

**INCUMBENT UPGRADING
A FRAMEWORK FOR ANALYSIS:
TOWARDS A NEW UNDERSTANDING OF RESIDENTIAL REVITALIZATION
IN WINNIPEG**

**A THESIS
PRESENTED TO THE
FACULTY OF GRADUATE STUDIES
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**IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF CITY PLANNING**

**BY
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REVITALIZATION IN WINNIPEG

BY

CHRISTIAN E. DOUCHANT

A Thesis submitted to the Faculty of Graduate Studies of the University of Manitoba in partial fulfillment of the requirements for the degree of

MASTER OF CITY PLANNING

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PREFACE

In the last two decades, most research into inner city residential revitalization focused on the process of gentrification. This is a process that resulted from the movement of a number of middle and upper-income households into declining inner-city neighbourhoods, where renovation and restoration of existing housing stock were taken up through private investment. Gentrification implied that residential revitalization occurred primarily as a result of the settlement of new middle- and higher-income households into inner city neighbourhoods. However, other studies of Canadian inner cities revealed that other forms of residential renewal were occurring that could not be simply attributed to gentrification (Millward 1988; Bunting 1990).

Though gentrification has received much study - Clay(1979) Reid(1985) Ley(1985) Lang(1982) - other forms of inner city revitalization have not received due attention. A process contrasting gentrification is "incumbent upgrading" which also involves owner-occupier households (Millward 1988). Clay (1979) defines this process in which physical improvements by incumbent residents take place without real change in the socioeconomic characteristics of the residential population. Contrary to the gentrification process, the areas in question are primarily lower-income and the residents are mostly blue-collar workers. Another important social characteristic is that the majority of households are traditional husband/wife families with children. Therefore,

incumbent upgrading is dealing with a completely different segment of the population that has not been considered relevant to the residential revitalization process.

One theoretical explanation for the incumbent upgrading process is the influence of public policy and the application of government incentive programs, such as the Neighbourhood Improvement Program (NIP) and the Residential Rehabilitation Assistance Program (RRAP). Millward (1988) suggests that incumbent upgrading is fostered by these public policies which were aimed at reversing the downgrading trend of inner-city neighbourhoods. Therefore, the assumption is that government incentive programs are considered important catalysts in the upgrading process.

The focus of this thesis was to conduct empirical research into residential revitalization for the inner city of Winnipeg. The city was chosen because its economic and social developments in the past twenty years seem to provide the suitable preconditions to induce incumbent upgrading. Concomitantly, the City of Winnipeg has been heavily involved in the implementation of several community and neighbourhood revitalization programs in the inner city for over 15 years. This involvement started originally with the first targeted neighbourhoods under NIP to the present day Manitoba/Winnipeg Community Revitalization program (M/WCRP).

The methodology included the establishment of a framework to

conduct an empirical analysis. The framework involved the identification of basic underlying assumptions as testable hypotheses. Various independent variables were then selected to identify the socioeconomic characteristics of neighbourhoods. To reveal the levels of reinvestment activity, three dependent variables were created - one measured the level of building permits issued by census tract; another measure amount of R.R.A.Ps issued and the last included a total of both R.R.A.Ps and building permits. Each variable was mapped for analyzing spatial relationships. The final part of the analysis used principal component analysis to determine how the various independent variables grouped together to form vectors. These vectors were then used in a multiple regression to determine which vector or vectors correlated with the dependent variables.

In terms of the principal component analysis, one vector formed which clearly had the socioeconomic characteristics associated with the incumbent upgrading process. The same vector scored significantly high with the dependent variables. The results reveal that there is the intimation that several inner city neighbourhoods are exhibiting evidence of upgrading and this is possibly attributed to the public policies and federal incentive programs that have been administered during the last several years.

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CHAPTER 1

INTRODUCTION

In the past decade, most Canadian research into neighbourhood revitalization has focused on the phenomenon of "gentrification". This process can be quickly defined here as an increase in the environmental quality and socioeconomic status of an inner city neighbourhood by new in-migrating middle- and upper-income households. The reason gentrification has become such a interesting topic was its direct link with the changing role of the inner city in a post-industrial society. Economic restructuring has changed the patterns of employment away from manufacturing and more towards the service sector and high-income professions (Filion & Bunting 1988). This resulted in the settlement of many new middle and upper-income households into older central city neighbourhoods, where renovation and restoration of the existing housing stock were undertaken through private investment (Millward 1988, p.106).

Research into gentrification has been thorough: Ley 1985, 1988; Clay 1979; Gale 1984; Lang 1982; Laska and Spain 1980; Reid 1985. The motivation for such interest has been the substantial criticism of gentrification and its negative effects on the local residential population. Most notable is the "displacement" phenomenon that affect the lower income residents that were no longer able to compete for homes in areas that became dominated by higher income residents.

Though gentrification has received its due attention, other forms of inner city revitalization have not. Some researchers have focussed their studies towards smaller and medium size centres in order to identify whether any substantial revitalization has taken place - the most significant studies are Phipps (1983) and Bunting (1990). However, these studies often only presented a descriptive analysis of the amount of revitalization and never provided a detailed analysis as to the actual processes involved. In addition, what has been particularly neglected is whether public policy and government involvement with neighbourhood and community revitalization has had any affect in inducing residential home maintenance and upgrading.

In the United States, some research has been shifting towards the examination of another form of revitalization process which has been designated "incumbent upgrading". This process was originally identified by Philip Clay (1979) in his work Neighbourhood Renewal, where he compared the difference between gentrification and incumbent upgrading.

In his research, Clay marginally affiliates incumbent upgrading to gentrification in that it deals with the renovation activity of individual owner-occupied households. However, quite opposite to gentrification, incumbent upgrading is a process in which physical improvement by incumbent residents takes place at a substantial rate with no significant change in the socioeconomic status or

characteristics of the population in a particular area (Clay 1979). The households which make up the incumbent residents are often low income residents that live in "working class" neighbourhoods. These residents have been established in such neighbourhoods for many years and have simply begun to reinvest in their housing stock. In terms of population movement, there is little that takes place, meaning that the original "indigenous" population predominately resides in the area. And though some movement of the population might occur, usually the new in-migrants are of the same social and economic background (Clay 1979).

A major component in Clay's research is the relationship between government home improvement programs and planning policies with inner city revitalization. These programs and policies are identified as the major stimulus for inducing the incumbent upgrading process. Clay believes the combination of neighbourhoods with strong "social mechanisms"¹ - defined here as an implied social contract between neighbourhood residents to a certain standard or code of appropriate home maintenance - and the availability of government financial resources are the main

¹ These social cohesive mechanisms enable residents to maintain a certain equilibrium in face of social and economic change. This equilibrium requires people to see each other as relative equals and to be willing to accept and yield control to some collective local standard of behaviour (Clay 1979). It is such social mechanism that affects the basic dynamics and attitudes of a neighbourhood rendering substantial change possible, and, therefore, neighbourhood revitalization is possible (Clay 1979).

strengths in initiating and sustaining upgrading. Government financed home improvement loans provide the initial financial means to inaugurate some type of home rehabilitation. Usually, the availability of public accessible financial resources is crucial when other private financial institutions are apprehensive about investing in such areas.

To document the effectiveness of these programs, Clay points out that the influence of these programs extended even to cities where the economic situation is stagnant or declining; for example, even Detroit revealed signs of inner city neighbourhood revitalization. However, one major drawback to Clay's research was the lack of any empirical evidence to support his beliefs. This thesis is an attempt to further investigate this relationship by producing empirical evidence to determine whether there is a link between government intervention and revitalization. This research is also an attempt to identify whether the incumbent upgrading process is possibly occurring in one Canadian urban centre.

DEFINITION OF PROBLEM

In order to formulate a more comprehensive research method, a closer examination of existing Canadian research has to be undertaken. Some studies have already provided some evidence that a relationship does exist between government home improvement programs and residential revitalization (Millward 1988) (Bunting 1988) - for the U.S. see (Galster 1988). From this research, the

key to proper empirical analysis is in terms of the methodology and the data sources used for analysis.

What is common among Canadian and American research on inner city revitalization is the use of social indicators to measure the level of revitalization. This is particularly true in the Canadian context: see Ley 1985, 1988 and Bourne, 1990. However, as Clay clearly shows in his original work of 1979, incumbent upgrading did not occur due to "up-filtering" in areas. The areas in question were dominated by low income residents employed in the more traditional sectors of the economy, such as manufacturing. By using only social status indicators to measure neighbourhood revitalization explains why the results from many studies have never identified incumbent upgrading. My belief is that the work by Millward (1986,1988) is much more significant because he attempts to completely redefine inner city revitalization by identifying new categories of revitalization based on newly available empirical data sources.

Millward used a framework of analysis that showed enumeration areas in the inner city of Halifax had variations in reinvestment activity. The purpose was to show that resettlement of high-income groups was not the only explanation for reinvestment activity. Using building permits, he identified certain areas that revealed higher renovation activity but did not show any sign of changing socioeconomic conditions in the population. Part of his study

included a spatial analysis component, where he distinguished these areas of reinvestment activity with areas that were designated as NIP. His conclusions suggest that incumbent upgrading was occurring in neighbourhoods that have been under various neighbourhood and housing improvement programs.

Millward's findings are crucial in the debate between those who support the claims of government incentive programs and those who do not. Millward's suggest that all studies that analyzed inner city revitalization through various social indexes to indicate change in the socioeconomic profile of a neighbourhood could not possibly identify a process such as incumbent upgrading. This is particularly important when we are dealing with low income areas. Millward's use of an indicator for actual physical reinvestment activity revealed, that at the neighbourhood level, other forms of revitalization are occurring which are not associated with an increase in social status - i.e. the up-filtering process of high income residents moving into low income areas. This suggests that the need for a new definition of neighbourhood revitalization.

HYPOTHESIS

The focus of this thesis is to question the effectiveness of all previous research on neighbourhood revitalization which used "social status"² indicators to measure the extent of

² The use of social status indicator is taken from Ley's 1986 study. It was used to measure middle and high-income household resettlement into the inner-city.

revitalization. My hypothesis is that studies that used quantitative increases in the so called "social status" indexes have not been effective at identifying other forms of revitalization. By failing to use other statistical measures, such as ones to measure actual physical reinvestment activity, it is impossible to identify whether more stable or low-income neighbourhoods are involved in some form of revitalization. Using such statistics supports the possibility that neighbourhoods in cities that score low in terms of social status for their inner city, may be undergoing a process such as incumbent upgrading.

In terms of this research, the key to the proliferation of incumbent upgrading is the availability of various government incentive programs such as the Neighbourhood Revitalization Program (NIP) for neighbourhoods and the Residential Rehabilitation Program (RRAP) for actual home reinvestment. The belief is that residents of certain low income neighbourhoods are taking advantage of these programs to aid in the physical and residential upgrading process, and thereby causing the neighbourhood housing values to appreciate. I believe that the key to the success of these programs is that they provide financial assistance that would not otherwise be available from private financial institutions. Hence, there is a direct relationship between the availability of government programs and the revitalization of certain inner city low-income neighbourhoods.

The availability of government programs is not seen as the sole explanation for the process of incumbent upgrading. As Clay suggested, neighbourhoods that revitalize themselves have built-in coping mechanisms that deal with various conditions of instability (Clay 1979). A good example would be "NIMBYism" - defined here as the "Not in my back yard" syndrome which stems from residential action to control or stop local developments which might affect the living standards in the neighbourhoods. Government loans are therefore seen as an outside source that enables neighbourhood residents to initiate home reinvestment activity. For this research, if there is evidence that incumbent upgrading is occurring and there is a relationship between it and the availability of government programs, it will be assumed that such neighbourhoods already have strong social networks in place that explain their upgrading.

WINNIPEG - CASE STUDY FOR INCUMBENT UPGRADING

i) Classification of cities in the Post-industrial period

There have been many studies on the classification of Canadian cities based upon the employment restructuring which has occurred in the post-industrial period³. As previously indicated, the study of gentrification is based on this economic transformation of employment in the 1980's. However, Broadway (1992) and Ley (1985)

³ The post-industrial period is used as a loose term which signifies the contemporary economic situation of a reduced manufacturing base and increase in the service and technological economy. For further reading see Castells (1988); Broadway (1989), (1992).

identify that some cities were not influenced by the employment restructuring, and, as a result, did not influence population movement back towards the inner city. The trend for some centres was still towards the growing suburban areas. Therefore, two types of cities were identified, those that have had inner city resettlement and those that did not.

The classification of cities according to economic restructuring is important in this thesis. Though Ley's 1985 study identifies only large regional metropolitan centres to be witnesses to gentrification and inner city neighbourhood revitalization, availability of new data now makes it possible for further investigation into this assumption. Was there less evidence of neighbourhood revitalization in cities where a social status increase was not evident? In light of new data sources, this assumption can now be challenged.

ii) Classification of Winnipeg in the Post-Industrial period

Winnipeg is a good example of a city not affected by the concentration of corporate capital into its Central Business Area. The growth in high-tech and professional employment had seen less than moderate growth, but its service sectors grew substantially; also, its manufacturing sector had declined (Ley 1985). Hence, these conditions in Winnipeg did not propel a back to the city movement (Ley 1985). In terms of its inner city, there has been continual increases in unemployment, and increasingly the existing

employment base has been taken over by the tertiary sector. There has been continual population loss in most inner city neighbourhoods with no sign of substantial "social upgrading", and there are increasing signs of deprivation in certain neighbourhoods Broadway (1992), Ley (1988), Bourne (1990).

Considering the present state of Winnipeg's inner city it does seem an unlikely candidate for neighbourhood revitalization. However, since incumbent upgrading occurs in lower income neighbourhoods, Winnipeg will be a good case study to determine whether it is a phenomenon.

DEFINITIONS

To conduct such a study requires that certain operational definitions be made so that it is clear about what is represented when the terms inner city, residential revitalization, quaternary and tertiary, and neighbourhood are used. The definitions here are brief and will be further developed in the proceeding chapters.

i) There is no single "best" criterion for defining the inner city in any metropolitan area. One criterion often used is the proportion of housing stock built in Pre-1945 and the proximity to the central business district in urban census tracts (Brown and Burke 1979). However, as Ley (1985) points out, urban geographers have long realised all regionalization procedures are arbitrary rather than true.

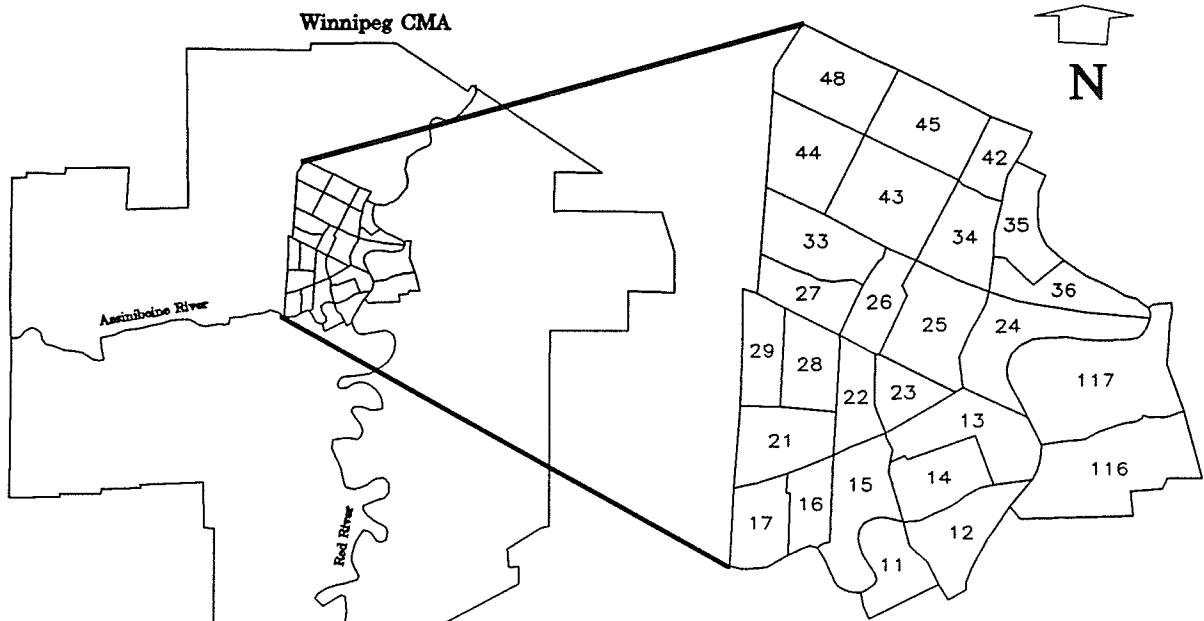
Since it is impossible to accurately define what incorporates an inner city, it is best to use an existing definition. The Core Area Initiative program, which originated in 1981 as a coordinated effort from all three levels of government to finance redevelopment projects in the inner city of Winnipeg used various statistics to define the actual boundary limits of inner city; these included the percent of housing stock built before 1945 and the percentage of households with incomes below the poverty-line (CAI Report 1981). Therefore, the inner city of Winnipeg for this thesis is defined according to the established boundaries set by the Core Area Initiative program (See Map 1).

Another reason for adopting this boundary definition of the inner city is that this area incorporates nearly all of the neighbourhoods in the past and present which have been targeted for neighbourhood revitalization programs. All previously targeted neighbourhoods for NIP and RRAP from 1973 to 1981 were situated within these defined boundaries. Additionally, the CAI funding was limited to this area. Therefore, this geographical area has been witness to 18 years of government revitalization programs.

ii) The term quaternary and tertiary are used to describe distinct employment sectors of the economy. Quaternary categorizes all professional and high-skilled employment with higher paying positions, which would include management positions, health, banking, etc. Tertiary categorizes the sectors of the economy

Map 1

WINNIPEG CMA AND INNER CITY CENSUS TRACTS AS DEFINED BY THE CORE AREA INITIATIVE



dealing with the service industry, which would include sales, clerical and other services sector employment. These terms have become particularly important when describing social change in the post-industrial period. They have been identified as the new economic sectors developing simultaneously with the decrease in the traditional manufacturing sectors.

iii) The neighbourhood is defined as Census Tracts for the Winnipeg Census Metropolitan Area. Though there are many theoretical definitions for neighbourhoods, primarily based on their structural function in either economic, political, physical and social aspects

(Galster & Hesser 1982), the neighbourhood is seen more as an area defined by physical boundaries as determined by Statistics Canada. The definition from statistics Canada is based on the demographic homogeneity as a definition of the boundaries. However, the ecological fallacy that such a defined area can "truly" be representative an actual population's characteristics is ignored. The purpose of using census tracts is simply that it allows for statistical analysis of various socioeconomic characteristics in geographically defined areas in the inner city over time. The tracts that fall under the inner city boundary have not changed since 1971. Therefore this provides an excellent opportunity to do a longitudinal analysis of these areas.

iv) The definition of residential revitalization is a key part of this thesis. In terms of analyzing gentrification, various statistics indicating social status change, such as increase in household income and education levels, are used (Ley 1985). These are believed to be better at identifying actual changes in household composition - they identify change in the population that are assumed to represent the in-migration of new inner city households (Ley 1985). However, in terms of analyzing incumbent upgrading, it is a question of determining whether the up-filtering of existing homes occurred. Hence, statistics needed for identifying changes in the housing stock are needed; these would include changes in housing tenure, housing prices and assessments and renovation/upkeep activity on homes.

For this research, the changes in the housing stock will be used as the measure of neighbourhood revitalization, particularly changes in the home renovation activity. Though changes in social status will be used as well to identify population profiles in each census tract, the focus is to identify areas where there has been physical reinvestment in the neighbourhood.

REVIEW OF CHAPTERS

The first phase of this research will be to develop a literature review (Chapter 2). The focus is to identify various theories that explain the process of neighbourhood decline and revitalization. From this review, a synthesis will be developed from the material covered in order to build a framework from which the incumbent upgrading process can be understood. The importance of this literature review is to place incumbent upgrading in the context of our understanding of neighbourhood change and revitalization in the post-industrial economy. Chapter 3 will examine the history of Winnipeg's involvement with community and neighbourhood revitalization. It will identify the many programs that have been in place in Winnipeg for the past 20 years and prove that the city has had substantial involvement with community revitalization. Chapter 4 deals with the development of a methodology for analyzing various statistics to identify census tracts in Winnipeg that exhibit characteristics of incumbent upgrading. Chapter 5 will further develop the methodology by using principal component analysis for simplification of data analysis. Chapter 6 will deal with conclusions and the implications of the findings.

CHAPTER 2

REVIEW OF LITERATURE

Both incumbent upgrading and gentrification are two distinct forms of revitalization. They share some similar characteristics, but do not share the same different underlying factors. The main similarity lies in the fact that they deal with individual households that initiate reinvestment in the housing stock. What sets them apart are the socioeconomic circumstances of the population involved with either form of revitalization.

Our theoretical understanding of gentrification is quite extensive. What is now needed is a review of literature on the process of incumbent upgrading. Presently, there is no satisfactory theoretical rationalization for its potential causes. Therefore, this thesis will review the past theories on neighbourhood decline and revitalization to see how well they can be used for explaining the process. This review will include a further examination into theoretical explanations for gentrification, since it is likely that incumbent upgrading will have some similarities. The final objective will then be to synthesize all reviewed literature into a single theory for understanding the process of incumbent upgrading.

EXISTING THEORIES ON INNER CITY CHANGE AND REVITALIZATION

Filion and Bunting (1988) provide an comprehensive overview of the processes that have created structural change in the inner city

since the end of the Second World War. It provides an excellent starting point. Their examination concentrates on how the evolution of society and changes in urban structures explain changes that occurred in the inner city. In total, they define four theoretical approaches: the spatial, the demand-orientated, the supply-oriented and the social-demographic change.

The spatial theoretical approach to explaining neighbourhood change deals with the distribution patterns inside cities. The models by Burgess, Park and McKenzie (1925) and Hoyt (1939) suggest that cities should be seen as a series of concentric rings or wedge-shaped sectors. Expansion takes place in an outward direction from the inner city as incomes and class increase and as the CBD expands. Because of both these processes, inner city residential neighbourhoods often become less desirable, under-maintained, and deteriorate as low income households begin to inhabit them (Mark and Goldberg: 1983). This has been known as the filtering process, where middle and upper income households move out of the central city while the housing filters down to lower-income households.

The second view of inner city change comes directly from the neo-classical tradition of economics, which describe all explanations related to housing in terms of demand. According to this demand-orientated interpretation, the consumer's choice, based on housing preferred and the desired location, is the primary determinants of residential change. All the choices made by consumers are regarded

as entirely based on their own free choice; as a result, any large-scale, socioeconomic change in any sector of a city is a consequence of the aggregate effect of a multiplicity of individual choices. (Bunting & Filion: 1988) Often this interpretation of change is based on assumptions, such as Alonso's (1964) economic equilibrium model of residential structure, where all cities form spatial patterns based on income and economic rent for land. Essentially, the model is based on a trade off between transportation costs against land rents. Low income residents occupy higher density areas at high prices in the centre of the city, and higher income groups locate themselves further out on where density is lower and prices are cheaper. The assumption in this model is that those who can afford to exercise choice in the housing market always prefer newer and larger residential structures, and therefore there is a continual process of suburban expansion. (Bunting & Filion: 1988).

In terms of explaining inner city decline, this model of the city is similar to the spatial analytical form - the filtering down stages is the result of this process. The cycle of declining social status and housing quality, where higher income households move outwards and the older housing stock left behind in the older inner city areas is occupied by lower income households. (Bunting & Filion: 1988) This of course leads to deterioration of an existing older housing stock.

The main criticism of both the spatial and demand oriented models has been their determinist view of inner city decline. In the United States, the existence of slums in the core is justified via these models; therefore, they place the existence of slums as a natural evolution of the modern city. The problem of slums is not as pronounced in Canadian cities, though apparently some planners and policy makers also interpret the city in the same manner as their U.S. counterparts. And as for recent trends towards gentrification and revitalization, researchers like Adams (1984) view the process as a short-term and localised aberration in a society where unique tastes are nothing new. Others view it as a major phenomena and quote major recent trends such as demographic and major economic change in contemporary society as a major explanation. For example, changes in demographics (smaller households and lower fertility), economics (inflation, reduction in housing starts, and the energy crisis), and lifestyles induce a new set of consumer demands that change previous housing patterns (Downs: 1981, Gale: 1979).

The third model, supply-oriented approach to inner city change, includes explanations that address perceived weaknesses in consumer preference, where consumer values only play a passive role (Bunting & Filion: 1988). The basic assumption for this model is that consumer preference is ultimately shaped by the housing supply in different sectors of the city. This supply-oriented view can divide itself into two groups.

The first group of the supply-oriented approach believes that developers, real estate agents and the public sector play important roles in creating socioeconomic changes in the city. (Bunting & Filion: 1988) For example, the contribution of redlining by lending institutions to urban decline has been substantiated (Albrandt and Brophy 1975, Goetze 1976). In the United States, various local and federal government subsidies lead to the construction of suburban expressways and roads with the consequential expansion of suburbia; however, this phenomenon has been documented to have occurred in various Canadian cities as well. This activity has lead to the "unintended hypothesis of inner city decline". (Bunting & Filion: 1988).

The second group represents a marxian view of inner city change, where neighbourhood decline is seen as an inherent tendency in a capitalist economy. The evolution of urban sectors is tied to capital cycles and to the capitalist economy pattern of development (Bunting & Filion: 1988). Smith relates the changing fate of the inner city to the " . . . ebb and flow" of investments within sectors of metropolitan regions (Smith: 1979). In using the marxist theory of uneven development to explain the gentrification process, Smith points out the important role of the automobile, development industries and government in valorising capital investment in new suburban housing while simultaneously decapitalising and devalorising the older, inner city housing stock. (Bunting & Filion: 1988) Subsequently, capitalists take

advantage of this devalorisation in the inner city to create large-scale capital gain through various forms of reinvestment in decapitalised property. From this perspective, home buyers, such as individual "gentrifiers", are mere pawns in a process that reflects the laws of a capitalist economy (Smith: 1979).

The fourth model of inner city change goes beyond spatial explanations and consumer preferences. It associates inner city change with underlying transformations that are effecting the society as a whole. (Bunting & Fillion: 1988) One view stresses the demographic factors in the past thirty years and how they have effected inner city revitalization. For example Clay (1979) emphasises the pressure on housing markets caused by the maturing of the babyboom generation into middle age as a factor of inner city resettlement. Others such as Ley (1985), (1988) relate the rise of inner city revitalization with economic, social and urban change; his approach consists of describing how factors that interact at the general societal level have a direct impact on internal city structure. For example, Ley associates a growth in tertiary and quaternary sectors of employment with a change in attitudes towards the inner city. This restructuring of the employment base has led to the growth of a literate middle class with a taste for inner city living (Ley: 1985). The post-industrial economy in North America fosters inner city revitalization.

There are others that support the claims of Ley. Reid (1985) goes even further and suggests a new class has formed from this economic restructuring that occurred. In particular, certain groups of individuals employed in the quaternary sectors have developed particular tastes and style that Reid defined as "conspicuous consumption". Part of this new consumption is the desire for older style of housing with architectural styles with turn-of-the-century appeal that can only be found in the inner city. This new class use their wealth and influence to manipulate and control local planning and political decisions in their new neighbourhoods (Reid: 1985). Reid believes that class plays an important role in inner city revitalization, and that a new class with affluence and power has emerged because of post-industrial economic restructuring.

The connection between factors of urban change observed by these researchers suggest a possibility of a link between the changing role of the inner city and recent trends in society. It serves as a basis for the development of a theoretical framework that emphasizes the relationship between many aspects of our society's change that influences the inner city: economic and employment restructuring, family consumption, the role of women, values, consumption patterns and demography. The next section examines in detail the role of the post-industrial economy and its effects on the changing form of inner city revitalization; in particular, how it has been identified as a major catalyst for gentrification and how it might also explain the proliferation of incumbent upgrading.

THE POST-INDUSTRIAL CITY AND RESIDENTIAL REVITALIZATION

Though this thesis concentrates on the process of incumbent upgrading, it is important to understand the gentrification process. In particular, what factors can explain why one process is more prevalent in the inner city of one city over another? The literature review so far has concentrated on existing theories of inner city change. The most notable has been the fourth group - demographic and economic change. Gentrification has been viewed as a consequence of this demographic change occurring because of the economic restructuring. Because of this interpretation of gentrification, it must be further analyzed to determine whether it can provide an adequate theoretical explanations as to why incumbent upgrading is occurring.

Smith suggests that gentrification is a process much broader than merely residential revitalization. In fact, it has become increasingly apparent that residential rehabilitation is only one facet of a more profound economic, social, and spatial restructuring (Smith & Williams: 1986). Though gentrification is integrally linked to various strategic redevelopments, such as waterfronts, new recreational facilities, etc.; what is underlying all the changes associated with gentrification in the urban landscape are specific economic, social and political forces that are responsible for a major reshaping of advanced capitalist societies (Smith & Williams: 1986). As Smith and Williams stated,

"...there is a restructured industrial base, a shift to service employment and a consequent transformation of the working class, and indeed of the class structure in general; and there are shifts in state intervention and political ideology aimed at the privatization of consumption and service provision".

As Smith points out, gentrification is then simply a visible spatial component of this social transformation. As a result, the demographic change identified has occurred because of this transformation, which has lead to movement of higher income households to occupy homes in the central city.

The decline of industrial employment and the manufacturing sector and the rapid growth of the service sector along with the information oriented economy are only one aspect of this larger transformation. (Bunting and Fillion: 1988) However, Ley (1985) argues that the most important consideration is the post-industrial metropolitan economy oriented towards services and white-collar employment, which is responsible for the rise of gentrification.

The evidence to support this claim is overwhelming. Ley's 1985 and 1988 studies proved that large metropolitan centres with economies oriented towards service and white collar employment had the greatest increases in the number of neighbourhoods showing signs of gentrification (See Table 1) - Ley 1985 p. 12. From this table, Ley uses his computed social status index to prove that major centres with substantial concentrations of service and professional employment increased in the number of high- and middle-income households in the inner city. However, cities that did not have

any increase in this employment sector did not reveal any signs of high-income household movement into the inner city. Ley hypothesises that gentrification was not as developed in cities with major manufacturing components still remained.

Table 1

Characteristics of Canadian Inner Cities, 1971-81

	Percentage of CMA* households in inner city, 1976	Inner city:CMA* social status index, 1981 (x100)	Inner city social status index, 1981	Inner City revitalization index, 197-81
St.John's	10	96.3	21.1	+ 8.4
Halifax	29	138.8*	31.1	+13.0
Saint John	31	83.7	14.4	+ 2.5
Quebec City	30	95.4	20.6	+ 7.4
Montreal	46	96.0	19.0	+ 6.4
Ottawa-Hull	26	99.6*	26.1*	+10.0
Oshawa	25	70.7	10.4	+ 1.9
Toronto	23	111.4*	23.4*	+ 8.7
Hamilton	18	93.5	15.8	+ 5.7
St.Chatherines-				
Niagara	23	100.0*	14.3	+ 3.8
Kitchener	17	97.6	16.0	+ 6.8
London	13	91.1	17.3	+ 6.2
Windsor	29	89.3	15.0	+ 4.6
Sudbury	31	94.7	14.4	+ 3.6
Thunder Bay	34	96.4	15.9	+ 4.2
Winnipeg	16	72.0	14.4	+ 4.0
Regina	23	88.3	18.9	+ 5.1
Saskatoon	29	122.0*	27.7*	+ 8.0
Calgary	31	111.1*	26.0*	+ 9.0
Edmonton	24	113.0*	23.4*	+ 6.5
Vancouver	29	119.0*	25.1*	+ 9.3
<u>Victoria</u>	<u>9</u>	<u>101.0*</u>	<u>22.3*</u>	<u>+ 9.5</u>
All CMAs	29	99.1	21.1	+ 7.5

* CMA -> Census Metropolitan Area

Source: Ley, David, Gentrification in Canadian Inner Cities: Patterns, Analysis, Impacts and Policy (1985)

Other factors have also played an important role in the gentrification process. One important force has been the "pro

urban" lifestyle that evolved which changed the way the inner city developed (Ley: 1985). Ley argues that the rationale behind allocation of urban land to different uses are altered. Priorities are reversed: whatever the importance of production-based land use allocation in the industrial city, it is consumption factors, taste, and political forces that come to dominate today. Not only is gentrification the product of certain sets of consumption choices, but it represents a historically new phase in urban development and the primacy of consumption over production. (Smith & Williams: 1986) Therefore, wherever gentrification is suggested to be occurring, more forces are at work than simply economic restructuring.

The important question to answer is how does this help in developing a theoretical framework for understanding incumbent upgrading? Where does Incumbent upgrading fit in the scheme of residential revitalization? Are there certain characteristics that are conducive to incumbent upgrading? Are there certain forces that have to be in place for it to proliferate or is it simply a question that it exists where gentrification does not? To develop a theoretical foundation, deductive logic should be applied in retrospect of the hypothetical explanations for gentrification.

BUILDING A THEORETICAL FOUNDATION FOR INCUMBENT UPGRADING

From U.S. studies, what is known about incumbent upgrading is the general type of city in which it has occurred. Clay used data from

the Neighbourhood Housing Service (NHS) program in the United States for his study. The data obtained suggested cities that show signs of incumbent upgrading usually have not had the same degree of employment restructuring associated with larger regional metropolitan centres - this meant that some of the manufacturing base has still remained. Additionally, all the inner cities that exhibited incumbent upgrading witness continual population loss (Beauregard: 1981). Most of these cities in question had populations greater than 100,000 inhabitants, and they were predominately located in the North East and Central plains areas of the United States (Beauregard: 1981) - this incorporates most of the "Rust Belt" or old turn-of-the-century industrial centres.

Clay reveals that the forces at work in a post-industrial society are also responsible for incumbent upgrading. The main differences lie in the employment restructuring which has occurred in most post-industrial cities. Gentrification occurs where there is a movement of high-income households into the inner-city. On the other hand, incumbent upgrading occurs where it seems that the immigration of new middle and high income households is minimal, placing less pressure on the existing residents to reinvest. Usually the pressure on inner-city residents comes from increasing housing values because of reinvestment activity by the middle class resulting in higher appreciation values. However, incumbent upgrading can be occurring where this pressure is not as developed and therefore gives residing residents the opportunity to reinvest

in their aging housing stock.

Clay's study identified low-income and working class communities as the typical areas where incumbent upgrading occurs. The main source of employment is in the manufacturing and the lower services sectors of employment - often termed "tertiary".

In a Post-industrial economy there are likely two scenarios: one where employment manufacturing has been substantially reduced and the other where post-industrial change has been quite extensive. In the former, where a city that has been affected by post-industrial change and reveals signs of incumbent upgrading, it can be hypothesised that those residents are employed in the remaining manufacturing sectors or are working in the ever increasing service jobs. In the latter, where the amount of manufacturing employment has remained the same, it can be deduced that the residents are employed in those sectors and therefore employment has remained steady. The importance of either scenario is that sufficient employment exist for individuals to stay in their neighbourhood and initiate some reinvestment activity. And though employment is available, there is no sufficient means for these residents to "filter-up" to higher income levels. They remained employed in lower-skilled jobs where incomes are actually diminishing over time. However, they are employed in these particular sectors of the economy, and the fact that some form of employment exists means residents have a source of income.

In some North American cities, the remaining manufacturing industry has been transplanted to the suburbs; in these cases, it is highly unlikely that incumbent upgrading is possible since a major employment source is gone. Unless there are significant amounts of employment in the service sector to provide opportunities for incumbent residents, there is no likelihood that incumbent upgrading could be possible.

It is important to note that only medium and small size centres have not been as subjected to the economic restructuring. In the classification of cities, the most pronounced restructuring occurred in large metropolitan centres because of the predominance of corporate capital. However, smaller centres have maintained some of the more traditional patterns of employment, and this explains why incumbent upgrading is more likely to occur in these areas. Employment is an important factor in the incumbent upgrading process, and it is the availability of the more traditional types of blue-collar and low skill service employment that seem to allow various households to maintain an existing household in the inner city.

This leads to another important question. Are those involved in incumbent upgrading residing in the neighbourhood because they are truly decided upon remaining and building a future, or is it a process where individuals simply lack control over their future - meaning the individual does not have the adequate income to move

else where (there is no filtering to higher income levels)? It can be deduced that in an inner city, the service sector employment is insufficient to provide an individual with enough financial savings to buy a home in a newer suburb; therefore the individual is forced to reside in an area that he or she perceives as "less" desirable. It can be hypothesised that incumbent upgrading is revealing a situation where households are trying to make the best of a difficult situation. If this is the case, then it can have mixed interpretations: in one way it can be viewed as an indication of our sorry state of the economy in which fewer and fewer employment opportunities are presenting themselves and where individuals are slowly losing control over their own futures; or, it can be viewed in a positive situation where the process of incumbent upgrading reveals signs of resistance and determination against the tide of a post-industrial society and where groups of residents are determined to make a future in areas where they reside. In either scenario, the assumption that these residents are unable to "filter up" to higher income levels is an important factor in understanding the incumbent upgrading process.

Irrespective of the employment situation imposed on individuals in an incumbent upgraded neighbourhood, Clay's research revealed that internal and external factors are important in being a catalyst to the process. There are two main factors. First, the conviction that the formation of neighbourhood organizations and activist groups for the purpose of promoting neighbourhood redevelopment are

influential. The second is the direct involvement of the public sector in neighbourhood revitalization. In particular, the move by the public sector away from major redevelopment strategies to the implementation of community revitalization programs and neighbourhood planning.

The rise of neighbourhood consciousness in the past twenty years has been reflected in the emergence of many community group organizations. Clay identified in 1979 the political force of community groups and committees dedicated to preserving their area. Geotze (1976) forwards the idea of certain neighbourhoods having coping mechanisms to deal with specific problems. These coping mechanisms serve as a means of social control, where the residents enforces norms and beliefs on the other residents. Clay identifies NIMBYism as an example of residents trying to instill a coping mechanism. Clay terms the process where acceptable neighbourhood behaviour and the degree to which individuals will modify their behaviour to conform to a neighbourhood norm as the "civil class".

Those that enforce this "civil class" in a neighbourhood vary from church groups to any type of neighbourhood organization. Neighbourhoods that have a strong "civil class" are better able to cope with change. Clay believes that the enforcement of neighbourhood social codes is fundamental to their survival in changing the inner city and is an important factor in the incumbent upgrading process.

In the United States, the political force of these community organizations was enough to make lending institutions eliminate the redlining process that so often inhibited institutions from providing loans to potential households (Clay 1979). Often the process of deteriorating housing and the in-migration of immigrants and low-income households would make banks redline areas too "risky" for home improvement loans. It seems that these new community groups have been successful in putting pressure on the lending institutions to make available funds for loans and to eliminate the redlining so often responsible for further neighbourhood deterioration. This suggests that community empowerment is a strong force in the inner city residential revitalization process.

What is considered by Clay and other researchers to be a primary factor in the incumbent upgrading process is the creation of various public initiatives to enhance residential and neighbourhood revitalization. Various infrastructure and home repair programs were initiated in the 1970s and 1980s to reverse the decay cycle in many neighbourhoods. This change in planning initiatives and approach to inner city revitalization seems to have been the most effective in ushering residential revitalization. Some studies have already proven that there is a direct relationship between the implementation of government home improvement programs and the overall increase of residential involvement with home "upkeep" behaviour - see Galster (1988).

This thesis has argued from the beginning that incumbent upgrading is a process which has not been fully researched in terms of Canadian inner-cities. From the existing U.S. research done, it can be deduced that there is a strong possibility incumbent upgrading is occurring in Canada since many cities fit categorically to the type of cities just described. Ley's(1985) research shows that many cities have not been witness to the social upgrading process associated with gentrification, and in fact have shown continued population loss. What is more important, Ley's own research suggested that gentrification did not occur in cities where the manufacturing sector was still a strong component and where economic employment restructuring had not taken place. If we examine the U.S. literature there is a possibility that Canadian cities, just like U.S. cities in the North East, have this form of urban revitalization occurring.

Profile of Upgraded Neighbourhoods

The characteristic features of an upgraded neighbourhood are primarily that of individual reinvestment. Any decision to reinvest is therefore based at an individual household level. Because of this, the scale of reinvestment in a neighbourhood's housing stock is smaller than gentrification. In Clay's(1979) study, the analysis of all incumbent upgraded neighbourhoods revealed that a minimum 10% of the physical units had actually been upgraded, while he estimated that 75% of the neighbourhoods in his study had improved approximately 40% of their housing stock. Clay

acknowledges that though this amount is small the general effect from these improvements is important:

"...relatively small scale action can reverse attitudes and alter the shape of the market in those neighborhoods. In addition, all structures may not need substantial physical modifications. Minor cosmetic improvements and preventive maintenance which would not otherwise have been done are not reflected in these numbers. In addition, the process is relatively new, usually having been started within the past five years."

Physical Characteristics:

Incumbent upgrading is identified by Clay to occur in certain neighbourhoods which are not necessarily close to the Central Business District of a city. In fact, he identified an area approximately 1 to 2 miles away from the CBD as suitable. Also, such upgraded neighbourhoods are more likely to have eclectic architectural style, whereas gentrification occurs in the areas where nineteenth century style architecture exists. Incumbent upgraded occurred often in areas with predominately post-World War Two housing.

The areas in question are often predominately single detached homes and rarely have larger multifamily structures and almost no large apartment blocks. Generally, neighbourhoods which go through the incumbent upgrading process are often in areas where the housing structure is in fair condition, and the housing is fairly moderate in cost. Such housing is in a state of condition where only moderate amount of reinvestment in the structure is required to bring-up to standard.

The amount of home maintenance in a neighbourhood is important to establish in this thesis. If only regular maintenance is involved, then one has to question whether incumbent upgrading is simply not simply indicating a sign of neighbourhood stability? However, Clay's study (1979) clearly indicates that the amount of reinvestment taken up by residents is more than usual. Levels of home improvement activity have increased over time, and this reveals itself whereby the homes have improved from what they once were. The establishment of "normality" is important because it implies that neighbourhoods can be compared to each other statistically - i.e. which neighbourhoods are more involved in renovation activities than others? In more technical terminology, which neighbourhoods have higher levels of reinvestment activity than that which is normal for an area like the inner city?

Social Characteristics:

The types of household identified by Clay in upgraded neighbourhoods are predominately well-established families who have lived in the area for some time - although he does not specify a period. Many households were families with dependent children. Though some older residents reside in the area, they are often predominately family oriented. Hence, family type is an important component in the incumbent upgrading process. These are areas where the husband/wife family with children is the majority.

In terms of ethnicity, Clay suggests that no single ethnic group

had a stronghold in an upgraded neighbourhood. He therefore feels it is not a factor for incumbent upgrading. However, a study by Beauregard reveals that ethnicity does seem to play a major part in the upgrading process (Beauregard: 1990). As well, Varady concluded that neighbourhoods where one ethnic group that predominates is more likely to revitalize itself than one that is not (Varady: 1984). Though this might be the case in the U.S., it remains an open question for Canadian inner-cities - however, it is possibly a factor as well.

The factor that was constant in all neighbourhoods in terms of social characteristics is class. In Clay's study, 90% of the residents were either solid working-class/blue-collar neighbourhoods. The residents were therefore low-income.

A THEORETICAL EXPLANATION FOR INCUMBENT UPGRADING

So far, this thesis has examined many potential theoretical implications for incumbent upgrading. The fourth theoretical foundation -social and demographic change - is likely the most suitable for understanding incumbent upgrading. It is plausible that incumbent upgrading has come about because of the economic restructuring associated with the post-industrial economy, though in a much different context than gentrification. Further, it has been identified that other factors such as public policy and neighbourhood cohesiveness have also played a factor in its proliferation. How can all these factors be incorporated into one

theoretical basis for explaining incumbent upgrading?

Beauregard seems to supply the best possible explanation. In his article title Trajectories of Neighborhood Change, he identified the process of incumbent upgrading, though his intent was to explain the process of gentrification through the dynamics of neighbourhood change. His research is an attempt to provide an explanation for the very complicated process of neighbourhood revitalization. In particular, he identified how the process is a "chaotic concept" comprising a variety of prior conditions, participants, outcomes and processes (Beauregard: 1990). Other factors such as public policy, neighbourhood consciousness, socioeconomic factors, neighbourhood historical development, etc., all play important parts in the creation of gentrification. His identification of how certain neighbourhoods survive despite the forces of economic change provides a good understanding of the incumbent upgrading process.

His analysis of neighbourhood change is seen as buffeted by two sets of often antagonistic forces. The first is the tension between accumulation and community, and the second the problematic intersection of contextual or structural forces with the particularities of place (Beauregard: 1990). Harvey (1985) indicates neighbourhoods are simultaneously places where "community" is formed and where household investors amass wealth and accumulate profits. As a result, the formation of "community"

leads to interclass struggles as different groups attempt to establish the social bonds, public image, and norms of behaviour that define the neighbourhood as their home (Beauregard: 1990). Simultaneously, other groups that are frequently denied such opportunities elsewhere compete to do the same. These groups trying to form community often become intertwined with the exchange value of property, further confounding the bases upon which struggle occurs. This then creates a contradiction between community and accumulation that is most pronounced in neighbourhoods experiencing sudden and rapid change (Beauregard: 1990). Structural change as a result from the contemporary economic system is a perfect example of where conflict is occurring. In two possible scenarios, a neighbourhood can be effected by the emergence of new, affluent households moving into it and displacing existing residents - gentrification, or long standing residents who are trying to remain in control despite the continual population loss and/or loss of employment opportunities for the community - incumbent upgrading. Depending on which group will have control depends on those who control the accumulation of wealth through property.

Along with the previous mentioned contradictions are the place-specific tensions. Beauregard states that,

"Forces of accumulation emerge primarily from structural tendencies in a capitalist social formation that operate on a national and even internationale scale. Although housing markets are often local in scope, the flow of capital to finance the purchase and construction of new and rehabilitated housing, mortgage insurance, and the overall push towards profitability are part of a larger context of advanced capitalism".

The result is that the playing out of these contextual forces "on the ground" results in distinct "local" housing markets - he bases this on Harvey's (1985) theories. Therefore, investment is space specific. Sometimes, investors find that capital cannot annihilate space, and they cannot overcome, without resistance, the layers of past investment and social commitment from existing residents (Beauregard: 1990).

Beauregard says that as a result of the interaction between accumulation and community with structure and place there is a significant variation in the potential for and pace of gentrification across neighbourhoods. Ignoring the word "gentrification" one can quickly identify how his explanation of the dynamics in neighbourhoods also can be used to understand the forces behind incumbent upgrading. He states that,

"...potential is both a function of accumulation opportunities and of the nature and strength of the "community" as historically produced. Where community is embedded and where neighbourhood residents have captured control over accumulation through home ownership, for example, the potential for and the pace of gentrification might be correspondingly reduced." (Beauregard: 1990)

In this explanation, Beauregard is defining neighbourhood consciousness which is very similar to the social cohesiveness of neighbourhoods as discussed by Clay and Geotze. Beauregard believes that when residents have control of the community - they have a strong "sense of community" - and where they have invested into the community, they can curb the pressure from future change such as gentrification. The key is that they have invested in their environment, where homes and other amenities have been maintained and even improved. What is important from Beauregard's article is that he has given a definition to the forces involved. The interaction between accumulation and community structure with structure and place provides a base where an understanding of the complex force of neighbourhoods dynamics can be understood.

The particularities of place identified by Beauregard relate to the neighbourhoods where such activities take place. Essentially, he acknowledges that such forces vary throughout a geographical area. Every area has different contextual forces at play and this in essence is translated in geographical terms to the various neighbourhoods - i.e. local housing markets.

In light of incumbent upgrading, he has identified neighbourhoods where residents have an embedded "community" and control over the accumulation of wealth in an area. They have the potential to resist the forces of gentrification - if the forces are present. He has therefore given an understanding of internal forces at work

in a neighbourhood. In particular, some neighbourhoods control the pressure from outside forces by having control of certain key social and economic elements.

It can be assumed that this control is important not only for neighbourhoods to resist gentrification but where the problems are of an opposite nature, such as decreasing population that threatens the stability of an area. In Winnipeg, decentralization is threatening the survival of many neighbourhoods. Are there neighbourhoods in Winnipeg in which the residents have a strong sense of community and control most of the dwelling through ownership thereby alleviating the forces of deterioration? The key element that Beauregard has identified is the need for communities to have a strong sense of a community and control over the accumulation of property in an area. Accomplishing this allows them to maintain some sort of stability despite dramatic change, whether it be the pressure from in-migration or the threat of out-migration.

CONCLUSION

From this review of literature, many factors have been forwarded to explain incumbent upgrading. Some basic assumptions can now be established. Before this is done, a quick review of the findings are in order.

What has been established is that incumbent upgrading deals with

low-income areas, usually classified as "working class". The majority households are traditional husband/wife families with children - hence, these are strong "residential" neighbourhoods. The residents of such a neighbourhood do not "filter up" in the income scale - meaning they do not move in terms of social class. The incumbent residents have resided in the area because they are probably still employed in the more traditional sectors of the economy, or they are employed in the "lower-skilled" and lower paying tertiary sectors of a newly restructured economy. Therefore, they have no probable means to seek housing elsewhere through improving incomes. In fact, their existing situation presents a more likely scenario of diminishing incomes over time. As a result they are residents who remain in the same social scale as before and any new in-coming residents into the area are probably of the same socioeconomic background.

