

Patterns of health and disease
are largely a consequence of
how we learn, live and work



SUMMARY REPORT



How Healthy Are Rural Canadians?

An Assessment of Their Health Status and Health Determinants

A Component of the Initiative "Canada's Rural Communities:
Understanding Rural Health and Its Determinants"

September 2006

C a n a d i a n P o p u l a t i o n H e a l t h I n i t i a t i v e



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Contents

Abstract.....	1
Introduction	1
Objectives	2
Methods.....	2
Results.....	3
Population Distribution	3
Socio-Economic Factors	3
Health Behaviours	4
Life Expectancy (LE).....	5
Mortality	5
Multivariate Analysis of All-Cause Mortality	7
Chronic Diseases.....	7
Health Status and Quality of Life	8
Discussion and Implications.....	9
References	11

Abstract

How Healthy Are Rural Canadians? An Assessment of Their Health Status and Health Determinants is a pan-Canadian report that presents the results of a research program on the health status and determinants of health in rural populations as compared to urban populations. The purpose of this report is to create a broader understanding of rural health needs and to inform and support programs and policies that will address those needs. This report made use of several pan-Canadian databases to study geographic differences in health. The Canadian annual mortality database, the Canadian Cancer Registry and the Canadian Community Health Survey (CCHS) were analyzed according to five geographic categories representing different degrees of rurality. The geographical groupings were based on the Metropolitan Influenced Zone definition (MIZ). While some health measures did not show any pronounced geographic disparities, rural communities showed a health disadvantage for many health measures. Compared to their urban counterparts, rural Canadians were more likely to report poorer socio-economic conditions, to report lower educational attainment, to exhibit less-healthy behaviours and to have higher overall mortality rates. These results highlight the unique risk patterns for some health status and health determinant measures among rural Canadians.

Introduction

In the past few years, increasing attention has been given to the role of place in shaping people's health experiences.¹⁻³ However, most of the theoretical and applied work on place and health has been based on studies of urban environments.⁴ Despite their unique social, economic and demographic characteristics, less attention has been directed to characterizing the health of rural populations. This is the first report ever produced at the pan-Canadian level that provides a broad picture of the health of rural populations. The report's descriptive analyses provide a basis for consideration of rural health issues among health decision-makers.

In comparison with other countries of the world, Canadians enjoy a very high standard of living. In 2000, the life expectancy at birth for Canadians was one of the highest among OECD (Organisation for Economic Co-operation and Development) countries. The infant mortality rate in Canada is around the median among OECD countries; the unemployment rate is similar to that of most OECD countries.^{5,6} However, it has been found, especially when some specific measures of health were examined, that certain groups within the Canadian population can experience better or worse health status and health risks.^{7,8} Previous studies at local levels suggest that some rural communities have specific health vulnerabilities, poorer health status, lower life expectancy, higher accident and injury rates and higher levels of disability.⁸⁻¹² There is also evidence indicating that rural communities have unique characteristics with respect to health determinants, including demographic, economic, social and physical environment factors.^{13,14}

Objectives

The primary research objectives of this report were to:

- Identify the key factors (health determinants and/or health status indicators) that lead to health similarities or differences among rural and urban populations;
- Describe whether residence in a rural location is a determinant of health above and beyond other known determinants of health;
- Assess whether there are disparities between rural and urban populations in individual and community determinants of health; and
- Contribute to addressing some of the knowledge gaps that have been identified in the past, as well as stimulate more research and interest in rural health.

Methods

Findings in this report were obtained from the analysis of several pan-Canadian data sources: the Canadian Community Health Survey (CCHS), the Canadian annual mortality database and the Canadian Cancer Registry. The Metropolitan Influenced Zone (MIZ) classification, developed by Statistics Canada,¹⁵ was used to distinguish between urban and four different types of rural communities. The MIZ definition is based on population density and distance, but also considers the commuting flow (the proportion of people who commute to an urban area for work) between rural and small towns and larger centres. Urban areas are defined as census metropolitan areas (CMAs) and census agglomerations (CAs). Metropolitan Influenced Zones are assigned on the basis of the proportion of the workforce that commutes to any CMA or CA. In addition to the “urban” category, the four MIZ categories are as follows:

- Strong MIZ (commuting flow $\geq 30\%$);
- Moderate MIZ (commuting flow $\geq 5\%$ and $< 30\%$);
- Weak MIZ (commuting flow of > 0 and $< 5\%$); and
- No MIZ (no commuters).

