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Canada

TRENDS AND IMPLICATIONS OF THE CONVERSION OF SINGLE-FAMILY DWELLINGS INTO MULTIPLE UNITS IN THE CITY OF OTTAWA.

by

Scott Ian MacIntosh

A thesis
presented to the University of Ottawa
in fulfillment of the
thesis requirement for the degree of
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in
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Inspiration for this thesis came from articles written by George Sternlieb of Rutgers University, whose interest and expertise in the social aspects of housing prompted the selection of dwelling conversions as a research endeavour.

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ABSTRACT

The temporal and spatial aspects of the conversion of single family dwellings into multiple units in the City of Ottawa from 1961 onward is the topic of this thesis, and has as precedents the studies completed by Morrison (1977) in Toronto and by McCann (1975) in Edmonton. The methodology was developed by taking particular account of the concerns expressed by Morrison in 1978 after his study of the housing market in Toronto. It was originally thought that it would be possible to predict the spatial impact of conversions in the City of Ottawa by examining past conversions and the factors which were thought to have been involved.

The only available method of sampling addresses which have undergone conversion is through the combined usage of City of Ottawa Building Permits, Assessment Rolls and the Multiple Listing Service as operated by the Ottawa-Carleton Real Estate Board.

What was achieved by the present study, to a degree far in excess of original expectations, was the preparation of a usable data base, comprising close to 600 individual addresses. This product should be a valuable source of information for researchers examining other aspects of the "housing problem" in the City of Ottawa. In particular, the collected data could be utilized for such research topics as illegal conversions, the physical aspects of converted dwellings, and neighbourhood impact studies.

Two main statistical procedures were utilized to examine collected data. First, a factor analysis was undertaken utilizing variables with hypothesized outcomes vis-a-vis conversions. Based on the variables identified by the factor analysis, it could be determined whether or not areas highly loaded on that factor would be susceptible to the conversion process. Factor scores for each census tract (1961, 1971 and 1981) were obtained and mapped. Rates of conversion were obtained from the sample addresses for each census tract and for each census year examined.

Then, a multiple regression analysis was undertaken utilizing the derived rates of conversion and the various factor scores.

The results of the statistical procedures were, in large part, not significant. The only supportable conclusion that can be drawn from the variables utilized is that there is a linear relationship between the rate of conversion and the incidence of dwellings constructed prior to 1945, and particularly those dwellings in need of major and/or minor repairs. However, the research objective of predicting the spatial impact of conversions in the City of Ottawa was not realized in a fully satifactory statistical manner.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter I

A STATEMENT OF PROBLEM

Inspiration for this thesis topic arose from three main sources. Since the late 1970's, the City of Ottawa has been suffering from a severe shortage of housing units for persons and families of low to moderate income, with single-parent and pensioner-households in the greatest and most acute need. Obviously, a solution is required in the very near future to alleviate the stress caused by this situation which is increasingly regarded as being of major and critical proportions.

It is unfortunate that, up to the time of writing, there appears to have been very little accomplished towards this end. That is, neither the private nor the public sector appears to have come to grips with the problem. This is not to say that possible solutions have not been advanced from time to time, but rather that suggestions put forth by both the private and public planning sectors have, in the past, been subject to rejection largely for political reasons.

Indeed, it appears that federal and provincial governments are attempting to delegate more responsibility to municipal governments. If solutions to the problems have to be produced within the boundaries of local government jurisdictions, then it is appropriate that research be conducted within that sphere as part of the solution process. This study represents an attempt, therefore, to contribute to a city-based approach to dealing with the housing availability problem.

The second factor involved in the selection of this thesis topic was a passage written in The Future of Rental Housing by George Sternlieb and James Hughes in 1981. These two American researchers suggest that a policy option for cities, towns and villages with a shortage of low to moderate income housing units is to:

> facilitate conversion of one family homes into two or more units. This is a process which is already taking place. It provides perhaps the least expensive and most expandable provision of rental facilities. It entirely complements the plight of the elderly homeowner faced with household chores and fiscal requirements that make homeownership more and more onerous. The process is presently at work ..... we would recommend its advocacy and broadening through federal and conversion pathmaking. (Sternlieb and Hughes, 1981, p. 14)

The above quotation raised several questions in regard to the City of Ottawa. For example, what has been the nature of the conversion of single-family dwellings into multiple units in this city? What areas have been most affected and for what reasons? What common factors applied? What have been the impacts on the neighbourhoods most affected by this process? Is it possible to predict which areas may be subjected to the conversion process in the future? What are the possible future impacts?

To determine the answers to the above-mentioned questions raised by the Sternlieb and Hughes quotation, the following (primary) working hypothesis for this study was developed.

> That it is possible to predict where single-family housing conversions will take place in the future by examining, in combination, where they have taken place in the past and the reasons for the conversions.

A third source of inspiration for a study of this nature arose from a statement in Larry S. Bourne's The Geography of Housing.

(1981). Bourne states that "the lack of comparative studies to date, however, makes it difficult to generalize very far about the location of conversion activity in the existing stock."[1] It is intended, in the above regard, that this research project add to the collective body of knowledge on the conversion process, and to the data base necessary for an inter-city comparative study. This, as part of the research effort, respects the scientific perspective of inquiry, as stated by Ackoff (1953): "the objective of science.....is not only to increase knowledge, but to increase our chances of continuing to increase knowledge."[2]

Since no usable data base for this topic was readily available, one of the main tasks of the study has been to assemble addresses where the conversion process has occurred in Ottawa. The provision of these data is an important contribution in two respects which extend beyond the particular intents of this thesis: that is, persons who want to appreciate the magnitude and nature of the conversion process now have the means (data) for doing so, and other researchers have a sound data base for conducting studies which incorporate the data compiled for this study.

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[1] Larry S. Bourne, The Geography of Housing. London: Edward Arnold, 1981. p. 115.

[2] Russell Ackoff, The Design of Social Research. Chicago: University of Chicago Press, 1953, p.21.

Chapter II

RESEARCH DOMAIN AND STUDY AREA

In The Geography of Housing (1981), Larry S. Bourne differentiates between housing concerns which dominated the industrial era as opposed to those of the post-industrial period.

TABLE 1

Industrial vs Post-Industrial Housing Concerns

Industrial	Post-Industrial
a) production and new construction	a) conservation and rehabilitation
b) overall housing shortage	b) overall housing surplus
c) minimum quality building standards	c) aesthetic standards
d) housing as shelter	d) diverse preference dominant
e) limited housing forms	e) housing as status
f) high rise vs low rise	f) diverse housing forms
g) declining densities	g) mixed high and low rise
h) distinct types of tenure and ownership	h) increasing densities
	i) alternate types of tenure and ownership
i) increase in homeownership rates	j) increased retirement and recreation housing

Source: Larry S. Bourne, The Geography of Housing. Edward Arnold, 1981. p. 259.

Some of the categories listed in Table 1 are interchangeable, as will be shown subsequently in the thesis.

In a research topic of this nature, it is extremely important to have a healthy mix of theory with statistical procedures. In this sense the overall philosophy of this thesis is Kantian in outlook. A Kantian system of inquiry, as defined by Mitroff and Turoff (1973), is one in which;

> theory or general propositions are built up from data and, in this sense theories are dependent on data, but data cannot be collected without the prior assumption of some theory of data collection, ... in this sense data depends on theory. (Mitroff and Turoff, 1973, p. 66)

Keeping this in mind, it becomes apparent that a comprehensive review of the pertinent literature on the subject of conversion of single-family dwellings to multiple units and related topics is necessary.

Research on the topic of dwelling conversions appears to have been sparse, especially in geographic literature. Further, much of what has been written on the subject in Canada is now either outdated or obsolete. This does not mean that the topic has been ignored - only that it has not been examined in depth.

By way of illustration, a recent report completed by Damas & Smith Limited, as part of a CMHC external research grant, contributed little useful information on the subject of housing conversions. The report, entitled Residential Conversions in Canada (1980), came to the conclusion that for the City of Ottawa, "it is not possible to make a reliable estimate of the rate of conversions or of the potential of renting conversion dwellings".[3]

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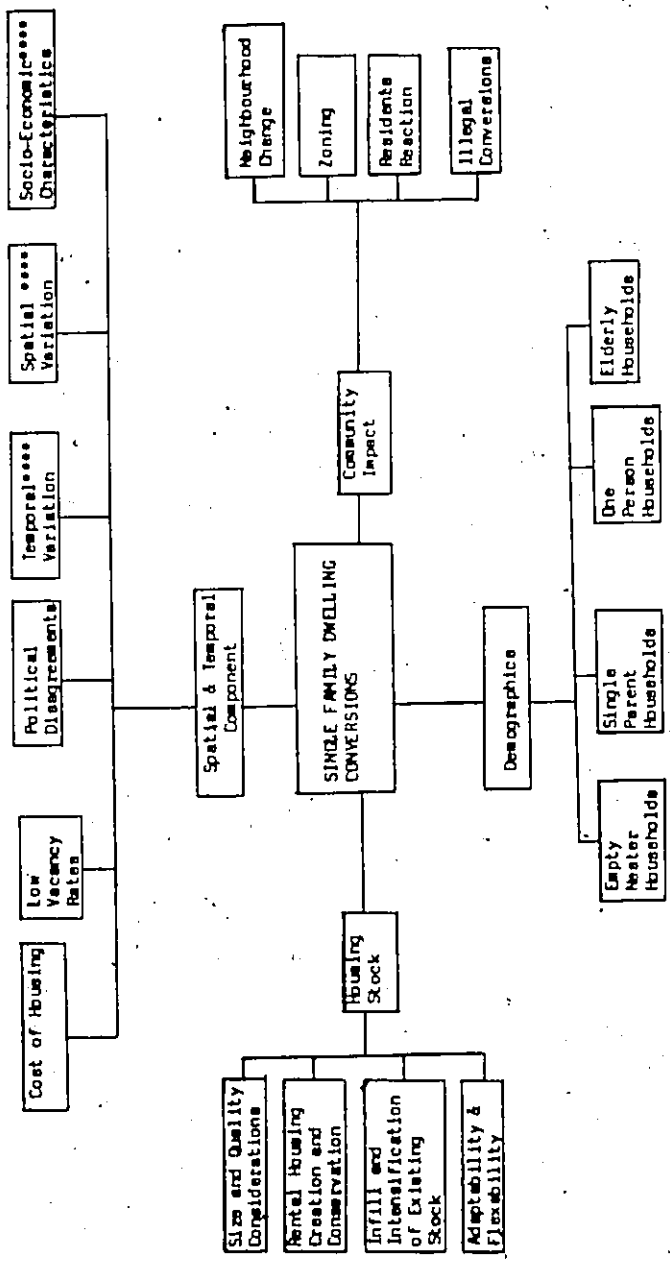
[3] Damas and Smith Ltd. Residential Conversions in Canada. Ottawa: CMHC Policy Development Division, 1980, p. 37.

This statement appears to have arisen as a result of the extreme difficulty of assessing the rather sketchy records kept in this regard by the various governmental bodies. However, the fact that suitable data are not readily available did not preclude the collection of sample data for the research undertaken herein.

Further and even more important, although the aforementioned authors admitted that substantiating data did not exist, the report made sweeping generalizations. One of their assumptions was that 50% of all housing units in metropolitan areas are either single-family, row or semi-detached dwellings. While the title of the report may be relevant, the contents were found to be of little use in this study of housing conversions.

There are a number of sub-topics involved in the wider subject of housing conversions. Some of the more important ones are outlined in Figure 1 .



**** Denotes a topic dealt with in this study.

Figure 1: Research Domain

2.1 CANADIAN PLANNING LITERATURE.

In the early 1970's many studies on various aspects of housing, including conversions, were undertaken by local governments in Canada. Ensuring the "highest and best use" of property was and still is of paramount importance in cities such as Vancouver. It is thus none too surprising to discover that that city was among the first to undertake studies on higher density land and residential uses. While it may be true that Vancouver is in a unique position in terms of land development vis-a-vis its availability, many cities are now facing similar problems. The City of Ottawa has been considering, for some years, the idea of allowing housing on prime conservation land west of the city.[4]

In 1973, the Department of Planning and Civic Development for the City of Vancouver completed a study of the economic feasibility of conversion housing in that city. The study came to three important conclusions, summarized as follows:

1. conversion housing is a major source of low-cost rental accommodation in the city and thereby constitutes an important segment of the housing supply,
2. districts where the process has been most active have been close to the Central Business District (CBD),

and finally that:

> 3. it would appear that the preservation of conversion districts, and incentives to encourage maintenance and repair can be justified on conventional economic grounds. Although sale for high density apartment sites may bring greater cash return, the retention of land in conversion housing is an economic alternative ..... although perhaps not as lucrative a one for the individual owner. The public need not

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[4] The Ottawa Citizen. "Housing proposed for former Conservation Land," May 10th, 1984. p.27.

> recognize such higher expectations. (City of Vancouver, 1973, p. 20.)

Other reports prepared within the same time interval were not as convincing that conversions were totally acceptable housing alternatives. One such study undertaken by the District of North Vancouver in 1975 claimed that "the impact on the community level of conversions would be minimal given an improvement in the rental accommodations."[5] However, the impact of conversions without improvement in rental accommodations was not discussed.

The Planning Department for the City of Vancouver attempted to solicit residents' opinions on allowing second suites in single-family zoned areas. The results of the research were that;

> 8.2 % of the homeowners sampled stated that they did want suites to be allowed in their houses, 58.3% stated that they did not..... 10% of the total single family homeowners said that they would move if suites were allowed in their area. (City of Vancouver, 1975, p.i.)

In response to the strongly negative attitudes on the part of the local residents, Vancouver planners were faced with three policy options. First, there was a "do-nothing" position which would allow homeowners to continue to illegally create extra units within areas zoned for single-family dwellings. Second, it was thought that the answer might lie in simple site zoning which would allow certain property owners to convert their homes. A third policy option was the possible creation of conversion districts. Ultimately, a policy of individual site zoning, which would allow the conversion of single-family housing into multiple units, was designed, based upon physical and neighbourhood stan-

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[5] District of North Vancouver. The Study of Second Suites. Planning and Property Dept., 1975, p. ii.

dards.

The conclusions of the Vancouver report are particularly germane to the current situation regarding housing in the City of Ottawa. The authors of the report state:

> A policy regarding suites in single family houses should thus attempt to recognize the desires of the people of Vancouver, but also remain cognizant of the acute rental housing shortage. (City of Vancouver, 1975, p.51.)

These policy options evolved from a gradual build-up of knowledge about the nature of conversion housing in the City of Vancouver over a number of years. Before such policy development can be undertaken in the City of Ottawa, it will be necessary to collect basic data on the temporal and spatial aspects of past conversions in this city. The purpose of this thesis is to provide at least part of that body of information.

In concluding this section, two other examples are presented to illustrate the range of cities which have been interested in conversion housing in Canada.

In 1981, the City of Thunder Bay, Ontario, undertook a comprehensive policy study on residential conversions. The report produced by the study provides a deep and extremely well-expressed explanation of the conversion process as it has occurred in that city.

It should be pointed out that Thunder Bay (approx. 38,000 dwelling units) is a far smaller city than Ottawa (approx. 258,000 dwelling units) and its records on conversions are much more complete and accurate than those maintained by the City of Ottawa.

Of possibly even greater consequence for the field and for this study, however, was the decision of the City of Toronto to allow second

The Lukermann study is unquestionably the most comprehensive piece of documentation, in terms of a case study and policy options, dealing with this topic. The report came to numerous conclusions of which some of the more relevant are summarized in Table 2 . Any further research on this topic should certainly include that report as a piece of background reading of major importance.

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sibility of Accessory Apartments in Minnesota. St. Paul: Minnesota Housing Finance Agency, 1982, p. 26.

TABLE 2

Summary of The Study on the Market and Economic Feasibility of Accessory Apartments in Minnesota

1. Statistical evidence points to a significant under-utilization of the existing housing stock in all parts of the state.

2. Pressures to make more efficient use of the existing housing stock came from two sources: demographic shifts and an inability to provide affordable housing.

3. The elderly home owner is part of the future market rather than core to the existing market.

4. The character of the existing converted stock demonstrates that virtually any size or architectural style of home can be converted.

5. The market potential is currently constrained by local land use and other regulations.

6. Four types of space have been identified as "prototypical" for conversion. These include unfinished attic space, conversion of finished space on a second floor, split entry and walk-out basements.

7. The accessory apartment unit can produce additional rental units with significantly less capital per unit as compared to new apartment construction.

8. No significant adverse economic impacts for the homeowner or adjacent properties have been identified if the conversion is accomplished in the same manner described in the study.

Source: Barbara Lukermann et al. Analysis of the Market and Economic Feasibility of Accessory Apartments in Minnesota. St. Paul: MHFA, 1982, p. 5-9.

2.3 NEIGHBOURHOOD CHANGE

Many Canadian planners and politicians are caught in the dilemma of attempting to provide adequate housing for the economically disadvantaged, while trying to maintain neighbourhood stability. There is no easy solution. The provision of more and more public housing units, in addition to being expensive, has serious social and economic side-effects as Bourne (1981), pointed out. If a policy of more public housing is followed, the problems of location become paramount. Would homeowners in Ottawa's Alta Vista or Manor Park areas prefer low-income, high-rise housing in the heart of their communities rather than allowing an elderly neighbour to turn his garage or basement into an accessory apartment or other dwelling unit?

Some experts on the subject feel that the latter option is more likely to be used in the future, and to be more conducive to better neighbourhood maintenance. In an article entitled "Rethinking Single-Family Zoning: Growing Old in American Neighborhoods," Patrick Hare (1981), argues that restrictive single-family "only" zoning is prohibiting the use of "untapped housing resources."[8] As Hare noted, "tinkering with single-family zoning is tinkering with the underpinnings of the 'good life' that many have worked so hard to achieve."[9] In other words, while many communities have outgrown the need for large dwellings, many residents may object to changing the zoning policies which leads Hare to suggest that an extensive educational program be estab-

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[8] Patrick Hare, "Rethinking Single-Family Zoning: Growing Old in American Neighbourhoods," in: New England Journal of Human Services. Vol. 1, Issue 3, 1981, p. 33.

[9] ibid. p. 33.

lished.

Jacqueline Vischer, of the consulting firm of Vischer- Skaburskis Planners, examined the broad concept of the changing suburb in a 1982 planning report prepared for CMHC. The study entitled The Changing Canadian Suburb: A Case Study of Burnaby B.C., attempted to answer several questions, of which the following are considered to be most relevant to this inquiry:

> 1. What do residents actually mean by the concept of "density" and what elements of higher density development are particularly threatening to them?
>
> 2. Do residents anticipate staying in their present single-family homes throughout the empty-nester and senior citizen stage in the life cycle?
>
> 3. Are residents actually opposed to or simply naive regarding the redevelopment potential of their property either through conversion to two units or through gentrification and up- grading of detached dwellings? (Vischer-Skaburskis Planners, 1982, p.26.)

Some of the findings of her study are directly applicable to this research. For example, she discovered that many residents would like to rent as their next form of tenure. Vischer found this surprising given the residents' "expressed resistance to various forms of neighbourhood redevelopment to want to move into higher density dwellings (that are currently unavailable) in order to stay in the same neighbourhood."[10] One of Vischer's more important findings, in terms of her resident questionnaires, was:

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[10] Vischer-Skaburskis Planners, The Changing Canadian Suburb: A Case Study of Burnaby B.C. Ottawa: CMHC - Planning Division, 1982, p. 31.

> Respondents appear concerned not so much at the increase in density implied by the conversions, but at the fact that those who are non-conforming are "getting away with it" and households who tried to get planning permission for a duplex were refused. (Vischer-Skaburskis, 1982, p. 55.)

The classic body of literature on housing, as it pertains to neighbourhood change, was written in 1964 by Bernard Frieden and is entitled The Future of Old Neighborhoods: Rebuilding for a Changing Population. Frieden explored the social and morphological processes involved in neighbourhood change in and about New York City, Los Angeles and Hartford, Connecticut.

It was discovered that, within the American context, there was a "striking physical adaptation of old housing to meet the changing needs of the cities."[11] Except for the City of New York, the dominant process of the 1950's was merger of dwellings rather than conversion. Merger means the return of a multiple unit dwelling into a single-family residence. It must also be remembered that, as a result of the 1949 American Housing Act, there was an "easing of housing shortages and overcrowding."[12] Therefore, during the latter part of the 1950's the provision of extra dwelling units was not of primary concern, at least in the opinion of some researchers.

The so-called "back-to-the-city" movement has created substantial changes in the neighbourhood as it previously existed. Gentrification, or the invasion of traditionally working-class neighbourhoods by middle to upper-income households, has, in many cases, resulted in the displacement of lower-income residents. This trend is currently at work in

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[11] Bernard Frieden, The Future of Old Neighborhoods: Rebuilding for a Changing Population. Cambridge: MIT Press, 1964, p. 23.

[12] ibid. p.23.

Dalhousie Ward in the City of Ottawa. Strickland and Judd (1982), question the potential for the "back-to-the-city" movement's future relevancy. They state that "a large pool of unhappy, disgruntled suburbanites ripe for 'back-to-town' appeals simply does not exist."[13]

Wentz and Irwin (1981), offer the following policy option to alleviate some of the above-mentioned problems:

> Accessory dwelling unit ordinances could also be used as a tool to assist in preventing displacement in some areas which are undergoing both Block Grant and private market revitalization.....a special permit process which allowed accessory apartments could create opportunities for some of these families (low-income), particularly smaller households to remain in their neighborhoods. (Wentz and Irwin, 1981, p. 28.)

Further reading on this topic includes Gale (1979); Gober (1981); McCann (1972, 1975); Morrison (1977); and Sumka and Blackburn (1982), which present positions and findings similar to those noted above regarding neighbourhood change.

2.4 HOUSING ADAPTABILITY

The topic of under-utilization in the current housing stock, as well as potential flexibility, is an important sub-topic of single-family dwelling conversions. A major study on the topic of housing flexibility was completed by Reid Levenson in 1979. The report discusses the need for Canada's housing to be more flexible to the changing needs of a household's life cycle. After examining a number of factors, primarily demographics and the existing housing stock, it was concluded that:

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[13] Donald E. Strickland and Dennis R. Judd, "Capital Investment in Neighborhoods: Theories which inform National Urban Policy in the United States," in: Population Research and Policy Review. 1982, p. 73.

> the need perceived will be for smaller dwelling units to fit smaller households and more adaptations of existing stock through renovation and conversion to respond to this new demand. (Levenson, 1979, p. 12)

The whole concept of housing flexibility was first examined seriously in Europe in the early 1970's principally by architects Andrew Rabeneck, David Sheppard and Peter Town (1973, 1974). While the reasons for concern were somewhat different during that period than in the current one, it is apparent that European interest in this topic arose from the fact that "pressure of building costs and political production norms resulted in a severe drop in space standards."[14] The logical response to this pressure was that

> not only would it be valuable for the family staying in one house for most of its life: it would allow much easier and perhaps more satisfactory adaptation to the changing general needs. (Rabeneck et al., 1974; p. 699.)

The topic of housing flexibility also incorporates the subject of single-family house expansion. This process, according to spokesmen for the Council of Renovators for the Ottawa-Carleton Region, is prevalent in many older suburban areas of Ottawa. Single-family house expansion was studied in 1983 in the City of Vancouver. That study considered 100 residences which were expanded in years just prior to completion of the study. It was found that a large number of empty-nesters were expanding their homes. It was discovered that those who were expanding living space already owned homes of 1,800 or more square feet. It is apparent that mainly economically secure households were involved in this process and that, in all likelihood, they were doing so to increase the investment they have in their homes. The pro-

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[14] Andrew Rabeneck et al., "Housing Flexibility," in: Architectural Digest. Vol. 11, 1974, p. 698.

cess of single-family dwelling expansion, in the Vancouver case at least, seems to be aggravating the problem of housing under-utilization by creating more space per person than existed at the time of expansion.

In Ontario, the subject of housing under-utilization has become a major concern of the Ministry of Municipal Affairs and Housing. In 1982, the Ministry completed a literature review entitled Making Better use of the Existing Housing Stock. The following year the Ministry, in conjunction with the Association of Municipalities of Ontario, commissioned Klein and Sears and a number of other consulting groups to undertake a study on the topic of residential intensification and rental housing conservation.

The result was an eleven-volume report, of which Part 1 (the summary) is of most importance to this research. Much of the report is of use to this study in a macro Ontario picture. Despite the fact that there were several pages missing from the report, it appears that these groups of consultants did a thorough job in examining the problem. Since the summary of the report covers over 90 pages, it would be a great injustice to attempt to further summarize the report in the limited context of this thesis. Other researchers examining this topic are advised to refer to the full set of findings contained in the summary of that study.

Wellar (1975) stresses that within the whole aspect of housing adaptability is the question of equity, that is, the financial situation of a homeowner versus the right to housing. For example an empty-nester household might be occupying more space than needed, while a less af-

fluent larger household is in cramped quarters. This is a central question in the housing equitability debate.

In 1983, Martin Gellen completed a working paper for the (U.S.) Institute of Urban and Regional Development, entitled Underutilization in American Housing: Residential Space Standards and Social Change. Gellen states that:

> not only are conversions cheaper than conventional new apartment construction. Insofar as conversions are a form of infill, they require no addition to the infrastructure. Conversions also involve lower social costs in that they cause no displacement in contrast to demolition and development to higher densities... our housing stock was built for or adapted to meet the needs of a population with larger and more stable households than we now have or will have in the future. This mismatch between housing need and housing supply cannot be corrected by an increasing rate of replacement. (Gellen, 1982, p. 26.)

The bulk of Gellen's work has been key background reading for this thesis. Other works on the topic of under-utilization would include Baer (1980); Soen (1979) and Hare (1981).

2.5 DEMOGRAPHICS

According to Divic (1981), demographics play an extremely important and significant role in determining housing demand. The term demographics means "population dynamics and its evolving form and structure."[15] What is clear is the fact that demographics are changing from the way they were in the not-too-distant past. Key pieces of literature dealing with housing and demographics include Fallis (1983); Divic (1981); Bloom (1982); Teras (1981); Morrison (1977); Fisher and Gra-

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[15] George Sternlieb et al., Demographic Trends and Economic Reality: Planning and Markets in the 80's. New Brunswick: Center for Urban Policy Research. 1981, p. xiii.

ham (1974); Brown (1981); Doling (1976); Steele (1979); Kristof (1968); Gober (1982), and Sternlieb et al (1983).

Two comprehensive studies on the subject of housing and the smaller household were completed by Miron (1983) and Miron and Schiff (1981). The first report cites that trends of declining fertility, increase in lone-parent families, rising age of marriage, a desire for more privacy, declining mortality and increasing affluence have played vital roles in not only the decline of the large family but in the fundamental changes in Canadian society. Miron (1983), hesitates to draw policy implications in his work and simply suggests five areas of concern. These can be summarized as follows:

1. encourage the movement of young families into the inner core of metropolitan areas.
2. encourage empty-nesters to downsize their housing.
3. analyse the change in type of accommodations indicated by the decline in average household size.
4. encourage the construction, renovation or conversion of the existing housing stock to better meet these emerging housing demands.
5. encourage better housing designs. (Miron, 1983, p.111.)

It is clear that the decline in the size of the average household has and will continue to play a key role in future housing research. It is, however, questionable whether empty-nesters need to "downsize" by moving from the dwelling which they occupy. Miron states that, by doing so, empty-nesters would free up larger housing units for the "baby boomers". This is inconsistent with another portion of his report in which he foresees a rapid increase in smaller households, and from which it would follow that the need for larger houses will decline.

Miron and Schiff (1981) profiled empty-nesters in Canada and their potential impact on housing. Among their conclusions they state that:

> it is recommended that innovative housing forms be developed for empty nesters. This should include renovation of existing stock, zero lot line development and infilling. (Miron and Schiff, 1981, p. ii.)

In a seminar arranged by Statistics Canada,[16] Aaron Spector and Fran Klodawsky stressed the need for better housing for the increasing number of single-parent households in Canada. They point to the ever-increasing divorce rates as a major cause in the rise of this type of household in recent years. It is clear that lone-parent families will play a fundamental role in shaping future housing demands. The question remains as how and when do we provide housing for these people?

It is clear that all aspects of the demographic transition must be considered when attempting to develop a policy concerning the conversion of single-family dwellings to multiple units in the City of Ottawa.

2.6 RESEARCH METHODOLOGY LITERATURE

Literature concerning research methodologies employed in the study of housing change was examined. Much of this literature is American in origin and thus not completely pertinent to Canadian research. For example, U.S. federal government agencies, most notably the Department of Housing and Urban Development (HUD), conduct annual housing surveys which are very comprehensive in scope. There is currently nothing comparable in the Canadian sphere of research.

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[16] Statistics Canada Seminar, "The Housing Needs of Single Parent Households," Ottawa, Feb. 15th, 1985.

Bradbury (1977), developed a sophisticated econometric model which attempts to accurately predict a given number of single-family, multi-family and apartment units that have the potential for conversion. Bradbury's formula, as it pertains to single-family dwelling conversions, is outlined in Appendix J.

Much of the methodological procedures used in this thesis follow the concerns and aspects raised by Morrison (1978). Future researchers of Canadian housing should consult this key source. Other sources which were valuable in the completion of this thesis include Apgar (1977); Becker (1972) and McGough (1983).

Most of the literature on conversion of single-family dwellings to multiple units stresses that neighbourhood change, housing under-utilization and flexibility, and demographics are indications that the potential for single-family dwelling conversions is unlimited.

The subject of housing conversions does not fall entirely within the the scope of either of Bourne's subject lists mentioned at the beginning of this chapter. The topic covers a wide spectrum, especially for the City of Ottawa.

2.7 STUDY AREA DESCRIPTION

In recent years the local print medium has contained expressions of concern about the City of Ottawa's shortage of low to moderate-income housing. Of particular note have been articles dealing with efforts of consulting firms and special task forces. The general public has also been consulted on possible solutions to the problem. The latest attempt involves a task force under the direction of William Teron, a local de-

veloper. Thus far, Mr. Teron has come to the conclusion that the private developer must play a vital role in solving housing problems - not too surprising a conclusion given the source. Previous to the establishment of the task force, the Toronto-based firm of Barnard and Associates was contracted to examine and propose solutions to the housing situation. The result of that research was disappointing since it only reworked old data and came to no clear solutions regarding the housing problem.

This thesis makes no pretensions, therefore, about solving the housing problem in Ottawa, a complex subject well beyond the scope of a Master's thesis. It is hoped, however, that it will contribute substantially, first, to a comprehension of the conversion process as it has occurred in Ottawa and, second, to assessments as to whether or not conversions have had a favourable impact on Ottawa's communities. In particular, in this latter regard, is conversion as suitable an alternative as the literature seems to imply?

The "housing problem" in the City of Ottawa has been part of the larger "urban problem" currently plaguing many Canadian cities.[17] The issues listed below are worthy of elaboration, if only briefly. For the past few years the main housing concerns in the City of Ottawa can be identified as follows:

1. the high cost of housing;
2. continuing low vacancy rates;
3. whitepainting and dwelling mergers;

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[17] The Ottawa Citizen. "Cities need $12 Billion to Fight Urban Rot: Report," Jan. 18th, 1985, p. 7.

4. problems concerning future housing construction;
5. the politics of housing, that is, disagreements among the different levels of government as to which level has the authority/ responsibility of resolving the housing problem.
6. a lack of housing for low to moderate-income households.

2.7.1 The High Cost of Housing

The Real Estate Board of Ottawa-Carleton stated that the average cost of a dwelling was $102,084 for the year 1984. This made "Ottawa's house prices among the highest in Canada,"[18] due in part to the shortage of dwellings in general, according to Board officials. This statement, however, diverged considerably from CMHC's claim that Ottawa was the "bright spot in the dismal housing picture."[19]

Associated with the high cost of housing is the matter of high rents. Indeed, some of the units provided by City Living (the City of Ottawa's Non-Profit Housing Corporation) are renting at prices beyond what many families can afford and therefore, they have little option but to remain tenants. It was discovered that, due to strict eligibility guidelines, a "family would have to earn between $26,000 and $31,000 to move into one of the City Living units."[20] The lowering of rents was not a policy option considered. Rental units available in the private market at the present time either command much higher rent, or are not up to the standard of those provided by City Living.

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[18] The Ottawa Citizen. Jan. 24th, 1985, p. C9.

[19] The Ottawa Citizen. July 11th, 1984, p. 47.

[20] The Ottawa Citizen. Dec. 2nd, 1983, p. 19.

2.7.2 Continuing Low Vacancy Rates

For the past two years, the City of Ottawa has had a vacancy rate of around 0.3%, whereas a vacancy rate of 3.0% is considered to be normal by most housing analysts.[21] CMHC personnel are "not forecasting a substantial improvement in the near future."[22] Developers argue that the only way to increase the numbers of rental accommodation is to remove provincial rent control legislation. The theory is that if landlords are permitted to charge profitable rents, more and more developers would be interested in constructing rental units.[23] The other side of the argument stresses that, without controls, rents will be so exorbitant that a substantial increase in the number of homeless could occur.[24]

2.7.3 Whitepainting and Dwelling Mergers

Another reason for the shortage of low rent dwelling units is the trend toward whitepainting and the merger of formerly converted dwellings. This process is currently taking place in the Dalhousie and Hintonburg areas of Ottawa. Renovations in these neighbourhoods are displacing the former lower-income residents. The newer residents tend to bring with them different lifestyles. One renovator in the Dalhousie community said of her neighbours "but it's blue collar people.... it's so unfortunate we have nothing to share. Their life is so different from

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[21] From conversations with Mr. Dan Gurrette, Housing Analyst with Canada Mortgage and Housing, (Ottawa Office).

[22] The Ottawa Citizen. May 19th, 1984, p. 1.

[23] The Globe and Mail. Febuary 28th, 1983. p.7.

[24] The Ottawa Sunday Herald. October 28th, 1984, p. 37.

mine."[25]

The gentrification process is also adversely affecting the housing situation for students in the Ottawa area. "The whitepainting of traditional 'student ghettos' such as Centretown and the Glebe by young urban professionals has left few options for students searching for affordable housing."[26] Conversion of rooming houses into single-family residences or bed-and-breakfast establishments is a further partial cause of the housing shortage. One policy option to help halt this trend is to simply not permit it to occur, which is the objective of a amendment proposal currently before the Ontario Municipal Board. This amendment, if passed, would not permit row housing to be deconverted. While this might maintain some low-income housing units, it would not create any additional ones.

In 1980, city planners first proposed a policy of not allowing rental property to be converted back into owner-occupation. City council, being divided on the issue, would not allow the Official Plan to be amended. A current problem in Ottawa's Overbrook neighbourhood (Figure 7) indicates that city planners were correct in foreseeing that a problem was likely to occur.

The issue in Overbrook revolves around the question of whether or not the owners of several rental units should be allowed to return their properties to owner-occupation in such a tight housing market. As of late 1985, the answer to this question lies with the Ontario Municipal Board (OMB). Since the Official Plan was never amended, the

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[25] The Ottawa Citizen. July 28th, 1984, p. 79.

[26] The Fulcrum. October 25th, 1984, p. 14.

case for the landowners is very strong, according to Stan Wilder (Planner for the City of Ottawa).

2.7.4 Problems Concerning Future Housing Construction

The solution to the housing problem, as perceived by many private developers, is to construct more housing on the periphery of the city. One such plan would see prime conservation land used for housing.[27] Such units would undoubtedly not be within the financial reach of lower-income families. Another problem, as it relates to further new dwelling construction in Ottawa, is the inadequacies of the infrastructure, particularly sewage treatment plants. All housing developments in the western part of the city have recently been put "on hold" because of the above-mentioned inadequacies. This, in turn, will undoubtedly make the current housing shortage even more acute.

