AN ANALYSIS OF PAST, PRESENT AND TEMPORAL CHANGES IN BI-WAY'S MARKET AREAS FOR METROPOLITAN TORONTO

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BY

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ABSTRACT

This research paper looks at the past, present and temporal changes in Bi-Way's market areas for Metropolitan Toronto. Each of the stores trade or market areas was defined by using Thiessen polygons which gave boundaries in which specific census data was collected and analyzed. The analysis essentially three questions; the first being to see if there are any differences between the trade areas of those stores built in the 1970's and those built in the 1980's, the second was to see if there were any changes between the two groups of stores but in terms of 1981 data, and the third was to see if there were any changes between the groups of stores and their changes between 1971 and 1981. The results showed that for hthesis number one it was only the 1980's potential trade areas which revealed any specific market characteristics which could be used to define its target markets. The results from the second hypothesis that both sets of stores showed similar and different trade area characteristics and target markets. The results from the third hypothesis revealed that overall the stores built in the 1970's underwent the most significant changes in its market characteristics. Overall however, it was shown that although some similarities and differences came through for these two sets of stores an more in-depth analysis is needed.

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Andrea Dawkins

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CHAPTER 1

INTRODUCTION

INTRODUCTION

In the last few decades there have been significant changes in the retail structure and demographic compsition of Metropolitan Toronto. For instance, the retail structure of Toronto preceding WW II reflected restricted mobility and was hierarchial in nature with development being concentrated along arterial streets, defined nodes of higher accessibility and specific neighborhood areas. Population changes associated with suburbanization and the growth of ethnic populations has led to a city with a complex arrangement of market segments. At the same time, changes in the retail sector such as planned shopping centres and the growth of retail chains occurred which had the most profound affect on the retail structure of Toronto.

To add to this complexity of market segments, recent times have witnessed population movements back into the central city of predominantly middle to high income groups. One more recent response of the retail sector to this phenomena has been an accentuation of the trend towards specialty retailing which began as a result of changes in the ownership structure of retailing firms.

It is in the context of this complexity that the importance of these two trends; the creation and movement of the different market segments and the changing retail structure, will be analyzed. Specifically, it will be interesting to see if (and to what extent) there are any spatial and/or temporal relationships

between the choices of store location for a specific retail chain (Bi-way) and the changing characteristics of its actual and potential trade areas.

There are certain fundamental assumptions in retailing as to not only where businesses locate, but also the mobility and preference patterns of consumers. As a result it is possible to make various hypotheses as to the outcomes in the analyses of the maps. For instance, it is assumed that low income people have more restrictions on their mobility and spend less of their disposable income on higher order/luxury items. As a result, the chains that cater to this group may exhibit the more constrained locational strategy of being closely tied to the area where this group is found. High income groups on the other hand have more mobility and more of their disposable income is spent on shopping type goods. Consequently, this market segment will travel greater distances and will engage in comparison shopping. The chains that cater to this group are more likely to locate near their competition or other types of stores that appeal to this group (to take advantage of positive externalities) than as they are to locate within high income residential areas.

In order to determine if there is any relationship between the location of a specific retail chain and the changing characteristics of their trade area, various sources of data will be needed. Firstly, it is necessary to choose a chain which seems to target a specific market. Secondly, the boundaries of the probable trade areas for each of its stores should be

determined. Thirdly, it is important to choose appropriate census data which reflects different demographic and socio-economic characteristics which in turn can be collected for the various trade areas.

Most of the analysis would consist of comparing each of the trade areas in terms of the chosen market characteristics for a fixed point in time as well as over a period of time. At this point the absence or presence of trends or anomalies will be examined.

In conclusion, the essence of the analysis will be to chart to what extent the locational strategies of Bi-Way stores reflect the changing characteristics of their trade areas and possibly determine their actual and potential target markets.

CHAPTER 2

LITERATURE REVIEW

LITERATURE REVIEW

Although the field of retail geography is extensive in terms of the types of topics covered, literature linking population movement and the location of specific retail chains is lacking. The main purpose of this chapter is to attempt to link literature on the general temporal changes in urban demography to changes in the location of retail development and marketing strategies. This will be done using a spatial demand curve as a conceptual model which in its variation reflect changes in the relationship between the consumer and distance to the retailer. In this way, this chapter will give a brief historical and conceptual background to the particular study which forms the basis of this thesis.

In the last few decades two important processes have occurred that have had a profound structural change on metropolitan areas. The first is the suburbanization of both the population and economic activity. The second, on a smaller scale, is the re-entry of specific demographic groups into central city locations created by modern condominium development and the gentrification of older residential districts. These two processes represent demand side changes which have created a reorganization of retail facilities both structurally and spatially within urban areas (Schneider 1986: 25).

The trend of suburbanization of the population is a common and familiar phenomenon in most major metropolitan areas. The

metropolitan region in Toronto in 1951, for example, held 1.4 million people with 86% of its inhabitants being located in the inner 3 municipalities of Toronto, East York and York, and only 14% housed in the outer 3 municipalities of North York, Scarborough and Etobicoke. Between 1951 and 1971, the process of suburbanization occurred. The region itself grew to a population of 2.9 million due to high birth rates and extensive post-war immigration, with the majority of growth occurring in the suburbs as many younger people migrated out of the inner municipalities and the lower income groups and new ethnic groups remained. After a general population decline in the 1970s, this trend of suburbanization was joined by a reverse process of migration back to the inner city by upper income groups encouraged bythe re-vitalization of the downtown (City of Toronto Planning & Development Department: 1-6). These twin processes, linked with the general trend demographically towards increasing household diversity have led to a complex arrangement of market segments within urban areas (Jones & Simmons 1987: 189).

As would be expected, the general trend of suburbanization and the latter trend of recentralization has a well recorded impact on the location of retailers. This is evident when looking at two aspects of retail development; the change in retail establishments (Schneider 1986: 32; Logan 1986: 432). Firstly, taking the U.S. as an example, in terms of changes in retail employment in U.S. metropolitan areas between 1958 and 1968, the number of jobs in the retail sector grew by 16% in the suburbs

and 6% in the central city, but by 1977, however, it increased 36% and declined 19% respectively. This continual increase in retail employment in the U.S. suburban areas and a subsequent stagnation of the central city employment structure reveals a movement to the suburbs of the majority of growth in employment (Schneider 1986: 27-35). Secondly, the growth in the actual numbers of retail establishments has grown and declined in the same areas at the same time as both the population and the number of jobs (Logan 1986: 434).

A barometer that may be useful to adopt in studying the relationship between changes in urban demography, structural changes in retailing, and retail location, is that of the spatial demand curve. In its variations through time it indicates possible hypotheses about location with respect to the consumer (Jones & Simmons 1987: 33).

The first important period is that prior to suburbanization. At this time the demographic composition of most Canadian cities was fairly homogeneous, there was little market differentiation (Jones & Simmons 1987: 190) and the social structure of the city was dominated by the "nuclear" family. In addition to this, the levels of auto ownership were relatively low and networks of public transit defined nodes of higher accessibility within the city. Thus, the numbers of retail nodes was large and easily identified, each serving a well defined spatial market proportionate to its size (Jones & Simmons 1987: 191). This lack of market differentiation and accessibility reveals the importance

of the spatial distance between markets as the determining location factor for retail firms. As a result, the spatial demand curve is characterized by steep slope or gradient in which each retail outlet has a spatial monopoly over a group of consumers, which in turn defines the market area.

Suburbanization from the later 1950s to the early 1970s obviously brought about spatial shifts in retail provision as retailers expanded and/or relocated to meet the growing market of suburbia. Retail location was further influenced by the same forces which were driving suburbanization itself, predominantly the increase in personal mobility. High levels of auto ownership made the concept of a central meeting place of exchange for large tracts of suburbia a reality. The new "main streets" or "village greens" of suburbia became the indoor shopping mall (Dawson 1979: 176). Toronto is a good example of the transition from retail environment made up of solely independent retail outlets to the growth of retail chains and their linkages with the growth of planned shopping centres. For instance, the floor area growth for planned shopping centres went from 2000m^2 in 1961 to 2,000,000m^2 in 1974 (Jones & Simmons 1987: 226).

The actual movements and locations of those planned shopping centres through time were also extremely significant events. For example, in the 1950s these malls located in established suburbs, while in the 1960s malls such as the Don Mills Plaza in Toronto located in the suburbs but were developed simultaneously with residential development, and in the first half of the 1970s

planned shopping centres such as Scarborough Town Centre were developed previous to any residential development (Jones & Simmons 1987: 198). The changes in the composition of the retail structure, the profound growth in suburbia, as well as the increase in consumer mobility, affected the form of the spatial demand curve. Consequently, the spatial demand curve becomes less steep as the importance of the distance between markets declines.

From the late 1970s onward and into the present, significant changes resulting from the previous decades are having profound effects on this relationship between space, the consumer, and the location of retail outlets. The increasingly competitive retail environment, the concentration of retail capital into large corporations, and the stagnation of the growth in disposable income, has led to situations where retailers are increasingly attempting to corner one particular segment of the market on which they can rely on for steady growth (Dawson 1979: 73).

