



Quantifying the burden of disease and injury in Queensland 1996-1998

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Summary

- By calculating premature mortality in Queensland, and applying statistical adjustments to the disability component of Australian Burden of Disease study, a broad picture of the burden of disease in Queensland between 1996 and 1998 was able to be generated with limited resources.
- Premature mortality was responsible for 56% of the total burden of disease in Queensland males and 49% in females. Males lost 34% more years of life due to premature mortality than females.
- Ischaemic heart disease was the leading specific cause of burden of disease, measured by Disability-adjusted life years (DALYs), among both males and females. This was followed by lung cancer, suicide and stroke among males, and by affective disorders (such as depression), stroke and breast cancer among females.
- The male disease burden (DALY) was 17% higher than the female burden. Females generally have greater incidence and prevalence of the more common non-fatal health problems, while males generally have greater incidence of the major diseases and injuries associated with high case fatality.
- The category of mental disorders was the leading cause of years of life lost due to disability (YLD), accounting for over a quarter (27%) of the non-fatal burden of disease in Queensland.
- Mental disorders, as a category, was the third leading cause (13% of total) of disease burden (DALY), after cardiovascular diseases (21%) and cancer (19%).
- Premature mortality due to suicide was about 28% higher in Queensland than the national average. In contrast premature mortality due to substance use disorders was about 60% lower among Queensland males than nationally. Premature mortality due to ischaemic heart disease was about 5% higher in Queensland than nationally.
- Although Queensland estimates are not available, Australian data suggest that at least 17% of the total disease burden can be attributed to socioeconomic disadvantage. Similarly national data suggest that tobacco smoking was the risk factor responsible for the greatest burden of disease and injury in Australia (causing 12% of the total disease burden among males and 7% among females). This was followed by physical inactivity (7% among persons), hypertension or high blood pressure (5%) and harmful alcohol consumption (5%). The impact of diet on the burden of disease is not able to be assessed.

Introduction

Addressing the burden of disease is one of the 3 Strategic Directions of Queensland Health (QH, 2002). This circular presents the results from the Queensland burden of disease study; one method of quantifying the overall burden of disease in Queensland.

Detailed assessments of the magnitude and impact of health issues in the community are necessary to inform health planning and priority setting. Although good information is available on causes of mortality in Queensland, this does not provide information about the current health status of those people still alive. In particular, those conditions that result in significant disability, such as mental illnesses, but cause relatively few deaths, are given less priority in rankings based on mortality alone. Similarly, rankings based on hospital separation data are limited since they only include conditions serious enough to warrant admission to hospital.

In an attempt to address this issue, Murray and Lopez (1996a) conducted the first Global Burden of Disease study. As well as developing comparable, valid and reliable epidemiological information on a wide range of diseases, injuries and risk factors, the study created an aggregate measure of population health, called the Disability-adjusted life year (or DALY). This type of health status measure, comprising both premature mortality and disability components, can be used to highlight the need for future progress in population health to include both health-related quality of life as well as quantity of life. One DALY can be thought of as one lost year of 'healthy' life, and the burden of disease as a measurement of the gap between current health status and an ideal situation where everyone lives into old age free of disease and disability (Murray et al., 2001).

In 1999, the first comprehensive assessment of the burden of disease and injury of the Australia population was published (Mathers et al., 1999). This comprehensive study built on the methodology used by Murray and Lopez. Measurement of the health of the population was based upon estimates of incidence, prevalence, duration, disease progression, mortality, and disability burden of 176 exhaustive and mutually exclusive diseases and injuries. The non-fatal outcomes included impairments, functional limitations and restrictions in participation in usual roles. Note that disability is defined as any departure from full health, and this can include short-term disability such as a common cold through to a long-term disability such as quadriplegia (Mathers et al., 1999). This is a much broader definition of disability than is often used in common language.

By calculating premature mortality in Queensland, and applying statistical adjustments to the disability component of the national study, a broad picture of the burden of disease in Queensland was able to be generated with limited resources.

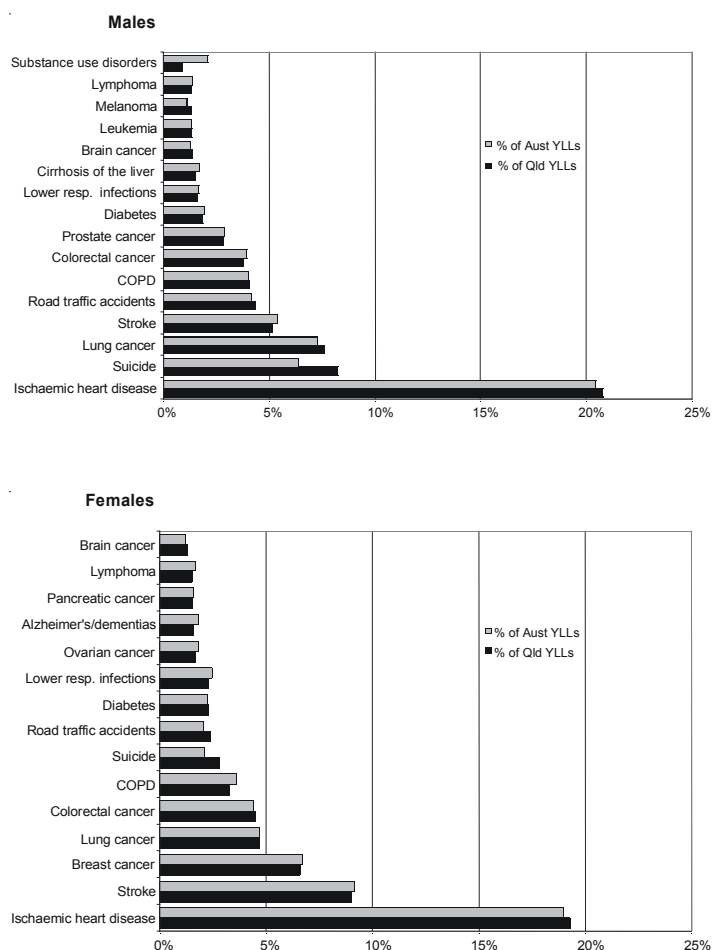
Results

Years of life lost due to mortality (YLL) are the mortality component of the burden of disease. Between 1996 and 1998 premature mortality was responsible for nearly 240,000 years of life lost on average each year in Queensland. Ischaemic heart disease (IHD) was clearly the largest cause of premature years of life lost among both males and females (Table 1). IHD was followed by suicide and lung cancer among males, and by stroke and breast cancer among females. The top 15 causes of premature mortality shown in Table 1 comprised 67.2% and 64.8% of the total premature mortality for males and females respectively.

