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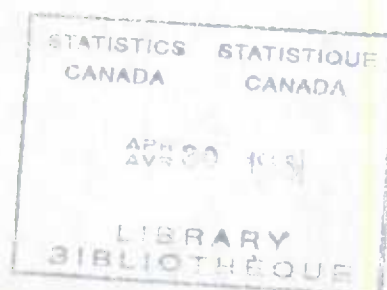
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WORKING PAPER #14

Alternative Frameworks for Rural Data

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ALTERNATIVE FRAMEWORKS FOR
RURAL DATA

REPORT
TO THE
AD HOC COMMITTEE ON THE
DEFINITION OF RURALITY,
STATISTICS CANADA
OTTAWA

by
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ALTERNATIVE FRAMEWORKS FOR RURAL DATA

1. INTRODUCTION

"The transportation industry which made it possible to work in and live out has now enabled people to work anywhere and live nowhere."

Gilbert, 1960

'Rural' must go. This cry has long been heard from the research community, yet the term, the old definitions and the concept itself remain deeply embedded in our psyche. As a general descriptive term it has obvious meaning and value. It conveys to most people conditions associated with countryside, small settlements, greenness and remoteness. These may be seen as land, people, ecology and space related. Yet the precise degree, combination or nature of these basic characteristics vary enormously according to objective reality and individual experience. Most importantly these conditions and perceptions change over time such that maintaining clearly defined, commonly-held concepts of rurality becomes increasingly difficult.

For public agencies that have to develop policy and administer programs, the labels which describe differences in the circumstances of people is a constant concern. Such agencies are driven by demands of equity and justice, special needs, fiscal responsibility and political efficacy. Policy analysts and researchers who provide public agencies with information on needs, costs and benefits, are required to use data that is publicly available and is seen to serve the common good. All these demands and constraints on public policy and program development place enormous emphasis on the requirement for good, accurate data that reflects reality. Popular images of 'rural' are not sufficient to inform policy in a consistent and meaningful way, although they may be important for society to uphold.

The essential characteristic of 'rural' is that it is a geographical concept. It conveys a sense of space, whether measured in terms of low density of people, houses or activities. It invariably contrasts with high density urban or metropolitan centres in that it looks different. However, a major debate has evolved as to whether the people who occupy so-called 'rural' space are different, behave differently or have a different construction of reality. It is our belief that rural areas not only look different but that people have different lifestyles based on their environment and their values. The important thing however is that there are many different types of rural space and probably many different rural lifestyles, such that the simplistic comparison of rural with urban is insufficient and often misleading.

It is the purpose of this report to trace the growing disutility of the term 'rural' as used by Statistics Canada and to establish the need for better constructs based on contemporary reality and future probabilities. It is therefore largely a conceptual paper with only passing reference to secondary data to provide clues as to the prospects and problems of changing definitions, measurements and units of analysis. In this way, it is hoped to stimulate further examination of the problem and to provide some ideas that might lead to more informed research and debate on what is 'rural'.

2. THE CHANGING NATURE OF 'RURAL'

2.1 'Rural' Must Go?

Dissatisfaction with the term rural is evident in the literature. Hoggart (1990), speaking mainly from the British experience makes the general point that,

" . . . undifferentiated use of 'rural' in a research context is detrimental to the advancement of social science."

He goes on to observe the distinction between "'rural', meaning a particular kind of geographical milieu, and 'rurality' which refers to a particular behaviour style associated with such areas." As both these concepts are also vague and contain within them large variations in types and, since researchers still use existing definitions and data because of convenience, he advocates "Lets do away with 'rural'."

The growing plethora of seminars on the future of rural areas in a period of global restructuring is constrained by the paucity of suitable data to verify the emerging trends of rural change and dynamism. The seminar, Agriculture and Beyond, Rural Economic Development, held in the USA in 1987 produced international concern about measuring rural dynamism, beyond agriculture (Castle, Newby, Summers, de Janvrey and Deavers).

An international seminar in Scotland on Rural Policy Issues (1991) produced similar observations with regard to the difficulty of measuring the new dynamics of rural areas. The Agricultural and Rural Restructuring Group (ARRG) Seminar on Sustainable Rural Communities in Saskatoon, 1989 and the ARRG Preconference to the Agricultural Economics and Farm Management Society Meetings in Vancouver, 1990, echoed the data problem, particularly the papers by Fuller, Ehrensaft and Gertler; Ehrensaft and Freshwater: and by Fuller, Bollman and Ahearn. References to the dilemmas of definition

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were made at the Aspen Institute International symposium on Economic Change, Policies, Strategies and Research Issues, in 1990 by Bonnen (USA), MacDowell (USA), Capellin (Italy) and Fuller (Canada). This culminated in 1990, with the Statistics Canada conference on Rural and Small Town Canada, which illustrated through the papers presented both the constraints in the data as well as the paucity of useful constructs with which to identify 'rural'. In 1991, two further conferences have confirmed this view, among European rural development specialists who met in Galway (eg, Grohn, Finland; Henrichsmeyer, Germany) and rural geographers from the U.K., Canada and the USA who are concerned with rural restructuring who met in the U.K. in August (eg, Munton, Hart and Bryant).

2.2 'Rural' Ain't What It Used To Be

What emerges from this debate is that 'rural' ain't what it used to be. Definitions that may have served well in the past have become redundant over time and because they are maintained for convenience and continuity, have actually led to poor research.

A simple 3-stage evolution of 'rurality' can be used to illustrate the dynamics of change in Western Industrial societies over the last one hundred and fifty years.

The Short Distance Society is based on the primacy of primary economies and low transportation technology. It captures the old reality where one settlement served to focus most of the activity of its surrounding hinterland. It would be a relatively short distance by horse drawn conveyance to the centre for goods, services and institutional needs such as church and

school. The essential dynamic is centripetal, the economy is resource dependent and social organization relatively structured and closed. There is a high unity of space and function in the 'short distance society'.

The Industrial Society depicts the broadening of the interactive space due to declining (relative) transportation costs. However, the focus remains on the central community which becomes industrial in its mode of organization and function, even when supplying farm needs and processing farm outputs. Social organization remains community-based despite the growing 'contractual' form of economic and social relations. Technology is the main motor of change and net labour out-migration characterises this phase in most rural systems. The single resource based community (the single industry town) which brings together the short-distance society and the industrial society, is an example.

The Arena Society reflects the emerging rural reality. The spatial context for activity widens appreciably to include several trade centres for the consumption of personal and household goods and services, as well as for socialisation. The economy may now be linked to the international production and capital markets, with a high segmentation of the labour market. Distance-shrinking technology overcomes isolation in terms of news and media, but the physical distances and the effects of space remain

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and are still made visible as transportation costs for individual mobility. Great personal mobility based on the motor vehicle is a key feature of the local multicommunity system.

*It is essential to recognize that this 3-stage construct developed originally by Persson and Westholm (1991) is a simplification of how rurality has evolved over time. Importantly, all three 'rural' societies can exist in one region or nation. The concept recognizes the roots of our present rurality, elements of which still remain, while identifying some of the essential features of the emerging reality. The sense of space and the physical configuration of landscape and the infrastructures such as road and settlement patterns remain largely the same, but the economic and social reality of human activity has altered considerably. **This implies a fundamental shift in that social and economic interactions are now taking place over a larger (and varied) set of spatial units.***

2.3 If 'Rural' Ain't What It Used To Be, Then What Is It?

The emerging rural reality is a complex mix of interrelationships that take place within and between the spatially defined infrastructures that were laid down for the short distance societies in the nineteenth century. The individual need to identify with one place (home and community), to interact with several places (the multicommunity system) to achieve the quality of life expected today, and to be aware of global news and views in the arena society is the emerging norm. It is in this context that new and rural labour markets are forming, high modes of mobility (vulnerable to fuel crises) become prominent and economies link or de-link with international markets. Although the spatial units and

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configurations remain relatively fixed, the emergent human behaviours are dynamic and may best be described as differences in 'lifestyles'.