The MIZ definition has been used successfully in previous studies^{12, 16} and is considered to better reflect current access to urban services/structures than traditional measures based only on population density.

Results

Rural communities generally showed a health disadvantage for many health-related measures examined in this study, whereas some health measures did not show any pronounced rural–urban differences. Additionally, some adverse health measures, such as higher stress levels and higher incidence rates for most cancers, were found to be more prevalent in urban areas.

Population Distribution

Over 95% of Canada’s land mass is rural.¹⁷ According to 1996 Census data, it was populated by 21.5% of Canadians. Between 1996 and 2001, the total rural population tended to decline, particularly in Moderate MIZ and Weak MIZ areas (Table 1).

Table 1 Population by Degree of Rurality (Metropolitan Influenced Zone, or MIZ), Canada, 1996 and 2001	Population and Percent Distribution (Within 2001 Boundaries)				Percent Change Within MIZ Groups Between 1996 and 2001
	1996	%	2001	%	
Urban (CMA/CA)	22,654,692	78.5	23,839,086	79.4	5.2
All rural and small town areas	6,192,069	21.5	6,168,008	20.6	-0.4
Strong MIZ	1,470,493	5.1	1,524,579	5.1	3.7
Moderate MIZ	2,307,387	8.0	2,285,538	7.6	-0.9
Weak MIZ	2,027,488	7.0	1,969,211	6.6	-2.9
No MIZ	330,616	1.2	333,847	1.1	1.0
Rural and small town territories	56,085	0.2	54,833	0.2	-2.2
Total	28,846,761		30,007,094		4.0

Census metropolitan areas (CMAs) have 100,000 or more people in the urban core (including all neighbouring towns and municipalities where 50% or more of the workforce commutes to the urban core).
Census agglomerations (CAs) have 10,000 to 99,999 people in the urban core (including all neighbouring towns and municipalities where 50% or more of the workforce commutes to the urban core).

Source: Adapted from the Statistics Canada Census of Population, 1996 and 2001.
This analysis is based on the Statistics Canada Census of Population, 1996 and 2001.
All computations, use and interpretation of these data are entirely that of the authors.

Socio-Economic Factors

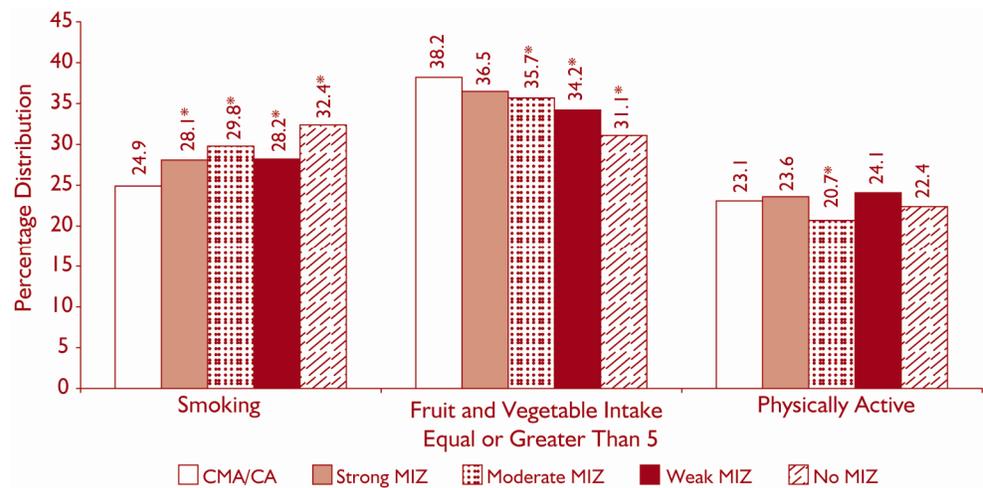
Strong urban–rural variations were observed for most of the selected socio-economic factors. Compared to urban residents, higher proportions of people living in rural areas reported having less than secondary school graduation (CMA/CA: 27.8%; No MIZ: 43.0%) and reported an income in the lowest income category or the lower middle income category (CMA/CA: 32.4%; No MIZ: 49.9%). However, rural residents were more likely to report a strong sense of community belonging compared to urban residents (CMA/CA: 56.2%; No MIZ: 76.8%).