Males lost 34% more years of life than females. As causes of premature mortality, suicide and road traffic accidents were ranked higher for males (2nd and 5th respectively) than for females (7th and 8th respectively).

Comparisons between the top causes of premature mortality in Australia and those in Queensland (Figure 1) highlight the elevated burden of suicide in Queensland. The proportion of YLL due to suicide was 29% higher for males in Queensland than the corresponding proportion in Australia and 25% higher for females. In contrast premature mortality due to substance use disorders was about 60% lower among Queensland males than nationally. The order of the most common causes of premature mortality in Queensland generally matches that for Australia. Some other conditions with proportionally higher mortality in Queensland, compared

Figure 1: Comparison of main causes of premature mortality (YLL) for Queensland and Australia (average per year between 1996 and 1998)



to Australia, were road transport accidents (10% higher among females, 4% higher among males), lung cancer (8% higher among males) and ischaemic heart disease (4% higher among females, 5% higher among males).

Years of life lost due to disability (YLD) represent the disability component of the burden of disease. The non-fatal disease burden presents a very different picture to that provided by the traditional mortality statistics (Table 2). As a category, mental disorders were the leading cause of YLD, accounting for over a quarter (27%) of the non-fatal burden of disease in Queensland.

Affective disorders (including depression and bipolar affective disorder) was the largest specific cause of disability among both males and females (Table 2). Affective disorders was followed by sense organ disorders and substance abuse disorders among males, and by anxiety and sense organ disorders among females.

The combined burden of fatal and non-fatal health outcomes are represented in a single measure: the disability-adjusted life year or DALY. The DALY adds together the YLL and YLD. Premature mortality was responsible for 56% of the total burden of disease in Queensland males and 49% in females. Due to their very high mortality component, ischaemic heart disease (IHD), lung cancer and suicide remain the top three causes of DALYs among males as they were for premature mortality (Figure 2). Although IHD is still the highest cause of DALYs among females, affective disorders ranks second in terms of total burden of disease, followed by

Figure 2: Leading causes of burden of disease (YLL, YLD and total DALYs) for Queensland (1996 to 1998)

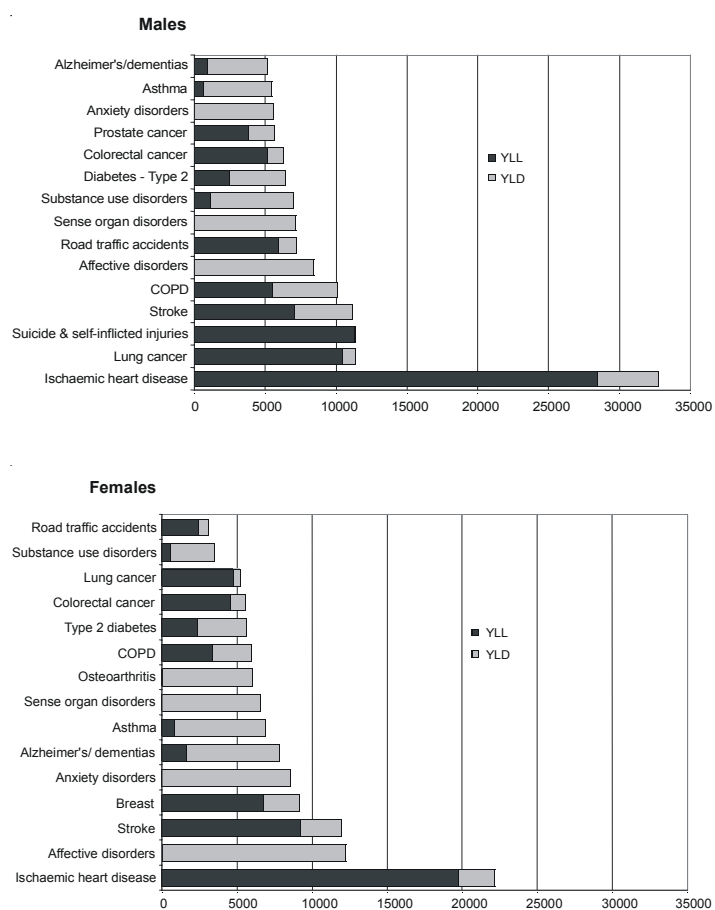


Table 1: Top 15 causes of premature mortality (YLL¹) in Queensland (average per year between 1996 and 1998)

Male			Female		
	YLL	% of YLL		YLL	% of YLL
Ischaemic heart disease	28449	20.8%	Ischaemic heart disease	19741	19.3%
Suicide	11293	8.2%	Stroke	9214	9.0%
Lung cancer	10444	7.6%	Breast cancer	6738	6.6%
Stroke	7062	5.2%	Lung cancer	4780	4.7%
Road traffic accidents	5958	4.4%	Colorectal cancer	4602	4.5%
COPD 2	5545	4.0%	COPD 2	3360	3.3%
Colorectal cancer	5198	3.8%	Suicide	2877	2.8%
Prostate cancer	3863	2.8%	Road traffic accidents	2460	2.4%
Diabetes - type 2	2530	1.8%	Diabetes - type 2	2373	2.3%
Lower respiratory infections	2201	1.6%	Lower respiratory infections	2332	2.3%
Cirrhosis of the liver	2084	1.5%	Ovarian cancer	1711	1.7%
Brain cancer	1873	1.4%	Alzheimer's & other dementias	1628	1.6%
Leukemia	1854	1.4%	Pancreatic cancer	1588	1.6%
Melanoma	1812	1.3%	Lymphoma	1558	1.5%
Lymphoma	1809	1.3%	Brain cancer	1347	1.3%
Other conditions	44957	32.8%	Other conditions	36032	35.2%
All conditions	136931	100.0%	All conditions	102339	100.0%

1: YLL are calculated using the annual average mortality in Queensland between 1996 and 1998.