This trend towards specialized retailing is the most important consequence of an increasingly competitive market. It has spawned a new term in the field of retail marketing; that of the target or "niche" market (Jones & Simmons 1987: 187; Jones 1984: 15). This refers to the spatial segmentation of consumers using socioeconomic criteria. This is evident in the emergence of new technology in marketing research and the companies that create and use market research information. Firstly, in terms of new technology we now have scanner panels. Demographic charact-

eristics of the consumer as well as their shopping preferences are recorded by plasticised cards used at the checkout and are stored on a panel which can be accessed at any time (Reader & Uncles 1988). Secondly, new market research companies are emerging such as Compusearch (Jones & Simmons 1987: 332) who specialize in site evaluations and consumer profile studies for retailers. More specifically, they have categorized each census tract or postal district into one of seventy "lifestyle" groups based on socioeconomic household data. A retailer using those Compusearch "lifestyle" categories can pinpoint spatially who they perceive as being their consumers (Jones & Simmons 1987: 332).

For some retailers this may produce a very dispersed market characterized by a spatial demand curve which is normally shallow and discontinuous. The degree of discontinuity in shallowness of the demand curve can also be determined by the extent and nature of the niche market in terms of socioeconomic and demographic characteristics. For instance, high income, upscale groups which possess good mobility and which spend a larger proportion of their disposable income on shopping type goods tend to make the curve shallow. Low income and elderly groups with more restricted mobility and which spend most of their disposable income on convenience type goods, tend to spawn relatively steep demand curves. Because there are now distinct market segments which are being targeted specifically by the retailer, distance to specific markets instead of to volumes of people has become

the prominent location consideration.

It is evident from this retailing and urban demographic literature than significant trends have emerged. The first being the creation of distinct market segments and their increasing importance as a location consideration. The second trend is the structural changes in retailing namely -- the growth of the planned shopping centre and the specialty retailing district. Lastly, the relationship between location and distance to the consumer has changed in terms of distance being a significant location determinant. As a result, it will be interesting to see if there are any spatial or temporal relationships between the location of a specific type of retail chain and the compositions of their trade areas or markets through time.

CHAPTER 3

DATA COLLECTION & METHODOLOGY

CHAPTER 3: DATA COLLECTION AND METHODOLOGY

3.1 : DATA ON RETAIL CHAINS

The selection of the best retail chain which is conducive to looking at market profiles through time consisted of two main parts. The first part was to identify and select retail chains which have existed in Metropolitan Toronto during the study period which was done through the use of old telephone and yellow page directories. The selection of the chain was based on specific criteria resulting in Bi-Way being chosen as the retail chain for this study. The second part of this data collection on retail chains was to find the locations through time of the chain. This was done using lists from the company itself. The problem that arose however was that the list itself listed some of the locations of the stores in boroughs rather than identifying them by street names resulting in a confusion of which store in which area belonged to each specific location. This problem was eventually overcome by finding their addresses in the telephone directory and combining this information with the list of dates from the company list to produce a total 25 stores built between 1967 and 1986.

One of the most important variables to consider when at changing market profiles is the selection of the retail chain to be used in the study. Some of these variables are; the size of the store, the type of merchandise it sells and hence, the size

and type of market, the number of stores or outlets, the age of the chain, and whether it is a local or national chain. Firstly, the actual size of the chain is important as variations in size are obviously reflected in varying market or trade area sizes. The type of merchandise a chain sells is also a crucial factor to consider because the merchandise reflects the market the chain is trying to target. For instance, a chain of convenience stores selling a wide variety of everyday products appeals to a larger, less specialized market than an upscale childrens store which essentially targets high income families. The number of outlets is also an important consideration because a market study of a chain with a larger representation throughout a region allows better definition of its individual trade areas and intra urban comparisons across trade areas. The age of the chain is also significant because the older a chain is the more likely it will have a better understanding of its markets than chains whose marketing strategy is to completely saturate the market within a short period of time. Finally, whether a chain is a local or national chain is important as ownership patterns are different at these levels and hence, the knowledge of a certain area or market will be different. We have given here only a brief explanation as to why these variables are important and depending on the research objective some variables will tent to become more dominant than others in the chain selection.

In order to analyze how a market for a particular chain has changed through time, three of the above mentioned variables were

emphasized which in turn formed the criterion on which the selection of the chain was based. The three dimensions chosen were the age of the chain, the number of stores and the type of merchandise. Based on these variables, the retail chain Bi-Way formed a rational choice for analysis. The age of the chain and the number of outlets is important because in order to obtain an accurate market profile through time based on a representative sample of stores that will generate statistically significant results, the chain had to have been in existence sine 1971. Bi-Way fits this criteria since its first store in Metropolitan Toronto was opened in 1967 resulting in a present total of twenty-five stores. This was unlike many other chains which either started in the mid 1970's and didn't expand until the 1980's or did start before 1971 but had so few outlets that an accurate market profile could have resulted. For instance although Harry Rosen is a fairly prominent chain today and its first store was opened in the 1960's, most of its growth occurred in a cluster in the 1970's but was not significant in terms of its numbers.

The merchandise a chain sold became an important selection criteria. This is mainly because as mentioned previously, it largely determines the chains target market. It was necessary to identify a chain which generally appeals to a large market and thus, whose trade area can be defined mainly by spatial competition rather than by smaller, more dispersed trade areas. Bi-Way adheres to this criteria because its merchandise consists

mainly of low order and convenience type goods and therefore appeals to a fairly large market. This is unlike chains such as Harry Rosen whose merchandise is more specialized and targets mainly higher income groups and thus, making their appeal to a smaller, more dispersed market. It was also important to choose a chain which although it targets a large market it targets a specific portion of a market as well. For instance we may hypothesize that although Bi-Way offers a wide variety of goods the prices of these goods are cheaper and thus, it may appeal to a large proportion of lower income people in the city. Consequently, it is evident that Bi-Way adheres to the selection requirements defined by this study.

3.2 : TRADE AREA DELIMITATION

The delimitation of the chain's trade areas was the next step to consider in this study. Delimiting a trade area around a store each store is necessary as they define an area in which we can collect various socio-economic data which in turn is used to generate a market profile for each trade area. There are however various ways to delimit a trade area with the appropriate method depending on the size and type of retail chain. These trade area delimitation methods can be classified into those of the spatial monopoly approach, market penetration and dispersed markets.

The spatial monopoly approach exhaustively divides up the whole market area between the stores. It assumes that consumers will visit the nearest store and thus, the trade areas are

largely distance defined. The type of chain which would most likely use this would be convenience stores and neighborhood supermarkets. The market penetration approach delimits trade areas on the basis of ranked penetration rates (the number of customers/ the number of households) which defines a chain's primary trade area (the first 60%) and its secondary trade area (the next 25%). The type of chain which would most likely use this are one which are mainly concerned with increasing their market share either by expanding their present trade area or by attracting a greater proportion of potential customers within the area. The third way to define a trade area is by first creating a market profile of the targeted consumer and by using census data, finding where these consumers located within the city. This is most appropriate for chains which target very specialized markets which are dispersed throughout the city. As a result it is evident that not all types of chains will use the same methods as some are more appropriate for their type of store than others.

The trade area approach chosen for Bi-Way stores is the spatial monopoly approach. This is mainly due to the fact Bi-Ways merchandise is mainly low order and convenience type goods and consequently, their trade areas are largely distance defined. This is analogous to supermarket chains which use time isochrones to define their trade areas. The problem arises however that it is difficult to determine whether these time isochrones should be lines of walking time, driving time or in terms of cost. As a result , Thiessen polygons (a technique of the spatial monopoly

approach) was chosen to define its trade areas. The Thiessen polygon method is a distance defined geometrical technique of trade area delimitation. Essentially it produces trade areas in which each trade are is closer to the store associated with that trade area than to any other store in the system.

In using Thiessen polygons the stores chosen to define its trade areas were just the Bi-Way stores as opposed to taking into account the locations of their competitors eg. K-Mart. The main reason for this was essentially practical. Accurate information on store location is hard to come by. However, despite the overall methodological disadvantages associated with this limitation, there are certain advantages too.

To begin with, we can be fairly confident that Bi-Way would not overlap the trade areas in its own network therefore, the Thiessen polygon method of exclusive trade areas are more applicable. If we would have extended the analysis to include competitors we could not have assumed this lack of trade area so readily. Moreover, inclusion of competitors trade areas would have necessitated the use of weighted Thiessen polygons to reflect the different sizes of retail stores found between chains.

The major methodological disadvantages with using Thiessen Polygons is that the method assumes that the chain has saturated the market and that all consumers in a market are allocated to a store. If we are considering only Bi-Way stores this is a large assumption. Its main repercussions is to produce larger trade

areas for Bi-Way than would actually exist in practice and can heavily dilute the target market characteristics that Bi-Way stores may be locating to exploit. It is hoped that this assumption and the size of the trade areas will "come out in the wash" and will not seriously effect any inter-trade area differences which actually exist.

