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An analysis of the nature and implementation of zoning amendments in Windsor, Ontario.

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AN ANALYSIS OF THE NATURE AND IMPLEMENTATION
OF ZONING AMENDMENTS IN WINDSOR, ONTARIO

by

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A Thesis

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through the Department of Geography
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ABSTRACT

AN ANALYSIS OF THE NATURE AND IMPLEMENTATION
OF ZONING AMENDMENTS IN WINDSOR, ONTARIO

by

Binmatty Sukhai

The general objective of this study is an investigation of the

nature and implementation of zoning amendments in Windsor. The invest-

igation is executed by three specific objects: (a) to determine

whether the granting of zoning amendments caused a significant deviation

from the Official Plan: (b) to determine whether zoning amendments

promote desirable land use changes consistent with the forces of change

operating in the city; (c) to determine whether there was any bias in

the application for and the granting of zoning amendments.

Results from statistical analysis of data on the zoning amendments

applied for and granted from 1972-1976 indicate that, although zoning

amendments applied for were consistent with the forces of change operating

in the city, the granting of amendments caused a significant change in the

proportion of land use classes allocated by the Official Plan. The results

show no statistically significant bias in the application for zoning

amendments by socio-economic areas nor for the granting of zoning

amendments by socio-economic areas. Statistically significant bias is

indicated, however, for the accepted number of zoning amendments causing

down-zoning.

ACKNOWLEDGEMENTS

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CHAPTER I

INTRODUCTION

Zoning is a legal and administrative device designed to divide a municipality into a number of districts in which certain uses are allowed while others considered incompatible are excluded. The height and bulk of buildings and the area of ground built upon are also controlled by zoning regulations. Zoning is, therefore, a derogation of the common law and constitutional right of the individual to use his property as he wishes. Ideally, the employment of zoning laws is based on rational land-use considerations, established in master plans[1] (also called official plans) which reflect the planning goals of a community.

The achievement of the purpose of zoning depends on the relative inflexibility of the zoning ordinance. But since city planners and legislators cannot in every case predict the future development of the neighbourhoods, and the effect of the ordinance on individual property, various change mechanisms - amendments[2] and variances[3] are adopted to provide some measure of flexibility in the ordinance without a departure

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1. "A master plan is a statement of policy and a program of future development in a municipality consisting primarily of a text in which these matters are dealt with, illustrated by maps and charts. General policies are spelled out together with population densities and land use patterns." Rogers, Canadian Law of Planning and Zoning, 1973, p. 44.

2. "An amendment is a legislative change of the zoning ordinance which effectively rezones a specified area. Amendments like original ordinances should conform to the general welfare objectives of the enabling legislation." Ratinoff, The Law of Zoning and Planning, 2nd. ed. 1949, pp. 1626.

3. Variances are official indulgences entitling the holder of a property to violate some portion of the law. Crawford C. Strategy and Tactics in Municipal Zoning, 1969.

from its basic spirit[4].

The granting of amendments can legally change zoning maps. Since change mechanisms are devices to cater for the unexpected forces of change operating within the city, it can be assumed that under reasonable administration the changes in the zoning maps reflect change in the spatial and structural expression of urban growth. Although the initial objective of the change mechanisms was innocent, they also create loopholes in the zoning system. Under a politically dominated procedure, the city and neighbourhoods can suffer from undesirable land-use mixtures if administration is not handled with discretion and expertise.

The parties interested in zoning are, on the professional side, practising attorneys, judges and city planners. The developers constitute the principal decision-makers in the private sector.

As Badcock (1966, p. 15) pointed out, an examination of the motives and bias of each of the parties involved is of paramount importance. Serious allegations have been declared against these decision-makers. It was pointed out that local administrators, particularly in the suburbs, were confident that government corruption was only a matter of black bags and were offended if it was suggested that the use of such land-use tools as zoning could involve less obvious forms of civic dishonesty (Freund, 1929).

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4. For a detailed review of the flexibility measures, see Sells J., "Zoning as the Central Device of Land Use Regulatory System and the Treatment of Mixed Land Uses in the Planning and Design of Residential Neighbourhoods and Apartment Redevelopments: Traditional Approaches, and New Concepts of Flexibility of Land Use Mix - a Survey of Contemporary Literature and Application to a Case Study of Windsor, Ontario." (B.A. Thesis, University of Windsor, 1977).

An even more serious attack on professionals, administrators and lay decision-makers comes from Badcock:

> "It is these professionals whether in law or planning, who, I have sensed during fifteen years in the pit of zoning and planning litigation, are either too bored, ignorant or fearful to speak out effectively." 5

The existence of inefficiency and malpractices among administrators in the implementation of zoning ordinances cannot be challenged. In a survey and analysis of fifty-two Zoning Boards of Adjustments in Montgomery County, Grossman (1964) uncovered a procedural diversity among the boards: written rules and regulations were often overlooked, inconsistency in the consideration of similar cases, and the lack of any planning skills or knowledge among most board members. Squabbling among governing agencies is not uncommon. In an analysis of zoning variances in New York City, the conflict between the City Planning Commission, which adopts zoning amendments, and the Board of Standards and Appeals which grants variances, was documented. They accused each other of ignoring the Zoning Regulations and transgressing jurisdiction.[6]

Undoubtedly, what is found to be true in one area is not necessarily true in another, and this necessitates similar studies in several areas before generalization can be attempted. It is, therefore, the general objective of this research to investigate one aspect of the implementation of zoning ordinances - zoning amendments.

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5. Richard F. Badcock. The Zoning Game; Municipal Practices and Policies. Madison: University of Wisconsin Press, 1966. p. 15.

6. Note: "Zoning Variances in New York City." Columbia Journal of Law and Social Problems 3 (June, 1967) pp. 120-135

LITERATURE REVIEW

Before a review is made of previous studies on the effects of the implementation of zoning ordinances, the historical development of zoning is briefly outlined.

Historical Development of Zoning

Zoning is a comprehensive plan of land use; no more than a rational and comprehensive extension of the common law of nuisance. The main principle behind the nuisance laws was that "one must so use his own rights as not to infringe upon the rights of another." (Pollard, 1931). The main advantage of zoning over common law of nuisance was made clear by Bettman:

> "The term public nuisance has ceased to have any definite meaning
> as a measure of legislative power... A lawyer would often hardly
> hazard a guess as to whether his client's proposed industry will or
> will not be declared a nuisance. The zone plan, by comprehensively
> districting the whole territory of the city and giving ample space
> and appropriate territory for each type of use, is decidedly more
> just, intelligent, and reasonable than the system, if system it can
> be called, of spotty ordinances and uncertain litigation about the
> definition of a nuisance." 7

The earliest examples of zoning in North America are those introduced in California between 1870 to 1890 as a means of discriminating against Chinese immigrants. During this period several municipalities passed ordinances restricting and prohibiting Chinese laundries from residential districts since they were considered a clear fire risk and public nuisance. The first attempt at districting typical of the early zoning laws is the ordinance adopted by the city of Modesto in 1885 designating districts where laundries and wash-houses were prohibited.

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7. Alfred Bettman , _City and Regional Papers_. Edited by Arthur C. Comey. Harvard City Planning Series, No. 13. Cambridge: Harvard University Press. 1964. p. 171.

By the early years of the years of the twentieth-century, public regulation
of the use of private land through districting was gradually gaining
popularity, and the inadequacy of the nuisance laws as means of controlling land
uses was made obvious. Districts were established where glue factories,
bakeries, laundries and slaughter houses were strictly prohibited and
more sophisticated districting ordinances were established. In 1904 city
councils in Ontario were authorized to enforce by-laws to prevent,
regulate and control the location, erection and use of buildings as
laundries, stores and manufactories.

During 1885 and the early twentieth-century, districting had been used
for regulating bulk and height of buildings. Boston, Baltimore,
Indiannapolis and New York were divided into several districts in which
different heights were imposed. In 1912 Massachusetts permitted all of
its cities and towns to regulate the height, area, location and use of
buildings in designated areas. In the same year, the Province of
Ontario empowered its cities with more stringent authority to control
the location of apartment buildings, tenement houses and public garages
(Veiller, 1914, pp. 100 - 101).

Zoning has undergone evolutionary changes since it was constitutionally
established in 1926 in the U.S. Comprehensive Zoning Policy originated
in New York in 1916 in response to the problems of overcrowding and
congestion among buildings which posed a fire hazard and an incompatible
mixture of uses. The initial objective of the early zoning by-laws was
health and safety, and also to prevent the seemingly bad land uses from
driving out the good (Bengeman, 1974). Bad land uses are referred to
as "external diseconomies", which have adverse neighbourhood effects
resulting in a decrease in land values (Levy, 1974). Zoning was therefore

defensive and aimed at preventing the worst in conflicting mixtures of land uses, which were considered harmful to the urban environment.

Today zoning is increasingly used as a method of implementing larger objectives based on a comprehensive plan. It has an important effect on the character of urban areas as it is used as an instrument to direct and shape market forces through its control over the location of urban development and of the supply of available land. Undoubtedly, zoning has become a crucial element in the planning process and its aims can be categorized under three broad headings:- externality zoning, fiscal zoning and exclusionary zoning.

Previous Studies on the Effects of Zoning Implementation

(I) Externality Zoning

Externality zoning policy aims at achieving an efficient land use pattern (Davis 1963, p. 39). The optimal policy of this type of zoning is the segregation of industrial, residential and commercial land uses. This type of zoning evolved out of the realization that one person's use of land may have external effects - positive and negative - on the uses of neighbouring lands e.g. if industrial land users exert negative effects on residential land users, then externality zoning would restrict industrial land users to separate parts of land reserved for their uses (Ohls, Chadbourn and White, 1974). Such zoning is used to remove or at least mitigate the influence of urban diseconomies in the urban property market (Grecine, Davis and Jackson, 1967).

The rationale behind externality zoning is to "maximize the value of property" (Mandeker, 1974). Implicit in this statement is that every piece of property should be utilized in a manner that will give maximum utility without effecting a corresponding decrease in the value of other property.

Differing conclusions are presented by researchers who attempted an examination of the effects of zoning on land values.

Raleigh (1964) contends that "zoning has a definite monetary value". He found instances where the prices of the properties purchased on condition that the seller obtain a change in zoning dropped significantly after rezoning petitions were denied by the city and the properties were replaced on the market.

The monetary value of zoning is stressed by Steiger (1963) who contends that permitted and prohibited uses affect greatly the value of seemingly comparable properties. Seymore (1966) on the other hand, presents a research formula designed to filter out the effects of zoning changes on property values from effects caused by other variables such as regional economic growth or business cycles. He concludes that zoning will not affect property values unless present zoning is constraining demand for more capital uses, or unless future zoning will constrain market demand. Ukeles' (1964) view on the effects of zoning on land values is not far removed from that of Seymore (1966). After a thorough examination of the various theories of urban space, the structure of zoning goals and regulations, and studies on the effects of zoning on land values and compatible uses, Ukeles concludes that, while zoning appears to have enormous potential for regulating urban change, in actuality it has had only marginal effects on land values and amenities.

(II) Fiscal Zoning

Fiscal zoning is aimed at maximizing the tax rate in a community. The objective of policy makers here is to zone vacant land into large lots for high value single family homes because the owners of the

expensive homes are expected to pay higher property taxes than the cost of providing additional public services to meet their needs (Ohls, Chadbourn and White, 1974). This policy, it is claimed, would make available additional funds for the provision of public services for the less fortunate municipal dwellers. According to White, however, the major benefit of this type of zoning lies in its ability to ensure that one's neighbour has the same taste for housing and demand for public services as oneself and not in the expectation of acquiring additional revenue from higher property taxes (White, 1974).

