

# Methodology

## Indicators

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The framework for the indicators presented in each of the chapters is based on Public Health Core Indicators created by the Association of Public Health Epidemiologists of Ontario (APHEO). Some modifications were required to adapt these Ontario-based indicators for use in Saskatchewan. These core indicators form a foundation for community health status reporting by public health. The APHEO core indicators may be found on the APHEO website (<http://www.apheo.ca/index.php?pid=48>).

When possible, a number of comparisons for each indicator for the provincial level analyses were made including by time (1995 to 2009 or later when available), age, sex, and sex by age. If data were available, Saskatchewan as a whole was compared to Canada and the other prairie provinces. For the most recent year, regional health authority comparisons were made by time and also by Statistics Canada peer groupings (Statistic Canada 2008 and 2009); however, in many cases, the small number of events made these analyses too unstable to be presented in this report.

## Rate Calculations and Statistical Significance

The basic rates including crude rates, age, sex and age-sex-specific rates, and age-adjusted rates were reported for the appropriate indicators. Indicator-specific rates such as birth rates were included where appropriate.

When calculated, adjusted rates using the direct method were standardized to the age distribution of the Census Canada 1991 population.

Rate calculations based on small numbers (i.e., less than 20 events) for the most part were not reported due to the instability of the calculated rate. In the tables, frequencies reported were suppressed when the cell size was less than five events.

The 95% confidence intervals (CIs) were calculated using a methodology appropriate for the analysed database and num-

ber of events. The Canadian Community Health Survey (CCHS) analyses required the CIs to be calculated using the bootstrap method. For the hospitalization and mortality data, CIs of age-standardized rates were calculated using the Gamma method.

The CIs may be used as a test of statistical significance when comparing rates. If the CIs overlap, then the difference between the estimates is not considered to be statistically significant.

## Data Sources

The table below provides a listing of the data sources used in this report. Data sources were also identified at the end of each chapter and as

well as with the chart pages. The data were used in accordance with the confidentiality requirements for each data source.

Table 2.1 Data sources

DATABASE	SOURCE	YEARS USED	COMMENTS
Saskatchewan Health covered population	Saskatchewan Ministry of Health	1995-2008	Count of all persons who held Saskatchewan health coverage on June 30th of each year. The following version was used: covpop_plan21_all_rha_agegrp_YEAR.csv. The 14 annual files were downloaded from the intranet on December 1, 2010. Does not include federal employees of the RCMP, the Canadian Forces or inmates of federal penitentiaries.
Vital statistics birth registration files	Saskatchewan Ministry of Health	2000-2009	All births to the Saskatchewan residents that occurred in the province. The data include information about date of birth, sex, parental information, residence, birth weight, gestational age etc. This includes all live births (single and multiple births) and stillbirths.
Vital statistics death registration files	Saskatchewan Ministry of Health	1995-2009	All deaths to the Saskatchewan residents occurred in the province. The data includes date of death, sex, residence, Registered Indian status, underlying cause of death etc.
Year-end hospital separation files	Saskatchewan Ministry of Health	1994/1995 to 2008/2009	All hospital separation records for Sask Health beneficiaries (including out-of-province hospital separations) are used. For more detail on inclusion of newborn and day surgery records see indicator descriptions in chart pages.
Integrated Public Health Information System (iPHIS)	Saskatchewan Ministry of Health	2004-2009	Notifiable diseases reported to the Ministry of Health by regional health authorities and First Nations health authorities
Saskatchewan Environmental Health System (EHS)	Saskatchewan Ministry of Health	2009	Data related to environmental health programs in SK. Data includes environmental health program information on food, water, swimming pools, personal services, public accommodation, and tobacco control.
Saskatchewan Air Resource Management System	Saskatchewan Ministry of Environment	2001-2010	Data available only where air quality monitoring stations exist; 2009-2010 = 4 locations in SK
Saskatchewan Environment Environmental Management System (SEEMS)	Saskatchewan Ministry of Environment	2000-2011	Provincial and local/municipal data on drinking water quality and other water quality. Where Ministry of Environment indicated elevated levels had been rectified - system was excluded from analysis (n=14)
Listing of drinking water advisories (in Excel format)	Saskatchewan Ministry of Environment and Regional Health Authorities	2010	At end of 2011, the Excel data source is no longer used; all health authorities and Ministry of Environment enter data into the drinking water advisory module within the Canadian Network for Public Health Intelligence.
Canadian Daily Climate Data	Environment Canada	1895-2006	Daily temperature, precipitation and snow-on-the-ground data. Used five selected monitoring stations - representing longest history of data available and various geographic points in SK. Trendline = logarithmic scale of the average.
National Pollutant Release Inventory	Environment Canada	2009	Publicly accessible inventory of pollutant releases (to air, water and land), disposals and transfers for recycling. Geolocator based on location of facility. Facilities with locations outside of SK (but mailing addresses within SK) were excluded from the analysis (n=3).
Canadian Census data	Statistics Canada	1991 - 2006	Census variables and also used the age distribution of the 1991 Canadian census population to compute age-standardized rate
Intercensal estimates for population	Statistics Canada	1995-2009	Population estimates of Saskatchewan by age, sex and health region used to compute mortality rates (crude, gender- and age-specific, and age-standardized rates)
Canadian Community Health Survey (CCHS) Shared files	Statistics Canada	2000/01, 2003, 2005, 2007-08	Cross-sectional survey that collects information related to health status, health care utilization and health determinants for the Canadian population. The CCHS targets all Canadians aged 12+ years but excludes individuals living on Indian Reserves and on Crown Lands, institutional residents, full-time members of the Canadian Forces, and residents of certain remote regions.