The amount of home improvement occurring in such an area is considered more than normal. Though the usual regular maintenance of homes is occurring, the amount of home improvement taken place is greater than other inner city neighbourhoods. Sufficient improvement of the physical stock is occurring, so that there is a distinction between neighbourhoods that are upgrading and those that are not. In addition, government home improvement programs have been identified as a key element in this process. Because we are dealing with low-income areas, the availability of such programs enable residents to secure loans for home improvement.

Hence, they are probable sources of alternative funding which otherwise would not normally be available.

And finally, there is the intimation that communities with strong social mechanisms have a greater probability to initiate and sustain residential revitalization. Where property ownership is high and where residents instill in each other an acceptable standard of minimum home maintenance, it is likely that such a neighbourhood will have a greater chance at improving. With these social mechanisms in place, there is more control over developments which occur in the area. Even factors such as population loss do not affect the overall process because there are enough residents committed to the area that its overall physical appearance improves.

From the literature review, the following assumptions can be made:

- Incumbent upgrading neighbourhoods are inner city low-income areas with a propensity for higher home-ownership than normal for other inner city neighbourhoods.
- The majority of the residents in incumbent upgrading neighbourhoods are employed in the more traditional sectors of the economy.
- Since the areas in question have higher home-ownership than normal and are primarily "working class", this implies that incumbent upgrading neighbourhoods are made up primarily of families with children.
- The amount of home reinvestment activity in incumbent upgrading areas is higher than regular maintenance activity in other inner city neighbourhoods.
- Incumbent upgrading areas have higher amounts of government issued home improvement loans than other inner city neighbourhoods.

- Incumbent upgrading areas have social mechanisms in place that establish a minimum code of home maintenance among residents.

With these basic assumptions in place, it is now possible to pursue an empirical study of the Winnipeg area. These assumptions will be used to build hypotheses statements in chapter 4 for applying statistical tests. The final outcome of these tests is to determine whether these assumptions are in fact valid. They will prove that incumbent upgrading is a process which is indeed occurring, and they will provide an understanding of the factors that are underlying the process.

It must be mentioned that the condition describe in the incumbent upgrading process is likely to occur in other neighbourhoods outside the inner city. This study is focusing on inner city revitalization; however, it is likely that other older neighbourhoods outside the inner city are involved in residential revitalization.

CHAPTER 3

REVIEW OF PUBLIC POLICY INITIATIVES IN WINNIPEG

Public programs have been identified as an important element in the incumbent upgrading process. From the literature review, it was determined that the availability of government sponsored home improvement loans have been crucial in helping residents to initiate and sustain reinvestment in the inner city housing stock. They provide the low-income resident with an alternative financial source to draw upon to invest in home improvement projects. This is particularly important when other financial institutions may be unwilling to provide the residents with the much needed financial help to start such projects. Therefore, the intensity by which these government home improvement loans are used by residents of low-income areas is key to the process.

This chapter examines the various public programs that have been initiated by the various levels of government in the City of Winnipeg to stimulate neighbourhood reinvestment. Overall, this is a general survey of these programs and the focus is to determine their possible significance with the incumbent upgrading process.

CONTEXT OF NEIGHBOURHOOD REVITALIZATION PROGRAMS

By far the most recognised program has been the Neighbourhood Improvement Program (NIP). This program implemented in the early 1970s marked a new direction in several initiatives designed to assert a federal presence in urban affairs. Presently, similar

programs exist, particular in Winnipeg, which continue some of the same basic principles of the original NIP, such as the Manitoba/Winnipeg Community Revitalization Program (M/WCRP). Though over time the original role of the federal government has been slowly reduced, the provincial and municipal governments have still been committed to sustaining such initiatives.

A good chronological review of public sector involvement with neighbourhood revitalization is provided by Lyon and Newman (1986). Unless otherwise cited, most of the material presented in this section is quoted from their work.

The emergence of the original Neighbourhood Improvement Program (NIP) represents a period of transition for the role of the public sector in housing and urban development. Prompted by the socioeconomic conditions of the period, the three levels of government (Federal, Provincial and Municipal) became more activists during the 1960s. At the federal level, one major preoccupation was to establish some type of new response to follow the previous urban renewal programs. Some considerations included strategies to develop a policy role for the new Ministry of State for Urban Affairs. Priorities for urban reform included: giving adequate resources to municipalities to have them carry out more complex responsibilities and tasks; preservation of the fabric and human scale of city centres; minimizing the social costs and conflicts involved in urban change; relief of the pressures on

groups and individuals in inner-city areas who were least able to bear such pressures; and finally, to shift urban planning/policy models away from single-use districts.

The result of such a shift in policy change was the development of a community assistance program, premised on the assumption that the private market was unable or unwilling to help improve deteriorating neighbourhoods without the injection of public funds. Another development was the ability to develop a proposal that could incorporate broader federal objectives and priorities for a national urban policy. The program in question was to:

- 1) undertake residential and neighbourhood conservation and stabilization;
- 2) enable local residents to have more control and choice over their future;
- 3) improve services to assist residents to adapt to change;
- 4) break the cycle of events contributing to deterioration;
- 5) promote new municipal approaches to community planning;
- 6) promote historical conservation, and enhancement of sociocultural diversity in central cities. (Lyon and Newman: 1986)

In 1973, new amendments were passed to the National Housing Act (NHA). These included new legislation that made the social objectives of the federal housing policy explicit -- "to bring adequate standards of housing accommodation within reach of those barred from such housing of inadequate incomes". The legislation also showed that the federal government had crossed several

"thresholds of principle" in housing policy through:

- * provision for direct subsidies to low-income homeowners
- * extension of 100 percent financing and grants to non-profit and cooperative organizations providing low-income housing
- * provision of grants for rehabilitation of private, substandard dwellings
- * extension of these aids without requiring contributions from any other level of government.

The Neighbourhood Improvement program (NIP) and the complementary Residential Rehabilitation Assistance Program (RRAP) were among the new initiatives; both were focused on the improvement and conservation of existing neighbourhoods. More importantly, the programs were devised from the onset to explicitly help low-income homeowners in their residential rehabilitation efforts.

The NIP legislation had a time-limit clause introduced by the Federal Government, where it was stated explicitly that no applications for loans or grants would be approved after the 31st of March, 1978 (Carter 1991). The provinces and municipalities were expected to secure other resources to supplement NIP funding. Some projects drew on provincial programmes that provided grants for infrastructure repair and maintenance (Carter 1991).

Amendments in 1973 to the National Housing Act introduced two programmes to complement NIP: the Site Clearance Program (SCP) and the Residential Rehabilitation Assistance Program (RRAP). SCP was used by municipalities to purchase and clear property for low- and

moderate-income housing and community facilities (Carter 1991). For its part, RRAP became the most integral component of NIP; it provided financial assistance to lower income homeowners and landlords for the upgrading of residential property (Carter 1991). Homeowners were eligible for loans to a maximum of \$10,000, where up to \$5000 of the loan was forgivable, if the homeowner continued to own and occupy the dwelling for five years (Canada, Ministry of Supply and Services, 1986, p.73). Despite the availability of all three programs, RRAP and NIP were the most critical, where funding was set up so that NIP addressed the community component of the neighbourhood and RRAP dealt with the deteriorating housing stock (Carter: 1991).

By 1974, all ten provinces had signed NIP agreements and 20 NIP areas had begun to carry out projects. Winnipeg targeted nine neighbourhoods for this program from 1974 to 1979.

The most interesting aspect of NIP and RRAP was its specific targeting of problem areas. Until 1986, only designated NIP areas, usual identified by the municipality, received NIP and RRAP. However, after 1986, there were major changes to the RRAP program - in particular, the qualification criteria for those applying - that even the City of Winnipeg has designated two distinct periods for RRAP: before 1986 and after 1986¹. Each period is exclusive

¹

Status Report on the City of Winnipeg Involvement in Housing Initiatives. Prepared by the Community Programs Division, Department of Environmental Planning: May, 1989. p. 3

since the conditions of eligibility in the program were so different, and as a result the nature of who could acquire a RRAP changed.

Before 1986, only the homeowners in target neighbourhoods were eligible for assistance. Those whose adjusted incomes were above \$23,000 could receive a loan up to \$10,000 from C.M.H.C. Those with incomes below this amount were eligible for the same amount plus an amount of up to \$5000 could be forgiven². Forgiveness was a factor of income, as well as the work required and the length of residency after repair; if the household has an income of \$13000, it was eligible for full forgiveness after a full five years of occupancy in the dwelling. After 1986, RRAP was considered a "Social Housing Program", whereby only specific income groups were targeted without being confined to a designated geographical area³. It applied on a universal basis to the city at large. Table 2 gives the Core Need Income Threshold Table for Winnipeg - it relates household size (as an expression of bedrooms required) to gross income. For example, a couple would require one bedroom; the same as for a single person; a family with two young children of the same gender requires two bedrooms, but if the children are male and female, three bedrooms are required⁴.

² Ibid, p.3

³ Ibid, p.3

⁴ Ibid, p.3

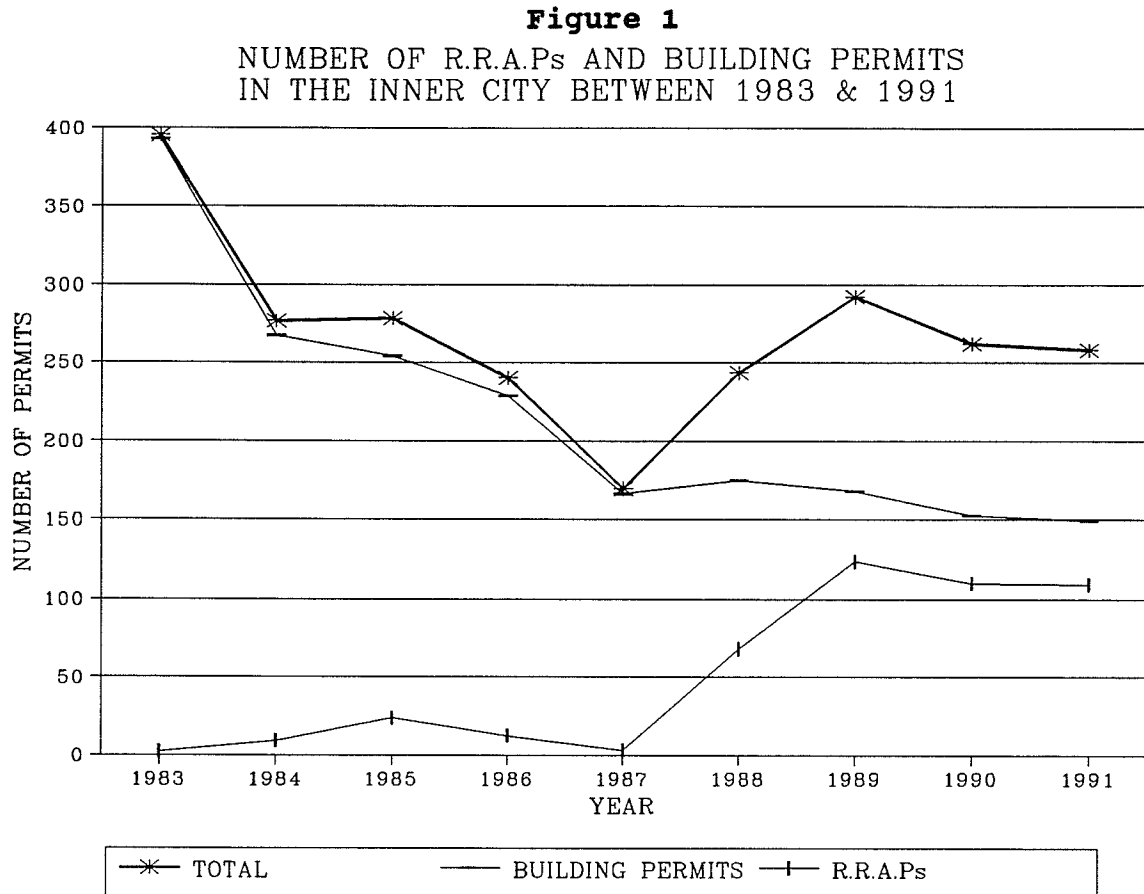
Table 2

CORE NEED INCOME THRESHOLD TABLE

<u>BEDROOMS REQUIRED</u>	<u>INCOME THRESHOLD</u>
1	\$ 17,000
2	\$ 21,500
3	\$ 26,500
4	\$ 28,500
5	\$ 30,500

As a social housing program, RRAP after 1986 with its income thresholds, disqualified those of higher income from RRAP participation. Prior to 1986, all households with incomes between \$13,000 and \$23,000 received forgivable assistance based upon a sliding scale, but after 1986 only low-income residents could qualify for RRAP. In addition, since there was no longer any targeting of areas, this meant all low-income residents throughout the city could participate.

A brief analysis of the number of issued RRAPS from 1983 to 1991 for Winnipeg's inner city reveals that the proportion of RRAPS increased dramatically after 1987 (See Figure 1). Nevertheless, It seems that though the qualification limited the number of higher income households into the RRAP program the numbers significantly increased. It is likely that change from specific area targeting had an affect on the numbers. Without question, more universal availability has increased the proportion of actual permits being issued after RRAP. By the late 1980s, RRAP was more prominent than building permits in the inner city.



There is no doubt that this increase in RRAP signifies an increase in the number of low-income residents that have become involved with home reinvestment. This graph reveals that since 1987 even more low-income residents have received assistance for home improvement.

As for NIP, with its demise in 1978, the Community Services and Contribution Program (CSCP) was introduced and operated from 1979 to 1980. This program consisted of an amalgamation of the previous NIP program along with the Municipal Infrastructure Program and the

Municipal Incentive Grant Program⁵. CSCP was introduced to make federal assistance to municipalities for multiple improvement activities ranging from sewage treatment to housing and social/cultural recreational activities (Carter 1991). Though the program's focus was not directed towards alleviating neighbourhood deterioration, it was still connected with the changing attitudes about planning at the neighbourhood level. In Winnipeg, three neighbourhoods participated in the program before its cancellation in 1980.

In 1980, the change of Government in Ottawa made CSCP's mandate very short. All CMHC's programs were reviewed, and a task force urged termination of the program and the end of its existing operating agreements to remove CMHC from what was considered a municipal problem, and from the fiscal transfer program that was only indirectly related to housing. This ultimately meant that the federal government was no longer directly involved, or had decreased its power, in the area of community planning. However, it also recognised the need for CHMC to intervene in certain areas where needed, and therefore retained for CMHC some CSCP legislative authority.

In the period after NIP and CSCP, there were three main developments, which included: a series of short-term market

⁵ Neighbourhood Improvement Program, An evaluation of the program in Winnipeg, Manitoba: Canada Mortgage and Housing Corporation and the City of Winnipeg: 1981

interventions to stimulate employment and economic activity, and to improve the situation faced by consumers during the economic crisis and periods of high interest rates in the early 1980s; a continued interest in rehabilitation and selected renewal of neighbourhoods and housing by provincial and the municipal governments (particularly in Winnipeg); and, a continued re-evaluation of the appropriate federal role in housing.

To offset the recession and widespread unemployment, several short-term housing programs were adopted by the federal government. These included grants to first-time and new-home buyers; mortgage renewal assistance; tax incentives to free up saving in the Registered Home Ownership Savings Plan (RHOSP); a new subsidy program for construction of market rental units; and a home renovation program to create work in construction trades and encourage the upgrading of housing through grants of up to \$3000 to cover 30 per cent of renovation costs. All these programs had mandates of only one to three years duration. Unfortunately, the federal government made subsequent changes to eliminate the Canadian Home Insulation Program and RHOSP and to reduce the budget for RRAP.

In 1985, a federal consultation paper on housing by the minister responsible for the Canadian Housing and Mortgage Corporation concluded that requirements for new housing would decline significantly over the next ten to fifteen years, while the need

for renovation, repair and conversion of existing stock would increase. This was seen as having implications for both the residential construction industry and the future role of government. Despite these conclusions, the federal paper did not raise the possibility of a new potential program similar to NIP. However, options included the possibility of renovation assistance as an integral part of social housing programs; innovations in renovation financing, guidance to the construction industry as it restructures itself to adopt renovation type of activities; and consumer protection and education.

As for other levels of government, all provinces, including Manitoba, have continued to participate in various public non-profit, public housing and rent supplement programs under federal/provincial arrangements. As well, the province of Manitoba had been engaged in many other programs, such as now the defunct tax supplement program. The provincial government has continued to fund the CIP program through using CSCP funds; the CIP was extended through other federal funds and the Core Area Initiative.

PROGRAMS UNDER THE CORE AREA INITIATIVE AGREEMENT

In 1981, a new initiative was created to help address the growing socioeconomic and physical conditions of Winnipeg's inner-city. This new initiative -designated the Winnipeg Core Area Initiative (CAI)- was a multi-million, tri-government agreement between the Federal Government, the Manitoba Provincial Government and the City

of Winnipeg to fund various projects to deal with the economic, social and physical conditions of the inner-city. The original initiative was a five-year term and comprised a \$96 million package of thirteen diverse programs.⁶ In 1986, a further agreement was signed for another five-year term with a further \$100 million allocated to a very similar package of programs.⁷

CAI is particularly important since one of its major focuses was housing. Those guiding the CAI proposals for housing recognised the need for focusing on rehabilitation of the existing housing stock in the inner-city, particular since most of the older homes were located in the inner-city (File No. EP 10.F.2, February 19, 1981). Though some new housing was needed for special groups, such as the elderly and low-income residents (especially native and single-parent households), it was clear that emphasis be placed on initiatives to address the problems of premature deteriorations and functional obsolescence of homes (File No. EP 10.F.2, February 19, 1981). The result was to make efficient use of the inner-city stock thereby increasing its attractiveness relative to suburban units. As for new housing, it was believed that there were demand constraints, due to the high mortgage rates and to the overbuilding that occurred in the previous decade (File No. EP 10.F.2, February 19, 1981).

⁶ Winnipeg Core Area Agreement, Final Status Report of Programs and Projects to December 31, 1991.

⁷ Ibid.

In the ten years of the CAI's existence five separate programs directly related to housing were implemented. These activities consisted of four major areas: home ownership incentives; housing development activities to stimulate additional affordable residential stock; home repair initiatives; and the integrated inspection and enforcement of housing upgrading and maintenance by-laws. As well, there were neighbourhood and community development programs for improving community facilities and amenities - these programs were very similar to the previous NIP programs. In terms of addressing the problems of homeownership and home repair, two programs were in existence for both agreements from 1981 to 1991: they were the Core Area Home Repair program (CAHRP) and CAI grant for home ownership.

The Core Area Home Repair Program (CAHRP) was an extension of the RRAP approach into neighbourhoods not previously qualified for it. The purpose of the program was to provide homeowners with the financial assistance to effect dwelling repairs necessary for health and safety in those instances where repairs would not be undertaken without the assistance of the program (File No.EP 10.F.2, February 19, 1981) All lending was obtained from CMHC as per normal RRAP procedures. For homeowners, loan forgiveness was up to \$3750 depending on income (same as RRAP qualifications); for hardship case with incomes less than \$8000 per annum there was an additional \$1250 forgiveness, bringing the maximum forgiveness at \$5000. (File No.EP 10.F.2, February 19, 1981) Also, there was an

interest rate write-down feature on a maximum amount of \$3250 of loan over and above the CMHC loan forgiveness portion. This meant that CMHC funding allowed a total loan amount of \$10000 per unit with a maximum of \$3750 of that amount being forgivable; a maximum of \$3250 being eligible for an interest rate write-down; a further \$3000 being available at the current NHA interest rate. (File No.EP 10.F.2, February 19, 1981) The program was implemented by the Housing and Community Improvement Branch of the Department of Environmental Planning - City of Winnipeg (now called Community Development Branch: 1994) Overall, the CAHRP program operated the same as the RRAP program except that the areas to be targeted were in the inner-city and were not part of previous NIP projects.

According to CAI final status reports, the first 5 year agreement resulted in approximately 4038 owner-occupied units repaired, and an additional 979 homeowners received additional loan forgiveness assistance. (CAI Report:1987, p.24) The funding in this first agreement amounted to \$ 6.181 million from CAI and \$25 million from CMHC. In the second agreement, 545 homeowners units were repaired with a total investment of \$ 4.6 million. (CAI Report:1991, p.8-4)

During the entire 10 years of CAI, there was also the Home Ownership Assistance Program (HOAP) from the Province of Manitoba. This program allowed applicants up to \$5000 in the form of an interest-free second mortgage provided by the province to defray the cost of home purchases for families. (File No.EP 10.F.2,

February 19, 1981) It also provided grants of up to \$2500 to first-time purchasers of qualifying existing dwellings in the core area. (CAI Report: 1987, p.25) The program's objective was to assist first time home buyers to purchase newly constructed infill dwellings in the core area through the provision of a grant towards the down-payment and through the added incentive of a five year municipal tax "holiday" on the dwelling. (File No.EP 10.F.2, February 19, 1981) The Manitoba Housing and Renewal Corporation was responsible for implementing the program and used its existing delivery systems for the provincial HOAP program.

In the initial five year of the programs operation, 305 grants were issued to new infill dwellings and 186 grants to first time purchasers of existing dwellings. (CAI Report: 1987, p.25) In the second term of CAI, grants were provided for the purchase of 198 (178 existing; 20 new) homes in the core area. (CAI Report: 1991, p. 8-1)

CONCLUSION

From this chronological analysis, one main element has been consistent with public policy over the past 20 years for Winnipeg's inner city. This has been the implementation of housing reinvestment programs with an emphasis to help those homeowners who are specifically "low income". This has been evident from the beginning with NIP and RRAP, where help for home improvement was specifically targeted to several low-income areas.

Even more interesting is when NIP and RRAP were no longer neighbourhood target orientated after 1986. The universality of RRAP for all low-income residents in the City of Winnipeg revealed a considerable increase in the number of building permits being issued in the inner city. The number of RRAPs grew substantially. A greater proportion of the total building permits were RRAP, which also indicates that many of the residents involved with residential rehabilitation were low-income. This has implications for incumbent upgrading since it is primarily residents in this income group which make-up the incumbent upgrading neighbourhoods. Measuring simply the intensity of RRAP applications over time for the inner city suggest that there was substantial home repair and improvement after a certain period by people in a certain income groups.

Subsequent programs after NIP, such as the programs under the CAI, were involved in helping residents with home repair though in different forms. For CAI, many of the qualifying residents did not have to be in a certain income group; however, the residents had to be within the inner city boundary identified in the programs. Therefore, CAI was geographically specific. Other programs run by the Federal government were universal - such as RHOSP. Anybody was eligible for this program as long as they were first-time home buyers.

The important detail to identify is that throughout 20 years of

government involvement with home reinvestment programs, there has always been a commitment to providing assistance to low-income residents for home repair and improvement. Even the period after the demise of NIP, there has still been continual support for low-income residents to initiate home repair and improvement.

This thesis deals with a process which focuses on how low-income residents are involved with residential revitalization. If government programs are seen as key element in this process, there is no doubt that, in Winnipeg, there were plenty of programs available for residents to use.

CHAPTER 4

BUILDING A FRAMEWORK FOR ANALYSIS

From the literature review, various assumptions were made about the phenomenon of incumbent upgrading. First, the process occurs in low-income areas where homeownership is high and where very little household mobility exists. In addition, the residents of such areas are often employed in more traditional sectors of the economy, such as manufacturing, or are employed in the low-paying tertiary sector. Irrespective of the employment type, they are low-income residents who do not move-up to new income levels; they remain stable at their level and any new in-coming residents in the area are of the same socioeconomic background. And finally, many of the households are husband-wife families with children. This, in brief, is the inferred socioeconomic profile of an incumbent upgrading neighbourhood.

The most important aspect of the incumbent upgrading process is the amount of actual physical reinvestment occurring in the housing stock. It was established that such areas would have higher than normal levels of reinvestment activity than other inner city neighbourhoods. And more importantly, government home reinvestment programs have been identified as key to the incumbent upgrading process because they give residents of low-income areas the needed financial resources to initiate and sustain home reinvestment activity. Hence, an area where incumbent upgrading is occurring would have higher than normal levels of reinvestment activity

coupled with a high amount of government home reinvestment grants being issued for that same area.

Some general empirical evidence from chapter 3 revealed that by 1990 RRAPs became more pronounced than privately acquired building permits in Winnipeg's inner city. However, at this point, the question still remains whether these permits simply increased overall in the inner city. If there are concentrations of permits in certain neighbourhoods, would this suggest incumbent upgrading? The next step is to build a framework to analyze Winnipeg's inner city at the neighbourhood level.

FORMING A EMPIRICAL RESEARCH METHOD

Considering the literature review of chapter two, older models used to study neighbourhood revitalization no longer apply because it was clearly determined that the focus of any empirical research in the inner city should move away from simply identifying whether social status has increased - this approach could only be appropriate to identify the gentrification process. Instead, it is necessary to develop a framework of analysis that can establish whether different forms of revitalization have taken place. In this case, if reinvestment in the housing stock has taken place without major shifts in the population profile. Understandably, any new framework which conducts a longitudinal analysis, has still to rely on the assumption that neighbourhoods' exhibit characteristics of their socioeconomic and demographic condition

during any given period. If there is any change which occurred over time, it should be reflected in an transformed social and demographic profile from the previous period. However, any new framework has to include the additional aspect of physical renewal activity in addition to the socioeconomic characteristics of neighbourhoods.

In order to achieve the stated research objectives, it was necessary to undertake a descriptive analysis of Winnipeg in general and the inner city in detail for 1986 and 1991 at the census tract level using a variety of variables. To accomplish this, a number of theoretical and analytical decisions were made. This involved identifying observations and their standardization over time; data selection and manipulation; statistical analyses and standardization of single distributions and mapping procedures.

Any meaningful longitudinal analysis of Winnipeg's inner city requires that the number of observations for each time period should remain the same. As already stated in the introduction, the boundaries of the inner city used for this study are exactly the same used by the Core Area Initiative. Fortunately, all census tracts for both 1986 and 1991 remained unchanged during this time period (See Map 1 - Chapter 1). Altogether, 27 census tracts are in this area; however, 3 census tracts were eliminated from the study - 13, 14 and 23. These were eliminated either because their population base was low; and/or because nearly all dwellings were

apartment units and rented; and/or because no residential permits were issued for single detached and semi-detached dwellings in these areas.

VARIABLE SELECTION AND METHODOLOGY

The difficulty with deriving a method of analysis is the complexity of defining neighbourhood revitalization. In his 1985 study, Ley accurately identifies two major choices: either neighbourhood change could be measured by changes in the housing market, or it could be assessed by changes in the socioeconomic profile of households. In terms of studying gentrification, most researchers have opted for socioeconomic profiles of households (Gale: 1984), (Ley: 1985,1988), (Beauregard: 1990), (Logan:1984). However, other researchers such as Millward and Davis (1988) successfully used both changes in the housing market and socioeconomic profiles for analyzing inner city revitalization. Their research provided a descriptive analysis into whether incumbent upgrading and gentrification were occurring simultaneously in Halifax by using variables that assessed actual physical reinvestment of the housing stock as well as the socioeconomic and demographic change that has occurred in certain neighbourhoods.

Building on Millward's study, the focus of this research is much the same. Variables are used to accurately measure both physical reinvestment and the socioeconomic and demographic changes in neighbourhoods over time.

Dependent Variable: Identification of Home renovation via Building Permits

The dependent variable to be used should represent actual reinvestment and renovation of the housing stock. For this research the assumption is that reinvestment in the housing stock is a consequence of the change in the socioeconomic characteristics of an area; housing conditions are not seen as the motivating factor behind the change. With this assumption, it is therefore necessary to build some type of variable that provides an indication as to the amount and type of renovation activity that has occurred over time in a neighbourhood. There has been substantial use of various empirical indicators to show change in housing market areas, that include housing tax rates, housing assessments, number of housing sales and building permits (Albrandt and Brohpy: 1975, Phipps: 1983). However, the use of any one of these variables can only be associated with its availability and the amount of information provided.

It has been decided to use building permits as a measure of actual home reinvestment activity in various neighbourhoods. Building permits have been successfully used by Millward and Davis (1987) in their study of Halifax. Other studies have also mentioned the possibility of using building permits as well: Albrandt and Brophy (1975) and Ley (1988). Building permits are seen as a good indicator of the type of reinvestment activity in an area particular since the type of renovation and construction being

conducted is indicated on the permit (Millward 1988).

There are some limitations with the use of permits. Building permits are only indications of intent and so construction might not even take place. Also, not all households will apply for a renovation permit; often this type of work is done covertly to avoid a upward reassessment property taxes. However, as Millward argues "...the missed cases of renovation presumably exhibit a spatial pattern similar to those recorded" (Millward 1988, p.110). Most important, evasion of applications is less severe in cases of substantial renovation work, since such work is much less easily disguised. (Millward 1988)

With the use of building permits as a measure of reinvestment and renovation activity in a neighbourhood, it is simply a question of identifying variables that can be used to explain the different socioeconomic circumstance of a neighbourhood. In this case, whether gentrification or incumbent upgrading is predominating in an area. This can therefore be symbolised in a diagram:

Gentrification → Home Renovation ← Incumbent Upgrading

To facilitate the analysis, particularly in terms of the influence of public policy on home reinvestment, the building permit data used was divided into three variables. The variables include:

- * RRAP = (RRAPs + CAHRPs);
 - * PERM = Standard privately applied building permits; and,
 - * TOTAL = RRAP + PERM.
- * Each of the variables are defined in Appendix I.

These variables were disaggregated so as to identify census tracts that might have proportionally more government-sponsored reinvestment than others.

Independent Variables: Socioeconomic and Demographic variables

Initially, eighteen variables describing socioeconomic, demographic, and housing characteristics were selected for two periods: 1986 and 1991. The variables were selected on the basis of previous research as well as our understanding of urban structure and process. For example, a variable measuring the proportion of individuals with university degrees was calculated because areas exhibiting characteristics of gentrification often reveal higher proportions of highly educated and employed individuals. However, it was very difficult on a priori basis to determine those variables that were highly intercorrelated and essentially measured the same characteristics about various neighbourhoods. Initial use of the Pearson Product Moment Correlation table revealed those variables that were highly intercorrelated and were therefore removed from the study. Appendix I displays the sixteen variables that were used in the study - this appendix indicates the variable titles, how they were

calculated and the data sources.

These variables measure various aspects of the social and economic condition of neighbourhoods. Two variables measuring the proportion of dwelling tenure owned and rented were calculated to compare neighbourhoods in terms of ownership and whether the proportion of dwelling ownership had any significant relationship with the amount of reinvestment activity. Three variables show three types of family households that were calculated because certain types of households are present for different type of neighbourhoods undergoing different transitions. For example, areas showing gentrification have more families with no children or common-law couples than other neighbourhoods. Conversely, areas exhibiting characteristics of incumbent upgrading or stability would have greater proportions of families with children. In terms of single parents, there would be a greater proportion in the poorer areas of the inner city.

To identify middle- and upper-income household movements into an inner city area, it is important to use measures which reveal the socioeconomic transitional process associated with this phenomenon. Changes within a neighbourhood can be identified through changes in socioeconomic class or income groups. (Badcock 1990) However, the problem with using income is that an individual's income changes over time, but not necessarily his or her social position. (Badcock 1990). To overcome this problem, many studies have used changes in

occupation inside neighbourhoods to define the socioeconomic transition associated with gentrification.

There have been many studies that used changes in occupational structures of neighbourhoods: Badcock (1981, 1990), Logan (1984) and Houghton (1987). In his study, Logan used the increase in occupational status, where an increase in the proportion of residents in the professional and upper management occupations suggests neighbourhood improvement (Logan 1984). Ley used the same variable in the social status index indicator of his study on Canadian inner-cities. The use of occupation has been significantly important for those researchers of post-industrial change and its effects on the socioeconomic structures of Canadian inner-cities. Bourne (1987), Broadway (1992) and Ley (1988) used changes in occupations to prove in large metropolitan centres there has been an increase in the number of people employed in quaternary sectors concentrated in certain inner city neighbourhoods. Therefore, in terms of identifying whether gentrification has occurred in a neighbourhood it is possible to use occupation in the quaternary sectors to identify the transitional process in a neighbourhood.

Levels of education were also used to measure changes in the socioeconomic status of neighbourhoods: Ley (1985), Logan (1984) and Millward (1988). However, initial use of the variable showed significant correlations with the variable measuring the proportion

employed in the quaternary sector. The relationship was so high that it was decided to omit this variable and use only occupational characteristics to identify shifts in socioeconomic status.

For its part, incumbent upgrading deals with a set of socioeconomic characteristics that are much different from gentrification. Most notably the population has resided in the area for many years without any substantial change. (Clay 1979) In addition, the population in question is usually of the same socioeconomic background - i.e. working class or lower income households (Clay 1979). Therefore, to define these particular sectors of the economy, the proportion of those employed in tertiary, manufacturing and construction sectors were also calculated. If incumbent upgrading is occurring, then areas that have significant levels of renovation activity should have a stronger showing of households where people are employed in these sectors of the economy.

Ethnicity is a controversial factor in neighbourhood revitalization. For gentrification it has no impact, but for incumbent upgrading it is a major factor. Clay identified in his study that areas with a strong ethnic component, where one ethnic group predominates in an area; were more likely to show signs of revitalization via reinvestment in the housing stock. (Clay 1979) These findings have been supported by other studies as well. (Beauregard 1990) Neighbourhoods that have one predominant ethnic

group often produce a solidarity among most of the residences that resist change and/or promote reinvestment and renovation of the existing housing stock. Because of this factor, an additional variable identifying ethnicity will be used to determine its relationship with renovation activity. A variable was calculated to measure the percentage of immigrants in an area, which translates into the percentage of all individuals who are not born in Canada. By using both this variable, it was possible to determine the influence of ethnicity on renovation activity.

To determine whether certain segments of the population are responsible for renovation activity three additional variables will be calculated. A variable to measure the percentage of population over 65 years of age was used in order to determine whether the majority of renovation activity is done by this group. This is possible since the contemporary inner city has more concentrations of people in their old age (i.e. pensioners) than the suburban areas which contain younger families.

Another variable was calculated to measure the proportion of households that use over 30% of their annual income that goes towards payments on housing. Such a variable will identify low-income areas because often residents with lower incomes use greater proportions of their income towards mortgage payments.

Theoretically all these variables should provide more detailed

information for the existence of incumbent upgrading, since it is a process that is directly related with low-income areas. As Clay(1979) indicated, most of the incumbent upgraded areas often had households using larger than normal amounts of their income towards their housing, and it has been identified that some areas have a larger than normal concentration of an older retired population firmly established in the area - often becoming the main reason for stability in some areas. Therefore, all these variable can be included as independent variables measuring incumbent upgrading, though it is not necessarily true that there will be a relationship. They are being included at this point in order to determine whether a relationship does exist.

Similarly, a variable measuring the proportion of households paying over 30% of income towards rent was calculated. This variable will be a good economic measure for determining areas of low income and poverty.

Conclusion

Overall, there are 16 independent demographic and socioeconomic variables identified in this model. Though they are all factors that can explain the neighbourhood revitalization process, a variable measuring quaternary employment is important for identifying gentrification while population stability is important for incumbent upgrading. The extent to which each variable will be more prominent than another will ultimately help to identify the

type of revitalization.

It should be mentioned that neither these variables nor the forms of revitalization identified are exclusive. For example, Millward's study is the foundation for this model because his study did not only reveal gentrification or incumbent upgrading but also the stages of revitalization between them. Building on his initial research, this model is an attempt to incorporate more variables and thereby provide a more detailed analysis for the degree of change occurring in each neighbourhood over time.

Hypotheses:

To conduct an empirical analysis, it is proper to establish null-hypothesis statements, which are designated H_0 . The null hypothesis is an indispensable part of all statistical tests, and despite what may be our strongest impressions concerning the behaviour of variables, our initial assumption should always be one of 'no difference' between data sets (Shaw & Wheeler 1984). Simply put, there is no difference between the cases under study.

Statistical tests result in the acceptance or rejection of the null hypothesis. If it is rejected, the alternative hypothesis (H_1) must be accepted. The alternative hypothesis is the logical converse of the null-hypothesis and asserts that a very real difference exists between the cases under study (Shaw & Wheeler 1984). Hence we may distinguish three forms of hypothesis:

- 1) the research hypothesis or general statement;
- 2) the null hypothesis of no difference (H_0); and,
- 3) the alternative hypothesis (H_1).

The null and alternative hypotheses are statistical statements only and represent expression of the research hypotheses being used. The proceeding null hypothesis statements are worded to disprove the assumptions made in the literature review concerning the incumbent upgrading process:

- 1) H_0 = There is no relationship between the amount of reinvestment activity and increases in household income levels;
- 2) H_0 = There is no relationship between amount of reinvestment activity and the proportional increase of individuals in the labour force who are employed in the tertiary or manufacturing sectors;
- 3) H_0 = There is no relationship between the amount of reinvestment activity and the proportional increase in families with children;
- 4) H_0 = The proportion of issued government financed loans is evenly distributed between all neighbourhoods in the inner city;
- 5) H_0 = There is no relationship between the amount of issued building permits and the amount of government financed home improvement loans.

At this point, the aim here is to use null hypotheses to statistically test the assumptions related to incumbent upgrading. Evidence to prove or disprove the incumbent upgrading process can only be achieved by proving that underlying assumptions related to it are being validated via statistical relationships between key variables. By using statistics to reject the null hypotheses,

evidence will then be provided to suggest incumbent upgrading might be occurring.

METHODOLOGY

The raw data was standardized by converting all values to percentages. The expression of values in per cent makes it possible to compare census tracts even though they may vary extensively on the basis of their absolute numbers. All values were then weighted for the entire inner city. This weighting procedure takes into account the proportion of each of the variables for each census tract relative to the entire inner city area; the value calculated is then multiplied by the calculated percentage for each census tract in order to obtain a weighted value. The values weighted are more representative of each census tracts' value according to each variable. All weighted calculations are presented at the end of Appendix I. The raw data is provided in Appendix IV.

The data for issued permits indicates the census tract in which it is located, the value, the type of construction undertaken and whether it was issued under a RRAP or CAHRP program. The dates of the permits range from 1983 to 1991 and were divided by the total number of single-detached and semi-detached dwelling units in the study area for 1981, and the value for each census tract will be appropriately weighted according to the entire inner city. Unfortunately, the Statistic Canada profiles do not include the

variable single-detached and semi-detached owner-occupied dwellings; therefore, a choice had to be made between single and semi-detached dwellings or the number of occupied owners. For this study, it is more important to deal with the number of single detached dwellings since the majority in most urban areas are owned, and since the focus of the study deals with the residential neighbourhoods. In addition, the 1981 census was used for obtaining the total amount of single and semi-detached homes since it is a more appropriate base for the building permit data, and since both single-detached and semi-detached dwellings were outlined - the 1986 census only identified single-detached dwelling and therefore it became less accurate than the 1981 statistics.

The data for each time period was placed on an SPSS computer file (Statistical Package for the Social Sciences) for extensive data manipulations. Because all the variables were measure on a ratio scale¹, descriptive statistics such as means and standard deviations could be calculated and meaningfully interpreted. The normal distribution has many desirable properties in that between ± 1 standard deviations from the mean would include 68 percent of the observations (Kuz:1979).

At this point it should be mentioned that none of the data was normalized before conducting further advanced statistical analysis

¹ The distances between the observations are defined in terms of a fixed and equal units allowing for direct comparisons.

i.e. factor analysis and multiple regression. The basic underlying assumption before analyzing any data on a continuous scale is that it should be a normal distribution (Shaw & Wheeler: 1984)² However, this is acceptable since this study is not dealing with population samples that have to be normalized for normative statistics since this study is dealing with actual entire population sizes. Therefore, if any of the variables are not normally distributed, they represent the true nature of the entire data population.

To increase comparability between variables, z-scores were calculated for each observation on each variable. This was done using the descriptive program in the SPSS software. A z-score is calculated as follows:

$$Z_i = \frac{X_i - X}{S}$$

where X_i is a value for an observation i ,
 X is the mean of a variable array,
 S is the standard deviation of a variable array.

The new array of standardized z-scores has a mean of 0 and a standard deviation of 1. The z-scores were then used for all further statistical manipulations in the factor analysis and

² The normal distribution essentially forms a bell shaped curve above the horizontal axis when using continuous data scales. It is often necessary for sample data to be normalized before conducting further statistical analysis. However, we are dealing with entire population samples and this rule can now be overlooked.

multiple regression programs.

Three steps were used to analyze the data. First the variables were examined individually for relationships and then mapped. This will be dealt with in this chapter. The next chapter deals with the second step in the analysis which is to reduce the collinearity between the variables using a Principal Component analysis to see if any distinguishable typologies (or Vectors) will form between the variables - it is then simply a question of qualitatively interpreting the factor score. And finally, the last chapter will use the multiple regression procedure to identify relationships between each identify vector and the dependent variables.

First, each variable will be examined individually through the Pearson's Product Moment Correlation table i.e. the relationship between all the variables, and all values with greater than 50 percent will be identified (See Appendix II). All values with a asterisk (*) represents a statistical significant relationship at the 0.01 level or, put more simply, the confidence limits of 95 percent - meaning 5 times out of a 100 this relationship could have occurred by chance. Similarly, any values with (**) represents a statistical relationship at the 0.001 level or simply the confidence limits of 99 percent.

All the variables were then mapped for each time period so as to

provide a visual expression of their distribution (See Appendix II). The mapping was done using the Atlas Grapher program which produces accurate choropleth automated maps. Values were assigned for each variable in the computer mapping software database which connects each value with the represented census tract.

The variables in this project were all mapped in their original form without transformation or z-scores being used. The use of original values is acceptable since it is more easily interpreted and understood than z-scores (Kuz:1979). Hence, the maps reveal the distribution of the weighted values and their numbers do not reflect the real percentage value. However, it is more important to use these weighted values because they give a true representation of census tracts that stand relative to others. Finally, a criteria of twice the median was used for categorizing each value. This is justified in that all established categories are arbitrary. Though means and standard deviations could be used for creating such categories the desired effect is simply to identify the areas which score higher than others. Twice the median has been used by other researchers such as Millward (1988), Millward & Davis (1986) & Knox (1988). All maps are displayed in Appendix II - Map 2 to Map 18b.

To further enhance the analysis of the inner city, all these same statistics were calculated for the entire city of Winnipeg and for remaining areas of the city excluding the inner city - this was

termed non-inner city. For this study, only census tracts that had building permits and RRAPS issued over the 1983-1991 period were included. As well, any CTs which change boundaries over time were not included. Altogether, 102 census tracts were included for analysis of the entire city of Winnipeg (See Appendix III). By eliminating the inner city CTs, 77 CTs were included for the non-inner city boundary (See raw data - Appendix IV). By dividing up the city into these boundaries, it is possible to conduct a comparative analysis between the inner city, non-inner city and the entire city of Winnipeg. The belief is that there will be marked difference between the inner city and non-inner city in terms of the levels of issued permits and RRAPS as well as the socioeconomic variables associated with each neighbourhood. The logical assumption is that there will be proportional more RRAPS in the inner city than the non-inner city. However, what will be more interesting is to determine the trends between the two areas of the city and their levels of reinvestment activity.

DISCUSSION OF RESULTS

This analysis is based on the correlation tables produced for the inner city (See Appendix II). All variable labels are identified in Appendix I.

Values from the 1986 (See Table 3 - Appendix II) data set reveal strong relationships between the three dependent variables (TOTAL, PERMS & RRAPS). The RRAPS variable reveals a direct relationship

of (.85) with TOTAL and a (.71) value with the variable PERMS. This only indicates that a relationship exists; whether increase in one influences the other is still inconclusive. Further analysis will needed to be done. Of course theses same values were used in the 1991 calculated values, since they are the base dependent variables.

The relationship between some of the independent variables with the dependent variables for 1986 are strong. Of course the variable OWNER (total households owners of dwelling) reveals a strong relationship with all three dependent variables. A value of (.86) for TOTAL was computed and a value of (.81) for PERMS as well as a value of (.81) for RRAPS. All three were significant at the .001 level using the student-t- test. There is no question that as the proportion of owners increase so do the number of permits. However, what is particularly interesting is the strong relationship between the variable measuring the percent of husband-wife families with children (FWKIDS) and all three dependent variables; in succession, a value of (.80) was calculated with TOTAL, and values of (.67) with RRAPS and (.78) with PERMS. All values were again significant at the .001 level of significance. There is a direct relationship between the number of families with children the proportion of permits.

A strong relationship exists between the variable OWNGT (Percent of owners who pay greater than 30 percent of their income towards

housing) and the dependent variables; OWNGT achieved a value of (.81) against TOTAL and a value of (.70) for RRAPS and a value of (.78) against PERMS respectively. Again, all values were significant at the .001 level of significance. This variable is indicative of a household's greater drain of existing income towards supporting mortgage payments. Hence, it is often a measure of low-income family homeowners. Therefore, a significant relationship between the variable OWNGT and dependent variables suggest that there is a relationship between low-income households and renovation activity.

There are many correlations between the various independent variables. Interestingly, the variable RENT (Percent of household that rent their dwelling) is correlated with PROF - Percent employed in Quaternary sector (.80), POPOLD (Percent of population over 65 years of age (.73), FNKIDS (Percent of husband/wife (Common-law) families with no children) (.72) and TERT (Percent employed in Tertiary sector) (.79). Again, all these values are significant at the .001 level of significance. Also, the variable INCOM was significant with the PROF (.57) variable and FNKIDS (.61). This means that in the inner city, there is a strong relationship between those employed in professional sectors of the economy and rented dwellings. As well, those that are renters seem to be individuals that are retired or families with no children. This same variables are only intercorrelated to each other, though FNKIDS is also correlated with OWNERS. As well, TERT is

correlation with nearly all the independent variables, but this is a result of the increase of the tertiary sector in our economy. What this seems to indicate is that those are considered the typical gentrifiers, are not in fact homeowners at all. This then indicates that it is highly unlikely that any form of gentrification is occurring.

However, other occupations variables such as CONST and MANU are showing relationships with variables such as OWNGT, IMMG, TERT SPAR, FWKIDS. When we consider some of the conditions of incumbent upgrading - high ownership, long length of occupancy, predominant low income areas, strong ethnic component - we see that our correlation table does in certain ways support these conditions which would suggest incumbent upgrading, both directly and indirectly. For Winnipeg, it seems that as the number of owners, and households that pay over 30% income towards housing increase, the number of building permits increase. Surprisingly, professional occupations have absolutely no influence on the dependent variable; however, other occupation variables (which represent lower income occupations) strongly correlated with other independent variables that do score high with the dependent variable. The important findings are the fact that there is a polarization in terms of the different occupations associated with the different identified family types. In terms of families with kids, individuals in this group are more likely to be employed in manufacturing or constructions than those who have no children. As

well, those families with children are more likely to be homeowners than those that have no children.

Considering these preliminary results, we can reject the 2nd, 3rd, 4th and 5th null hypothesis. In terms of the 2nd hypothesis:

There is a relationship between reinvestment activity and the proportion of those who work in manufacturing and tertiary sector, therefore reject H_0 .

Simultaneously, we can reject the 3rd null hypothesis which means:

There is a relationship between the proportion of families with children and renovation activity, therefore reject H_0 .

The proportion of building permits and RRAPs are not evenly distributed throughout the entire inner city. Certain neighbourhoods have higher than normal levels of reinvestment activity as compared to others. There, we can reject the 4th null hypothesis which means:

The proportion of issued government financed loans are not evenly distributed between all neighbourhoods in the inner city.

From the correlation table, it was identified that there was a relationship between the amount of R.R.A.Ps being issued and the proportion of building permits. As the amount of R.R.A.Ps increased so did the amount of building permits. Therefore, in terms of the 5th null-hypothesis:

There is a direct relationship between the proportion the number of privately issued permits and RRAPs, therefore reject H_0 .

Together, the rejection of these 4 null hypotheses suggests that a segment of the inner city population is involved with renovation activity. Additionally, there seems to be a significant proportion of these homeowners who are using government assistance to finance reinvestment in their housing stock.

As for the variable measuring income, there seems to be no inverse or direct relationship between the dependent variables.

In terms of the 1st null hypothesis:

Therefore, we cannot reject the H_0 for the 1st hypothesis.

This signifies that income is not a factor in the amount of reinvestment activity in Winnipeg's inner city. The rejection of the 1st hypothesis therefore rejects the assumption that only higher income households are more likely involved in home reinvestment activity

Overall, our linear analysis reveals the strong possibility that revitalization might be occurring in the entire inner city, and it might be in the form of incumbent upgrading. However, the proportion of issued building permits in the inner city is relatively small to the rest of the City of Winnipeg - in fact, we are dealing with just over 7% of the permits for the entire city.

