Understanding the New Rural Economy: Choices and Options
SAMPLE SELECTION

Bill Reimer

Department of Sociology and Anthropology
Concordia University
1455 boul de Maisonneuve O.
Montréal, Québec
H3G 1M8

November 6, 1997

(514) 848-2171
FAX: (514) 689-5435
E-mail: REIMER@VAX2.CONCORDIA.CA

DRAFT VERSION

A:\NRE\NRESAMP

Table of Contents

Understanding the New Rural Economy: Choices and Options
SAMPLE SELECTION

1.   Introduction

In order to understand the changes taking place in rural Canada, we need appropriate, comprehensive, and reliable information. This is not easy to accomplish since the processes involved are complex and most of the available information focuses on individuals and households rather than on communities and regions. In addition, most existing community studies are conducted in isolation without the benefits of comparison and contrast.

A central feature of the **New Rural Economy** (NRE) project is to rectify this situation through the development of a national sample frame which can be used as a basis for site selection and analysis. The first steps to this end are outlined in the following products.[1]

C   *Understanding the New Rural Economy: Choices and Options - A Research
Prospectus*

> This document outlines the overall rationale for the NRE project and the role of the
> sampling frame within it. It includes the schedule for the project.

C   *A Sampling Frame for Non-Metropolitan Communities in Canada*

> This document outlines the justification for a sampling frame and an analysis of
> Census Subdivisions (CSD) using a selection of existing community-level studies
> from the research literature. It includes recommendations for the use of the
> sampling frame.

C   *The Rural Community Database*

> This file includes over 100 research projects and researchers who have investigated
> communities in rural Canada. It is available in machine-readable form.

C   *Progress Reports: Ambitious I*

> These are eight reports relating to the rationales, procedures, and outcomes of
> various studies of the CSD database conducted for the sample frame and sample
> for the NRE project.

---

[1] **These documents are available from the author. The research
reports and research prospectus are also available through the CRRF
home page on the World Wide Web at:
http://artsci-ccwin.concordia.ca/SocAnth/CRRF/crrf_hm.html**

These documents and data provide the background to this report and to the proposals we make for an initial sample of rural communities.

2.   General Rationales of Sample Selection

As demonstrated by the Research Prospectus, there are many different objectives for the NRE program. They include the description of the New Rural Economy, testing of hypotheses regarding the processes involved, exploring the consequences of current changes, and the development of policy proposals regarding rural issues. This makes the sample selection particularly complex since we wish to meet as many of these objectives in the most efficient manner possible.

Since we are at the early stages of our understanding regarding the changes taking place, the predominant approach to the study will be exploratory in nature. This means that the most important objective for sample selection is to maximize our chance for developing new ideas and understandings rather than the testing of well formulated hypotheses. Thus purposive sampling procedures will be given prominence over those which ensure the representativeness of the locales chosen.

At the same time, we will make our purposive selection within a strictly designed sample frame. This will permit us to monitor the extent to which the sample is representative and to make this criteria more important as our understanding increases. Such a strategy is consistent with the long-term objectives of the NRE project.

As discussed in the *Sample Frame* document, the unit of analysis for the sample frame is the Census Subdivision (CSD). This provides the most accessible geographical unit with the closest approximation to the type of rural community with which we are concerned. Once a CSD has been chosen, we will use it as a primary point of reference, expanding out investigation beyond the CSD if the local social and economic relations warrant. The extent to which this is the case will vary from site to site and it stands as an important focus of analysis.

3.   Dimensions of the Sampling Frame

As discussed in the documents and reports above, there are three main types of concerns represented by NRE participants:

- C   those which focus on the processes involved in the changes;

- C   those which rest in local area residents' and organizations' questions regarding what might be done in their regions; and

- C   those which arise as broad policy issues.

These concerns will provide a basis for the initial selection of communities.

