Errata

After Publication, we found that the map in Health Inequities in Manitoba: Is the Socioeconomic Gap in Health Widening or Narrowing Over Time? was incorrect. Figure 1.1: Distribution of Rural and Urban Neighbourhood Income Quintiles, 2006 Census Data Dissemination Areas (page 5) has been updated here. The numbers quoted in the text were correct.

As well, there was a code missing in our definition of Tuberculosis. Realizing this issue, we corrected the problem and edited the Tuberculosis sections throughout the report (pages 9-11, 123-130, 178, 182, 199, and 223).

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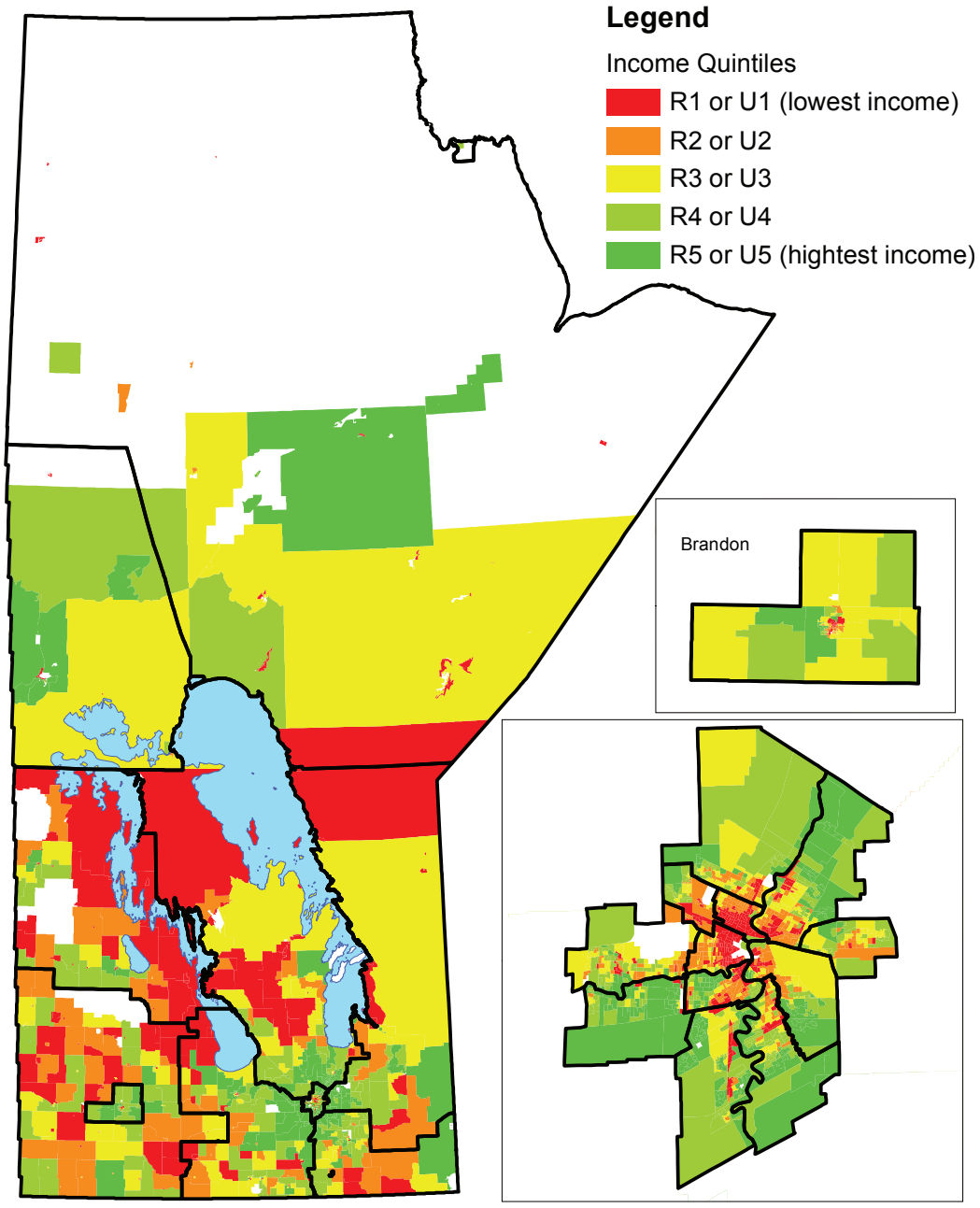
Figure 1.1: Distribution of Rural and Urban Neighbourhood Income Quintiles, 2006 Census Data Dissemination Areas*



Charles Burchill, Manitoba Centre for Health Policy. January 2009
Based on 20% Population groups of Average Household Income by Census Dissemenination Areas. Census of Canada 2006.

* Note: white areas in map indicate census areas which are not enumerated (such as park areas).

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newly diagnosed during the time period. In prevalence, a person can only contribute once to this percentage.

Some of our health services indicators are listed as rates. In this case, a rate refers to the number of occurrences divided by the size of the population. It also involves a time period in which these events occurred. For example, the rate of hospitalizations for tuberculosis for the province of Manitoba was 16.7 per 100,000 in time period one (1984/85–1988/89) and 12.8 per 100,000 in time period five (2004/05–2007/08). In a rate, a person can contribute more than one event—for example, one person could have more than one hospitalization contributing to this rate during the year.

The Various Types of Graphs

Beginning in Chapter 3, there are three types of graphs given for each indicator:

a) Time trend graphs including Disparity Rate Ratios and Disparity Rate Differences:

Separately by rural and urban neighbourhood income quintiles, each indicator shows the trend in rates or prevalence over time—usually from around 1984 to the most recent data available in 2008—for each of the neighbourhood income quintile groupings (R1 through R5 or U1 through U5). Under the graph itself is a table showing the actual rates for each of the neighbourhood income quintile groups and each of the time periods. Below this table is given further information to quantify "inequality"—**Disparity Rate Ratios (DRRs)** and **Disparity Rate Differences (DRDs)**—as well as a statistical test of the DRRs and DRDs comparing the first time period to the last time period.

Disparity Rate Ratio (DRR) is one measure of a socioeconomic gap, dividing the rate of the lowest neighbourhood income group by the rate of the highest neighbourhood income group (i.e., R1/R5 or U1/U5). This is sometimes referred to in the text as simply the "rate ratio". There is also a statistical test for the **time comparison of the DRR**, measuring the change in the DRR or rate ratio from the first to the last time period. This is given as a ratio of DRRs from the last time period to the first time period. We also provide its 95% confidence interval and the p–value. DRRs can be thought of as a way to express the relative increase or decrease in inequality between the lowest and highest neighbourhood income quintile groups over time.

An example:

In Chapter 6 (see Figure 6.9), the DRR of hospitalization due to tuberculosis is 2.72 in the first time period, meaning that the rate is almost three times as high in R1 compared to R5, and 5.83 in the last time period. This means the rate is over five times higher in R1 compared to R5 in the last time period. As well, the statistical comparison of these DRRs indicates a statistically significant increase of 114% in the rate ratio (5.83/2.72 = 2.14, $p < 0.01$; note that 2.14 translates into an 114% higher rate in the last time period).