The popularity of low-density zoning among suburban dwellers is based on the assumption that larger lots result in higher priced homes and a preservation of neighbourhood homogenity. Empirical investigation by Coke, James and Liebman (1961) of lot sizes and home prizes in seven Pennsylvania municipalities reveals too low a correlation between the two factors to substantiate any such assumption. After an examination of the social and economic consideration behind low-density zoning, the conclusion is that the social argument that fiscal zoning allows preservation of the status quo by limiting population influx and excluding those deemed undesirable is "sterile and undemocratic".[8]

(III) Exclusionary Zoning

Exclusion is inherent in the term zoning since zoning implies sorting out and separation of incompatible land uses. The contemporary practice of zoning which segregates and stratifies the population is called exclusionary zoning. It is derived from the purposeful design

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8.Note. "Snob Forming - A Look at the Economic and Social Impact of Low Density Zoning." Syracuse Law Review 15 (1964): pp 507-521.

of zoning ordinances which prohibit the construction of inexpensive

houses, with the subsequent exclusion of low income occupants from the

municipality. Exclusionary zoning has injected a number of biases in

the planning system which have effectively distorted the operation of

free market forces.

Bergeman (1974) explains the status and role of zoning within the

planning process. He concentrates mainly on "exclusionary zoning",

indicating its effect on certain phenomena like land values and the

housing market. He suggests that land use zoning creates and/or strengthens

certain social and economic dichotomies within the urban framework and

should be handled only after the limitations are clearly understood.

Exclusionary zoning is extremely disfavoured. Those who oppose it contend

that in the U.S.

> "exclusionary zoning results in a pattern of racial and economic
> segregation and that in concert with fiscal policies encourages
> economic growth in suburban communities and isolates potential
> job holders from jobs." 9

Exclusionary zoning ordinances can exclude low income and minority

racial groups from certain urban areas. This is done through the exclusion

of certain types of dwellings like mobile homes and apartments from

suburban areas or limiting the maximum number of bedrooms per housing

dwelling . These practices result in a barrier to effective implementation

of a housing program especially for low income families (Mandeker, 1974).

William and Norman (1974) identify the manipulation of exclusionary

devices in four counties of the suburban ring of New Jersey. They find

that zoning ordinances for 80% of the dwellings have only one bedroom

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9. John Levy. "Exclusionary Zoning, after the Walls Came Down".
Land Use Control Presents Problems and Future Reform (ed). David Listokun
1974. p. 164.

while the remaining 20% covers no more than two bedrooms. Mobile homes are prohibited, but where found, they are allowed on conditional terms only. Exclusion is also applied against multiple dwellings which are the most important for low and middle income families. In these suburban areas, William and Norman find the amount of land zoned for multiple dwelling to be miniscule. The largest area for this type of dwelling is potentially available in areas where residential construction is permitted in industrially zoned areas. The land space allocated to multiple dwellings in these non-residential zones is found to be more than six times as high as that permitted in residential zones. The effects of these regulations seem to be the exclusion of large families and-low-to moderate income families from suburban areas.

(IV) Zoning Politics

The political aspects of zoning have been investigated by several authors. According to Makielski (1967), zoning in legal theory and zoning in practice are different phenomena. He contends that planners and legislators are forced to play the roles of arbiter and negotiator between competing interests and there is no clear-cut workable standards by which planners, legislators or courts can sort through the competing claims on public welfare. He concludes that any attempt at reform which does not take into account the political realities of zoning is due for frustration.

According to Ascher (1954), planning is a tool of the chief executive and that the basic role of the chief planning executive is to give advice to the local responsible authorities which will enable them to defend the developmental steps taken by their administration when they come up for re-election. He concludes that "it is not sound planning to

advise officials to do something that would ensure their defeat at the next election." Increasingly, the director of planning is appointed by and responsible to the city manager. The placing of the city planning agency under the city executive is not the best policy. Daland (1957) contends that a prime barrier to placing the city planning agency under the city executive is the serious incompatibility between the professional attitudes of administrators and and planners to the political implications of planning and the professional status of the planner and city manager.

Long (1959) suggests organizing planners as staff to the mayor and council, thus making them more sensitive to community values as they are expressed in the political process.

SCOPE AND OBJECTIVES

This study is limited in scope and objectives. It is concerned only with an investigation of the nature and implementation of zoning amendments in Windsor from 1972-1976, the years for which the Official Plan of 1972 was designed. Specifically, the objectives of the study can be categorized as follows:-

(a) To determine whether zoning amendments caused a deviation from the Official Plan.

(b) To determine whether zoning amendments promote desirable land use changes consistent with the forces of change operating within the city.

(c) To identify the nature of applications for zoning amendments and to determine whether or not there is bias in the granting of approval for zoning amendments.

CHAPTER 2

-THE STUDY AREA

The study area is the city of Windsor, Ontario, the 10th. largest
urbanized area in Canada (Map I). Windsor's city limits expanded continuously
to a present area of approximately 12,105 hectares. The bulk of the increase
occurred in January 1966 when the towns of Riverside, Ojibway, Sandwich East,
part of Sandwich West were annexed to the city, enlarging its area by
approximately 8,907[10] hectares (Map II). At the time of

annexation, the Townships of Riverside and Sandwich West had each adopted
Official Plans. All Townships had zoning by-laws, except Ojibway.
The Official Plans of these Townships were merely land use maps indicating
future land uses in the community. The Zoning By-Laws were cumulative
in nature such that residential uses were permitted in commercial
zones and residential and commercial uses in industrial zones.

In 1972, the second comprehensive plan for the whole city was
adopted. This plan was based on anticipated rates of population growth,
direction of expected physical growth, transportation and renewal.
The general objective of this plan was ... "to serve as a guide to
both public and private agencies in Windsor through the establishment
of policies for future development and redevelopment of the community."[11]
Land use in the city is controlled in wards 1 to 5 by Zoning By-Law
728 passed in July 1948, and in wards 6, 7 and 8 by Zoning By-Law 3072
passed in 1969. The major land use categories created by zoning are:-

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10. Windsor Planning Board Official Plan of the City of Windsor
    Planning Area. September, 1971.

11. Ibid p. 4.

Location of Study Area

Source : Murray V. Jones and Associates Ltd.

Map I

WINDSOR

CITY OF WINDSOR — 1971

North

Municipalities 1961

- Ojibway
- Riverside
- Sandwich E.
- Sandwich S.
- Sandwich W.
- Windsor
- Unclassified

Kilometres

Map II

Source: L. Oliver — 1976
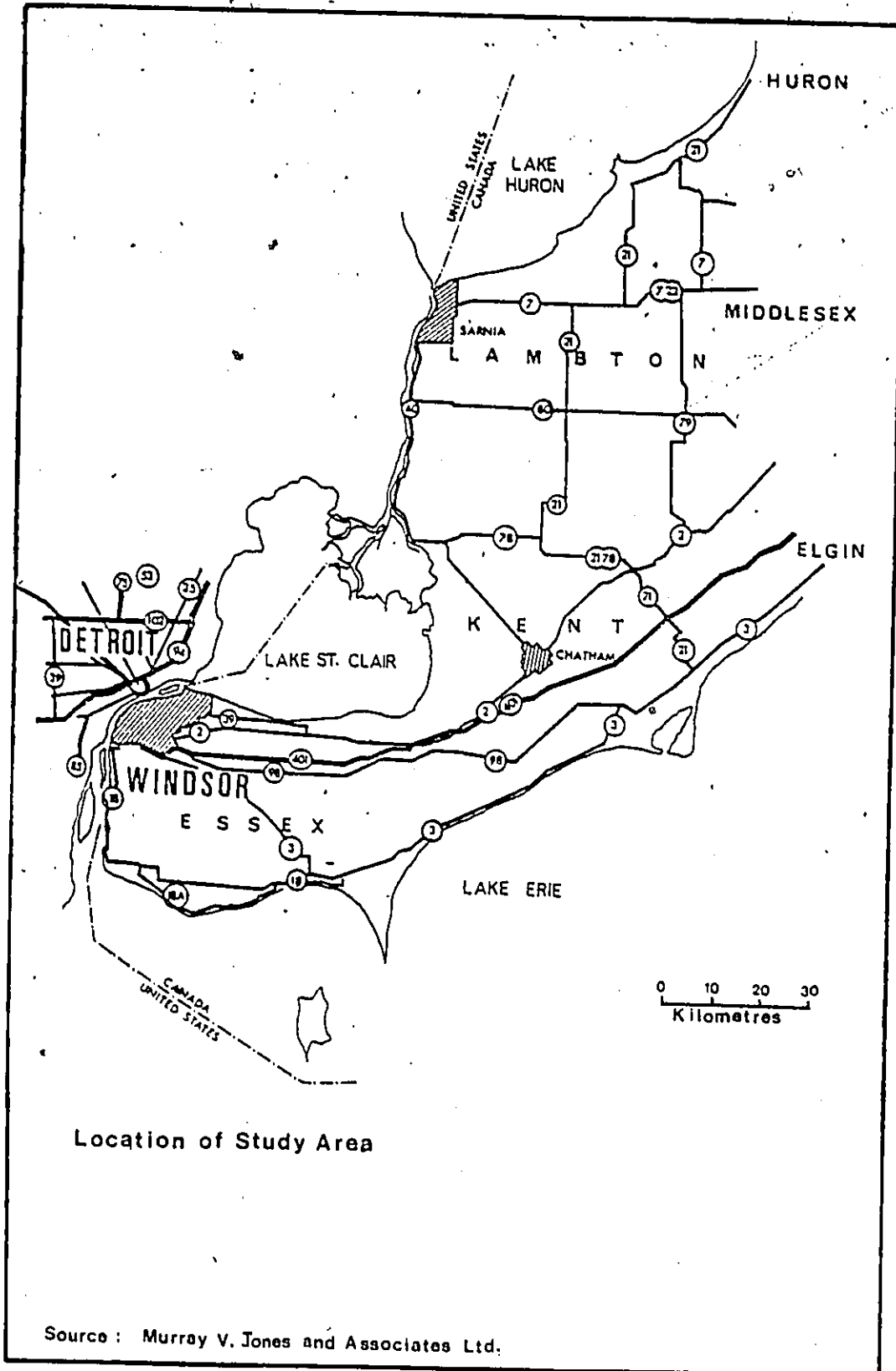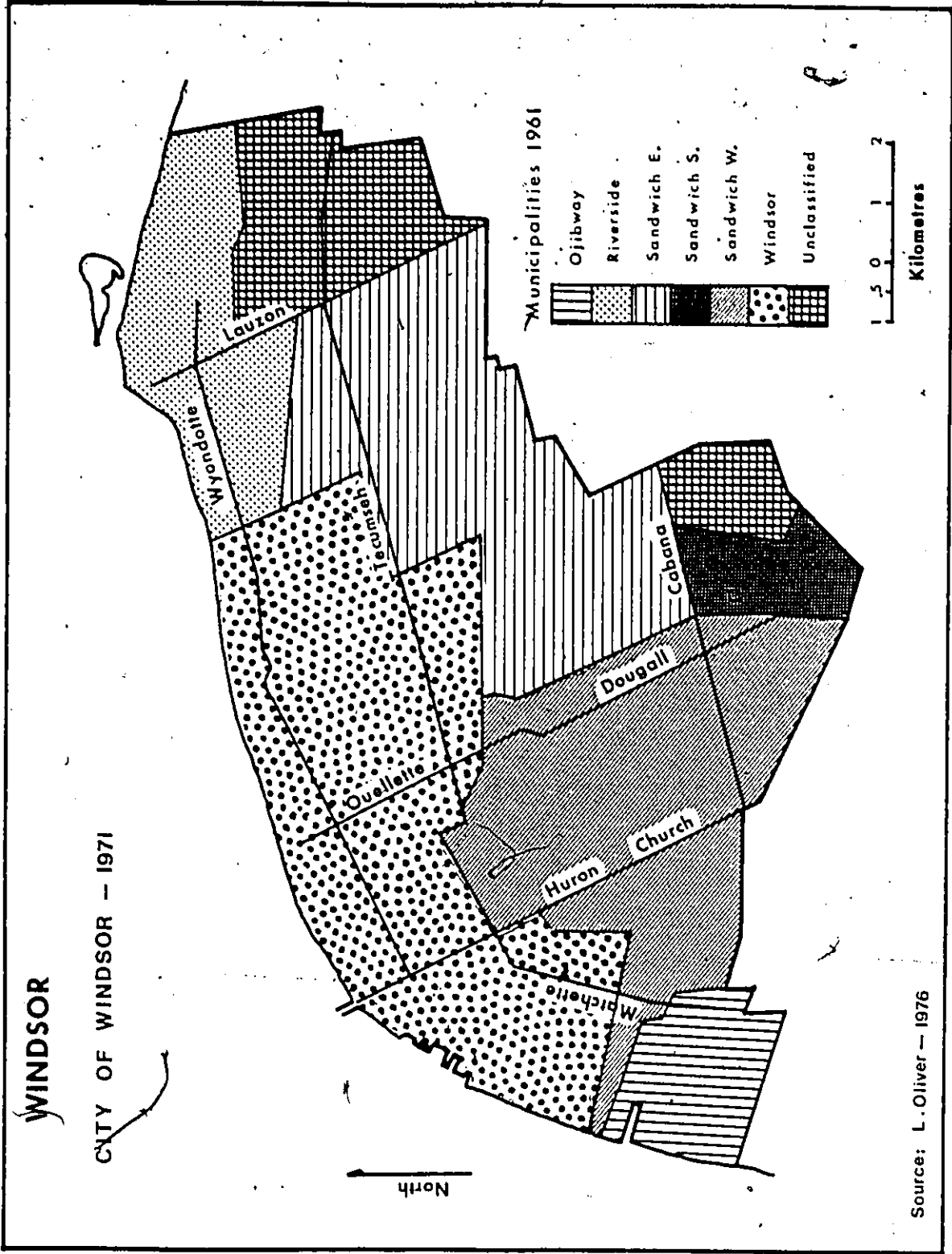
(1) Open Space.