2: Chronic Obstructive Pulmonary Disease

Table 2: Top 15 causes of disability (YLD¹) in Queensland (average per year between 1996 and 1998)

Male			Female		
	YLL	% of YLL		YLL	% of YLL
Affective disorders	8369	7.9%	Affective disorders	12221	11.7%
Sense organ disorders	7176	6.8%	Anxiety disorders	8552	8.2%
Substance use disorders	5835	5.5%	Sense organ disorders	6520	6.2%
Anxiety disorders	5568	5.3%	Alzheimer's & other dementias	6232	5.9%
Asthma	4799	4.5%	Asthma	5999	5.7%
COPD 2	4518	4.3%	Osteoarthritis	5943	5.7%
Ischaemic heart disease	4285	4.0%	Diabetes - type 2	3254	3.1%
Alzheimer's & other dementias	4169	3.9%	Substance use disorders	2925	2.8%
Osteoarthritis	4131	3.9%	Stroke	2729	2.6%
Stroke	4097	3.9%	COPD 2	2609	2.5%
Diabetes - type 2	3877	3.7%	Ischaemic heart disease	2415	2.3%
Benign prostatic hypertrophy	3059	2.9%	Breast cancer	2404	2.3%
Childhood mental disorders	2660	2.5%	Eating disorders	1960	1.9%
Borderline personality disorder	1924	1.8%	Parkinson's disease	1895	1.8%
Prostate cancer	1802	1.7%	Schizophrenia	1606	1.5%
Other conditions	39578	37.4%	Other conditions	37478	35.8%
All conditions	105848	100.0%	All conditions	104743	100.0%

1: YLD are the estimates of the average per year between 1996 and 1998. Refer to the methodology section for the calculation methods of YLD.

2: Chronic Obstructive Pulmonary Disease

Table 3: Burden of disease for National Health Priority Areas in Queensland (with column % in brackets) estimates per year between 1996 and 1998.

	Male			Female		
	Premature mortality (YLL)	Disability (YLD)	Total Burden (DALYs)	Premature mortality (YLL)	Disability (YLD)	Total Burden (DALYs)
Cardiovascular disease	41559 (30%)	11339 (11%)	52899 (22%)	34500 (34%)	7279 (7%)	41779 (20%)
Cancers	38797 (28%)	7658 (7%)	46455 (19%)	31907 (31%)	6817 (7%)	38725 (19%)
Mental disorders	1485 (1%)	26496 (25%)	27980 (12%)	1055 (1%)	29570 (28%)	30624 (15%)
Injury	24186 (18%)	7264 (7%)	31450 (13%)	8225 (8%)	4106 (4%)	12332 (6%)
Diabetes mellitus	2733 (2%)	4353 (4%)	7086 (3%)	2600 (3%)	3730 (4%)	6330 (3%)
Asthma	693 (<1%)	4799 (5%)	5492 (2%)	886 (1%)	5999 (6%)	6885 (3%)
Other causes	27477 (20%)	43939 (42%)	71416 (29%)	23166 (23%)	47241 (45%)	70408 (35%)
All conditions	136931 (100%)	105848 (100%)	242779 (100%)	102339 (100%)	104743 (100%)	207082 (100%)

Note: Premature mortality (YLL), disability (YLD) and burden of disease (DALY=YLL+YLD) are the estimates of the average per year between 1996 and 1998. Refer to the methodology section for details about the calculations employed. Percentages may not add to 100% due to rounding.

stroke. Along with affective disorders, conditions such as diabetes and substance use disorders come into prominence when disability is included with mortality. Asthma and anxiety disorders, with low or no mortality component, also make the top 15 conditions among both males and females.

Table 3 provides an overview of the burden of disease associated with the six National Health Priority Areas (NHPA) (AIHW and DHFS, 1997). The six NHPAs account for 68% of the total burden of disease and injury in Queensland, comprising 79% of the premature mortality (YLL) and 57% of the disability (YLD).

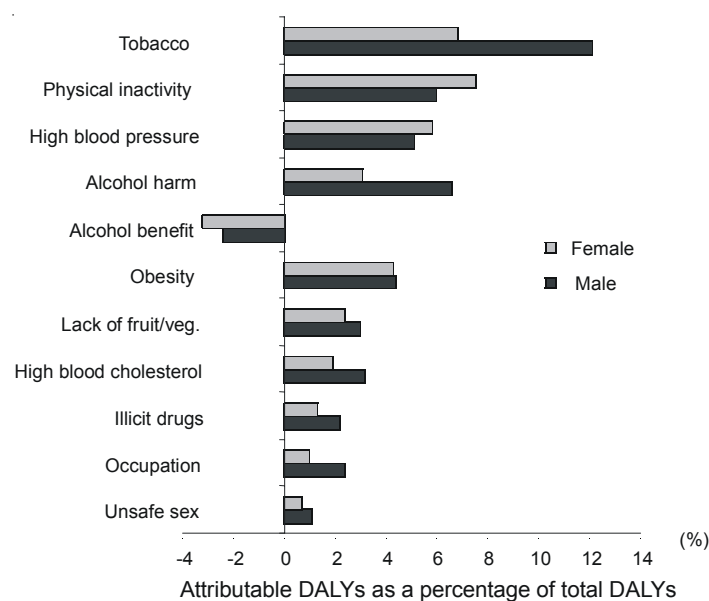
Of the NHPA, cardiovascular disease and cancer were the two major causes of burden of disease in Queensland. The burden for these disease groups was primarily due to premature mortality. Mental disorders were the greatest contributor to disability, with a very small contribution towards premature mortality.

The Australian Burden of Disease report (Mathers et al., 1999) estimates the effect that risk factors and socioeconomic status have on the total burden of disease. Although these are national estimates, the results are presented here since it is likely similar associations would be observed in the Queensland population.

Tobacco smoking is the risk factor responsible for the greatest burden of disease and injury in Australia (causing 12% of the total disease burden among males and 7% among females) (Figure 3). This is followed by physical inactivity (7% among persons), hypertension or high blood pressure (5%) and harmful alcohol consumption (5%). Dietary factors have been shown to be an important risk factor for 56 per cent of all deaths in Australia. The overall burden of disease associated with diet is difficult to assess from available evidence.

Nationally, there was a marked increasing gradient in the total burden of disease with increased socioeconomic disadvantage (measured by the SEIFA – socioeconomic disadvantage (ABS, 1998)). The total disease burden per 1000 population in the most disadvantaged quintile was 37% higher and 27% higher than the burden in the least disadvantaged quintile for males and females respectively (Mathers et al., 1999). It was estimated that at least 17% of the total disease burden could be attributed to socioeconomic disadvantage (Mathers et al., 1999).