3. REDEFINING 'RURAL'

3.1   The Key Literature Reviewed.

In searching the literature for ideas which may be of value in reformulating the concept of 'rural', the findings are disappointing. Only a few authors outside of Statistics Canada appear to have something to say on the rurality question in terms of measurement.

Paul Cloke developed a Rurality Index for England and Wales in the mid-1970's (Cloke, 1977). It was based on a multi-variate analysis of factors which produced a gradient of values by which to map rurality. Updated in 1986, it shows the tendency for rurality and deprivation to increase in remote and upland areas such as Central Wales (Cloke and Edwards, 1986).

Marvel Lang assessed alternative approaches to redefining urban and rural for the U.S. Census of Population in 1986. He observes that settlement patterns and socio-cultural lifestyles are the two changes of note in the American population and observes that " . . . one's residence in a rural environment no longer automatically typifies a rural lifestyle." Although he advocates using a household-aggregation approach, he recognises that it does not account for the socio-cultural aspects of the population and we are left with another example of advocacy without a satisfactory means of measurement.

Beale on the other hand is very specific about measurement and divides geographical space in the U.S.A. into units based on population numbers (Beale, 1978). He argues that there is a continuum from rural to metropolitan and that a division into ten categories captures the essential differences between rural and urban areas. It has the merit of being a relatively simple approach with a sound internal logic based on the continuum idea. However, in testing the Beale codes for Canada, Ehrensaft found the population cut-offs used by Beale to be unsuitable in the Canadian context, although the concept of distance from major centres is a useful one (Ehrensaft and Beeman, 1992). Ehrensaft in attempting to use the Beale codes in Canada has added an eleventh code for northern and native environments.

The Beale codes have potential and we include here a review of the paper by Ehrensaft and Beeman (1992) to comment on its strengths and weaknesses when applied to Canada. The review, contained in Annex One, is divided into a Summary of the paper and a critique of the application.

A recent paper by Arundell on Rural, Remote and Metropolitan Zone Classification in Australia (Annex Two) arrives at similar conclusions. He devises an Index of Remoteness in which distance to metropolitan centres is the main differentiating criterion. It is a spatial concept and does not allow very much characterisation. It tells us where rural is, not what it is.

What is required is a system of classification which describes the characteristics of rural and remote areas in order to explain the internal logic of those areas. What are the characteristics of rural and remote areas that distinguish them fundamentally from

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each other and from metropolitan areas? If there are no such distinguishing characteristics, are those areas worth studying?

The emphasis of the Index seems to be on service provision. What is forgotten is that services are provided in order to maintain a system of production and it is around this system of production that social organisation takes place. The Index therefore can be useful to policy makers in estimating costs of service provision, but without explaining the role of the area in the larger economy, or the internal social and economic logic of the area, it tells us little about desired policy directions for the area. Nor does it allow us to predict the expected outcomes of policy or to engage in effective policy analysis. The explanatory ability, and hence predictability, of this classification system appears limited.

4.0 Measurement in the Public Domain

Two requirements dominate the variety of considerations that need to be taken into account when reformulating statistical and geographical concepts. One is the need to make new definitions consistent with the most valid of old definitions such that temporal continuity can be maintained. An important use of statistical record keeping is to assess societal development. Such analysis would be impossible if new definitions which suit only the current era are invented for every census period. One solution is to be able to adjust concepts and definitions as new phenomena of social importance arise by adapting them to the constructs that have already been established and used.

The second requirement is that all concepts and definitions need to be simple and universally applicable. Complexity is both costly and likely to lead to confusion on behalf

of the users. Concepts and definitions need to have broad meaning and universal acceptance. With the globalisation of economies, new political and economic alliances and the recognition of cultural diversity, the need for concepts and definitions which have international currency is also becoming important. For example, Canada (represented by Statistics Canada) is participating in an OECD initiative to define a consistent definition of rural areas across twenty-four OECD countries.

The requirements of temporal consistency, simplicity and universality are constraining factors in the search for improved measures of rurality.

4.1 Reconceptualising Rurality

There are three contributions to this discussion: the evolving concept of rurality as the Arena Society, the ideas and information from other studies including the experience of those attempting to measure rurality and apply it over space; and the constraints imposed by statistical agencies for continuity and universality. The outcome may be formulated as three options: _to make the best_ of what there is; _to adjust_ what is there; or _to change_ the concept and definition completely.

A. The New Status Quo

It is important to recognise that a valiant attempt at improving the situation in Canada has already taken place and that the Census Metropolitan Area (CMA) and Census Agglomeration (CA) constructs are the result. Instituted in the 1941 and 1951 Censuses, respectively, the two population based, geographical constructs each have three tiers within them: the urbanized core, the urban fringe and the rural fringe. The urbanized core of the CMA has more than 100,000 population, while that of the CA has

10,000+ population. Both geographical constructs permit the recognition of rural sub-units within them, and suggests that rurality will vary according to the differential in the order of magnitude of the population base.

The overall assumption is that the CMA and CA definitions involve the classification of space based on population interactions, that is, those used to describe the labour market. It attempts to recognise the dominant influence of major metropolitan centres over the social and economic structure of the surrounding hinterland. This classification is based on the traditional concept of a metropole/hinterland relationship and takes labour patterns as indicative of this relationship.

Although this objective in itself is valid, it also becomes the weakness of the system as it assumes that all human inter- actions are governed by metropolitan relationships. More importantly it assumes the dominance of <u>one</u> urban centre of agglomeration and this is not what we recognise in the emerging arena society where multiple centres and modes of interaction are common, especially in rural areas.

One distinct advantage of the new status quo is the possibility of identifying rural population change within the CMA/CA system. For example, it is evident that the share of rural population almost doubled between 1976 and 1986. Significantly, this occurred largely in urban fringe areas.

However, the urbanistic focus, the unipolarity, the arbitrary population size cut-offs, and the dependency on labour markets are weaknesses which render the CMA/CA classifications unsatisfactory from a rural perspective.

B. The Adjustment Approach

Option B is to improve the situation by making adjustments to the existing definitions without doing violence to the need for temporal continuity. It was decided to use the census sub-division (CSD) as the spatial units of analysis, not the enumeration area (EA), because of the ease of quality of data at this level. In order to multiply the categories of rural, by searching for population cut-offs that showed significant differences between categories, variables were selected from our understanding of contemporary rural conditions in Southern Ontario. A full description of the methodology with tables of results are contained in Annex Three.

To test this approach, 2A/2B profiles of the 1986 Census for Ontario were used at the Census sub-division level. The data were transformed into percentages and then into quintile ranges for purposes of comparison between centres of varying sizes. Population, population density, and distance from urban population centres of specified size were selected as independent variables. The following were considered to be fundamental indicators of the social economy of any geographical unit and were selected as the dependent variables:

- housing type
- migration
- employment
- education
- infrastructure
- income

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A Kolmogorov-Smirnov test was run to test for differences in the selected indicators between the population categories. As the test was run on data transformed into quintile ranges, the results indicated levels of difference in the structure of the variables between units, not differences in the values of the variables.

