INDICATORS AND CRITERIA FOR STRONG RURAL MUNICIPALITIES IN MANITOBA

April 25, 2013

Submitted to:
Provincial-Municipal Support Services
Manitoba Local Government
508-800 Portage Avenue
Winnipeg, MB R3G 0N4

Prepared by:
Wm. (Bill) Ashton
Ray Bollman
Wayne Kelly
Rural Development Institute
Brandon University
270-18th Street
Brandon, MB R7A 6A9

Rural Development Institute, Brandon University

Brandon University established the Rural Development Institute in 1989 as an academic research centre and a leading source of information on issues affecting rural communities in Western Canada and elsewhere.

RDI functions as a not-for-profit research and development organization designed to promote, facilitate, coordinate, initiate and conduct multi-disciplinary academic and applied research on rural issues. The Institute provides an interface between academic research efforts and the community by acting as a conduit of rural research information and by facilitating community involvement in rural development. RDI projects are characterized by cooperative and collaborative efforts of multi-stakeholders.

The Institute has diverse research affiliations, and multiple community and government linkages related to its rural development mandate. RDI disseminates information to a variety of constituents and stakeholders and makes research information and results widely available to the public either in printed form or by means of public lectures, seminars, workshops and conferences.

For more information, please visit www.brandonu.ca/rdi.

Table of Contents

Executive Summary: Indicators for Strong Municipalities

Strong municipalities provide Manitoba with the capacity to improve and maintain quality of services and to grow and change with the economy. Due to the complexity of rural Manitoba and municipalities, no single measure can identify what constitutes a strong rural municipality. Two fundamental views of strength of a municipality focus on (1) the size or **capacity** of a jurisdiction to service its population and make development investments and (2) whether the population and or economy in the jurisdiction on a trajectory of **growth**. Both of these concepts are important for rural municipalities and both are effective ways to define strength.

These two concepts of strength are integral to a set of eight indicators describing strong municipalities in Manitoba. The capacity of the municipality is described with two baseline indicators. The concept of growth as strength is represented in one financial and three demographic indicators that reflect dynamic trends over time for strong municipalities. The last two indicators provide context on the financial state of each municipality, examining their current debt level as well as the trend of debt of overtime.

Indicators require metrics to be effective and through an analysis of 30 strong municipalities in Manitoba, metrics were defined to inform the discussion on strong municipalities in Manitoba. Emphasizing capacity, this report proposes a threshold for population size and municipal taxable assessment as the two baselines to identify a strong municipality in Manitoba. The specific baseline thresholds, proposed for discussion, are:

1. **A population level threshold of 3,000 or more residents in the jurisdiction, and**
2. **A municipal taxable assessment threshold of $130 million or more.**

Both of these baselines ensure there is a sufficient population and local economy for a strong municipality that can continue to grow. These thresholds are equally sufficient to enable a declining area to gradually recover and establish a growth trajectory.

Introduction

To untangle essential indicators of a strong municipality there is no better starting point than beginning with existing municipalities that reflect a strong rural Manitoba. A municipality is, first and foremost, a geographic unit. Self-contained labour markets areas provide a geographic framework within which strong municipalities should be organized. The geography and labour markets are identified in the 18 self-contained labour areas (SLAs) that cover rural Manitoba (*See Project 1 Report: Identifying and Explaining Self-Contained Labour Areas in Rural Manitoba*).

The purpose of this report is to identify specific population and financial characteristics to help test the probable strength of the municipal groupings within each SLA. Due to the complexity of municipalities and rural areas, definitions of strong rural municipalities vary and there is not a single set of criteria that is used. Therefore this research requires several steps to develop a set of criteria or indicators along with measurements to use as guidelines for determining strong municipalities. The steps to achieving this include:

1. Building on current definitions of strong municipalities to develop a set of indicators;
2. Identifying examples of strong municipalities to serve as guideposts; and
3. Developing metrics for the set of indicators using the guideposts.

Developing a Set of Indicators

Others have examined how to define strong municipalities, especially rural ones. Population, financial characteristics and commuting patterns are common factors in defining rural regions. Three recent definitions of strong municipalities were examined to help build a set of criteria for rural Manitoba:

- **Building Stronger Local Governments and Regions** – this is a recent approach that was initiated and implemented by the provincial government of New Brunswick that identifies indicators to reconfigure the province's rural governance structure and territories. The report emphasized that rural municipalities need sufficient level of demographic and financial capacity to be successful. The findings proposed that due to rural New Brunswick experiencing on-going rural depopulation (like other parts of rural Canada), a minimum threshold for population and tax assessments should be established. The purpose of this minimum threshold was to provide a buffer and sufficient capacity for any new jurisdiction to attempt economic development initiatives to counter the trend of population loss. (Finn, 2008)
- **Municipal Health Checklist** – this alternative view of the strength of a rural municipality was development by the Association of Manitoba Municipalities in partnership with Manitoba Local Government (2003) that focused on the pattern of growth in the municipality, the pattern of growth of municipal assessment and low level of debt, among other factors, as indicators of municipal health. A growing population with a growing municipal tax base and low debt were indicators of a 'healthy' community.
- **Functional Economic Areas** – Another view might be gleaned from studies that attempt to define 'functional economic areas (FEA).' For example, Stabler and Olfert (2002) proposed FEAs for Manitoba. The idea of an FEA is that most employed residents work in the area and most jobs in the area are held by residents in the area. Thus, the benefit of any economic development initiative will remain within the FEA as there are few commuters into or out of the FEA

Table 1 below lists the common indicators from the three regional approaches and illustrates the purpose of each.

Table 1. *Common indicators from different definitions of strong municipalities*

INDICATORS	*BUILDING STRONGER LOCAL GOVERNMENTS*	*MUNICIPAL HEALTH CHECKLIST*	*FUNCTIONAL ECONOMIC AREAS (FEA)*
Population Levels	Serves as a baseline for municipal groupings – 4000 in population is minimum required for effective growth opportunities	Not used	Used as contextual factor to inform FEAs
Population Change	Used as contextual factor to inform municipal groupings	Positive population growth and youth and family growth are used indicators of municipal health	Not used
Tax Assessment Levels	Serves as a baseline for municipal groupings – $200 million in total tax assessment is minimum required for effective growth opportunities	Not used	Not used
Tax Assessment Change	Used along with other economic indicators such as economic drivers and employment as contextual factors to inform municipal groupings	Positive tax assessment change is used as an indicator of municipal health	Not used
Commuting	Used as a contextual factor to inform municipal groupings	Not used	Used as a core indicator for determining FEAs
Service Centres	Used as a contextual factor to inform municipal groupings	Not used	Used as a core indicator for determining FEAs
Inter-municipal Interactions	Used as a contextual factor to inform municipal groupings	Inter-municipal interactions and agreements are used as an indicator of municipal health	Not used

From the above examples, indicators for strong municipalities include population and financial criteria. In addition, the indicators provide a snapshot of the current state or they help describe the trajectory of a municipality or the dynamic trends by considering change over time. The relationship-focused indicators described the current situation between two or more municipalities.

Population level is a snap shot at a particular time, used as a minimum (eg 4000 pop for a rural municipality) or to inform a decision. Population and taxation change indicates how dynamic the situation is for a region or municipality in relation to growth.

Tax assessment levels are important for the financial strength of a municipality and like population levels reflect a snapshot in time. In the New Brunswick study on building stronger local governance, the specific metric is $200M for effective growth. Tax Assessment change is another dynamic indicator capturing the change in tax assessment over time.

Commuting is a relationship-based indicator and identifies which municipalities have employment and residential connections to each other. Service centre is another relationship-based indicator, identifying geographic centres that serve surrounding municipalities and regions. In the FEA study, the focal point is shopping services while the New Brunswick study identifies education and health institutions as key services.

Finally inter-municipal interactions is the third relationship-based indicator, identifying specific agreements and interactions existing between municipalities. Within the Municipal Health Checklist, these interactions are counted but not defined either in type or in membership, while the New Brunswick study identifies the importance of these relationships but does not provide a metric for them.

In summary, the practicality of applying any indicator hinges on available data for calculating the metrics. It is also clear from these three approaches that municipalities and rural regions are complex and there is not a single indicator that can guide municipal groupings but in fact several relevant indicators are needed. In addition, snapshot-based indicators help establish minimum levels while change over time indicators provide insight into the dynamics of growth. This combination of snapshot and dynamic indicators is needed to effectively identify strong municipal groupings. As a final observation, there is no absolute set of indicators and metrics that provide a universally agreed upon approach. This means a combination of field experience with the relevant municipalities must be coupled with more analytics.

Recommended Indicators

A combination of snapshot, dynamic and relationship-based indicators is needed to provide a more complete framework of indicators for strong rural municipalities. The snapshot and dynamic indicators will serve as the core of the framework while the relationship-based indicator commuting patterns is already being applied via the SLAs that are the initial grouping for this research and were defined in the Project 1 Report: *Identifying and Explaining Self-Contained Labour Areas in Rural Manitoba.* Refinements to these commuting patterns will be based on the other indicators in table 1 to ensure that recommended municipal groupings are manageable and realistic.

Baseline indicators have been adapted from the Building Stronger Local Governance and Regions report to serve as the snapshot indicators for municipal groupings while the changing nature of municipalities highlighted in the Municipal Health Checklist has been captured as growth indicators. Contextual indicators have been added to these groups of indicators to provide an important overview of financial strength for each municipal grouping, something that was identified as critical in the Municipal Health Checklist. Table 2 lists the 8 proposed indicators with more detailed descriptions being provided below.

Table 2. *Proposed Indicators*

Indicator Type	Indicator
Baseline Indicators	**Population Levels** **Tax Assessment Levels**
Growth Indicators	**Population Change per year** **Growth of Female Population age 20-39 per year** **Growth of Senior population 80 years and older per year** **Tax Assessment Change per year**
Contextual Indicators	**Debt per capita** **% Debt change per year**

Baseline Indicators

Adapted from the New Brunswick study, **population levels** and **total tax assessment** will provide the baselines indicators for this assessment. These baseline indicators will be the core indicators that define the size and scope of a strong municipality. As in the New Brunswick study, proposed strong municipalities will need to meet the minimum metrics for both population and total tax assessment. It is recommended that the metrics identified as minimums for population and tax assessment include a moderate buffer to provide communities with declining population or taxation assessments some room to address their specific situations. The metrics for these indicators will be developed in a subsequent section.