2.7.5 Political Disagreements

The print media reports in considerable detail about the political disagreements that occur within the various levels of government with regard to solving housing problems.

At the local level, ideological differences among the members of Ottawa City Council have, in large part, contributed to the current "housing problem". Council members who tend to be more conservative in their decision-making see no reason for the City to deal with the "housing problem". Other council members who tend to be more socially aware have been stymied by the conservative attitude. The previously

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[27] The Ottawa Citizen. May 10th, 1984, p. 27.

mentioned problem concerning the conversion of rental accommodation in Overbrook is a good example of political infighting. It should be pointed out that such infighting at the local level is not a recent phenomenon but has existed, to a certain extent, for quite some time, as Andrew (1981), suggests.

At the provincial level, the policy of rent controls has been highly contentious since its inception.[28] Debate over the pros and cons of this policy will undoubtedly continue regardless of whether or not it remains as a body of legislation.

In terms of federal research, policy and programme initiatives attempting to deal with the housing problem have been numerous. Unfortunately, not all federal initiatives have been efficient.[29] In any event, an analysis of federal housing policy is well beyond the scope of this body of research.

2.7.6 A Lack of Housing for Lower-Income Households

This problem is, for all intents and purposes, a result of the above-mentioned five. The lack of affordable housing has been acute during most of the 1980's. Arthur Pope, the Commissioner of Social Services for the Ottawa-Carleton Region, stated that, for the year 1984, "an average of 86 families and 530 single persons per month needed emergency housing."[30] According to Pope, "until we start creating low-cost accom-

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[28] The Sunday Star. "Rent Controls:Davis Can't Let Go of Tiger's Tail," Nov. 21st, 1982, p. F3.

[29] The Ottawa Citizen. "Housing Program Not Efficient:CMHC Study," Dec. 2nd, 1983, p. 19.

[30] The Ottawa Citizen. Oct. 10th, 1984, p. B1.

modation, the problem won't go away."[31]

In summary, it is evident that Ottawa is, by all standard measurements, suffering from a severe housing problem, which is not of recent origin. Based on the findings of numerous studies, a partial solution may lie in the conversion of single-family residences to multiple units. However, before such a solution can be seen as being acceptable to all concerned, it will be necessary to examine the nature of housing conversions as they have occurred in Ottawa in the past several years, and to predict the future impact of the conversion process.

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[31] The Ottawa Citizen. Dec. 31st, 1983, p. 11.

Chapter III

PRACTICAL RESEARCH DESIGN

Ackoff (1953), wrote what many now consider to be a classic statement on social research methodology. The text, entitled The Design of Social Research, lists four key components which must be included in any significant body of research. These components are a sampling design (Sections 3.1 and 3.2); a statistical design (Section 3.3); an observational design and an operational design. Research for this study incorporated all of these components. For example, data was sampled from building permits, assessment rolls and MLS information. Statistical procedures(factor analysis and multiple regression) were used to analyse the sampled data. In terms of the observational design, since no usable or accurate data existed on the topic, this information had to be collected from a number of sources on a first-hand basis.

The operational design was probably more important in the thesis proposal stage. By the term "operational design", Ackoff refers to the necessity of setting up research in such a manner that it can be accomplished effectively, that is, in a reasonable amount of time. The sampling and statistical design requirements, however, need elaboration.

The purpose of this thesis, to put the research design in context, is to examine the process involved in the conversion of single-family dwellings into multiple units. The factors involved in the conversion process and their potential future impact are suggested.

To accomplish the objectives as set out, a practical research design was developed. This design is expressed in Figure 2, which relates the data base required to the geo-statistical and research design aspects of the study.

3.1 THE GEO - STATISTICAL DEFINITION OF THE PRACTICAL RESEARCH DESIGN

In terms of the geo-statistical requirements of the practical research design, some points merit elaboration. The geo-statistical basis of this study was Statistics Canada census tracts. Because of census tract boundary changes over the years, direct spatial and temporal comparisons are not always possible. For the Ottawa area, however, the boundary changes have been minor. In fact, the 1981 census tracts are, in some instances, simply sub-divided 1971 census tracts.

The collection of addresses associated with conversions allows the placement of the properties within the appropriate census tracts. This procedure was particularly difficult where the subject property was on the boundary between two census tracts (Figures 3-5). However, by using City of Ottawa Assessment Rolls and Maps, as well as the 1981 Census of Canada Street Directory, it was possible to place sample properties in the appropriate tracts.

THESIS PROPOSAL

Trends & Implications of Conversions from Single Family to Multiple Family Dwelling Units in the City of Ottawa

THESIS RESEARCH DESIGN

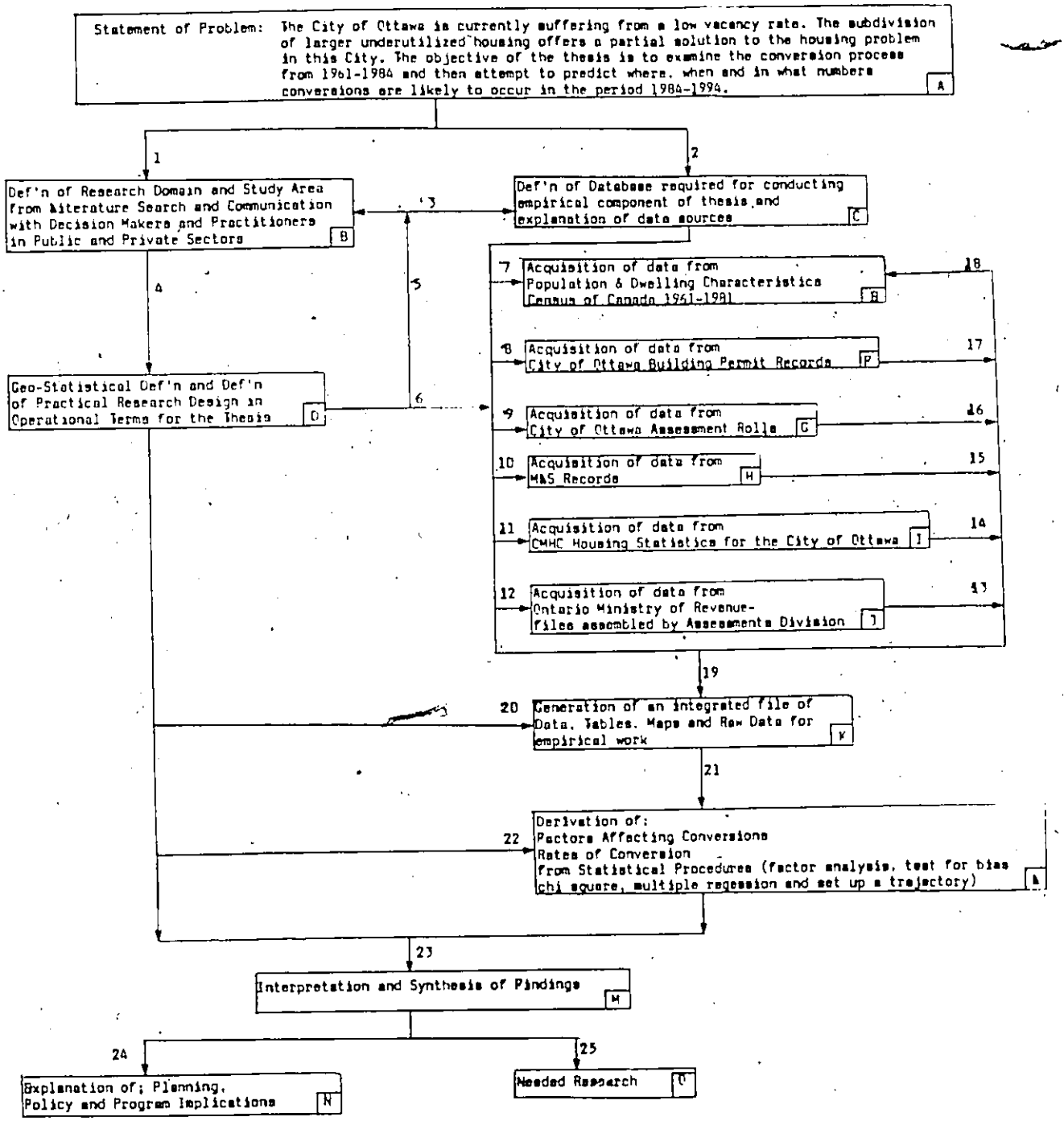

Figure 2: A Diagramatical Representation of the Practical Research Design.

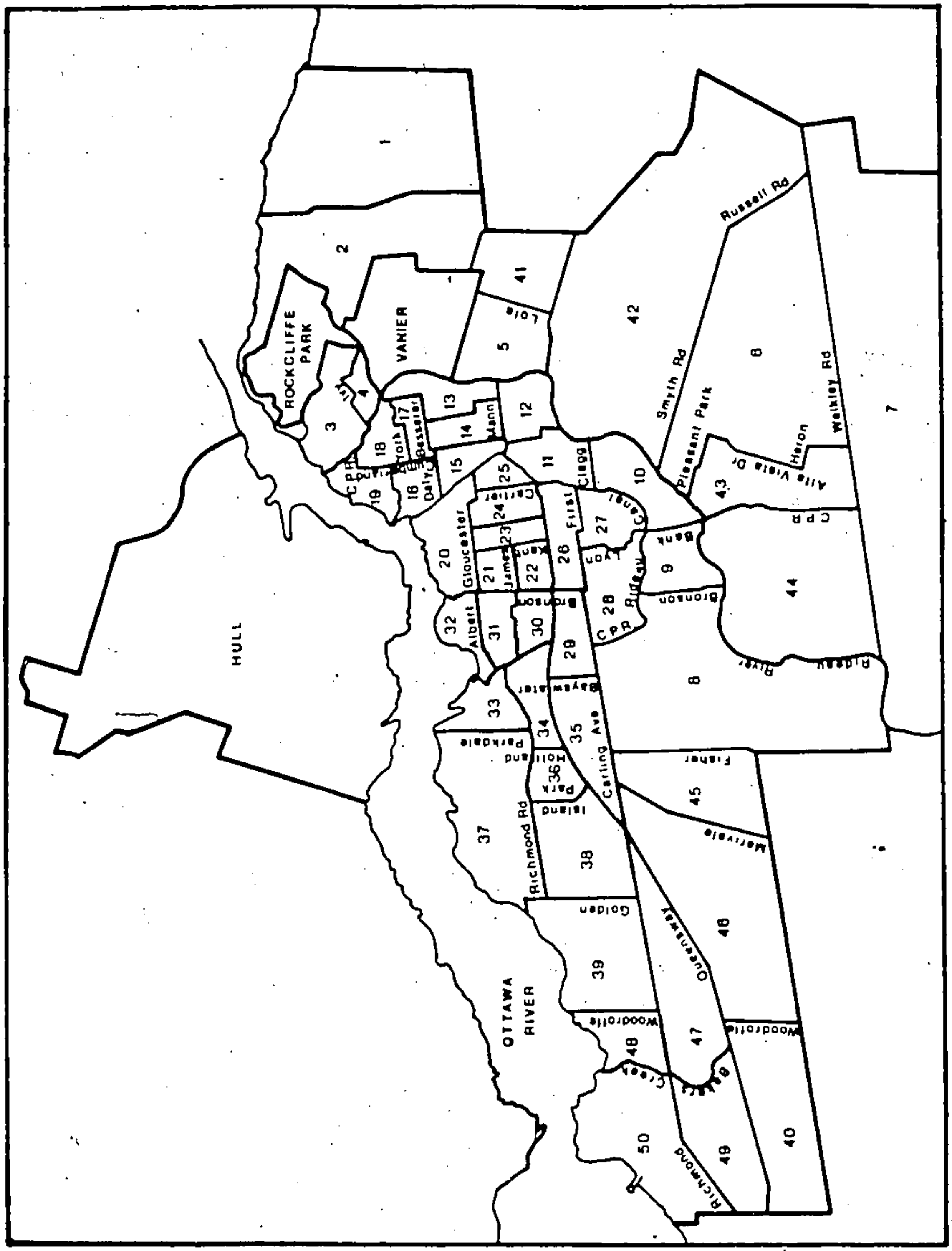

Figure 3: Statistics Canada Census Tract Boundaries For the City of Ottawa (1961).

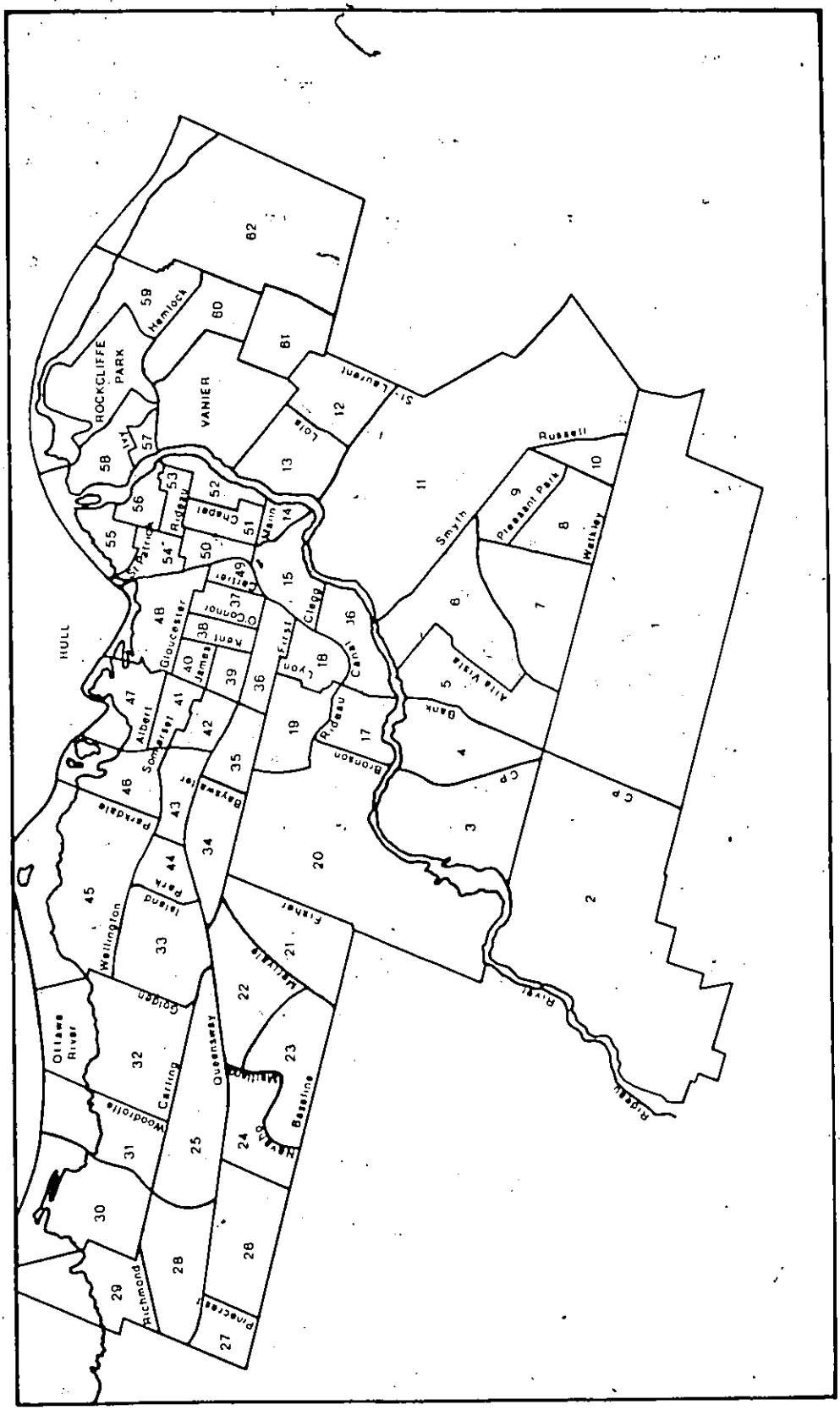

Figure 4: Statistics Canada Census Tract Boundaries For the City of Ottawa (1971).

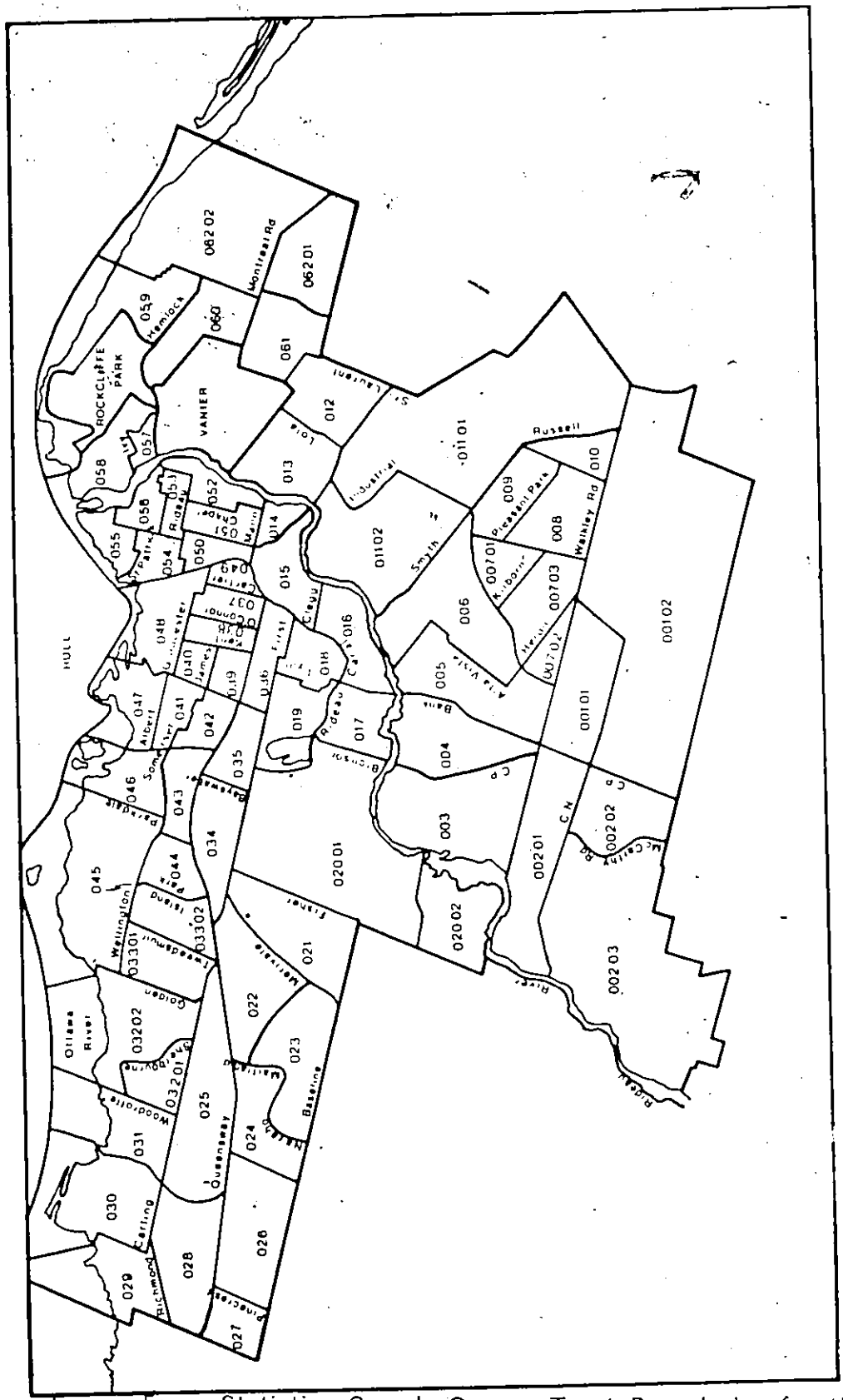

Figure 5: Statistics Canada Census Tract Boundaries for the City of Ottawa (1981).

3.2 DEFINITION OF A DATA BASE

The empirical component of this study required the collection of data from a number of sources. Morrison (1977) outlined various data sources that can be utilized when examining changes in housing stock. Some of these sources have been considered in the Practical Research Design and are included in Figure 2 .

Data sampled from the Population and Housing Characteristics of the 1961, 1971 and 1981 Censes of Canada is represented by Box E of Figure 2 . The variables used in each censues analysis, as well as hypothesized outcomes in terms of rates of single-family dwelling to multiple units conversions, are shown in Appendix C. The variables were selected on the bases of a review of existing literature, and conversations with persons directly involved in housing research. In order to examine the nature of conversions, three main sources of data needed to be consulted. Two of the sources were City of Ottawa Building Permit and Assessment Roll records, as well as the MLS service offered by the Real Estate Board of Ottawa-Carleton. Problems associated with these data sources are discussed in Appendix H.

The third major source was Canada Mortgage and Housing Corporation, and the housing data acquired included those on vacancy rates and housing starts for the City of Ottawa. Data on building permits and conversions for the City of Ottawa were extrapolated from Statistics Canada material maintained by the Construction Statistics Division and were a fourth source of information.

Data from the Ontario Ministry of Revenue were not available for, as Morrison (1977) points out, "this is a confidential file not legally open to the public."[32] For all intents and purposes then, Box J of Figure 2 can be deleted from the practical research design.

Monthly records of building permits for the years 1961 - 1984 were examined and subject dwelling addresses were extracted. A random sample of data was taken from the Assessment Rolls for the year ending December, 1983. MLS-listed dwellings that were sold in 1983-1984 were also randomly sampled.

Information gathered from Assessment Rolls and the MLS, while indicating whether or not a property is multi-family, does not show when the conversion took place. To extract this information, Mights City Street Directories were consulted. All sample addresses from each source were set up so that conversions would fall into the following time periods:

1. Prior to 1961
2. Between 1961 and 1970
3. Between 1971 and 1980
4. Between 1981 and present(1984)

Appendix D contains this information. It should also be pointed out that only first conversions after 1961 were used, thus ignoring any de-conversion or merger processes.

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[32] Philip S. Morrison, Data Sources on Residential Change and the Housing Market. Toronto: Centre for Urban and Community Studies, 1977, p. 2.

3.3 STATISTICAL PROCEDURES

The procedures of factor analysis, as explained in Appendix G, and multiple regression were used to analyse the data collected from the various sources mentioned above. The reason for selecting these procedures is explained as follows.

Factor analysis, as a statistical tool, is ideal when a researcher is confronted with a large number of variables, which he/she wishes to reduce to a few inter-related factors. To determine the various socio-economic factors involved in the conversion process in the City of Ottawa, an extensive factor analysis was necessary. The simplest form of factor analysis (principal-component) was used for this purpose. Factor analysis does not, however, determine either the strength or direction of a relationship.

Multiple regression analysis (step-wise) was chosen for two reasons. First, it would determine whether or not a statistically significant linear relationship existed between rates of conversion and the identified factors. Second, the role each factor played in that relationship would be determined. An analysis of residuals was not undertaken due to time constraints. The data was normalized before the analysis was completed.

The first step in the procedure was to hypothesize what the factor values (high and low) would indicate in terms of single-family to multiple-family dwelling conversions. The second step involved the processing of a factor analysis program using the selected variables. The program automatically identified the clusters of variables. The third step involved identifying the prime variables in each factor and interpreting them in terms of the prior assumptions regarding conversions.

A factor analysis was undertaken for each of the census periods. By examining the identified variables it can be determined whether or not the overall factor would be indicative of an area prone to conversions. The factors were delineated on census maps and compared with similar maps showing the number of conversions in the temporal periods selected. A multiple regression was undertaken using conversion rates as the dependent variable and the derived factors as the independent variables. A second factor analysis was undertaken for the census tracts which had a proportionally large number of single-family to multiple-family dwelling conversions.

Chapter IV

INTERPRETATION OF RESULTS OF STATISTICAL ANALYSES

The results of the factor analysis were, in some cases, quite revealing although in other instances confirmation of expected outcomes was not forthcoming, as discussed below. It is important to note at the outset that, in the latter regard, this can be a positive outcome reflecting consistency with what was learned from the literature search and prior efforts. In particular, it must be remembered that the variables were all chosen with some prior expectations vis-a-vis single-family dwelling conversions (Appendix C). It should be pointed out that all neighbourhoods mentioned herein are indicated on Figure 6 .

4.1 FACTOR ANALYSIS (1961)

Factor analysis of 1961 data incorporated all fifty census tracts and thirty-two variables were utilized for each tract. Appendix C lists the details of the factor variables and their interpretation in regard to single-family dwelling conversions. After running the program and an associated scree diagram, it became evident that three factors were significant. Each of these factors, as well as the conversions prior to 1961, is mapped on Figures 7-10.

Factor 1, which accounts for 31 % of the variance, identified the following cluster of variables:

1. larger households;

2. newer dwellings;
3. married couples;
4. middle-aged persons;
5. persons of British origin.

All of these variables are indicative of an area where there would be few conversions of the kind examined in this research. Census tracts with a high negative loading on factor 1, on the other hand, would be more likely to have single-family dwelling conversions.

By examining Figure 7, which depicts the spatial limits of Factor 1, it can be seen that, in general, the census tracts highly loaded in a positive manner tend to be on the fringe areas of the city. The southern and western sections of the city, were highly loaded in a positive fashion with variables of factor 1, more so than other sections of Ottawa. There were no census tracts highly loaded in a negative fashion, but there were several with moderately negative loadings. Tracts which fit the latter category are 4, 15, 16, 17, 19 and 32 and tend to be located near the central business district. There were definite clusters around the Sandy Hill and Lowertown neighbourhoods.

In terms of the sample of conversion addresses collected and used for this study it was found that, for census tracts with over 11 conversions, only 3 also had a negative loading on factor 1. Tracts with at least a moderate negative loading (Sandy Hill and Lowertown) had one or more conversions during this time period.

Thus, factor 1 does not appear to indicate a notable tendency towards single-family to multiple-family dwelling conversions for the time period 1961 and earlier.

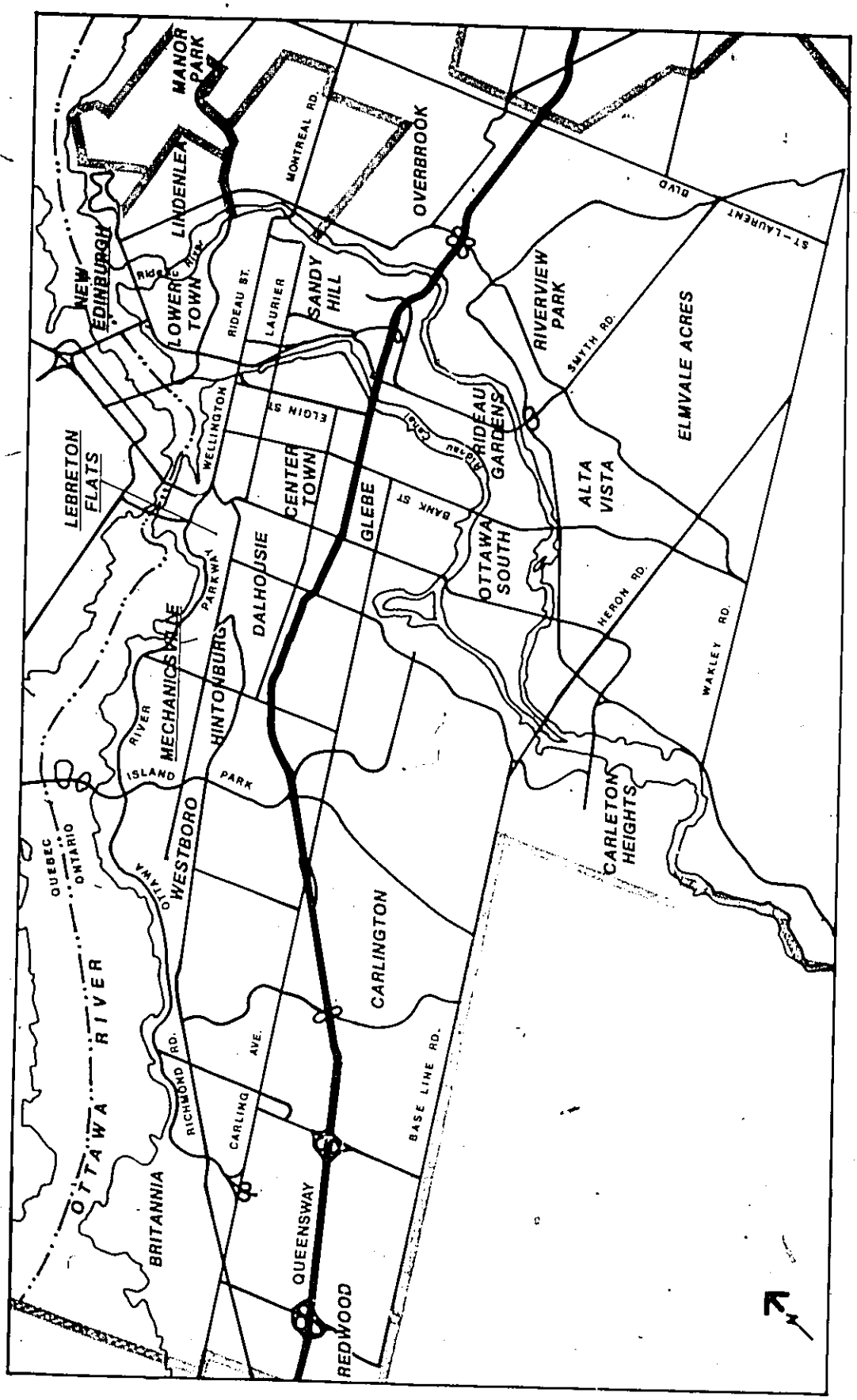

Figure 6: Neighbourhood Map of The City of Ottawa.

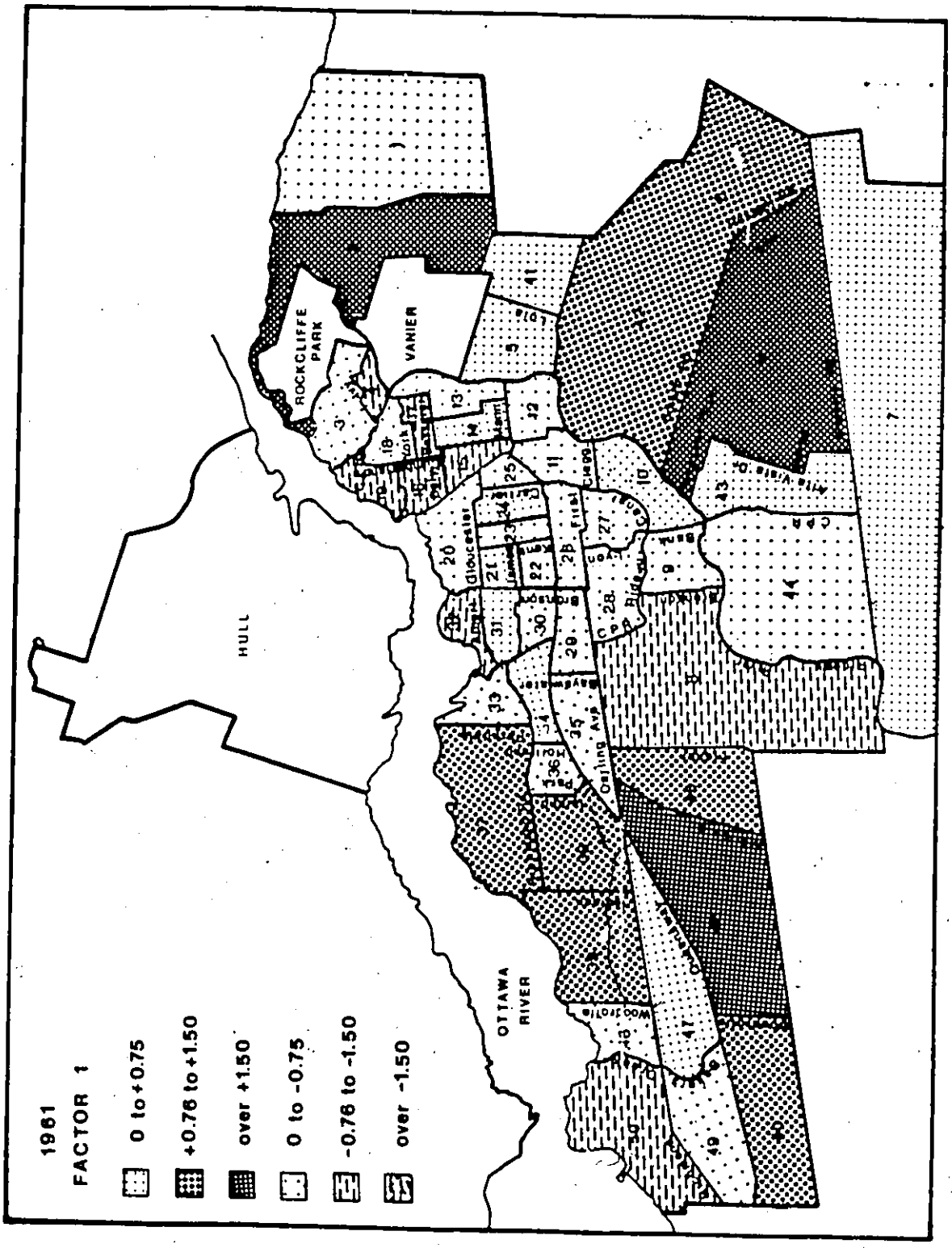

Figure 7: Factor 1 (1961) Married and Middle-Late Life Cycle.

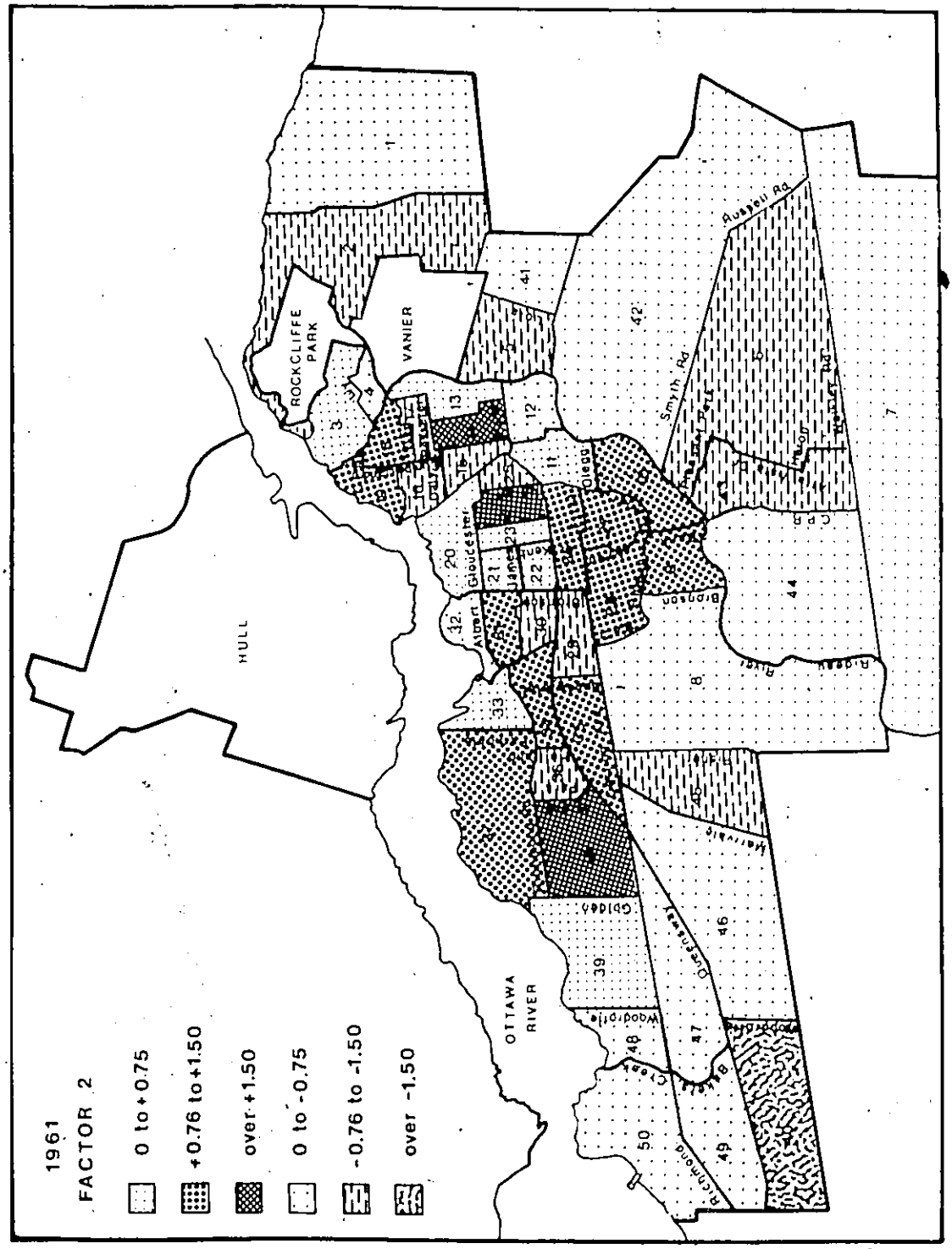

Figure 8:- Factor 2 (1961) Empty-Nester Life Cycle.

