

Health *in* Rural Canada

Edited by Judith C. Kulig and Allison M. Williams



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We would like to dedicate this book to

rural Canadians who work to sustain health in their families and communities each day;

rural health researchers from across Canada who, through their passion, interest, and expertise, have worked tirelessly to increase the understanding of rural health; and

our undergraduate and graduate students and research colleagues who have inspired us to create this volume.

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Foreword

When I was growing up in the 1940s in a small town, now a ghost town, we were fortunate to have a first-aid clinic staffed by a worker whose knowledge was gleaned through osmosis, we were told, by association with his older physician brothers. When an elective tonsillectomy was deemed appropriate for whatever ailed us, I and five other children from the community were driven early one morning to his physician brother who practised seven miles away. After the surgery, we returned home late in the evening to be cared for by our family members in what must have been a pioneering but historically unrecognized day surgery program. Five of us survived, but the sixth was less fortunate, bleeding to death in the night with no professional supervision or instructions, coordinated follow-up, or homecare that might have altered the outcome. The heartbroken mother of the child shouldered the entire guilt of electing surgery on behalf of her son, who might have lived without the procedure. The shrieking and crying of the inconsolable mother at the funeral pierce my thoughts even to this day, permanently etched in my memory. The entire community shared her grief and struggled to accept their fate, believing that there was no other choice under the circumstances.

That was my first encounter with rural health care – my first encounter with health care, for that matter. I hope that through the intervening years rural health care has improved and that better outcomes are now realistic expectations for most, if not all, Canadians

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who inhabit rural and remote parts of this country. If we have yet to reach that utopian vision, let's hope that all possible efforts are being directed toward achieving that worthwhile goal.

What will it take to get us there? We have to recognize that rural, remote, northern, and Aboriginal communities are unique and must be viewed and defined in their own right, not by their non-urbanicity. We must recognize the heterogeneity of such communities and not assume that they are homogeneous in their characteristics. We must acknowledge that there are health gradients and health inequities affecting the populations of these communities. We must commit to refocusing our attention and energy on rural issues. We need to explore and understand the factors that determine the health of these communities and the health of those individuals who live in them, and we must be willing to believe that they might be different from the population at large. Some have argued that rurality itself is a major determinant of health. Finally, we need a strong and sustainable rural health research effort in this country that provides evidence of rural health inequities and differences, identifies healthy rural communities and pockets of healthy individuals, and showcases best practices, concepts, and solutions that work. We need support for knowledge translation relevant to rural communities. We need to ensure opportunities and support for innovative ideas and future research that promises to change how we view the totality of rural health.

If we have made progress in rural health issues, credit should go to the many individuals, organizations, and governments that have made rural health issues clearly visible on the radar screen. Health Canada for many years, even preceding the creation of its Office of Rural Health, which unfortunately is no longer in operation, sponsored research competitions to encourage rural health research. The short-lived Office of Rural Health, the report of the Conference on Rural Health (which the office sponsored), and the subsequent Ministerial Advisory Council on Rural Health articulated the need to focus on rural health as its own entity. The Canadian Society of Rural Physicians has always been a strong advocate for the special needs of rural health care. The Canadian Society for Rural Health Research has created a Canadian network of researchers.

Strong advocates for rural research have also emerged from academia. The rural health research group at Laurentian University sponsored a conference in 1993 on the theme of "Redressing the Imbalance." The

University of Northern British Columbia sponsored several conferences in 2001 involving participants from rural and Aboriginal communities, giving them a voice that had not been heard before. The Canadian Institutes for Health Research produced a report on rural health research and made rural health a cross-cutting theme across its thirteen institutes.

Committed academic researchers across Canada continue to explore rural health issues, and many of them are contributors to this volume. Topics range from population health status, health services, health human resources, cultural aspects, and special needs of rural, remote, and northern communities. It is important to document the findings of these researchers in a way that is accessible to future students and researchers so that lessons learned do not disappear. We need to build a library of reports, research evidence, stories, and experiences that record the life of rural Canada, to create and build a discipline called rural health and life. This volume will contribute enormously to that endeavour, and the editors and authors deserve our appreciation and gratitude for moving us toward that goal.

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Chapter 1 **Health and Place in Rural Canada**

Allison M. Williams and Judith C. Kulig

Rural Canada accounts for about 90 percent of the country's land mass and is home to almost a third of Canada's population. Many Canadians define themselves through an idea of Canada as largely rural; our national identity is rooted historically in the immigration of our ancestors to the rural areas of this country when it was being developed. Our ongoing links to the rural landscape are based on our dependence on resources, including foods and minerals, as well as our need for recreation and renewal. Still persistent in the country's collective imagination is a sense of Canada's rural and remote places as defining spaces of Canadian national identity, from the varied rural landscapes of the Group of Seven artists, whose work has become an icon of Canadian nationhood, to Canadian musicians such as Gordon Lightfoot and Anne Murray, who sing about life and livelihood in rural Canada. Our rural landscapes are what draw world travellers to visit us, with fifteen UNESCO biosphere reserve sites in Canada, many of which either encompass rural areas or are surrounded by them (e.g., Niagara Escarpment, Ontario, or Clayoquot Sound, British Columbia). Canada's First Nations mastered survival in rural and remote corners of the country, teaching Europeans how to live in the wilderness. Early European settlers set the foundation for Canada's economic success, which is still based on primary industries, the vast majority of which are located in rural and remote areas. In the past couple of decades, there has been a recognized shift toward a new national identity reflective of urban

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multicultural centres. A preoccupation with cities has impacted our cultural identity, making less visible the crucial need for studies of dynamic Canadian rural spaces.

Depending on the definition of the word *rural* used, between 19 percent and 30 percent of Canadians are formally defined as living in rural Canada (Bollman and Clemenson 2008); rural people are also known for their diverse and distinct cultural and demographic characteristics compared with their urban counterparts. For example, rural areas have fewer immigrant and visible minority populations, higher proportions of First Nations, and unique religious groups such as the Anabaptists (i.e., Amish, Hutterites, and Mennonites). Furthermore, rural areas have higher proportions of dependants, both children and older adults (Dandy and Bollman 2008); this is contrasted with low proportions of those of working age (Canadian Institute for Health Information [CIHI] 2006; Ministerial Advisory Council on Rural Health 2002).

These demographic characteristics play a large role in the comparative vulnerability that rural Canadians experience across a number of population health determinants. Rural Canadians experience a greater number of population health risks compared with urban Canadians. They generally have lower socio-economic status due to higher unemployment rates and lower education levels than do urban Canadians (Kirby and LeBreton 2002). This contributes to comparatively poorer health status; to illustrate, rural residents have a shorter life expectancy and higher mortality and infant mortality rates than the Canadian average (CIHI 2006; Kirby and LeBreton 2002). In contrast to urban residents, rural residents show higher levels of high blood pressure and obesity, higher levels of arthritis/rheumatism and depression, and lower levels of self-reported functional health, self-assessed health status, and health-promoting behaviours (CIHI 2006; Mitura and Bollman 2003). Furthermore, higher rates of accident, suicide, and disability are experienced in rural populations, partly explained by the prevalence of primary sector employment in rural areas. Strasser (2003) has specified that these noted health disparities between rural and urban geographies are found around the world, further substantiating the Canadian Health Commission's assertion that "geography is a determinant of health" (Romanow 2002). If we can identify a clear health gap between urban and rural populations, how can we work to reduce it? It is imperative that we gain a better understanding of these disparities through research that provides enhanced comprehension of how and why they occur.