Due to some of the suburban localities of some of the stores and a natural boundary by Lake Ontario some problems occurred. For example, some of the stores in the outer locations did not have fully enclosed boundaries which was due to the fact that there were no stores beyond their locations in the Metropolitan area which would provide a boundary for the upper extent of the trade area. Consequently, the populations in each of the enclosed trade areas was calculated using census data and then averaged over all the trade areas. Once the average for all of the enclosed trade ares was determined the populations around the each of the trade ares were summed until the average was attained and the boundaries put around those tracts to define their trade areas. Although there are twenty five stores there are only twenty two trade areas which is because two sets of stores were so close to each other it was more appropriate to denote them as one since they are competing for the same market anyway and one was in the Eaton Centre which was deleted as its market area is mainly transient as opposed to residential. As a result, twenty two trade areas have been defined in which information about their market characteristics can now be found.

3.3: CENSUS DATA COLLECTION

The collection of the appropriate census data is the third section of the data collection but is one of the most important as it is through these variables and their changes through time which will reveal any changes in the market profiles of the trade areas. The data itself was collected by hand from 1961, 1971 and 1981 and each year had approximately four hundred and thirty census tracts. The reasons for the choice of these years originally twofold; firstly it is through these two decades that one can observe a wide spectrum of intra-urban migration patterns such as suburbanization and the re-urbanization of specific income groups. Secondly, these years were the years of the major census's which contained the largest variety of data on a census tract scale. Because this data spanned two decades however, the actual composition of the data varied greatly. In addition, because this study will be analyzing changes in Bi-way's market profiles of its trade ares and there are only two stores built in the 1960's only the 1971 and 1981 data will be used.

In order to obtain an accurate reflection of different market characteristics three broad categories of census data were chosen; income, marital status and housing tenure. In terms of income, it is the most important variable which separates one market from another and greatly alters the purchasing power of an area. The types that were chosen were family income and nonfamily income with each consisting of approximately eight subcategories within. The rationale behind behind the choice of these two types

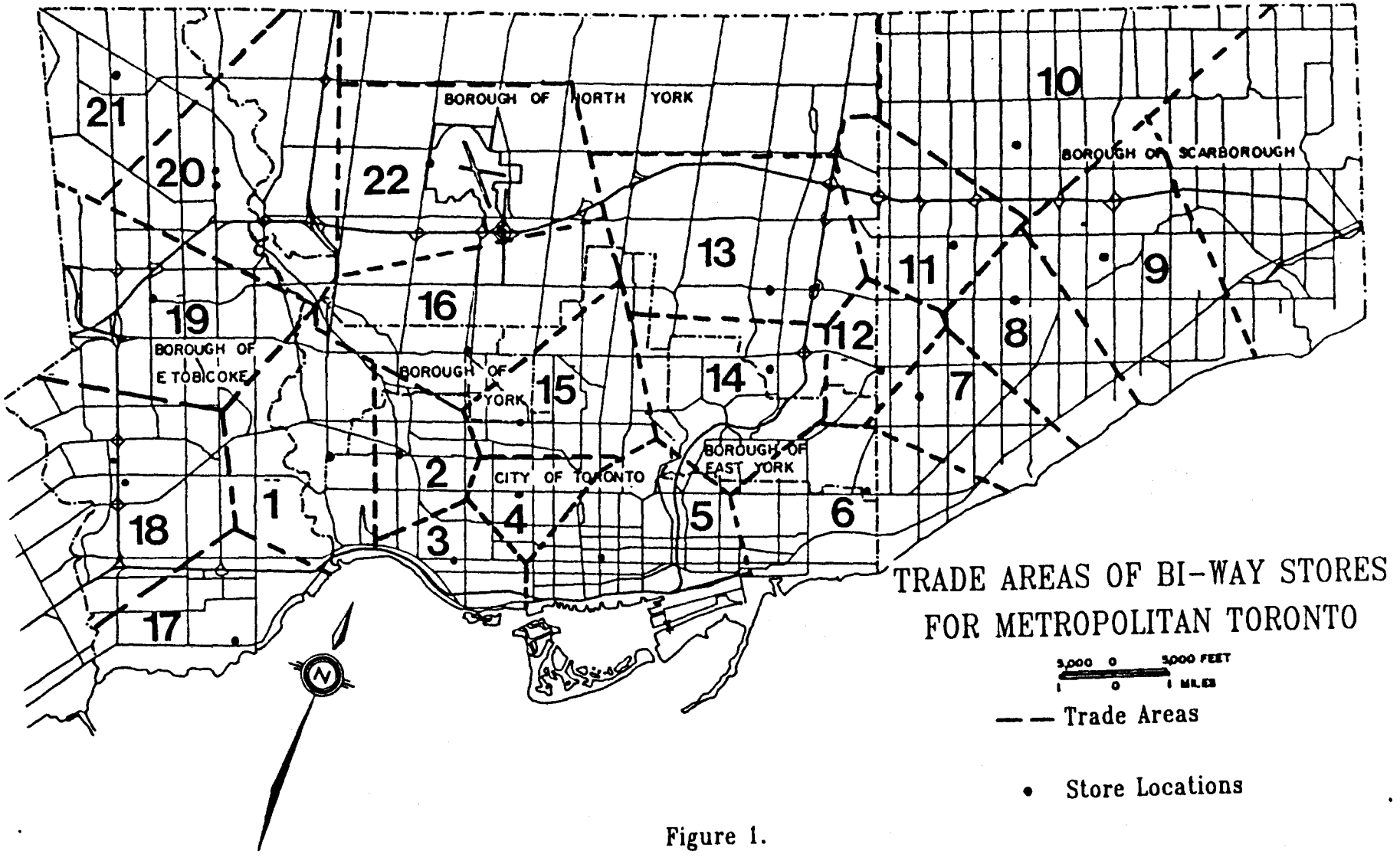
of income groups was not only because these two classes represent a family's income as well as representing the increasing number of single people as divorce rates and the average marrying age increases , but also because this data is not sex-specific and as a result it can be used by all types of chains to give a broad overview of possible trends.

The second and third categories from which specific census data was chosen were marital status and housing type. The rationale behind choosing marital status (more specifically single and married totals) is that a chain might target these specific areas of the market depending on the type of merchandise they sell. Housing type in terms of owner occupied versus tenant occupied are also important variables to consider because it can not only be considered as a surrogate for income as well as revealing the stability of the household. For example, an area with a large number of tenants might indicate areas of lower income based on the assumption that people rent because they can't afford to own their own home. Also, areas with a large number of tenants may represent unstable populations as these people tent to be more mobile thereby giving the area a continually changing market profile. Areas of a high number of owner occupied dwellings on the other hand may represent higher income groups and tend to be more stable as they tend to move less frequently. Furthermore, as they are more apt to be "house proud" they may tend to buy more lower order goods eg. household supplies Bi-Way sells.

There were however, a group of variables that were possibilities but due to a mixture of substantive and practical reasons they were not chosen. Foe example age is often a market characteristic which varies from market to market but in this case it is not thought as such due to the fact that most age groups have shopped at Bi-Way and given the merchandise of the store, it is not age specific. Furthermore, given the size of the study it is two difficult and time consuming to handle another set of data with a large number of subcategories.

Variables such as car ownership, education and occupation type were not chosen mainly due to the fact that they can be considered to be highly correlated with income. Furthermore, occupation type and education are subject to the same categorical problems as the age variable. In addition to these variables ethnicity was originally thought to be an important variable but it is not due to two crucial reasons; the first being that there are not enough chains which target ethnic groups and the second problem is largely a definitional one. For instance with so many ethnic groups in Toronto how does one define ethnicity? Is it by the language spoken, religion, place of birth etc. and at what proportion of the population can various trade areas be considered ethnic. As a result this variable was too problematic to be considered. Consequently, the variables that were chosen will be able to generate a market profile based on some of the more important census variables that can be considered by this chain.

In summary, it can be seen that we now have the appropriate data in order to proceed generating market profiles of the specific trade areas. More specifically, we have twenty-two trade areas with their date of opening and location within Metropolitan Toronto as well as data from three groups; income, marital status and housing type. Subsequently, it is now possible to proceed to the analysis.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BOROUGH OF YORK
CITY OF TORONTO
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TRADE AREAS OF BI-WAY STORES
FOR METROPOLITAN TORONTO
5,000 0 5,000 FEET
0 1 MILES
Trade Areas
Store Locations

Figure 1.

CHAPTER 4

ANALYSIS: METHODOLOGY AND RESULTS

4.1 METHODOLOGY

The first few parts of the methodology for the analysis were devoted to simply converting the raw data to some workable form. Firstly, census tracts were put into their corresponding trade areas (as mentioned previously). For each census tract, its percentage of the Metropolitan total of each variable (each income category is also a variable) was calculated and added to give totals for each of the trade areas for each variable. Similarly the theoretical level was calculated for each trade area which is essentially what percentage each of the totals for each variable should be in each trade area assuming an even distribution for that variable in the Metropolitan area. The theoretical percentage was calculated as follows:

For single/married/owner occupied theorized percentage =

$$\frac{\text{metropolitan total for each variable} \;/\; \text{metropolitan total population} \;\; X \;\; \text{the population of the trade area}}{\text{metropolitan total for each category}}$$

Family income = metropolitan total for each variable / metropolitan total # of families X the number of families for that trade area

Non-Family income = metropolitan total for each variable / metropolitan total # of persons not in families X the number of non-family persons for that trade area

As a result, this gives the percentage of the metropolitan total what each trade area should be (assuming an even distribution) of

a certain variable based on either their population, the number of families or the number of non-family persons.