Health Behaviours

In general, rural residents exhibited less-healthy behaviours than urban residents. Smoking rates were significantly higher in rural areas compared to urban areas (Figure 1). Second-hand smoke exposure rates were also significantly higher in all rural areas than in urban areas (CMA/CA: 27.0%; Strong MIZ: 31.6%; Moderate MIZ: 31.8%; Weak MIZ: 34.1%; No MIZ: 34.2%). Lower proportions of rural residents reported eating five servings or more of fruit and vegetables each day (Figure 1). Moderate MIZ residents reported that they were less likely to be physically active in their leisure time than their urban counterparts, whereas residents of other rural areas reported similar activity levels to their urban counterparts (Figure 1).

It is possible that the observed higher prevalence of smoking in rural areas is due to factors other than place of residence. A statistical method called multivariate analysis was used to control for other factors. The association between smoking and place of residence was no longer statistically significant after adjusting for socio-demographic, economic and self-reported health measures, indicating that socio-economic status could be a mediator between place of residence and the adoption of certain lifestyle behaviours such as smoking.

Figure 1
Age-Standardized Prevalence of Selected Health Behaviours, by Place of Residence, 12 Years of Age and Over, Canada, 2000–2001

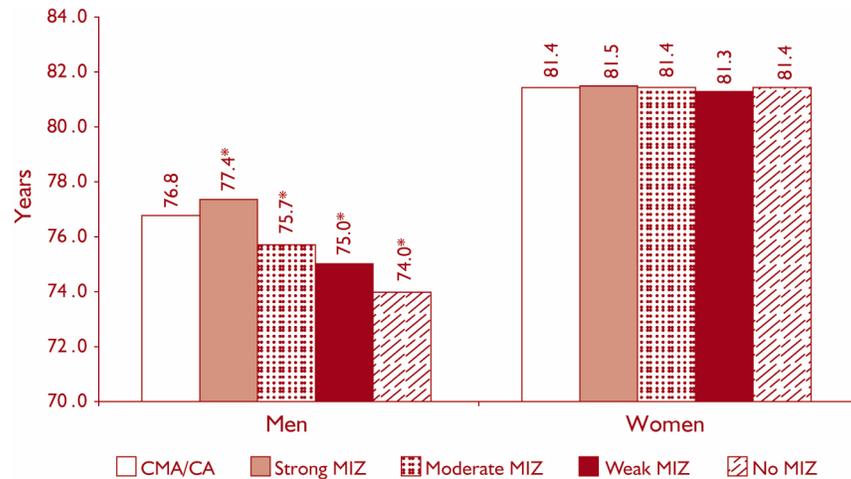


Reference group is CMA/CA.
 * Statistically significant at $p < 0.05$.
 Data source: Canadian Community Health Survey, 2000–2001, Statistics Canada.

Life Expectancy (LE)

For men, life expectancy at birth was generally lower in rural areas compared to urban areas. Life expectancy in men ranged from 74.0 years in No MIZ areas to 76.8 years in CMA/CAs, but was higher in Strong MIZ areas (77.4 years) compared to CMA/CAs. Among women, life expectancy was at its lowest in Weak MIZ areas, at 81.3 years, and highest in Strong MIZ areas, at 81.5 years (Figure 2).

Figure 2
Life Expectancy (LE) at Birth, by Place of Residence and Sex, Canada, 1999 to 2001



Reference group is CMA/CA.

* Statistically significant at $p < 0.05$.

Data source: Canadian annual mortality data 1999 to 2001, Statistics Canada.

Mortality

Higher overall mortality rates among rural communities seem to be driven by higher death rates from causes such as circulatory diseases, injuries and suicide. Areas that are the most rural (Moderate, Weak and No MIZ) are often at higher risk. In contrast, residents of rural communities that have the most commuting flow to large centres (Strong MIZ) were at lower risk of dying of some causes compared to those in urban areas or other rural areas. All-cause mortality rates and mortality rates for selected causes are displayed in Figure 3.