(2) Residential:

    (a) Low density residential - single-detached, semi-detached and duplex dwellings.

    (b) Medium density - row housing and walk-up apartments having more than (2) dwelling units.

    (c) High-density apartment dwellings other than walk-up apartments.

(3) Commercial.

(4) Manufacturing. (Industrial)

(5) Institutional.

REZONING PROCEDURE IN WINDSOR

Windsor has a standard procedure to process requests for changes of zoning classification of land uses. The procedure is outlined below (see Figure I).

The rezoning procedure commences with the developer or resident requesting the municipal council to amend its zoning restrictions so as to permit the land use he contemplates on a site where the land use by-law prohibits it. It is the aim of the applicant to get council to amend the Official Plan and/or zoning by-law and have them approved by the Ontario Municipal Board.

The applications are analyzed by the staff of the Planning Department and other municipal officials who assess the adequacy of the available services to support the new development and make recommendations as to the conditions to be improved. The Planning Department gives a written report of recommendations to the Planning Board and notifies residents within 122 metres radius of the area to be rezoned of the application.

REZONING PROCEDURE

Figure 1

AGENCY CIRCULATION

- BUS COMPANY
- CENTRAL MORTGAGE & HOUSING CORPORATION
- MINISTRY OF THE ENVIRONMENT
- MINISTRY OF HEALTH
- MINISTRY OF TRANSPORTATION & COMMUNICATIONS
- CONSERVATION AUTHORITY
- PUBLIC WORKS
- TRAFFIC ENGINEERING
- PARKS & RECREATION
- PROPERTY DEPARTMENT
- FIRE DEPARTMENT
- BUILDING DEPARTMENT
- WINDSOR UTILITIES COMMISSION
- UNION GAS
- BELL TELEPHONE
- BOARD OF EDUCATION
- SEPARATE SCHOOL BOARD
- DEVELOPMENT COMMISSION

• OPTIONAL

APPLICATION FOR ZONING BY-LAW AMENDMENT (MAY INCLUDE COLLATERAL OFFICIAL PLAN AMENDMENT)

PROCESSING OF APPLICATION BY PLANNING DEPARTMENT

REPORT TO PLANNING BOARD BY PLANNING DEPARTMENT

PUBLIC NOTIFICATION (400 FT. RADIUS)

CONSIDERATION & RECOMMENDATION BY PLANNING BOARD

PUBLIC NOTIFICATION (TO PERSON OR AGENCIES EXPRESSING INTEREST)

COUNCIL DECISION

IF APPROVAL

IF REQUIRED

- SERVICING AGREEMENT
- PROCESSING OF OFFICIAL PLAN AMENDMENT

ENACTMENT OF REZONING BY-LAW

14 DAY NOTICE

IF OBJECTION

COUNCIL CONSIDERATION

BY-LAW AMENDMENT (IF CHANGE IS NECESSARY)

IF NO ACTION TAKEN — BY-LAW FORWARDED TO ONTARIO MUNICIPAL BOARD FOR HEARING

ONTARIO MUNICIPAL BOARD DECISION

2 WEEKS

4-12 WEEKS

2 WEEKS

3 WEEKS

4-12 WEEKS

3-8 MONTHS

6-15 MONTHS

At public hearings, opponents and proponents of the rezoning applications are given an opportunity to express their views on the matter to the Planning Board. After considering the recommendations of the Planning Department, the views of the public, the Planning Board advises the council on whether to adopt or decline the official plan and/or zoning by-law amendments. If council approves the application, the by-law is enacted and application is made to the OMB for approval of the By-law. If council decides to amend the official plan against the recommendations of the Planning Board, it will require the votes of at least two-thirds of all council members before it can get the approval of OMB.

The rezoning procedure is completed in six to fifteen months, and during this time span it is possible for malpractices to be injected into the system.

CHAPTER 3

METHODOLOGY

STATEMENT OF HYPOTHESES, TESTING PROCEDURE AND RATIONALE FOR HYPOTHESES.

To examine the objectives outlined in Chapter I, three sets of hypotheses are formulated. All the hypotheses formulated and tested will be accepted at the .05 significance level.

First Hypothesis:-

(a) There is a significant difference between the proportion of land in each land use class allocated by the official plan and the proportion in each class resulting from the granting of amendments. A Kolmogorov-Smirnov test will be used to test this hypothesis.

This hypothesis is designed to investigate whether zoning amendments caused a major deviation from the Official Plan. In view of the fact that the official plan is a comprehensive plan for the city, designating proportions of land in each use category in accordance with the anticipated rate of expansion and direction of growth, an insignificant deviation from the plan is expected. Any major deviation would be indicative of a drastic change in the goals sought, inaccurate forecasting or considerable laxity in the granting of amendments.

Second Set of Hypotheses:-

(a) A significant inverse relationship exists between the aggregate number of applications for zoning amendments and property values.

(b) A significant inverse relationship exists between the number of residential rezoning applications and property values.

(c) A significant inverse relationship exists between the number of commercial rezoning applications and property values.

(d) A significant inverse relationship exists between the number of industrial rezoning applications and property values.

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These hypotheses will be tested independently by the use of Kendall's Tau.

The second set of hypotheses is designed to establish whether the request for rezoning and changes are consistent with the forces of change that operate in the city.

Some of the change variables used in previous studies are: area size and density, location and relative accessibility, employment and employment density, building and housing stock and occupancy turnover. It is assumed here that land value would reflect the many possible forces of change operating within the city. Property value is considered in this thesis as a measure of the forces of change within the city. It is used as a surrogate measure for land values.

Third Set of Hypotheses:-
Inner City or Peripherial Bias in Zoning Amendments

(a) A significant difference exists between the inner city and the periphery in the frequency of requests in each land use category for spot rezoning.[12]

(b) A significant difference exists between the inner city and the periphery in the amount of land requested for spot rezoning in each land use category.

(c) A significant difference exists between the inner city and periphery in the frequency of requests in each land use category for large-

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12."Spot rezoning is considered an area of less than three acres or a small use enclave differing from the rest of the block." Natoli Salvadore J. "Zoning and the Development of Urban and Use Patterns". Economic Geography, 1971.

area rezonings.

(d) A significant difference exists between the inner city and the periphery in the amount of land requested for large-area rezoning in each land use category.

    - A Kolmogorov-Smirnov test will be used to test each hypotheses individually.

The above hypotheses are formulated to investigate the existence of bias in the requests for rezoning between the inner city and the periphery. The rationale for these hypotheses is based on the arguments presented by Engels (1935) and Hawley (1950). According to Engels (1935), the growth of modern cities gives centrally located land very high values but the old buildings erected on them depress their values. These buildings are accordingly demolished and more intensive use is made of the land. Hawley (1950) further explained that low income families live on high priced land while the wealthier live on cheaper lands. Time and cost of transportation are contributory factors to this situation.

In summary, the general patterns of land values according to Engels (1935) and Hawley (1950) can be described as follows:

(1) Land values reach a peak in the city centre and decrease disproportionately toward the periphery of the urban area.

(2) Land values decrease away from the major arteries.

(3) Local peaks are of higher values than the general level at a given distance from the city centre.

In the light of the above, there should be a greater incidence of spot rezoning in the city centre than in the periphery and more large-area rezoning in the periphery than in the city centre. Spot

rezonings are undesirable since they create a mixture of land uses, a condition which zoning itself attempts to prevent.

Socio-Economic bias over areas in zoning amendments

(a) A significant inverse relationship exists between the frequency of requests for zoning amendments and income levels.

(b) A significant negative relationship exists between the amount of land requested for rezoning and income levels.

(c) There is a significant difference in the amount of land requested for rezoning in each land use category between income levels.

(d) A significant inverse relationship exists between the frequency of applications for zoning amendments accepted and income levels.

(e) A significant inverse relationship exists between the frequency accepted rezoning applications resulting in down-zoning[13] and income levels.

Hypotheses (a) (b) (d) and (e) will be tested by Kendall Tau statistical tests while hypothesis (c) will be tested by x^2 test.

Incidents of down-zoning and spot rezoning are expected to be higher in areas of lower income groups for the reasons outlined below:

(1) Low income residents occupy homes that depress their land value, making them more attractive to developers and others to have them rezoned to those land uses (e.g. high density residential, commercial and industrial) that are less acceptable in higher income areas.

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13. The term down-zoning refers to the downward movement on the accepted zoning hierarchy which assigns the highest and best use to areas of single family housing and proceeds downwards through medium density and high density residential areas, commercial and industrial.

(2) Low income residents are less likely to oppose a zoning
change. This could be due either to lack of knowledge of
their right to oppose, or plain lack of interest in their
environment since most low income residents aspire to move
to better residential areas eventually.

(3) Members of the Planning Board who are predominantly from
the middle and upper income groups are likely to protect
their own areas from land use mixtures.

Evidence of malpractice in zoning is provided by several studies.
Cross (1965) and Balk (1966) have found that zoning has been widely
converted into an instrument of special favour for developers and
speculators who have generally been successful in obtaining the zoning
changes they desire without reference to any planning criteria.