Because much of the discussion on rural health in Canada focuses on a deficit model, there is a distorted perception of the risks and benefits of rural living. For example, overshadowed are results such as those in the CIHI (2006) report on the health of rural Canadians, which found that there are statistically significant differences among rural residents reporting a “sense of belonging”¹ compared with their urban counterparts. Many rural residents choose to live in such an environment, emphasizing the connection with physical geography and its positive impact in their lives.

One of the fastest-growing populations in Canada is among Aboriginal peoples. From 1996 to 2006, the Aboriginal population grew at a rate of 45 percent, compared with only 8 percent for the non-Aboriginal population. It is expected that by 2017 there will be 1.4 million Aboriginal people in Canada, an increase of 4 percent. The increase is related not only to a higher fertility rate but also to a sense of identity, as individual Aboriginals evidence an interest and comfort in identifying themselves as such (Statistics Canada 2010). As a group, Aboriginal peoples are the fastest-growing segment in Canadian society (Indian and Northern Affairs Canada 2009). On average, Aboriginal peoples are younger than other Canadians and therefore have higher fertility rates and are more often young families.

Aboriginal peoples illustrate both their strength and their vulnerability as a group. Their vulnerability is easily discernible when considering their health status; this group experiences HIV infections 2.8 times higher than the average Canadian. The life expectancy for First Nations is approximately 7 years less than the average Canadian; infant mortality is 1.5 times higher among First Nations groups and 4 times higher among the Inuit (Health Canada 2009). Suicide rates are also much higher among this population: among the average Canadian population, suicide rates are 13/100,000, whereas among the Inuit they are 79/100,000 and among the on-reserve First Nations 28/100,000 (CIHI 2004). The vulnerability of this group suggests that their needs must be prioritized if any change in rural health status is to occur. This book contains a section (Part 6) dedicated to addressing questions and issues pertaining to the specific health needs/status/care of Aboriginals in Canada.

As the first comprehensive volume addressing rural health research in Canada, this collection provides breadth while sharing a theme: *health and place*. It adds to the growing international literature available from Australia (Liew and Kilpatrick 2008; Smith 2007) and the United

Figure 1.1 All provinces, districts/areas, and towns mentioned in this book



States (Glasgow et al. 2004; Loue and Quill 2001) that focuses exclusively on the meaning of rural and its impact on both health status and health outcome. Through its examination of the richness and diversity of rural health issues in Canada, the book best meets the needs of both established and emerging health researchers while providing useful information for policy makers involved in decision making for all groups across the population health spectrum.

As noted in Figure 1.1, most Canadian provinces and territories are represented in the research contained in this collection, albeit to differing degrees; Atlantic Canada, the northern territories, and Nunavut will no doubt strengthen their research voices in the future. Similarly, work pertaining to minority groups, such as newly arrived immigrants and refugees and various rural-based religious communities, is still sparse and, as a result, has correspondingly less representation in this collection; this gap will likely be filled by the next generation of rural researchers.

The contributing authors use a variety of theoretical frameworks, reflected in the employment of a wide range of research designs and analytical methods. The richness of this collection is in the multitude of disciplinary perspectives represented, often working in collaborative teams. Certainly, within Canada, the majority of rural health research is driven by an interdisciplinary focus, allowing for a more complex analysis and a deeper understanding of specific health issues. Thus, contributing research groups have included a variety of professional and academic disciplines, such as nursing, social work, geography, epidemiology, and sociology.

At the core of this volume is the theme of health and place. Within it, three broad and significant sub-themes are highlighted: *rural places matter to health*, *rural places are unique*, and *rural places are dynamic*. Using the chapters as illustrations, we attempt to establish the importance of the need to understand the unique qualities of rurality across a number of geographical scales. We begin by providing an overview of the Canadian health system, detailing how rural services are structured and funded. Next we define what rural means and how a common definition was decided on for this collection. A comprehensive understanding of rural health issues in Canada is an important step in understanding the health of our nation in general. Given the connections that we all hold to the rural landscape and its inhabitants, a volume such as this is necessary in broadening our knowledge base while also helping to ensure sustainability of our rural areas.

Canadian Rural Health Services

To understand how health services are delivered in rural Canada, one must first review how Canadian health care is governed, funded, and delivered. To address *governance*, we turn to the Canada Health Act, enacted in 1984; it represents five principles of health care in Canada: accessibility, universality, portability, comprehensiveness, and public administration. This legislation conceptualized health in terms of social justice and aspired to ensure equitable access to health care for all. Medicare guaranteed citizens access to medically necessary services regardless of their geographical locations, but in reality it guarantees only that people be assessed for services; it does not guarantee that they will receive them (Health Canada 2007). Consequently, great disparities in service access exist, such as those between urban and rural populations.

To address the issue of *funding*, the Constitution divided federal and provincial powers such that the former would acquire the resources to finance health care but the latter would govern the actual *delivery* of health-care products and services. Provincial governments receive annual transfer payments from the federal government to finance health-care delivery. Each Canadian province and territory thereby has a unique health-care system since the delivery design is province specific. As the federal government has struggled with deficits, transfer payments to the provinces have been reduced, leaving provincial/territorial jurisdictions less inclined to honour the principles of the Canada Health Act.

The exception to provincial/territorial delivery of health services is First Nations and Inuit communities (i.e., registered under the Indian Act) that receive care in partnership with the federal government. First Nations and Inuit Health Branch (FNIHB) either directly provides a variety of services on reserve to individuals and families or transfers funds to the local communities to provide the services that they need.

An example of the jurisdictional specificity of health-care delivery can be found in the recent changes instituted in Ontario. Fourteen Local Health Integration Networks (LHINs) were formed in the past few years (announced in 2004 and in place by 2006); each has geographical boundaries that encompass what was formerly approximately three times the number of health districts. Two of the fourteen LHINs (i.e., the Northeast and Northwest LHINs) cover substantial rural hinterland, representing the medically under-serviced area of northern Ontario, defined as all the area north of Manitoulin Island. Each LHIN is responsible for planning, funding, and coordinating health services such as hospitals, community care access centres (CCACs), community health centres (CHCs), mental health and addiction agencies, community support services, and long-term care for the communities in its region/under its jurisdiction.

As mentioned, the development and delivery of rural health services inevitably differ across provinces and territories and ultimately have impacts on the quantity and quality of rural health services. Let us compare, to illustrate the point, recent developments in health-care delivery in two provinces, New Brunswick and Alberta. The provincial government in New Brunswick has chosen to focus on resource allocation, indicating that its health mandate will focus on rural issues by developing a rural health institute and working on recruitment and

retention of health-care professionals (Province of New Brunswick 2008). In contrast, Alberta has been reforming the structure of its system, working to create a “superboard” to deliver its health services: in 2009, all nine regions and three provincial entities (Alberta Cancer Board, Alberta Mental Health Board, and Alberta Alcohol and Drug Abuse Commission) were amalgamated into one large regional health service system governed by a president and a chief executive officer with vice-presidents in set geographical zones throughout the province. Thus, in this configuration, individuals focus on specific issues such as women’s health and palliative care from a provincial level. There is also a single chief operating officer for the rural health delivery system within the province. Furthermore, evidence-based decisions regarding rural health-care services in Alberta ensure consistency from one rural community to another despite their inherent recognized differences (Duckett 2009). This goal of consistency or standardization stands in stark contrast to the aims and arguments advanced in this book, which call for greater recognition of the specific and unique characteristics of rural places and the many contextual nuances that make them individual and dynamic.

