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HEALTH

Burden of Disease and Injury Study

Impact and causes of illness, injury and death in the Northern Territory, 2004-2013

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NORTHERN TERRITORY GOVERNMENT

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Xiaohua Zhang, Yuejen Zhao and Steven Guthridge

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Selected Innovation and Research publications

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Zhao Y, You J, Guthridge S. Burden of disease and injury in the Northern Territory, 1999-2003. Darwin: Department of Health and Families, 2009

Skov JS, Chikritzhs NT, Li SQ, Pircher S, Whetton S. How much is too much? Alcohol consumption and related harms in the Northern Territory. Med J Aust 2010, 193(5): 269-272

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Summary

The burden of disease and injury (BOD) methodology is an epidemiological tool developed to inform health policy and the distribution of resources by estimating the relative impacts of both fatal and non-fatal conditions in a population. The BOD method collates information on more than 200 conditions, which when added together forms the total burden of disease and injury for a population. The method can be used to compare different populations and to assess the influence of a range of risk factors on the health of a population. The average BOD per person in the population is measured in disability-adjusted life years (DALY), which incorporates years of life lost (YLL) and years lived with disability (YLD). The YLL rate and the YLD rate represent the corresponding burden of fatal and non-fatal disease per person. This report, the third Northern Territory (NT) BOD study, describes the BOD for the NT Aboriginal and non-Aboriginal populations between 2004 and 2013.

Key findings

- Fatal (YLL) and non-fatal (YLD) BOD each accounted for about half of total BOD (48% and 52% respectively) in the NT population.
- Total BOD (age-adjusted DALY rate) was greater for males than females.
- Males had a higher fatal burden but females had a higher non-fatal burden.
- Males had a greater BOD than females from injuries (particularly suicide and road traffic accidents), cancers and cardiovascular diseases (particularly coronary heart disease).
- The NT population's BOD per person (i.e. age-adjusted DALY rate) was 80% higher than the total Australian population. This disparity was largely driven by the poor health of the NT Aboriginal population.
- Total BOD was more than three times higher for the NT Aboriginal population than the non-Aboriginal population.
- This BOD gap between Aboriginal and non-Aboriginal Australians was greater in the NT than Australia as a whole.
- For the non-Aboriginal population, the leading BOD groups by total DALYs were unintentional injuries (19%), cancer (16%) and cardiovascular diseases (13%).
- For the Aboriginal population, the leading BOD groups were cardiovascular diseases (15%), unintentional injuries (13%) and infectious diseases (9%).
- DALY rates for the Aboriginal population were higher across all disease groups. The greatest gaps were for kidney/urinary diseases (9.7 times higher), endocrine disorders (7.3 times higher) and mental/alcohol disorders (6.6 times higher).
- There was a pattern of greater burden occurring at younger ages in the Aboriginal population when compared with the non-Aboriginal population. The BOD gap was greatest in the age-groups of 0-4 years and 35 to 54 years.

- The leading non-fatal disease groups in the Aboriginal population were infectious diseases, unintentional injuries, mental/alcohol disorders and cardiovascular diseases. In the non-Aboriginal population, the leading non-fatal disease groups were unintentional injuries, gastrointestinal disorders, and reproductive/maternal conditions.
- The leading fatal disease groups in the Aboriginal population were cardiovascular diseases, unintentional injuries and cancers. In the non-Aboriginal population, the leading fatal disease groups were cancers, cardiovascular diseases and unintentional injuries.
- The difference in total YLL rates between the Aboriginal and non-Aboriginal populations was largely due to a greater incidence of cardiovascular diseases, cancers and endocrine disorders.
- BOD was greater for those living in remote areas, largely due to a greater proportion of Aboriginal people living in these areas.
- There was a considerable improvement in fatal BOD between 1999 and 2013 but this was mostly offset by an increase in non-fatal BOD. As a result, there was only a small reduction in total BOD over this period. The increase in non-fatal BOD may have been a result of fewer people with serious disease/s dying but instead living longer with disability.
- The adverse health consequences of socio-economic disadvantage, tobacco smoking, high body mass, physical inactivity and alcohol underpin the excess fatal and non-fatal BOD in the NT population.

Introduction

Disease and injury impose a substantial burden on the population and health system in the Northern Territory (NT). Burden of disease and injury (BOD) analysis quantifies the combined fatal and non-fatal effect of ill-health on a population. Previous Australian and NT BOD studies indicated the NT had the highest BOD on a per capita basis among all jurisdictions.[1-3] The latest NT study indicates that between 1999 and 2003 and after adjustment for population age structure, the BOD in the Aboriginal population was 3.57 times the national average, while the non-Aboriginal population was 1.22 times the national average.[3] BOD is measured in disability-adjusted life years (DALY), a composite measure that incorporates both years of life lost (YLL) due to premature death and years lived with disability (YLD) due to morbidity.[4]

Previous burden of disease studies

Since the first report in 1996, the World Health Organization has regularly published global BOD reports,[5-7] which have provided the key platform for maintaining and developing the DALY methodology. The Australian Institute of Health and Welfare (AIHW) published the first Australian BOD study in 1999[8] and the second in 2007.[1] The University of Queensland conducted a BOD study for the Australian Aboriginal and Torres Strait Islander population to coincide with the second national study.[9] The AIHW has recently completed the third Australian BOD study,[10,11] for the first time including a component specifically for the Aboriginal and Torres Strait Islander population.[12,13]

In the NT, the first two BOD studies were undertaken for the periods 1994-1998 and 1999-2003[2,3] to align with national studies. The third NT BOD study commenced in 2016 to update information about BOD for the NT in 2004-2013, in comparison with the updated national results and to inform health care policy and support regional health service planning. The first report of the third NT BOD study focused on fatal BOD.[14]

Purpose of this report

This is the second report of the third NT BOD study. The purposes of this report are to:

- estimate BOD for NT Aboriginal and non-Aboriginal populations for two five-year periods of 2004-2008 and 2009-2013;
- assess changes in BOD between 1999 and 2013;
- compare the BOD in the NT with that for Australia as a whole;
- estimate the contribution of risk factors to BOD;
- predict future BOD based on projected changes in the NT population size and composition; and
- analyse BOD by sex, age, Aboriginality, regions (Central Australia and Top End) and health districts (Alice Springs Rural, Alice Springs Urban, Barkly, Darwin Rural, Darwin Urban, East Arnhem and Katherine), to inform health service development and planning.

Methods

Data sources

Estimation of fatal BOD (YLL) requires data on each death that occurred in the NT population during the study period, including the date and cause of death, age, sex, Aboriginality and place of residence of the deceased person. YLL was calculated using mortality data from national cause of death unit record files produced by the Australian Bureau of Statistics (ABS). This dataset is compiled by the ABS from death registrations supplied by the Registries of Births, Deaths and Marriages in each State and Territory. It contains information about all deaths of NT residents that occurred anywhere in Australia, but does not include the small number of deaths of NT residents that occurred overseas.

Calculation of non-fatal BOD (YLD) is based on the prevalence of 205 conditions (causes) in the population by age, sex, area of residence and Aboriginality, and the relative disability each condition imposed on the affected person. The prevalence of each condition was calculated from the most reliable data source available for each condition. When multiple data sources were available, a hierarchical structure was followed, giving preference to disease registry and surveillance data, followed by health survey and health care administrative data, and data from specific research projects.[3] Disease registry and surveillance data sources included the NT Cancer Registry, and the NT Communicable Diseases Notification System (maintained by the NT Centre for Disease Control). Health care administrative data included hospital inpatient and emergency department data from NT public hospitals and the Primary Care Information System (PCIS) data from primary care clinics in remote communities. Prevalence from the PCIS data was adjusted by inverse probability weights, taking from the proportion of annual service population to the total population to account for graduate roll-out and incomplete coverage of the PCIS system.[15,16] International Classification of Primary Care codes, status and event dates are used to identify prevalent cases.[17]

Data from each source was assessed for quality. The assessment included internal validity (e.g. missing data), implausible data (e.g. extremely old age) and internal inconsistency between data items (e.g. males diagnosed with female-specific conditions and vice versa). External validity was also assessed, including for inconsistency between data sources (where more than one source was available) and implausible differences compared with national and previous NT BOD results.

NT Estimated Resident Population (ERP) data produced by the ABS was used as the denominator to calculate DALY, YLL and YLD rates. All data sources included demographic breakdown by age, sex, Aboriginality, NT health district of residence, and period. The age distribution of the 2001 Australian ERP was used as the standard age-specific weight when calculating direct age standardised rates.

Disease group classification

The distribution of DALYs has been aggregated into broad disease groups based on cause of death or diagnosis coded in the International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10) (Table 1).

Table 1. Disease groups, with abbreviations used in tables and figures

Abbreviation	Disease group
Infectious	Infectious diseases
Infant/congenital	Infant and congenital conditions
Cancer	Cancer and other neoplasms
Endocrine	Endocrine disorders
Cardiovascular	Cardiovascular diseases
Mental/alcohol	Mental and substance use disorders
Neurological	Neurological conditions
Hearing/vision	Hearing and vision disorders
Respiratory	Respiratory diseases
Gastrointestinal	Gastrointestinal disorders
Kidney/urinary	Kidney and urinary diseases
Reprod/maternal	Reproductive and maternal conditions
Skin	Skin disorders
Musculoskeletal	Musculoskeletal conditions
Oral	Oral disorders
Blood/metabolic	Blood and metabolic disorders
Unintentional inj	Unintentional injuries
Intentional inj	Intentional injuries

The NT BOD study broadly adopts the disease group classification of the Australian BOD study.[10] However, the NT BOD study makes a few variations to account for issues which are specific to the NT:

- The injuries disease group was subdivided into intentional and unintentional injuries due to the high BOD from injuries in the NT
- Melioidosis (A34) was included as a separate subcategory in the infectious diseases group
- Scabies (M07) was included as a separate subcategory in the skin disorders group.

For fatal burden, the BOD classification was generally based on the underlying cause of death. A death with an ill-defined underlying cause was redistributed to the BOD group of the next classifiable cause in the sequence. If there was no classifiable sequential cause available, the redistribution was based on the proportions of classifiable deaths for the same ICD-10 chapter.

For non-fatal burden, the prevalence of cause was based on either registration, survey, activity or research data, depending on availability. Multiple sources were analysed and assessed for derivation of prevalence using activity data.

A complete list of disease groups and specific diseases is presented in the Appendix.

Calculation of DALY, YLL and YLD

Total burden of disease is measured by DALY, which is the sum of YLL and YLD. YLL is rather simple to estimate, representing the additional years of life each deceased person should have expected to live by cross-referencing their age at death with the standard life table used in the third Australian BOD Study.[10]

On the other hand, establishing YLD is relatively complex. The NT BOD study uses 'prevalent YLD', the same YLD measure as the Australian BOD study. Prevalent YLD for each condition was calculated by multiplying the number of prevalent cases of that condition by the corresponding disability weight as used by the Australian BOD study.[11] Diseases often has multiple disability weights; that is, specific levels of disability associated with varying severities or stages (health state) of the disease. Where possible, prevalence data for each health state of a disease was sought. For conditions with no sufficient data to estimate prevalence at the health state level, the average disability weight of all relevant health states was applied to the total prevalence of the disease.

YLD can be estimated using either the direct or indirect method. The direct method uses complete data about the prevalence of specific conditions in the population from population-based disease registers and notification systems. On the other hand, the indirect method uses service activity or survey data to estimate condition prevalence in the population.

Initially, the indirect method was used for all BOD categories. The 2011 national BOD results[11] were assumed to be comparable with the NT non-Aboriginal population between 2009 and 2013. These results were used as the base to derive hospital morbidity rate ratios for the Aboriginal population and for previous periods using hospital activity data for age, sex and cause specific YLD rates.

The direct method was then used for selected conditions to review, assess and validate the preliminary indirect YLD estimates. The selected conditions included cancer (32 specific causes) and notifiable diseases (34 specific causes), for which good quality register or surveillance data were available. Also included were 32 priority causes based on the NT or national top 20 rankings and 5 research causes with special relevance to the NT population (rheumatic heart disease, otitis media, stroke, scabies and melioidosis). For these selected causes, the prevalence was validated using patient level diagnoses of remote primary care clinics for the Aboriginal population or hospital emergency departments for the non-Aboriginal population.

Contribution of risk factors to DALYs

The third national BOD study did not provide a detailed risk factor assessment methodology.[18] Therefore, this study followed the methods used in the second national BOD study.[1] There were 12 risk factors investigated for both the Aboriginal and non-Aboriginal populations. These included:

- alcohol use
- illicit drug use
- tobacco smoking
- unsafe sex
- child sexual abuse
- intimate partner violence
- physical inactivity
- high blood pressure
- high body mass index
- low fruit and vegetable intake
- high blood cholesterol
- osteoporosis.

Four additional risk factors (occupational exposures, ozone, and both long and short term effects of air pollution) were investigated for the non-Aboriginal population only, due to data unavailability. The contribution of a risk factor to BOD for each condition was quantified using the population attributable fraction method. This calculation uses the sex and age specific population distribution of exposure to a risk factor and the relative risk of developing each condition in people exposed to that risk factor compared to those not exposed.[3]

For the NT non-Aboriginal population, NT epidemiological and health survey data was used to estimate the distribution of exposure to each risk factor. For the NT Aboriginal population, the distribution of risk factor exposure in remote areas as reported the second national Aboriginal and Torres Strait Islander BOD study was used.[9] This assumes that the NT Aboriginal population has similar exposure to risk factors as Aboriginal and Torres Strait Islander people living in remote areas throughout Australia.

As in the second NT BOD study, this study includes low socio-economic status as a risk factor, despite not being included in the Australian BOD study. This reflects low socio-economic status and poverty as being widely recognised as a key determinant of many categories of disease and injury in the NT while also underpinning many other risk factors.[19] Socio-economic status of the population at a small area level was estimated using the Socio-Economic Indexes for Areas (SEIFA) index at Statistical Local Area (SLA) level for the 2006 Census or at Statistical Area 2 (SA2) level for the 2011 Census.[20] The interplay between poverty and disease burden at small area level was assessed using only YLL because YLD information was not available at the SLA or SA2 level. This assumes that the

association between each risk factor and YLD was the same as the association between the risk factor and YLL.

Gini Concentration Indices were used to assess the relationship between SEIFA score and BOD. Firstly, the Gini coefficient calculated the total dispersion of BOD in the NT at small area level. Next, the Concentration Index was calculated to estimate the extent to which BOD differs across small areas ranked by SEIFA score. The ratio of Concentration Index over Gini coefficient provided the proportional contribution of SEIFA to the total dispersion.[21]

The contribution by each risk factor was assessed independently in univariate analysis, so the estimates for the association between risk factors and BOD are not mutually exclusive. This means that the estimated proportion of BOD associated with all risk factors may exceed 100%. A method for assessing the interaction between the risk factors would require knowledge of the complex causal pathways between risk factors and conditions. We did not develop such a model to incorporate the interaction of risk factors. Therefore, the combined contribution of all risk factors cannot be provided.

Uncertainty analysis

For group comparison, such as BOD rate between Aboriginal and non-Aboriginal populations, the bootstrap method was applied to construct confidence intervals for age-standardised rates, taking the population as the sample size. This determines the statistical significance of the difference between two populations. We used 2000 replicates in the estimation.

Results

Total burden of disease

During the period 2004-2013 a total of 650,913 DALYs were lost due to premature death and disability in the NT (Table 2). The crude rate was slightly higher for males than females in the non-Aboriginal population (563.9 compared with 534.8 per 1,000 population) but over 40% higher for Aboriginal males than females (211.9 compared with 148.4). The crude rate was much higher for Aboriginal than non-Aboriginal people, being 3.6 times higher among Aboriginal females and 2.7 times higher among Aboriginal males. The Aboriginal population comprised 30% of the NT population but accounted for 57% of total DALYs.[22]

Table 2. Number, rate and rate ratio of disability-adjusted life years (DALYs) by sex, Aboriginality and period, Northern Territory, 2004-2013

	2004-2008	2009-2013	2004-2013
	Number of DALYs		
Female	138,956	147,719	286,674
Aboriginal	86,337	93,223	179,560
Non-Aboriginal	52,619	54,496	107,114
Male	183,602	180,636	364,239
Aboriginal	97,091	92,828	189,919
Non-Aboriginal	86,511	87,808	174,320
Person	322,558	328,355	650,913
Aboriginal	183,428	186,051	369,479
Non-Aboriginal	139,130	142,304	281,434
	Crude rate (DALYs per 1000 population)		
Female	275.4	267.2	271.1
Aboriginal	529.0	540.3	534.8
Non-Aboriginal	154.2	143.3	148.4
Male	335.8	294.8	314.2
Aboriginal	594.2	535.3	563.9
Non-Aboriginal	225.7	199.9	211.9
Person	306.8	281.7	293.6
Aboriginal	561.7	537.8	549.4
Non-Aboriginal	192.0	173.6	182.3
	Rate ratio (Aboriginal/Non-Aboriginal)		
Female	3.43	3.77	3.60
Male	2.63	2.68	2.66
Person	2.93	3.10	3.01

Figure 1 presents the proportional distribution of total DALYs alongside the total population by five-year age-group for Aboriginal and non-Aboriginal people. There was a general pattern of greater representation in younger age-groups for both DALYs and population for Aboriginal people compared to non-Aboriginal people. The peak age-group for DALYs was 15 years younger for Aboriginal people than non-Aboriginal people (40-44 vs 55-59 years respectively).

The number of DALYs and DALY rate varied significantly with age (Figure 2). The age-specific DALY rate for the total NT population was relatively high in the 0-4 year age-group before falling to its lowest at 5-9 years. The DALY rate then increased gradually between the 5-9 year and 55-59 year age groups, and more rapidly through older age-groups (60+ years). Males had higher age-specific DALY rates than females in all age-groups (Figure 2).

The Aboriginal population had higher age-specific DALY rates than the non-Aboriginal population in all age-groups (Figure 3). In age-groups less than 55 years, Aboriginal people experienced a greater total number of DALYs, despite having a smaller share of the population. Age-specific DALY rates were consistently higher for males than females in the non-Aboriginal population, but not in the Aboriginal population (Figures 4 and 5).

Figure 1. Proportion of population and disability-adjusted life years (DALYs) by age and Aboriginality, Northern Territory, 2004-2013

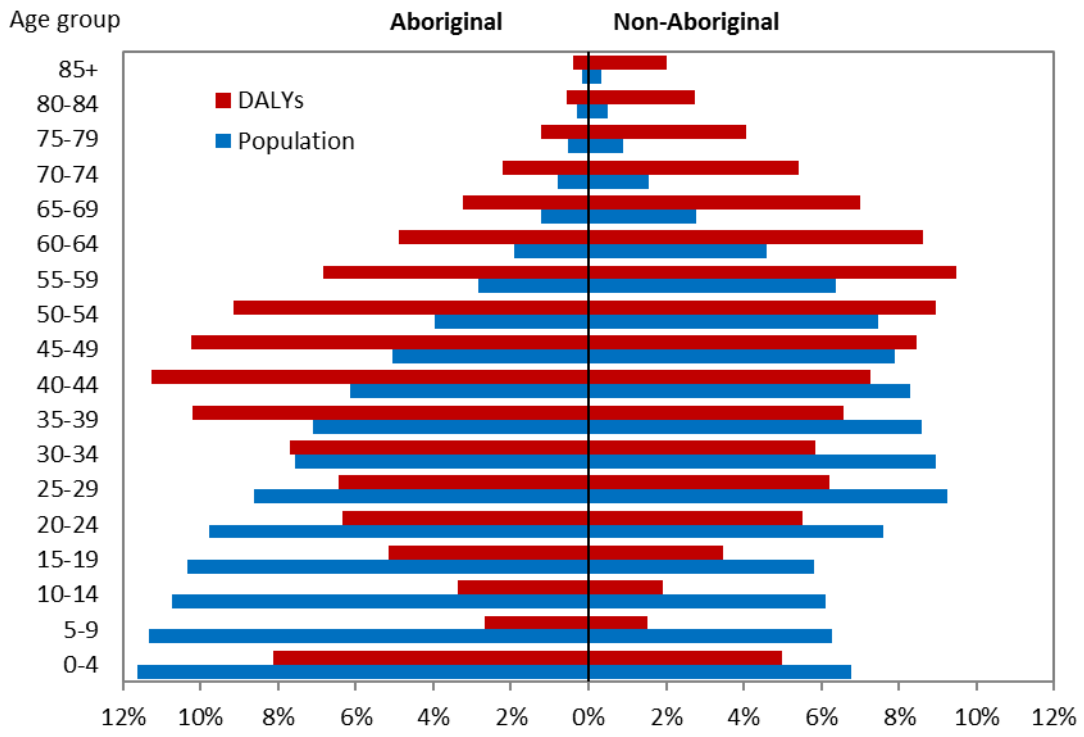


Figure 2. Number and rate of disability-adjusted life years (DALYs) by age and sex, Northern Territory, 2004-2013

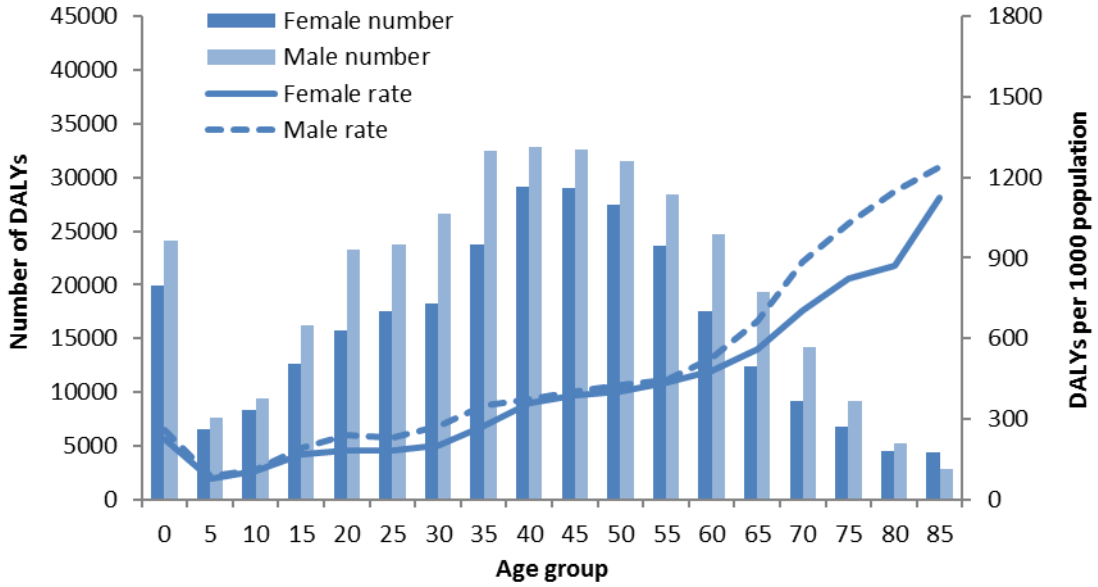


Figure 3. Number and rate of disability-adjusted life years (DALYs) by age and Aboriginality, Northern Territory, 2004-2013

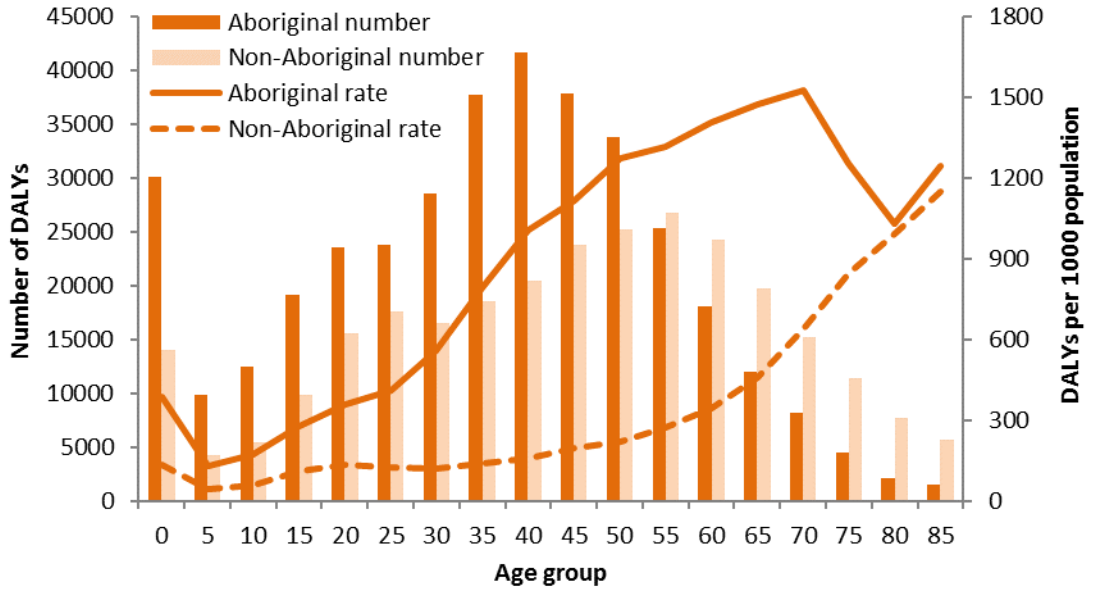


Figure 4. Number and rate of disability-adjusted life years (DALYs) by age and sex, Northern Territory Aboriginal population, 2004-2013

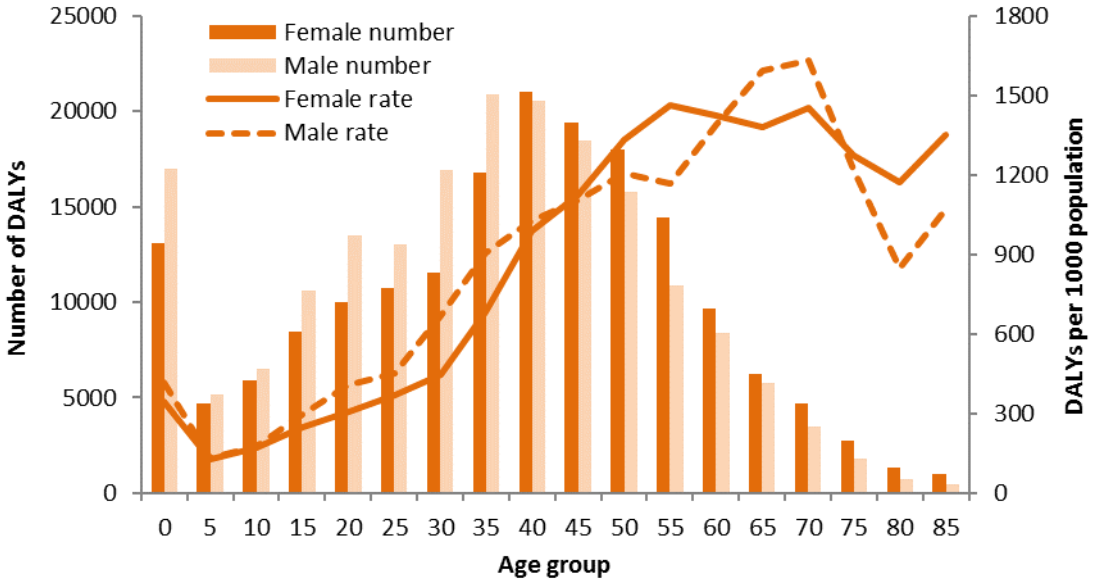
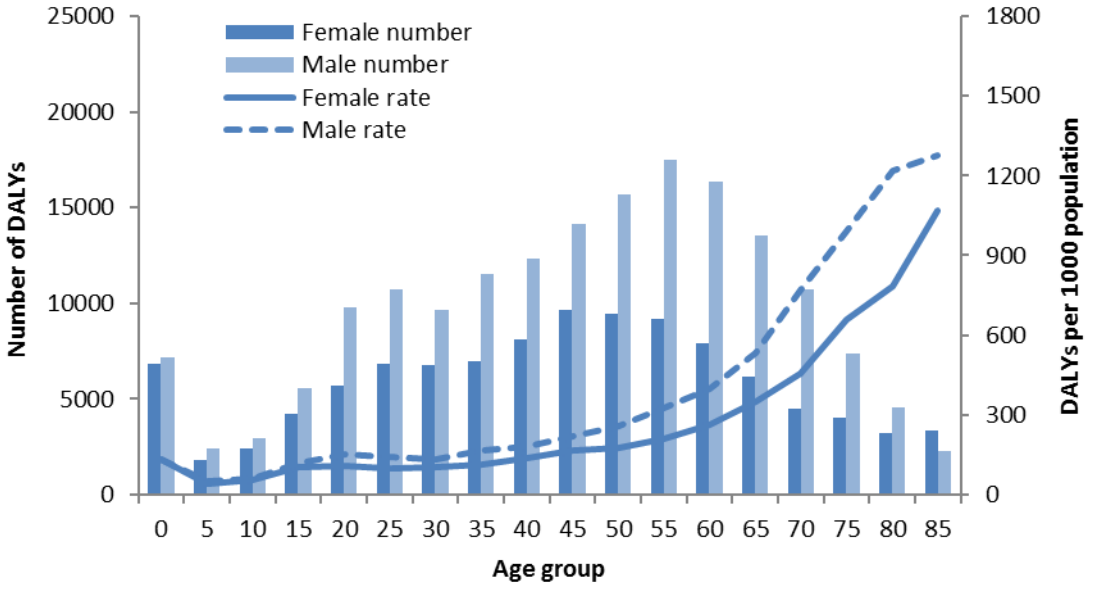


Figure 5. Number and rate of disability-adjusted life years (DALYs) by age and sex, Northern Territory non-Aboriginal population, 2004-2013



Disability-adjusted life years by disease group

For the total NT population, the three leading disease groups by total DALYs were unintentional injuries (16%), cardiovascular diseases (14%) and cancer/neoplasms (11%) (Figure 6). These were followed by infectious diseases (8%) and gastrointestinal conditions (7%). Together, the top five disease groups accounted for 55% of total DALYs. Comparing the differences between sexes, injuries, cardiovascular diseases and cancer resulted in proportionally more DALYs among males than females, while infectious diseases and gastrointestinal conditions were slightly higher among females than males.

