Measuring health inequalities in Queensland: Current picture and trends since 2001

Queensland Government

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1. Introduction

The overall level of health and wellbeing of Queenslanders is relatively high.[1] However, there are significant disparities in the health outcomes of different populations. People who live in remote areas or areas with poorer socioeconomic conditions tend to have worse health than people from other areas. The health gap between Indigenous and non-Indigenous people is also well documented.[2, 3] Several factors contribute to the health gap including differences in health behaviours, health system access, and social, political and environmental conditions.[2, 4]

The term 'health inequality' refers to the difference in health status in the population resulting from avoidable social, economic and geographic influences and the undesirable impact this can have on individuals and the community. The differences are considered inequalities because if a subgroup of the population can achieve a high standard of health, why should that not be available to the whole population? Important elements that contribute to health inequality include limited access to health services due to geographic or cultural barriers, and to material resources necessary for health, such as good housing, education, employment, healthy food, and social and community infrastructure. In this report the level of health inequality in Queensland is described and, based on trends in selected conditions, the important question is addressed: are health inequalities improving or getting worse? This report expands on health inequalities in Queensland discussed in The Health of Queenslanders 2010: Third Report of the Chief Health Officer Queensland.[1]

A wide range of summary measures have been developed to quantify health inequality, such as the Gini coefficient, index of dissimilarity and relative index of inequality.[5-7] However, these measures can be difficult to interpret, and are beyond the scope of this report. Health inequalities can be more clearly described by examining measures of the effect and impact of variables such as socioeconomic disadvantage, remoteness and Indigenous status on selected health outcomes (Table 1). Both absolute and relative differences have limitations if used in isolation and so it is important to consider these together to provide a full description of health inequalities. For example, absolute differences are influenced by the number of cases in the whole population while relative differences are strongly affected by the size of the denominator population. The established epidemiological approach looks at the difference in the health status of populations as well as the impact of those differences on health outcomes. This conceptually simple approach can be used to determine the level and the trend in inequality.

Table 1: Effect and impact measures of health inequality

	Absolute	**Relative**
Effect	Rate difference	Rate ratio
Impact	Excess	Excess %

2. Methods

Identifying and quantifying inequality is dependent on the availability of reliable data to support such investigations. In Australia, health datasets are coded for area based socioeconomic and remoteness categories. Socioeconomic quintiles are based on the Socioeconomic Indexes for Areas (SEIFA) Index of relative advantage/disadvantage value for Queensland SLAs in 2001. The application of this Index and related information is described in supporting documents.[1,8] Remoteness categories are based on 2006 statistical local areas values in the Accessibility/Remoteness Index of Australia (ARIA+): major cities (0-2.0), regional (>2.0-5.92) and remote (>5.92).

Identification of Indigenous Australians is now of sufficient quality to report Indigenous health inequalities. However, for other key groups such as culturally and linguistically diverse populations the data are either not collected or of limited usefulness. Therefore, it is only possible to assess inequalities in the Queensland population for which there are reliable data.

In this report two measures of inequality in disease and risk factor prevalence are used:

- First, the rate of disease in one population is compared with the rate in another. This is a measure of effect and can be used to describe the difference in absolute terms (rate difference) and relative terms (rate ratio).
- Second, the impact of the difference in health status of one population compared with another is quantified in absolute terms by calculating the number of excess cases, hospitalisations or deaths. Using the example of socioeconomic disadvantage, total excess deaths due to disadvantage can be determined by estimating the difference in deaths if all areas had the same age standardised rates

as the most advantaged population. The number of excess deaths divided by the number of recorded deaths gives the excess percentage, a relative measure of impact.

The interpretation for each measure is summarised in Table 2. The major advantage of the impact measures is that a summary value of the level of inequality across all categories can be calculated, whereas effect measures can only be used to compare differences between two categories. For this reason, impact measures have been used to summarise health inequalities in this report. However, it is important to note that individual causes of excess deaths or hospitalisations are potentially interrelated and cannot be added together.

Table 2: Interpreting measures of health inequality

Measure	Interpretation
Rate difference	Additional cases per 100,000 population between categories
Rate ratio	Comparative proportion in rates between categories
Excess	Number of cases that would have been avoided if all groups had the same rate
Excess %	Percentage of total cases that would have been avoided if all groups had the same rate

2.1 Calculating measures of effect

Age-standardised death and hospitalisation rates were determined using direct age-standardisation by applying the 5-year age-specific rates to the 2001 Australian population. Age-standardised rates were used for rate difference and rate ratio calculations in order to remove the influence of age when comparing populations with different age structures. A hypothetical worked example for calculating measures of effect is outlined in Box 1.

Box 1: Calculating measures of effect - hypothetical worked example

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Population	717,893	985,448	874,056	840,119	530,673
Age standardised rate (deaths per 100,000)	298	253	247	207	184

Rate difference
The age standardised rate in Quintile 1 minus Quintile 5 = 298 - 184 = 114 per 100,000 population

Rate ratio
The age standardised rate in Quintile 1 divided by Quintile 5 = 298 / 184 = 1.6

Interpretation: The rate in Quintile 1was 60% greater than Quintile 5, equating to 114 more deaths per 100,000 population.

