved less than 3 miles. The data was then disaggregated to permit a link comparison of distance moved. An inverse relationship between distance and position in the vacancy chain seemed to emerge. It was found that as position in the vacancy chain increased (numerically greater), the distance of the move decreased. A chi square test was employed in order to determine whether there was a significant difference between links in terms of origin destination distance. The calculation of the chi square indicated that a significant difference did exist between links with respect to distance moved. This finding would imply that the relocation opportunity of households in the second and third links was limited primarily due to income. The move for these individuals, especially those in the third link, would most probably be confined to within a small radius of their present residence since this may be the only area of the city whose housing costs are within their means. In this study, the area of confinement appeared to be within a two mile radius of the central core.

Distance to Downtown

The results obtained from the data suggest that the mobility inclination is towards the periphery of the city. Sixty-four percent of the households in position 1, 63% in position 2 and 57% of those in link 3 indicated that the move placed them at a greater distance from the C.B.D.. Much of the outward mobility trend of households in link 1 may be explained by the concentration of the sample condominiums near the eastern periphery of the city. Nevertheless, the finding for positions 2 and 3 would seem to indicate

that the trend in housing mobility is definitely centrifugal. This finding is in keeping with urban growth theories (Burgess' concentric rings; Hoyt's sector) which maintain that city growth is outward from the city center. The data was disaggregated in order to determine the relationship among the links with respect to this aspect of mobility. Mean distance to downtown increased for all but households in position 3. The small decrease in distance to downtown observed for link 3 was not considered to be significant enough to suggest the invalidation of the previous conclusion arrived at.

Migration Pattern and Areas of Housing Turnover

The location of the 4 condominium developments in one area of the city precluded a detailed analysis of sectoral bias in mobility. In the majority of cases, the moves were found to be necessarily west to east since there is almost no population to draw upon east of this area.

The findings indicated that the greatest proportion of households moving into the condominiums from within the study area originated near the C.B.D. and in areas around each condominium development. This lended some support to the concept of the mental map since most people originated in the area of the city closest to their destination. Stable areas of the city exhibited minimal activity. Some clustering of origin points was found to exist although testing was not undertaken.

Areas of the city exhibiting high turnover were located in the east and core. West and south Windsor had a low turnover rate.

6.2.6 Further Considerations

Multivariate techniques were employed in the final chapter in an attempt to reduce the total number of semantic differential variables into factors for use in regression analysis. Subprogram "Factor" revealed 13 significant factors explaining 60.1% of their common variance. The factors were then transformed for use in regression analysis and a series of regressions were run using select variables as the dependent variable. Fifty-three percent of the variance in "link number" was explained by 4 variables which were "distance from new place to downtown", "present tenure status", "number of extra familial dependents", and "value of rent in the former residence". The second regression involved "tenure status" as the dependent variable. Sixty-three percent of the variance in this variable was explained by "property tax", "age of spouse", "satisfaction/dissatisfaction with the proximity of the new dwelling to children's facilities", "marital status of the head", and "overall convenience of the former residence". The final three regressions used the "overall improvement/deterioration of the housing circumstance" as the dependent variable. The results by link were found to be somewhat obscure since the total variance accounted for was at times low as was the number of significant variables.

6.2.7 Implications for Future Research

The findings revealed by this study enables an assessment of the condominium housing market in the city of Windsor. It was felt that the objectives of this research were successfully completed. The findings implied that as a form of ownership, condominium row housing is one of the

least expensive since households with total family incomes under \$15,000 were able to afford one. With regards to socio-economic and demographic characteristics, it was found that vacancies in the lower positions of the chain were made available to lower income groups suggesting that upward filtering of households was occurring. The multiplier effect of row house condominium unfortunately was not found to be very great since for each ten condominiums available, only 18 households were able to participate in the housing turnover. Windsor's growth trend appears to be outward from the city center.

As is characteristic of all research endeavors, the difficulties of obtaining, analysing and interpreting the data emerged. A number of these problems, especially in data collection, will continue to pursue future researchers. It was found that a better, more accurate account of the housing turnover process was obtained by studying only one housing submarket. Such an examination eliminates the possibility of confusing the results obtained with those of other submarkets. What is lost in terms of general applicability is often gained by the detailed information obtained on that specific market.