The second part of this analysis is to compare the theoretical to actual percentage (of the metropolitan total) for each of the variables for each trade area which was done by dividing the actual percentage by the theorized in order to get a standardized ratio. The benefits of this standardization are that everything is being compared to an even distribution of that variable and consequently, it doesn't matter if the overall number of singles, married etc. increases between the years. Moreover, anything greater than one indicates a higher level of that variable for a trade area than given by the ratio, and anything lower than one indicates a lower level for that trade area than theoretical.

The third part of the analysis was to set up a table with the actual, the theoretical, and the corresponding ratio. The stores were separated in terms of the ones built in between 1971 and 1981 (the 1970s stores) and the ones built between 1981 and 1986 (the 1980s stores). They were subsequently arranged in ascending order according to the year they were opened. Consequently each group of stores had their own table for each of the variables containing the corresponding ratios for both the 1971 and the 1981 values.

The fourth step of the analysis was to set up hypotheses on which to base an organized comparison. The hypotheses considered:

1. To see the difference (if any) between the trade area of the stores built in the 1970s and the trade areas of the stores built in the 1980s in terms of 1971 data.
2. To see the difference (if any) between the trade areas of the stores built in the 1970s and the trade areas of the stores built in the 1980s in terms of 1981 data.
3. To see the difference (if any) between the changes in trade area characteristics from 1971 to 1981 for the stores built in the 1970s and those built in the 1980s.

The underlying assumption is that the boundaries of the trade areas are fixed and determined independent of time which is necessary for an interpretation of the three hypotheses above. For instance, the first hypothesis attempts at testing whether there are any differences between the trade areas of stores built in the 1970s and the trade areas of the stores Bi-Way decided not to build in the 1970s. The second hypothesis was developed in order to see how in 1981 the market areas for each group of stores and their corresponding trade areas compared at this time. The third hypothesis is used to see the changes for each of the stores and their corresponding trade areas between 1971 and 1981 in order to examine possible trends or anomalies as well as possibly giving an indication of Bi-Way's target markets. Note however that trade areas eighteen (although listed in the table) and trade area twenty were not used in the analysis because they both contained two stores with them and therefore any comparison would have been redundant.

In order to compare the stores and their trade areas, various categories were developed. Firstly, instead of using all the categories for family and non-family incomes, certain other

categories were set up. Each of these two income groups were divided into low, middle and high income values.[1] Even though the absolute numbers changed, the same number of categories remained and consequently the first three were termed low, the next three medium and the remaining two high. Secondly, a series of averages had to be calculated. One group of averages that were calculated were the averages for each broad group of stores (1970 & 1980 stores) for each of the variables. In order to get averages for the new income categories the ratios were simply averaged for each trade area and then averaged again for each set of stores. On a smaller scale, averages were calculated for each group of stores for those trade areas which were either below the theorized, and those which were above, in order to try to get a measure of the average differences.

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[1]. Note: For family income the corresponding values were: < $2000 to $4999 for low, $5000 to $14999 for middle, $15000 to > $20000 for high for 1971 and < $5000 to $14999 for low, $15000 to $30000 for middle and $30000 to > $40000 for high for 1981. For non-family income the values were: < $1000 to $2999 for low, $3000 to $6999 for middle, $7000 to > $10000 for high for 1971. 1981 = < $2000 to $5999 for low, $6000 to $19999 for middle, and $20000 to > $25000 for high.

4.2: RESULTS

4.21 Hypothesis #1

In terms of the number of single people, neither the stores built in the 1970s or 1980s seemed to contain markets that were very different from the theoretical. For instance, the stores built in the 1970s on average in 1971 contained slightly less (.97) than what was theorized. More specifically, out of the four trade areas which had values greater than what was theorized, only 3 had slight increases while one (trade area 17) had a significantly larger value (4.42) which was not counted as it was an outlier. The other trade areas were only slightly under the theoretical level averaging .93. Consequently, for these stores in 1971 there were only slightly less the number of singles than was theorized. The stores built in the 1980s also showed similar results. Although the average for all the trade areas in only .96 of the theorized, six of the trade areas were lower than the theorized as well. The lowest values for these grade areas consisted on .84 (trade area 14) and .88 (trade area 1), while overall all of these trade areas were only slightly less than the theoretical. Two trade areas (10 and 4) were greater than the theoretical, but only slightly. As a result, these stores are not significantly different from what was theorized. Subsequently, both groups of stores, in terms of 1971 data, are not significantly different from the theoretical levels.

The numbers of married people showed similar results for

both the stores built in the 1970s and the stores built in the 1980s. More specifically, for the stores built in the 1970s, the overall, average of the trade areas was approximately what was theorized (.99). Seven of the trade areas were less than one, ranging from .85 (trade area 5) to .94 (trade areas 3 and 21), resulting in an average of approximately .93, which is only slightly less than what was theorized. Five of the trade areas were greater than one, but only slightly greater, and as a result revealing that the number of married people for the trade areas of this store are not significantly different from the theoretical.

The trade areas of the stores built in the 1980s also showed a similar outcome. Overall, the average for all fo the trade areas is only slightly greater than theorized (1.02). Six out of 8 trade areas were greater than the theoretical, but only ranged from 1.03 to 1.08, revealing only a slight departure. Only 2 trade areas were less than theorized (10 and 4) and had values which were only slightly less than the theoretical (.97 and .84 respectively). Because of these slight differences which seemed to be not very significant, it is possible to say that the markets for these stores do not contain a number of married people significantly different from the theoretical.

In terms of owner occupied dwellings, the stores built in the 1970s seem to exhibit moderately less owner occupied dwellings than what was theorized. For example, 8 out of the 13 trade areas were less than theorized, having an average of only

.83. A few trade areas (5, 3, 9) were significantly lower than the theoretical as they ranged from .58 to .78. The rest of the trade areas exhibited only slightly greater values than the theoretical with two (18, 19) having a moderately greater value (1.27 and 1.16). Consequently, with having a moderately lower than theoretical overall average as well as a significant number of trade areas also showing less than the theoretical values, seems to reveal this group of stores having a lower number of owner occupied dwellings in 1971 than was theorized.

In terms of the stores built in the 1980s, overall they did not differ from the amount of owner occupied dwellings. Two of the trade areas were only moderately less than the theoretical (4 & 13) as they ranged from .72 to .87 respectively, while the other two trade areas were only slightly less than the theoretical. Four of the trade areas were slightly to moderately greater than the theoretical and they ranged from 1.08 to 1.27, but their overall average was only slightly greater than the theoretical. Even though there were a few trade areas which were either slightly greater or less than the theoretical, overall the average was only 1.02 which is not significantly different from the theoretical. As a result, these stores' trade areas in 1971 did not contain a significantly different amount of owner occupied dwellings than what was theorized.

In terms of tenant occupied dwellings, both sets of stores show similar overall results, and both contained a wide variation of values. For the stores built in the 1970s, the overall

average of the trade areas was approximately the theoretical. About half of the trade areas were significantly less than the theoretical, with an average of only .7, and the other half ranged from only being slightly greater to a few which were significantly greater (trade areas 3 and 12). Even though on average the market areas are not significantly different from the theoretical, half were significantly lower and only two significantly higher. Therefore, in terms of the number of trade areas, there seems to be a swing in the direction to trade areas with considerably less tenant occupied dwellings than theorized. The stores built in the 1980s, in terms of an overall average, are not significantly different from the theoretical. For the individual trade areas these seemed to be a real dichotomy. On the on hand, some of the trade areas ranged from .45 to .91 of the theoretical level with an average of only .69, while the other trade areas ranged from 1.07 to 1.62 (trade area 14) with an average of 1.24. This reveals to sets of trade areas which are either moderately lower than the theoretical or moderately higher. Subsequently, even through overall the average is not significantly different from the theoretical, there are a wide range of values which vary significantly, giving no real pattern to the market areas of the stores in 1971.

For both groups of stores for low family income there were differences exhibited between the two sets of stores. For the stores built in the 1970s the overall average was only slightly higher than the theoretical, but in terms of the trade area, a

large variation was seen. None of the trade areas had significantly lower values, ranging from .41 to .87 with an average of only .65 of the theorized. The rest of the trade areas were significantly greater than the theoretical and ranged from 1.19 (trade area 6) to 2.66 (trade area 16) with an average of 1.87. As a result, even though the overall average was only slightly higher than the theoretical, there was a large dichotomy with a large number of stores exhibiting significantly lower income families, and a large number of stores with significantly higher low income people than was theorized.

The results for the stores built in the 1980s were slightly different than those of the 1970s. More specifically, the overall average of these trade areas in 1971 was moderately lower than expected with seven out of the 8 trade areas significantly less with an average of only .64. Only one trade area was greater than the theoretical (4) and was significantly greater at 1.75. Consequently, the market areas of these stores in 1971 were characterized by considerably less low income people than theorized.

In terms of middle income, both groups of stores revealed similar results. For the stores built in the 1970s, overall the average of the trade areas was moderately lower (.85) than the theoretical and 12 out of 13 trade areas exhibiting moderately less than the theoretical ranging from .56 (trade are 3) to .97 (trade area 6), while one (trade area 2) was only slightly greater than 1.02. Consequently, the trade areas of these stores

in 1971 contained moderately less middle income families than expected. The stores built in the 1980s showed almost the same results, therefore both groups of stores and trade areas at this time contain less middle income families than expected.