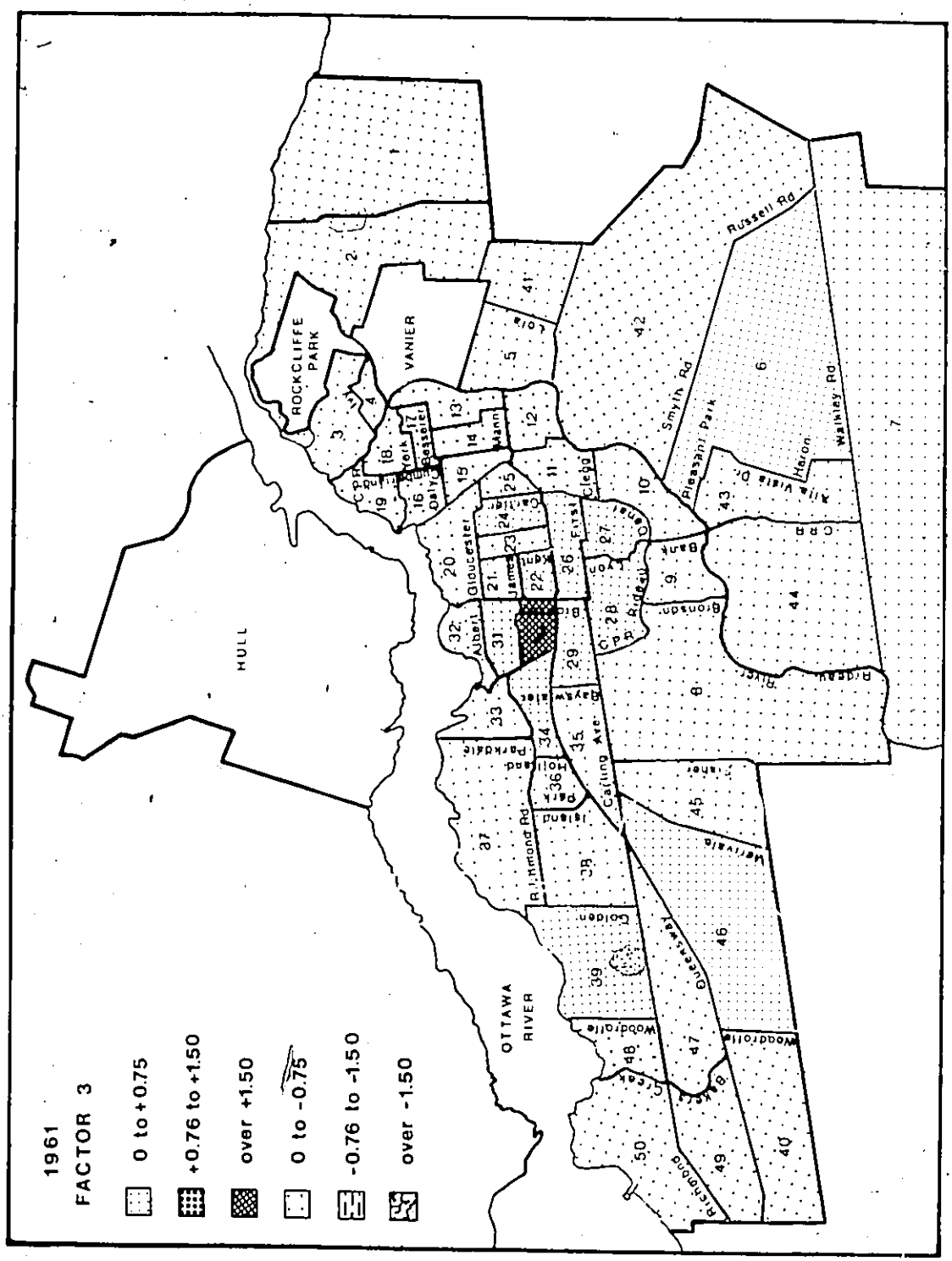

Figure 9: Factor 3 (1961) Residential Areas in Transition.

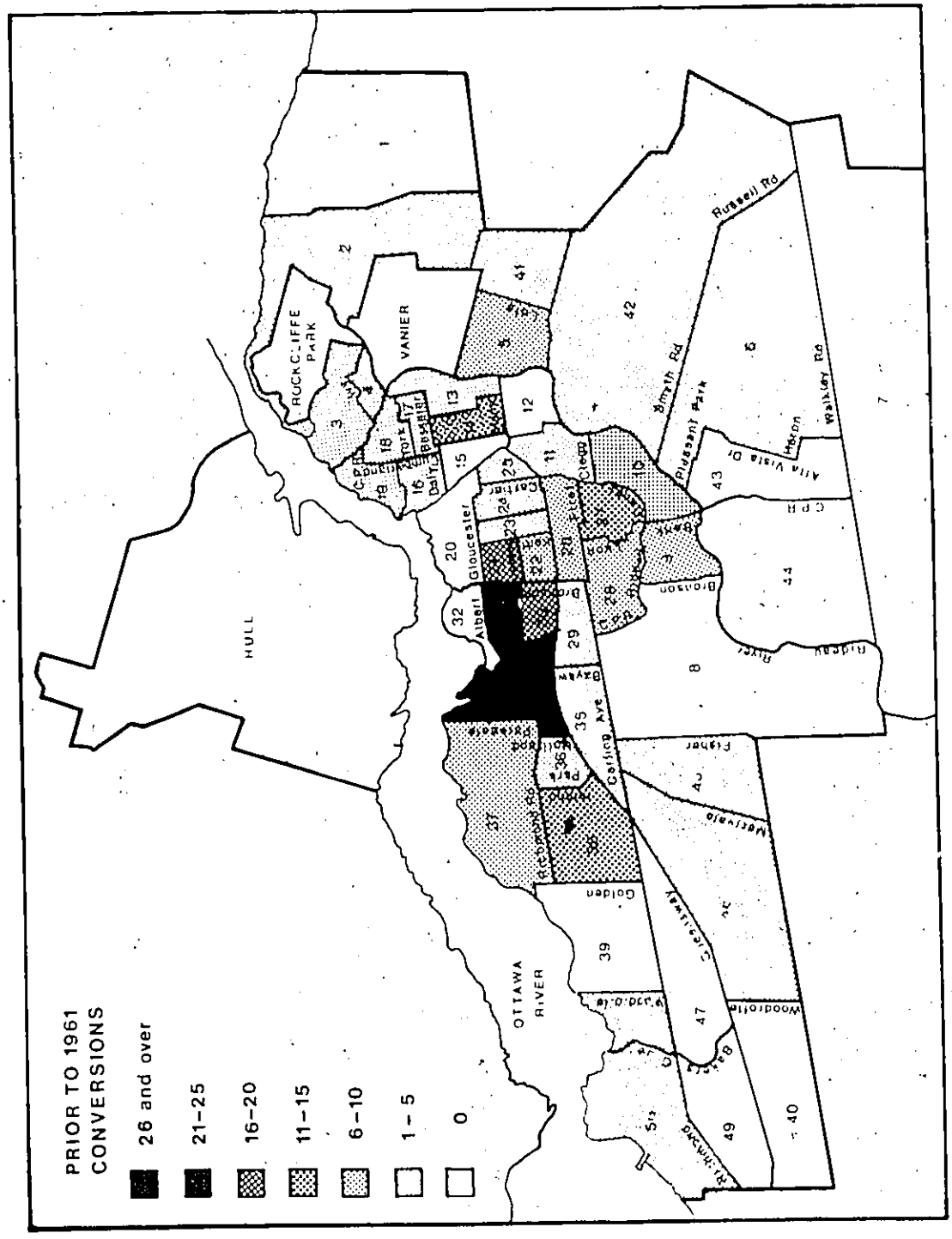

Figure 10: Conversions of Single-Family Dwellings to Multiple Units Prior to 1961.

Factor 2, which accounts for 21% of all variance of the variables used in the factor analysis and thus less significant than factor 1 (31% of the variance), is represented by the following cluster of variables:

1. persons 55 years of age and over;
2. widowed persons;
3. significant population change 1956-1961;
4. single persons.

All of these variables could indicate an area subject to conversions based on the assumptions set out in Appendix C. The incidence of older people and widowed persons indicates an older established area, or the existence of empty-nesters. These people, like single persons, require less living space and might be living in converted dwellings. The change in population might indicate an influx of people into an older established area. In combination then, areas with a high positive loading on Factor 2 would be an indication that conversions were prevalent.

From the factor 2 map (Figure 8), it can be seen that census tracts 38, 24 and 14 have a high positive loading on factor 2. Interestingly, census tracts 38 and 14 had a relatively high number of single-family to multi-family dwelling conversions prior to 1961, which is suggestive of a relationship. Of the 15 census tracts with 6 or more conversions, 13 of them were positively loaded on factor 2. Census tract 40 was the only one with a high negative loading for the factor in 1961. As far as the sample data revealed, it did not have any conversions prior to 1961.

The variables factor 3 identified do not lend themselves to easy interpretation. It may, however, be deduced from some of the variables

that areas highly loaded on this factor would be areas prone to conversions. The variables factor 3 identified include the following:

1. dwellings built before 1946;
2. occupancy of more than 10 years;
3. easy access to the CBD;
4. occupancy between 3-10 years;
5. occupancy between 1-2 years.

Factor 3 appears to identify areas which are older and established yet going through a period of transition, as is indicated by the various levels of occupancy years. Census tract 30 had an unusually high factor score on factor 3. This tract is in the Dalhousie neighbourhood directly west of the CBD and Centretown sections of the city. Census tract 30 had a high number of conversions in the sample data prior to 1961. There were 17 conversions which occurred in that census tract.

Census tracts with the greatest number of conversions include 33, 34, 31, 30, 21, 27, 38 and 14, and are located in the neighbourhoods known as Mechanicsville, Hintonburg and Dalhousie (Figure 6). In order to determine some of the factors these areas have in common, a second factor analysis was undertaken using only census tracts with a high proportion of sample dwelling conversions. The eight tracts listed above were the ones selected for this second procedure.

There were two key factors utilized in this second factor analysis. The first factor identified variables associated with areas expected to have a low rate of conversions, that is, middle-aged couples, larger households and a high proportion of married people. Census tract 38 in Westboro was highly loaded in a positive manner on factor 1, seemingly

contradicting the supposition that areas with these characteristics would have a low number of conversions. Census tracts 21 and 27 were negatively loaded on this factor. The tracts with the highest conversions did not rate high on either the positive or negative intervals.

Factor 2, in this second analysis, identified a cluster of variables which included access to a university, large numbers of apartments and a median occupancy of less than 1 year. Census tract 14 in Sandy Hill had a high positive loading on this factor, mainly due to its nearness to the University of Ottawa. One may surmise from the analysis that this district has had a large number of single-family to multiple dwelling conversions.

In an analysis of census tracts with a high number of dwelling conversions, tract 33 had 64% people of French ethnic origin. Tract 34 had 6.2% population of persons of Italian extraction. Household incomes for the year 1961 were average or close to average for the city. The value of dwellings were, however, an average of 15% lower than for the city in general.

TABLE 3

Varimax Rotated Factor Loadings for 1961 Factor Analysis

Variable	Factor 1	Factor 2	Factor 3
Persons per household 4 +	0.95290		
Married persons	0.93505		
Age of Dwelling after 1945	0.92968		
Persons aged 35 to 54	0.91351		
British	0.89481		
Persons aged 15-34	0.86083		
Pop. difference 1956-61	0.84525		
Persons aged 55 +		0.93430	
Widowed persons		0.90423	
Population 1956		0.82401	
Single persons		0.81161	
Age of dwelling prior to 1920			0.97481
Occupancy of more than 10 years			0.95863
Access to the CBD			0.94736
Occupancy 3 - 10 years			0.88883
Occupancy 1 - 2 years			0.86360

TABLE 4

Varimax Rotated Factor Loadings for 1971 Factor Analysis

Variable	Factor 1	Factor 2	Factor 3
Non-migrants	0.95511		
Married persons as of 1971	0.94553		
Population 1971	0.90333		
Age of persons 34-54	0.89860		
Owner occupied dwellings	0.88131		
Persons per household - 3	0.87057		
Persons per household - 4 +	0.86511		
Persons in school	0.85419		
Non-family members in household		0.93058	
Persons per household - 1		0.92289	
Apartment units		0.91443	
Tenant Occupied dwellings		0.84574	
Age of dwelling after 1960			0.85609
Migrant from a different CMA			0.82208
Population difference 1961-71			0.81690

4.2 FACTOR ANALYSIS (1971)

Between the years 1961 and 1971, some factors remained relatively stable, while others changed quite dramatically. Three factors were identified and mapped, along with conversions which occured between 1961 and 1970 (Figures 11-14). For example, factor 1 identified variables which are similar to those for factor 1 of 1961. The variables identified are as follows:

1. non-migrants;
2. married persons;
3. higher than average population in 1971;
4. persons aged 34-54;
5. owner occupation;
6. large households.

Factor 1 identified areas which, on the bases of the assumptions set forth in Appendix C, would not be suspected of having had a high number of dwelling conversions. The census tracts with a high positive loading on factor 1 include 11, 26, 32 and 33. The first two tracts are in suburban sections of the city while the latter two are within the Westboro and Hampton Park sections of Ottawa. (Figure 11)

Areas with a high negative loading on this factor would have several conversions, according to the expectations that were set up before the factor analysis was run (Appendix C). Census tracts loaded in this fashion include those near the Central Business District (CBD), the University of Ottawa and parts of Manor Park (Figure 6). The census tract which includes Manor Park (number 60) is not really representative of a true census tract because the Beechwood Cemetery occupies a

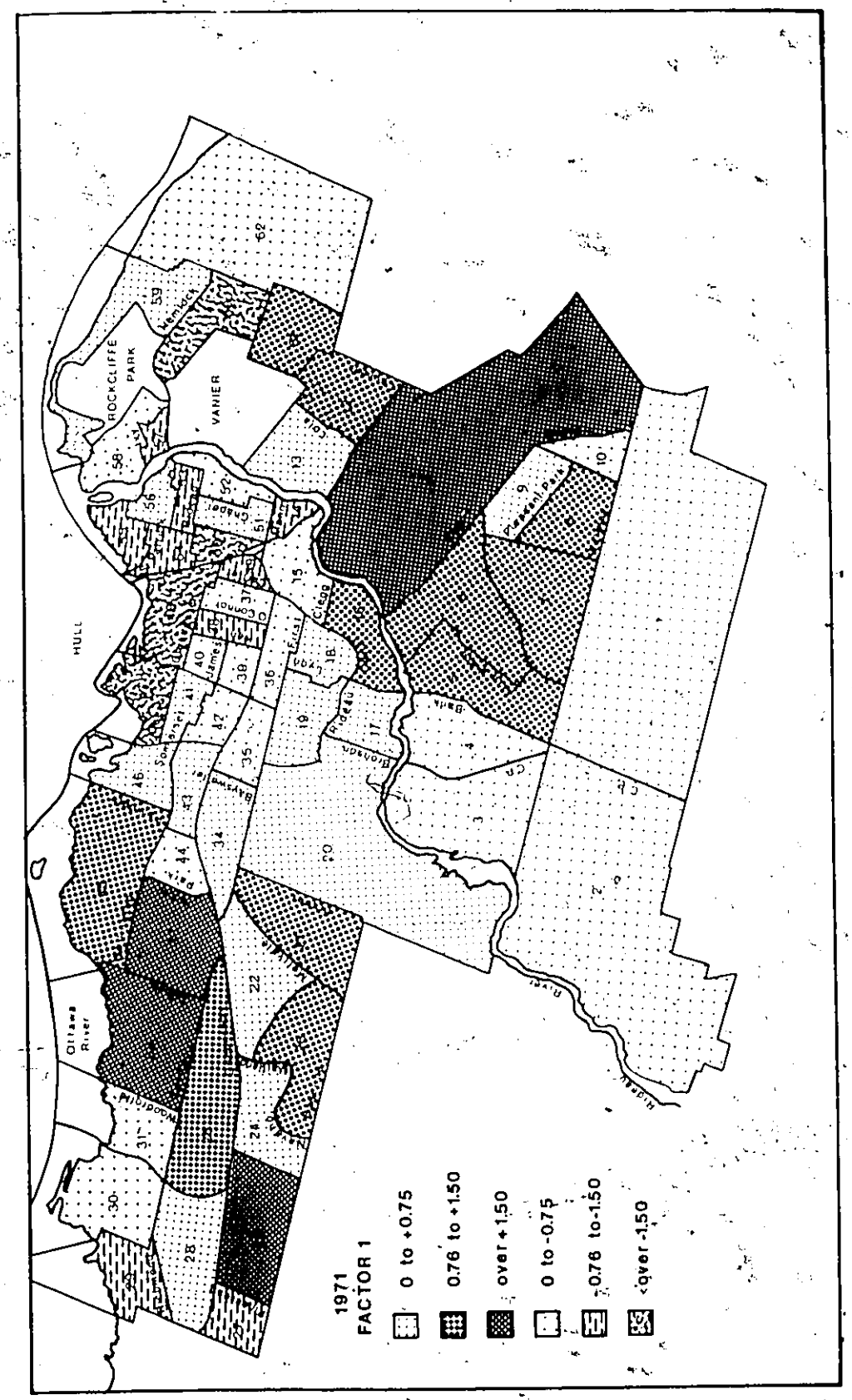

Figure 11: Factor 1 (1971) Married and Middle to Late Life Cycle

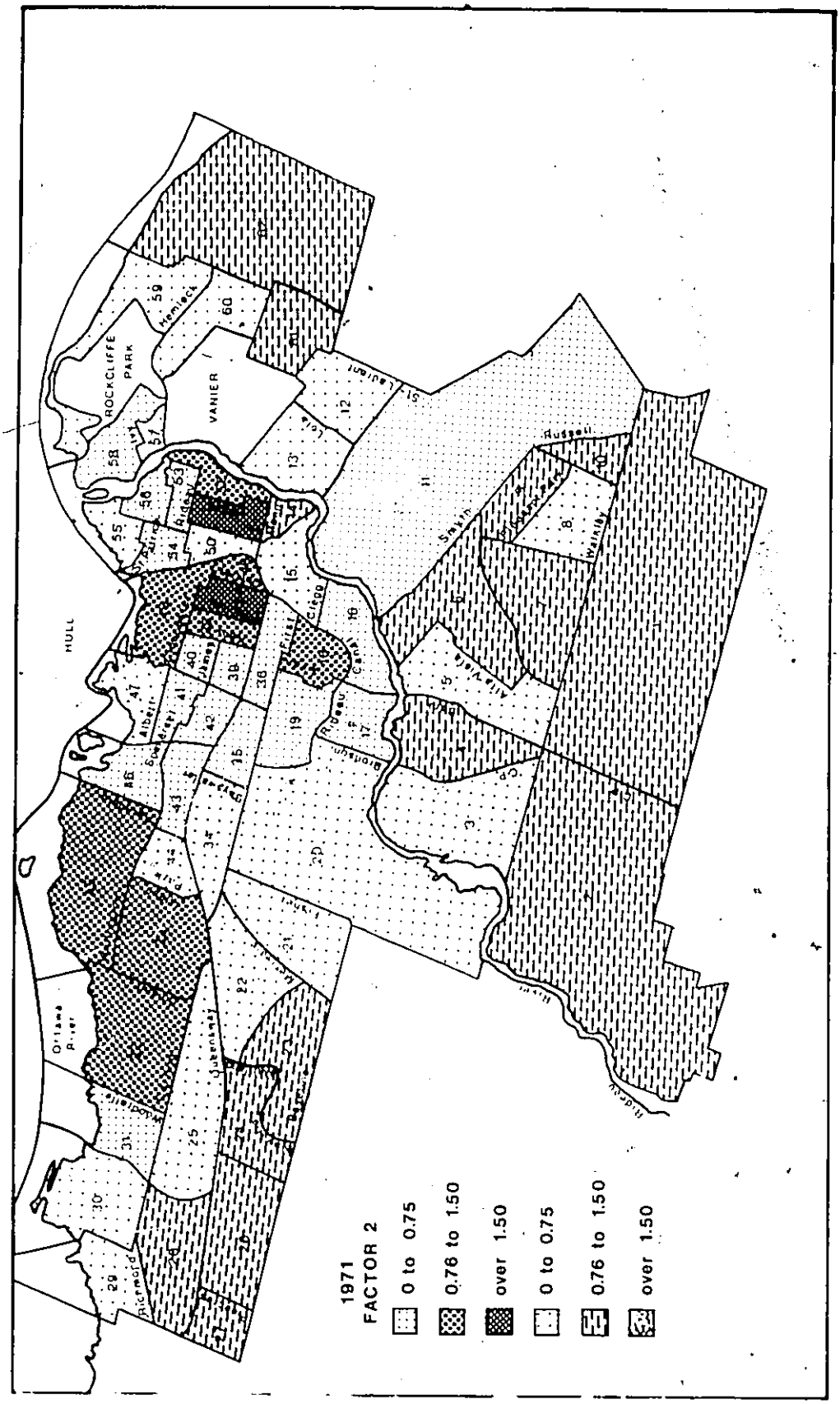

Figure 12: Factor 2 (1971) Young Single-Person Households

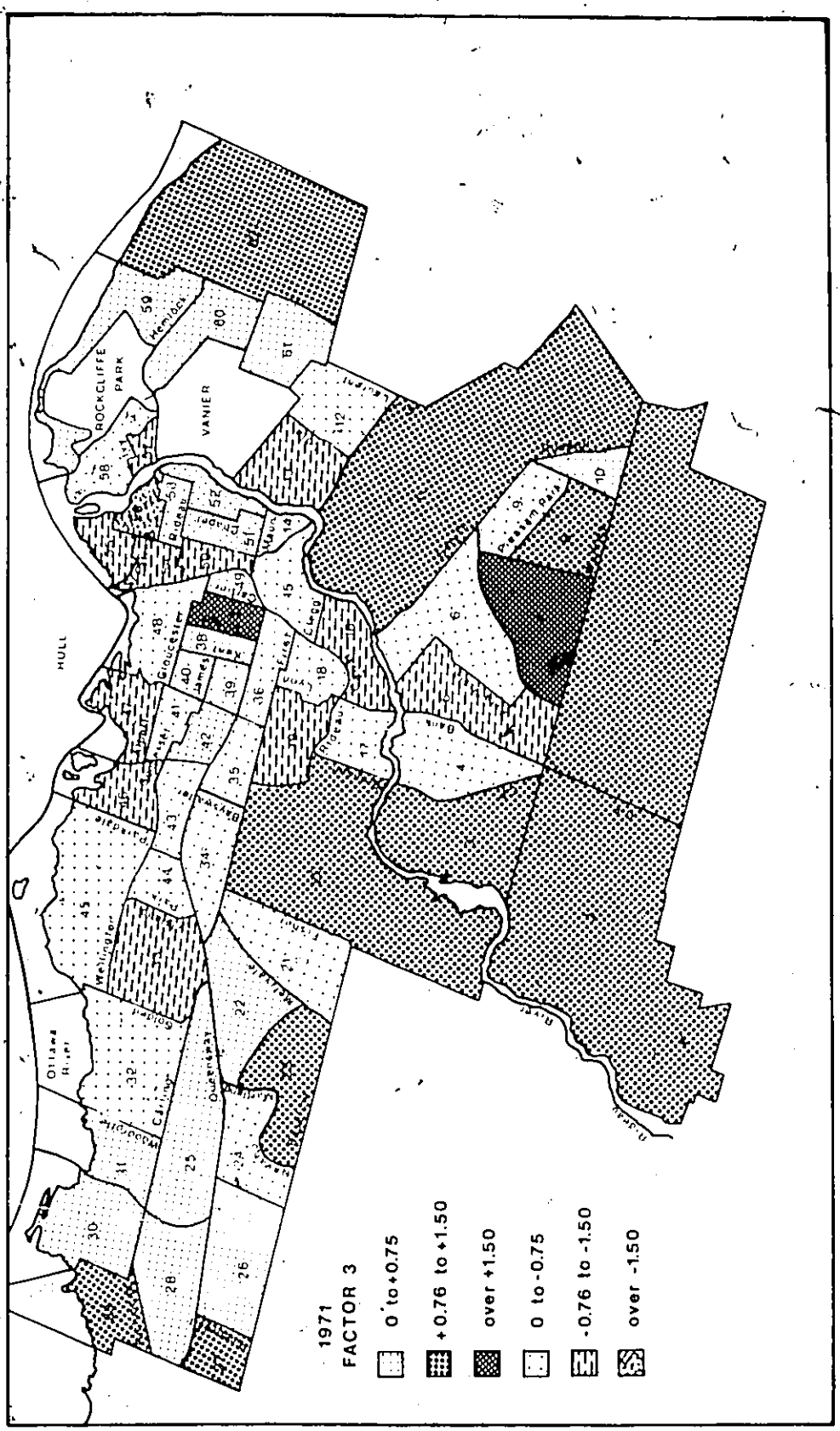

Figure 13: Factor 3 (1971) Newer Residential Areas

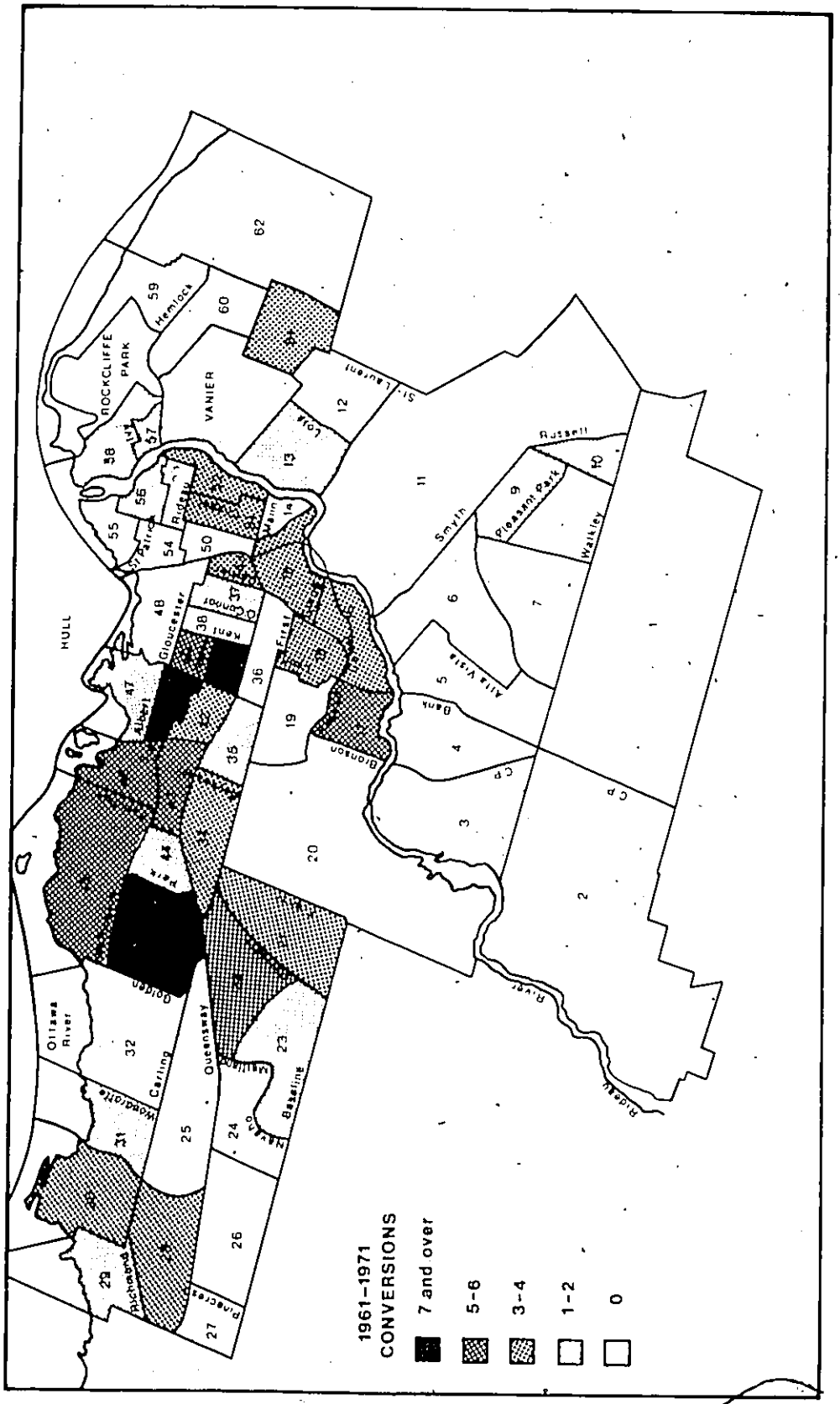

Figure 14: Conversions of Single-Family Dwellings into Multiple Units - 1961 to 1970

large part of this census tract. As such, one would expect to find variables which are the opposite of those listed above.

The spatial delimitation of moderately negative-loaded tracts identified clusters in Sandy Hill, Lowertown and New Edinburgh (Figure 6). Another cluster exists in the West end of the city and includes communities such as Britannia Heights, Faircrest Heights and Redwood Park (Figure 6). Each of these communities during the 1960's experienced the construction of several public housing units and the information is skewed because of the existence of these projects. That is, large social housing projects would tend to change the expected data for a suburban neighbourhood. In particular, income, education and occupation statistics would be affected.

Sample data for the years between 1961 and 1970 seem to demonstrate that conversions did not occur in areas positively loaded with factor 1. For example, census tracts 41, 33 and 39 had seven or more conversions between 1961 and 1970, yet these same tracts are not strongly loaded in either a positive or negative manner.

Factor 2 of the 1971 factor analysis identified variables symbolic of a large number of second suites. These variables are listed as follows:

1. non-family members;
2. one-person households;
3. significant number of apartments;
4. tenant-occupied dwellings.

The census tracts which were found to have a positive loading on factor 2 included one in the CBD (37) and one in Sandy Hill (51). These two

tracts were highly related to factor 2. Areas with a moderate loading of factor 2 included much of the CBD, and parts of Westboro and the Glebe. Comparisons between the conversion map and the factor 2 map, however, do not lead to any clear conclusion concerning conversions.

Factors 3 and 4 account for only a small percentage of the variance in the variables (4.1% and 3.9% respectively) and were not as significant as factors 1 and 2 (20.2% and 11.3% respectively). An attempt at explanation, however, is warranted.

Factor 3 identified variables associated with areas of residential construction during the 1960's. Among other highly loaded variables, there was a large population difference between 1961 and 1971, especially due to migrants from other Census Metropolitan Areas. Tracts 7 and 37 had a high positive loading on this factor. Census tract 7 witnessed its first development in the 1960's in the form of communities such as Elmvale Acres and Urbandale. Factor 4 had only one highly loaded variable, that being persons with French ethnic origin.

4.3 FACTOR ANALYSIS (1981)

In terms of the factor analysis utilizing variables included for the 1961, 1971 and 1981 Censues of Canada, some important differences occurred. For example, factor 1 for both 1961 and 1971 identified areas associated with a low level of single-family dwelling conversions. For the 1981 census period, these or similar variables were part of the second factor. This might indicate a decrease in the significance of these variables.

Factor 1 indicated the following cluster of key variables:

1. households with income between $10,000 and $29,999 in 1981 dollars;
2. divorced persons;
3. non-family members;
4. one-person households;
5. single persons.

All variables, except the first one, were hypothesized to indicate areas where conversions would most likely occur. The inclusion of this first variable shows that there are several persons who are both single and with an income between $10,000 and $29,000. The variables identified by factor 1 do not lend themselves to easy interpretation. However, single, independent and mobile would seem an appropriate label.

From the factor 1 map (Figure 15), the spatial delineation of this factor can be clearly seen. Census tracts highly loaded in a positive fashion included 051, 037, 031 and 011.02, representing areas of Sandy Hill, Centretown, Carlingwood, Britannia and Riverview Park. All areas, except perhaps the latter, were expected to have a high number of conversions, given the characteristics of these communities. In comparing the factor 1 map with the one depicting conversions, no significant relationship is evident. Of the tracts listed above, only 051 and 037 had a few single-family to multiple-family dwelling conversions between 1971 aand 1980. Between 1981 and 1984, tract 051 had a significant number of conversions while the others had only a few. For the Sandy Hill neighbourhood at least, there appears to be a high incidence of middle-class single and divorced persons, and also a high rate of conversions.

Census tracts with a high negative loading on factor 1 were not expected to have a large number of dwelling conversions. Tracts highly loaded with factor 1 would include 014 in Sandy Hill; 020.02 in Carleton Heights and 047 in the area known as LeBreton Flats. Census tracts 014 and 047, due to a lack of dwellings, did not have an impact on the overall data. In recent years census tract 020.02 has had a large number of newer residents arriving, particularly into the Carleton Heights area.

Factor 2 identified areas which, in all likelihood, were not expected to have a high number of conversions. These areas are mapped on Figure 16. Variables included in this cluster are as follows:

1. households with 3 or more persons;
2. married persons;
3. persons aged 35-54;
4. households with incomes $30,000 or above;
5. persons of British origin.

Census tracts highly loaded positively on this factor included clusters in the western and southern sections of the city. These are newer suburban areas of Ottawa. Of much more relevance to this study was the spatial delineation of negatively loaded tracts for this factor. These areas tend to be closer to the central core of Ottawa, i.e. Lebreton Flats and Lowertown (Figure 6). Neighbourhoods expected to have similar loadings had only light negative loadings, these areas being Dalhousie, Hintonburg and Mechanicsville.

Census tracts 039 and 043 had the greatest number of conversions, yet both had only a light negative loading on factor 2. Conver-

sions which took place in the post-1981 period indicate a similar trend. The results of the multiple regression indicated a very low relationship between factor 2 and rates of conversion for the census tracts included in this analysis.

Factor 3 of the 1981 census analysis was found to be the most significant in terms of the regression analysis. Factor 3 identified the following cluster of variables:

1. dwellings constructed prior to 1946;
2. dwellings in need of major repair;
3. dwellings in need of minor repair.

Areas with these dwelling characteristics were expected to have a large number of single-family to multiple unit dwelling conversions, according to the assumptions set forth in Appendix C. The spatial delineation of factor 3 is outlined on Figure 17, where it is revealed that tracts 018, 036, 043 and 051 all had a high positive loading on this factor. The neighbourhoods thus identified include parts of the Glebe, Centretown, Dalhousie and Sandy Hill. By comparing the factor 3 map with the conversion map, (Figure 18) depicting the number of conversions which took place between 1971 and 1980, a noticeable relationship became apparent. The conversion map showing the number of conversions between 1981 and 1984 is of more significance. Of the census tracts highly loaded on factor 3, three had the largest number of conversions.