3.1. Exposure to Global Processes

All three types of concerns identify global-based processes as important factors in the NRE. This implies that those locales which are most exposed to changes in the global economy, labour market, and institutions are likely to experience changes and issues which are quite different than those which are shielded from them by their economic base and/or geographical isolation. Our sample should therefore reflect variations in the exposure to global processes in order to maximize the information we can gather regarding these processes.

Two types of variables provide us with indicators for such variation. The first relates to the type of industry which is at the economic base of the community. We have divided CSDs into those which have high levels of employment in industries which are exposed to global markets from those which are less exposed.[2] We recognize that this classification is fraught with danger since each industry is made up of many subsectors and these subsectors are often very diverse. It is likely to improve the quality of the sample, however, and remains open to modification once the collection of more detailed information is completed.

On this basis, CSDs are classified into two types based on the percentage of individuals employed in the industries as identified in Table 1. CSDs with more than 40% of their labour force in

---

[2] **We wish to thank Jack Stabler for his assistance in this procedure.**

industries exposed to global markets were classified as globally exposed and those with more than

75% in industries exposed to local markets were classified as locally exposed.[3]

Table 1: Industries by Exposure to Global Markets

Exposed to Global Markets	Less Exposed to Global Markets
Agriculture and related services	Construction
Fishing and Trapping	Transportation and storage
Logging and Forestry	Wholesale trade
Mining (milling), quarrying, and oil wells	Retail trade
Manufacturing	Real estate and insurance agent
Communication and other utilities	Government services
Finance and insurance	Education services
Business services	Health and social services
	Accommodation, food and beverage services

The second variable relates to the role of urban-based labour markets in such vulnerability. Those CSDs which are close to large urban centres are significantly affected by the opportunities and institutions of those centres. For this reason, we will include a measure of metropolitan adjacency in this criterion of selection. Since this criteria implies a regional, not community basis, we will use the characteristic of the Census Division (CD) in which the CSD is located as a measure of adjacency. The modified Beale classification as developed by Ehrensaft and Beeman (1992) will serve as the basis for classification.

These two aspects result in the identification of four types of CSDs: those with

C   industries exposed to global markets, adjacent to metropolitan centres

C   industries exposed to global markets, not adjacent to metropolitan centres

C   industries less exposed to global markets, adjacent to metropolitan centres

C   industries less exposed to global markets, not adjacent to metropolitan centres

---

[3] **The 40% and 75% represent the 60% percentile in each of these variables.**

4

3.2. Market Fluctuations

The impacts of markets conditions are significantly different depending on whether they are stable or fluctuating. For this reason we will ensure that CSDs representing both types of conditions are included. Using the predominant industry of employment we will classify CSDs on the following basis.

Table 2: Industries by Market Fluctuation

Fluctuating Markets	Stable Markets
Agriculture and related services	Manufacturing
Fishing and Trapping	Transportation and storage
Logging and Forestry	Communication and other utilities
Mining (milling), quarrying, and oil wells	Wholesale trade
Construction	Retail trade
Finance and insurance	Business services
Real estate and insurance agent	Government services
	Education services
	Health and social services
	Accommodation, food and beverage services

3.3. Local Capabilities

Opportunities for local communities rest to a large extent on their ability to respond to the changes affecting them and to position themselves to take advantage of the new developments. These capabilities involve individual abilities, but they also include local infrastructure, social resources, environment, and capital. To examine the ways in which these characteristics affect the outcomes it is necessary to ensure that we include variation in local capabilities as part of our sample framework.

We are limited to a small number of variables relevant to this dimension. As a result our measure will reflect only a few of the capabilities of local regions. In addition, since we are limited in

our resources, we have utilized factor analysis to identify intercorrelations between the variables to reduce the data complexity.