As an academic exercise, this disaggregated study of the housing market was optimum. It introduced the author to many aspects of the "real" housing market such as the significance of property taxes, changes in family size, income and other factors in the decision to seek a new residence. Furthermore, it is hoped that this study has added to the small body of Canadian literature in the fields of intra-urban mobility and vacancy chain analysis.

Future vacancy chain studies should attempt to concentrate on as few aspects of housing as possible. This

will lead to more detailed analysis while providing the researcher and reader with findings which are clearer and more easily interpreted.

In order to improve response rates during interviews, the questionnaire should be clear and very short. Overly lengthy questionnaires tend to disinterest the interviewee and may result in less accurate responses. Unless required, open-ended questionnaires should be eliminated. In carrying out the interview, it was found that open-ended questions tended to slow down the smooth flow of the interview because it required that the respondent think of an answer rather than choose from those given. Furthermore, in the course of analysing the data, open-ended questions were found to be difficult to categorize thereby rendering them of little use in many instances.

Data obtained from field work was found to have its advantages and disadvantages. The time consuming aspect of door-to-door interviewing and the expense involved often precludes this as a viable provider of data. If possible, however, this method of data collection should be employed since it enables the researcher to acquire information which is specifically oriented to the subject being examined i.e. by setting up his own questionnaire, information such as former tenure status or present income can be extracted on an individual basis. Data from the decennial census does not provide this information on an individual basis.

The S.P.S.S. was found to be an invaluable tool in analysing the large quantities of data. Unless the researcher is capable of employing more sophisticated means, statistical packages are highly recommended.

In summary, the author feels that this study has been successful from both an academic and empirical aspect. Prior to this study, the knowledge of the condominium housing market in Windsor was virtually non-existent. Nevertheless, additional more specific and more detailed analysis of condominiums will be required since this is the fastest growing form of housing in Canada.

APPENDIX 1



7. Please state the occupation and place of employment for both the head of the household and spouse.

	OCCUPATION	PLACE OF EMPLOYMENT	F-T P-T
HEAD			
SPOUSE			

8. I'd like to turn now to the reasons why you decided to move out of your former residence. Thinking back, what factors do you feel influenced you most in your decision to move?

9. How important do you feel the factors listed below were in motivating you to move out of your previous dwelling place?

	Extremely Important	Extremely Unimportant
A Change in Place of Work	_____ : _____ : _____ : _____ : _____ : _____ : _____	_____ : _____ : _____ : _____ : _____ : _____ : _____
B Change in Marital Status	_____ : _____ : _____ : _____ : _____ : _____ : _____	_____ : _____ : _____ : _____ : _____ : _____ : _____
C Incr/Decr in Family Inc.	_____ : _____ : _____ : _____ : _____ : _____ : _____	_____ : _____ : _____ : _____ : _____ : _____ : _____
D Job Promotion	_____ : _____ : _____ : _____ : _____ : _____ : _____	_____ : _____ : _____ : _____ : _____ : _____ : _____
E Incr/Decr in Family Size	_____ : _____ : _____ : _____ : _____ : _____ : _____	_____ : _____ : _____ : _____ : _____ : _____ : _____
F Forced to move due to high housing costs, need for repairs etc.	_____ : _____ : _____ : _____ : _____ : _____ : _____	_____ : _____ : _____ : _____ : _____ : _____ : _____

10. Remembering your former residence, how did you feel about the features listed below?

	Extremely Satisfied	Extremely Dissatisfied
A Number of Rooms	_____ : _____ : _____ : _____ : _____ : _____ : _____	_____ : _____ : _____ : _____ : _____ : _____ : _____
B Interior Appearance	_____ : _____ : _____ : _____ : _____ : _____ : _____	_____ : _____ : _____ : _____ : _____ : _____ : _____