A second factor analysis was undertaken, using only those census tracts which had a large number of single-family dwelling conversions between 1971 and 1984, to determine the key variables involved in these tracts.

TABLE 5

Varimax Rotated Factor Loadings for 1981 Factor Analysis

Variable	Factor 1	Factor 2	Factor 3
Income $10,000 -$29,999	0.93321		
Divorced persons	0.92716		
Non-family persons in household	0.91727		
Persons per household - 1	0.90346		
Single persons	0.84242		
Persons per household - 3 +		0.85436	
Married persons		0.83306	
Persons aged 35-54		0.81511	
Income above $30,000		0.81020	
Age of dwellings - prior to 1946			0.84431
Dwellings in need of major repair			0.76081
Dwellings in need of minor repair			0.72334

The derived factors indicated corroborating evidence that factor 3 above is statistically significant. Factor 1 of this second factor analysis accounted for 35% of the variance. The common variables include a predominance of non-family members in the household, dwellings in need of major repair, a tendency towards young, single-person households, as well as migrants principally from the Ottawa-Hull Region. Census tract 051, which is located in Sandy Hill adjacent to the University of Ottawa, had an extremely high loading on this first factor.

The second factor identified from this analysis included variables more apt to be associated with areas where conversions would be less likely. These variables included middle-aged householders, dwellings constructed between 1946 and 1970, and married persons.

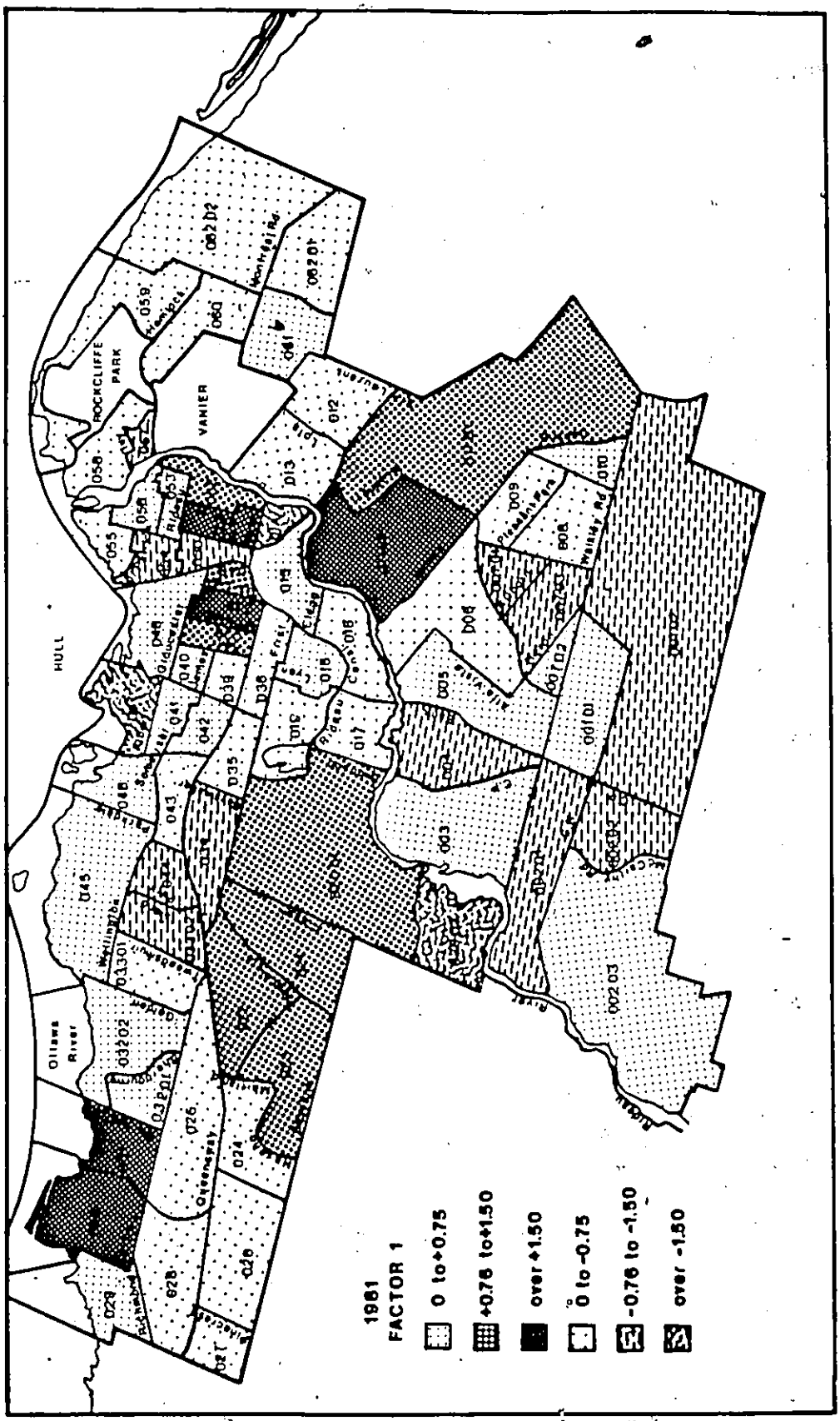

Figure 15: Factor 1 (1981) Areas with Single, Independent, Mobile Persons

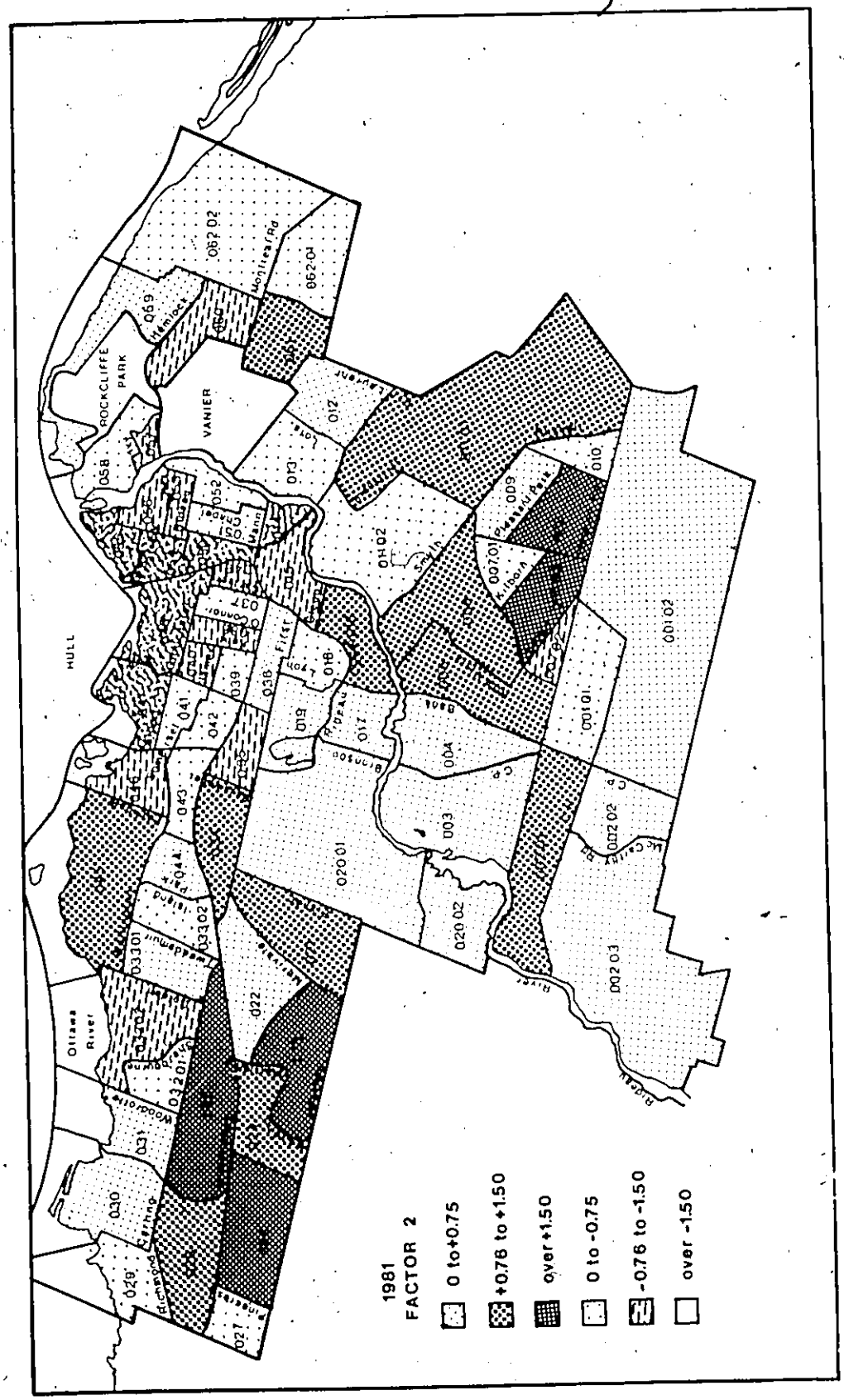

Figure 16: Factor 2 (1981) Married Middle to Late Life Cycle

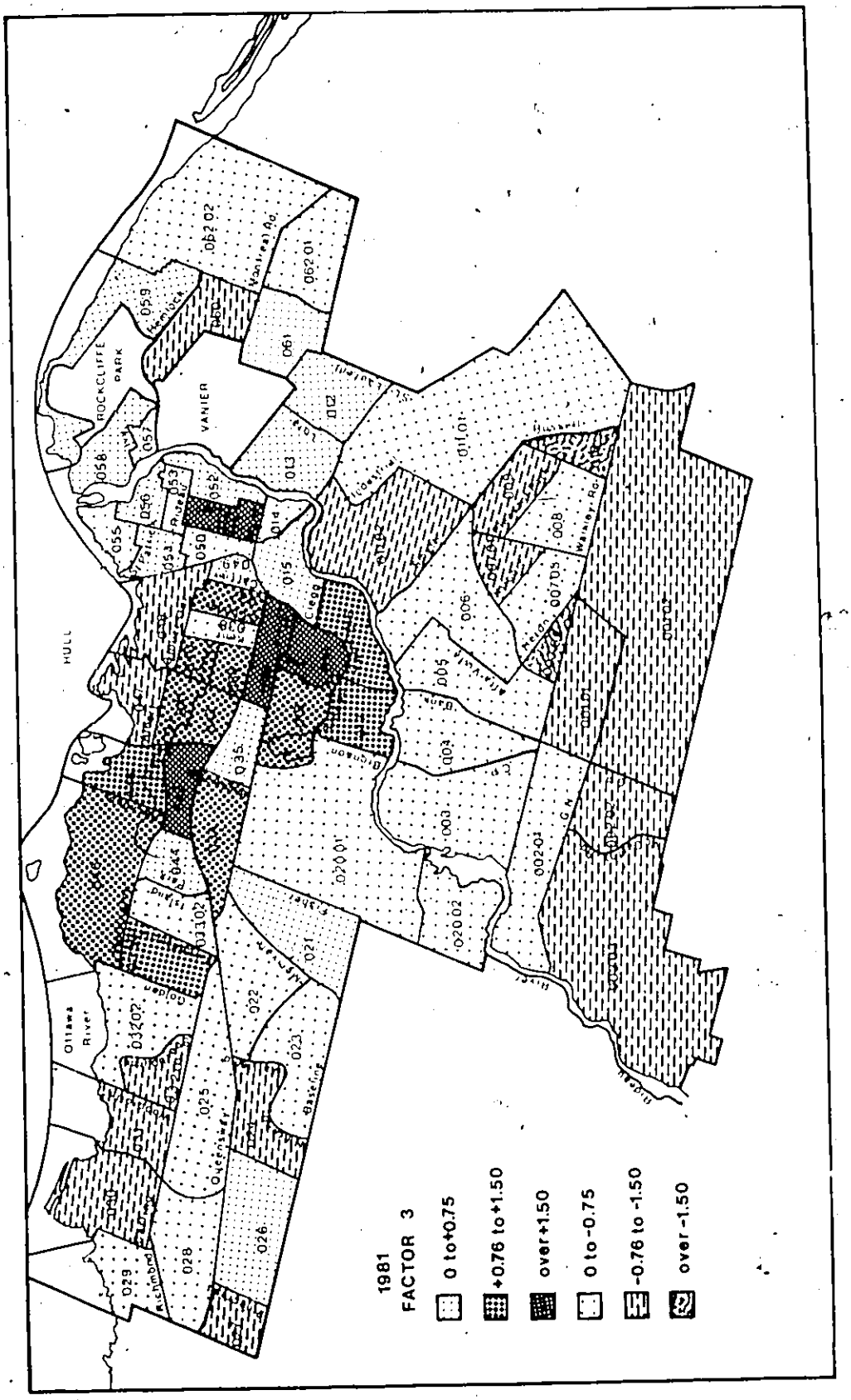

Figure 17: Factor 3 (1981) Older Dwellings in Need of Repair

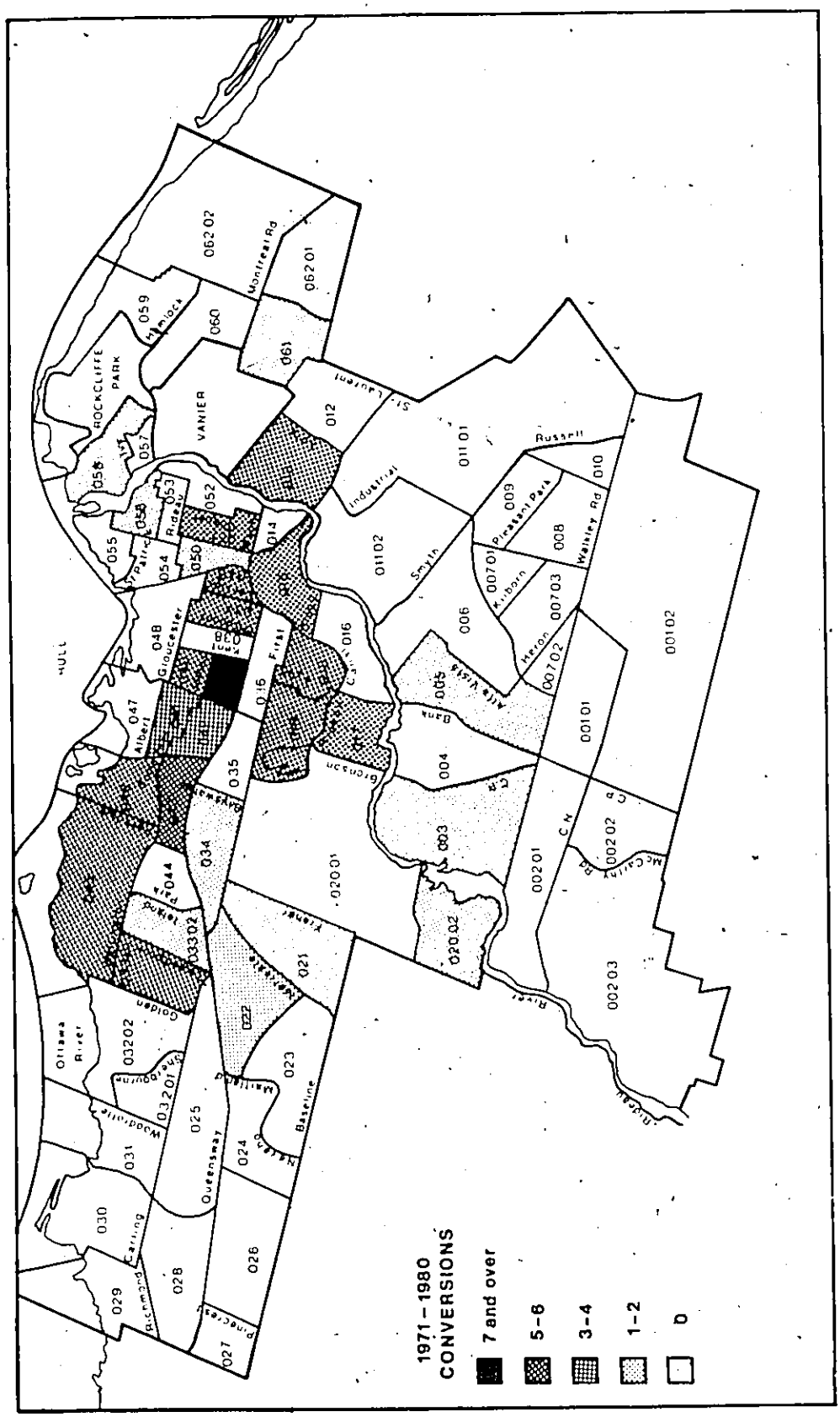

Figure 18: Conversions of Single -Family Dwellings into Multiple Units - 1971 to 1980

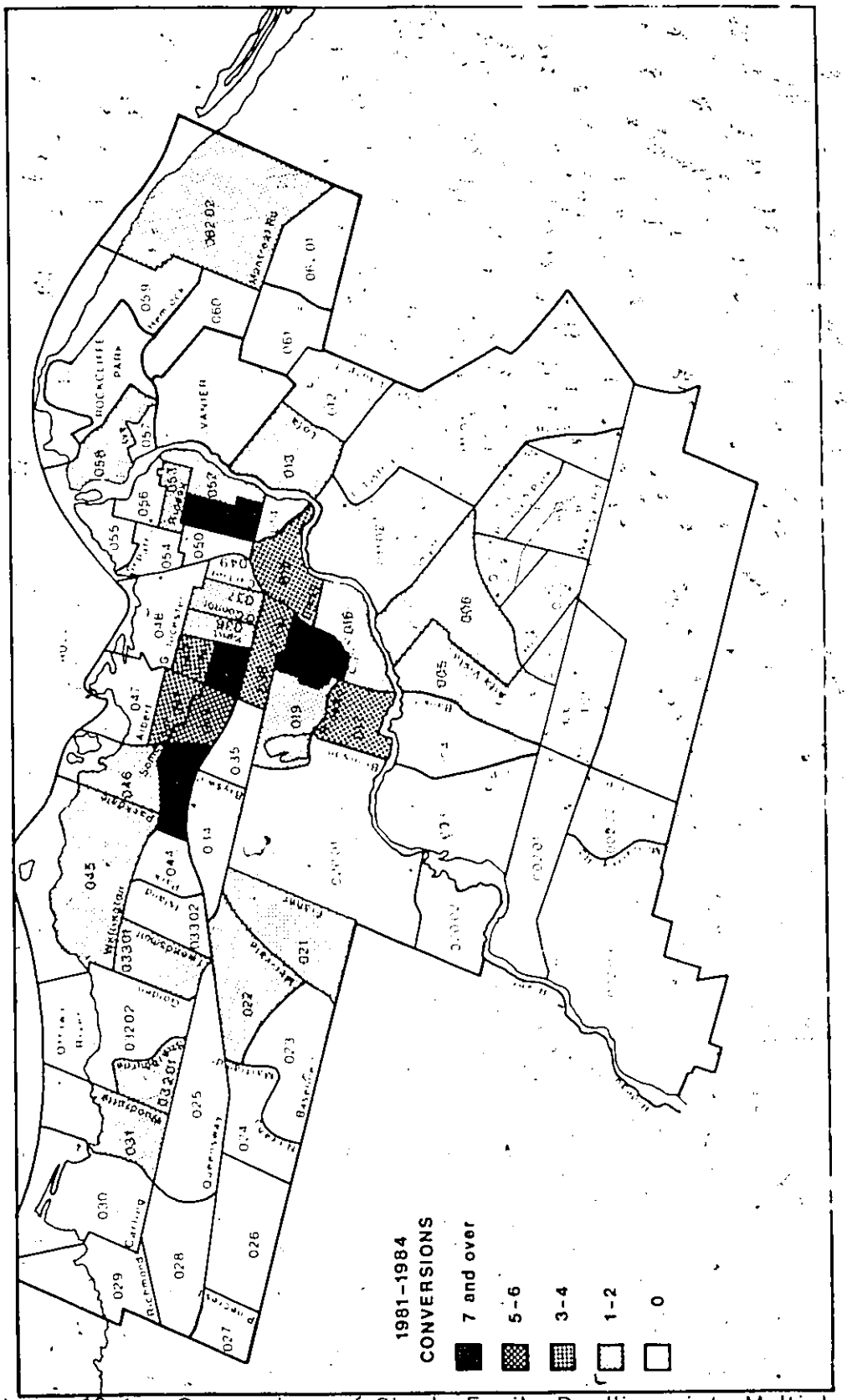

Figure 19: Conversions of Single-Family Dwellings into Multiple Units 1981 to 1984

4.4 INTERPRETATION AND SYNTHESIS OF RESULTS OF STATISTICAL ANALYSES

It is evident that the results of the factor analysis were not as conclusive as one might wish for in terms of determining rates of conversion. The multiple regression, which follows in Section 4.5, tended to prove this point. Relationships between the derived factors and rates of conversions, as determined from the sample data, were, for all intents and purposes, weak at best. Even the simple correlation analysis indicated this point.

While the results of some of the statistical procedures may have been less than conclusive, a summary and interpretation of the results of the research is necessary. That is, and these points warrant being stressed since no comprehensive study has been undertaken on this topic in Ottawa, any information, even on the observational scale, could provide valuable guidance for further fruitful research.

The section of this research utilizing conversions prior to 1961 also used the 1961 census variables. There were 291 addresses which, from the random sample, were found to have been converted in that time period. The majority of these dwellings were in the Hintonburg, Mechanicsville, Dalhousie and Centretown neighbourhoods. Parts of the Glebe, Westboro and Sandy Hill also had a significant number of pre-1961 conversions.

In terms of the 1961 factor analysis, factor 2 had an observational relationship with dwelling conversions. Areas highly loaded on this factor had a large number of older, widowed persons as well as a significant number of single, unmarried people. Factor 3 identified variables indicating an older established area close to the CBD. Census

tract 30 (part of the Dalhousie ward) was highly loaded on factor 3 and, as well, had a significant number of single-family dwelling conversions. Other areas, which had a large number of conversions and would be expected to exhibit some of the same characteristics as tract 30, were not strongly loaded in any manner. This might indicate that tract 30 is indeed unique in terms of this factor, or that other areas had different variables which were dominant. Since the second-highest weighted variable represented a length of occupancy of 10 years or more, it might be concluded that this was the unique characteristic. This is, however, not true considering that factor 3 also identified variables showing a wide mix in length of occupancy.

The collection of statistics from the MLS proved to be a frustrating procedure and the problems are outlined in Appendix F. Most of those dwellings with specified zoning were in areas classified as R5 or R4. Some of the dwellings were located in areas zoned for higher density. The majority of converted dwellings were listed simply as "RES", meaning residential. This could indicate that the conversions were illegal, or that the listing agents were not aware of the zoning particulars. From Appendix F it can be seen that there is a wide variation in the size of dwellings converted during this period, thereby indicating a considerable amount of flexibility in Ottawa's housing stock.

Comparisons of conversions between 1961 and 1971, both from the factor analysis and the actual number of conversions, are quite different from those of the base year of 1961. It was discovered in the multiple regression, which follows, that none of the factors was significantly related to the rates of conversion.

4.5 RESULTS OF THE MULTIPLE REGRESSION ANALYSIS

A multiple regression analysis was undertaken using the derived rates of conversion as the dependent variable, and the first three factors for each factor analysis as the independent variables. It was anticipated that this procedure would, first, identify the strength and direction of any relationship; second, identify a linear relationship and, third, determine the various factors involved in the overall conversion from the sample data collected. The rates of conversion for each census tract, as well as their factor scores, were used in the multiple regression.

For the 1961 factor analysis, and rates of conversions derived from conversions which took place prior to 1961, it was discovered from the simple correlation analysis that factor 2 had the highest correlation of all three factors with rates of conversions. This value was 0.353. Factor 2, it will be remembered, was thought to be indicative of areas where single-family to multiple-family dwelling conversions would be prevalent.

Factor 2 accounts for just 12% of the variance in the variables, while factors 1 and 3 account for 17% and 18% of this variance respectively. The F value for each factor regression confirms that the relationships found are statistically significant at the 0.05 level.

By examining each regression separately, it can be seen that the predicted value would increase at a minimal rate. For factor 2 it was found that, for each increase in standard deviation in this factor, the conversion rate would increase by 0.35. For factors 3 and 1 the increase in rates would be 0.23 and 0.069 respectively. For the more significant factor 2, it was discovered that, when factor 2 is at zero,

rates of conversion would be at 0.515 and a predicted increase of 0.2478 with each incremental increase in factor 2. The standard error was 0.664, meaning that predicted values would be plus or minus this amount.

It can be concluded, at least in terms of the 1961 and pre-1961 conversion rates, that areas showing an increase in older persons (especially those who are widowed) areas subject to large swings in population, and areas with a high proportion of single persons would be expected to show an increase in the rate of conversion, even if the increase is only minimal.

TABLE 6

Multiple Regression Results: Factor Scores (1961) and Rates of Conversion Prior to 1961

Factor Scores 1961 and Rates of Conversion Prior to 1961

Dependent Variable = Rates of Conversion

Variable	Multiple Regression(R)	R Square	Simple R	Predicted Value	F Value	D/F
Factor 2	0.35265	0.12436	0.35265	0.2478	6.82	1/48
Factor 3	0.42268	0.17866	0.23302	0.1637	5.11	2/47
Factor 1	0.42842	0.18354	-0.06988	-0.4911	3.45	3/46

TABLE 7

Multiple Regression Results: Factor Scores (1971) and Rates of Conversion 1961 to 1970

Factor Scores 1971 and Rates of Conversion 1961 to 1970

Dependent Variable = Rates of Conversion

Variable	Multiple Regression(R)	R Square	Simple R	Predicted Value	F Value	D/F
Factor 3	0.21434	0.04594	-0.21434	-0.[illegible]105	2.89	1/60
Factor 1	0.29381	0.08632	-0.20099	-0.5[illegible]4	2.79	2/59
Factor 2	0.29675	0.08806	0.04171	0.11[illegible]	1.87	3/58

Factor 3, which was also predicted to have a significant positive relationship with conversions, had only a very weak positive linear relationship. Factor 1, expected to have a high negative relationship with rates of conversion, had only a weak negative association and a very small predicted increase. For every standard deviation increase of factor 1, a corresponding decrease in rate of conversions of -0.4911 would occur.

When considering all factors in this multiple regression, it was discovered that 13% of the variation in the rates of conversion could be explained by factors 1, 2 and 3 together. The standard error was 0.655, making any prediction inaccurate.

The multiple regression, utilizing variables obtained from the 1971 Census of Canada as well as conversions from the sample data which occurred between 1961 and 1970, yielded findings that were less conclusive than the results obtained for the 1961 analysis. For example, the highest value in the simple correlation analysis was for factor 2 and was only 0.0417. A value of either +1.00 or -1.00 would indicate a perfect relationship between variables. Factor 2 would, in all likelihood, be expected to have a very high relationship with rates of conversion, as was suggested in the factor analysis section of this chapter. None of the regressions run in this particular analysis was significant at the 0.05 confidence level.

TABLE 8

Multiple Regression Results: Factor Scores (1981) and Rates of Conversions 1971 -1980

Dependent Variable = Rates of Conversion

Variable	Multiple Regression(R)	R Square	Simple R	Predicted Value	F Value	D/F
Factor 3	0.47854	0.22900	0.47854	0.5071	20.79	1/70
Factor 2	0.52130	0.27176	-0.20689	-0.2191	12.87	2/69
Factor 3	0.52220	0.27269	-0.03049	-0.3237	8.50	3/68

TABLE 9

Multiple Regression Results: Factor Scores (1981) and Rates of Conversion 1981-1984

Dependent Variable = Rates of Conversion

Variable	Multiple Regression(R)	R Square	Simple R	Predicted Value	F Value	D/F
Factor 3	0.62230	0.38726	0.62230	0.7757	44.24	1/70
Factor 2	0.62832	0.39478	-0.08689	-0.1081	22.50	2/69.
Factor 1	0.63363	0.40149	0.08190	0.1021	15.20	3/68

Utilizing conversions which occurred during the 1971 to 1980 period, as well as the factors obtained from the 1981 factor analysis, a multiple regression was run. The strongest correlation coefficient was found using factor 3 as the independent variable and rate of conversions as the dependent variable. This value was 0.4785, indicating a weak if somewhat significant relationship. The factor 3 regression accounts for 23% of the variance in the variables. Each increase in the standard deviation of factor 3 would mean a corresponding increase in rates of conversion of 0.5072, with a margin of error of only 0.094.

Factors 1 and 2 both had weak, negative relationships with rates of conversions. For every increase in these factors the rate of conver-

sion would decrease by -0.219 and -0.324 respectively. This result for factor 1 was unexpected, given the variables with which it is identified (that is, a large number of single persons, divorced persons, etc). The fact that the highest weighted value was an income level of between $10,000 and $29,999 would seem to indicate that the original hypothesised outcome regarding conversions, as outlined in Appendix F, was as expected. It was first believed that this income level would not indicate an area prone to conversions. After completing the factor analysis and keeping the other identified variables in mind, this supposition was reversed. The regression, however, proved that the original expectation was correct. All the regression analysis results were accurate to the 0.001 significance level, as determined from an F value table.

Utilizing conversion data from the 1981 to 1984 period, factor 3 had an even higher correlation coefficient than the previous analysis. This value was determined at 0.6223, indicating a low to moderate positive relationship. The multiple regression analysis indicates that, for areas highly loaded on factor 3, every increase in this factor signifies that the rates of conversion will increase by 0.777 with a standard error of 0.0983.

In conclusion it can be seen that only factor 3 played a significant role in "explaining" past single-family dwelling conversions. Factor 3 also was predicted to have reasonably high rates of increase during 1980-1984. It must be remembered that factor 3 identifies dwellings constructed before 1946, as well as those in need of major and minor repairs.

The factor analysis, and subsequent multiple regressions, as noted above, utilized household and dwelling characteristics maintained at the census tract level. Other relevant housing data (starts, vacancy rates etc.) are not readily available on a census tract scale. Hence, further analysis is required to determine the relationship between rates of conversion and these housing statistics, and that is the subject of the following section.

4.6 ANALYSIS OF NON-CENSUS TRACT HOUSING STATISTICS (1963 TO 1984 OCTOBER)

With regard to single-family dwelling conversions in the City of Ottawa, a different body of statistics was analysed. These data are for the City of Ottawa proper, and all surrounding municipalities are excluded.

The actual statistics under examination are those maintained by the Construction Division - Housing and Building Permit Section of Statistics Canada. The vacancy rate for apartment units in privately-initiated buildings of six units and over, as maintained by CMHC, was utilized. While Statistics Canada does keep records on building permits, there are no addresses associated with the data and there is no breakdown by individual census tract. Records maintained by Ottawa's Building Permit Branch are inconsistent in the figures for total city-wide dwelling conversions.

The statistics used include total housing starts for the City of Ottawa; building permits issued for single-family dwellings; building permits issued for apartment units; permits for conversion of single-family dwellings into higher density residential uses; and, as already mentioned, the vacancy rates for 1963 to 1984.

The first step in this analysis was to compare, on an observational level, diagrams depicting the number of conversions with the other variables selected. This procedure was chosen basically to determine if there were any similarities or differences apparent over the time period in question.

First, an examination of conversions, as they relate to the total number of dwelling starts for the city (Figure 20), reveals that during 1969 and 1970 the number of permits for conversions and for total dwelling starts increased dramatically from previous years. The year 1973 witnessed the largest number of dwelling starts but little conclusive information exists about conversions during that time period. During the recession of the mid-1970's, dwelling starts took a sharp decline while conversions remained at fairly constant levels. In 1977, dwelling starts began to increase once more and there were no conversions. In 1983, conversions rose to an all-time high of 77. From about 1980 onward, dwelling starts seemed to parallel this trend until 1983 and 1984 when both variables took a similar decline in numbers.

In terms of the vacancy rate and rates of conversion, some noteworthy comparisons can be made, particularly during the 1980's. From Figure 21 it can be seen that a dramatic turn of events took place between 1965 and 1967 when vacancy rates decreased from a high of 9.2 to 2.1, a state from which the housing situation has not really recovered to date. During this period conversions rose and fell, making any relationship difficult to interpret. A vacancy rate of around 3% is normal, according to CMHC personnel.[33] After 1967, the highest vacancy

[33] From conversations with Mr. Dan Gurrette, Housing Analyst with Canada Mortgage and Housing (Ottawa Office).

TABLE 10

Housing Statistics

HOUSING STATISTICS

Year	No. of Conversions *	No. Dwelling Starts +	No. of Permits for SFD's *	No. of Permits for Apartments *	Vacancy rate **
1963	15	4921	890	3871	8.2
1964	12	3209	547	5010	9.1
1965	18	3173	802	3426	7.6
1966	12	2569	512	1243	7.6
1967	17	1647	387	1533	2.1
1968	16	2539	535	2166	1.6
1969	14	3108	322	2777	1.8
1970	32	5099	126	5457	1.7
1971	11	5177	172	5076	1.8
1972	14	7071	471	6138	2.2
1973	8	8631	219	8603	2.1
1974	17	4698	55	4065	2.95
1975	7	1697	173	609	2.45
1976	7	1664	335	820	2.95
1977	0	2454	293	220	2.5
1978	7	2069	221	1399	2.3
1979	16	1613	299	487	3.6
1980	16	475	85	637	4.3
1981	24	1265	158	502	3.2
1982	35	2349	199	1178	0.5
1983	77	2346	513	1144	0.3
1984 (Oct.)	51	1099	179	824	0.3

* Statistics Canada Building Permit Data (City of Ottawa).
+ Statistics Canada Residential Dwelling Starts Data (City of Ottawa).
** CMHC vacancy rate for Privately Initiated Apartment Structures 6 unit plus..

rate occurred in 1980. It was also in this period that the number of conversions began to rise. In fact, in 1983 when conversions were at an all-time high, the vacancy rate was at its all-time low of 0.3%. There appears to be a definite relationship, therefore, between conversions and the vacancy rate, at least during the 1980's (Figure 21).

Three significant relationships became apparent from the plot of apartment unit permits and those for conversions (Figure 22). The first trend was the decline in the construction of apartment units after 1964. The second trend saw the gradual increase in permits let for this type of residence, to an all-time high of 8603 such units in 1974.

The third and most noticeable trend can be linked to the introduction of rent controls in Ontario. This action resulted in a dramatic decline of 93% in building permits for this type of dwelling unit, due mainly to the reluctance of private developers to build and maintain apartment units for rental purposes.[34] After 1979, the number of apartment units remained fairly low while conversions steadily rose until 1983-4 when a decrease began. There does not appear to be any significant relationship between apartment building permit issuance and conversions.

Finally, it was necessary to determine if there had been any significant or noticeable trends in connection with permits issued for single-family dwelling units (Figure 23). It would be expected that a decline in this type of unit would indicate an increase in conversions. This situation, however, only occurred in 1970 and 1974. Once again, the most significant trends have taken place after 1980. It is very ap-

[34] From conversations with Mr. Dan Gurrette, Housing Analyst with Canada Mortgage and Housing (Ottawa Office).

