



# CIHI's Rural Health Systems Model

Use this model to gather quantitative and qualitative information about the key contextual factors that affect population health, health needs, system use and health system performance in rural regions.



# Contextual factors

## Geography

With rural health systems and regions, we typically consider the distance people have to travel and its impact on access to health services.

But distance alone doesn't tell us enough about the travel burden rural residents face. We also need to consider the actual travel time, and the cost and availability of transportation.

## Travel time

Travel time to access care can vary widely when people must use multiple modes of transportation, when weather causes delays, or when geographic features (e.g., mountains, lakes, rivers) increase travel time relative to distance.

Travel time can have profound implications for health outcomes, particularly in emergency circumstances.

## Example

People from an island community who need to travel by boat, ferry or seaplane to the nearest hospital 200 kilometres away will likely have longer and less consistent travel times than those from a community who can access a hospital 200 kilometres away by major highway with good year-round road conditions.

## Ask yourselves . . .

- How long does it take community residents to travel to various types of health services?
- Does travel time vary seasonally?
- What else might affect travel time?

## Travel cost

Travel costs for rural populations can vary widely, depending on how residents get to the nearest urgent care centre — do they have to fly or can they walk there?

Sometimes, travel costs can be reduced through public assistance programs. But lower-income residents may not qualify for these programs; the burden of travel costs can be the greatest barrier for them.

Travel costs may also increase significantly when family or others must accompany patients. In these cases, many assistance programs won't cover the added cost, which could pose a barrier to accessing needed care.

## Examples

Residents must leave their community for minor surgeries like cataract surgery, a procedure that requires accompaniment and therefore adds to travel costs. Some expectant mothers have to travel out of the community well in advance of delivery, which can lead to a substantial financial burden.

## Ask yourselves . . .

- To what degree are travel costs a barrier to our patient population?
- Does the need for accompaniment pose a barrier to accessing needed care?
- How might the variation in travel costs affect population health status and health system performance?
- What is being given up if travel assistance is funded from the health budget (i.e., what is the overall opportunity cost)?

## Travel availability

The availability and timing of transportation can limit patients' ability to reach needed services in a timely manner, for both planned interactions and emergency evacuations.

We need to consider the burden people face when navigating and accommodating schedules for various modes of transportation (e.g., buses, trains, ferries, planes).

### Example

Consider 3 rural communities, each 50 kilometres as the crow flies from the nearest primary care service.

- The first community is located on an island where transportation is limited by ferry schedules, which vary seasonally.
- The second is located in a mountainous region where roads may at times be impassable in winter.
- The third has good highway links that are generally accessible all year round.

The residents in these 3 communities have very different access to primary care.

## Ask yourselves . . .

- What main methods of travel do our population use to access health care services?
- Is travel availability uniform across our system or region?
- Are there seasonal variations in travel availability?
- Are there economic factors that affect travel availability?
- Does travel availability influence our population health or health system performance?

## Population

In addition to population size and density, there are important factors about rural regions that influence a population's health needs and health service use, and outcomes.

### Age and sex

We know that rural communities often have a much higher proportion of youth and/or seniors than urban communities do. This can influence the nature and volume of health services needed.

Because older people have higher rates of a number of diseases, disabilities and other physical impairments that reduce their mobility and ability for self-care, communities with a larger proportion of seniors may have quite different service needs than communities with a predominantly younger population.

Access, quality and outcomes of care may also vary between men and women and among genders.

## **Example**

A small community has a resource-based economy that depends primarily on forestry, an industry in which the majority of employees are men. There is a higher proportion of men in this community than in one that relies on a tourism-based economy.

## **Ask yourselves . . .**

- What are the age, sex and gender profiles of our population?
- Are certain groups over- or under-represented compared with reference populations?
- How might this affect health, health needs and access to health care?

## **Population fluctuation**

Across rural Canada, examples of population fluctuation or surge (e.g., high levels of tourist or worker influx) and population drain (e.g., high levels of out-migration of seasonal workers) are abundant.

Migrant worker and tourist populations may contribute to significant — yet predictable — shifts in population size, requiring planning to ensure that adequate health services are available for both permanent and transient residents.