Disparity Rate Difference (DRD) is another measure of a socioeconomic gap, subtracting the rate of the lowest neighbourhood income group from the rate of the highest neighbourhood income group (i.e., R1 minus R5 or U1 minus U5). This is sometimes referred to in the text as the "rate difference". There is also a statistical test for the time comparison of the DRD, measuring the change in the DRD or rate difference from the first to the last time period. This is given as a ratio of DRDs from the last time period to the first time period. The p–value associated is also provided. DRDs can be thought of as a way to express how many "more" events occur in the lowest neighbourhood income quintile group compared to the highest.

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An example:

In Chapter 6 (see Figure 6.11), the hospitalization events due to tuberculosis have been illustrated using a Lorenz curve. For the rural neighbourhood income quintiles in the first time period (1984/85–1988/89), you will see on the x–axis that R1 is 20% of the population, R2 an additional 20% meaning a total of 40%, R3 an additional 20.1% for a total of 60.1% and so on. For the 20% of the population in R1, they have 40.9% of the events (i.e., hospitalizations for tuberculosis). The number on the graph above R2 is 65.1%, meaning that an additional 24.2% (65.1–40.9 = 24.2) of the TB hospitalizations occur in R2 (which represents an additional 20% of the people). So a preponderance of TB hospitalization events occur within the lowest neighbourhood income quintile group. The Gini coefficient is 0.260, meaning that the area between the curve and the line of equality is 26.0% of the total area in that half of the graph. This is statistically significant, since the 95% CIs (0.187–0.333) do not include 0. In the second time period, the inequality is even larger, with the 19.9% of the R1 population in 2004/05–2007/08 experiencing 57.2% of the hospitalizations due to TB. The Gini coefficient is now 0.463 (95% CI 0.403–0.523). There was a statistically significant increase in the Gini coefficient from the first to last time period, since the 95% CI do not overlap. Similar information is also available for the urban neighbourhood income quintile groups.

c) Graphs of DRRs and DRDs over time, comparing rural and urban:

The final set of graphs illustrate information given in the time trend tables, but showing both rural and urban results as well as the 95% CIs (error bars) at each time period. The DRRs are an indication of rate ratio between the lowest and highest neighbourhood income quintile group, and the DRDs are an indication of the rate difference. Although these two graphs basically reiterate previous information, it is interesting to note historical trends in the DRRs and DRDs and in the comparison of rural to urban.

An example:

In Chapter 6 (see Figures 6.15 and 6.16), comparisons of DRRs and DRDs for hospitalization due to tuberculosis are illustrated in these graphs. The rate ratio (DRR) was statistically higher in urban compared to rural in the first time period, but appears to be statistically similar (with overlapping error bars) in all other time periods to the present. Similarly, the rate difference (DRD) was similar throughout all time periods until the most recent time period, where the rural rate difference is much higher (and statistically higher) than the urban rate difference.

The research team has found that it is important to realize the strengths and weaknesses of each way to measure inequality. Therefore, each of the outcomes was analysed through time trend graphs, relative and absolute difference measures, the use of Lorenz curves, and comparisons amongst all of these. The intent is to give the fullest picture possible of equity or inequity in a given health or social outcome.

Limitations of the Data

Because data analyses were limited to those data available in the Repository housed at MCHP, our chosen indicators were dictated by this limitation. We chose *not* to use survey data, such as the Canadian Community Health Survey (CCHS), for three reasons: 1) CCHS is sample data; and although it is chosen to be representative of the non–First Nations community participants, it is a relatively small sample compared to the Repository containing de–identified records for the entire population of Manitoba; 2) we chose to go back as far in time as possible, usually to the mid–1980s, to give an idea of change over time, but survey data at the population level are not available for this long period of time over such extensive indicators; 3) we chose to use only data which contains information about

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An example:

In Chapter 6 (see Figure 6.9), the DRD of hospitalization due to tuberculosis is 26.2 per 100,000 in the first time period, meaning there are 26.2 "more" hospitalizations in R1 compared to R5. In the last time period, the DRD is 47.9 per 100,000, meaning there are 47.9 more hospitalizations in R1 compared to R5. However, a statistical comparison of these rare events shows that the comparison of the DRDs (47.9/26.2) is 1.82, and is statistically significantly different. The conclusion would be that there was am 82% increase in hospitalizations for TB overtime.

The research team thought it critical to give both the DRR and the DRD. Rate ratios can be useful, but can also lead to misleading interpretations if used alone. For example, if rates in both the lowest neighbourhood income group (R1) and highest neighbourhood income group (R5) in the rural areas dropped substantially by exactly the same absolute amount, the rate ratio could actually be shown to increase mathematically, due to dividing by a smaller number in the second time period. To illustrate this: assume that an indicator dropped from 50 to 40 in R1 from time one to time two, and from 20 to 10 in R5. Although the DRD, the rate difference between R1 and R5, is 30 in both T1 (50 minus 20) and T2 (40 minus 10), the DRR, or rate ratio, is 50/20 or 2.5 at T1 and 40/10 or 4.0 at T2. So in one sense (the rate difference), improvement has been made in both groups and equally; but in another sense (the rate ratio), there has actually been a worsening of inequality.

b) Lorenz Curves and Gini Coefficients:

A Lorenz curve is the graphical representation of inequality. If there were equity in the population, then the outcome would be equally distributed by the population size. In other words, 20% of the population would experience 20% of the outcome event, 40% would experience 40% of the event, continuing to 100%. In our report, equity is represented by a dashed line on the Lorenz curve graph. Any bend from that, whether it be a bend upwards or downwards, illustrates inequality. A Gini coefficient, with a value between zero and one, is a mathematical measurement of the degree of inequality. A Gini coefficient of zero means that the null hypothesis is accepted, i.e., there is no inequality, and the Lorenz curve would approximate the dashed line of equal distribution throughout the population's neighbourhood income groups. A Gini coefficient of 1 means the maximal inequality, such that the lowest neighbourhood income group would have all of the disease events despite the fact it is only 20% of the population. The Gini coefficient represents the fraction of the area under the bending curve to the line of equity (as a fraction of the total area between that line and the outer bounds of the graph). The confidence intervals (CI) of the Gini coefficients were derived using bootstrapping techniques.

In our report, we are using an adjusted Lorenz curve approach, meaning that the attribution of outcome events to the differing neighbourhood income quintile groups has been adjusted for underlying differences in the groups' age and sex (male/female) structure. We give the percentage of the entire population that is within each neighbourhood income quintile group (R1 through R5 on the rural graphs, U1 through U5 on the urban graphs) for that particular indicator. Recalling that these neighbourhood income quintile groups are based upon around 20% of the population in each grouping based upon the census closest to that time period, it is important to note that some indicators select certain age groupings, or females only, so that the real percentage may vary slightly from the estimated 20%. So on each Lorenz curve, the actual percentage is shown on the x–axis, below the notation for the neighbourhood income quintile group (like R1). Also, the accumulating percentage is shown in R2 through R5. On the Lorenz curve itself, the corresponding percentage of events for R1, and the accumulating percentages R2 through R5 are indicated.