It is interesting to note that when density was factored into the analysis using the official definition of >1000 population and >400 population density to equal urban, 52% of the cases were not classified within the given parameters. Subsequent analysis on the 52% as a statistical group showed the validity of 1000 population as a significant cut-off, but 400 population density as not so. This confirms that low population does not necessarily mean low density and vice versa and reflects the size and location of geographical units rather than rurality.

Figure One illustrates the outcome of the tests of difference between the selected indicators for 6 groups of population size (1-999, 1,000-2,499, 2,500-4,999, 5,000-9,999, 10,000-19,999, 20,000+). All indicators show a statistical difference between areas with less than 1,000 population from those of 1,000-2,499 population. Some differentiations occurred between units of populations 2,500 to 10,000, but without consistency. Units with between 10,000-20,000 population differed on two indicators and places above 20,000 were different again. The resultant pattern, shown in Figure One, is simple and revealing. To emphasize their characteristic differences, we ascribed names to the population size groups.

FIGURE ONE

Rural Canada

1 - 1,000	1,000 - 10,000	10,000 - 20,000
Rural Area	District Centre	Regional Centre
Adjacent	Adjacent	Adjacent
--------	--------	--------
Remote	Remote	Remote

A *Rural Area* is a CSD with less than 1,000 population and can either be near or remote from a major population centre. A *District Centre* has between 1,000-10,000 population and may vary according to location (adjacent or remote from major urban centre). A *Regional Centre* has between 10,000-20,000 population.

All three groups of census subdivisions could be described as comprising Rural Canada in a collective sense, as most of the spatial and population variations in rural areas are accounted for. We also know that the population size groups are different on income, migration and employment indicators which are fairly good surrogates of the labour market. Together with the proximity to urban centre variable, another labour market factor, we feel that most rural situations are covered in the three part grouping.

To develop this approach further, it needs to be thoroughly tested across Canada using additional socio-economic variables to test for difference between the three categories and the validity of the category boundaries. For example, if there is no significant difference on key variables between the upper cut-off of CSDs with 20,000

population and 25,000 population, then the latter should be adopted as it would be consistent with existing size categories. In addition, the concept of adjacent/remote needs to be implemented; CSDs that are physically adjacent to urban CSDs being adjacent while CSDs that are not physically adjacent can be called remote. Mapping these distributions and ground truthing them by checking them wit reality should provide a simple test of the utility of this approach.

C. The Multifactor Approach

The employment of a 2-stage process involving multivariate classification of the lowest level of publicly available Census data (EAs or CSDs) as the basis of selected socio-economic indicators and the subsequent classification of larger census divisions on the basis of the proportion and combination of these socio-economic groups found within them, is an approach worthy of further consideration. It could be used in combination with the more general indicators such as population size, density and metropolitan proximity.

Equally important, the multi-variate approach permits us to describe rurality by means of changing lifestyles. Well chosen indicators may effectively capture the essence of the Arena Society while allowing the residual conditions of the short-distance and the industrial societies to remain in the calculus and to be relevant.

Some indication of what the first stage of this process might look like is found in the Lifestyles (TM) market segmentation classification developed by Compusearch using the 1981 Census and extensively re-worked using 1986 Census data.

The 1986 Lifestyles (TM) classification is based on a non-hierarchical cluster

analysis of thirty-five variables which reflect income, education, age of head of household, household size, employment and occupation, household mobility, dwelling type and tenure, residential setting and mother tongue (Compusearch, 1989). Separate analyses were conducted for areas over 25,000 ("urban") and the remaining small cities, towns and rural areas ("Rural"). The analyses generated forty-eight "urban" and twenty-two "rural" clusters representing comparatively homogeneous "Neighbourhoods" (enumeration areas) on the variables included in the analysis. The seventy clusters produced are further grouped into thirteen broad aggregated categories.

Although capturing the richness of the database, albeit for a market segmentation purpose, a more simplified general classification system for EA's might be developed using a more restricted list of variables without an a priori distinction between "urban" and "rural" on the basis of the 25,000 population cut-off. Larger geographic census units could then be classified on the basis of both the diversity and relative proportion of the cluster types contained within them.

A multifactor classification approach overcomes some of the limitations of aggregation, classification and causation inherent in the present system. The problem of aggregation is addressed by permitting geographic space to be organised by social and economic activity rather than some existing predefined units. The multifactor approach allows for the classification of units on the basis of contemporary patterns of behaviour and hence permits the exploration of new and perhaps more relevant questions. Finally, by treating population as just one variable rather than as the independent variable, the approach permits research to move beyond the simplistic population behaviour causal

relationship.

Conceptually, a multifactor classification approach is more in accord with the new spatial reality of the Arena Society, a reality which is more mobile, and in which social and economic activity is more dispersed. The Arena Society represents the broader trend towards globalisation, in which technological change in communications has dispersed values and information and in which improved transportation has reduced real distance. Population size per se is thus less of a factor in social and economic differences. The multifactor classification approach moves us beyond the implicit population size/behaviour relationship.

The principal limitations of the multifactor classification approach relate to its lack of temporal continuity and its subjectivity. Implementation of a multifactor approach in future censuses would result in a lack of comparability both with data reported in the past and also with data collected in future censuses, since to retain its contemporary utility the classification would be reworked following each census. The multifactor approach is thus more subjective than simplistic definitions which could remain constant over time.

5. SUMMARY AND CONCLUSIONS

Changing the concept and definition of rurality so that it more accurately reflects present reality is a daunting task. The requirements of simplicity and temporal continuity have produced, in all the western industrial nations, definitions of rural space based on population and related measures such as population density.

Although a classification system based purely upon population, population density

and proximity to major metropolitan centres has the apparent advantage of simplicity, it also has a number of problems. These problems may be categorized as problems of aggregation, classification and causation. The limited number of indicator variables and the gross level of geographic representation fail to capture the considerable socio-economic diversity of larger geographic reporting units. Existing spatial reporting units, based upon administrative subdivisions, are also reflective of the short-distance/industrial society and the use of such administrative subdivisions may not adequately capture new emerging patterns of interaction. Moreover, the existing urban/rural definition presumes a correlation between population size and population density and socio-economic activity and interaction. Given that the nature and form of this relationship is clearly changing, such simplistic secondary indicators may no longer be adequate as descriptors.

Three observations emerge from this paper which suggest further research and deliberation.

1.   The rural reality in Canada has evolved into a complex set of characteristics which differ as much from each other as much as they distinguish rural from urban. A thorough academic debate needs to be undertaken to reach consensus on just how many broad types of rural space there are and what the leading indicators of difference are among them.

A consultative approach involving data users from social sciences, the private sector and government agencies is required that would provide feedback on the concepts and propositions thought most likely to succeed.

2.	*A specific study should be made of the multifactor classification approach to classifying rurality and rural space. This approach offers the most promise as it includes a dynamic element in its conception and permits redefinition over time.*

3.	*Further examination of the adjustment approach using population cut-offs below 20-25,000 population needs to be undertaken across Canada. A wide variety of variables need to be tested that would potentially differentiate, confirm or reject the three categories of rural.*

If such enquiries are undertaken in a series of planned activities then the opportunity to fully comprehend the viable options for redefining 'rural' as a nationally acceptable 'user' concept could be reached in time for a change of census definition before the twenty-first century.