## **Example**

A community has a tourism economy that effectively triples the size of the local population during summer months.

## **Ask yourselves . . .**

- Do we have significant predictable fluctuations in our population?
- How might this affect health system use, performance and population health measures?

## **Language, culture, ethnicity and religion**

Other demographic factors that affect health system access, availability and use, as well as health status, include language, culture, ethnicity and religion.

Many rural communities in Canada have large Indigenous populations that participate in traditional cultural practices. These communities benefit from participation of Indigenous populations in health system planning and service delivery.

Immigration can also play a role: a community with a large immigrant population that doesn't speak the language local services are delivered in may see effects on the uptake and use of these services.

The influence of religion within the population and on the health system may also affect the uptake, use and availability of certain health services.

### **Example**

A community has a large immigrant population that doesn't speak the language health services are delivered in. This population may access services to a lesser degree or experience different outcomes than the population that speaks the language services are delivered in.

### **Ask yourselves . . .**

- Does our community include a significant demographic group that has particular needs?
- Have we configured health services in our community to provide effective care to all groups?

## **Presence of industry**

Many rural Canadian communities rely on resource extraction or food production industries. The socio-economic benefits of these can have positive health implications. On the other hand, the economic “boom and bust” cycles of some industries — as well as the industries themselves — are associated with important health concerns that can result in increased need for, and use of, health services, as well as in increased health service expenditure.

### **Example**

A town with a mine that operates 24/7 has high rates of cardiovascular disease, diabetes, obesity and depression — all long-term health effects associated with shift work.

### **Ask yourselves . . .**

- What are the main industries in our area?
- How might these affect the health of our population?
- What health benefits do these industries provide?
- What health risks might these industries present?

## **Socio-economic status**

Socio-economic status is recognized as a major determinant of variation in health care use, health outcomes and spending. Socio-economic status typically includes income, employment and education, all of which may relate to more complex factors such as household composition and core housing needs.

### **Example**

A remote community has limited education options. Youth often leave the community to attend school and end up finding employment elsewhere. As a result, the community has low levels of education and poor socio-economic status, which may affect health system access and population health.

## Ask yourselves . . .

- Do the residents of our community have access to affordable and suitable housing?
- Is there a large number of unemployed individuals in our community?
- How might these contributors affect health and access to health care?

## Health system and community context

The conceptual model includes 6 health system and community factors that describe the conditions and characteristics of the health system and of the ecosystem in which it operates. These factors form the critical context surrounding population and geography.

### Infrastructure

This refers to the level and nature of financial, human (e.g., adequate recruitment and retention of appropriate health human resources), physical, capital, technological (e.g., electronic medical record; internet access, availability and bandwidth), data and information resources available to deliver and improve health services. Infrastructure across rural regions can vary widely, directly affecting population health, and health system use and performance.

### Example

Health systems that appear on the surface to have equivalent infrastructure may be wide-ranging in capacity. Consider 2 health systems with the same number of health human resources. One has a relatively stable workforce; the other experiences continuous workforce turnover. This additional insight about human resource supply could help us understand variations in service delivery costs and service outcome.

## Ask yourselves . . .

- Which components of our health system and community infrastructure are relevant to the health system issue at hand?
- What role does infrastructure play in our health system performance or health status?

## Partnerships and community readiness

Improving rural residents' health and access to health services often involves working with community partners to address the broader determinants of health, such as housing, transportation and education. The level of readiness of community partners impacts the ability of rural communities to address these factors. Effective partnerships must also be sensitive to the local culture and political climate of a community.

## Example

Consider 2 health systems that both face barriers to patient travel. One is fully involved with community partners and engages in joint planning and decision-making to provide a transportation option for lower-income residents who need transport to a nearby regional hospital. The other has very limited involvement with community partners and offers no such transportation option. This difference could affect population health, health system use and health system performance.

## Ask yourselves . . .

- Which types of partnerships are relevant to the health system issue you are considering?
- Do the necessary partnerships exist in our community? If so, how effective are they?
- What additional partnerships may be necessary to address the health system issue you are considering?