There were major differences in the leading causes of DALYs between Aboriginal and non-Aboriginal populations. In the Aboriginal population, the top three causes were cardiovascular diseases (15%), unintentional injuries (13%) and infectious diseases (9%) (Figure 7), while for the non-Aboriginal population the top causes were unintentional injuries (19%), cancer/neoplasms (16%) and cardiovascular diseases (13%) (Figure 8).

Figure 9 presents the relative contributions of fatal and non-fatal components to DALYs by disease group. For the NT population, 52% of total DALYs were due to non-fatal conditions. Among the five leading disease groups, the fatal component was dominant for cancer/neoplasms (89%) and cardiovascular diseases (66%), while for unintentional injuries the non-fatal component was dominant across infectious diseases (75%) and gastrointestinal disorders (61%).

While the total DALY rate was only moderately higher for males than females, there were large gender differences for particular disease groups (Table 3). Males had higher DALY rates for injuries (both intentional and unintentional), cardiovascular diseases and cancers. Females had higher rates for reproductive/maternal conditions and, to a lesser extent, kidney/urinary diseases and blood/metabolic diseases.

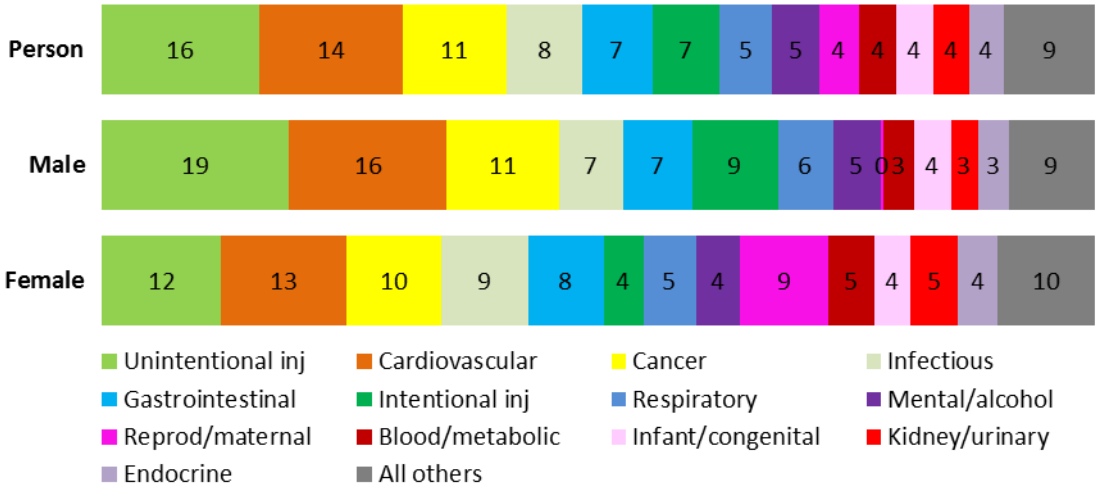
The DALY rate in the Aboriginal population was 3.4 times greater than the non-Aboriginal population (Table 4). The Aboriginal population had a higher DALY rate for all disease groups, with the greatest disparities in kidney/urinary diseases (9.7 times higher), endocrine disorders (7.3 times higher) and mental/alcohol disorders (6.6 times higher). The cardiovascular disease group was the greatest contributor to the difference between Aboriginal and non-Aboriginal DALY rates, accounting for 18.6% of the total variation. Other major contributors were infectious diseases (10.1%), respiratory diseases (8.7%), kidney/urinary diseases (8.3%) and unintentional injuries (7.9%).

Figures 10 and 11 illustrate the distribution of DALYs by disease group over the life course of females and males. DALYs in the 0-4 year age-group were dominated by infant/congenital conditions for both females and males. In the age-groups between 10 and 34 years, reproductive/maternal conditions were prominent for females. For males, injuries were prominent during late childhood and young adulthood and continued to be significant into the middle age range, while cardiovascular diseases and cancers were responsible for greater proportions of burden in later life.

The age patterns for disease groups were different for Aboriginal and non-Aboriginal people (Figures 12 and 13). Noticeable differences included:

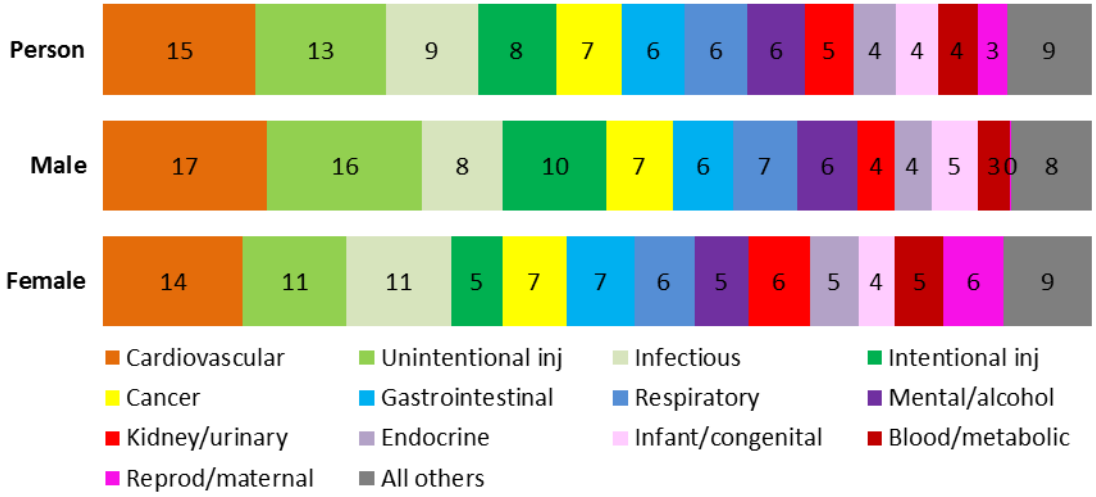
- a much greater burden from infectious diseases for Aboriginal people
- a greater burden from cancer in non-Aboriginal people in older age-groups
- a greater burden from cardiovascular diseases in middle age Aboriginal people
- in adolescence and young adulthood, the burden from injury was predominantly from intentional injury for Aboriginal people while unintentional injury was more prominent for non-Aboriginal people.

Figure 6. Proportion (%) of disability-adjusted life years by disease group and sex, Northern Territory, 2004-2013



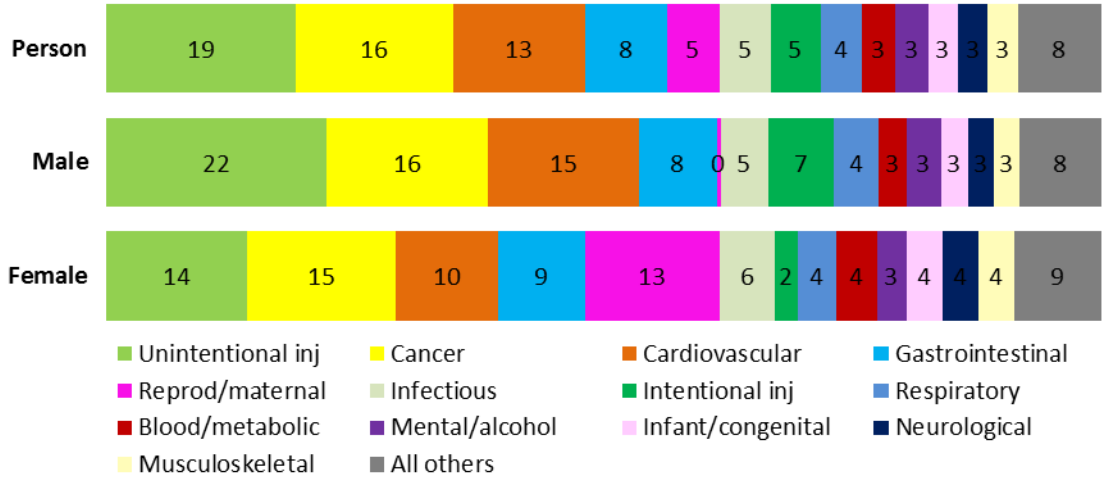
Note: Reprod = Reproductive; inj = injuries

Figure 7. Proportion (%) of disability-adjusted life years by disease group and sex, Northern Territory Aboriginal population, 2004-2013



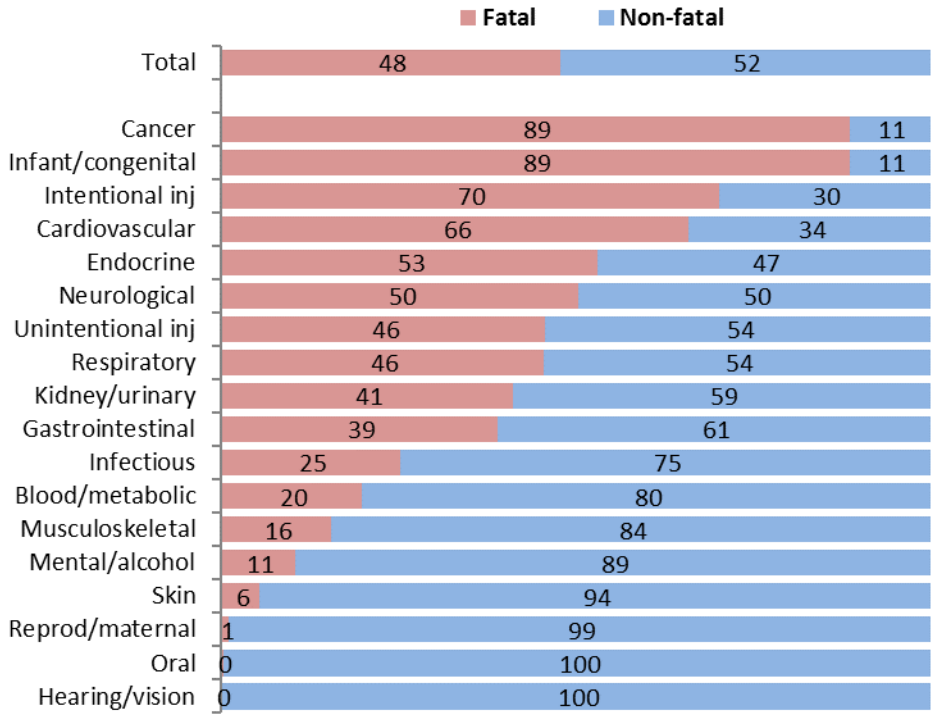
Note: Reprod = Reproductive; inj = injuries

Figure 8. Proportion (%) of disability-adjusted life years by disease group and sex, Northern Territory non-Aboriginal population, 2004-2013



Note: Reprod = Reproductive; inj = injuries

Figure 9. Fatal and non-fatal proportions (%) of disability-adjusted life years by disease group, Northern Territory, 2004-2013



Note: Reprod = Reproductive; inj = injuries

Table 3. Age-standardised rate of disability-adjusted life years by disease group and sex, Northern Territory, 2004-2013

Disease group	Male*	Female*	Ratio#	Difference#	Contribution (%)†
Infectious	23.0	25.6	0.9	-2.5	-4.9
Infant/congenital	9.8	8.0	1.2	1.8	3.5
Cancer	52.7	37.3	1.4	15.4	29.6
Endocrine	13.3	15.2	0.9	-1.9	-3.6
Cardiovascular	67.3	47.7	1.4	19.7	37.8
Mental/alcohol	15.3	12.2	1.3	3.1	6.0
Neurological	13.4	11.8	1.1	1.6	3.0
Hearing/vision	4.6	4.5	1.0	0.1	0.1
Respiratory	23.5	18.9	1.2	4.6	8.8
Gastrointestinal	24.1	23.2	1.04	0.9	1.7
Kidney/urinary	11.7	16.8	0.70	-5.1	-9.8
Reprod/maternal	1.0	21.6	0.0	-20.6	-39.6
Skin	7.5	6.7	1.1	0.8	1.5
Musculoskeletal	7.6	9.4	0.8	-1.8	-3.4
Oral	1.8	2.2	0.8	-0.4	-0.8
Blood/metabolic	11.3	14.7	0.8	-3.4	-6.5
Unintentional inj	58.4	34.1	1.7	24.3	46.6
Intentional inj	25.0	9.3	2.7	15.6	30.0
Total	371.2	319.1	1.2	52.1	100.0
(95% CI)	(370.6-371.6)	(319.4-320.3)			

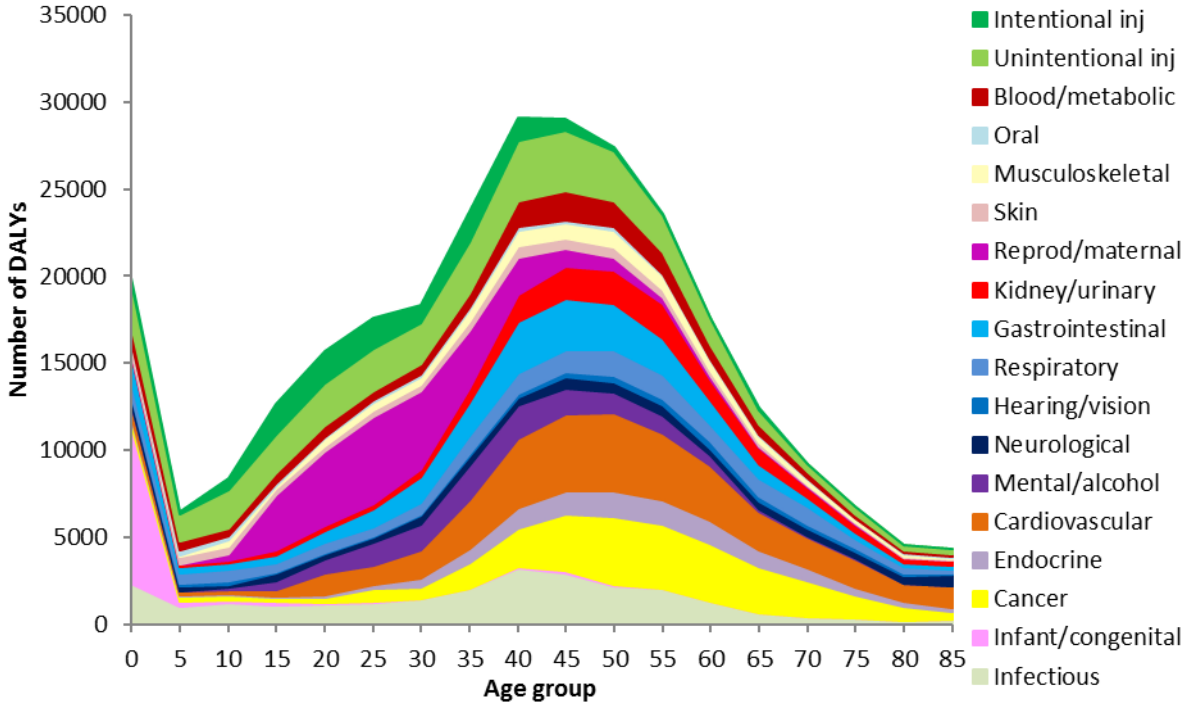
Note: Reprod = Reproductive; inj = injuries; CI = Confidence interval
* age-standardised rate per 1,000 population; # males compared to females; † proportional contribution to the total rate difference

Table 4. Age-standardised rate of disability-adjusted life years by disease group and Aboriginality, Northern Territory, 2004-2013

Disease group	Aboriginal*	Non-Aboriginal*	Ratio#	Difference#	Contribution (%)†
Infectious	65.3	11.2	5.8	54.1	10.1
Infant/congenital	13.8	5.4	2.5	8.3	1.5
Cancer	71.6	38.8	1.8	32.7	6.1
Endocrine	46.5	6.4	7.3	40.2	7.5
Cardiovascular	136.8	36.5	3.7	100.3	18.6
Mental/alcohol	39.3	6.0	6.6	33.3	6.2
Neurological	24.0	9.2	2.6	14.8	2.7
Hearing/vision	7.9	3.6	2.2	4.3	0.8
Respiratory	57.8	11.3	5.1	46.6	8.7
Gastrointestinal	48.9	16.3	3.0	32.6	6.1
Kidney/urinary	50.0	5.1	9.7	44.9	8.3
Reprod/maternal	15.4	8.8	1.7	6.6	1.2
Skin	14.5	4.4	3.3	10.1	1.9
Musculoskeletal	16.6	6.3	2.6	10.3	1.9
Oral	4.4	1.1	4.0	3.3	0.6
Blood/metabolic	31.1	7.4	4.2	23.7	4.4
Unintentional inj	78.4	35.9	2.2	42.5	7.9
Intentional inj	37.8	8.5	4.5	29.3	5.5
Total	760.1	222.2	3.4	537.9	100.0
(95% CI)	(758.2-761.5)	(221.9-222.5)			

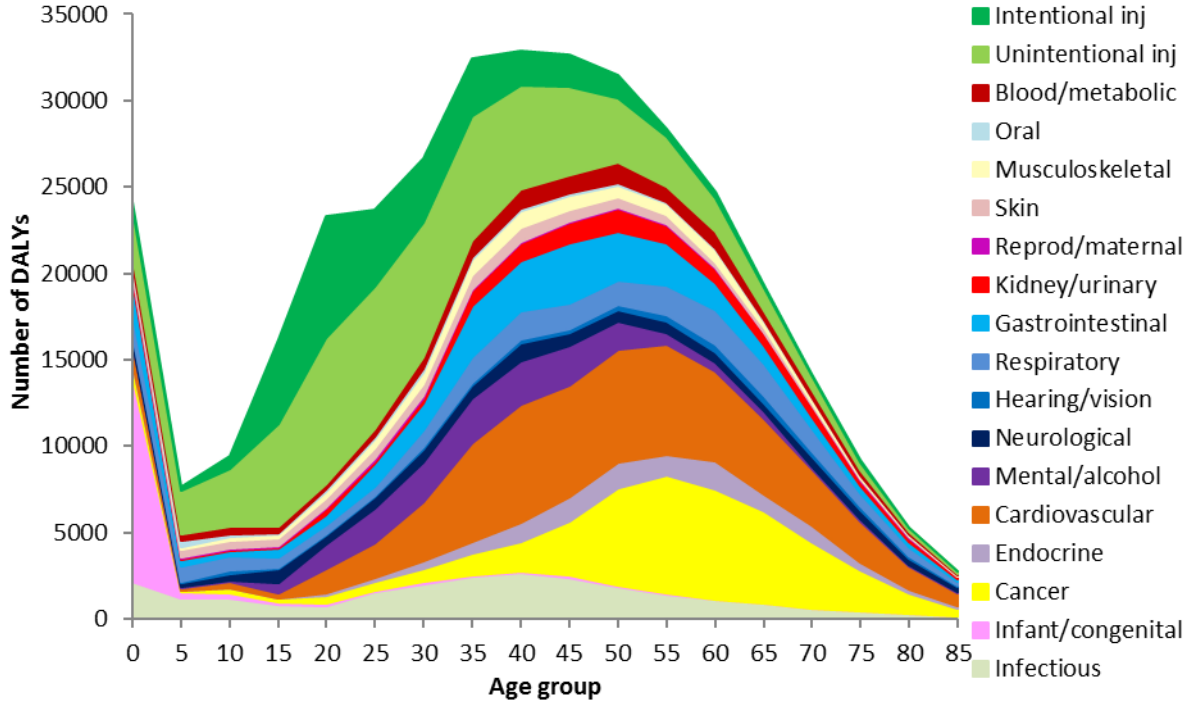
Note: Reprod = Reproductive; inj = injuries; CI = Confidence interval
* age-standardised rate per 1,000 population; # Aboriginal compared to non-Aboriginal; † proportional contribution to the total rate difference

Figure 10. Number of disability-adjusted life years (DALYs) by disease group and age, Northern Territory females, 2004-2013



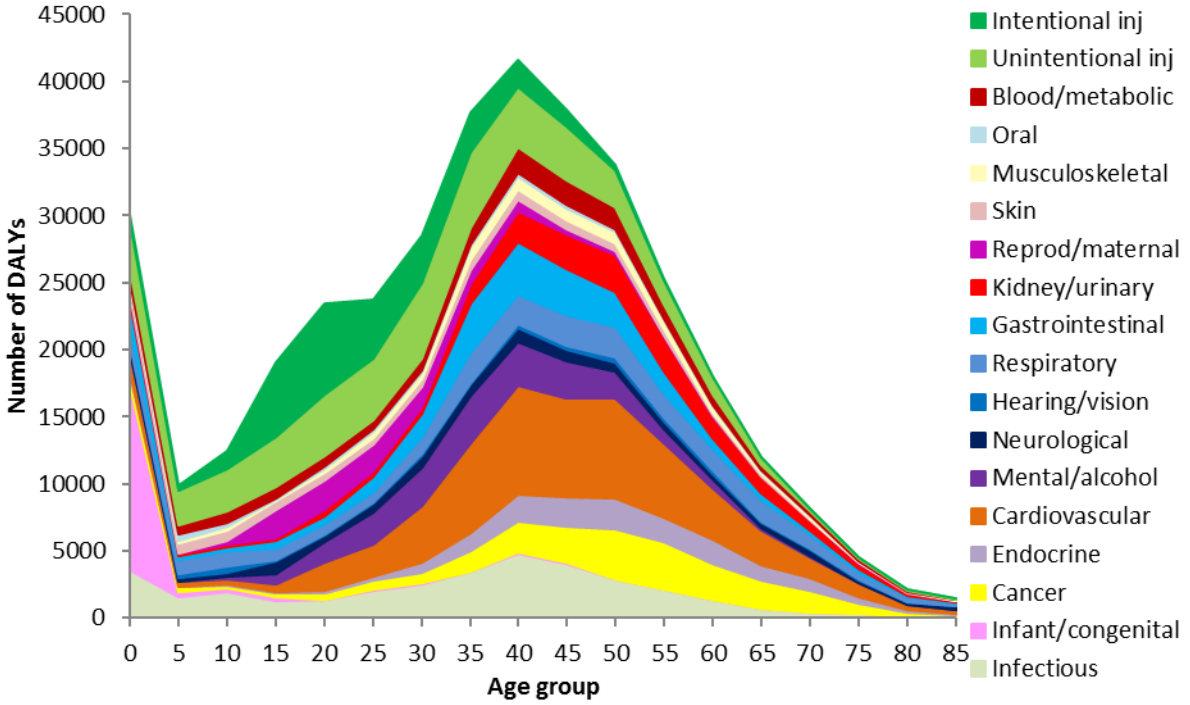
Note: Reprod = Reproductive; inj = injuries

Figure 11. Number of disability-adjusted life years (DALYs) by disease group and age, Northern Territory males, 2004-2013



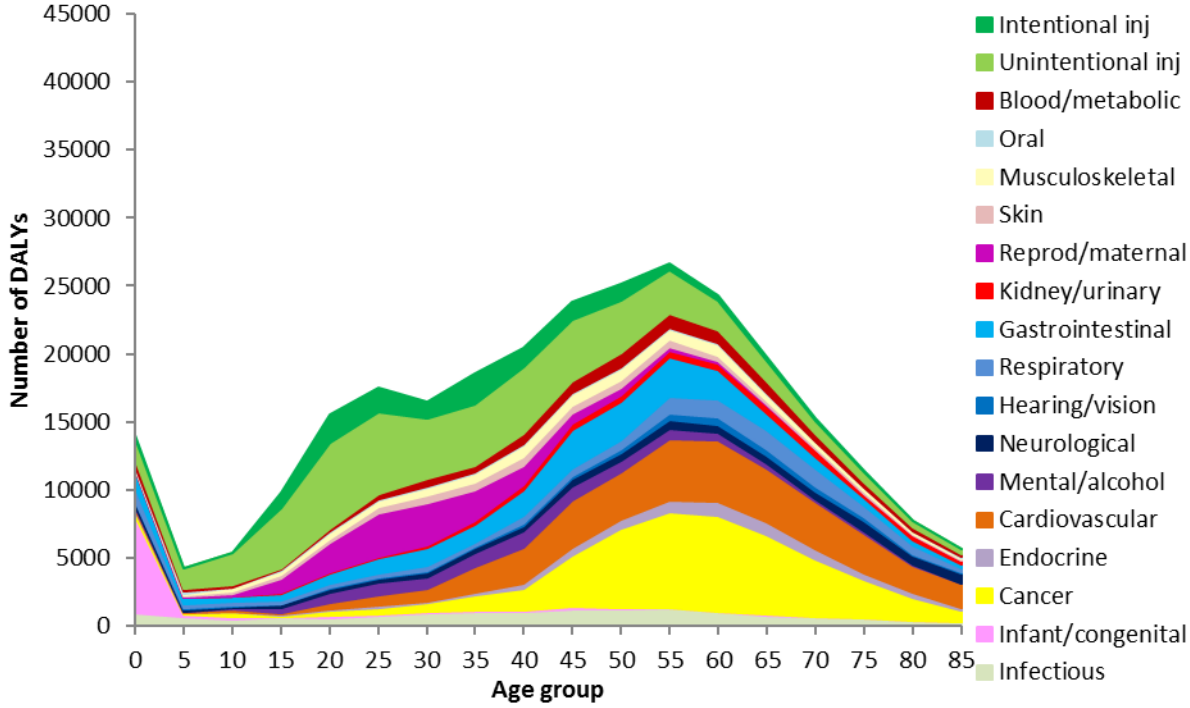
Note: Reprod = Reproductive; inj = injuries

Figure 12. Number of disability-adjusted life years (DALYs) by disease group and age, Northern Territory Aboriginal population, 2004-2013



Note: Reprod = Reproductive; inj = injuries

Figure 13. Number of disability-adjusted life years (DALYs) by disease group and age, Northern Territory non-Aboriginal population, 2004-2013



Note: Reprod = Reproductive; inj = injuries

Disability-adjusted life years by cause

The top 20 specific causes accounted for 45% of the total disease burden in the NT population (Table 5). Coronary heart disease was the leading specific cause for both males and females. Coronary heart disease, suicide and self-inflicted injuries, and road traffic injuries accounted for a higher proportion of burden for males than females, while diabetes and chronic kidney diseases accounted for a greater share for females than males.