Table 4 - Appendix II represents the correlations calculated for the 1991 values. There seems to be no change over time. Once again, the independent variable OWNER is highly correlated with TOTAL (.82), RRAPS (.78) and PERMS (.77); all three were significant at the .001 level. Other independent variables correlated with TOTAL are again FWKIDS (.82), CONST (.66) and OWNGT (.80); all were significant at the .001 level. Interesting, the variable MANU - Percent employed in the Manufacturing sector) was also correlated with TOTAL, where MANU had a value of (.59) and was significant at the .001 level. This seems to reinforce our overall analysis of the 1986 table in that there is a segment of the population primarily involved with reinvestment activity who are employed in traditional occupations of the economy.

The variable RENT is again highly correlated with POPOLD (.69), PROF (.77), TERT (.82) and FNKIDS (.72). This reinforces the original analysis from 1986 that those who would be considered typical gentrifiers are not involved at all in home reinvestment. From examining both tables, it seems clear that the inner city has a segment of the population which is educated, employed in professional employment but which does not own property. They merely are renting, which suggests that they are highly mobile. Also, it could suggest that the majority are retired or professionals who are renting unit with the desire to have close a proximity to downtown. This in itself deserves further investigation - the statistics seem to cohere with this analysis.

From both time periods, certain independent variables were intercorrelated to reveal that a segment of the population is in poverty. For 1986, the variable SPAR - Percent single parents with children is highly correlated with RENTGT - Percent renter paying greater than 30 percent income towards rental payments (.86). RENTGT is also highly correlated with ABORG - Percent population of aboriginal descent (.62), IMMG - Percent immigrant population (.67), MANU (.65) and CONST (.65). Interestingly, these statistics reveal that in terms of the immigrant population in the inner city there is a dichotomy. One group seem to be highly correlated with homeownership and employed in the traditional professions (i.e. construction & manufacturing), the other seems to be associated with deprivation, such as decreasing incomes, no homeownership and higher proportion of single parent families. Those in the groups associated with deprivation would include aboriginal as well. The 1991 tables supports the same statistics for 1986 in terms of the deprivation levels.

There seems to be no suggestion of gentrification occurring in Winnipeg. Any potential variables that would be indicative of gentrification (PROF & INCOME) reveal no correlation with the dependent variables. Perhaps the spatial analysis will reveal more interesting results.

Table 5 to Table 8 - Appendix II provides results for both the City of Winnipeg and the Non-inner city for 1986 and 1991. The most

interesting statistic for these tables is no correlation at all between TOTAL and RRAPS. Interestingly, even the entire city reveals no relationship with RRAPS except independent variables such as POPOLD, ABORG, RENT and direct inverse relationship with the INCOME variable. All these signify conditions of low income groups in the suburban area. However, when we separate the city into inner city and non-inner city, we clearly see a difference in terms of the significance of RRAPS and the independent variables associated. In the non-inner city, the variables OWNER are correlated with TOTAL and PERM, but so are the variables PROF, TERT, FWKIDS and SPAR. This indicates that in this geographical area, it is the middle class which predominates in terms of homeownership, construction and maintenance. Only lower income groups are associated with RRAPS. However, in the inner city variables such as MANU, CONST, OWNER and FWKIDS reveals strong relationship with TOTAL, PERMS as well as RRAPS.

Overall, this then signifies that two distinct groups are involved with home repair and maintenance. In the non-inner city, it is the middle class; in the inner city, lower income groups employed in traditional sectors of the economy. More importantly for the inner city, there is a relationship between this group and the use of RRAPS - hence the high correlation. This suggests that incumbent upgrading is occurring in the inner city - it is the only thing that can explain the differences between the two geographical areas.

Spatial Analysis:

For the second part of this study, maps were created to examine the spatial distribution of the various independent variables and the dependent variable identified in this study. The aim was to determine the census tracts that have higher intensities than others. Twice the median value was used as a threshold to identify the census tracts with higher degree of intensity (See Maps 2 - 18b - Appendix II).

The first map reveals the distribution of total building permits for the inner city. From the data, census tracts 21, 43, 45, 48 and 117 have higher proportions than other census tracts (See Map 2). The next step is to see if the same census tracts score high on the various independent variables. Map 5a and 5b reveals the percentage of homeowners in the inner city. Interestingly, census tracts 21, 45 and 48 reveal higher proportions than the rest of the inner city; census tract 29 also scored high but did not score high in terms of the building permit variable. Most of these census tracts are on the marginal areas of the inner city.

Map 6a and 6b reveals that the majority of the rented dwellings are in the south of the inner city. These same census tracts scored high for the professional (Map 7a and 7b) and tertiary occupation variables (Map 8a and 8b). There does seem to be a spatial relationship between rental units and those employed in professional and service employment. The other occupation groups

(construction and manufacturing - Map 9a to 10b) are more related to the census tracts which have higher proportions of homeowners.

Map 11a to 13b reveal the family types variables for both periods. Families with no children are spatially related to the census tract that scored high with professional occupation variables. Families with children are more associated with the area with high tenure-ownership. Interestingly, single parent families are associated with both. This probably represents the simple fact that this family type is becoming more common in all walks of life.

Maps 15a to 16b measure the proportion of immigrants and aboriginal in the inner city for both periods. This a particular concentration of immigrants in the centre; both census tract 21 and 29 scored high. These census tract also exhibit characteristics of high homeowners and renovation activity. While the proportion of aboriginal is more concentrated in the central and northern part of the inner city.

The series of maps reveal that there is the probability that incumbent upgrading was occurring in Winnipeg from 1986 to 1991. There is some evidence of up-filtering that occurred in some neighbourhoods. Census tract 117 exhibited characteristics of gentrification (.i.e scored high in terms of building permits and percent employed in professional occupations), and this suggests that there has been socioeconomic change in the that census tract

over the past five years. The most likely explanation is the immigration of new high income households into the area. Finally, despite the fact that census tract 117 did not pass the threshold level of twice the median, its own score came really close meaning that there is a higher proportion of homeownership.

In terms of incumbent upgrading, three census tracts (21, 45 and 48) reveal signs of this process. All three scored high with the building permit, tenure-owned, and manufacturing and construction occupations. They are also geographically located in areas where it is likely that this process would occur. These findings suggest that the populations in these areas are fairly stable, with a higher proportion of homeownership and where more home investment activity has been taking place than other census tracts in the inner city. Most important, these areas have higher concentrations of people employed in traditional occupations. Census tract 21 is particularly interesting since it scored high with all the immigrant variables as well. Altogether, these maps reveal that spatially there is a case for incumbent upgrading in Winnipeg. Three census tracts can be associated with the traditional definition of incumbent upgrading, and another can be associated with the ethnic component of incumbent upgrading as discussed by Clay (1979) and Beauregard (1990).

Finally, it is important to determine the influence of public policy on potential renovation activity. A view of the map showing

the spatial distribution of RRAP (Map 3) reveals that once again census tracts 21, 45 and 48 score high as well as surrounding census tracts; most interestingly, census tract 117 does not show up at all which suggest that the majority of its building permits have been obtained through private investment. This map indicates that those areas with conditions of incumbent upgrading also have higher proportions of government assisted home reinvestment grants than other census tracts in the inner city. This alone demonstrates a strong possibility that incumbent upgrading has been occurring in the three mentioned census tracts.

CHAPTER 5

PRINCIPAL COMPONENT ANALYSIS

The methodology developed in chapter four provided a detailed analysis of the type of inner city revitalization occurring in Winnipeg from 1986 to 1991. By using the thirteen socioeconomic and demographic variables in the analysis, the statistical results revealed that there is evidence that the incumbent upgrading process is occurring. However, at this point, the analysis is still incomplete because the amount of variables being examined makes it difficult to develop a full picture of the process of incumbent upgrading. In addition, the various individual variables show significant relationships between each other. To develop a better understanding of the relationship between these variables and how they can be used to explain the socioeconomic structures of neighbourhoods is the next step. Many urban researchers have used statistical methods such as factor analysis to reduce the number of variables being examined. Essentially, factor analysis is a statistical technique used to identify a few factors that can be used to represent relationships among sets of many interrelated variables (Narusis: 1986).

The basic assumption of factor analysis is the underlying factors, or vectors, that can be used to explain complex phenomena. Observed correlations between variables result from their sharing these factors (Narusis: 1986). Therefore, the goal of factor analysis is to identify the not-directly-observable factors based

on a set of observable variables (Narusis: 1986). It makes it possible to derive inductively the dimensions of urban structures through its application to an extended set of empirical indicators.

The use of factor analysis is important in determining whether structural processes are occurring. For example, it can help determine whether the characteristics that make up incumbent upgrading will group together as well as identify how other variables will group together. Consequentially, the factors created can help identify these areas in terms of spatial representations. The objective of this chapter is to analyze the factors for change over the 1986 to 1991 period - particularly, how their dimensions and spatial distribution have changed in the inner city of Winnipeg for both periods.

Factors eliminate most if not all covariance between many similar variables. The opportunity then exists to examine further processes in the inner city by taking each factor and correlating it against the three established dependent variables. Therefore, the second part of this chapter is to examine the relationship between the factors created and the amount of reinvestment activity through multiple regression.

VARIABLE SELECTION AND METHOD OF ANALYSIS

Before examining the mechanics of a factor analysis solution, the characteristics of a successful factor analysis have to be first

considered. One goal is to represent relationships among a set of variables parsimoniously (Narusis: 1986). The object then is to explain the observed correlations using as few factors as possible. If many factors are needed, little simplification or summarization occurs (Narusis: 1986). In addition, a good factor solution is simple to understand and interpretable (Narusis: 1986).

Both 1986 and 1991 inner city data sets were selected for this part of the analysis. Since all variables provide socioeconomic and demographic characteristics of the population and were directly comparable with each other, none were excluded from the study. However, the dependent variables were not included since the purpose is to determine how these variables will effect the latter. In addition, both data sets for the non-inner city and Winnipeg were included to compare the factors created with those of the outer city and Winnipeg.

Principal Components Factor Analysis Model with Varimax Rotation was used to reduce the inner city data sets of 24 x 13 data matrix to a few factors that would identify the structure of the data. For the outer city, the data set was 77 x 13 and the total for Winnipeg was 103 x 13¹. This model structures all the common variances among the 13 variables and consequently the diagonal values in the correlation matrix are set at unity (Kuz 1979).

¹

For Total Winnipeg 1991, the data set was 101 x 13 because two census tracts were eliminated from the study due to boundary changes.

The computational procedure for the principal components model for the inner city data sets are as follows:

Step one:

A raw data matrix of measurements for 24 census tracts on 13 variables. All variables were weighted relative to the entire inner city.

$$\begin{matrix} & 13m \\ 24n & \left| \begin{array}{c} \hline \end{array} \right. \end{matrix}$$

Step two:

A standardized data matrix of the above measurements for 24 census tracts on 13 variables. All measurements are now expressed in standardized Z scores having a mean of zero and single unit variance.

$$\begin{matrix} & 13m \\ 24n & \left| \begin{array}{c} \hline \end{array} \right. \end{matrix}$$

Step three:

A zero order correlation matrix with diagonal values set at 1.00.

$$\begin{matrix} & 13m \\ 13m & \left| \begin{array}{c} \hline \end{array} \right. \end{matrix}$$

Step four:

A factor loadings matrix. The first factor extracted accounts for the largest amount of variance (Kuz 1979). The factors are extracted in descending order of magnitude (Kuz 1979). Each succeeding factor is independent but additive and accounts for variance not included in the preceding factors. Eigen value was set at default - 1.00. Using this cut off, the last factor had accounted for 15 per cent or more of the variance in this matrix.

$$\begin{matrix} & 3f \\ 13m & \left| \begin{array}{c} \hline \end{array} \right. \end{matrix}$$

Step five:

A rotated factor loading matrix. All factors in the preceding matrix are rotated orthogonally. This procedure maximizes the loadings of each variable on one factor with its loadings on the other factors as near to zero as possible (Kuz 1979). The factor loadings are a measure of the strength or degree of association each variable has with each factor extracted (Kuz 1979). The variance accounted for by each factor will vary from that of the matrix in Step 4, and new eigen values must be calculated for this matrix. Thus, there is no order of magnitude for the factors in this matrix. It is this matrix that is interpreted in this study (See Table 10 - Appendix III).

3f
13m |

Step six:

A factor scores matrix. Factor scores are a composite measure for each census tract for each factor in the rotated factor loadings matrix (Kuz 1979). These are expressed in standardized Z-scores. The complete factor scores matrices are included in Appendix D.

3f.s.
13m |

The importance of the various factors defined in each analysis may be assessed by comparing the percent variance accounted for and conclusions drawn regarding structural changes over time. Factor scores can be categorized and mapped to show their spatial distribution, thereby allowing the researcher to test theories of the spatial pattern of various characteristics and their movement over time.

DISCUSSION OF RESULTS

Results from the application of principal components analysis to the variables for 1986 and 1991 were examined. Principal component

analysis implies that all variables used explain 100 percent of the variance between the variables; therefore, it assumes a closed system with no assumption about other underlying structures of variables (Shaw & Wheeler: 1985, p.279). Using the standard default of 1.00 eigen, three factors were created for both 1986 and 1991. Table 9 - Appendix III lists the percentages of total and common variance explained, the cumulative percentages, and the eigen values for each year after varimax rotation was used to improve the distribution of the explained variance between the factors.

Table 10 - Appendix III lists the standard factor scores for each of the three factors created. Only significant loadings, those $\pm .40$ and greater are identified as relevant in identifying the characteristic of each factor (Kuz: 1979).

The first factor extracted for 1986 (Table 10 - Appendix III) identifies many variables associated with incumbent upgrading, with high loadings on the dwelling owned variable (OWNER), the husband-wife family with children variable (FWKIDS), traditional occupation variable, which includes both construction and manufacturing (CONST and MANU), and the income variable (INCOM). With occupations, even the tertiary sector (TERT) scores sufficiently to be relevant as a loading with this factor. Even more interesting, the variable measuring those owners who pay greater than 30% of their income towards housing (OWNGT) scored very high in this factor.

For 1991, the same factor was extracted, where most of the same variables scored high loadings (See table 10 - Appendix III). Interestingly, the variable that identifies the proportion of income (INCOM) scored very low. As well, some variables, though they still had high loadings, were lower than the 1986 period; this includes dwelling owners (OWNER), the variable measuring homeowners paying greater than 30 percent of income towards dwelling (OWNGT) and the construction occupation (CONST). However, the variables measuring the proportion of families with children (FWKIDS) and those employed in manufacturing occupations (MANU) were higher than 1986. This indicates that a shift had occurred over this period.

The most interesting factor loading was the proportion of immigrant population (IMMG). This variable already scored high in 1986 and increases for 1991 suggesting that a greater proportion of these residents were immigrants.

Overall, the first factor definitely revealed strong characteristics of incumbent upgrading. The population in this group own their dwellings and have traditional families with children. In addition, over time it seems their incomes diminished; this itself indicates that they are in the lower income category. In terms of employment, they remained employed in the more traditional sectors of the economy, though they more and more were employed in the tertiary sector. Their diminishing incomes are corroborated by the fact that most are paying greater than 30

percent of their income towards their dwelling - this means more than 30 percent of their income goes towards paying mortgages and home repair. As well, increasingly the individuals in this group are immigrants. All these characteristics reveal conditions of incumbent upgrading. The use of factor analysis has identified a particular population group because of its unique social and demographic characteristics. Therefore, this factor that comes out for both the 1986 and 1991 data set will be formally titled the Incumbent Upgrading vector.

The second factor extracted for 1986 revealed characteristics associated with a retired population and a more mobile high-income households (Table 10 - Appendix III). The variable that indicates the proportion of dwellings rented (RENT) loaded very high in this factor. In terms of the demographic variables, families with no children (FNKIDS) and population over 65 years of age (POPOLD) loaded very high also. In terms of occupation, the variable measuring the proportion employed in professional employment (PROF) and tertiary employment (TERT) also scored very high. Interestingly, though income (INCOM) had a loading high enough to qualify in the factor it was not significantly high.

Overall, this factor revealed a segment of the population that is retired or upwardly mobile who are living in rented dwellings with high incomes. In terms of the variable measuring the proportion of the older population, it is surprising that it scored so high with

this variable. The data set for 1991 reveals that the same variable also loaded high for that year. The only variable that scored significantly lower was income, though it was not as low as Incumbent upgrading factor. Because of the characteristics of this second factor, it was titled the upper High Income/Retired Population vector.

The third factor revealed all the characteristics of a population with poverty and conditions of deprivation. In terms of demographics, the variables showing the proportion of single parents (SPAR), immigrants (IMMG) and aboriginal (ABORG) load very high in this vector. In terms of occupation, the variable indicating the proportion of manufacturing (MANU) loads very high in this vector; the variable construction (CONST) scores enough to be included in this variable.

The most interesting were the economic variables. The variable measuring the proportion of housing paying greater than 30 percent of their income towards rental payments (RENGT) was loading very high. The only significant inverse loading was in this factor where the income variable (INCOM) had a negative number. These economic variables alone reveal that this factor represented a population that is in poverty.

The data set for 1991 revealed none of the occupation variables loaded into this factor. What is most important, the variable

measuring the proportion of immigrants (IMMG) just scored enough to be counted in this factor, but was nevertheless much lower than the 1986 values. Overall this was showing that, over time, the population in this group have become even more disadvantage, where they were completely disenfranchised from any form of occupation. Immigrants have moved on in society to other levels of living. It seems to suggest that a certain segment of the population are therefore in state of deprivation, and though some the population in this group eventually move out others do not, such as the Aboriginal population. This vector will be titled the Low Income/Poverty vector.

Examination of Non-inner City data set

A brief analysis of Table 13 - Appendix III, which includes all the factors score for the Non-inner City data set for 1986 and 1991, revealed completely different vector formations. There were four vectors created for 1986. The first vector -the most significant- revealed that variables such OWNER, FWKIDS, FNKIDS, INCOM, PROF and TERT score high. This suggested that the principal socioeconomic structure was the middle class; this group was either new families or husband-wife families with children who were employed in service or professional employment and had high incomes. What is most important, they are home owners. The formation of this vector should not be surprising.

The formation of another vector showing high scores in the

variables MANU, CONST, FWKIDS, OWNGT and OWNERS is interesting. This vector revealed the same characteristics of the income upgrading vector in the inner city. This suggested that this segment of the population in the non-inner city were a low to moderate income portion of the population who are homeowners. It can be possible that this group extended into the inner city; however, to further analyze this requires a spatial analysis of the entire non-inner city. This goes beyond this thesis.

The third vector revealed characteristics of poverty. The variables RENT, SPAR, RENTGT, ABORG and INCOM scored high. This indicated that the population in this segment was low-income: they had high rental rates, had a large portion of income going towards rent, included a high proportion of aboriginals - a group marginalized by society - and a high negative income variable showing actual lower incomes.

The fourth vector revealed the same conditions as the third except that the variable POPOLD, IMMG and FNKIDS were also significant. This indicates a different segment of the population with low income: the elderly and immigrants.

For the 1991 data sets, the most interesting point is the order in which the vectors score had changed. The first vector remained the most significant in terms of variance explain, the second vector in 1986 had now become the fourth in order. The third and fourth in 1986 have moved up in 1991. Therefore, the lower income/homeowner

group identified in 1986 was no longer as prevalent. It seems to have survived in the inner city but not in the non-inner city area. Overall, the population in non-inner city seemed to become polarized between the well-to-do and the lower-income groups.

SPATIAL ANALYSIS OF MAPS

To view the spatial relationship between the identified vectors for both 1986 and 1991, the vectors were mapped by using the standard root scores relative to each census tract (See Maps 19a - 21b - Appendix III) - for root scores for each census tract see Table 10 - Appendix III. These scores, which are standardized measures of the census tracts on each factor, have been divided into five class intervals as follows:

Low	-1.5 to -5.0;
Below average	-0.5 to -1.5;
Average	0.5 to -0.5;
Above average	0.5 to 1.5;
High	1.5 to 5.0.

These intervals follow the normal breakdown to analyze a normal distribution using z-scores. For example, using the incumbent upgrading factor, a high positive score indicates high incumbent upgrading status (positive factor loading) in that census tract while high negative scores reveal low status of incumbent upgrading (negative factor loadings). Visually, all areas that score high are assigned a cross-hatched pattern. These are the areas of high significance for each factor. To supplement these maps, the dependent variables - TOTAL, RRAP & PERMS - were standardized using

z-scores and mapped using the same intervals (See Maps 22 - 23 - Appendix III).

i) Spatial analysis of Incumbent Upgrading vector

Map 19a showed the spatial distribution of the incumbent upgrading vector for 1986. The patterns showed that the census tracts that score high are in the periphery of the inner city boundary. Two census tracts score high above average in the northwest of the inner city (census tract 45 and 48), which is the traditional North end of the city. These areas are delimited north of Burrows avenue and south of Church avenue. McPhillips Avenue is the limit West and Main street is the limit East. This area of the city is predominately older suburban development, with some minor industries and retail outlets. The housing was built immediately after the second world war and has continued to be a stable area in terms of household composition and housing maintenance. Situated in the North end of the city, this area has a resident population that usually highly identifies itself with their area. They have moderate- and low-incomes and are primarily considered working class. This area has always had this perception vis a vis other residents of the city. With a strong ethnic component of Eastern European immigrants, and more recently Filipinos, the area has a consistent social economic track record of being composed of moderate and low income working class households.

Other census tracts that scored high include census tract 21 and 29

in the west side at the edge of the inner city. These areas again are considered traditional working class areas where the residents earn moderate to low incomes. Census tract 21 is unique because of its strong British and German ethnic component. These areas are similar to census tract 45 and 48 in that the housing stock was built primarily in the post-world war two period. However, census tract 21 has a mixture of housing dating to the 1920s and 30s. Again, the residency in these areas has been stable, though census tract 21 seems to have pockets of unstable populations of low-income groups who are mobile and renters. This is evident from viewing the third vector.

Viewing Map 19b showed that the same census tracts score high above average for 1991. However, census tract 21 had gone from high to above average only, which revealed that over time its has been in transition. Census tract 29 has remained high above-average. Most of the surrounding census tracts were average to above average. Not surprisingly they surrounded the census tracts scoring high above-average, which suggested that in some ways concentric patterns are forming around the area exhibiting characteristics of incumbent upgrading. The downtown core and the north east showed below normal values for this vector.

Considering Clay's identification of incumbent upgrading, the census tracts which scored high are geographically in the periphery of the inner city areas, and they had a strong social and economic

composition of working class residents living in post-World War Two suburban housing. These areas were therefore situated exactly as Clay identified where incumbent upgrading is most likely to occur. All the characteristics that Clay identified for incumbent upgrading neighbourhoods were revealing themselves for Winnipeg's inner city. This is not only revealed in terms of socioeconomic and demographic characteristics, but also in relation to geographical representation as well; therefore, there are both a linear and spatial relationship that exist.

ii) Spatial analysis of Population over 65/High Income vector

Map 20a revealed the spatial distribution of the population over 65/high income vector for 1986. In terms of geography, the areas that scored high above-average were traditionally where higher income households reside in the inner city. The limits are North of Corydon Ave and South of Portage Avenue and East of Sherbrooke Ave and West of Osborne Street. Two census tracts that scored very high are census tract 15 and 13. Census tract 15 has a pocket of high income residents established in the bend of the Red River; streets included in this area are Middle Gate, West Gate and East Gate. This has always been a traditionally high income area and it has often been surrounded by very low income residents North of the area. As for census tract 13, Wellington Crescent, which is occupied by high income residents, is situated along the river bend inside the census tract. Again this is another traditionally high income area. What is significant for census tract 13 is that it

has many condominium and apartments with high proportions of retired population with high incomes. West of Osborne Avenue and along River Avenue there are many apartment units that are for high income users - the usual rental rates were higher than other surrounding apartment units. Most of the unit occupants are retired or over 65 years of age. It is likely that these residents reside in this area because of the accessibility to the downtown area and because individuals of similar incomes reside in the area - a form of social association is in place.

Comparing these census tracts to the Incumbent upgrading vector, they only had average values with this vector. This included census tract 45, 48 and 21. As well, all the central census tracts, 22, 26 and 29 had average scores as do the census tracts of 16 and 17. The remaining census tracts scored below average, particularly the census tracts in the Northwest and Northeast of the inner city; these are traditionally the lower income areas of the city. Overall, this vector identifies only a few census tracts had higher concentrations of high income households than the rest of the inner city and that these areas were in traditionally affluent areas. As for the incumbent upgrading areas, this vector revealed they have normal scores only, meaning that characteristics are normal compared to the entire inner city. Finally, the lower income areas scored very low for this vector that should not be surprising. The Population over 65/High income vector is important in that it has successfully distributed itself spatially to reveal

actual socioeconomic conditions in the inner city it should naturally represent.

As for 1991, Map 20b showed that no real change has occurred overtime; those census tracts that scored high in 1986 remained high in 1986. There has not been any significant change in the distribution of high income groups in the area. The fact that no real increase in a census tract occurred indicates that no transition has taken place over time.

iii) Spatial analysis of Immigrant population/Lower income vector

The last vector - Immigrant population/Lower income - reveals through Map 21a for 1986 that this group scattered throughout the inner city. The exceptions are the North - Northwest, which include census tracts 48, 44, 33 and 27; St. Boniface which includes census tracts 116 and 117; and, the Southwest which includes census tracts 16, 17 and 11. A band forms from census tract 15 and 22. This is particularly interesting since census tract 15 also scored high with vector II. Polarization of population groups is the most likely explanation, where a large section of the population has high incomes and another is low income. Census tracts along the Northeast, which include census tract 24, 36 and 35 have normal scores as well as census tract 21 and 29. The remaining census tracts score above normal; a solid band forms from the centre to the North of the inner city. This includes census tract 45 that scored high in the incumbent

upgrading vector. This likely indicates that the population is polarized in that area as well between incumbent upgrading residents and lower income households.

Map 21a showed that the city centre and the North/northeast of the inner city had scores ranging from average to above average. The distribution of population groups revealed that the city centre has many low-income residents who are either low-income immigrants or are larger concentrations of low income households who are highly mobile.

For 1991, the same distribution held. Map 21b showed that the same areas had the same above average scores. Some census tracts decreased in scores while others had gone up. In St. Boniface, census tract 116 was now average instead of below normal and census tract 45 had dropped from above average in 1986 to average in 1991.

iv) Spatial distribution of standardized dependent variables

Map 22 revealed the spatial distribution of the z-score values for the computed variable TOTAL - building permits and R.R.A.Ps combined. Clearly, the same census tracts that scored high in the Incumbent Upgrading Index (45, 48 & 21) revealed signs of higher building permits and R.R.A.Ps being issued than other census tracts. Census tract 29 also showed signs of higher than average values that could suggest the process of incumbent upgrading was beginning to flourish in the area - more residents were taking up

the initiative to reinvest in their housing stock. Also, census tracts 116 and 117 show higher than normal scores for this variable, which suggests that possible reinvestment is being taken up by residents with a different socioeconomic background. Census tract 117 recently had a new housing development placed along the Red River adjacent to Wideyer Park that would explain the higher amount of privately taken building permits. Irrespective, it shows that activity is occurring in areas other than incumbent upgrading areas.

When Map 23 was examined for the spatial distribution of building permits, census tract 117 had a very high score. This attests to the fact that new housing developments were occurring in the area. The incumbent upgrading areas (census tracts 45 and 48) showed very high scores as well. Both census tracts 21 and 29 showed higher than average amounts for the area, which still made it significantly different from other areas considering its socioeconomic profile. The remaining census tracts had scores that were normal too below normal for this variable.

Map 24 revealed the distribution of R.R.A.Ps scores. Census tracts that scored high with the Incumbent upgrading vector (census tract 45, 48 and 21) scored high with this value. This showed that public programs were linked to these neighbourhoods involved with extensive reinvestment activity. The areas that surrounded the incumbent upgrading neighbourhoods have average levels of activity

while the remaining has below average.

Multiple regression:

To determine the relationship of each vector with the dependent variables, multiple regression was used. The multiple regression model is an extension of simple linear regression except that it attempts to predict and explain the variation of a single dependent variable Y, from a number of independent or predictor variables (Shaw & Wheeler: 1985, p.230). The following equation is used:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3$$

a	=	intercept value
b1 - b3	=	partial regression coefficients
Y	=	Dependent variable
X1 - X3	=	Independent Variables

Using the multiple regression means that the idea of least-squares is still mathematically valid and used to obtain a "best-fit" surface in multi-dimensional space (Shaw & Wheeler: 1985, p.230).

Some basic assumptions for using any linear analysis are the data must be normally distribution (or approximately) and there must not be any collinearity between the variables. The advantage with using root scores derived from factor analysis is that the vectors are exclusive to each other and therefore no collinearity exists. The three Vectors from the principal component analysis were used as independent variables to the 3 dependent variables: TOTAL - Percentage of R.R.A.Ps and building permits; PERM - percentage of building permits; and, RRAP - percentage of RRAPs.

In this phase of the research, the step-wise variable selection process chosen was for multiple regression. This method combines the efficiency of forward inclusion (and backwards elimination) with the thoroughness of all possible regressions (Shaw & Wheeler: 1985, p.243). "In this scheme the independent variables are re-examined at each stage to identify any that have become superfluous following the introduction of subsequent items, or to permit use of previously rejected variables" (Shaw & Wheeler: 1985, p.243). At each step both inclusion and exclusion are permitted, and the process continues until neither can be allowed under the selected significance level.

From Table 11 - Appendix II 1986 data set, the main equation using TOTAL as a dependent variable calculates a coefficient of multiple determination (R value) of 84 percent. The proportion of the variances accounted for in the dependent variable (R² value) is 72. The model is therefore very good at predicting and explaining the dependent variables. Using the F-test for significance, the equation is significant, where the value exceeds the minimum .01 level of significance.

Using the step-wise regression method, only Root A - the Incumbent Upgrading Vector - was highly correlate with TOTAL with a value of .81 or (81 percent). In addition, using the student-t-test for significance, only its coefficient (b value) was significant. Therefore, all three vectors adequately explain most of the

variance related to the variable TOTAL, but only one vector was highly correlated - the incumbent upgrading vector. This indicated that as the conditions described in Vector I - Incumbent Upgrading Vector - increase, there is a direct increase in the number of issued building permits and R.R.A.Ps.

The data set for 1991 revealed the same type of values for the multiple regression equation (See Table 12 - Appendix III). The R value is 86 percent and the R² value is 69 percent. As for its significance, the F-test revealed again a very high level. Again only Root A - the Incumbent Upgrading Vector - had the highest individual R value of .85 (or 85 percent).

From Table 12 - Appendix D, only the Incumbent upgrading Vector scored with any significance with the dependent variable. This indicated conclusively that only this segment of the population was primarily involved with home reinvestment.

CONCLUSION

In terms of the structural formations, it was encouraging that many of the characteristics identified by Clay in regards to incumbent upgrading identified themselves through the use of factor analysis. One vector formed with all the characteristics describing the profile of a population in an incumbent upgrading neighbourhood. The factor scores revealed that one vector had the characteristics of a population, where the husband-wife with children household

predominate, where most households have low incomes, where many people are still employed in the traditional sectors of the economy, and where the majority are owners of their dwelling. What is more important, the spatial location of the areas were in the periphery of the inner city, which is exactly where most of the post-World War II homes are located. Therefore, this gave both a structural and spatial understanding that incumbent upgrading is occurring in Winnipeg.

The use of multiple regression revealed that the Incumbent Upgrading vector explained most of the variances in the dependent variables. All three dependent variables were correlated with this vector. Of particular interest was the relationship between the dependent variable RRAP. Only this vector scored high. This revealed that the population group responsible for conducting home reinvestment is very much dependent on the use of government assistance for home rehabilitation. Though it cannot identify the extent to which this government assistance was influential, it does indicate that both the amounts of privately obtained building permits and government sponsored home rehabilitation were highly correlated with the same population group. The intensity of building permits went up as the number of R.R.A.Ps went up and vice versa.

In total, the framework used to analyze incumbent upgrading revealed that it was likely an actual process occurring to explain

home reinvestment activity in the inner city of Winnipeg between 1986 and 1991. The use of factor analysis helped to build a structural understanding of the population. One structure created conformed well with previous descriptions of incumbent upgrading. Using maps to denote spatial relationships revealed that the phenomenon in question was occurring geographically where it is most likely to occur. In addition, the use of multiple regression to identify linear relationship confirmed that it is not only spatially identified through identification on a map, but that this segment of the inner city population was involved with most of the reinvestment activity. For this thesis, it was identified in terms of both linear and spatial relationships for the city of Winnipeg.

CHAPTER 6

CONCLUSION

The purpose of this thesis was to examine the process of incumbent upgrading. Using Winnipeg as a case study, a framework was developed to analyze statistical data and examine spatial relationships between census tracts. The results from the study so far have been promising; the evidence produced does suggest that such a process is occurring in the study area. The following is a review of the research findings and its implication for residential revitalization.

REVIEW OF THE INCUMBENT UPGRADING PROCESS

Building a method for analysis began in chapter 2 with a literature review, which first focused on the general theories of neighbourhood change and then concentrated on the effects of post-industrial change and the gentrification process. From this review, it was concluded that certain conditions of the post-industrial economy are likely responsible for the incumbent upgrading process. However, unlike gentrification - which occurred in larger metropolitan centres that underwent massive employment restructuring due to an infusion of corporate capital - the incumbent upgrading process seems to occur in the smaller and medium size centres that were often negatively effected by the overall influence of post-industrialism.

In the literature review, the obvious ramifications of this

restructuring on many medium size centres was continual employment loss, and ,as a result, a destabilizing effect on neighbourhoods. Many people who could participate in the new economy and became part of the middle class, simply began a process of moving out to the suburbs. As a result, the inner city became a reservoir of deprivation and where unemployment, low-paying jobs and increasing poverty are the norm.

Decentralisation of the population base from the inner city - including the area under study - has been a fact for the last twenty years. Nevertheless, there is no question that some neighbourhoods maintained a stable population base. The reason for stability in some neighbourhoods must be attributed to the remaining employment available in the traditional economic sectors. Simply put, the residents of some neighbourhoods were employed in the remaining traditional manufacturing sector or in the expanding, low-paying service sector. The explanation provided in this thesis is simple: most medium size centres have not had massive restructuring and therefore have often retained more of their traditional economic base. As a result, some residents are employed in the traditional sectors that are a viable part of the economy. Sometimes the new expanding service sector jobs are able to provide adequate employment where the traditional sectors of employment have disappeared. However, the degree to which a city has a stable economic base has been identified as crucial; even if a medium size centre was going through massive restructuring and/

or there was substantial decentralization of the economic base away from the central city, then it was concluded that incumbent upgrading cannot occur.

The final section of the literature review clearly defined the incumbent upgrading process. It was identified that such a process occurs in low-income, working class areas, where the majority of households are homeowners. Demographically, most households are husband/wife families with children. In terms of employment, most of the residents are employed in the traditional sectors of the economy, such as manufacturing, or they are employed in the expanding low-paying tertiary sectors. The availability of employment is considered fundamental to the incumbent upgrading process. If the residents of these areas have no employment base - which consequentially means no supporting income - then there is no way that this process will occur. High unemployment will simply mean neighbourhood instability and decline.

Another important aspect of the incumbent upgrading process is its geographical location within a city. In Clay's research (1979), the basic assumption was that neighbourhoods undergoing this process were relatively close (1 to 2 miles) from the Central Business District (CBD). The main reason for this spatial demarcation is that the process often occurs in neighbourhoods where the first post-war suburbs were built - that means the areas in question are situated around but not adjacent to the CBD. As

for the housing stock in these areas, it is predominately post-World War Two housing though some dates back to the 1930s. Therefore, the housing encompasses a more eclectic style of architecture and not the turn-of-the-century style desired by the potential "gentrifier".

Some U.S. research often identified ethnicity as a factor, where there is a predominate ethnic group in the area that is responsible for maintaining and initiating most of the housing reinvestment. Irrespective of the ethnic component, one clear aspect of the process was that neighbourhood residents often formed strong neighbourhood cohesiveness in the form of acceptable minimal standards of housing maintenance that was implicitly enforced by all residents. As Clay identified in his research, social mechanisms, such as NYBISMs, often enforced norms that every resident adheres to which then greatly influences the revitalization process once it has commenced.

Fundamental to the research into incumbent upgrading has been the influence of public policy in initiating and sustaining the process. Clay (1979) identified in his research that changes in public policy over the 1970's have had an influence on residential revitalization in many neighbourhoods. The availability of home improvement loans and grants has provided these low-income residents with the financial assistance needed to commence housing rehabilitation projects. Where other financial institutions may

have been reluctant to provide such assistance, public programs have filled the gap by providing individual households with the loans necessary to commence such projects.

Considering all these features of the incumbent upgrading process, this thesis established some basic underlying assumptions. From these assumptions, a framework of analysis was formalized to investigate the process in a case study. The assumptions were tested by establishing null-hypotheses which then permitted statistical tests to be performed. Consequently, this framework was devised to confirm if the established assumptions were valid.

REVIEW OF METHODOLOGY AND RESULTS

For this literature research, Winnipeg was chosen as a case study because it is a medium size centre. It has not experienced substantial restructuring of its traditional economic base. Additionally, it is a city that has had significant government involvement by all three levels of government - federal, provincial and municipal - with home improvement and neighbourhood revitalization. It was therefore hypothesised that the city is likely to be a strong candidate for incumbent upgrading.

A framework was developed to conduct the empirical analysis. The framework involved identifying assumptions as testable hypotheses. Various independent variables were selected to identify the socioeconomic characteristics of neighbourhoods. To provide more

detail of the amount of reinvestment activity, three dependent variables were created - one measured the amount of building permits issued by census tract; another measure of the amount of R.R.A.Ps issued and the last included a total of both R.R.A.Ps and building permits. Each variable was mapped for analyzing spatial relationships. The final part of the analysis used principal component analysis to determine how the various independent variables grouped together to form vectors. These vectors were then used in a multiple regression to determine which vector or vectors were correlated with the dependent variables.

The initial correlation tables revealed that relationships existed between key independent variables and the dependent variables measuring renovation activity. In this case variables measuring dwelling ownership, families with children, people employed in manufacturing and tertiary labour sectors, and households paying greater than 30% of income towards housing scored significantly high with all three permit variables. Overall, three particular neighbourhoods scored high with the previously mentioned variables.

To further enhance the methodology, principal component analysis was used to group the various independent variables. Multiple regression was then used to discover the relationship between the newly formed vectors and the dependent variables. Three distinct typologies were created, where one clearly had the characteristics identifiable with incumbent upgrading. Key variables scored high

on this one vector: families with children, ownership of dwelling, low income, tertiary and manufacturing employment, and households paying greater than 30% of income towards housing. All these characteristics reinforce the assumptions made in the literature review related to the incumbent upgrading process. With the final application of multiple regression, only the one vector - incumbent upgrading vector - was highly correlated with the dependent variables.

The maps produced for this thesis clearly indicate that there is a spatial distribution related to the incumbent upgrading vector. This vector identified three census tracts - 21, 45 and 48 - which were located on the periphery of the inner city. This is exactly where incumbent upgrading areas would be located. These areas have predominately post-world war two housing and are considered older suburbs.

In view of all the empirical research conducted in this study, the evidence produced through the analysis suggest that such a process is probably occurring in Winnipeg's inner city. All statistics affirmed the assumptions made about the process and there was a distinct spatial relationship between the assumptions made and certain inner city census tracts.

IMPLICATION OF FINDINGS

Considering these findings, the question of whether government involvement with residential revitalization is effective has really not been fully established. The results from the thesis suggest that there is a relationship between government home improvement loans and residential revitalization. However, there is no direct connection that can be made at this level of analysis. At this point, the analysis is simply based on the association of statistical results. To prove if there is an actual link between the incumbent upgrading process and government assistance requires more detailed analysis.

The results, however, do present the possibility of success for such programs as RRAP. The conclusion that one can draw is that these programs are probably very effective at initiating and sustaining revitalization by low-income residents in certain areas, simply because they are financial resources for these residents to draw upon. The findings seem to prove Clay's (1979) assertions that such public programs are necessary to foster reinvestment activity by residents of low-income areas. Interestingly, the change in RRAP qualifications by federal government in 1986 had some considerable repercussions. By targeting only low-income residents, the changes to RRAP may have had a more positive effect than others may have conceived at the time. If the results from this thesis are meaningful, the implications are that targeting only low-income residents might have fostered a process of

reinvestment in certain neighbourhoods. However, the decision by the federal Conservatives in 1993 to discontinue the RRAP program and its short-term reinstatement by the Liberal government (1994-96) does have negative implications for future of residential revitalization.

Given the findings of this analysis, there is a strong argument for conducting a RRAP evaluation on various neighbourhoods to determine whether reinvestment activity and patterns have changed in the inner city.

Another crucial question that must be addressed is whether incumbent upgrading identified as a potential residential revitalization process in Winnipeg merely reflects neighbourhood stability? This question arises due to the fact that the distinction between incumbent upgrading and neighbourhood stability are not dissimilar.

The definition of neighbourhood stability is also based on socioeconomic, demographic and physical conditions of neighbourhoods. Bunting and Fillion (1988) described it in their review of theories of neighbourhood change. Stable neighbourhoods often have a balanced mix of income groups, high homeownership, high proportions of husband/wife families and housing which is in adequate condition. These are seen as some of the key conditions of a stable neighbourhood. If one examines both definitions

clearly, it is obvious that some major distinctions exist between the two. The problem of associating neighbourhood stability with incumbent upgrading is the set of circumstances from which incumbent upgrading occurs and some unique differences between the two.

Neighbourhood stability is often affiliated with an inner city area where incomes are higher and residents often maintain regular maintenance of their housing stock; homeownership is high, but the turnover rate is also high. Therefore, the socioeconomic characteristics are similar to a suburban, middle-class neighbourhood. As for incumbent upgrading, home improvement is occurring at a more substantial rate than other neighbourhoods. Also, the main critical differences lies in the socioeconomic characteristics of the population. In an incumbent upgrading area most of the residents are low-income, working class people, unlike stable neighbourhoods that have higher incomes. The most important difference is the reliance on public programs. The residents of stable neighbourhoods do not rely on them to maintain their dwellings - all regular maintenance is individually financed. However, it is a fundamental part of the renovation activity occurring in incumbent upgrading. Therefore, incumbent upgrading has some very unique characteristics which set it apart from a simple classification of neighbourhood stability. The socioeconomic circumstance of the population, the amount of reinvestment activity and the influence of public programs are some

of the major differences which set them apart.

Despite the differences identified between incumbent upgrading and neighbourhood stability, the fact still remains that the empirical evidence from this study of Winnipeg's inner city is still not direct proof that incumbent upgrading is occurring. Though the use of statistics at the census tract level has provided some convincing evidence that the process is probably occurring, further detailed analysis must be done.

More detailed research is now needed at the neighbourhood level. The results from this framework have provided evidence that some neighbourhoods are showing signs of residential revitalization. The next step is to analyze further these neighbourhoods to determine conclusively whether reinvestment activity is (or was) taken up by residents in the area. An analysis of neighbourhood residents and focus groups might provide a more detailed understanding of the actual amount of reinvestment by a random sample of households. In addition, surveys might provide better links between neighbourhood reinvestment by residents and their use of the RRAP program. Also, it could provide an opportunity to understand better the true socioeconomic circumstances of the population by asking questions related to occupation and employment as well as household family structures.

This research has provided a general analysis of Winnipeg's inner

city, and the evidence presented is convincing that incumbent upgrading is probably a form of residential revitalization. The next step for future research in this area could involve examining in greater detail one of the neighbourhoods studied in order to determine whether the general findings are in fact reinforced by a more detailed neighbourhood analysis.

PUBLIC POLICY AND PLANNING IMPLICATIONS

The implication of these findings on public policy and urban planning is that government financed home repair is an important part of any neighbourhood revitalization strategy. If community and neighbourhood revitalization remains an important component of public policy initiatives towards inner city renewal, then the need for government financed home improvement loans are essential. The results from this study reveal that some neighbourhoods did benefit from the availability of such programs. Considering that the Federal government funding for R.R.A.P is uncertain, sustained neighbourhood revitalization could be jeopardized. The results from this study imply they are an integral part of the process of residential revitalization and should be maintained.

What could change is the overall distribution of the program. The findings from this research suggest that perhaps the specific targeting of neighbourhoods for programs, such as R.R.A.P, are not necessary the appropriate action to take. Considering the economic circumstances of many low-income households in the 1990s, where

incomes are diminishing and job security is minimal, the availability of government assistance for home repair might be more effective if it were made available to all households which qualify under a minimum-income threshold. Ultimately, it will be the poorer households that will need the assistance for home reinvestment. The results from this thesis suggest that the modification of R.R.A.P guidelines after 1986 might have benefitted other neighbourhoods because it became universal and not target specific. The neighbourhoods that showed characteristics of incumbent upgrading were not targeted for special assistance from any neighbourhood improvement program, such as the Manitoba/Winnipeg Community Revitalization Program (M/WCRP), during the period under study. Clearly, the residents in these neighbourhoods were simply taking advantage of the universal availability of R.R.A.P.

If governments insist on a targeted approach to their neighbourhood revitalization strategies, perhaps they should use different criteria for selecting the neighbourhoods. Another important conclusion to be drawn from this study is the need to reassess the criteria used to determine which neighbourhoods to target for revitalization. For example, the incumbent upgrading neighbourhoods revealed barely any proportion of middle- or high-income households in the areas. They were predominately low-income and working class. Perhaps the criteria for selecting neighbourhoods should be reconsidered. Some assumptions are still

valid: high property ownership and a steady income base are necessary. However, what should change is the absolute need for promoting the need for a mixed percentage of middle- or high-income households in an area. Often the assumption is that a mix of income groups will have a greater likelihood of inducing neighbourhood revitalization. The evidence from this thesis suggest that this is not necessarily the case. Simply having a percentage of homeowners with some stable source of income is adequate.

What is lacking in low-income neighbourhoods is an additional sources of financing for home repair. This is where government assistance can be crucial in initiating reinvestment activity. The key conclusion to draw however is that targeting neighbourhoods for revitalization strategies should not always be founded on a need to promote revitalization strategies for more middle-income households. This thesis has proven that the predominance of a low-income group in an area might still present an opportunity for residential revitalization.

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APPENDIX I

The following lists all labels and definitions for each independent and dependent variable.

LIST OF INDEPENDENT VARIABLES - LABEL AND DESCRIPTION

FNKID:	(%) Percent of Husband/wife (& Common-Law Couples) households with no children
FWKID:	(%) Percent of Husband/wife (& Common-Law Couples) households with children
SPAR:	(%) Percent of Single Parent Families (both Male & Female head of household)
ABORG:	(%) Percent of Aborigines, single ethnic origin
POPOLD:	(%) Percent of Population, 65 years of age and older
IMMG:	(%) Percent of Immigrant Population
PROF:	(%) Percent of labour force employed in Professional occupations (Quaternary Sector of economy)
TERT:	(%) Percent of labour force employed in Service occupations (Tertiary Sector of economy)
MANU:	(%) Percent of labour force employed in Manufacturing occupations
CONST:	(%) Percent of labour force employed in Construction occupations
OWN:	(%) Percent of owner-occupied private dwellings
OWNGT:	(%) Percent of owner-occupied private dwellings, where the owner pays greater than 30 % of household income towards major payments.
RENT:	(%) Percent of rented, occupied private dwellings
RENTGT:	(%) Percent of rented, occupied private dwellings, where the renter pays greater than 30 % of income towards rent.
INCOM:	(%) Percent of Household Income

LIST OF DEPENDENT VARIABLES - LABEL AND DESCRIPTION

TOTAL:	(%) Percent of building permits registered and R.R.A.Ps/ C.A.H.R.Ps issued
PERM:	(%) Percent of building permits registered
RRAP:	(%) Percent of R.R.A.Ps/C.A.H.R.Ps issued

The following provides the formula used for calculating each value for the 1986-1991 census periods for each census tract. All data sources are also included.