Defining Rural

What exactly do we mean by rural Canada? Defining what is rural has become the subject of lively debates at conferences and other such forums. One report concluded that, despite a review of over 150 publications related to rural nursing, there was no universal definition of the term “rural” or “remote” (Kulig et al. 2003). Pitblado (2005) has noted that using technical (geographical distance) and social (indices) approaches can help to define these elusive terms. *The National Study on Rural and Remote Nursing Practice*, based on survey data from registered nurses (RNs), concluded that it is more appropriate to focus on the meaning of rurality shared by rural residents rather than a single specific definition (Kulig et al. 2008). Similarly, Williams and Cutchin (2002) suggest a multi-faceted definition of rural based upon socio-cultural characteristics (i.e., cultural aspects of place), measurable descriptive features (i.e., land use, demographic structure), and local understandings of rural. Such a definition naturally encourages holistic, interdisciplinary research to address research topics within and across rural settings.

Adding to the debate regarding the definition of rural are the attempts to differentiate among rural, remote, and northern. Perhaps, like rurality, it might be more appropriate to focus on the more complex meanings of remote and northern rather than general and limiting definitions. Just as it is challenging to generalize about the definition or meaning of rural given that rural geographies often encompass remote and northern areas of Canada, so too it is difficult to generalize about the rural health experiences lived across these geographies. For example, there are significant differences among delivering a child, receiving diagnostic tests, and having surgery depending on whether one lives in the isolated North, on the edge of an urban area, or within a farming district. Documentation of these differences has been lacking in Canada, and thus far our understanding of health differences and similarities among rural geographies in our country, as well as between rural and urban geographies, is limited. Despite this, many researchers inevitably need to use one of a number of specific definitions, based on either objective or subjective approaches, pending the question being asked. Recognizing that rurality is complex and multi-dimensional, we use the shorthand “rural” when generally referring to the composite of rural, remote, and northern.

Generally speaking, there are three main definitions of rural: (1) census rural; (2) Rural and Small Town (RST), which has since been extended to Metropolitan Influenced Zones (MIZ), and (3) predominantly rural region (see Box 1.1). The definition used is often based on the purpose of the specific research question or analysis. For example, the predominantly rural region definition is best employed when conducting rural policy analysis with a regional focus, such as a comparison of transportation for health-care access. In contrast, the RST or MIZ definition can be useful when examining community-level issues such as comparing retention of health professionals across rural communities.

For many rural health researchers, the RST definition is an appropriate choice because it designates whole towns or communities as rural and allows for analysis of specific issues that impact these geographical areas. Unless otherwise noted, this is the chosen definition for this book. The RST definition refers to residents who are “outside the main commuting zone of 10,000 or more” (Bollman and Clemenson 2008, 9). Using this definition, approximately 19 percent of Canadians would be considered rural.

BOX 1.1 Definitions of Rural

- 1 *Census rural* typically refers to the population living outside settlements of 1,000 or more inhabitants and with a population density of 400 or more inhabitants per square kilometre (Statistics Canada 2007).
- 2 *Rural and Small Town (RST)* refers to individuals in towns or municipalities outside the commuting zones of larger urban centres (with 10,000 or more population) (duPlessis et al. 2001, 6). Larger urban centres refer to both Census Metropolitan Areas (CMAs) and Census Agglomerations (CAs). The RST population is also discussed in light of the degree of influence of larger urban centres. There are three categories: Strong Metropolitan Influenced Zone (MIZ) (30 percent or more of residents commute to a larger urban centre), Moderate MIZ (5-29 percent of residents commute to any urban core), and Weak MIZ (0 percent of residents commute to an urban core).
- 3 *Predominantly rural regions* refer to having more than 50 percent of the population living in a rural community with a population density of fewer than 150 persons per square kilometre (OECD 1994). Such regions are further classified as rural metro-adjacent (predominantly rural census divisions adjacent to metropolitan centres), rural non-metro-adjacent (rural census divisions not adjacent to metropolitan centres), and rural northern (predominantly rural census divisions found either entirely or mostly above specific lines of parallel in provinces [e.g., fiftieth line of parallel in Newfoundland] as well as all of Yukon, Northwest Territories, and Nunavut) (Ehrensaft and Beeman 1992).

Health and Place

Spaces are primarily physical, such as geographies based on physical or administrative boundaries. Space is organized into social *places* or bounded settings that hold meaning and identity and where social relations are constituted. Harrison and Dourish (1996, 69) provide a simple way to understand this distinction using an analogy of house and home: “We are located in space, but we act in place. Furthermore places are spaces that are valued. The distinction is rather like that between a

house and a home; a house might keep out the wind and the rain, but a home is where we live.”

Disease and health (care) exist in both space and place, across a wide range of scales. Small geographical scales include the spaces and places of health-care settings (e.g., hospital wards or nursing home rooms), whereas larger scales encompass rural regions that are shaped by even larger state- or global-level processes, such as globalization.

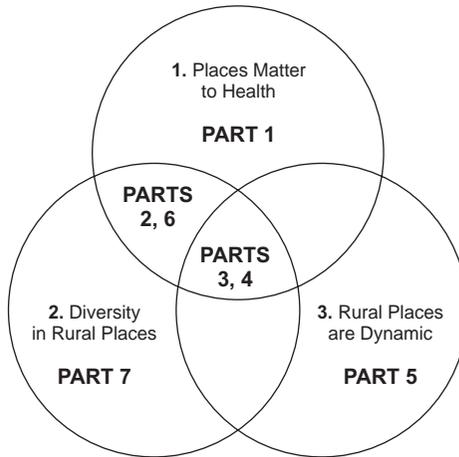
The research exploring and documenting place and its relationship to health has grown exponentially over the past decade, with contributions from a wide range of disciplines, from medical health sciences and community epidemiology through to the social sciences, where numerous disciplines have been involved. Arguably, health geographers have been at the cutting edge of this scholarship, having a firm disciplinary base in space and place and more recently in place and its relationship to health. A number of good reviews of health and place research by geographers outline the numerous scales at which place can be operationalized in examining substantive issues: health inequalities (Curtis 2004; Hayes 1999; Smyth 2007), care and caring (Parr 2003), health-care work (Andrews and Evans 2008), and telemedicine (Cutchin 2002). In this work, health is defined broadly, encompassing both ill health (i.e., disease) as well as positive health (i.e., well-being and quality of life). One key area of inquiry has been the place-sensitive attention to a number of non-geometric constructions of space, such as culture, gender, and sexuality (Kearns 1995; Kearns and Moon 2002). This often theoretically driven work embraces the world of difference with respect to how we as humans perceive ourselves and experience health (care) in place.