## Statistics Canada Peer Groups

A Statistics Canada peer group consists of health regions with similar characteristics. Statistics Canada has developed a methodology to classify health regions into peer groupings to see the impact of social and economic factors on health outcomes (Statistics Canada, 2008 and 2009). Peer groups are useful in the analysis of health regions where important differences may be detected by comparing health regions within a peer group. The principal characteristics of the peer groups in Saskatchewan are summarized below:

Peer group A - Urban-rural mix, average percentage of Aboriginal population and average immigrant population. Regina Qu'Appelle RHA and Saskatoon RHA.

Peer Group D - Mainly rural, average percentage of Aboriginal population, high employment rate. Cypress RHA, Five Hills RHA, Heartland RHA, Kelsey Trail RHA, Sunrise RHA and Sun Country RHA.

Peer group F - Northern and remote regions, very high proportion of Aboriginal population, very low employment rate and low proportion of immigrants. Mamawetan Churchill River RHA, Keewatin RHA and Athabasca HA.

Peer group H - Rural northern regions, high proportion of Aboriginal population and low proportion of immigrants. Prince Albert Parkland RHA and Prairie North RHA.

## Limitations

**Overall:** The production of the provincial health status report involved a team of epidemiologists, analysts and writers. Best efforts were made to standardize wording, but as a result of the large number of people working on, in many cases, isolated sections of the report, minor issues around standardization of wording, abbreviations, chart and table formats occurred. These deviations do not affect the quality of the data analyses results.

**Data:** Some of the data sources were external to the Saskatchewan Ministry of Health. Time and effort were required to obtain these data.

When possible, analyses included data from 1995 to 2008. In some cases, 2009 data or later were included, but this varied with the data source.

For much of the data analyses using the health administrative data, the raw records from each data source were used for this report. There is the possibility of recoding inconsistencies.

The data analysed for morbidity included only acute inpatient hospital records for all indicators except injury and therapeutic abortions, which also include day surgery records. Other hospital-based services such as emergency room or outpatient clinics (e.g., radiology) are not included nor are records from two Saskatchewan chronic inpatient facilities (one rehabilitation and one psychiatric) included. As a result, only the more severe end

of the morbidity spectrum including day surgeries and hospital separations was able to be reported.

The inclusion of all residents of Saskatchewan or only those receiving the service/event in Saskatchewan was dependent on the data source. The chart pages provide information on the population included in the specified data sources.

**Analyses:** Overall provincial trends along with age and sex distributions are presented in the report text. When possible, comparisons to Canada as a whole, and in select cases, comparisons to the other prairie provinces, Manitoba and Alberta, were provided. However, for the majority of the indicators, comparable Canadian information was not available. Further detail and regional health authority overall trends were presented in the chart pages. Detailed statistical tables for the regional health authorities were not included in this report. Specific indicator limitations appear in the indicator description on the left hand side of the chart pages.

The report on the health of Saskatchewan residents could not include an analysis of all known health indicators. Nor could the indicators be analysed at all known levels. This report provides an initial overview of the more common indicators. These findings will be used to generate more comprehensive analyses of specific topic areas in the future.

## References

Saskatchewan Ministry of Health Regional Health Authorities. (2007) Retrieved 2011/03/22, from <http://www.health.gov.sk.ca/health-region-list>

Statistics Canada, Health Regions and Peer Groups (2008) Retrieved 2011/03/22, from <http://www.statcan.gc.ca/pub/82-221-x/2008001/5202322-eng.htm>

Statistics Canada, Health Regions and Peer Groups. (2009) Retrieved 2011/03/28, from <http://www.statcan.gc.ca/pub/82-221-x/2009001/hrpg-eng.htm>