DATA AND MEASUREMENTS

Three sets of data are utilized in this study. The first set
consists of applications for zoning amendments extracted from Windsor
Planning Board Agenda from 1972 to 1976. These are recorded in terms
of frequency and the amount of land requested for change in each
zoning category. Altogether 250 applications are recorded, accounting
for a request of a total change of 228.77 hectares (Map III). A
breakdown of these figures is found in Table 1 and Maps IV - VIII.

WINDSOR

Distribution of Zoning Amendments Requested
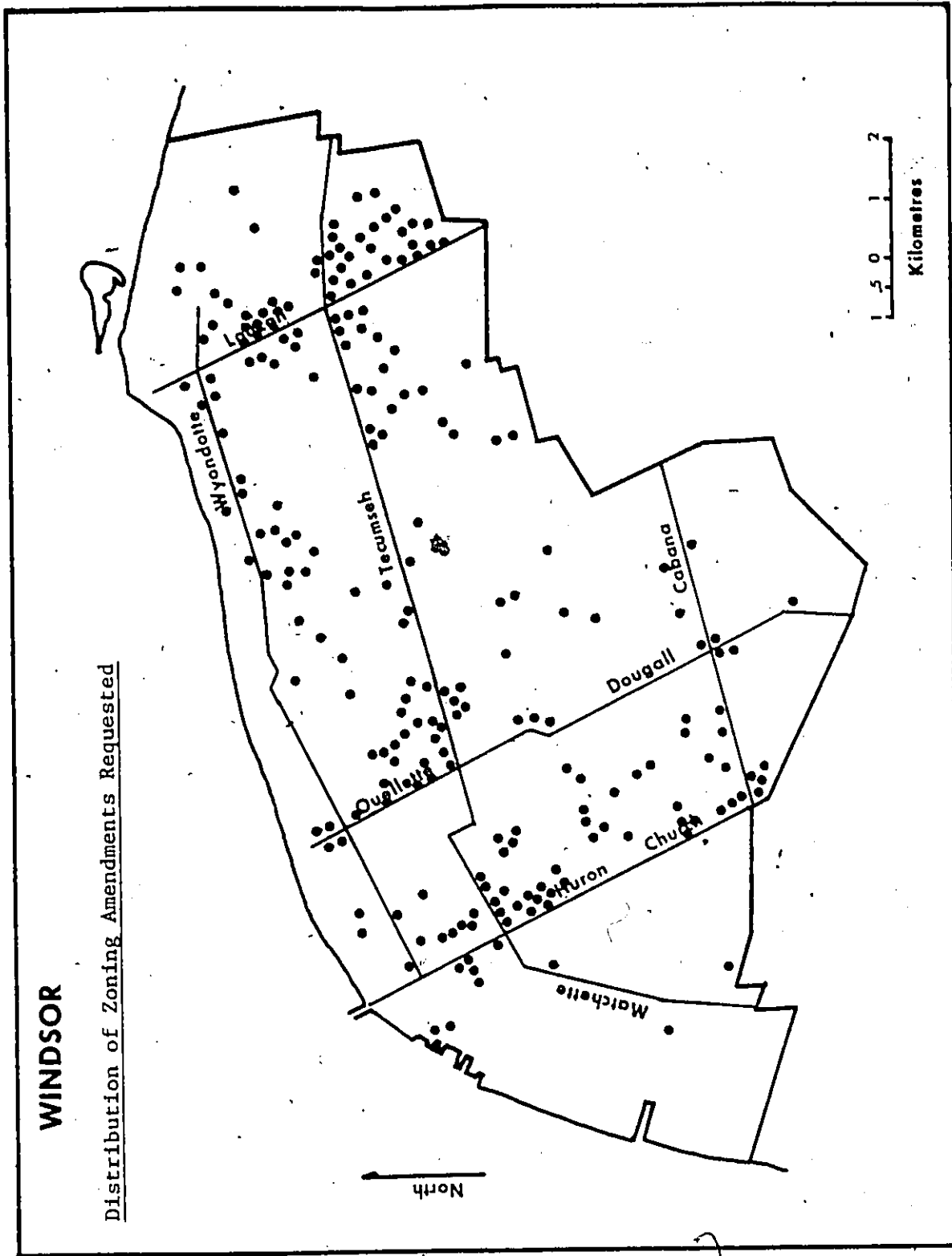
Map III

Source: Field Work

Table 1

Nature of Rezoning Requests (1972-1976)

Land Use Type	No. of Zoning Amendments Requested	& of Total
Low Density Residential (R_1)	72	28.8
Medium Density Residential (R_2)	37	14.8
High Density Residential (R_3)	31	12.4
Commercial	88	35.2
Industrial	22	8.8

The second data set consists of a sample of sixty-four property

values randomly chosen over the city of Windsor. A table of random numbers

was used to select one hundred properties (a 1% sample of properties)

from the City Directory of Windsor. The data for property values were

extracted from the files of Pedler's Real Estate Company for sales

transacted between 1972 and 1976. Data were obtained for only sixty-four

of the hundred properties chosen. The sixty-four data points were

located on the map and dispersion was tested for by the use of the nearest

neighbour analysis (Hammond & McCullagh, 1974, p. 40-42). The index of

dispersion obtained is .92, indicating that the distribution over space

is close to random with a slight tendency towards uniformity. Perfectly

random distribution indicated by an index of one is most desirable, but

since .9 is so close to one, the spatial distribution of properties is

considered random.

The data on property values are standardized (cost per hectare) and
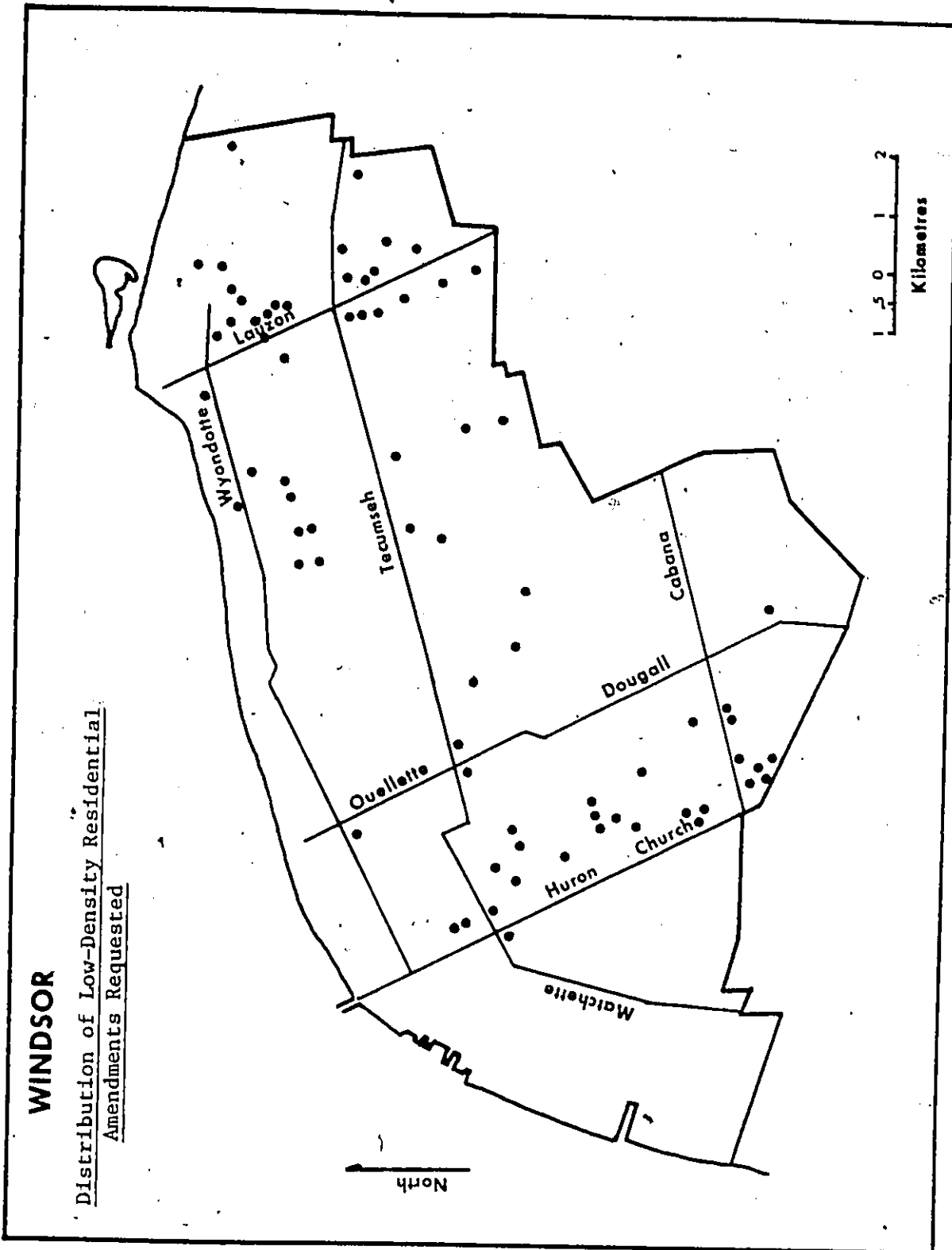
WINDSOR