Much of this work has used qualitative methods, such as a case study approach, in arguing how place or locality impacts health. In this genre of health and place research, specific localities operate as field sites, and the effect of place on health is examined across a number of different indices, from the availability of health services to the degree of social capital experienced. One such work examined the changes experienced in community care services as a result of health system restructuring across two locales in Ontario – one in a medically under-served area (Sault Ste. Marie) in northern Ontario, the other in a well-served area in southern Ontario (Guelph) – highlighting the impacts on the health of the populations in question (Williams 2006). Other such work has examined settings of care, such as home, long-term care facility, or hospital, making a case for how the immediate settings of care and the

social relations within such settings impact health (McLean 2007). A similar case study approach is used in much of the environment and health research, where hazards and risks are examined often at the local level. Certainly, much of the work on farming accidents and risks to health, such as bovine spongiform encephalopathy (BSE), can be placed in this category of research.

Another genre of health and place research uses sophisticated quantitative methods, such as multi-level modelling, to search for area effects or between-area variations in (ill) health. The statistical models used take account of spatial differences in numerous socio-demographic characteristics of populations, such as differences in age, sex, education, and income (individual or compositional characteristics), but cannot explain, at most scales of analysis, the small but significant amount of between-area variation in (ill) health. This significant variation is understood to be the result of contextual or place characteristics, also known as area effects. These contextual characteristics are often derived from aggregate statistics, describing features such as housing (age and size), economic structure (industrial base, economy), green space (parkland), social capital, sense of place, community identity, or availability of services, such as those used for recreation (pools, gyms). Considerable research has examined these issues at smaller scales – the neighbourhood and the region – but comparatively less has been conducted targeting larger scales. In this volume, a number of chapters illustrate such area effects at larger scales, including between urban and rural areas and across a continuum of rural areas. Increasingly, mixed methods are appearing in health and place research, providing both breadth and depth. All of rural research needs to acknowledge, consider, and incorporate the unique contexts of rural communities. As Chapter 15 demonstrates, the implications extend into the ethics of health research in rural communities. What do confidentiality and anonymity mean, for instance, and how are they achieved in cohesive rural communities? How are the boundaries and roles of the research participants defined in these communities? Related to this is the appropriate dissemination of research results that can ensure the voices of rural people are heard within policy and service contexts.

Figure 1.2 shows a number of health and place themes apparent throughout the chapters. The first sub-theme is *place matters to health*, evident in health inequalities across the urban-rural continuum. The second is that *there is great diversity in rural places*, with each locality or place providing a unique, nuanced health experience. The third and

Figure 1.2 Health and place themes with corresponding book sections

last sub-theme is that *rural places are dynamic*, and thus so are their impacts on health.

We will now discuss each of these sub-themes with reference to the chapters. These discussions on the health and place sub-themes do not comply with the order of the chapters in the Contents, where the sectional grouping of chapters reflects the similarity in the substantive material presented. Rather, the following thematic discussions tie chapters together by their shared representation of each of the three respective sub-themes. We have done this in an effort to promote critical dialogue among chapters as well as encourage critical comparison across each section of the book. Importantly, there is overlap across the chapters and themes, with the research findings illustrating the interconnections among and the complexities of rural health issues. For example, the link between sense of belonging and positive mental health is important to the sub-themes of rural place matters to health and rural places are dynamic, as discussed below. We will return to the sub-themes in the concluding chapter when we discuss policy implications and research recommendations.

Rural Places Matter to Health

The first and most common theme in the collection is that place does matter to health. Place is not only key to identity but also operates as a

social resource, often defining our life chances, the degree of risk that we experience, and, ultimately, our health (care) and well-being. Living and working in rural areas have impacts on health status, partly due to the results of shortcomings in health-care services. The findings presented here illustrate and confirm that in rural areas health status and care services delivery are different compared with urban places. For example, compared with urban areas, life expectancy is lower in rural and remote areas, and mortality rates are higher in more rural and remote areas. In presenting a broad picture of the health of rural populations by comparing differences between rural and urban Canada with respect to life expectancy, health behaviour, and quality-of-life indicators, we learn that rural residents are more likely to exhibit less healthy behaviours than urban residents. Furthermore, health status has stagnated among rural dwellers, and among rural residents less than forty-five years of age there are higher death rates mostly due to injury, suicide, and accident. The enduring health status disparities suggest that care is not available or not accessed in rural places.

A central realization in the theme place matters to health is that the discussion has to take into account difference, whether defined by culture, gender, or sexuality. The links between culture and the socio-political context of health status help to clarify the health status variation experienced by First Nations, Inuit, and Métis. This variation includes the experience and frequency of specific diseases but also the social support embedded in their culture that has positive impacts on health and ill health. In contrast, mental health status is actually better in rural and non-metropolitan areas compared with other disorders, in part because of the availability of social support in rural communities. Finally, the findings clarify that rural health status is linked to socio-economic status, illustrating that health-care services need to be embedded in economic and community development.

Ongoing challenges with recruiting and retaining health professionals in rural geographies mean that rural residents experience many obstacles in obtaining care due to lack of available services and personnel as well as geographical and transportation limitations. Our current understanding is that rural Canadians use a different range of services (e.g., there is more reliance on family physicians and less use of dental services) and that the contextual barriers to accessing certain kinds of services (e.g., mental health providers) are known but not always acknowledged through the current “one size fits all” health-care delivery system. We learn from the research presented here that health-care

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providers are unavoidably mobile individuals, increasing the likelihood of migration from rural areas. In general, rural health providers are older and are not being replaced at sufficient levels to match the provider-to-population proportions in urban areas. Within the context of an aging population and the evident inequality in health human resources across the urban-rural continuum, there remains the need for careful recruitment and retention planning for health-care providers. Beyond planning, actual preparation for working in the rural environment also needs to be carefully considered so that, for example, the needs of those with mental health concerns are appropriately addressed.

All of these variations and specific examples regarding rural health status and the supply of health providers point to the need for a paradigm shift in how we operationalize health-care services in rural areas. The research findings across the rural communities studied, together with the divergent groups that were their focus, clearly indicate that enhancing health status is linked to improving the economic and educational status of rural residents. Furthermore, community development efforts are tied to improving health status. These findings point to creating policies with a rural lens to address the uniqueness of rural communities through developing and implementing health services that include the perspectives of rural peoples. In other words, genuine endorsement from rural residents is essential and will further foster their sense of belonging and acknowledge that rural life is important to their urban counterparts. Finally, the research also clearly notes that focusing on capacity building and the social determinants of health is necessary to develop and implement appropriate health services that will positively impact rural residents' health status.

Rural Places Have Great Diversity

The second theme in this book is that there is a great amount of diversity among rural geographies. Intuitively, we know that there are differences among rural communities from one geographical area of the country to another. Numerous case studies are presented in many of the chapters, noting differences in individual and community responses to adversity and illness as well as how health-care services are developed and provided to attend to these specific circumstances. Rural Canadians believe that to paint all rural communities with one brush is inappropriate when developing and delivering health services. However, given

the number of rural towns across Canada, the impacts on health (care) are poorly understood. This confirms the importance of conducting future research that differentiates rural communities, their health status, and the types of services that are effective in addressing identified concerns. Many of the chapters have employed place-specific case studies as an approach, acknowledging nuances in the characteristics of each place of concern.