Figure 3: Proportion of total burden of disease and injury attributed to selected risk factors in Australia in 1996 by sex



Limitations

The limitations noted in this section are primarily related to the calculation of the Queensland YLD from the Australian YLD. The Australian Burden of Disease report (Mathers et al., 1999) outlines in detail most of the assumptions, limitations and cautions associated with the original Burden of Disease methodology.

The calculation of the adjusted YLD assumes that the relative difference between premature mortality in Queensland compared to Australia is the same as the relative difference for disability. We know that this assumption does not always hold. For example, the incidence of melanoma between 1992 and 1996 was 40% higher than the national average, whereas mortality was only 20% higher during the same period (Baade et al., 2000). The adjustment of the YLD also does not take into account the possibility that variations in mortality may be due to different clinical treatment rather than variations in incidence and prevalence.

Because of the criteria used to calculate expected YLD for Queensland, conditions with low premature mortality, such as mental disorders, were not adjusted, even though it is plausible that the extent of disability for some of these conditions were different from the national average.

A consistent methodology for calculating DALYs was required across the large number of conditions in the study. Although excellent data for cancer incidence, prevalence, survival and mortality in Queensland is available, it was considered inappropriate to include Queensland specific estimates for cancer but use national estimates for other conditions within the Queensland study. Similarly, although we have prior knowledge that the assumptions made in this study do not hold for some conditions (eg melanoma where interstate incidence differentials are different from interstate mortality differentials), no exceptions were made to the rules for these known conditions, as it was not possible to identify all conditions that did not satisfy the assumptions.

As the national YLD were used to estimate the Queensland YLD, comparisons of the Queensland and Australian YLD, or the resulting DALYs, are not valid. However, premature mortality (YLLs) for Queensland and Australia are comparable as they were independently calculated from the death registration dataset.

The results of this study must be interpreted with regard to the limitations of the methodology. Although the estimates of the YLLs can be considered valid and reliable, the validity and reliability of the Queensland YLD estimates are uncertain. Even the precision of the National YLD estimates are not able to be quantified in the usual statistical sense, as they are based on extensive epidemiological modelling using a wide range of data sources, expert opinions and research findings. The estimated precision varies between diseases and depends on the disease model applied and the source and nature of the underlying data (Mathers et al., 1999).

Discussion

The greatest advantage of using the burden of disease methodology is being able to recognise not only the impact of premature mortality but also the burden of disability to the community when estimating health status. By including non-fatal health outcomes we have generated a substantially different picture compared to that provided by traditional mortality statistics in Queensland. From a very low ranking in terms of mortality, mental disorders (13%) are now the third leading cause of disease burden behind cardiovascular disease (21%) and cancers (19%).

A disadvantage of the burden of disease methodology is that it does not recognise the contribution of successful prevention strategies, and the continued need for them, such as immunisation. As such, using the disease rankings suggested by burden of disease studies for resource allocation is not valid unless these successful preventive programmes are somehow taken into account.

The male burden (in total DALYs) was 1.2 times higher than the female burden. Females have greater incidence and prevalence of the more common non-fatal health problems, while males have greater incidence of the major diseases and injuries associated with high case fatality.

Diabetes was the 9th leading cause of disease burden in Queensland, causing 3% of all DALYs. However, national

estimates suggest that this increases to approximately 5% if the attributable burden of cardiovascular disease is included in the calculation (Mathers et al., 1999).

Future directions

The Australian Institute of Health and Welfare is planning an update of the Australian Burden of Disease study using 2001 data. There is some potential for a Queensland component of the study to be conducted at the same time, providing Queensland-specific data on premature mortality, disability and overall burden of disease.

Although a study of the burden of disease in Indigenous people is seen as a priority at a national level, only certain diseases could be included in the disability component of the study as the data is inadequate for certain areas. Discussions are currently underway to see whether an Australian Indigenous study is feasible.

Work has started on a 2000 Global Burden of Disease study (Murray et al., 2001). In addition to the calculation of the DALY estimates, the primary activity of the Global Burden of Disease study is the further development of comparable, valid and reliable epidemiological information on a wide range of diseases, injuries and risk factors (Murray et al., 2001).

Methodology

This methodology enabled the results of the national study to be fully utilised within certain limitations, while trying to give appropriate priority to those conditions that are of specific importance and relevance to Queensland.

Full details and justification for the terminology and concepts used in the Australian Burden of Disease study, and referred to throughout this report, can be found in the national report (Mathers et al., 1999).

Years of life lost to premature death (YLL) for Queensland were calculated directly from the 1996-98 deaths data for Queensland supplied by the Australian Bureau of Statistics (ABS).

Since there are insufficient data available on incidence and prevalence in Queensland for most conditions it is not possible to calculate years lost due to disability (YLD) specifically for Queensland. Assuming incidence and prevalence for most conditions in Queensland are similar to those of Australia, estimates of YLD for Queensland were derived from the 1996 Australian YLD published in the Burden of Disease and Injury in Australia (Mathers et al., 1999).

Queensland is known to have significantly different incidence and prevalence for some conditions (eg melanoma). Although we have not specifically included the Queensland incidence and prevalence estimates, we have used the relative difference between Queensland YLL and Australian YLL as a proxy for possible differences in incidence and prevalence between Queensland and Australia.

After adjusting YLD for selected conditions, YLL and YLD have been aggregated for each condition to provide disability-adjusted life years (DALYs) for Queensland.

For a more detailed explanation of the methodology see Appendix 1.

Acknowledgements

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Appendix 1: Detailed Methodology

The steps for calculating Queensland DALYs outlined below are illustrated in Figure 4 and the number of each step correspond to the reference numbers in the diagram.

1. Average annual YLL for Queensland from 1996-98 for each condition, age and sex were calculated from ABS deaths data. This was carried out in accordance with the method used in the Australian burden of disease study, using a 3% discount rate. These results were then aggregated to produce YLL for Queensland by condition and sex. Three years of data were used to minimise the effects of random variation, particularly for conditions with lower numbers of deaths.
2. As an initial estimate YLD for Queensland were calculated from the 1996 Australian YLD published in the Burden of Disease and Injury in Australia (Mathers et al., 1999). The Australian YLD for each condition, age and sex were multiplied by the ratio of Queensland's population (1996-98 average) and Australia's population (1996) for the corresponding age and sex group. These results were aggregated to produce expected YLD for Queensland by condition and sex.