- C Size of Rooms _____:_____:_____:_____:_____:_____:
- D Exterior Appearance _____:_____:_____:_____:_____:_____:
- E Amount of Storage Space _____:_____:_____:_____:_____:_____:
- F Size of Yard/Grounds _____:_____:_____:_____:_____:_____:

11. How convenient do you feel your former location was to the activity places given below?

Extremely Convenient Extremely Inconvenient

- A Home of Best Friend _____:_____:_____:_____:_____:_____:
- B Downtown _____:_____:_____:_____:_____:_____:
- C Park/Playground _____:_____:_____:_____:_____:_____:
- D H.O.H. Place of Work _____:_____:_____:_____:_____:_____:
- E Elementary School _____:_____:_____:_____:_____:_____:
- F Clinic/Hospital _____:_____:_____:_____:_____:_____:
- G Favorite Shopping Centre _____:_____:_____:_____:_____:_____:

12. How did you feel about the conditions listed below as they existed in your former neighbourhood?

Extremely Satisfied Extremely Dissatisfied

- A Amount of Traffic _____:_____:_____:_____:_____:_____:
- B Property Taxes _____:_____:_____:_____:_____:_____:
- C Air Pollution _____:_____:_____:_____:_____:_____:
- D Quality of Services/ Utilities _____:_____:_____:_____:_____:_____:
- E Safety on Streets _____:_____:_____:_____:_____:_____:
- F Quality of Education _____:_____:_____:_____:_____:_____:
- G General Appearance _____:_____:_____:_____:_____:_____:
- H Availability of Parks _____:_____:_____:_____:_____:_____:
- I Friendliness _____:_____:_____:_____:_____:_____:

13. More generally, would you rank in order of importance, those THREE factors listed below that were most influential in motivating you to move out of your former residence?

- A Change in Family Size & Need for More/Less Space _____
- B Increase/Decrease in Total Family Income _____
- C Change in Place or Type of Work _____
- D Desire to Move to a Better Home _____
- E Desire to Improve Convenience of Location _____
- F Desire to Move to Better Neighbourhood _____
- G Learned of Better Dwelling Place for About Same Costs _____
- H Other _____

14. Regarding your former residence, did you : RENT OWN
OTHER

VALUE IF OWNED

RENT INCLUDING UTILITIES

A B C D E F G

A B C D E F G H

15. What was the address at your last residence?

16. Has somebody moved into that (house/apt.) since you moved out?

YES NO DON'T KNOW

Why not? _____

17. Regarding your present residence, do you : RENT OWN
OTHER

VALUE IF OWNED

RENT INCLUDING UTILITIES

A B C D E F G

A B C D E F G H

18. What was the most important factor about financing?

Interest Rate

Total Loan

Amt. of Down Payment

Property Taxes

Size of Monthly Payment

19. Do you think you had a chance to see most of the places that would suit you?

___ YES ___ NO

Why not: _____

20. When you first started to look, were you looking for a place to:

___ RENT ___ BUY ___ NO PREFERENCE

21. Did you prefer:

___ A NEW PLACE ___ ONE THAT HAD BEEN LIVED IN
___ NO PREFERENCE

22. Were you looking for:

___ SINGLE FAMILY ___ CONDOMINIUM
___ DUPLEX ___ APARTMENT
___ TOWNHOUSE ___ OTHER _____

23. As a result of moving, how many rooms have you lost/gained?

LOST ___ GAINED ___ NONE ___

24. What facilities (eg. basement, recreation room, garage; etc.) have you gained/lost as a result of moving?

25. With respect to your present dwelling, what are your feelings regarding the features given below?

	Extremely Satisfied	Extremely Dissatisfied
A Number of Rooms	: : : : :	: : : : :
B Interior Appearance	: : : : :	: : : : :
C Size of Rooms	: : : : :	: : : : :
D Exterior Appearance	: : : : :	: : : : :
E Amount of Storage Space	: : : : :	: : : : :
F Size of Yard/Grounds	: : : : :	: : : : :