2.2 Calculating measures of impact

There are two approaches to measuring the impact of health inequalities. The first approach can be calculated using age standardised rates only, as shown in Box 2, and is also described in detail by the Australian Institute of Health and Welfare (AIHW) in relation to socioeconomic inequalities in cardiovascular disease.[9] While this method is easier to perform, it has limitations. If the underlying age structure of the population in each category differs markedly, the age standardised process artificially influences the excess calculations. The second approach requires age-specific counts and population numbers as shown in Box 3 and, while more complex, it internally adjusts for differences in the underlying age structure of the categories.

Table 3 shows the impact of socioeconomic status, remoteness and Indigenous status on premature deaths in 2007 using the two different methods. Both approaches provide very similar results for socioeconomic inequalities and relatively similar results for remoteness, but are markedly different for Indigenous excess. This is because the age standardised rates used in method one inflate the number of excess deaths in the Indigenous population due to the very different underlying age structure. Method one therefore provides a reasonable approximation for the impact of socioeconomic and remoteness inequalities but cannot be used to calculate excess between groups where the underlying age structure is markedly different for example, Indigenous and non-Indigenous populations. Where possible, the second approach should be used if age specific data are available. When such data are not available, the first method should be used to report the impact of socioeconomic and remoteness only.

Table 3 : Comparison of methods to calculate impact of socioeconomic status, remoteness and Indigenous status on inequalities in premature death in Queensland, 2007

	Method 1		Method 2	
	Excess premature deaths	**Excess %**	**Excess premature deaths**	**Excess %**
Socioeconomic	2,240	23.6	2,306	23.7
Remoteness	504	5.2	448	4.6
Indigenous	648	6.5	308	3.2

Box 2: Calculating measures of impact Method 1 - hypothetical worked example of impact of socioeconomic status on premature deaths in 2007

The age standardised rate of premature death and the population in each socioeconomic quintile in Queensland in 2007 were:

	Most disadvantaged	**Quintile 2**	**Quintile 3**	**Quintile 4**	**Most advantaged**	**Total**
Population	717,893	985,448	874,056	840,119	530,673	3,948,189
Age standardised rate (deaths per 100,000)	297.7	252.8	246.5	207.4	183.9	
Rate difference (Q1 minus Q5)	113.8	68.9	62.6	23.5	-	
Rate x population (age standardised deaths)	2,137	2,491	2,155	1,742	976	9,501
Excess	817	679	547	197	-	2,240
Excess %						23.6%

Method 1
Excess
For each quintile, the population multiplied by the rate difference compared to Quintile 5
For example:
*Quintile 1 = (113.8 / 100,000) * 717,893 = 817*
*Quintile 2 = (68.9 / 100,000) * 985,448 = 679*
*Quintile 3 = (62.6 / 100,000) * 874,056 = 547*
*Quintile 4 = (23.5 / 100,000) * 840,119 = 197*

Total excess = sum of excess in each group = 817 + 679 + 547 + 197 = 2,240
Interpretation: 2,240 cases would have been avoided if the rate for Quintile 5 applied the whole population

Excess %
The total excess divided by the (age standardised) total number of deaths
Excess % = 2,240 / (2,137 + 2,491 + 2,155 + 1,742+ 976)
= 2,240 / 9,501
= 23.6%

Interpretation: 23.6% of deaths in Queensland would have been avoided if the rate for Quintile 5 had applied to all groups

Box 3: Calculating measures of impact Method 2 - impact of socioeconomic status on premature deaths in 2007

Excess

For each 5-year age group, the age specific rate in Quintile 5 is multiplied by the population in the respective age group in all the other categories to determine the expected number of deaths.

	Number of deaths					Population				
Age	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
0-4	92	77	82	68	24	51,908	70,365	63,262	55,691	32,536
5-9	6	12	8	4	2	54,506	72,356	64,764	55,411	32,111
10-14	7	12	4	4	8	57,905	75,745	66,985	58,012	33,384
15-19	27	39	25	26	12	52,482	73,016	64,478	62,311	40,180
20-24	32	49	47	36	16	45,170	68,049	62,437	69,756	54,882
25-29	35	42	35	39	31	43,752	66,397	62,230	65,029	47,212
30-34	46	71	37	46	21	45,403	69,524	66,466	65,598	43,641
35-39	80	85	65	48	27	50,720	75,429	71,839	68,184	44,991
40-44	84	99	82	61	33	51,388	74,443	69,210	65,409	41,443
45-49	124	156	140	96	53	53,084	75,088	68,811	64,380	40,262
50-54	179	204	167	128	67	50,537	68,398	60,227	58,441	35,824
55-59	282	306	223	192	100	50,260	64,599	54,075	53,457	32,015
60-64	368	408	292	263	134	46,103	55,653	44,127	44,038	24,533
65-69	468	485	343	307	168	36,712	42,926	31,660	30,859	16,071
70-74	621	603	501	386	160	27,963	33,460	23,485	23,543	11,588

For example in the 0-4 year age group the age specific rate in category 5 = 24 / 32,536. Therefore we would expect (24 / 32,536) x 51,908 = 38 deaths in Quintile 1 had the rate been the same as in Quintile 5.