Fourteen variables were used as the basis for the factor analysis:

- % of self-employed workers
- % of males with postsecondary education
- % of females with postsecondary education
- % in managerial, natural science, social science, art, literary, or recreational occupations
- labour force participation rate for all persons 15 years or older
- % of people in the outlying Census Consolidated Subdivision who are in educational service industries
- % of people in the outlying Census Consolidated Subdivision who are in health and social service industries
- % of people in the outlying Census Consolidated Subdivision who are in government service industries
- % of people in the outlying Census Consolidated Subdivision who are in teaching and related occupations
- % of people in the outlying Census Consolidated Subdivision who are in medicine and health occupations
- % of families with incomes of $50,000 or more
- average value of dwellings
- % of people in transportation and storage industries
- % of people in communication and utilities industries

From these variables, the factor analysis identified five major factors related to local capabilities. By combining these factors and selecting the top and bottom 40% of the CSDs we were able to identify CSDs into two main types:

- those with a relatively high level of local capabilities, and

- those with a relatively low level of local capabilities.

3.4. Outcomes

At the basis of all three types of concerns is an interest in the outcomes of the processes and changes taking place in rural Canada. In most cases, these outcomes are evaluated as positive or negative on some criteria. We have chosen to represent this issue as one where locales may be been as lagging or leading relative to the norm. This does not imply they will always be in one or the other group: those which are currently lagging may become leading in the future, while leading regions may become lagging.

As discussed in our previous documents, the identification of lagging and leading locales was conducted using a large number of variables. Using factor analysis, seven dimensions were identified: income-related, government transfer-related, housing-related, low income (LICO)-related, marital stress-related, self-employment-related, and population-growth-related. For each dimension, those CSDs which were in the top 25% were considered to be leading and those in the bottom 25% were considered to be lagging. An overall indicator for lagging and leading was constructed by identifying those CSDs which:

C   were leading in at least 4 of the dimensions

C   were lagging in at least 4 of the dimensions, and

C   other CSDs.

4.   The Sampling Grid

The decisions outlined above result in a sampling grid composed of 2 x 2 x 2 x 2 x 2 (32) cells. We will choose the locales to be sampled in such a manner that examples are included from as many of the cells as possible. This will provide a basis for comparisons which reflect most of the concerns identified by the NRE participants.

Table 3 identifies the cells proposed with the number of CSDs which are located in each cell.

Table 3: Number of Rural CSDs by Sample Frame Classification

			High Capabilities		Low Capabilities	
			Leading	Lagging	Leading	Lagging
Globally Exposed	Fluctuating Markets	Metro Adjacent	77	1	9	3
		Not Adjacent	118	31	38	42
	Stable Markets	Metro Adjacent	10	0	7	15
		Not Adjacent	8	14	5	23

Less Globally Exposed	Fluctuating Markets	Metro Adjacent	10	1	5	9
		Not Adjacent	7	17	5	16
	Stable Markets	Metro Adjacent	36	12	23	54
		Not Adjacent	25	48	14	113

### 5.	The Community Sample

Our sample of CSDs can now be constructed using a random selection from each of these cells. This procedure will be moderated to some extent, however, in order to meet the regional interests represented by the NRE and to make more efficient use of previous community research.

We expect to find that provincially-based governments and organizations will be primarily interested in data from within their jurisdictions. For this reason, we will ensure that locales are selected from each of the provinces. There is theoretical justification for this as well since we expect that provincial legislation and programs are likely to affect the processes involved at the local level.

In addition, our Rural Community Database makes clear that there are many local studies which can serve as a basis for local data collection under the NRE project. In order to take advantage of the knowledge gained from this research, we will select those sites which have been examined previously so long as the integrity of our sample grid is maintained. For example, Table 4 indicates the distribution of the studies in the Rural Community Database within the Sample grid.