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DISTANCE AND DIVERSITY IN NON-METROPOLITAN ECONOMIES

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Summary

There are two forces operative in the development of rural (non-metropolitan) space:

1. Reorganisation of the labour force from primary to secondary to tertiary activities.

2. Changes in transportation and telecommunications technology which have brought rural areas into the orbit of metropolitan areas while excluding more remote regions.

The buoyant economy of the 1970's in primary products and small town manufacturing led to a concentration on sectoral rather than regional policy. This led indirectly to the deterioration of regional data as data was assembled sectorally. In the current economic environment sectoral policies are no longer sufficient to aid regions to restructure their economic base.

Problem	.	We do not have a conceptual framework to interpret the changes to rural areas;
	.	Neglect of regional data* limits the ability to organize data to interpret change and establish effective policy.
Objective	.	Present a Coding System that reflects the diversification of and plurality of non-metro areas.
	.	Apply these codes in a cross-sectional analysis of data.

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*   *Regional data in this discussion refers to sub-provincial data, not aggregations of provinces into 'regions'.*

The existing definition of rural as an aggregate measure masks real differences in economic structure, performance and welfare among rural areas. Population and density measures do not take account of the regional context of the population.

Proposition   The labour force and demographic dynamics of a given rural settlement will vary according to whether:

> .   *The host county is adjacent or non-adjacent to a metropolitan area*

> .   *The population of the host county is predominantly in larger cities, small cities, small towns or rural settlements.*

Ehrensaft and Beeman advocate use of the Beale Codes as they take account of the regional context by factoring distance from metropolitan areas.

Canada has three basic settlement classes, account for 1/3 of the total population each:

> .   *Major metro areas (Beale Codes 0-1)*

> .   *Medium and small metro areas (Beale Codes 2-3)*

> .   *Non-metro areas (Beale Codes 4-10)*

Non-metro areas can be either adjacent or distant from metro areas. The majority of the non-metro population is located in areas which are distant from metro areas.

Summary of Data

The proportion of the labour force in non-metro areas employed in goods production rises as one moves from metro to non-metro areas. The trend towards service employment in advanced industrial economies leaves non-metro areas more vulnerable

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to the stresses imposed by global restructuring. Non-adjacent non-metro areas are the most vulnerable as they rely proportionately more on initial manufacturing rather than more advanced stages of goods production.

There is a declining proportion of the labour force employed in services as one moves from metro to non-metro areas. Service employment in non-adjacent non-metro areas is largely concentrated in government.

Economic welfare is measured by the unemployment rate and the proportion of families reporting low income. As one moves from metro to non-metro areas unemployment rates and the incidence of low income rise and are higher in non-adjacent non-metro areas.

Non-metro areas also tend to be highly dependent on one or two sectors, indicating the trend toward macro-diversification and micro-specialisation. Non-metro areas can be classified as belonging to one of the following specialised groups:

. *Agriculturally dependent*

. *Manufacturing dependent*

. *Mining dependent*

. *Government specialised*

. *Persistent poverty*

. *Federal land counties*

. *Retirement destination communities*

These are not mutually exclusive categories as non-metro areas can be dual dependent, but generally dependence is on one sector.

Critique

The Beale Code system as advocated by Ehrensaft and Beeman is based on the following assumptions:

. That the social and economic structure and role of a region is defined by its place within a larger economic structure which is based on heartland-hinterland relationships.

. That distance is the primary determinant of an area's place within the heartland-hinterland structure.

. That within the heartland-hinterland structure a single metropolitan area has regional dominance over a surrounding hinterland.

. That the population size of the metropolitan area determines its relative influence over the hinterland which surrounds it.

. That the economy of an area as defined by its physical location in the heartland-hinterland structure is the primary organizing structure of the area.

These assumptions are open to question on a number of grounds.

The approach assumes that distance is the prime determinant of an area's place within a heartland-hinterland structure. The implication is that by changing relative distance we can change the nature of the social and economic structure of the area. This ignores the particularities of regions and their respective natural and human resources which may be sufficient to either lead to underdevelopment within adjacent or metropolitan areas or to development within non-adjacent or remote regions.

Secondly, the assumption that the population of the metropolitan area determines its relative influence over the hinterland which surrounds it means that all areas with the same metropolitan population are grouped together as similar in terms of their economic

role and structure. This does not account for regional differences in the role and structure of metropolitan areas. Population of itself is not the prime determinant of a metropolitan area's role or structure. Rather, it could be argued that the population of a particular place is determined by the role and structure of the larger economic structure, of which local area is a part, and which organizes local space in terms of the resources which it requires to extract from that area.

Finally, the Beale Code approach assumes that the economic structure of an area is the primary organizing structure. There is no account made of sociological influences which may operate independent of the form of economic organization in the area. The Beale Code approach remains within rural orthodoxy which assumes that population of an area determines the socio-economic structure of that area. The Beale Codes merely extend this concept to argue that the population of the adjacent metropolitan area also has influence over the rural socio-economic structure.

The Beale Code approach makes sense if one accepts that the traditional heartland-hinterland concept is still a valid theoretical construct within which to organize our data. The arena society concept challenges this premise. The heartland-hinterland concept retains the short distance society framework and the concept of a single metropolitan area having regional dominance over a surrounding hinterland. The arena society concept suggests that a hinterland is governed by various metropoles which assert varying degrees of influence over the area.

While the Beale Codes establish a relationship between economic structure and distance, there is no explanatory concept which relates the two variables. An alternative explanation of the relationship between "distance and diversity" is that both metro and

non-metro areas are linked via a larger socio-economic structure which dominates both independently of the other and the effects of that relationship are experienced more or less intensely depending on the socio-economic structure of the region and the nature of its relationship with the larger organizing structure. The arena society concept makes thinking of such relationships possible whereas traditional heartland-hinterland concepts confine our data and research to modes of social and economic organization which may be increasingly antiquated.

RURAL, REMOTE AND METROPOLITAN ZONE CLASSIFICATION:
Leon Arundell

Summary

Arundell outlines a classification system based on an Index of Remoteness. The purpose of the remoteness classification is to:

. Enable the production of maps and statistics which compare areas

. Measure remoteness and to permit selected factors to be measured for remoteness.

Arundell states that rural, remote and metropolitan zones exhibit differences in service provision, economic base, land use, natural resources, demography and social structure. These differences are not detailed in the article.

The rural, remote and metropolitan zones are treated as mutually exclusive. The rural and remote zones are treated as residuals after the metropolitan classification. The Australian Statistical Geographic Classification (ASGC) defines metropolitan as: 1. Capital Cities 2. Other Metropolitan: centres of population of >100,000. ASGC defines rural as 'localities' (population clusters of 200-999) plus the surrounding 'rural balance' of more sparsely populated regions.

Arundell uses the ASGC metropolitan classification and then uses an "Index of Remoteness" to define non-metropolitan areas. The rural zone includes non-metro areas whose index of remoteness is < 10. Remote zones include non-metro areas whose index of remoteness is > 10.

The Index of Remoteness is based on Central Place Theory which uses the

concepts of threshold population and distance to services to establish a Central Place Hierarchy. The Index was developed based on the following criteria:

. Distance to nearest provincial city

. Personal distance (basically population density)

. Distance to nearest small city

. Distance to nearest metropolitan area

Critique

The Index of Remoteness is purely a spatial concept. It indicates distance from population centres of a given size. It does not allow us to infer any characteristics about the given zone. Specifically it does not allow us to infer social or economic characteristics. Thus the index does not explain an area's role, it only describes its physical/spatial location. It tells us where rural is, not what it is.