Growth Indicators

Adapted from the Municipal Health Checklist's indicators of change, **population change**, **growth of female population age 20-39, growth of seniors 80 years and older**, and **tax assessment change** will serve as growth indicators that provide a long-term understanding about whether a municipality is growing or declining in population and ability to raise funds. These indicators will provide a longitudinal perspective of municipal health. The metrics for these indicators will be developed in a subsequent section.

Contextual Indicators

Two other indicators will provide a snapshot of the financial strength of a proposed municipality. **Debt per capita** and **change in debt over time** will help identify the financial context for a proposed municipal grouping. These indicators will provide an important context for municipalities to understand what investment and development options are financially available. Each proposed municipality group will receive a financial snapshot value based on these two indicators. The metrics for each of these contextual indicators will be developed in a subsequent section.

General implications of positive and negative values for each growth and context indicator are provided in Table 3 below.

Table 3. *Growth and Context Indicators for Strong Municipalities*

INDICATORS	POSITIVE IMPLICATIONS	NEGATIVE IMPLICATIONS
Growth Indicators		
Population change per year	A positive rate of population change per year indicates a municipality with sustained growth	A negative rate of population change per year indicates a municipality that has consistently declined over time
Tax assessment change per year	A positive rate of tax assessment change per year indicates a municipality with increasing tax assessment	A negative rate of tax assessment change per year indicates a municipality with long term declining assessment
Growth of Females age 20-39 per year	A positive rate of change per year in females aged 20-39 indicates an increased ability to grow the municipality's population from within	A negative rate of change per year in females aged 20-39 indicates that the municipality is losing its ability to grow from within.
Growth of Seniors age 80+ per year	A declining rate of change per year would mean that the overall population is potentially getting younger and there are fewer people in an age group that is usually dependent.	An increasing rate of change per year would indicate a potentially aging population and a potential increase in the number of dependent people in that age group
Context Indicators		
Debt per capita	A debt per capita value below the metric would indicate a municipality with less debt per resident than is typical for strong municipalities, providing that municipality with financial opportunities and strength	A debt per capita value above the metric would indicate a municipality with more debt per resident than is typical for a strong community and would limit that municipality's financial opportunities and increase their burden.
% Debt change in per year	A change in debt % per year below the metric would indicate a municipality whose debt is growing slower than typical for strong municipalities	A change in debt % per year above the metric would indicate a municipality whose debt is growing faster than typical for strong municipalities.

As identified, there are other indicators to consider, such as the relationship-based service centres and inter-municipal interactions. These additional factors to consider are elements that may impact the grouping of specific municipalities (e.g. Official language levels) or are elements where data is not available to establish metrics on a wide scale (e.g. inter-municipal relations) but the indicator itself is still important to consider on a case-by-case basis for validating or enhancing strong municipal groupings. These additional indicators are included in 'factors to consider' which are listed in Appendix D.

While the indicators are a start to define a strong municipality, specific metrics are needed to identify stronger municipalities. The next section explores 5 different approaches to developing metrics for each of the 8 indicators identified above.

Guideposts for Strong Rural Municipalities in Manitoba

Strong municipalities can be defined in several ways with a key distinction being between growth and capacity. The Municipal Health Checklist outlined in this report adheres to the growth-based definition of strong municipalities while the New Brunswick and functional-economic area efforts embrace a capacity-based definition. The growth-based definition is focused on determining if a municipality is increasing in population and financial well-being, regardless of size while the capacity-based approach is focused on determining a minimum population and financial threshold in order for the municipality to be able to service its residents and engage in significant development initiatives. There is no one single definition or only one correct definition for what constitutes a strong rural municipality. As a result of the complexity in defining what constitutes a strong municipality, the final definition of metrics must be a combination of judgment and data rather than data alone.

Various groupings of Manitoba municipalities were compiled to assess the nature of a 'strong' municipality. The alternative approaches are presented below. Each approach is based on the argument that each municipality in each grouping is 'strong'. However, recognizing the smallest municipality in any grouping might be an 'outlier', the 1st quartile has been selected (i.e. the level where 25% of the municipalities are below this level and 75% of the municipalities are above this level) as a proposed threshold.

Five initial guidepost municipalities

Based on the field experience of Manitoba Local Government staff, they identified five 'strong' municipalities (***RM of Lac du Bonnet, RM of Rhineland, RM of Killarney-Turtle Mountain, Town of Neepawa and Town of Swan River***), generally based on their size as an indication of their capacity to pursue economic development initiatives. The size thresholds identified from these 5 municipalities were:

- 3,233 population threshold[1]; and
- $134 million taxable assessment threshold (Table 4).

[1] See the line labelled "One-quarter of CSDs are below this level" in each table. For each of the indicators, this line shows the value of the indicator that separates the bottom one-quarter (i.e. the first quartile) from the remaining CSDs in the list in the given table.

Table 4. *Five guidepost municipalities proposed by MB Local Government*

Census Sub-division (CSD) Identi-fication Number (2011)	Census Sub-division (CSD) name (2011)	CSD type (T= town, IRI= Indian Reserve, CY= City, VL= Village, RM= Rural Muni-cipality, S-É= Indian settle-ment, NO= unorgan-ized)	Name of self-contained labour area (SLA) in which the CSD is delineated	Total popu-lation of CSD in 2011	Average change per year, total popu-lation, 1996 to 2011 (%)	Average change per year, number of females, 20 to 39 years, 1996 to 2011 (%)	Average change per year, popu-lation 80+ years of age, 1996 to 2011 (%)	2013 Total Taxable Assess-ment ($ million)	Average change per year, total taxable assess-ment ($2013), 1998 to 2013 (%)	% of muni-cipal rev-enues gener-ated from pro-perty tax (%)	Total muni-cipal long-term debt (2012) per resident in 2011 ($)	Total current debt (2012) as a % of assess-ment (%)	Average change per year, muni-cipal long-term debt, 2005 to 2012 ($2012) (%)*
4601057	Lac du Bonnet	RM	Winnipeg (Manitoba)	2,671	1.3	-1.3	4.8	$292	8	62	$71	0	-7
4603036	Rhineland	RM	Winkler-Morden-Altona (Manitoba)	4,373	0.2	-1.1	-0.4	$251	4	68	$337	1	49
4605025	Killarney - Turtle Mountain	RM	Killarney-Boissevain (Manitoba)	3,233	-0.3	-1.4	2.5	$165	4	52	$2,817	6	8
4615020	Neepawa	T	Brandon (Manitoba)	3,629	0.6	0.4	-0.7	$124	3	58	$1,567	5	24
4620048	Swan River	T	Swan River (Manitoba)	3,907	-0.2	-1.6	1.6	$134	3	92	$1,487	5	19
Average for above census subdivisions (CSDs)				3,563	0.2	-1.0	1.1	$193	5	63	$1,250	2	15
Minimum among above CSDs				2,671	-0.3	-1.6	-0.7	$124	3	52	$71	0	-7
Maximum among above CSDs				4,373	1.3	0.4	4.8	$292	8	92	$2,817	6	49
One-quarter of CSDs are below this level				3,233	-0.2	-1.4	-0.4	$134	3	58	$337	1	8
One-quarter of CSDs are above this level				3,907	0.6	-1.1	2.5	$251	4	68	$1,567	5	24
1/2 of CSDs are above & 1/2 are below this level				3,629	0.2	-1.3	1.6	$165	4	62	$1,487	5	19
Summary of above CSDs				17,813	0.2	-1.0	1.1	$966	5	63	$1,250	2	15

* Note: change in debt is not calculated in cases where debt was equal to zero one of the years from 2005 to 2012.

Table 4, and each subsequent table, shows the level of population in 2011 (in the 1st data column) and the level of municipal taxable assessment (in the 5th data column). In addition, other columns show indicators to describe or to show the characteristics of each component census subdivision[2] (CSD) and the coloured rows at the bottom show the characteristics of the groups of CSDs listed in the table. The definition of each indicator and the rationale for including each indicator is discussed in Appendix D.

Five additional guidepost municipalities

The project team undertook to identify an additional set of representative 'strong' municipalities' (***Town of Ste. Anne, Town of Altona, Town of Carberry, RM of Woodlands and Town of Arborg***). The criteria for this process are summarized in Appendix A. The size thresholds identified from these 5 municipalities were:

- 1,626 population threshold; and
- $43 million taxable assessment threshold (Table 5).

[2] In this study, a census subdivision refers to an incorporated village, town, rural municipality or city. Census subdivisions also include Indian Reserves, Local Government Districts and unorganized territories which are not the focus of this study.

Table 5. *Five Additional guidepost municipalities*

Census Sub-division (CSD) Identi-fication Number (2011)	Census Sub-division (CSD) name (2011)	CSD type (T= town, IRI= Indian Reserve, CY= City, VL= Village, RM= Rural Muni-cipality, S-É= Indian settle-ment, NO= unorgan-ized)	Name of self-contained labour area (SLA) in which the CSD is delineated	Total popu-lation of CSD in 2011	Average change per year, total popu-lation, 1996 to 2011 (%)	Average change per year, number of females, 20 to 39 years, 1996 to 2011 (%)	Average change per year, popu-lation 80+ years of age, 1996 to 2011 (%)	2013 Total Taxable Assess-ment ($ million)	Average change per year, total taxable assess-ment ($2013), 1998 to 2013 (%)	% of muni-cipal rev-enues gener-ated from pro-perty tax (%)	Total muni-cipal long-term debt (2012) per resident in 2011 ($)	Total current debt (2012) as a % of assess-ment (%)	Average change per year, muni-cipal long-term debt, 2005 to 2012 ($2012) (%)*
4602061	Ste. Anne	T	Winnipeg (Manitoba)	1,626	0.5	0.0	-0.7	$59	6	31	$607	2	-4
4603040	Altona	T	Winkler-Morden-Altona (Manitoba)	4,088	1.5	0.8	2.7	$134	4	20	$1,094	3	-1
4607068	Carberry	T	Brandon (Manitoba)	1,669	0.7	0.1	0.4	$43	4	40	$142	1	..
4614031	Woodlands	RM	Winnipeg (Manitoba)	3,521	0.2	-1.5	-0.5	$141	4	69	$234	1	3
4618074	Arborg	T	Winnipeg (Manitoba)	1,152	0.9	1.3	1.5	$38	4	50	$851	3	-7
Average for above census subdivisions (CSDs)				2,411	0.8	-0.1	1.2	$83	4	38	$622	2	-2
Minimum among above CSDs				1,152	0.2	-1.5	-0.7	$38	4	20	$142	1	-7
Maximum among above CSDs				4,088	1.5	1.3	2.7	$141	6	69	$1,094	3	3
One-quarter of CSDs are below this level				1,626	0.5	0.0	-0.5	$43	4	31	$234	1	-5
One-quarter of CSDs are above this level				3,521	0.9	0.8	1.5	$134	4	50	$851	3	0
1/2 of CSDs are above & 1/2 are below this level				1,669	0.7	0.1	0.4	$59	4	40	$607	2	-2
Summary of above CSDs				12,056	0.8	-0.1	1.2	$415	4	38	$622	2	-2

* Note: change in debt is not calculated in cases where debt was equal to zero one of the years from 2005 to 2012.