Table 4: Rural Community Database CSDs by Sample Frame Classification

			High Capabilities		Low Capabilities	
			Leading	Lagging	Leading	Lagging
Globally Exposed	Fluctuating Markets	Metro Adjacent	1			
		Not Adjacent	8	1	6	3
	Stable Markets	Metro Adjacent				

		Not Adjacent		3	1	3
Less Globally Exposed	Fluctuating Markets	Metro Adjacent			1	1
		Not Adjacent	1	1	1	2
	Stable Markets	Metro Adjacent	1		2	2
		Not Adjacent	7	3	5	7

It is apparent that even with the conditions imposed on the data, we have many more cases than could be investigated. Our selection of the final sample will therefore be conducted using several procedures.

- C Initially, one CSD was randomly selected from each cell (cf. Appendix 1).[4]

- C We exchanged several selected CSDs with other ones from within the same cell in order to ensure adequate representation by province. This procedure used randomization techniques. A map of the selected CSDs can be found in Appendix 3.

- C People in the NRE network are invited to propose exchanges of the selected CSDs for others from within the same cell in order to accommodate special interests and experiences. The full list of CSDs for each cell is available via the CRRF web page or by request from Bill Reimer. Special analysis of the database will be conducted upon request (eg. the identification of the cell into which particular locales fall, the identification of CSDs with particular characteristics available on our database).

- C The CSDs selected will then be ranked in order of priority for data collection and analysis. When doing so, consideration will be given to ensuring that important comparisons can be made even though information from CSDs in all cells is complete.

Table 5: Distribution of CSDs in Sample by Province

---

[4] **To select a CSD for the cell with 0 cases, we relaxed the 40/60 percentile rule for the local capability variable, using instead, the 50th percentile. This allowed us to identify one community.**

Province or Territory	Approx. % of Rural Population	Number of CSDs in Sample
NFLD	1.9	2
PEI	0.4	1
NS	1.9	2
NB	1.9	2
QC	7.6	7
ON	6.9	6
MA	1.6	1
SA	1.8	2
AL	2.9	3
BC	4.6	4
YK	0.1	1
NWT	0.2	1

6.   References

Ehrensaft, Philip and Jennifer Beeman
1992   "Distance and diversity in nonmetropolitan economies." Pp. 193-224 in Bollman, Ray D.
        (ed.) Rural and Small Town Canada, Toronto: Thompson Educational Publishing Inc.

Reimer, Bill
1995   "A Sampling Frame for Non-Metropolitan Communities in Canada." A report to the
        Canadian Rural Restructuring Foundation.

7.   Appendix 1: NRE Project Sample

Initial random choices are identified within [ ]s.

Global/ Local	Market Stability	Metro Adjacency	Capability	Lag/Lead	CSD Name	CSD Type	Province	CSD code
Global	Fluctuating	Adjacent	High	Leading	Lot 20 [Lanoraie-d'Autray]	LOT [SD]	PEI [QC]	1102038 [2452020]
				Lagging	Mendham	VL	SA	4708059
			Low	Leading	Sainte-Hénédine	P	QC	2426040
				Lagging	Saint-Médard	SD	QC	2411025
		Not Adjacent	High	Leading	Peace River, Subd. C [Eldon No. 471]	SRD [RM]	BC [SA]	5955019 [4717017]
				Lagging	Maisonnette [Division No. 19, Unorganized]	VL [UNO]	NB [MA]	1315040 [4619045]
			Low	Leading	Goose Cove East [Turtle Mountain]	COM [RM]	NF [MA]	1009039 [4605024]
				Lagging	L'Ascension-de-Patapédia	SD	QC	2406060
	Stable	Adjacent	High	Leading	St. Brieux	VL	SA	4715049
				Lagging	Come-By-Chance	T	NF	1001274
			Low	Leading	Saint-Thomas-d'Aquin	P	QC	2454040
				Lagging	Granby	V	QC	2447015
		Not Adjacent	High	Leading	Parry Sound, Unorganized, North East Part	UNO	ON	3549095
				Lagging	Slocan	VL	BC	5903019
			Low	Leading	Braeside	VL	ON	3547004
				Lagging	Trenton [Les Méchins]	T [SD]	NS [QC]	1212016 [2408005]
Local	Fluctuating	Adjacent	High	Leading	Kitscoty [Cudworth}	VL [T]	AB [SA]	4810041 [4715041]
				Lagging	Massey	T	ON	3552021