INDEPENDENT VARIABLES:

FNKID: (%) Percent of Husband/wife (& Common-Law Couples) households with no children

Formula: **FNKID** = ((Ai / Bi) * 100) * HSLDWGT

Ai = (Total number of husband/wife + Common law Couple households without children)

Bi = (Total number of private households)

** This value was then multiplied by the private household weight.

Weight = HSLDWGT

Formula: **HSLDWGHT** = Ai/ΣB*10

A = (Total number of private households per census tract)

ΣB = (Sum of total private households in the inner city)

Source of Data:

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 1 (1986),
Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 1 (1991)

FWKID: (%) Percent of Husband/wife (& Common-Law Couples) households with children

Formula: **FWKID** = ((Ai / Bi) * 100) * HSLDWGT

Ai = (Total number husband/wife + Common law Couple households with children)

Bi = (Total number of private households))

** This value was multiplied by the same family household weight.

Source of Data:

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 1 (1986),
Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 1 (1991)

SPAR: (%) Percent of Single Parent Families (both Male & Female head of household)

Formula: **SPAR** = ((Ai / Bi) * 100) * HSLDWGT

Ai = (Total number of single parent households)

Bi = (Total number of private households)

** This value was then multiplied by the same family household weight.

Source of Data:

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 1 (1986),
Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 1 (1991)

IMMG: (%) Percent of Immigrant Population

Formula: **IMMG** = ((Ai / Bi) * 100) * POP5WGT

Ai = (Total number of immigrants)

Bi = (Total Population over 5 years of age)

** This value was then multiplied by the weight of Population 5 years and older.

Weight = POP5WGT

Formula: POP5WGHT = Ai/ΣB*10

A = (Total Population over 5 years old per census tract)

ΣB = (Sum of Total Population over 5 years old in the inner city)

Source of Data:

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 2 (1986),
Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 2 (1991)

ABORG: (%) Percent of Aborigines, single ethnic origin

Formula: **ABORG** = ((Ai / Bi) * 100) * POPWGT

Ai = (Total number of Aborigines, single ethnic origin)

Bi = (Total Population)

** This value was then multiplied by a Total Population weight.

Weight = POPWGT

Formula: **POPWGHT** = Ai/ΣB*10

A = (Total population per census tract)

ΣB = (Sum of Total Population in the inner city)

Source of Data:

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 2 (1986),
Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 2 (1991)

POPOLD: (%) Percent of Population, 65 years of age and older

Formula: **POPOLD** = ((Ai / Bi) * 100) * POPWGT

Ai = (Total population over 65 years of age)

Bi = (Total Population)

** This value was then multiplied by a Total Population weight.

Weight = POPWGT

Source of Data:

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 2 (1986),
Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 2 (1991)

PROF: (%) Percent of labour force employed in Professional occupations (Quaternary Sector of economy)

Formula: **PROF** = ((Ai / Bi) * 100) * LABRWGT

Ai = (a + b + c + d + e + f)

a = Total number of males and females employed in Managerial, administrative and related occupations.

b = Total number of males and females employed in natural sciences, engineering and mathematics.

c = Total number of males and females employed in social sciences and related fields.

e = Total number of males and females employed Teaching and related occupations.

f = Total number of males and females employed in medicine and health occupations.

g = Total number of males and females employed in Artistic, literary, recreational and related occupations.

Bi = (Total Labour Force 15 years of age and older)

** This value was then multiplied by a Total Labour Force weight.

Weight = LABRWGT

Formula: LABRWGT = Ai/ΣB*10

A = (Total Labour Force 15 years and older per census tract)

ΣB = (Sum of Total Labour Force over 15 years in the inner city)

Source of Data:

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 2 (1986),
Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 2 (1991)

TERT: (%) Percent of labour force employed in Ser.
occupations (Tertiary Sector of economy)

Formula: $TERT = ((A_i / B_i) * 100) * LABRWGT$

$A_i = (a + b + c)$

$a =$ Total number of males and females employed in
clerical and related occupations.
 $b =$ Total number of males and females employed in Real
sales occupations.
 $c =$ Total number of males and females employed in
service occupations.

$B_i =$ (Total Labour Force 15 years of age and older)

** This value was then multiplied by a Total Labour Force
weight.

Source of Data:

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No.
2 (1986),

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No.
2 (1991)

MANU: (%) Percent of labour force employed in Manufacturing
occupations

Formula: $MANU = ((A_i / B_i) * 100) * LABRWGT$

$A_i = (a + b + c)$

$a =$ Total number of males and females employed in processing
occupations.
 $b =$ Total number of males and females employed in machine and
related occupations.
 $c =$ Total number of males and females employed in product
fabricating, assembling and repairing occupations.

$B_i =$ (Total Labour Force (Population over 15 years of age)

** This value was then multiplied by a Total Labour Force
weight.

Source of Data:

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No.
2 (1986),

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No.
2 (1991)

CONST: (%) Percent of labour force employed in Construction occupations

Formula: **CONST** = ((Ai / Bi) * 100) * LABRWGT

Ai = (Total number of males and females employed in construction sector)

Bi = (Total Labour Force (Population over 15 years of age))

** This value was then multiplied by a Total Labour Force weight.

Source of Data:

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 2 (1986),
Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 2 (1991)

OWN: (%) Percent of owner-occupied private dwellings

Formula: **OWN** = ((Ai / Bi) * 100) * DWELWGT

Ai = (Total number of occupied private dwellings - owned)

Bi = (Total number of occupied private dwellings)

** This value was then multiplied by the total occupied dwellings weight.

Weight = DWELWGT

Formula: $DWELWGT = Ai / \Sigma B * 10$

A = (Total number of occupied private dwellings per census tract)

ΣB = (Sum of Total number of occupied private dwellings in the inner city)

Source of Data:

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 1 (1986),
Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 1 (1991)

OWNGT: (%) Percent of owner-occupied private dwellings, where the owner pays greater than 30 % of household income towards major payments.

Formula: **OWNGT** = ((Ai / Bi) * 100) * DWELWGT

Ai = (Total number of Owner's major payments >= 30% of household income)

Bi = (Total number of occupied private dwellings)

** This value was then multiplied by the total occupied dwellings weight.

Source of Data:

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 2 (1986),
Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 2 (1991)

RENT: (%) Percent of rented, occupied private dwellings

Formula: **RENT** = ((Ai / Bi) * 100) * DWELWGT

Ai = (Total number of occupied private dwellings - rented)

Bi = (Total number of occupied private dwellings)

** This value was then multiplied by the total occupied dwellings weight.

Source of Data:

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 1 (1986),
Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 1 (1991)

RENTGT: (%) Percent of rented, occupied private dwellings, where the occupier pays greater than 30 % of income towards rent.

Formula: $RENTGT = ((Ai / Bi) * 100) * DWELWGT$

Ai = (Total number of renters gross rent $\geq$ 30% of house hold income)

Bi = (Total number of occupied private dwellings)

** This value was then multiplied by the total occupied dwellings weight.

Source of Data:

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 2 (1986),

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 2 (1991)

INCOM: (%) Percent of Household Income

** This variable is used simply to indicate an area's standing in incomes relative to another; hence, an area with a high positive value has a greater overall median income than an area with a lower or negative value.

Formula: $INCOM = Ai / \Sigma B$

A = (Median income, household income per census tract)

ΣB = (Sum of Median incomes, household income in the inner city)

Source of Data:

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 2 (1986),

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 2 (1991)

DEPENDENT VARIABLES:

TOTAL = (%) Percent of building permits registered and R.R.A.Ps/
C.A.H.R.Ps issued

Formula: **TOTAL** = ((Ai / Bi) * 100) * HOUSWGT

Ai = (Total number of registered building permits for single detached and semi-detached homes and issued R.R.A.Ps and C.A.H.R.Ps 1983-1991)

Bi = (Total number of single detached and semi-detached homes in 1981)¹

** This value was then multiplied by the 1981 housing weight.

Weight = HOUSWGT

Formula: HOUSWGT = Ai/ΣB*10

A = (Total number of single-detached and semi-detached dwellings per census tract in 1981)

ΣB = (Sum of Total number of single-detached and semi-detached dwellings in the inner city 1981)

Source of Data:

City of Winnipeg, Environmental Planning Department, List of single-detached and semi-detached issued building permits from 1983 to 1991 for selected inner city neighbourhoods and the CMA of Winnipeg (1992),

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 1 (1981)

¹ Two reasons for using 1981 as a base year: a) the year of data recording for building permits began in 1983; and b) the 1986 census year did not desegregate homes by the single detached and semi-detached categories, which made it unreliable to use.

PERM = (%) Percent of building permits registered

Formula: **PERM** = ((Ai / Bi) * 100) * HOUSWGT

Ai = (Total number of registered building permits for single detached and semi-detached homes 1983-1991)

Bi = (Total number of single detached and semi-detached homes in 1981)

** This value was then multiplied by the 1981 housing weight.

Source of Data:

City of Winnipeg, Environmental Planning Department, List of single-detached and semi-detached issued building permits from 1983 to 1991 for selected inner city neighbourhoods and the CMA of Winnipeg (1992),

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 1 (1981)

RRAP = (%) Percent of R.R.A.Ps/C.A.H.R.Ps issued

Formula: **RRAP** = ((Ai / Bi) * 100) * HOUSWGT

Ai = (Total number of registered R.R.A.Ps and C.A.H.R.Ps for single detached and semi-detached homes 1983-1991)

Bi = (Total number of single detached and semi-detached homes in 1981)

** This value was then multiplied by the 1981 housing weight.

Source of Data:

City of Winnipeg, Environmental Planning Department, List of single-detached and semi-detached issued building permits from 1983 to 1991 for selected inner city neighbourhoods and the CMA of Winnipeg (1992),

Statistics Canada, Winnipeg Census Metropolitan Area, Profile No. 1 (1981)

APPENDIX II

The following list all correlation tables for the inner city, non-inner city and winnipeg for 1986 and 1991.

TABLE 3

CORRELATIONS FOR WINNIPEG'S INNER CITY 1986 - SELECTED CTS

Correlations:	TOTAL	RRAPS	PERMS	OWNER	RENT	FNKIDS
TOTAL	1.0000					
RRAPS	.8492**	1.0000				
PERMS	.9758**	.7132**	1.0000			
OWNER	.8632**	.8120**	.8095**	1.0000		
RENT	-.1203	-.2409	-.0596	.0523	1.0000	
FNKIDS	.3914	.2866	.4010	.6616**	.7195**	1.0000
FWKIDS	.7988**	.6652**	.7847**	.8194**	.1244	.4557
SPAR	.5244*	.4747	.4997	.5162*	.4800	.4674
POPOLD	.3741	.2369	.3989	.5872*	.7287**	.9278**
PROF	-.0240	-.1565	.0331	.2677	.8006**	.8451**
TERT	.3938	.2391	.4239	.6057*	.7852**	.8878**
MANU	.4909	.4182	.4784	.4807	.2414	.2672
CONST	.6795**	.5516*	.6735**	.7001**	.2919	.4958
ABORG	.2114	.2852	.1628	.0811	.1511	-.0507
IMMG	.3422	.2814	.3376	.4522	.3729	.3675
OWNGT	.8106**	.7042**	.7843**	.8517**	-.0260	.3989
RENTGT	.1630	.0915	.1789	.1978	.8003**	.5361*
INCOM	.3447	.2750	.3432	.6112*	.1070	.6017*

Minimum pairwise N of cases: 24 2-tailed Signif: * - .01 ** - .001

Correlations:	FWKIDS	SPAR	POPOLD	PROF	TERT	MANU
TOTAL						
RRAPS						
PERMS						
OWNER						
RENT						
FNKIDS						
FWKIDS	1.0000					
SPAR	.7718**	1.0000				
POPOLD	.4266	.5086	1.0000			
PROF	.0590	.1706	.7466**	1.0000		
TERT	.6325**	.6836**	.8120**	.7496**	1.0000	
MANU	.8594**	.8162**	.2713	-.0639	.5295*	1.0000
CONST	.8778**	.7386**	.4417	.1416	.6992**	.7998**
ABORG	.3749	.7424**	.0994	-.2802	.1355	.5871*
IMMG	.8011**	.7781**	.3524	.1272	.6251*	.9366**
OWNGT	.9179**	.6730**	.3923	.0393	.5262*	.6558**
RENTGT	.4701	.8520**	.5939*	.3990	.7258**	.6535**
INCOM	.2643	-.0529	.3872	.5774*	.4498	-.0976

Minimum pairwise N of cases: 24 2-tailed Signif: * - .01 ** - .001

TABLE 3...Continued

CORRELATIONS FOR WINNIPEG'S INNER CITY 1986 - SELECTED CTS

Correlations:	CONST	ABORG	IMMG	OWNGT	RENTGT	INCOM
TOTAL						
RRAPS						
PERMS						
OWNER						
RENT						
FNKIDS						
FWKIDS						
SPAR						
POPOLD						
PROF						
TERT						
MANU						
CONST	1.0000					
ABORG	.3689	1.0000				
IMMG	.7568**	.5157*	1.0000			
OWNGT	.7410**	.3150	.5982*	1.0000		
RENTGT	.5612*	.6251*	.6674**	.3047	1.0000	
INCOM	.2456	-.5222*	.0166	.3313	-.1678	1.0000

Minimum pairwise N of cases: 24

2-tailed Signif: * - .01 ** - .001

TABLE 4

CORRELATIONS FOR WINNIPEG'S INNER CITY 1991 - SELECTED CTS

Correlations:	TOTAL	RRAPS	PERMS	OWNER	RENT	FNKIDS
TOTAL	1.0000					
RRAPS	.8492**	1.0000				
PERMS	.9758**	.7132**	1.0000			
OWNER	.8231**	.7796**	.7698**	1.0000		
RENT	-.0841	-.2166	-.0216	.1104	1.0000	
FNKIDS	.3611	.2745	.3658	.7003**	.7203**	1.0000
FWKIDS	.8196**	.6876**	.8030**	.7714**	.1017	.3941
SPAR	.5094	.4420	.4934	.4149	.5702*	.4351
POPOLD	.4156	.2833	.4346	.6983**	.6906**	.9349**
PROF	-.0187	-.1463	.0359	.3553	.7700**	.8505**
TERT	.3378	.1723	.3772	.5903*	.8163**	.9076**
MANU	.5914*	.5101	.5736*	.5619*	.1323	.2600
CONST	.6593**	.5513*	.6471**	.5258*	.2251	.3593
ABORG	.2128	.2335	.1861	-.0166	.2349	-.0895
IMMG	.3383	.2679	.3378	.4268	.3181	.3144
OWNGT	.8005**	.6321**	.8007**	.7740**	.1380	.5181*
RENTGT	.1380	.0669	.1556	.0491	.7186**	.3505
INCOM	.3224	.2435	.3269	.5955*	-.0233	.5105

Minimum pairwise N of cases: 24 2-tailed Signif: * - .01 ** - .001

Correlations:	FWKIDS	SPAR	POPOLD	PROF	TERT	MANU
TOTAL						
RRAPS						
PERMS						
OWNER						
RENT						
FNKIDS						
FWKIDS	1.0000					
SPAR	.6982**	1.0000				
POPOLD	.4481	.4971	1.0000			
PROF	.0242	.1793	.7201**	1.0000		
TERT	.5253*	.6044*	.8466**	.7827**	1.0000	
MANU	.9322**	.6976**	.3196	-.0713	.4684	1.0000
CONST	.7306**	.6761**	.3616	.0179	.4646	.6594**
ABORG	.3552	.7687**	.0595	-.2442	.0367	.4324
IMMG	.7937**	.6596**	.3665	.1049	.5380*	.9127**
OWNGT	.7754**	.5216*	.5528*	.2077	.5391*	.5916*
RENTGT	.3892	.8643**	.3682	.2295	.5578*	.4944
INCOM	.2100	-.2456	.3603	.5195*	.3524	.0216

Minimum pairwise N of cases: 24 2-tailed Signif: * - .01 ** - .001

TABLE 4...Continued

CORRELATIONS FOR WINNIPEG'S INNER CITY 1991 - SELECTED CTS

Correlations:	CONST	ABORG	IMMG	OWNGT	RENTGT	INCOM
TOTAL						
RRAPS						
PERMS						
OWNER						
RENT						
FNKIDS						
FWKIDS						
SPAR						
POPOLD						
PROF						
TERT						
MANU						
CONST	1.0000					
ABORG	.3263	1.0000				
IMMG	.4748	.4301	1.0000			
OWNGT	.6514**	.0734	.3907	1.0000		
RENTGT	.4755	.7108**	.5674*	.1936	1.0000	
INCOM	.0010	-.6157*	-.0153	.3555	-.4217	1.0000

Minimum pairwise N of cases: 24

2-tailed Signif: * - .01 ** - .001

TABLE 5

CORRELATIONS FOR WINNIPEG'S NON-INNER CITY 1986 - SELECTED CTS

Correlations:	TOTAL	RRAPS	PERMS	OWNER	RENT	FNKIDS
TOTAL	1.0000					
RRAPS	.0021	1.0000				
PERMS	.9994**	-.0316	1.0000			
OWNER	.3246*	.1892	.3182*	1.0000		
RENT	.0979	.2371	.0899	.1011	1.0000	
FNKIDS	.2537	.2568	.2450	.7926**	.5901**	1.0000
FWKIDS	.4212**	-.0344	.4223**	.8607**	.1603	.6412**
SPAR	.2042	.5988**	.1839	.4507**	.7125**	.6104**
POPOLD	-.0148	.4363**	-.0296	.3962**	.5740**	.7379**
PROF	.4786**	-.2708	.4875**	.6980**	.2740	.6178**
TERT	.3397*	.0864	.3367*	.7564**	.5806**	.8138**
MANU	.1416	.5257**	.1240	.6152**	.3332*	.5767**
CONST	.1314	.3338*	.1201	.6209**	.3785**	.5936**
ABORG	.0236	.6981**	-.0002	.0191	.2409	.0412
IMMG	.4238**	.2463	.4154**	.6351**	.5064**	.7476**
OWNGT	.3451*	.1053	.3414*	.8197**	.0867	.6059**
RENTGT	.2322	.3966**	.2187	.0343	.8203**	.4021**
INCOM	-.1656	-.4650**	-.1498	.0599	-.4498**	-.2741

Minimum pairwise N of cases: 79

2-tailed Signif: * - .01 ** - .001

Correlations:	FWKIDS	SPAR	POPOLD	PROF	TERT	MANU
TOTAL						
RRAPS						
PERMS						
OWNER						
RENT						
FNKIDS						
FWKIDS	1.0000					
SPAR	.4480**	1.0000				
POPOLD	.0668	.4549**	1.0000			
PROF	.7931**	.3223*	.1583	1.0000		
TERT	.8461**	.6628**	.3595*	.7146**	1.0000	
MANU	.5660**	.6795**	.2954*	.1367	.5905**	1.0000
CONST	.6030**	.6436**	.2192	.2901*	.6664**	.8579**
ABORG	.0377	.5989**	.0790	-.1174	.0366	.3712**
IMMG	.5803**	.6056**	.5394**	.5776**	.6621**	.5599**
OWNGT	.8320**	.3986**	.0969	.6337**	.6711**	.6058**
RENTGT	.1714	.7884**	.3255*	.1249	.4616**	.4455**
INCOM	.2264	-.3869**	-.4627**	.2038	-.0101	-.2811

Minimum pairwise N of cases: 79

2-tailed Signif: * - .01 ** - .001

TABLE 5...Continued

CORRELATIONS FOR WINNIPEG'S NON-INNER CITY 1986 - SELECTED CTS

Correlations:	CONST	ABORG	IMMG	OWNGT	RENTGT	INCOM
TOTAL						
RRAPS						
PERMS						
OWNER						
RENT						
FNKIDS						
FWKIDS						
SPAR						
POPOLD						
PROF						
TERT						
MANU						
CONST	1.0000					
ABORG	.2534	1.0000				
IMMG	.4931**	.1598	1.0000			
OWNGT	.6349**	.0844	.5201**	1.0000		
RENTGT	.4170**	.4589**	.4831**	.1002	1.0000	
INCOM	-.2006	-.3359*	-.3116*	-.0127	-.4442**	1.0000

Minimum pairwise N of cases: 79

2-tailed Signif: * - .01 ** - .001

TABLE 6

CORRELATIONS FOR WINNIPEG'S NON-INNER CITY 1991 - SELECTED CTS

Correlations:	TOTAL	RRAPS	PERMS	OWNER	RENT	FNKIDS
TOTAL	1.0000					
RRAPS	.0556	1.0000				
PERMS	.9409**	.0453	1.0000			
OWNER	.2453	.1478	.2354	1.0000		
RENT	.2244	.2810	.2512	.0640	1.0000	
FNKIDS	.2303	.2170	.2552	.7341**	.6047**	1.0000
FWKIDS	.3421*	-.1165	.3106*	.8213**	.0610	.5181**
SPAR	.4060**	.6217**	.4028**	.3862**	.6655**	.5155**
POPOLD	-.0202	.3694**	.0273	.3996**	.5970**	.8068**
PROF	.3480*	-.2900	.3854**	.6958**	.1595	.5193**
TERT	.3724**	.0678	.3518*	.7415**	.5099**	.7563**
MANU	.1350	.5747**	.0561	.3749**	.3482*	.3615*
CONST	.2424	.2975*	.1895	.4698**	.2634	.3885**
ABORG	.0514	.6951**	-.0006	-.0866	.3078*	-.0165
IMMG	.2527	.2410	.2847	.5616**	.4186**	.5555**
OWNGT	.0871	-.0761	.0136	.6982**	-.1545	.2593
RENTGT	.4956**	.4363**	.4978**	.0426	.7600**	.3477*
INCOM	.0529	-.5454**	.0537	.3741**	-.5012**	-.0250

Minimum pairwise N of cases: 77 2-tailed Signif: * - .01 ** - .001

Correlations:	FWKIDS	SPAR	POPOLD	PROF	TERT	MANU
TOTAL						
RRAPS						
PERMS						
OWNER						
RENT						
FNKIDS						
FWKIDS	1.0000					
SPAR	.3471*	1.0000				
POPOLD	.0157	.3834**	1.0000			
PROF	.7767**	.1939	.1034	1.0000		
TERT	.8313**	.5917**	.3178*	.6589**	1.0000	
MANU	.3308*	.6867**	.2521	-.0970	.4492**	1.0000
CONST	.4203**	.5247**	.1660	.1021	.5056**	.6110**
ABORG	-.0797	.6125**	.0451	-.2341	.0396	.4874**
IMMG	.5133**	.5883**	.4246**	.3965**	.5527**	.5789**
OWNGT	.7892**	.1378	-.1046	.5766**	.5636**	.2656
RENTGT	.1570	.8412**	.2282	.0647	.4471**	.5151**
INCOM	.5622**	-.3685**	-.3793**	.6195**	.2183	-.3809**

Minimum pairwise N of cases: 77 2-tailed Signif: * - .01 ** - .001

TABLE 6...Continued

CORRELATIONS FOR WINNIPEG'S NON-INNER CITY 1991 - SELECTED CTS

Correlations:	CONST	ABORG	IMMG	OWNGT	RENTGT	INCOM
TOTAL						
RRAPS						
PERMS						
OWNER						
RENT						
FNKIDS						
FWKIDS						
SPAR						
POPOLD						
PROF						
TERT						
MANU						
CONST	1.0000					
ABORG	.2317	1.0000				
IMMG	.4448**	.1935	1.0000			
OWNGT	.4209**	-.0663	.4704**	1.0000		
RENTGT	.4369**	.5730**	.4492**	-.0962	1.0000	
INCOM	-.2440	-.4409**	-.1240	.4369**	-.4840**	1.0000

Minimum pairwise N of cases: 77

2-tailed Signif: * - .01 ** - .001

TABLE 7

CORRELATIONS FOR CITY OF WINNIPEG 1986 - SELECTED CTS

Correlations:	TOTAL	RRAPS	PERMS	OWNER	RENT	FNKIDS
TOTAL	1.0000					
RRAPS	.0735	1.0000				
PERMS	.6248**	.0972	1.0000			
OWNER	.2941*	.2076	.4503**	1.0000		
RENT	.0685	.1027	-.0657	-.1378	1.0000	
FNKIDS	.2446	.1559	.2808*	.7576**	.4164**	1.0000
FWKIDS	.3756**	.0144	.4622**	.8320**	-.0906	.5429**
SPAR	.2980*	.5693**	.1970	.1954	.6436**	.3516**
POPOLD	.0183	.3179*	.0570	.4428**	.5517**	.8142**
PROF	.3309**	-.2764*	.2813*	.6478**	.2109	.6376**
TERT	.3600**	.0457	.3883**	.7246**	.4209**	.8185**
MANU	.1080	.5643**	.1960	.2520	.2971*	.2161
CONST	.2614*	.3461**	.3056*	.4877**	.1562	.4010**
ABORG	-.0585	.3958**	-.1052	-.3509**	.4282**	-.2579*
IMMG	.1080	.2940*	-.0002	.1750	.4511**	.2290
OWNGT	.1507	.0233	.3603**	.7314**	-.1761	.3758**
RENTGT	.2455	.3276**	.0142	-.2311	.7803**	.0995
INCOM	.1414	-.3721**	.2670*	.5930**	-.4793**	.2781*

Minimum pairwise N of cases: 101 2-tailed Signif: * - .01 ** - .001

Correlations:	FWKIDS	SPAR	POPOLD	PROF	TERT	MANU
TOTAL						
RRAPS						
PERMS						
OWNER						
RENT						
FNKIDS	1.0000					
FWKIDS		1.0000				
SPAR	.2784*		1.0000			
POPOLD	.1220	.3975**		1.0000		
PROF	.6737**	.1025	.2695*		1.0000	
TERT	.7824**	.4728**	.4708**	.7111**		1.0000
MANU	.3429**	.7068**	.2601*	-.1387	.3546**	
CONST	.4949**	.5098**	.2298	.1162	.5107**	.5644**
ABORG	-.1743	.6430**	.0059	-.3155*	-.1598	.4580**
IMMG	.3102*	.6372**	.3290**	.1156	.3381**	.7670**
OWNGT	.8090**	.1124	.0437	.5548**	.5874**	.2277
RENTGT	-.0299	.8357**	.2149	-.0487	.2423	.5350**
INCOM	.6070**	-.4037**	-.1399	.6117**	.3575**	-.3326**

Minimum pairwise N of cases: 101 2-tailed Signif: * - .01 ** - .001

TABLE 7...Continued

CORRELATIONS FOR CITY OF WINNIPEG 1986 - SELECTED CTS

Correlations:	CONST	ABORG	IMMG	OWNGT	RENTGT	INCOM
TOTAL						
RRAPS						
PERMS						
OWNER						
RENT						
FNKIDS						
FWKIDS						
SPAR						
POPOLD						
PROF						
TERT						
MANU						
CONST	1.0000					
ABORG	.0905	1.0000				
IMMG	.3351**	.5000**	1.0000			
OWNGT	.4712**	-.2057	.2033	1.0000		
RENTGT	.2988*	.7349**	.5917**	-.1847	1.0000	
INCOM	-.0470	-.6285**	-.2976*	.5127**	-.6206**	1.0000

Minimum pairwise N of cases: 101

2-tailed Signif: * - .01 ** - .001

TABLE 8

CORRELATIONS FOR CITY OF WINNIPEG 1991 - SELECTED CTS

Correlations:	TOTAL	RRAPS	PERMS	OWNER	RENT	FNKIDS
TOTAL	1.0000					
RRAPS	.0735	1.0000				
PERMS	.6248**	.0972	1.0000			
OWNER	.2941*	.2076	.4503**	1.0000		
RENT	.0685	.1027	-.0657	-.1378	1.0000	
FNKIDS	.2446	.1559	.2808*	.7576**	.4164**	1.0000
FWKIDS	.3756**	.0144	.4622**	.8320**	-.0906	.5429**
SPAR	.2980*	.5693**	.1970	.1954	.6436**	.3516**
POPOLD	.0183	.3179*	.0570	.4428**	.5517**	.8142**
PROF	.3309**	-.2764*	.2813*	.6478**	.2109	.6376**
TERT	.3600**	.0457	.3883**	.7246**	.4209**	.8185**
MANU	.1080	.5643**	.1960	.2520	.2971*	.2161
CONST	.2614*	.3461**	.3056*	.4877**	.1562	.4010**
ABORG	-.0585	.3958**	-.1052	-.3509**	.4282**	-.2579*
IMMG	.1080	.2940*	-.0002	.1750	.4511**	.2290
OWNGT	.1507	.0233	.3603**	.7314**	-.1761	.3758**
RENTGT	.2455	.3276**	.0142	-.2311	.7803**	.0995
INCOM	.1414	-.3721**	.2670*	.5930**	-.4793**	.2781*

Minimum pairwise N of cases: 101

2-tailed Signif: * - .01 ** - .001

Correlations:	FWKIDS	SPAR	POPOLD	PROF	TERT	MANU
TOTAL						
RRAPS						
PERMS						
OWNER						
RENT						
FNKIDS	1.0000					
FWKIDS						
SPAR	.2784*	1.0000				
POPOLD	.1220	.3975**	1.0000			
PROF	.6737**	.1025	.2695*	1.0000		
TERT	.7824**	.4728**	.4708**	.7111**	1.0000	
MANU	.3429**	.7068**	.2601*	-.1387	.3546**	1.0000
CONST	.4949**	.5098**	.2298	.1162	.5107**	.5644**
ABORG	-.1743	.6430**	.0059	-.3155*	-.1598	.4580**
IMMG	.3102*	.6372**	.3290**	.1156	.3381**	.7670**
OWNGT	.8090**	.1124	.0437	.5548**	.5874**	.2277
RENTGT	-.0299	.8357**	.2149	-.0487	.2423	.5350**
INCOM	.6070**	-.4037**	-.1399	.6117**	.3575**	-.3326**

Minimum pairwise N of cases: 101

2-tailed Signif: * - .01 ** - .001

TABLE 8...Continued

CORRELATIONS FOR CITY OF WINNIPEG 1991 - SELECTED CTS

Correlations:	CONST	ABORG	IMMG	OWNGT	RENTGT	INCOM
TOTAL						
RRAPS						
PERMS						
OWNER						
RENT						
FNKIDS						
FWKIDS						
SPAR						
POPOLD						
PROF						
TERT						
MANU						
CONST	1.0000					
ABORG	.0905	1.0000				
IMMG	.3351**	.5000**	1.0000			
OWNGT	.4712**	-.2057	.2033	1.0000		
RENTGT	.2988*	.7349**	.5917**	-.1847	1.0000	
INCOM	-.0470	-.6285**	-.2976*	.5127**	-.6206**	1.0000

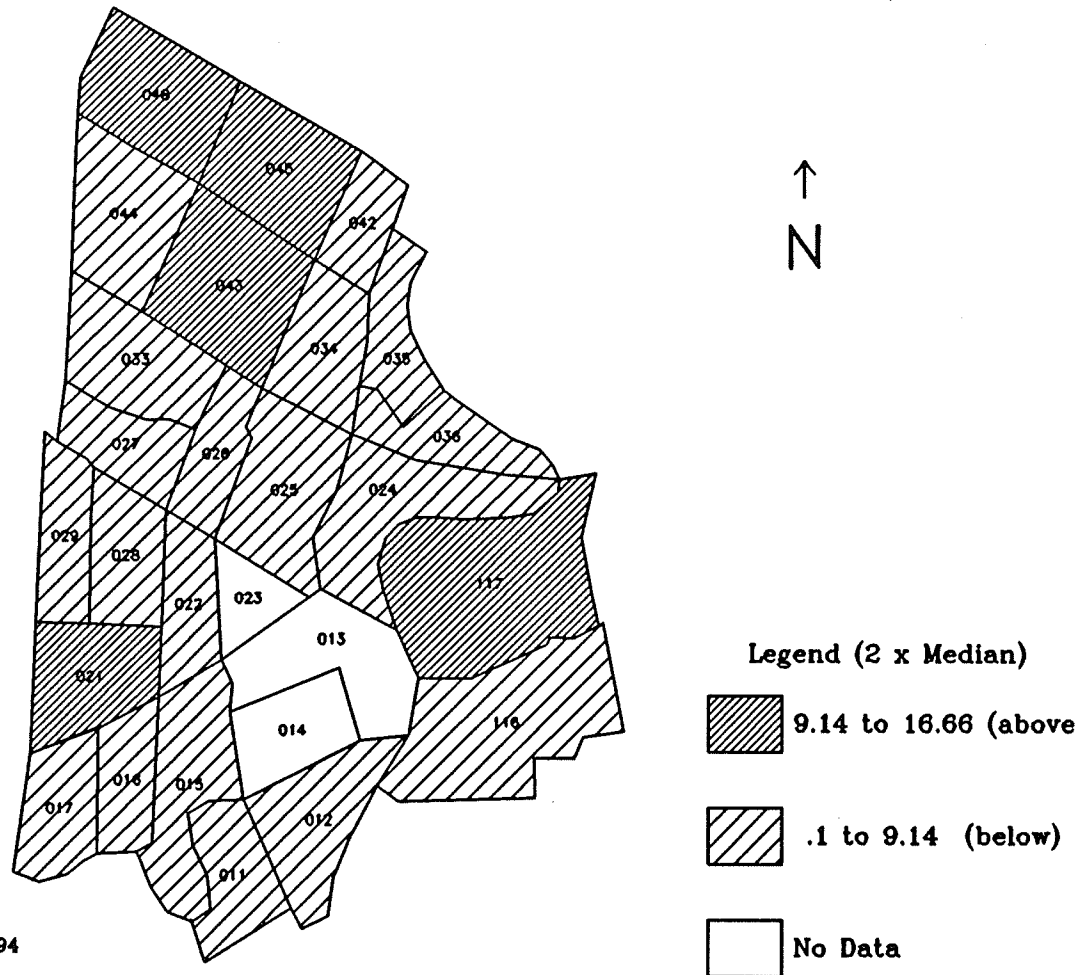
Minimum pairwise N of cases: 101

2-tailed Signif: * - .01 ** - .001

APPENDIX II ... Continue
THE FOLLOWING LIST MAPS 2 - 14B

Map 2

PERCENT OF TOTAL BUILDING PERMITS BY CENSUS TRACT FOR
WINNIPEG'S INNER CITY - 1983 TO 1991 (All VALUES WEIGHTED)

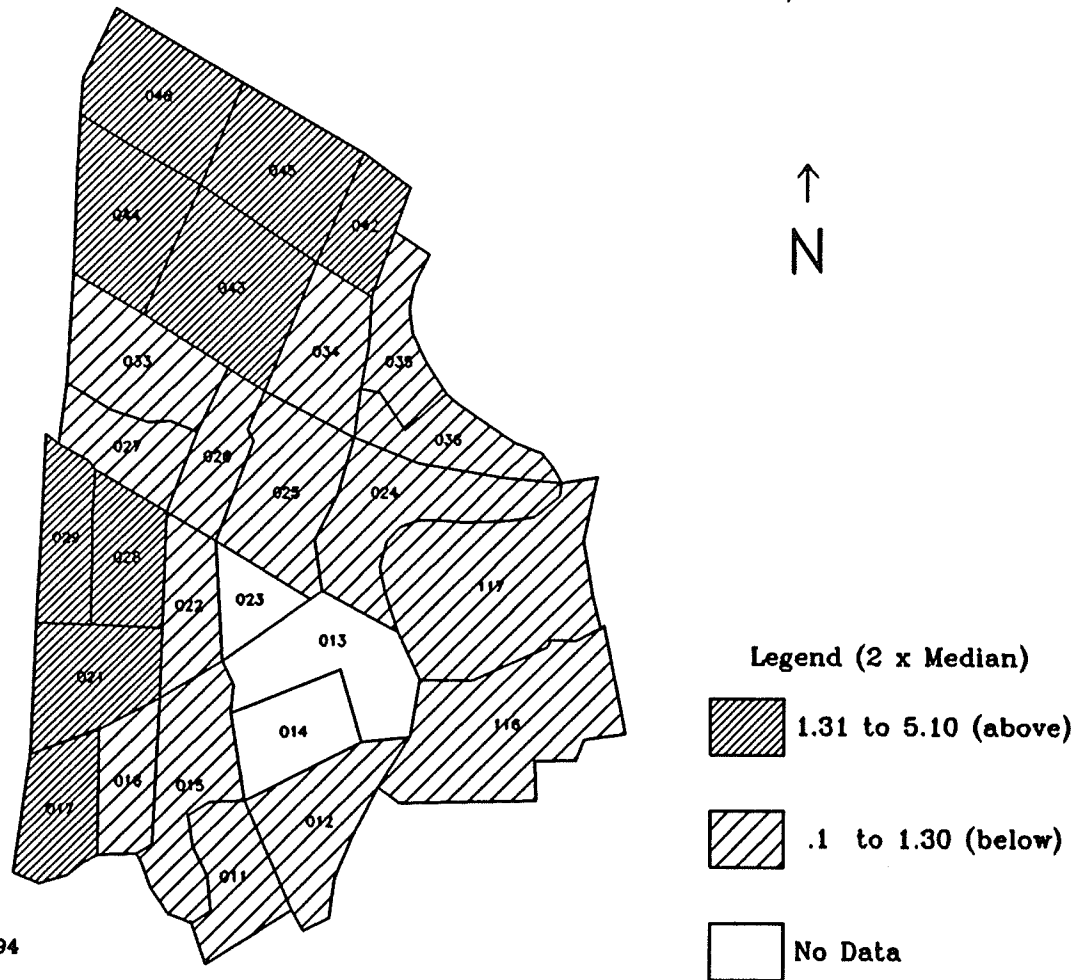


Maps by Christian Douchant 03/09/1994

Production courtesy of Institute of Urban Studies - U of W.

Map 3

PERCENT OF ISSUED RRAPS BY CENSUS TRACT FOR WINNIPEG'S
INNER CITY - 1983 TO 1991 (All VALUES WEIGHTED)

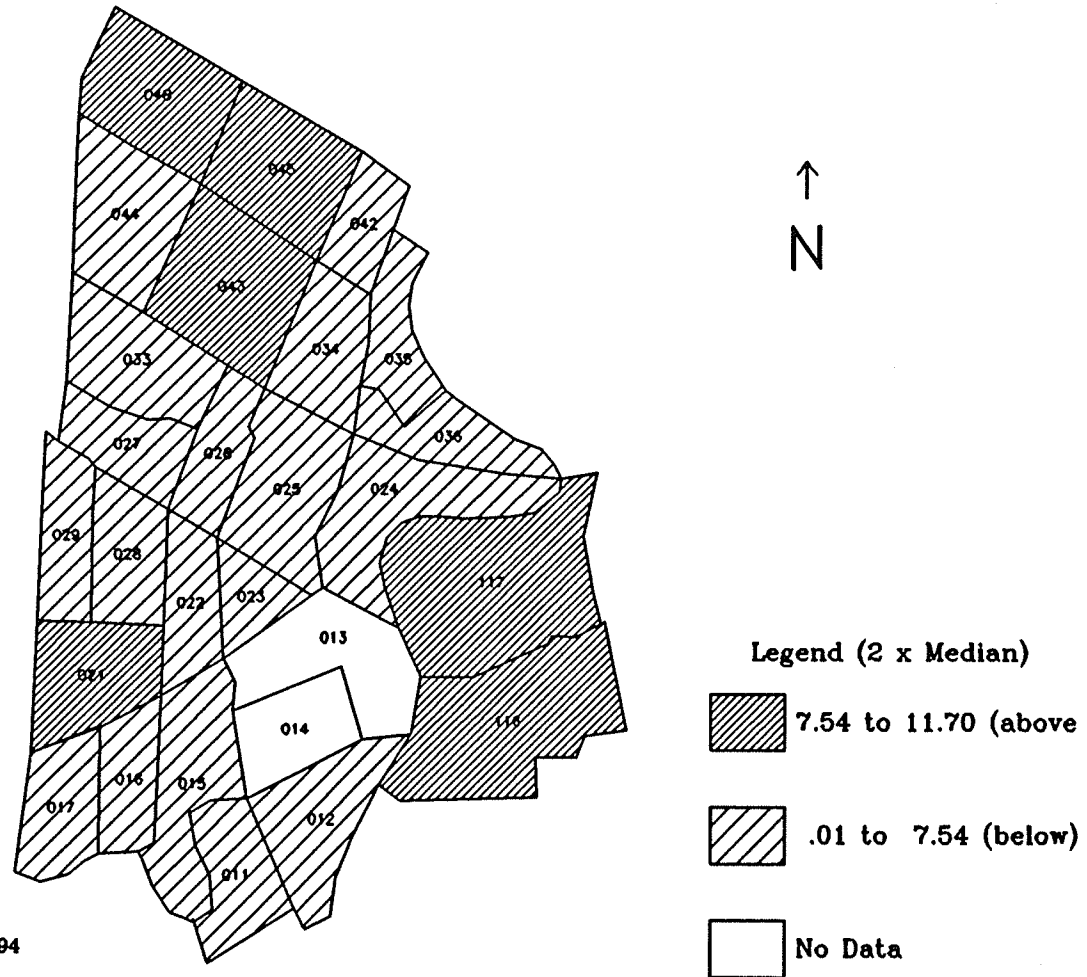


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 4

PERCENT OF ISSUED BUILDING PERMITS BY CENSUS TRACT FOR
WINNIPEG'S INNER CITY - 1983 TO 1991 (All VALUES WEIGHTED)

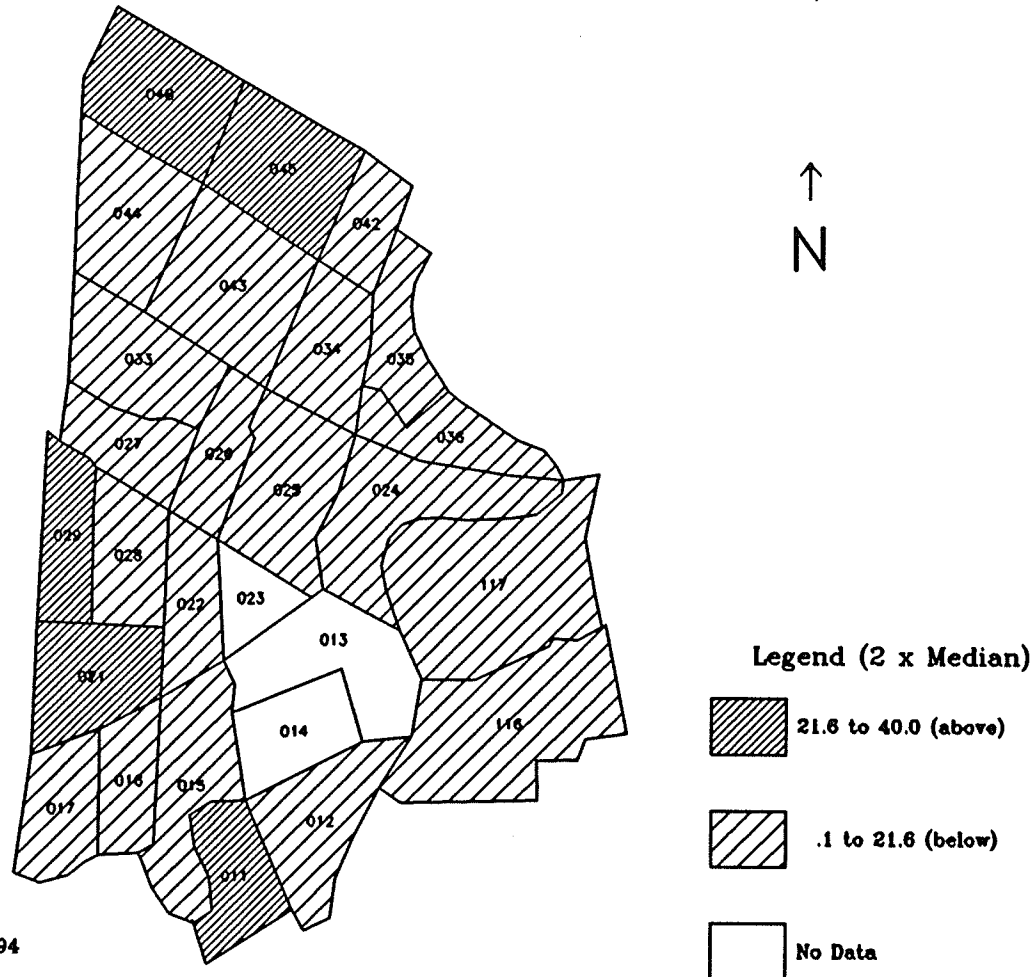


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 5a

OWNER-OCCUPIED DWELLINGS BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1986 (All VALUES WEIGHTED)

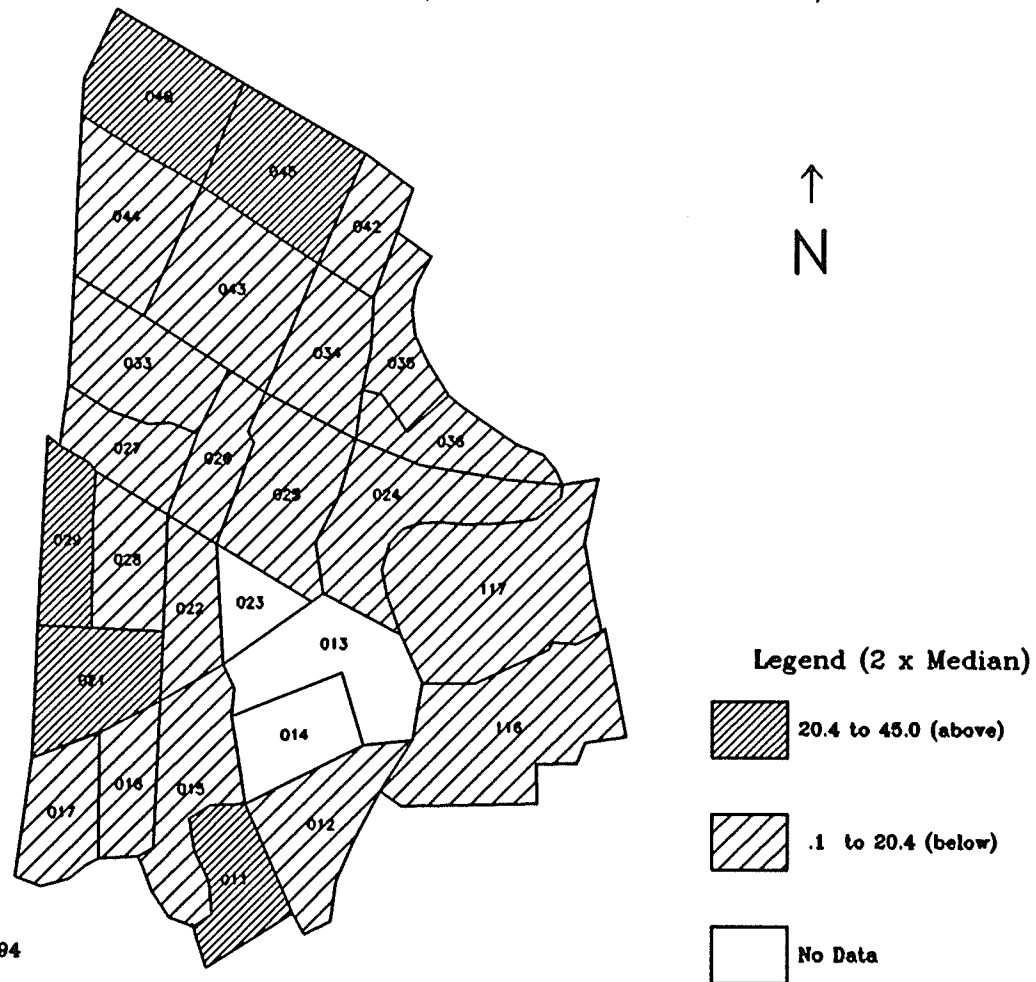


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 5b

OWNER-OCCUPIED HOUSEHOLDS BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1991 (All VALUES WEIGHTED)

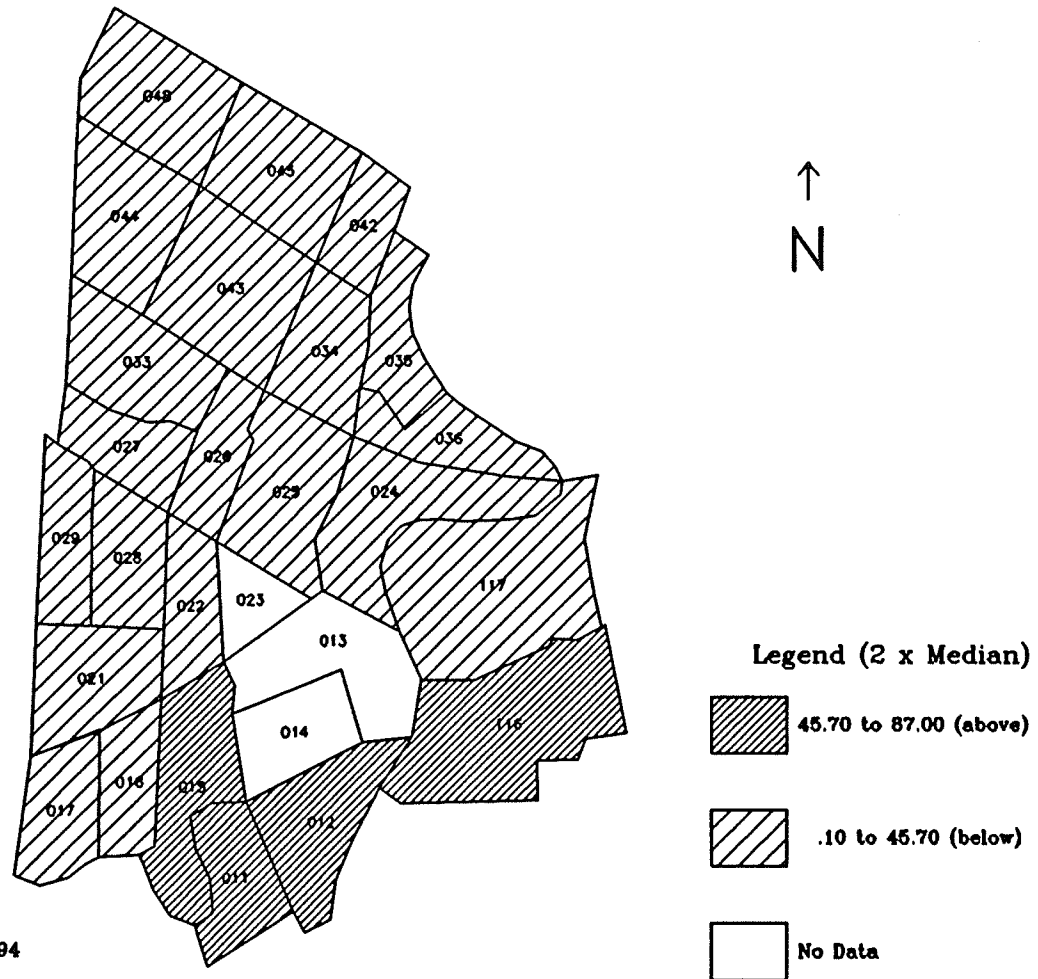


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 6a

RENTED—OCCUPIED DWELLINGS BY CENSUS TRACT
WINNIPEG'S INNER CITY — 1986 (All VALUES WEIGHTED)