ANNEX THREE

THE ADJUSTMENT APPROACH

A. Methodology

1.0 Using the Statistics Canada 2A/2B profiles of the 1986 Census, data for all Ontario Census subdivisions was retrieved and imported into the SPSS statistical program for statistical analysis. The data was transformed into percentages for purposes of comparison. The percentages were transformed into quintile ranges so as to make population centres of varying sizes comparable. Population, population density, and distance from urban population centres of specified size were selected as independent variables.

The following were considered to be fundamental indicators of the social economy of the respective units and selected as the dependent variables:

- *Housing type*
- *Migration*
- *Employment*
- *Education*
- *Infrastructure*
- *Income*

1.1 Population

The initial units of analysis consisted of the following population categories of census sub-divisions:

1.   0 - 999
2.   1000 - 2499
3.   2500 - 4999
4.   5000 - 9000
5. 10000 - 19999
6.   20000 +

A Kolmogorov-Smirnov test was run to test for differences in the selected indicators among the population categories. The Kolmogorov-Smirnov test of difference of population categories was used to determine whether the population size categories chosen are significantly different in terms of the selected socio-economic indicators. As the test was run on data transformed into quintile ranges the results indicated levels of difference in the structure of the variables between units, not differences in the values of the variables.

A summary of results was used to identify indicator variables which recorded differences of statistical significance between population categories. The identified indicators could then be examined in more detail to determine the nature of difference.

1.2 Density

Following analysis of tests of difference of the selected population categories, density was factored into the analysis. Density was factored by grouping cases according to the satisfaction of population and density conditions. The initial parameters selected were <1000 population and <400 population density = rural; >1000 and >400 = urban.

The results of the frequency distribution indicated that 52% of the census sub-

divisions are not classified within the given parameters. The unclassified group was further divided between those cases satisfying the urban population condition but not the density condition (>1000, <400), and those cases satisfying the urban density condition but not the population condition (<1000, >400).

Tests of difference were run on the selected indicators between the unclassified units and the urban units, and between the unclassified units and the rural units.

Leaving density constant, the population component of the urban/rural definition was altered to establish an optimum demarcation point of population per census sub-division at which the unclassified group would be minimised and the maximum number of cases reclassified in either the urban or the rural category.

Descriptive statistics of the new classifications were generated based on the selected indicators to descriptively analyze the new population categories.

Tests of difference between the new classifications were run to test the statistical validity of the new classifications.

2.0   Summary

Differences between size categories were found primarily between the size categories of 0-1000 and 1000-2500, and between the categories 10000-20000 and 20000+. Differences between the size categories 2 and 3 were significant only on the income indicator.

Differences between categories 1 and 2 were most marked at the indicators of housing type, migration, education, employment and income. Differences between categories 5 and 6 were most marked at the indicators housing type, migration, and employment.

There were no differences between categories 5 and 6 on the income indicator.

However, as noted, differences appeared on this indicator between the size categories

2 and 3.

This suggests that the 1000 population category is a relevant size cut-off point

based on the variables selected for analysis. Further examination of this tentative

conclusion is warranted.

2.1 Housing Type

Differences in occupancy appear between the 0-1000 and 1000-2500 categories

on the variables "percentage owned" and "percentage rented". Differences between these

two size categories also appear on the variable "movable dwelling".

Differences also appear between the size categories 10000-20000 and 20000+ on

the variable percentage rented. Differences between these two categories also appear

on the variable "apartment 5 stories and more" and "single detached house".

2.2 Migration

Differences between size categories 0-1000 and 1000-2500 appear on the variables

non migrants, migrants, migrants from same census division, migrants from the same

province, migrants from a different province and migrants from outside Canada.

Differences between size categories 10000-20000 and 20000+ appear on the

variables non-movers and movers, migrants from same census division, migrants from

same province, migrants from different province and migrants from outside Canada.

2.3 Employment

Differences in industry of employment were significant between size categories 1 and 2 on all employment variables except for the "trade" variable.

Differences in industry of employment were significant between size categories 5 and 6 on the following employment variables: primary industries; trade; finance, insurance and real estate; other service industries.

2.4 Education

Differences between size categories 1 and 2 were significant for all education variables except for "Grades 9-13 no certificate". Difference between size categories 2 and 3 was significant for the variable less than grade 9.

Differences between size categories 5 and 6 were significant for the following education variables: less than grade 9; grade 9-13 no certificate' other non-university without diploma; university without degree and university with degree.

2.5 Infrastructure

Differences between size categories on the infrastructure indicator variables followed a less clear pattern than the other indicators. Differences between size categories 1 and 2 appeared on the variables constructed before 1949; constructed between 1961 and 1970; percentage using gas; percentage using oil; other fuels.

Differences between size categories two and three appeared on the variables constructed before 1946; constructed between 1961 and 1970; percentage using electricity; percentage using other fuels.

Differences between size categories 3 and 4 appeared on the variables constructed

between 1946 and 1960; constructed between 1961 and 1970; percentage using gas and percentage using other fuels. Differences between size categories 5 and 6 appeared for the variables constructed before 1946; percentage using gas and percentage using other fuels.

2.6 Income

Differences between size categories 1 and 2 appeared on all variables except under 5000, 20000-24999 and 25000-29999. The same differences were also recorded between size categories 2 and 3. No differences on the income indicator were recorded between size categories 5 and 6.

3.0 Population and Density

The density component was added to the population component by reclassifying units according to the satisfaction of population and density conditions. The initial parameters consisted of the classification rural < 1000 population and < 400 density. By these parameters 25.0% of cases satisfied the conditions for rural classification, 20.6% satisfied the urban conditions and 54.4% were unclassified within the specified parameters.

The unclassified category consisted of 52.5% of total cases which satisfied the urban population condition but not the density condition. The mean population for this group was 5849 and the mean density was 44.71.

The remaining 1.9% of total cases satisfied the urban density condition but not the population condition. The mean population for this group. As this group did not represent a significant percentage of total cases it was not selected as a unit of analysis.

By eliminating northern Ontario (CSD 3551000 and above) the rural population declined to 17.7% and the urban population increased to 24.7%. The percentage satisfying the urban population condition but not the density condition increased to 55.2% and the percentage satisfying the urban density condition but not the population condition increased to 2.4%. Therefore, eliminating northern Ontario does not resolve the problem of incomplete classification.

With density remaining constant the population parameter was increased to 2500. By these parameters 48.7% of cases were classified as rural, 13.9% as urban and 37.3% were unclassifiable within the specified parameters. Of total cases 28.8% satisfied the urban population condition but not the density condition. The remaining 8.5% satisfied the urban density condition but not the urban population condition.

Therefore, increasing the population limit increased the population of "rural" CDSs by 23.7% and decreased the urban population by 6.7%. The number of cases satisfying the urban population condition but not the density condition decreased by 24.7% and the number satisfying the density but not the population condition increased by 6.6%.

With density remaining constant, the population condition was further increased to 5000. At this level the rural category increased to 62.7% of the CSDs, the urban category declined to 9.9%, the unclassified group meeting the population but not the density condition declined to 14.8% of cases and the remaining unclassified group increased to 12.6% of cases.

At the 1000 population cutoff, of those units satisfying the urban population condition but not the density condition, of 437 cases, 354 (81%) were townships. Of

those units satisfying the urban population condition of 2500 but not the density condition, of 240 cases, 177 (73%) were townships.

The problem of incomplete classification might be explained by the amalgamation of many small rural population centres into a surrounding township through the process of county restructuring. An examination of census data at the EA level would be required to examine this more fully.