26. How do you feel about the conditions listed below as you find them in your present neighbourhood?

	Extremely Satisfied	Extremely Dissatisfied
A Amount of Traffic	____:____:____:____:____:____:____	____:____:____:____:____:____:____
B Property Taxes	____:____:____:____:____:____:____	____:____:____:____:____:____:____
C Air Pollution	____:____:____:____:____:____:____	____:____:____:____:____:____:____
D Quality of Services/ Utilities	____:____:____:____:____:____:____	____:____:____:____:____:____:____
E Safety on Streets	____:____:____:____:____:____:____	____:____:____:____:____:____:____
F Quality of Education	____:____:____:____:____:____:____	____:____:____:____:____:____:____
G General Appearance	____:____:____:____:____:____:____	____:____:____:____:____:____:____
H Number of Parks	____:____:____:____:____:____:____	____:____:____:____:____:____:____
I Friendliness	____:____:____:____:____:____:____	____:____:____:____:____:____:____

27. How convenient is your present location with respect to the activity places given below?

	Extremely Convenient	Extremely Inconvenient
A Home of Best Friend	____:____:____:____:____:____:____	____:____:____:____:____:____:____
B Downtown	____:____:____:____:____:____:____	____:____:____:____:____:____:____
C Park/Playground	____:____:____:____:____:____:____	____:____:____:____:____:____:____
D H.O.H. Place of Work	____:____:____:____:____:____:____	____:____:____:____:____:____:____
E Elementary School	____:____:____:____:____:____:____	____:____:____:____:____:____:____
F Clinic/Hospital	____:____:____:____:____:____:____	____:____:____:____:____:____:____
G Favorite Shopping Centre	____:____:____:____:____:____:____	____:____:____:____:____:____:____

28. As a result of moving, what are your overall feelings regarding your new housing circumstances?

Extremely Improved	Extremely Worsened
____:____:____:____:____:____:____	____:____:____:____:____:____:____

29. Which of the following categories best describes TOTAL FAMILY INCOME, first during the time immediately prior to your last move, and secondly as it exists currently at your present home

PREVIOUS DWELLING PLACE

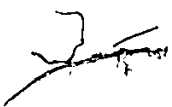
A B C D E F G H I

PRESENT DWELLING PLACE

A B C D E F G H I



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PARAMETER I

1. H_0 : There is no significant improvement in satisfaction with the number of rooms after the move.
 H_1 : There is a significant improvement in satisfaction with the number of rooms after the move.

Total Sample: $N = 75$ $T = 345.5$ $Z = 5.6$

$P = .00003$

reject H_0 @ .01 level

Link 1: $N = 50$ $T = 75$ $Z = -5.43$

$P = .00003$

reject H_0 @ .01 level

Link 2: $N = 18$ $T = 48$

accept H_0 @ .01 level

Link 3: $N = 6$ $T > 0$

accept H_0 @ .025 level

2. H_0 : There is no significant improvement in satisfaction with the interior appearance of the dwelling after the move.

H_1 : There is a significant improvement in satisfaction with the interior appearance of the dwelling after the move.

Total Sample: $N = 77$ $T = 555$ $Z = -4.81$

P = .00003

reject H_0 @ .01 level

Link 1: N = 50 T = 155 Z = -4.66

P = .00003

reject H_0 @ .01 level

Link 2: N = 20 T = 77.5

accept H_0 @ .01 level

Link 3: N = 7 T = 11.5

accept H_0 @ .01 level

3. H_0 : There is no significant improvement in satisfaction with the size of the rooms in the dwelling after the move.

H_1 : There is a significant improvement in satisfaction with the size of the rooms in the dwelling after the move.

Total Sample: N = 69 T = 753 Z = -2.72

P = .0033

reject H_0 @ .01 level

Link 1: N = 45 T = 378 Z = -1.58

P = .0571

reject H_0 @ .01 level

Link 2: N = 18 T = 42.5

reject H_0 @ .01 level

Link 3: N = 6 T = 1.5

accept H_0 @ .025 level

4. H_0 : There is no significant improvement in satisfaction with the exterior appearance of the dwelling after the move.
- H_1 : There is a significant improvement in satisfaction with the exterior appearance of the dwelling after the move.