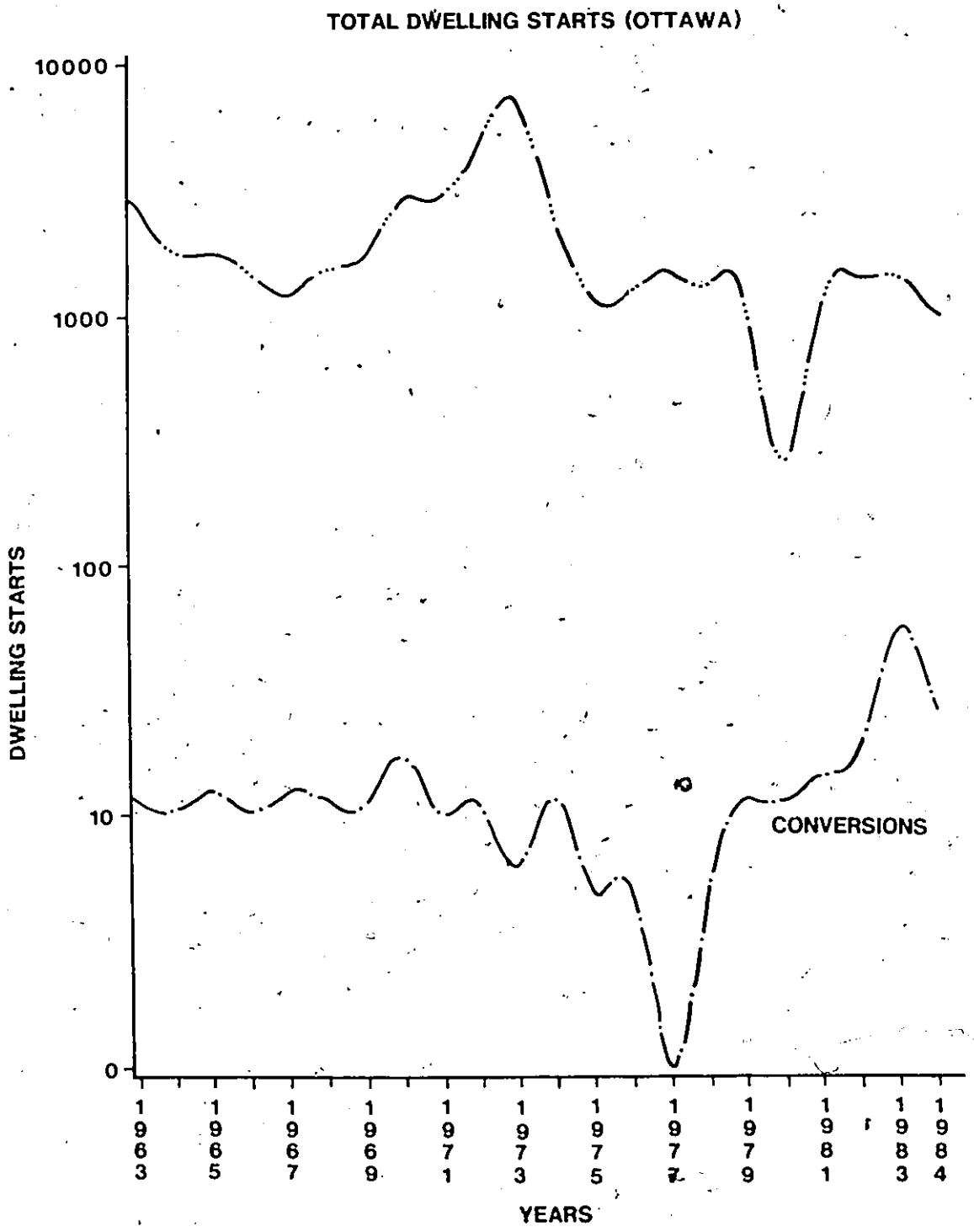

Figure 20: Dwelling Starts for The City of Ottawa. Lower line is the number of Conversions

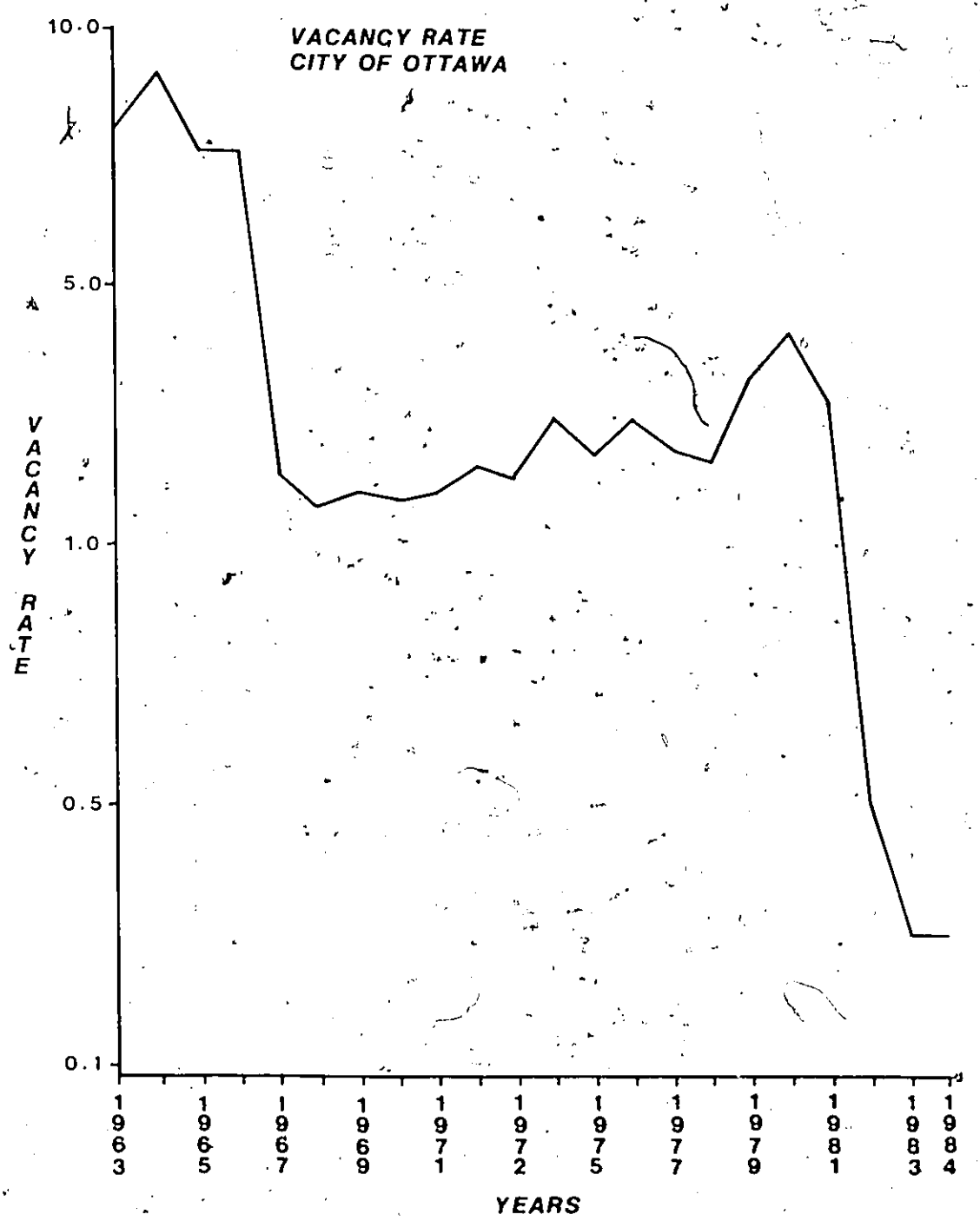

Figure 21: Vacancy Rate For The City of Ottawa (1961 to 1984)

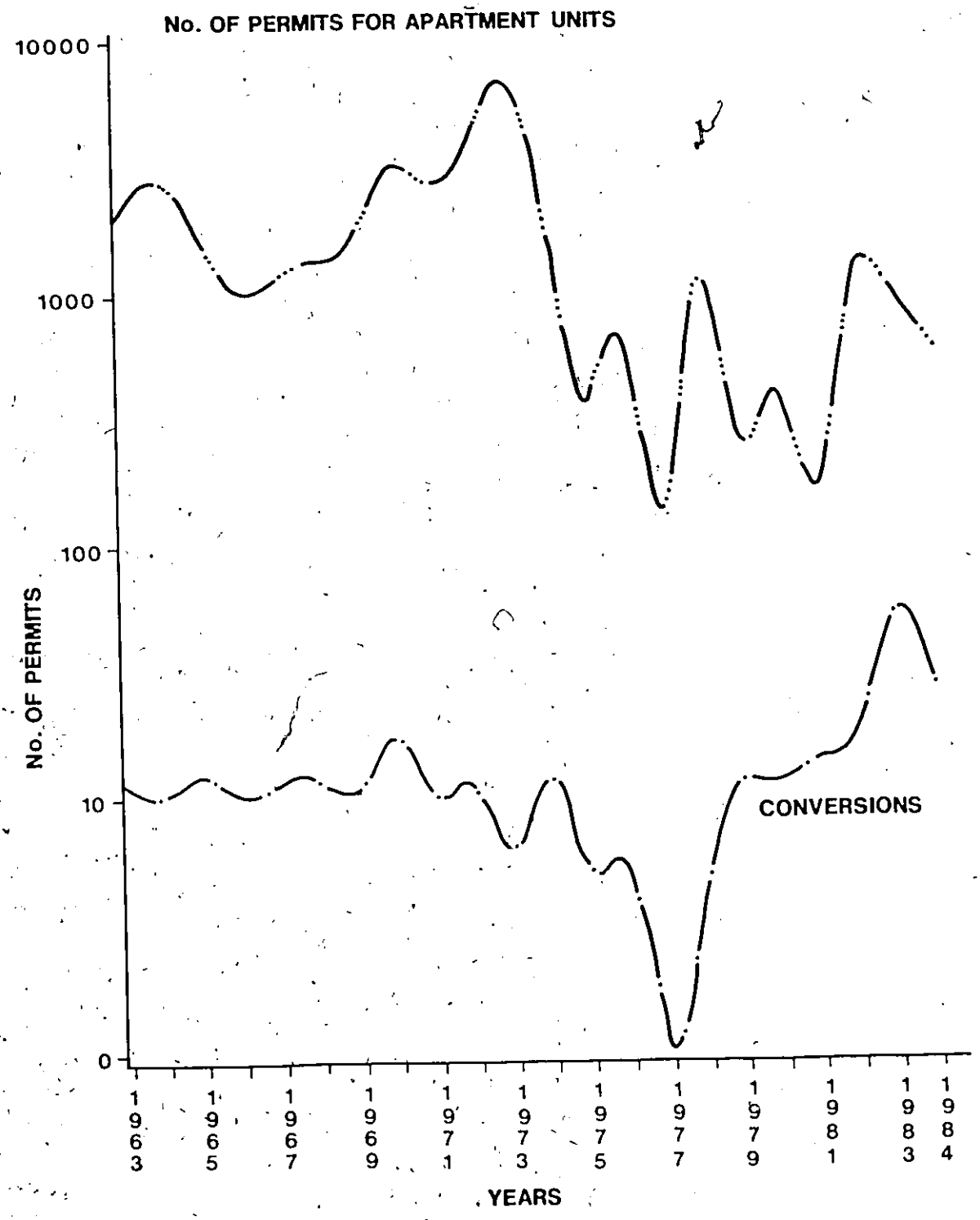

Figure 22: No. of Permits Issued for Apartment Units. Lower line is the number of Conversions

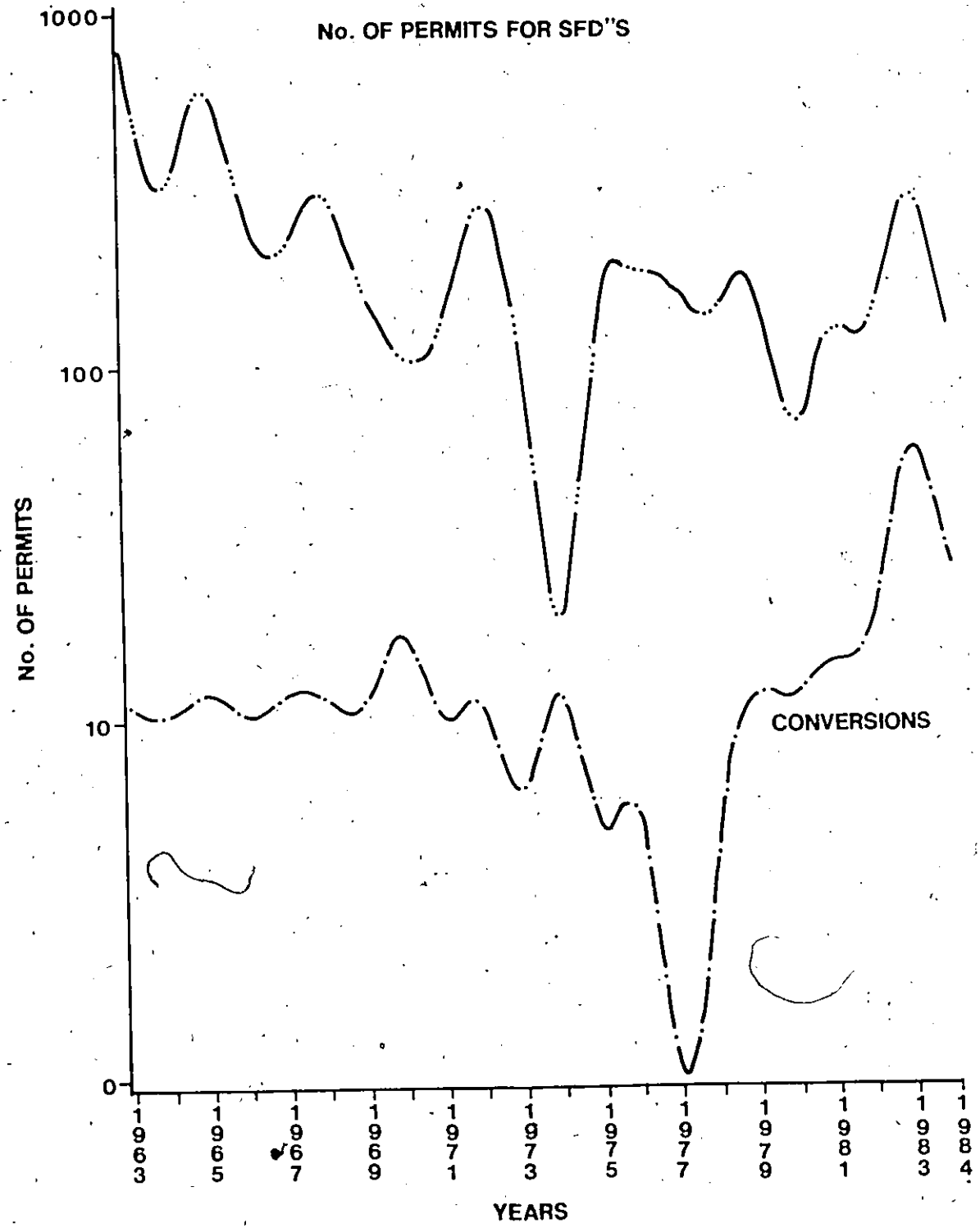

Figure 23: No. of Permits Issued for Single-Family Dwellings. Lower line is the number of Conversions

parent that the number of permits issued for single-family dwelling units paralleled conversions rather closely. This may be due, in large part, to the severe shortage of all types of dwelling units during this period.

A multiple regression analysis, with its ability to determine whether or not linear relationships exist between and among variables, was deemed an appropriate means to examine the impact each of these factors had on the number of conversions, as well as to examine the role each one played in the conversion process.

4.7 RESULTS OF THE MULTIPLE REGRESSION ANALYSIS OF NON-CENSUS TRACT HOUSING STATISTICS

It was hypothesized that a significant relationship could be established between rates of conversion and the selected housing statistics. It was assumed, on the basis of prior analyses, that the number of conversions would be high if the total number of dwelling starts and building permits issued for apartments and single-family dwellings were low and if, in addition, the vacancy rate was considerably below 3.0%.

From the simple correlation analysis it can be seen that some of these hypotheses, which were based on prior works, did not hold true. For example, it was thought, based on a model developed by Maisel (1963), that low vacancy rates would lead to higher dwelling starts and rates of conversion. The strongest relationship was found using conversions and vacancy rate figures, yielding a simple correlation of -0.34998, indicating a weak negative relationship. The highest correlation coefficient was for dwelling starts and building permits for apart-

ment units, thereby indicating that, when total starts are high it is due mainly to an increase in apartment units.

By examining the number of conversions and the vacancy rate, and holding the other variables constant, it was discovered that 12% of the variance in the number of conversions can be explained by the vacancy rate. When the vacancy rate was at zero, the number of conversions would be 26.3 per year. With each increase of 1% in vacancy rate the number of conversions would decrease by 2.41. The F value does not support this regression because the derived value was less than the critical value needed to reject the idea that relationships as found were due to chance. It is not possible to state that this relationship is significant at either the 95% or 99% significance levels. It must be concluded, therefore, that there is no significant linear relationship between the number of conversions and the vacancy rate. It is important to note that all the F values for each of the regressions, including the multiple one, were below the minimum required to reject the notion that no linear relationship existed.

Given the preceding, an analysis of the multiple regression results, while possibly of interest, would not be indicative of a truly significant linear relationship. Therefore, the interpretation of these results will be brief, and is primarily offered as a guide for other research efforts of a related nature.

The multiple regression indicated that 24% of the variance in the number of single-family dwelling conversions could be explained by each of the variables acting jointly. Any predicted value in the number of conversions would vary from the actual number by a wide margin of er-

TABLE 11

Multiple Regression Results: Housing Statistics and Number of Conversions

Dependant Variable = Number of Conversions

Variable	Multiple Regression(R)	R Square	Simple R.	Predicted Value	F Value	D/F
Vacancy Rate	0.34998	0.12248	-0.34998	-3.6536	2.972	1/20
Dwelling Starts	0.41545	0.17260	-0.16906	-0.7323	1.982	2/19
Apartment Building Permits	0.45443	0.20650	-0.16906	0.4800	1.561	3/18
SFD Permits	0.45894	0.23906	0.01179	0.1459	1.335	4/17

ror (+ or - 16.41). This is a large standard error, particularly considering the data. It is perhaps this high standard error which accounts for the very low F value of 1.335. An F value of 4.67 or greater would be necessary to reject the contention that there is no significant linear relationship between number of conversions and these variables.

In conclusion it has been shown, on the basis of this multiple regression at least, that no significant linear relationship exists between rates of conversion and the housing statistics utilized.

4.8 MULTIPLE LISTING SERVICE (MLS) DATA

The Real Estate Board of Ottawa-Carleton maintains a multiple listing service, commonly referred to as MLS. The main purpose of this service is to ensure that the maximum number of real estate brokers, and thus the buying public, are aware of the status of the housing market. An individual real estate broker places his/her listings (except those exclusively listed with that firm) with the Real Estate Board which, in turn, distributes them to the member brokers. The Board also distributes information on value once the actual sale is complete and registered. It is pointed out and acknowledged that a portion of the information used in this study was obtained from the MLS data provided to the consulting firm of General Research and Evaluation.

For purposes of examination, conversions which had MLS as a source were summarized in Table 12 . In subsequent tables the collected information for areas that had a large number of conversions was summarized. This information was then compared to the total averages in Table 12 .

To a certain extent, this method is useful for examining the conversion process in a small area. It would have been more effective to examine the changes in value over the full temporal period (1961-1984). However, that would require a sampling effort beyond the resources and scope of the present study. Further, although the Real Estate Board maintains values on a temporal scale, they are by MLS district and not by census tract, and thus not available for analysis within the terms of reference of the present study.

Numbers of conversions prior to 1961 were, on average, smaller than those in other periods and had higher-value units. Over 30% of all conversions in this time period occurred in the Dalhousie and Hintonburg areas of Ottawa. Therefore, census tracts 33 and 34 were examined in closer detail. Both of these neighbourhoods are in transition and are adjacent to the downtown core. This latter fact was expected to be the main reason for the high average value. It was discovered, however, that this was not the case. The average value of conversion units for the two census tracts was much lower than the overall average: $74,987 per unit in tract 33 and $84,323 per unit in tract 34, as opposed to the overall average of $104,070 per unit.

It can be stated, therefore, that the other conversions which were scattered over the rest of the city accounted for the higher average value and the higher average size. In addition, it can be stated that the conversions which occurred in Sandy Hill and the Glebe, although less concentrated, have substantially changed the average value of dwellings for this time period. It should be pointed out that the sizes of dwellings in tracts 33 and 34 were much smaller than average. Like most conversions during this period, dwellings in the above-mentioned tracts were old and zoned R5. A zoning classification of R5 allows for a wide range of residential dwelling types. In general, however, R5 zoning permits 37.5 dwelling units per hectare, while R1(single-family) allows 15 dwellings per hectare. Conversions in the other areas were larger and more expensive.

For conversions occurring between 1961 and 1970, it was discovered that they were on average the smallest dwellings and the least ex-

TABLE 12

Summary of MLS Collected Data

Summary of MLS Collected Data

	Period of Conversion				
	Prior to 1961	1961 - 1970	1971 - 1980	1981 - 1984	Potential
Total Number of Sample Dwellings	175	60	22	58	34
Average Size of Dwelling (sq. ft.)	1347	1312	1434	1424	1480
Average Value 1983-84	$104,070	$92,332	$124,295	$105,101	$110,827
Typical Unit Mix	Varied	2-2bedroom	1-1, 1-2bed	2-2bedroom	in-law
Typical Age of Dwelling	old	old	old	old	25
Typical Zoning	R5-x/R4-x	R5-x	R5-x	R5-x/R4-x	Res

Source: Sample Data collected by the author from MLS listings.

TABLE 13

Summary of Pre-1961 MLS Collected Data for Census Tracts 33, 34 and All Tracts.

Summary of MLS Data For Pre -1961 Conversions

Census Tract	33	34	All Pre-1961 Data
Number of Conversions	27	26	175
Average Size of Dwelling (sq. ft.)	~ 1079	1251	1147
Average Value 1983-84	$74,989	$84,323	$104,070
Typical Conversion Type	duplex	duplex/triplex	Varied
Typical Age	old	old	old
Typical Zoning	R5-x	R5-x	R5-x/R4-x

Source: Data Collected by author from MLS listings.

pensive in 1983-84 dollars. Perhaps this is a sign of a lack of gentrification and renovation.

Because the dwellings converted between 1971 and 1980 were scattered spatially among census tracts, conversions were examined from 1971 to 1984 rather than in two separate temporal periods. Examination of the total data revealed that conversions which occurred between 1971 and 1980 had the highest average value and the largest square footage.

For a closer examination of the conversion process in a small area, census tracts 039 (Dalhousie) and 043 (Hintonburg) were studied because of the large number of conversions each experienced. In contrast to the conversions of 1961-1971, the converted dwellings were larger and more in line with the average value of a converted unit for the City of Ottawa.

In conclusion, at least for the areas where the process has been most active, the following generalizations are appropriate:

1. Size - The larger the dwelling, the higher the likelihood of its being converted by, for example, the creation of in-law suites. Dwellings converted prior to 1971 were significantly smaller than those converted after 1971.
2. Value - Most converted dwellings had a value in or around the $100,000 value range, making them relatively similar in value to the average cost of a single-family dwelling in Ottawa in 1984. There were two notable exceptions to this rule: the low value of dwellings converted between 1961 and 1970, and the higher value of dwellings converted between 1971 and 1980. The latter finding may be due in large part to the small sample size, that

TABLE 14

Summary of MLS Collected Conversions 1961-1970 for Census Tracts 33, 39 and All Tracts

Summary of Conversions 1961 to 1970

Census Tract	33	39	All Data 1961-1970
No. of Conversions	4	11	60
Average Size of Dwelling (sq. ft.)	1090	1462	1312
Average Value 1983-1984	$83,375	$104,345	$92,332
Typical Conversion Type	duplex	varied	duplex
Typical Age	old	old	old
Typical Zoning	Res	RS-x	RS-x

Source: Data Collected by Author from MLS listings.

TABLE 15

Summary of MLS Collected Conversions 1971-1984 for Census Tracts 039, 043 and All Tracts

Summary of MLS Data for Conversions 1971-1984

	Census Tracts		
	039	043	All 1971-1984 Data
No. of Conversions	7	8	80
Average Size of Dwelling	1180	1387	1429
Average Value 1983-84	$72,871	$101,438	$114,698
Typical Conversion Type	duplex	varied	varied
Typical Age	old	old	old
Typical Zoning	R5-x	Res	R5-x

Source: Data Collected by the Author from MLS listings.

is, there were only 22 sample dwelling units which fell into this time period, while the others had 60 and 58.

3. Type of Conversion - The most common type of conversion for the time period under examination was to a duplex from a single-family dwelling.

4. Age - Most converted dwellings were in the "old" category. This classification refers to dwellings of older construction, the actual age of which is not specified, but which is in the domain of 30 years ago.

5. Zoning - The majority of converted dwellings were zoned as "RES" on the MLS forms. Those with more specific zoning were usually R5 or R4 (medium density residential), allowing for 37.5 dwelling units per hectare, with R5 permitting a slightly higher density use. The City of Ottawa's zoning by-laws have witnessed substantial changes over the years to meet the needs of a growing city. There have been several up-zonings to reflect this fact. The current zoning by-law, Z-2K, has every section of the city classified as either residential, commercial or otherwise. It should be pointed out that R5 and R4 zoning are very similar except that R5 allows for a higher density. The numbers in brackets after the zoning classifications indicates the allowable divergence in the floor space index.[35]

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[35] Floor space index being a ratio of the size of a piece of property and the permitted size of building floor space which may be constructed thereon.

4.9 CONCLUSIONS

It must be borne in mind that this study has been more in the nature of "exploratory", rather than "confirmatory", research,[36] however, elements of both do exist. The objective was to determine whether significant relationships exist, as well as, confirming the findings of other research.

As can be seen quite clearly from the Statement of Problem, the main premise of this research endeavour was to predict where, when and in what numbers the conversion of single-family dwellings to multiple units would occur in the years 1984-1994 in the City of Ottawa. In order to accomplish this, a detailed examination of conversions which occurred between 1961 and 1984 was considered necessary. A sample of nearly 600 appropriate addresses was obtained from across the City of Ottawa.

The conversion of single-family dwellings to multiple units was selected as a research topic for three reasons:

1. To determine whether, or to what extent, Ottawa's pressing need for more affordable housing units might be met by conversion from single-family to mulitiple dwelling units;
2. To examine the prospects of applying to Ottawa a policy option suggested by American researchers, that is, using the conversion process as a possible solution for areas suffering from a lack of affordable housing; and

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[36] For a full discussion of these concepts see Gina Bari Kolata, "Frederick Mosteller and Applied Statistics," in Science. Volume 202, April 1979, p. 397-398.

3. To add to the body of knowledge comprising Canadian research into the topic of housing conversions.

It is obvious from relevant literature that the "housing problem" has been of concern for many, many years and is simply part of a wider urban problem. Questions raised by Engels (1872), seem to parallel present concerns in many Canadian Cities. For example, he states that what:

> is meant today by the housing shortage is the peculiar intensification of the bad housing conditions of the workers as a result of the sudden rush of population to the big cities; a colossal increase in rents, still greater congestion in the separate houses, and, for some, the impossibility of finding a place to live at all. (Engels, 1872, p.18)

This is not to suggest that his solutions to or interpretations of the housing questions were appropriate. His concerns are mentioned here only to indicate that this problem is by no means of recent origin.

There are four main sub-topics which play a role in the impact that conversion of single-family dwellings to multiple units has on neighbourhoods and the city as a whole. These are demographics, changes in the housing stock, community impacts and spatial-temporal components. This study was most involved with the latter sub-topic.

Reference to Figure 2, which is the schematic of the practical research design, is useful for organizing and stating conclusions in regard to this study.

First, the definition of a data base (Boxes C-J in Figure 2) was modified somewhat to permit utilization of more reliable and accessible data sources. Housing stock information, as maintained by Statistics Canada and Might's City Street directories from 1961-1984, was included in this study. Relevant information from the Ontario Ministry of Rev-

enue was not accessible. Building permit information maintained by Ottawa's City Hall personnel proved useful in the collection of a suitable data base. This source indicates dates of permit issuance, the exact nature of the work to be done and the address of the project. It warrants noting and emphasizing that, if subsequent work were undertaken, those changes would not be noticeable unless the researcher were looking into both the conversion and merger processes. For example, if a dwelling was converted in 1971, and deconverted in 1981, the researcher would have to have a complete history of the dwelling or simply look for all dwellings that underwent both processes. Information acquired from MLS and City of Ottawa assessment rolls, in conjunction with Might's City Street directories, was useful in connection with this study. Despite shortcomings, data from these sources should be taken into consideration should other research into this subject be undertaken.

Second, in terms of the statistical results produced by the study, it must be acknowledged that a large proportion of the results fell within the 0.4 or 0.5 R levels. That outcome not only precluded easy interpretation, it also left room for conceivably quite different interpretations by other researchers. In addition, however, that outcome created a "difficult situation" with regard to the data base. That is, changes to the data base through an expanded sample base, could result in quite different R values. Hence, there must, of necessity, be more tentativeness to the interpretations than one would wish. Further, it should also be mentioned and noted that the R values tended to get more statistically significant over time, due mainly to the different sample sizes for the given time periods.

Having established a caveat with respect to the statistical analyses, the following conclusions are apparent. Two statistically significant results were determined using factor analysis of the 1981 Census Population and Dwelling Characteristics, followed by multiple regression techniques on the derived factors and rates of conversion. In each of the periods 1971-1980 and 1981-1984, a significant linear relationship existed between rates of conversion and factor 3 of the 1981 Census data. In each instance, factor 3 identified dwellings constucted prior to 1946 and in need of minor or major repairs. It can be concluded, therefore, that areas highly loaded on factor 3 have a considerable number of single-family dwelling conversions and that such areas are included in the following neighbourhoods:

1. The Glebe
2. Sandy Hill
3. Dalhousie
4. Ottawa South
5. Rideau Gardens
6. Hintonburg
7. Westboro
8. Centretown

(See Figure 6 for the Neighbourhood Map)

Third, from MLS information, it can be concluded that large dwellings, especially those already containing in-law suites have the greatest potential for conversion. This source of data also confirms that the majority of such dwellings are of older constuction.

Fourth, by comparing the factor analysis over the temporal period, it was discovered that the 1961 and 1971 identified factors were similar, especially in terms of factor 1 which is the factor accounting for the highest number of identified variables. The 1981 factor analysis found that the most common cluster of variables included new variables identified as middle-income, single or divorced persons and one-person households. This is a significant change from previous census analyses.

And fifth, should future research be made into this subject, it may be prudent to make several changes in the research design. In particular, an earlier research period would perhaps be more appropriate, although the collection of relevant information for any such time period may be extremely difficult to accomplish.

In terms of implications for policy and planning development in connection with housing conversions, the only significant conclusion found, as a result of the present study, was that older dwellings in need of major and minor repair seem to be those most often subjected to conversion.

It has become evident that some city aldermen strongly object to Ottawa's recent policy of not allowing rental housing to be converted back into owner-occupancy use. While these aldermen seem quite ready to defend the rights of the landowners in such a situation, it would be interesting to note and examine their reactions if the opposite were to prevail and landowners in their own immediate neighbourhoods were allowed to create extra rental units by conversion of single-family residences into higher density use. Until this and other discriminatory or ideological attitudes are overcome, the question of solving housing

shortages to the satisfaction of a majority of the residents will remain one of considerable complexity.

The housing shortage in Ottawa is particularly acute for those persons earning low to moderate incomes. This situation is not expected to lessen in the near future. Previous attempts to solve the problem by consulting groups, planners and the public have failed to develop any pragmatic and economically reasonable solutions.

In summary then, the main objective of this study has been to determine whether or not conversion of single-family dwellings into multiple units can be considered as a viable method of at least partially solving the housing shortage in Ottawa. On the basis of what has been learned from this study, the first on the topic of conversions in the City of Ottawa, sufficient ground has not yet been established to support the implementation of a policy by city officials to promote the conversion of single-family dwellings to mutiple units or a means of resolving the shortage of low-income housing in the City of Ottawa.

If future studies are to be undertaken on the topic of single-family dwelling conversions, primary vs secondary sources should be consulted. The present study provides nearly 600 addresses of converted dwellings and is a good starting point for primary data collection. The term primary data means data collected at source by directly questioning homeowners who have converted their homes to determine why, when and how their conversions (legal or not) were accomplished. The present study is the first to provide addresses where single-family dwelling conversions have taken place in Ottawa.

Should another study on this topic be completed, different variables would and, indeed, should be incorporated. For example, there is a very human dimension to the conversion process in that conversions have had a certain social stigma attached to them. A homeowner who added a rental unit or who took in boarders was thought of as being unable to maintain his dwelling financially. Some people convert strictly for investment purposes, while others convert illegally and hope city official remain ignorant of the fact.

The process of gentrification in the City of Ottawa is very prevalent in many inner-city neighbourhoods at the current time. This present study did not examine the impact which this trend has had or will have on the conversion process. While it is true that dwelling mergers, (rather than conversions) are occurring in neighbourhoods like Dalhousie and Hintonberg, it is equally true that conversions are occurring in the older suburban areas like Alta Vista and Manor Park. Thus, the gentrification trend is not affecting the conversion process city-wide.

4.9.1 Policy Concerns

This study raised several questions of a policy nature, which bear mentioning.

First, are conversions a less disruptive method of adding to the housing stock than highrise or group developments? What is the impact on the neighbourhood scale? Should a policy that allows conversions carte blanc be allowed?

A second policy concern arises in connection with conversions for owner-occupancy vs those intended for investment purposes only. Are owners who occupy a portion of the converted space more likely to maintain the upkeep of their property than owners for whom the conversions are solely for investment purposes? Should investment-only conversions be permitted?

A third policy concern involves dealing with illegal conversions. Should city officials attempt to regulate such units, or would this simply remove much needed rental stock from the current housing market?

A final area of concern revolves around the marketability of single-family dwelling conversions or how to "sell" the idea to the general public. Perhaps what is needed is an extensive advertisement and educational program. The Ontario Ministry of Housing has recently added to their "Convert to Rent Program" a new phase which allows interest-free loans to the owners of single-family dwellings who wish to create an accessory apartment within their existing home.

Chapter V

NEEDED RESEARCH

While the statistical results produced by this study were less conclusive than one might wish, that outcome should have no bearing on other researchers making use of the data collected. Indeed, the provision of a usable data base for related studies in Ottawa, or elsewhere, is a major contribution since no such data base for Ottawa previouly existed. In particular, the placement of the addresses into their individual census tracts was a time-consuming endeavour. Given the reality of the housing problem in Ottawa, and the limitations of data available from various sources, it is recommended that this data base be utilized for further research into single-family dwelling conversions and related sub-topics.

One of the lessons learned from this research project, is that future studies should select an earlier period for the examination of the conversion process. That is, it was discovered after the data collection effort was well on its way towards being completed that a large part of the sample addresses collected from MLS and the Assessment Rolls were converted prior to 1961.

Some research in the United States suggests that conversion activity really began immediately after World War II. In 1949, The American Society of Planning Officials undertook a study to deal with the problem of legalizing these conversions. Future research into conversions as far back as 1951 may therefore be desirable, but it is apparent

from the findings of the present work that the task will be difficult to accomplish. Of note in this regard is the extremely poor condition of city building permit records prior to 1983. City street directories, however, would contribute towards that end.

An associated problem, which needs to be studied further, is the process of dwelling deconversion or merger. Collection of data required for examination of this process revealed a number of dwellings which had undergone both conversion and deconversion and, in some cases, conversion once again. Building permit data also indicate that this is a recent trend of some significance. As mentioned previously, research into this process, while germane to the subject of maintenance of a number of dwellings, contributes little or nothing to a study of the creation of additional residential units from existing housing stock. Examination of the type of deconversion or merger should, however, be valuable in terms of identifying the nature and location of the process as it has occurred in Ottawa.

Another research topic which may warrant future examination involves questioning homeowners as to why they converted their residences, or why they bought converted dwellings. The addresses collected for the present study would provide an excellent starting point for an inquiry of that nature. Responses could be placed on a interval scale in order to determine the profile of the typical converter-householder.