Tests of difference were run to test for differences between the rural, urban and unclassified CSDs. At the 1000 population limit with density constant at 400, urban and rural areas so defined are significantly different on all indicator variables apart from infrastructure where three variables are not significantly differentiated.

Between the urban and the unclassified units, differences are apparent on the indicators of housing type, migration and employment. However, there is no significant difference between the urban and the unclassified units on the indicators of education, infrastructure and income.

The unclassified units were significantly differentiated from the rural units on the indicators of employment, education and income, but not significantly different in respect to infrastructure, and housing type. Differences between the classified and unclassified units did not vary greatly from the original tests when the 2500 population condition was used.

Therefore, the unclassified units resemble rural areas in respect to housing and infrastructure. They resemble urban areas in respect to education and income. They are differentiated from both rural and urban areas in respect to employment.

4.1   Distance

The variable of distance as indicated by "adjacency" to large urban centres was entered into the analysis as an independent variable.   Census subdivisions with populations of 20000 or more were identified and the census subdivisions adjacent to those population centres were classified as a separate unit of analysis.   The 20000 population cutoff was taken as an arbitrary urban minimum size definition.

The frequency distribution of adjacent and non-adjacent census subdivisions indicated that, including Northern Ontario, 6.4% of cases were adjacent to such centres of population, 7.2% of cases constituted those population centres and 86.4% of cases were non-adjacent to those population centres.   When Northern Ontario was excluded, 8.0% of cases were adjacent, 8.5% constituted the population centres, and 83.5% were non-adjacent.

When the adjacent and non-adjacent categories were cross-tabulated with the size categories established previously, the following distribution was produced:

<u>Number of Census Subdivisions</u>

	ADJACENT	POP 20000+	NON-ADJACENT
1 - 999	0	0	214
1000 - 2499	4	0	248
2500 - 4999	9	0	142
5000 - 7499	17	0	42
7500 - 9999	7	0	25
10000 - 20000	8	0	27
20000 +	3	60	1

When cross-tabulations were run against the rural urban definitions previously developed (Section 2.0) the following distribution was produced.

	ADJACENT	POP 20000+	NON-ADJACENT
RURAL	4	0	410
URBAN	0	42	74
UNCLASSIFIED (1)	49	18	173
UNCLASSIFIED (2)	0	0	71

*(Where rural equals census sub-divisions with <1000 population and <400
population density, urban equals >1000, >400, unclassified (1) equals
>1000, <400 and unclassified (2) equals <1000, >400.)*
*Tests of difference were run testing for difference between the adjacent and non-
adjacent groups on the selected indicators.*

*A Kolmogorov-Smirnov test was run to test for differences in the selected indicators
between the population categories. As the test was run on data transformed into quintile
ranges, the results indicated levels of difference in the structure of the variables between
units, not differences in the values of the variables.*

*It is interesting to note that when density was factored into the analysis using the
official definition of <1,000 population or <400 population density to equal rural, 52% of
the cases were not classified within the given parameters. Subsequent analysis on the
52% as a statistical group showed the validity of 1,000 population as a significant cut-off,
but 400 population density as not so. This confirms that low population does not
necessarily mean low density and vice versa and reflects the size and location of
geographical units rather than rurality.*

*Figure One illustrates the outcome of the tests of difference between the selected
indicators for 6 groups of population size (1-999, 1,000-2,499, 2,500-4,999, 5,000-9,999,
10,000-19,999, 20,000+). All indicators show a statistical difference between CSDs with
less than 1,000 population from those of 1,000-2,499 population. Some differentiations
occurred between units of populations 2,500 to 10,000, but without consistency. Units
with between 10,000-20,000 population differed on two indicators and places above*

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20,000 were different again. The resultant pattern, shown in Figure One, is simple and revealing. To emphasize their characteristic differences, we ascribed names to the population size groups.

FIGURE ONE

<u>Rural Canada</u>

0 - 1,000	*1,000 - 10,000*	*10,000 - 20,000*
<u>*Rural Area*</u>	<u>*District Centre*</u>	<u>*Regional Centre*</u>
Adjacent	*Adjacent*	*Adjacent*
Remote	*Remote*	*Remote*

A <u>Rural Area</u> is a CSD with less than 1,000 population and can either be near or remote from a major population centre. A <u>District Centre</u> has between 1,000-10,000 population and may vary according to location (adjacent or remote from major urban centre). A <u>Regional Centre</u> has between 10,000-20,000 population.

All three groups of census subdivisions could be described as comprising Rural Canada in a collective sense, as most of the spatial, and population variations in rural areas are accounted for. We also know that the population size groups are different on income, migration and employment indicators which are fairly good surrogates of the labour market. Together with the proximity to urban centre variable, another labour market factor, we feel that most rural situations are covered in the three part grouping.

B.   *Data and Results*

VARIABLE LIST

Indicator	Variable	
Identification	VAR001	Census ID Code'
	VAR002	Name'
	TYPE	Type of Municipality'
Dependent Variables	VAR003	Population, 1981(1)'
	VAR004	Population, 1986'
	VAR005	Pop percentage change, 1981-1986'
	VAR006	Land area sq km., 1986'
	VAR007	Pop density per sq km, 1986'
	VAR008	Total population'
	VAR009	Male, total'
	VAR010	Female, total'
Housing Type	VAR011	Total occupied private dwellings'
	VAR012	Owned'
	VAR013	Rented'
	VAR014	On reserve(2)'
	VAR015	Single-detached house'
	VAR016	Apartment, 5 or more storeys'
	VAR017	Movable dwelling'
	VAR018	All other types(3)'
Migration	VAR019	Total private households'
	VAR020	Total pop 5 years and over'
	VAR021	Non-movers'
	VAR022	Movers'
	VAR023	Non-migrants'
	VAR024	Migrants'
	VAR025	Migs same census division'
	VAR026	Migs same province'
	VAR027	Migs diff province'
	VAR028	Migs outside Canada'
Employment	VAR029	Total lab force 15 years +'

	VAR030	Industry not applicable'
	VAR031	All industries'
	VAR032	Primary industries'
	VAR033	Manufacturing'
	VAR034	Construction'
	VAR035	Trans,stor,com. & other util'
	VAR036	Trade'
	VAR037	Finance, ins and real estate'
	VAR038	Government service'
	VAR039	Other service industries'
Education	VAR040	Tot pop 15 years and over'
	VAR041	Less than grade 9'
	VAR042	Grades 9 – 13 no sec school cert.'
	VAR043	Grades 9 – 13 with sec cert.'
	VAR044	Trades certificate or diploma'
	VAR045	Other non–university without dipl.'
	VAR046	Other non–university with diploma'
	VAR047	University without degree'
	VAR048	University with degree'
	VAR049	Trades certificate or diploma'
Infrastructure	VAR050	Tot occ private dwellings'
	VAR051	Constructed before 1946'
	VAR052	1946 – 1960'
	VAR053	1961 – 1970'
	VAR054	1971 – 1980'
	VAR055	1981 – 1986'
	VAR056	Gas'
	VAR057	Electricity'
	VAR058	Oil'
	VAR059	Other fuels'
Income	VAR060	Total'
	VAR061	Employment income'
	VAR062	Government transfer payments'
	VAR063	Other income'