Total Sample: N = 73 T = 983.5 Z = -2.02

P = .0217

reject H_0 @ .01 level

Link 1: N = 50 T = 404 Z = -2.25

P = .0122

accept H_0 @ .01 level

Link 2: N = 17 T = 68

accept H_0 @ .01 level

Link 3: N = 6 T = 1.5

accept H_0 @ .025 level

5. H_0 : There is no significant improvement in satisfaction with the amount of storage space after the move.
- H_1 : There is a significant improvement in satisfaction with the amount of storage space after the move.

Total Sample: N = 77 T = 917 Z = 2.97

P = .0015

reject H_0 @ .01 level

Link 1: N = 53 T = 422.5 Z = -2.59

P = .0048

reject H_0 @ .01 level

Link 2: N = 18 T = 8.5

accept H_0 @ .01 level

Link 3: N = 6 T = 0

reject H_0 @ .025 level

6. H_0 : There is no significant improvement in satisfaction with the size of yard/grounds after the move.

H_1 : There is a significant improvement in satisfaction with the size of yard/grounds after the move.

Total Sample: N = 75 T = 1087 Z = -1.79

P = .0367

reject H_0 @ .05 level

Link 1: N = 57 T = 844 Z = .139

P = .4443

accept H_0 @ .01 level

Link 2: N = 12 T = 0

reject H_0 @ .01 level

Link 3: N = 6 T = 10

accept H_0 @ .025 level

7. H_0 : There is no significant improvement in satisfaction with the amount of air pollution in the neighbourhood after the move.

H_1 : There is a significant improvement in satisfaction with the amount of air pollution in the neighbourhood after the move.

Total Sample: N = 76 T = 1122 Z = -1.77

Total Sample: N = 61 T = 909 Z = -.262
P = -.3974
accept H_0 @ .01 level
Link 1: N = 42 T = 362 Z = -1.12
P = .1314
accept H_0 @ .01 level
Link 2: N = 15 T = 34
accept H_0 @ .01 level
Link 3: N = 5
insufficient for computation

10. H_0 : There is no significant improvement in satisfaction with safety on the streets in the new neighbourhood after the move.
 H_1 : There is a significant improvement in satisfaction with safety on the streets in the new neighbourhood after the move.

Total Sample N = 72 T = 901 Z = -2.32
P = .0102
reject H_0 @ .01 level
Link 1: N = 49 T = 396.5 Z = -2.45
P = .0071
reject H_0 @ .01 level
Link 2: N = 19 T = 78
accept H_0 @ .01 level
Link 3: N = 4
insufficient for computation

11. H_0 : There is no significant improvement in satisfaction with the quality of education in the neighbourhood after the move.
 H_1 : There is a significant improvement in satisfaction with the quality of education in the neighbourhood after the move.

Total Sample: N = 51 T = 728.5 Z = .605
P = .2743

accept H_0 @ .05 level

Link 1: N = 35 T = 321 Z = .098
P = .4641

accept H_0 @ .01 level

Link 2: N = 13 T = 41.5

accept H_0 @ .01 level

Link 3: N = 3
insufficient for computation

12. H_0 : There is no significant improvement with the general appearance of the neighbourhood after the move.
 H_1 : There is a significant improvement with the general appearance of the neighbourhood after the move.

Total Sample: N = 62 T = 758 Z = 1.528
P = .0630

Accept H_0 @ .01 level

Link 1: N = 39 T = 339 Z = -.71
P = .2389

accept H_0 @ .01 level

Link 2: N = 19 T = 69.0

accept H_0 @ .01 level

Link 3: N = 4

insufficient for computation

13. H_0 : There is no significant improvement in satisfaction with the availability of parks in the neighbourhood after the move.

H_1 : There is a significant improvement in satisfaction with the availability of parks in the neighbourhood after the move.

Total Sample: N = 67 T = 993.5 Z = -.9089

P = .1814

accept H_0 @ .01 level

Link 1: N = 45 T = 450 Z = -7.6

P = .2236

accept H_0 @ .01 level

Link 2: N = 18 T = 85.5

accept H_0 @ .01 level

Link 3: N = 4

insufficient for computation

14. H_0 : There is no significant improvement in satisfaction with the friendliness of the neighbourhood after the move.

H_1 : There is a significant improvement in satisfaction with the friendliness of the neighbourhood after the move.