Distribution of Low-Density Residential
Amendments Requested

North

Lauzon

Wyandotte

Tecumseh

Cabana

Dougall

Ouellette

Church

Huron

Marchette

Kilometres

.5 0 1 2

Source: Field Work

Map IV

WINDSOR

Distribution of Medium-Density Residential
Amendments Requested

North

Wyandotte

Lauzon

Tecumseh

Ouellette

Dougall

Cabana

Church

Huron

Marchette

Kilometres
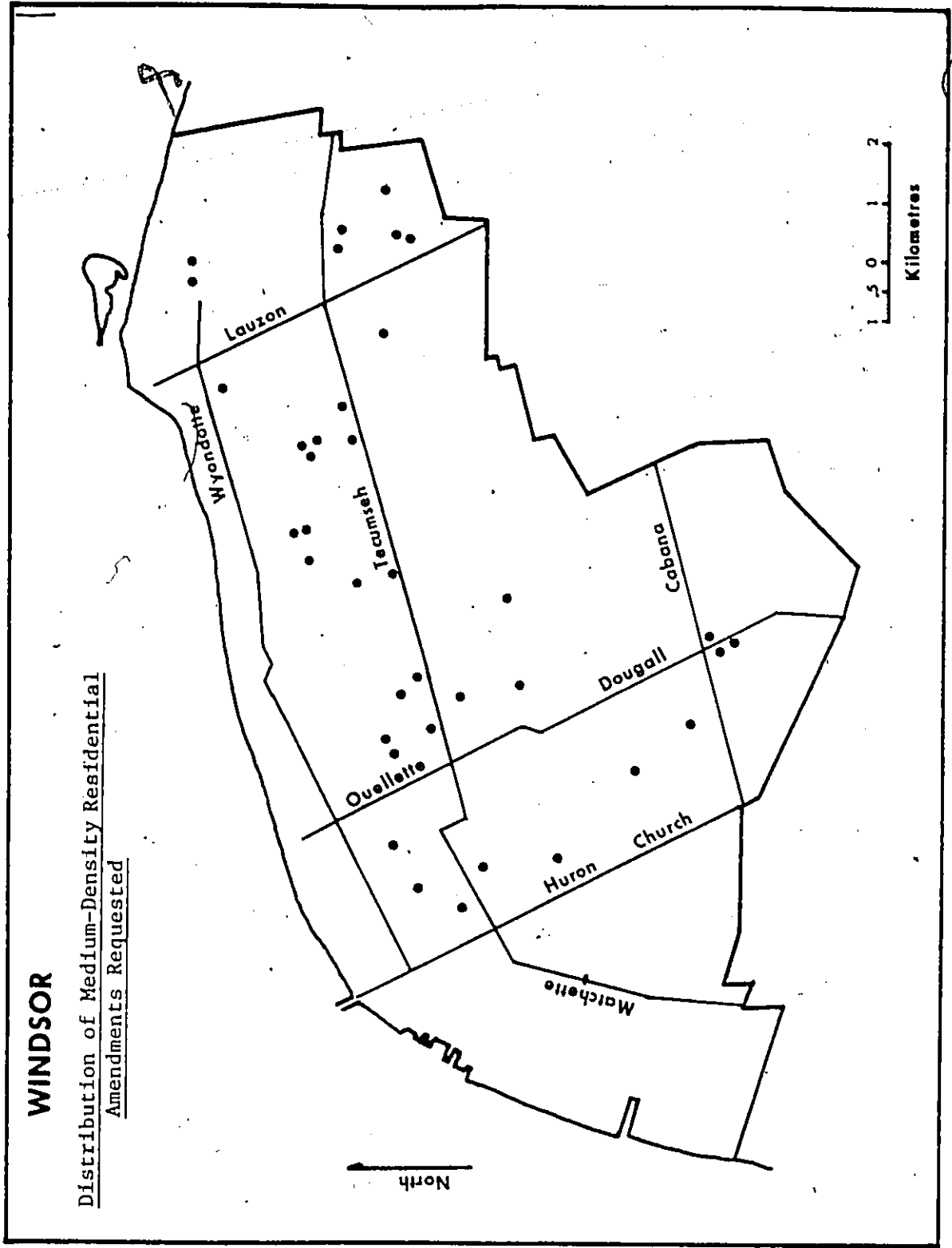
Source: Field Work
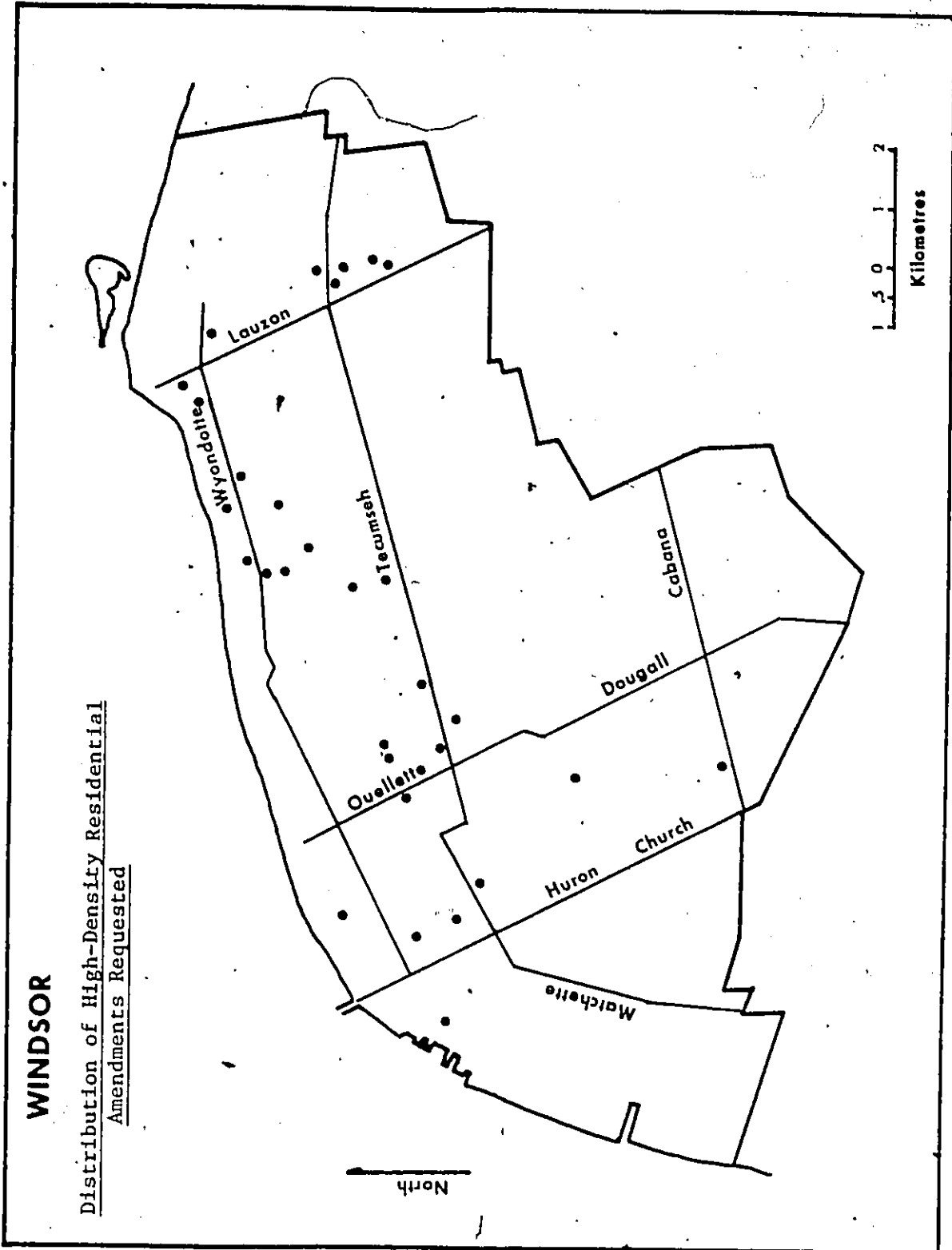
Map V

MAP V

WINDSOR

Distribution of High-Density Residential
Amendments Requested

Map VI

Source: Field Work

Kilometres

North

Lauzon

Wyandotte

Tecumseh

Ouellette

Dougall

Cabana

Huron Church

Marchette

WINDSOR

Distribution of Industrial Zoning
Amendments Requested

North

Lauzon

Wyandotte

Tecumseh

Cabana

Dougall

Ouellette

Church

Huron

Marchette

Kilometres

Source: Field Work

Map VII

WINDSOR

Distribution of Commercial Zoning
Amendments Requested

Map VIII

Source: Field Work

Kilometres

North

Lauzon

Wyandotte

Tecumseh

Cabana

Dougall

Ouellette

Church

Huron

Marchette

the data punched on cards. A Symap Computer Program is used to divide
the data into deciles and produce an isoline map of property
values (Map IX).

The third set of data consists of average household income
distribution by enumeration districts derived from the 1971 User
Summary Tapes, Enumeration Area Series. The data are retrieved from the
computer and punched on cards. The data are then divided into deciles
to produce a cloropleth map of ten income areas (Map X). The choice
of average household income as the only socio-economic indicator is
based on the fact that previous studies support a strong relationship
between income and other socio-economic indicators e.g. health, housing,
education and community and environment.

The high correlation between the quality of health and income
level is undisputable.

> "How long a person will live, the diseases he will have,
> the type of treatment he will receive and the cause of
> his death are all strongly influenced by the amount of
> money there is to spend on health. While public and
> private arrangements have been made to provide the poor
> with the same quality of medical care that the more
> wealthy can afford, statistics on death and disease
> show that such efforts have not succeeded. Low income
> still decreases the likelihood of ready access to
> medical care, freedom from diseases and long life."[14]

Poor medical care of lower income groups is also observed by the
National Council of Welfare (1975, p. 12.), the Canadian Labour
Congress (1970) and Anselm L. Strauss (1974, pp. 234-246). It is the
general contention that people in the lower income bracket make fewer
visits to the physician than those in upper income brackets despite

---

14. Eichord, R.L., and Ludwig, E.J. "Poverty and Health" in
Meissner, ed., 1973: p. 175.

WINDSOR

Property Value

Map IX

WINDSOR

Average Household Income by Enumeration Districts
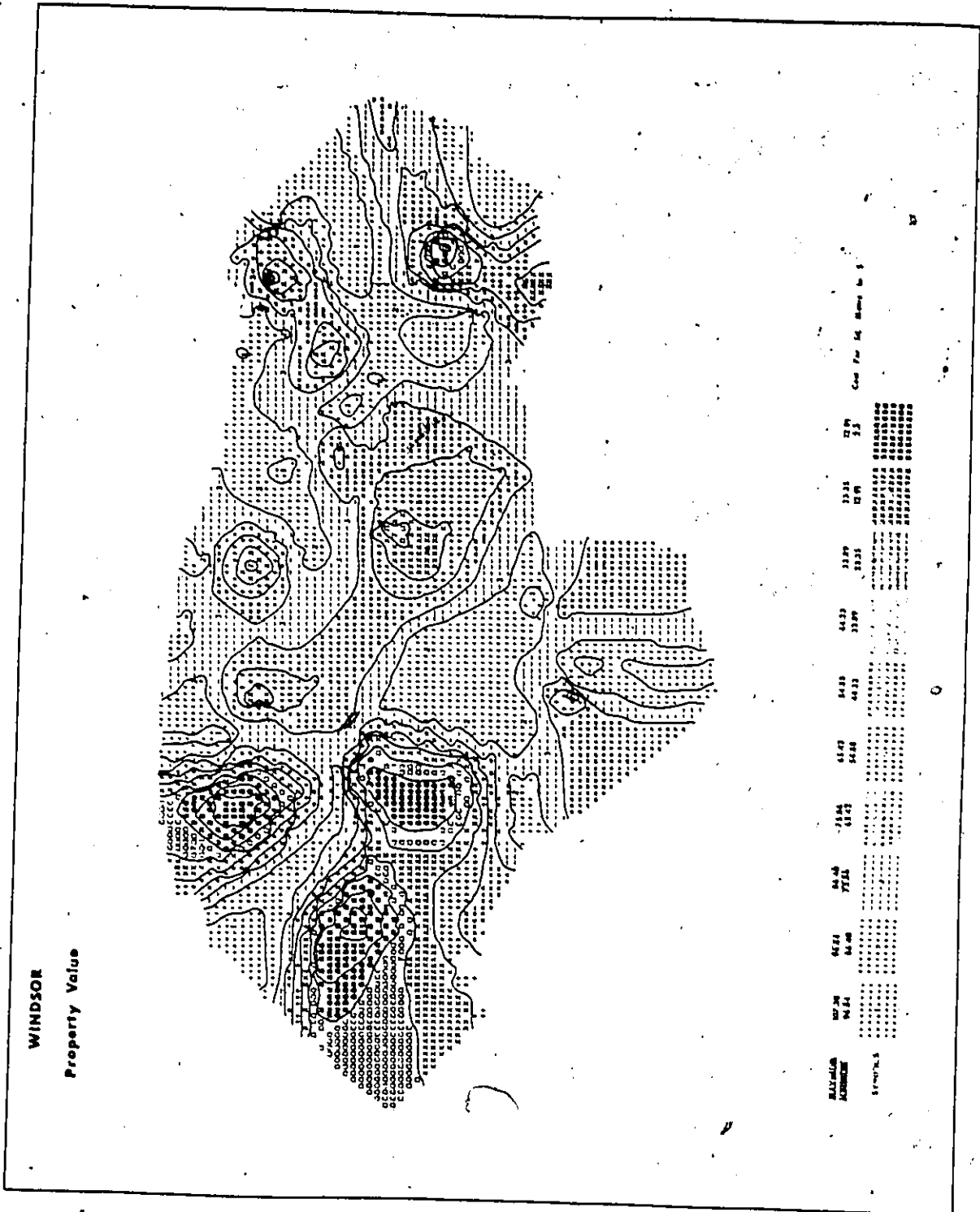
Map X

their higher rate of illness.