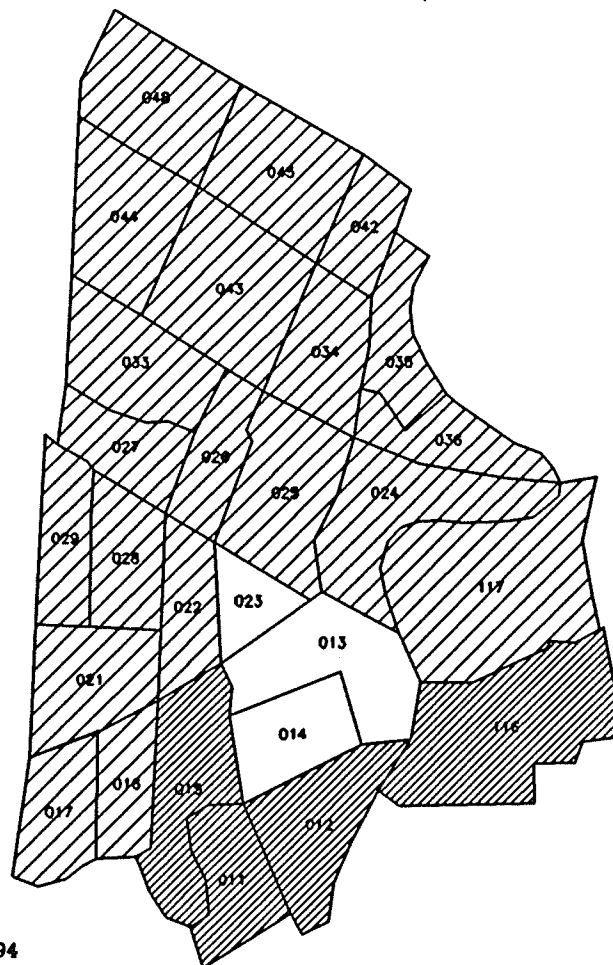


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 6b

RENTED OCCUPIED HOUSEHOLDS BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1991 (All VALUES WEIGHTED)



Legend (2 x Median)

 43.8 to 90.0 (above)

 .1 to 43.8 (below)

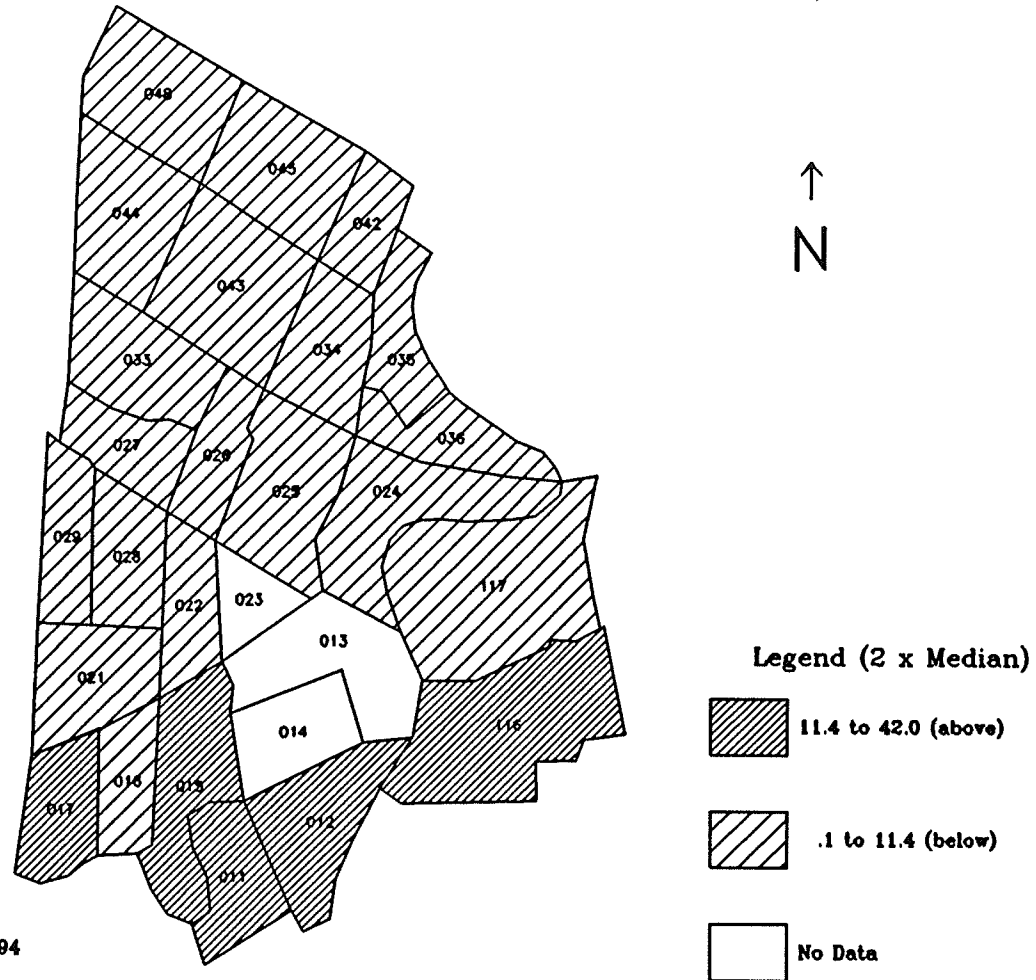
 No Data

Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 7a

PROFESSIONAL EMPLOYED POPULATION BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1986 (All VALUES WEIGHTED)

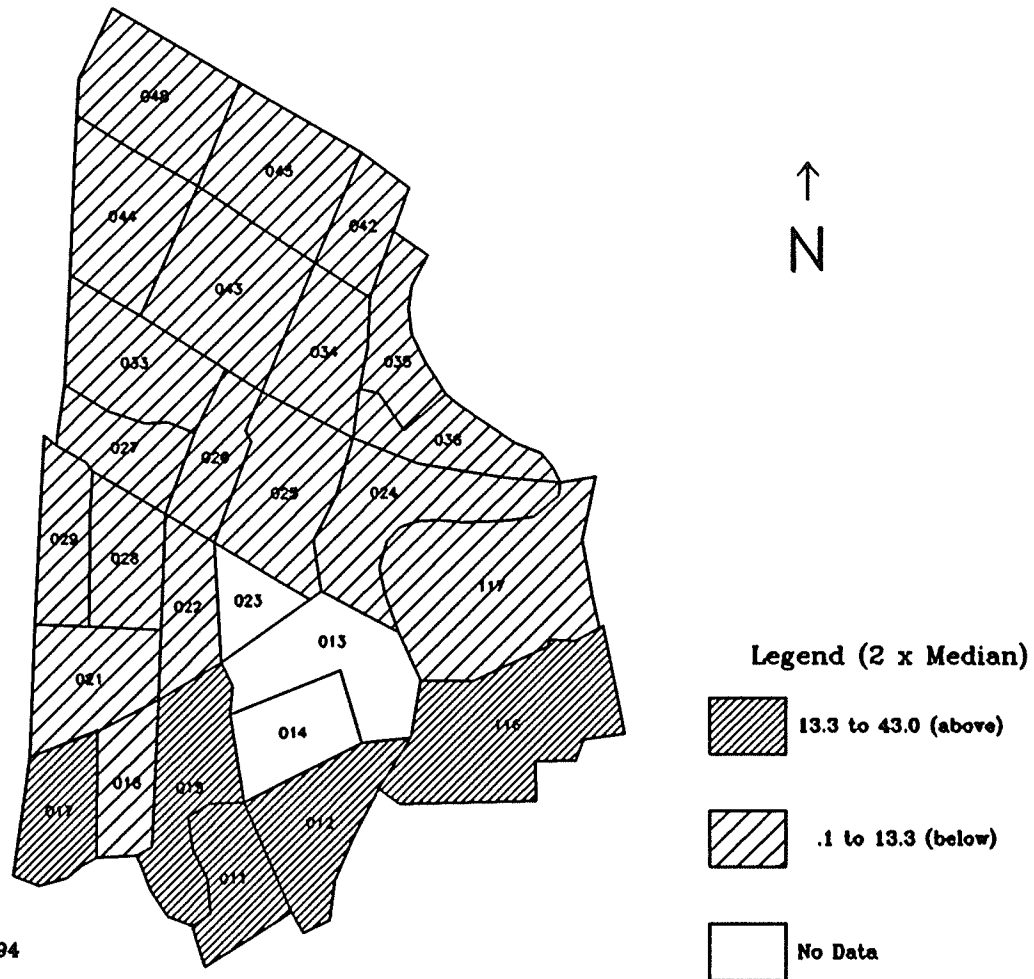


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 7b

PROFESSIONAL EMPLOYED POPULATION BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1991 (All VALUES WEIGHTED)

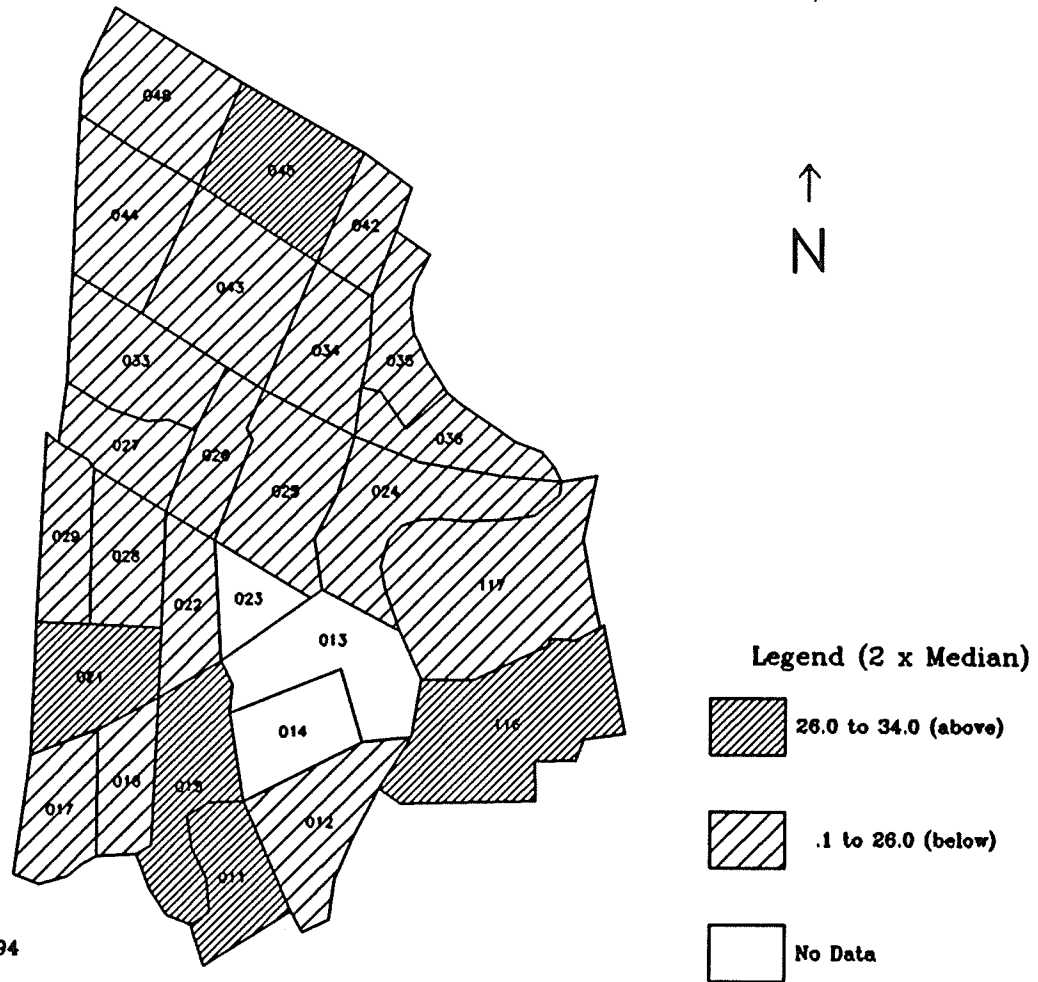


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 8a

POPULATION EMPLOYED IN SERVICE SECTOR BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1986 (All VALUES WEIGHTED)

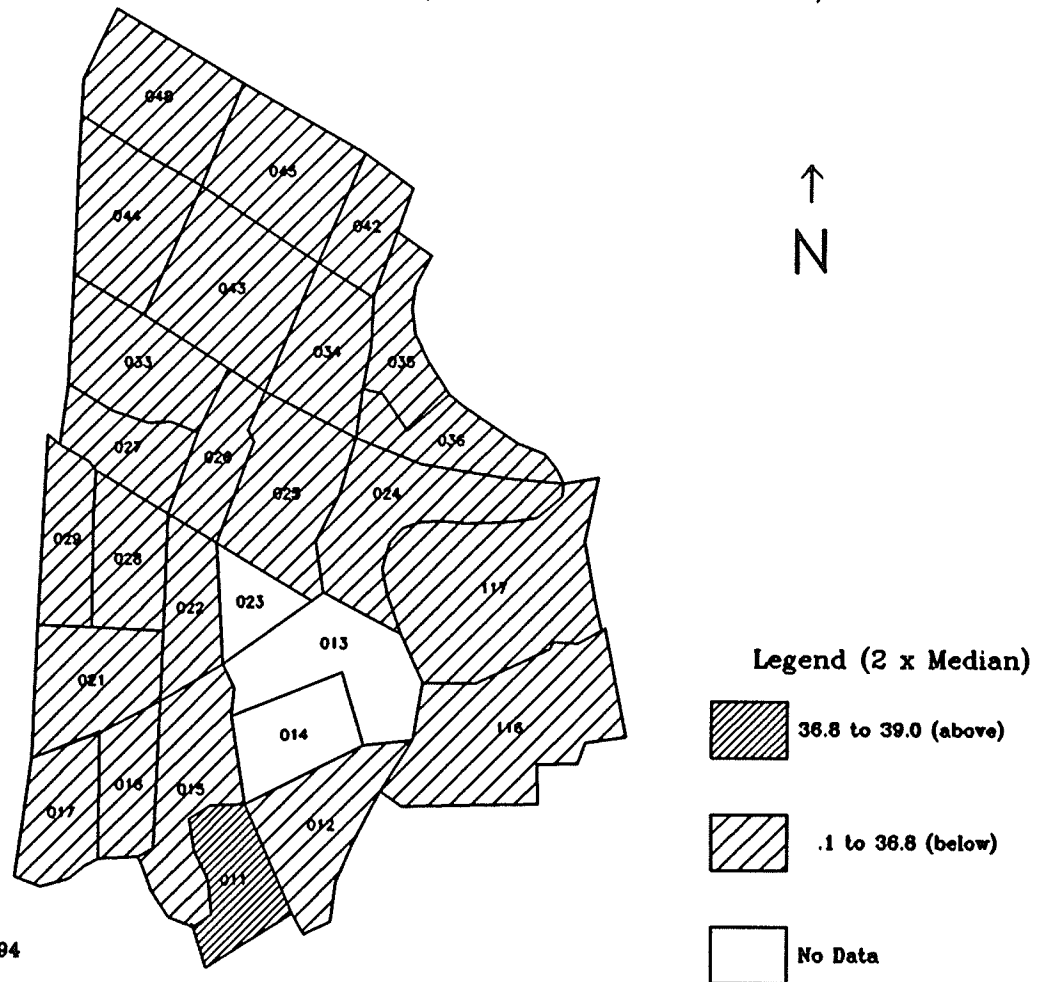


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 8b

POPULATION EMPLOYED IN SERVICE SECTOR BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1991 (All VALUES WEIGHTED)

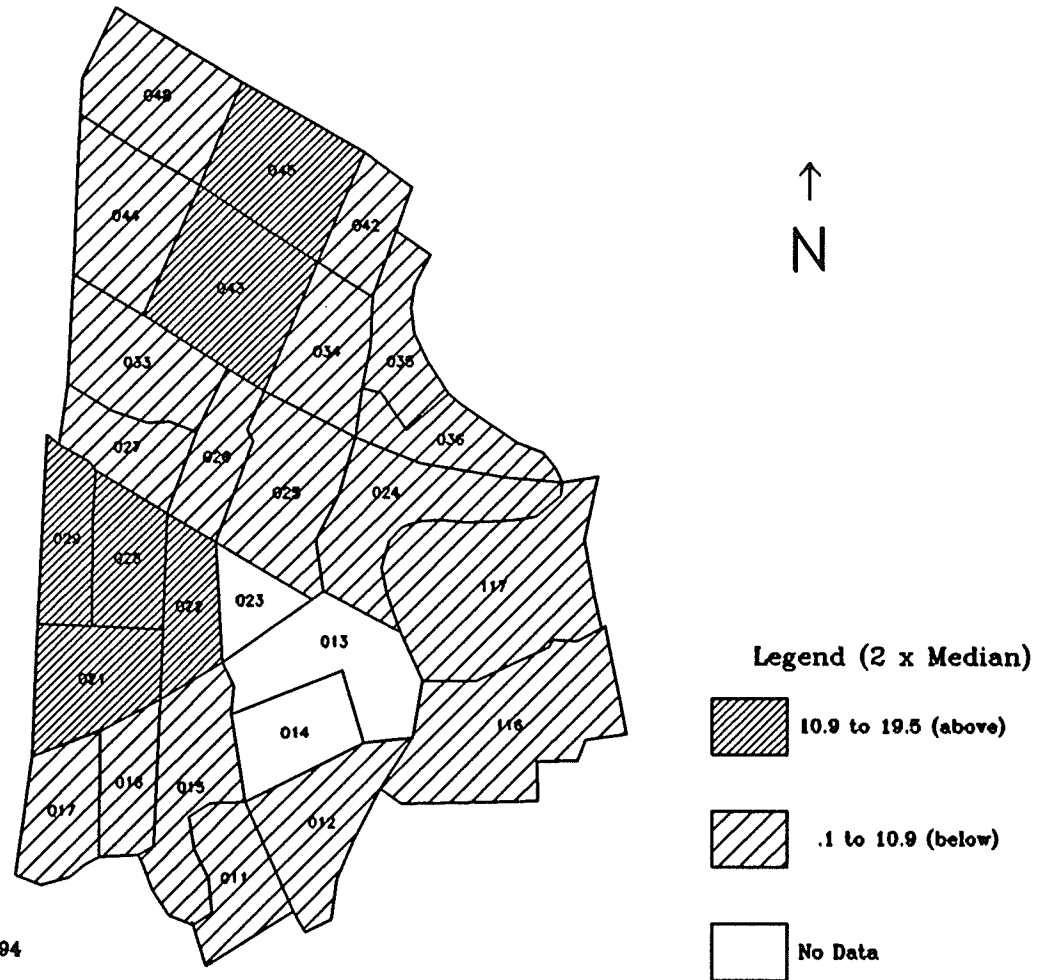


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 9a

POPULATION EMPLOYED IN MANUFACTURING SECTOR BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1986 (All VALUES WEIGHTED)

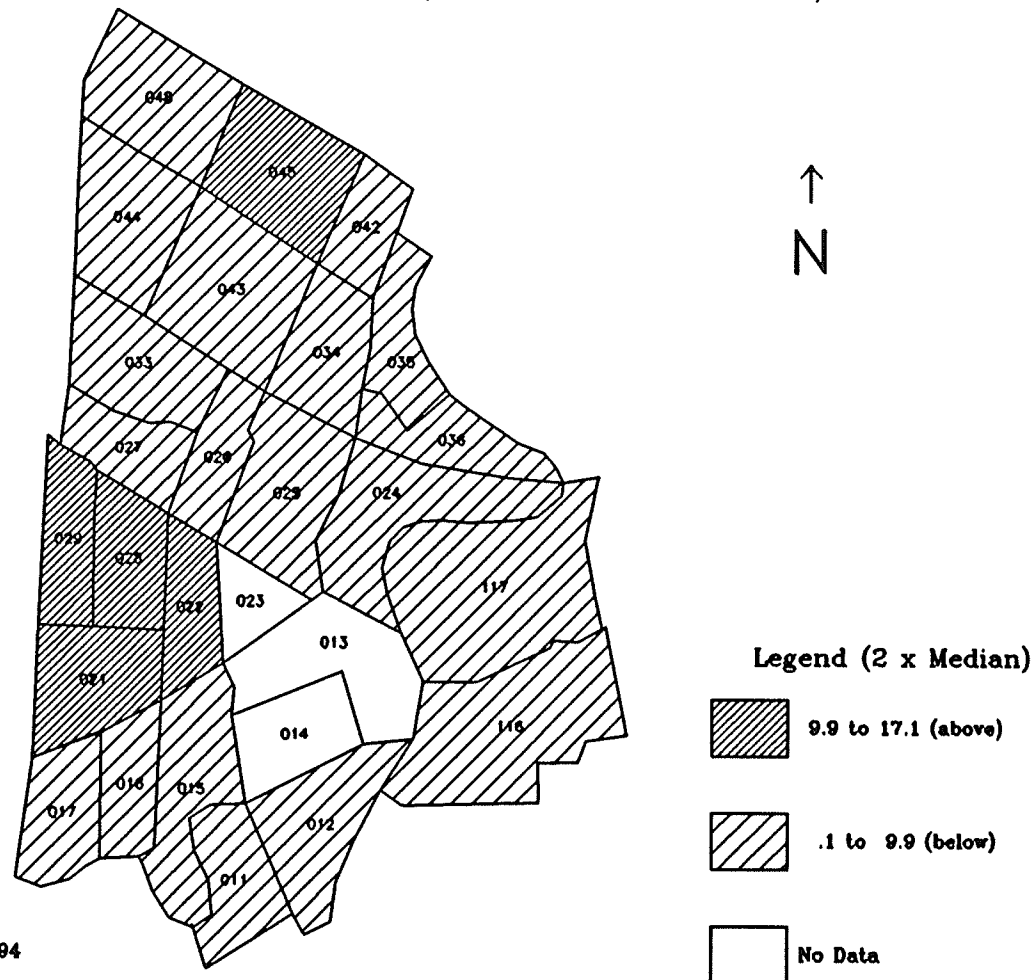


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 9b

POPULATION EMPLOYED IN MANUFACTURING SECTOR BY CENSUS TRACT
WINNIPEG'S INNER CITY – 1991 (All VALUES WEIGHTED)

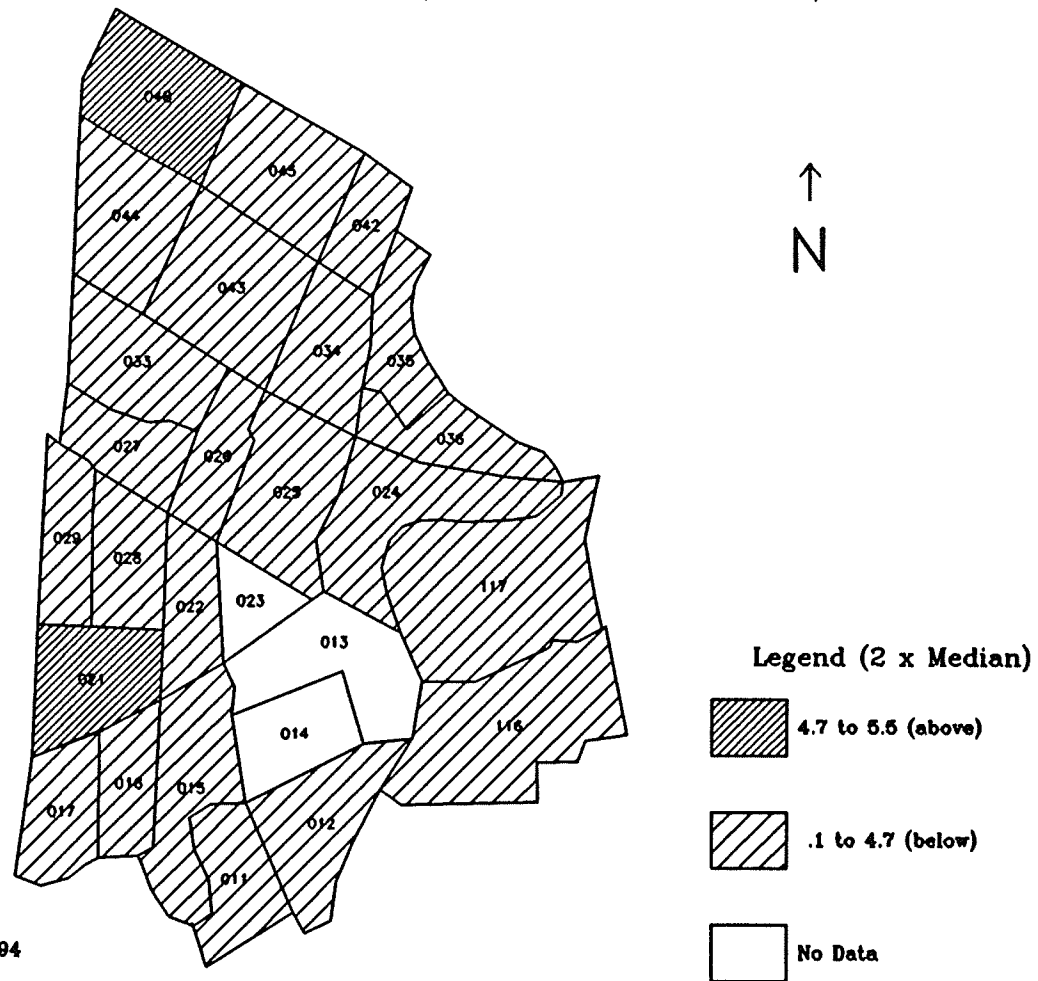


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 10a

POPULATION EMPLOYED IN CONSTRUCTION SECTOR BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1986 (All VALUES WEIGHTED)

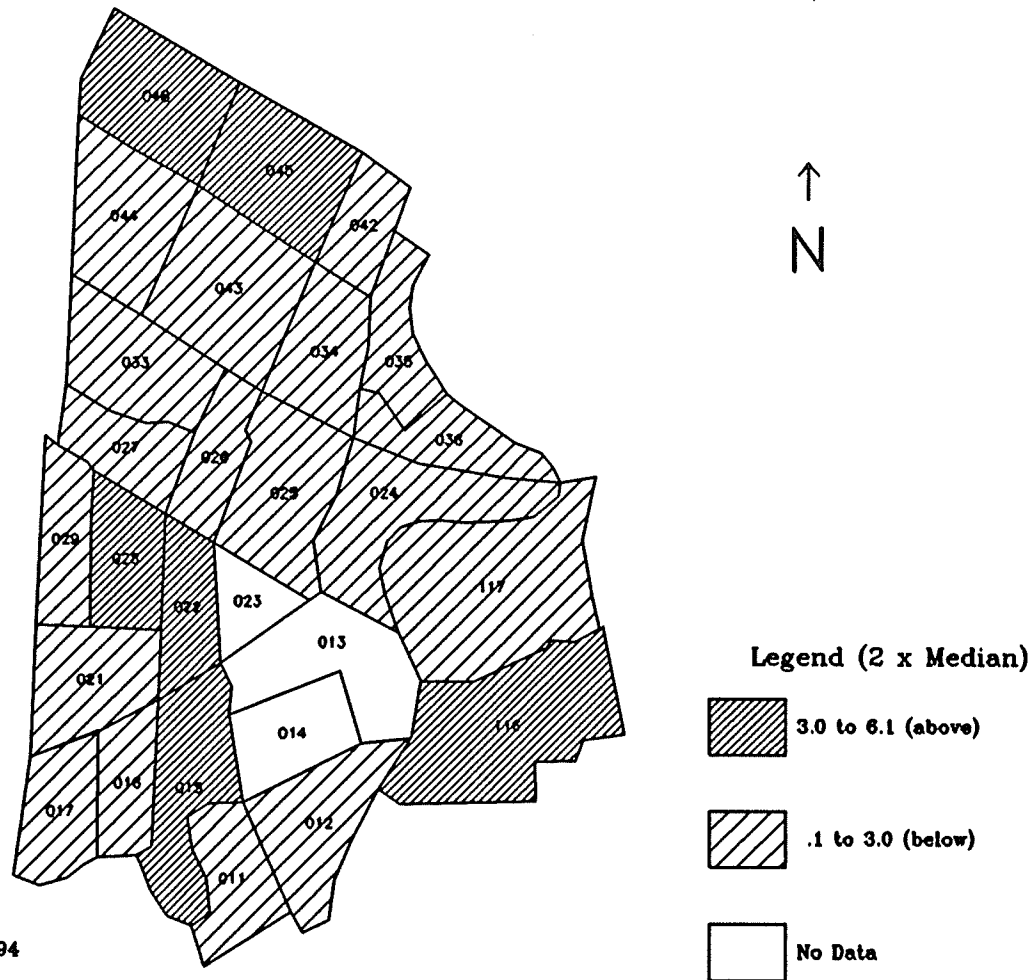


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 10b

POPULATION EMPLOYED IN CONSTRUCTION SECTOR BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1991 (ALL VALUES WEIGHTED)

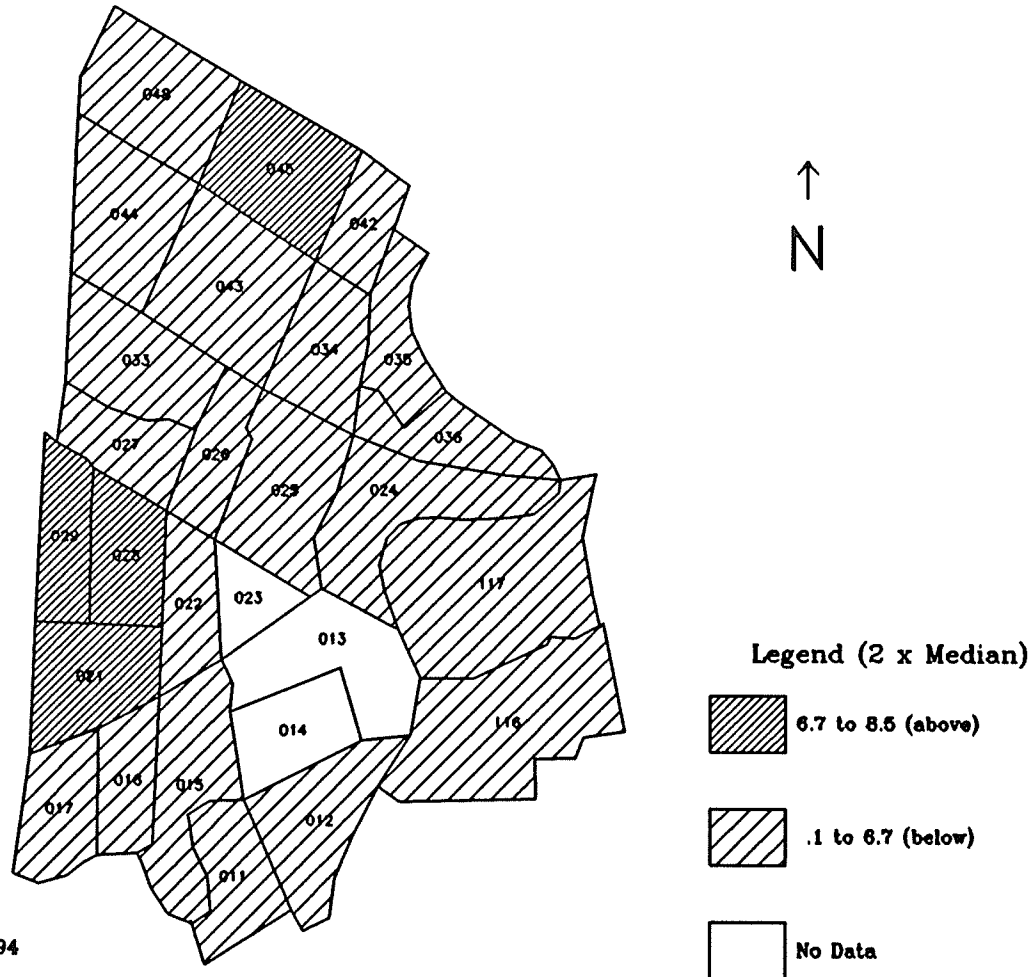


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 11a

FAMILIES WITH CHILDREN BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1986 (All VALUES WEIGHTED)

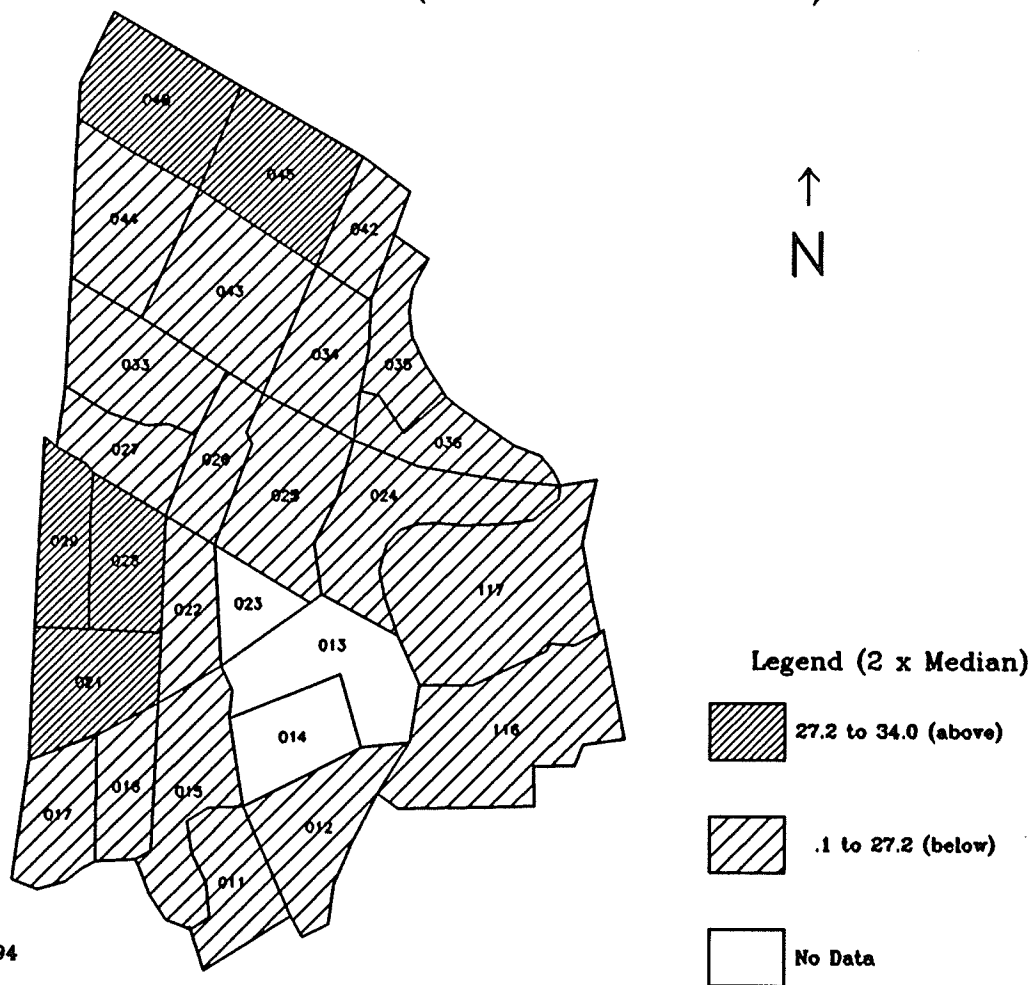


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 11b

FAMILIES WITH CHILDREN BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1991 (All VALUES WEIGHTED)

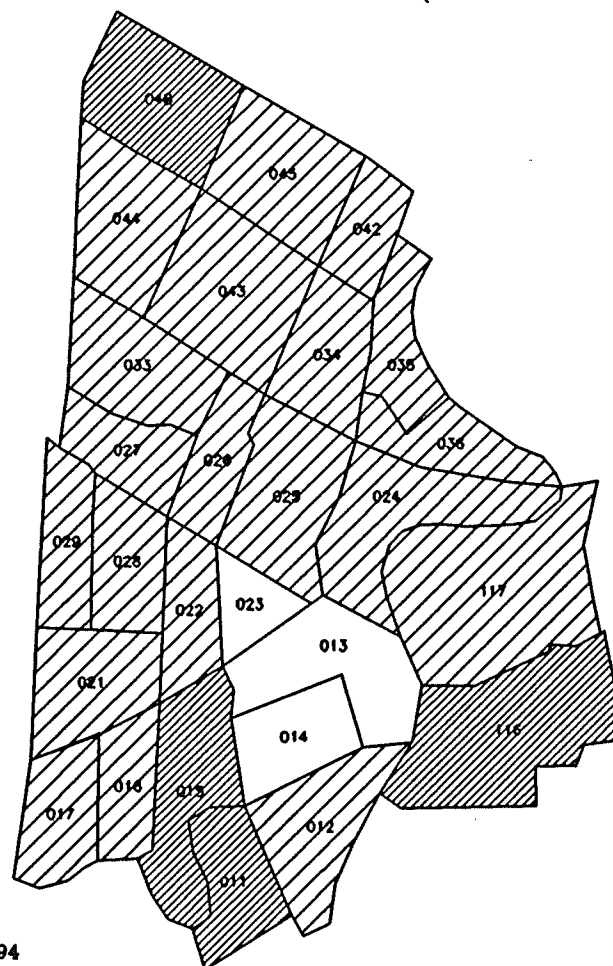


Maps by Christian Douchant 03/09/1994

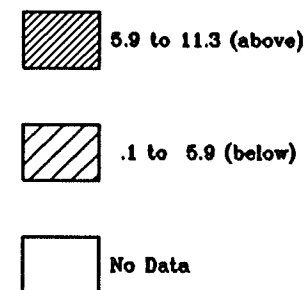
Production courtesy of the Institute of Urban Studies

Map 12a

**FAMILIES WITH NO CHILDREN BY CENSUS TRACT
WINNIPEG'S INNER CITY – 1986 (All VALUES WEIGHTED)**



Legend (2 x Median)

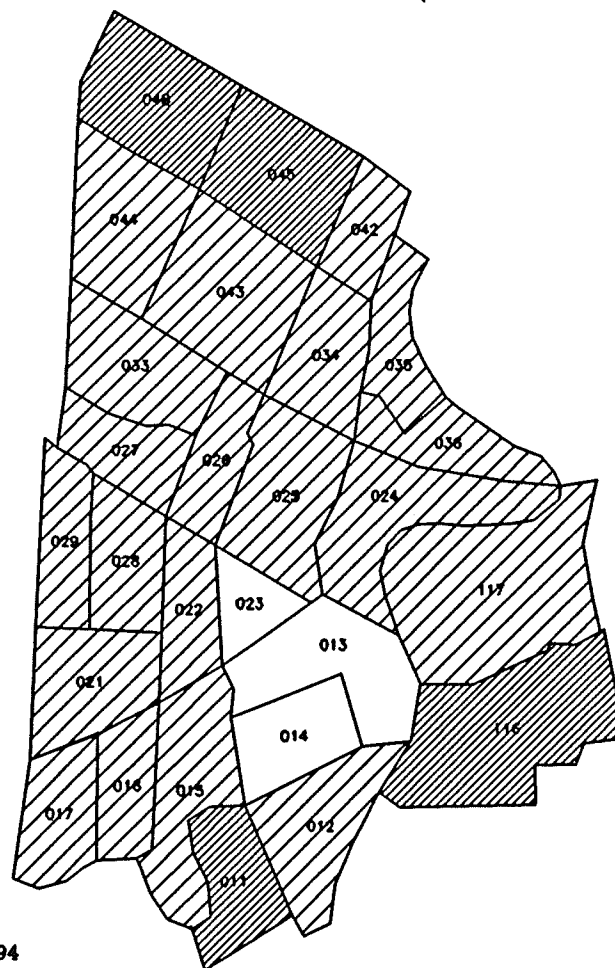


Maps by Christian Douchant 03/09/1994

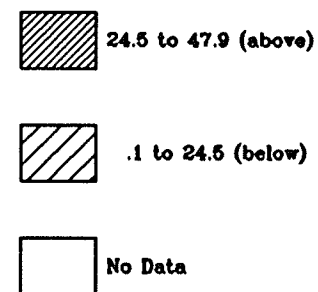
Production courtesy of the Institute of Urban Studies

Map 12b

FAMILIES WITH NO CHILDREN BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1991 (ALL VALUES WEIGHTED)



Legend (2 x Median)

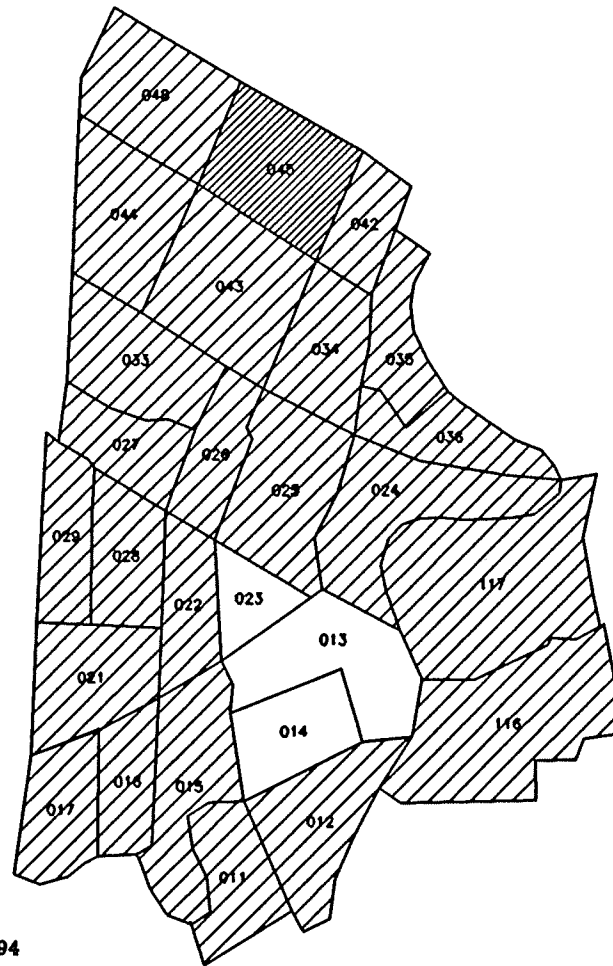


Maps by Christian Douchant 03/09/1994

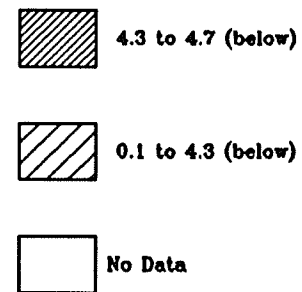
Production courtesy of the Institute of Urban Studies

Map 13a

**SINGLE PARENT FAMILIES BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1986 (All VALUES WEIGHTED)**



Legend (2 x Median)

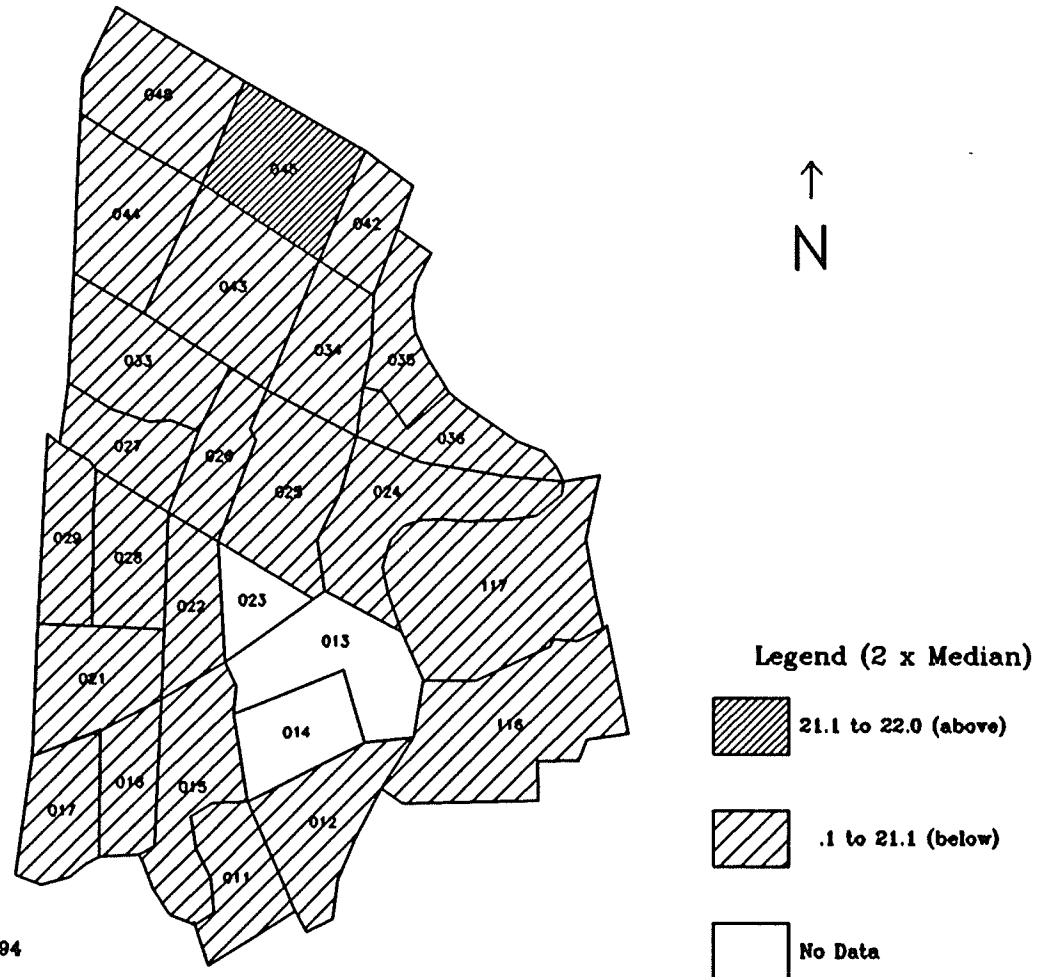


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 13b

SINGLE PARENT FAMILIES BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1991 (ALL VALUES WEIGHTED)

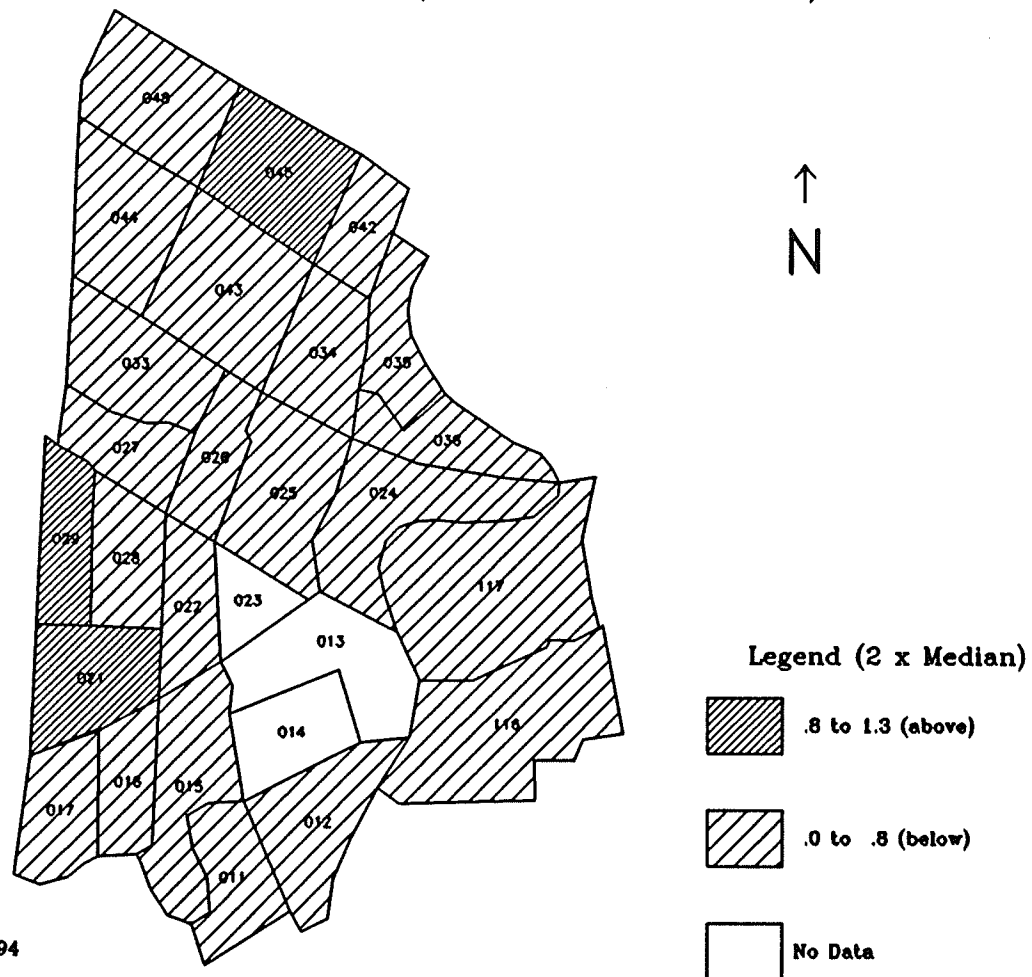


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 14a

OWNER-OCCUPIERS > 30% OF INCOME FOR HOUSING BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1986 (All VALUES WEIGHTED)