11

Global/ Local	Market Stability	Metro Adjacency	Capability	Lag/Lead	CSD Name	CSD Type	Province	CSD code
			Low	Leading	Buffalo Point 36	R	MA	4601070
				Lagging	Sussex	T	NB	1305022
		Not Adjacent	High	Leading	Oyen	T	AB	4804014
				Lagging	Saint-Jean-de-la-Lande	SD	QC	2413010
			Low	Leading	Stanhope	TP	ON	3546021
				Lagging	Horse Lakes 152B	R	AB	4819815
	Stable	Adjacent	High	Leading	Saint-Otienne-de-Lauzon	SD	QC	2425010
				Lagging	Nanoose	R	BC	5921805
			Low	Leading	North Burgess	TP	ON	3509011
				Lagging	Bridgewater [Prescott]	T [T]	NS [ON]	1206004 [3507008]
		Not Adjacent	High	Leading	Iqaluit [Humphrey]	T [TP]	NWT [ON]	6104003 [3549001]
				Lagging	Haines Junction	VL	YK	6001018
			Low	Leading	Chesley	T	ON	3541039
				Lagging	Kootenay 1	R	BC	5901803

8.   Appendix 2: Variable Construction

8.1. Global Exposure (GLOLOC40)
- Ç   Calculate the % of people employed in globally exposed industries (cf. Table 1).
- Ç   Calculate the % of people employed in less-globally exposed industries (cf. Table 1).
- Ç   Calculate the 60th percentile for each of these variables.
- Ç   GLOLOC40   = 1:   60 to 100% of the labour force is in industries which are less exposed to global markets
                       = 2:   60 to 100% of the labour force is in industries which are exposed to global markets
- Ç   Those CSDs which had over 60% of the LF in both exposed and less exposed categories were excluded.

8.2. Market Fluctuation (FLUSTA40)
- Ç   Calculate the % of people employed in fluctuating industries (cf. Table 2).
- Ç   Calculate the % of people employed in stable industries (cf. Table 2).
- Ç   Calculate the 60th percentile for each of these variables.
- Ç   FLUSTA40   = 1:   60 to 100% of the labour force is in industries which have relatively stable markets
                       = 2:   60 to 100% of the labour force is in industries which have fluctuating markets
- Ç   Those CSDs which had over 60% of the LF in both stable and fluctuating markets were excluded.

8.3. Metropolitan Adjacency (ADJAC)
- Ç   Recode Beale categories for CDs:
    - Ç   Codes 1, 2, 3, 4, 6, 8: adjacent to metro CDs
    - Ç   Codes 5, 7, 9, 10: not adjacent to metro CDs
- Ç   ADJAC   = 1:   Not Adjacent
                          = 2:   Adjacent

8.4. Local Capabilities (ILOCAP40)
- Ç   Conducted Factor Analysis of relevant variables (oblimin, listwise)
- Ç   Added the factor scores for the 7 factors identified (ILOCAP)
- Ç   Calculated the 40th and 60th percentiles of the sum of factor scores.
- Ç   ILOCAP40   = 1:   low capability: below the 40th percentile
                          = 2:   high capability: above the 60th percentile

8.5. Lagging or Leading (LAGLEAD)
- Ç   Conducted Factor Analysis of relevant variables (oblimin, listwise)
- Ç   Identified CSDs in the top and bottom 25% of each factor
- Ç   Leading CSDs were identified as those in the top 25% of at least four of the factors
- Ç   Lagging CSDs were identified as those in the bottom 25% of at least four of the factors
- Ç   LAGLEAD   = 1:   lagging
                          = 2:   leading

9.   Appendix 3: Map of Sample CSDs