## Service delivery models

An effective system plans and delivers services across the continuum in a person-centric and culturally safe manner, based on the health needs of the population. This includes service delivery models that are well integrated, optimized, and reflective of best practices and population needs. Due to resource availability and economies of scale, service delivery models in rural communities are often different from those in urban communities.

## Example

While 2 health systems may have equivalent infrastructure, the degree to which their infrastructure is integrated to deliver service may vary. For example, one might be tightly integrated, with minimal service silos, while another is highly segmented with ample opportunities for patients and clients to fall through service gaps. The latter community experiences challenges with patient outcomes, access to care and timeliness of interventions.

## Ask yourselves . . .

- How are services configured and delivered to our rural community population?
- Are the service delivery models integrated and responsive to population health needs?
- What barriers do our current service delivery models face?

## Innovation and learning capacity

The most effective systems create time and space for innovative thinking. The learning capacity of the health system is a prerequisite for innovation and adaptation to the changing environment. It is also a pillar for quality and performance improvement.

## Example

The leaders of a community health system are averse to change and restrict innovation. As a result, the health system is not as responsive to a population's health needs as a system that is agile, adaptive and able to try new approaches.

## Ask yourselves . . .

- To what extent do innovation and learning capacity play a role in the health system issue you are considering?
- Which features of our health system are restricted or enhanced by our existing capacity for innovation and learning?

## Leadership and governance

This includes a combination of strategic leadership and policy- and decision-making, with effective oversight, appropriate regulation and incentives, networks and coalition-building, and attention to system design and accountability. Strong leadership and governance provides direction, support and momentum toward achieving health system goals.

## Example

Consider 2 health systems. One has highly aligned leadership that speaks with a single voice and communicates effectively both internally and externally. The leadership in a second health system isn't well aligned and its communication channels are ineffective.

## Ask yourselves . . .

- Does the leadership in our health system support conditions in which health/health system problems can be solved?
- What are the governance structures in our community that are integral to health system change and performance?

## Resource models and allocation

Ideally, resources are allocated based on population health needs — rather than on traditional service delivery models — and combine with funding and payment models that enable the health system to achieve better outcomes.

## Example

Consider 2 health systems. One allocates and directs financial resources among several rural communities based on the relative health status and service needs of the populations served, as well as on the proximity and availability of existing health and social services in nearby communities. The other allocates and directs financial resources among several rural communities based on the size and age structure of the populations in each community.



## Ask yourselves . . .

- How does our health system's resource model and allocation impact the delivery of health services?
- To what extent do the resource model and allocation impact health service use and health outcomes?

## Interactions

Finally, for each factor in the model that's relevant to the health system issue you are considering, identify whether there are potential interactions between 2 or more factors.

### Example

Socio-economic status, travel cost, and partnerships and community readiness may have interactions. Compare 2 island communities that have poor socio-economic status paired with high travel costs. One community has innovative partnerships with the community-based ferry service (offering discounts for medical-related travel). The other has no such partnerships with transport providers.

## Ask yourselves . . .

- Based on the health system issue you are considering, which interactions between or among factors in this model are relevant?
- To what extent do these interactions play a role in the health system issue you are considering?



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# Appendix: Text alternative for figure

CIHI's Rural Health Systems Model includes a set of key contextual factors that affect population health, health needs, system use and health system performance in rural areas.

You should consider these factors when doing planning, performance management or peer selection for rural health systems or regions.

The model is divided into 3 parts: Geography (referring to geographic distance), Population (referring to the size and density of the population) and Health system and community context.

For geographic distance from a major centre, the model suggests that you consider travel time, cost and availability.

For population size and density, the model suggests that you consider the population's age and sex structure; whether there is population fluctuation; the presence and influence of language, culture, ethnicity and religion; the presence of industry; and socio-economic status.

The model also describes factors that are part of the larger health system and community context. These factors include infrastructure; partnerships and community readiness; service delivery models; innovation and learning capacity; leadership and governance; and resource models and allocation.

As you consider these factors, you should also look for meaningful interactions between 2 or more of the factors in the model.