The number of excess deaths is then calculated by subtracting the observed number of deaths from the expected number and the sum of the excess deaths across all quintiles equals the total number of excess deaths.

For example in the 0-4 year age group there were actually 92 deaths, therefore the excess in this age group is 92 - 38 = 54. This is then repeated for each age group and summed as shown below.

	Expected deaths					Excess deaths					
Age	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	
0-4	38	52	47	41	24	54	25	35	27	0	
5-9	3	5	4	3	2	3	7	4	1	0	
10-14	14	18	16	14	8	-7	-6	-12	-10	0	
15-19	16	22	19	19	12	11	17	6	7	0	
20-24	13	20	18	20	16	19	29	29	16	0	
25-29	29	44	41	43	31	6	-2	-6	-4	0	
30-34	22	33	32	32	21	24	38	5	14	0	
35-39	30	45	43	41	27	50	40	22	7	0	
40-44	41	59	55	52	33	43	40	27	9	0	
45-49	70	99	91	85	53	54	57	49	11	0	
50-54	95	128	113	109	67	84	76	54	19	0	
55-59	157	202	169	167	100	125	104	54	25	0	
60-64	252	304	241	241	134	116	104	51	22	0	
65-69	384	449	331	323	168	84	36	12	-16	0	**Total**
70-74	386	462	324	325	160	235	141	177	61	0	**excess**
Total						902	707	507	190	0	**2,306**

Interpretation: 2,306 cases would have been avoided if the rate for category 5 applied to the whole population

Excess % = total excess divided by the total number of actual deaths
= 1,250 / 9,710 = 23.7%

Interpretation: 23.7% of cases would have been avoided if the rate for category 5 had applied to the whole population.

3. Current levels of inequality

3.1 Burden of disease and injury

Burden of disease is a concept of population health that aims to quantify the gap between the ideal of living to old age in good health, and the current situation where healthy life is shortened by illness, injury, disability and premature death. It is an important summary measure for health policy and planning because it quantifies the total impact of health conditions on the individual at the population level in a comparable and consistent way.

Burden of disease is measured using the Disability Adjusted Life Year (DALY). The DALY combines fatal and non-fatal outcomes into a single measure by summing years of healthy life lost to disability (YLD) associated with disease or injury and premature death, or years of lost life (YLL). The DALY gives a more comprehensive picture of health status compared to traditional statistics, such as disease incidence, prevalence, hospital separations and death rates. This is because the DALY combines information regarding the incidence, duration and severity of disease or injury. Impact measures of health inequalities in disease burden were only able to be calculated using Method 1 with the data available.

The burden of disease in Queensland in 2006 varied by Indigenous status, socioeconomic disadvantage, and remoteness as shown in
Figure **1**.[10] Indigenous status had the largest relative difference in age standardised DALY rate with rates for Indigenous Queenslanders 2.3 times higher than the non-Indigenous population (Table 4). In comparison, the rate ratios for the remote areas compared to major cities and the most socioeconomically disadvantaged areas compared to the most advantaged areas were 1.5 and 1.4, respectively. In other words, rates were 50% higher in remote areas than major cities and 40% higher in disadvantaged areas than advantaged areas. Using the first method outlined above to calculate the impact, there were 92,500 DALYs (17.8% of all DALYs) associated with socioeconomic inequalities, and 33,600 DALYs (6.4%) associated with remoteness inequalities.

Figure 1: Burden of disease and injury rate by Indigenous status, socioeconomic status and remoteness, Queensland, 2006