Various problems relative to data sources are outlined in Appendix H. The most frustrating of all these sources to work with was the MLS listings, due mainly to inaccuracies in the age, square footage and zoning categories. As Stanton (1984), discovered, research into better

methods of data preparation and maintenance at the local level is badly needed. Many people in both the private and public sectors would no doubt applaud such improvements. The reader should consult works completed by Lindley et al (1977), Datlen (1977), and Chamberlain et al (1980).

Another area of needed future research, and which should be of interest to persons involved in planning and by-law enforcement, would involve examining how many of the dwellings considered in this study were actually converted illegally. The large number of MLS files with a zoning classification of "RES" (rather than a more explicit zoning declaration) would lead one to suspect that the incidence of illegal conversions may be quite high. It should be borne in mind, however, that the "RES" classification on MLS documents may merely be the result of real estate agents' ignorance of zoning by-laws or wilful misleading of possible purchasers.

From a spatial and temporal viewpoint, comparison of the values of converted dwellings with single-family dwellings in the same neighbourhood in the same time period may warrant detailed examination to determine if the conversion process has had an economic impact on affected communities. This would be a monumental undertaking given the fact that most dwelling conversions appear to have taken place in the older stock which tends to be variable in quality and value. An extensive real estate history of each converted dwelling would have to be done to ensure that accurate temporal comparisons are made.

In chapter II of this thesis, Larry Bourne was quoted as stating that, because of the lack of comparative studies on conversions, gener-

alizations about their nature is rather difficult. The present effort could, in a small way at least, contribute to such proposed inter-city comparative studies.

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Appendix A

DEFINITION OF KEY TERMS

1. Single-family Dwelling Conversion -- the conversion of a dwelling originally constructed for one household to one for two or more households, which are also referred to as accessory apartments, second suites and/or secondary units.
2. Illegal Conversions -- the subdivision of one-unit dwellings into two or more units without the knowledge of City officials.
3. Deconversion or Merger -- the process whereby single family dwellings are converted to several units and are subsequently returned to single-family status.
4. Empty-Nesters -- a household comprised of two parents whose children who have grown up and no longer reside in the parental home.
5. Housing Flexibility -- the ability of a dwelling to be modified to the changes in the family's life cycle.
6. Conversion Rates -- a ratio of the number of conversions to the total number of dwellings during an interval of time.

Appendix B

SUMMARY OF RESEARCH DOMAIN

A) HOUSING CONVERSIONS American(governmental)

1976, Marin County, California
1979, Spirio, Town of Babylon
1980, Gouveia, Town of Westport
1981, Tri-State Regional Planning
1981, Westchester County
1981, Wentz and Irwin
1982, Lukermann et. al.
1983, Southwestern Area Comm. & Ind.

B) HOUSING CONVERSION American(non-gov't)

1969, ASPO
1977, Brudbury
1980, Baer
1981, Hare a) b) c)
1982, Thibodeau
1982, Collen
1982, Connolly
1982, Santry
1983, Cobb
1983, Collen
1983, McGough
1983, Morrisa
1983, Hodges and Goldman

D) HOUSING AND DEMOGRAPHICS American

1968, Kristof
1973, Hodell & Haraven
1974, Blake
1974 Fisher and Graham
1976, Doling
1977, Morrison, Peter
1977, Struyk
1978, Muth
1978, Kuznets
1980, Michael
1981, Trees
1981, Kobrin
1981, Gober
1982, Bloom

A) HOUSING CONVERSIONS Canadian(governmental)

1973, City of Vancouver
1974, City of Burnaby
1975, City of Vancouver
1975, District of N. Vancouver
1975, Wellar
1976, City of Ottawa
1979, Levinson
1979, City of Toronto
1980, Lamas and Smith
1981, City of Thunder Bay
1981, City of Ottawa
1982, Vischer-Skaburskis
1983, Klein and Sears et al.

B) HOUSING CONVERSIONS Canadian(non-gov't)

1972, McCann
1975, McCann
1978, Morrison
1978, Soen
1980, AHO
1983, AHO

D) HOUSING AND DEMOGRAPHICS Canadian

1981, Brown
1981, Divic
1981, Miron
1981, Miron and Schiff
1982, Lapping
1983, Follis
1983, Miron

F) NEIGHBOURHOOD CHANGE

1964, Frieden
1979, Cale
1982, Strickland and Judd

C) HOUSING - GENERAL American and other

1872, Engels
1963, Campbell
1965, Beyer
1969, Muth
1970, Smith
1976, Stegman
1977, Angor
1977, Mendelson
1979, Grebler and Mittlebach
1979, Starr
1979, Sternlieb and Hughes
1980, Sternlieb and Hughes
1980, Lassett and Short
1981, Sternlieb and Hughes
1982, Sternlieb and Hughes
1982, Maclennan
1982, Sumka
1983, Howenstine
1983, Burstein

C) HOUSING - GENERAL Canadian

1972, Dennis and Fish
1978, Bourne and Hitchcock
1979, Steele
1981, Bourne
1983, Evenden
1983, Goldberg

F) HOUSING, SOCIAL AND GEOGRAPHIC RESEARCH

American	Canadian
1953, Ackoff	1970, May
1955, Shevky and Bell	1974, Yeates
1969, Murdie	1977, Morrison, Philip
1972, Becker	
1973, Mitroff and Turoff	
1973, Smith	
1974, Clark	
1976, Mumford	
1977, Taylor	
1978, Kim and Muller	
1981, Carter	

Appendix C

ASSUMPTIONS REGARDING SELECTED VARIABLES AND CONVERSIONS

Interpretation of Factor Values for Selected Variables in terms of Single-Family to Multiple-Family Dwelling Conversions. (1961).

Variable.	Factor Value	
	HIGH	LOW
1. Population 1961	several	few
2. Population 1956	"	"
3. Population difference 1956-1961	"	"
4. No. of single persons	"	"
5. No. of married persons	few	several
6. No. of widowed persons	several	few
7. No. of persons aged 15-34	"	"
8. No. of persons aged 35-54	few	several
9. No. of persons aged 55 plus	several	few

10. Ethnic Origin -British	few	several
11. Ethnic Origin -French	several	few
-Italian	"	"
-Asiatic	"	"
12. No. of one person households	"	"
13. No. of 2-3 person households	few	several
14. No. of 4 plus person households	"	"
15. No. of households with lodgers	"	"
16. Average family income	"	"
17. Income as a % of the average for the city	"	"
18. Average no. of rooms per dwelling	"	"
19. Average value of dwelling	"	"
20. Value as a % of average for the city	"	"
21. No. of apartment units	several	few
22. No. of apts as % of all units	"	"
23. Persons per room	few	several
24. No. of crowded dwellings	several	few
25. Occupancy less than 1 year	"	"

26. Occupancy between 1 and 2 years	"	"
27. Occupancy between 3 and 10 years	few	several
28. Occupancy more than 10 years	"	"
29. Age of dwelling -Pre 1920	several	few
30. Age of Dwelling -Post 1945	few	several
31. No. of dwellings needing major repair	several	few
32. Access to a university	"	"
33. Access to the CBD/Downtown	"	"

Derived Factors 1961:

Factor 1

Indicates an incidence of: a) large households;
b) newer dwellings;
c) married persons;
d) middle-aged persons;
e) persons of British origin.

Factor 2

Indicates an incidence of: a) older persons;
b) widowed persons;
c) large population change;
d) single persons.

Factor 3

Indicates an incidence of: a) older dwellings;
b) occupancy of more than 10 years;
c) access to the CBD;
d) occupancy between 3 and 10 years;
e) occupancy between 1 and 2 years.

Interpretation of Factor Values for Selected Variables in terms of Single-Family to Multiple-Family Dwelling Conversions. (1971).

Variable	Factor Value	
	HIGH	LOW
1. Population in 1971	several	few
2. Population in 1966	"	"
3. Population Difference 71-66	"	"
4. Population Difference 71-61	"	"
5. No. of single persons 1971	"	"
6. No. of single persons 1961	"	"
7. No. of married persons 1971	few	several
8. No. of married persons 1961	"	"
9. No. of widowed persons 1971	several	few
10. No. of widowed persons 1961	"	"

11.	No. of residents aged 15-34	"	"
12.	No. of residents aged 35-54	few	several
13.	No. of residents aged 55 +	"	"
14.	Ethnic Origin -British	"	"
15.	Ethnic Origin -French	several	few
	-Italian	"	"
	-Asiatic	"	"
16.	No. of 1 person households	"	"
17.	No. of 2 person households	"	"
18.	No. of 3 person households	few	several
19.	No. of 4 + person households	"	"
20.	Average number of rooms per dwelling	"	"
21.	No. of non-family members in household	several	few
22.	No. of non-migrants	few	several
23.	No. of migrants	several	few
24.	No. of migrants from same CMA	few	several
25.	No. of migrants from different CMA	several	few
26.	No. of migrants from non-CMA	"	"
27.	No. person 15+ enrolled in school	"	"
28.	No. of owner-occupied dwellings	few	several
29.	Value of dwelling	"	"

30.	No. of tenant-occupied dwellings	several	few
31.	Average gross rent	few	several
32.	No. of apartment units	several	few
33.	Average number of rooms per dwelling	few	several
34.	Average number of persons per room	"	"
35.	Length of occupancy less than 1 year	several	few
36.	Length of occupancy between 1-2 years	"	"
37.	Length of occupancy 3 years	few	several
38.	No. of dwellings built before 1946	several	few
39.	No. of dwellings built after 1960	few	several
40.	Income less than $2,999 per year	several	few
41.	Income between $3,000 and $9,999	few	several
42.	Income above $10,000	"	"
43.	Average income	"	"
44.	Access to CBD	several	few
45.	Access to university	"	"
46.	Access to a shopping centre	few	several

Derived Factors 1971

Factor 1

Indicates an incidence of a) non-migrants;
b) no. of married persons;
c) high population in 1971;
d) persons aged between 34 and 54;
e) owner occupancy;
f) 3 or more persons per household

Factor 2

Indicates an incidence of a) non-family members in household;
b) one-person households;
c) apartment units;
d) tenant occupancy.

Factor 3

Indicates an incidence of a) dwellings built after 1960;
b) migrants from a different CMA;
c) population difference between 71 and 66.

Factor 4

Indicates an incidence of a) persons of French ethnic origin;
b) persons per room;
c) income $2,999 or less.

Interpretation of Factor Values for Selected Variables in terms of Single-Family to Multiple-Family Dwelling Conversions. (1981).

	Variable	Factor Value	
		HIGH	LOW
1.	Population in 1981	several	few
2.	Population difference 1976-1981	"	"
3.	Population density	"	"
4.	Percentage of rental units	"	"
5.	Percentage of apartments	"	"
6.	Percentage of duplex dwellings	"	"
7.	No. of 1 person households	"	"
8.	No. of 2 person households	"	"
9.	No. of 3 + person households	few	several
10.	Average number of rooms per dwelling	"	"
11.	No. of non-family members in household	several	few

12.	Dwellings built prior to 1946	"	"
13.	Dwellings built between 1946-1970	few	several
14.	Dwellings built between 1971-1980	"	"
15.	Minor repairs needed	several	few
16.	Major repairs needed	"	"
17.	Average no. of persons per room	several	few
18.	Median length of occupancy	few	several
19.	No. of non-migrants	"	"
20.	No. of migrants	several	few
21.	No. of migrants from same CMA	"	"
22.	No. of migrants from different CMA	"	"
23.	Household income $10,000 or under	"	"
24.	Household income between $10,000 and $29,999	few	several
25.	Household income $30,000 and above	"	"
26.	No. of single persons	several	few
27.	No. of married persons	few	several
28.	No. of widowed persons	several	few
29.	No. of divorced persons	"	"
30.	Age of persons between 15 and 34	"	"

31.	Age of persons between 35 and 54	few	several
32.	Age of persons 55 +	"	"
33.	Ethnic Origin British	"	"
34.	Ethnic Origin French	several	few
35.	Mother Tongue Italian	"	"
36.	Mother Tongue Asiatic	"	"
37.	Access to a university	"	"
38.	Access to a hospital	"	"
39.	Access to a shopping mall	few	several
40.	Access to CBD	several	few
41.	Average gross rent	few	several
42.	Average value of dwelling	"	"

Derived Factors (1981)

Factor 1

Indicates an incidence of a) income levels between $10,000 and $29,999;
b) divorced persons;
c) non-family members;
d) 1 person households;
e) single persons.

Factor 2

Indicates an incidence of a) households with 3 or more persons;

b) married persons;

c) persons aged between 35-54;

d) income $30,000 or above;

e) British ethnic origins;

Factor 3

Indicates an incidence of a) dwellings constructed before 1946;

b) dwellings in need of major repairs;

c) dwellings in need of minor repairs.

Appendix D

TOTAL LIST OF ADDRESSES UTILIZED

ADDRESS	CENSUS TRACTS 1961	1971	1981	DATE OF CONVERSION PRIOR TO 1961	1961 TO 1970	1971 TO 1980	1981 TO 1984	
12 Adelaide St.	27	18	018(mls)	x				
16 Adelaide St.	27	18	018(mls)	x				
18 Adelaide St.	27	18	018(mls)	x				
193 Allison Ave.	48	31	031(mls)	x				
810 Alpine Ave.	49	28	028(s.r.)		x			
812 Alpine Ave.	49	28	028(s.r.)		x			in-law
2265 Alta Vista Dr.	6	6	006(mls)					
54 Anderson St.	30	42	042(mls)	x				
57 Anderson St.	31	41	041(mls)	x				
65 Anderson St.	31	41	041(mls)		x			x
68 Anderson St.	30	42	042(mls)					
72 Anderson St.	30	42	042(mls)	x				
73 Anderson St.	31	41	041(mls)			x		
18 Anna Ave.	45	21	021(s.r.)	x				
1215 Anoka St.	43	5	005(b.p.)			x		
16 Armstrong Ave.	33	46	046(mls)	x				
40 Armstrong Ave.	33	46	046(mls)	x				
184 Armstrong Ave.	33	46	046(mls)					x
186 Armstrong Ave.	33	46	046(mls)					x
221 Armstrong Ave.	33	46	046(b.p.)			x		
262 Armstrong Ave.	33	46	046(mls)	x				
154 Arlington Ave.	22	39	039(mls)			x		
156 Arlington Ave.	22	39	039(mls)					x
168 Arlington Ave.	22	39	039(mls)	x				
209-211 Arlington Ave.	22	39	039(mls)		x			
257 Arlington Ave.	22	39	039(mls)	x				
263 Arlington Ave.	22	39	039(mls)	x				
265 Arlington Ave.	22	39	039(mls)	x				
270 Arlington Ave.	22	39	039(mls)	x				
404 Arlington Ave.	30	42	042(mls)	x				
10 Arthur St.	31	41	041(mls)					x
21 Arthur St.	31	41	041(mls)	x				
136 Arthur St.	31	41	041(mls)	x				
144 Arthur St.	31	41	041(mls)	x				
145 Arthur St.	31	41	041(b.p.)		x			
190 Arthur St.	30	42	042(mls)		x			
317 Athlone Ave.	21	45	045(b.p.)			x		
357 Athlone Ave.	38	33	033.01(mls)			x		
452 Athlone Ave.	38	33	033.01(mls)	x				
195 Augusta Ave.	13	52	052(mls)	x				
301 Avondale Ave.	38	33	033.01(s.r.)	x				
306 Avondale Ave.	38	33	033.01(b.p.)			x		

ADDRESS	CENSUS TRACTS 1961	1971	1981	DATE OF CONVERSION PRIOR TO 1961	1961 TO 1970	1971 TO 1980	1981 TO 1984	
46 Aylmer Ave.	9	17	017(mls)		x			
52 Aylmer Ave.	9	17	017(mls)		x			
137 Aylmer Ave	9	17	017(b.p.)			x		
148 Aylmer Ave.	9	17	017(b.p.)			x		
2108 Belharrie Ave.			010(s.r.)		x			
9 Balsam St.	30	42	042(mls)	x				
139 Balsam St.	30	42	042(mls)					x
142 Balsam St.	30	42	042(mls)	x				
1546 Baseline Rd.	46	23	023(mls)					in-law
2411 Baseline Rd.	40	26	026(mls)					in-law
405 Bay St.	21	40	040(mls)		x			
507 Bay St.	22	39	039(mls)					x
513 Bay St.	22	39	039(mls)		x			
544 Bay St.	22	39	039(mls)		x			
546 Bay St.	22	39	039(mls)		x			
64 Bayswater Ave.	34	43	043(s.r.)	x				
138 Bayswater Ave.	34	43	043(mls)	x				
148 Bayswater Ave.	34	43	043(b.p.)					x
152 Bayswater Ave.	34	43	043(b.p.)		x			
114 & 114 1/2 Bayview Rd.	33	46	046(mls)	x				
162 Beech St.	29	35	035(b.p.)		x			
113 Beechwood Ave.	4	57	057(mls)	x				
1986 Bel-Air Dr.	46	24	024(mls)					in-law
107 Bell St. N.	30	42	042(mls)			o		
130 Bell St. N.	30	42	042(mls)		x			
133 Bell St. N.	30	42	042(mls)	x				
184 Bell St. N.	30	42	042(mls)					x
240 Bell St. N.	30	42	042(mls)	x				
16 Bellwood Ave.	10	16	016(mls)	x				
87 Bellwood Ave.	10	16	016(mls)	x				
30 Belmont Ave.	10	16	016(s.r.)	x				
172 Belmont Ave.	10	16	016(s.r.)	x				
375 Berkley Ave.	37	45	045(mls)	x				
312 Besserer St.	15	50	050(mls)			x		
459 Besserer St.	17	53	053(mls)	x				
461 Besserer St.	13	52	052(mls)					x
202 Billings Ave.	6	6	006(s.r.)	x				
2176 Bingham St.	6	8	008(mls)					in-law
167 Bolton St.	19	55	055(s.r.)	x				
847 Boyd Ave.	47	25	025(b.p.)		x			
103 Breezehill Ave.	34	43	043(s.r.)		x			
540-542 Brierwood Ave.	38	33	033.02(mls)	x				

ADDRESS	CENSUS TRACTS 1961	1971	1981	DATE OF CONVERSION PRIOR TO 1961	1961 TO 1970	1971 TO 1980	1981 TO 1984	
136 Brighton Ave.	10	16	016(mls)	x				
136 Broadway Ave.	28	18	018(s.r.)	x				
1874 Bromley Rd.	39	32	032.01(s.r.)				x	
1942 Bromley Rd.	39	32	032.01(s.r.)				x	
332 Bronson Ave.	31	41	041(mls)				x	
396-396A Bronson Ave.	31	41	041(mls)			x		
1071 Bronson Place.	9	17	017(mls)					in-law
1117 Bronson Place	9	17	017(b.p.)		x			
560 Brunel St.	1	62	062.02(s.r.)				x	
76 Bruyere St.	19	55	055(s.r.)	x				
114 Bruyere St.	19	55	055(s.r.)	x				
161 Buell St.	38	33	033.02(s.r.)	x				
20 Burnside Ave.	33	46	046(mls)	x				
50 Byron Ave.	36	44	044(b.p.)		x			
94 Byron Ave.	36	44	044(b.p.)		x			
450 Byron Ave	38	33	033.01(mls)	x				
462 Byron Ave.	38	33	033.01(mls)	x				
474 Byron Ave.	38	33	033.01(b.p.)		x			
534 Byron Ave.	38	33	033.01(b.p.)		x			
450 Byron Place	50	29	029(s.r.)	x				
1421 Caldwell Ave.	46	22	022(s.r.)				x	
1217 Cameo Dr.	46	23	023(s.r.)		x			
777 Canterbury Ave.	6	8	008(mls)					in-law
31 Cambridge St. N.	31	41	041(s.r.)	x				
89 Cambridge St. N.	31	41	041(mls)	x				
97 Cambridge St. N.	31	41	041(mls)				x	
120 Cambridge St. N.	31	41	041(s.r.)	x				
164-166 Cambridge St. N.	31	41	041(mls)		x			
208 Cambridge St. N.	31	41	041(s.r.)	x				
238 Cambridge St. N.	30	42	042(mls)		x			
240 Cambridge St. N.	30	42	042(mls)	x				
265 Cambridge St. N.	30	42	042(mls)				x	
365 Cambridge St. N.	30	42	042(mls)	x				
446 Cambridge St. S.	29	35	035(s.r.)	x				
487 Cambridge St. S.	29	35	035(s.r.)		x			
520 Cambridge St. S.	29	35	035(mls)	x				
100 Cameron Ave.	9	17	017(s.r.)	x				
2409 Carleson Ave	44	3	003 (b.p.)			x		
89 Carruthers Ave.	33	46	046(s.r.)			x		
98 Carruthers Ave.	33	46	046(mls)	x				
99 Carruthers Ave.	33	46	046(mls)		x			
100 Carruthers Ave.	33	46	046(mls)	x				

ADDRESS	CENSUS TRACTS 1961	1971	1981	DATE OF CONVERSION PRIOR TO 1961	1961 TO 1970	1971 TO 1980	1981 TO 1984	
137 Carruthers Ave.	33	46	046(mls)	x				
185 Carruthers Ave.	33	46	046(mls)	x				
209 Carruthers Ave.	33	46	046(mls)	x				
225 Carruthers Ave.	33	46	046(mls)	x				
229 Carruthers Ave.	33	46	046(mls)	x				
114 Cartier Ave.	24	37	037(mls)			x		
120 Cartier St.	24	37	037(b.p.)			x		
11 Cathcart Sq.	18	56	056(a.r.)	x				
13 Cathcart Sq.	18	56	056(a.r.)	x				
193 Cathcart St.	18	56	056(b.p.)			x		
246 Cathcart St.	18	56	056(b.p.)		x			
445 Catherine St.	22	39	039(mls)	x				
457 Catherine St.	22	39	039(mls)			x		
631 Centre St.	2	61	061(mls)		x			
40 Champagne St. S.	29	35	035(a.r.)	x				
339 Chapel St.	13	52	052(mls)				x	
521 Chapel St.	14	51	051(mls)	x				
658 Chapel St.	14	51	051(mls)	x				
678 Chapel St.	14	51	051(mls)				x	
682 Church St.	2	61	061(mls)	x				
694 Church St.	2	61	061(a.r.)			x		
602 Churchill Ave.	38	33	033.01(b.p.)			x		
191 Clare St.	38	33	033.02(mls)	x				
277 Clarence St.	18	56	056(mls)	x				
48 Clarendon Ave.	36	44	044(mls)	x				
126 Clarendon Ave.	36	44	044(mls)	x				
160 Clarendon Ave.	35	34	034(b.p.)		x			
7 Clarey St.	27	18	018(mls)	x				
1561 Clover St.	43	5	005(mls)					basement apt.
561 Cole Ave.	38	33	033.01(mls)				x	
230 Columbus St.	5	13	013(mls)	x				
243 Columbus St.	5	13	013(mls)	x				
251 Columbus St.	5	13	013(mls)	x				
267 Columbus St.	5	13	013(mls)	x				
304-306 Columbus St.	5	13	013(mls)	x				
204 Compton Ave.	48	31	031(mls)	x				
191 Cooper St.	25	49	049(b.p.)		x			
496 Cooper St.	21	40	040(mls)	x				
674 Cooper St.	21	40	040(mls)		x			
67 Crichton St.	3	58	058(b.p.)				x	
105-107 Crichton St.	3	58	058(b.p.)				x	
135 Crichton St.	3	58	058(mls)		x			
308 Crichton St.	4	57	057(mls)	x				
260 Currell Ave.	38	33	033.01(mls)		x			

ADDRESS	CENSUS TRACTS 1961	1971	1981	DATE OF CONVERSION PRIOR TO 1961	1961 TO 1970	1971 TO 1980	1981 TO 1984	
225-227 Daly Ave.	14	51	051(b.p.)		x			
412 Daly Ave.	17	53	053(b.p.)				x	
28 Des Jardins	17	53	053(mix)	x				
268 Donald St.	5	13	013(mix)	x				
282 Donald St.	5	13	013(b.p.)		x			
639 Donat St.	2	61	061(b.p.)		x			
1188-1190 Dorchester Ave.	45	21	021(mix)	x				
18 Douglas St.	4	57	057(mix)	x				
29 Douglas St.	4	57	057(mix)		x			
31 Douglas St.	4	57	057(mix)	x				
1301 Dowler Ave.	43	5	005(mix)					in-law
122 Drummond St.	21	15	015(b.p.)		x			
324 Duncairn Ave.	38	33	033.01(b.p.)		x			
139 Eccles St.	31	41	041(mix)	x				
425-427 Echo Dr.	11	15	015(b.p.)				x	
459 Echo Dr.	10	16	016(b.p.)		x			
24 Elm St.	31	41	041(mix)		x			
38 Elm St.	31	41	041(mix)					pot. duplex
78 Elm St.	31	41	041(mix)	x				
84 Elm St.	31	41	041(mix)	x				
28 Euclid Ave	9	17	017(b.p.)			x		
972 Eva St.	5	13	013(mix)				x	
66 Evelyn Ave	11	15	015(b.p)				x	
14 Fairbairn Ave.	10	16	016(mix)		x			
36 Fairbairn Ave.	10	16	016(mix)				x	
39 Fairmount Ave.	34	43	043(mix)				x	
63 Fairmont Ave.	34	43	043(mix)				x	
72 Fairmont Ave.	34	43	043(mix)				x	
84 Fairmount Ave.	34	43	043(mix)				x	
45 Fifth Ave.	27	18	018(mix)		x			
63 Fifth Ave.	27	18	018(mix)			x		
213 Fifth Ave.	28	19	019(mix)				x	
225 Fifth Ave.	28	19	019(b.p.)			x		
246-252 Fifth Ave.	28	19	019(b.p.)				x	
350 Fifth Ave.	28	19	019(mix)			x		rooming
64 First Ave.	27	18	018(mix)				x	
123 First Ave.	27	18	018(mix)				x	
164 First Ave.	27	18	018(mix)		x			
320 First Ave.	28	19	019(mix)	x				

ADDRESS	CENSUS TRACTS 1961	1971	1981	DATE OF CONVERSION PRIOR TO 1961	1961 TO 1970	1971 TO 1980	1981 TO 1984	
334 First Ave.	28	19	019(mls)	x				
974 Fisher Ave.	45	21	021(b.p.)		x			
982 Fisher Ave.	45	21	021(mls)	x				
1006-1008 Fisher Ave.	45	21	021(mls)		x			
1611 Fisher Ave.	8	20	020.02(b.p.)			x		
72 Flora St.	23	38	038(mls)	x				
116 Flora St.	22	39	039(mls)		x			rooming
132 Flora St.	22	39	039(mls)			x		
147 Flora St.	22	39	039(mls)		x			
161 Flora St.	22	39	039(mls)	x				
212 Flora St.	22	39	039(mls)		x			
214 Flora St.	22	39	039(mls)					
256 Flora St.	22	39	039(mls)	x				
277 Flora St.	22	39	039(s.r.)			x		
314 Flora St.	22	39	039(b.p.)			x		
308 Flora St.	22	39	039(mls)				x	
428 Flora St.	22	39	039(mls)					
46 Florence St.	23	38	038(mls)	x				
93 Florence St	22	39	039(b.p.)			x		
95-99 Florence St.	22	39	039(b.p.)		x			
215 Florence St.	22	39	039(mls))		x			
50 Fourth Ave.	27	18	018(b.p.)			x		
51 Fourth Ave.	27	18	018(mls)		x			
56 Fourth Ave.	27	18	018(s.r.)	x				
88 Forward Ave.	33	46	046(mls)			x		
94 Forward Ave.	33	46	046(mls)	x				
70 Frank St.	25	49	049(s.r.)		x			
163 Frank St.	24	37	037(mls)	x				
242 Frank St.	24	37	037(mls)		x			
352 Frank St.	23	38	038(s.r.)				x	
80 Fulton Ave.	9	17	017(mls)				x	
621 Gardendale Rd.	2	61	061(b.p)			x		
4 Garland St.	34	43	043(mls)	x				
109 General Ave.	45	21	021(mls)					in-law
330 Gilmour St.	21	40	040(mls)					
396 Gilmour St.	21	40	040(mls)					
510 Gilmour St.	21	40	040(mls)	x				
511 Gilmour St.	21	40	040(mls)	x				
558 Gilmour St.	21	40	040(mls)		x			
590 Gilmour St.	21	40	040(mls)		x			

ADDRESS	CENSUS TRACTS 1961	1971	1981	DATE OF CONVERSION PRIOR TO 1961	1961 TO 1970	1971 TO 1980	1981 TO 1984	
593 Gilmour St.	21	40	040(mls)					
638 Gilmour St.	21	40	040(mls)	x				
653 Gilmour St.	21	40	040(mls)		x			
176 Gladstone Ave.	24	37	037(b.p.)			x		
230 Gladstone Ave.	24	37	037(mls)	x				
616 Gladstone Ave.	22	39	039(mls)		x			
628 Gladstone Ave.	22	39	039(mls)		x			
1073-1075 Gladstone Ave.	34	43	043(mls)	x				
1190 Gladstone Ave.	34	43	043(mls)	x				
80-82 Glebe Ave.	26	36	036(mls)	x				Carling 74
37 Glen Ave.	9	17	017(mls)	x				
168 Glenora Ave.	11	15	015(mls)	x				
68 Glynn Ave.	5	13	013(mls)		x			
147 Glynn Ave.	5	13	013(mls)	x				
19 Graham St.	11	15	015(mls)		x			
8 Grenville Ave.	36	44	044(mls)	x				
39 Grove Ave.	9	17	017(s.r.)	x				
43 Grove Ave.	9	17	017(mls)	x				
166 Guigues St.	16	58	058(mls)	x				
267-269 Guigues St.	19	55	055(mls)	x				
543 Guy St	2	61	061(s.r.)	x				
563 Guy St.	2	61	061(s.r.)	x				
141 Hamilton Ave.	34	43	043(mls)				x	
207 Harcourt Ave.	48	31	031(mls)					pot. in-law
496 Hartleigh Ave.	48	31	031(mls)				x	
186 Hawthorne Ave.	11	15	015(mls)	x				
159 Henderson St.	14	51	051(mls)				x	
1253 Heron Rd.	43	5	005(mls)				x	
2698 Hickson Ave.	40	27	027(mls)					pot. in-law
15 Hilda St.	33	46	046(mls)		x			
469 Hilson Ave.	38	33	033.01(mls)		x			
190 Hinchey Ave.	33	46	046(mls)	x				
201 Hinchey Ave.	33	46	046(mls)		x			
278 Hinchey Ave.	33	46	046(mls)		x			
295 Hinchey Ave.	33	46	046(mls)	x				
81 Hinton Ave N.	34	43	043(mls)	x				
88 Hinton Ave. N.	34	43	043(s.r.)	x				
96 Hinton Ave. N.	34	43	043(b.p.)			x		
130 Hinton Ave. N.	34	43	043(mls)	x				
149 Hinton Ave. N.	34	43	043(s.r)	x				

ADDRESS	CENSUS TRACTS 1961	1971	1981	DATE OF CONVERSION PRIOR TO 1961	1961 TO 1970	1971 TO 1980	1981 TO 1984	
166 Hinton Ave. N.	34	43	043(mls)	x				
412 Hinton Ave. S.	35	34	034(mls)	x				
455 Holland Ave.	37	45	045(b.p.)		x			
107 Holmwood Ave.	27	18	018(mls)	x				
181 Holmwood Ave.	27	18	018(mls)	x				
211 Holmwood Ave	28	19	019(b.p.)			x		
263 Holmwood Ave.	28	19	019(mls)					
41 Hopewell Ave.	9	17	017(b.p.)		x			
100 Hopewell Ave.	9	17	017(mls)					
155 Hopewell Ave	9	17	017(b.p.)		x			
176 Hopewell Ave.	9	17	017(mls)	x				
114 Huron Ave.	37	45	045(mls)		x			
1 Iona Ave.	36	44	044(mls)	x				
51 Irving Ave.	34	43	043(mls)	x				
90 Irving Ave.	34	43	043(mls)	x				
120 Irving Ave.	34	43	043(mls)	x				
130 Irving Ave.	34	43	043(mls)	x				
132 Irving Ave.	34	43	034(mls)		x			
176 Irving Ave.	34	43	043(mls)	x				
404 Island Park Drive	38	33	033.02(b.p.)			x		
87 James St.	21	40	040(mls)	x				
96 James St.	21	40	040(mls)			x		
140 James St.	22	39	039(mls)				x	
184 James St.	22	39	039(mls)				x	
191 James St.	21	40	040(mls)				x	
206 James St.	21	40	040(mls)			x		
212 James St.	21	40	040(mls)	x				
297 James St.	21	40	040(mls)	x				
325 James St.	21	40	040(mls)				x	
336 James St.	21	40	041(b.p.)			x		
49 Kempster Ave.	50	29	029(mls)					pot. in-law
388-390 Kent St.						x		
505 Kent St.	22	39	039(mls)		x			
507 Kent St.	22	39	039(mls)	x				
1777 Kerr Ave	47	17	017(b.p.)		x			
2335 Kildonan Ave.	47	25	025(mls)					in-law

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15 Kinnear St.	35	34	034(b.p.)			x		
598 Kirkwood Ave.	38	33	033.02(b.p.)		x			
223 Knox St.	42	11	011.01(mls)	x				
12 Ladouceur Ave.	33	46	046(mls)	x				
25 Ladouceur Ave.	33	46	046(mls)	x				
34 Ladouceur Ave.	33	46	046(mls)	x				
42 Ladouceur Ave.	33	46	046(mls)		x			in-law
2142 Lambeth Walk	40	26	026(mls)			x		
331 Lanark Ave.	37	45	045(b.p.)			x		
19 Larch Ave.	30	42	042(b.p.)			x		rooming
286 Laurier Ave. E.	14	51	051(mls)			x		
94 LeBreton St.	30	42	042(b.p.)					
125 LeBreton St.	30	42	042(mls)	x				
40 Lees Ave.	11	15	015(mls)				x	
52 Lees Ave.	11	15	015(mls)		x			
63 Lees Ave.	11	15	015(a.r.)	x				
103 Lees Ave	11	15	015(b.p.)			x		
115 Lees Ave.	11	15	015(b.p.)			x		
297 Lincoln Ave.	38	33	033.01(b.p.)		x			
475 Lisgar St.	21	40	040(mls)	x				
547 Lisgar St.	21	40	040(a.r.)	x				
550 Lisgar St.	21	40	040(mls)	x				
15 Louise St.	30	42	042(b.p.)				x	
27 Louise St.	30	42	042(mls)	x				
185 Louise St.	30	42	042(mls)	x				
188 Louise St.	30	42	042(mls)		x			
13 Lowery St.	33	46	046(mls)	x				
26 Lowery St.	33	46	046(mls)	x				pot. duplex
27 Lowery St.	33	46	046(mls)					
291 Lyon St.	21	40	040(mls)	x				
396 Lyon St.	21	40	040(mls)	x				
424 Lyon St.	22	39	039(mls)				x	
502 Lyon St.	22	39	039(mls)		x			
521 Lyon St.	22	39	039(mls)				x	
63 Maclaren St.	25	49	049(b.p.)			x		
649 Maclaren St.	21	40	040(mls)		x			
248 Main St.	11	15	015(b.p.)			x		
46 Marlborough Ave.	13	52	052(b.p.)		x			

ADDRESS	CENSUS TRACTS 1961	1971	1981	DATE OF CONVERSION PRIOR TO 1961	1961 TO 1970	1971 TO 1980	1981 TO 1984	
50 Marlborough Ave.	13	52	052(b.p)		x			
71 Marlborough Ave.	13	52	052(mls)	x				
1386 Mayview Ave.	46	22	022(mls)				x	
3016 McCarthy Rd.	44	3	003(mls)					in-law
142 McGillvary Ave.	11	15	015(mls)				x	
55 McLeod St.	25	49	049(mls)			x		
144 McLeod St.	24	37	037(b.p.)				x	
393 McLeod St.	23	38	038(mls)				x	
408 McLeod St.	23	38	038(mls)	x				
539 McLeod St.	22	39	039(b.p.)			x		
543 McLeod St.	22	39	039(mls)		x			
550 McLeod St.	22	39	039(mls)	x				
561 McLeod St.	22	39	039(mls)				x	
567 McLeod St.	22	39	039(b.p.)		x			
12 Melrose Ave.	34	43	043(mls)			x		
73-75 Melrose Ave.	34	43	043(mls)	x				
101-103 Melrose Ave.	34	43	043(mls)	x				
114 Melrose Ave.	34	43	043(mls)				x	
1185 Merivale Rd.	45	21	021(mls)				x	
98 Merton Ave.	33	46	046(mls)					pot. duplex
457 Metcalfe St.	26	36	036(b.p.)				x	
2242 Midway Ave.	48	31	031(mls)					pot. in-law
793 Montreal Rd.	1	62	062.02(mls)				x	
566 Mutual St.	2	61	061(b.p.)		x			
283 Nelson St.	14	51	051(s.r.)	x				
430 Nelson St.	13	52	052(mls)		x			
270 Nepean St.	21	40	040(s.r.)	x				
330 Nepean St.	21	40	040(mls)			x		
641 Norands Ave.	2	61	061(b.p.)		x			
156-158 Northwestern Ave.	37	45	045(b.p.)			x		
233 Northwestern Ave.	37	45	045(mls)				x	
857 Norton Ave.	49	28	028(mls)		x			
18 Oak St.	30	42	042(mls)	x				
20 Oak St.	30	42	042(mls)				x	
402-404 O'Connor St.	23	38	038(mls)	x				
569 O'Connor St.	27	18	018(b.p.)				x	
599 O'Connor St.	27	18	018(mls)				x	

ADDRESS	CENSUS TRACTS 1961	1971	1981	DATE OF CONVERSION PRIOR TO 1961	1961 TO 1970	1971 TO 1980	1981 TO 1984	
655 O'Connor St.	27	18	018(mls)	x				
36-46 Ontario St.	5	13	013(mls)			x		
121 Osgoode St.	14	51	051(mls)				x	
194 Osgoode St.	14	51	051(s.r.)				x	
81 Ossington Ave.	9	17	017(mls)	x				
87 Ossington Ave.	9	17	017(mls)		x			
100 Ossington Ave.	9	17	017(mls)					pot. triplex
2069 A&B Palmer Ave.	6	6	006(s.r.)	x				
101 Parkdale Ave.	33	46	046(mls)	x				
139 Parkdale Ave.	33	46	046(mls)	x				
203 Parkdale Ave.	33	46	046(mls)	x				
274 Parkdale Ave.	37	45	045(mls)		x			in-law
227 Patricia St.	37	45	045(mls)				x	
138 A&B Percy St	21	40	040(b.p.)					
141 Percy St.	21	40	040(mls)	x				
148 -148 1/2 Percy St.	21	40	040(mls)	x				
309 Picton Ave.	37	45	045(b.p)		x			
52 Pinehurst Ave.	33	46	046(mls)	x				
72 Pinehurst Ave.	33	46	046(mls)	x				
17 Pinhey St.	33	46	046(mls)			x		
46 Pinhey St.	33	46	046(mls)	x				
63 Poplar St.	30	42	042(mls)	x				
196 Powell Ave.	26	36	036(mls)	x			x	
224 Powell Ave.	26	36	036(mls)					
235 Powell Ave.	26	36	036(mls)	x				
63 Preston St.	31	41	041(mls)	x				
67 Preston St.	31	41	041(mls)	x				in-law
78 Pretoria St.	26	36	036(mls)					
124 Pretoria St.	26	36	036(mls)					pot. in-law
167 Prince Albert St.	5	13	013(mls)		x			
2715 Priscilla St.	50	30	030(mls)					
443 Queen St.						x	x	
312 Queen Elizabeth Dr.	27	18	018(mls)				x	
380-382 Queen Elizabeth Dr.	27	18	018(b.p.)			x		
128 Queen Mary St.	5	13	013(b.p.)					
288 Queen Mary St.	41	12	012(mls)	x		x		
4 Quill St.	5	13	013(b.p.)					