COMPARISON OF DIFFERENCES BETWEEN POPULATION SIZE CATEGORIES

SIGNIFICANCE

	1 – 2	2 – 3	3 – 4	4 – 5	5 – 6

HOUSING TYPE

		1 – 2	2 – 3	3 – 4	4 – 5	5 – 6
Owned'	12	0.043	0.581	0.117	0.652	0.063
Rented'	13	0.011	0.384	0.071	0.484	0.044
On reserve(2)'	14					
Single–detached house'	15	0.319	0.812	0.079	0.124	0
Apartment, 5 or more storeys'	16	1	1	0.261	0	0
Movable dwelling'	17	0	0.075	0.946	0.764	0.183
All other types(3)'	18	0.329	0.09	0.094	0.008	0.069

SIZE CATEGORIES

1=0–999
2=1000–2499
3=2500–4999
4=5000–9999
5=10000–19999
6=20000+

MIGRATION

		1 – 2	2 – 3	3 – 4	4 – 5	5 – 6
Non–movers'	21	0.689	0.185	0.123	0.69	0.005
Movers'	22	0.902	0.221	0.105	0.791	0.005
Non–migrants'	23	0	0.185	0.005	0.673	0.315
Migrants'	24	0.001	0.242	0.005	0.967	0.256
Migs same census division'	25	0.003	0.964	0.373	1	0.004
Migs same province'	26	0.033	0.997	0.467	1	0.5
Migs diff province'	27	0	0.475	0.841	0.993	0
Migs outside Canada'	28	0	0	0.167	0.259	0

EMPLOYMENT

Primary industries'	32	0.026	0.028	0.105	0.848	0
Manufacturing'	33	0	0.286	0.098	0.999	0.575
Construction'	34	0.004	0.922	0.089	0.898	0.092
Trans,stor,com. & other util'	35	0.001	0.964	0.657	0.957	1
Trade'	36	0.459	0.269	0.571	0.784	0.5
Finance, ins and real estate'	37	0	0.061	1	0.467	0.003
Government service'	38	0.001	0.746	1	0.918	0.331
Other service industries'	39	0.077	0.058	0.921	1	0.013

EDUCATION

Less than grade 9'	41	0.003	0	0.944	0.245	0.04
Grades 9 – 13 no sec school cert.'	42	0.094	0.198	0.816	0.974	0.006
Grades 9 – 13 with sec cert.'	43	0.046	0.49	0.766	0.183	0.203
Trades certificate or diploma'	44	0	0.328	0.987	0.158	0.203
Other non–university without dipl.'	45	0.119	0.096	0.911	0.109	0.043
Other non–university with diploma'	46	0	0.108	0.056	0.823	0.923
University without degree'	47	0	0.124	0.441	0.735	0.007
University with degree'	48	0.013	0.001	0.433	1	0.032

INFRASTRUCTURE

Constructed before 1946'	51	0	0.013	0.127	0.934	0.049
1946 – 1960'	52	0.118	0.992	0.001	0.585	0.998
1961 – 1970'	53	0	0.026	0.017	0.62	0.062
1971 – 1980'	54	0.114	0.261	0.992	0.318	0.686
1981 – 1986'	55	0.202	0.638	1	1	0.439
Gas'	56	0.002	0.066	0.007	0.055	0.024
Electricity'	57	0.25	0.04	0.911	0.252	0.189
Oil'	58	0.001	0.671	0.197	0.756	0.063
Other fuels'	59	0	0.016	0.001	0.022	0

INCOME

Under $5,000'	65	0.205	0.156	0.543		0.913
$ 5,000 – $ 9,999'	66	0	0.003	0.731		0.996
$10,000 – 14,999'	67	0	0	0.731		0.624
$15,000 – 19,999'	68	0.004	0.012	0.086		0.602
$20,000 – 24,999'	69	0.118	0.949	0.013		0.454
$25,000 – 29,999'	70	0.074	0.644	0.991		0.266
$30,000 – 34,999'	71	0	0.09	0.8	0.973	0.134
$35,000 – 39,999'	72	0.063	0.004	0.312	0.997	0.136
$40,000 – 49,999'	73	0	0.001	0.196	0.452	0.865
$50,000 and over'	74	0	0	0.304	1	0.425

COMPARISON OF DIFFERENCES BETWEEN POPULATION SIZE CATEGORIES

SIGNIFICANCE

1 – 2   2 – 3   1 – 3

HOUSING TYPE

	1 – 2	2 – 3	1 – 3
Owned'	12	0	0	0.061
Rented'	13	0	0	0.023
On reserve(2)'	14			
Single–detached house'	15	0	0	0.109
Apartment, 5 or more storeys'	16	0	0	0.08
Movable dwelling'	17	0.001	0	0
All other types(3)'	18	0	0	0.061

SIZE CATEGORIES

1=RURAL:	<1000, <400
2=URBAN:	>1000, >400
3=UNCLASSIFIED (1):	>1000, <400
4=UNCLASSIFIED (2):	<1000, >400

MIGRATION

	1 – 2	2 – 3	1 – 3
Non-movers'	21	0	0	0.154
Movers'	22	0	0	0.225
Non-migrants'	23	0	0	0
Migrants'	24	0	0	0
Migs same census division'	25	0.01	0.085	0.002
Migs same province'	26	0	0.86	0.001
Migs diff province'	27	0	0.033	0
Migs outside Canada'	28	0	0.204	0

PERCENT (%)

1=RURAL:	48.7
2=URBAN:	20.6
3=UNCLASSIFIED (1):	52.5
4=UNCLASSIFIED (2):	1.9

EMPLOYMENT

Primary industries'	32	0	0	0.091
Manufacturing'	33	0	0	0
Construction'	34	0	0	0
Trans,stor,com. & other util'	35	0	0.038	0
Trade'	36	0	0	0.002
Finance, ins and real estate'	37	0	0	0
Government service'	38	0.004	0.378	0
Other service industries'	39	0	0	0.007

EDUCATION

Less than grade 9'	41	0	0.833	0
Grades 9 – 13 no sec school cert.'	42	0	0.09	0
Grades 9 – 13 with sec cert.'	43	0.002	0.135	0
Trades certificate or diploma'	44	0	0.082	0
Other non–university without dipl.'	45	0	0.01	0
Other non–university with diploma'	46	0	0.604	0
University without degree'	47	0	0.998	0
University with degree'	48	0	0.367	0

INFRASTRUCTURE

Constructed before 1946'	51	0.009	0.43	0.182
1946 – 1960'	52	0.024	0	0.88
1961 – 1970'	53	0.082	0.085	0.334
1971 – 1980'	54	0.168	0.623	0.514
1981 – 1986'	55	0.001	0.001	0.165
Gas'	56	0	0	0
Electricity'	57	0.075	0.999	0.015
Oil'	58	0	0	0.001
Other fuels'	59	0	0	0

INCOME

Under $5,000'	65	0.002	0.036	0
$ 5,000 – $ 9,999'	66	0.032	0	0
$10,000 – 14,999'	67	0	0	0
$15,000 – 19,999'	68	0	0.218	0
$20,000 – 24,999'	69	0	0.435	0
$25,000 – 29,999'	70	0	0.358	0.005
$30,000 – 34,999'	71	0	0	0
$35,000 – 39,999'	72	0	0.007	0
$40,000 – 49,999'	73	0	0	0
$50,000 and over'	74	0	0.002	0