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Hospitalization due to Tuberculosis

Definition

Tuberculosis (TB) is a disease that is acquired through an infection from a bacterium called *Mycobacterium tuberculosis*. TB is highly contagious: it is spread through the air by individuals with infected lungs or throats when they cough, sneeze, or talk. An individual with a spreading TB disease will become sick; and if left untreated, the individual may die.

In this report, we calculated the average annual hospital episode rates for TB per 100,000 residents for all ages. We used ICD–9 codes 011–018 and ICD–10 codes A15–A19 to identify these hospital visits. We included all diagnosis fields for TB in dX01–dX16. Only those who had a diagnosis of TB were counted for this indicator; therefore, the code for "primary tuberculosis infection" (010.xx, coded for individuals who have a skin test for TB) has been excluded.

Time Periods	Average annual hospitalizations for TB per 100,000
T1: 1984/85–1988/89	16.67
T2: 1989/90–1993/94	11.01
T3: 1994/95–1998/99	11.32
T4: 1999/00–2003/04	10.29
T5: 2004/05–2007/08	12.81

Key Findings: Hospitalization due to Tuberculosis

Manitoba overall rates:

- From the first time period T1 (1984/85–1988/89) to the last time period T5 (2004/05–2007/08), hospitalizations due to tuberculosis rates have decreased from 16.67 per 100,000 to 12.81 per 100,000 residents provincially.

Rates by neighbourhood income quintile over time:

Rural:

- Comparing only T1 to T5, the rate of hospitalizations due to tuberculosis among rural residents increased for R1 and R2 and decreased for R4 and R5.
- The rates of hospitalizations due to tuberculosis are much higher in R1 than in the other rural neighbourhood income quintile groups.
- The disparity in hospitalizations due to tuberculosis rates between R1 and R5 increased over time between the first and last time period. The rate ratio of R1 compared to R5 was 2.72 in the first time period and 5.83 in the last time period, a statistically significant increase of 114%. The absolute difference gap in tuberculosis hospitalization rates comparing R1 to R5 was 26.22 more hospitalizations per 100,000 residents in T1, and 47.91 more in T5, a statistically significant increase over time of 83%.

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Urban:

- From T1 to T5, rates of hospitalizations due to tuberculosis dropped for U1, U2, and U3; it rose slightly for U4 and remained stable for U5.
- Depending upon the measure used, the disparity between U1 and U5 remained similar or narrowed between the first and last time period for tuberculosis hospitalization rates. The rate ratio of U1 compared to U5 was 14.46 in the first time period and 9.43 in the last time period; this decrease is not statistically significantly different. The absolute difference gap in tuberculosis hospitalization rates comparing U1 to U5 decreased over the study period; 35.20 per 100,000 more tuberculosis hospitalizations in U1 compared to U5 in the first time period, and 19.19 more per 100,000 in the last time period, for a statistically significant decrease of 45%.

Lorenz Curves:

Rural over time:

- In T1, 40.9% of tuberculosis hospitalizations were accounted for in the 20.0% of the rural population in the lowest neighbourhood income quintile group (R1), with the Gini coefficient of 0.260 indicating a statistically significant (and large) inequality.
- In T5, 57.2% of the tuberculosis hospitalizations were accounted for in the 19.9% of the population in the lowest neighbourhood income quintile group (R1), with the Gini coefficient of 0.463 indicating a statistically significant (and large) inequality.
- The Gini coefficient from T1 to T5 increased from 0.260 to 0.463, a statistically significant increase ($p<.0001$), showing increasing disparity over time.

Urban over time:

- In T1, 58.4% of tuberculosis hospitalizations were accounted for in the19.9% of the urban population in the lowest neighbourhood income quintile group (U1), with the Gini coefficient of 0.496 indicating a statistically significant (and large) disparity.
- In T5, 52.9% of tuberculosis hospitalizations were accounted for in the 20.0% of the urban population in the lowest neighbourhood income quintile group (U1), with the Gini coefficient of 0.401 indicating a statistically significant (and large) disparity.
- The Gini coefficient decreased from the first to the last time period, but this decrease was not statistically significant, suggesting stability of inequality in urban residents over that time period.

Rural compared to urban in most recent time period:

- In the most recent time period T5, there is no statistically significantly difference between Gini coefficients in rural compared to urban areas, indicating a similar level of inequality in rural and urban Manitoba for hospitalizations due to tuberculosis.

Disparity measures over time by rural and urban:

- The disparity rate ratios (DRRs) (i.e., the ratio of rates of hospitalizations due to tuberculosis in the lowest compared to the highest neighbourhood income group) are similar across time for the urban neighbourhood income quintiles, but show statistically significantly increasing disparity over time in the rural neighbourhood income quintiles. In T1, the urban rate ratio was higher than the rural gap; for subsequent time periods, the relative ratios did not differ across urban and rural areas.

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- The disparity rate differences (DRDs) for the rural neighbourhood income quintiles are statistically increasing over time, while there was statistically significantly decreasing disparity over time in the urban neighbourhood income quintiles. The absolute differences between the lowest and highest neighbourhood income groups were similar across rural and urban quintiles for all time periods except the last time period, where the rate difference in rural areas was wider than in urban areas.

What is this telling us?