ADDRESS	CENSUS TRACTS 1961	1971	1981	DATE OF CONVERSION PRIOR TO 1961	1961 TO 1970	1971 TO 1980	1981 TO 1984	
86-88 Ralph St.	28	19	019(b.p.)			x		
1435 Raven Ave.	46	22	022(b.p.)			x		
1469 Raven Ave.	46	22	022(b.p.)		x			
415 Ravenhill Ave.	38	33	033.01(b.p.)			x		
406 Richardson Ave.	48	31	031(mle)		x			
22 Rideau Terrace	14	58	058(b.p.)			x		
45 Riverdale Ave.	10	16	016(mle)		x			
75 Rochester St.	31	41	041(mle)	x				
80 Rochester St	31	41	041(b.p.)		x			
110 Rochester St.	31	41	041(mle)	x				
141 Rochester St.	31	41	041(mle)					
150 Rochester St.	31	41	041(mle)	x				
225 Rochester St.	30	42	042(mle)		x			
192 Rodney Cr.	6	6	006(mle)				x	
372 Roosevelt Ave.	38	33	033.01(mle)	x				
373 Roosevelt Ave.	38	33	033.01(mle)		x			
520 Roosevelt Ave.	38	33	033.01(mle)	x				
19 Roseberry Ave.	26	36	036(mle)	x				
78 Rosemount Ave.	34	43	043(mle)	x				
110 Rosemount Ave.	34	43	043(mle)					pot. duplex in-law
869 Rosevlew Ave.	49	28	028(mle)					
12 Ross Ave.	37	45	045(mle)	x				
50 Ross Ave.	37	45	045(mle)		x			
59 Russell Ave.	14	51	051(e.r.)	x				
65 Russell Ave.	14	51	051(b.p.)			x		
93 Russell Ave.	14	51	051(mle)	x				
106 Russell Ave.	14	51	051(mle)		x			
184 Second Ave.	27	18	018(mle)	x				
320 Selby St.	37	45	045(b.p.)		x			
108 Sherbrooke Ave.	34	43	043(e.r.)			x		
1141 Shillington Ave	85	21	021(b.p.)			x		
60 Sairle Ave.	37	45	045(mle)	x				
16 Somerset St. W.	25	49	049(mle)	x				
564 Somerset St. W.	21	40	040(mle)	x				
878 Somerset St. W.	31	41	041(mle)	x				
14 Spadina Ave.	34	43	043(mle)	x				
24 Spadina Ave.	34	43	043(mle)	x				
28 Spadina Ave.	34	43	043(mle)	x				
34 Spadina Ave.	34	43	043(mle)	x				
37 Spadina Ave.	34	43	043(mle)	x				

ADDRESS	CENSUS TRACTS 1961	1971	1981	DATE OF CONVERSION PRIOR TO 1961	1961 TO 1970	1971 TO 1980	1981 TO 1984
60 Spadina Ave.	34	43	043(mls)		x		
82 Spadina Ave.	34	43	043(mls)	x			
84 Spadina Ave.	34	43	043(mls)	x			
105 Spadina Ave.	34	43	043(mls)	x			
111 Spadina Ave.	34	43	043(mls)		x		
115 Spadina Ave.	34	43	043(b.p.)			x	
127 Spadina Ave.	34	43	043(mls)	x			
129 Spadina Ave.	34	43	043(mls)	x			
131 Spadina Ave.	34	43	043(mls)	x			
136 Spadina Ave.	34	43	043(mls)	x			
142 Spadina Ave.	34	43	043(mls)				x
143 Spadina Ave.	34	43	043(mls)		x		
154 Spadina Ave.	34	43	043(b.p.)			x	
157 Spadina Ave.	34	43	043(mls)			x	
109 Springfield Ave.	3	58	058(mls)	x			
27 Spruce St.	31	41	041(mls)		x		
61 Spruce St.	31	41	041(mls)	x			
76 Spruce St.	31	41	041(mls)	x			
81 Spruce St.	31	41	041(mls)			x	
133 Spruce St.	31	41	041(mls)		x		
138 Spruce St.	31	41	041(mls)		x		
222-224 St Andrew St.	18	56	056(mls)	x			
236 St Andrew St.	18	56	056(mls)		x		
16 St Francis St.	34	43	043(mls)		x		
55-57 St Francis St.	34	43	043(mls)	x			
63 St Francis St.	34	43	043(mls)	x			
2121 St. Laurent Blvd.	6	10	010(b.p.)		x		
232 St Patrick St.	16	54	054(mls)	x			
320 St Patrick St.	18	56	056(m.r.)	x			
196 Stanley Ave.	3	58	058(mls)	x			
174 Stewart St.	14	51	051(b.p.)			x	
220 Stewart St.	14	51	051(mls)	x			
286 Stewart St.	13	52	052(mls)	x			
21 Stirling Ave.	33	46	046(mls)	x			
60 Stirling Ave.	33	46	046(mls)	x			
76 Stirling Ave.	33	46	046(mls)	x			
1040 Stormont St.	8	20	020.02(mls)				In-law x
145-147 Strathcona Ave.	26	36	036(b.p.)				x
155 Strathcona Ave.	26	36	036(mls)				
157 Strathcona Ave.	26	36	036(mls)	x			
352 Sunnyside Ave.	9	17	017(mls)				x
384 Sunnyside Ave.	9	17	017(mls)	x			

ADDRESS	CENSUS TRACTS 1961	1971	1981	DATE OF CONVERSION PRIOR TO 1961	1961 TO 1970	1971 TO 1980	1981 TO 1984	
395 Sunnyside Ave.	9	17	017(mls)				x	
48 Sweetland Ave.	14	51	051(b.p.)		x			
51 Sweetland Ave.	14	51	051(mls)	x				
77 Sweetland Ave.	14	51	051(mls)				x	
94-96 Sweetland Ave.	14	51	051(b.p.)				x	
147 Sweetland Ave.	14	51	051(s.r.)	x				
1470 Tedder Ave.	6	6	006(mls)					pot. in-law
24 Third Ave.	27	18	018(b.p.)			x		
73 Third Ave.	27	18	018(b.p.)				x	
85 Third Ave.	27	18	018(mls)	x				
230 Third Ave.	28	19	019(mls)	x				
33 Thorton Ave.	27	18	018(mls)	x				
2594 Traverse Dr.	43	5	005(mls)					in-law
2622 Traverse Dr.	43	5	005(mls)					pot. in-law
315 Tweedsmuir Ave.	38	33	033.02(mls)	x				
357 Tweedsmuir Ave.	37	45	045(b.p.)			x		
473 Tweedsmuir Ave.	38	33	033.02(mls)	x				
480 Tweedsmuir Ave.	38	33	033.01(mls)	x				
482 Tweedsmuir Ave.	38	33	033.01(mls)		x			
5548 Utah St.	43	5	005(mls)					pot. duplex
95 & 95A Vaughan St.	4	57	057(mls)	x				
107 Waverley St.	25	49	049(mls)	x				
121 Waverley St.	25	49	049(b.p.)			x		
129 Waverley St.	25	49	049(mls)		x			
141-143 Waverley St.	25	49	049(mls)	x				
935 Wellington St.	33	46	046(mls)	x				
33 Wendover Ave.	9	17	017(b.p.)		x			
166 Westhaven Cr.	38	33	033.02(mls)		x			
320 Westhill Ave.	38	33	033.01(mls)	x				
183 Wilbrod St.	14	51	051(mls)	x				
326 Wilbrod	14	51	051(b.p.)				x	
27 Willow St.	30	42	042(mls)			x		
82 Willow St.	30	42	042(mls)		x			

ADDRESSS	CENSUS TRACTS 1961	1971	1981	DATE OF CONVERSION PRIOR TO 1961/	1961 TO 1970 /	1971 TO 1980 /	1981 TO 1984
87 & 87 1/2 Willow St.	30	42	042(mle)	x			
19 Wilton Cres.	28	19	019(mle)	x			
51 Wilton Cres.	28	19	019(mle)	x			
338 Winona Ave.	37	45	045(mle)	x			
5 Woodlawn Ave.	27	18	018(mle)	x			
240 Woodroffe Ave.	48	31	031(mle)	x			
1386 Woodward Ave.	46	22	022(mle)	x			

Appendix E

LIST OF ADDRESSES COLLECTED FROM BUILDING PERMITS

LOCATION	DATE	NATURE OF WORK COMPLETED
City of Ottawa	1962	22 single residences altered to duplexes.
482 Tweedsmuir Ave.	Jan. 1964	Alter a 2 1/2 storey single residence to a duplex.
160 Clarendon Ave.	Feb. 1964	Alter a 2 storey single residence to duplex.
50 Byron Ave.	Feb. 1964	Alter a 2 storey single residence to a duplex.
474 Byron Ave.	Apr. 1964	Alter single residence, addition at side into a double residence.
155 Hopewell Ave.	May 1964	Alter a 2 storey semi-detached into a duplex.
94 Byron Ave.	May 1964	Alter a 2 1/2 storey brick single residence into a duplex.
297 Lincoln St.	June 1964	Alter 1 storey and basement to a duplex.
459 Echo Drive	Sept 1964	Alter a 1 1/2 storey dwelling into a 2 dwelling residence.
191 Cooper St.	Jan. 1965	Alter a 2 1/2 storey single residence into a duplex.
246 Cathcart St.	Mar. 1965	Alter a 2 storey one family dwelling into a duplex.
48 Sweetland Ave.	Apr. 1965	Alter 1/2 a double residence into a duplex.
641 Noranda St.	May 1965	Alter a 2 storey single residence and add one storey on the west side.
1117 Bronson Place	June 1965	Alter a one storey single residence into a duplex.

566 Mutual St.	July 1965	Alter a 2 storey single family residence into a duplex.
1777 Kerr Ave.	Aug. 1965	Alter a 2 storey single residence into a duplex.
324 Duncairn Ave.	Dec. 1965	Alter a 2 storey single family dwelling into a duplex.
City of Ottawa	1966	2 permits to alter single family homes into duplexes.
225-227 Daly Ave.	Jan. 1968	Alter a 3 storey to a double unit.
1469 Raven Ave.	Feb. 1968	Add single family residence to existing single residence.
50 Marlborough Ave.	Apr. 1968	Construct kitchen and bathroom on the third floor.
41 Hopewell Ave.	Aug. 1968	Alter 2 storey single residence to a duplex.
46 Marlborough Ave.	Sept. 1968	Interior renovations - single to a duplex.
639 Donat St.	Sept. 1968	Add kitchen to single family residence.
162 Beech St.	Sept. 1968	Convert sinlge residence to a duplex.
282 Donald St.	Feb. 1969	Alter a 2 storey single dwelling.
320 Selby St.	Feb. 1969	Alter a 2 storey single family residence to a double.
152 Bayswater Ave.	Feb. 1969	2 storey single family residence to a duplex.
80 Rochester St.	Mar. 1969	Alter a 2 1/2 storey single residence to duplex.
2121 St Laurent Blvd.	Mar. 1969	Convert a 1 storey single residence to duplex.

143 Spadina Ave.	Apr. 1969	Alter a single to duplex.
534 Byron Ave.	May 1969	Convert a 3 storey single family dwelling to duplex.
95-99 Florance St.	May 1969	Alter 2 single units of a 2 storey 8 unit row into a duplex.
309 Picton Ave.	June 1969	Alter a 2 storey single to a 2 storey double.
974 Fisher Ave.	Sept. 1969	Alter a 1 1/2 storey residence to a duplex.
122 Drummond St.	Nov. 1969	Alter a 2 storey single residence to a duplex.
847 Boyd Ave.	Dec. 1969	Construct a 2 storey addition to make a duplex.
598 Kirkwood Ave.	Mar. 1970	Alter a 2 storey single residence to duplex.
567 Mcleod St.	Apr. 1970	Alter 2 storey single residence to duplex with an addition on the rear.
145 Arthur St.	Sept. 1970	Alter single residence to a duplex.
455 Holland Ave.	Oct. 1970	Alter duplex to a single residence.
33 Wendover Ave.	Oct. 1970	Alter single residence to a duplex.
22 Rideau Terrace	Jan. 1971	Alter a single residence to a duplex.
137 Aylmer Ave.	Mar. 1971	Additional dwelling in the basement of residence.
1611 Fisher Ave.	Mar. 1971	Dwelling unit in basement of residence.
19 Larch Ave.	Apr. 1971	Alter a 2 storey single residence to a duplex.
93 Florence St.	Apr. 1971	Alter a single residence to a duplex.

1435 Raven Ave.	June 1971	Convert single residence into a duplex.
602 Churchill Ave.	Aug. 1971	Alter 2 1/2 storey single dwelling into a duplex.
115 Lees Ave.	Jan. 1972	Convert a 2 storey triplex and commercial to a four plex.
211 Holmwood Ave.	Mar. 1972	Alter single residence to a duplex.
1141 Shillington Ave.	July 1972	Alter a 2 storey single residence to a double.
154 Spadina Ave.	Feb. 1973	Convert a 3 storey residence into a duplex.
156-158 Northwestern	May 1973	Convert a 1 storey single residence into a double.
306 Avondale Ave.	June 1973	Add to a 2 storey single residence a 2-storey addition and convert to a duplex.
317 Athlone Ave.	July 1973	Alter a 2 storey single residence to a duplex.
128 Queen Mary St.	Nov. 1973	Alter a 2 storey single residence to a duplex.
331 Lanark Ave.	April 1974	Convert a 1 storey single residence into a double.
115 Spadina Ave.	May 1974	Convert a single residence into a 2 unit apartment building.
28 Euclid	Aug. 1974	Alter a 2 storey single residence into a duplex.
221 Armstrong Ave.	Sept 1974	Alter a 2 storey single residence to a duplex.
103 Lees Ave.	Dec. 1974	Alter 2 storey residence to a duplex.
15 Kinnear St.	July 1975	Convert bedroom to a Kitchen.
539 Mcleod St.	Dec. 1975	Alter a 3 storey house to a duplex.

404 Island Park Dr.	Oct. 1976	Alter a 2 storey residence by adding 2 bedrooms over the garage and a kitchen at the rear of the garage.
314 Flora	May 1977	Alter a single residence to a duplex.
4 Quill St.	May 1977	Addition of garage and kitchen to a single residence.
443 Queen St.	June 1977	Alter 1/2 a double residence into a duplex.
63 Maclaren St.	June 1977	Alter a 3 storey rooming house to a duplex.
336 James St.	Aug. 1977	Alter a 2 storey single family residence into a duplex.
678 Chapel St.	Nov. 1977	Alter a 2 storey single residence into a duplex.
225 Fifth Ave.	Feb. 1978	Convert rooming house into a duplex.
621 Gardendale Rd.	Feb. 1978	Alter a 1 storey single residence to duplex.
148 Aylmer Ave.	June 1978	Alter a 3 storey single residence to duplex.
1215 Anoka St.	July 1978	Alter 2 storey single residence to a duplex.
120 Cartier St.	Sept. 1978	Alter a semi-detached dwelling into a duplex with apartment on the ground floor.
86-88 Ralph St.	Nov. 1978	Alter one side of an existing double residence into a duplex.
415 Ravenhill Ave.	Nov. 1978	Add a second storey addition to form a 2 storey duplex.
388-390 Kent St.	Feb. 1979	Alter a 3 double to a duplex.

50 Fourth Ave.	June 1979	Alter a 3 storey single residence to a duplex.
36-38 Ontario St.	Nov. 1979	Alter a 3 storey duplex to a triplex.
193 Cathcart St.	Nov. 1979	Alter a single family dwelling to a duplex.
248 Main St.	Nov. 1979	Alter a 2 storey single residence to a duplex.
65 Russell Ave.	Nov. 1979	Alter second floor of of a double residence into a duplex.
2409 Carlsen Ave.	Jan. 1980	Construct a 2 storey addition to a 1 storey residence creating a double.
121 Waverley St.	Jan. 1980	Complete renovation of single residence into a duplex.
176 Gladstone Ave.	Feb. 1980	Renovate to a 3 storey duplex.
24 Third Ave.	Feb. 1980	Alter a single residence to a duplex.
357 Tweedsmuir Ave.	Mar. 1980	Alter a 2 storey single residence to a duplex.
96 Hinton Ave.	May 1980	Alter a single residence to living quarters on ground and on the second floor.
174 Stewart St.	May 1980	Add a new single residence to a existing single residence.
569 O'Connor St.	Sept. 1980	Alter a single residence to a duplex.
City of Ottawa	1981	7 single residences converted to duplexes.
15 Louise St.	Oct. 1982	Renovate single residence to a duplex.

352 Frank St.	Dec. 1982	Alter a 3 storey single residence to a duplex.
67 Crichton St.	Dec. 1982	Alter a 2 storey Commercial apt. building to a duplex.
148 Bayswater St.	Dec. 1982	Alter a 2 1/2 storey single residence to a duplex.
380-382 Driveway	Jan. 1983	Convert a 2 storey single residence to a semi-detached dwelling.
326 Wilbrod St.	Mar. 1983	Alter a 3 storey single residence to a triplex.
66 Evelyn Ave.	Mar. 1983	Alter a 2 storey single residence to a duplex.
73 Third Ave.	April 1983	Alter 1/2 a double residence to a duplex.
105-107 Crichton Ave.	May 1983	Convert to a double residence.
425-427 Echo Dr.	May 1983	Convert a 3 storey single residence into a duplex.
412 Daly Ave.	Aug. 1983	Alter a 3 storey single residence into a duplex.
145-147 Strathcona Ave.	Aug. 1983	Convert a 2 storey single residence to a double.
457 Metcalfe St.	April 1984	Alter a 2 storey single residence into a duplex.
94-96 Sweetland Ave.	June 1984	Convert rooming house to duplex.
246-252 Fifth Ave.	June 1984	Alter a single residence to a 3 row unit.
138 A&B Percy St.	June 1984	Add to a single residence to create a double.
57 First Ave.	July 1984	Convert existing 2 1/2 storey dwelling into a double.
144 Mcleod St.	July 1984	Add kitchen to a single family dwelling.

LIST OF MULTIPLE LISTING SERVICE SAMPLE ADDRESSES

Address	Type of Conversion	Size sq.ft. (approx.)	Unit Mix	Value(year)	Age	MLS No.	Zoning
12 Adelaide St.	SFD to Triplex	unknown		$136,000(84)	old	71533	R4-x
16 " "	SFD to Duplex	"		$94,000(84)	"	85662	"
18 " "	"	"		$89,000(84)	"	80696	Res
193 Allison Ave.	SFD with in-law	2016	in-law	$107,000(83)	25	59006	R4-x
54 Anderson St.		1112	unknown	$86,000(83)	"	62178	R11-x(1.0)
57 " "	SFD to duplex	1124	"	$70,000(83)	"	64061	"
72 " "	"	unknown	1-bach 2-1bed	$85,000(84)	70	84177	Res
40 Armstrong St.	SFD to triplex	844	2-2bed	$75,000(84)	old	81593	Res/Com
262 " "	SFD to duplex	unknown	3-2bed	$80,000(84)	"	71534	R5
168 Arlington Ave.	SFD to triplex	"	"	$60,000(83)	"	58292	"
257 " "	"	"	1-1 1-3bed	$98,000(83)	"	64408	R11-x(1.0)
265 " "		"	2-2bed	$77,000(83)	"	65435	Res
404 " "		"	unknown	$66,700(84)	"	68715	R11-x(1.0)
21 Arthur St	SFD to duplex	804	1-1 1-3bed	$132,000(84)	70	79580	R4-x
136 " "	"	1528	2-2bed	$165,000(84)	old	73592	R5-x
144 " "	Double to duplex	1855	1-3 1-2bed	$95,000(84)	"	82655	Res
432 Athlone Ave.	SFD to duplex	1225	unknown	$83,000(83)	"	52783	M2-x(1.0)
195 Auguste Ave.	"	1526	1-1,2-2bed	$91,000(84)	60	68947	Res
9 Balsam Ave.	"	unknown	2-1bed	$36,000(83)	"	54115	"
102 " "	"	unknown	unknown	$115,000(84)	"	72427	CA-1
158 Bayswater	SFD to triplex	1030	2-2bed	$69,000(83)	"	56809	Res
114 & 114 1/2 Bayview Rd.	"	1081	"	$66,000(83)	"	63550	R12-x(1.5)
113 Beechwood Ave.	"	unknown		$117,000(84)	"	83940	R4
133 Bell St. N.	"	1061		$164,000(83)	"	65253	Res
240 " "	"	1544	1-2 1-3bed				
16 Bellwood Ave.	"						
87 " "	"						
375 Berkley Ave.		unknown	3-2bed	$130,000(84)	"	76218	HR-1
459 Besserer St.	SFD to triplex						
540-542 Brierwood	SFD to duplex	2126	1-1 1-2bed	$172,000(83)	"	65784	R3
96 Brighton Ave.	"	1000	"	$103,000(83)	"	63402	Res
136 " "	SFD to triplex	unknown	2-1 1-2bed	$157,000(83)	"	55912	R3
20 Burnside Ave.	SFD to duplex	1103	2-2bed	$140,000(84)	"	72853	Res
450 Byron Ave.	SFD to triplex	unknown	1-1,2-2bed	$85,500(83)	"	2-18982	R4
462 " "	"	unknown	2-2bed	$78,000(83)	"	56203	R11-x(1.0)
89 Cambridge St. N.	SFD to duplex	1439	1-2 1-3bed	$62,500(83)	"	66035	"
240 " "	"	1340	1-2 1-3bed	$70,500(83)	"	68080	R12-x(1.5)
365 "	"	unknown	5-1bed	$90,000(83)	70	58474	Res
520 "	SFD to fiveplex						

Address	Type of Conversion	Size	Unit Mix	Value(yr)	Age	MLS	Zoning
98 Carruthers Ave.	SFD to triplex	"	1-1 2-2bed	$37,000(83)	"	51273	R6-x(1.5)
100 " "	SFD to duplex	1077	2-1bed	$37,000(83)	41	51239	"
137 " "	SFD to triplex	unknown	2-1bed 1bach	$57,000(83)	50	61003	Res
209 " "	SFD to duplex	1007	2-1bed	$46,000(83)	"	50881	R4
225 " "	"	1088	1-1,1-3bed	$70,000(84)	"	70206	R3
229 " "	"	970	1-1,1-2bed	$72,000(83)	"	58603	Res
445 Catherine St.	"	unknown	2-1,1-2bed	$140,000(83)	"	64819	R5x(1.0)
521 Chapel	"	1417	unknown	$98,500(83)	37	72173	Res
658 "	SFD to triplex	1756	"	$112,000(84)	35	79742	R4
682 "	SFD to duplex	1350	1-1,1-2bed	$127,000(83)	old	81440	Res
191 Clare	"	1657	unknown	$122,000(83)	37	55149	"
277 Clarence	"	1826	2-2bed	$125,000(83)	old	63079	R4-x
48 Clarendon	"	1439	SFD with apt	$139,000(83)	"	54514	R4
126 "	"	1686	unknown	$106,300(84)	35	74201	"
? Clarey	SFD with apt.	unknown	1-1,1-2,1-3bed	$57,700(83)	old	54228	Res
230 Columbus	SFD to duplex	"	3-2bed	$114,000(83)	32	64202	"
243 "	SFD to triplex	"	2-2bed	$95,000(83)	old	57545	"
251 "	"	"	1-1,1-2,1-3bed	$94,000(84)	35	73157	"
267 "	SFD to duplex	"	3-2bed	$120,000(83)	old	63133	R4-x
304-6 "	SFD to triplex	"	3-1bed	$198,000(83)	"	-----	HR1
204 Compton	"	"	1bach,2-2bed	$77,000(83)	"	64024	Res
496 Cooper	"	1658	1-1,1-3bed	$124,000(83)	65	59656	"
308 Crichton	"	unknown	1-1,1-2,1-3bed	$72,000(83)	30	58533	R5-x(0.5)
28 Dejardins	SFD to duplex	1420	1-2,1-3bed	$90,000(83)	35	66052	Res
268 Donald	SFD to triplex	1030	1bach,1-2bed	$51,000(83)	old	65822	"
1188-90 Dorchester	SFD to duplex	unknown	2-2bed	$83,000(84)	"	75227	"
18 Douglas	"	1536	2-3bed	$114,000(84)	50	84645	"
31 "	"	1023	2-2bed	$67,000(84)	50	84645	"
139 Eccles	"	unknown	2-1.1-2bed	$93,000(84)	old	72114	R11-x(1.0)
78 Elm	Row to Duplex	2360	1-2,1-3bed	$153,000(83)	"	51387	R4-x
84 "	SFD to duplex	1916	2-3bed	$200,000(84)	"	79209	Res
320 First	"	unknown	1-1,2-2bed	$149,800(83)	"	77451	R3
338 "	"	unknown	1-1,1-2,1-3bed	$100,000(84)	"	70893	R5-x
982 Fisher	SFD to triplex	"	"	$151,000(84)	"	74138	Res
72 Flora	SFD to triplex	"	2-1,1-2bed	$145,000(83)	"	64212	"
161 "	"	1133	2-2bed	$113,000(84)	"	70895	R5-x(2.0)
256 "	"	1332	2-2bed	$122,000(84)	"	83181	R7(2.5)
46 Florence	SFD to duplex	1460	1bach,1-3bed	$105,000(83)	"	53456	R5-x
94 Forward	SFD to duplex	unknown	1-1,2-2bed	$81,000(84)	"	65738	R5-x(1.0)
163 Frank	"						
4 Garland	SFD to triplex						

Address	Type of Conversion	Size	Unit Mix	Value(yr)	Age	MLS	Zoning
510 Gilmour	SFD to duplex	1680	1-1,1-4bed	$154,000(84)	85	73528	R6(2.0)
511 "	"	unknown	2-1bed	$104,000(84)	80	68128	HR1
558 "							
638 "	SFD to triplex	unknown	1-1,2-3bed	$110,000(83)	old	64559	Res
230 Gladstone	SFD to duplex	1659	2-3bed	$92,000(83)	old	59419	R5-x
1073-5 Gladstone	"	962	2-2bed	$90,000(84)	"	72201	R5-x(1.0)
1190 "	"	1060	2-2bed	$99,900(84)	"	84127	Res
80-82 Glebe	SFD to triplex	4178	3-2bed	$330,000(83)	"	57745	"
37 Glen	SFD to duplex	1209	2-2bed	$90,000(83)	"	53190	"
168 Glenora	"	1143	"	$110,000(83)	"	65760	"
147 Glynn	"	967	2-1bed	$65,500(83)	"	58683	"
8 Granville	"	2191	2-2bed	$144,000(84)	"	69826	R4-x
43 Grove	"	unknown	"	$106,000(83)	"	53816	HR1
166 Guigues	"	"	unknown	$90,000	"	------	"
267-9 "	"	"	1-1,2-2bed	$148,000(84)	"	73261	R4
186 Hawthorne	SFD to triplex	957	2-2bed	$68,000(84)	"	78873	Res
190 Hinchey	SFD to duplex	1244	1-1,1-3bed	$79,000(84)	"	84267	"
295 "	"	875	2-1bed	$72,500(84)	"	70127	C1-a(3.0)
81 Hinton	"	1408	1-1,1-2bed	$107,000(84)	"	81180	R5-x(1.0)
130 Hinton	"	1262	1-1,1-3bed	$78,500(83)	"	62863	R5
166 "	"	1944	2-1bed	$125,000(83)	43	65926	R4
412 "	"	1087	2-2bed	$81,000(83)	old	55407	"
107 Holmwood	"	1609	SFD with apt	$146,500(84)	"	75006	Res
181 "	SFD with apt	unknown	"	$99,500(84)	"	69242	R4
176 Hopewell	"						
1 Ione Lease		"	unknown	$79,000(83)	"	55428	R5-x
51 Irving	SFD to triplex	"	1bach,1-2bed	$38,000(83)	"	63755	Res
90 "	SFD to duplex	unknown	unknown	$144,900(84)	81	70588	R5-x(1.0)
120 Irving	SFD to triplex	1235	1-2,1-3bed	$89,000(84)	old	------	Res
130 "	SFD to duplex	unknown	3-2bed	$55,000(83)	"	51697	"
176 "	SFD to triplex	"	2-1,1-2bed	$155,000(84)	"	84755	Res
87 James	"	1101	unknown	$112,000(84)	"	69700	R5-x
212 "	SFD to duplex	1803	1-3,1-4bed	$172,000(84)	"	84405	R5-x(2.0)
297 "	"	unknown	unknown	$131,000(84)	"	76918	"
507 Kent	"	1209	SFD with apt	$110,000(84)	30	82507	Res
223 Knox	SFD with apt.	unknown	2-1,1-2bed	$73,800(84)	old	72006	"
12 Ladouceur	SFD to triplex	1100	unknown	$72,500(84)	"	70519	R5-x(1.0)
34 "	SFD to duplex	unknown	unknown	$73,000(84)	"	68340	R11-x(2.0)
125 LeBreton	"	"	1-1,1-2bed	$125,000(84)	"	64006	Res
475 Lisgar	SFD to triplex	"	"	$161,500(84)	"	69698	R5-x
550 "	SFD to triplex						

Address	Type of Conversion	Size	Unit Mix	Value(yr)	Age	MLS	Zoning
27 Louise	SFD to duplex	"	1-2,1-3bed	$57,200(83)	"	63122	R12(1.5)
185 "	SFD to triplex	"	1bach,1-1,1-2	$46,500(83)	"	53189	Res
13 Lowery	SFD to duplex	1074	2-2bed	$59,000(84)	"	68715	R11-x(1.0)
26 "	"	1058	unknown	$61,500(84)	"	74550	Res
291 Lyon	SFD to triplex	1250	2-2bed	$95,000	"	85237	R5-x
396 "	"	unknown	1-1,2-2bed	$156,500(84)	"	71060	HR1
71 Marlbourgh	SFD to duplex	1855	2-3bed	$165,000(84)	"	73592	R5-x
408 Mcleod "							
550 "	SFD to duplex	1261	unknown	$85,500(83)	"	61260	Res
73-75 Melrose	"	1300	2-2bed	$83,000(84)	"	70481	"
101-103 "	"	unknown	unknown	$85,000(84)	"	83124	R5
18 Oak	SFD to triplex	unknown	2-1,1-2bed	$82,000(840	"	82974	R11-x
402-4 O'Connor	2 SFD to 2 triplexes	"	3-1,3-2bed	$365,000(84)	"	70015	R5-x(2.0)
656 O'Connor	SFD to triplex	"	1-1,2-2bed	$134,500(84)	"	69236	R4
81 Ossington	"	"	2-1,1-2bed	$139,000(83)	"	68095	R4-x
101 Parkdale	SFD to duplex	1092	1-1,1-3bed	$86,000(84)	"	72679	Res
139 "	"	"	2-1,1-3bed	$69,500(83)	"	54401	R7-x(2.0)
203 Parkdale "							
141 Percy	SFD to duplex	1072	2-2bed	$108,000(84)	"	73503	CA-1(2.0)
148-148 1/2 Percy	"	1000	2-1bed	$125,000(84)	"	80635	R5-x
52 Pinehurst	"	unknown	1-2,1-3bed	$93,000(84)	"	82236	Res
72 "	"	"	unknown	$124,500(84)	40	69780	R5-x(1.0)
46 Pinhey	"	743	"	$39,000(83)	"	54793	Res
63 Poplar "							
196 Powell	SFD to triplex	unknown	2bach,1-2bed	$142,000(83)	"	56236	R4-x
235 "	SFD to duplex	1521	1-1,1-3bed	$145,000(83)	"	55063	Res
63 Preston	Row to duplex	unknown	unknown	$63,000(84)	"	71294	R11-x(1.0)
67 "	"	"	"	"	"	75359	"
288 Queen Mary St.	"	"	1-1,2-2bed	$57,000(83)	"	61225	R5
75 Rochester	Row to duplex	1054	2-1bed	$66,000(84)	"	73553	Res
110 "	SFD to triplex	unknown	1-1,1-2bed	$66,000(83)	"	62963	"
150 "	"	"	1-1,1-2,1-3	$82,000(83)	"	67010	Res
372 Roosevelt	SFD to duplex	"	2-2bed	$84,000(83)	"	52709	"
520 "	"	"	unknown	$117,500(84)	"	72818	"
19 Roseberry	SFD to triplex	"	1bach,1-1,1-2	$147,000(83)	"	67408	R4
78 Rosemount	SFD to duplex	1261	2-3bed	$97,500(84)	"	73122	R5-x(1.0)
12 Ross	"	980	2-2bed	$77,000(83)	"	67723	R4
93 Russell	"	1633	1-1,1-3bed	$146,000(84)	"	75744	R5-x(1.0)
184 Second	SFD to triplex	unknown	1bach,1-1,1-2	$177,500(84)	"	75296	R5
60 Sairle	SFD to duplex	906	1-1,1-2bed	$89,900(84)	"	84557	R4
16 Somerset	SFD to triplex	unknown	2-1,1-2bed	$182,000(83)	"	57059	Res
564 "	SFD to duplex	1155	1-2,1-3bed	$130,000(84)	"	81438	HR1
878 "	"	800	unknown	$77,500(84)	"	84770	Res