. A similarly high positive correlation between income and housing

type and income and education is supported. According to Lithwick (1970,

p. 27-29), the housing problem of the poor in Canada is not the

inadequacy of total housing units, but the lack of adequate income to

purchase or rent proper houses. Further evidence of a high correlation

between income and housing type and housing conditions is provided by

Adams (1971, p. 75) who reveals that 30% of welfare households in

Canada have more than 1.6 persons per room compared to 4% for Canada

as a whole; that sharing of accommodations with others is more prevalent

among welfare families than among non-welfare families.

The strong positive correlation between income and education is

clearly seen from the following table:

Income-Education Relationships - Canada 1972

Level of Education of Family Head	Years	Average Family Income
	0 - 4	$ 8,192.
	5 - 8	9,263.
Some Secondary Schooling		10,862.
Completed Secondary		12,268.
Some University		14,681.
Completed University		18,714.

Source: Statistics Canada: Income Distribution by Size in Canada
1972, Cat. No. 13-207 (Ottawa: Information Canada 1974: p.27)

This income-education relationship is supported by the findings of the

U.S. President's Commission 1970b that school drop-outs when employed

have lower-status occupations and lower earnings than high school

graduates.

In Windsor, in particular, Oliver (1977) finds evidence of a

high correlation between average income per household and level of

education, health and housing conditions.

ANALYSIS AND EVALUATION

First Hypothesis

Hypothesis I - There is a significant difference between the proportion

of land in each land use class allocated by the official

plan, and the proportion in each class resulting from the

granting of zoning amendments.

In order to test this hypothesis, the number of zoning amendments
granted from 1972 to 1976 are recorded and categorized to facilitate
calculation of change measures in each category of land use. Since
units of observation are expected to vary in size, all net change
indices are transformed to percentage change. Net change in each use
category is obtained by:-

Categories		Net Change
PI	=	-C +C
OP	=	-C +C
Com	=	-C +C
I	=	-C +C
R	=	-C +C

where PI represents Public Institutional uses; OP - open space; Com -
commercial; I - industrial; R - residential, and C - the area changed.
The net change in each land use category is equivalent to the summation
of the amount of land rezoned to the category being considered minus
changes out of this category.

To standardize the data, net change in each land use category is
transformed to percentage change:

Percentage Change = $\dfrac{\text{net change in each land use category (hectares)}}{\text{official plan designation to each category}} \times 100$

The results of the above computations are depicted in Table II.

Table II

Official Plan Designation and Percentage Change

Land Use Categories	Official Plan Designation (Hectares)	Cumulative Proportion	Net Change (Hectares)	% Change	Cumulative Proportion
Public Institutional	184.6	0.017	0.77	0.42	.03
Open Space	616.19	0.075	1.35	0.22	.046
Commercial	664.4	0.137	54.33	8.18	.647
Industrial	2573.75	0.378	96.88	3.87	.931
Residential	6604.05	1.00	75.56	1.14	1.0

As indicated by the data in the table, the greatest percentage
change is occurring in the commercial category with industrial occupying
a second place. To determine whether a change in the proportion of land
in the land use classes is significant, a Kolmogorov-Smirnov statistical
test is performed on two sets of data - Official Plan Designation and
Percentage Change. The first set of data is arranged in ascending order,
and the second set follows accordingly. With a D_{max} value of 0.55 and
a critical value of 0.06, the hypothesis is accepted at the 0.05
significance level.

Second Set of Hypotheses

The second set of hypotheses which is formulated to investigate
whether zoning changes are consonant with the forces of change operational
in the city are tested by means of Kendall's Tau. Levels of
property values and the number of applications for zoning amendments by
levels of property values are the sets of data used in the analysis.
A Kendall's Tau statistical test is performed firstly on the aggregate
number of applications, and then on the disaggregated number i.e. the

total frequency is disaggregated into categories of land use - residential, commercial and industrial. The disaggregation of rezoning applications is done to investigate the response of each category of use to change in property values.

Hypothesis (a) –   An inverse relationship exists between the aggregate number of rezoning applications and property value.

To test this hypothesis, the ten interval levels of property values which were derived by a Synap Computer program (see Chapter 3) are ranked in descending order i.e. the highest interval level is given a rank of one and the lowest a rank of ten. This set of data is tested against the number of applications for zoning amendment per interval level of property value (Table III).

Table III

Property Value and Applications for Zoning Amendments

Property Value Interval (cost per sq. metre in $)	Rank	Number of Applications For Zoning Amendments	Rank
107.38 – 96.84	1	2	10
96.84 – 86.40	2	3	9
86.40 – 75.86	3	7	7.5
75.86 – 65.42	4	8	6
65.42 – 54.88	5	14	5
54.88 – 44.33	6	7	7.5
44.33 – 33.89	7	58	3
33.89 – 23.35	8	62	2
23.35 – 12.91	9	67	1
12.91 – 2.37	10	23	4

Tau = -0.83   Z observed = -3.32   Z critical = -1.64

The Kendall Tau test performed on the above data gives a Tau value of -0.83 indicating a strong inverse relationship between property value and number of applications for zoning amendments. The hypothesis is accepted at the .05 significance level.

Hypothesis (b) -   A significant inverse relationship exists between the number

of residential zoning amendment applications and

property value.

Hypothesis (c) -   A significant inverse relationship exists between the number

of commercial zoning amendment applications and

property value.

Hypothesis (d) -   A significant inverse relationship exists between the number

of industrial zoning amendment applications and

property value.

The data used for testing the above stated hypotheses are shown
in Table IV.   Each hypothesis is tested individually by a Kendall's
test.

For testing Hypothesis (b) columns one and three of Table IV are
used; columns one and five for Hypothesis (c); and one and seven for
Hypothesis (d).   Correlation coefficients of -.597, -.598 and -.659 are
obtained for hypotheses (b) (c) and (d) respectively.   These hypotheses
are accepted at the .05 significance level.

The conclusion derived from the overall result is that the
aggregate number of rezoning applications exhibit a much stronger
relationship to property value than the disaggregated frequencies, but
all are strong and negative.   The ten categories of property values
are combined into three broad groups and the percentage of applications
for zoning amendments for residential, commercial and industrial land
uses in each group is found (see Table V).   It is seen from the statistics
presented in this table that the highest percentage of the applications
for zoning amendment in each land use category is in areas of low
property value, while the lowest percentage in all the land use categories

Table IV: Property Value and Applications for Zoning Amendments by Land Use Type

No. of Applications for Zoning Amendments

Ranked Levels of Property Value	Residential	Rank	Commercial	Rank	Industrial	Rank
1	1	9.5	1	9.5	0	9.5
2	1	9.5	2	7	0	9.5
3	5	6	1	9.5	1	6
4	2	7.5	3	5	1	6
5	11	5	2	7	1	6
6	2	7.5	2	7	1	6
7	35	1	21	2	3	2
8	30	3	20	3	12	1
9	33	2	32	1	2	3
10	18	4	4	4	1	6

Residential:
Tau = -0.597
Z observed = -2.388
Z critical = -1.64

Commercial:
Tau = -0.598
Z observed = -2.39
Z critical = -1.64

Industrial:
Tau = -0.659
Z observed = -2.636
Z critical = -1.64

is found in areas of high property value.

Table V: Property Value and Percentage of Applications for Amendment

Property Value	Cost per Sq. Metre	Residential	Commercial	Industrial
High	107.38 - 86.40	5	4.5	4.5
Medium	86.40 - 33.89	37.14	31.8	27.27
Low	33.89 - 2.37	57.86	63.7	68.23

Third Set of Hypotheses

A. Inner City or Peripheral Bias

Hypothesis (a) - A significant difference exists between the inner city and the periphery in the frequency of requests in each land use category for "spot rezoning".

Hypothesis (b) - A significant difference exists between the inner city and the periphery in the amount of land requested for rezoning in each land use category.

These hypotheses are tested by Kolmogorov-Smirnov tests and acceptance will be at the 0.05 significant level. For the purpose of this study, the inner city consists of the Windsor area before the annexation of the surrounding Townships in January 1966 and the periphery the annexed Townships of Riverside, Ojibway, Sandwich East and parts of Sandwich South and Sandwich West (Map XI). The old Windsor area is defined as the inner city mainly because it is surrounded by the other townships annexed to it. Since it is older, more established and constitutes the hub of activities in Windsor as it is today, a difference is expected in the pattern of amendments. The distribution of spot-rezonings applications are depicted by Map XII. A frequency count of the spot rezoning applications by land use type is taken for

WINDSOR

Inner City and Periphery

North

Woodoll

Huron

Tecumseh

Ouellette

Dougall

Erie

Church

Matchette

Inner City

Periphery

.5 0 1 2
Kilometres

Map XI

Source: Census of Windsor 1971

WINDSOR

Distribution of Spot-Zoning
Amendments Requested
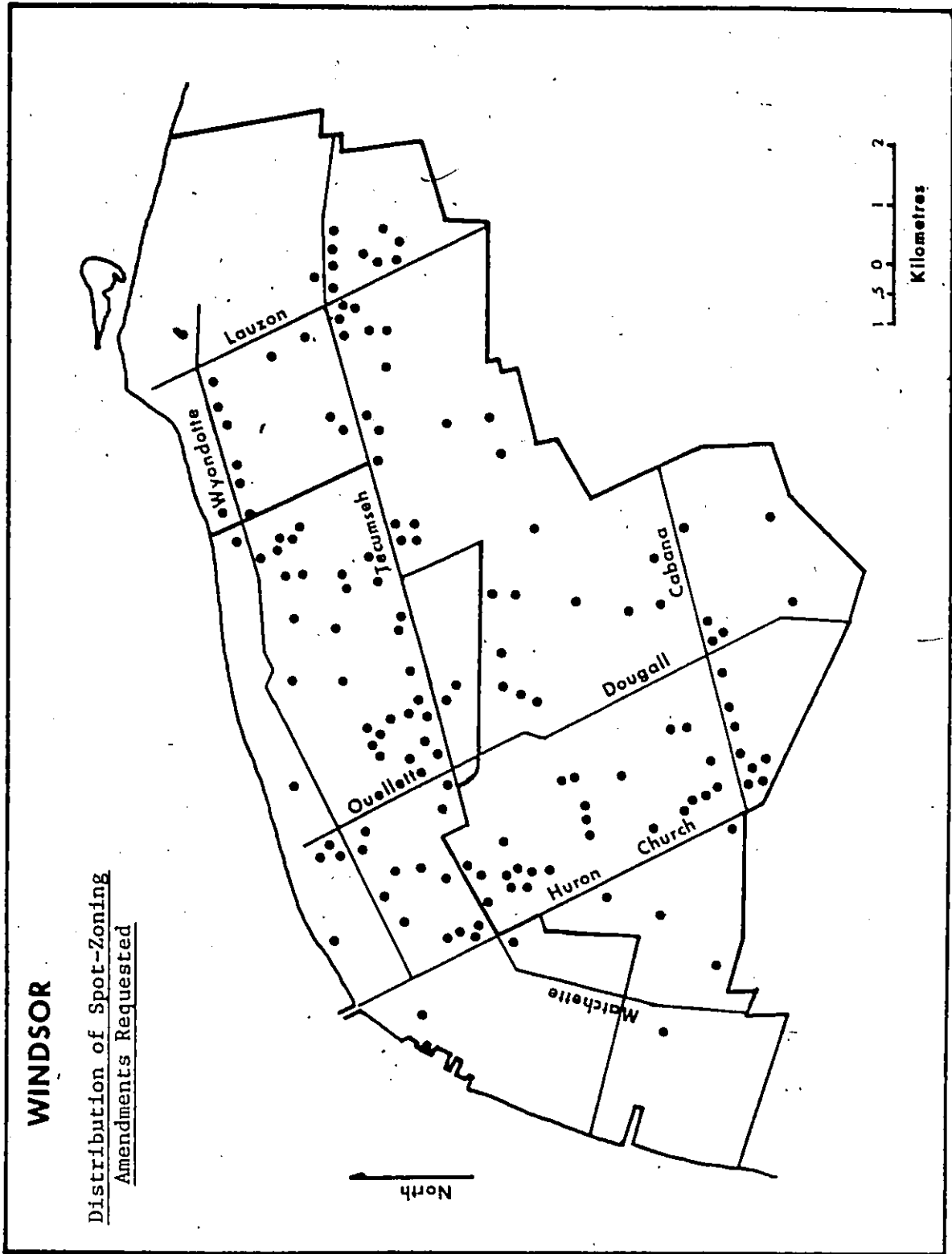
Source: Field Work

Map XII

the inner city and the periphery (Table VI).