Top 10 'healthy' municipalities using selected indicators from the Municipal Health Checklist

Our focus is on "size matters." The Municipal Health Checklist is focused on the trajectory of community growth and municipal performance (e.g. low debt). However, it is important to see what the size threshold might be for the top 10 "healthy" municipalities (***Village of Dunnottar, RM of Sifton, Town of Carberry, RM of Odanah, Town of Oak Lake, RM of Piney, RM of Roland, Town of Ste. Anne, RM of South Cypress, Village of Wawanesa***).

Our calculation used only selected indicators for which data were available:

- Rate of change of total population from 2001-2011
- Rate of change of number of females 20-39 years of age from 1996 to 2011
- Rate of change of population 80 years of age and older from 1996 to 2011
- Rate of change of level of municipal tax assessment
- Expenditure on general government, 2008 as a percent of municipal revenue, 2013
- Debt payment as a percent of revenue, 2012
- Debt capacity remaining as a % of debt capacity

(for a description of how each indicator was calculated see Appendix B).

The size thresholds identified from these 10 municipalities were:

- 596 population threshold; and
- $40 million taxable assessment threshold (Table 6).

Table 6. *Top 10 'Healthy' municipalities*

Census Sub-division (CSD) Identi-fication Number (2011)	Census Sub-division (CSD) name (2011)	CSD type (T= town, IRI= Indian Reserve, CY= City, VL= Village, RM= Rural Muni-cipality, S-É= Indian settle-ment, NO= unorgan-ized)	Name of self-contained labour area (SLA) in which the CSD is delineated	Total popu-lation of CSD in 2011	Average change per year, total popu-lation, 1996 to 2011 (%)	Average change per year, number of females, 20 to 39 years, 1996 to 2011 (%)	Average change per year, popu-lation 80+ years of age, 1996 to 2011 (%)	2013 Total Taxable Assess-ment ($ million)	Average change per year, total taxable assess-ment ($2013), 1998 to 2013 (%)	% of muni-cipal rev-enues gener-ated from pro-perty tax (%)	Total muni-cipal long-term debt (2012) per resident in 2011 ($)	Total current debt (2012) as a % of assess-ment (%)	Average change per year, muni-cipal long-term debt, 2005 to 2012 ($2012) (%)*
4613049	Dunnottar	VL	Winnipeg (Manitoba)	696	4.1	2.4	0.4	$66	7	39	$289	0	..
4606015	Sifton	RM	Virden (Manitoba)	789	0.3	0.2	0.3	$85	6	44	$0	0	..
4607068	Carberry	T	Brandon (Manitoba)	1,669	0.7	0.1	0.4	$43	4	40	$142	1	..
4615023	Odanah	RM	Brandon (Manitoba)	533	-0.1	0.0	-5.2	$38	4	76	$0	0	..
4606018	Oak Lake	T	Virden (Manitoba)	383	0.2	-0.6	-0.7	$8	5	20	$0	0	..
4601039	Piney	RM	Winnipeg (Manitoba)	1,720	0.5	0.1	0.9	$64	4	51	$0	0	..
4603062	Roland	RM	Winkler-Morden-Altona (Manitoba)	1,058	0.4	0.6	0.3	$84	5	65	$609	1	17
4602061	Ste. Anne	T	Winnipeg (Manitoba)	1,626	0.5	0.0	-0.7	$59	6	31	$607	2	-4
4607038	South Cypress	RM	Brandon (Manitoba)	838	-0.1	0.1	-4.2	$87	4	64	$0	0	..
4607047	Wawanesa	VL	Killarney-Boissevain (Manitoba)	562	1.0	1.3	-0.4	$16	6	35	$568	2	27
Average for above census subdivisions (CSDs)				987	0.6	0.3	-0.1	$55	5	45	$242	0	7
Minimum among above CSDs				383	-0.1	-0.6	-5.2	$8	4	20	$0	0	-4
Maximum among above CSDs				1,720	4.1	2.4	0.9	$87	7	76	$609	2	27
One-quarter of CSDs are below this level				596	0.3	0.0	-0.7	$40	4	36	$0	0	7
One-quarter of CSDs are above this level				1,484	0.6	0.5	0.4	$80	6	61	$499	1	22
1/2 of CSDs are above & 1/2 are below this level				814	0.4	0.1	0.0	$62	5	42	$71	0	17
Summary of above CSDs				9,874	0.6	0.3	-0.1	$551	5	45	$242	0	7

* Note: change in debt is not calculated in cases where debt was equal to zero one of the years from 2005 to 2012.

Top 10 municipalities in terms of "administrative efficiency"

As described in Appendix C, municipalities with a smaller population base typically report a higher expenditure on administration per resident in the municipality. Thus, "administrative efficiency" would be enhanced if the municipal jurisdiction covered a larger population base.

When municipalities were ranked by a measure of administrative efficiency (i.e. general government expenditure per resident in the municipality), the thresholds identified from the top 10 most efficient municipalities (***RM of Cornwallis, RM of Ste. Anne, Town of Stonewall, RM of Brokenhead, RM of Macdonald, Town of Beausejour, RM of Swan River, RM of Ritchot, RM of Portage la Prairie, RM of Rhineland***) were:

- 4,374 population threshold; and a
- $163 million taxable assessment threshold (Table 7).

Table 7. *Top 10 municipalities ranked by "administrative" efficiency*

Census Sub-division (CSD) Identi-fication Number (2011)	Census Sub-division (CSD) name (2011)	CSD type (T= town, IRI= Indian Reserve, CY= City, VL= Village, RM= Rural Muni-cipality, S-É= Indian settle-ment, NO= unorgan-ized)	Name of self-contained labour area (SLA) in which the CSD is delineated	Total popu-lation of CSD in 2011	Average change per year, total popu-lation, 1996 to 2011 (%)	Average change per year, number of females, 20 to 39 years, 1996 to 2011 (%)	Average change per year, popu-lation 80+ years of age, 1996 to 2011 (%)	2013 Total Taxable Assess-ment ($ million)	Average change per year, total taxable assess-ment ($2013), 1998 to 2013 (%)	% of muni-cipal rev-enues gener-ated from pro-perty tax (%)	Total muni-cipal long-term debt (2012) per resident in 2011 ($)	Total current debt (2012) as a % of assess-ment (%)	Average change per year, muni-cipal long-term debt, 2005 to 2012 ($2012) (%)*
4607060	Cornwallis	RM	Brandon (Manitoba)	4,378	0.3	-1.0	4.6	$154	5	49	$0	0	..
4602057	Ste. Anne	RM	Winnipeg (Manitoba)	4,686	0.7	-1.3	5.7	$223	6	52	$112	0	..
4614039	Stonewall	T	Winnipeg (Manitoba)	4,536	1.4	-0.7	2.3	$215	6	40	$1,143	3	5
4612054	Brokenhead	RM	Winnipeg (Manitoba)	4,635	1.2	-0.3	1.9	$188	6	63	$901	2	-2
4610035	Macdonald	RM	Winnipeg (Manitoba)	6,280	1.6	-0.4	2.4	$487	6	60	$1,925	3	29
4612056	Beausejour	T	Winnipeg (Manitoba)	3,126	0.9	-0.1	1.7	$118	4	43	$860	2	1
4620041	Swan River	RM	Swan River (Manitoba)	2,546	-0.9	-2.0	3.0	$120	4	78	$39	9	..
4602075	Ritchot	RM	Winnipeg (Manitoba)	5,478	0.2	-1.5	1.0	$282	5	44	$494	1	0
4609024	Portage la Prairie	RM	Portage la Prairie (Manitoba)	6,525	-0.1	-1.2	2.1	$492	4	89	$1,251	2	6
4603036	Rhineland	RM	Winkler-Morden-Altona (Manitoba)	4,373	0.2	-1.1	-0.4	$251	4	68	$337	1	49
Average for above census subdivisions (CSDs)				4,656	0.6	-1.0	2.3	$253	5	60	$797	2	9
Minimum among above CSDs				2,546	-0.9	-2.0	-0.4	$118	4	40	$0	0	-2
Maximum among above CSDs				6,525	1.6	-0.1	5.7	$492	6	89	$1,925	9	49
One-quarter of CSDs are below this level				4,374	0.2	-1.3	1.8	$163	4	45	$168	1	1
One-quarter of CSDs are above this level				5,280	1.1	-0.5	2.8	$274	6	67	$1,083	2	17
1/2 of CSDs are above & 1/2 are below this level				4,586	0.5	-1.1	2.2	$219	5	56	$677	2	5
Summary of above CSDs				46,563	0.6	-1.0	2.3	$2,530	5	60	$797	2	9

* Note: change in debt is not calculated in cases where debt was equal to zero one of the years from 2005 to 2012.

Recommended Thresholds for New Brunswick

Recall that the recommended thresholds for New Brunswick were:

- 4,000 population threshold; and a
- $200 million taxable assessment threshold.

To summarize

Five approaches have been identified:

- 5 guidepost municipalities proposed by colleagues with Manitoba Local Government;
- 5 alternative guidepost municipalities proposed by the study team;
- 10 municipalities that rank at the top using selected indicators from the Municipal Health Checklist; and
- 10 municipalities that rank high in terms of administrative efficiency.
- New Brunswick's recent thresholds developed for their rural municipal restructuring.

The various population size thresholds are summarized in Table 8. The various taxable assessment thresholds are summarized in Table 9.