For the number of high income families, both sets of stores seem to show similar, but somewhat different, results in terms of moderately less high income people than expected, but had several differences. For examples, the stores built in the 1970s had an overall average of only .76 of the theoretical as a result of 11 out 13 trade areas being significantly less the theoretical ranging from .25 (trade area 3) to .93 (trade area 9). The other trade areas had more than theorized ranging from 1.14 to 1.48. Because, however, the majority of the trade areas were significantly lower than expected, it seems that the market areas for these stores contain considerably less high income people than the theoretical.

For the stores built in the 1980s, in terms of high income families, they revealed somewhat different results. Although the overall average is only slightly less (.93) than the theoretical four of its eight trade areas showed significantly less than the theoretical values, while on the other hand the other four trade areas had significantly higher than the theoretical values as they ranged from 1.3 (trade area 10) to 1.67 (trade area 13). Consequently, the 1971 markets for these trade areas revealed that overall there is a slightly less than the theoretical number of high income families, but there is an even distribution of

trade areas both considerably greater and considerably less than theorized values.

In terms of low non-family income, both sets of stores reveal similar results in that their values are not significantly different from those theorized. For instance, for the stores built in the 1970s there are on average for all of the trade areas only a slightly lower (.97) value than what was theorized. For the trade areas specifically there was an even distribution of trade areas having values both below and above what was theorized, but not significantly either way. Subsequently, the market areas for these stores do not have a significantly different number of low non-family income members than what was theorized.

The stores built in the 1980s reveal similar results as those built in the 1970s in terms of low non-family income. The overall average of all the trade areas was slightly less (.96) than theorized. Four trade areas, however, show moderately less than theorized as their values range from .75 to .95 with an average of only .86 of what was theorized. The other four trade areas consisted of two trade areas with slightly greater than expected values, but two trade areas (10 & 12) showing extremely higher (4.44 and 10.14) values than theorized. As a result, even though the overall average does not differ significantly from what was theorized, and was actually slightly less, there was great variation between the trade areas. Consequently, there seem to be no patterns among the trade areas which would help

determine if these stores in general differ from the theoretical levels of low non-family income.

For middle income non-family income groups, both sets of stores revealed similar results. In terms of the stores built in the 1970s, its overall average of the trade areas was only slightly less than the theoretical (.95). Nine of the trade areas were less than expected, but most were extremely close to the expected level ranging from .76 (trade area 21) to .99 (trade area 2). The rest of the trade areas were greater than the theoretical, but not significantly so. The stores built in the 1980s also revealed similar results. Its overall average value for its trade areas is .97 which is not that different from the theoretical. The trade areas themselves are either slightly lower or slightly higher, with only two anomalies; trade area 10 and 12, whose values are 3.72 and 9.48 respectively. As a result, although the overall average of the trade areas revealed only a slightly lower level than the theoretical, there was also general pattern among the trade areas in terms of having less or more than the theoretical value, thus there is no real difference between the level of middle non-family incomes of these stores and their theoretical values.

In terms of high non-family income, the stores of the 1970s exhibit different results than those stores built in the 1980s. For example, the stores built in the 1970s reveal a moderately lower than expected overall average (.88) than the theoretical. More specifically, 11 of the trade areas ranged from .66 (trade

area 21) to .9 (trade area 14) resulting in a moderately lower than expected average. The remaining three trade areas ranged from 1.14 (trade are 18) to a significantly higher value of 1.42 (trade area 15), thus indicating a moderately higher than theoretical average. Overall, the majority of the trade areas were moderately to significantly less than the expected value, thereby indicating that these trade areas seem to contain a larger number of markets which contain less high non-family income groups than expected.

The stores built in 1981, however, unlike the previous stores seem to have a larger number of high non-family income groups in 1971. For instance, although thee was only an overall average for the trade areas (1.03), this is not considerably less than the theoretical values. There were, however, only 2 trade areas that were lower than expected (trade areas 7 and 4) which had considerably low values than the theoretical (almost half). The majority, however, were significantly greater than theoretical, ranging from a slightly greater (1.08) than the theoretical value to a significantly greater than the theorized value of 1.54 for trade area 13. There were also two anomalies (trade area 10 & 12) which revealed extremely greater than expected value. Although overall average is only slightly greater than expected, the majority of trade areas were significantly greater than the theoretical. As a result, the number of markets contain significantly more high non-family income than is expected.

4.22 Hypothesis #2

In terms of the number of single persons in the various market areas in 1981, there are slight differences between the two groups of stores. For example, stores built in the 1970s seem to show no difference than the theoretical values. The overall average for these stores by 1981 was the same as theoretical (1) and the trade areas were fairly evenly distributed between being slightly lower (.83) or higher (1.12) than expected. The average of the trade areas of the stores built in the 1980s, however, exhibited a slightly less (.94) value of single people than the theoretical. Five out of the seven trade areas revealed only slightly less than the theoretical values with the lowest being .86 (trade area 7). Trade areas 10 & 14 were the only trade area with greater than theoretical values, but were only slightly greater at 1.03 and 1.13 respectively. As a result, even though on average there was only a slightly less than theorized number of single people, and because the majority of the trade areas were slightly to moderately less, it is possible to assume that these stores exhibit slightly less single people than the theoretical. This is unlike the stores in the 1970s which did not contain any real differences.

For the number of married people, both sets of stores seem to show no differences between their actual number of married people and the theoretical level. The stores built in the 1970s averaged overall contained approximately the same number of

married people than was expected, but with the trade areas themselves showing fair variation. For instance, there was a fairly even split between those less and those trade areas whose values were more than the theoretical. The ones which had lower values had values which ranged from a moderately less than the theoretical .78 (trade area 5) to .99 (trade area 9), producing an overall average which is only slightly less than the theoretical. The trade areas which were high were only slightly higher ranging from 1.02 (trade area 8) to 1.08 (trade area 18), with only one significant value, 1.32 (trade area 22). Consequently, these stores reveal the majority of trade areas which did not differ significantly from the theoretical value, thus showing no difference in the number of actually married people to the theoretical.

The stores built in the 1980s were also not significantly different from wthe theoretical. More specifically, its overall average was approximately the same as the theoretical and almost all of the trade areas were only slightly greater with the highest value only being 1.08. There was only one trade area which was less than the theoretical (.87), but was not significantly lower. As a result, the majority of the trade areas for these stores do not seem to exhibit a significantly different amount of married people than the theoretical.

In terms of the number of owner occupied dwellings, there was only a slight difference between the two sets of stores. For the stores built in the 1970s, in 1981 they contained slightly

less than owner occupied dwellings than the theoretical. Although the overall average of the trade areas was only slightly less (.92) than the theoretical the majority of the trade areas were lower than expected with trade areas 3 and 5 showing considerably less than expected values of .66 and .59. There were only two trade areas which were slightly greater (trade area 17) and moderately greater (trade area 18). Consequently, because the majority were slightly lower than expected, it seems that the market characteristics of these stores reveal a slightly less number of owner occupied dwellings than expected.

The stores built in the 1980s, however, seemed to not have occupied dwellings which were significantly different from what was theoretical. Overall, the average for all the trade areas is only slightly higher (1.03) than the theoretical. The trade areas which were less were only slightly less than the theoretical with a moderately lower value of .76 (trade area 4). The trade areas which were higher ranged from being only slightly higher, 1.05, (trade area 7) to moderately higher, 1.22, (trade area 1). Consequently, these trade areas show an even variation in levels of owner occupied dwellings, thus showing no pattern in terms of the variations away from the theoretical levels.

For differences in the number of tenant occupied dwellings in 1981, the results for each set of stores were different. For instance, the stores built in the 1970s had a moderately higher (1.18) than theoretical number of tenant occupied dwellings. The majority of the trade areas (10 out of 13) had moderately greater

values and one trade area (5) had a significantly greater (2.02) value which was twice the theoretical. The three which were left had values which differed moderately from the theoretical giving an average of .78. Although there were a few trade areas which were less than the theoretical, the majority are moderately greater, and thus it is evident that these stores contain moderately more tenant occupied dwellings than the theoretical.

For the stores built in the 1980s, however, did not on average differ from the theoretical, as it only reveals a slight increase (1.04). Half of the trade areas only showed slightly less than the theoretical values except for trade area 10 which was about half the theoretical value. The trade areas which were higher, however, revealed a moderate to significant departure from the theoretical value, as they ranged from 1.12 to 1.51. Consequently, there seems to be a significant variation in the values of each of the trade areas, and thus the trade areas for these stores don't reveal any pattern in terms of the differences between the actual and theoretical levels of tenant occupied dwellings.

In terms of low family income in 1981, there seems to be a significant difference in the results for the two sets of stores. For the stores built in the 1970s they had an overall average value that was approximately 30% greater than the theoretical. More specifically, only four of the trade areas had lower values (.83 on average). The majority of the trade areas were considerably larger than the theoretical as these values ranged

from 1.12 (trade area 8) to 2.47 (trade area 5), giving an average of 1.35 which is 35% greater than the theoretical. Consequently, since the majority of the trade areas had values which were considerably greater than the theoretical, it can be assumed that these stores overall exhibit a significantly greater number of low income families than the theoretical.