To test hypothesis (a), the frequency of zoning amendment applications in the inner city is arranged in ascending order, and that in the periphery is arranged accordingly. Results from the Kolmogorov-Smirnov test ($D_{max} = 0.17$ and $D_{crit} = 0.483$) does not allow the acceptance of the hypothesis.

The two sets of data used for testing hypothesis (b) are the number of hectares per 1,000 hectares in the inner city and periphery (Table VII). The testing procedure is the same as that used for testing hypothesis (a). A D_{max} value of 0.16 and D_{crit} value of 0.91 warrants the rejection of the hypothesis.

As indicated in Table VI, requests for spot rezoning are more intensive in the inner city where a total of 24.07 applications per 1,000 hectares are obtained compared to only 11.79 per 1,000 hectares on the periphery. Commercial rezoning requests assume a leading position in both localities accounting for 37.64% of the rezoning requests in the inner city and 42.86% in the periphery. A higher percentage of change is requested for the medium (R_2) and high (R_3) density residential categories in the inner city than on the periphery. It is also worth noting that 31.43% of the rezoning requests on the periphery is for low density residential compared to only 15.58% on the inner city.

A comparison to Tables VI and VII reveals little difference in the pattern of rezoning requests. Commercial and the high density residentail (R_3) categories of land use account for 45.98 and 33.53 percentage respectively of the amount of land requested for rezoning in the inner city. These categories of use also have leading percentages

Table VI: Applications for Spot-Zoning Amendment Between the Inner City and the Periphery By Land Use Type

Categories	Inner City				Periphery			
	No. of Spot Zoning Amendments Requested	%	Frequency per 1,000 hectares	Cumulative Proportions	No. of Spot Zoning Amendments Requested	%	Frequency per 1,000 hectares	Cumulative Proportions
I	4	5.19	1.25	0.05	7	6.66	.79	0.07
R_1	12	15.58	3.75	0.21	33	31.43	3.71	0.38
R_2	15	19.49	4.69	0.40	12	11.43	1.35	0.49
R_3	17	22.08	5.31	0.62	8	7.62	.9	0.57
C	29	37.64	9.07	1.00	45	42.86	5.08	1.00
Total	77	100	24.07		105	100	11.79	

I - Industrial; R_1 - Low Density Residential; R_2 - Medium Density Residential;

R_3 - High Density Residential; C - Commercial

D_{max} = 0.17

D_{crit} = 0.483

Table VII: Amount of Land Requested for Spot-Zoning Amendment between the Inner City and the Periphery

Categories	Inner City				Periphery			
	No. of Hectares	%	Hectares per 1000 Hectares	Cumulative Proportions	No. of Hectares	%	Hectares per 1000 Hectares	Cumulative Proportions
I	0.59	3.82	.19	0.038	1.94	5.51	.22	0.055
R_1	1.14	7.23	.36	0.11	7.69	21.55	.86	0.271
R_2	1.49	9.44	.47	0.20	2.30	6.52	.26	0.336
R_3	5.35	33.53	1.67	0.54	5.35	15.04	.60	0.490
C	7.31	45.98	2.29	1.00	18.22	51.38	2.05	1.00
Total	15.88		4.98		35.51		3.99	

I - Industrial; R_1 - Low Density Residential; R_2 - Medium Density Residential

R_3 - High Density Residential; C - Commercial

D_{max} - .16

D_{crit} - .913

(37.64 and 22.08 respectively) in the frequency of rezoning requests

in the inner city (Table VI).

The result for the periphery in Table VI is similar to the

corresponding result in Table VII. More requests are made for rezoning

into the commercial and low density residential (R_1) land use categories

both in terms of frequency per 1000 hectares and number of hectares per

1000 hectares.

Hypothesis (c) -   A significant difference exists between the inner

city and the periphery in the frequency of requests

in each land use category for large-area rezoning.

Hypothesis (d) -   A significant difference exists between the inner

city and the periphery in the amount of land for

large area rezoning in each land use category.

The distribution of large area rezoning is shown by Map XII. Hypothesis

(c) and (d) are tested by the same procedure as hypotheses (a) and (b).

The frequency of large-area zoning amendments in the inner city and in

the periphery are the two sets of data used for testing hypothesis (c)

(Table VIII). The hypothesis is rejected since the D_{max} and the D_{crit}

values obtained are 0.4 and 0.86 respectively. The two sets of data

used for testing hypothesis (d) are the number of hectares per 1000

hectares requested for change in the inner city and the periphery (Table

IX). D_{max} value of 0.55 and D_{crit} value of 0.31 allows the acceptance

of this hypothesis.

A greater density of large-area zoning amendment requests occurs on

the peripheral area (6.18 per 1000 hectares) compared to 4.06 per 1000

hectares in the inner city. 47.27% of the peripheral large-area rezoning

applications is for R_1 land use while only 7.69% of those in the inner

WINDSOR

Distribution of Large-Area Zoning
Amendments Requested

North

Wyandotte

Lauzon

Tecumseh

Ouellette

Dougall

Cabana

Huron

Church

Marchette

Kilometres
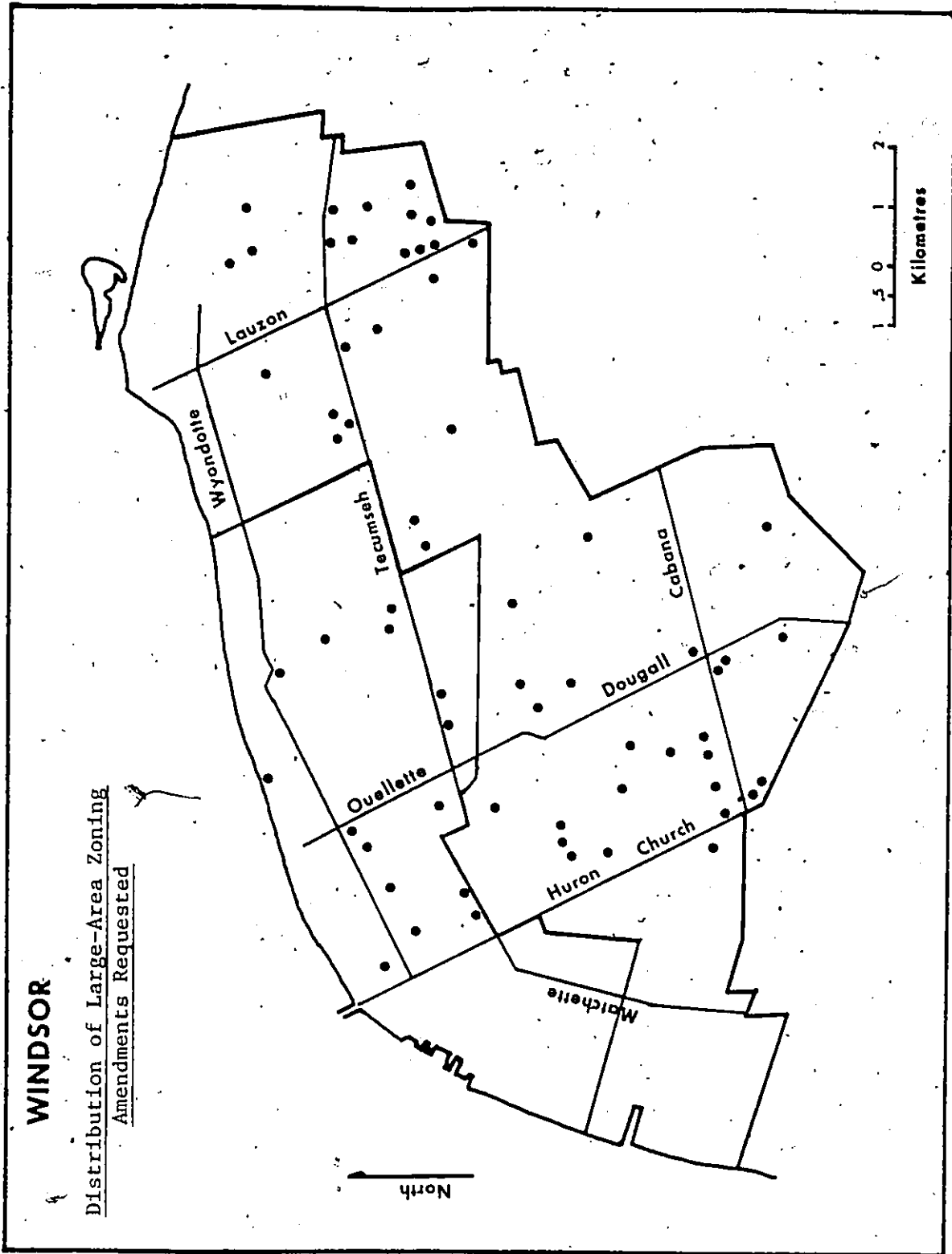
Source: Field Work

Map XIII

Table VIII: Applications for Large-Area Zoning Amendments between the Inner City and the Periphery

Categories	Inner City				Periphery			
	No. of Large-Area Amendments Requested	%	Frequency Per 1000 Hectares	Cumulative Proportion	No. of Large-Area Amendments Requested	%	Frequency Per 1000 Hectares	Cumulative Proportion
R_1	1	7.69	0.31	0.08	26	47.27	2.92	0.47
R_3	1	7.69	0.31	0.16	5	9.1	0.56	0.56
R_2	3	23.0	0.91	0.38	6	10.91	0.67	0.67
I	4	30.76	1.25	0.69	7	12.73	0.79	0.80
C	4	30.76	1.25	1.0	10	15.18	1.12	1.0
Total	13		4.06		55		6.18	

R_1 - Low Density Residential; R_3 - High Density Residential; R_2 - Medium Density Residential;

I - Industrial; C - Commercial.

D_{max} = .4

D_{crit} = .86

Table IX: Amount of Land Requested for Large-Area Zoning Amendment between the Inner City and the Periphery

Categories	Inner City				Periphery			
	No. of Hectares	%	No. of Hectares Per 1000 Hectares	Cumulative Proportions	No. of Hectares	%	No. of Hectares Per 1000 Hectares	Cumulative Proportions
R_3	1.49	2.34	.47	0.02	48.69	10.01	5.47	0.1
I	6.27	9.75	1.96	0.12	67.99	13.98	7.64	0.24
C	8.82	4.97	2.76	0.26	55.03	11.81	6.18	0.35
R_1	11.33	17.60	3.54	0.44	312.21	64.86	35.07	0.99
R_2	36.38	56.59	11.38	1.0	2.39	0.49	0.27	1.00
Total	64.29		20.11		486.31		54.63	

R_3 - High Density Residential; I - Industrial; C - Commercial; R_1 - Low Density Residential;

R_2 - Medium Density Residential.