For selected conditions these expected YLD were adjusted to take into account differences in incidence and prevalence between Queensland and Australia. The method of calculating the adjustment factor is outlined in steps 3 to 6 below.

3. The YLL for Queensland by condition and sex calculated in step 1 were further aggregated to produce total actual YLL for each condition for persons.
4. Average annual YLL for Australia from 1996-98 for each condition, age and sex were calculated from ABS deaths data.
5. The average annual Australian YLL for each condition, age and sex were multiplied by the ratio of Queensland's population (1996-98 average) and Australia's population (1996-98 average) for the corresponding age and sex group. These results were aggregated to produce total expected YLL for Queensland for each condition for persons.
6. The adjustment factor for each condition is equal to the ratio of the actual YLL to the expected YLL for that condition. For conditions where there is a significant difference between actual and expected YLL this ratio is used to adjust the expected YLD calculated in step 2.
7. For selected conditions total adjusted YLD for males and females are calculated by multiplying total expected YLD for males and females respectively by the adjustment factor derived in step 6. The criteria for selecting conditions to have their YLD adjusted are as follows:
 - Total actual average annual Queensland YLL are greater than 500;
 - Total expected Queensland YLD are greater than 500;
 - The magnitude of the difference between total expected YLD and total adjusted YLD is greater than 200;
 - Total actual average annual Queensland YLL is near or greater than 10% of total expected Queensland YLD;
 - The condition is not an aggregation of disease groups defined in the Australian burden of disease study;
 - The condition is not defined as "other" in the Australian burden of disease study;
 - Conditions that do not satisfy all these criteria are considered to have an adjustment factor equal to one. A summary of the conditions that meet all these criteria is found in table 4.
8. Queensland DALYs for each condition and sex were calculated by adding the actual average Queensland YLL and adjusted Queensland YLD for each condition and sex respectively.

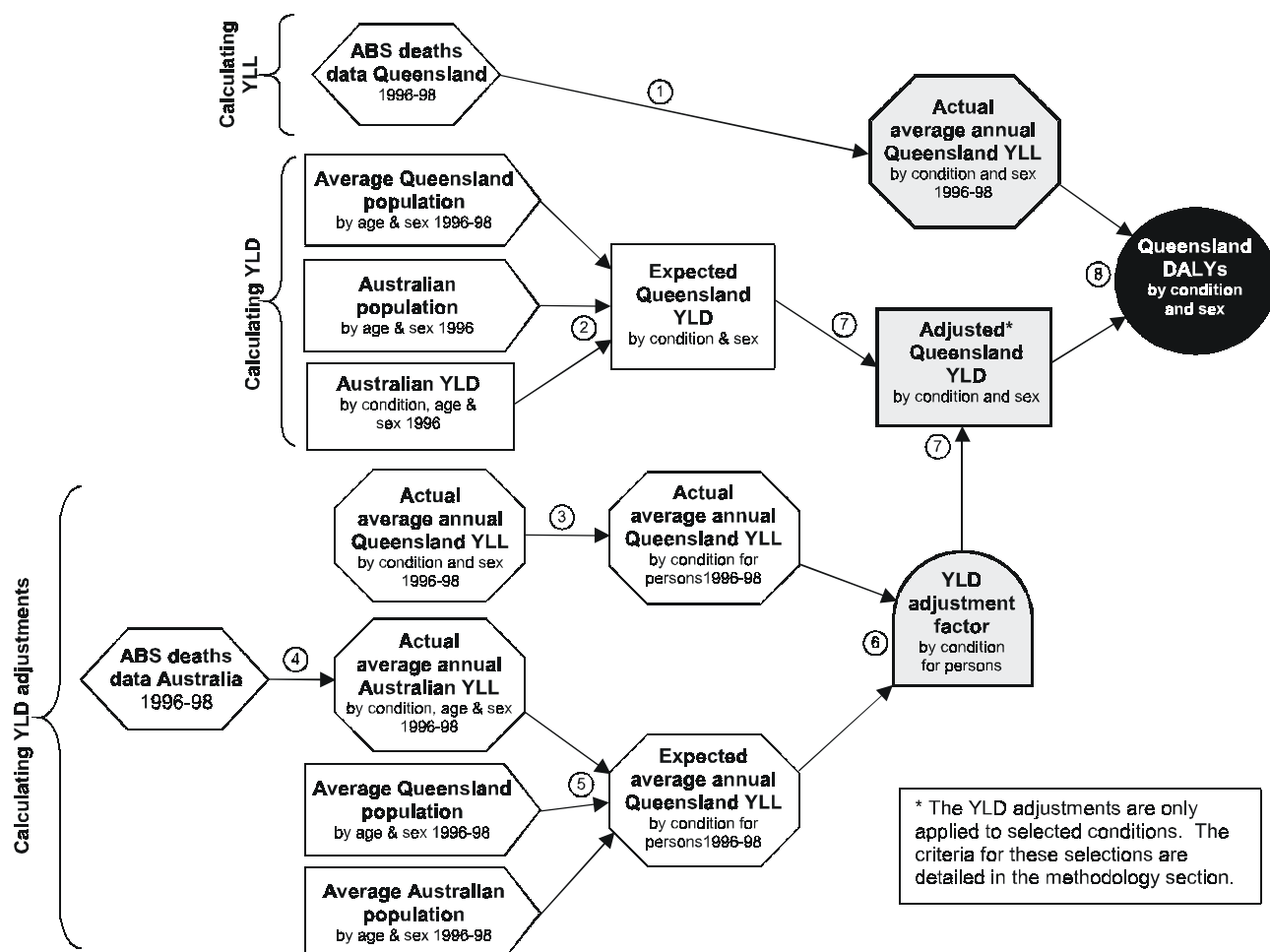
Notes:

- ❖ The adjustments applied to expected YLD for Queensland assume that differences in mortality are proportional to the differences in the level of disability in the community for each condition.
- ❖ Some conditions for which there are significant variations in the level of disability between Queensland and Australia may be overlooked because the number of YLL for these conditions is low.
- ❖ The adjustment of the YLD does not take into account the possibility that variations in mortality may be due to different clinical treatment rather than variations in incidence and prevalence.