Coronary heart disease was the leading specific cause for both Aboriginal and non-Aboriginal people, followed by suicide and self-inflicted injuries (Table 6). Diabetes, chronic obstructive pulmonary disease (COPD), chronic kidney disease, homicide/violence and chronic liver disease accounted for a greater proportion of total DALYs in Aboriginal people than non-Aboriginal people, while road traffic injuries and lung cancer was more prevalent for non-Aboriginal than Aboriginal people.

Figures 14 and 15 present the age-specific top 10 causes for females and males, respectively. Figures 16 and 17 present the top 10 specific causes by age-group, separately for Aboriginal and non-Aboriginal populations. Figures 14 and 15 present the top 10 age-specific causes for females and males.

Table 5. The twenty leading causes contributing to disability-adjusted life years (DALYs) by sex, Northern Territory, 2004-2013

	Male			Female			Person		
	Cause	DALY	%	Cause	DALY	%	Cause	DALY	%
1	Coronary heart disease	29,672	8.1	Coronary heart disease	10,043	3.5	Coronary heart disease	39,714	6.1
2	Suicide and SII	20,848	5.7	Diabetes	10,036	3.5	Suicide and SII	26,503	4.1
3	RTI - motor vehicle occupants	13,863	3.8	Chronic kidney disease	9,538	3.3	COPD	21,364	3.3
4	COPD	12,384	3.4	COPD	8,980	3.1	RTI - motor vehicle occupants	21,323	3.3
5	Diabetes	10,713	2.9	RTI - motor vehicle occupants	7,460	2.6	Diabetes	20,748	3.2
6	Homicide and violence	10,545	2.9	Chronic liver disease	6,986	2.4	Chronic liver disease	16,678	2.6
7	Chronic liver disease	9,693	2.7	Lower respiratory infections	6,645	2.3	Homicide and violence	16,591	2.5
8	Lung cancer	9,466	2.6	Homicide and violence	6,047	2.1	Chronic kidney disease	16,422	2.5
9	Alcohol use disorders	9,201	2.5	Suicide and SII	5,655	2.0	Alcohol use disorders	14,582	2.2
10	Falls	8,247	2.3	Alcohol use disorders	5,381	1.9	Lung cancer	14,447	2.2
11	Chronic kidney disease	6,884	1.9	Falls	5,212	1.8	Falls	13,460	2.1
12	Lower respiratory infections	6,122	1.7	Lung cancer	4,981	1.7	Lower respiratory infections	12,767	2.0
13	Skin infections and cellulitis	5,222	1.4	Stroke	4,264	1.5	Stroke	9,285	1.4
14	Stroke	5,021	1.4	Breast cancer	4,065	1.4	Skin infections and cellulitis	8,967	1.4
15	RTI - other	4,632	1.3	Rheumatic heart disease	3,880	1.4	PTB and LBW complications	7,631	1.2
16	PTB and LBW complications	4,367	1.2	Skin infections and cellulitis	3,745	1.3	RTI - other	6,874	1.1
17	Poisoning	3,998	1.1	Depressive disorders	3,737	1.3	Depressive disorders	6,439	1.0
18	Bowel cancer	3,556	1.0	Early pregnancy loss	3,577	1.2	Rheumatic heart disease	6,207	1.0
19	Unknown primary cancer	3,536	1.0	PRB and LBW complications	3,264	1.1	Unknown primary cancer	5,939	0.9
20	Epilepsy	3,263	0.9	Gastroduodenal disorders	2,964	1.0	Gastroduodenal disorders	5,831	0.9
Leading 20		181,231	49.8		116,462	40.6		291,774	44.8
All others		183,007	50.2		170,212	59.4		359,140	55.2
Total		364,239	100.0		286,674	100.0		650,913	100.0

Note: COPD = Chronic obstructive pulmonary disease, SII = self-inflected injuries, RTI = Road traffic injuries, PTB and LBW = Pre-term birth and low birthweight

Table 6. The twenty leading causes contributing to disability-adjusted life years (DALYs) by Aboriginality, Northern Territory, 2004-2013

	Aboriginal			Non-Aboriginal			All		
	Cause	DALY	%	Cause	DALY	%	Cause	DALY	%
1	Coronary heart disease	23,896	6.5	Coronary heart disease	15,819	5.6	Coronary heart disease	39,714	6.1
2	Suicide and SII	15,749	4.3	Suicide and SII	10,754	3.8	Suicide and SII	26,503	4.1
3	Diabetes	14,678	4.0	RTI - motor vehicle occupants	10,405	3.7	COPD	21,364	3.3
4	COPD	14,454	3.9	Lung cancer	9,000	3.2	RTI - motor vehicle occupants	21,323	3.3
5	Chronic kidney disease	13,845	3.7	Falls	7,213	2.6	Diabetes	20,748	3.2
6	Homicide and violence	13,414	3.6	COPD	6,910	2.5	Chronic liver disease	16,678	2.6
7	Chronic liver disease	11,669	3.2	Diabetes	6,071	2.2	Homicide and violence	16,591	2.5
8	Alcohol use disorders	11,600	3.1	Chronic liver disease	5,009	1.8	Chronic kidney disease	16,422	2.5
9	RTI - motor vehicle occupants	10,919	3.0	Bowel cancer	4,331	1.5	Alcohol use disorders	14,582	2.2
10	Lower respiratory infections	9,886	2.7	Stroke	4,225	1.5	Lung cancer	14,447	2.2
11	Falls	6,247	1.7	Skin infections and cellulitis	3,827	1.4	Falls	13,460	2.1
12	Rheumatic heart disease	5,600	1.5	Unknown primary cancer	3,547	1.3	Lower respiratory infections	12,767	2.0
13	Lung cancer	5,447	1.5	Gastroduodenal disorders	3,288	1.2	Stroke	9,285	1.4
14	Depressive disorders	5,327	1.4	Homicide and violence	3,177	1.1	Skin infections and cellulitis	8,967	1.4
15	PTB and LBW complications	5,182	1.4	Poisoning	3,085	1.1	PTB and LBW complications	7,631	1.2
16	Skin infections and cellulitis	5,140	1.4	Back pain and problems	3,056	1.1	RTI - other	6,874	1.1
17	Stroke	5,060	1.4	Alcohol use disorders	2,982	1.1	Depressive disorders	6,439	1.0
18	RTI - other	4,945	1.3	Lower respiratory infections	2,881	1.0	Rheumatic heart disease	6,207	1.0
19	Epilepsy	3,559	1.0	Breast cancer	2,841	1.0	Unknown primary cancer	5,939	0.9
20	Iron-deficiency anaemia	2,752	0.7	Chronic kidney disease	2,577	0.9	Gastroduodenal disorders	5,831	0.9
Leading 20		189,367	51.3		110,998	39.4		291,774	44.8
All others		180,112	48.7		170,436	60.6		359,140	55.2
Total		369479	100.0		281434	100.0		650913	100.0

Note: COPD = Chronic obstructive pulmonary disease, SII = self-inflected injuries, RTI = Road traffic injuries, PTB and LBW = Pre-term birth and low birthweight

Figure 14. The ten leading causes contributing to disability-adjusted life years by age, Northern Territory females, 2004-2013

	Age-group						
	Under 5	5-14	15-24	25-44	45-64	65-74	75+
1st	PTB and LBW complications (3256; 16%)	Falls (831; 6%)	RTI - motor vehicle occupants (2479; 9%)	Homicide and violence (3443; 4%)	Chronic kidney disease (5250; 5%)	Diabetes (1662; 8%)	Coronary heart disease (1404; 9%)
2nd	Birth trauma and asphyxia (1286; 6%)	Chronic obstructive pulmonary disease (671; 5%)	Suicide and self-inflicted injuries (2061; 7%)	Chronic liver disease (3033; 3%)	Diabetes (4799; 5%)	Chronic obstructive pulmonary disease (1556; 7%)	Dementia (1157; 7%)
3rd	Gastroduodenal disorders (1125; 6%)	Skin infections and cellulitis (667; 4%)	Homicide and violence (1525; 5%)	Alcohol use disorders (2844; 3%)	Coronary heart disease (4530; 5%)	Coronary heart disease (1448; 7%)	Chronic obstructive pulmonary disease (941; 6%)
4th	Sudden infant death syndrome (779; 4%)	RTI - motor vehicle occupants (639; 4%)	Early pregnancy loss (1367; 5%)	RTI - motor vehicle occupants (2484; 3%)	Chronic liver disease (3367; 3%)	Chronic kidney disease (1279; 6%)	Diabetes (858; 5%)
5th	Lower respiratory infections (762; 4%)	Iron-deficiency anaemia (484; 3%)	Maternal haemorrhage (646; 2%)	Diabetes (2438; 3%)	Chronic obstructive pulmonary disease (3076; 3%)	Lung cancer (1186; 5%)	Stroke (767; 5%)
6th	RTI - motor vehicle occupants (677; 3%)	Suicide and self-inflicted injuries (437; 3%)	Rheumatic heart disease (586; 2%)	Suicide and self-inflicted injuries (2385; 3%)	Lung cancer (2981; 3%)	Stroke (561; 3%)	Chronic kidney disease (649; 4%)
7th	Chronic obstructive pulmonary disease (648; 3%)	Dental caries (407; 3%)	Chronic obstructive pulmonary disease (570; 2%)	Coronary heart disease (2290; 3%)	Lower respiratory infections (2567; 3%)	Breast cancer (541; 3%)	Falls (504; 3%)
8th	Neonatal infections (601; 3%)	Otitis media (379; 3%)	Lower respiratory infections (473; 2%)	Depressive disorders (2196; 2%)	Breast cancer (2512; 3%)	Dementia (527; 2%)	Lung cancer (401; 3%)
9th	Congenital cardiovascular defects (459; 2%)	Homicide and violence (366; 2%)	Skin infections and cellulitis (448; 2%)	Early pregnancy loss (2114; 2%)	Alcohol use disorders (2068; 2%)	Unknown primary cancer (462; 2%)	Atrial fibrillation and flutter (306; 2%)
10th	Skin infections and cellulitis (378; 2%)	Lower respiratory infections (355; 2%)	Maternal infections (400; 1%)	Lower respiratory infections (1907; 2%)	Stroke (1867; 2%)	Bowel cancer (415; 2%)	Lower respiratory infections (286; 2%)

Note: PTB and LBW = Pre-term birth and low birthweight; RTI = Road traffic injuries

Figure 15. The ten leading causes contributing to disability-adjusted life years by age, Northern Territory males, 2004-2013

	Age-group						
	Under 5	5-14	15-24	25-44	45-64	65-74	75+
1st	PTB and LBW complications (4347; 18%)	Falls (1393; 8%)	Suicide and self-inflicted injuries (7738; 20%)	Suicide and self-inflicted injuries (9526; 8%)	Coronary heart disease (13167; 11%)	Coronary heart disease (4299; 13%)	Coronary heart disease (2179; 13%)
2nd	Birth trauma and asphyxia (1720; 7%)	Chronic obstructive pulmonary disease (947; 6%)	RTI - motor vehicle occupants (5235; 13%)	Coronary heart disease (9137; 8%)	Lung cancer (5629; 5%)	Chronic obstructive pulmonary disease (2646; 8%)	Chronic obstructive pulmonary disease (1304; 8%)
3rd	Gastroduodenal disorders (1305; 5%)	RTI - motor vehicle occupants (921; 5%)	Homicide and violence (4239; 11%)	RTI - motor vehicle occupants (5366; 5%)	Diabetes (5456; 5%)	Lung cancer (2288; 7%)	Lung cancer (940; 5%)
4th	Neonatal infections (1031; 4%)	Skin infections and cellulitis (687; 4%)	Falls (1114; 3%)	Alcohol use disorders (4467; 4%)	Chronic liver disease (5100; 4%)	Diabetes (1915; 6%)	Dementia (868; 5%)
5th	Chronic obstructive pulmonary disease (852; 4%)	Homicide and violence (589; 3%)	RTI - motorcyclists (909; 2%)	Homicide and violence (4030; 3%)	Chronic obstructive pulmonary disease (4323; 4%)	Chronic kidney disease (1050; 3%)	Diabetes (772; 4%)
6th	Congenital cardiovascular defects (799; 3%)	Iron-deficiency anaemia (527; 3%)	RTI - other (852; 2%)	Chronic liver disease (3678; 3%)	Alcohol use disorders (3522; 3%)	Unknown primary cancer (839; 3%)	Stroke (749; 4%)
7th	RTI - motor vehicle occupants (710; 3%)	Otitis media (437; 3%)	Skin infections and cellulitis (802; 2%)	Falls (2889; 2%)	Chronic kidney disease (3126; 3%)	Bowel cancer (757; 2%)	Prostate cancer (542; 3%)
8th	Lower respiratory infections (673; 3%)	Cerebral palsy (379; 2%)	Alcohol use disorders (789; 2%)	RTI - other (2456; 2%)	Suicide and self-inflicted injuries (2702; 2%)	Stroke (718; 2%)	Chronic kidney disease (442; 3%)
9th	Sudden infant death syndrome (521; 2%)	Dental caries (363; 2%)	Epilepsy (766; 2%)	Diabetes (2297; 2%)	Mouth and pharyngeal cancer (2072; 2%)	Prostate cancer (529; 2%)	Unknown primary cancer (424; 2%)
10th	Brain malformations (353; 1%)	Asthma (355; 2%)	Poisoning (609; 2%)	Lower respiratory infections (2231; 2%)	Lower respiratory infections (2017; 2%)	Pancreatic cancer (520; 2%)	Bowel cancer (318; 2%)

Note: PTB and LBW = Pre-term birth and low birthweight; RTI = Road traffic injuries

Figure 16. The ten leading causes contributing to disability-adjusted life years by age, Northern Territory Aboriginal population, 2004-2013

	Age-group						
	Under 5	5-14	15-24	25-44	45-64	65-74	75+
1st	PTB and LBW complications (5169; 17%)	Chronic obstructive pulmonary disease (1588; 7%)	Suicide and self-inflicted injuries (7435; 17%)	Coronary heart disease (9430; 7%)	Coronary heart disease (10909; 9%)	Diabetes (2089; 10%)	Chronic obstructive pulmonary disease (868; 11%)
2nd	Birth trauma and asphyxia (1970; 7%)	Skin infections and cellulitis (1138; 5%)	Homicide and violence (4929; 12%)	Suicide and self-inflicted injuries (6673; 5%)	Chronic kidney disease (7574; 7%)	Chronic obstructive pulmonary disease (2050; 10%)	Diabetes (720; 9%)
3rd	Gastroduodenal disorders (1476; 5%)	Falls (1086; 5%)	RTI - motor vehicle occupants (3512; 8%)	Alcohol use disorders (6361; 5%)	Diabetes (7499; 7%)	Coronary heart disease (1984; 10%)	Chronic kidney disease (611; 8%)
4th	Neonatal infections (1379; 5%)	RTI - motor vehicle occupants (1076; 5%)	Rheumatic heart disease (1052; 2%)	Homicide and violence (6090; 5%)	Chronic obstructive pulmonary disease (5304; 5%)	Chronic kidney disease (1624; 8%)	Coronary heart disease (610; 8%)
5th	Lower respiratory infections (1205; 4%)	Iron-deficiency anaemia (1003; 5%)	Chronic obstructive pulmonary disease (1012; 2%)	Chronic liver disease (6057; 5%)	Chronic liver disease (4773; 4%)	Lung cancer (1042; 5%)	Dementia (490; 6%)
6th	RTI - motor vehicle occupants (1081; 4%)	Homicide and violence (938; 4%)	Alcohol use disorders (940; 2%)	Diabetes (4020; 3%)	Alcohol use disorders (4114; 4%)	Stroke (585; 3%)	Stroke (393; 5%)
7th	Sudden infant death syndrome (1039; 3%)	Suicide and self-inflicted injuries (724; 3%)	Skin infections and cellulitis (849; 2%)	RTI - motor vehicle occupants (3995; 3%)	Lower respiratory infections (3482; 3%)	Dementia (463; 2%)	Lung cancer (217; 3%)
8th	Chronic obstructive pulmonary disease (723; 2%)	Otitis media (700; 3%)	Epilepsy (824; 2%)	Lower respiratory infections (3610; 3%)	Lung cancer (3369; 3%)	Lower respiratory infections (382; 2%)	Atrial fibrillation and flutter (160; 2%)
9th	Skin infections and cellulitis (677; 2%)	Dental caries (602; 3%)	Falls (718; 2%)	Depressive disorders (3192; 2%)	Stroke (2258; 2%)	Unknown primary cancer (361; 2%)	Lower respiratory infections (157; 2%)
10th	Congenital cardiovascular defects (633; 2%)	Lower respiratory infections (530; 2%)	Iron-deficiency anaemia (674; 2%)	Chronic kidney disease (3106; 2%)	Falls (1586; 1%)	Liver cancer (354; 2%)	Unknown primary cancer (134; 2%)

Note: PTB and LBW = Pre-term birth and low birthweight; RTI = Road traffic injuries

Figure 17. The ten leading causes contributing to disability-adjusted life years by age, Northern Territory non-Aboriginal population, 2004-2013

	Age-group						
	Under 5	5-14	15-24	25-44	45-64	65-74	75+
1st	PTB and LBW complications (2434; 17%)	Falls (1137; 12%)	RTI - motor vehicle occupants (4203; 17%)	Suicide and self-inflicted injuries (5239; 7%)	Coronary heart disease (6789; 7%)	Coronary heart disease (3763; 11%)	Coronary heart disease (2972; 12%)
2nd	Birth trauma and asphyxia (1036; 7%)	RTI - motor vehicle occupants (484; 5%)	Suicide and self-inflicted injuries (2363; 9%)	RTI - motor vehicle occupants (3856; 5%)	Lung cancer (5242; 5%)	Lung cancer (2431; 7%)	Dementia (1535; 6%)
3rd	Gastroduodenal disorders (954; 7%)	Gastroduodenal disorders (344; 4%)	Early pregnancy loss (899; 4%)	Coronary heart disease (1997; 3%)	Chronic liver disease (3694; 4%)	Chronic obstructive pulmonary disease (2152; 6%)	Chronic obstructive pulmonary disease (1377; 6%)
4th	Chronic obstructive pulmonary disease (777; 6%)	Upper respiratory diseases (229; 2%)	RTI - motorcyclists (896; 4%)	Falls (1757; 2%)	Diabetes (2756; 3%)	Diabetes (1488; 4%)	Lung cancer (1124; 5%)
5th	Congenital cardiovascular defects (624; 4%)	Skin infections and cellulitis (216; 2%)	Homicide and violence (835; 3%)	Skin infections and cellulitis (1536; 2%)	Suicide and self-inflicted injuries (2619; 3%)	Unknown primary cancer (939; 3%)	Stroke (1124; 5%)
6th	Brain malformations (436; 3%)	Cerebral palsy (204; 2%)	Falls (688; 3%)	Early pregnancy loss (1535; 2%)	Bowel cancer (2279; 2%)	Bowel cancer (888; 3%)	Diabetes (910; 4%)
7th	Drowning (352; 3%)	Asthma (199; 2%)	Gastroduodenal disorders (453; 2%)	Poisoning (1476; 2%)	Falls (2201; 2%)	Chronic kidney disease (705; 2%)	Falls (748; 3%)
8th	RTI - motor vehicle occupants (306; 2%)	Appendicitis (185; 2%)	Back pain and problems (418; 2%)	Homicide and violence (1382; 2%)	Chronic obstructive pulmonary disease (2096; 2%)	Stroke (694; 2%)	Bowel cancer (563; 2%)
9th	Epilepsy (294; 2%)	Upper respiratory tract infections (182; 2%)	Drowning (415; 2%)	Back pain and problems (1251; 2%)	Breast cancer (1801; 2%)	Falls (577; 2%)	Unknown primary cancer (541; 2%)
10th	Sudden infant death syndrome (261; 2%)	Dental caries (167; 2%)	RTI - other (412; 2%)	RTI - motorcyclists (1210; 2%)	Unknown primary cancer (1748; 2%)	Pancreatic cancer (546; 2%)	Prostate cancer (485; 2%)

Note: PTB and LBW = Pre-term birth and low birthweight; RTI = Road traffic injuries

Non-fatal burden of disease

Non-fatal burden of disease is measured by years lived with disability (YLDs). There were 339,782 YLDs in the NT during the ten years from 2004 to 2013 (Table 7). Aboriginal people, comprising only 30% of the NT population, had 56% of YLDs. Consequently, the crude YLD rate was almost three times higher for Aboriginal people than non-Aboriginal people.

Table 7. Number, rate and rate ratio of years lived with disability (YLDs) by sex, Aboriginality and period, Northern Territory, 2004-2013

	2004-2008	2009-2013	2004-2013
	Number of YLDs		
Female	83,280	90,653	173,933
Aboriginal	50,091	55,814	105,905
Non-Aboriginal	33,189	34,839	68,028
Male	81,605	84,244	165,849
Aboriginal	43,196	42,798	85,994
Non-Aboriginal	38,409	41,446	79,856
Person	164,886	174,897	339,782
Aboriginal	93,287	98,612	191,899
Non-Aboriginal	71,599	76,285	147,884
	Crude rate (YLDs per 1000 population)		
Female	165.1	164.0	164.5
Aboriginal	306.9	323.5	315.4
Non-Aboriginal	97.2	91.6	94.3
Male	149.3	137.5	143.0
Aboriginal	264.4	246.8	255.3
Non-Aboriginal	100.2	94.4	97.1
Person	156.8	150.1	153.3
Aboriginal	285.6	285.0	285.3
Non-Aboriginal	98.8	93.1	95.8
	Rate ratio (Aboriginal/Non-Aboriginal)		
Female	3.16	3.53	3.35
Male	2.64	2.62	2.63
Person	2.89	3.06	2.98

The YLD age distribution for non-Aboriginal people was of similar shape to that of the population, with the lower share of YLD than population in younger age-groups and higher share in older age-groups reflecting the good health of the young compared to the declining health of the elderly (Figure 18). For Aboriginal people, the proportion of

YLD was low in the oldest age-groups but was markedly higher than for non-Aboriginal people in the age-groups between 35 and 49 years. This is despite a comparatively lower Aboriginal population distribution in this age bracket. This illustrates the high non-fatal BOD in younger and middle-aged Aboriginal adults. The age distribution of YLD was similar between males and females (Figure 19).

For non-Aboriginal people, the age-specific YLD rate increased steadily with advancing age, growing more sharply after age 60 (Figure 20). Aboriginal people had higher YLD rates in all age-groups and experienced high YLDs at a much younger age compared to non-Aboriginal people. The YLD rate in Aboriginal population peaked in the 50-64 year age range, as opposed to a peak in 85 years and over in the non-Aboriginal population.

Figures 21 and 22 show no clear difference in YLD rate between males and females by age and Aboriginality, except for Aboriginal and non-Aboriginal females respectively suffering higher rates of YLD from 40 and 70 years onward.