Circulatory Disease: Circulatory disease mortality rates were significantly higher in all MIZ categories than in urban areas, with the exception of Strong MIZ areas (Figure 3).

Cancer: All-cancer mortality rates were slightly lower in some rural than in urban areas. However, in No MIZ areas, the rate was significantly higher than in urban areas (CMA/CA: 191.3 per 100,000; Strong MIZ: 177.4; Moderate MIZ: 193.4; Weak MIZ: 189.4; No MIZ: 197.0).

Respiratory Disease: Respiratory disease mortality rates were significantly higher in all MIZ categories, with the exception of Strong MIZ areas (CMA/CA: 59.2 per 100,000; Moderate MIZ: 64.0; Weak MIZ: 65.1; No MIZ: 65.5). Residents of Strong MIZ areas had lower mortality from respiratory diseases than those in urban areas (55.8 per 100,000).

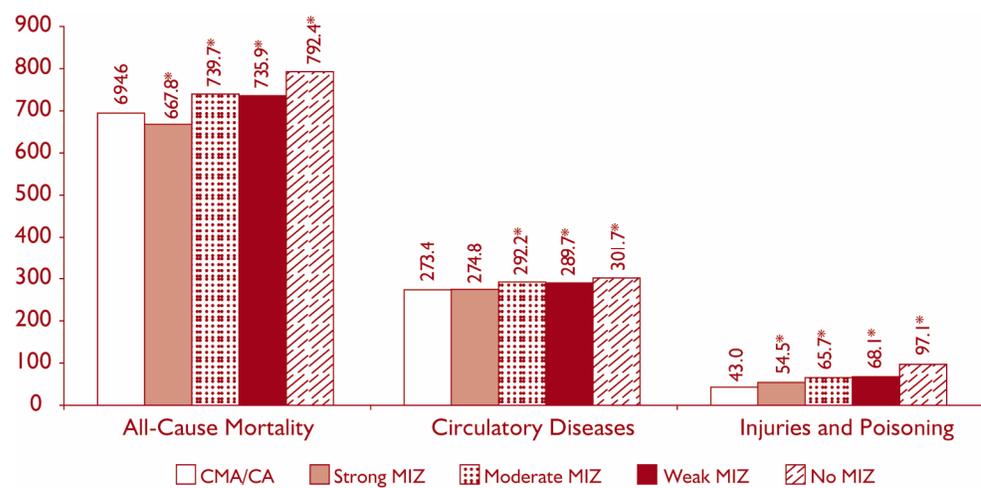
Diabetes: Diabetes mortality was higher in all rural areas than in urban areas, with the exception of Strong MIZ areas, where the rate was significantly lower compared to urban areas (CMA/CA: 15.7 per 100,000; Strong MIZ: 14.3; Moderate MIZ: 16.9; Weak MIZ: 16.8; No MIZ: 18.8).

Injuries: Residents of rural areas in all four MIZ categories had increased mortality rates from injuries (Figure 3), which included motor vehicle accidents (MVAs). Calculation of standardized mortality ratios (not shown) by age group and sex showed that the youngest age groups (0 to 4 and 5 to 19) were at highest risk of mortality due to MVAs.

Suicide: Residents of rural areas were more likely to die from suicide. Young boys and girls (under age 20) living in No MIZ areas had the highest risk of dying from suicide: boys were 4.3 times more likely to commit suicide than their urban counterparts, and girls were 6.5 times more likely to commit suicide than their urban counterparts.

Figure 3

Age-Standardized All-Cause Mortality Rates and Selected Cause-Specific Mortality Rates (per 100,000), by Place of Residence, All Ages, Canada, 1986 to 1996



Reference group is CMA/CA.

* Statistically significant at $p < 0.05$.

Data source: Canadian annual mortality data, 1986 to 1996, Statistics Canada.