Rural communities are diverse, differentially affecting residents' experiences of (ill) health. How older residents experience aging or dementia varies across their respective rural settings. Former resource communities, commonly referred to as "instant towns," have a unique set of challenges with respect to caring for the aged (see Chapter 25). Recognizing that rural communities are generally under-served, some have concluded that cases of dementia are worse in certain communities precisely because of the insufficient health-care services and stark shortage of health-care providers (see Chapter 24). Much work is needed in developing the place-specific services and providing education for the range of health-care providers who care for the aged, especially those with dementia. These illustrations reinforce a common thread across the three sub-themes: rural health-care delivery needs to consider the unique nature of the individual within his or her specific rural community.

The examples of place-specific links provided here also make clear how the characteristics of place influence the availability of health care and, indirectly, health. One example of how place influences health-care availability is the multi-disciplinary, multi-sector, and multi-dimensional training centre discussed in Chapter 7. Through the provision of curriculum, field placements, continuing education, and professional development, this centre is enhancing the capacity of local health services. It is clear that capacity building is a key component of successful rural health-care service and delivery.

Other key features identified in the research for the successful delivery of health services to rural and remote locations are the establishment of trust and the creation of relationships with community members. Collaborative processes to develop these features while concomitantly addressing other challenges associated with the delivery of health services in such locations are therefore not a luxury but a necessity. Bridging health policy, health services, and research in the application of a conceptual model to guide and evaluate service development for palliative care is yet another example of how the diversity of rural

Canada needs to be considered when developing and implementing health-care service.

Rural Places Are Dynamic

The third sub-theme developed in this volume is that rural places are dynamic. Numerous changes are being experienced by rural places: population shifts, economic changes resulting from globalization (including the current recession), and climatic changes due to global warming. Some specific examples include the loss of employment within the oil and gas industry related to the recession, the increased number of wildfires, and the constant threats to the agricultural sector due to the increased incidence of viruses (e.g., avian flu) and other disorders, such as BSE, as discussed in Chapter 19. These examples highlight the fact that the future of rural Canada is uncertain. This makes it all the more important to undertake research that can contribute to resolving issues by developing and implementing unique programs and initiatives by and for the individuals and families who choose to maintain a rural lifestyle.

Furthering our understanding of dynamism in rural communities, the research findings connect place (rural and community) with condition (health and well-being). In addition, rural community well-being and resilience are linked to the availability of rural health-care services. We highlighted the diversity of rural communities above and the differences in the specific health conditions; of course, there are also common concerns experienced across the spectrum of rural populations. For example, in rural and remote Canada, individuals with mental health disorders and specific diseases such as HIV/AIDS experience stigma. In addition, they confront barriers in accessing and receiving care. Similarly, in rural and remote locations across Canada, caregivers looking after the aged and those who are palliative experience limited support in their demanding role(s).

Despite the local social support that rural Canadians experience, there is agreement that professional supports to communities are declining in availability and quality, as seen in the lack of health professionals and health programs addressing particular conditions and disorders. Rural Canadians are increasingly concerned that, although their relatives are aging in place, albeit with significant personal supports and costs, they themselves will not be able to do so. Thus, the

dynamism of rural Canada, together with variation in the experience of (ill) health, calls for innovation.

Innovation in some cases has taken the form of adopting new technologies in providing health-care services (and even in continuing education). Technological innovation greatly influences the dynamism of rural places, bridging both distance and time. Given the extreme shortfall of health professionals (e.g., registered nurses, physicians, physiotherapists) in rural areas, creativity in providing care and supporting those who provide it is needed to ensure that health care remains accessible and available for rural residents. To illustrate, computer technology can be used to address diabetes and other chronic conditions among rural people, as discussed in Chapter 10. Our hope is that this volume will provide evidence that health-care services in rural areas need to remain in place and need to address the uniqueness of the rural context across the full spectrum, from health promotion to treatment, chronic care, and end-of-life support.

Conclusion

Focusing on the rural context as place and its interrelationship with the myriad of health issues discussed in this book will strengthen our knowledge and understanding of the complexity of rural health, especially across three thematic areas. The first theme, place matters to health, provided evidence of health variations across the urban-rural continuum. The second theme, diversity in rural places, confirmed that each place provides a unique, nuanced health experience. And the third theme, rural places are dynamic, suggests that the ever-changing nature of place will inevitably have irregular impacts on health. Debates about the definition and meaning of rural add to our understanding of place while challenging researchers to ask questions that will generate relevant information. Many other topics still need to be addressed to understand fully the range of health issues within rural communities, as will be further discussed in the concluding chapter.

Note

- 1 Sense of belonging is a concept related to levels of social attachment among individuals and is indicative of social engagement and participation within communities.

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Part 1: Rural Health Status

Chapter 2 **Rural Health Status and Determinants in Canada**

M. DesMeules, R.W. Pong, J. Read Guernsey,
F. Wang, W. Luo, and M.P. Dressler

Key Points

- Compared with urban areas, rural areas reported higher proportions of people with low income and less formal education. On the other hand, rural residents reported a stronger sense of community belonging than did their urban counterparts.
- Health-related factors such as the prevalence of smoking and obesity were elevated in rural Canada, while analyses of other health influences, such as dietary practices and leisure time physical activities, indicated lower levels of practice in rural areas.
- Higher overall mortality rates among rural communities were related to causes such as circulatory disease, injury, and suicide. Residents of the most rural areas are often at the highest risk. In contrast, residents of rural communities that have the most commuting flow between large centres were at lower risk of dying than those in urban areas or other rural areas for certain health conditions.
- Generally, rural residents of Canada are more likely to be in poorer socio-economic conditions, to have lower educational attainments, to exhibit less healthy behaviours, and to have higher overall mortality rates than urban residents.

Rural communities differ from urban communities in many ways that can determine health status differences between rural and urban

Canada. This chapter is based on a report entitled *How Healthy Are Rural Canadians? An Assessment of Their Health Status and Health Determinants* (Canadian Institute for Health Information [CIHI] 2006). It is the first pan-Canadian study that presents a broad picture of the health of rural populations with regard to aspects such as life expectancy, health behaviour, quality-of-life indicators, chronic conditions, and injuries. It focuses on the analysis of national data from several sources to examine whether there are differences in health status between rural and urban Canadians. It explores disadvantages and disparities facing rural communities in Canada, with the intention of reaching a better understanding of rural health needs to better inform rural health programs and policies. A more detailed version of the report can be found at <http://www.phac-aspc.gc.ca>.

In the past, much of rural health research in Canada focused on accessibility of health services, and less attention was given to the other determinants of health. While the need for adequate health services is recognized (see Chapter 4, this volume), there might be more fundamental reasons behind the disparities identified in the literature than simply access to services. An adequate understanding of rural health requires the adoption of a much broader perspective. Rural communities face a number of socio-demographic and -economic challenges. In general, rural communities have different socio-economic and -demographic profiles than urban communities. Aging of the population, economic difficulties, and geographical isolation are among the factors that can contribute to health vulnerabilities in rural areas and small towns in developed countries.

Most rural communities have high dependency ratios, with larger proportions of children and youth (0-19 years of age) and seniors (older than 60 years of age) and a smaller proportion of working-age individuals (20-50 years of age). Many factors contribute to rural areas having an older population distribution, including the tendency of retirees to move to rural areas and the migration of rural youth to urban centres for further education and employment opportunities (Ministerial Advisory Council on Rural Health 2002).