Figure 18. Proportion of population and years lived with disability (YLDs) by age and Aboriginality, Northern Territory, 2004-2013

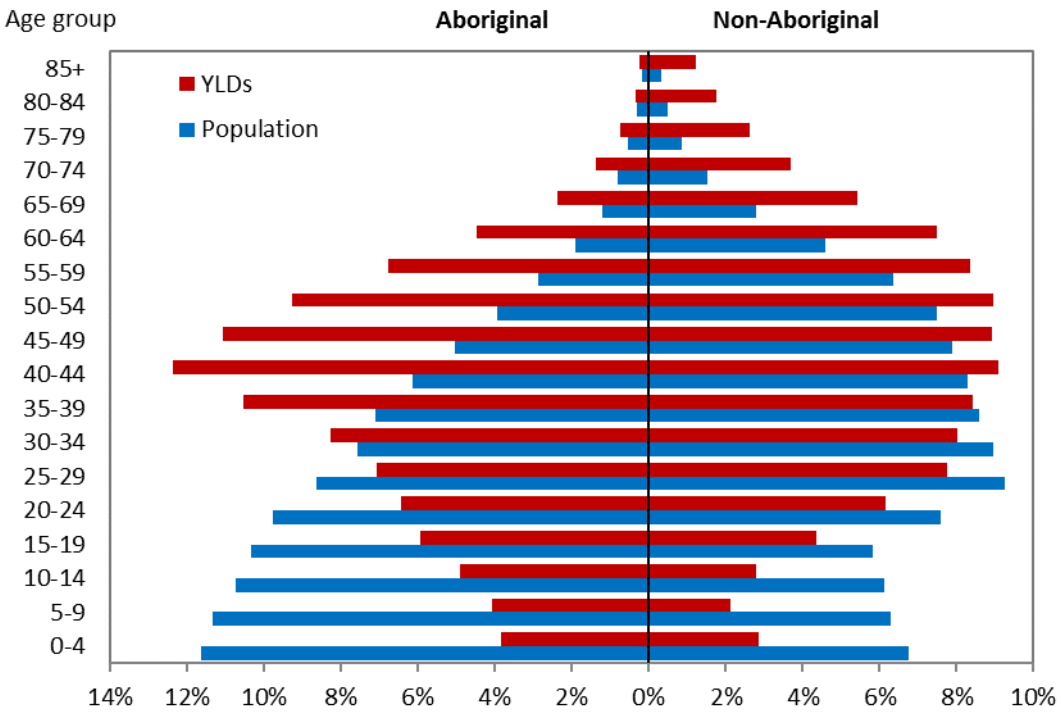


Figure 19. Number and rate of years lived with disability (YLDs) by age and sex, Northern Territory, 2004-2013

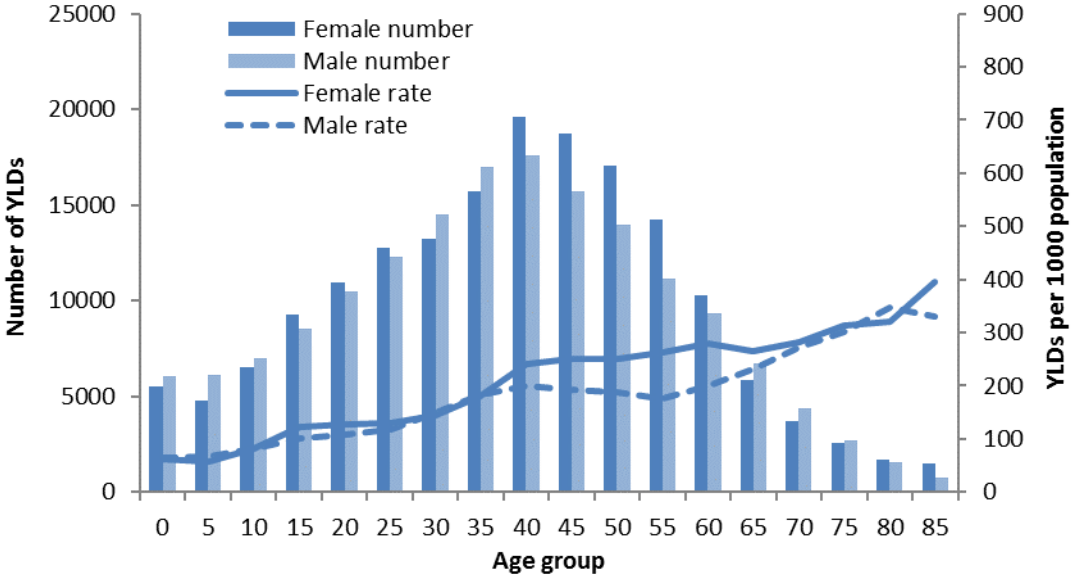


Figure 20. Number and rate of years lived with disability (YLDs) by age and Aboriginality, Northern Territory, 2004-2013

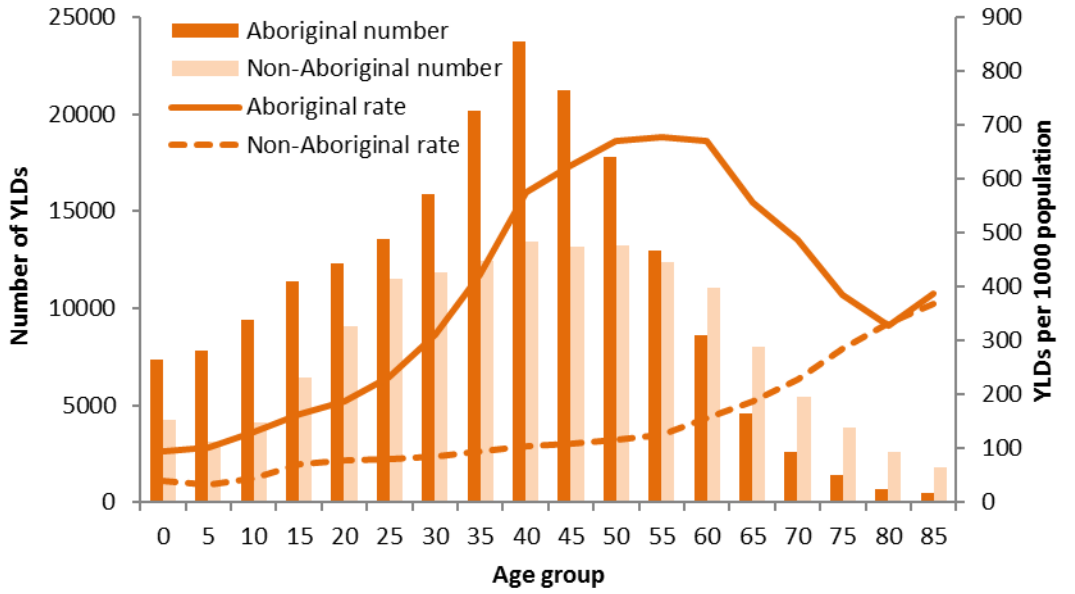


Figure 21. Number and rate of years lived with disability (YLDs) by age and sex, Northern Territory Aboriginal population, 2004-2013

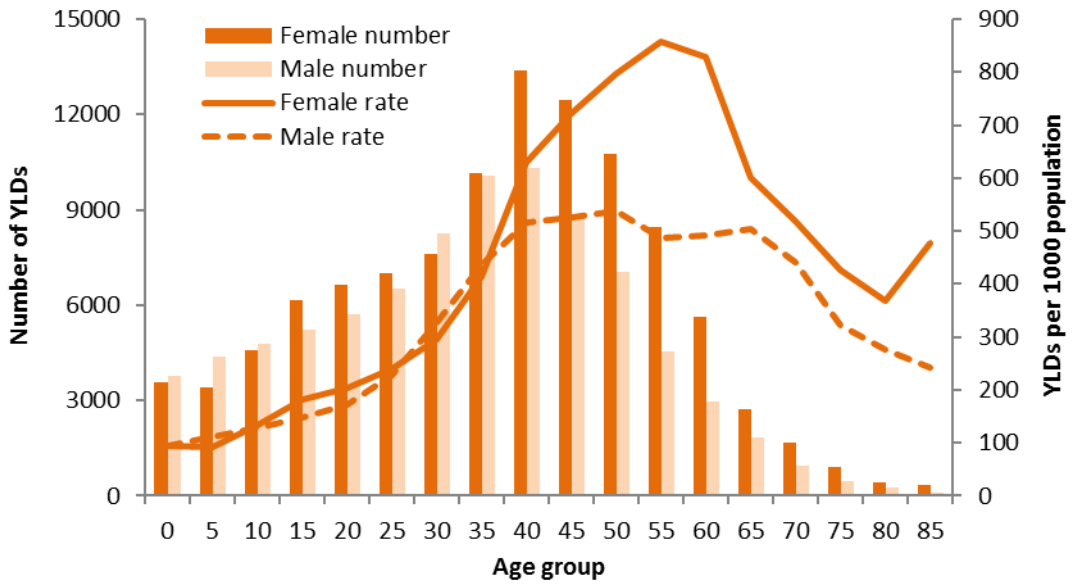
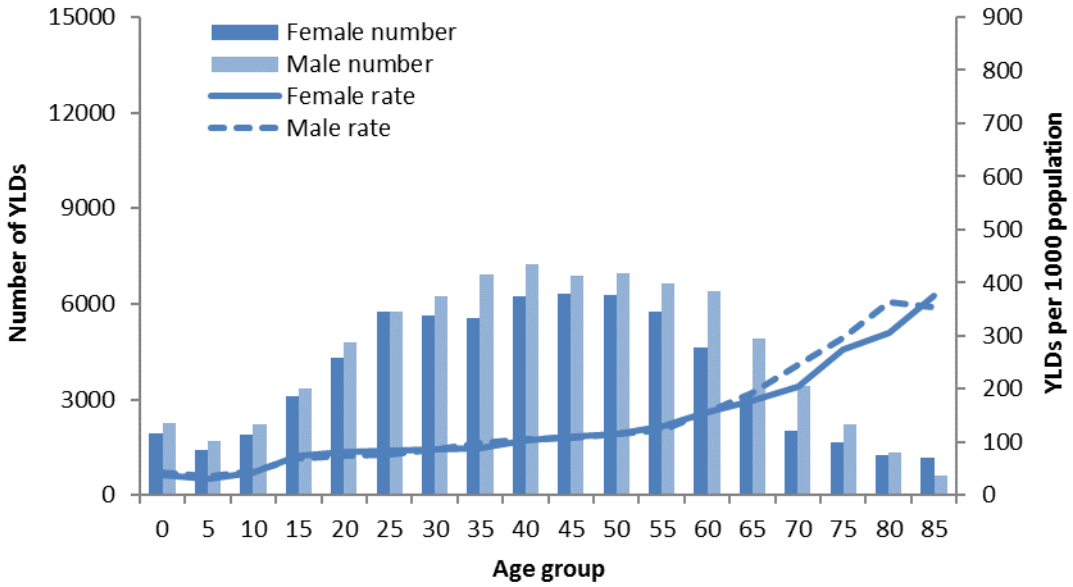


Figure 22. Number and rate of years lived with disability (YLDs) by age and sex, Northern Territory non-Aboriginal population, 2004-2013



Years lived with disability by disease group

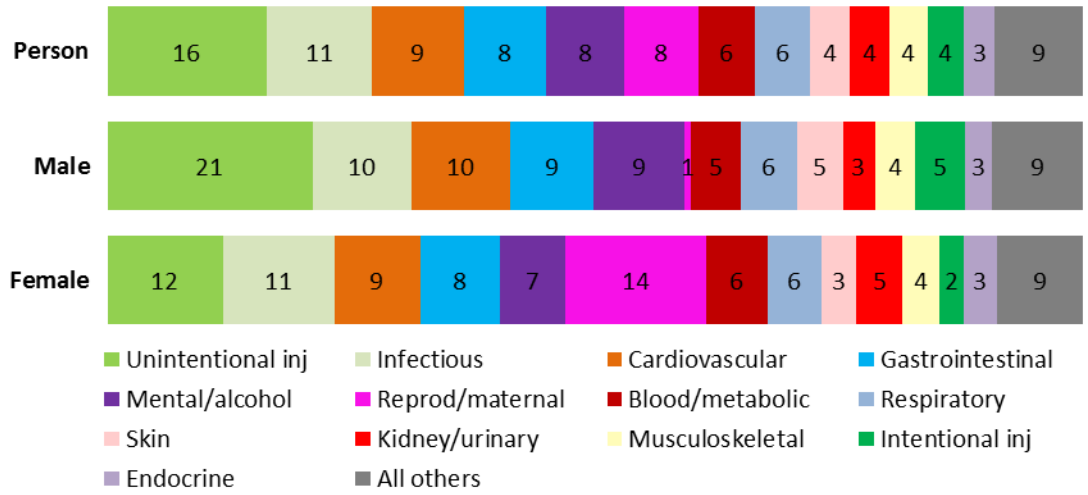
The leading disease groups causing non-fatal burden of disease were unintentional injuries, infectious diseases and cardiovascular diseases (Figure 23), followed by gastrointestinal and mental/alcohol condition. Unintentional injuries accounted for a higher proportion of YLDs in males than in females. Reproductive and maternal conditions accounted for 14% of total YLDs in females, ahead of any other disease groups.

The leading disease groups were different for Aboriginal and non-Aboriginal people (Figures 24 and 25). For Aboriginal people, infectious diseases and unintentional injuries each accounted for 13% of YLDs, followed by mental/alcohol conditions and cardiovascular diseases (10% each). For non-Aboriginal people, unintentional injuries was the dominant disease group (21%), followed by gastrointestinal disorders (11%) and reproductive/maternal conditions (10%).

The age-adjusted YLD rate for all disease groups combined was slightly lower for males than females, but this was not consistent for all disease groups (Table 8). The YLD rate was much higher for Aboriginal than non-Aboriginal people across all groups combined and higher for every disease group (Table 9).

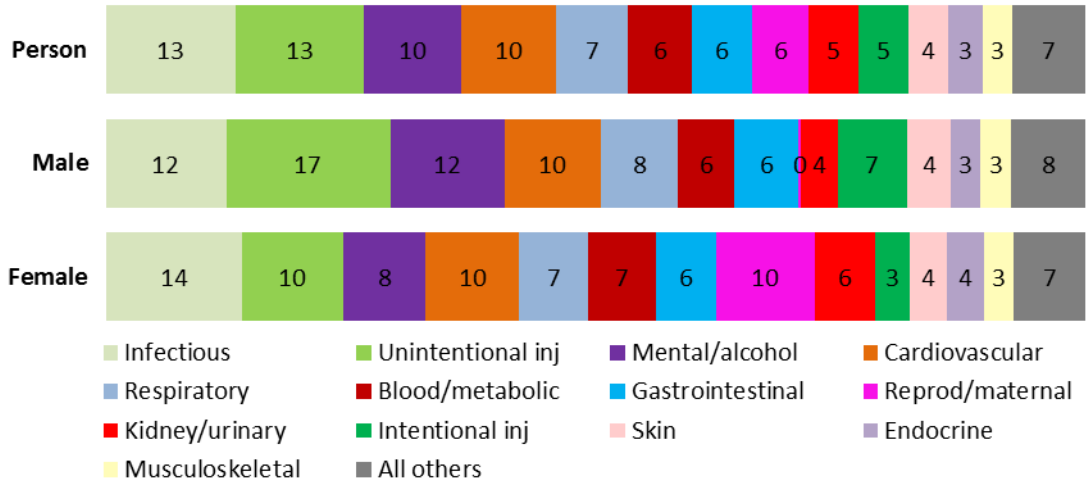
The age patterns for disease-specific YLDs were similar for males and females, with the obvious exception of maternal conditions (Figures 26 and 27). However, the age patterns for disease-specific YLDs were different for Aboriginal and non-Aboriginal people. Infectious diseases were much more prominent in Aboriginal people across all age-groups up to 64 years and Aboriginal people had much higher YLD levels in younger age-groups for most disease groups (Figures 28 and 29).

Figure 23. Proportion (%) of years lived with disability by disease group and sex, Northern Territory, 2004-2013



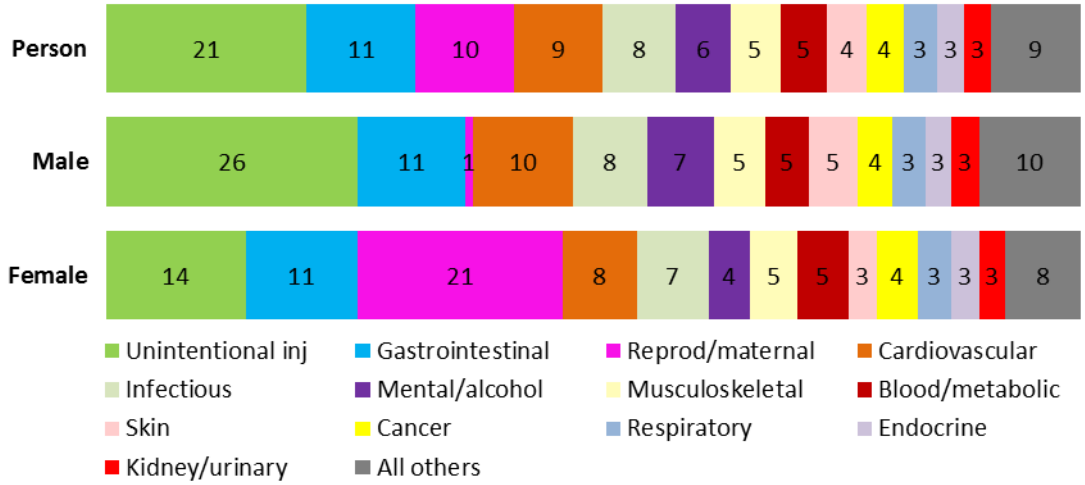
Note: Reprod = Reproductive; inj = injuries

Figure 24. Proportion (%) of years lived with disability by disease group and sex, Northern Territory Aboriginal population, 2004-2013



Note: Reprod = Reproductive; inj = injuries

Figure 25. Proportion (%) of years lived with disability by disease group and sex, Northern Territory non-Aboriginal population, 2004-2013



Note: Reprod = Reproductive; inj = injuries

Table 8. Years lived with disability rate by disease group and sex, Northern Territory, 2004-2013

Disease group	Male*	Female*	Ratio#	Difference#	Contribution (%)+
Infectious	15.2	19.9	0.8	-4.6	19.8
Infant/congenital	1.1	1.1	1.0	-0.0	0.0
Cancer	4.2	4.9	0.9	-0.7	2.9
Endocrine	5.1	7.3	0.7	-2.2	9.5
Cardiovascular	18.9	19.2	1.0	-0.3	1.2
Mental/alcohol	13.3	11.0	1.2	2.2	-9.5
Neurological	5.0	4.8	1.1	0.3	-1.1
Hearing/vision	4.6	4.5	1.0	0.1	-0.3
Respiratory	9.0	10.3	0.9	-1.4	5.7
Gastrointestinal	13.2	14.7	0.9	-1.5	6.4
Kidney/urinary	6.0	9.5	0.6	-3.5	14.8
Reprod/maternal	0.9	21.3	0.0	-20.5	87.3
Skin	7.0	6.0	1.2	1.0	-4.2
Musculoskeletal	6.5	7.4	0.9	-0.8	3.6
Oral	1.8	2.2	0.8	-0.4	1.8
Blood/metabolic	8.6	11.9	0.7	-3.3	14.1
Unintentional inj	30.5	21.5	1.4	9.0	-38.4
Intentional inj	6.6	3.4	1.9	3.2	-13.7
Total	157.4	181.2	0.9	-23.4	100.0
(95%CI)	(157.2-157.6)	(180.9-181.4)			

Note: Reprod = Reproductive; inj = injuries; CI = Confidence interval

* age-standardised rate per 1,000 population; # male compared to female; † proportional contribution to the rate total difference

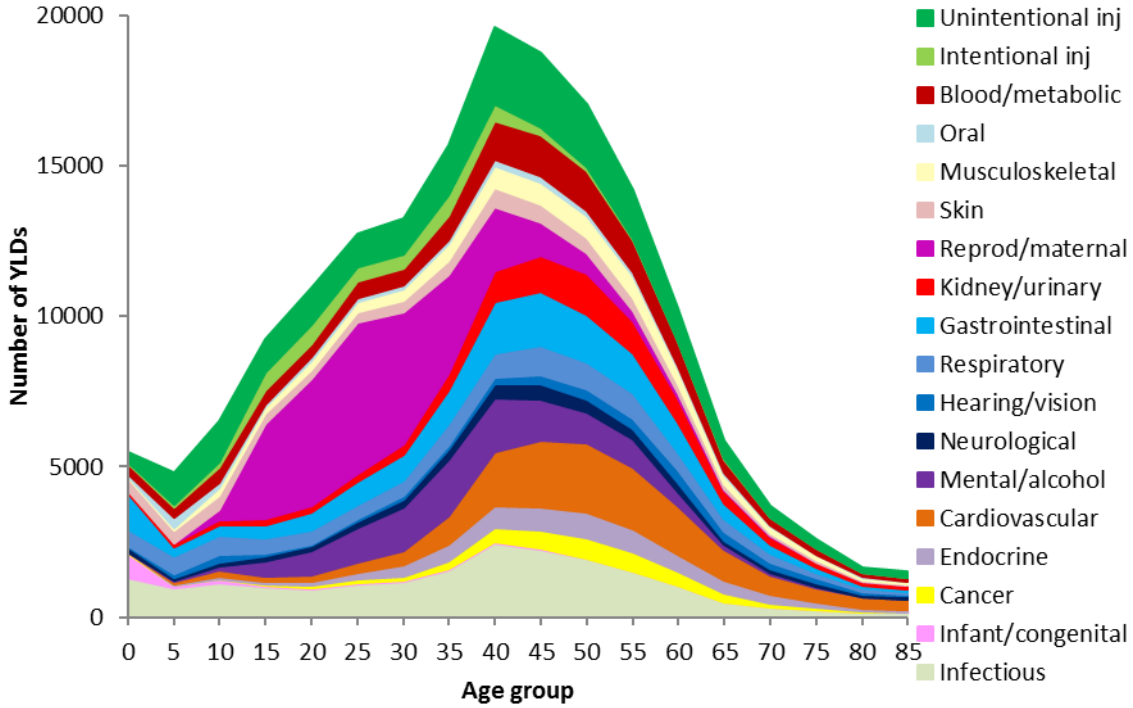
Table 9. Years lived with disability rate by disease group and Aboriginality, Northern Territory, 2004-2013

Disease group	Aboriginal*	Non-Aboriginal*	Ratio#	Difference#	Contribution (%)+
Infectious	46.9	8.1	5.8	38.8	14.6
Infant/congenital	1.4	0.9	1.6	0.5	0.2
Cancer	5.2	4.3	1.2	0.9	0.3
Endocrine	17.4	3.2	5.4	14.2	5.3
Cardiovascular	45.7	12.1	3.8	33.6	12.6
Mental/alcohol	34.3	5.3	6.4	28.9	10.9
Neurological	10.5	3.2	3.3	7.3	2.7
Hearing/vision	7.9	3.6	2.2	4.3	1.6
Respiratory	29.7	3.7	8.1	26.1	9.8
Gastrointestinal	22.8	11.3	2.0	11.6	4.4
Kidney/urinary	23.8	3.5	6.8	20.3	7.6
Reprod/maternal	14.9	8.7	1.7	6.2	2.3
Skin	13.1	4.1	3.2	9.0	3.4
Musculoskeletal	13.1	5.3	2.5	7.8	2.9
Oral	4.3	1.1	3.9	3.2	1.2
Blood/metabolic	24.8	5.5	4.5	19.3	7.3
Unintentional inj	43.8	20.8	2.1	23.0	8.6
Intentional inj	12.7	1.9	6.8	10.8	4.1
Total	372.4	106.5	3.5	265.9	100.0
(95% CI)	(371.5-373.1)	(106.4-106.6)			

Note: Reprod = Reproductive; inj = injuries; CI = Confidence interval

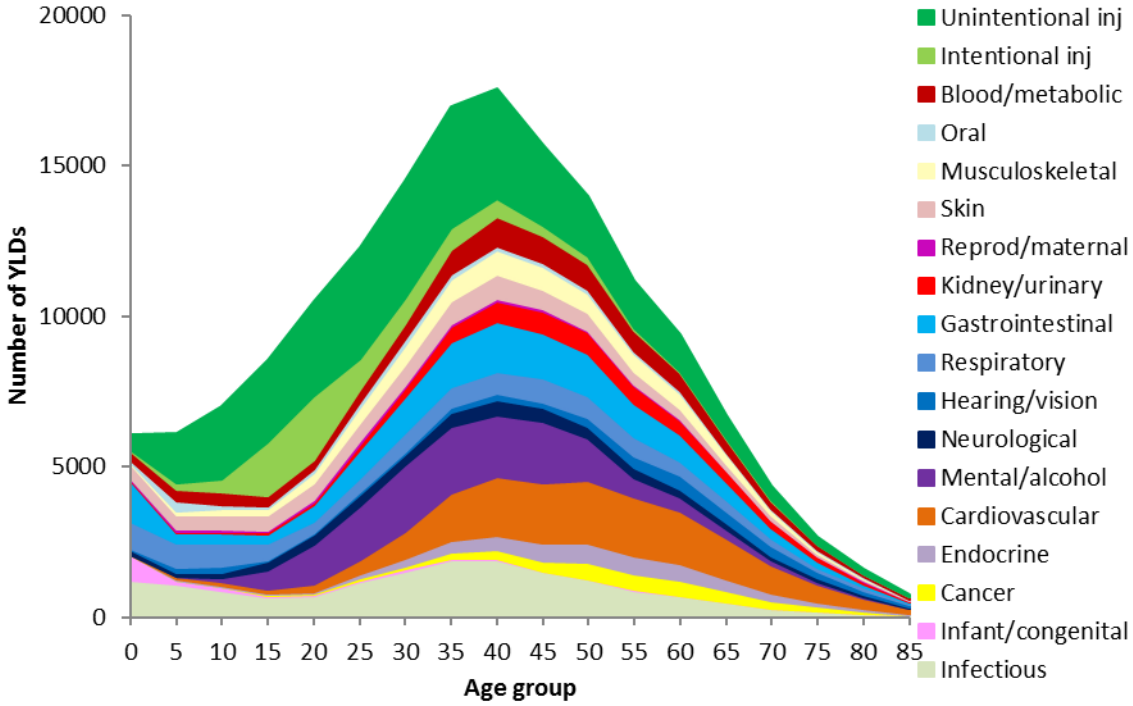
* age-standardised rate per 1,000 population; # Aboriginal compared to non-Aboriginal;† proportional contribution to the total rate difference

Figure 26. Number of years lived with disability (YLDs) by disease group and age, Northern Territory females, 2004-2013