Multivariate Analysis of All-Cause Mortality

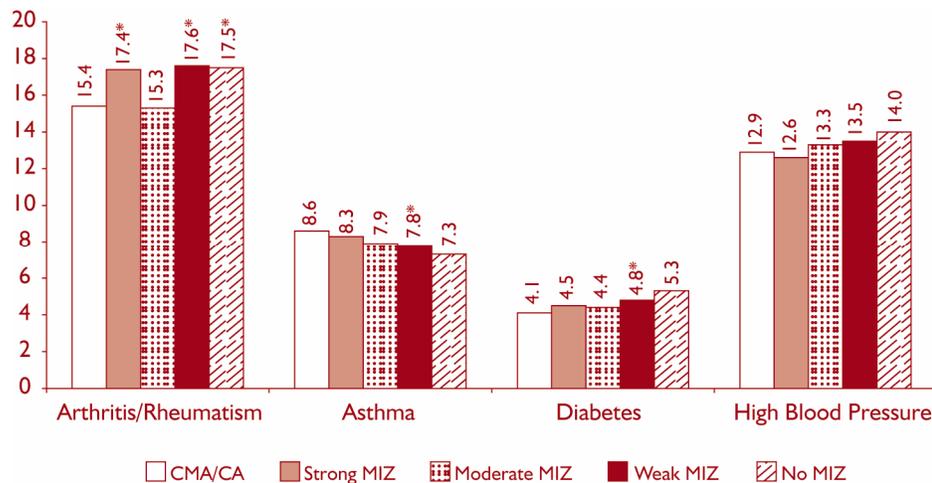
It is possible that factors other than place of residence contribute to the observed rural–urban mortality differences, such as migration of higher-risk individuals to be closer to medical facilities or family members, or north/south disparities. Multivariate analysis was performed for all-cause mortality to control for these factors between rural and urban areas. A significantly higher all-cause mortality risk in rural areas was still observed after adjusting for north/south location, migration and other selected socio-demographic variables. For example, among people aged 0 to 44 years, mortality risk adjusted for a number of factors was still 11% (in Strong MIZ) to 33% (in No MIZ) higher in rural than in urban areas. The results suggest that the observed higher all-cause mortality rates in rural areas cannot be explained by the differences in factors included in multivariate analysis.

Chronic Diseases

The all-cancer incidence rates were significantly lower in rural areas than in urban areas for both men and women. When looking at the incidence rates of specific cancers, the majority were lower in rural areas, with the exception of lip cancer, which was found to be higher in rural than urban men (CMA/CA: 3.1 per 100,000; Strong MIZ: 5.9; Moderate MIZ: 7.0; Weak MIZ: 8.1; No MIZ: 12.6).

A higher prevalence of arthritis/rheumatism was found among rural Canadians (Figure 4), and was higher among rural women than rural men. Few significant rural–urban differences were observed for asthma, diabetes and high blood pressure.

Figure 4
Age-Standardized Prevalence Rates for Selected Chronic Diseases, by Place of Residence, 12 Years of Age and Over, Canada, 2000–2001



Reference group is CMA/CA.

* Statistically significant at $p < 0.05$.

Data source: Canadian Community Health Survey 2000–2001, Statistics Canada.

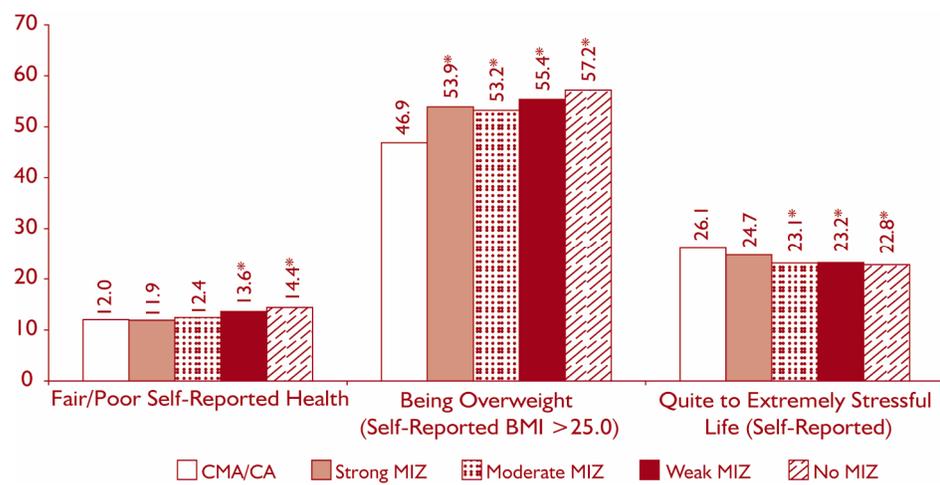
Health Status and Quality of Life

Higher proportions of Weak MIZ and No MIZ residents reported having fair/poor health status compared with urban Canadians (Figure 5). The highest proportion of people with fair/poor health was reported by women living in No MIZ areas (16.7%).