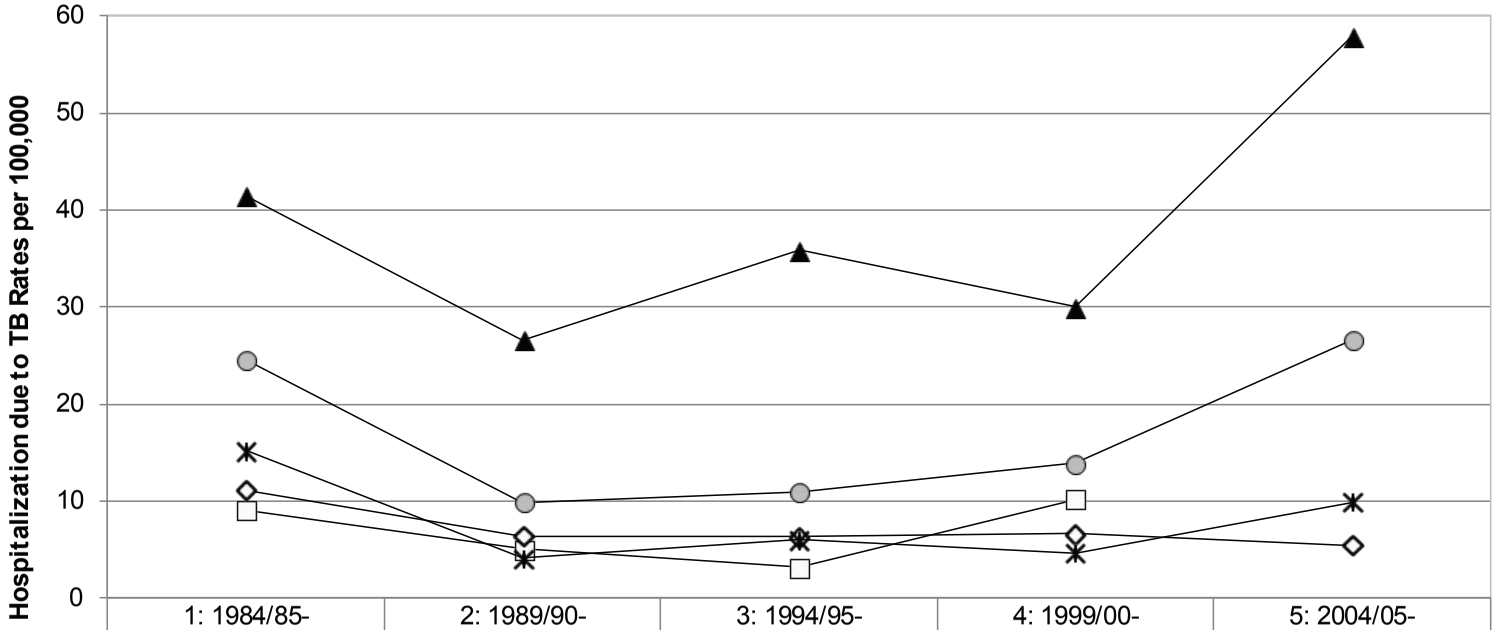
- The socioeconomic gap in rates of hospitalizations due to tuberculosis is very high in both rural and urban neighbourhood income quintiles in all time periods.
- The socioeconomic gap in tuberculosis hospitalization rates is widening over time in rural Manitoba, according to all three measures. However, in urban areas, the socioeconomic gap is narrowing according to some measures, but staying similar according to other measures.
- Although the rate ratio in tuberculosis hospitalization rates by neighbourhood income quintile groups was higher in urban compared to rural in the first time period, for all subsequent time periods the rate ratio was similar between rural and urban areas. On the other hand, the rate difference by neighbourhood income quintile groups was similar between rural and urban areas for all time periods except the last, when the gap was wider in rural compared to urban areas.
- Over time, the rate ratio is similar in urban neighbourhood income groups, but is widening in rural neighbourhood income groups. The rate difference is narrowing over time in urban neighbourhood income quintile groups, but staying the same over time for the rural neighbourhood income quintile groups.

Where to from here?

- An examination of all the factors that lead to hospitalization for tuberculosis should be undertaken to understand where, along the pathway, success has been found in decreasing hospitalization rates in low neighbourhood income groups in urban areas. For example: a person is exposed and the tuberculosis becomes latent or active; they seek or do not seek prompt primary care; they are accurately diagnosed with appropriate medical tests; they are treated with appropriate medications to which their particular tuberculosis is sensitive; and, thorough contact tracing is done to limit the spread to other people. This is not an exhaustive list as things such as exposure also depend on factors such as housing quality, overcrowding, etc.
- Investigation into the differences between rural and urban tuberculosis programs should be completed so the successes of the urban program could be applied to rural areas.

Figure 6.9: Hospitalization Due to Tuberculosis Rates Over Time by Rural Income Quintile

Adjusted by (2004/05-2007/08) age & sex, annual rate per 100,000 residents, all ages



	1: 1984/85-1988/89	2: 1989/90-1993/94	3: 1994/95-1998/99	4: 1999/00-2003/04	5: 2004/05-2007/08
NF (Not displayed)	16.66	17.34	29.72	28.08	28.63
R1 (lowest income)	41.42	26.61	35.87	29.99	57.83
R2	24.52	9.91	11.00	13.93	26.63
R3	9.12	5.10	3.18	10.21	s
R4	11.13	6.42	6.32	6.68	5.49
R5 (highest income)	15.21	4.16	6.02	4.71	9.92
Disparity Rate Ratios (R1/R5)	2.72	6.40	5.96	6.37	5.83
Disparity Rate Differences (R1-R5)	26.22	22.45	29.85	25.28	47.91

Time Period (fiscal years)

Comparison of Disparity Rate Ratios T5 to T1: 2.14 (95% CI 1.21, 3.82) p< .01

Comparison of Disparity Rate Differences T5 to T1: 1.83 p< .001

Source: Manitoba Centre for Health Policy, 2010

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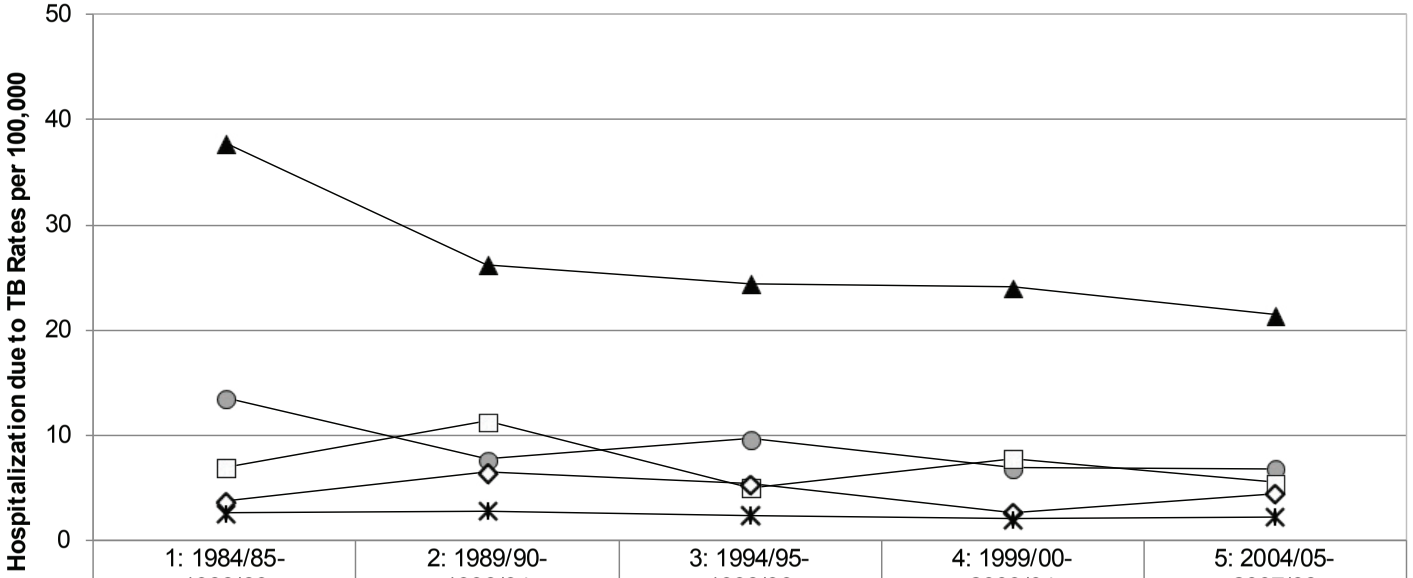
Figure 6.10: Hospitalization Due to Tuberculosis Rates Over Time by Urban Income Quintile

Adjusted by (2004/05-2007/08) age & sex, annual rate per 100,000 residents, all ages