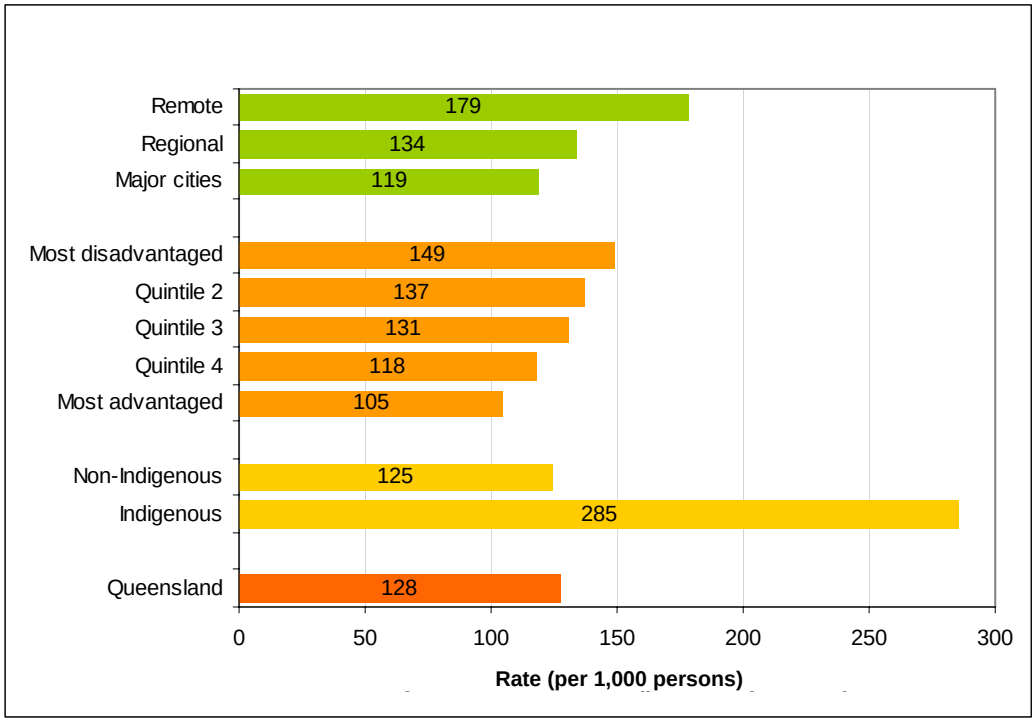


Table 4: Burden of disease (DALYs) inequalities, Queensland, 2006

	Effect		Impact (Method 1)	
	Rate difference (per 100,000)	**Rate ratio**	**Excess DALYs per year**	**Excess %**
Socioeconomic status	44	1.4	92,500	17.8
Remoteness	60	1.5	33,600	6.4
Indigenous status	160	2.3		

3.2 Premature deaths

For the purpose of this report, premature deaths are defined as those that occurred before 75 years of age. About 2,200 premature deaths per year could have been avoided in Queensland if everyone experienced the same death rates as those in the most socioeconomically advantaged areas. This represents about 1 in 4 of all premature deaths (22.7%) in 2006–2007 (Table 5). It is important to reiterate that excess deaths for individual outcomes are independent and should not be considered a subset of each other or added together.

Remoteness is also an important cause of health inequality. If all Queenslanders aged less than 75 years had the same all-cause death rates as those living in major cities, about 450 premature deaths per year could have been avoided in 2006-2007 (Table 5). This represents about 1 in 20 of all premature deaths. Although these excess deaths were linked to remoteness, the actual cause may also be a number of interrelated factors including a higher proportion of Indigenous Queenslanders in remote areas and higher levels of socioeconomic disadvantage.

Health inequalities between Indigenous and non-Indigenous Queenslanders resulted in about 300 premature deaths per year in 2006–2007, or about 1 in 30 of all premature deaths.

Table 5: Premature death inequalities, Queensland, 2006–2007

	Effect		Impact (method 2)	
	Rate difference (per 100,000)	Rate ratio	Excess premature deaths per year	Excess %
Socioeconomic status	119.4	1.7	2,155	22.7
Remoteness	233.9	2.0	456	5.0
Indigenous status	426.3	2.8	312	3.4

3.3 Avoidable deaths

When examining inequalities in death rates in the population, it is of particular interest to consider those that are potentially avoidable. This includes deaths that are premature (less than 75 years of age), and are due to conditions that are potentially avoidable under nationally agreed criteria. Avoidable deaths are defined as deaths from:

- substantially preventable conditions such as lung cancer, intentional and unintentional injury, chronic obstructive pulmonary disease, alcohol and illicit drug disorders, hepatitis and HIV/AIDS
- health care amenable or treatable conditions such as most cancers, asthma and maternal and infant causes
- preventable and healthcare amenable conditions such as coronary heart disease, stroke and diabetes.

Using this method, deaths are classified as entirely preventable, entirely healthcare amenable, or equally preventable and healthcare amenable.[11] Almost two-thirds of all premature deaths of Queenslanders in 2006–2007 were considered to have been potentially avoidable.

Figure 2 illustrates inequalities in rates of health-care amenable, preventable and unavoidable deaths in the Queensland population aged 0-74 years. The total avoidable (health-care amenable and preventable) and total premature (avoidable and unavoidable) death rates are shown in the columns to the right.

There were about 1,700 excess avoidable deaths per year due to socioeconomic inequality (27.8%) in 2006–2007. Health inequalities between Indigenous and non-Indigenous Queenslanders resulted in about 200 avoidable deaths per year or about 1 in 25 of all avoidable deaths. Overall, the relative difference between population groups was slightly higher for avoidable deaths than premature deaths. The rate ratio for Indigenous compared to non-Indigenous Queenslanders was 3.2, very remote compared to city populations was 2.4, disadvantaged compared to advantaged populations was 1.8 (Table 6). In contrast, the death rate differences for non-avoidable conditions were generally lower – 2.2 between Indigenous and non-Indigenous Queenslanders, 1.4 between very remote and city populations and 1.5 between advantaged and disadvantaged populations.