SCAT2 – SIGNIFICANCE

		1 – 2	2 – 3	3 – 4	4 – 5	5 – 6	
HOUSING TYPE							
Owned'	12	0.043	0.581	0.117	0.652	0.063	**SIZE CATEGORIES**
Rented'	13	0.011	0.384	0.071	0.484	0.044	
On reserve(2)'	14						1=0–999
Single–detached house'	15	0.319	0.812	0.079	0.124	0	2=1000–2499
Apartment, 5 or more storeys'	16	1	1	0.261	0	0	3=2500–4999
Movable dwelling'	17	0	0.075	0.946	0.764	0.183	4=5000–9999
All other types(3)'	18	0.329	0.09	0.094	0.008	0.069	5=10000–19999
							6=20000+
MIGRATION							
Non–movers'	21	0.689	0.185	0.123	0.69	0.005	
Movers'	22	0.902	0.221	0.105	0.791	0.005	
Non–migrants'	23	0	0.185	0.005	0.673	0.315	
Migrants'	24	0.001	0.242	0.005	0.967	0.256	
Migs same census division'	25	0.003	0.964	0.373	1	0.004	
Migs same province'	26	0.033	0.997	0.467	1	0.5	
Migs diff province'	27	0	0.475	0.841	0.993	0	
Migs outside Canada'	28	0	0	0.167	0.259	0	

EMPLOYMENT

Primary industries'	32	0.026	0.028	0.105	0.848	0
Manufacturing'	33	0	0.286	0.098	0.999	0.575
Construction'	34	0.004	0.922	0.089	0.898	0.092
Trans,stor,com. & other util'	35	0.001	0.964	0.657	0.957	1
Trade'	36	0.459	0.269	0.571	0.784	0.5
Finance, ins and real estate'	37	0	0.061	1	0.467	0.003
Government service'	38	0.001	0.746	1	0.918	0.331
Other service industries'	39	0.077	0.058	0.921	1	0.013

EDUCATION

Less than grade 9'	41	0.003	0	0.944	0.245	0.04
Grades 9 – 13 no sec school cert.'	42	0.094	0.198	0.816	0.974	0.006
Grades 9 – 13 with sec cert.'	43	0.046	0.49	0.766	0.183	0.203
Trades certificate or diploma'	44	0	0.328	0.987	0.158	0.203
Other non–university without dipl.'	45	0.119	0.096	0.911	0.109	0.043
Other non–university with diploma'	46	0	0.108	0.056	0.823	0.923
University without degree'	47	0	0.124	0.441	0.735	0.007
University with degree'	48	0.013	0.001	0.433	1	0.032

INFRASTRUCTURE

Constructed before 1946'	51	0	0.013	0.127	0.934	0.049
1946 – 1960'	52	0.118	0.992	0.001	0.585	0.998
1961 – 1970'	53	0	0.026	0.017	0.62	0.062
1971 – 1980'	54	0.114	0.261	0.992	0.318	0.686
1981 – 1986'	55	0.202	0.638	1	1	0.439
Gas'	56	0.002	0.066	0.007	0.055	0.024
Electricity'	57	0.25	0.04	0.911	0.252	0.189
Oil'	58	0.001	0.671	0.197	0.756	0.063
Other fuels'	59	0	0.016	0.001	0.022	0

INCOME

Under $5,000'	65	0.205	0.156	0.543		0.913
$ 5,000 – $ 9,999'	66	0	0.003	0.731		0.996
$10,000 – 14,999'	67	0	0	0.731		0.624
$15,000 – 19,999'	68	0.004	0.012	0.086		0.602
$20,000 – 24,999'	69	0.118	0.949	0.013		0.454
$25,000 – 29,999'	70	0.074	0.644	0.991		0.266
$30,000 – 34,999'	71	0	0.09	0.8	0.973	0.134
$35,000 – 39,999'	72	0.063	0.004	0.312	0.997	0.136
$40,000 – 49,999'	73	0	0.001	0.196	0.452	0.865
$50,000 and over'	74	0	0	0.304	1	0.425

RURBAN2 – SIGNIFICANCE

		1 – 2	2 – 3	1 – 3

HOUSING TYPE

		1 – 2	2 – 3	1 – 3
Owned'	12	0	0	0.495
Rented'	13	0	0	0.582
On reserve(2)'	14			
Single–detached house'	15	0	0	0
Apartment, 5 or more storeys'	16	0	0	0.001
Movable dwelling'	17	0	0	0
All other types(3)'	18	0	0	0

MIGRATION

		1 – 2	2 – 3	1 – 3
Non-movers'	21	0	0	0
Movers'	22	0	0	0
Non-migrants'	23	0	0	0
Migrants'	24	0	0	0
Migs same census division'	25	0.03	0.013	0.722
Migs same province'	26	0.012	0.263	0.012
Migs diff province'	27	0	0.117	0
Migs outside Canada'	28	0	0.051	0

SIZE CATEGORIES

1=RURAL:	<2500, <400
2=URBAN:	>2500, >400
3=UNCLASSIFIED (1):	>2500, <400
4=UNCLASSIFIED (2):	<2500, >400

PERCENT (%)

1=RURAL:	48.7
2=URBAN:	13.9
3=UNCLASSIFIED (1):	28.8
4=UNCLASSIFIED (2):	8.5

EMPLOYMENT

Primary industries'	32	0	0	0.004
Manufacturing'	33	0	0	0
Construction'	34	0	0	0.003
Trans,stor,com. & other util'	35	0	0.023	0
Trade'	36	0	0	0
Finance, ins and real estate'	37	0	0	0
Government service'	38	0.004	0.452	0.115
Other service industries'	39	0	0	0.01

EDUCATION

Less than grade 9'	41	0	1	0
Grades 9 – 13 no sec school c	42	0.003	0.259	0
Grades 9 – 13 with sec cert.'	43	0.017	0.295	0
Trades certificate or diploma'	44	0.001	0.001	0
Other non–university without d	45	0	0.069	0
Other non–university with dipl	46	0	1	0
University without degree'	47	0	0.632	0
University with degree'	48	0	0.058	0

INFRASTRUCTURE

Constructed before 1946'	51	0.004	1	0
I946 – 1960'	52	0	0.006	0.176
1961 – 1970'	53	0	0.422	0
1971 – 1980'	54	0.323	0.594	0.07
1981 – 1986'	55	0.003	0.006	0.301
Gas'	56	0	0	0
Electricity'	57	0.74	0.803	0.049
Oil'	58	0	0	1
Other fuels'	59	0	0	0

FREQUENCY DISTRIBUTION OF RURAL, URBAN AND UNCLASSIFIED UNITS AT THE 2500 POPULATION CUTOFF

	FREQUENCY	PERCENT (%)
RURAL	405	48.7
URBAN	116	13.9
UNCLASSIFIED (1)	240	28.8
UNCLASSIFIED (2)	71	8.5

Rural = Population <2500, Density <400
Urban = Population >2500, Density >400
Unclassified (1) = Population >2500, Density <400
Unclassified (2) = Population <2500, Density >400

FREQUENCY DISTRIBUTION OF RURAL, URBAN AND UNCLASSIFIED UNITS AT THE 1000 POPULATION CUTOFF

	FREQUENCY	PERCENT (%)
RURAL	208	25.0
URBAN	171	20.6
UNCLASSIFIED (1)	437	52.5
UNCLASSIFIED (2)	16	1.9

Rural = Population ‹1000, Density ‹400
Urban = Population ›1000, Density ›400
Unclassified (1) = Population ›1000, Density ‹400
Unclassified (2) = Population ‹1000, Density ›400

POPULATION SIZE CATEGORIES

1 = 1 - 999
2 = 1000 - 2499
3 = 2500 - 4999
4 = 5000 - 9999
5 = 10000 - 19999
6 = 20000 +

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