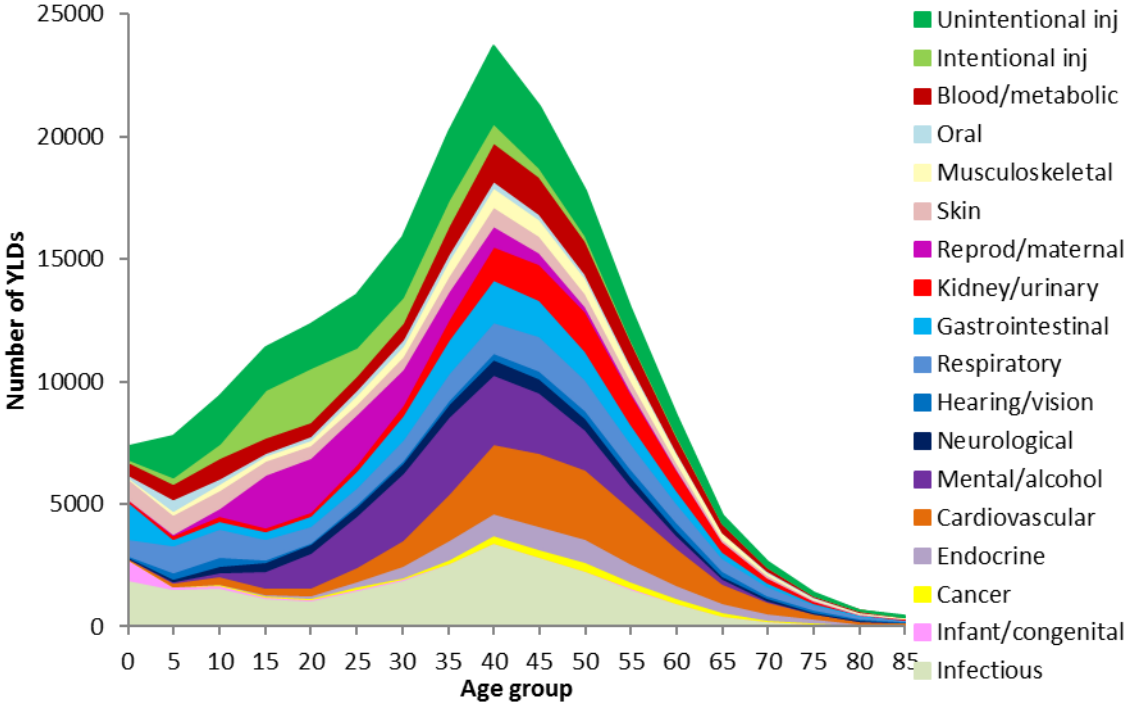
Note: Reprod = Reproductive; inj = injuries

Figure 27. Number of years lived with disability (YLDs) by disease group and age, Northern Territory males, 2004-2013



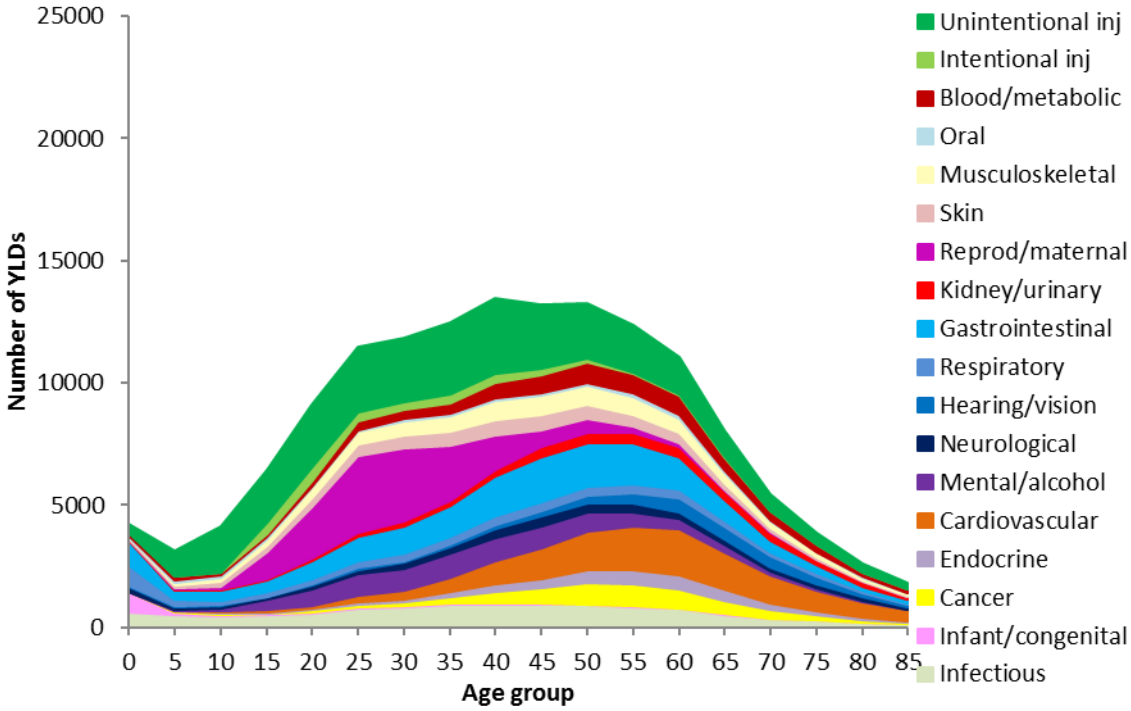
Note: Reprod = Reproductive; inj = injuries

Figure 28. Number of years lived with disability (YLDs) by disease group and age, Northern Territory Aboriginal population, 2004-2013



Note: Reprod = Reproductive; inj = injuries

Figure 29. Number of years lived with disability (YLDs) by disease group and age, Northern Territory non-Aboriginal population, 2004-2013



Note: Reprod = Reproductive; inj = injuries

Years lived with disability by cause

The top 20 specific causes accounted for 38% of the total YLDs in the NT population (Table 10). The leading specific causes were different for males and females. The top three specific causes for males were alcohol use disorders, homicide/violence and falls. The leading specific causes for females were chronic obstructive pulmonary disease (COPD) chronic kidney disease and diabetes.

The top three specific causes were also different for Aboriginal and non-Aboriginal people (Table 11). The top three specific causes for Aboriginal people were COPD, alcohol use disorders, homicide and violence, lower respiratory infections and chronic kidney disease while for non-Aboriginal people they were falls, skin infections/cellulitis and diabetes.

Figures 30 and 31 shows the top 10 specific causes by age-group, separately for Aboriginal and non-Aboriginal people. Figures 32 and 33 show the top 10 specific causes by age-group, separately for females and males.

Table 10. The twenty leading causes contributing to years lived with disability by sex, Northern Territory, 2004-2013

	Male			Female			Person		
	Cause	YLD	%	Cause	YLD	%	Cause	YLD	%
1	Alcohol use disorders	7,313	4.4	COPD	5,523	3.2	Alcohol use disorders	11,756	3.5
2	Homicide and violence	6,539	3.9	Chronic kidney disease	4,943	2.8	COPD	11,177	3.3
3	Falls	6,260	3.8	Diabetes	4,840	2.8	Falls	10,830	3.2
4	COPD	5,654	3.4	Falls	4,570	2.6	Homicide and violence	9,415	2.8
5	Skin infections and cellulitis	4,941	3.0	Lower respiratory infections	4,538	2.6	Diabetes	9,039	2.7
6	Diabetes	4,200	2.5	Alcohol use disorders	4,443	2.6	Lower respiratory infections	8,645	2.5
7	Lower respiratory infections	4,107	2.5	Depressive disorders	3,737	2.1	Skin infections and cellulitis	8,386	2.5
8	Coronary heart disease	4,104	2.5	Early pregnancy loss	3,577	2.1	Chronic kidney disease	8,234	2.4
9	Chronic kidney disease	3,291	2.0	Skin infections and cellulitis	3,445	2.0	Depressive disorders	6,438	1.9
10	RTI - motor vehicle occupants	3,078	1.9	Homicide and violence	2,876	1.7	Coronary heart disease	6,377	1.9
11	Gastroduodenal disorders	2,740	1.7	Gastroduodenal disorders	2,873	1.7	Gastroduodenal disorders	5,613	1.7
12	Depressive disorders	2,701	1.6	Coronary heart disease	2,273	1.3	RTI - motor vehicle occupants	4,954	1.5
13	Back pain and problems	2,247	1.4	Asthma	2,013	1.2	Back pain and problems	4,179	1.2
14	Epilepsy	2,220	1.3	Iron-deficiency anaemia	1,993	1.1	Epilepsy	3,804	1.1
15	Suicide and SII	1,981	1.2	Back pain and problems	1,932	1.1	Early pregnancy loss	3,578	1.1
16	Chronic liver disease	1,779	1.1	Maternal haemorrhage	1,880	1.1	Chronic liver disease	3,455	1.0
17	Atrial fibrillation and flutter	1,422	0.9	RTI - motor vehicle occupants	1,876	1.1	Suicide and SII	3,415	1.0
18	Iron-deficiency anaemia	1,414	0.9	Chronic liver disease	1,677	1.0	Asthma	3,412	1.0
19	Drug use disorders*	1,406	0.8	Epilepsy	1,584	0.9	Iron-deficiency anaemia	3,407	1.0
20	Asthma	1,399	0.8	GORD	1,474	0.8	GORD	2,834	0.8
Leading 20		68,796	41.5		62,066	35.7		128,949	38.0
All others		97,054	58.5		111,867	64.3		210,834	62.0
Total		165,849	100.0		173,933	100.0		339,782	100.0

Note: COPD = Chronic obstructive pulmonary disease, SII = self-inflected injuries, RTI = Road traffic injuries, GORD = Gastro oesophageal reflux disorder
*Drug use disorders (excluding alcohol)

Table 11. The twenty leading causes contributing to years lived with disability by Aboriginality, Northern Territory, 2004-2013

	Aboriginal			Non-Aboriginal			All		
	Cause	YLD	%	Cause	YLD	%	Cause	YLD	%
1	COPD	9,583	5.0	Falls	5,629	3.8	Alcohol use disorders	11,756	3.5
2	Alcohol use disorders	9,337	4.9	Skin infections and cellulitis	3,651	2.5	COPD	11,177	3.3
3	Homicide and violence	7,808	4.1	Diabetes	3,296	2.2	Falls	10,830	3.2
4	Lower respiratory infections	6,767	3.5	Gastroduodenal disorders	3,178	2.1	Homicide and violence	9,415	2.8
5	Chronic kidney disease	6,556	3.4	Back pain and problems	2,990	2.0	Diabetes	9,039	2.7
6	Diabetes	5,743	3.0	RTI - motor vehicle occupants	2,539	1.7	Lower respiratory infections	8,645	2.5
7	Depressive disorders	5,327	2.8	Early pregnancy loss	2,476	1.7	Skin infections and cellulitis	8,386	2.5
8	Falls	5,201	2.7	Coronary heart disease	2,436	1.6	Chronic kidney disease	8,234	2.4
9	Skin infections and cellulitis	4,735	2.5	Alcohol use disorders	2,419	1.6	Depressive disorders	6,438	1.9
10	Coronary heart disease	3,941	2.1	GORD	2,090	1.4	Coronary heart disease	6,377	1.9
11	Iron-deficiency anaemia	2,752	1.4	Lower respiratory infections	1,878	1.3	Gastroduodenal disorders	5,613	1.7
12	Epilepsy	2,699	1.4	Chronic kidney disease	1,679	1.1	RTI - motor vehicle occupants	4,954	1.5
13	Chronic liver disease	2,546	1.3	Homicide and violence	1,607	1.1	Back pain and problems	4,179	1.2
14	Gastroduodenal disorders	2,435	1.3	Hearing loss	1,600	1.1	Epilepsy	3,804	1.1
15	RTI - motor vehicle occupants	2,415	1.3	COPD	1,594	1.1	Early pregnancy loss	3,578	1.1
16	Asthma	2,096	1.1	Suicide and SII	1,511	1.0	Chronic liver disease	3,455	1.0
17	Suicide and SII	1,904	1.0	Anxiety disorders	1,398	0.9	Suicide and SII	3,415	1.0
18	Rheumatic heart disease	1,349	0.7	Asthma	1,315	0.9	Asthma	3,412	1.0
19	Otitis media	1,245	0.6	Atrial fibrillation and flutter	1,240	0.8	Iron-deficiency anaemia	3,407	1.0
20	Back pain and problems	1,189	0.6	Depressive disorders	1,111	0.8	GORD	2,834	0.8
Leading 20		85,627	44.6		45,638	30.9		128,949	38.0
All others		106,272	55.4		02,246	69.1		210,834	62.0
Total		191,899	100.0		47,884	100.0		339,782	100.0

Note: COPD = Chronic obstructive pulmonary disease, SII = self-inflected injuries, RTI = Road traffic injuries, GORD = Gastro oesophageal reflux disorder

Figure 30. The ten leading causes contributing to years lived with disability by age, Northern Territory Aboriginal population, 2004-2013

	Age-group						
	Under 5	5-14	15-24	25-44	45-64	65-74	75+
1st	Gastroduodenal disorders (1473; 20%)	Chronic obstructive pulmonary disease (1584; 9%)	Homicide and violence (3750; 16%)	Alcohol use disorders (5155; 7%)	Chronic kidney disease (3829; 6%)	Chronic obstructive pulmonary disease (741; 10%)	Chronic obstructive pulmonary disease (331; 13%)
2nd	Skin infections and cellulitis (588; 8%)	Skin infections and cellulitis (1138; 7%)	Chronic obstructive pulmonary disease (1002; 4%)	Depressive disorders (3192; 4%)	Alcohol use disorders (3230; 5%)	Diabetes (544; 8%)	Diabetes (240; 10%)
3rd	Chronic obstructive pulmonary disease (515; 7%)	Falls (1085; 6%)	Alcohol use disorders (874; 4%)	Homicide and violence (2792; 4%)	Chronic obstructive pulmonary disease (3039; 5%)	Chronic kidney disease (437; 6%)	Chronic kidney disease (117; 5%)
4th	Lower respiratory infections (480; 7%)	Iron-deficiency anaemia (1003; 6%)	RTI - motor vehicle occupants (849; 4%)	Lower respiratory infections (2617; 4%)	Diabetes (2751; 5%)	Coronary heart disease (348; 5%)	Coronary heart disease (103; 4%)
5th	PTB and LBW complications (246; 3%)	Homicide and violence (786; 5%)	Skin infections and cellulitis (849; 4%)	Chronic obstructive pulmonary disease (2371; 3%)	Lower respiratory infections (2525; 4%)	Lower respiratory infections (267; 4%)	Lower respiratory infections (99; 4%)
6th	Otitis media (234; 3%)	Otitis media (626; 4%)	Iron-deficiency anaemia (674; 3%)	Falls (2071; 3%)	Coronary heart disease (2126; 4%)	Atrial fibrillation and flutter (164; 2%)	Atrial fibrillation and flutter (91; 4%)
7th	RTI - motor vehicle occupants (175; 2%)	Dental caries (602; 4%)	Epilepsy (626; 3%)	Diabetes (2050; 3%)	Depressive disorders (1445; 2%)	Cataract and vision loss (162; 2%)	Hearing loss (75; 3%)
8th	Upper respiratory tract infections (167; 2%)	RTI - motor vehicle occupants (477; 3%)	Depressive disorders (552; 2%)	Chronic kidney disease (1857; 3%)	Falls (1247; 2%)	Falls (128; 2%)	Dementia (65; 3%)
9th	Scabies (150; 2%)	Lower respiratory infections (455; 3%)	Falls (521; 2%)	Coronary heart disease (1288; 2%)	Chronic liver disease (1094; 2%)	Depressive disorders (99; 1%)	Falls (60; 2%)
10th	Iron-deficiency anaemia (132; 2%)	Asthma (395; 2%)	Early pregnancy loss (468; 2%)	Skin infections and cellulitis (1263; 2%)	Skin infections and cellulitis (759; 1%)	Skin infections and cellulitis (95; 1%)	Cataract and vision loss (45; 2%)

Note: PBT and LBW = Pre-term birth and low birthweight; RTI = Road traffic injuries

Figure 31. The ten leading top causes contributing to years lived with disability by age, Northern Territory non-Aboriginal population, 2004-2013

	Age-group						
	Under 5	5-14	15-24	25-44	45-64	65-74	75+
1st	Gastroduodenal disorders (952; 23%)	Falls (1056; 15%)	RTI - motor vehicle occupants (1077; 7%)	Falls (1537; 3%)	Diabetes (1677; 3%)	Coronary heart disease (685; 5%)	Coronary heart disease (605; 7%)
2nd	Chronic obstructive pulmonary disease (726; 17%)	Gastroduodenal disorders (344; 5%)	Early pregnancy loss (899; 6%)	Early pregnancy loss (1535; 3%)	Falls (1555; 3%)	Diabetes (665; 5%)	Falls (448; 5%)
3rd	Epilepsy (205; 5%)	Upper respiratory diseases (229; 3%)	Homicide and violence (683; 4%)	Skin infections and cellulitis (1479; 3%)	Skin infections and cellulitis (1193; 2%)	Hearing loss (466; 3%)	Hearing loss (307; 4%)
4th	PTB and LBW complications (190; 4%)	Skin infections and cellulitis (216; 3%)	Falls (545; 4%)	Back pain and problems (1208; 2%)	Alcohol use disorders (1169; 2%)	Falls (394; 3%)	Diabetes (282; 3%)
5th	Lower respiratory infections (129; 3%)	Asthma (199; 3%)	Gastroduodenal disorders (453; 3%)	RTI - motor vehicle occupants (941; 2%)	Gastro oesophageal reflux disorder (1032; 2%)	Cataract and vision loss (366; 3%)	Atrial fibrillation and flutter (247; 3%)
6th	Upper respiratory tract infections (129; 3%)	Appendicitis (185; 3%)	Back pain and problems (418; 3%)	Maternal haemorrhage (812; 2%)	Coronary heart disease (990; 2%)	Atrial fibrillation and flutter (301; 2%)	Cataract and vision loss (207; 3%)
7th	Falls (94; 2%)	Upper respiratory tract infections (182; 3%)	Skin infections and cellulitis (400; 3%)	Gastroduodenal disorders (809; 2%)	Back pain and problems (920; 2%)	Chronic kidney disease (285; 2%)	Dementia (206; 2%)
8th	Birth trauma and asphyxia (85; 2%)	RTI - motor vehicle occupants (171; 2%)	Suicide and self-inflicted injuries (356; 2%)	Alcohol use disorders (808; 2%)	Chronic kidney disease (714; 1%)	Lower respiratory infections (248; 2%)	Lower respiratory infections (195; 2%)
9th	Neonatal infections (79; 2%)	Dental caries (167; 2%)	Anxiety disorders (332; 2%)	Suicide and self-inflicted injuries (800; 2%)	Hearing loss (703; 1%)	Skin infections and cellulitis (213; 2%)	Chronic kidney disease (194; 2%)
10th	Asthma (59; 1%)	RTI - other (143; 2%)	Alcohol use disorders (243; 2%)	Gastro oesophageal reflux disorder (681; 1%)	Lower respiratory infections (690; 1%)	Gastro oesophageal reflux disorder (193; 1%)	Chronic obstructive pulmonary disease (133; 2%)

Note: PBT and LBW = Pre-term birth and low birthweight; RTI = Road traffic injuries

Figure 32. The ten leading causes contributing to years lived with disability by age, Northern Territory females, 2004-2013

	Age-group						
	Under 5	5-14	15-24	25-44	45-64	65-74	75+
1st	Gastroduodenal disorders (1123; 20%)	Falls (830; 7%)	Early pregnancy loss (1367; 7%)	Alcohol use disorders (2435; 4%)	Chronic kidney disease (2944; 5%)	Diabetes (610; 6%)	Falls (349; 6%)
2nd	Chronic obstructive pulmonary disease (482; 9%)	Chronic obstructive pulmonary disease (667; 6%)	Homicide and violence (924; 5%)	Depressive disorders (2196; 4%)	Diabetes (2260; 4%)	Chronic obstructive pulmonary disease (461; 5%)	Coronary heart disease (317; 5%)
3rd	Lower respiratory infections (308; 6%)	Skin infections and cellulitis (667; 6%)	RTI - motor vehicle occupants (790; 4%)	Early pregnancy loss (2114; 3%)	Lower respiratory infections (1952; 3%)	Chronic kidney disease (395; 4%)	Diabetes (298; 5%)
4th	Skin infections and cellulitis (290; 5%)	Iron-deficiency anaemia (484; 4%)	Maternal haemorrhage (646; 3%)	Homicide and violence (1518; 2%)	Chronic obstructive pulmonary disease (1787; 3%)	Coronary heart disease (312; 3%)	Chronic obstructive pulmonary disease (248; 4%)
5th	PTB and LBW complications (232; 4%)	Dental caries (407; 4%)	Chronic obstructive pulmonary disease (557; 3%)	Diabetes (1481; 2%)	Alcohol use disorders (1595; 3%)	Falls (286; 3%)	Atrial fibrillation and flutter (172; 3%)
6th	Otitis media (148; 3%)	Otitis media (379; 3%)	Skin infections and cellulitis (447; 2%)	Lower respiratory infections (1375; 2%)	Falls (1531; 3%)	Cataract and vision loss (281; 3%)	Chronic kidney disease (167; 3%)
7th	Upper respiratory tract infections (138; 3%)	Gastroduodenal disorders (303; 3%)	Alcohol use disorders (393; 2%)	Chronic obstructive pulmonary disease (1320; 2%)	Coronary heart disease (1146; 2%)	Lower respiratory infections (256; 3%)	Lower respiratory infections (158; 3%)
8th	Epilepsy (122; 2%)	Lower respiratory infections (279; 2%)	Depressive disorders (379; 2%)	Maternal haemorrhage (1205; 2%)	Depressive disorders (1056; 2%)	Atrial fibrillation and flutter (202; 2%)	Dementia (155; 3%)
9th	Falls (90; 2%)	Asthma (239; 2%)	Gastroduodenal disorders (359; 2%)	Falls (1202; 2%)	Skin infections and cellulitis (830; 1%)	Hearing loss (157; 2%)	Cataract and vision loss (147; 3%)
10th	Neonatal infections (82; 1%)	Upper respiratory tract infections (222; 2%)	Hypertensive disorders of pregnancy (340; 2%)	Chronic kidney disease (1160; 2%)	Chronic liver disease (789; 1%)	Osteoarthritis (150; 2%)	Hearing loss (132; 2%)

Note: PBT and LBW = Pre-term birth and low birthweight; RTI = Road traffic injuries

Figure 33. The ten leading causes contributing to years lived with disability by age, Northern Territory males, 2004-2013

	Age-group						
	Under 5	5-14	15-24	25-44	45-64	65-74	75+
1st	Gastroduodenal disorders (1302; 21%)	Falls (1311; 10%)	Homicide and violence (3509; 18%)	Alcohol use disorders (3529; 6%)	Alcohol use disorders (2805; 6%)	Coronary heart disease (720; 6%)	Coronary heart disease (391; 8%)
2nd	Chronic obstructive pulmonary disease (759; 13%)	Chronic obstructive pulmonary disease (947; 7%)	RTI - motor vehicle occupants (1136; 6%)	Falls (2406; 4%)	Diabetes (2168; 4%)	Diabetes (598; 5%)	Hearing loss (249; 5%)
3rd	Skin infections and cellulitis (338; 6%)	Skin infections and cellulitis (687; 5%)	Skin infections and cellulitis (801; 4%)	Homicide and violence (1936; 3%)	Coronary heart disease (1971; 4%)	Chronic obstructive pulmonary disease (467; 4%)	Diabetes (224; 4%)
4th	Lower respiratory infections (301; 5%)	Homicide and violence (589; 4%)	Falls (783; 4%)	Skin infections and cellulitis (1718; 3%)	Chronic kidney disease (1599; 3%)	Hearing loss (394; 4%)	Chronic obstructive pulmonary disease (216; 4%)
5th	PTB and LBW complications (204; 3%)	Iron-deficiency anaemia (527; 4%)	Alcohol use disorders (723; 4%)	Lower respiratory infections (1657; 3%)	Chronic obstructive pulmonary disease (1549; 3%)	Chronic kidney disease (328; 3%)	Atrial fibrillation and flutter (166; 3%)
6th	RTI - motor vehicle occupants (180; 3%)	RTI - motor vehicle occupants (462; 4%)	Chronic obstructive pulmonary disease (506; 3%)	Depressive disorders (1552; 3%)	Falls (1272; 3%)	Atrial fibrillation and flutter (263; 2%)	Falls (159; 3%)
7th	Upper respiratory tract infections (158; 3%)	Otitis media (364; 3%)	Epilepsy (502; 3%)	Suicide and self-inflicted injuries (1274; 2%)	Lower respiratory infections (1263; 3%)	Lower respiratory infections (259; 2%)	Chronic kidney disease (145; 3%)
8th	Otitis media (143; 2%)	Dental caries (363; 3%)	Suicide and self-inflicted injuries (432; 2%)	Chronic obstructive pulmonary disease (1210; 2%)	Skin infections and cellulitis (1121; 2%)	Cataract and vision loss (247; 2%)	Lower respiratory infections (135; 3%)
9th	Epilepsy (136; 2%)	Asthma (355; 3%)	Iron-deficiency anaemia (386; 2%)	Diabetes (1100; 2%)	Chronic liver disease (848; 2%)	Falls (236; 2%)	Dementia (116; 2%)
10th	Falls (93; 2%)	Gastroduodenal disorders (322; 2%)	Depressive disorders (356; 2%)	Chronic kidney disease (1066; 2%)	Back pain and problems (771; 2%)	Alcohol use disorders (198; 2%)	Cataract and vision loss (105; 2%)

Note: PBT and LBW = Pre-term birth and low birthweight; RTI = Road traffic injurie

Fatal burden of disease

Fatal BOD is measured by years of life lost (YLLs). There were 311,131 YLLs due to premature deaths during the ten-year period 2004 to 2013 (Table 12). Males accounted for 64% of YLLs while comprising only 52% of the NT population. YLLs in Aboriginal people were also disproportionately higher (57%) relative to their proportion of the population (30%).

Table 12. Number, rate and rate ratio of years of life lost (YLL) by sex, Aboriginality and time, Northern Territory, 2004-2013

	2004-2008	2009-2013	2004-2013
	Number of YLLs		
Female	55,675	57,066	112,742
Aboriginal	36,246	37,409	73,655
Non-Aboriginal	19,429	19,657	39,086
Male	101,997	96,392	198,389
Aboriginal	53,895	50,030	103,925
Non-Aboriginal	48,102	46,362	94,464
Person	157,672	153,458	311,131
Aboriginal	90,141	87,439	177,580
Non-Aboriginal	67,531	66,019	133,550
	Crude rate (YLLs per 1000 population)		
Female	110.4	103.2	106.6
Aboriginal	222.1	216.8	219.4
Non-Aboriginal	56.9	51.7	54.2
Male	186.6	157.3	171.1
Aboriginal	329.9	288.5	308.6
Non-Aboriginal	125.5	105.5	114.8
Person	150.0	131.7	140.4
Aboriginal	276.0	252.7	264.0
Non-Aboriginal	93.2	80.6	86.5
	Rate ratio (Aboriginal/Non-Aboriginal)		
Female	3.90	4.19	4.05
Male	2.63	2.73	2.69
Person	2.96	3.14	3.05

Figure 34 presents the proportional distributions of total YLLs by five-year age-group along with the age distribution of the total population, separately for Aboriginal and non-Aboriginal people. There was a high proportion of YLLs in the 0-4 age-group for both Aboriginal and non-Aboriginal populations. This was predominantly because mortality is higher in infancy than during childhood and early adult life, and each infant death contributes 86.02 YLLs. Other than that, YLLs were predominant in older age-groups, reflecting higher mortality at older ages, in contrast to YLDs (non-fatal burden of disease) which were predominant in early and middle adult age-groups. The majority of YLLs (excluding those infancy) for the non-Aboriginal population were in the 50-69 year age range. However, the majority of YLLs for the Aboriginal population were 15 years earlier, in the 35-54 year age range.