Table 8. *Summary of population thresholds from 5 approaches to strong municipalities*

Review of alternative population thresholds for a strong community (excludes 'cities' and CSDs north of Swan River)					
	Proposed threshold	Distribution of 'strong' CSDs			Number of CSDs 'targeted' at proposed threshold**
		1st quartile	median	3rd quartile	
	Population level at threshold				
5 guidepost CSDs	3,233	3,233	3,629	3,907	151
5 additional guidepost CSDs	1,626	1,626	1,669	3,521	123
Top 10 'healthy' CSDs ***	596	596	814	1,484	45
Top 10 CSDs with general government expenditures (2008 data) < $200 / capita (excluding CSDs with total population of 7,500 and over)	4,374	4,374	4,586	5,280	159
New Brunswick study	4,000	..	..	..	157

Note: We also plotted general government expenditure per capita (2008 data) against population size (2011 data). General government expediture per capita fell below $200 per capita (and stayed below this level for all larger CSDs) when the population level reached 1,884 residents. If this was the threshold, the number of 'targeted' CSDs would be 135 CSDs.

** 'targeted' here refers to the number of CSDs below the proposed threshold. In addition, many neighbouring CSDs will be 'impacted' as the joining-up process unfolds.

*** based on selected indicators adapted from the Municipal Health Checklist

Figure 1. Population Thresholds of 5 approaches

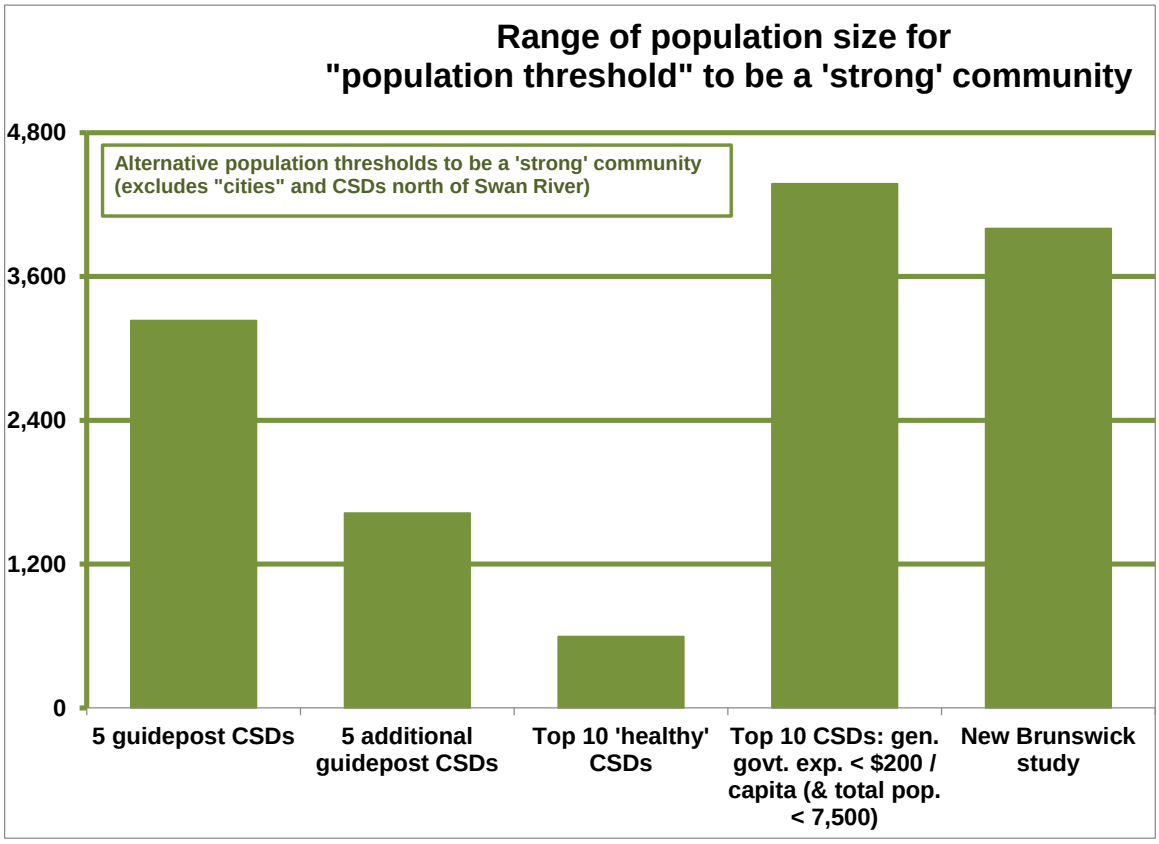


Table 9. *Summary of tax assessment thresholds from 5 approaches to strong municipalities*

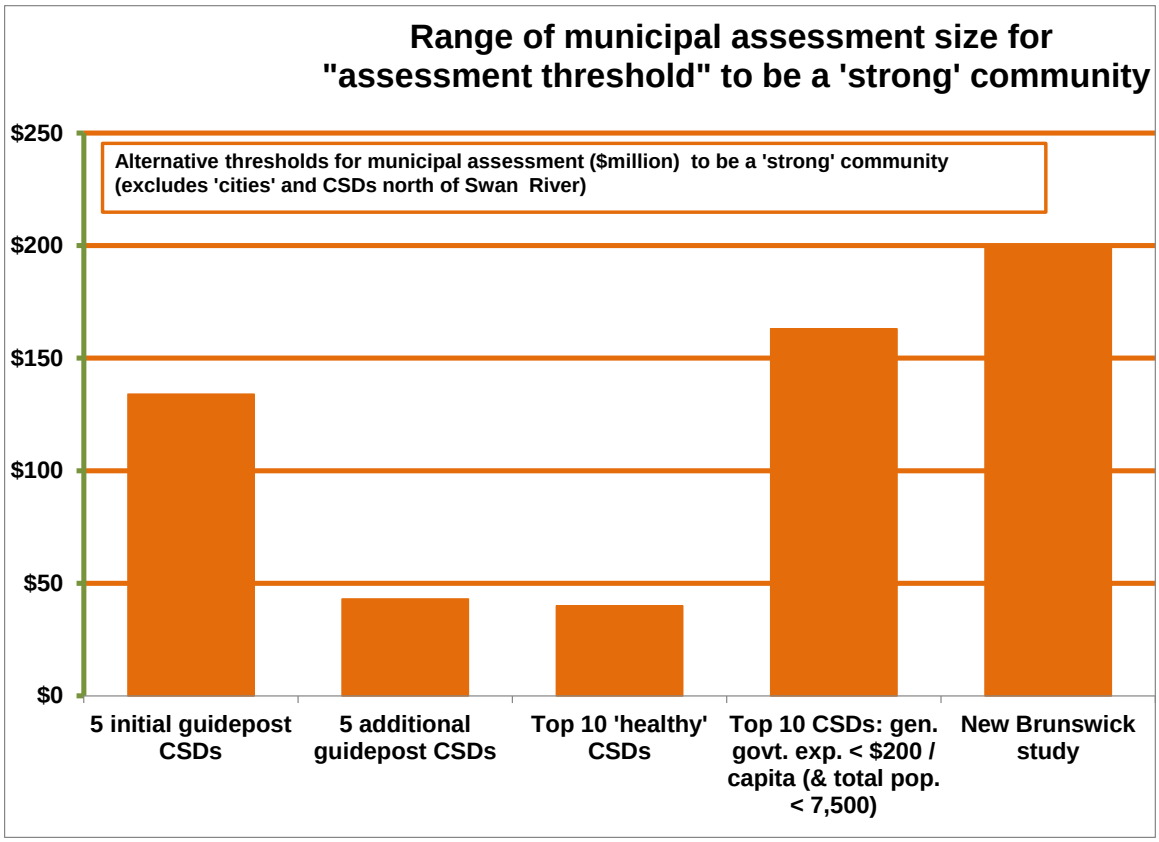
Review of alternative municipal assessment ($million) thresholds for a strong community (excludes 'cities' and CSDs north of Swan River)					
	Proposed threshold	Distribution of 'strong' CSDs			Number of CSDs 'targeted' at proposed threshold**
		1st quartile	median	3rd quartile	
	Assessment level ($million) at threshold				
5 initial guidepost CSDs	134	134	165	251	139
5 additional guidepost CSDs	43	43	59	134	77
Top 10 'healthy' CSDs ***	40	40	62	80	70
Top 10 CSDs with general government expenditures < $200 / capita (excluding CSDs with total population of 7,500 and over)	163	163	219	274	147
New Brunswick study	200	..	..	..	156

Note: We also plotted general government expenditure per capita (2008 data) against size of municipal assessment (2013 data). General government expediture per capita fell below $200 per capita (and stayed below this level for all larger CSDs) when the municipal assessment level reached $150 million. If this was the threshold, the number of 'targeted' CSDs would be 144 CSDs.

** 'targeted' here refers to the number of CSDs below the proposed threshold. In addition, many neighbouring CSDs will be 'impacted' as the joining-up process unfolds.

*** based on selected indicators adapted from the Municipal Health Checklist

Figure 2. Tax Assessment Thresholds of 5 Approaches



Now that municipality and threshold values have been identified for each approach, the positive and negative aspects can be compared in Table 10 below.

Table 10. *Assessment of different guidepost approaches*

Approaches	Positive Aspects	Negative Aspects
Initial 5	Provides a baseline threshold that is sufficient in capacity. The communities are also geographically representative of rural Manitoba.	Not all of the municipalities are growing with 2 out of 5 declining in all of the population growth indicators. The regional representation results in other stronger municipalities being excluded as examples.
Additional 5	It identifies growing communities that are over 1,000 population and provides a geographic representation of rural Manitoba	It does not ensure sufficient capacity amongst its strong municipalities as 3 of the 5 are growing but have less than 1,700 in population and $60 million in tax assessment. The regional representation results in some stronger municipalities being excluded as examples.
Top 10 AMM Healthy	It identifies growing communities that are positively changing on the population and financial front.	It does not ensure sufficient capacity amongst its strong municipalities and in fact 6 out of the 10 do not even meet the 1,000 population threshold to form as a municipality in Manitoba.
Top 10 Administrative Efficiency	Provides a clear connection between administrative efficiency and size. It also creates a baseline threshold with sufficient capacity	It is the largest proposed population threshold. It defines strong municipalities solely on efficiency of government expenditures.
New Brunswick	Provides simple baseline threshold that creates sufficient capacity	The proposed thresholds are too high for rural Manitoba and are not based on rural Manitoba communities.