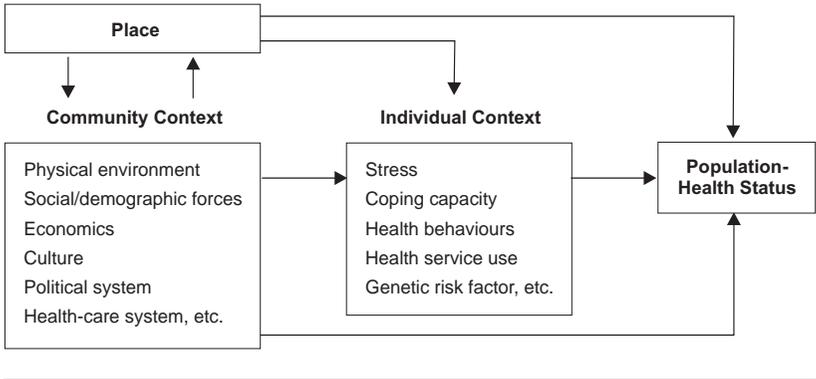
Employment and education opportunities are critical to the well-being of people. Unfortunately, some rural areas are lacking in these opportunities and in social, cultural, and recreational facilities that support a growing population. In general, rural residents are less educated, have higher unemployment rates, and have lower incomes than urban residents. In 2001, the proportion of people aged twenty to thirty-four

with less than a high school diploma was higher in rural (23 percent) than urban (14 percent) communities. Finally, rural/urban income disparities are still apparent, with families in rural communities having a median income of \$49,449 compared with \$56,817 for their urban counterparts (Statistics Canada 2004).

The ethnic composition of rural Canada also differs from that of urban areas. In 1996, rural Canada had the lowest proportion of immigrants, including recent immigrants and visible minorities, 88 percent of whom lived in urban regions. Another important characteristic of rural communities is their relatively high proportions of Aboriginal people. Canada has the second highest proportion (3.3 percent) of Aboriginal people in the total population; New Zealand ranks first with 14 percent of its total population being Aboriginal. Aboriginal people accounted for 2.2 percent of the population of Australia and 1.5 percent of the population of the United States (Statistics Canada 2003). In 2001, a little over half (51 percent) of the population who identified themselves as Aboriginal – First Nations, Inuit, and Métis – lived in rural Canada (Statistics Canada 2003); this 51 percent comprised 31 percent living on Indian reserves and settlements and 19.5 percent living in rural non-reserve areas (Curtis and Jones 1998, 645–72). These proportions have declined slightly since 1996 since the Aboriginal population is experiencing the same patterns of youth out-migration to urban areas.

“Place” embodies a lot of things and is often treated as a residual category. It is a shorthand way of describing a host of factors that might have health consequences for communities and populations. It is now argued that place should have a special status in the population–health discourse, particularly as an important explanatory variable (Curtis and Jones 1998, 645–72; Duncan, Jones, and Moon 1993, 725–33; Forbes and Wainright 2001, 801–16; Goins and Mitchell 1999, 147–56; Kearns and Gesler 1998; MacIntyre, MacIver, and Soomans 1993, 213–34; Stafford et al. 2001, 117–29). For this reason, the conceptualization and measurement of place have received more attention. A simplified framework has been developed as part of this research to portray the hypothesized relationships between major categories of health determinants, including place, and the health status of populations (see Figure 2.1). This framework is informed by a variety of studies on social support networks (Johnson 1996, 61–66; Krout 1989, 141–56), cultural values (Hoyt et al. 1997, 449–70; Rode and Shephard 1984, 1472–77), economic conditions (Amato and Jiping 1992, 229–40), educational attainment (Durlberg 1992, 191–98), occupation and work (Denis 1998,

Figure 2.1 A population-health framework for rural health



419-36; Jennissen 1992; Pratt 1990, 399-417; Wing and Wolf 2000, 786-93), and lifestyle (Young and Sevenhuysen 1989). It recognizes the compositional, contextual, and collective impacts of place and shows that the relationships between place and health status can be direct, indirect, or reciprocal.

Building on this framework, the overall research question driving this chapter is this: are people living in rural areas and small towns less healthy than those living in cities? The main objective is to describe the health status and identify key determinants of health that would permit us to explain why some rural communities are healthy and others less healthy. This study focuses on rural areas given that the body of knowledge on the health of rural communities in Canada is quite limited and that a better understanding of rural health issues is needed.

Methodology

Definition of Rural

Urban areas were used as the reference group against which different types of rural areas in Canada were compared. Critical to any type of rural research is how the term “rural” is defined or operationalized. For this study, the Rural and Small Town (RST) definition developed by Statistics Canada is adopted. It refers to the population living outside the commuting zones of larger urban centres – specifically, outside Census Metropolitan Areas (CMAs) and Census Agglomerations

(CAs). CMAs (containing populations of 100,000 or more) and CAs (with populations of 10,000 or more) contain large urban areas or urban cores, together with neighbouring census subdivisions (CSDs) or municipalities, that have a high degree of social and economic integration with the urban core.

The Metropolitan Influenced Zones (MIZ) classification of rural, also developed by Statistics Canada, is a refinement or an extension of the RST concept “to better show the effects of metropolitan accessibility on non-metropolitan areas” (du Plessis et al. 2002; McNiven, Puderer, and Janes 2000). CSDs¹ that lie outside a CMA or CA are classified into one of four zones of influence ranging from “strong” to “no” influence, according to the degree of influence that CMAs or CAs have on them.

- Strong MIZ: 30 percent or more of the employed labour force living in the CSD work in *any* CMA/CA.
- Moderate MIZ: at least 5 percent but less than 30 percent of the employed labour force living in the CSD work in *any* CMA/CA.
- Weak MIZ: more than 0 percent but less than 5 percent of the employed labour force living in the CSD work in *any* CMA/CA.
- No MIZ: includes all CSDs that have a small employed labour force (fewer than forty people) or no commuters to a CMA/CA.

MIZ commuting flows from a rural area or small town to all larger urban centres (with a population of 10,000 or more) for work were combined to determine the degree of influence of CMAs/CAs (Rambeau and Todd 2000). The classification and its methodology have been extensively validated by Statistics Canada (McNiven, Puderer, and Janes 2000). Commuter flow is used as a proxy for “access” to services such as health care, education, banking, shopping, and cultural and sports activities.

Strengths and Limitations

The four-category MIZ classification is based on administrative boundaries and takes into account the heterogeneity of rural communities. It also allows comparisons between urban communities (CMAs/CAs) and four categories of rural communities. On the other hand, this classification is not related to the social representations of rural and urban and does not examine the heterogeneity within the CMA/CA category.

Data Sources and Analytical Methods

The following data sources were used: Canadian annual mortality data, Canadian Cancer Registry, and Canadian Community Health Survey (CCHS) 2000-1. A file containing each CSD of Canada and its respective MIZ category was merged with each of these datasets.