Table 4: Conditions to which YLD adjustments were applied

BOD ref	Conditions	Expected QLD YLL	Actual QLD YLL	YLD adjustment factor	Expected QLD YLD	Actual YLL/Expected YLD >=10%	Adjusted QLD YLD	QLD DALYs
L2	Ischaemic heart disease	46044	48190	1.047	6402	753%	6701	54891
F10	Melanoma	2394	2990	1.249	1255	238%	1568	4558
K1	Alzheimer's & other dementias	2846	2582	0.908	11461	23%	10401	12983
T4	Falls	1740	2047	1.176	2476	83%	2913	4960
M2	Asthma	1532	1579	1.031	10473	15%	10798	12378
J1a	Alcohol dependence & abuse	868	750	0.864	7692	10%	6642	7392
K3	Parkinson's disease	787	707	0.899	3647	19%	3277	3984
J1b	Heroin dependence & abuse	2464	510	0.207	2403	21%	497	1008

Figure 4: Calculating the burden of disease and injury in Queensland



Appendix 2: YLL, YLD and DALYs by sex and cause, Queensland, 1996-98

Disease category	YLD			YLL			DALYs		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
All causes	210114	105557	104557	239270	136931	102339	449383	242487	206896
I Communicable diseases, maternal and neonatal conditions	9527	4170	5357	12857	7227	5630	22384	11397	10987
A. Infectious & parasitic diseases	3183	1467	1715	3852	2606	1245	7034	4074	2960
1. Tuberculosis	29	15	13	113	88	24	141	104	37
2. Sexually transmitted diseases (not HIV/AIDS)	338	7	331	13	13	0	351	20	331
a. Syphilis	4	3	2	4	4	0	8	7	2
b. Chlamydia	202	3	198	0	0	0	202	3	198
c. Gonorrhoea	5	1	4	9	9	0	13	9	4
d. Other STDs	128	0	128				128	0	128
3. HIV/AIDS	462	426	36	905	870	35	1367	1296	71
4. Diarrhoeal diseases	624	314	310	109	37	72	733	351	382
5. Childhood immunisable diseases	61	26	35	30	25	6	91	50	41
a. Diphtheria	0	0	0	0	0	0	0	0	0
b. Whooping cough	17	8	10	10	10	0	28	18	10
c. Tetanus	0	0	0	0	0	0	0	0	0
d. Polio	0	0	0	20	14	6	20	14	6
e. Measles	2	1	1	0	0	0	2	1	1
f. Rubella	14	7	7	0	0	0	14	7	7
g. Haemophilus influenzae type b	27	10	18	0	0	0	27	10	18
6. Meningitis	150	92	59	339	199	141	490	291	199
7. Septicaemia	135	74	61	684	349	335	819	423	396
8. Arbovirus infection	320	119	201	0	0	0	320	119	201
9. Hepatitis	133	83	50	863	556	307	996	639	358
a. Hepatitis A	42	28	14	38	14	23	80	43	37
b. Hepatitis B	23	12	11	322	174	148	345	186	159
c. Hepatitis C	68	42	25	503	367	136	571	410	161
10. Malaria	0	0	0	0	0	0	0	0	0
11. Trachoma	197	62	134	0	0	0	197	62	134
12. Other infectious & parasitic	734	249	485	796	470	326	1530	719	811
B. Acute respiratory infections	2572	1326	1246	4615	2213	2402	7187	3539	3648
1. Lower respiratory tract infections	952	492	460	4532	2201	2332	5484	2693	2791
2. Upper respiratory tract infections	820	428	392	69	12	57	889	440	449
3. Otitis media	800	406	394	14	0	14	814	406	408
C. Maternal conditions	576	0	576	46	0	46	622	0	622
1. Maternal haemorrhage	18	0	18	27	0	27	45	0	45
2. Maternal sepsis	18	0	18	0	0	0	18	0	18
3. Hypertension in pregnancy	106	0	106	10	0	10	116	0	116
4. Obstructed labour	31	0	31	0	0	0	31	0	31
5. Abortion	215	0	215	0	0	0	215	0	215
6. Other maternal conditions	187	0	187	9	0	9	196	0	196
D. Neonatal causes	1689	876	813	4197	2353	1844	5886	3229	2657
1. Birth trauma & asphyxia	333	189	145	710	412	298	1043	601	443
2. Low birth weight	840	409	431	949	524	425	1789	933	856
3. Neonatal infections	166	94	71	330	175	156	496	269	227
4. Other neonatal causes	350	184	166	2207	1243	965	2558	1427	1131
E. Nutritional deficiencies	1507	500	1007	148	55	93	1655	555	1100
1. Protein-energy malnutrition	27	14	13	98	49	50	125	62	63
2. Iron-deficiency anaemia	1477	486	991	40	6	34	1517	492	1025
3. Other nutritional deficiencies	3	1	3	10	0	10	13	1	13
II. Non-communicable diseases	189453	94338	95115	194000	105517	88483	383454	199855	183598
F. Malignant neoplasms	14475	7658	6817	70704	38797	31907	85180	46455	38725
1. Mouth and oropharynx cancers	787	557	230	1595	1241	354	2382	1798	584
2. Oesophagus cancer	156	93	63	1977	1412	565	2133	1505	628
3. Stomach cancer	295	202	94	2231	1397	834	2526	1599	927
4. Colorectal cancer	2067	1144	923	9800	5198	4602	11867	6342	5525
5. Liver cancer	31	22	10	697	501	196	728	522	206
6. Gall bladder cancer	52	24	28	682	268	413	734	292	441
7. Pancreas cancer	120	62	58	3235	1647	1588	3355	1709	1646
8. Lung cancer	1318	899	419	15223	10444	4780	16541	11342	5199
9. Bone and connective tissue cancers	295	165	130	831	454	377	1125	618	507
10. Melanoma	1568	849	718	2990	1812	1179	4558	2661	1897
11. Non-melanoma skin cancers	180	114	66	625	445	181	806	559	247
12. Breast cancer	2404	0	2404	6738	0	6738	9143	0	9143
13. Cervix cancer	182	0	182	872	0	872	1054	0	1054
14. Uterus cancer	248	0	248	516	0	516	764	0	764
15. Ovary cancer	165	0	165	1711	0	1711	1876	0	1876