An additional step in the analysis is to examine all 30 of these strong municipalities together. Among these 30 municipalities that appear from alternative ways of identifying a 'strong' municipality, only 3 appear in more than one list. Thus, the first take-away message is that very few communities that rank high on one scale will be ranked high on another scale. The thresholds at the 1st quartile when the remaining 27 municipalities are assembled are:

- 1,105 population threshold; and a
- $65 million taxable assessment threshold (Table 11).

However, also note that the typical or median municipality in this group of 27 'strong' municipalities (noted on Table 11 as "½ of CSDs are above and ½ of CSDs are below this level") shows:

- a population level of 3,126 (for the median community); and
- a taxable assessment level of $124 million (for the median community).

Table 11. *Candidates for strong municipalities derived from alternative ways to identify a strong municipality*

Census Sub-division (CSD) Identi-fication Number (2011)	Census Sub-division (CSD) name (2011)	CSD type (T= town, IRI= Indian Reserve, CY= City, VL= Village, RM= Rural Muni-cipality, S-É= Indian settle-ment, NO= unorgan-ized)	Name of self-contained labour area (SLA) in which the CSD is delineated	Total popu-lation of CSD in 2011	Average change per year, total popu-lation, 1996 to 2011 (%)	Average change per year, number of females, 20 to 39 years, 1996 to 2011 (%)	Average change per year, popu-lation 80+ years of age, 1996 to 2011 (%)	2013 Total Taxable Assess-ment ($ million)	Average change per year, total taxable assess-ment ($2013), 1998 to 2013 (%)	% of muni-cipal rev-enues gener-ated from pro-perty tax (%)	Total muni-cipal long-term debt (2012) per resident in 2011 ($)	Total current debt (2012) as a % of assess-ment (%)	Average change per year, muni-cipal long-term debt, 2005 to 2012 ($2012) (%)*
4601039	Piney	RM	Winnipeg (Manitoba)	1,720	0.5	0.1	0.9	$64	4	51	$0	0	..
4601057	Lac du Bonnet	RM	Winnipeg (Manitoba)	2,671	1.3	-1.3	4.8	$292	8	62	$71	0	-7
4602057	Ste. Anne	RM	Winnipeg (Manitoba)	4,686	0.7	-1.3	5.7	$223	6	52	$112	0	..
4602061	Ste. Anne	T	Winnipeg (Manitoba)	1,626	0.5	0.0	-0.7	$59	6	31	$607	2	-4
4602075	Ritchot	RM	Winnipeg (Manitoba)	5,478	0.2	-1.5	1.0	$282	5	44	$494	1	0
4603036	Rhineland	RM	Winkler-Morden-Altona (Manitoba)	4,373	0.2	-1.1	-0.4	$251	4	68	$337	1	49
4603040	Altona	T	Winkler-Morden-Altona (Manitoba)	4,088	1.5	0.8	2.7	$134	4	20	$1,094	3	-1
4603062	Roland	RM	Winkler-Morden-Altona (Manitoba)	1,058	0.4	0.6	0.3	$84	5	65	$609	1	17
4605025	Killarney - Turtle Mountain	RM	Killarney-Boissevain (Manitoba)	3,233	-0.3	-1.4	2.5	$165	4	52	$2,817	6	8
4606015	Sifton	RM	Virden (Manitoba)	789	0.3	0.2	0.3	$85	6	44	$0	0	..
4606018	Oak Lake	T	Virden (Manitoba)	383	0.2	-0.6	-0.7	$8	5	20	$0	0	..
4607038	South Cypress	RM	Brandon (Manitoba)	838	-0.1	0.1	-4.2	$87	4	64	$0	0	..
4607047	Wawanesa	VL	Killarney-Boissevain (Manitoba)	562	1.0	1.3	-0.4	$16	6	35	$568	2	27
4607060	Cornwallis	RM	Brandon (Manitoba)	4,378	0.3	-1.0	4.6	$154	5	49	$0	0	..
4607068	Carberry	T	Brandon (Manitoba)	1,669	0.7	0.1	0.4	$43	4	40	$142	1	..
4609024	Portage la Prairie	RM	Portage la Prairie (Manitoba)	6,525	-0.1	-1.2	2.1	$492	4	89	$1,251	2	6
4610035	Macdonald	RM	Winnipeg (Manitoba)	6,280	1.6	-0.4	2.4	$487	6	60	$1,925	3	29
4612054	Brokenhead	RM	Winnipeg (Manitoba)	4,635	1.2	-0.3	1.9	$188	6	63	$901	2	-2
4612056	Beausejour	T	Winnipeg (Manitoba)	3,126	0.9	-0.1	1.7	$118	4	43	$860	2	1
4613049	Dunnottar	VL	Winnipeg (Manitoba)	696	4.1	2.4	0.4	$66	7	39	$289	0	..
4614031	Woodlands	RM	Winnipeg (Manitoba)	3,521	0.2	-1.5	-0.5	$141	4	69	$234	1	3
4614039	Stonewall	T	Winnipeg (Manitoba)	4,536	1.4	-0.7	2.3	$215	6	40	$1,143	3	5
4615020	Neepawa	T	Brandon (Manitoba)	3,629	0.6	0.4	-0.7	$124	3	58	$1,567	5	24
4615023	Odanah	RM	Brandon (Manitoba)	533	-0.1	0.0	-5.2	$38	4	76	$0	0	..
4618074	Arborg	T	Winnipeg (Manitoba)	1,152	0.9	1.3	1.5	$38	4	50	$851	3	-7
4620041	Swan River	RM	Swan River (Manitoba)	2,546	-0.9	-2.0	3.0	$120	4	78	$39	9	..
4620048	Swan River	T	Swan River (Manitoba)	3,907	-0.2	-1.6	1.6	$134	3	92	$1,487	5	19
Average for above census subdivisions (CSDs)				2,913	0.5	-0.7	1.4	$152	5	55	$846	2	8
Minimum among above CSDs				383	-0.9	-2.0	-5.2	$8	3	20	$0	0	-7
Maximum among above CSDs				6,525	4.1	2.4	5.7	$492	8	92	$2,817	9	49
One-quarter of CSDs are below this level				1,105	0.2	-1.2	-0.4	$65	4	41	$55	0	-1
One-quarter of CSDs are above this level				4,376	0.9	0.2	2.3	$201	6	65	$998	3	19
1/2 of CSDs are above & 1/2 are below this level				3,126	0.5	-0.3	1.0	$124	4	52	$494	1	5
Summary of above CSDs				78,638	0.5	-0.7	1.4	$4,108	5	55	$846	2	8

* Note: change in debt is not calculated in cases where debt was equal to zero one of the years from 2005 to 2012.

What are the Proposed Thresholds for a 'Strong' Municipality?

It is recommended that 'strength' is determined in this case by the capacity of the municipal jurisdiction to assess and to implement strategic economic development investments. As Finn (2008) indicated in the New Brunswick municipal restructuring report, sufficient population is needed "*to ensure that the proposed entities would not find themselves with immediate or long-term issues related to viability, or both, and in particular problems of financial capacity and civic participation*" (pg. 84).

Based on this analysis the different approaches and the focus on strength as capacity, the judgment in this report is that in the current Manitoba economy, a 'strong' municipal jurisdiction is required to have:

- a 3,000 population threshold; and a
- $130 million taxable assessment threshold

Figures 3 and 4 compares the proposed population and tax assessment thresholds with the five approaches to strong communities examined above.

Figure 3. Proposed Population threshold compared to 5 examples of strong municipalities

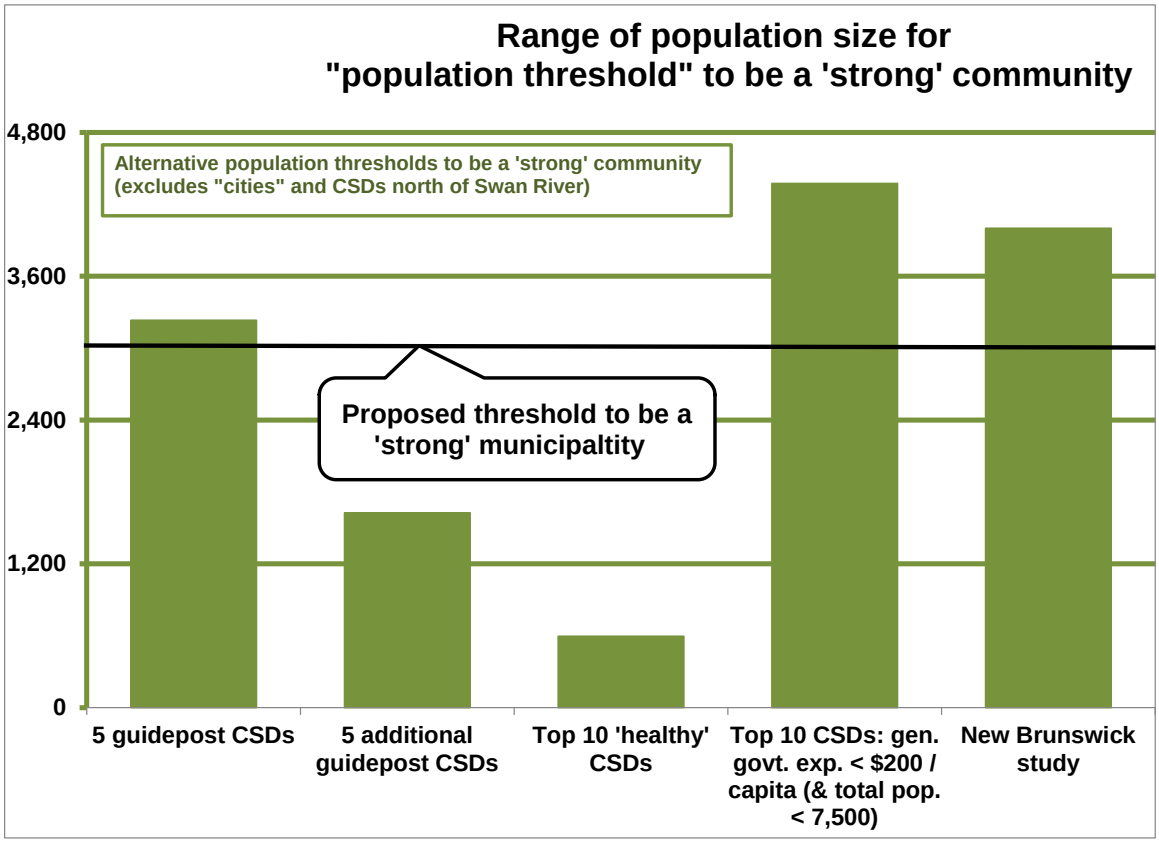


Figure 4. Proposed tax assessment threshold compared to 5 examples of strong communities