Canadian Annual Mortality Data

Analytical Approach

Records from the Canadian annual mortality database were aggregated to the CSD level and then to the national and provincial levels for the period 1986-96. The CSD boundaries were those of the 1996 census. The Canadian annual mortality database uses the CSD of the patient's residence. In other words, it refers to where people lived as opposed to where they died (which could, in some cases, be the CSD of a hospital or long-term-care facility). The CSD data were subsequently assigned to a MIZ category to compare mortality rates for rural and urban areas, by age group and sex. The comparisons were made using age-standardized mortality rates (ASMRs) and standardized mortality ratios (SMRs). (For the methods used to determine the statistical significance of the SMRs and ASMRs, please see the full report at <http://www.phac-aspc.gc.ca>.) The standard population was that of the 1991 census. Causes of death, according to the ninth revision of the *International Classification of Disease* (ICD-9), were examined by ICD-9 chapters on the basis of their frequency in each age group. The selected causes of death (e.g., circulatory diseases, respiratory diseases, cancers, injuries, motor vehicle accidents [MVAs],² suicides, etc.) represent over 80 percent of all deaths.

Multivariate Analysis

The potential association between all-cause, suicide, and MVA mortality and area of residence, based on the MIZ classification, was examined in multivariate regression analyses (Poisson regression using CMA/CA as the reference category) to account for the effect of socio-demographic and -economic determinants of health, such as north/south location,³ education, occupation, income, mobility, ethnic background, marital status, and average number of persons per household. Sex-combined information on these characteristics was derived from the 1996 census. Age-, sex-, and CSD-specific mortality counts for the three causes of death were computed for the period 1986-96.

Data Quality and Limitations

Complete census data were available for 78.6 percent of the 5,984 CSDs defined in 1996 because of the small populations in the remaining CSDs, but the share of the CSDs included in our study varied by MIZ: 75.3 percent CMA/CA, 99.1 percent Strong MIZ, 93.9 percent Moderate MIZ, 82.3 percent Weak MIZ, and 50.1 percent No MIZ. Area suppression (i.e., the suppression of data for CSDs with small populations) explains the unavailability of some census data at the CSD level. Area suppression results in the suppression of all information for geographical areas with populations below 40 persons. Also, data on income variables in areas with populations below 250 persons or fewer than 40 private households are suppressed. Note that the socio-economic variables are enumerated on the long census of population questionnaire, which is completed by a 20 percent sample of households. Thus, information for CSDs with a population of 250 inhabitants would be based on a sample of 50 census respondents.

Canadian Cancer Registry

Analytical Approach

A similar methodology was used for the analysis of cancer incidence data. Records were aggregated to the CSD level and then to the national and provincial levels for the period 1986-96. The CSD boundaries were those of the 1996 census. Age-standardized incidence rates (ASIRs) and ratios were calculated using the 1991 census population as a standard. All-cause and cause-specific incidence rates and ratios for forty cancer sites were calculated, by age group and sex. See the full report for methods of testing the significance of the SIRs and ASIRs.

Canadian Community Health Survey 2000-1

Analytical Approach

The analysis of the Canadian Community Health Survey was done in two stages. Bivariate analyses were first performed to examine the differences in health status between urban and rural communities. Age-standardized prevalence rates for over forty indicators were calculated by sex and urban/rural category using the 2001 census population as the standard. Data were weighted to take into account the complex sample design, to adjust for non-response, and to adjust for post-stratification. The bootstrap procedure was used to calculate 95 percent confidence intervals.

Multivariate Analysis

Following the bivariate analysis, multivariate logistic regression analyses were performed to ascertain the relationships between selected health determinants and place of residence. The goal of this analysis was to assess whether place of residence had an independent effect on specific health outcomes after several determinants of health had been controlled for. Key health status outcomes were chosen: self-rated health, stress levels, chronic conditions, body mass index, and smoking.

Data Quality and Limitations

The CCHS is a sample of all CSDs in Canada, which does not include all the CSDs used in this analysis. As well, persons living on Indian reserves or crown lands, the clientele of institutions, full-time members of the Canadian Armed Forces, and residents of certain remote regions are excluded; therefore, the associations or the proportions reported for some of the most rural/remote areas might be underestimated.

Deriving Life and Health Expectancy Measures

Life tables are a valuable tool for health evaluation. Although their primary use is to model life expectancy at birth, life tables can be used to derive health expectancy, years of life lost, and many other models depicting the burden of disease or poor health for a population.

Life Expectancy

The Canadian annual mortality data for the most recent years available (1999-2001) were used to calculate age- and sex-specific mortality rates by MIZ categories. Life expectancy by sex and MIZ were then obtained and compared by rural category according to previous methods (Chiang 1984; Manuel, Goel, and Williams 1998, 52-56).

Health-Adjusted Life Expectancy

Health expectancy describes a family of indices that combine mortality (i.e., life expectancy) with different measures of health-related quality of life, of which health-adjusted life expectancy (HALE) is one particular measure (Manuel et al. 2000, 73-80). HALE is a measure that incorporates both the quantity and the quality of life by representing

the number of expected years of life equivalent to years lived in full health, based on the average experience in a population. For a more detailed discussion of the methods for calculating HALE, see the full report at <http://www.phac-aspc.gc.ca>.

General Statistical Notes and Limitations

Throughout this report, the estimates are provided with 95 percent confidence intervals. Reported statistics are taken to be significantly different if the 95 percent confidence intervals do not overlap. In the text, rates described as “significantly different” can be taken to be statistically significantly different at the 95 percent level. The small population in Weak or No MIZ sometimes restricts the amount of data available to calculate the rates. The level of uncertainty associated with rates calculated for these areas is certainly greater than for areas with larger populations (e.g., CMAs/CAs). Consequently, confidence intervals have been calculated and accompany the presented rates or ratios so that the level of uncertainty associated with them is clearly stated. These confidence intervals do not describe the uncertainty associated with potential bias, such as the uncertainty in proper CSD identification.

Results

Although some health measures did not show pronounced rural/urban differences, and some outcomes were actually found to be worse in urban areas, rural areas generally showed a health disadvantage for many of the measures examined in this study. Despite rural Canadians reporting a stronger sense of community and less stress, health status worsened with increased rurality; the exception was most cancer rates, which were found to be higher in urban areas. Generally speaking, rural residents were more likely to be living in poorer socio-economic conditions, to have lower educational attainments, to exhibit behaviours that were less healthy, and to have higher overall mortality rates than their urban counterparts.

Health Status

Life expectancy at birth was generally higher in urban compared with rural areas, and the differences were greater among men. Life expectancy

in men ranged from 76.7 years in CMAs/CAs to 73.9 years in No MIZ areas. Among women, life expectancy was at its highest in CMAs/CAs, at 81.4 years, and at its lowest in Weak MIZ areas, at 81.3 years.

Higher overall mortality risks among rural residents seemed to be driven by higher death rates from causes such as circulatory disease, injury, and suicide (see Chapter 3, this volume, for more detailed analysis of deaths due to injury and suicide). Residents of the most rural areas were often at the highest risk of death. In contrast, for certain health conditions, residents in Strong MIZ communities were at lower risk of dying than those in urban or other rural areas. Using a detailed breakdown of age group, it becomes apparent that greater overall mortality risk in rural areas is driven mainly by those under the age of forty-five (see Chapter 3).