Disease category	Total	YLD		Total	YLL		Total	DALYs	
		Male	Female		Male	Female		Male	Female
16. Prostate cancer	1802	1802	0	3863	3863	0	5665	5665	0
17. Testicular cancer	91	91	0	111	111	0	202	202	0
18. Bladder cancer	399	309	90	1406	953	453	1805	1262	543
19. Kidney cancer	268	163	105	1870	1105	765	2138	1269	870
20. Brain cancer	192	122	70	3219	1873	1347	3411	1995	1417
21. Thyroid cancer	125	27	98	127	65	62	252	92	160
22. Lymphoma	707	389	318	3367	1809	1558	4073	2198	1876
23. Multiple myeloma	110	69	42	1113	566	547	1223	635	589
24. Leukemia	384	209	175	3167	1854	1314	3552	2063	1488
25. Other malignant neoplasms	526	346	180	2739	1781	957	3265	2127	1137
G. Other neoplasms	328	86	242	1017	473	544	1345	560	785
1. Uterine myomas	133	0	133	0	0	0	133	0	133
2. Benign brain tumor	95	36	59	190	72	119	285	107	178
3. Other benign neoplasms	100	51	49	827	402	425	927	452	474
H. Diabetes mellitus	8084	4353	3730	5332	2733	2600	13416	7086	6330
1. Type 1 diabetes	953	477	476	429	202	227	1382	679	703
2. Type 2 diabetes	7131	3877	3254	4904	2530	2373	12034	6407	5627
I. Endocrine and metabolic disorders	2815	1645	1171	2696	1304	1392	5512	2949	2563
1. 1. Non-deficiency anaemia	809	378	431	223	117	107	1033	494	538
a. Thalassemia	10	7	3	0	0	0	10	7	3
b. Other non-deficiency anaemia	799	371	428	223	117	107	1022	487	535
2. Cystic fibrosis	136	53	82	365	108	257	501	161	340
3. Haemophilia	12	12	0	0	0	0	12	12	0
4. Other endocrine and metabolic	1858	1201	657	2108	1080	1028	3966	2281	1685
J. Mental disorders	56065	26496	29570	2540	1485	1055	58605	27980	30624
1. Substance use disorders	8760	5835	2925	1747	1178	569	10507	7013	3495
a. Alcohol dependence/harmful use	6642	4560	2083	750	569	181	7392	5129	2264
b. Heroin dependence or polydrug dependence and harmful use	497	303	194	510	435	75	1008	738	269
c. Sedative dependence/abuse	546	290	256	0	0	0	546	290	256
d. Cannabis dependence/abuse	834	584	250	0	0	0	834	584	250
e. Other drug dependence/abuse	240	98	142	487	174	313	727	272	455
2. Schizophrenia	3268	1662	1606	46	20	26	3314	1682	1632
3. Affective disorders	20591	8369	12221	51	18	33	20642	8387	12254
a. Depression	17261	6709	10551	29	16	13	17289	6725	10564
b. Bipolar affective disorder	3330	1660	1670	22	2	20	3352	1662	1690
4. Anxiety disorders	14120	5568	8552	0	0	0	14120	5568	8552
a. Panic disorder	1038	222	816	0	0	0	1038	222	816
b. Agoraphobia	859	231	628	0	0	0	859	231	628
c. Social phobia	3495	1584	1911	0	0	0	3495	1584	1911
d. Generalised anxiety disorder	5902	2115	3787	0	0	0	5902	2115	3787
e. Obsessive-compulsive disorder	875	457	418	0	0	0	875	457	418
f. Post-traumatic stress disorder	1448	701	747	0	0	0	1448	701	747
g. Separation anxiety disorder	504	259	245	0	0	0	504	259	245
5. Borderline personality disorder	3061	1924	1137	0	0	0	3061	1924	1137
6. Eating disorders	2057	97	1960	53	0	53	2111	97	2013
a. Anorexia nervosa	1059	97	961	49	0	49	1108	97	1010
b. Bulimia nervosa	999	0	999	4	0	4	1003	0	1003
7. Childhood conditions	3551	2660	892	0	0	0	3551	2660	892
a. Attention-deficit disorder	2446	1770	677	0	0	0	2446	1770	677
b. Autism and Asperger's syndrome	1105	890	215	0	0	0	1105	890	215
8. Mental retardation	657	379	278	46	29	17	703	408	295
9. Other mental disorders	0	0	0	596	241	355	596	241	355
K. Nervous system and sense organ disorders	31900	14994	16906	6503	3192	3310	38403	18187	20216
1. Dementia	10401	4169	6232	2582	955	1628	12983	5123	7860
2. Epilepsy	1169	622	547	831	582	249	2000	1204	796
3. Parkinson's disease	3277	1382	1895	707	414	293	3984	1796	2188
4. Multiple sclerosis	517	160	357	188	53	136	705	212	493
5. Motor neuron disease	70	45	25	740	371	369	810	416	394
6. Huntington's chorea	166	106	61	81	27	53	247	133	114
7. Muscular dystrophy	47	40	7	207	197	10	253	236	17
8. Sense organ disorders	13696	7176	6520	0	0	0	13696	7176	6520
a. Glaucoma	325	74	251	0	0	0	325	74	251
b. Cataracts	1011	261	751	0	0	0	1011	261	751
c. Age-related vision disorders	3681	793	2888	0	0	0	3681	793	2888
d. Adult-onset hearing loss	8679	6049	2630	0	0	0	8679	6049	2630
9. Other nervous system, sense organ	2558	1296	1262	1167	594	573	3724	1889	1835