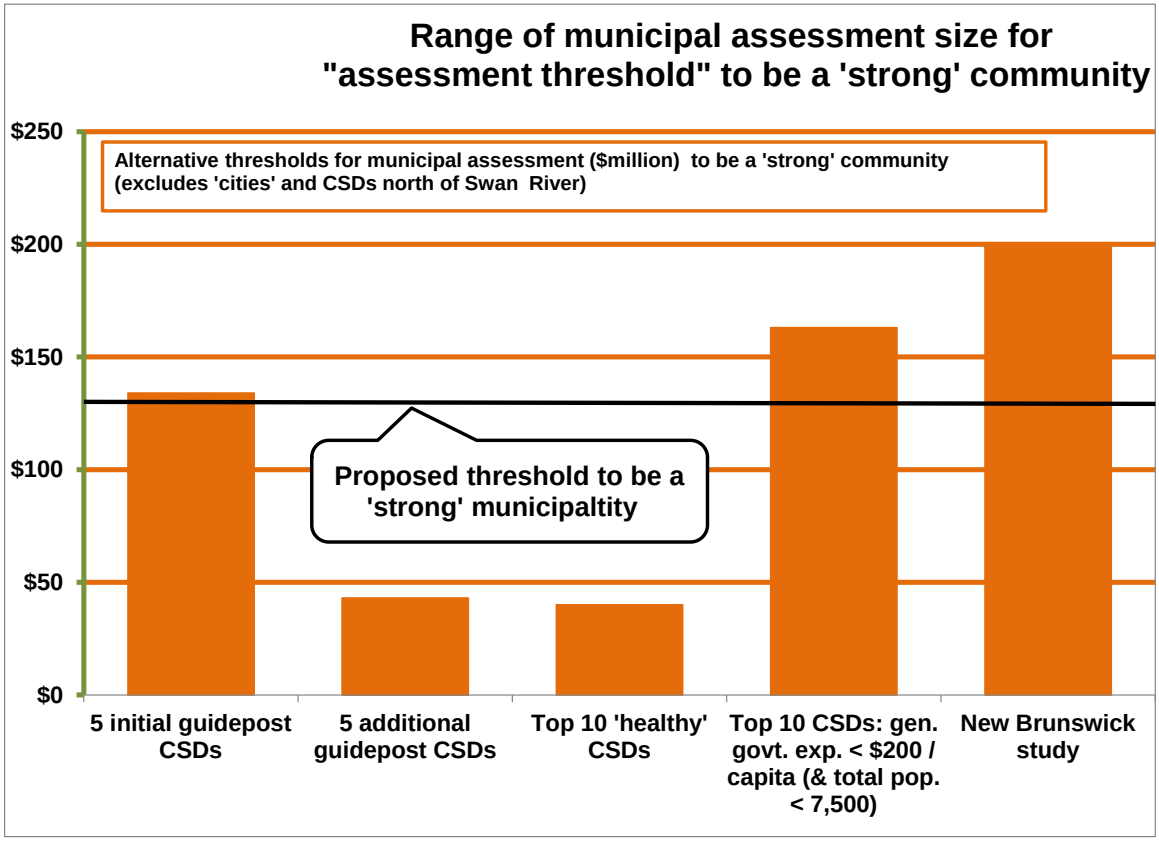


Table 12 provides a complete list of the proposed indicators and metrics for strong municipalities.

Of the municipalities outside of Winnipeg and northern Manitoba, there are 146 municipalities that do not meet the population threshold of 3,000. If the $130 million taxable assessment were also applied, an additional 4 municipalities would not meet the threshold for a total of 150 municipalities.

Table 12. *Indicators and Metrics for Strong Rural Municipalities*

Indicator Type	Indicators	Metric	Description
BASELINE	**Population**	>3,000	3,000 is the baseline population level to ensure sufficient demographic capacity for strong municipalities.
	Tax Assessment	>$130 (million)	$130 million is the baseline tax assessment level to ensure sufficient financial capacity for strong municipalities.
GROWTH	**Population Change per year**	> 0%	Positive population change over time is indicative of a long-term growing municipality
	Growth of female population age 20 to 39 per year	> 0%	Positive growth of female population over time is indicative of the potential for positive natural growth via birth rates within a municipality.
	Growth of Senior's population 80 years and older per year	< 0%	Negative values indicate a declining number of seniors over 80 years old over time, reducing the dependent population within a municipality.
	Tax Assessment Change per year	> 0%	Positive values indicate a growing assessment base on which to draw financially.
CONTEXTUAL	**Debt per capita**	< $494[3]	Municipalities with debt levels lower than$494 per resident are identified as having a favourable debt level below the typical debt level for a strong municipality.
	Debt change per year	< 5%	Municipalities with debt change per year levels lower than 5% are identified as having a favourable debt change per year below the typical debt change per year for a strong municipality.

[3] The metrics for the contextual indicators are based on the median values from table 11. These values represent the typical debt per capita and debt change per year across all 27 strong municipalities identified.

Resources

Association of Manitoba Municipalities. Municipal Health Checklist: Manitoba Municipalities: Embracing 21st Century Challenges. Retrieved Feb 23, 2013 from http://www.amm.mb.ca/PDF/Tools%20for%20Change/checklist.pdf

Finn, Jean-Guy. (2008) Building Stronger Local Governments and Regions: An Action Paln for the Future of Local Governance in New Brunswick, Report of the Commissioner on the Future of Local Governance (Fredericton: Government of New Brunswick).

Stabler, Jack C. and M. Rose Olfert. (2002) Functional Economic Areas of the Canadian Prairie Region (Agriculture Canada), retrieved Feb 23, 2013 from http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/csi12110/$FILE/functional_economic_areas_2002.pdf

Appendix A: Five Additional Guidepost Municipalities

The project team identified the need to identify an additional 5 guidepost municipalities. In this selection, growth-based criteria were used to identify the additional 5 municipalities to serve as guideposts for strong municipalities. The criteria for the additional 5 guidepost municipalities were:

- Must have population >1,000 and <7,500;
- Must have population growth >0% per year;
- Must have tax assessment growth >0% per year;
- Priority to female age 20-39 growth >0% per year;
- Priority to seniors 80+ years old growth <0%;
- Priority to municipalities with lower debt per resident;
- Priority to municipalities with lower growth in debt per year;
- Stratified by 5 regions to pick a one guidepost municipal per region (where possible)

These guidepost municipalities are listed in Table 5, above.

Appendix B: Partial Index of Health of a Municipal Jurisdiction

The Association of Manitoba Municipalities has developed a checklist of indicators to assess the health of a municipality.[4] The indicators are organized in five categories:

- A: Is your municipality's population stable?
- B: Is your municipality's tax base stable or growing?
- C: Is your municipality financially strong?
- D: Does your municipality take advantage of opportunities to work with others?
- E: Is there local interest and support in your community?

For this study, we generated a partial health index for each municipality, using available data on population change, assessment change and degree of debt in the municipality. Our index of the health of each community was calculated as:

- Rate of change of total population from 2001-2011:
  - = 6 if growth >2%/yr.; = 4 if growth <2%/yr.; = -4 if decline <2%/yr.; = -6 if decline >2%/yr.;
- Rate of change of number of females 20-39 years of age from 1996 to 2011:
  - = 6 if growth >2%/yr.; = 4 if growth <2%/yr.; = -4 if decline <2%/yr.; = -6 if decline >2%/yr.;
- Rate of change of change of population 80 years of age and older from 1996 to 2011:
  - = 6 if decline; = 0 if growth <1/yr.; = -4 if growth 1 to 2%/yr.; = -6 if decline >2%/yr.;
- Rate of change of level of municipal taxable assessment:
  - = 7 if growth >1.5%/yr.; = 4 if growth up to 1.5%/yr.; = -3 if decline <0.75%/yr.; = -5 if decline >0.75%/yr.;
- Expenditure on general government, 2008, as a percent of municipal revenue, 2013:
  - = 7 if <15%; = 0 if 15 to 20%; = -7 if 20+%;
- Debt payment as a percent of revenue, 2012:
  - =7 if <2%; = 0 if 2 to 4%; = -7 if 4+%;
- Debt capacity remaining as % of debt capacity:
  - =0 if 50+%; = -4 if <50%; = -7 of over the limit

Our partial indicator of the health of each jurisdiction is obtained by adding across the 7 indicators note above. The top 10 municipal jurisdictions according this index are listed in Table 6 above.