	1: 1984/85-1988/89	2: 1989/90-1993/94	3: 1994/95-1998/99	4: 1999/00-2003/04	5: 2004/05-2007/08
NF (Not displayed)	16.66	17.34	29.72	28.08	28.63
U1 (lowest income)	37.81	26.21	24.40	24.07	21.47
U2	13.56	7.74	9.66	6.93	6.86
U3	6.99	11.36	5.02	7.82	5.53
U4	3.74	6.47	5.35	2.68	4.50
U5 (highest income)	2.61	2.82	2.41	2.08	2.28
Disparity Rate Ratios (U1/U5)	14.46	9.31	10.11	11.58	9.43
Disparity Rate Differences (U1-U5)	35.20	23.40	21.98	21.99	19.19

Time Period (fiscal years)

Comparison of Disparity Rate Ratios T5 to T1: 0.65 (95% CI 0.28, 1.50) NS

Comparison of Disparity Rate Differences T5 to T1: 0.55, p< .001

Source: Manitoba Centre for Health Policy, 2010

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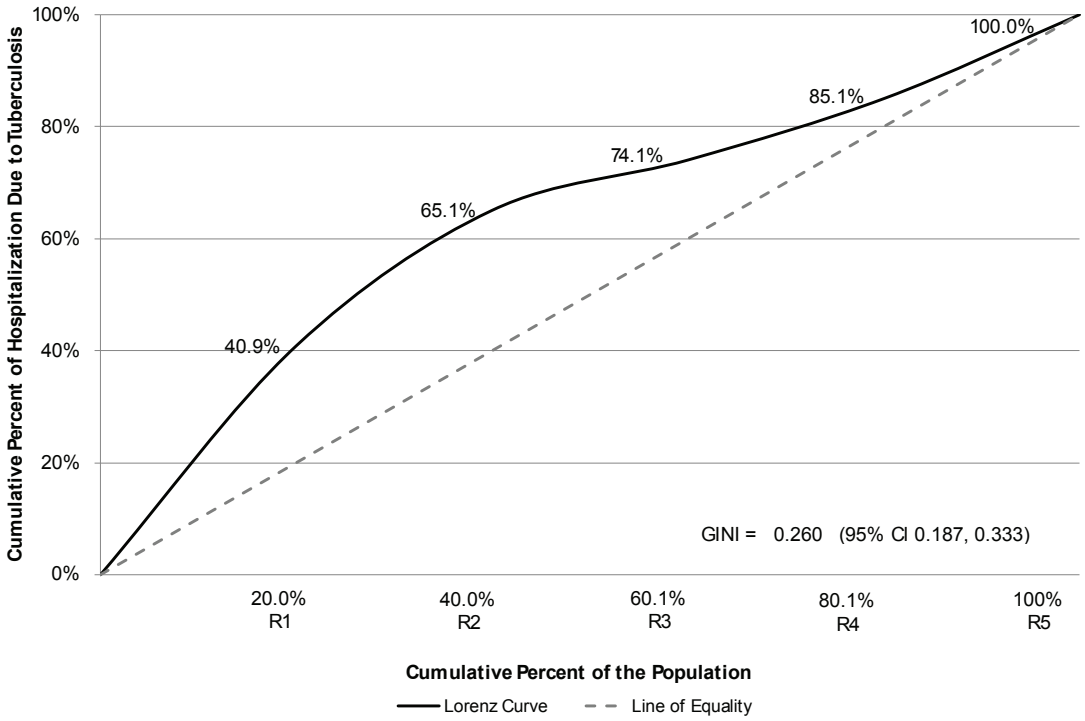
Figure 6.11: Adjusted Lorenz Curve for Hospitalization Due to Tuberculosis in Rural Areas 1984/85-1988/89

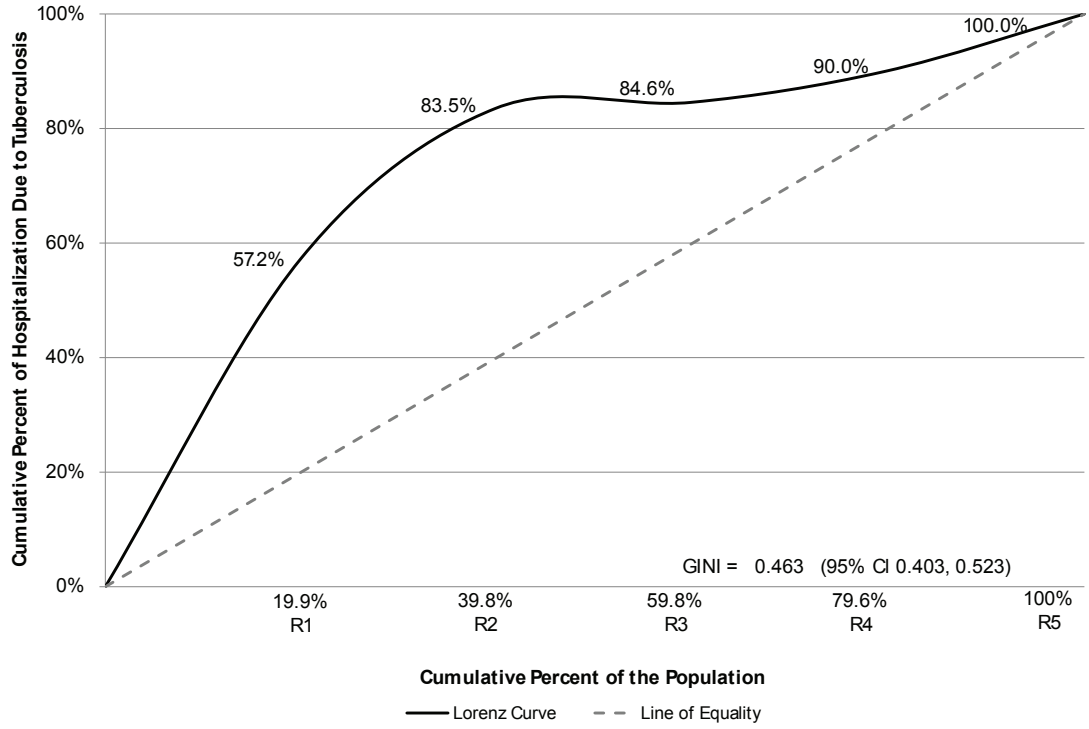
Adjusted by (2004/05-2007/08) age & sex, residents, all ages



Source: Manitoba Centre for Health Policy, 2010

Figure 6.12: Adjusted Lorenz Curve for Hospitalization Due to Tuberculosis in Rural Areas 2004/05-2007/08