Figure 2: Age standardised rates of premature and avoidable mortality (aged 0-74) by Indigenous, socioeconomic and remoteness status, Queensland, 2006–2007

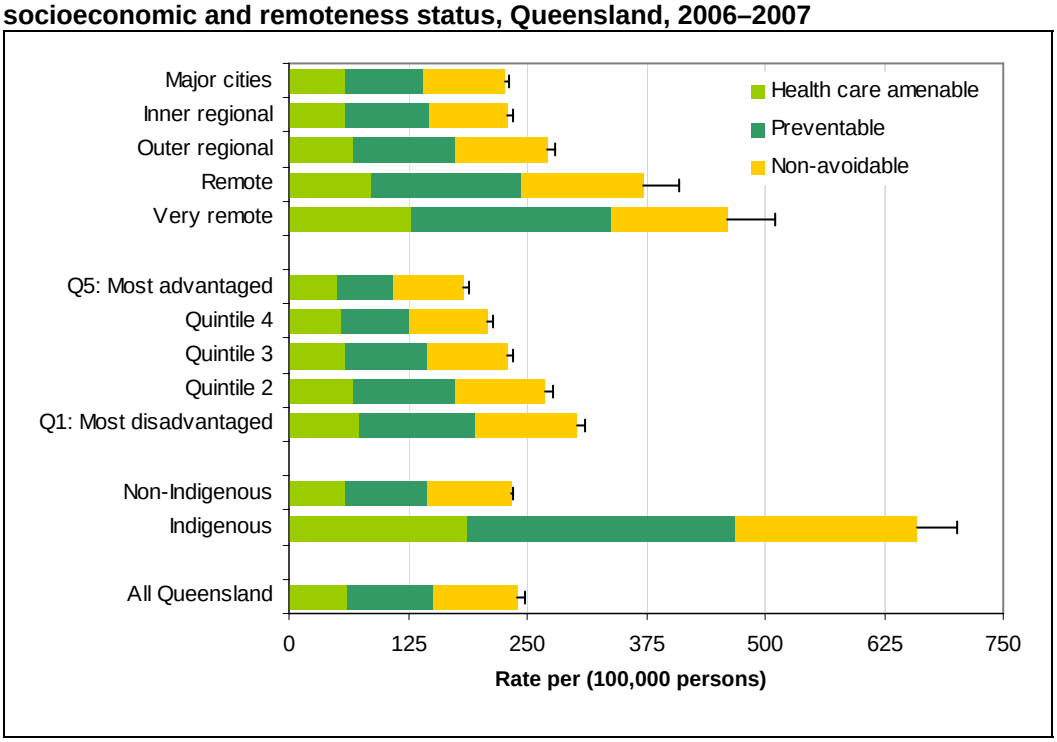


Table 6: Avoidable death inequalities, Queensland, 2006–2007

	Effect		Impact (Method 2)	
	Rate difference (per 100,000)	Rate ratio	Excess avoidable deaths per year	Excess %
Socioeconomic status	85.6	1.8	1,667	27.8
Remoteness	198.2	2.4	395	6.8
Indigenous status	322.6	3.2	231	4.0

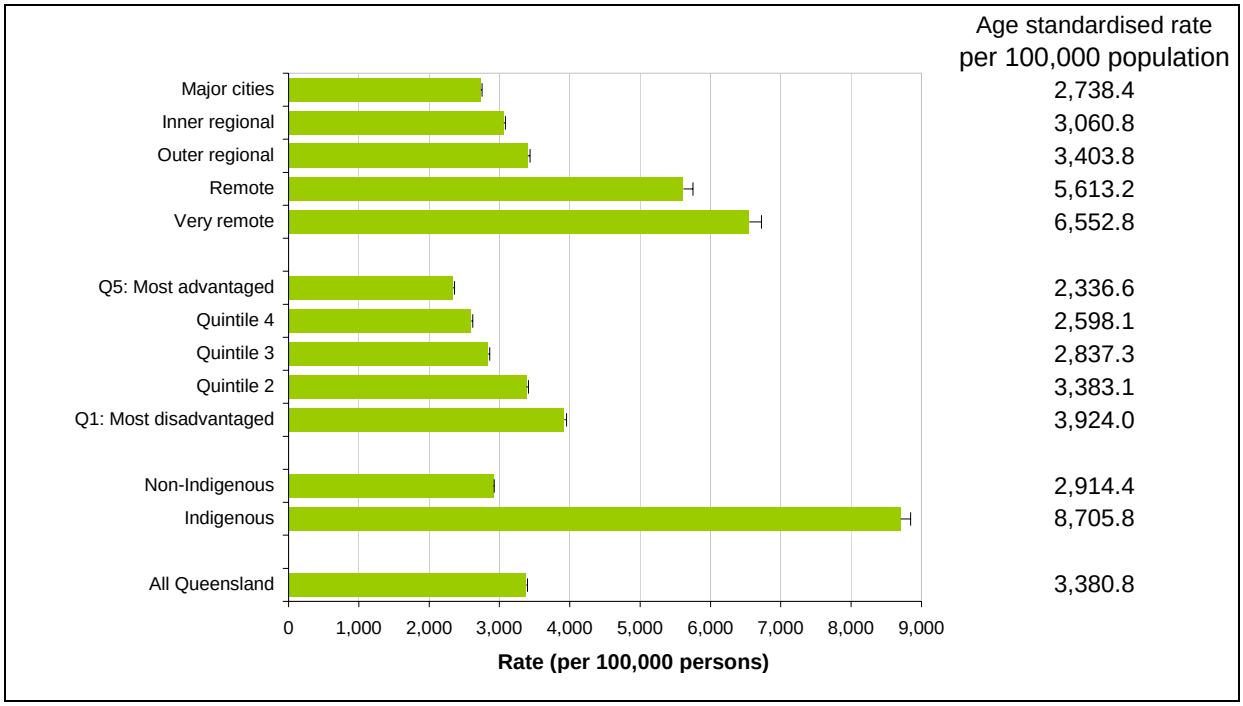
3.4 Selected potentially preventable hospitalisations