The crude YLL rate was three times higher for Aboriginal than non-Aboriginal people (Table 12), with higher age-specific YLL rates across all age-groups (Figure 35). For non-Aboriginal people, the age-specific YLL rate was low until about age 50 years, thereafter increasing rapidly (Figure 35). Aboriginal people had higher YLL rates in all age-groups and YLL rates increased steadily from childhood throughout adult life. The largest disparity was in the middle adult years (35-54 years). Males had higher age-specific YLL rates than females in almost all age-groups (Figure 36), for both Aboriginal and non-Aboriginal people (Figures 37 and 38).

Figure 34. Proportion of population and fatal burden by age and Aboriginality, Northern Territory, 2004-2013

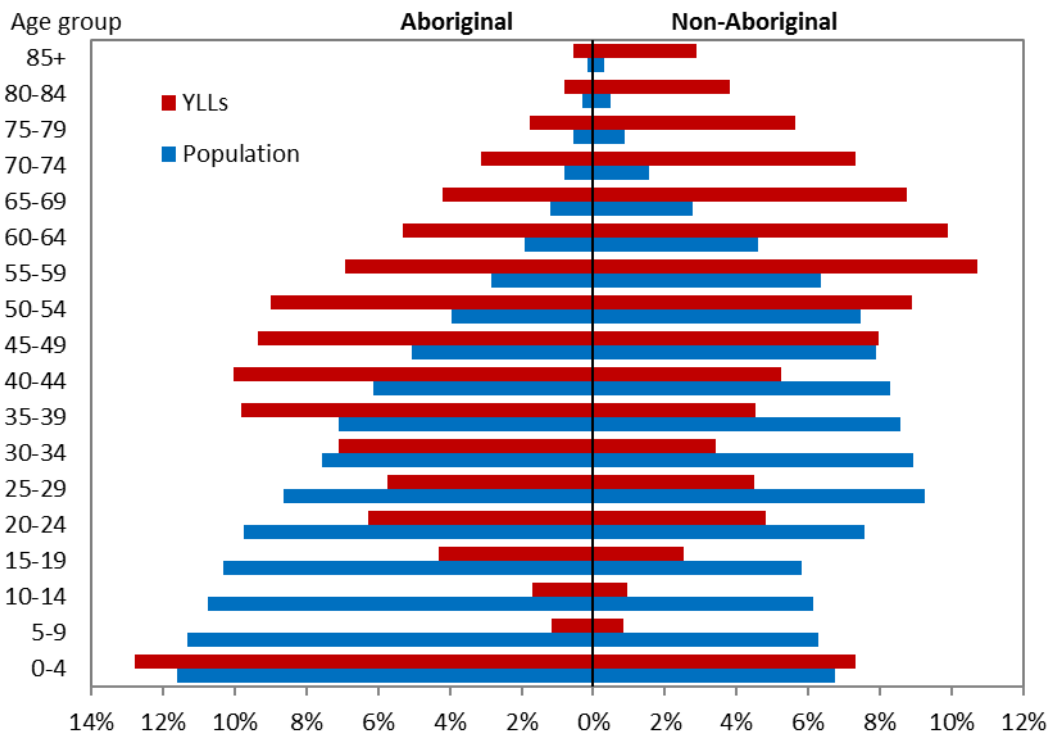


Figure 35. Number and rate of years of life lost by age and Aboriginality, Northern Territory, 2004-2013

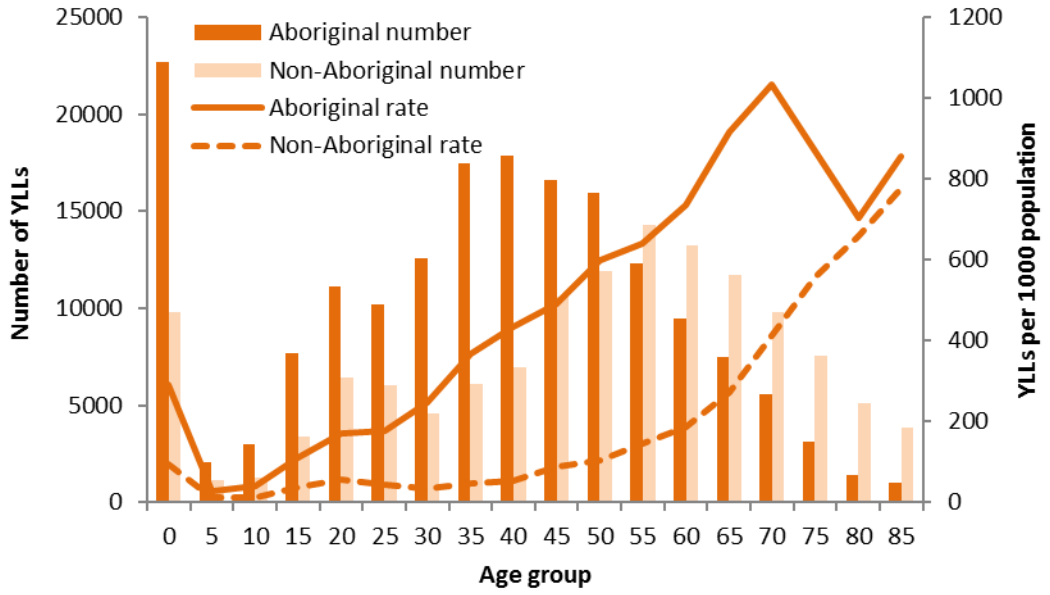


Figure 36. Number and rate of years of life lost by age and sex, Northern Territory, 2004-2013

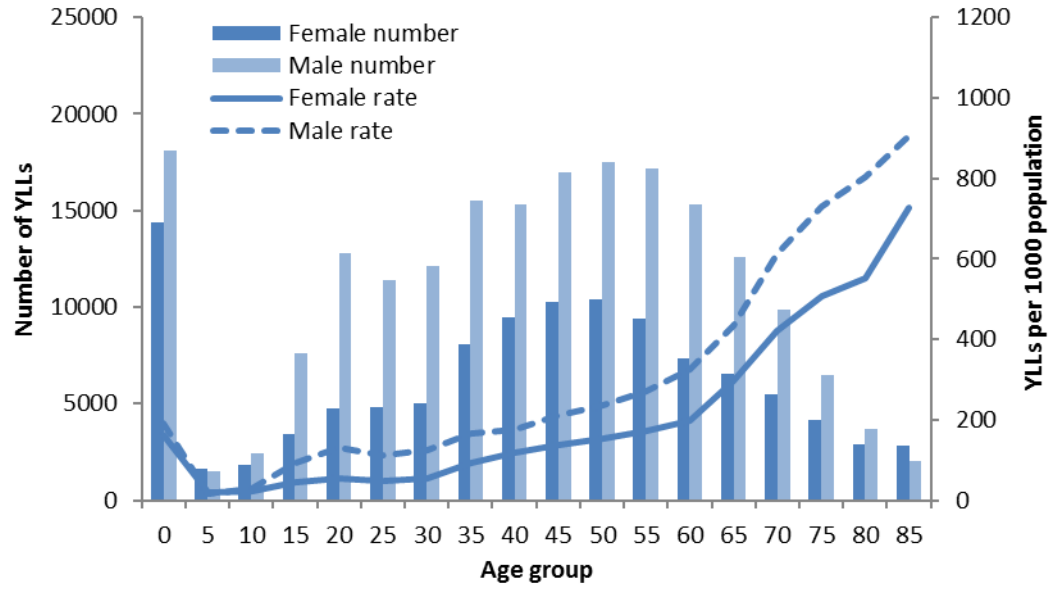


Figure 37. Number and rate of years of life lost by age and sex, Northern Territory Aboriginal population, 2004-2013

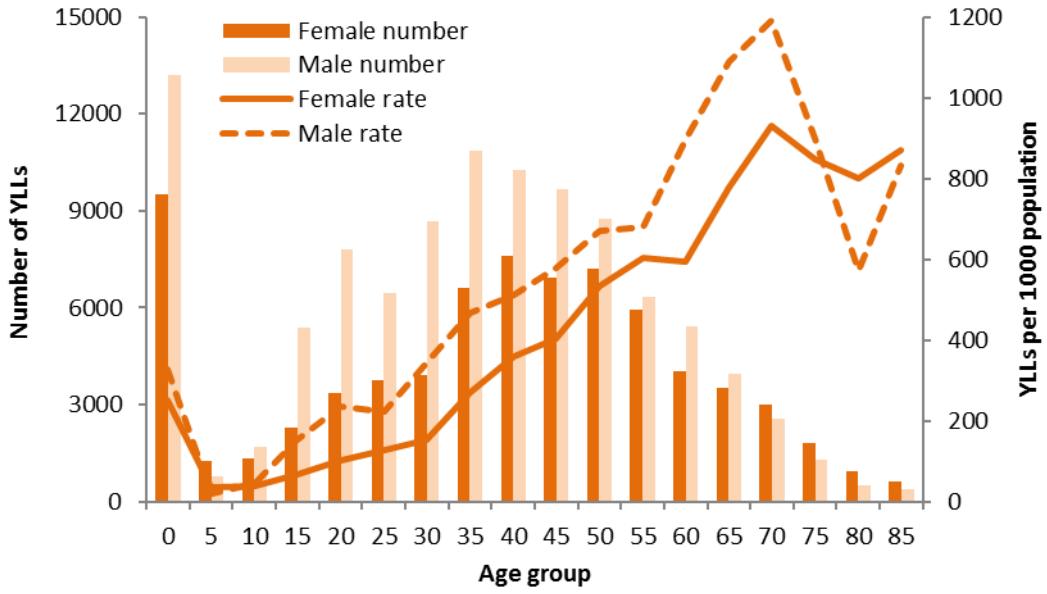
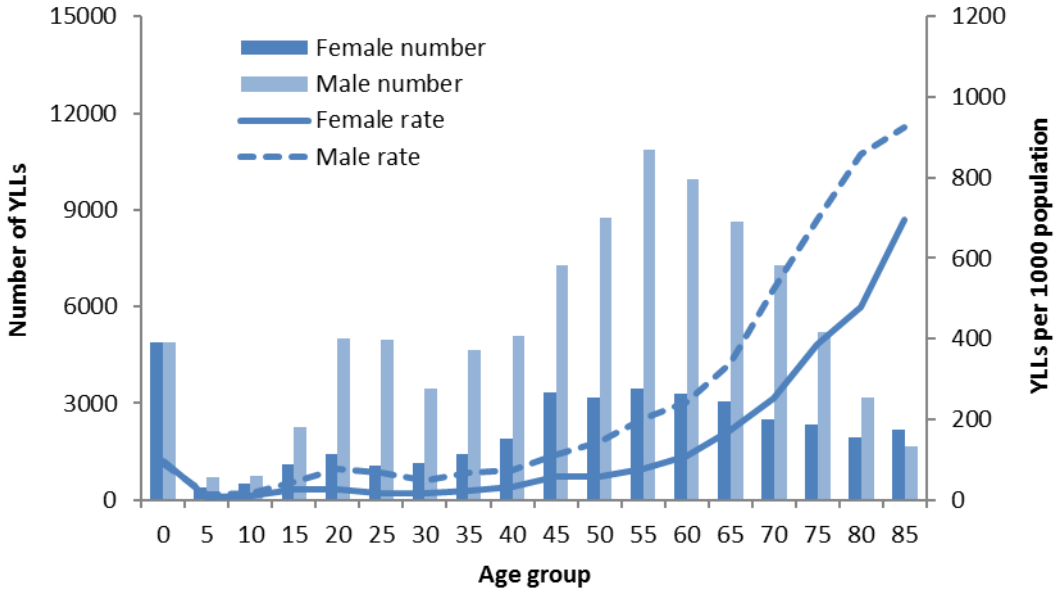


Figure 38. Number and rate of years of life lost by age and sex, Northern Territory non-Aboriginal population, 2004-2013



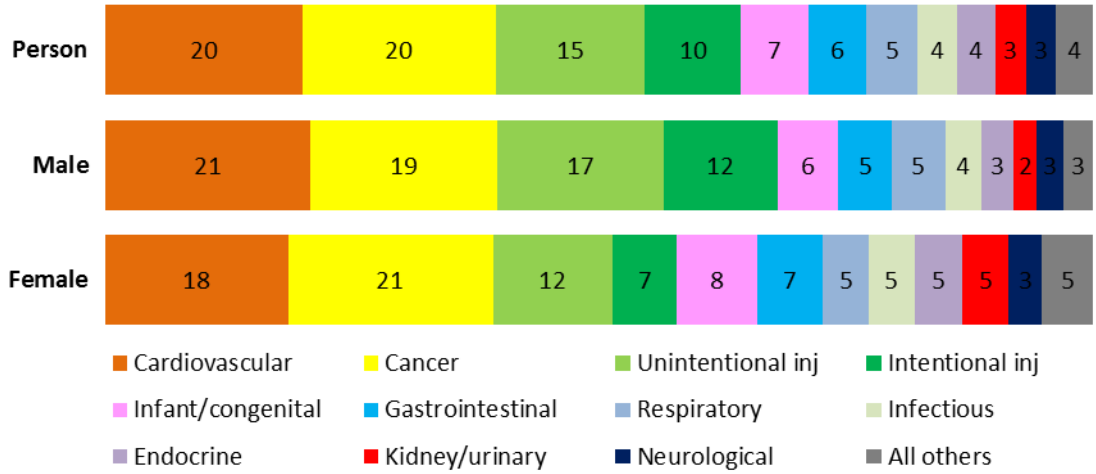
Years of life lost by disease group

For the total NT population, cardiovascular diseases was the leading disease group, accounting for 20% of YLLs, followed by cancer/neoplasms (20%) and unintentional injuries (15%) (Figure 39). Together, the top three disease groups accounted for 55% of the total YLLs. The three leading causes were similar between males and females (Figure 39). The leading causes differed considerably between Aboriginal and non-Aboriginal people. Cancer accounted for a much greater proportion of YLLs for non-Aboriginal people and was their leading disease group (Figures 40 and 41).

The age-standardised YLL rate was 1.6 times higher for males than females (Table 13). The disease groups contributing most to this difference were cardiovascular diseases (26%), cancer/neoplasms (21%), unintentional injuries (20%) and intentional injuries (16%).

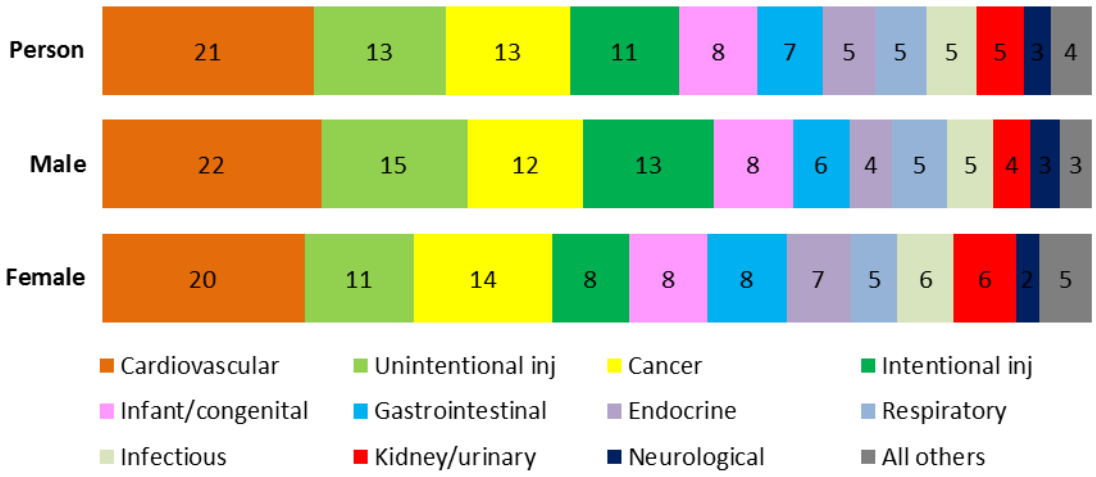
The YLL rate was 3.4 times higher for Aboriginal than non-Aboriginal people (Table 14). The disease groups contributing most to this difference were cardiovascular diseases (25%), cancer/neoplasms (12%) and endocrine disorders (10%).

Figure 39. Proportion (%) of years of life lost by disease group and sex, Northern Territory, 2004-2013



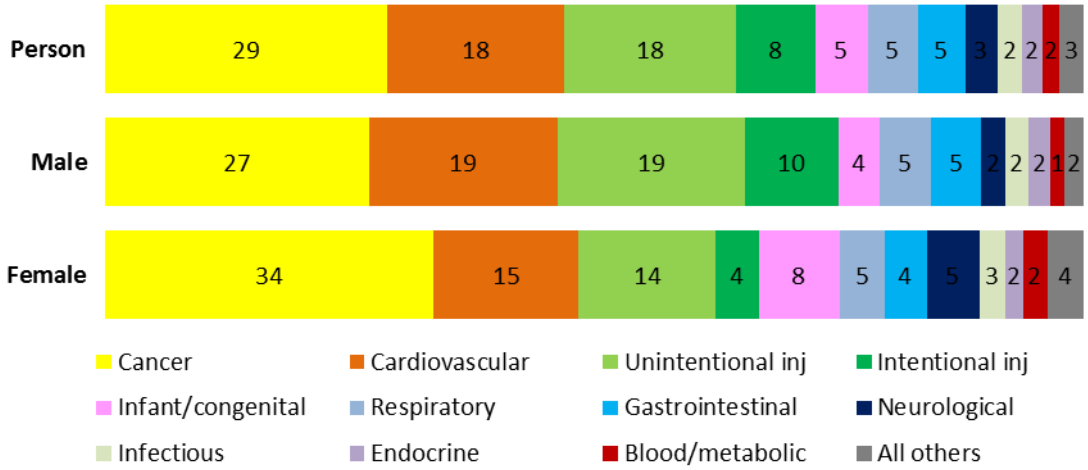
Note: inj = injuries

Figure 40. Proportion (%) of years of life lost by disease group and sex, Northern Territory Aboriginal population, 2004-2013



Note: inj = injuries

Figure 41. Proportion (%) of years of life lost by disease group and sex, Northern Territory non-Aboriginal population, 2004-2013



Note: Reprod = Reproductive; inj = injuries

Table 13. Age-standardised rate of years of life lost by disease group and sex, Northern Territory, 2004-2013

Disease group	Male*	Female*	Ratio#	Difference#	Contribution (%)†
Infectious	7.8	5.7	1.4	2.1	2.8
Infant/congenital	8.7	6.9	1.3	1.8	2.4
Cancer	48.5	32.4	1.5	16.1	21.3
Endocrine	8.3	7.9	1.0	0.3	0.4
Cardiovascular	48.4	28.5	1.7	20.0	26.4
Mental/alcohol	2.1	1.2	1.8	0.9	1.2
Neurological	8.3	7.0	1.2	1.3	1.7
Hearing/vision	0.0	0.0	1.5	0.0	0.0
Respiratory	14.5	8.6	1.7	6.0	7.9
Gastrointestinal	10.9	8.5	1.3	2.4	3.2
Kidney/urinary	5.7	7.3	0.8	-1.6	-2.1
Reprod/maternal	0.1	0.3	0.4	-0.2	-0.2
Skin	0.5	0.7	0.7	-0.2	-0.2
Musculoskeletal	1.1	2.0	0.5	-0.9	-1.2
Oral	0.0	0.0	2.1	0.0	0.0
Blood/metabolic	2.7	2.8	1.0	-0.1	-0.1
Unintentional inj	27.8	12.6	2.2	15.2	20.2
Intentional inj	18.3	5.9	3.1	12.4	16.4
Total	213.8	138.2	1.6	75.5	100.0
(95% CI)	(213.4-214.0)	(138.5-138.9)			

Note: Reprod = Reproductive; inj = injuries; CI = Confidence interval

* age-standardised rate per 1,000 population; # male compared to female; † proportion of the rate difference attributable to each disease group (group difference divided by total difference)

Table 14. Age-standardised rate of years of life lost by disease group and Aboriginality, Northern Territory, 2004-2013

Disease group	Aboriginal*	Non-Aboriginal*	Ratio#	Difference#	Contribution (%)†
Infectious	18.4	3.2	5.8	15.3	5.6
Infant/congenital	12.4	4.6	2.7	7.9	2.9
Cancer	66.4	34.5	1.9	31.9	11.7
Endocrine	29.1	3.1	9.3	26.0	9.6
Cardiovascular	91.1	24.4	3.7	66.7	24.5
Mental/alcohol	5.0	0.6	7.8	4.4	1.6
Neurological	13.5	6.0	2.3	7.5	2.8
Hearing/vision	0.0	0.0	2.6	0.0	0.0
Respiratory	28.1	7.6	3.7	20.5	7.5
Gastrointestinal	26.1	5.0	5.2	21.0	7.7
Kidney/urinary	26.2	1.6	16.1	24. 6	9.0
Reprod/maternal	0.4	0.1	4.0	0.3	0.1
Skin	1.4	0.3	4.0	1.1	0.4
Musculoskeletal	3.5	1.0	3.5	2.5	0.9
Oral	0.1	0.0	6.1	0.1	0.0
Blood/metabolic	6.2	1.8	3.4	4.4	1.6
Unintentional inj	34.6	15.1	2.3	19.5	6.8
Intentional inj	25.1	6.6	3.8	18.5	7.2
Total	387.7	115.7	3.4	272.0	100.0
(95%CI)	(386.7-388.4)	(115.5-115.8)			

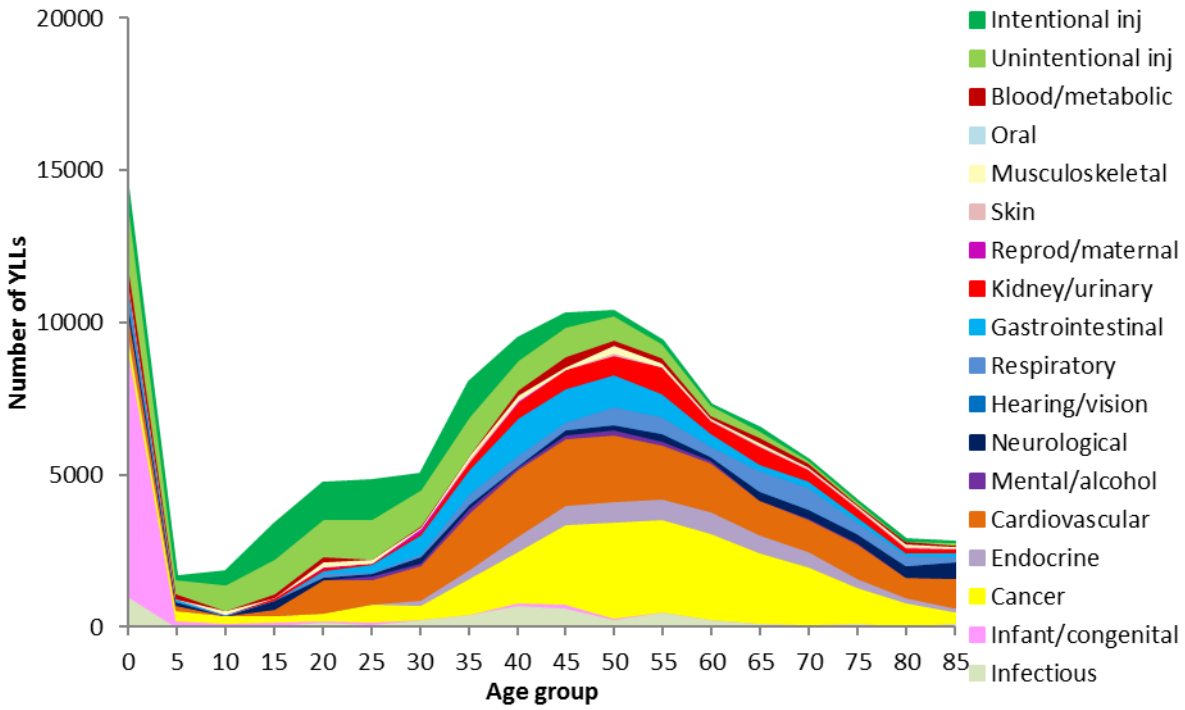
Note: Reprod = Reproductive; inj = injuries; CI = Confidence interval

* age-standardised rate per 1,000 population; # Aboriginal compared to non-Aboriginal; † proportion of the rate difference attributable to each disease group (group difference divided by total difference)

The age patterns for disease-specific YLLs were similar for males and females, with the exception of reproductive/maternal conditions (Figures 42 and 43) and with higher YLL levels that peak five years later for males.

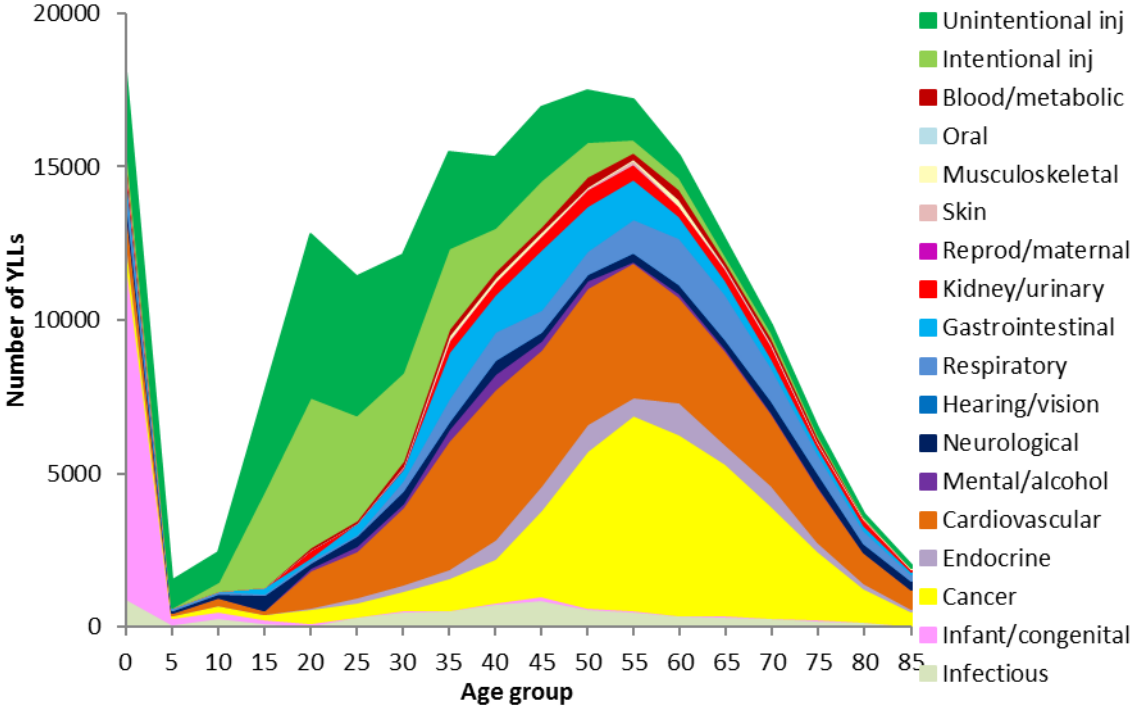
The age patterns for disease-specific YLLs were different for Aboriginal and non-Aboriginal people. Cardiovascular diseases and infectious diseases were more prominent for Aboriginal people in most age-groups and the peak age was 15 years younger, while cancer was much more prominent for non-Aboriginal people (Figures 44 and 45). Injuries was the dominant disease group in childhood (except 0-4 years) and early adult years, with intentional injury predominating in Aboriginal people.