Disease category	Total	YLD		Total	YLL		Total	DALYs	
		Male	Female		Male	Female		Male	Female
L. Cardiovascular disease	18618	11339	7279	76059	41559	34500	94677	52899	41779
1. Rheumatic heart disease	29	10	19	649	287	362	679	297	381
2. Ischaemic heart disease	6701	4285	2415	48190	28449	19741	54891	32735	22156
3. Stroke	6827	4097	2729	16276	7062	9214	23103	11160	11943
4. Inflammatory heart disease	1321	891	430	543	261	282	1864	1152	712
5. Hypertensive heart disease	302	68	234	1267	490	777	1569	558	1011
6. Non-rheumatic valvular disease	183	107	76	1284	647	638	1467	753	714
7. Aortic aneurysm	65	47	18	2240	1404	836	2305	1451	854
8. Peripheral arterial disease	2415	1451	964	886	450	436	3301	1901	1400
9. Other cardiovascular disease	775	383	392	4724	2510	2214	5499	2892	2607
M. Chronic respiratory disease	19429	10097	9332	12812	7478	5333	32241	17575	14665
1. COPD	7128	4518	2609	8905	5545	3360	16033	10063	5970
2. Asthma	10798	4799	5999	1579	693	886	12378	5492	6885
3. Other chronic respiratory disease	1503	779	724	2327	1240	1087	3830	2020	1810
N. Diseases of the digestive system	4369	2009	2360	7032	3933	3098	11401	5942	5459
1. Peptic ulcer disease	515	229	287	804	359	445	1319	588	732
2. Cirrhosis of the liver (non-hepatitis)	142	82	59	2970	2084	886	3111	2166	946
3. Appendicitis	80	42	38	63	39	24	143	81	62
4. Intestinal obstruction	426	199	227	511	243	268	938	443	495
5. Diverticulitis	527	238	289	308	132	176	835	371	465
6. Gall bladder and bile duct disease	241	79	163	447	222	225	689	301	388
7. Pancreatitis	42	25	17	375	206	170	417	230	187
8. Inflammatory bowel disease	1658	798	861	52	16	37	1711	813	897
9. Vascular insufficiency of intestine	82	42	40	504	194	310	586	235	351
10. Other digestive system diseases	656	276	380	996	439	557	1652	715	937
O. Genitourinary diseases	8647	5147	3500	2806	1253	1552	11453	6400	5053
1. Nephritis and nephrosis	365	220	146	1659	699	959	2024	919	1105
2. Benign prostatic hypertrophy	3059	3059	0	91	91	0	3149	3149	0
3. Urinary incontinence	1619	466	1153	0	0	0	1619	466	1153
4. Other genitourinary diseases	3603	1402	2201	1057	464	593	4660	1866	2794
P. Skin diseases	1809	786	1023	221	98	123	2030	884	1146
1. Eczema	558	187	371	1	0	1	560	187	373
2. Other skin diseases	1250	599	652	220	98	122	1470	697	774
Q. Musculoskeletal diseases	15034	5988	9046	1235	329	906	16269	6317	9952
1. Rheumatoid arthritis	1838	582	1256	307	72	235	2145	654	1491
2. Osteoarthritis	10074	4131	5943	126	47	79	10201	4178	6022
3. Chronic back pain	731	385	346	40	26	14	771	411	360
4. Slipped disc	708	424	284	6	3	3	715	428	287
5. Occupational overuse syndrome	637	21	616	0	0	0	637	21	616
6. Osteoporosis	361	44	317	105	17	88	466	61	405
7. Other musculoskeletal diseases	685	401	283	651	164	487	1336	565	771
R. Congenital anomalies	2555	1414	1141	3849	2140	1709	6404	3554	2851
1. Anencephaly	0	0	0	165	92	73	165	92	73
2. Spina bifida	119	61	58	79	59	19	197	120	77
3. Congenital heart disease	419	208	211	1363	702	661	1782	910	872
4. Cleft lip and/or palate	28	16	13	0	0	0	28	16	13
5. Digestive system malformations	11	7	3	139	103	36	150	110	40
a. Anorectal atresia	5	3	2	0	0	0	5	3	
b. Oesophageal atresia	4	3	1	10	10	0	14	13	1
c. Other digestive system malformations	1	1	0	129	93	36	130	93	37
6. Urogenital tract malformations	31	21	10	309	155	155	340	176	165
a. Renal agenesis	7	5	2	60	23	37	67	28	39
b. Other urogenital malformations	24	16	8	250	132	118	273	148	125
7. Abdominal wall defect	16	7	9	41	31	10	57	38	19
8. Down syndrome	519	275	244	193	100	92	712	376	336
9. Other chromosomal disorders	1154	673	481	202	82	120	1356	755	601
10. Other congenital anomalies	258	146	113	1359	816	543	1617	962	655
S. Oral health	4408	2063	2345	9	1	7	4417	2065	2352
1. Dental caries	2486	1239	1248	0	0	0	2486	1239	1248
2. Periodontal disease	1326	648	678	0	0	0	1326	648	678
3. Edentulism	596	177	419	0	0	0	596	177	419
4. Other oral health problems	0	0	0	9	1	7	9	1	7
V. Ill-defined conditions	916	263	653	1185	740	446	2101	1003	1099
1. Sudden infant death syndrome	0	0	0	1185	740	446	1185	740	446
2. Chronic fatigue syndrome	916	263	653	0	0	0	916	263	653

Disease category	Total	YLD		Total	YLL		Total	DALYs	
		Male	Female		Male	Female		Male	Female
III. Injuries	11134	7049	4085	32412	24186	8225	43546	31235	12310
T. Unintentional injuries	10467	6537	3930	16546	11850	4696	27012	18387	8625
1. Road traffic accidents	1833	1243	590	8418	5958	2460	10252	7202	3050
2. Other transport accidents	370	298	72	945	809	136	1315	1107	208
3. Poisoning	52	25	28	1432	1027	405	1484	1051	433
4. Falls	2913	1590	1322	2047	1134	913	4960	2724	2236
5. Fires/burns/scalds	357	249	107	327	279	48	684	528	156
6. Drowning	23	15	8	1130	869	261	1153	884	269
7. Sports injuries	436	346	90	9	9	0	445	355	90
8. Natural and environmental factors	118	75	43	200	149	52	318	224	95
9. Machinery accidents	586	534	53	324	296	29	911	829	81
10. Suffocation and foreign bodies	25	22	4	527	405	123	553	427	126
11. Adverse effects of medical treatment	188	103	85	104	46	58	292	148	144
a. Surgical/medical misadventure	68	39	29	85	36	49	153	75	78
b. Adverse effects of drugs in therapeutic use	120	64	56	19	9	10	139	73	66
12. Other unintentional injuries	3565	2036	1528	1082	871	211	4646	2907	1739
a. Cutting and piercing accidents	324	244	80	46	46	0	370	290	80
b. Striking and crushing accidents	615	452	162	261	232	29	875	684	192
c. Other unintentional injuries	2626	1340	1286	775	593	182	3401	1933	1468
U. Intentional injuries	667	512	156	15866	12336	3530	16533	12848	3685
1. Suicide and self-inflict injuries	88	47	41	14170	11293	2877	14258	11340	2918
2. Homicide and violence	579	464	115	1538	913	625	2117	1377	740
3. Legal intervention and war	1	1	0	158	130	27	159	131	28