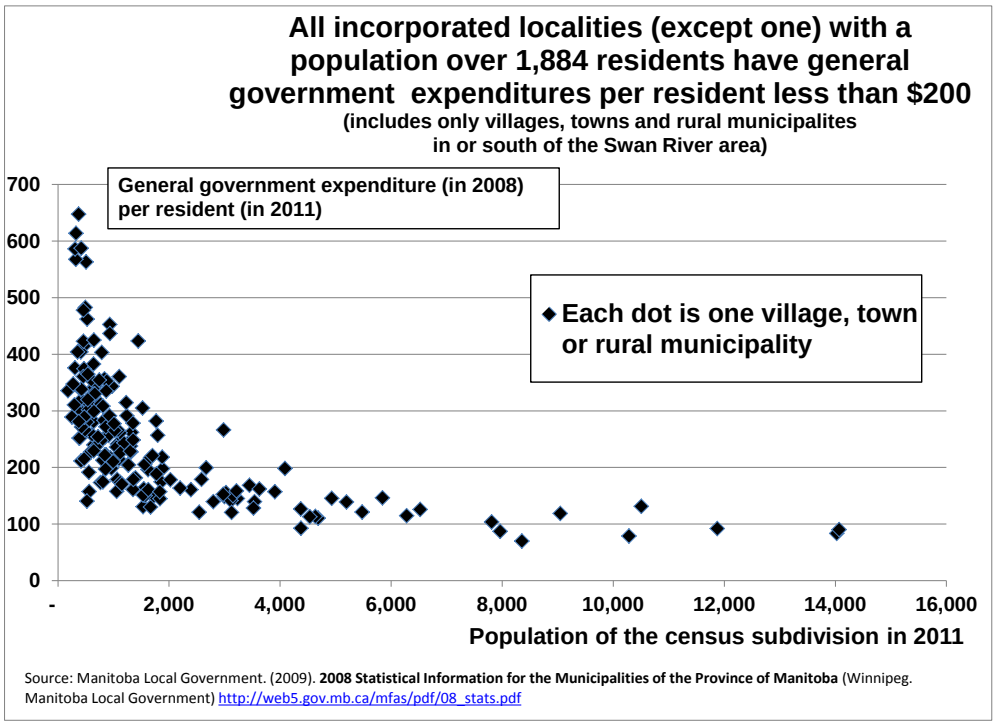
[4] See Association of Manitoba Municipalities. (2010ca) **Municipal Health Checklist: Manitoba Municipalities Embracing 21st Century Challenges, Tools for Change** (Winnipeg: Association of Manitoba Municipalities) http://www.amm.mb.ca/PDF/Tools%20for%20Change/checklist.pdf.

Appendix C: Determining the Top 10 Census Subdivisions in Terms of Administrative Efficiency

Manitoba Local Government, in their 2009 statistical report[5], noted that rural municipalities with a population less than 1,000 residents report that general government expenditures (essentially, administration expenses) were $342 per resident while rural municipalities with 1,000 to 5,000 spent $192 per resident on general government expenditures. This expenditure item was even less, at $102 per resident, for rural municipalities with a population over 5,000 residents.

To visualize this pattern, we have plotted the relationship between general government expenditure per resident on the vertical axis of Figure C1 and the population size of the municipality on the horizontal axis. Each dot shows the situation for one community.

Figure C1



Many municipalities have administrative expenses (i.e. general government expenditures) greater than $300 per resident. Only one jurisdiction over 1,884 residents has administrative expenses over $200 per year. Every jurisdiction over 4,080 residents has administrative expenses less than $150 per year. Thus, municipalities with between 1,848 and 4,080 residents have largely captured the administrative efficiencies of being a larger jurisdiction.

[5] See page 9 in Manitoba Local Government. (2010). **2009 Statistical Information for the Municipalities of the Province of Manitoba** (Winnipeg: Manitoba Local Government) http://web5.gov.mb.ca/mfas/pdf/09_stats.pdf.

We selected a cut-off of $200 per resident to be “efficient”, we eliminated the larger jurisdictions with over 7,500 from our calculation and we calculated the 1st quartile of population size among these administrative efficient jurisdictions. The 10 most efficient among those with less than 7,500 residents ranged from a population level of 2,546 to 6,525 residents. The 1st quartile when ranked by population provided a population threshold of 4,374 and when ranked by size of taxable assessment, provided a 1st quartile assessment threshold of $163 million. These results are reported above in Table 7.

Appendix D: Definitions and Rationale for Including Each Descriptive Indicator

Total population in 2011

This is a measure of the economic size of the community. Data were accessed from the 2011 Census of Population.

Average change per year in total population from 1996 to 2011 (%)

Is the population of your community growing or declining, on average? By how much? A growing population indicates that new jobs are being created in this community or that this is a community where people prefer to live (or both!). Data were accessed from the Census of Population for 1996, 2001, 2006 and 2011.

Average change per year in the number of females, 20 to 39 years of age from 1996 to 2011 (%)

This is an indicator of the ability of the community to grow its population from within the community.

Population growth will occur in a community if:

- births are greater than deaths; and / or if
- in-migration from another community is greater than out-migration to another community; and / or if
- the number of immigrant arrivals is larger than the two factors noted above.

As an indicator of the ability of the community to grow its population from within their community, we decided to focus on an indicator of the ability of the community to generate births (as data on the number of deaths is not readily available at the census division level). Some alternatives were available:

- The change in the number of children (within a given age group) would indicate whether the community had the capacity to grow or decline from within. However, it is not the children who decide to live in a given community – rather it is the decision of their parents to live in this community;
- The change in the number of potential parents (say, 20 to 39 years of age) would indicate the attractiveness (both the available of jobs and / or the desirability of the community as a place to live) of the community in which to raise children;
- The change in the number of women in their child bearing years (say, 20 to 39 years of age) would be an indicator focused on the ability of the community to attract and / or to keep potential mothers in their community.

Thus, we chose to focus on the change in the number of women in their child bearing years (20 to 39 years of age) to indicate the ability of a given community to grow their population from within. Perhaps obviously, the change is determined by the number of women who move into the community, the number of women who move out of the community, the number of stayers who move into the 20 to 39 year group and the number of stayers who move out of the 20 to 39 age group. If a community is losing their

population of women 20 to 39 years of age, they are losing their ability to grow their population from within the community. If there is an increase in the number of women 20 to 39 years of age, there is an increase in the ability of the community to grow their population from within the community[6]. Data were accessed from the Census of Population for 1996, 2001, 2006 and 2011.

Average change per year in the population 80 years of age and over from 1996 to 2011 (%)

An increase in the number of seniors implies additional costs in the community for personal care homes and other services for seniors, such as wheel-chair accessible grocery stores.

For communities wishing to attract retirees, an increase in the number of seniors may indicate a benefit for the community. For other communities, an increase in seniors indicates an increasing cost for senior services. Data were accessed from the Census of Population for 1996, 2001, 2006 and 2011.

2013 total taxable assessment for the municipal jurisdiction, in millions of dollars

This indicates the size and capacity of the municipal jurisdiction to generate tax revenue for investment in infrastructure, services, economic development initiatives, etc. Data were provided by Manitoba Local Government. Historical data are published in the statistical reports of Manitoba Local Government.[7]

Average change per year in total taxable assessment for the municipal jurisdiction, adjusted for inflation into constant 2013 dollars, tabulated for the 1998 to 2013 period (%)

An increase in taxable assessment indicates a growing capacity for the municipal jurisdiction to provide infrastructure, services and to invest in economic development initiatives. Data were provided by Manitoba Local Government. Historical data are published in the statistical reports of Manitoba Local Government.

Percent of municipal tax generated from property tax in 2012 (%)

Most municipal revenue is generated by property tax. A lower share of revenue from property tax indicates a more diversified tax base for generating revenues. Diversification of sources of municipal revenue would be expected to provide somewhat more stability to the municipal revenue stream.

Data were provided by Manitoba Local Government.

Total municipal long-term debt ($) in 2012 per resident (in 2011)

Jurisdictions with a higher debt per resident have less flexibility to borrow for future investments. However, a higher debt per resident also indicates that the jurisdiction appears pro-active in making long-term investments.

---

[6] Admittedly, the fertility rate (which we could proxy by the number of children per female, 20 to 30 years of age) does change over time but the change would be relatively small in the short time period for which we have data.

[7] For the 2009 data, see Manitoba Local Government. (2010). **2009 Statistical Information for the Municipalities of the Province of Manitoba** (Winnipeg: Manitoba Local Government) http://web5.gov.mb.ca/mfas/pdf/09_stats.pdf.

Data were provided by Manitoba Local Government.

Average change per year in total municipal long-term debt in the recent term, 2005 to 2012 (%)

As with debt per resident, a slow growth or decline in debt appears to be good municipal management. However, a rapid recent growth in debt may indicate a recent large strategic investment.

Data were provided by Manitoba Local Government.

Conservation District in which the census subdivision is located

We anticipate that environment issues and water management issues will become more important in the future. Municipalities within conservation districts and within watersheds will need to work together. Thus, for each census subdivision in each of the joined-up areas that we are proposing, we show the conservation district so that readers will see whether all component census subdivisions are also in the same conservation district. If all census subdivisions in a joined-up area were also in the same conservation district, then the management of economic issues and the management of environmental / water issues would appear to be easier to co-ordinate. The Conservation District for each census subdivision was assigned on the basis of inspecting the map on page 25 in Manitoba Local Government. (2013) **Municipal Officials Directory, 2013** (Winnipeg: Manitoba Local Government).

School Division in which the census subdivision is located

Similar to the argument for the management of environmental / water issues, if census subdivisions in any joined-up area are also in the same school district, then the management of over-lapping issues would appear to be easier to co-ordinate. The School District for each census subdivision was assigned on the basis the map of "Department of Education School Divisions" as published by Manitoba Education at http://www.edu.gov.mb.ca/k12/schools/rural_map.pdf.).

Regional Health Authority in which the census subdivision is located

Again, the management of over-lapping issues would appear to be easier to co-ordinate if jurisdictions in a joined-up area were also in the same regional health authority. The census subdivisions in each regional health authority were accessed in Manitoba Health. (2011) **Manitoba Health Population Report** – June 1, 2011 (Winnipeg: Manitoba Health) http://www.gov.mb.ca/health/population/pr2011.pdf.)

Numerous other indicators were considered but are not presented in our reports:

- **Presence of a high school** in the census subdivision. Thus, for any proposed joined-up area, we could determine if there was a high school in the joined-up area. The presence of a high school would be expected to be a key ingredient in a ‘strong’ municipality. This information is in our ‘master’ database but is not shown here as the presence of a high school was not a constraint in our process of proposing joined-up areas;
- **Presence of a hospital** in the census subdivision. Thus, for any proposed joined-up area, we could determine if there was a hospital in the joined-up area. The

presence of a hospital would be expected to be a key ingredient in a ‘strong’ municipality. This information is in our ‘master’ database but is not shown here as the presence of a hospital was not a constraint in our process of proposing joined-up areas.

- **Official language minority communities.** We acknowledge that recognizing and maintaining the strength of official language minority communities is an important policy objective. In our reports, we were not able to determine a joining-up process that would provide a ‘strong’ municipality and would preserve the official language distinction of these communities. This is a limitation of our report that merits further consideration.
- **Inter-municipal collaboration** exists among many Manitoba rural and small town municipalities. This factor merits further consideration. We lacked the information on the present mix of such collaborations and we lacked the time and resources to document the number and nature of these on-going collaborations. However, building on present collaborations should be one component of the joining-up process to create ‘strong’ municipalities in Manitoba.