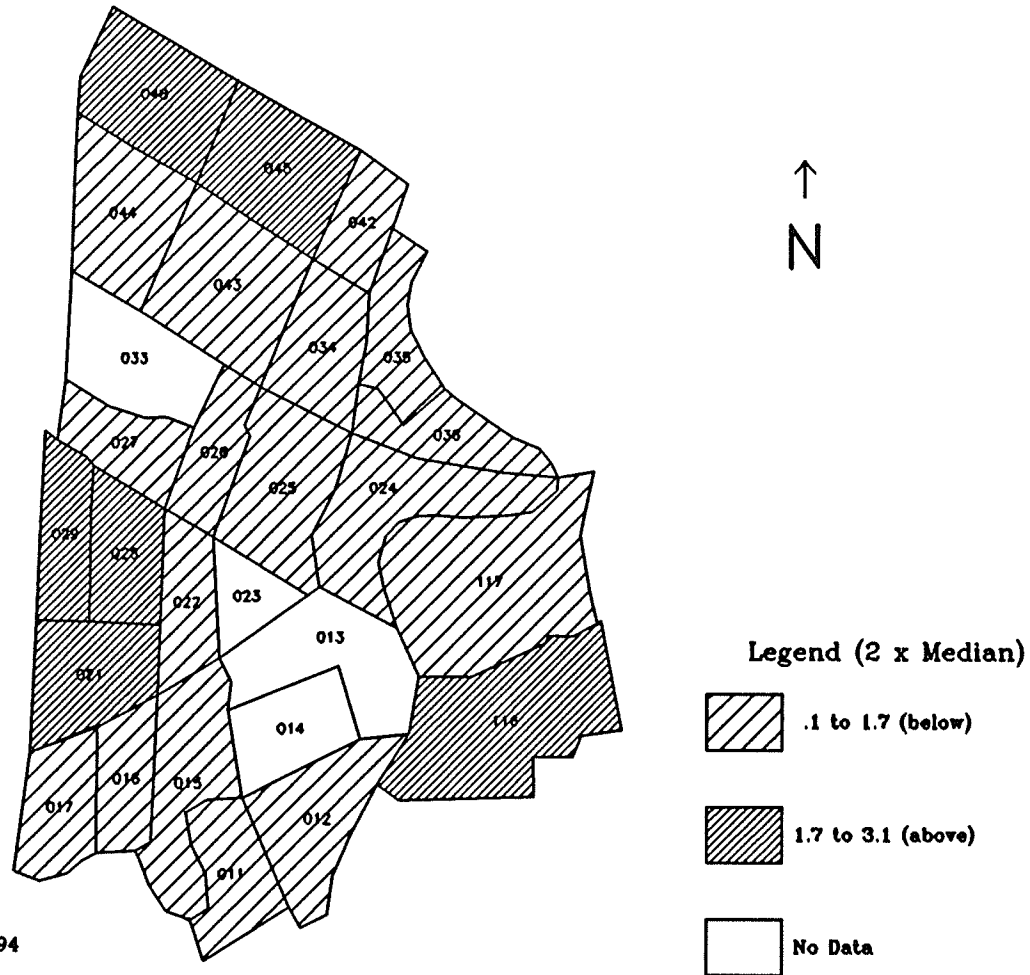


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 14b

OWNER-OCCUPIERS > 30% OF INCOME FOR HOUSING BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1991 (All VALUES WEIGHTED)

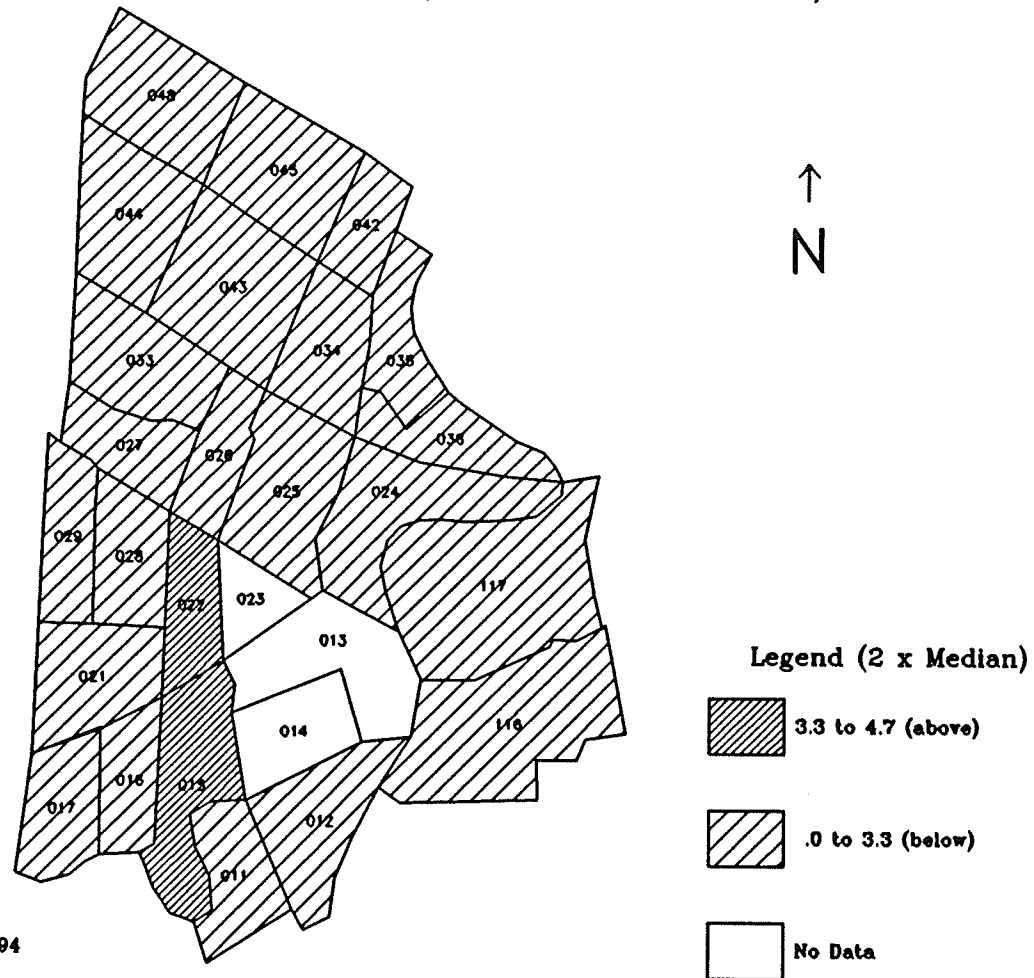


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 15a

RENTERS PAYING > 30% OF INCOME FOR HOUSING BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1986 (All VALUES WEIGHTED)

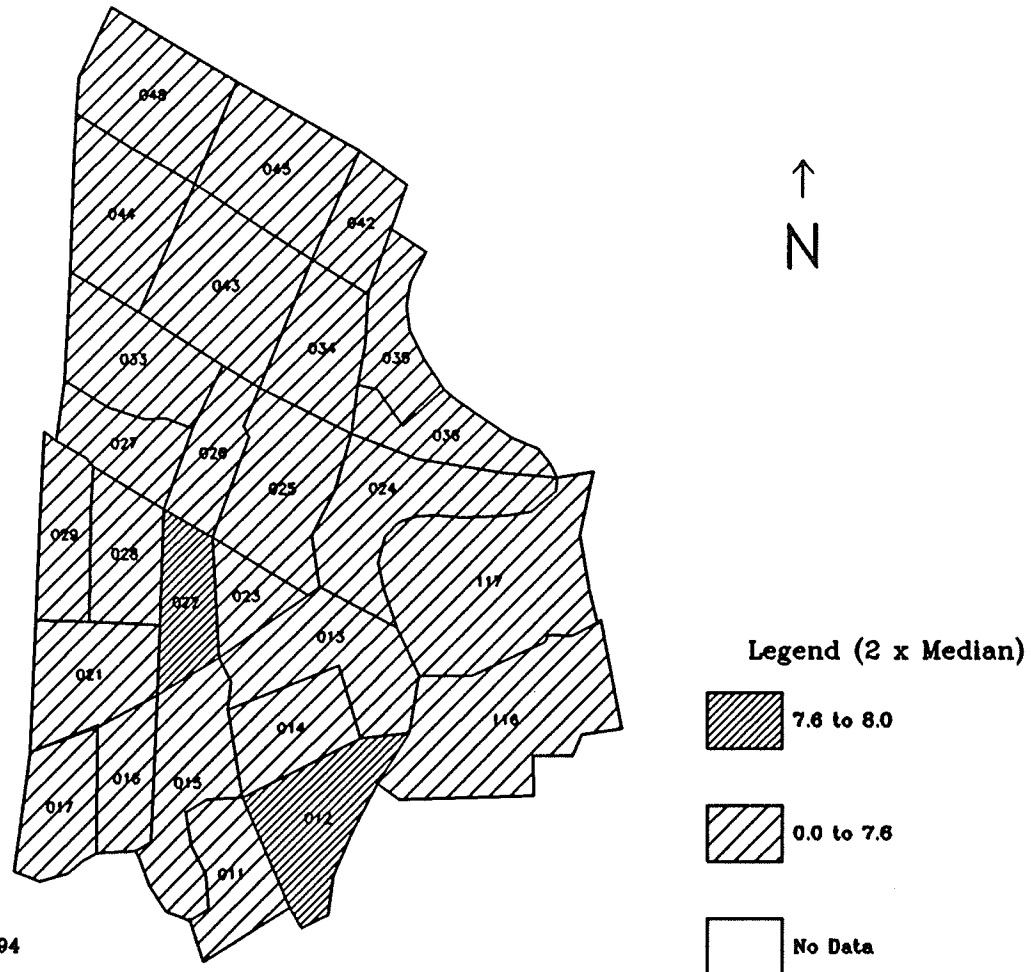


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 15b

RENTERS PAYING > 30% OF INCOME FOR HOUSING BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1991 (ALL VALUES WEIGHTED)

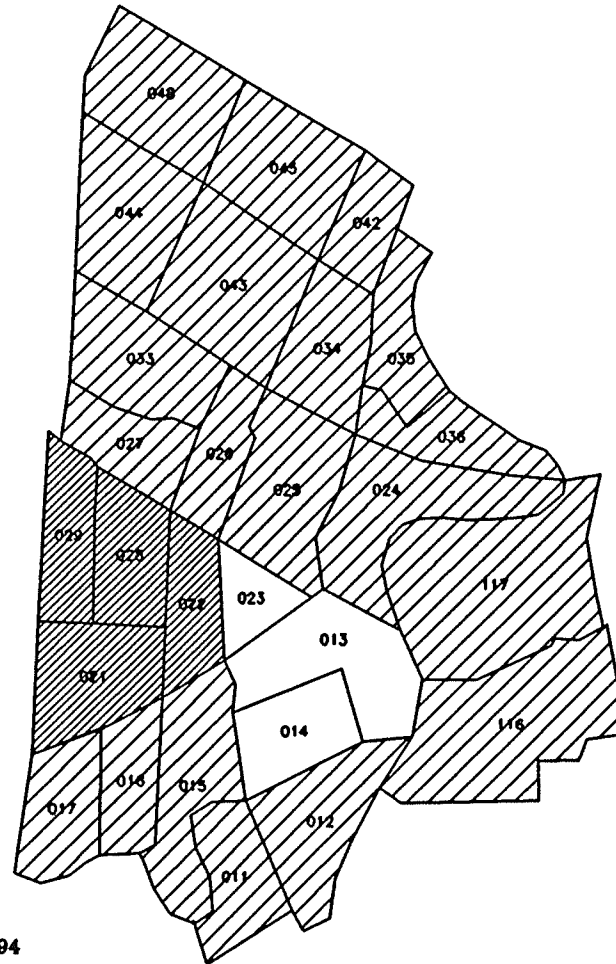


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 16a

IMMIGRANT POPULATION BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1986 (All VALUES WEIGHTED)



Legend (2 x Median)

 21.1 to 34.0 (above)

 .1 to 21.1 (below)

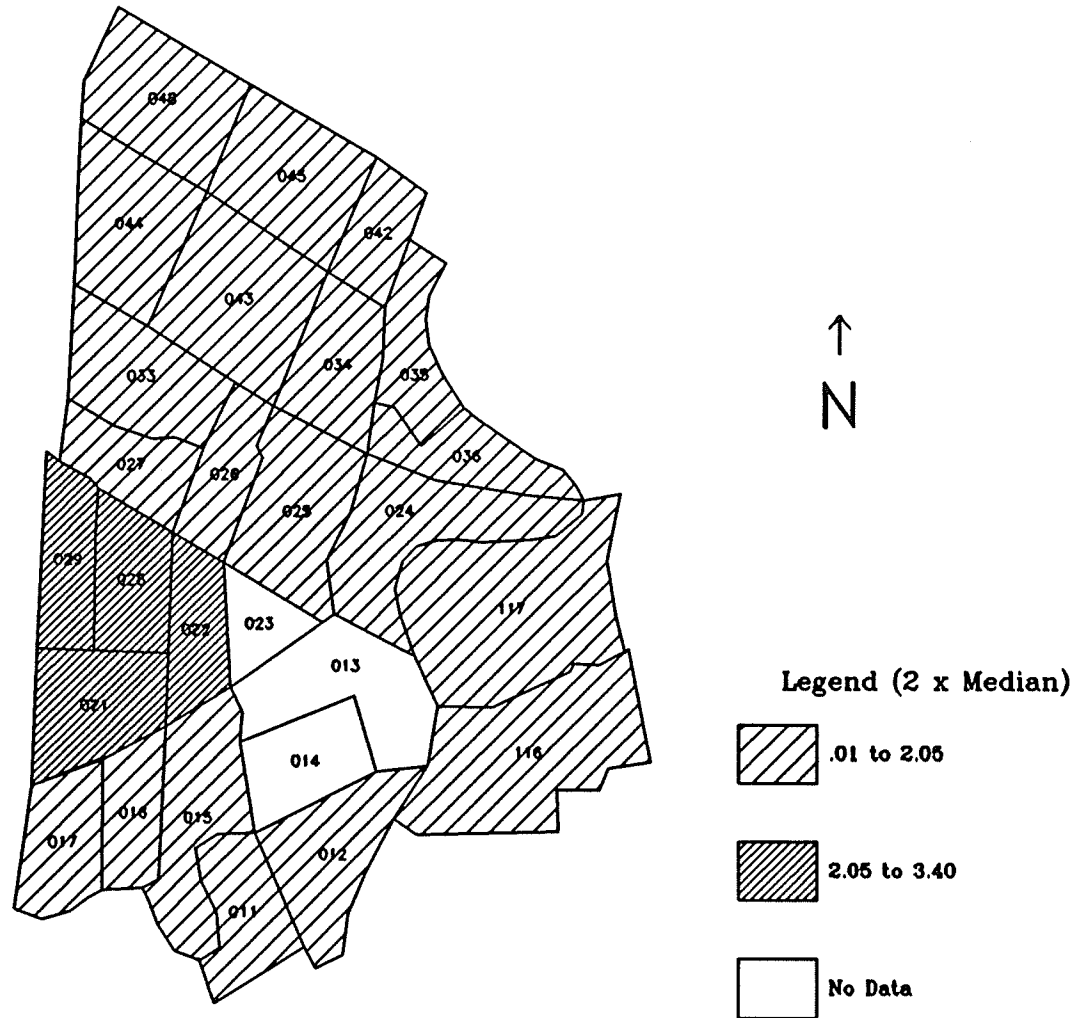
 No Data

Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

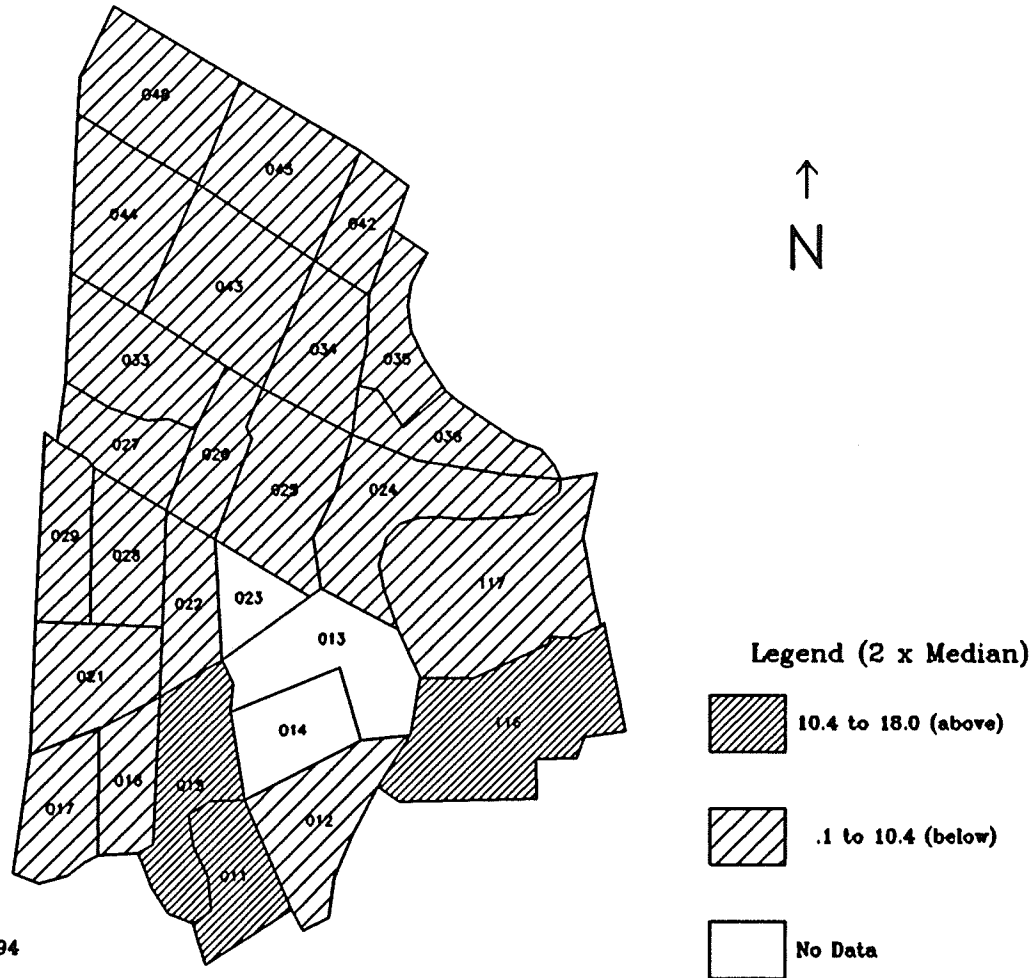
Map 16b

IMMIGRANT POPULATION BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1991 (All VALUES WEIGHTED)



Map 17a

POPULATION OVER 65 YEARS OF AGE BY CENSUS TRACT
WINNIPEG'S INNER-CITY - 1986 (All VALUES WEIGHTED)

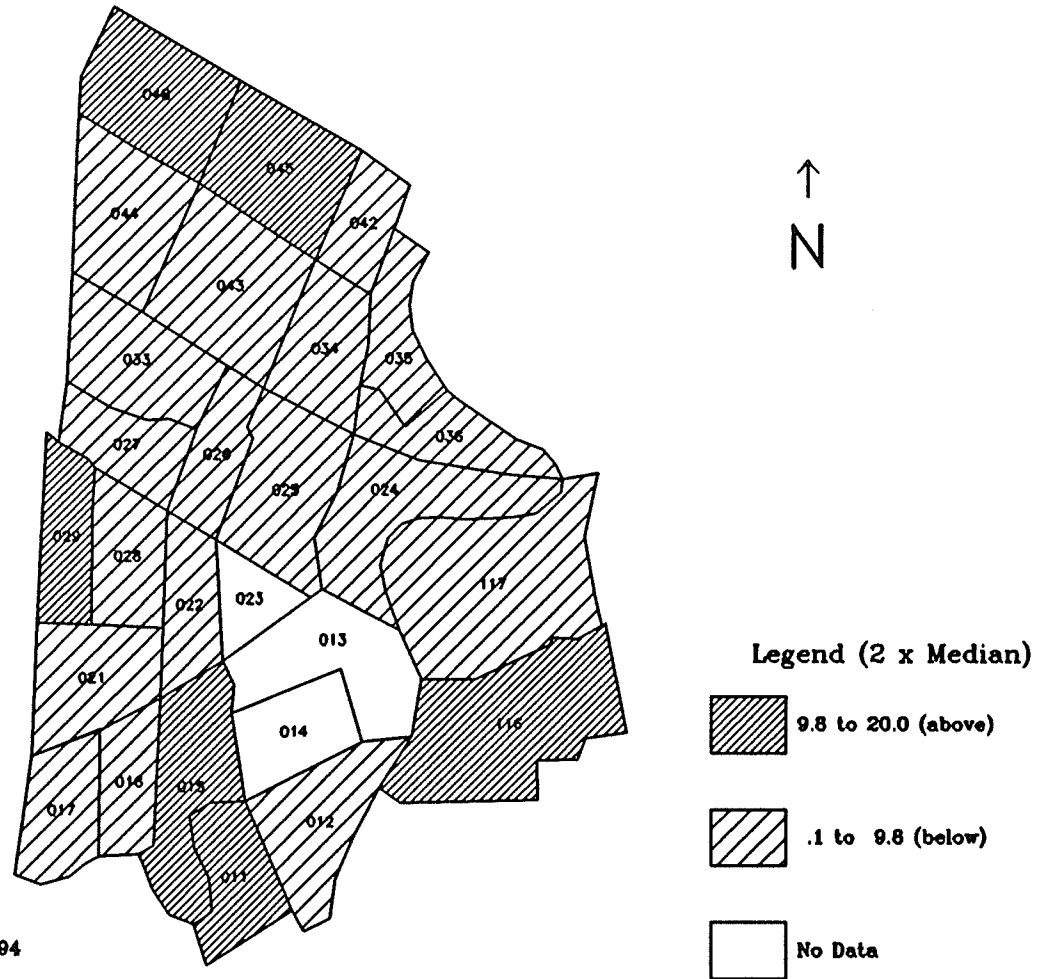


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 17b

POPULATION OVER 65 YEARS OF AGE BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1991 (All VALUES WEIGHTED)

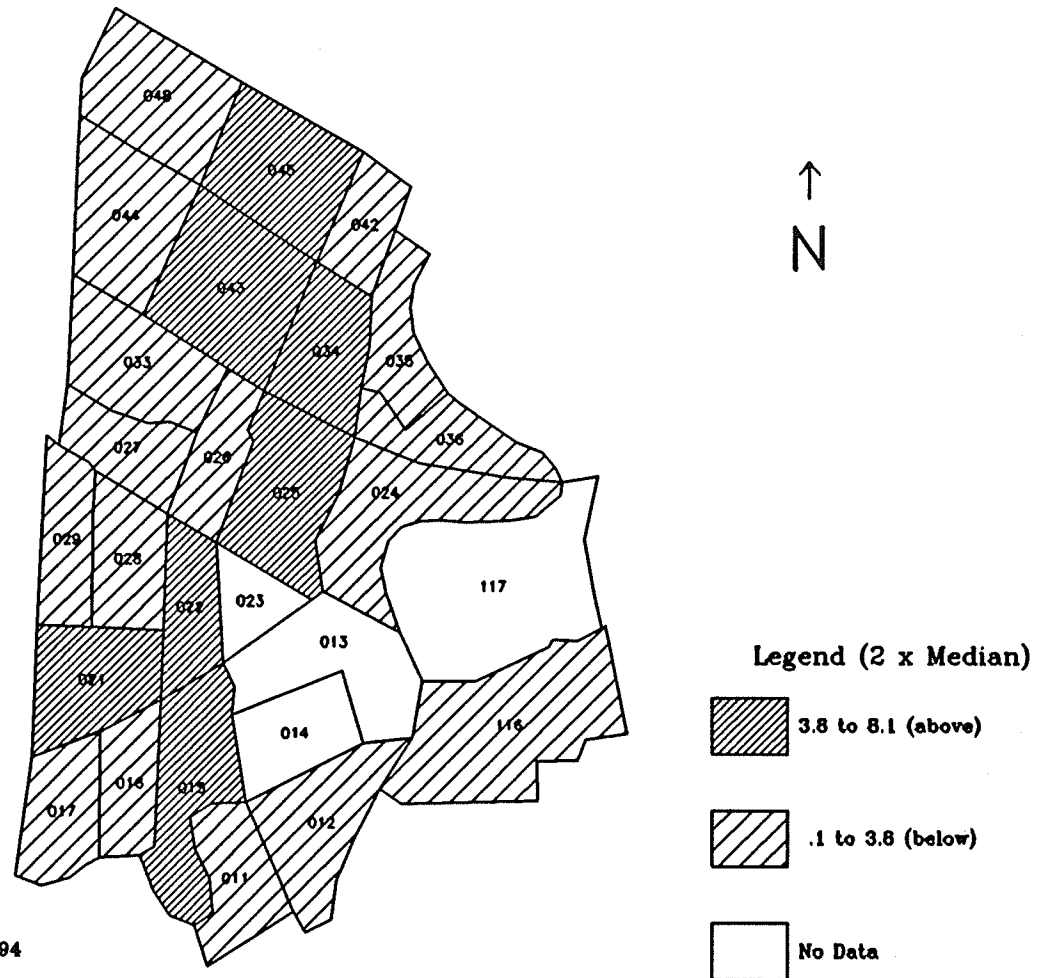


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 18a

ABORIGINAL POPULATION BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1986 (All VALUES WEIGHTED)

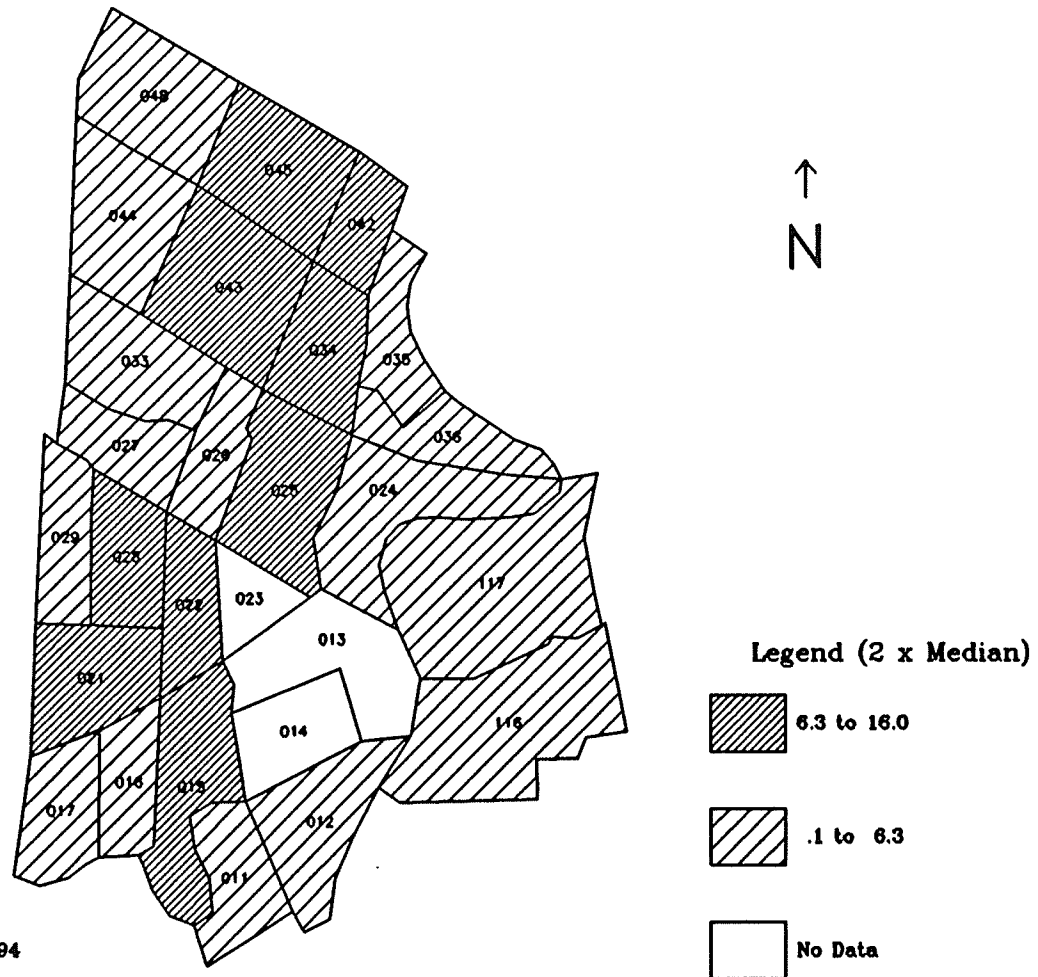


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 18b

ABORIGINAL POPULATION BY CENSUS TRACT
WINNIPEG'S INNER CITY - 1991 (All values weighted)



Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

APPENDIX III

TABLE 9

EIGEN VALUES AND VARIANCE EXPLAINED - WPG'S INNER CITY 1986

FACTOR SCORES FOR 1986

VAR	FACTOR 1	FACTOR 2	FACTOR 3	FCT 1SQR	FCT 2SQR	FCT 3SQR
ZOWNER	0.91651	0.28047	-0.07611	0.839990	0.078663	0.005792
ZRENT	-0.15508	0.90578	0.37098	0.024049	0.820437	0.137626
ZFNKIDS	0.39789	0.89524	-0.02478	0.158316	0.801454	0.000614
ZFWKIDS	0.9039	0.12651	0.38219	0.817035	0.016004	0.146069
ZSPAR	0.50005	0.31867	0.75795	0.250050	0.101550	0.574488
ZPOPOLD	0.30974	0.84817	0.11183	0.095938	0.719392	0.012505
ZPROF	0.00825	0.95814	-0.18453	0.000068	0.918032	0.034051
ZTERT	0.46571	0.81888	0.26117	0.216885	0.670564	0.068209
ZMANU	0.61619	0.05559	0.71799	0.379690	0.003090	0.515509
ZCONST	0.76539	0.2454	0.42355	0.585821	0.060221	0.179394
ZABORG	0.1102	-0.12327	0.87691	0.012144	0.015195	0.768971
ZIMMG	0.56276	0.21175	0.66074	0.316698	0.044838	0.436577
ZOWNGT	0.9188	0.05565	0.2071	0.844193	0.003096	0.042890
ZRENTGT	0.10562	0.57719	0.7884	0.011155	0.333148	0.621574
ZINCOM	0.51608	0.45466	-0.63253	0.266338	0.206715	0.400094

EIGENS:	4.81838	4.79241	3.94437
PERCENT VAR:	32.1	31.9	26.3
CUMULATIVE:	32.1	64.1	90.4

EIGEN VALUES AND VARIANCE EXPLAINED - WPG'S INNER CITY 1991

FACTOR SCORES FOR 1991

VAR	FACTOR 1	FACTOR 2	FACTOR 3	FCT 1SQR	FCT 2SQR	FCT 3SQR
ZOWNER	0.79657	0.38602	-0.33192	0.634523	0.149011	0.110170
ZRENT	-0.04532	0.87812	0.45061	0.002053	0.771094	0.203049
ZFNKIDS	0.33569	0.91769	-0.11508	0.112687	0.842154	0.013243
ZFWKIDS	0.97754	0.10014	0.12619	0.955584	0.010028	0.015923
ZSPAR	0.59641	0.33922	0.68665	0.355704	0.115070	0.471488
ZPOPOLD	0.38629	0.83816	-0.01623	0.149219	0.702512	0.000263
ZPROF	-0.06341	0.9539	-0.15695	0.004020	0.909925	0.024633
ZTERT	0.42245	0.86948	0.1145	0.178464	0.755995	0.013110
ZMANU	0.89115	0.01721	0.31185	0.794148	0.000296	0.097250
ZCONST	0.74751	0.13442	0.25504	0.558771	0.018068	0.065045
ZABORG	0.26551	-0.11097	0.85457	0.070495	0.012314	0.730289
ZIMMG	0.70349	0.17062	0.40196	0.494898	0.029111	0.161571
ZOWNGT	0.81313	0.26346	-0.14595	0.661180	0.069411	0.021301
ZRENTGT	0.24737	0.39874	0.84784	0.061191	0.158993	0.718832
ZINCOM	0.25852	0.3891	-0.79651	0.066832	0.151398	0.634428

EIGENS:	5.09978	4.69539	3.28060
PERCENT VAR:	34.0	31.3	21.9
CUMULATIVE:	34.0	65.3	87.2

TABLE 10

PRINCIPAL COMPONENT ANALYSIS FOR WPG'S INNER CITY 1986 - SEL. CTS

Rotated Factor Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3
ZOWNER	.91651	.28047	-.07611
ZRENT	-.15508	.90578	.37098
ZFNKIDS	.39789	.89524	-.02478
ZFWKIDS	.90390	.12651	.38219
ZSPAR	.50005	.31867	.75795
ZPOPOLD	.30974	.84817	.11183
ZPROF	.00825	.95814	-.18453
ZTERT	.46571	.81888	.26117
ZMANU	.61619	.05559	.71799
ZCONST	.76539	.24540	.42355
ZABORG	.11020	-.12327	.87691
ZIMMG	.56276	.21175	.66074
ZOWNGT	.91880	.05565	.20710
ZRENTGT	.10562	.57719	.78840
ZINCOM	.51608	.45466	-.63253

PRINCIPAL COMPONENT ANALYSIS FOR WPG'S INNER CITY 1991 - SEL. CTS

Rotated Factor Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3
ZOWNER	.79657	.38602	-.33192
ZRENT	-.04532	.87812	.45061
ZFNKIDS	.33569	.91769	-.11508
ZFWKIDS	.97754	.10014	.12619
ZSPAR	.59641	.33922	.68665
ZPOPOLD	.38629	.83816	-.01623
ZPROF	-.06341	.95390	-.15695
ZTERT	.42245	.86948	.11450
ZMANU	.89115	.01721	.31185
ZCONST	.74751	.13442	.25504
ZABORG	.26551	-.11097	.85457
ZIMMG	.70349	.17062	.40196
ZOWNGT	.81313	.26346	-.14595
ZRENTGT	.24737	.39874	.84784
ZINCOM	.25852	.38910	-.79651

TABLE 11

REGRESSION FOR WINNIPEG'S INNER CITY - 1986 FACTOR SCORES

* * * * MULTIPLE REGRESSION * * * *

Equation Number 1 Dependent Variable.. ZTOTAL ZSCORE(TOTAL)

Variable(s) Entered on Step Number

1.. ROOTC
 2.. ROOTA
 3.. ROOTB

Multiple R .84980
 R Square .72216
 Adjusted R Square .68048
 Standard Error .56526

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	16.60965	5.53655
Residual	20	6.39035	.31952

F = 17.32784 Signif F = .0000

Equation Number 1 Dependent Variable.. ZTOTAL ZSCORE(TOTAL)

----- Variables in the Equation -----

Variable	B	SE B	Beta	Correl	Part Cor	Partial
ROOTC	.053294	.117865	.053294	.053294	.053294	.100594
ROOTA	.847917	.117865	.847917	.847917	.847917	.849275
ROOTB	.018827	.117865	.018827	.018828	.018827	.035696
(Constant)	-7.20959E-07	.115383				

----- in -----

Variable	T	Sig T
ROOTC	.452	.6560
ROOTA	7.194	.0000
ROOTB	.160	.8747
(Constant)	.000	1.0000

Equation Number 1 Dependent Variable.. ZPERMS ZSCORE(PERMS)

Variable(s) Entered on Step Number

1.. ROOTC
2.. ROOTA
3.. ROOTB

Multiple R .81213
R Square .65956
Adjusted R Square .60849
Standard Error .62571

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	15.16985	5.05662
Residual	20	7.83015	.39151

F = 12.91575 Signif F = .0001

Equation Number 1 Dependent Variable.. ZPERMS ZSCORE(PERMS)

----- Variables in the Equation -----

Variable	B	SE B	Beta	Correl	Part Cor	Partial
ROOTC	.047512	.130469	.047512	.047513	.047512	.081161
ROOTA	.807835	.130469	.807835	.807835	.807835	.810662
ROOTB	.068582	.130469	.068582	.068582	.068582	.116737
(Constant)	-6.64417E-07	.127722				

----- in -----

Variable	T	Sig T
ROOTC	.364	.7196
ROOTA	6.192	.0000
ROOTB	.526	.6049
(Constant)	.000	1.0000

Equation Number 1 Dependent Variable.. ZRRAPS ZSCORE(RRAPS)

Variable(s) Entered on Step Number

1.. ROOTC
2.. ROOTA
3.. ROOTB

Multiple R .77570
R Square .60170
Adjusted R Square .54196
Standard Error .67679

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	13.83919	4.61306
Residual	20	9.16081	.45804

F = 10.07130 Signif F = .0003

----- Variables in the Equation -----

Variable	B	SE B	Beta	Correl	Part Cor	Partial
ROOTC	.056909	.141120	.056909	.056910	.056909	.089810
ROOTA	.766499	.141120	.766500	.766500	.766500	.771993
ROOTB	-.104612	.141120	-.104612	-.104612	-.104612	-.163528
(Constant)	-7.06050E-07	.138149				

----- in -----

Variable	T	Sig T
ROOTC	.403	.6910
ROOTA	5.432	.0000
ROOTB	-.741	.4671
(Constant)	.000	1.0000

TABLE 12

REGRESSION FOR WINNIPEG'S INNER CITY - 1991 FACTOR SCORES

* * * * MULTIPLE REGRESSION * * * *

Equation Number 1 Dependent Variable.. ZTOTAL ZSCORE(TOTAL)

Variable(s) Entered on Step Number

1.. ROOTC
 2.. ROOTA
 3.. ROOTB

Multiple R .85710
 R Square .73462
 Adjusted R Square .69481
 Standard Error .55244

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	16.89616	5.63205
Residual	20	6.10384	.30519

F = 18.45413 Signif F = .0000

----- Variables in the Equation -----

Variable	B	SE B	Beta	Correl	Part Cor	Partial
ROOTC	-.127731	.115192	-.127731	-.127732	-.127731	-.240660
ROOTA	.846190	.115192	.846189	.846189	.846189	.854161
ROOTB	.047579	.115192	.047579	.047577	.047579	.091968
(Constant)	2.857857E-07	.112767				

----- in -----

Variable	T	Sig T
ROOTC	-1.109	.2806
ROOTA	7.346	.0000
ROOTB	.413	.6840
(Constant)	.000	1.0000

Equation Number 1 Dependent Variable.. ZPERMS ZSCORE(PERMS)

Variable(s) Entered on Step Number

1.. ROOTC
2.. ROOTA
3.. ROOTB

Multiple R .82379
R Square .67862
Adjusted R Square .63042
Standard Error .60793

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	15.60831	5.20277
Residual	20	7.39169	.36958

F = 14.07735 Signif F = .0000

----- Variables in the Equation -----

Variable	B	SE B	Beta	Correl	Part Cor	Partial
ROOTC	-.117930	.126763	-.117930	-.117930	-.117930	-.203665
ROOTA	.809872	.126763	.809872	.809872	.809872	.819236
ROOTB	.093930	.126763	.093931	.093929	.093931	.163462
(Constant)	3.174471E-07	.124094				

----- in -----

Variable	T	Sig T
ROOTC	-.930	.3633
ROOTA	6.389	.0000
ROOTB	.741	.4673
(Constant)	.000	1.0000

Equation Number 1 Dependent Variable.. ZRRAPS ZSCORE(RRAPS)

Multiple R .76995
R Square .59282
Adjusted R Square .53175
Standard Error .68429

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	13.63496	4.54499
Residual	20	9.36504	.46825

F = 9.70629 Signif F = .0004

----- Variables in the Equation -----

Variable	B	SE B	Beta	Correl	Part Cor	Partial
ROOTC	-.124191	.142684	-.124191	-.124192	-.124191	-.191041
ROOTA	.756301	.142684	.756301	.756301	.756301	.764304
ROOTB	-.073548	.142684	-.073548	-.073550	-.073548	-.114502
(Constant)	1.503428E-07	.139680				

----- in -----

Variable	T	Sig T
ROOTC	-.870	.3944
ROOTA	5.301	.0000
ROOTB	-.515	.6119
(Constant)	.000	1.0000

End Block Number 1 All requested variables entered.

TABLE 13

PRINICPAL COMPONENT ANALYSIS FOR WPG'S NON-INNER CITY 1986 - CTS

Rotated Factor Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
ZOWNER	.61999	.67001	-.12792	.31535
ZRENT	.24330	-.11370	.75934	.51725
ZFNKIDS	.54023	.37844	.17985	.69272
ZFWKIDS	.78961	.57486	.07839	-.02093
ZSPAR	.20737	.42119	.77311	.29850
ZPOPOLD	.06699	.04561	.12729	.92717
ZPROF	.91747	.12190	.04818	.11559
ZTERT	.74911	.38886	.34626	.27732
ZMANU	.07196	.84578	.33652	.23200
ZCONST	.22166	.77513	.33108	.16712
ZABORG	-.31670	.37661	.64632	-.10728
ZIMMG	.45877	.34767	.29670	.54562
ZOWNGT	.54154	.72719	-.02649	.07681
ZRENTGT	.09069	.04930	.91441	.24687
ZINCOM	.45059	-.15004	-.34805	-.62319

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
FACTOR 1	.54342	.57433	.42172	.44384
FACTOR 2	.61085	.19787	-.67593	-.36170
FACTOR 3	-.33060	.64141	.23707	-.65046
FACTOR 4	.47144	-.46861	.55594	-.49908

TABLE 13...Continued

PRINICPAL COMPONENT ANALYSIS FOR WPG'S NON-INNER CITY 1991 - CTS

Rotated Factor Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
ZOWNER	.74313	-.10850	.38392	.45119
ZRENT	.00637	.73166	.60165	-.04706
ZFNKIDS	.44120	.18566	.82605	.19759
ZFWKIDS	.92175	.07275	.03299	.31506
ZSPAR	.18082	.79666	.26105	.40248
ZPOPOLD	-.06754	.08723	.95497	.12976
ZPROF	.92154	.05108	.18675	-.15726
ZTERT	.74575	.35874	.35391	.26493
ZMANU	.01445	.40930	.13468	.80244
ZCONST	.18398	.23909	.12006	.76330
ZABORG	-.22671	.70034	-.19486	.32671
ZIMMG	.37125	.29936	.37760	.51435
ZOWNGT	.73207	-.16827	-.12771	.50194
ZRENTGT	.02303	.93121	.16277	.16787
ZINCOM	.74420	-.41701	-.29843	-.28810

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
FACTOR 1	.57553	.45878	.46085	.49589
FACTOR 2	.75201	-.61978	-.18407	-.12831
FACTOR 3	.03965	.17687	-.81609	.54877
FACTOR 4	.31886	.61164	-.29621	-.66067

TABLE 13...Continued

PRINCIPAL COMPONENT ANALYSIS FOR WINNIPEG 1986 - SELECTED CTS

Rotated Factor Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3
ZOWNER	.93307	-.06714	.18321
ZRENT	-.16695	.46036	.80557
ZFNKIDS	.62917	.03611	.72544
ZFWKIDS	.95456	.07460	.08161
ZSPAR	.26625	.80386	.38071
ZPOPOLD	.11144	.18396	.81593
ZPROF	.61474	-.24193	.55434
ZTERT	.70884	.11237	.53644
ZMANU	.37233	.85111	.02102
ZCONST	.63110	.57156	.13503
ZABORG	-.23162	.85761	-.05071
ZIMMG	.25756	.74683	.29427
ZOWNGT	.90652	.11538	.01337
ZRENTGT	-.14389	.78444	.49110
ZINCOM	.44579	-.62226	-.17895

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3
FACTOR 1	.66256	.53297	.52627
FACTOR 2	.67097	-.73461	-.10078
FACTOR 3	-.33288	-.41988	.84433

TABLE 13...Continued

PRINCIPAL COMPONENT ANALYSIS FOR WINNIPEG 1991 - SELECTED CTS

Rotated Factor Matrix:

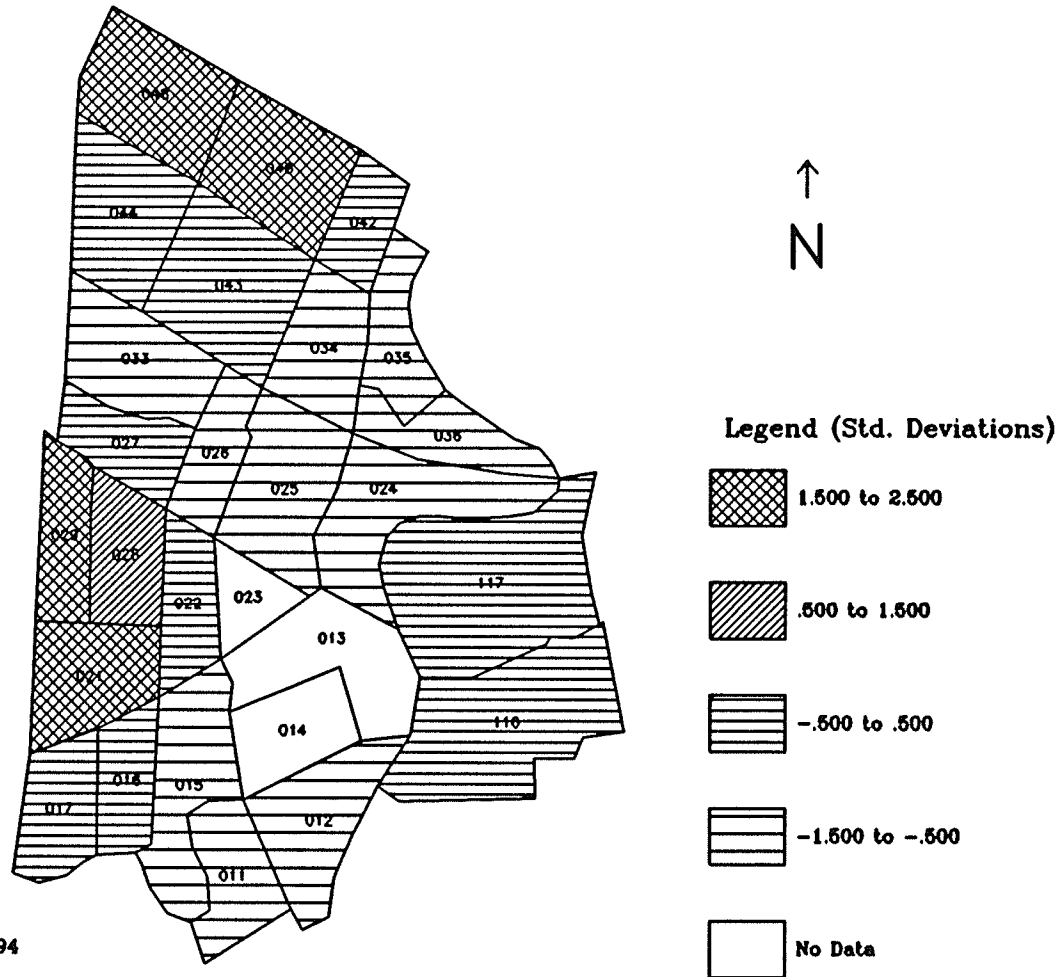
	FACTOR 1	FACTOR 2	FACTOR 3
ZOWNER	.89147	-.05803	.30375
ZRENT	-.25409	.52692	.72941
ZFNKIDS	.51773	.02927	.81556
ZFWKIDS	.94597	.12337	.09352
ZSPAR	.13347	.85965	.33396
ZPOPOLD	.09081	.17228	.83871
ZPROF	.62465	-.20963	.52287
ZTERT	.70546	.20729	.58155
ZMANU	.29368	.84212	-.02203
ZCONST	.54911	.51373	.04710
ZABORG	-.33163	.79080	-.10173
ZIMMG	.20925	.77451	.15075
ZOWNGT	.88666	.04517	-.05974
ZRENTGT	-.22950	.84434	.29536
ZINCOM	.67880	-.61058	-.02626

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3
FACTOR 1	.73261	.43305	.52512
FACTOR 2	-.55677	.82506	.09635
FACTOR 3	.39153	.36295	-.84556