Rural Canadians reported having a body mass index above 25 (indicating overweight/obesity) in greater proportions than their urban counterparts. On the other hand, lower proportions of rural Canadians reported a “quite stressful” to “extremely stressful” life (Figure 5). Similar patterns were found in both men and women.

Figure 5

Age-Standardized Proportions of Selected Health Status and Quality of Life Indicators, by Place of Residence, 12 Years of Age and Over, Canada, 2000–2001



Reference group is CMA/CA.

* Statistically significant at $p < 0.05$.

Data source: Canadian Community Health Survey 2000–2001, Statistics Canada.

Discussion and Implications

This report shows that, generally, rural residents of Canada are less healthy than their urban counterparts. They have higher overall mortality rates and shorter life expectancies, and are at elevated risk for death from injuries such as motor vehicle accidents and suicide. Those living in the most rural areas were the most disadvantaged for several health indicators, including death from injuries, cardiovascular disease and diabetes. Rural residents experienced advantages in a few areas compared to their urban counterparts: they had lower cancer incidence, reported greater sense of community belonging and were less likely to report high levels of stress.

The determinants of rural health include socio-economic factors. Rural residents were more likely to report low income and to report lower educational attainment. When socio-economic factors and place of residence were included in multivariate analyses of specific health outcomes, socio-economic factors consistently made a significant and independent contribution to health outcomes. Other determinants of rural health that were identified in this report were health behaviours. Rural residents in some areas exhibited less-healthy dietary practices, lower leisure time physical activity and higher smoking rates than their urban counterparts.

Our analyses showed that place of residence (that is, degree of rurality) contributed to health indicators above and beyond socio-economic factors. These results suggest that living in areas with low population density and low flow of commuters to an urban core is associated with special health risks. Consequently, rural-specific prevention and promotion initiatives may be useful to address rural health concerns.

While some determinants of health are more difficult to modify than others, potential avenues for addressing urban–rural health disparities include the following:*

- Although many regional economic development programs or projects have yielded mixed results, there are some success stories that may serve as models for community interventions.^{18–20} Innovative and multi-sectoral approaches may play an important role in assisting communities to adjust to and address micro- and macro-level changes, such as boom-and-bust economic cycles, which tend to hit rural communities particularly hard, or a community's dependence on one industry for economic sustainability.

* Please note that the recommendations presented in the report do not necessarily reflect those of the Canadian Institute for Health Information, the Public Health Agency of Canada, the Centre for Rural and Northern Health Research or Laurentian University.

Summary Report

- Overall mortality due to injury and poisoning is considerably higher in rural areas than in urban areas. Certain rural-based industries, such as farming, fishing and logging, tend to have high levels of occupational hazard.²¹⁻²³ One area of attention could be occupational health and safety issues in the rural setting, as rural workers may have special needs for which different solutions may be effective.
- People living in rural communities generally need to travel longer distances, and often on more dangerous roads, for work, shopping and other reasons. Injuries and death due to traffic accidents are much more common in rural areas. Improving rural road conditions and raising road safety awareness could be an avenue to explore.
- The importance of disease prevention and health promotion is well recognized in public health and clinical settings. What is less clear is whether conventional strategies, mostly developed by urban program planners for urban residents, are equally effective in rural settings. Findings reported in this study concerning health-related behaviours such as higher proportions of smokers, lower consumption of fruit and vegetables and higher proportion of individuals who are overweight among rural residents, suggest that there may be potential in rural-friendly approaches to disease prevention and health promotion.

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Summary Report

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This publication is part of CPHI's ongoing inquiry into the patterns of health across this country. Consistent with our broader findings, it reflects the extent to which the health of Canadians is socially determined, interconnected, complex and changing. CPHI is committed to deepening our understanding of these patterns.