Potentially preventable hospitalisations (PPHs) are defined by the AIHW as 'conditions where hospitalisation is thought to be avoidable if timely and adequate non-hospital care had been provided'.[12] The list of conditions within this category does not include all hospitalisations that are potentially preventable and for this reason they are referred to nationally as 'selected potentially preventable hospitalisations'. PPHs are a key indicator of primary care provision under the National Healthcare Agreement.[13] They are also referred to as Ambulatory Care Sensitive Conditions in some documents.[14] This latter term is a more precise description of the conditions included – these are conditions that could have been prevented in the ambulatory or non-hospital setting, rather than all those that could have been prevented by primary prevention. A high PPH rate may indicate limitations in access to or quality of primary healthcare such as general practitioners (GPs) and community health centres, but may also reflect an increased prevalence of the conditions in the community.[15]

It is important to note that for the purpose of PPH reporting within areas of Queensland (such as by Health Service Districts), hospitalisations for renal dialysis are excluded from the chronic conditions category due to inconsistencies in coding practices across Queensland.[16] However, for all state reporting and for national comparisons, the AIHW codes that include renal dialysis are used.

Hospitalisation rates for conditions that are potentially preventable vary substantially between population groups (Figure 3). There is a clear increase in hospitalisation rates with socioeconomic disadvantage, and also with remoteness. There is a threefold higher rate of potentially preventable hospitalisations in Indigenous Queenslanders compared to the non-Indigenous population, 1.7 times higher for the most disadvantaged group compared to the most advantaged, and 2.4 times higher for very remote areas compared to major cities (Figure 3).

Figure 3: Potentially preventable hospitalisations rate differentials, Queensland, 2006/07–2007/08



The average number of excess cases of PPHs during 2006/07–2007/08 due to rate differences by socioeconomic advantage/disadvantage, remoteness and Indigenous status are summarised in Table 7. About 1 in 4 PPHs could have been avoided if everyone experienced the same rates as those in the most socioeconomically advantaged areas. If all Queenslanders experienced the same rate of PPHs as those living in major cities, approximately 1 in 10 PPHs could have been avoided, while 1 in 27 PPHs could have been avoided if Indigenous rates were the same as non-Indigenous rates.

Table 7: Excess potentially preventable hospitalisations due to socioeconomic inequalities, remoteness and Indigenous status, Queensland, 2006/07–2007/08

	Effect		Impact (Method 2)	
	Rate difference (per 100,000)	Rate ratio	Excess PPHs per year	Excess %
Socioeconomic status	1,587	1.7	31,628	25.3
Remoteness	3,814	2.4	11,885	9.5
Indigenous status	5,791	3.0	4,644	3.7

4. Trends in health inequalities, 2001–2007

Measures of inequality are sensitive to data quality and how they are analysed, so while this assessment is based on the most comparable historical data available, there are limitations in how far socioeconomic and remoteness indices can be retrospectively applied. Similarly, Indigenous identification in Queensland has improved in recent years, but in the past had been low for both death[17] and hospitalisation data.[18] Therefore trends in health inequalities in Queensland have been evaluated only as far back as 2001 for measures of effect and impact.

4.1 Measures of effect

Rates of premature death in Queensland are decreasing for both males and females. However, is this downward trend affecting the whole population equally? Over the period 2001 to 2007, the premature death rate ratio of the most disadvantaged and least disadvantaged populations in Queensland increased from about 1.3 to 1.6, that is, premature death rates in disadvantaged areas increased from about 30% higher to about 60% higher than rates in advantaged areas (Table 8). Similarly, the avoidable death rate in disadvantaged areas increased from 40% higher than advantaged areas in 2001 to 75% higher in 2007. This means that while gains are being made in premature and avoidable deaths in the whole population, these gains are not being achieved equally across the population and the socioeconomic inequalities

have been widening in recent years. However, there was no evidence to indicate increases in death rate ratios for remoteness or Indigenous status, or for all hospitalisation rate ratios.