LIST OF MAPS FOR INDIVIDUAL VECTORS

INCUMBENT UPGRADING VECTOR – ZSCORE VALUES WINNIPEG'S INNER CITY 1986

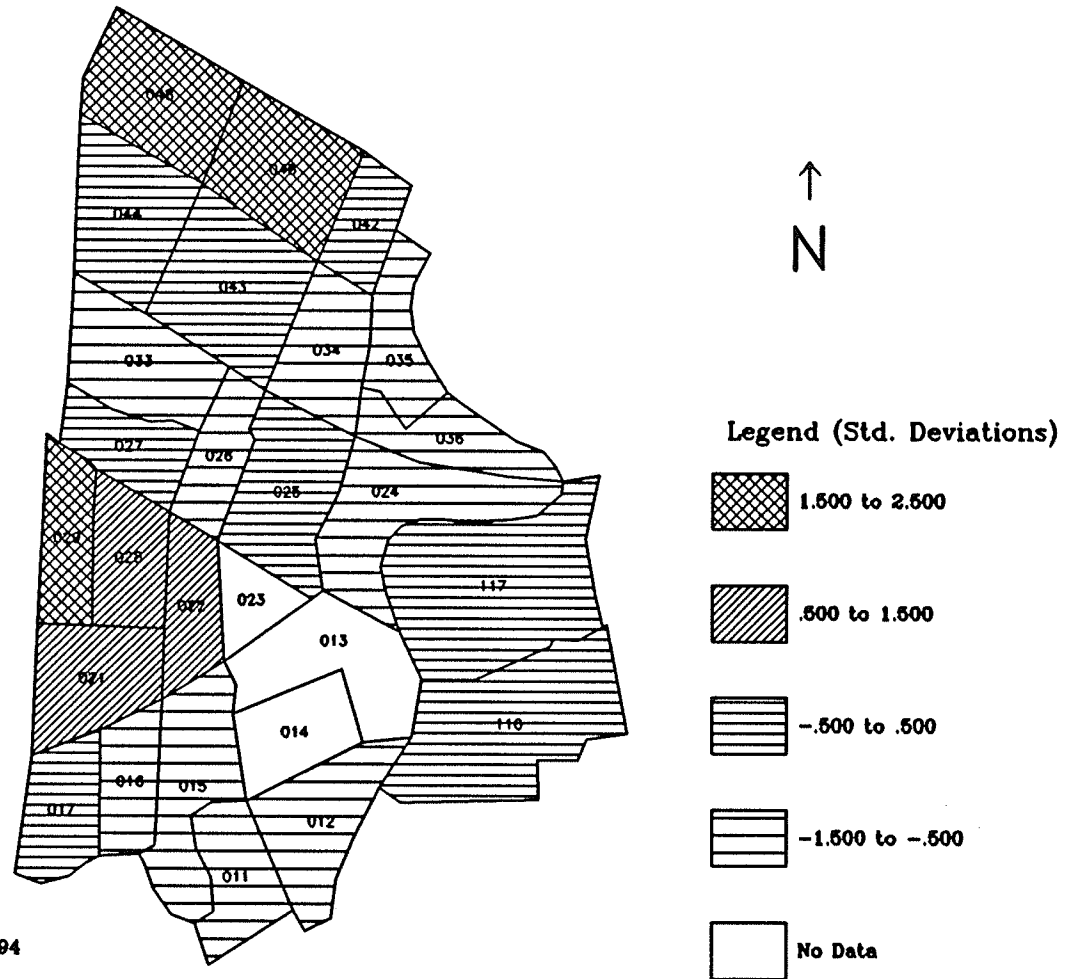


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 19b

INCUMBENT UPGRADING VECTOR – ZSCORE VALUES
WINNIPEG'S INNER CITY 1991

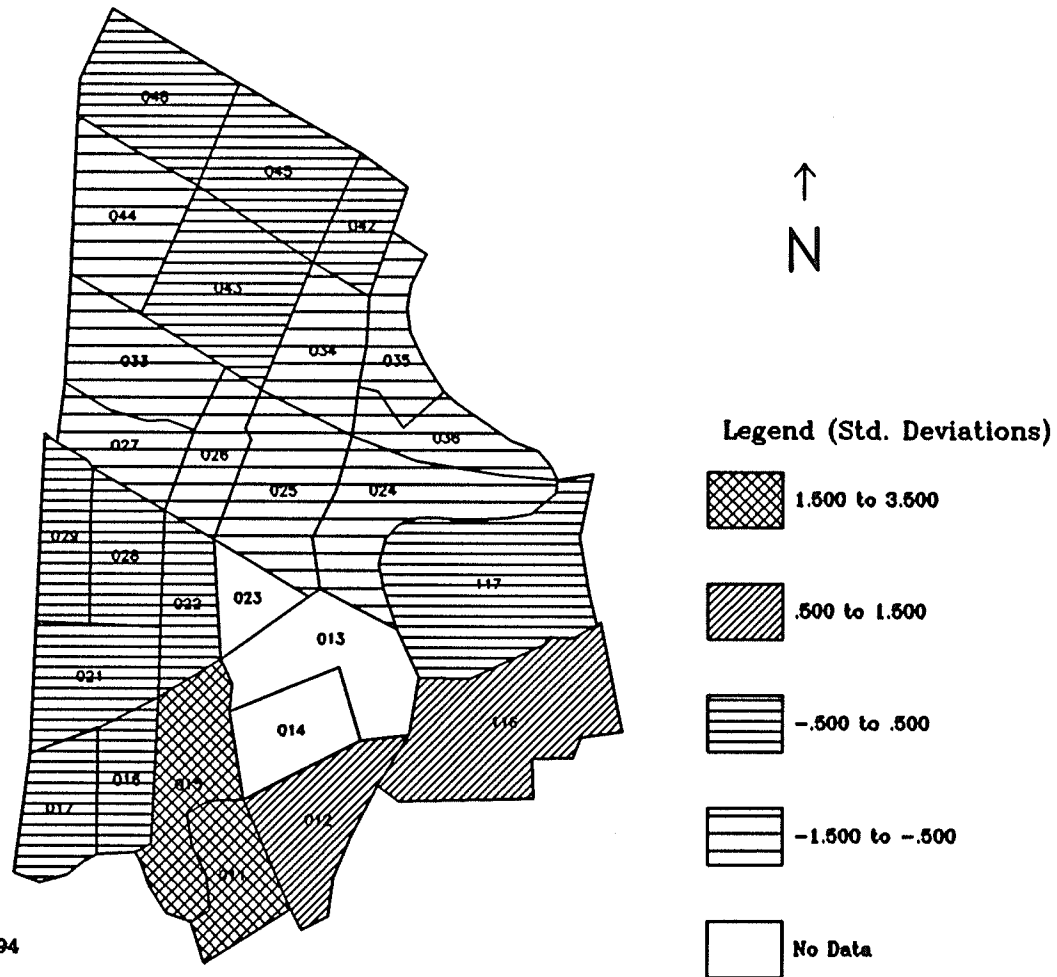


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 20a

POPULATION OVER 65/HIGH INCOME VECTOR - ZSCORE VALUES
WINNIPEG'S INNER CITY 1986

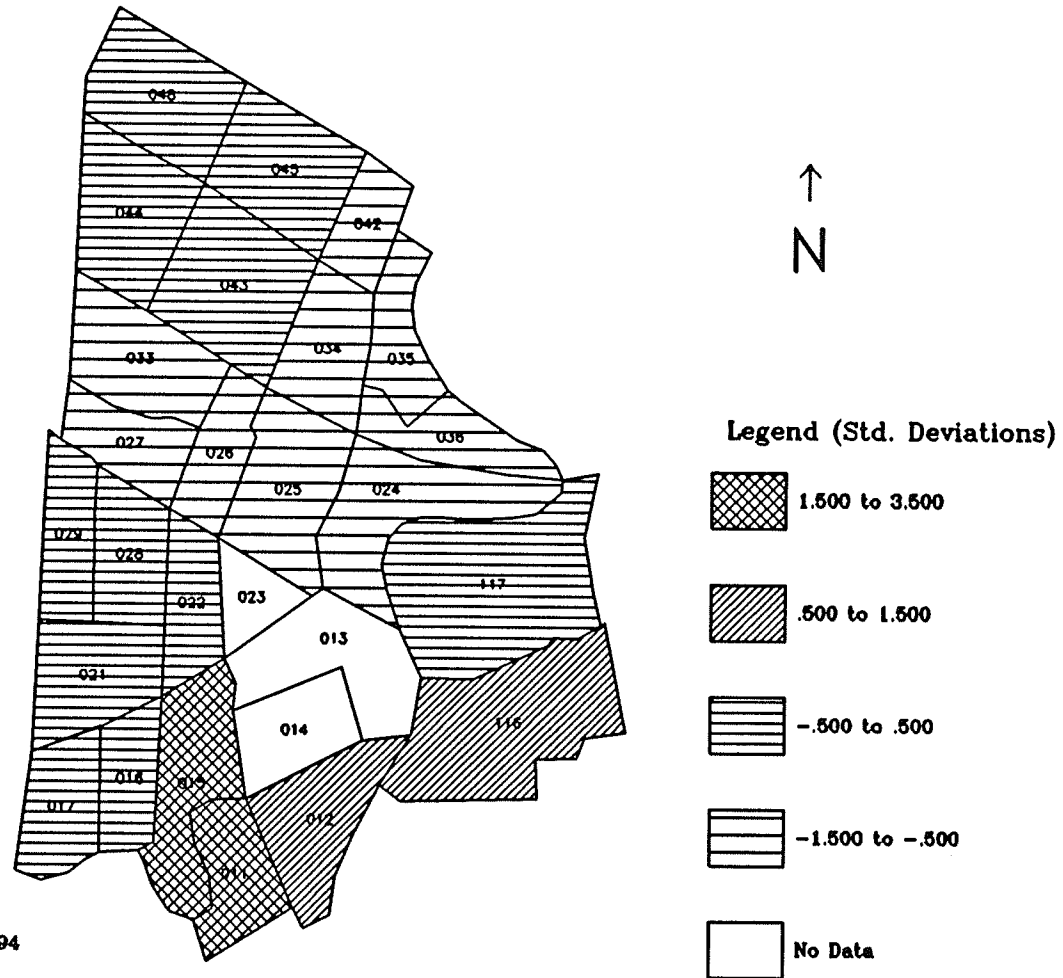


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 20b

POPULATION OVER 65/HIGH INCOME VECTOR - ZSCORE VALUES
WINNIPEG'S INNER CITY 1991

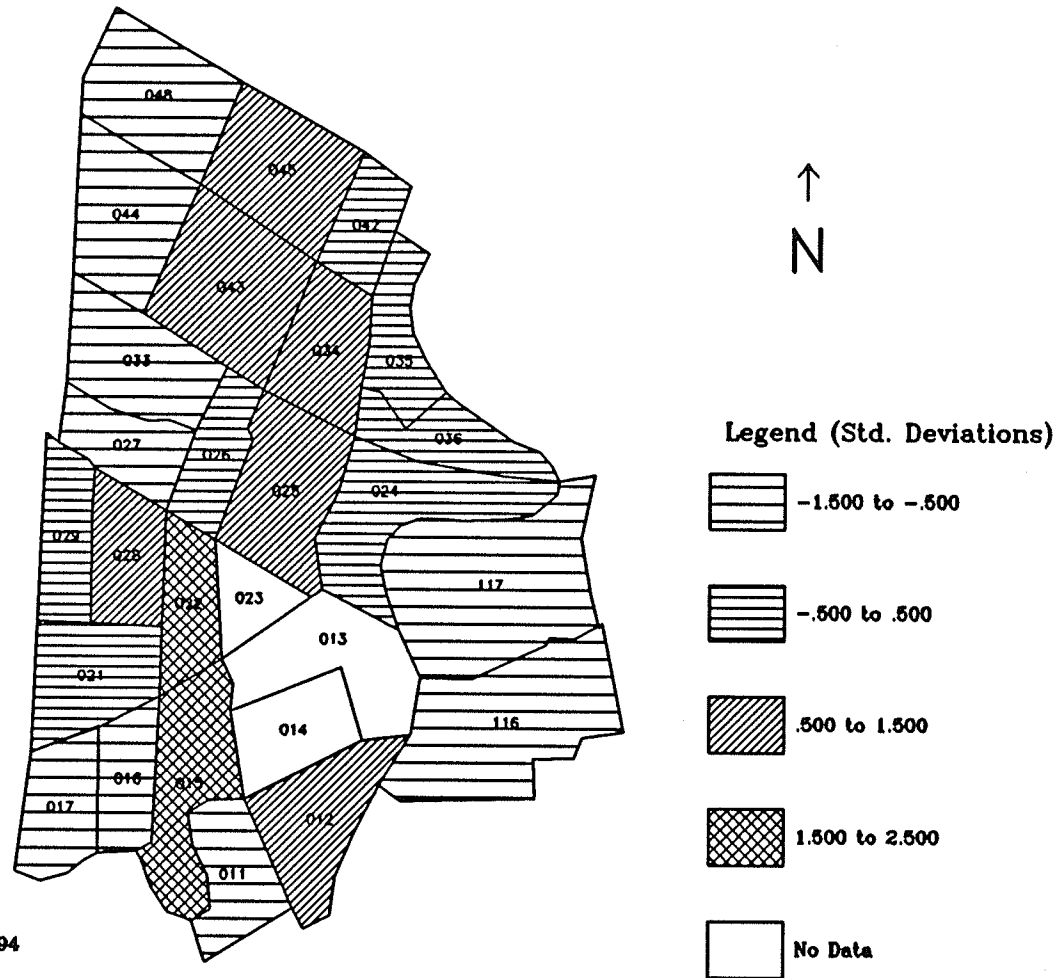


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 21a

IMMIGRANT POPULATION/LOWER INCOME VECTOR - ZSCORE VALUES
WINNIPEG'S INNER CITY 1986

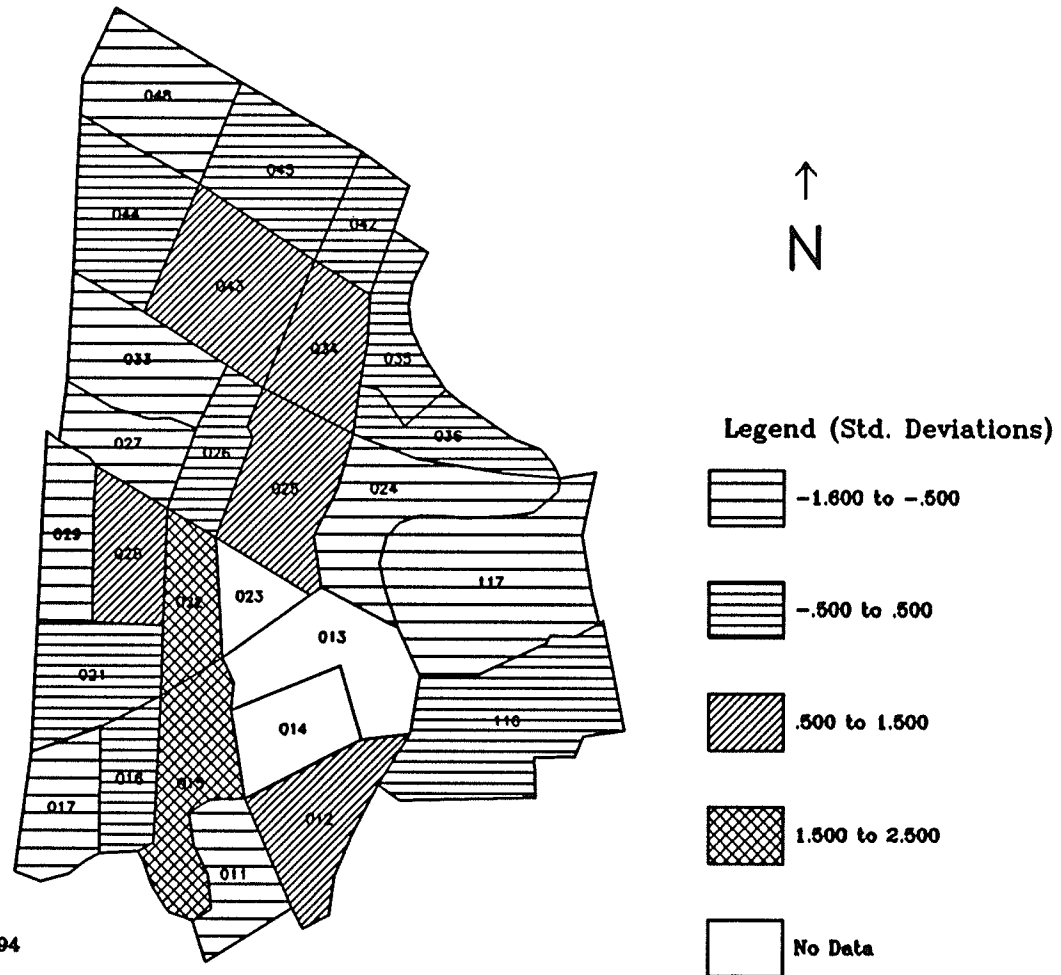


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 21b

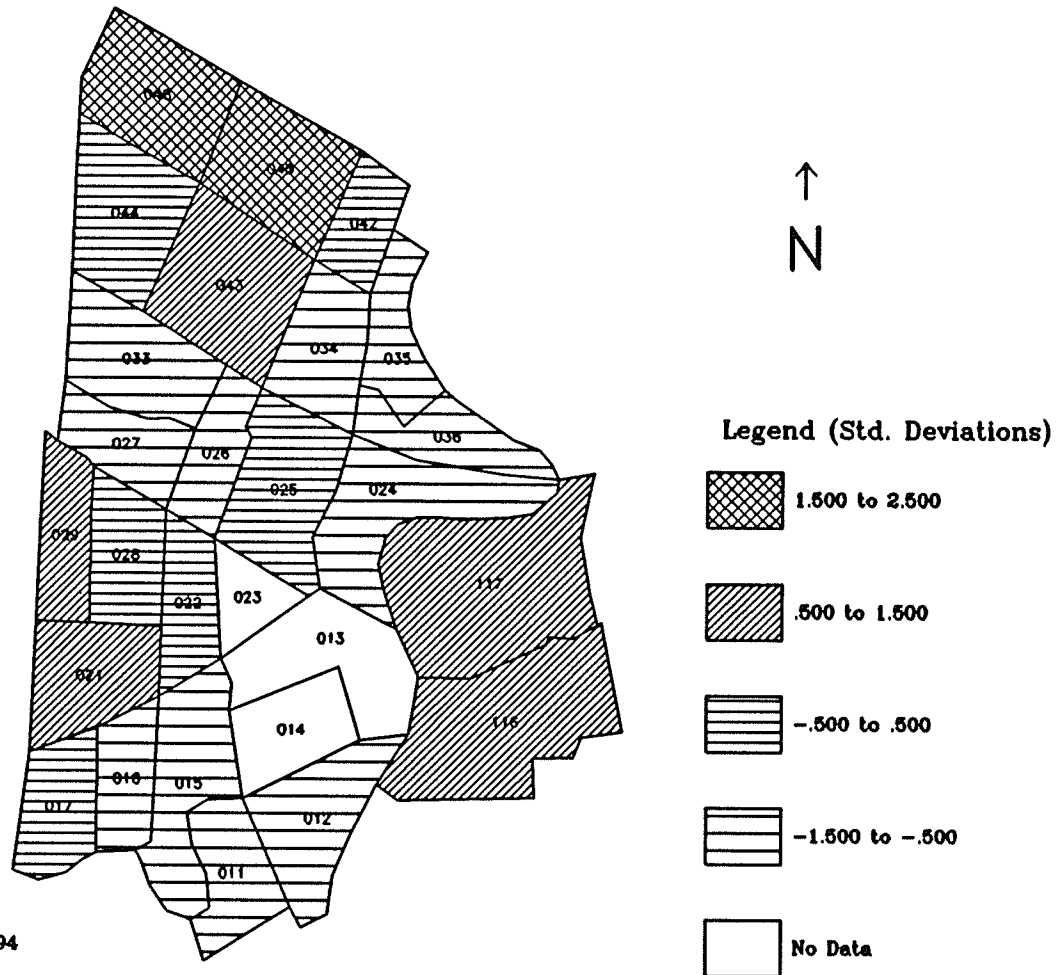
IMMIGRANT POPULATION/LOWER INCOME VECTOR – ZSCORE VALUES
WINNIPEG'S INNER CITY 1991



Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

TOTAL (BUILDING PERMITS AND R.R.A.Ps) – ZSCORE VALUES
WINNIPEG'S INNER CITY 1983 TO 1991

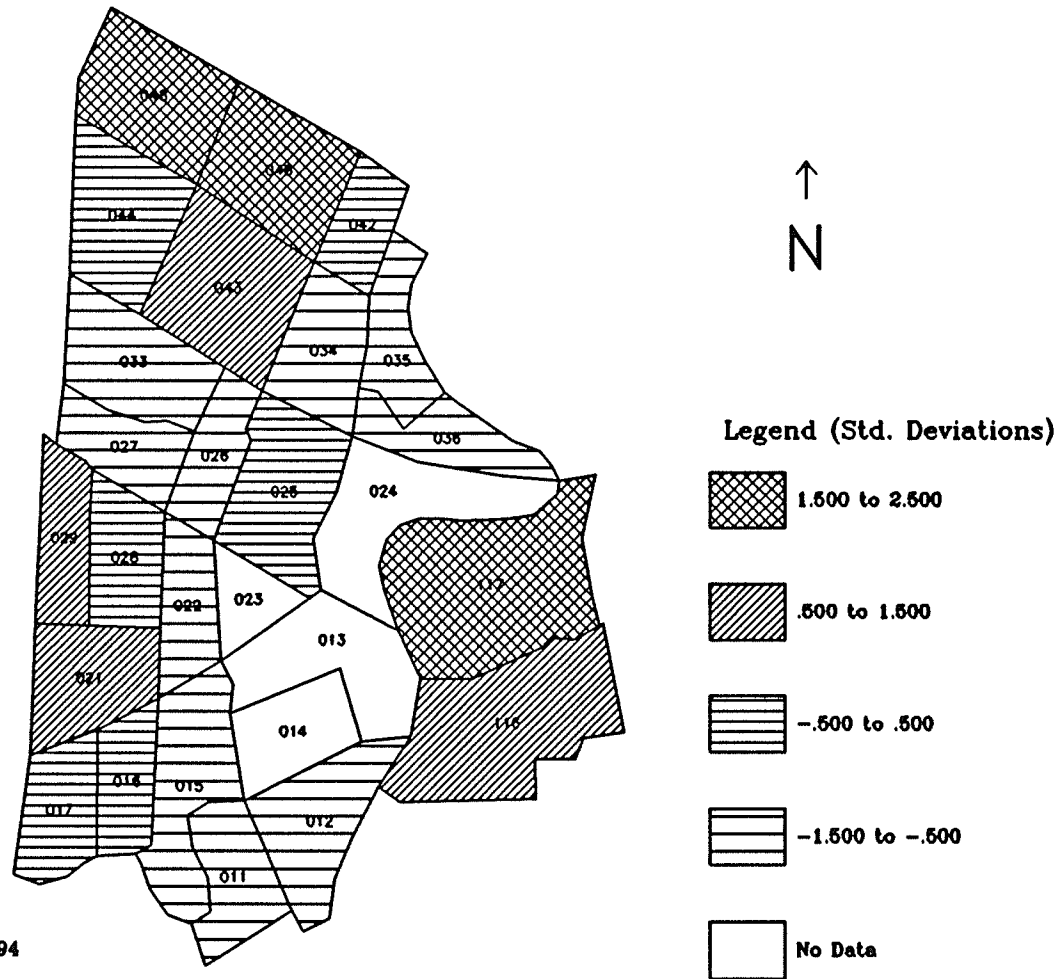


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 23

BUILDING PERMITS - ZSCORE VALUES
WINNIPEG'S INNER CITY 1983 TO 1991

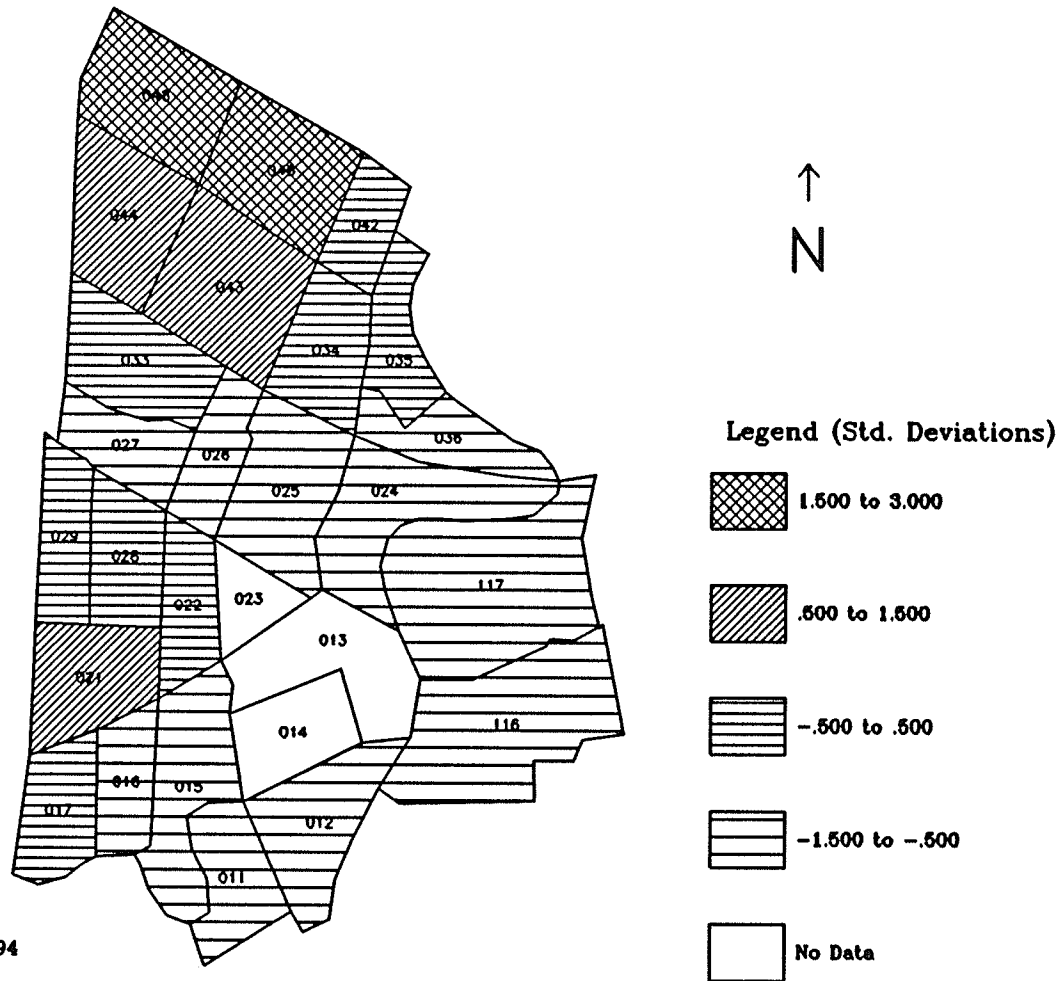


Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

Map 24

R.R.A.Ps - ZSCORE VALUES
WINNIPEG'S INNER CITY 1983 TO 1991



Maps by Christian Douchant 03/09/1994

Production courtesy of the Institute of Urban Studies

APPENDIX IV

LIST OF RAW DATA FOR INNER CITY CENSUS TRACTS - 1986

CT	S-DET81	TOTRRAP	PERMONLY	TOTPERM	POP86	TOTHSLD	OWNED	RENT	HUS-WIFE	NO-KIDS	W-KIDS	S-PARENT	RENT>30
011	230	5	42	47	6322	4015	910	3105	1205	990	210	165	230
012	110	3	34	37	4716	2880	140	2740	630	445	180	240	280
015	470	5	52	57	6633	3745	300	3440	830	525	310	330	405
016	375	8	57	65	2653	1280	340	935	390	210	185	95	100
017	795	21	100	121	3736	1585	720	865	660	320	340	170	75
021	1415	31	140	171	6924	2390	1185	1200	1205	465	745	375	220
022	530	14	56	70	5194	2145	395	1750	760	265	495	345	350
024	50	5	3	8	570	130	45	85	40	25	20	10	15
025	370	7	91	98	3525	1185	200	985	445	140	310	185	145
026	370	7	48	55	2328	860	210	650	360	110	255	130	120
027	395	9	26	35	1788	685	335	345	335	140	200	65	35
028	875	23	105	128	5683	1995	775	1225	1030	365	665	300	255
029	1195	26	109	135	5277	1980	1070	905	1010	370	635	235	145
033	255	10	39	49	1046	350	195	155	200	60	140	55	30
034	345	10	48	58	2808	1095	265	830	335	130	205	250	180
035	370	10	49	59	2327	680	325	350	280	110	170	155	90
036	165	9	41	50	956	405	125	280	140	65	80	65	35
042	505	21	75	96	2893	1090	455	635	490	195	300	220	180
043	930	39	128	167	4497	1815	710	1100	725	305	415	325	265
044	775	35	70	105	2598	1045	590	455	510	240	270	175	60
045	1575	78	177	255	6352	2380	1400	980	1225	515	710	400	275
048	1735	74	174	248	4612	1855	1580	280	1145	575	575	195	80
116	860	7	131	138	5924	2770	790	1980	1045	605	440	215	205
117	535	5	157	162	2915	1190	495	695	530	250	285	90	75
CT	POP>65	POP-IMMG	POP>5	POP>15	UNIV-DG	P>15LAB	OWN>30P	MED-INC	ABORIG	TOTPROF	TOTTERT	TOTMANU	TOTCONST
011	1635	1200	6130	5995	1715	3910	20	25956	60	1875	1515	145	80
012	660	1055	4425	4205	695	2855	0	15385	150	980	1115	265	145
015	1105	1600	6175	5820	790	3605	20	12667	490	945	1525	445	150
016	200	625	2325	2120	360	1605	25	17617	165	515	625	165	120
017	320	805	3385	3000	760	2275	50	23174	70	945	835	200	75
021	620	2595	5965	5105	255	3480	95	20258	470	450	1495	770	245
022	470	2200	4670	4085	140	2645	50	10936	600	215	940	825	180
024	55	90	535	510	10	295	0	9899	145	50	80	70	30
025	405	1615	3230	2730	100	1410	10	9897	430	135	445	465	95
026	220	1100	2135	1840	95	1015	20	10999	160	90	315	360	80
027	200	625	1440	1270	125	840	15	19205	35	185	355	130	45
028	495	2840	5160	4360	235	2840	65	16801	350	325	1000	880	200
029	955	2315	4865	4190	225	2485	95	17735	210	450	1020	610	190
033	80	415	1020	845	0	495	10	18899	170	30	145	105	100
034	495	825	2550	2110	70	885	35	10017	740	95	305	205	100
035	265	455	1630	1350	65	695	30	16343	240	155	230	135	50
036	190	150	820	700	15	265	5	10858	145	40	110	55	15
042	340	850	2580	2225	90	1325	45	14473	330	175	500	245	75
043	795	1245	4090	3455	60	1725	45	11621	695	130	570	550	115
044	450	485	2405	2115	90	1185	40	17847	185	200	445	240	70
045	895	1760	5795	4870	180	2945	110	17235	595	395	1200	600	210
048	870	915	4350	3805	100	2170	65	22627	120	295	910	405	220
116	1185	555	5295	4870	470	2925	65	17761	70	950	1235	250	125
117	530	180	2645	2365	215	1440	35	18699	5	395	560	155	125

APPENDIX IV...Continue

LIST OF RAW DATA FOR INNER CITY CENSUS TRACTS - 1991

Geos:	POP91	TOTHSLD	OWN	RENT	TOTCFAM	T-FNKIDS	T-FWKIDS	SPAR	POP>65	ABORG	IMMG
11	6202	3970	1105	2865	1275	915	185	175	1675	105	1065
12	4538	2685	105	2580	860	440	160	255	575	415	965
15	5990	3440	275	3160	1070	455	225	385	930	840	1100
16	2549	1125	310	810	490	175	175	135	140	280	540
17	3366	1485	690	800	760	290	295	180	255	130	505
21	6392	2450	1095	1350	1380	390	650	340	820	755	2420
22	4954	1920	350	1565	1025	235	440	355	360	815	1955
24	616	195	95	105	80	55	15	15	35	110	110
25	3704	1155	175	980	615	90	300	220	425	800	1540
26	2203	780	200	575	465	95	220	150	225	485	830
27	1776	680	310	365	410	150	190	70	220	90	750
28	5203	1795	695	1100	1220	300	600	320	440	800	2565
29	5194	1970	1025	945	1220	365	615	240	910	315	2400
33	1018	320	180	140	255	55	130	70	75	185	365
34	2555	1075	215	865	510	105	165	235	400	1135	550
35	2275	650	290	360	390	105	155	130	225	405	525
36	930	405	130	275	190	65	75	60	160	185	100
42	2701	1035	430	610	635	165	265	205	280	685	580
43	4600	1860	645	1220	1050	260	405	390	715	1355	1000
44	2561	1090	575	510	665	235	255	170	500	230	595
45	6016	2345	1365	980	1530	475	640	415	870	935	1280
48	4583	1850	1575	275	1265	515	545	200	925	120	1000
116	5561	2725	770	1950	1175	555	375	245	1170	135	590
117	2858	1200	510	690	615	230	280	100	465	65	190

Geos:	POP>5	POP>15	UNIV-DG	TOTPROF	TOTTERT	TOTMANU	TOTCONST	RENTGT	OWNGT	MED-INC
11	5915	5870	1710	1755	1575	115	40	165	30	31730
12	4190	4060	805	805	1255	200	50	305	15	18490
15	5215	5165	675	900	1240	200	140	290	35	14204
16	2235	2055	285	525	485	165	65	110	35	20279
17	3000	2650	840	870	755	150	55	90	65	28915
21	5625	4930	365	480	1270	615	85	200	70	22590
22	4090	3895	155	175	950	580	190	305	25	12111
24	350	590	70	135	90	20	20	10	10	22662
25	2655	2650	90	150	390	305	60	220	25	12153
26	1880	1655	85	90	370	205	95	115	10	13868
27	1530	1390	185	240	315	165	50	40	30	26075
28	4645	3900	175	305	825	655	170	260	70	19668
29	4700	4085	260	415	1075	700	105	115	85	25575
33	890	745	0	30	130	90	40	75	0	22201
34	2190	1815	55	90	220	130	55	175	15	9845
35	1525	1380	45	95	260	120	50	105	25	15009
36	845	740	0	50	115	70	40	45	10	13090
42	2400	1995	55	160	380	280	60	165	25	19416
43	4095	3380	75	165	520	355	80	240	60	15680
44	2355	2035	55	105	495	225	60	145	65	17787
45	5430	4605	180	340	990	515	250	235	115	22333
48	4235	3750	95	350	870	385	150	60	70	28814
116	4850	4490	460	735	1305	260	155	175	115	20626
117	2430	2360	310	415	595	155	120	80	45	28537

Appendix IV...Continue

LIST OF RAW DATA FOR NON-INNER CITY CENSUS TRACTS - 1986

CT	S-DET81	TOTRRAP	PERMONLY	TOTPERM	TOTDWEL81	POP86	TOTSLD	OWNED	RENT	HUS-WIFE	NO-KIDS	W-KIDS	S-PARENT
001.00	1290	15	181	196	1305	4209	1620	1225	395	945	435	510	160
002.00	1635	42	227	269	1845	5905	2420	1620	800	1240	545	695	285
003.00	1380	23	186	209	1440	5733	2535	1260	1275	1090	555	530	235
004.01	1255	21	123	144	1285	4670	2215	1280	940	1135	670	465	155
004.02	465	5	52	57	495	3542	1580	520	1060	680	410	275	150
005.00	1850	6	166	172	1855	5431	1880	1815	65	1475	605	870	135
006.00	760	2	51	53	1110	5995	2620	890	1730	1265	635	625	255
007.00	1095	14	140	154	1310	4107	1645	1100	540	935	460	475	215
008.00	1070	8	201	209	1080	3225	1145	1050	95	815	305	510	80
009.00	1200	3	199	202	1200	3338	1225	1185	40	875	345	525	95
010.00	1220	4	273	277	1250	5930	2455	1515	940	1230	570	665	210
018.00	910	12	99	111	930	2974	1230	820	405	625	280	345	115
019.00	1035	12	98	110	1055	3069	1235	955	280	725	355	370	115
020.00	800	10	77	87	835	2518	1015	780	230	570	295	275	100
030.00	1165	16	89	105	1190	3721	1450	1120	325	870	385	490	140
031.00	830	3	54	57	840	2149	865	795	70	585	310	270	85
032.00	1885	70	188	258	1980	5998	2360	1365	995	1265	560	710	345
037.00	875	27	90	117	975	3399	1285	970	310	850	400	455	140
038.00	1185	30	163	193	1415	5745	2410	1190	1220	1250	625	620	320
039.00	1075	34	152	186	1200	4031	1630	870	760	820	385	430	250
040.00	695	18	96	114	725	2270	825	655	170	535	215	315	70
041.00	1005	19	114	133	1025	3969	1495	1020	475	880	360	515	165
046.00	515	13	43	56	535	2563	1040	540	495	540	250	290	145
047.00	1450	30	114	144	1480	4635	1835	1415	415	1075	510	565	215
049.00	1015	17	39	56	1030	2601	1070	985	80	765	450	320	75
050.01	405	54	96	150	980	3314	1125	400	720	595	215	385	305
100.01	755	0	19	19	1280	11191	3815	2885	930	2935	1090	1850	290
100.02	280	0	5	5	285	1144	340	315	25	295	85	205	15
101.01	1600	1	25	26	1645	6157	2230	1660	575	1545	590	950	185
101.02	1140	0	3	3	1145	4790	1350	1225	130	1135	305	830	120
102.01	1140	6	277	283	1470	5385	1580	1425	150	1250	305	945	190
102.02	870	8	178	186	890	4053	1785	840	950	960	500	455	170
102.03	585	9	49	58	605	3193	1480	590	890	705	375	325	155
103.00	1090	7	199	206	1090	3148	1215	1070	150	835	380	460	80
104.00	1060	7	127	134	1090	3959	1915	995	925	1040	645	390	105
105.00	1130	12	171	183	1160	3104	1285	1085	195	825	430	395	80
110.03	580	0	24	24	580	3637	1155	840	320	920	250	670	50
111.00	1335	6	149	155	1405	4977	1630	1370	265	1300	440	860	115
112.01	900	4	91	95	1015	3676	1240	945	290	895	285	615	130
112.02	1110	11	85	96	1505	5362	1940	1355	585	1285	495	785	205
113.00	945	19	126	145	985	2911	1210	895	315	690	320	370	120
114.00	825	11	126	137	845	3509	1630	790	835	710	345	360	140
115.00	995	6	169	175	1000	3232	1310	980	330	775	335	440	125
120.01	640	4	410	414	880	3393	980	825	160	760	165	600	150
120.02	260	3	937	940	595	3003	895	740	155	735	180	555	90
121.00	825	9	53	62	840	2497	880	815	65	685	280	405	65
122.00	1900	25	944	969	2050	8277	2805	2505	300	2185	760	1425	195
123.00	1565	17	142	159	1810	6077	2035	1685	350	1510	510	1005	210
131.00	1375	31	199	230	1405	4214	1820	1370	445	965	485	480	180
132.00	1015	9	133	142	1020	2832	1185	990	195	770	405	365	85
133.00	1295	26	145	171	1335	3932	1580	1250	325	1040	510	530	150
134.00	1680	16	127	143	1720	5714	2475	1665	810	1465	730	730	160
141.01	840	3	125	128	855	3646	1425	850	575	940	420	520	120
141.02	780	10	136	146	870	4232	1865	815	1045	970	480	490	180
500.01	2275	9	2517	2526	2840	6962	2460	1290	1170	1590	560	1030	275
500.02	835	8	541	549	1210	5591	1695	1495	200	1350	410	945	150
500.03	395	0	10	10	430	3102	895	855	45	800	215	585	40
502.00	780	9	73	82	780	2545	895	780	115	660	265	390	110
503.00	1290	8	248	256	1300	3780	1450	1270	175	1000	465	530	95
510.00	1105	0	2167	2167	1110	7325	2395	1950	440	1920	775	1145	120
521.00	1695	8	666	674	1815	7128	2220	1900	325	1795	555	1240	190
530.00	535	6	96	102	535	2029	975	525	445	475	270	205	60
531.00	2005	48	411	459	2020	5934	2565	1760	805	1405	740	660	250

Appendix IV...Continue

LIST OF RAW DATA FOR NON-INNER CITY CENSUS TRACTS - 1986

532.00	330	5	61	66	335	965	375	315	70	235	120	120	30
533.00	1340	11	189	200	1370	4400	1730	1255	480	1095	530	570	95
534.00	725	8	77	85	725	3852	1855	720	1140	865	480	385	185
535.00	1375	11	82	93	1460	4555	1680	1005	680	1230	555	680	95
536.00	1410	11	165	176	1605	7604	3160	1435	1725	1755	885	870	270
537.01	775	0	149	149	890	3472	1360	855	505	885	400	490	85
537.02	1130	1	96	97	1130	3799	1140	1110	25	1010	270	740	70
537.03	805	4	57	61	885	3076	1045	845	195	805	260	540	80
538.00	540	1	45	46	560	2450	820	685	130	600	185	415	80
540.01	720	5	39	44	755	2689	775	730	45	680	170	520	55
540.02	935	5	68	73	1050	4088	1490	1040	450	995	375	620	155
540.03	1250	6	253	259	1525	5318	2140	755	1380	1235	530	705	220
542.00	885	13	149	162	890	2590	965	675	285	560	255	310	140
550.00	1030	12	98	110	1045	2677	1090	950	140	710	375	330	95
551.00	2170	39	164	203	2195	5837	2495	2000	490	1575	845	725	210
553.00	785	14	59	73	1000	4789	2065	860	1210	1095	525	570	195

CT	POP>65	IMMG	POP>5	POP>15	UNIV-DG	P>15LAB	TOTPROF	TOTSERV	TOTMANU	TOTCONS	OWN>30P	TFAMHSL	MED-INC
001.00	630	560	3795	3335	570	2235	830	1075	180	130	110	3985	29984
002.00	820	930	5440	4730	465	3120	860	1675	360	225	135	5845	23521
003.00	830	795	5115	4550	520	3065	705	1805	230	230	80	5385	20495
004.01	1205	890	4465	4120	545	2410	785	1490	170	90	40	4640	25715
004.02	540	590	3025	2795	310	1855	560	1095	165	90	20	3130	22374
005.00	805	855	5110	4425	1300	2905	1345	1450	180	60	130	5395	47916
006.00	860	935	5605	5100	780	3515	1115	2405	135	125	25	5695	29698
007.00	650	605	3760	3260	660	1965	780	1135	70	40	35	4025	28918
008.00	365	505	3065	2615	985	1835	1010	675	70	55	75	3255	47899
009.00	445	385	3085	2630	1030	1880	985	830	40	65	35	3325	43940
010.00	800	980	5575	4950	1775	3560	1770	1575	140	70	115	5815	39621
018.00	430	565	2680	2395	355	1680	565	800	120	110	30	2850	30459
019.00	490	665	2885	2585	185	1630	280	1015	270	100	40	3055	28479
020.00	430	380	2335	2045	175	1395	390	675	235	60	50	2435	26905
030.00	575	1230	3405	2990	155	1905	385	895	430	125	60	3655	28064
031.00	480	525	2105	1865	125	1105	245	555	155	125	35	2180	26499
032.00	860	925	5485	4645	65	2780	410	1355	600	185	130	5910	20434
037.00	470	605	3135	2780	110	1795	240	1155	265	150	75	3355	27368
038.00	775	925	5340	4690	185	3175	475	1730	545	190	85	5670	21357
039.00	455	795	3660	3150	120	2175	300	1320	300	155	70	3995	20937
040.00	260	380	2095	1810	220	1255	305	690	175	80	55	2240	27033
041.00	475	810	3675	3145	315	2160	655	970	290	125	80	3965	26734
046.00	405	680	2320	2010	120	1235	260	640	175	60	85	2475	19999
047.00	860	1120	4310	3770	245	2285	480	1155	420	140	60	4610	24407
049.00	620	545	2535	2335	60	1245	255	705	220	90	60	2580	26799
050.01	275	300	3000	2350	60	1415	215	685	215	80	20	3280	21935
100.01	285	1400	9675	7905	1125	6515	2365	3580	520	385	320	10960	38568
100.02	80	130	1020	800	115	595	170	280	50	60	20	1100	51317
101.01	635	690	5830	5050	835	3585	1395	1765	275	135	90	6065	38388
101.02	205	615	4200	3260	470	2490	925	1355	190	105	85	4450	41711
102.01	150	690	4665	3550	325	2860	950	1390	280	160	120	5150	39956
102.02	495	435	3795	3385	290	2340	515	1415	255	150	95	4030	25458
102.03	490	380	3020	2745	105	1820	340	1220	210	110	15	3185	23651
103.00	420	275	2935	2605	585	1790	730	920	95	60	30	3130	38794
104.00	1085	535	3770	3510	205	1825	355	1135	190	140	80	3940	23966
105.00	445	350	2900	2575	170	1735	375	970	220	155	70	3075	28285
110.03	90	620	3400	2670	590	2140	815	1165	170	65	75	3620	45322
111.00	510	500	4745	4135	375	2870	940	1665	220	115	50	4960	
112.01	225	500	3445	2980	225	2165	515	1215	280	145	70	3655	
112.02	485	570	5010	4335	380	3060	730	1995	260	180	90	5340	
113.00	415	335	2710	2410	100	1575	305	830	255	140	35	2925	
114.00	685	410	3275	2965	290	1825	520	960	160	110	50	3385	
115.00	555	305	3020	2660	515	1730	700	815	165	40	55	3215	
116.00	1185	555	5295	4870	470	2925	950	1575	250	125	65	5350	41099
117.00	530	180	2645	2365	215	1440	395	695	155	125	35	2565	35092
120.01	75	425	3060	2275	75	1740	300	900	340	110	90	3375	31171
120.02	35	380	2695	2020	180	1570	385	870	225	110	80	2995	24624

Appendix IV...Continue

LIST OF RAW DATA FOR NON-INNER CITY CENSUS TRACTS - 1986

121.00	260	225	2415	2115	110	1355	240	770	185	95	25	2485	19782
122.00	595	830	7485	6325	345	4620	1020	2630	735	205	240	8200	30356
123.00	495	635	5645	4750	210	3345	665	1950	480	210	145	6045	17761
131.00	795	815	3895	3480	150	2075	345	1245	340	125	105	4175	18699
132.00	665	410	2745	2445	335	1360	510	750	85	75	65	2880	36028
133.00	690	640	3690	3285	125	2005	370	1080	375	150	45	3895	37377
134.00	1180	1020	5505	5010	355	3025	825	1875	345	135	80	5685	35658
141.01	315	740	3460	3075	235	2190	540	1185	310	150	90	3630	36166
141.02	840	1305	3965	3565	300	2110	525	1185	360	130	50	4210	31267
500.01	325	1360	6520	5590	1430	4380	1675	2455	245	165	55	6855	22984
500.02	225	790	4985	4085	510	3140	910	1860	255	120	120	5430	32616
500.03	60	520	2755	2130	505	1735	735	880	115	75	80	3055	29422
502.00	255	320	2380	2100	215	1485	375	925	130	75	75	2535	28199
503.00	625	615	3560	3150	795	2075	950	1085	115	50	20	3755	28877
510.00	640	1570	6670	5790	1885	4110	2260	1730	145	75	225	7035	20867
521.00	470	855	6455	5330	715	3885	1340	2040	270	205	160	6935	36249
530.00	485	270	1970	1730	285	1075	345	595	65	45	25	2055	37892
531.00	965	790	5495	5020	190	3320	605	2010	410	175	145	5855	47399
532.00	135	105	840	750	35	485	90	295	55	35	10	910	34540
533.00	725	540	3940	3520	405	2145	635	1215	185	75	65	4145	41454
534.00	800	595	3630	3350	400	2070	620	1275	155	85	40	3820	0
535.00	690	520	4135	3680	275	2320	575	1695	155	50	55	4410	40465
536.00	1205	1035	7070	6465	960	4230	1435	2465	285	150	115	7255	25542
537.01	565	525	3310	2925	325	1865	700	1030	95	115	45	3435	24316
537.02	210	435	3685	3175	625	2195	920	1300	85	30	90	3870	30499
537.03	270	345	2915	2565	340	1875	555	1195	90	80	70	3030	30666
538.00	115	250	2350	2015	260	1495	500	915	90	50	40	2455	23866
540.01	80	415	2615	2170	195	1590	430	1055	110	65	40	2715	33864
540.02	320	445	3840	3365	170	2375	595	1580	190	105	60	4005	31942
540.03	425	840	5015	4295	600	3165	1090	1730	225	85	55	5305	36099
542.00	315	360	2460	2110	30	1285	95	650	270	95	35	2600	50971
550.00	555	605	2455	2240	220	1325	395	740	135	75	50	2570	40117
551.00	1345	1480	5575	5100	300	2945	650	1585	420	150	80	5805	39951
553.00	795	1185	4495	4070	230	2655	485	1740	350	110	60	4690	47195