The stores built in the 1980s, however, do not seem to show similar results as the stores built in the 1970s do. More specifically, their overall average is only slightly less than theoretical, and there is a large dichotomy between the trade areas whose values are lower and those which are higher. Approximately half of the trade areas show significantly smaller values than the theoretical, with an average of only .67. The other half show moderately to significantly higher than the theiretical values. Consequently, overall the market areas of these stores do not seem to share a significant pattern in terms of low income families.

For middle income families in 1981, there seems to be no difference between the actual versus the theoretical levels between both sets of stores. The stores built in the 1970s don't seem to have much of a pattern. Although the overall average is slightly higher (1.12), the majority of the trade areas are split between being only slightly less (.9 average) and slightly greater, with only one trade area exhibiting a significantly greater value of 1.78. As a result, the market areas for these stores didn't seem to show a preference for middle income

families, nor do they seem to show a preference for middle income families, nor do they seem to avoid them. The stores built in the 1980s also show similar results to those for the stores built in the 1970s. The trade areas are divided fairly evenly between those which are greater and those which are lower, and only differ moderately from the theoretical values (1.13 and .83 respectively). As a result, the market area for these stores also do not seem to have a significant pattern of middle income families for trade areas either above or below the theoretical values.

In terms of high family income, both sets of stores revealed similar results. The stores built in the 1970s contained lower high income families than the theoretical. The overall average for these trade areas is slightly lower at .91 of the theoretical, but the majority of trade areas are significantly lower having an overall average of .75, the theoretical. Only five of the trade areas revealed values ranging from 1.15 to 1.29, indicating somewhat of a moderately higher value than the theoretical. Because, however, the majority of trade areas being significantly lower than the theoretical, it seems possible to assume that the market areas for these stores contain a majority of trade areas which have less high income families than the theoretical.

The stores built in the 1980s, however, seem to show no patterns towards or against high income families. More specifically, the average for these stores is only a slightly

lower value (.96) than the theoretical. Furthermore, the trade areas are split evenly between having moderately lower than the theoretical values (.76) and moderately higher than the theoretical values (1.29). As a result, it is evident that some trade areas show a greater number of high income families than the theoretical, and a significant number of trade areas which have less than the theoretical number of high income families.

In terms of low non-family income in 1981, the two sets of stores showed differences in their results of the actual versus theoretical levels. For the stores built in the 1970s, it seems that by 1981 they contain a larger number of low income groups than theoretical. On average, the decline is only slightly less (.97) than the ttheoretical values. The number of trade areas, however, which have more than the theoretical values is twice as much as those lower, and exhibits an average moderately higher (1.2) value than the theoretical. The trade areas which are less are only moderately less (.18) on average, and are only few in number. As a result, it seems that because the majority of trade areas have a moderately greater number of low non-family income members than the theoretical, that overall these stores' market areas suggest a trend towards having a larger number of non-family income members.

The stores built in the 1980s do not seem to have this trend. Overall, the average of the trade areas is the same as that theoretical. Furthermore, there is an even split between those stores which are less and more than the theoretical, and

their differences are relatively close (.76 and 1.16 respectively). As a result, these markets are highly variable in terms of the number of low income non-family members.

For middle income non-family groups in 1981 there was only a slight difference between the stores built in the 1970s seem to suggest a slightly greater proportion of middle income people than the theoretical. Although the overall average is only slightly greater (1.08) than the theoretical, the majority of trade areas also have greater values than the theoretical. More specifically, while the overall average is 1.13, trade areas 15, 9 and 22 exhibit significantly greater values which are approximately 30% greater than the theoretical values. On the other hand, there are only three trade areas out of 13 which have values less than theoretical and their average is just .91 which is only slightly less. Consequently, because there are far more trade areas with greater values it seems to be that the market areas for those stores contains overall slightly more middle income non-family people the theoretical.

The stores built in the 1980s, however, do not seem to show any difference between the actual number of middle income non-family members and the theoretical level. The overall average is approximately the same as the theoretical (.99). Most of the trade areas did have values which were slightly greater than the theoretical, while the two trade areas which were less only had on average (.8) which was moderately lower than the theoretical. Consequently, because the majority of the trade areas at this

time exhibit only a slightly greater number of middle income families this difference is not very significant.

In terms of high income non-family income, the stores built in the 19709s show similar trends as those built in the 1980s. The stores built in the 1970s in 1981 seem to have market areas with a wide variety of levels of high income non-family members. Although the overall average for all the trade areas is only slightly less than the theoretical, there are alot of variations. More specifically, the division between trade areas which have less than the theoretical values is fairly even. The trade areas which are less range from .58 (trade area 21) to .89 (trade area 22) resulting in an average of .75 which is a moderately less value than the theoretical theorized. On the other hand the trade areas which have greater than the theoretical, their values range from 1.04 to 1.52 with an average of 1.25, which is only moderately greater than the theoretical. Subsequently, it seems to be that there are an equal number of trade areas exhibiting more high income non-family households than the theoretical, as well as some trade areas exhibiting less high income non-family groups than the theoretical. As a result, there seems to be no specific trends between the trade areas.

In terms of the stores built in the 1980s there seems to be no significant pattern as well in terms of the number of actual versus theoretical numbers of high income non-family groups. The overall average for all the trade areas is approximately the same as the theoretical level (.99). In terms of the trade areas

themselves, there is a real variability. Approximately half are significantly less on average than the theoretical, while the other half on average is moderately greater (1.21). As a result, this data seems to suggest that the trade areas of these stores consist of variations in the number of high non-family incomes they contain.

4.23 Hypothesis #3

The changes between 1971 and 1981 for both groups of stores, in terms of the number of singles, were very similar. For example, the stores built in the 1970s had an average increase of .03. This brings the average in 1981 to 1 which is the same as the theoretical. The stores built in the 1980s, however, had a slightly greater increase of .1 in the average number of singles in its trade area above its theoretical value. This resulted in a 1981 value of .98 which is also approximately the same as the theoretical. This increase resulted from a slight decrease (-.07) in the values which were less than the theoretical and a larger increase (.25) in the values of those trade areas which had a greater than the theoretical value. Subsequently, it seems however, that neither of these two groups of stores have significanly different numbers of singles than the theoretical.

For both groups of stores the changes in the number of actual versus the theoretical, number of married people is slightly different for the two groups of stores. These differences, however, are now significant. For instance, the

stores built in the 1970s had only a very slight increase (.008) in the ratio of the actual married totals to the theoretical. This resulted in its 1981 value of.99 which is approximately the same as the theoretical. For the stores built in the 1980a there was only a very slight decrease (-.003) in the ratio of the number of actual married people to the number of theoretical married totals. This resulted in a 1981 value of 1 which is the exact value of the theoretical. Consequently the changes between the two stores was not significant, resulting in both sets by 1981 not being much different from the theoretical number of married people.

In terms of the changes of the actual versus theoretical levels of owner occupied dwellings there were both similar results in both store groups, with one being more pronounced than the other. More specifically, the stores built in the 1970s had a moderate decrease (-.02) in its average for all of its trade areas, thereby declining to a 1981 value of .92. The stores built in the 1980s, on the other hand, had only a very slight decrease (-.005) in its ratios resulting in a 1981 value of 1.03. This was only slightly greater than the theoretical level. The stores built in the 1970s had a more significant decrease than the stores built in the 1980s, and as a result it seems that these markets on average are containing a slightly less amount of owner occupied dwellings than the theoretical level. The stores built in the 1980s, however, had only a slight decline and contains approximately the same number of owner occupied

dwellings as the theoretical.

The changes between 1971 and 1981 in terms of the levels of tenant occupied dwellings are somewhat different for each fo the groups of stores. For example, the stores built in the 1970s resulted in an increase of .17, thus bringing the average in 1981 up to 1.18 . The stores built in the 1980s, however, had a smaller increase of .07 resulting in a 1981 value of 1.04. This was not significantly different from the theoretical value. Consequently, it seems that the stores built in the 1970s contain a moderately larger number of tenant occupied dwellings than was theorietical as opposed to the stores built in the 1980s which did not, however, change significantly from the theoretical.

For low income families the changes observed for both groups of stores were quite similar. For the stores built in the 1970s, almost all of the trade areas exhibited increases, with a good many exhibiting large increases and only one trade area (16) having a considerable decrease. This results in an average increases of .36 bringing the value up to 1.27 for 1981. The stores built in the 1980s also showed a similar pattern , as the majority of the stores increasing in the number of low income families . This increase was .27 which was fairly considerable as it brought the average value up to .9. Consequently, it seems that the stores built int he 1970s with their larger increases resulted in a moderately higher number of low income families than the theoretical, while the stores built in the 1980s, although they increased on average, they are still less than

theoretical.

In terms of the changes in the values of the number of middle income families between 1971 and 1981, the two groups of stores showed similar changes. For instance, the stores built in the 1970s had an overall average increase of .28 for all of its trade areas. This resulted in a 1981 value of 1.12. This was mainly due to the majority of the trade areas all having significantly positive changes. The stores built in the 1980s had all of its trade areas exhibiting a positive change (.2) in the actual versus theoretical number of middle income families, resulting in a 1981 value of 1.02. It is evident that the first group of stores had a slightly larger increase than the second group of stores. Because this raised the average value of its trade areas to more than slightly greater than the theorized level, it seems that overall the stores built in the 1970s have a larger amount of middle income people than theoretical.