D_{max} = 0.55

D_{crit} = 0.31

city is for this land use category. Industrial and Commercial land uses
have the highest percentage of large-area rezoning applications in the
inner city but not on the periphery.

B.   Socio-Economic Bias over Area

Hypothesis (a) -.   A significant inverse relationship exists between the frequency
of requests for rezoning and income levels.

A Kendall's Tau statistical test is used for testing this hypothesis.
To perform the test, the income intervals are ranked in descending order_
and the frequency count of rezoning applications per 1000 hectares
within the areas of each income level interval is also ranked accordingly
(see Table X). A correlation coefficient of -.29 is obtained but it is not
significant . The hypothesis is rejected at the .05 significance level.

Table X

Frequency of Applications for Zoning Amendment per Income Groups

Income Level Interval	Rank	Frequency of Rezoning Appl. per 1000 hectares	Rank
26680.00 - 24012.00	1	35.79	3
24012.00 - 21344.00	2	7.68	10
21344.00 - 18676.00	3	19.61	8
18676.00 - 16008.00	4	28.33	5
16008.00 - 13340.00	5	32.06	4
13340.00 - 10672.00	6	13.41	9
10672.00 = 8004.00	7	21.88	6
8004.00 - 5336.00	8	21.74	7
5336.00 - 2668.00	9	133.50	1
2668.00 - 0	10	90.38	2

Tau = -0.29   Zobs = -1.16   Zcrit = -1.64

Hypothesis (b) - A significant inverse relationship exists between the amount of land requested for rezoning and income levels.

Hypothesis (b) is tested by the same procedure as the previous hypothesis. The data used to test this hypothesis are shown in Table XI.

Table XI

Amount of Land per Income Group
Requested for Zoning Amendment

Rank of Income Level Interval	No. of Hectares per 1000 hect.	Rank
1	72.47	1
2	0.96	9
3	0.25	10
4	25.81	2
5	10.65	5
6	16.03	3
7	12.49	7
8	15.91	4
9	15.46	6
10	5.78	8

Tau =-0.2   Zobs =-0.8   Zcrit =-1.64

A correlation coefficient of-0.2 is obtained but it is not significant the hypothesis is rejected at 0.05 significance level. As indicated in Table X, the frequency of rezoning applications for the lower income areas (income levels one and two) exceeds that of the higher income areas (income levels nine and ten). Although a larger frequency of rezoning applications is made in areas of lower income it accounts for the rezoning of comparatively small areas (see Table XI).

Hypothesis (c) - There is a significant difference in the amount of land requested for rezoning in each land use category and income levels.

A X^2 contingency test is used for testing hypothesis (c) (Table XII).

Chi-Squared observed value of 85.75 and critical value of 15.51 which are obtained from the test allow the acceptance of the hypothesis at the 0.05 significance level.

Table XII

Amount of Land per 1000 Hectares Requested

for Zoning Amendments in each Income Level
by Land Use Type

Income Level		R_1	R_2	R_3	C	I
Low	0 - 8893.33	96.33	29.37	3.71	136.84	106.7
Middle	8893.33-17786.66	217.11	50.38	35.57	51.38	38.04
High	17786.66-26680.00	848.4	2.96	15.31	22.23	6.18
Total		1161.8	82.71	54.59	210.45	150.92

R_1 - Low density residential; R_2 Medium density residential;

R_3 - High density residential; C - Commercial; I - Industrial.
Seventy-three percent of the area requested for rezoning to the low density dwellings is confined to the upper income areas. Requests for rezoning to medium and high density dwellings and also to the manufacuring and industrial categories of land use are minimal in these areas. The bulk of the change requested to minimum and high density dwellings is confined to the middle income areas. Commercial and manufacturing land use change dominates the lower income categories - 65%of the commercial land use change and 71% of the manufacturing change requested are confined to the lower income areas.

Hypothesis (d)- A significant inverse relationship exists between the frequency of rezoning applications accepted and income levels.

This hypothesis designed to investigate the presence of bias at the administrative level is tested by a Kendall's Tau test. To test the hypothesis, tabulation is made of the requested zoning amendments accepted by income levels (Table XIII).

Table XIII

Zoning Amendments Accepted and Income Levels

Rank of Income Levels	Freq. per 1000 Hectares	Rank
1	35.79	3
2	7.68	10
3	18.11	6
4	24.13	4
5	24.13	5
6	10.97	9
7	17.49	7
8	14.72	8
9	135.75	1
10	72.62	2

A Tau value of -0.15 is obtained but it is not significant. The hypothesis is rejected at 0.05 significance level.

The data in Table XIV show a continual decline in the total percentage accepted per land use type.

Further investigation of bias in the administration of zoning amendments is done through testing hypothesis (e).

Hypothesis (e).- A significant inverse relationship exists between the frequency of accepted rezoning applications resulting in down-zoning and income levels.

This hypothesis is designed to establish the relationship between the number of zoning amendment applications accepted per 1000 hectares causing down-zoning and income levels. The two sets of data are ranked (Table XV) and a Kendall's Tau test performed.

Table XIV: Percentage of Requested Zoning Amendments Accepted

Income Levels (Low to High)	R_1 No. of Requested Amendments	R_1 No. Accepted	R_1 % Accepted	R_2 No. of Requested Amendments	R_2 No. Accepted	R_2 % Accepted	R_3 No. of Requested Amendments	R_3 No. Requested Accepted	R_3 % Requested Accepted
1				2	2	100			
2									
3	4	4	100	1	1	100	2	0	0
4	23	19	83	15	13	86	11	10	91
5	16	16	100	10	8	80	6	4	67
6	13	10	77	6	4	66	6	4	67
7	11	10	91	3	2	66	6	5	83
8	1	1	100						
9									
10	4	4	100						
Total	72	64	89	37	30	81	31	23	74

R_1 – Low Density Residential; R_2 – Medium Density Residential;

R_3 – High Density Residential.

Table XIV: Percentage of Requested Zoning Amendments Accepted

Income Levels (Low to High)	C			I		
	No. of Requested Amendments	No. Accepted	% Accepted	No. of Requested Amendments	No. Accepted	% Accepted
1	2	2	100	1	1	100
2	1	1	100	3	2	67
3	9	7	78	3	2	67
4	26	16	62	12	8	67
5	31	22	71	1	1	100
6	10	6	60	2	0	0
7	8	6	75			
8						
9	1	1	100			
10						
Total	88	61	69	22	14	64

C – Commercial;   I – Industrial

Table XV

Frequency of Down-Zoning and Income Levels

Rank of Income Levels	No. of Down-Zoning	Frequency of Down-Zoning per 1000 hectares	Rank
1	0	0	9
2	0	0	9
3	0	0	9
4	12	15.73	4
5	14	19.24	3
6	35	8.89	6
7	30	12.25	5
8	6	7.36	7
9	1	66.76	1
10	2	36.33	2

Tau = -.53   Zobs = -2.12   Zcrit = -1.64

The correlation coefficient of -.53 is significant at 0.05

significance level, therefore the hypothesis is accepted.

CHAPTER 5

IMPLICATIONS

This study shows that the zoning amendments from 1972 to 1976 caused a significant change in proportion in the land use classes allocated by the Official Plan. The bulk of the deviation seems to have occurred in the commercial land use category which had an increase of 8.18% of its total area and the industrial land use category with an increase of 3.87% of its total area. Residential category occupied the third position with an increase of 1.14% of its total area, while Public Institutional and Open Space category occupied fourth and fifth positions having an increase of .42% and .22% respectively. The distribution of zoning amendments exhibit a cluster and a linear pattern. A cluster pattern is noted in the Forest Glade area while a linear pattern of zoning amendments exists along Tecumseh Road, Huron Church Road and Ouellette Avenue.

As mentioned in Chapter I, a zoning amendment is one of the change mechanisms which can legally change the zoning maps. It is a device to cater for the unforeseen forces of change operating in the city, forces which cannot in every case be accurately forecasted by planners and legislators. If zoning amendments are reasonably administered, they should reflect change in the spatial and structural expression of urban growth. The results of the study show that the zoning amendments requested were reflexive of the forces of change operating in the city. This view is derived from results of the analysis which indicate a strong inverse relationship (correlation coefficient of -.83) between the aggregate frequency of zoning amendments and property values. The conclusion that zoning amendments were reflexive of the forces of change is further substantiated by the moderately strong inverse relationships obtained for

the disaggregated frequencies and property value.

Although zoning amendments requested were consonant with the forces of change operating in the city, biases in the applications for and in the granting of zoning amendments could still exist. Two types of biases were examined, spatial and socio-economic.

A greater number of requests for spot zoning amendments was made for the inner city than for the periphery, but the reverse happened in the case of large-area zoning amendments. It can be deduced, therefore, that bias existed in the requests for spot-rezoning and large-area rezoning between the inner city and the periphery. Further implication of the result on the requests for spot rezoning is that a greater need existed for medium and high density housing in the inner city than on the periphery. Low density housing was in greater demand in the peripheral area than in the inner city where only 15% of the rezoning requests was for low density residential use compared to 29% in the periphery. The great difference in the rezoning requests to the commercial and high density residential compared to the other land use categories in the inner city would suggest increased need for high density and commercial activities. It can also be conjectured that the pressure for land use change to commercial and high density residential categories was directly consequential to under-zoning in these categories. Of course, it can be alternatively argued that the pattern of requested change was not due to need, but to speculation by developers and other interested parties.

The data for the periphery reveal that more spot-rezoning requests were made for commercial and low density land use categories, both in terms of frequency per 1000 hectares and hectares per 1000 hectares. This suggests

a demand existed for low density housing and commercial activities. This was attributable perhaps to the availability of space on the periphery and the exodus of residents from the city centre as they move up the socio-economic ladder.

The pattern of large-area rezoning on the periphery matches that of spot rezoning. The inner city distribution of large-area zoning amendments, however, is slightly different from that of spot zoning. Most of the requests for change seems to have occurred in the commercial, industrial, and medium density residential categories.

Generally, no significant bias seems to exist in the applications for and the granting of approval of zoning amendments by socio-economic groups. The indications are, however, that spot rezoning was associated with lower socio-economic areas . Although bias toward any socio-economic group is not statistically significant, the data show that rezoning to medium and high density dwellings was confined to middle income areas while rezoning to commercial and manufacturing land uses was concentrated in lower income areas. Rezoning to low density residential seems to have dominated upper income areas.

No statistically significant bias is indicated for the accepted number of zoning amendments and income areas. Possibilities of bias are indicated by the down-zoning statistic. Sixty-seven percent of the amendments accepted resulted in down-zoning in the lower income areas.

Future Research

Before any strong statement can be made on the validity of the amendment procedure in Windsor, further research needs to be done. Biases in the amendment procedure can be further tested for by an investigation

of whether applications for similar zoning amendments are given

differential treatment. This would involve an examination of the nature

of each application for zoning amendment; reasons for residents opposition

to the amendment, and city council's handling of it i.e. whether similar

applications are accepted or rejected for the same reasons. Other aspects

of zoning amendment that are not covered in this study but need to be

undertaken are: an investigation of the effect of zoning amendments on

property value and the influence of zoning amendments on neighbourhood

decay.

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