Table 8: Premature death and hospitalisation rate ratios for socioeconomic disadvantage, remoteness and Indigenous status, Queensland, 2001–2007

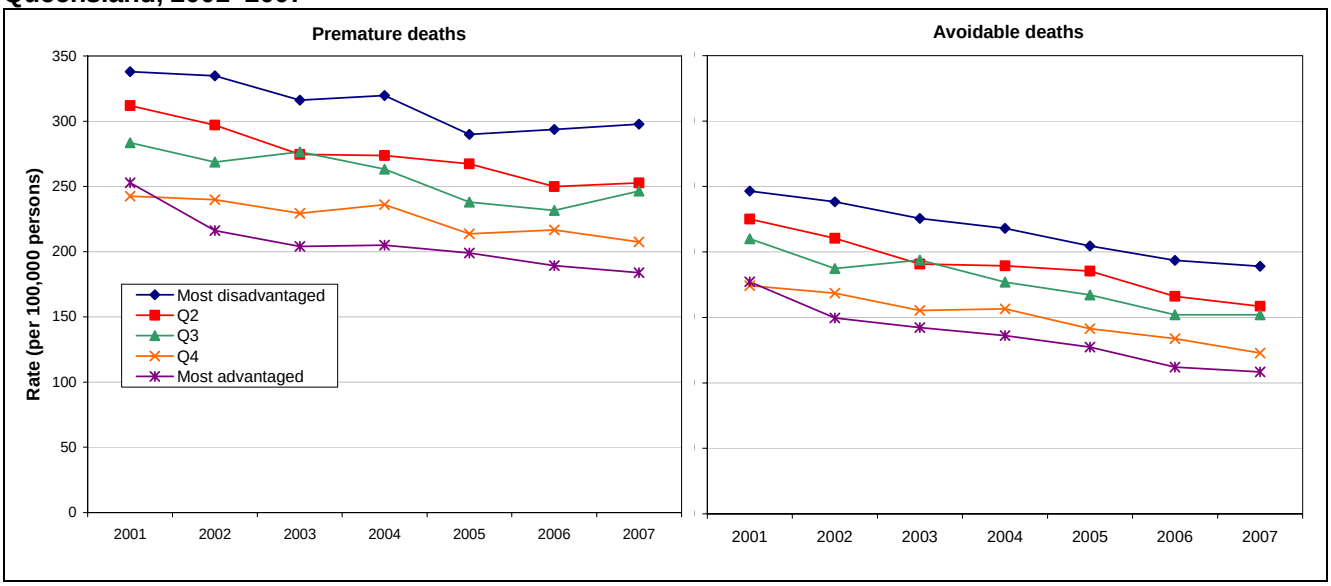
	Deaths (0-74 years)						
	2001	2002	2003	2004	2005	2006	2007
All causes							
Socioeconomic	1.34	1.55	1.55	1.56	1.46	1.55	1.62
Remoteness	1.76	1.54	1.61	1.70	1.63	1.76	1.81
Indigenous	3.00	3.06	2.91	2.87	2.61	2.87	2.86
Avoidable deaths							
Socioeconomic	1.39	1.59	1.59	1.60	1.61	1.73	1.75
Remoteness	1.80	1.50	1.52	1.56	1.65	1.94	1.93
Indigenous	3.36	3.35	3.26	3.26	2.99	3.33	3.16

	Hospitalisations (0-85+ years)						
	2001	2002	2003	2004	2005	2006	2007
All causes							
Socioeconomic	1.04	1.07	1.10	1.09	1.09	1.07	1.06
Remoteness	1.16	1.13	1.11	1.15	1.16	1.20	1.17
Indigenous	2.01	2.11	2.14	2.11	2.14	2.11	2.15
Potentially preventable hospitalisations (PPHs)							
Socioeconomic	1.61	1.64	1.67	1.64	1.66	1.68	1.65
Remoteness	2.30	2.23	2.22	2.19	2.31	2.28	2.13
Indigenous	3.43	3.05	3.18	3.08	3.24	2.98	3.06

4.2 Measures of impact

A determination of trend in health inequalities over time is limited by data comparability. Therefore only the period from 2001 to 2007 has been analysed for premature and avoidable deaths and for all cause and potentially preventable hospitalisations (Table 9 and Table 10). Despite the goal to maximise comparability, individual year data may show unexplained variation, for example, the 2001 socioeconomic impact estimates appear to be substantially different to other years in the series. This is a result of the fact that premature and avoidable death rates in the most advantaged category were actually higher than the second most advantaged category in 2001 but not any other year in the series (Figure 4). The exact reason for this anomaly in 2001 is unknown. However, excluding the 2001 data point does not change the direction or statistical significance of the trends identified in socioeconomic excess percentage.

Figure 4: Age-standardised rates of premature and avoidable deaths by socioeconomic category, Queensland, 2001–2007



The socioeconomic gap was stable for all outcomes except avoidable deaths, for which socioeconomic inequalities increased by about 50% between 2001 and 2007 or 6% per year (Table 9). Excluding the anomalous 2001 data point, the annual percentage change in socioeconomic excess percent for avoidable deaths remained significant at 3.4%. This is consistent with the increase in rate ratio described above (Table 8). The proportion of excess hospitalisations as a result of socioeconomic differences within the population remained steady in this period (Table 10).

Considering inequalities due to remoteness, there was a narrowing of the gap for all-cause deaths between major cities and regional/remote populations by 30% over the seven years (5% per year) (Table 9). Furthermore, the proportion of excess deaths due to Indigenous inequality remained steady, but the excess percentage of all-cause hospitalisations increased by 1% per year (Table 10).