The changes between 1971 and 1981 in terms of the levels of high income families shows a similar pattern between the two groups of stores. For the stores built in the 1980s, half of the trade areas exhibited a large increase (with trade areas 14 & 10 having the largest) and the other half only having a slight decrease, with the exception of trade area 13 which had a large increase (1.83). This resulted in an overall increase of .24, bringing the 1981 value to .96. The stores built in 1971 also showed a similar pattern, but their increase was only .15. As a result, the majority of the trade areas showed only a slight to

large increase. Consequently, it seems that both of these two groups of stores are increasing in the number of high income families, however, both the values by 1981 are still slightly below the theoretical.

The changes between 1971 and 1981 for low income non-family members for the two groups of stores were quite different. The stores built in the 1970s increased from .92 to .97 as a result of the majority of its trade areas also increasing. The stores built in the 1980s, however, decreased between this period (-.03) resulting in a 1981 value of 1 due to a decrease in the majority of its trade areas. Both increased and decreased by approximately the same amount to both having 1981 values which were almost the same as the theoretical.

In terms of changes in the ratio of actual middle non-family income to the theoretical level, both sets of stores showed similar but slightly different results. For instance, the stores built in the 1970s had an overall average increase of .12, resulting in a 1981 value of 1.08. This was mainly due to the majority of the trade areas undergoing moderate to large increases and the others undergoing only slight decreases. The stores built in the 1980s, however, did not show as significant of an increase (.03), as most of the trade areas only increased slightly. The exceptions, trade areas 10 and 12, were significant outliers and thus were not calculated. This resulted in a 1981 figure of .97. It can be observed that the stores in the first group have increased more significantly than those of

the second group, thus revealing a more pronounced change towards an increasing number of middle non-family members. Both groups, however, are not significantly far away from their theoretical values, thus the overall markets for these two groups of stores don't seem to contain more middle non-family income members.

The changes between 1971 and 1981 it terms of high non-family income members for each group of stores, is slightly different. For the stores built in the 1970s there occurred only a slight decrease (-.002) as a result of slightly more trade areas exhibiting a decline that those exhibiting an increase. This resulted in a 1981 figure of.92 of the theoretical level. For the stores built in the 1980s, however, there occurred only a slight (.003) average increase, as there was not much difference between the subsequent increases and decreases of its individual trade areas. This resulted in a 1981 value of .99. As a result, both groups increased and decreased by approximately the same amount, but both ending up with values which were not significantly different from the theoretical.

TABLE 1

MARITAL STATUS AND HOUSING TYPE/STORES BUILT (1972-1980): VALUE OF THE RATIO (ACTUAL / THEORETICAL)[1] BASED ON 1971 AND 1981 DATA

TRADE AREA	YEAR	SINGLE	MARRIED	OWNER OCCUPIED	TENANT OCCUPIED
18	1972	'71 '81	'71 '81	'71 '81	'71 '81
Ratio		.95 .87	1.05 1.08	1.27 1.22	.59 .86
Diff.		-.08	.03	-.05	.27
19	1972				
Ratio		.99 .83	1.03 .95	1.16 .97	.66 .71
Diff.		-.16	-.08	-.19	-.05
8	1974				
Ratio		1 .91	1 1.02	.97 .92	.87 1.04
Diff.		-.09	-.02	-.05	.17
15	1974				
Ratio		.97 1.04	.93 .86	.80 .82	1.89 2.05
Diff.		.07	-.07	.02	.16
9	1975				
Ratio		.69 1.05	.99 .99	.78 .98	.59 .75
Diff.		.36	0	.2	.16
2	1976				
Ratio		.98 1.06	.99 .88	.97 .95	.88 1.07
Diff.		.08	-.11	-.02	.19
3	1976				
Ratio		1 1.04	.94 .84	.68 .66	1.22 1.46
Diff.		.04	-.1	-.02	.24
6	1978				
Ratio		.94 1.06	1.01 1.09	1.08 1.22	1 1.21
Diff.		.12	.08	.14	.21
22	1979				
Ratio		.99 .96	1.03 1.32	.83 .84	1.03 1.14
Diff.		-.03	.29	.01	.11
5	1979				
Ratio		1.07 1.12	.85 .78	.58 .59	1.78 2.02
Diff.		.05	.07	.01	.24
17	1980				
Ratio		4.92 .88	1.05 1.05	1.01 1.06	1.12 1.2
Diff.		-4.04	0	.05	.08

TABLE 1 cont'd.

TRADE AREA	YEAR	SINGLE	MARRIED	OWNER OCCUPIED	TENANT OCCUPIED
21	1980				
Ratio		1.10 1.09	.94 .96	.99 .83	.62 .81
Diff.		-.01	.02	-.16	.19
16	1986				
Ratio		.91 .95	1.05 1.01	1.05 1	1.10 1.14
Diff.		.04	-.04	-.05	.04

NOTE: 1: See section 4.1

TABLE 2

MARITAL STATUS AND HOUSING TYPE/STORES BUILT (1982-1986): VALUE OF THE RATIO (ACTUAL / THEORETICAL) BASED ON 1971 AND 1981 DATA

TRADE AREA	YEAR	SINGLE	MARRIED	OWNER OCCUPIED	TENANT OCCUPIED
7	1982	'71 '81	'71 '81	'71	'81
Ratio		.96 .86	1.03 1.03	1.08 1.05	.82 .90
Diff.		-.1	0	-.03	.08
18	1982				
Ratio		.95 .87	1.05 1.08	1.27 1.22	.59 .86
Diff.		-.08	.03	-.05	.27
13	1984				
Ratio		.95 .87	1.05 1.08	1.27 1.22	.59 .86
Diff.		-.08	.03	-.05	.27
14	1984				
Ratio		.84 .90	1.08 1.02	.94 .95	1.62 1.51
Diff.		.06	-.06	.01	-.11
10	1985				
Ratio		1.07 1.03	.97 1.02	1.17 1.11	.45 .56
Diff.		-.04	.05	-.06	.11
4	1985				
Ratio		1.10 1.13	.89 .87	.72 .76	1.07 1.18
Diff.		.03	-.02	.04	.11
12	1986				
Ratio		.91 .92	1.06 1.04	.96 .95	1.17 1.24
Diff.		.01	-.02	-.01	.07
1	1986				
Ratio		.89 .91	1.05 1.06	1.17 1.22	.91 .92
Diff.		.02	.01	.05	.01

TABLE 3

FAMILY INCOME/STORES BUILT (1972-1980):
VALUE OF THE RATIO (ACTUAL / THEORETICAL) BASED ON 1971 AND 1981 DATA

TRADE AREA	YEAR	LOW	MIDDLE	HIGH
18	1972	'71 '81	'71 '81	'71 '81
Ratio		.45 .77	.76 .92	1.14 1.29
Diff.		.32	.16	.15
19	1972			
Ratio		.41 .68	.66 .86	1.48 1.25
Diff.		.27	.2	-.23
8	1974			
Ratio		.63 1.12	.87 1.09	.75 .89
Diff.		.49	.22	.14
15	1974			
Ratio		.83 .88	.75 .85	1.34 1.15
Diff.		.05	.3	-.19
9	1975			
Ratio		.58 .99	.78 .97	.93 1.06
Diff.		.41	.19	.13
2	1976			
Ratio		1.27 1.5	1.02 1.34	.36 .62
Diff.		.23	.32	.26
3	1978			
Ratio		1.68 1.72	.56 1.33	.25 .47
Diff.		.04	.77	.22
6	1978			
Ratio		1.19 1.34	.97 1.13	.72 .74
Diff.		.15	.16	.02
22	1979			
Ratio		.78 1.54	.93 1.78	.67 1.27
Diff.		.76	.85	.6
5	1979			
Ratio		1.87 2.47	.91 1.01	.46 .6
Diff.		.6	.1	.14
17	1980			
Ratio		.87 1.22	.93 1.27	.47 .76
Diff.		.35	.34	.29

TABLE 3 cont'd.