Figure 42. Number of years of life lost (YLLs) by disease group and age, Northern Territory females, 2004-2013



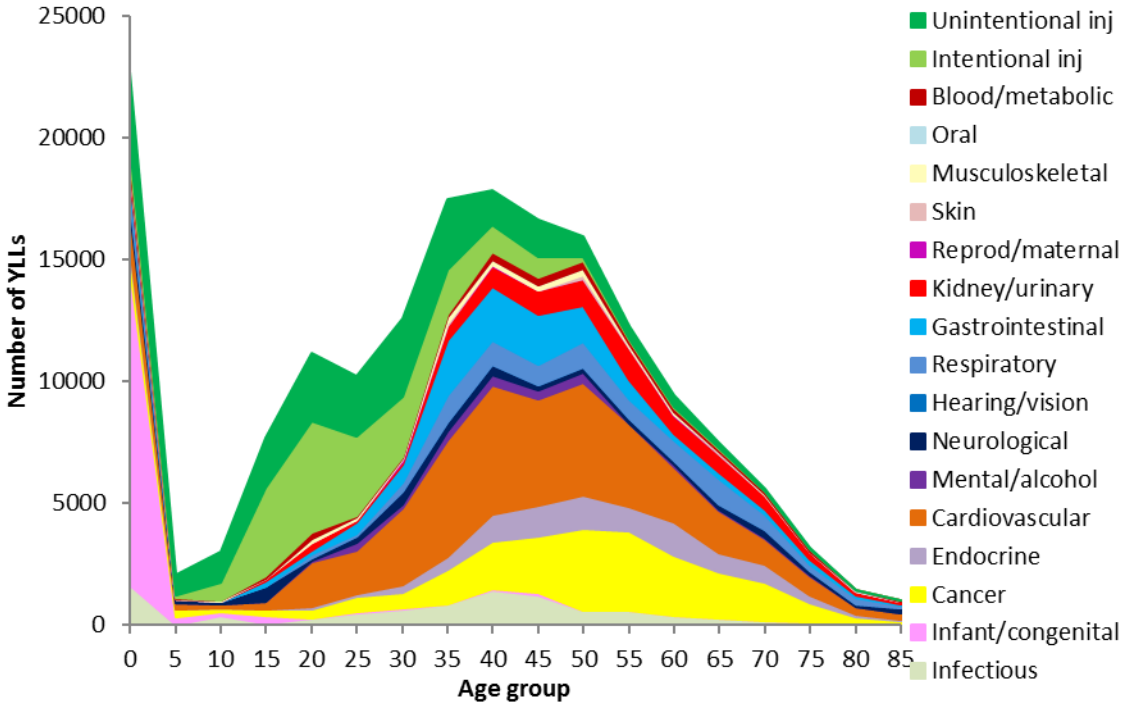
Note: Reprod = Reproductive; inj = injuries

Figure 43. Number of years of life lost (YLLs) by disease group and age, Northern Territory males, 2004-2013



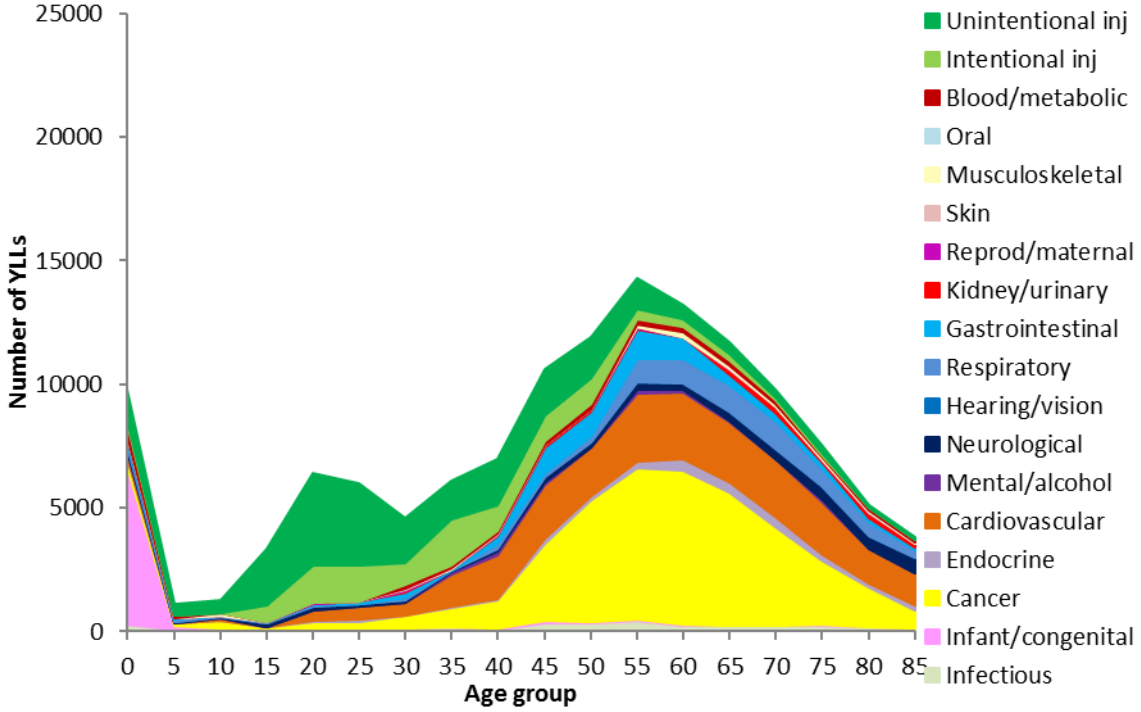
Note: Reprod = Reproductive; inj = injuries

Figure 44. Number of years of life lost (YLLs) by disease group and age, Northern Territory Aboriginal population, 2004-2013



Note: Reprod = Reproductive; inj = injuries

Figure 45. Number of years of life lost (YLLs) by disease group and age, Northern Territory non-Aboriginal population, 2004-2013



Note: Reprod = Reproductive; inj = injuries

Years of life lost by cause

The top 20 specific causes accounted for 62% of total YLLs (Table 15). Coronary heart disease, and suicide and self-inflicted injuries were the leading causes for both Aboriginal and non-Aboriginal people (Table 16). Chronic liver disease, diabetes and chronic kidney disease accounted for a higher proportion of YLLs in Aboriginal than non-Aboriginal people, while road traffic injuries involving motor vehicle occupants accounted for a higher proportion in non-Aboriginal people.

Figures 46 and 47 showed the top ten specific causes by age-group, separately for Aboriginal and non-Aboriginal people. Figures 48 and 49 were the top ten specific causes by age-group, separately for females and males.

Table 15. The twenty leading causes contributing to years of life lost by sex, Northern Territory, 2004-2013

	Male			Female			Person		
	Cause	YLL	%	Cause	YLL	%	Cause	YLL	%
1	Coronary heart disease	25,568	12.9	Coronary heart disease	7,769	6.9	Coronary heart disease	33,337	10.7
2	SII	18,867	9.5	RTI - motor vehicle occupants	5,585	5.0	SII	23,088	7.4
3	RTI - motor vehicle occupants	10,785	5.4	Chronic liver disease	5,309	4.7	RTI - motor vehicle occupants	16,369	5.3
4	Lung cancer	9,254	4.7	Diabetes	5,196	4.6	Lung cancer	14,053	4.5
5	Chronic liver disease	7,914	4.0	Lung cancer	4,798	4.3	Chronic liver disease	13,223	4.2
6	COPD	6,729	3.4	Chronic kidney disease	4,595	4.1	Diabetes	11,709	3.8
7	Diabetes	6,513	3.3	SII	4,221	3.7	COPD	10,187	3.3
8	Stroke	4,344	2.2	Stroke	3,595	3.2	Chronic kidney disease	8,188	2.6
9	PTB and LBW complications	4,162	2.1	Breast cancer	3,546	3.1	Stroke	7,939	2.6
10	Homicide and violence	4,006	2.0	COPD	3,457	3.1	PTB and LBW complications	7,194	2.3
11	Chronic kidney disease	3,593	1.8	Homicide and violence	3,171	2.8	Homicide and violence	7,176	2.3
12	RTI - other	3,468	1.7	PTB and LBW complications	3,032	2.7	RTI - other	5,346	1.7
13	Poisoning	3,352	1.7	Rheumatic heart disease	2,873	2.5	Bowel cancer	5,198	1.7
14	Bowel cancer	3,330	1.7	Lower respiratory infections	2,108	1.9	Poisoning	4,761	1.5
15	Drowning	3,080	1.6	Road traffic injuries - other	1,878	1.7	Rheumatic heart disease	4,660	1.5
16	Mouth and pharyngeal cancer	3,020	1.5	Bowel cancer	1,868	1.7	Unknown primary cancer	4,607	1.5
17	Unknown primary cancer	2,946	1.5	Unknown primary cancer	1,661	1.5	Lower respiratory infections	4,122	1.3
18	Liver cancer	2,352	1.2	Dementia	1,651	1.5	Mouth and pharyngeal cancer	3,822	1.2
19	Cardiomyopathy	2,025	1.0	Poisoning	1,409	1.2	Drowning	3,697	1.2
20	Lower respiratory infections	2,015	1.0	Birth trauma and asphyxia	1,216	1.1	Breast cancer	3,639	1.2
Leading 20		127,322	64.2		68,938	61.1		192,316	61.8
All others		71,067	35.8		43,803	38.9		118,815	38.2
Total		198,389	100.0		112,742	100.0		311,131	100.0

Note: COPD = Chronic obstructive pulmonary disease, PBT and LBW = Pre-term birth and low birthweight, RTI = Road traffic injuries, SII = self-inflected injuries, YLL=years of life lost

Table 16. The twenty leading causes contributing to years of life lost (YLL) by Aboriginality, Northern Territory, 2004-2013

	Aboriginal			Non-Aboriginal			All		
	Cause	YLL	%	Cause	YLL	%	Cause	YLL	%
1	Coronary heart disease	19,955	11.2	Coronary heart disease	13,383	10.0	Coronary heart disease	33,337	10.7
2	SII	13,845	7.8	SII	9,243	6.9	SII	23,088	7.4
3	Chronic liver disease	9,123	5.1	Lung cancer	8,735	6.5	RTI - motor vehicle occupants	16,369	5.3
4	Diabetes	8,935	5.0	RTI - motor vehicle occupants	7,865	5.9	Lung cancer	14,053	4.5
5	RTI - motor vehicle occupants	8,504	4.8	COPD	5,315	4.0	Chronic liver disease	13,223	4.2
6	Chronic kidney disease	7,290	4.1	Chronic liver disease	4,100	3.1	Diabetes	11,709	3.8
7	Homicide and violence	5,606	3.2	Bowel cancer	4,016	3.0	COPD	10,187	3.3
8	Lung cancer	5,317	3.0	Stroke	3,553	2.7	Chronic kidney disease	8,188	2.6
9	PTB and LBW complications	4,934	2.8	Diabetes	2,774	2.1	Stroke	7,939	2.6
10	COPD	4,871	2.7	Unknown primary	2,620	2.0	PTB and LBW complications	7,194	2.3
11	Stroke	4,386	2.5	Poisoning	2,521	1.9	Homicide and violence	7,176	2.3
12	RTI - other	4,269	2.4	Breast cancer	2,462	1.8	RTI - other	5,346	1.7
13	Rheumatic heart disease	4,250	2.4	PTB and LBW complications	2,260	1.7	Bowel cancer	5,198	1.7
14	Lower respiratory infections	3,119	1.8	Drowning	2,129	1.6	Poisoning	4,761	1.5
15	Alcohol use disorders	2,263	1.3	Dementia	1,900	1.4	Rheumatic heart disease	4,660	1.5
16	Poisoning	2,240	1.3	RTI - motorcyclists	1,787	1.3	Unknown primary cancer	4,607	1.5
17	Mouth and pharyngeal cancer	2,048	1.2	Mouth and pharyngeal cancer	1,774	1.3	Lower respiratory infections	4,122	1.3
18	Unknown primary cancer	1,987	1.1	Brain and CNS cancer	1,617	1.2	Mouth and pharyngeal cancer	3,822	1.2
19	Cardiomyopathy	1,934	1.1	Falls	1,584	1.2	Drowning	3,697	1.2
20	Birth trauma and asphyxia	1,910	1.1	Homicide and violence	1,570	1.2	Breast cancer	3,639	1.2
Leading 20		116,786	65.8		81,210	60.8		192,316	61.8
All others		60,794	34.2		52,340	39.2		118,815	38.2
Total		177,580	100.0		133,550	100.0		311,131	100.0

Note: CNS = Central nervous system, COPD = Chronic obstructive pulmonary disease, PBT and LBW = Pre-term birth and low birthweight, RTI = Road traffic injuries, SII = self-inflected injuries, YLL=years of life lost

Figure 46. The ten leading causes contributing to years of life lost by age, Northern Territory Aboriginal population, 2004-2013

	Age-group						
	Under 5	5-14	15-24	25-44	45-64	65-74	75+
1st	PTB and LBW complications (4923; 22%)	Suicide and self-inflicted injuries (663; 13%)	Suicide and self-inflicted injuries (7031; 37%)	Coronary heart disease (8141; 14%)	Coronary heart disease (8782; 16%)	Coronary heart disease (1636; 13%)	Chronic obstructive pulmonary disease (537; 10%)
2nd	Birth trauma and asphyxia (1904; 8%)	RTI - motor vehicle occupants (600; 12%)	RTI - motor vehicle occupants (2663; 14%)	Suicide and self-inflicted injuries (5492; 9%)	Diabetes (4748; 9%)	Diabetes (1545; 12%)	Coronary heart disease (507; 9%)
3rd	Neonatal infections (1295; 6%)	Cerebral palsy (312; 6%)	Homicide and violence (1179; 6%)	Chronic liver disease (4862; 8%)	Chronic kidney disease (3746; 7%)	Chronic obstructive pulmonary disease (1310; 10%)	Chronic kidney disease (494; 9%)
4th	Sudden infant death syndrome (1039; 5%)	RTI - other (238; 5%)	Rheumatic heart disease (857; 5%)	RTI - motor vehicle occupants (3369; 6%)	Chronic liver disease (3679; 7%)	Chronic kidney disease (1187; 9%)	Diabetes (480; 9%)
5th	RTI - motor vehicle occupants (906; 4%)	Brain and central nervous system cancer (234; 5%)	Poisoning (545; 3%)	Homicide and violence (3299; 6%)	Lung cancer (3273; 6%)	Lung cancer (1022; 8%)	Dementia (425; 8%)
6th	Lower respiratory infections (725; 3%)	Drowning (155; 3%)	RTI - other (543; 3%)	RTI - other (2508; 4%)	Chronic obstructive pulmonary disease (2265; 4%)	Stroke (519; 4%)	Stroke (366; 7%)
7th	Congenital cardiovascular defects (604; 3%)	Rheumatic heart disease (154; 3%)	Coronary heart disease (467; 2%)	Diabetes (1969; 3%)	Stroke (1869; 3%)	Dementia (395; 3%)	Lung cancer (215; 4%)
8th	Coronary heart disease (411; 2%)	Homicide and violence (152; 3%)	Chronic kidney disease (275; 1%)	Rheumatic heart disease (1896; 3%)	Mouth and pharyngeal cancer (1188; 2%)	Liver cancer (348; 3%)	Unknown primary cancer (125; 2%)
9th	Fire, burns and scalds (345; 2%)	Poisoning (147; 3%)	Drowning (208; 1%)	Chronic kidney disease (1249; 2%)	Liver cancer (1045; 2%)	Unknown primary cancer (317; 2%)	Liver cancer (78; 1%)
10th	Chronic kidney disease (336; 1%)	Brain malformations (81; 2%)	Stroke (208; 1%)	Stroke (1241; 2%)	Rheumatic heart disease (978; 2%)	Bowel cancer (274; 2%)	Chronic liver disease (74; 1%)

Note: PBT and LBW = Pre-term birth and low birthweight; RTI = Road traffic injurie

Figure 47. The ten leading causes contributing to years of life lost by age, Northern Territory non-Aboriginal population, 2004-2013

	Age-group						
	Under 5	5-14	15-24	25-44	45-64	65-74	75+
1st	PTB and LBW complications (2244; 23%)	RTI - motor vehicle occupants (313; 13%)	RTI - motor vehicle occupants (3126; 32%)	Suicide and self-inflicted injuries (4438; 19%)	Coronary heart disease (5798; 12%)	Coronary heart disease (3079; 14%)	Coronary heart disease (2368; 14%)
2nd	Birth trauma and asphyxia (951; 10%)	Cerebral palsy (157; 7%)	Suicide and self-inflicted injuries (2007; 21%)	RTI - motor vehicle occupants (2914; 12%)	Lung cancer (5082; 10%)	Lung cancer (2361; 11%)	Dementia (1329; 8%)
3rd	Congenital cardiovascular defects (606; 6%)	Leukaemia (149; 6%)	RTI - motorcyclists (656; 7%)	Coronary heart disease (1842; 8%)	Chronic liver disease (3151; 6%)	Chronic obstructive pulmonary disease (1965; 9%)	Chronic obstructive pulmonary disease (1244; 8%)
4th	Brain malformations (432; 4%)	Falls (81; 3%)	Drowning (408; 4%)	Poisoning (1234; 5%)	Suicide and self-inflicted injuries (2321; 5%)	Diabetes (823; 4%)	Lung cancer (1093; 7%)
5th	Drowning (344; 4%)	Brain and central nervous system cancer (80; 3%)	RTI - other (284; 3%)	RTI - motorcyclists (834; 4%)	Bowel cancer (2099; 4%)	Bowel cancer (818; 4%)	Stroke (1011; 6%)
6th	RTI - motor vehicle occupants (281; 3%)	Fire, burns and scalds (78; 3%)	Poisoning (205; 2%)	Drowning (765; 3%)	Chronic obstructive pulmonary disease (1799; 4%)	Unknown primary cancer (758; 4%)	Diabetes (628; 4%)
7th	Sudden infant death syndrome (261; 3%)	Downs syndrome (74; 3%)	Coronary heart disease (161; 2%)	Homicide and violence (719; 3%)	Breast cancer (1523; 3%)	Stroke (548; 3%)	Bowel cancer (535; 3%)
8th	Inflammatory bowel disease (174; 2%)	Ovarian cancer (73; 3%)	Homicide and violence (152; 2%)	Stroke (667; 3%)	Stroke (1213; 2%)	Pancreatic cancer (531; 2%)	Unknown primary cancer (459; 3%)
9th	Neonatal infections (174; 2%)		Falls (143; 1%)	Bowel cancer (538; 2%)	Unknown primary (1192; 2%)	Dementia (440; 2%)	Prostate cancer (455; 3%)
10th	Coronary heart disease (134; 1%)		Asthma (131; 1%)	Chronic liver disease (401; 2%)	Mouth and pharyngeal cancer (1161; 2%)	Chronic kidney disease (419; 2%)	Falls (300; 2%)

Note: PBT and LBW = Pre-term birth and low birthweight; RTI = Road traffic injuries

Figure 48. The ten leading causes contributing to years of life lost by age, Northern Territory females, 2004-2013

	Age-group						
	Under 5	5-14	15-24	25-44	45-64	65-74	75+
1st	PTB and LBW complications (3024; 21%)	RTI - motor vehicle occupants (453; 13%)	Suicide and self-inflicted injuries (1732; 21%)	Chronic liver disease (2320; 8%)	Coronary heart disease (3385; 9%)	Lung cancer (1144; 9%)	Coronary heart disease (1087; 11%)
2nd	Birth trauma and asphyxia (1212; 8%)	Suicide and self-inflicted injuries (367; 10%)	RTI - motor vehicle occupants (1689; 21%)	RTI - motor vehicle occupants (1941; 7%)	Lung cancer (2857; 8%)	Coronary heart disease (1135; 9%)	Dementia (1003; 10%)
3rd	Sudden infant death syndrome (779; 5%)	Brain and central nervous system cancer (160; 5%)	Homicide and violence (601; 7%)	Homicide and violence (1924; 7%)	Chronic liver disease (2578; 7%)	Chronic obstructive pulmonary disease (1095; 9%)	Stroke (695; 7%)
4th	RTI - motor vehicle occupants (657; 5%)	Cerebral palsy (159; 5%)	Rheumatic heart disease (453; 6%)	Coronary heart disease (1841; 7%)	Diabetes (2538; 7%)	Diabetes (1052; 9%)	Chronic obstructive pulmonary disease (693; 7%)
5th	Neonatal infections (519; 4%)	Road traffic injuries - other (156; 4%)	Lower respiratory infections (263; 3%)	Suicide and self-inflicted injuries (1678; 6%)	Chronic kidney disease (2306; 6%)	Chronic kidney disease (884; 7%)	Diabetes (559; 6%)
6th	Lower respiratory infections (454; 3%)	Homicide and violence (152; 4%)	Stroke (213; 3%)	Rheumatic heart disease (1249; 5%)	Breast cancer (2140; 6%)	Breast cancer (504; 4%)	Chronic kidney disease (482; 5%)
7th	Congenital cardiovascular defects (433; 3%)	Leukaemia (148; 4%)	Poisoning (211; 3%)	Diabetes (957; 3%)	Stroke (1488; 4%)	Stroke (462; 4%)	Lung cancer (390; 4%)
8th	Drowning (273; 2%)	Rheumatic heart disease (82; 2%)	Non-rheumatic valvular disease (197; 2%)	RTI – other (931; 3%)	Chronic obstructive pulmonary disease (1288; 3%)	Dementia (455; 4%)	Bowel cancer (264; 3%)
9th	Brain malformations (261; 2%)	Brain malformations (81; 2%)	RTI - other (148; 2%)	Chronic kidney disease (724; 3%)	Bowel cancer (763; 2%)	Bowel cancer (389; 3%)	Unknown primary cancer (212; 2%)
10th	Fire, burns and scalds (256; 2%)	Kidney cancer (79; 2%)	Chronic kidney disease (145; 2%)	Stroke (673; 2%)	Unknown primary cancer (744; 2%)	Unknown primary cancer (368; 3%)	Breast cancer (207; 2%)

Note: PBT and LBW = Pre-term birth and low birthweight; RTI = Road traffic injuries

Figure 49. The ten leading causes contributing to years of life lost by age, Northern Territory males, 2004-2013

	Age-group						
	Under 5	5-14	15-24	25-44	45-64	65-74	75+
1st	PTB and LBW complications (4143; 23%)	RTI - motor vehicle occupants (460; 12%)	Suicide and self-inflicted injuries (7306; 36%)	Suicide and self-inflicted injuries (8252; 15%)	Coronary heart disease (11196; 17%)	Coronary heart disease (3579; 16%)	Coronary heart disease (1788; 15%)
2nd	Birth trauma and asphyxia (1643; 9%)	Cerebral palsy (310; 8%)	RTI - motor vehicle occupants (4099; 20%)	Coronary heart disease (8143; 15%)	Lung cancer (5498; 8%)	Lung cancer (2239; 10%)	Chronic obstructive pulmonary disease (1088; 9%)
3rd	Neonatal infections (949; 5%)	Suicide and self-inflicted injuries (296; 8%)	Homicide and violence (730; 4%)	RTI - motor vehicle occupants (4342; 8%)	Chronic liver disease (4252; 6%)	Chronic obstructive pulmonary disease (2179; 10%)	Lung cancer (918; 8%)
4th	Congenital cardiovascular defects (777; 4%)	Brain and central nervous system cancer (155; 4%)	RTI - other (678; 3%)	Chronic liver disease (2943; 5%)	Diabetes (3289; 5%)	Diabetes (1317; 6%)	Dementia (752; 6%)
5th	RTI - motor vehicle occupants (530; 3%)	Drowning (155; 4%)	RTI - motorcyclists (654; 3%)	Homicide and violence (2093; 4%)	Chronic obstructive pulmonary disease (2775; 4%)	Chronic kidney disease (722; 3%)	Stroke (682; 6%)
6th	Sudden infant death syndrome (521; 3%)	Poisoning (147; 4%)	Drowning (541; 3%)	RTI - other (1913; 4%)	Suicide and self-inflicted injuries (2466; 4%)	Unknown primary cancer (707; 3%)	Diabetes (548; 4%)
7th	Lower respiratory infections (372; 2%)	Falls (81; 2%)	Poisoning (539; 3%)	Drowning (1520; 3%)	Mouth and pharyngeal cancer (1972; 3%)	Bowel cancer (703; 3%)	Prostate cancer (511; 4%)
8th	Brain malformations (347; 2%)	RTI - other (81; 2%)	Coronary heart disease (529; 3%)	Poisoning (1512; 3%)	Bowel cancer (1833; 3%)	Stroke (605; 3%)	Unknown primary cancer (372; 3%)
9th	Coronary heart disease (332; 2%)	Aortic aneurysm (80; 2%)	Rheumatic heart disease (406; 2%)	Stroke (1235; 2%)	Stroke (1595; 2%)	Pancreatic cancer (510; 2%)	Bowel cancer (301; 2%)
10th	Chronic kidney disease (317; 2%)	Fire, burns and scalds (78; 2%)	Falls (331; 2%)	Diabetes (1197; 2%)	Chronic kidney disease (1527; 2%)	Prostate cancer (479; 2%)	Chronic kidney disease (298; 2%)

Note: PBT and LBW = Pre-term birth and low birthweight; RTI = Road traffic injuries

Contribution of risk factors

The risk factors contributing the most to total burden of disease for both Aboriginal and non-Aboriginal people (as measured by DALYs) were socio-economic disadvantage, tobacco smoking, high body mass, physical inactivity and alcohol (Table 17). Contributions by most risk factors, including tobacco smoking, high body mass, physical inactivity, alcohol, low fruit and vegetable intake and intimate partner violence, were higher in the Aboriginal population than in non-Aboriginal population.

Socioeconomic inequality, measured by scores of Socio-Economic Indexes for Areas (SEIFA), contributed to the imbalance of total burden at small area level. Each of the four components of SEIFA, including Index of Advantage/Disadvantage, Index of Disadvantage, Index of Economic Resource, Index of Education and Occupation, individually contributed between 14.3% and 19.0%, with a combined score from all four indexes accounting for 18.6% of the health inequality (Table 18).