Appendix E: How Do We Calculate the Average Rate of Growth Per Year?

In this report, all calculations of rates of change are calculated as "annual average rates of change" or "average rates of change per year" so that we can compare the pace of change of one variable with the pace of change of another variable when the time periods do not match. In other circumstances, say when one is dealing with change between 5-year census periods, one could calculate the 5-year change and if only census data was being used, then the pace of change could be compared across all variables.

For example, in our preliminary analysis, we calculated the rate of population change for the 1991 to 2011 period and for the 2001 to 2011 period to determine if the rate of change had speed up or slowed down in the most recent period. Given that the time periods were different, the comparison was simplified by calculating an average rate of change per year.

As another example, we calculated the average rate of change per year in the level of assessment (in constant dollars) over the 1998 to 2013 period based on data for 1998, 2002, 2006 2010, 2011, 2012 and 2013. Our methodology (explained below) of calculating an average rate of change per year enabled us to compare the rate of change of assessment levels and the rate of change of other variables for which we had data for different time periods.

As another example, we calculated the average rate of change year in municipal debt using annual observations from 2005 to 2012 and again the advantage of a calculated average rate of change per year allowed us to make comparisons with the change in other variables calculated for (somewhat) different time periods.

In this report, we have calculated the "average rate of change per year" for each variable as the slope of a semi-log graph (which is explained below in Figure E3).

As summarized by P. Lutus[8] (2010), the annual rate of growth of population for a given period can be calculated as:

(1) Rate of population growth = logarithm [End period population / Beginning period population]

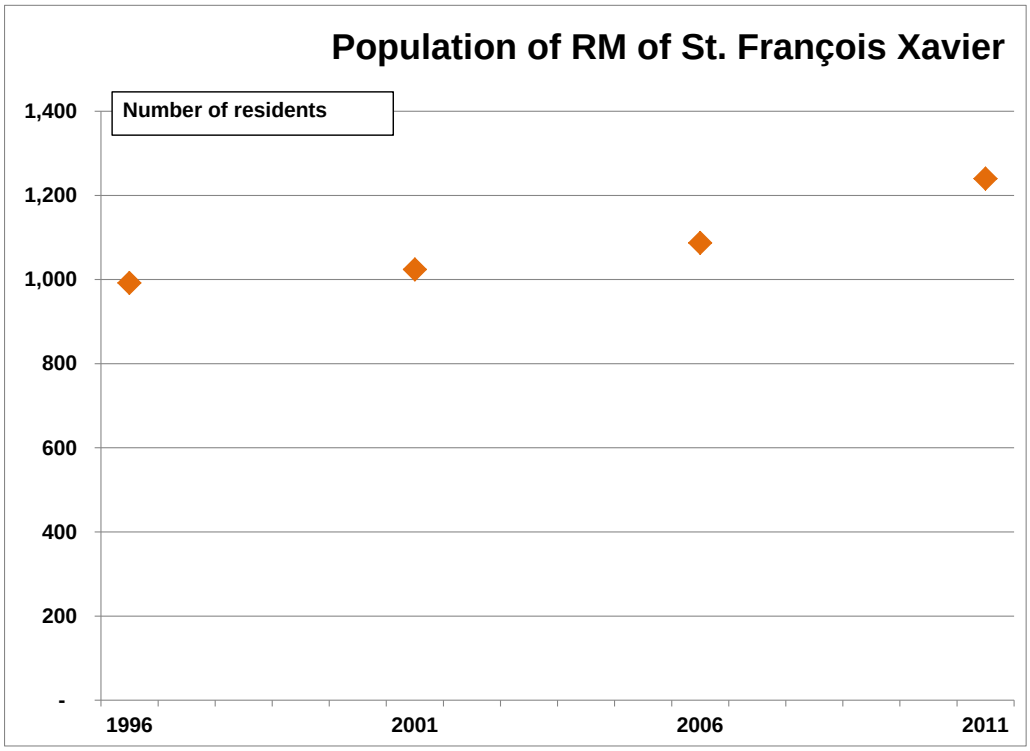
which is also calculated as

(2) Rate of population growth = logarithm {End period population} – logarithm {Beginning period population}

To see how we applied this relationship to our data, let us look at the data for, say, the RM of St. François Xavier. The level and trend in total population is shown in Figure E1.

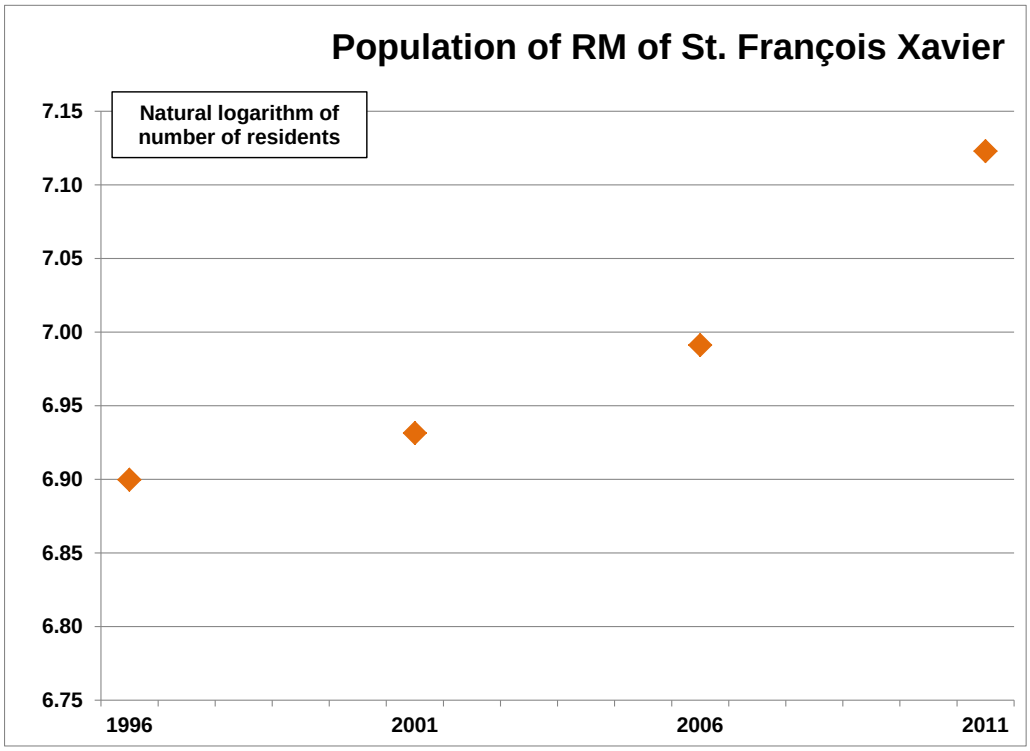
[8] Lutus, P. (2010) **The Mathematics of Population Increase (http://arachnoid.com/lutusp/populati.html)**

Figure E1



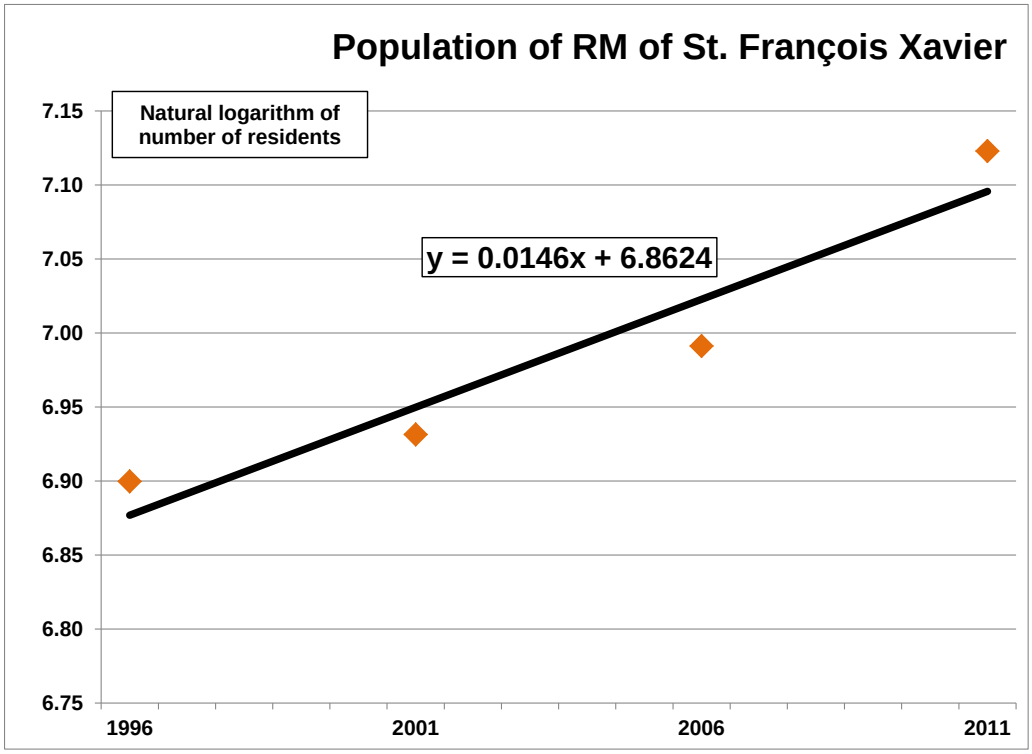
We then take the natural logarithm of the level of population (Figure E2).

Figure E2



We then show the trend in the logarithm of the total population (Figure E3).

Figure E3



Here we see that each time that "x" (i.e. the year) increases by one year, the logarithm of total population increases by 0.0146 (i.e. the average rate of increase per year in population is 1.46% per year). Recall from equation (2) above that the rate of population growth between any two time periods can be estimated as the change in the logarithm of the level of the population. Our graph shows that for each increase in "x" (i.e. for each increase of one year), the line goes up (i.e. which is the change in the logarithm of population) up by 0.0146. To say the same thing, the line in Figure E3 goes up (i.e. which is the change in the logarithm between any two years from Equation (2)) by 0.0146 (or 1.46%) per year, on average, over the 1996 to 2011 period.

This methodology of calculating the average rate of change per year is applied in each case that we are calculating rate of change. For a number of our variables, the length of the time period being covered is different. Thus, we have chosen this methodology for calculating an 'average rate of change per year' so that the pace of change can be compared across the different variables for which we are calculating the rate of change.