Address	Type of Conversion	Size	Unit Mix	Value(yr)	Age	MLS	Zoning
14 Spadina *		unknown	2-1,1-2bed	$115,000(84)	*	76185	R5-x(1.0)
24 "	SFD to triplex	"	unknown	$96,000(84)	*	70858	Res
28 "	SFD to duplex	1215	2-2bed	$87,000(83)	*	53647	"
34 "	"	1039	unknown	$92,000(84)	*	70580	"
37 "	Semi to duplex	unknown	2-2bed	$70,000(84)	*	73200	
82 "	"	"	unknown	$69,000(84)	*	73201	"
84 "	SFD to duplex	1664	"	$82,000(83)	*	51185	R5-x(1.0)
105 "	"	unknown	several	$117,500(83)	*	65281	Res
127-9 *	Double to fourplex	"	1bach,1-1,1-2	$74,000(83)	*	60030	R5
131 "	SFD to triplex	1458	2-2bed	$105,000(84)	*	-----	Res
136 "	SFD to duplex	2400	unknown	$165,350(84)	*	83929	"
109 Springfield	SFD to triplex	unknown	1bach,1-1bed	$72,000(83)	50	53384	R4
61 Spruce	"	"	1-1,1-2bed	$102,000(84)	old	69240	R11-x(1.0)
76 "	"	1318	2-2bed	$100,000(84)	*	81480	Res
222-4 St. Andrew	SFD to duplex	1311	"	$97,000(84)	*	72959	R5-x(1.0)
55-7 St. Francis	"	1247	"	$80,000(83)	*	54725	R5
63 "	"	unknown	5-1bed	$112,500(83)	*	2-8132A	Res
232 St. Patrick	SFD to fiveplex	"	1-1,1-2bed	$164,000(84)	*	70663	"
196 Stanley	SFD to duplex	"	1bach,1-1,1-2	$178,000(83)	*	91549	r5-x(1.0)
220 Stewart	SFD to fiveplex	"	1bach,1-1,1-2	$265,000(83)	*	63939	HR1
286 "	SFD to triplex	"	1-2,1-3bed	$55,000(83)	*	64597	R5-x(1.0)
21 Stirling	SFD to duplex	1424	"	$122,900(84)	*	86424	"
60 "	"	1212	unknown	$80,000(84)	*	83939	Res
76 "	"	unknown	2-1bed	$86,000(83)	*	54800	R5
157 Strathcona	Semi to duplex	1527	unknown	$117,000(83)	*	59706	R4-x
384 Sunnyside	SFD to duplex	1737	1-2,1-3bed	$99,900(84)	*	71423	Res
51 Sweetland	"	881	1-1,1-2bed	$91,000(83)	*	65663	"
85 Third	"	1064	SFD with 2 apts	$140,000(83)	*	55806	"
230 "	SFD with apts	1978	1-2,1-3bed	$129,000(83)	*	60906	"
33 Thorton	SFD to duplex	unknown	2-1,1-2bed	$64,800(83)	*	51887	"
315 Tweedsmuir	SFD to triplex	1612	1-1,1-4bed	$86,000(83)	35	65886	R4
473 "	SFD to duplex	1353	unknown	$84,500(83)	70	57997	R4-x
480 "	"	968	"	$85,000(83)	old	50026	R4
95-95A Vaughan	"	unknown	2bach,2-1,1-2	$115,000(84)	*	81141	Res
107 Waverley	SFD to fourplex	"	2-3bed	$90,000(83)	*	55856	R5-x
141-143 *	SFD to duplex	890	2-1bed	$57,000(84)	*	71198	C1-s(2.0)
935 Wellington	"	1407	2-1,1-2bed	$80,000(83)	*	2-7005	R4
320 Westhill	SFD to triplex	unknown	3-2bed	$235,000(83)	70	64531	Res
138 Wibrod	"	1230	1-2,1-3bed	$64,500(83)	old	58584	"
87 -87 1/2 Willow	SFD to duplex	unknown	1-1,1-2,1-3	$190,000(83)	*	52514	R4-x
19 Wilton	SFD to triplex	1544	1-2,1-3bed	$164,000(83)	*	65253	Res
51 "	SFD to duplex	1200	unknown	$115,000(84)	*	83073	R5-x(0.5)
338 Winona	"	1864	"	$189,000(84)	*	70917	R5-x
5 Woodlawn	"						
240 Woodroffe *							

CONVERSIONS 1961 - 1970

Address	Type	Size	Mix	Value(yr)	Age	MLS	Zoning
65 Anderson	SFD to duplex	1059	2-2bed	$75,000(83)	old	53464	Res
209-11 Arlington	"	-----	2-1bed	$87,000(84)	"	74817	"
190 Arthur	"	954	1-1,1-3	$71,500(83)	"	66598	R11x(1.0)
46 Aylmer	"	-----	1-1,1-2	$165,000(83)	"	61242	Res
52 "	SFD to triplex	----------		$139,000(83)	"	56887	"
405 Bay St.	"						
513 "	"	1545	2-1,1-2	$108,800(84)	70	-----	"
544 "	"	-----	"	$109,000(83)	old	68083	R5x
546 "	SFD to duplex	1288	2-2 bed	$146,000(84)	"	68829	"
130 Bell St.	"						
164-6 Cambridge	SFD to apts	-----	4bach,5-1	$174,000(83)	"	67887	R4
238 "	SFD to duplex	1355	1-3,1-2	$67,000(83)	"	56208	Res
99 Cathcart	SFD to triplex	-----	2-1,1-2	$57,000(83)	"	57749	"
631 Centre	SFD with apt.	1270	1-4,1-1	$92,000(84)	"	77723	R5(0.5)
674 Cooper	SFD to duplex	----	1-1,1-4	$111,000(84)	85	67900	R5x
135 Crichton	"	1255	1-2,1-3	$88,000(83)	old	60262	Res
260 Currell	SFD with apt	1021	1-3,1-1	$79,000(83)	"	61555	R5
29 Douglas	"						
24 Elm St.	"	748	SFD + apt	$73,000(83)	"	68077	Res
1A Fairbairn	SFD to duplex	1863	1-1,1-2	$175,000(84)	"	75824	"
45 Fifth	"	----	2-2bed	$159,700(84)	"	71028	R4
16A First	SFD to triplex	----	3-2bed	$125,000(84)	"	76708	Res
1006-8 Fisher	SFD to duplex	1331	1-1,1-2	$94,500(83)	"	57289	R4
116 Flora	SFD to triplex	----	1bach,2-2	$135,000(84)	"	77347	R5x
147 "	"	----	1-1,2-1	$147,000(83)	"	62092	R5x
212 "	SFD to duplex	----	1-2,1-4	$90,000(83)	"	66856	R5
214 "	"						
215 Florence	"	1634	1-2,1-3	$84,000(83)	"	55770	Res
51 Fourth	"	1009	2-1bed	$110,000(84)	"	80696	"
242 Frank	"	932	1-1,1-2	$90,000(84)	"	72333	R5x
558 Gilmour	"						
590 "	SFD to 6plex	----	several	$143,000(83)	"	55089	Res
653 "	SFD to duplex	1061	2-2bed	$106,000(83)	"	65988	R5x
616 Gladstone	Row to duplex	----	2-2bed	$74,000(84)	"	80488	R5x(2.0)
628 "	SFD to triplex	----	1-1,2-2	$76,000(83)	"	53417	Res
68 Glynn	SFD to duplex	969	2-1bed	$94,500(83)	"	56368	"
19 Graham	"	----	"	$82,000(83)	"	57151	R4
15 Hilda	SFD to triplex	----	1 of each	$54,000(83)	"	61320	Res
469 Hilson	SFD to duplex	1242	1-1,1-2	$115,000(84)	"	70574	"
201 Hinchey	"	----	1-1,1-3	$52,000(83)	"	60683	R6x(1.5)
278 "	"	1657	2-2bed	$105,000(84)	"	75649	Res
114 Huron	"	1056	1-1,1-2	$127,000(83)	"	69366	"
132 Irving	"						
505 Kent St.	"	1382	--------	$91,000(83)	"	61394	"
42 Ladouceur	"	1439	SFD + apt	$63,000(84)	"	75278	"
52 Lees	SFD to duplex	1640	2-2bed	$80,700(83)	"	59785	R4
188 Louisa	"						
502 Lyon	"						
649 Maclaren	"	1523	1-1,1-3	$108,000(84)	"	68422	R5x

543 McLeod *							
430 Nelson	Row to duplex	1930	1-2,1-3	$157,000(84)	92	85192	R5
857 Norton	SFD + apt	1707	-------	$135,000(84)	19	73093	Res
87 Dessington	"	1670	-------	$137,000(84)	old	84275	R4x
274 Parkdale	SFD to triplex	----------		$75,000(83)	50	51228	---
2715 Pricille *							
406 Richardson	SFD + apt	946	----------	$61,500(83)	old	50149	R4x
45 Riverdale	SFD to duplex	2220	2-3bed	$145,000(83)	21	65236	R5x(1.0)
225 Rochester	"	1368	1-2,1-3	$100,000(84)	old	77858	C5-c(2.0)
373 Roosevelt	"	1162	2-2bed	$73,000(83)	"	65490	RE&
50 Rose	Duplex + apt	1577	----------	$126,000(83)	25	55491	R5
106 Russell	SFD to duplex	963	1-1,1-3	$105,000(84)	old	78320	Res
60 Spadina	"	1158	2-2bed	$75,000(83)	"	53393	Res
111 Spadina	"	1167	"	$100,490(84)	"	78953	R5x
143 Spadina	"	----	"	$75,400(83)	"	65486	Res
27 Spruce	"	1296	"	$69,000(83)	"	56071	"
133 "	"	1456	---------	$110,500(84)	"	84030	"
134 "	"	----------		$75,000(84)	"	82526	"
236 St Andrew	"	1046	1-1,1-2	$67,900(83)	"	52621	"
16 St Francais	"	1333	1-1,1-4	$74,000(83)	"	52262	"
482 Tweedsmuir *							
129 Waverley	SFD to triplex	----	1 of each	$80,000(83)	"	61813	R5x
166 Westhaven	SFD to duplex	935	1-1,1-2	$66,500(84)	"	69271	Res
82 Willow	"	----	"	$69,000(83)	"	56214	"

CONVERSIONS 1971 - 1980

Address	Type	Size	Mix	Value(yr)	Age	MLS	Zoning
73 Anderson	SFD to Duplex	-----	1-1,1-2	$51,000(83)	old	52641	Res
154 Arlington*							
357 Athlone	"	1363	2-2bed	$69,000(83)	"	2-14807	R5-x
312 Bessemer	"	2408	1-2,1-3	$165,000(83)	"	54487	R6-x
1071 Bronson Pl.	SFD to tri.	----	1 of each	$110,000(83)	"	50361	R4
114 Cartier	SFD to duplex	1232	1-1,1-3	$193,000(83)	"	63961	R5-x
457 Catherine	SFD to duplex	1279	1-1,1-3	$64,500(83)	"	56356	C3-c(3.0)
63 Fifth	SFD to triplex	2586	-------	$185,000(84)	"	85391	Res
350 Fifth	SFd to 4plex	----	1 of each	$154,000(84)	"	81425	Res
132 Flora	SFD to triplex	----	3-1 bed	$148,000(83)	"	62088	R5-x
88 Forward	SFD to duplex	566	1-1,1-2	$79,900(84)	"	72156	Res
96 James	SFD to triplex	----	1 of each	$190,000(84)	"	84103	Res
206 James *							
286 Laurier	SFD to duplex	1528	1-1,1-2	$186,000(84)	"	73705	Res
55 Mcleod *							
12 Melrose	SFD to triplex	----	1bach, 2-1	$90,000(84)	"	74834	R5
330 Nepean	SFD to duplex	1584	2-2bed	$152,000(84)	"	70412	R6-x(3.0)
36-46 Ontario	3 SFD's to multi	----------		$500,000(84)	"	72939	R5
17 Pinhey	SFD to rooming	801	rooming	$46,000(83)	"	63501	----
157 Spadina	SFD to duplex	1356	1-1,1-2	$58,500(83)	"	50808	Res
81 Spruce *							
27 Willow	SFD to duplex	1073	1-1,1-2	$44,000(83)	"	51886	R11-x(1.0)

CONVERSIONS 1980 - 1984

Address	Type	Size	Mix	Value(yr)	Age	MLS	Zoning
68 Anderson	SFD to duplex	----	2-2bed	$120,000(84)	old	83645	Res
184 Armstrong	SFD to triplex	-----	2-1,1-2	$65,000(83)	50	50700	Res
186 Armstrong	SFD to duplex	------	-------	$59,000(84)	82	-----	Res
156 Arlington	SFD to duplex	1053	2-2bed	$62,500(84)	old	83415	Res
10 Arthur	SFD to triplex	----	1bach,2-2	$120,000(83)	"	62696	R12-x(1.5)
139 Balsam	SFD to duplex	----	1-2,1-3	$54,000(84)	"	65551	Res
507 Bay	SFD to triplex	----	3-1bed	$65,000(83)	"	50651	R4
184 Bell	SFD to duplex	-----	1-1,1-2	$67,000(83)	"	53522	Res
461 Besserer	SFD to triplex	1437	2-1,1-2	$132,000(83)	"	51223	HR1
332 Bronson *							
396 Bronson	SFD to duplex	1500	-------	$75,000(84)	"	74720	C5-c(2.0)
1421 Caldwell	SFD to triplex	----	1-1,2-2	$84,000(83)	"	66176	Res
97 Cambridge *							
265 Cambridge	SFD to 7 units	-----	7-1bed	$64,500(83)	"	68259	R5-x(1.0)
339 Chapel	SFD to duplex	1581	1-3,1-4	$148,500(83)	"	61977	Res
678 Chapel	SFD to duplex	1910	-------	$128,000(83)	"	55284	R5-x(1.0)
561 Cole	SFD to duplex	1159	1-2,1-3	$123,000(84)	"	78441	R4-x
972 Eve	SFD to duplex	1465	1-2,1-3	$120,000(84)	25	74214	Res
36 Fairbairn	SFD to duplex	1104	2-2bed	$115,000(83)	old	65723	R4-x
39 Fairmount	SFD to duplex	1613	2-2bed	$147,000(83)	"	65363	Res
43 Fairmount	SFD to duplex	1636	1-1,1-3	$124,000(84)	"	70383	R5-x
72 Fairmount	SFD to duplex	----	1-1,1-3	$110,000(84)	40	83295	Res
84 Fairmount	SFD to triplex	1233	3-1bed	$90,000(84)	old	83997	R5-x(1.0)
213 Fifth	SFD to duplex	1591	2-2bed	$126,000(83)	"	67891	Res
64 First	SFD to triplex	----	3-2bed	$145,000(83)	"	56385	R4-x
123 First	SFD to duplex	----------		$175,000(84)	"	82238	R5-x(1.0)
308 Flora	SFD to rooming	----------		$117,500(84)	"	68600	R5
352 Frank *							
80 Fulton	SFD to duplex	1836	1-1,1-3	$145,000(84)	"	77081	Res
141 Hamilton	SFD to duplex	1097	2-2bed	$82,000(83)	"	64953	Res
496 Hartleigh							
159 Henderson	SFD to rooming	982	-------	$57,000(83)	"	52127	R5-x(1.0)
1253 Heron	SFD to duplex	1574	-------	$112,000(84)	30	72346	Res
140 James	SFD to duplex	1317	2-2bed	$125,000(84)	old	71414	HR1
184 James	SFD to duplex	1463	1-2,1-3	$142,000(84)	"	81438	R5-x
191 James	SFD to duplex	1516	1-1,1-3	$92,500(83)	"	58225	R5-x
325 James	SFD to duplex	1134	2-2bed	$64,500(83)	"	51407	R5-x
424 Lyon	SFD to triplex	----	1 Of each	$106,000(84)	"	70883	R5-x
521 Lyon	SFD to rooming	----	-------	$75,900(83)	"	63700	R5-x(2.0)
1386 Mayview	SFD with apt	1528	apt.	$125,000(84)	21	77586	Res
142 McGillivary	SFD to duplex	1008	2-2bed	$79,000(83)	old	62169	Res
393 McLeod *							
561 McLeod	SFD to duplex	923	2-2bed	$49,900(83)	"	64041	Res
114 Melrose *							
1185 Merivale	SFD to duplex	1424	2-2bed	$85,000(84)	40	83638	R5-x(1.5)
793 Montreal	SFD to duplex	1695	------	$112,000(83)	40	56898	R5
233 Northwestern	"	1532	apt.	$135,000(83)	25	64824	Res
20 Oak	SFD to triplex	----	1-1,2-2	$80,000(83)	old	63220	Res
599 O'Connor *							
121 Osgoode	SFD to triplex	----	3-2bed	$74,900(83)	"	55127	Res
224 Powell	SFD to duplex	1887	------	$160,000(83)	"	55528	R4
312 Queen Eliz.	"	1766	1-1,1-2	$222,000(84)	"	85662	R4
142 Spadina	SFD to multi	----	-------	$110,000(84)	"	68436	Res
155 Strathcona	SFD to duplex	1138	1-1,1-2	$128,000(84)	"	83000	Res
352 Sunnyside	Row to duplex	----	1-1,1-2	$72,000(84)	"	68081	R4-x
395 Sunnyside	SFD to triplex	1514	3-1bed	$97,000(84)	"	74479	R4
77 Sweetland	SFd to duplex	1545	2-2bed	$125,000(83)	"	57342	HR1

* Indicates an MLS listed address without full and accurate details being provided.

Potential Conversion Dwellings

Address	Type	Size	Value(yr)	Age	MLS	Zoning
2242 Midway Ave.	in-law	973	$89,000(84)	29	87583	Res
207 Harcourt	pot. in-law	1350	$118,500(84)	11	73837	"
49 Kempster	in-law	1200	$79,000(83)	17	50208	"
2715 Priscilla	pot. duplex	1624	$94,000(83)	--	58680	R4
5548 Utah	"	1081	$112,500(83)	25	56002	Res
2622 Traverse	pot. in-law	1916	$118,000(83)	5	50069	"
2594 "	in-law	1707	$89,000(83)	20	60568	"
1561 Clover	access. apt.	1357	$100,000(83)	35	64867	"
1301 Dowler	in-law	2218	$245,000(83)	17	60485	"
192 Rodney	pot. in-law	2006	$172,000(83)	25	66337	R1
2265 Alta Vista	in-law	1761	$100,000(83)	31	52363	Res
2176 Bingham	pot. in-law	1113	$106,000(83)	22	64972	"
777 Canterbury	in-law	1524	$94,000(83)	22	61622	"
109 General	"	1530	$101,000(84)	old	84298	"
1185 Merivale	pot. duplex	1424	$85,000(84)	40	83638	R5(1.0)
1040 Stormont	in-law	----	$105,000(83)	32	63389	Res
3016 McCarthy	pot. in-law	1403	$150,000(83)	4	58524	"
1986 Belair	"	1419	$124,900(84)	19	78996	"
1544 Baseline	"	1325	$75,000(83)	22	53722	R4
1470 Tedder	"	1365	$125,000(84)	34	79109	Res
227 Patricia	in-law	2178	$100,000(83)	35	55731	"
496 Hartleigh	pot. in-law	1341	$79,500(83)	old	57841	"
38 Elm	pot. duplex	960	$112,050(84)	"	78244	"
2698 Hickson	pot.in-law	1362	$95,500(83)	13	60110	"
2411 Baseline	"	1276	$90,000(83)	21	59890	R3
2335 Kildonan	in-law	1760	$235,000(84)	20	75811	Res
869 Roseview	"	1492	$103,000(84)	31	72469	"
2142 Lambeth Walk	pot.in-law	1207	$95,000(84)	26	68774	"
27 Lowery	pot. duplex	1345	$41,500(83)	old	52654	"
100 Dasington	pot.triplex	1649	$165,000(84)	55	70338	"
124 Pretoria						
167 Prince Albert	pot.in-law	750	$76,000(84)	35	71601	"
681 Melbourne	"	808	$71,000(84)	old	67962	"
110 Rosemount	pot. duplex					

Appendix G

FACTOR ANALYSIS: A BRIEF EXPLANATION OF THE CONCEPTS INVOLVED

This thesis is, by no means, the first housing study to employ the statistical technique of factor analysis. Academic works by Murdie (1969) and Shevkey and Bell (1955) in Chicago set the framework for the utilization of this technique in human geography. A brief description of factor analysis, its methodolgy and purpose, as well as the reasons for adopting the technique for use in this study, are briefly summarized as follows.

Factor analysis, as a quantitative application in the social sciences, had its origins in the field of psychology. It was designed to measure the intelligence of groups of students by identifying "the general intelligence of the pupil and a specific aptitude for the subject the pupil was being tested upon."[37] The purpose of factor analysis is, in general, to attempt to reduce a large number of variables into a few highly intercorrelated ones.

A basic knowledge of geometry is needed to fully comprehend the objectives and methodolgy of factor analysis. Variables in the form of vectors are plotted along "x" and "y" axes, with the length of the vector representing the strength of variance of that variable with all the other variables. The cosine of the angle between the vectors is a

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[37] Peter J. Taylor, Quantitative Methods in Geography. Boston: Houghton Mifflin, 1977, p. 232.

measure of the correlation between the variables. It is normal in a procedure such as this to look at a number of variable pairs. Thus, it is possible to geometrically determine the common elements underlying all the variables. A new vector which best summarizes the variable vectors is called a **factor**. This new vector is referred to as a **resultant** and it identifies a cluster of common variables. Each new resultant is a different factor. The cosine of the angle between the resultant and the variable vectors indicates the correlation or weight of the variables on that factor. These values are referred to as **loadings**.

When looking at a multiple factor analysis, a slightly more complicated process is involved. Instead of having variables forming vectors, they form points in space. A "regression line" called the principal axis best summarizes the variable points in space. A minor axis measures the residuals. In defining the principal axis, it is necessary to rotate the variables onto the principal axis itself. Eigenvectors and eigenvalues are the result of this procedure. Eigenvectors measure the length of the principal axis and eigenvalues are the values associated with those vectors. It must be remembered that "every variable has a correlation or loading with every factor."[38]

To determine the weight of each factor the following formula is utilized:

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[38] ibid. p. 232.

$$\frac{\text{length of eigenvector}}{\text{number of variables}} \times 100 = \text{the percent of the variance}$$

If, for example, there were 34 variables used in a factor analysis, total variance would be 34. If the first eigenvector were 20.178, then factor 1 would account for 59.3% of the variance according to the above formula. The remaining factors would account for the remaining 40.7% of the variance. Thus, it can be seen that the first few factors are of prime importance.

Rotation is a term used to describe the procedure whereby the factor axis is rotated so as to be within a cluster of variable vectors. In many factor analyses a factor vector is located between two clusters of variables. This indicates that said factor has a high general loading on those two groups of variables. There must be a basis for rotation. Varimax rotation allows the factor vectors to be placed where each relates to one of the two pairs of related variables. It does this by squaring the variance of the factor loadings. Thus, by rotating the factor axis it is possible to get a new set of values, referred to as factor scores, which reflect a new relationship among the clusters of variables. The final results of the factor analysis procedure are factor scores for each of the original observations (i.e census tracts, municipal wards etc.).

The simplist form of factor analysis is known as principal-component analysis. This type of analysis examines all of the variations be-

tween the key factor(principal-component) and the other variables. A scree diagram is completed and, along with the variable loadings, determines the cutoff point for meaningful factors. A more complex form of factor analysis is concerned with the common source of variance where a correlation coefecient diagram is developed.

Carter (1981), among others, has noted that factor analysis, as a statistical technique, is not problem-free. A major shortcoming, for example, is that "the key variables one gets out of a study merely reflect what variables are incorporated and the subjective nature of the labels placed on the factors."[39] While Carter is correct in his criticism, it is of course the case that a similar statement "can be made against almost any statistical technique."[40]

Factor analysis was utilized for this study for several important reasons, the main one being the fact that no previous study of the Ottawa area has been undertaken utilizing these specific variables and relating them to single-family dwelling conversions. It was expected that some common factors would emerge on a temporal and/or spatial level.

Multiple regression, a more rigorous technique than factor analysis (in terms of testing for the existence and strength of a relationship), was used to measure the outcome of relationships between the factors identifed and rates of conversions from the sample data.

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[39] Harold Carter, The Study of Urban Geography. London: Edward Arnold, 1981, p. 259.

[40] Nie et al, SPSS: Statistical Package for the Social Sciences. New York: McGraw-Hill, 1970. p. 305.

For an elaboration on factor analysis, the reader should consult Kim and Mueller (1978), Taylor (1977), Yeates (1974), and Clark et al (1974). These texts provide a detailed discussion of this statistical procedure.

Appendix H

PROBLEMS ASSOCIATED WITH DATA COLLECTION

Several problems arose during the study with regard to both collecting data, and using the data once collected. The discussion which follows is intended to contribute to improved data base development, maintenance and practices at the local level. The interested reader may also wish to examine the work of Stanton (1984), in this regard.

H.1 CITY OF OTTAWA BUILDING PERMIT RECORDS

The City of Ottawa's Buildings Branch maintains building permits on a monthly basis, disaggregated to the level of individual permits. The latter are, however, not open to the public because of confidentiality restrictions. Monthly records contain addresses of buildings to be altered, the applicant's name, the nature of the work to be undertaken and the estimated value of said work. For the purposes of this study, the two most important variables to be examined were 1) the addresses and 2) the nature of the work completed.

There were three main problems associated with this source of information. They are as follows:

1. Records for the years 1961 and 1963 were in a state of non-maintenance that rendered them useless in terms of this study.
2. Records for the years 1962 and 1966 included only the total number of conversions without the associated addresses. Records for the year 1981 were missing from city hall.

3. Dates on the permits are only approximate. Building permits are dated when the permit has been granted, not when the work has been completed.

H.2 CITY OF OTTAWA ASSESSMENT ROLLS

Assessment Rolls for the year ending December, 1983, were utilized for this study. Associated problems include the following:

1. There is no reliable manner of determining whether a specific dwelling unit has been converted from a single-dwelling unit to a multi-unit residence. For the purposes of this research, converted dwellings were considered to be those which had a tenant or owner occuping different floors of a single address. To differentiate between new duplexes, triplexes, etc., and those which may have been converted, it was assumed that if the floors of the dwellings had widely varying assessment values, the dwelling had been converted from a single-family unit.
2. On the basis of information obtained from MLS sources, it is obvious that a number of converted dwellings were not assessed in 1983 as multiple unit dwellings. While it was not possible to determine exact figures, it would be appear that the number of illegally-converted dwelling units is considerable.

H.3 MLS (MULTIPLE LISTING SERVICE) INFORMATION

It is obvious that the MLS as maintained by the Ottawa-Carleton Real Estate Board is of little value in its present format as a source of housing research information. Improvement of data collected by that Service would be of major benefit to researchers and market analysts, as well as real estate brokers and agents.

A number of major problems were encountered in the use of this source of information to examine single-family housing conversions. It would of considerable benefit to have the exact or, at least, an estimated age of a dwelling shown on the MLS forms. Many agents simply put "old" instead of an actual age. The exact zoning of a property is frequently not given. The most common classification given was RES, meaning residential. It would be extremely useful to have an estimate of the square footage of a dwelling. This approximate figure is not difficult to obtain, but it is inconvenient to have to go to another source for such basic data. For the purposes of this study, a very rough estimate of the size of dwellings was determined by adding the room sizes given on the MLS forms. It is noted, however, that room size figures on the forms are only approximate as a rule.

H.4 STATISTICS CANADA, CENSUS DATA - POPULATION AND HOUSEHOLD CHARACTERISTICS

Of all the data utilized in the present study, information maintained by Statistics Canada was found to be the most accurate and easiest to use. While some variables were not carried over from one year to the next, no major problems seemed to result. For example, the 1961 census of

family composition did not include a separate section for single-parent families, while the 1971 1981 censuses did. Some changes in variable definitions are inevitable but, for the purposes of this research, the variables were treated as being generally similar. Statistics Canada information on building permits and housing starts was utilized, instead of CMHC sources, mainly due to ease of use. Vacancy rates maintained by CMHC were, however, found to be quite useful.

H.5 MIGHT'S CITY STREET DIRECTORIES.

The Public Archives of the City of Ottawa maintains city street directories dating from the early 1900's. This source, as a estimation of dates of conversions, has limitations due to lack of accuracy. However, due to the long time-period considered in the study, the directories were useful as a source of trend data. Sample addresses that had two separate residents at the one address were assumed to be indicative of a converted dwelling. Only the last conversion was utilized and deconversions were ignored.

Appendix I

PHOTOGRAPHIC VIEWS OF SELECTED CONVERTED DWELLINGS

Photograph No. 1

Photograph 1

Address: 1386 Mayview Avenue, Ottawa, Ontario.

Type of Conversion: Garage to a one bedroom apartment.

Period of Conversion: 1981 - 1984

Source: MLS

Photograph No. 2.

Photograph 2

Address: 39 Grove Avenue. Ottawa, Ontario.

Type of Conversion: Single-family to duplex.

Period of Conversion: Prior to 1961

Source: Assessment Rolls for the City of Ottawa.

Photograph No. 3

Photograph 3

Address: 43 Grove Avenue. Ottawa, Ontario.

Type of Conversion: Single-family to duplex.

Period of Conversion: Prior to 1961

Source: MLS

MLS Details: 2191 square feet

2 - 2 bedroom apartments

$144,000 value in 1984

R4 - x zoning

Photograph No. 4

Photograph 4

Address: 339 Chapel Avenue. Ottawa, Ontario.

Type of Conversion: Single-family to duplex.

Period of Conversion: 1981 - 1984

Source: MLS

MLS Details: 1581 square feet
1-3, 1-4 bedroom units
$148,000 value in 1983
residential zoning
Plan 55578, Part of lot 15

Photograph No. 5

Photograph 5

Address: 678 Chapel Street

Type of Conversion: Single-family Dwelling to Duplex

Period of Conversion: 1981 - 1984

Source: MLS

MLS Details: 1910 square feet

$128,000 value in 1983

Zoning is R-5x (1.0)

Photograph No. 6

Photograph 6

Address: 238 Cambridge Street North

Type of Conversion: Single-family Dwelling to Duplex

Period of Conversion: 1961 - 1970

Source: MLS

MLS Details: 1355 square feet

1-2 bedroom apartment

1-3 bedroom apartment

$67,000 value in 1983

Residential Zoning

Photograph No. 7

Photograph 7

Address: 99 Carruthers Avenue

Type of Conversion: Single-family Dwelling to Triplex

Period of Conversion: 1961 - 1970

Source: MLS

MLS Details: 2-1 bedroom units
1-2 bedroom unit
$57,000 value in 1983
Residential Zoning

Photograph No. 8

Photograph 8

Address: 40 Armstrong Avenue

Type of Conversion; Single-family Dwelling to Triplex

Source: MLS

MLS Details: 1 bachelor apartment

2-1 bedroom apartments

70 years old

$85,000 value in 1984

Residential Zoning

Appendix J

BRADBURY'S EQUATION

In 1977, Katherine Bradbury, currently of the Brookings Institute, developed a econometric model to estimate the number of conversions from within the existing housing stock. Conversions from both single-family and multiple-family units were included in her model.

The key variables, which allow the application of this formula to different centres, include changes in the vacancy rate, the value of dwellings, and in the amount of vacant land available for residential development. While the basic soundness of the equation is not in question, its applicability to the Canadian situation, and more specifically to the case of Ottawa, is tenuous at best. Morrison (1978), discovered this fact in his Ph.D thesis, in which he used Toronto as a case study.

Some of the variables, especially the determination of the change over time in single-family dwelling prices, do not include the price of newly-constructed dwellings. Data of this nature were not located for inclusion in this study and, on the evidence, are not (readily) available from either a public or private source.

Another problem, and one which is not really unique to Ottawa, is the fact that there are cities in the environs with an abundance of developable vacant land. It is in these areas that new single-family homes will be constructed. An associated concern is that zoning by-laws have changed over time, thereby either creating or removing land for development.

Further examination and application of this model, while being pertinent to research of the present nature, is well beyond the scope of what is being attempted here. Its inclusion, however, serves the purpose of informing other researchers about what may be a useful avenue to pursue during further considerations of this topic in the City of Ottawa or elsewhere.

Bradbury's equation, as it pertains to the conversion - retirement activity in the single-family housing stock is:

$$\text{CONV SINGLE} = -7.23 + \text{OLD SINGLE}\left[\underset{(.112)}{-.221} + \underset{(.181)}{.180}\right.$$

$$\frac{\text{¢PRICE}}{\text{PRICE}_{60}} + \underset{(.149)}{.223}\ \frac{\text{¢VAC RATE}}{\text{VAC RATE}_{60}} + .193\ \text{PZ}$$

$$\left.\underset{(.000162)}{-.000286}\ \text{NEW TIGHT}\right]$$

$$+ \text{DETER SINGLE}_{60}\left[\underset{(.578)}{-.509} - \underset{(.766)}{.537}\ \frac{\text{¢PRICE}}{\text{PRICE}_{60}}\right.$$

$$\left.-1.54\ \frac{\text{¢VAC RATE}}{\text{VAC RATE}_{60}} - 1.50\ \text{PZ}\right] + e.$$

Where,

1. Conv single = difference between 1970 and 1960 number of single family housing units built between 1960 and 1970.
2. Old single = estimate of the number of 1960 single family dwellings built before 1940.
3. Deter single = estimate of the number of 1960 single family dwellings deteriorating.
4. PZ = fraction of residential and vacant land zoned for minimum lot sizes greater than 25,000 sq.ft.
5. ¢PRICE = percentage change in housing unit price 1960 to 1970, for unchanged housing units existing in both 1960 and 1970.

6. ¢VAC RATE = percentage change in housing unit vacancy rate 1960 to 1970.

7. NEW TIGHT = number of housing units built between 1960 and 1970 per acre of vacant land initially available.

Perhaps what is needed at this point is a simpler equation than Bradbury's. One such equation might be as follows;

$$TH_t = Hm + Hs + Hsc$$

Where,

1. TH = total housing stock for time t
2. Hm = change in multiple unit housing stock (held fixed)
3. Hs = change in single family housing stock
4. Hsc = the remainder being converted dwellings.