CT	ABORG	RENT>30
001.00	40	55
002.00	135	90
003.00	120	100
004.01	20	105
004.02	15	115
005.00	5	5
006.00	25	160
007.00	40	90
008.00	5	5
009.00	5	10
010.00	40	70
018.00	85	40
019.00	130	35
020.00	20	20
030.00	40	45
031.00	0	0
032.00	530	160
037.00	35	60
038.00	105	205
039.00	220	110
040.00	10	40
041.00	170	80
046.00	210	85
047.00	150	100
049.00	10	10
050.01	535	205
100.01	100	115
100.02	5	5
101.01		95

Appendix IV...Continue

LIST OF RAW DATA FOR NON-INNER CITY CENSUS TRACTS - 1986

101.02		40
102.01	25	65
102.02	40	135
102.03	20	120
103.00	15	5
104.00	5	115
105.00	25	25
110.03	15	30
111.00		
112.01		
112.02		
113.00		
114.00		
115.00		
120.01	65	60
120.02	55	35
121.00	50	50
122.00	15	20
123.00	70	205
131.00	5	75
132.00	55	55
133.00	50	45
134.00	10	10
141.01	45	60
141.02	55	85
500.01	60	35
500.02	0	15
500.03	15	20
502.00	15	50
503.00	10	80
510.00	60	190
521.00	115	215
530.00	35	75
531.00	10	0
532.00	40	35
533.00	0	15
534.00	5	40
535.00	10	80
536.00	0	20
537.01	75	90
537.02	0	30
537.03	0	30
538.00	65	125
540.01	10	35
540.02	25	140
540.03	0	55
542.00	0	0
550.00	10	30
551.00	5	25
553.00	0	10

Appendix IV...Continue

LIST OF RAW DATA FOR NON-INNER CITY CENSUS TRACTS - 1991

Geos:	POP91	TOTHSLD	OWN	RENT	TFAMHSLD	T-FNKIDS	T-FWKIDS	T-SPAR	POP>65	ABORG	IMMG	POP>5
001.00	4209	1790	1245	550	1130	485	470	175	765	65	675	3830
002.00	5905	2370	1565	810	1415	520	620	280	745	60	775	5100
003.00	5733	2455	1220	1235	1235	545	460	230	730	200	720	4795
004.01	4670	2275	1265	1010	1165	580	425	160	1285	30	705	4280
004.02	3542	1505	500	1010	765	350	255	160	525	95	565	2765
005.00	5431	1960	1875	80	1600	615	845	140	1005	0	915	5100
006.00	5995	2530	965	1565	1395	605	550	240	930	60	765	4965
007.00	4107	1630	1085	540	1080	425	455	195	665	100	450	3610
008.00	3225	1130	1015	120	865	310	465	95	335	10	285	2835
009.00	3338	1220	1165	55	940	350	480	115	405	15	350	2965
010.00	5930	2405	1515	895	1365	545	610	205	760	70	850	5240
018.00	2974	1290	880	410	725	320	280	120	465	120	370	2680
019.00	3069	1225	935	290	800	325	345	125	475	95	700	2735
020.00	2518	1020	750	270	645	255	275	115	405	105	480	2260
030.00	3721	1450	1075	375	995	350	480	170	535	180	1260	3490
031.00	2149	935	775	155	610	275	260	80	520	15	580	2045
032.00	5998	2320	1340	985	1505	495	600	410	820	575	895	5175
037.00	3399	1385	955	430	1040	370	465	215	550	150	585	3300
038.00	5745	2475	1145	1330	1495	595	565	340	845	330	1015	5110
039.00	4031	1580	850	735	990	345	410	230	415	160	705	3450
040.00	2270	810	640	175	565	200	285	85	250	60	245	1895
041.00	3969	1465	1000	460	990	340	445	205	425	220	685	3405
046.00	2563	1005	515	490	630	225	255	155	355	80	630	2260
047.00	4635	1805	1410	400	1230	455	540	230	825	260	885	4125
049.00	2601	1060	985	75	795	415	295	85	765	75	500	2390
050.01	3314	1090	395	695	830	225	320	285	335	575	315	2710
100.01	2014	1205	1120	90	1125	265	790	70	80	15	630	3450
100.02	1144	385	365	20	345	105	215	20	85	0	90	1135
101.01	6157	2350	1750	595	1715	655	855	210	740	145	725	5655
101.02	4790	1450	1315	135	1300	365	790	140	270	55	575	4275
102.01	5385	1800	1405	395	1530	335	905	290	330	65	770	5085
102.02	4053	1715	835	880	1040	460	420	160	560	65	445	3545
102.03	3193	1525	630	895	860	370	290	200	560	70	440	2925
103.00	3148	1205	1045	155	880	400	400	85	475	10	365	2800
104.00	3959	1870	955	920	1015	550	345	120	1120	70	480	3490
105.00	3104	1260	1025	240	835	395	355	90	395	75	335	2745
110.03	3637	2245	1750	495	1900	550	1230	115	190	50	925	6365
111.00	4977	1680	1410	270	1385	525	740	120	660	15	365	4410
112.01	3676	1270	925	345	1030	345	530	155	305	75	235	3330
112.02	5362	1915	1320	590	1425	510	680	235	545	105	600	4650
113.00	2911	1190	870	320	750	300	340	120	455	55	370	2580
114.00	3509	1560	795	770	790	320	335	125	625	85	255	3020
115.00	3232	1290	940	355	820	300	420	105	475	20	315	2885
120.01	3393	1190	1005	190	1085	230	700	160	135	65	620	3600
120.02	3003	1445	1225	220	1310	330	835	145	85	140	360	4115
121.00	2497	875	820	55	695	320	315	60	385	40	240	2190
123.00	6077	2100	1660	440	1645	565	875	205	605	20	445	5390
131.00	4214	1790	1335	455	1065	435	445	185	730	25	645	3720
132.00	2832	1320	975	345	810	400	345	65	845	0	510	2680
133.00	3932	1580	1240	340	1125	505	445	175	750	30	460	3465
134.00	5714	2440	1640	805	1540	770	625	150	1355	10	785	5115
141.01	3646	1390	900	495	1035	425	490	120	500	65	720	3205
141.02	4232	1760	855	905	1120	455	485	180	785	60	1285	3730
500.01	6962	2660	1330	1325	1915	615	945	360	450	75	1200	6635
500.02	5591	2020	1730	295	1705	565	950	190	455	120	680	5495
500.03	3102	2085	2025	60	1965	465	1385	115	170	0	1295	6420
502.00	2545	895	775	120	710	275	325	105	310	30	260	2235
503.00	3780	1455	1270	185	1095	470	510	110	645	30	450	3420
521.00	7128	2400	2060	345	2105	610	1265	220	565	10	760	6745
530.00	2029	940	515	430	515	265	195	55	455	40	215	1835
531.00	5934	2570	1775	790	1555	705	600	245	955	135	600	5320
532.00	965	390	310	80	260	110	110	45	140	25	110	895
533.00	4400	1690	1240	450	1150	530	510	110	730	10	370	3685

Appendix IV...Continue

LIST OF RAW DATA FOR NON-INNER CITY CENSUS TRACTS - 1991

534.00	3852	1795	705	1095	945	465	320	160	785	120	500	3400
535.00	4555	1675	980	695	1260	550	615	95	770	40	420	3855
536.00	7604	3245	1450	1795	1965	980	755	240	1540	25	850	6670
537.01	3472	1350	905	445	900	425	415	60	695	25	340	3030
537.02	3799	1130	1105	25	1045	340	645	65	290	10	310	3350
537.03	3076	1030	840	190	855	325	440	85	320	10	405	2690
538.00	2450	805	685	115	650	230	355	65	185	15	300	2020
540.01	2689	765	740	25	705	200	450	60	145	0	290	2315
540.02	4088	1440	1030	410	1095	395	535	165	385	15	385	3565
540.03	5318	2205	885	1315	1455	560	665	220	545	40	445	5010
542.00	2590	950	680	270	660	235	310	120	310	160	435	2275
550.00	2677	1105	950	150	775	355	330	85	565	30	535	2490
551.00	5837	2465	1955	510	1665	795	620	245	1445	30	1285	5255
553.00	4789	2045	850	1195	1195	485	480	230	850	100	1110	4170

Geos:	POP>15	UNIV	TLAB>15	TOTPROF	TOTTERT	TOTMANU	TOTCONST	RENTGT	OWNGT	MEDIAN
001.00	3405	755	2180	885	845	150	85	60	90	36169
002.00	4440	415	2995	765	1295	345	165	100	100	28796
003.00	4315	630	2960	920	1325	215	195	155	90	26116
004.01	3975	560	2200	715	995	205	95	65	50	30322
004.02	2535	435	1655	525	760	170	50	105	20	28347
005.00	4455	1600	2935	1585	1005	135	60	10	110	54224
006.00	4705	790	3225	925	1885	150	70	110	60	34896
007.00	3095	695	1995	805	840	75	85	85	55	39909
008.00	2465	1010	1800	990	615	25	50	10	60	61540
009.00	2545	1155	1890	1045	630	65	30	0	40	60351
010.00	4690	1925	3455	1870	1160	95	100	60	120	48228
018.00	2360	650	1555	685	605	85	35	30	70	35628
019.00	2470	180	1665	405	715	265	100	30	70	34919
020.00	1990	230	1220	315	555	150	80	70	45	35666
030.00	2980	245	2115	435	850	450	150	55	90	32964
031.00	1860	115	1005	195	455	95	125	15	75	30732
032.00	4455	120	2795	330	1215	555	180	205	75	25866
037.00	2815	80	1795	280	905	245	115	130	80	31744
038.00	4525	185	2765	300	1390	450	170	225	70	24256
039.00	2930	100	1905	300	830	330	150	135	50	25369
040.00	1635	235	1125	320	520	75	95	40	80	30028
041.00	2900	475	2040	670	760	250	140	70	100	32947
046.00	1945	105	1165	170	435	270	100	85	40	25881
047.00	3575	210	2185	385	945	365	170	80	105	30210
049.00	2215	135	1055	225	395	120	125	0	40	33559
050.01	2185	55	1365	200	620	220	35	145	25	29393
100.01	2685	505	2255	915	915	140	70	15	145	54604
100.02	945	75	695	175	310	25	70	0	45	46742
101.01	4990	915	3295	1210	1470	210	145	80	125	43946
101.02	3490	630	2625	1085	1025	130	120	25	155	58722
102.01	4025	485	2950	810	1405	255	170	95	155	46016
102.02	3160	205	2180	355	1050	170	255	105	60	31879
102.03	2620	235	1630	435	660	190	110	120	45	26207
103.00	2450	570	1750	730	675	130	55	20	60	49138
104.00	3270	235	1760	460	865	165	100	85	55	29801
105.00	2510	225	1835	505	845	170	140	40	80	37040
110.03	5220	1010	4375	1950	1730	270	130	70	175	59495
111.00	3935	480	2665	880	1195	205	125	30	70	48967
112.01	2835	185	2005	510	905	245	125	85	50	40430
112.02	4000	285	2875	650	1360	360	150	65	70	37977
113.00	2290	145	1530	300	705	245	85	35	100	29767
114.00	2715	335	1760	550	795	90	145	60	55	27078
115.00	2495	475	1695	655	705	115	80	25	70	39504
120.01	2805	175	2115	435	995	360	60	60	115	45182
120.02	3275	155	2695	565	1295	370	170	65	175	45263
121.00	1970	90	1155	205	595	115	60	15	35	40079
123.00	4575	215	3250	640	1495	430	255	70	105	39261
131.00	3285	185	2105	435	850	390	120	35	75	30889

Appendix IV...Continue

LIST OF RAW DATA FOR NON-INNER CITY CENSUS TRACTS - 1991

132.00	2415	420	1260	575	500	70	55	0	60	37629
133.00	3110	205	1900	420	820	290	120	60	75	34457
134.00	4705	435	2625	650	1275	310	100	30	90	33414
141.01	2905	215	1950	505	845	215	105	95	70	34365
141.02	3305	220	1880	380	800	310	140	125	60	27923
500.01	5865	1855	4285	1725	1795	190	165	290	55	39508
500.02	4555	590	3425	1095	1425	285	185	50	150	49480
500.03	5090	1235	4330	1795	1835	220	175	0	365	62961
502.00	1985	255	1275	400	570	140	75	30	40	40161
503.00	3000	915	2035	1000	745	85	75	15	60	49587
521.00	5645	1130	4180	1690	1825	220	120	85	150	56547
530.00	1630	290	1030	460	365	70	60	25	40	35996
531.00	4790	310	3200	700	1635	335	145	85	120	34581
532.00	755	60	500	85	245	70	20	20	25	36808
533.00	3310	515	2130	665	1040	145	110	25	65	42088
534.00	3130	385	1830	595	890	170	40	65	30	30480
535.00	3435	285	2165	565	1210	135	70	30	70	41746
536.00	6160	860	3835	1295	1805	270	115	125	80	41123
537.01	2765	370	1650	505	890	50	70	40	30	42197
537.02	2890	515	2075	790	1010	85	55	0	70	62393
537.03	2395	400	1705	530	865	125	50	25	50	45548
538.00	1850	240	1355	385	685	110	50	35	35	44352
540.01	1995	180	1520	400	785	120	50	0	40	55231
540.02	3140	145	2335	575	1180	195	135	65	65	41781
540.03	4355	565	3120	1010	1525	220	95	150	50	38672
542.00	1960	25	1195	110	500	230	130	75	40	28653
550.00	2255	255	1465	380	685	145	125	15	65	35787
551.00	4780	340	2675	515	1275	320	145	60	110	31104
553.00	3790	250	2435	450	1145	410	115	120	55	26740

Appendix IV...Continue

LIST OF RAW DATA FOR WINNIPEG CENSUS TRACTS - 1986

CT	S-DET81	TOTRRAP	PERMONLY	TOTPERM	TOTDWEL81POP86	TOTHSLD	OWNED	RENT	HUS-WIFE	NO-KIDS	W-KIDS	S-PARENT	
001.00	1290	15	181	196	1305	4209	1620	1225	395	945	435	510	160
002.00	1635	42	227	269	1845	5905	2420	1620	800	1240	545	695	285
003.00	1380	23	186	209	1440	5733	2535	1260	1275	1090	555	530	235
004.01	1255	21	123	144	1285	4670	2215	1280	940	1135	670	465	155
004.02	465	5	52	57	495	3542	1580	520	1060	680	410	275	150
005.00	1850	6	166	172	1855	5431	1880	1815	65	1475	605	870	135
006.00	760	2	51	53	1110	5995	2620	890	1730	1265	635	625	255
007.00	1095	14	140	154	1310	4107	1645	1100	540	935	460	475	215
008.00	1070	8	201	209	1080	3225	1145	1050	95	815	305	510	80
009.00	1200	3	199	202	1200	3338	1225	1185	40	875	345	525	95
010.00	1220	4	273	277	1250	5930	2455	1515	940	1230	570	665	210
011.00	230	5	42	47	290	6322	4015	910	3105	1205	990	210	165
012.00	110	3	34	37	155	4716	2880	140	2740	630	445	180	240
015.00	470	5	52	57	525	6633	3745	300	3440	830	525	310	330
016.00	375	8	57	65	405	2653	1280	340	935	390	210	185	95
017.00	795	21	100	121	810	3736	1585	720	865	660	320	340	170
018.00	910	12	99	111	930	2974	1230	820	405	625	280	345	115
019.00	1035	12	98	110	1055	3069	1235	955	280	725	355	370	115
020.00	800	10	77	87	835	2518	1015	780	230	570	295	275	100
021.00	1415	31	140	171	1470	6924	2390	1185	1200	1205	465	745	375
022.00	530	14	56	70	575	5194	2145	395	1750	760	265	495	345
024.00	50	5	3	8	70	570	130	45	85	40	25	20	10
025.00	370	7	91	98	480	3525	1185	200	985	445	140	310	185
026.00	370	7	48	55	455	2328	860	210	650	360	110	255	130
027.00	395	9	26	35	410	1788	685	335	345	335	140	200	65
028.00	875	23	105	128	930	5683	1995	775	1225	1030	365	665	300
029.00	1195	26	109	135	1235	5277	1980	1070	905	1010	370	635	235
030.00	1165	16	89	105	1190	3721	1450	1120	325	870	385	490	140
031.00	830	3	54	57	840	2149	865	795	70	585	310	270	85
032.00	1885	70	188	258	1980	5998	2360	1365	995	1265	560	710	345
033.00	255	10	39	49	260	1046	350	195	155	200	60	140	55
034.00	345	10	48	58	585	2808	1095	265	830	335	130	205	250
035.00	370	10	49	59	445	2327	680	325	350	280	110	170	155
036.00	165	9	41	50	195	956	405	125	280	140	65	80	65
037.00	875	27	90	117	975	3399	1285	970	310	850	400	455	140
038.00	1185	30	163	193	1415	5745	2410	1190	1220	1250	625	620	320
039.00	1075	34	152	186	1200	4031	1630	870	760	820	385	430	250
040.00	695	18	96	114	725	2270	825	655	170	535	215	315	70
041.00	1005	19	114	133	1025	3969	1495	1020	475	880	360	515	165
042.00	505	21	75	96	555	2893	1090	455	635	490	195	300	220
043.00	930	39	128	167	1140	4497	1815	710	1100	725	305	415	325
044.00	775	35	70	105	840	2598	1045	590	455	510	240	270	175
045.00	1575	78	177	255	1695	6352	2380	1400	980	1225	515	710	400
046.00	515	13	43	56	535	2563	1040	540	495	540	250	290	145
047.00	1450	30	114	144	1480	4635	1835	1415	415	1075	510	565	215
048.00	1735	74	174	248	1780	4612	1855	1580	280	1145	575	575	195
049.00	1015	17	39	56	1030	2601	1070	985	80	765	450	320	75
050.01	405	54	96	150	980	3314	1125	400	720	595	215	385	305
100.01	755	0	19	19	1280	11191	3815	2885	930	2935	1090	1850	290
100.02	280	0	5	5	285	1144	340	315	25	295	85	205	15
101.01	1600	1	25	26	1645	6157	2230	1660	575	1545	590	950	185
CT	S-DET81	TOTRRAP	PERMONLY	TOTPERM	TOTDWEL81POP86	TOTHSLD	OWNED	RENT	HUS-WIFE	NO-KIDS	W-KIDS	S-PARENT	
D													
101.02	1140	0	3	3	1145	4790	1350	1225	130	1135	305	830	120
102.01	1140	6	277	283	1470	5385	1580	1425	150	1250	305	945	190
102.02	870	8	178	186	890	4053	1785	840	950	960	500	455	170
102.03	585	9	49	58	605	3193	1480	590	890	705	375	325	155
103.00	1090	7	199	206	1090	3148	1215	1070	150	835	380	460	80
104.00	1060	7	127	134	1090	3959	1915	995	925	1040	645	390	105
105.00	1130	12	171	183	1160	3104	1285	1085	195	825	430	395	80
110.03	580	0	24	24	580	3637	1155	840	320	920	250	670	50
111.00	1335	6	149	155	1405	4977	1630	1370	265	1300	440	860	115
112.01	900	4	91	95	1015	3676	1240	945	290	895	285	615	130

Appendix IV...Continue

LIST OF RAW DATA FOR WINNIPEG CENSUS TRACTS - 1986

112.02	1110	11	85	96	1505	5362	1940	1355	585	1285	495	785	205
113.00	945	19	126	145	985	2911	1210	895	315	690	320	370	120
114.00	825	11	126	137	845	3509	1630	790	835	710	345	360	140
115.00	995	6	169	175	1000	3232	1310	980	330	775	335	440	125
116.00	860	7	131	138	965	5924	2770	790	1980	1045	605	440	215
117.00	535	5	157	162	580	2915	1190	495	695	530	250	285	90
120.01	640	4	410	414	880	3393	980	825	160	760	165	600	150
120.02	260	3	937	940	595	3003	895	740	155	735	180	555	90
121.00	825	9	53	62	840	2497	880	815	65	685	280	405	65
122.00	1900	25	944	969	2050	8277	2805	2505	300	2185	760	1425	195
123.00	1565	17	142	159	1810	6077	2035	1685	350	1510	510	1005	210
131.00	1375	31	199	230	1405	4214	1820	1370	445	965	485	480	180
132.00	1015	9	133	142	1020	2832	1185	990	195	770	405	365	85
133.00	1295	26	145	171	1335	3932	1580	1250	325	1040	510	530	150
134.00	1680	16	127	143	1720	5714	2475	1665	810	1465	730	730	160
141.01	840	3	125	128	855	3646	1425	850	575	940	420	520	120
141.02	780	10	136	146	870	4232	1865	815	1045	970	480	490	180
500.01	2275	9	2517	2526	2840	6962	2460	1290	1170	1590	560	1030	275
500.02	835	8	541	549	1210	5591	1695	1495	200	1350	410	945	150
500.03	395	0	10	10	430	3102	895	855	45	800	215	585	40
502.00	780	9	73	82	780	2545	895	780	115	660	265	390	110
503.00	1290	8	248	256	1300	3780	1450	1270	175	1000	465	530	95
510.00	1105	0	2167	2167	1110	7325	2395	1950	440	1920	775	1145	120
521.00	1695	8	666	674	1815	7128	2220	1900	325	1795	555	1240	190
530.00	535	6	96	102	535	2029	975	525	445	475	270	205	60
531.00	2005	48	411	459	2020	5934	2565	1760	805	1405	740	660	250
532.00	330	5	61	66	335	965	375	315	70	235	120	120	30
533.00	1340	11	189	200	1370	4400	1730	1255	480	1095	530	570	95
534.00	725	8	77	85	725	3852	1855	720	1140	865	480	385	185
535.00	1375	11	82	93	1460	4555	1680	1005	680	1230	555	680	95
536.00	1410	11	165	176	1605	7604	3160	1435	1725	1755	885	870	270
537.01	775	0	149	149	890	3472	1360	855	505	885	400	490	85
537.02	1130	1	96	97	1130	3799	1140	1110	25	1010	270	740	70
537.03	805	4	57	61	885	3076	1045	845	195	805	260	540	80
538.00	540	1	45	46	560	2450	820	685	130	600	185	415	80
540.01	720	5	39	44	755	2689	775	730	45	680	170	520	55
540.02	935	5	68	73	1050	4088	1490	1040	450	995	375	620	155
540.03	1250	6	253	259	1525	5318	2140	755	1380	1235	530	705	220
542.00	885	13	149	162	890	2590	965	675	285	560	255	310	140
550.00	1030	12	98	110	1045	2677	1090	950	140	710	375	330	95
551.00	2170	39	164	203	2195	5837	2495	2000	490	1575	845	725	210
553.00	785	14	59	73	1000	4789	2065	860	1210	1095	525	570	195

CT	POP>65	IMMG	POP>5	POP>15	UNIV-DG	P>15LAB	TOTPROF	TOTSERV	TOTMANU	TOTCONS	OWN>30P	TFAMHSL	MED-INC
001.00	630	560	3795	3335	570	2235	830	1075	180	130	110	3985	29984
002.00	820	930	5440	4730	465	3120	860	1675	360	225	135	5845	23521
003.00	830	795	5115	4550	520	3065	705	1805	230	230	80	5385	20495
004.01	1205	890	4465	4120	545	2410	785	1490	170	90	40	4640	25715
004.02	540	590	3025	2795	310	1855	560	1095	165	90	20	3130	22374
005.00	805	855	5110	4425	1300	2905	1345	1450	180	60	130	5395	47916
006.00	860	935	5605	5100	780	3515	1115	2405	135	125	25	5695	29698
007.00	650	605	3760	3260	660	1965	780	1135	70	40	35	4025	28918
008.00	365	505	3065	2615	985	1835	1010	675	70	55	75	3255	47899
009.00	445	385	3085	2630	1030	1880	985	830	40	65	35	3325	43940
010.00	800	980	5575	4950	1775	3560	1770	1575	140	70	115	5815	39621
011.00	1635	1200	6130	5995	1715	3910	1875	1870	145	80	20	6205	25956
012.00	660	1055	4425	4205	695	2855	980	1320	265	145	0	4615	15385
015.00	1105	1600	6175	5820	790	3605	945	1695	445	150	20	6330	12667
016.00	200	625	2325	2120	360	1605	515	665	165	120	25	2405	17617
017.00	320	805	3385	3000	760	2275	945	1005	200	75	50	3630	23174
018.00	430	565	2680	2395	355	1680	565	800	120	110	30	2850	30459
019.00	490	665	2885	2585	185	1630	280	1015	270	100	40	3055	28479
020.00	430	380	2335	2045	175	1395	390	675	235	60	50	2435	26905
021.00	620	2595	5965	5105	255	3480	450	1740	770	245	95	6445	20258
022.00	470	2200	4670	4085	140	2645	215	1020	825	180	50	5115	10936

Appendix IV...Continue

LIST OF RAW DATA FOR WINNIPEG CENSUS TRACTS - 1986

024.00	55	90	535	510	10	295	50	80	70	30	0	275	9899
025.00	405	1615	3230	2730	100	1410	135	425	465	95	10	3040	9897
026.00	220	1100	2135	1840	95	1015	90	370	360	80	20	2290	10999
027.00	200	625	1440	1270	125	840	185	415	130	45	15	1525	19205
028.00	495	2840	5160	4360	235	2840	325	1115	880	200	65	5625	16801
029.00	955	2315	4865	4190	225	2485	450	1170	610	190	95	5175	17735
030.00	575	1230	3405	2990	155	1905	385	895	430	125	60	3655	28064
031.00	480	525	2105	1865	125	1105	245	555	155	125	35	2180	26499
032.00	860	925	5485	4645	65	2780	410	1355	600	185	130	5910	20434
033.00	80	415	1020	845	0	495	30	170	105	100	10	1085	18899
034.00	495	825	2550	2110	70	885	95	315	205	100	35	2780	10017
035.00	265	455	1630	1350	65	695	155	235	135	50	30	1700	16343
036.00	190	150	820	700	15	265	40	120	55	15	5	825	10858
037.00	470	605	3135	2780	110	1795	240	1155	265	150	75	3355	27368
038.00	775	925	5340	4690	185	3175	475	1730	545	190	85	5670	21357
039.00	455	795	3660	3150	120	2175	300	1320	300	155	70	3995	20937
040.00	260	380	2095	1810	220	1255	305	690	175	80	55	2240	27033
041.00	475	810	3675	3145	315	2160	655	970	290	125	80	3965	26734
042.00	340	850	2580	2225	90	1325	175	610	245	75	45	2850	14473
043.00	795	1245	4090	3455	60	1725	130	590	550	115	45	4465	11621
044.00	450	485	2405	2115	90	1185	200	555	240	70	40	2570	17847
045.00	895	1760	5795	4870	180	2945	395	1370	600	210	110	6295	17235
046.00	405	680	2320	2010	120	1235	260	640	175	60	85	2475	19999
047.00	860	1120	4310	3770	245	2285	480	1155	420	140	60	4610	24407
048.00	870	915	4350	3805	100	2170	295	1115	405	220	65	4600	22627
049.00	620	545	2535	2335	60	1245	255	705	220	90	60	2580	26799
050.01	275	300	3000	2350	60	1415	215	685	215	80	20	3280	21935
100.01	285	1400	9675	7905	1125	6515	2365	3580	520	385	320	10960	38568
100.02	80	130	1020	800	115	595	170	280	50	60	20	1100	51317
101.01	635	690	5830	5050	835	3585	1395	1765	275	135	90	6065	38388
101.02	205	615	4200	3260	470	2490	925	1355	190	105	85	4450	41711
102.01	150	690	4665	3550	325	2860	950	1390	280	160	120	5150	39956
102.02	495	435	3795	3385	290	2340	515	1415	255	150	95	4030	25458
102.03	490	380	3020	2745	105	1820	340	1220	210	110	15	3185	23651
103.00	420	275	2935	2605	585	1790	730	920	95	60	30	3130	38794
104.00	1085	535	3770	3510	205	1825	355	1135	190	140	80	3940	23966
105.00	445	350	2900	2575	170	1735	375	970	220	155	70	3075	28285
110.03	90	620	3400	2670	590	2140	815	1165	170	65	75	3620	45322
111.00	510	500	4745	4135	375	2870	940	1665	220	115	50	4960	
112.01	225	500	3445	2980	225	2165	515	1215	280	145	70	3655	
112.02	485	570	5010	4335	380	3060	730	1995	260	180	90	5340	
113.00	415	335	2710	2410	100	1575	305	830	255	140	35	2925	
114.00	685	410	3275	2965	290	1825	520	960	160	110	50	3385	
115.00	555	305	3020	2660	515	1730	700	815	165	40	55	3215	
116.00	1185	555	5295	4870	470	2925	950	1575	250	125	65	5350	41099
117.00	530	180	2645	2365	215	1440	395	695	155	125	35	2565	35092
120.01	75	425	3060	2275	75	1740	300	900	340	110	90	3375	31171
120.02	35	380	2695	2020	180	1570	385	870	225	110	80	2995	24624
121.00	260	225	2415	2115	110	1355	240	770	185	95	25	2485	19782
122.00	595	830	7485	6325	345	4620	1020	2630	735	205	240	8200	30356
123.00	495	635	5645	4750	210	3345	665	1950	480	210	145	6045	17761
131.00	795	815	3895	3480	150	2075	345	1245	340	125	105	4175	18699
132.00	665	410	2745	2445	335	1360	510	750	85	75	65	2880	36028
133.00	690	640	3690	3285	125	2005	370	1080	375	150	45	3895	37377
134.00	1180	1020	5505	5010	355	3025	825	1875	345	135	80	5685	35658
141.01	315	740	3460	3075	235	2190	540	1185	310	150	90	3630	36166
141.02	840	1305	3965	3565	300	2110	525	1185	360	130	50	4210	31267
500.01	325	1360	6520	5590	1430	4380	1675	2455	245	165	55	6855	22984
500.02	225	790	4985	4085	510	3140	910	1860	255	120	120	5430	32616
500.03	60	520	2755	2130	505	1735	735	880	115	75	80	3055	29422
502.00	255	320	2380	2100	215	1485	375	925	130	75	75	2535	28199
503.00	625	615	3560	3150	795	2075	950	1085	115	50	20	3755	28877
510.00	640	1570	6670	5790	1885	4110	2260	1730	145	75	225	7035	20867
521.00	470	855	6455	5330	715	3885	1340	2040	270	205	160	6935	36249
530.00	485	270	1970	1730	285	1075	345	595	65	45	25	2055	37892

Appendix IV...Continue

LIST OF RAW DATA FOR WINNIPEG CENSUS TRACTS - 1986

531.00	965	790	5495	5020	190	3320	605	2010	410	175	145	5855	47399
532.00	135	105	840	750	35	485	90	295	55	35	10	910	34540
533.00	725	540	3940	3520	405	2145	635	1215	185	75	65	4145	41454
534.00	800	595	3630	3350	400	2070	620	1275	155	85	40	3820	0
535.00	690	520	4135	3680	275	2320	575	1695	155	50	55	4410	40465
536.00	1205	1035	7070	6465	960	4230	1435	2465	285	150	115	7255	25542
537.01	565	525	3310	2925	325	1865	700	1030	95	115	45	3435	24316
537.02	210	435	3685	3175	625	2195	920	1300	85	30	90	3870	30499
537.03	270	345	2915	2565	340	1875	555	1195	90	80	70	3030	30666
538.00	115	250	2350	2015	260	1495	500	915	90	50	40	2455	23866
540.01	80	415	2615	2170	195	1590	430	1055	110	65	40	2715	33864
540.02	320	445	3840	3365	170	2375	595	1580	190	105	60	4005	31942
540.03	425	840	5015	4295	600	3165	1090	1730	225	85	55	5305	36099
542.00	315	360	2460	2110	30	1285	95	650	270	95	35	2600	50971
550.00	555	605	2455	2240	220	1325	395	740	135	75	50	2570	40117
551.00	1345	1480	5575	5100	300	2945	650	1585	420	150	80	5805	39951
553.00	795	1185	4495	4070	230	2655	485	1740	350	110	60	4690	47195

CT	ABORG	RENT>30
001.00	40	55
002.00	135	90
003.00	120	100
004.01	20	105
004.02	15	115
005.00	5	5
006.00	25	160
007.00	40	90
008.00	5	5
009.00	5	10
010.00	40	70
011.00	60	230
012.00	150	280
015.00	490	405
016.00	165	100
017.00	70	75
018.00	85	40
019.00	130	35
020.00	20	20
021.00	470	220
022.00	600	350
024.00	145	15
025.00	430	145
026.00	160	120
027.00	35	35
028.00	350	255
029.00	210	145
030.00	40	45
031.00	0	0
032.00	530	160
033.00	170	30
034.00	740	180
035.00	240	90
036.00	145	35
037.00	35	60
038.00	105	205
039.00	220	110
040.00	10	40
041.00	170	80
042.00	330	180
043.00	695	265
044.00	185	60
045.00	595	275
046.00	210	85
047.00	150	100
048.00	120	80

Appendix IV...Continue

LIST OF RAW DATA FOR WINNIPEG CENSUS TRACTS - 1986

049.00	10	10
050.01	535	205
100.01	100	115
100.02	5	5
101.01		95
101.02		40
102.01	25	65
102.02	40	135
102.03	20	120
103.00	15	5
104.00	5	115
105.00	25	25
110.03	15	30
111.00		
112.01		
112.02		
113.00		
114.00		
115.00		
116.00	15	20
117.00	20	60
120.01	65	60
120.02	55	35
121.00	50	50
122.00	15	20
123.00	70	205
131.00	5	75
132.00	55	55
133.00	50	45
134.00	10	10
141.01	45	60
141.02	55	85
500.01	60	35
500.02	0	15
500.03	15	20
502.00	15	50
503.00	10	80
510.00	60	190
521.00	115	215
530.00	35	75
531.00	10	0
532.00	40	35
533.00	0	15
534.00	5	40
535.00	10	80
536.00	0	20
537.01	75	90
537.02	0	30
537.03	0	30
538.00	65	125
540.01	10	35
540.02	25	140
540.03	0	55
542.00	0	0
550.00	10	30
551.00	5	25
553.00	0	10

Appendix IV...Continue

LIST OF RAW DATA FOR WINNIPEG CENSUS TRACTS - 1991

Geos:	POP91	TOTHSLD	OWN	RENT	TFAMHSLD	T-FNKIDS	T-FWKIDS	T-SPAR	POP>65	ABORG	IMMG	POP>5
001.00	4209	1790	1245	550	1130	485	470	175	765	65	675	3830
002.00	5905	2370	1565	810	1415	520	620	280	745	60	775	5100
003.00	5733	2455	1220	1235	1235	545	460	230	730	200	720	4795
004.01	4670	2275	1265	1010	1165	580	425	160	1285	30	705	4280
004.02	3542	1505	500	1010	765	350	255	160	525	95	565	2765
005.00	5431	1960	1875	80	1600	615	845	140	1005	0	915	5100
006.00	5995	2530	965	1565	1395	605	550	240	930	60	765	4965
007.00	4107	1630	1085	540	1080	425	455	195	665	100	450	3610
008.00	3225	1130	1015	120	865	310	465	95	335	10	285	2835
009.00	3338	1220	1165	55	940	350	480	115	405	15	350	2965
010.00	5930	2405	1515	895	1365	545	610	205	760	70	850	5240
011.00	6322	3970	1105	2865	1275	915	185	175	1675	105	1065	5915
012.00	4716	2685	105	2580	860	440	160	255	575	415	965	4190
015.00	6633	3440	275	3160	1070	455	225	385	930	840	1100	5215
016.00	2653	1125	310	810	490	175	175	135	140	280	540	2235
017.00	3736	1485	690	800	760	290	295	180	255	130	505	3000
018.00	2974	1290	880	410	725	320	280	120	465	120	370	2680
019.00	3069	1225	935	290	800	325	345	125	475	95	700	2735
020.00	2518	1020	750	270	645	255	275	115	405	105	480	2260
021.00	6924	2450	1095	1350	1380	390	650	340	820	755	2420	5625
022.00	5194	1920	350	1565	1025	235	440	355	360	815	1955	4090
024.00	570	195	95	105	80	55	15	15	35	110	110	350
025.00	3525	1155	175	980	615	90	300	220	425	800	1540	2655
026.00	2328	780	200	575	465	95	220	150	225	485	830	1880
027.00	1788	680	310	365	410	150	190	70	220	90	750	1530
028.00	5683	1795	695	1100	1220	300	600	320	440	800	2565	4645
029.00	5277	1970	1025	945	1220	365	615	240	910	315	2400	4700
030.00	3721	1450	1075	375	995	350	480	170	535	180	1260	3490
031.00	2149	935	775	155	610	275	260	80	520	15	580	2045
032.00	5998	2320	1340	985	1505	495	600	410	820	575	895	5175
033.00	1046	320	180	140	255	55	130	70	75	185	365	890
034.00	2808	1075	215	865	510	105	165	235	400	1135	550	2190
035.00	2327	650	290	360	390	105	155	130	225	405	525	1525
036.00	956	405	130	275	190	65	75	60	160	185	100	845
037.00	3399	1385	955	430	1040	370	465	215	550	150	585	3300
038.00	5745	2475	1145	1330	1495	595	565	340	845	330	1015	5110
039.00	4031	1580	850	735	990	345	410	230	415	160	705	3450
040.00	2270	810	640	175	565	200	285	85	250	60	245	1895
041.00	3969	1465	1000	460	990	340	445	205	425	220	685	3405
042.00	2893	1035	430	610	635	165	265	205	280	685	580	2400
043.00	4497	1860	645	1220	1050	260	405	390	715	1355	1000	4095
044.00	2598	1090	575	510	665	235	255	170	500	230	595	2355
045.00	6352	2345	1365	980	1530	475	640	415	870	935	1280	5430
046.00	2563	1005	515	490	630	225	255	155	355	80	630	2260
047.00	4635	1805	1410	400	1230	455	540	230	825	260	885	4125
048.00	4612	1850	1575	275	1265	515	545	200	925	120	1000	4235
049.00	2601	1060	985	75	795	415	295	85	765	75	500	2390
050.01	3314	1090	395	695	830	225	320	285	335	575	315	2710
100.01	2014	1205	1120	90	1125	265	790	70	80	15	630	3450
100.02	1144	385	365	20	345	105	215	20	85	0	90	1135
101.01	6157	2350	1750	595	1715	655	855	210	740	145	725	5655
101.02	4790	1450	1315	135	1300	365	790	140	270	55	575	4275
102.01	5385	1800	1405	395	1530	335	905	290	330	65	770	5085
102.02	4053	1715	835	880	1040	460	420	160	560	65	445	3545
102.03	3193	1525	630	895	860	370	290	200	560	70	440	2925
103.00	3148	1205	1045	155	880	400	400	85	475	10	365	2800
104.00	3959	1870	955	920	1015	550	345	120	1120	70	480	3490
105.00	3104	1260	1025	240	835	395	355	90	395	75	335	2745
110.03	3637	2245	1750	495	1900	550	1230	115	190	50	925	6365
111.00	4977	1680	1410	270	1385	525	740	120	660	15	365	4410
112.01	3676	1270	925	345	1030	345	530	155	305	75	235	3330
112.02	5362	1915	1320	590	1425	510	680	235	545	105	600	4650
113.00	2911	1190	870	320	750	300	340	120	455	55	370	2580
114.00	3509	1560	795	770	790	320	335	125	625	85	255	3020

Appendix IV...Continue

LIST OF RAW DATA FOR WINNIPEG CENSUS TRACTS - 1991

115.00	3232	1290	940	355	820	300	420	105	475	20	315	2885
116.00	5924	2725	770	1950	1175	555	375	245	1170	135	590	4850
117.00	2915	1200	510	690	615	230	280	100	465	65	190	2430
120.01	3393	1190	1005	190	1085	230	700	160	135	65	620	3600
120.02	3003	1445	1225	220	1310	330	835	145	85	140	360	4115
121.00	2497	875	820	55	695	320	315	60	385	40	240	2190
123.00	6077	2100	1660	440	1645	565	875	205	605	20	445	5390
131.00	4214	1790	1335	455	1065	435	445	185	730	25	645	3720
132.00	2832	1320	975	345	810	400	345	65	845	0	510	2680
133.00	3932	1580	1240	340	1125	505	445	175	750	30	460	3465
134.00	5714	2440	1640	805	1540	770	625	150	1355	10	785	5115
141.01	3646	1390	900	495	1035	425	490	120	500	65	720	3205
141.02	4232	1760	855	905	1120	455	485	180	785	60	1285	3730
500.01	6962	2660	1330	1325	1915	615	945	360	450	75	1200	6635
500.02	5591	2020	1730	295	1705	565	950	190	455	120	680	5495
500.03	3102	2085	2025	60	1965	465	1385	115	170	0	1295	6420
502.00	2545	895	775	120	710	275	325	105	310	30	260	2235
503.00	3780	1455	1270	185	1095	470	510	110	645	30	450	3420
521.00	7128	2400	2060	345	2105	610	1265	220	565	10	760	6745
530.00	2029	940	515	430	515	265	195	55	455	40	215	1835
531.00	5934	2570	1775	790	1555	705	600	245	955	135	600	5320
532.00	965	390	310	80	260	110	110	45	140	25	110	895
533.00	4400	1690	1240	450	1150	530	510	110	730	10	370	3685
534.00	3852	1795	705	1095	945	465	320	160	785	120	500	3400
535.00	4555	1675	980	695	1260	550	615	95	770	40	420	3855
536.00	7604	3245	1450	1795	1965	980	755	240	1540	25	850	6670
537.01	3472	1350	905	445	900	425	415	60	695	25	340	3030
537.02	3799	1130	1105	25	1045	340	645	65	290	10	310	3350
537.03	3076	1030	840	190	855	325	440	85	320	10	405	2690
538.00	2450	805	685	115	650	230	355	65	185	15	300	2020
540.01	2689	765	740	25	705	200	450	60	145	0	290	2315
540.02	4088	1440	1030	410	1095	395	535	165	385	15	385	3565
540.03	5318	2205	885	1315	1455	560	665	220	545	40	445	5010
542.00	2590	950	680	270	660	235	310	120	310	160	435	2275
550.00	2677	1105	950	150	775	355	330	85	565	30	535	2490
551.00	5837	2465	1955	510	1665	795	620	245	1445	30	1285	5255
553.00	4789	2045	850	1195	1195	485	480	230	850	100	1110	4170

Geos:	POP>15	UNIV	TLAB>15	TOTPROF	TOTTERT	TOTMANU	TOTCONST	RENTGT	OWNGT	MEDIAN
001.00	3405	755	2180	885	845	150	85	60	90	36169
002.00	4440	415	2995	765	1295	345	165	100	100	28796
003.00	4315	630	2960	920	1325	215	195	155	90	26116
004.01	3975	560	2200	715	995	205	95	65	50	30322
004.02	2535	435	1655	525	760	170	50	105	20	28347
005.00	4455	1600	2935	1585	1005	135	60	10	110	54224
006.00	4705	790	3225	925	1885	150	70	110	60	34896
007.00	3095	695	1995	805	840	75	85	85	55	39909
008.00	2465	1010	1800	990	615	25	50	10	60	61540
009.00	2545	1155	1890	1045	630	65	30	0	40	60351
010.00	4690	1925	3455	1870	1160	95	100	60	120	48228
011.00	5870	1710	3735	1755	1575	115	40	165	30	31730
012.00	4060	805	2705	805	1255	200	50	305	15	18490
015.00	5165	675	3020	900	1240	200	140	290	35	14204
016.00	2055	285	1405	525	485	165	65	110	35	20279
017.00	2650	840	2020	870	755	150	55	90	65	28915
018.00	2360	650	1555	685	605	85	35	30	70	35628
019.00	2470	180	1665	405	715	265	100	30	70	34919
020.00	1990	230	1220	315	555	150	80	70	45	35666
021.00	4930	365	2900	480	1270	615	85	200	70	22590
022.00	3895	155	2295	175	950	580	190	305	25	12111
024.00	590	70	355	135	90	20	20	10	10	22662
025.00	2650	90	1175	150	390	305	60	220	25	12153
026.00	1655	85	900	90	370	205	95	115	10	13868
027.00	1390	185	865	240	315	165	50	40	30	26075

Appendix IV...Continue

LIST OF RAW DATA FOR WINNIPEG CENSUS TRACTS - 1991

028.00	3900	175	2365	305	825	655	170	260	70	19668
029.00	4085	260	2605	415	1075	700	105	115	85	25575
030.00	2980	245	2115	435	850	450	150	55	90	32964
031.00	1860	115	1005	195	455	95	125	15	75	30732
032.00	4455	120	2795	330	1215	555	180	205	75	25866
033.00	745	0	435	30	130	90	40	75	0	22201
034.00	1815	55	630	90	220	130	55	175	15	9845
035.00	1380	45	705	95	260	120	50	105	25	15009
036.00	740	0	355	50	115	70	40	45	10	13090
037.00	2815	80	1795	280	905	245	115	130	80	31744
038.00	4525	185	2765	300	1390	450	170	225	70	24256
039.00	2930	100	1905	300	830	330	150	135	50	25369
040.00	1635	235	1125	320	520	75	95	40	80	30028
041.00	2900	475	2040	670	760	250	140	70	100	32947
042.00	1995	55	1090	160	380	280	60	165	25	19416
043.00	3380	75	1480	165	520	355	80	240	60	15680
044.00	2035	55	1110	105	495	225	60	145	65	17787
045.00	4605	180	2570	340	990	515	250	235	115	22333
046.00	1945	105	1165	170	435	270	100	85	40	25881
047.00	3575	210	2185	385	945	365	170	80	105	30210
048.00	3750	95	2225	350	870	385	150	60	70	28814
049.00	2215	135	1055	225	395	120	125	0	40	33559
050.01	2185	55	1365	200	620	220	35	145	25	29393
100.01	2685	505	2255	915	915	140	70	15	145	54604
100.02	945	75	695	175	310	25	70	0	45	46742
101.01	4990	915	3295	1210	1470	210	145	80	125	43946
101.02	3490	630	2625	1085	1025	130	120	25	155	58722
102.01	4025	485	2950	810	1405	255	170	95	155	46016
102.02	3160	205	2180	355	1050	170	255	105	60	31879
102.03	2620	235	1630	435	660	190	110	120	45	26207
103.00	2450	570	1750	730	675	130	55	20	60	49138
104.00	3270	235	1760	460	865	165	100	85	55	29801
105.00	2510	225	1835	505	845	170	140	40	80	37040
110.03	5220	1010	4375	1950	1730	270	130	70	175	59495
111.00	3935	480	2665	880	1195	205	125	30	70	48967
112.01	2835	185	2005	510	905	245	125	85	50	40430
112.02	4000	285	2875	650	1360	360	150	65	70	37977
113.00	2290	145	1530	300	705	245	85	35	100	29767
114.00	2715	335	1760	550	795	90	145	60	55	27078
115.00	2495	475	1695	655	705	115	80	25	70	39504
116.00	4490	460	2690	735	1305	260	155	175	115	20626
117.00	2360	310	1465	415	595	155	120	80	45	28537
120.01	2805	175	2115	435	995	360	60	60	115	45182
120.02	3275	155	2695	565	1295	370	170	65	175	45263
121.00	1970	90	1155	205	595	115	60	15	35	40079
123.00	4575	215	3250	640	1495	430	255	70	105	39261
131.00	3285	185	2105	435	850	390	120	35	75	30889
132.00	2415	420	1260	575	500	70	55	0	60	37629
133.00	3110	205	1900	420	820	290	120	60	75	34457
134.00	4705	435	2625	650	1275	310	100	30	90	33414
141.01	2905	215	1950	505	845	215	105	95	70	34365
141.02	3305	220	1880	380	800	310	140	125	60	27923
500.01	5865	1855	4285	1725	1795	190	165	290	55	39508
500.02	4555	590	3425	1095	1425	285	185	50	150	49480
500.03	5090	1235	4330	1795	1835	220	175	0	365	62961
502.00	1985	255	1275	400	570	140	75	30	40	40161
503.00	3000	915	2035	1000	745	85	75	15	60	49587
521.00	5645	1130	4180	1690	1825	220	120	85	150	56547
530.00	1630	290	1030	460	365	70	60	25	40	35996
531.00	4790	310	3200	700	1635	335	145	85	120	34581
532.00	755	60	500	85	245	70	20	20	25	36808
533.00	3310	515	2130	665	1040	145	110	25	65	42088
534.00	3130	385	1830	595	890	170	40	65	30	30480
535.00	3435	285	2165	565	1210	135	70	30	70	41746
536.00	6160	860	3835	1295	1805	270	115	125	80	41123

Appendix IV...Continue

LIST OF RAW DATA FOR WINNIPEG CENSUS TRACTS - 1991

537.01	2765	370	1650	505	890	50	70	40	30	42197
537.02	2890	515	2075	790	1010	85	55	0	70	62393
537.03	2395	400	1705	530	865	125	50	25	50	45548
538.00	1850	240	1355	385	685	110	50	35	35	44352
540.01	1995	180	1520	400	785	120	50	0	40	55231
540.02	3140	145	2335	575	1180	195	135	65	65	41781
540.03	4355	565	3120	1010	1525	220	95	150	50	38672
542.00	1960	25	1195	110	500	230	130	75	40	28653
550.00	2255	255	1465	380	685	145	125	15	65	35787
551.00	4780	340	2675	515	1275	320	145	60	110	31104
553.00	3790	250	2435	450	1145	410	115	120	55	26740