TRADE AREA	YEAR	SINGLE	MARRIED	OWNER OCCUPIED
21	1980			
Ratio		.62 1.19	.91 .83	.61 .88
Diff.		.57	-.08	.27
16	1980			
Ratio		2.66 1.22	.89 1.09	.83 .86
Diff.		-1.44	.2	.03

TABLE 4

FAMILY INCOME/STORES BUILT (1982-1986):
VALUE OF THE RATIO (ACTUAL / THEORETICAL) BASED ON 1971 AND 1981 DATA

TRADE AREA	YEAR	LOW	MIDDLE	HIGH
7	1982	'71 '81	'71 '81	'71 '81
Ratio		.74 1.25	.92 1.07	.57 .81
Diff.		.51	.15	.24
18	1982			
Ratio		.45 .77	.76 .92	1.14 1.29
Diff.		.32	.16	.15
13	1984			
Ratio		.49 .64	.63 .75	1.67 1.34
Diff.		.15	.12	-.33
14	1984			
Ratio		.77 1.12	.8 1.04	.78 .86
Diff.		.35	.24	.08
10	1985			
Ratio		.58 .56	.68 .88	1.3 1.25
Diff.		-.02	.2	-.05
4	1985			
Ratio		1.75 1.67	1.04 1.32	.29 .47
Diff.		.08	.28	.18
12	1986			
Ratio		.72 1.2	.9 1.2	.72 .66
Diff.		.48	.3	-.06
1	1986			
Ratio		.76 1.03	.84 1.01	1 .99
Diff.		.27	.17	-.01

TABLE 5

NON-FAMILY INCOME/STORES BUILT (1972-1980):
VALUE OF THE RATIO (ACTUAL) BASED ON 1971 AND 1981 DATA
(THEORETICAL)

TRADE AREA	YEAR	LOW	MIDDLE	HIGH
18	1972	'71 '81	'71 '81	'71 '81
Ratio		.93 .77	.92 1.05	1.14 1.19
Diff.		-.16	.13	.05
19	1972			
Ratio		.85 .81	.84 1.11	1.43 1.36
Diff.		-.04	.27	-.07
8	1974			
Ratio		1.07 1.11	.9 1.06	.78 .61
Diff.		.04	.16	-.17
15	1974			
Ratio		.72 .63	1.06 1.27	1.42 1.52
Diff.		-.09	.21	.1
9	1975			
Ratio		1.10 1.26	.84 1.28	.82 .79
Diff.		.16	.44	-.03
2	1976			
Ratio		1.02 1.18	.99 1.08	.82 .8
Diff.		.16	.09	-.02
3	1978			
Ratio		1.03 1.37	1.07 .99	.62 .5
Diff.		.07	-.08	-.12
6	1978			
Ratio		1.07 1	.98 1.01	.73 .82
Diff.		-.07	.03	.09
22	1979			
Ratio		.99 1.27	.92 1.33	.91 .89
Diff.		.28	.41	-.02
5	1979			
Ratio		1.03 1.09	.96 .94	.85 1.04
Diff.		.06	-.02	.19
17	1980			
Ratio		.9 1.12	1.04 1.04	.9 .77
Diff.		.22	0	-.13

TABLE 5 cont'd.

TRADE AREA	YEAR	LOW	MIDDLE	HIGH
21	1980			
Ratio		1.12 1.11	.76 .79	.66 .58
Diff.		.01	.03	-.08
16	1980			
Ratio		.83 .89	1.11 1.04	.97 1.15
Diff.		.06	-.07	.18

TABLE 6

NON-FAMILY INCOME/STORES BUILT (1982-1986):
VALUE OF THE RATIO (ACTUAL / THEORETICAL) BASED ON 1971 AND 1981 DATA

TRADE AREA	YEAR	LOW	MIDDLE	HIGH
7	1982	'71 '81	'71 '81	'71 '81
Ratio		1.06 .88	1.01 .73	.64 .48
Diff.		-.18	-.28	-.16
18	1982			
Ratio		.93 .77	.92 1.05	1.14 1.19
Diff.		-.16	.13	.05
13	1984			
Ratio		.82 .7	.88 1.04	1.54 1.49
Diff.		-.12	.16	-.05
14	1984			
Ratio		.75 .7	1.02 1.14	1.11 1.2
Diff.		- 05	.12	.09
10	1985			
Ratio		4.44 1.18	3.72 .87	3.21 1.07
Diff.		-3.26	-2.85	-2.14
4	1985			
Ratio		1.12 1.31	1 1.01	.66 .72
Diff.		.19	.01	.06
12	1986			
Ratio		10.14 1.06	9.48 1.1	7.95 .64
Diff.		-9.08	-8.38	-7.31
1	1986			
Ratio		.95 1.09	.97 1	1.08 1.11
Diff.		.14	.03	.03

CHAPTER 5

CONCLUSION

CONCLUSION

In terms of hypothesis one, both similarities and differences were observed between the two sets of stores. Both sets of stores have less middle income families and single households than the theoretical. In terms of the differences, characteristics such as high family and high nonfamily income households and tenant occupied dwellings were more pronounced for the stores built in the 1980's than those in 1971 which were considerably less. The other variables exhibited little variation between the stores and were not significantly different from their theoretical values. Overall, because the stores built in the 1970's do not contain a greater proportion of any one variable it would appear that there is little evidence of any one specific market characteristic that dominates.

Using data from 1981 however, (hypothesis #2) differences and similarities in the trade area characteristics between the two groups of stores are at variance with the differences and similarities using 1971 data. For instance both sets of stores now exhibit similarly more tenant occupied dwellings and low income families. In terms of the differences the stores built in the 1970's exhibit less owner occupied dwellings than the 1980's stores. In addition, the 1970's stores exhibit a trend towards lower income non family households whilst the 1980's seem to have a greater proportion of lower income families and showing a trend towards high income nonfamily households.

In terms of hypothesis three, the changes between both groups of stores revealed somewhat similar changes. For both sets of stores considerable increases have occurred in the proportion of low income families. This may be explained by the dispersion of low income people as a result of displacement due to gentrification. Furthermore, the group of 1970's stores also exhibit moderate increases in the proportion of tenant occupied dwellings and middle income families and non family households. The stores built in the 1980's show less of a dramatic change than the stores built in the 1970's. Their only significant increase occurred in the proportion of low income families and the number of single people.

In conclusion, in terms of the differences between the two stores in terms of 1971 data, the only significant difference between them is in terms low and high family income households and high non family income households as well as tenant occupied dwellings. Because however, the stores built in the 1970's do not have a considerable proportion of any one variable in their trade areas, their target market cannot be inferred and as a result the reasons ese locations were chosen at the time is unclear in accordance with these market characteristics.

In terms with the differences between the two stores in terms of 1981 data the 1970's stores show a trends towards lower income households while the 1981 stores seem to target tenant occupied dwellers and low income families as well. Consequently, there are both similarities and differences between the markets

of the two stores. For the changes between 1971 and 1981 the stores built in 1971 seemed to have undergone more changes than the 1980's stores. The 1970's stores seem to show a trend towards targeting low income families while the 1980's stores does not seem to show any significant changes. As a result of these hypotheses it is evident that there are not only differences and similarities in the proportions of the variables for each group of stores, it is also evident that there are also differences in their target markets through time.

It is evident that at this level of analysis that there were not as many trends as once thought there would be. Foe example, some of the variables such as single and married totals do no exhibit the sort of difference we may expect given the trend in retailing towards the "niche" or target market. This however could be due to a number of constraints.

One of the most important constraints is the problem of scale. For instance the Thiessen polygon approach was taken but as this method is exhaustive of the whole market area the trade areas around the stores are larger than what they are in reality. As a result many market differences will "come out in the wash" as the true market characteristics are probably better represented by a few select census tracts immediately surrounding the store.

A possible alternative would be to map the census tract variables in and through time for Metropolitan Toronto and examine the locations of these stores relative to these maps

(which was originally my approach). This alternative was dropped mapping approximately 450 census tracts for 12 variables is too time consuming but such an approach is becoming more feasible with new levels of technology in geography such as geographic information systems.

Apart from the scale issue which is quite fundamental their are some assumptions which could bias the results. Firstly, in terms of the stores themselves it was observed on the basis of observing a few stores that every store within Bi Way appeals to the same market with not much differentiation in terms of its product mix. There could however be subtle marketing differences within the chain which could not be taken into account at this level of analysis. Secondly, this study assumes that the consumers come from the surrounding residential area. It is not possible to know if the store's consumers are actually residents in the area or transient daytime consumers which just work in the area and consequently, some trade areas more than others will be affected by this. Another assumption which was made was the division of the two groups of stores which was essentially done out of convenience due to the years of the census. In reality changes in market characteristics are gradual rather than abrupt divisions.

In conclusion, it was found that although some market characteristics and possible target markets were determined, because of the above mentioned constraints a truly accurate market analysis could not be attained. It does however show the

complex nature in trying to tackle this type of research question and finding ways to deal with this complexity is fundamental to an in-depth locational analysis.

TABLE 7: SUMMARY OF RESULTS

Variables	Hyp. #1		Hyp. #2		Hyp. #3	
	1970	1980	1970	1980	1970	1980
Single Total	<	<	O	<	>	>>
Married Total	O	>	O	>	O	<
Owner Occupied	<<	O	<<	O	<<	<
Tenant Occupied	<<<	<&>	>>	<&>>	>>	<
Low Income Families	<<<&>>>	<<<	>>>	<<<$>>>	>>>	>>>
Middle Income Families	<<	<<	<&>	<&>	>>>	>
High Income Families	<<<	<<<&>>>	<<	<<&>>	>	>
Low Non-Family Inc.	O	<	>>	<&>	>	<
Middle Non-Family Inc.	O	O	>	O	>>	>
High Non-Family Inc.	<<	>>>	<&>	>>>&<<<	<	>

Legeng:

O - no difference from theoretical
< - slighlty less than theoretical
<< - moderately less than theoretical
<<< - considerably less than theoretical

> - slightly greater than theoretical
> - moderately greater than theoretical
>>> - considerably greater than Theoretical

CHAPTER 6

REFERENCES

REFERENCES

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