Adjusted by (2004/05-2007/08) age & sex, residents, all ages



Source: Manitoba Centre for Health Policy, 2010

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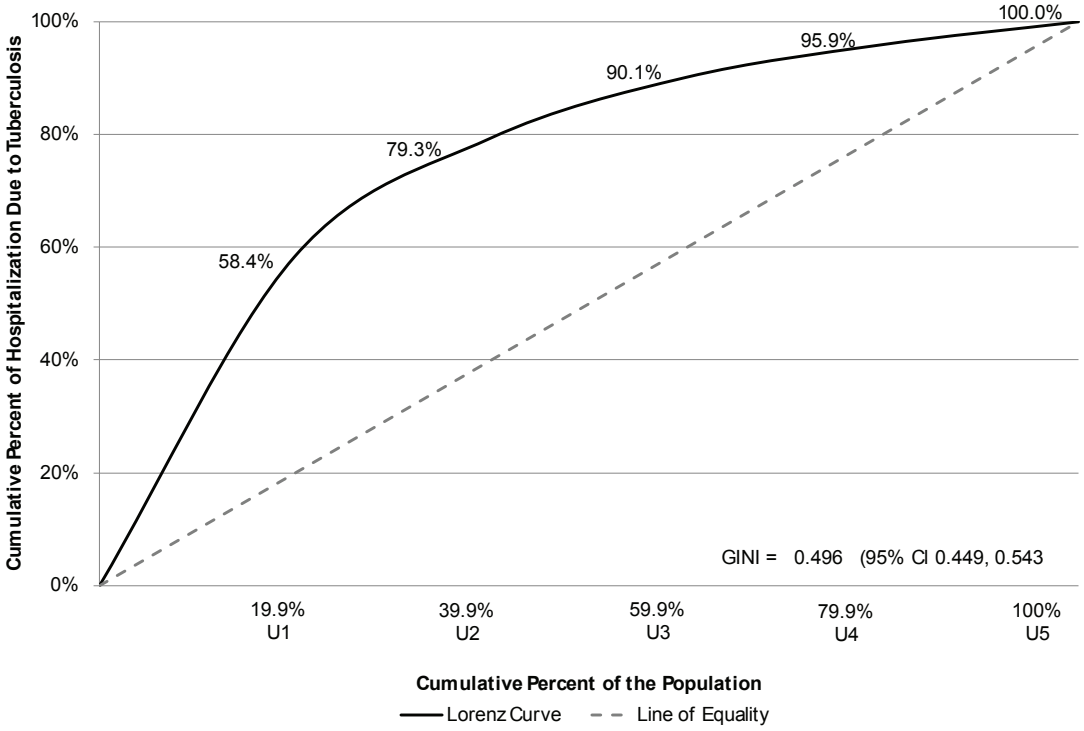
Figure 6.13: Adjusted Lorenz Curve for Hospitalization Due to Tuberculosis in Urban Areas 1984/85-1988/89

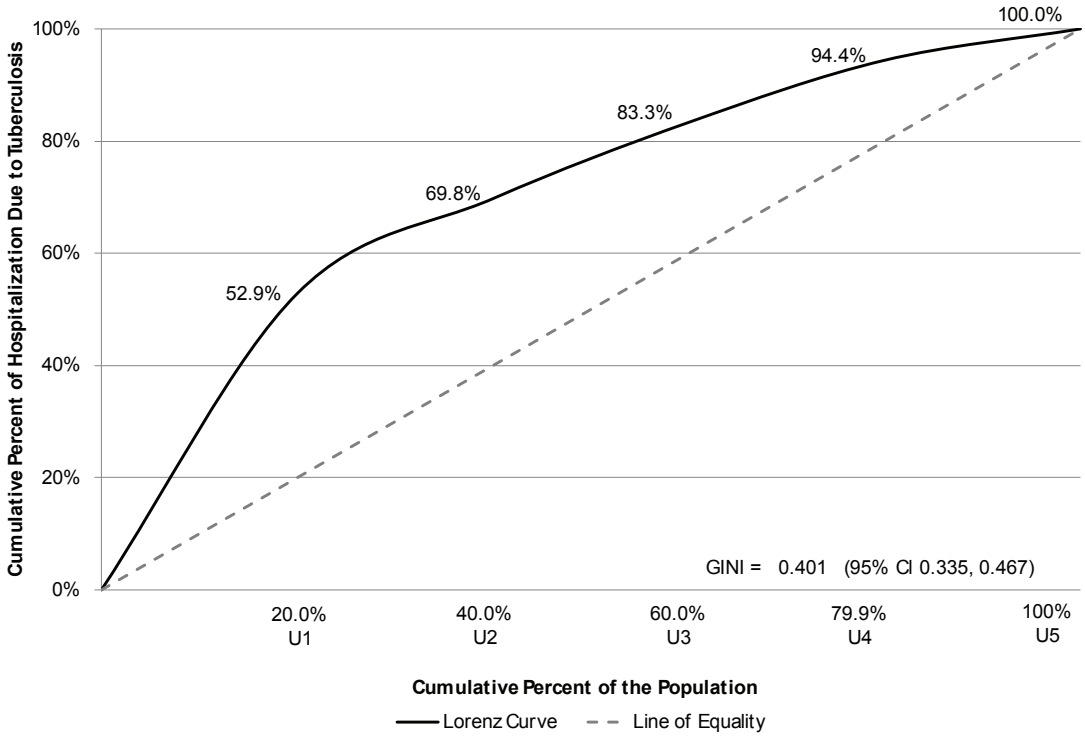
Adjusted by (2004/05-2007/08) age & sex, residents all ages



Source: Manitoba Centre for Health Policy, 2010

Figure 6.14: Adjusted Lorenz Curve for Hospitalization Due to Tuberculosis in Urban Areas 2004/05-2007/08

Adjusted by (2004/05-2007/08) age & sex, residents, all ages



Source: Manitoba Centre for Health Policy, 2010

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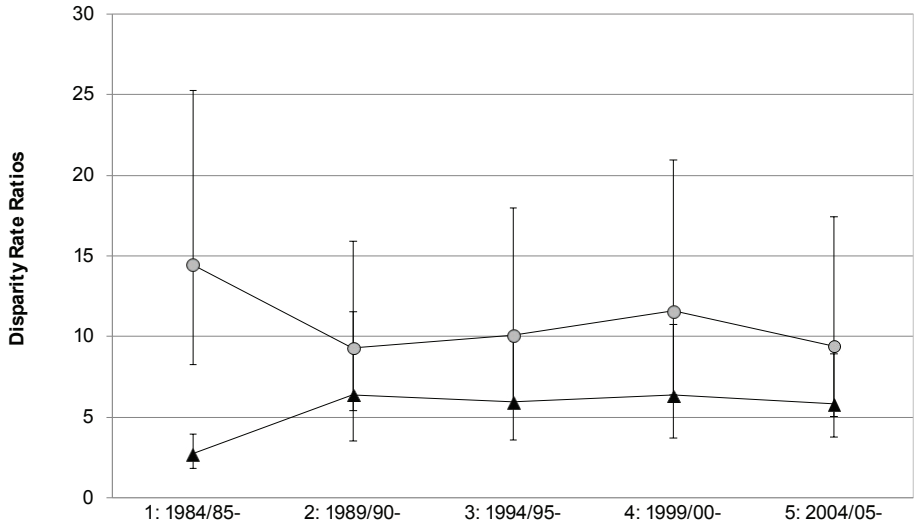
Figure 6.15: Hospitalization Due to Tuberculosis Disparity Rate Ratios by Urban and Rural Income Quintile