Total Sample: N = 70 T = 840.5 Z = 2.35

P = .0094

reject H_0 @ .01 level

Link 1: N = 47 T = 355 Z = 2.21
P = .0136

reject H_0 @ .05 level

Link 2: N = 20 T = 87

accept H_0 @ .01 level

Link 3: N = 3

insufficient for computation

15. H_0 : There is no significant improvement in convenience to the home of the best friend after the move.
 H_1 : There is a significant improvement in convenience to the home of the best friend after the move.

Total Sample: N = 64 T = 845.5 Z = -1.3
P = .0968

Accept H_0 @ .01 level

Link 1: N = 42 T = 358 Z = 1.18
P = .1190

accept H_0 @ .01 level

Link 2: N = 18 T = 96.5

accept H_0 @ .01 level

Link 3: N = 4

insufficient for computation

16. H_0 : There is no significant improvement in convenience to downtown after the move.

H_1 : There is a significant improvement in convenience to downtown after the move.

Total Sample: N = 66 T = 1024.5 Z = -.517

P = -.3050

accept H_0 @ .01 level

Link 1: N = 46 T = 433 Z = 1.17

P = .1210

accept H_0 @ .01 level

Link 2: N = 15 T = 65.5

accept H_0 @ .01 level

Link 3: N = 5

insufficient for computation

17. H_0 : There is no significant improvement in convenience to parks or playgrounds after the move.

H_1 : There is a significant improvement in convenience to parks or playgrounds after the move.

Total Sample: N = 66 T = 801 Z = -1.945

P = .0262

reject H_0 @ .05 level

Link 1: N = 46 T = 396.5 Z = -1.57

P = .0582

accept H_0 @ .01 level

Link 2: N = 14 T = 48.5

accept H_0 @ .01 level

Link 3: N = 6 T = 1.5

accept H_0 @ .025 level

18. H_0 : There is no significant improvement in convenience to the head of household's place of employment after the move.

H_1 : There is a significant improvement in convenience to the head of household's place of employment after the move.

Total Sample: N = 69 T = 968.5 Z = -1.43
P = .0764

accept H_0 @ .01 level

Link 1: N = 45 T = 422.5 Z = 1.07
P = .1493

accept H_0 @ .01 level

Link 2: N = 18 T = 94

accept H_0 @ .01 level

Link 3: N = 6 T = 3

accept H_0 @ .025 level

19. H_0 : There is no significant improvement in convenience to an elementary school after the move.

H_1 : There is a significant improvement in convenience to an elementary school after the move.

Total Sample: N = 60 T = 350 Z = -4.159
P = .00003

reject H_0 @ .01 level

Link 1: N = 44 T = 144 Z = 4.09
P = .00003

reject H_0 @ .01 level

Link 2: N = 13 T = 28

accept H_0 @ .01 level

Link 3: N = 3

insufficient for computation

20. H_0 : There is no significant improvement in convenience to a clinic/hospital after the move.
 H_1 : There is a significant improvement in convenience to a clinic/hospital after the move.

Total Sample: N = 62 T = 548 Z = -3.00
P = .0013

reject H_0 @ .01 level

Link 1: N = 42 T = 207.5 Z = 3.05
P = .0011

reject H_0 @ .01 level

Link 2: N = 16 T = 62.5

accept H_0 @ .01 level

Link 3: N = 4

insufficient for computation

21. H_0 : There is no significant improvement in convenience to a shopping centre after the move.
 H_1 : There is a significant improvement in con-

venience to a shopping centre after the move.

Total Sample: $N = 54$ $T = 177$ $Z = -4.89$

$P = .00003$

reject H_0 @ .01 level

Link 1: $N = 34$ $T = 82$ $Z = -3.85$

$P = .00009$

reject H_0 @ .01 level

Link 2: $N = 16$ $T = 5.5$

reject H_0 @ .01 level

Link 3: $N = 4$

insufficient, for computation

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