Table 9: Excess all cause and avoidable deaths per year (in persons aged 0–74 years), due to socioeconomic disadvantage, remoteness and Indigenous status, Queensland, 2001–2007

	Socioeconomic		Remoteness		Indigenous	
	All causes	Total avoidable	All causes	Total avoidable	All causes	Total avoidable
Excess deaths						
2001	1,228	1,093	684	491	327	272
2002	2,087	1,564	587	466	336	254
2003	2,144	1,505	561	418	311	246
2004	2,194	1,572	678	547	315	241
2005	1,750	1,540	557	460	276	222
2006	2,008	1,687	464	426	315	236
2007	2,306	1,648	448	364	308	225
*Excess deaths** (% of total for each condition)*						
2001	12.8	15.7	7.1	7.0	3.4	3.9
2002	22.0	23.4	6.2	7.0	3.5	3.8
2003	22.9	23.1	6.0	6.4	3.3	3.8
2004	22.9	24.2	7.1	8.4	3.3	3.7
2005	19.1	24.4	6.1	7.3	3.0	3.5
2006	21.6	28.0	5.0	7.1	3.4	3.9
2007	23.7	27.5	4.6	6.1	3.2	3.7
Annual % change in excess - based on trend analysis						
	4.3	6.2*	-5.0*	-0.8	-1.2	-0.4

* significant change

** age adjusted

Table 10: Excess all cause and preventable hospitalisations due to socioeconomic disadvantage, remoteness and Indigenous status, Queensland, 2001/2002–2007/2008

	Socioeconomic		Remoteness		Indigenous	
	All causes	PPH	All causes	PPH	All causes	PPH
Excess hospitalisations						
2001/2002	27611	25447	-12245	9993	24102	4650
2002/2003	23166	26155	-8430	9803	24395	3794
2003/2004	39973	27689	-3388	9985	26435	4296
2004/2005	45297	28124	2909	10579	27405	4349
2005/2006	38658	27444	12239	12141	28850	4555
2006/2007	21609	30410	-564	11698	29374	4406
2007/2008	10749	32819	1431	12066	32778	4882
*Excess hospitalisations** (% of total for each condition)*						
2001/2002	2.2	24.0	-1.0	9.4	1.9	4.4
2002/2003	1.8	24.7	-0.7	9.3	1.9	3.6
2003/2004	3.0	24.9	-0.3	9.0	2.0	3.9
2004/2005	3.3	24.8	0.2	9.3	2.0	3.8
2005/2006	2.7	23.7	0.9	10.5	2.0	3.9
2006/2007	1.5	25.4	0.0	9.8	2.0	3.7
2007/2008	0.7	25.2	0.1	9.3	2.1	3.7
Annual % change in excess % based on trend analysis						
	-7.8	0.4	24.1	0.6	1.0*	-1.3

* significant change

** age adjusted

4.3 Health risk factors

Over recent years, there has been consistent, comparable data collection of risk factor prevalence for daily smoking, sufficient physical activity and self reported overweight and obesity in Queensland. The prevalence of these risk factors is declining at a similar rate in both socioeconomically advantaged and disadvantaged populations in Queensland. The prevalence remains about double for smoking and high body mass, and 25% lower for physical activity in the most disadvantaged socioeconomic quintile compared to the most advantaged. The linear trend in the rate difference between the prevalence in the most advantaged compared to most disadvantaged socioeconomic quintiles was calculated and was not significant for any of the three risk factors.

5. Discussion

Measures of effect and impact are useful tools to quantify health inequalities in the population and data are available to assess socioeconomic, remoteness and Indigenous inequalities. There are two approaches to calculating impact measures, the first of which outlined in Box 2 provides a good approximation for socioeconomic and remoteness inequalities but cannot be used to calculate Indigenous inequality. Method 2 (Box 3), using age specific data, is the preferred approach and should be used where data are available. Where age specific data are not available, Method 1 (Box 2) can be used if the categories being compared have a similar underlying age structure. Finally, it is important to note that individual causes of excess deaths or hospitalisations are interrelated and cannot be added together.

Levels of inequality continue to exist in Queensland with the greatest relative difference between Indigenous and non-Indigenous Queenslander populations. However, socioeconomic differentials produce the greatest impact as measured by number and percentage of excess deaths and hospitalisations.

This analysis has been focused on selected conditions with relatively high case numbers and public health significance, and the assessment of change in levels of health inequalities shows mixed results. Amongst these selected conditions, the only evidence of change in socioeconomic inequality is a widening gap for avoidable deaths. Remote and regional inequality is diminishing based on deaths from all causes, but is stable based on people admitted to hospital. The large difference in health status between Indigenous and non-Indigenous Queenslanders also remained stable, except for a slightly widening gap in all-cause hospitalisations for Indigenous Queenslanders.

In conclusion, this assessment of health inequalities shows there is clearly significant potential to improve the health of Queenslanders by reducing health inequalities between those who live in advantaged compared to disadvantaged areas, those who live in remote areas compared to major cities and Indigenous compared to non-Indigenous Queenslanders.

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