Adjusted by (2004/05-2007/08) age & sex, per 100,000 residents, all ages



	1: 1984/85-1988/89	2: 1989/90-1993/94	3: 1994/95-1998/99	4: 1999/00-2003/04	5: 2004/05-2007/08
Urban Disparity Rate Ratios	14.46	9.31	10.11	11.58	9.43
Rural Disparity Rate Ratios	2.72	6.40	5.96	6.37	5.83

Time Period (fiscal years)

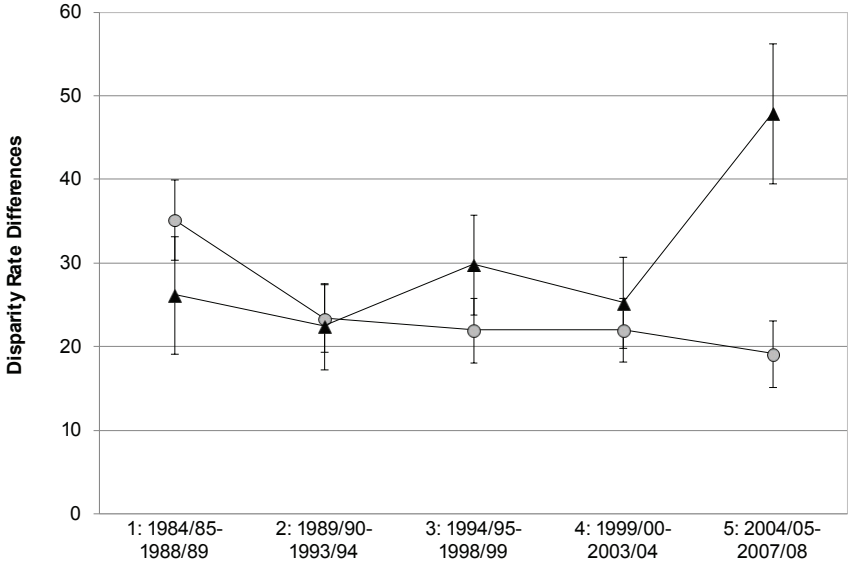
Urban Disparity Rate Ratios T5 to T1: 0.65 (95% CI 0.28, 1.50) NS

Rural Disparity Rate Ratios T5 to T1: 2.14 (95% CI 1.20, 3.82) p< .01

Source: Manitoba Centre for Health Policy, 2010

Figure 6.16: Hospitalization Due to Tuberculosis Disparity Rate Differences by Urban and Rural Income Quintile

Adjusted by (2004/05-2007/08) age & sex, per 100,000 residents, all ages



	1: 1984/85-1988/89	2: 1989/90-1993/94	3: 1994/95-1998/99	4: 1999/00-2003/04	5: 2004/05-2007/08
Urban Disparity Rate Differences	35.20	23.40	21.98	21.99	19.19
Rural Disparity Rate Differences	26.22	22.45	29.85	25.28	47.91

Time Period (fiscal years)

Urban Disparity Rate Differences T5 to T1: 0.55, p< .001

Rural Disparity Rate Differences T5 to T1: 1.83, p< .001

Source: Manitoba Centre for Health Policy, 2010

Table 9.1: Continued

Indicator	RURAL change over time			URBAN change over time			RURAL vs. URBAN		
	DRR	DRD	Gini	DRR	DRD	Gini	DRR	DRD	Gini R vs. U
Amputations due to Diabetes (rate of amputations per 1,000 people aged 19+ with diabetes)	NS T1: 2.00 T8: 3.38	NS T1: 13.9 T8: 18.3	↑ T1: 0.138 T8: 0.255	NS T1: 2.53 T8: 2.77	NS T1: 11.3 T8: 9.9	NS T1: 0.170 T8: 0.211	NS	Higher in rural (since T4)	NS T8 rural: 0.266 urban: 0.211
Ischemic Heart Disease (% of persons aged 19+ with a diagnosis of IHD)	↑ (45%) T1: 1.07 T8: 1.55	↑ (422%) T1: 0.50 T8: 2.59	↑ T1: 0.019 T8: 0.074	NS T1: 1.07 T8: 1.33	↑ (196%) T1: 0.51 T8: 1.51	↑ T1: 0.011 T8: 0.057	NS	Higher in urban T2; higher in rural T4, T6-T8	NS T8 rural: 0.074 urban: 0.057
Multiple Sclerosis (persons aged 16+ diagnosed with MS over a six-year period, per 100,000 persons aged 16+)	NS T1: 0.78 T4: 0.61	NS T1: -45.3 T4: -110.9	NS T1: 0.042, NS T4: 0.054	NS T1: 0.99 T4: 0.96	NS T1: -2.3 T4: -10.7	NS T1: 0.010, NS T4: 0.008, NS	NS except at T4, where greater in rural	NS except at T4, where greater in rural	NS T4 rural: 0.054 urban: 0.008
Chapter 6: Primary Care and Prevention									
Continuity of Care (% of population having at least 50% of their physician visits over a two-year period to the same physician)**	NS T1: 0.88 T12: 0.83	↑ (26%) T1: -9.31 T12: -11.70	↑ T1: 0.026 T12: 0.037	NS T1: 0.93 T12: 0.92	NS T1: -5.76 T12: -5.99	NS T1: 0.015 T12: 0.016	NS to mid-1990s; very slightly greater in rural after	Greater gap in rural	Greater inequality in rural T12 rural: 0.037 urban: 0.016
Hospitalizations for TB (average annual rate of persons per 100,000 who were hospitalized for TB)	↑(114%) T1: 2.72 T5: 5.83	↑(83%) T1: 26.22 T5: 47.91	↑ T1: 0.260 T5: 0.463	NS T1:14.46 T5: 9.43	↓ (45%) T1: 35.20 T5: 19.19	NS T1: 0.496 T5: 0.401	NS except at T1 where urban is higher	NS except at T5 where rural is greater	NS T5 rural: 0.463 urban: 0.401
Cervical Cancer Screening (% females aged 18-69 having at least one Pap test over three years)**	↑ (12%) T1: 0.82 T8: 0.72	↑ (53%) T1: -12.03 T8: -18.37	↑ T1: 0.035 T8: 0.059	NS T1: 0.84 T8: 0.80	↑ (27%) T1: -11.55 T8: -14.62	↑ T1: 0.033 T8: 0.041	NS or slightly greater in rural	Mostly greater in rural	Greater inequality in rural T8 rural: 0.059 urban: 0.041

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The "Not Found" Neighbourhood Income Group: A group with a high risk profile

The "Not Found" (NF) group was rarely discussed in the text despite the data available in the time trend graphs. This group includes people residing in postal codes which may represent an institution (such as a jail or nursing home) or who are wards of the province (such as Child & Family Services or the Public Trustee). Chapters 1, 2, and the Glossary go into greater detail in describing this group. "NF" could represent a mix of persons who may be at risk of poorer health outcomes than the general population. This may be a group of interest in a future study, especially given their profile. Table 9.4 shows a comparison in the *most recent time period* for the 18 indicators. It compares NF rates with the overall Manitoba rate and the lowest rural and urban neighbourhood income quintile rates.