Circulatory disease mortality risk was significantly higher in all MIZ categories among both men and women aged zero to sixty-five years or older (for both sexes combined, Moderate MIZ: SMR = 1.07; Weak MIZ: SMR = 1.06; No MIZ: SMR = 1.10), with the exception of Strong MIZ areas (both sexes combined, SMR = 1.00). The highest proportions of death due to circulatory disease occurred among men aged forty-five to sixty-four years.

The incidence rates of most cause-specific cancers were lower in rural areas than in urban areas. Two exceptions were lip cancer in men and cervical cancer (see Chapter 3, this volume, for possible reasons for this latter finding). Overall, cancer mortality rates were slightly lower in rural than urban areas (among men, CMA/CA: 247.0 per 100,000; Weak MIZ: 238.7 per 100,000; among women, CMA/CA: 155.1 per 100,000; Weak MIZ: 149.9 per 100,000).

For the most part, respiratory disease mortality risks were significantly higher among rural residents (both sexes combined, Moderate MIZ: SMR = 1.08; Weak MIZ: SMR = 1.10; No MIZ: SMR = 1.10). Residents of Strong MIZ areas, however, had a reduced risk of dying from respiratory conditions compared with those living in cities (both sexes combined, SMR = 0.94).

A reduced risk of dying from diabetes was observed among men living in Strong MIZ areas compared with their urban counterparts (Strong MIZ: SMR = 0.81). Women living in the most rural areas had higher risks of dying from diabetes than those living in cities and Strong MIZ areas (Strong MIZ: SMR = 0.98; Moderate MIZ: SMR = 1.17; Weak MIZ: SMR = 1.16; No MIZ: SMR = 1.32).

Canadians living in Strong, Weak, and No MIZ areas reported a higher prevalence of arthritis/rheumatism compared with their urban counterparts (both sexes combined, CMA/CA: 15.4 percent; No MIZ: 17.5 percent).

Multivariate analyses were used to examine the association between mortality and place of residence while adjusting for various socio-economic and -demographic factors. This association remained statistically significant after a number of health determinants had been controlled for. The results show that higher mortality risks in rural areas remained for all-cause mortality (relative risks [RRs] ranging from 1.10 to 1.32 for men aged 0-44 years and from 1.08 to 1.27 for women in the same age group) (see Table 2.1), MVA-related deaths (RRs ranging from 1.61 to 1.90 for men aged 45-64 years and from 1.69 to 2.98 for women), and suicide-related deaths (RRs ranging from 1.28 to 1.67 for men aged 65 years or older and from 0.66 to 0.81 for women). In other words, place of residence still had an independent and statistically significant effect on all-cause mortality as well as mortality due to MVAs and suicides, in specific age groups, after some health determinants had been accounted for.

Not having completed secondary school and having a low median household income were strong predictors of increased mortality risk in both men and women. Ethnic composition also had a strong effect on mortality risk: a proportion of less than 10 percent (versus more than 10 percent) of Aboriginal people within the census subdivision was associated with a 53 percent to 61 percent reduction in mortality risk, and a proportion of immigrants of less than 5 percent was associated with a 5 percent reduction of the mortality risk. Slightly higher mortality risks were also associated with small household size (i.e., fewer than three individuals per household). People living in CSDs located in the north had a 26 percent increased risk of dying from any cause compared with people living in CSDs located in the south.

Health Determinants

Rural areas reported higher proportions of people with low income (CMA/CA: 32.4 percent; No MIZ: 49.9 percent) and low levels of formal education (CMA/CA: 27.8 percent; No MIZ: 43.0 percent). On the other hand, more rural residents than urban residents reported a strong sense of community belonging (CMA/CA: 56.2 percent; No MIZ: 76.8 percent), a measure of social capital.

Table 2.1 Adjusted relative risk (RR) estimates for the association between place of residence and all-cause mortality, people aged zero to forty-four years, Canada, 1986-96

Variable	Relative risk		
	Men (95% CI)	Women (95% CI)	Total population (95% CI)
<i>Place of residence</i>			
CMA/CA	Reference	Reference	Reference
Strong MIZ	1.10 (1.07, 1.14)*	1.08 (1.03, 1.12)*	1.11 (1.08, 1.15)*
Moderate MIZ	1.17 (1.14, 1.21)*	1.19 (1.15, 1.24)*	1.20 (1.17, 1.23)*
Weak MIZ	1.20 (1.16, 1.23)*	1.18 (1.12, 1.22)*	1.20 (1.18, 1.24)*
No MIZ	1.32 (1.23, 1.41)*	1.27 (1.15, 1.40)*	1.33 (1.25, 1.42)*
<i>Completed secondary school</i>			
75-100%	Reference	Reference	Reference
50-74%	1.20 (1.17, 1.24)*	1.13 (1.09, 1.18)*	1.20 (1.17, 1.23)*
25-49%	1.27 (1.21, 1.33)*	1.17 (1.10, 1.24)*	1.26 (1.21, 1.31)*
0-24%	1.74 (1.45, 2.07)*	1.31 (1.01, 1.71)*	1.63 (1.39, 1.91)*
<i>Married</i>			
≥50%	Reference	Reference	Reference
<50%	1.20 (1.18, 1.22)*	1.14 (1.11, 1.16)*	1.18 (1.16, 1.20)*
<i>Median household income</i>			
≥\$40,000	Reference	Reference	Reference
\$20,000 - <\$40,000	1.20 (1.18, 1.22)*	1.16 (1.13, 1.19)*	1.20 (1.17, 1.22)*
<\$20,000	1.36 (1.23, 1.51)*	1.52 (1.33, 1.75)*	1.43 (1.31, 1.57)*
<i>Unemployment</i>			
≥15%	Reference	Reference	Reference
10% - <15%	0.96 (0.94, 0.98)*	0.98 (0.95, 1.03)	0.92 (0.90, 0.94)*
<10%	0.87 (0.85, 0.89)*	0.95 (0.92, 1.00)	0.91 (0.89, 0.93)*
<i>Medical occupations</i>			
≥5%	Reference	Reference	Reference
<5%	1.06 (1.04, 1.08)*	1.04 (1.02, 1.07)*	1.06 (1.04, 1.08)*
<i>Aboriginals</i>			
≥10%	Reference	Reference	Reference
<10%	0.71 (0.68, 0.74)*	0.66 (0.62, 0.70)*	0.71 (0.68, 0.73)*
<i>Immigrants</i>			
≥5%	Reference	Reference	Reference
<5%	0.95 (0.93, 0.97)*	0.95 (0.93, 0.98)*	0.96 (0.95, 0.98)*
<i>Movers (inter CSD)</i>			
≥20%	Reference	Reference	Reference
<20%	0.90 (0.88, 0.92)*	0.93 (0.91, 0.95)*	0.90 (0.88, 0.91)*
<i>Average number of persons per family</i>			
≥3%	Reference	Reference	Reference
<3%	1.19 (1.16, 1.22)*	1.15 (1.12, 1.18)*	1.18 (1.16, 1.20)*
<i>North vs. south</i>			
North	1.25 (1.19, 1.32)*	1.24 (1.15, 1.33)*	1.26 (1.21, 1.32)*
South	Reference	Reference	Reference

Note: * RR estimate statistically different from reference (1.00) at $p < .05$.

Sources: Statistics Canada, Canadian Annual Mortality Data, 1986-96; Statistics Canada, 1996 Census.

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