Table 9.4: Comparison of the Not Found (NF) Neighbourhood Income Group
with the overall Manitoba rate and the lowest neighbourhood income quintile group rates, for the most recent period

Indicator	Manitoba rate	NF rate	Lowest rural neighbourhood income group (R1) rate	Lowest urban neighbourhood income group (U1) rate
PMR (per 1,000)	3.33	23.28	4.76	5.31
PYLL (years per 1,000)	60.53	554.18	111.57	100.89
Under age 5 Mortality (per 1,000)	1.58	12.08	2.09	2.10
Teenage pregnancy (per 1,000)	49.91	53.98	107.66	105.56
High school completion (includes band schools)	77.31%	57.47%	52.01%	53.29%
Dental extraction (per 1,000 aged 0-5)	17.06	23.46	59.51	18.14
Breastfeeding initiation (% newborns)	80.13%	69.19%	62.51%	74.71%
Diabetes prevalence (%)	8.17%	11.24%	14.01%	10.36%
Amputations due to diabetes (per 1,000 with diabetes)	11.58	20.12	26.01	15.53
Ischemic heart disease (%)	4.47	6.06	7.27	6.14
MS (per 100,000)	275.65	1922.36	175.63	266.33
Continuity of care (%)	69.63%	73.00%	58.30%	67.97%
Hospitalization for TB (per 100,000)	12.81	28.63	57.83	21.47
Cervical cancer screening (%)	65.50%	43.80%	48.10%	59.74%
Prevalence of cumulative mental illness (%)	23.56%	74.28%	20.43%	29.13%
Prevalence of dementia (% aged 55+)	7.35%	68.24%	8.96%	12.36%
Suicide and suicide attempts (per 1,000)	0.71	2.20	1.91	1.25
Post–AMI beta-blockers (% having an AMI)	81.28%	65.45%	75.30%	81.50%

Source: Manitoba Centre for Health Policy, 2010

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Health Equity

Health equity suggests that all people can reach their full health potential and should not be disadvantaged from attaining it because of their race, ethnicity, religion, gender, age, social class, socioeconomic status, or other socially determined circumstance (Dahlgren & Whitehead, 2006).

Health Inequality

Variations in health status across individuals in a population.

Health Inequity

Unfair and avoidable or remediable differences in health among social groups (Bonnefoy et al; 2007)

High School Completion (Graduation)

Level of educational attainment where the individual has completed high school (completed Grade 12). Graduated students are identified in the student record or if the student has earned 28 or more credits or if the student earned four or more Grade 12 credits during high school. In this report, individuals were followed from Grade 9 for six years to ensure that those graduating late are identified as high school graduates.

Hospitalization due to Tuberculosis (TB)

Tuberculosis (TB) is a disease that is acquired through an infection from a bacterium called *Mycobacterium tuberculosis*. TB is highly contagious: it is spread through the air by individuals with infected lungs or throats when they cough, sneeze, or talk. An individual with a spreading TB disease will become sick; and if left untreated, the individual may die.

In this report, we calculated the hospital episode rates for TB per 100,000 residents for all ages. We used ICD–9 codes 011–018 and ICD–10 codes A15–A19 to identify these hospital visits. We included all diagnosis fields for TB in dX01–dX16 (all diagnosis fields for TB in up to 16 diagnoses which are recorded on each hospital claim). Only those who have developed the TB disease were counted for this indicator; therefore, the code for "primary tuberculosis infection" (010.xx—coded for individuals who have a skin test for TB) has been excluded.

Income Quintile (definition based upon census data)

Assignment of an income quintile to a DA in the census is done at an aggregate level rather than at an individual level. Dissemination areas (formally enumeration areas prior to 2001) are assigned to an income quintile based on the average household income cut–offs, developed by MCHP to create income quintiles. Each income quintile based on the Manitoba population, U1 through to U5 and R1 through to R5, have corresponding minimum and maximum average household income values. To classify DAs to one of the income quintiles, each DA was first determined to be either urban (Winnipeg and Brandon) or rural. Then the DA was sorted into one of the quintiles based on where the average household income of that DA lay within the quintile cut–offs. For DAs with missing or suppressed income, imputation for an average household income was attempted. Where possible, the Census Sub–Division's (CSD) average household income was used to approximate the DA's average household income. However, DAs associated with First Nations communities often have a missing average household income at both the DA and CSD level. Therefore, a different imputation was done; the mean household income for the North and South First Nation communities were calculated and then assigned to each North and South First Nation DA respectively.

Table A2.15: Crude Numbers for Hospitalization Due to Tuberculosis

Income Quintile	1984/85-1988/89			1989/90-1993/94			1994/95-1998/99		
	Average Number of Hospitalizations Due to Tuberculosis Per Year	Population	Crude Rate per 100,000	Average Number of Hospitalizations Due to Tuberculosis Per Year	Population	Crude Rate per 100,000	Average Number of Hospitalizations Due to Tuberculosis Per Year	Population	Crude Rate per 100,000
Income Not Found	2	36,279	22.05	2	47,782	22.05	4	53,663	23.02
Lowest Rural R1	32	439,370	36.64	21	442,223	36.64	29	447,071	23.74
R2	20	439,280	23.22	8	436,924	23.22	9	441,529	9.61
R3	8	441,717	8.60	4	442,047	8.60	3	445,324	4.98
R4	9	439,993	9.77	5	438,105	9.77	5	440,551	5.93
Highest Rural R5	11	436,815	12.36	3	424,288	12.36	5	455,699	3.54
Lowest Urban U1	49	668,135	36.67	37	688,879	36.67	35	695,366	27.15
U2	18	669,599	13.29	11	687,556	13.29	14	686,273	7.71
U3	9	669,118	6.73	15	687,952	6.73	7	685,216	11.19
U4	4	669,997	3.28	8	687,739	3.28	7	686,429	5.53
Highest Urban U5	3	674,889	2.37	4	690,503	2.37	3	678,971	2.61

Income Quintile	1999/00-2003/04			2004/05-2007/08		
	Average Number of Hospitalizations Due to Tuberculosis Per Year	Population	Crude Rate per 100,000	Average Number of Hospitalizations Due to Tuberculosis Per Year	Population	Crude Rate per 100,000
Income Not Found	3	43,078	37.14	4	41,615	33.64
Lowest Rural R1	23	446,346	26.21	48	367,579	52.51
R2	13	447,202	14.09	25	366,579	26.73
R3	9	447,349	10.28	s	s	s
R4	6	447,087	6.49	5	365,399	5.47
Highest Rural R5	4	470,255	4.25	9	376,067	9.31
Lowest Urban U1	35	695,589	25.45	32	568,796	22.33
U2	10	695,690	6.90	11	566,453	7.41
U3	12	695,582	8.34	8	566,095	5.83
U4	4	695,529	2.59	7	566,412	4.59
Highest Urban U5	3	695,001	2.01	3	569,295	2.28

s = suppressed

Source: Manitoba Centre for Health Policy, 2010

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