Table 17. Disability-adjusted life years (DALYs) attributed to risk factors, Aboriginal and non-Aboriginal populations, Northern Territory, 2004-2013

	Aboriginal		Non-Aboriginal		Total	
Risk factor*	Number	%	Number	%	Number	%
Socio-economic inequality#					121,070	18.6
Tobacco	29,726	8.0	18,688	6.6	48,414	7.4
High body mass	30,129	8.2	15,762	5.6	45,891	7.1
Physical inactivity	27,665	7.5	15,398	5.5	43,063	6.6
Alcohol	27,504	7.4	14,463	5.1	41,967	6.4
High blood pressure	13,718	3.7	11,586	4.1	25,305	3.9
High blood cholesterol	10,492	2.8	10,301	3.7	20,793	3.2
Low fruit and vegetable intake	14,142	3.8	6,130	2.2	20,272	3.1
Intimate partner violence	7,557	2.0	1,203	0.4	8,760	1.3
Illicit drugs	3,557	1.0	2,863	1.0	6,420	1.0
Unsafe sex	3,025	0.8	3,221	1.1	6,246	1.0
Child sexual abuse	2,082	0.6	632	0.2	2,714	0.4
Occupational exposures+			6,320	2.2	6,320	1.0
Osteoporosis+			1,939	0.7	1,939	0.3
Air pollution - long term+			1,225	0.4	1,225	0.2
Particulates - short term+			237	0.1	237	<0.1
Ozone - short term+			290	0.1	290	<0.1
Total DALY	369,479	100.0	281,434	100.0	650,913	100.0

* The separate attribution of each risk factor cannot be summed to provide a total for all risk factors because of the possible joint effect of multiple risk factors.

Socio-economic disadvantage was only assessed for total NT population due to the unavailability of data.

+ The risk factors of occupational exposure, osteoporosis and environmental exposure were not assessed for Aboriginal population because of their relatively lower exposure and harm by these risk factors.

Table 18. Contributions to total burden by socio-economic inequalityS

SEIFA index	Contribution
Relative disadvantage	19.0%
Relative advantage and disadvantage	18.6%
Economic resource	18.7%
Education and occupation	14.3%
Combined SEIFA	18.6%

Note: SEIFA = Socio-Economic Indexes for Areas

Gap between Aboriginal and non-Aboriginal populations

The gap in total burden between Aboriginal and non-Aboriginal populations was measured using age-standardised DALY rates. This gap was greater in the NT than in Australia as a whole (Table 19).

The leading 20 causes contributing to the gap in DALYs were responsible for nearly three-quarters (72%) of the gap. Coronary heart disease, diabetes, chronic kidney disease and COPD were the top contributors, each accounting for around 6-8% of total DALYs (Table 20).

Table 19. Age-standardised disability-adjusted life year rates by Aboriginality, Northern Territory 2004-2013 and Australia 2011

	Rate*		Aboriginal vs Non-Aboriginal	
	Aboriginal	Non-Aboriginal	Rate ratio	Rate difference*
Northern Territory	760.1	222.2	3.4	537.9
Australia	429.4	185.0	2.3	244.4

* age-standardised rate of disability-adjusted life years per 1000 population.

Table 20. The twenty leading causes contributing to the gap in disability-adjusted life year rates by Aboriginality, Northern Territory, 2004-2013

Disease	Aboriginal*	Non-Aboriginal*	Difference#	Contribution (%)†
Coronary heart disease	59.4	15.9	43.4	8.1
Diabetes	43.3	5.8	37.6	7.0
Chronic kidney disease	39.0	2.7	36.3	6.7
COPD	39.5	7.3	32.1	6.0
Other cardiovascular diseases	36.4	9.3	27.1	5.0
Other infections	30.6	5.9	24.7	4.6
Chronic liver disease	24.1	3.3	20.7	3.9
Homicide and violence	30.2	10.0	20.2	3.8
Alcohol use disorders	22.0	2.0	20.0	3.7
Other blood/metabolic disorders	26.0	6.3	19.6	3.6
Lower respiratory infections	20.0	2.5	17.4	3.2
Suicide and self-inflicted injuries	19.8	6.6	13.2	2.5
Other respiratory diseases	12.2	1.4	10.8	2.0
Other external causes of injury	16.7	6.3	10.4	1.9
Stroke	14.7	4.7	10.0	1.9
Rheumatic heart disease	9.8	0.5	9.3	1.7
Lung cancer	17.4	8.1	9.3	1.7
Depressive disorders	9.6	0.7	8.9	1.7
Other unintentional injuries	17.1	8.5	8.5	1.6
Other kidney and urinary diseases	10.2	1.9	8.3	1.5
Total	760.1	222.2	537.9	100.0

Note: COPD = Chronic obstructive pulmonary disease
* age-standardised rate of disability-adjusted life years per 1000 population.
# Aboriginal rate minus non-Aboriginal rate.
† proportional contribution to the total rate difference.

Variation across geographical areas

Variation across geographic areas was assessed by age-standardised DALY rates. Disease burden was generally high in remote districts (Alice Springes Rural, Barkly, Darwin Rural, Katherine and East Arnhem) than the two urban districts of Darwin and Alice Springs (Figure 50). Disease burden was higher in Central Australia (Alice Springs Rural and Urban and Barkly districts) than in the Top End (Darwin Urban and Rural, Katherine and East Arnhem districts) (Figure 51). Aboriginal people living in remote areas had lower burden of disease than those in non-remote areas, while the opposite was true for the non-Aboriginal population (Figure 52). Thus, the gap in total burden

between Aboriginal and non-Aboriginal populations was greater in non-remote areas than remote areas.

Figure 50. Age-standardised rate of disability-adjusted life years (DALYs) by health district, Northern Territory, 2004-2013

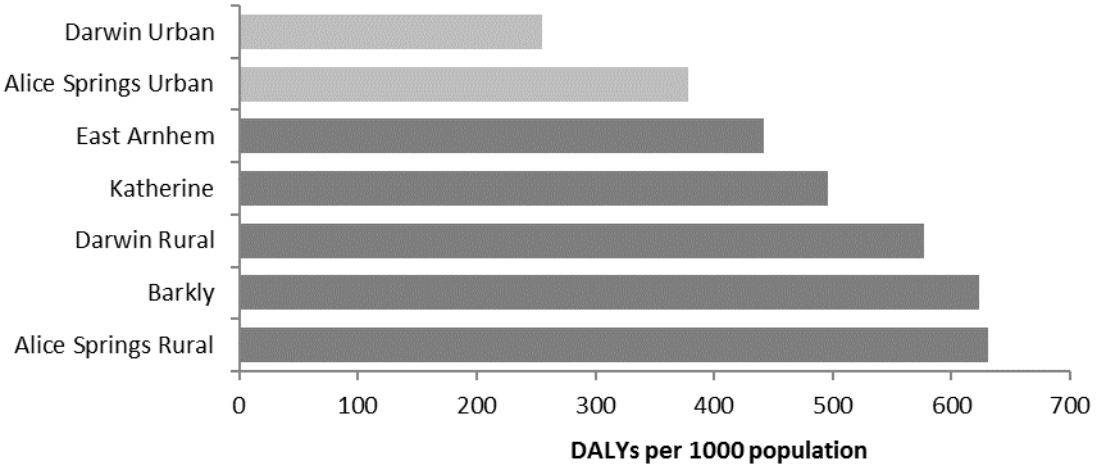


Figure 51. Age-standardised rate of disability-adjusted life years (DALYs) by region and remoteness, Northern Territory, 2004-2013

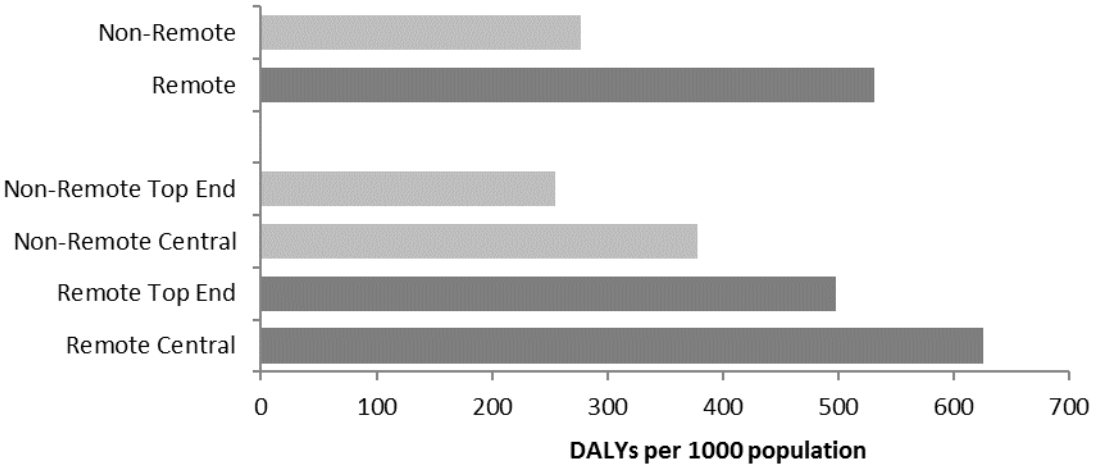
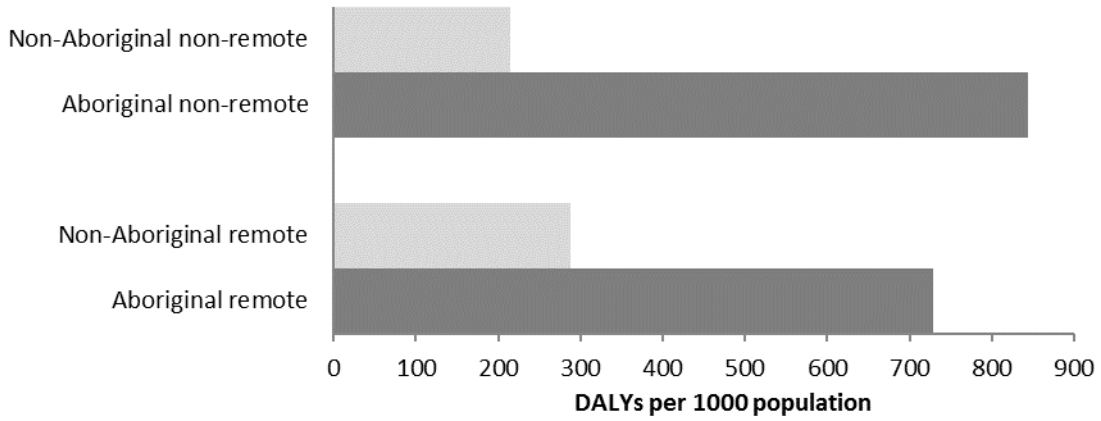


Figure 52. Age-standardised rate of disability-adjusted life years (DALYs) by remoteness and Aboriginality, Northern Territory, 2004-2013



Comparison to national average

The average BOD per person, as measured by the age-standardised DALY rate, was higher for the NT population than for Australians as a whole, for both males and females (Table 21). This excess was spread across almost all disease groups, with the exceptions of musculoskeletal, oral and mental/alcohol conditions.

The DALY rate was slightly higher (by a rate ratio of 1.2, or 20%) for non-Aboriginal people in the NT than non-Aboriginal people Australia-wide. The DALY rate was higher for some disease groups and lower for others in the NT than the Australian non-Aboriginal population (Table 22). For Aboriginal Australians, the DALY rate was much higher (rate ratio of 1.8) in the NT than Australian population. The DALY rate was higher for almost all disease groups with injuries and cardiovascular diseases making the largest contribution to the excess in the NT.

Table 21. Comparison of age-standardised disability-adjusted life year rates by disease group and sex, Northern Territory (NT) 2004-2013 vs Australia 2011

	Male (NT vs Australia)			Female (NT vs Australia)		
Disease group	Rate ratio	Rate* difference	Contribution (%)#	Rate ratio	Rate* difference	Contribution (%)#
Infectious	6.4	19.4	12.4	9.8	23.0	15.1
Infant/congenital	1.6	3.8	2.4	1.7	3.2	2.1
Cancer	1.3	12.1	7.7	1.3	8.5	5.6
Endocrine	2.5	8.0	5.1	4.3	11.7	7.7
Cardiovascular	2.0	32.8	20.9	2.5	28.8	19.0
Mental/alcohol	0.6	-10.6	-6.7	0.5	-11.1	-7.3
Neurological	1.1	1.7	1.1	0.9	-1.2	-0.8
Hearing/vision	1.0	0.1	0.1	1.3	1.1	0.8
Respiratory	1.4	7.0	4.5	1.2	3.2	2.1
Gastrointestinal	3.5	17.2	11.0	4.6	18.1	12.0
Kidney/urinary	4.0	8.8	5.6	8.4	14.8	9.8
Reprod/maternal	2.4	0.6	0.4	7.0	18.5	12.2
Skin	2.3	4.2	2.7	1.9	3.2	2.1
Musculoskeletal	0.4	-12.7	-8.1	0.4	-14.4	-9.5
Oral	0.4	-2.7	-1.7	0.6	-1.8	-1.2
Blood/metabolic	5.9	9.4	6.0	6.1	12.3	8.1
Injuries	3.3	57.9	36.9	4.5	33.8	22.3
Total	1.7	157.0	100.0	1.9	151.6	100.0

Note: Reprod = Reproductive

* age-standardised rate of disability-adjusted life years per 1000 population.

proportional contribution to the total rate difference

Table 22. Comparison of age-standardised disability-adjusted life year rates by disease group and Aboriginality, Northern Territory (NT) 2004-2013 vs Australia 2011

	Aboriginal (NT vs Australia)			Non-Aboriginal (NT vs Australia)		
Disease group	Rate ratio	Rate* difference	Contribution (%)#	Rate ratio	Rate* difference	Contribution (%)#
Infectious	5.8	54.0	16.3	3.9	8.3	22.4
Infant/congenital	1.4	3.9	1.2	1.0	0.2	0.6
Cancer	1.3	14.6	4.4	1.1	4.9	13.2
Endocrine	2.1	24.6	7.5	1.6	2.3	6.1
Cardiovascular	1.9	65.0	19.7	1.4	10.9	29.3
Mental/alcohol	0.7	-18.5	-5.6	0.3	-17.6	-47.3
Neurological	1.0	0.0	0.0	0.7	-3.1	-8.3
Hearing/vision	1.2	1.5	0.5	0.9	-0.3	-0.9
Respiratory	1.5	18.6	5.6	0.7	-4.4	-11.9
Gastrointestinal	3.0	32.5	9.8	2.8	10.5	28.2
Kidney/urinary	3.4	35.1	10.6	2.3	2.9	7.9
Reprod/maternal	9.0	13.7	4.1	5.2	7.1	19.1
Skin	3.7	10.6	3.2	1.3	1.0	2.8
Musculoskeletal	0.5	-14.0	-4.2	0.3	-15.6	-42.0
Oral	0.7	-2.1	-0.6	0.3	-3.1	-8.3
Blood/metabolic	5.0	24.9	7.5	3.5	5.3	14.2
Injuries	2.3	66.3	20.1	2.7	27.8	74.7
Total	1.8	330.7	100.0	1.2	37.2	100.0

Note: Reprod = Reproductive
* age-standardised rate of disability-adjusted life years per 1000 population.
# proportional contribution to the total rate difference

Changes between 1999 and 2013

To examine changes in burden of disease over time, age-standardised DALY rates were compared for three time periods: 1993-2003, 2004-2008 and 2009-2013 (Table 23). There was a 7% decrease in total DALY rate over the fifteen-year period, with a small increase between 1999-2003 and 2004-2009 followed by a larger decrease in 2009-2013 (Table 23).

Cardiovascular diseases had the largest decrease in DALY rate (25%), with a rate difference of -17.4 per 1,000 accounting for two-thirds of the total DALY rate decrease. There were large relative decreases for several disease groups but the absolute differences were only moderate:

- infant/congenital diseases decreased by 31% (rate difference -4.0, all by 2004-2008)
- endocrine diseases decreased by 20% (rate difference -3.1, all after 2004-2008)
- respiratory diseases decreased by 19% (rate difference -4.5).

There was little change (with rate ratios close to 1.0) in DALY rate for most other disease groups.

The DALY rate increased by 20% or more for two disease groups (neurological and oral) but the absolute rate increases were small (2.1 and 0.4 per 1,000 respectively).

Table 23. Number and age-standardised rate of disability-adjusted life years by disease group and period, Northern Territory, 1999-2013

	1999-2003		2004-2008		2009-2013		Rate ratio
Disease group	Number	Rate*	Number	Rate*	Number	Rate*	1999-2003 vs 2009-2013
Infectious	22,490	25.0	23,972	25.1	24,907	23.4	0.94
Infant/congenital	16,986	12.9	11,603	8.9	12,436	8.9	0.69
Cancer	27,965	47.1	32,306	46.6	36,485	44.2	0.94
Endocrine	9,616	15.6	11,939	16.4	10,956	12.5	0.80
Cardiovascular	42,432	68.8	48,540	66.2	45,457	51.4	0.75
Mental/alcohol	13,266	13.2	14,812	14.1	15,705	13.6	1.03
Neurological	7,336	10.6	8,846	12.6	9,511	12.7	1.20
Hearing/vision	2,427	4.3	3,178	4.7	3,674	4.4	1.02
Respiratory	16,892	24.3	17,916	23.0	17,270	19.8	0.81
Gastrointestinal	16,635	19.9	24,805	26.4	21,958	21.3	1.07
Kidney/urinary	8,791	13.3	10,754	14.0	12,759	14.1	1.06
Reprod/maternal	13,204	11.7	12,442	10.9	13,850	10.8	0.92
Skin	6,720	7.7	6,997	7.2	7,692	7.0	0.91
Musculoskeletal	5,743	7.3	7,457	8.6	8,317	8.3	1.14
Oral	1,564	1.7	1,777	1.8	2,358	2.1	1.24
Blood/metabolic	9,579	12.1	12,402	14.1	11,977	11.9	0.98
Unintentional inj	41,066	40.3	50,075	47.9	52,686	45.6	1.13
Intentional inj	20,295	18.2	22,738	19.9	20,356	16.1	0.88
Total	283,005	353.8	322,558	368.6	328,355	328.2	0.93

Note: Reprod = Reproductive; inj = injuries

* age-standardised rate of disability-adjusted life years per 1000 population.

The DALY rate was much higher for the Aboriginal than non-Aboriginal population throughout 1999-2013. However, the gap between Aboriginal and non-Aboriginal DALY rates narrowed by 11% between 1999-2003 and 2009-2013 (Table 24). This reduction occurred almost entirely in YLLs. There was almost no decrease in YLDs (Table 24, Figure 53).

The key disease groups which contributed to closing this gap were cardiovascular diseases and respiratory diseases. These accounted for over two-thirds of the reduction, with cardiovascular diseases alone accounting for almost half (Table 25). The gap also narrowed moderately for skin disorders, endocrine disorders and infectious diseases, but widened moderately for cancer, unintentional injuries and gastrointestinal disorders.

Table 24. Gap in disability-adjusted life year rates between Aboriginal and non-Aboriginal populations by type of burden and period, Northern Territory, 1999-2013

	Aboriginal rate*		Non-Aboriginal rate*		Gap*		Change in gap*
	1999-2003	2009-2013	1999-2003	2009-2013	1999-2003	2009-2013	
YLD	358.7	364.8	92.3	101.6	266.4	263.2	-3.2
YLL	451.7	369.5	131.8	105.7	320.0	263.9	-56.1
DALY	810.4	734.4	224.1	207.3	586.4	527.1	-59.3

* age-standardised rate per 1000 population.

Figure 53. Gap in age-standardised disability-adjusted life year rates between Aboriginal and non-Aboriginal populations by type of burden and period, Northern Territory, 1999-2013

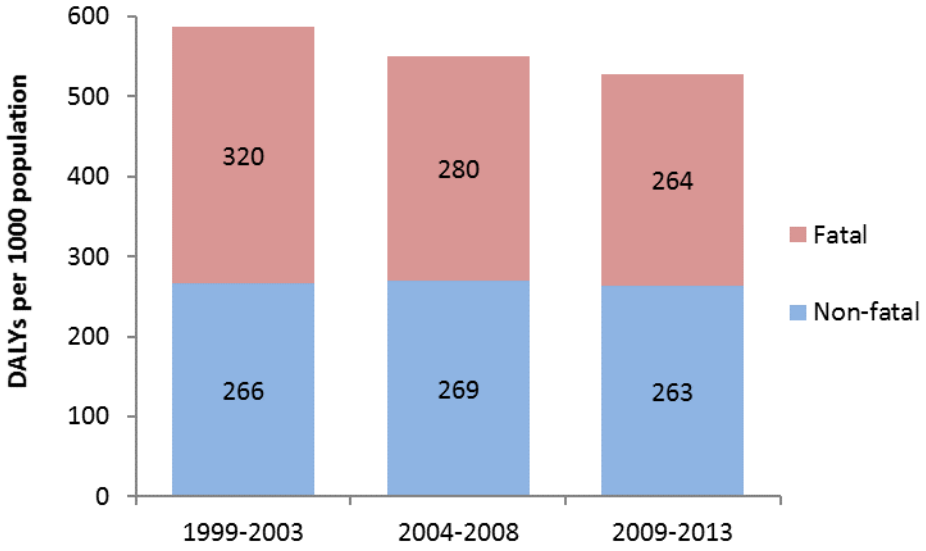


Table 25. Gap in age-standardised disability-adjusted life year rates between Aboriginal and non-Aboriginal populations by disease group and period, Northern Territory, 1999-2013

	Aboriginal		Non-Aboriginal		Gap		Change in	Contribution to
Disease group	1999-2003	2009-2013	1999-2003	2009-2013	1999-2003	2009-2013	gap	total gap (%)
Infectious	69.5	62.3	11.5	11.0	58.1	51.3	-6.8	11.5
Infant/congenital	20.9	14.7	7.4	5.2	13.5	9.5	-4.0	6.7
Cancer	74.1	75.6	41.4	36.8	32.7	38.9	6.1	-10.4
Endocrine	52.9	42.7	6.7	5.2	46.2	37.5	-8.7	14.6
Cardiovascular	166.1	124.9	44.3	31.3	121.9	93.6	-28.3	47.7
Mental/alcohol	38.9	38.9	5.8	5.8	33.1	33.0	-0.1	0.2
Neurological	25.0	23.5	6.3	9.5	18.8	14.0	-4.7	8.0
Hearing/vision	7.6	7.4	3.5	3.5	4.2	3.9	-0.3	0.5
Respiratory	70.4	56.1	11.2	10.0	59.3	46.1	-13.2	22.2
Gastrointestinal	39.4	44.2	14.8	14.7	24.6	29.4	4.8	-8.2
Kidney/urinary	48.6	51.6	4.6	4.8	44.0	46.8	2.9	-4.8
Reprod/maternal	17.7	15.5	9.1	8.7	8.6	6.8	-1.8	3.0
Skin	22.7	14.2	3.4	4.4	19.3	9.8	-9.5	16.0
Musculoskeletal	14.0	16.0	5.4	6.3	8.6	9.7	1.2	-1.9
Oral	3.6	4.7	1.1	1.1	2.5	3.6	1.1	-1.9
Blood/metabolic	31.3	29.6	6.6	6.5	24.6	23.0	-1.6	2.7
Unintentional inj	69.2	77.2	31.6	34.7	37.6	42.5	4.9	-8.3
Intentional inj	38.6	35.3	9.7	7.8	28.9	27.5	-1.5	2.5
Total	810.4	734.4	224.1	207.3	586.4	527.1	-59.3	100.0

Note: Reprod = Reproductive; inj = injuries

Future projections

The total number of DALYs was projected for two 5-year periods from 2014 to 2028. Projections assumed that the age-sex-cause specific DALY rates for 2009-2013 would remain stable until 2028 and that the NT population would increase as projected by the NT Department of Treasury and Finance (Treasury).[23] The 2009-2013 cause-specific DALY rates were applied to Treasury's population projections, by age-group and sex.

The projected increase in total burden is slightly slower for Aboriginal males than other population groups (Figure 54). At a disease group level, the largest increases for both Aboriginal and non-Aboriginal populations are expected to be cardiovascular diseases and cancer; with rate of increase much faster for the Aboriginal population (Figures 55 and 56).

Figure 54. Estimated and projected total burden by period and sex, Northern Territory Aboriginal and non-Aboriginal populations, 2009-2028

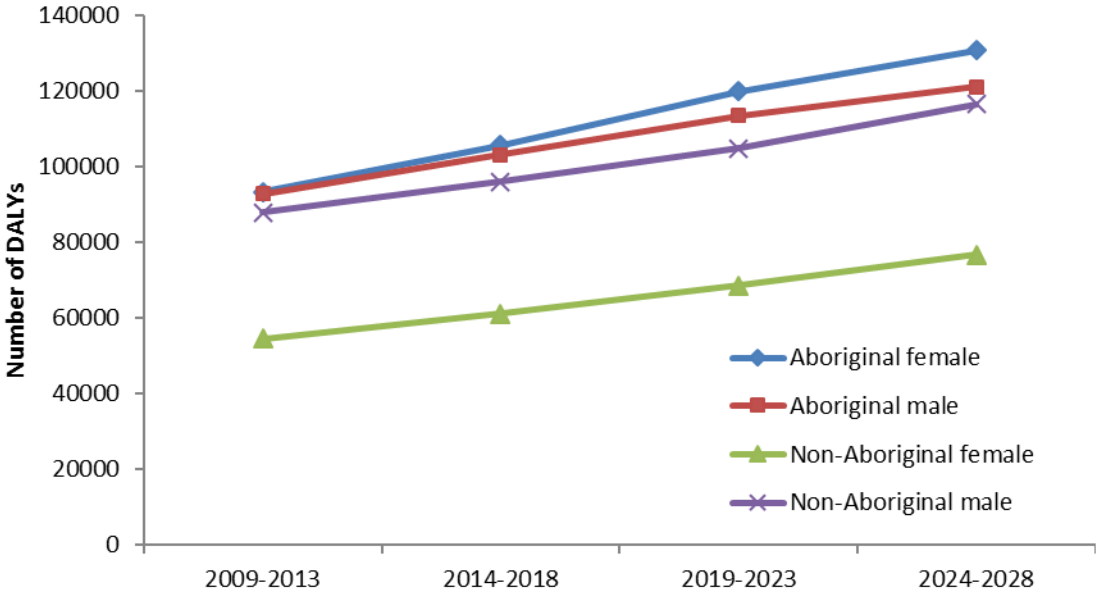


Figure 55. Estimated or projected total burden by disease group and period, Northern Territory Aboriginal population, 2009-2028

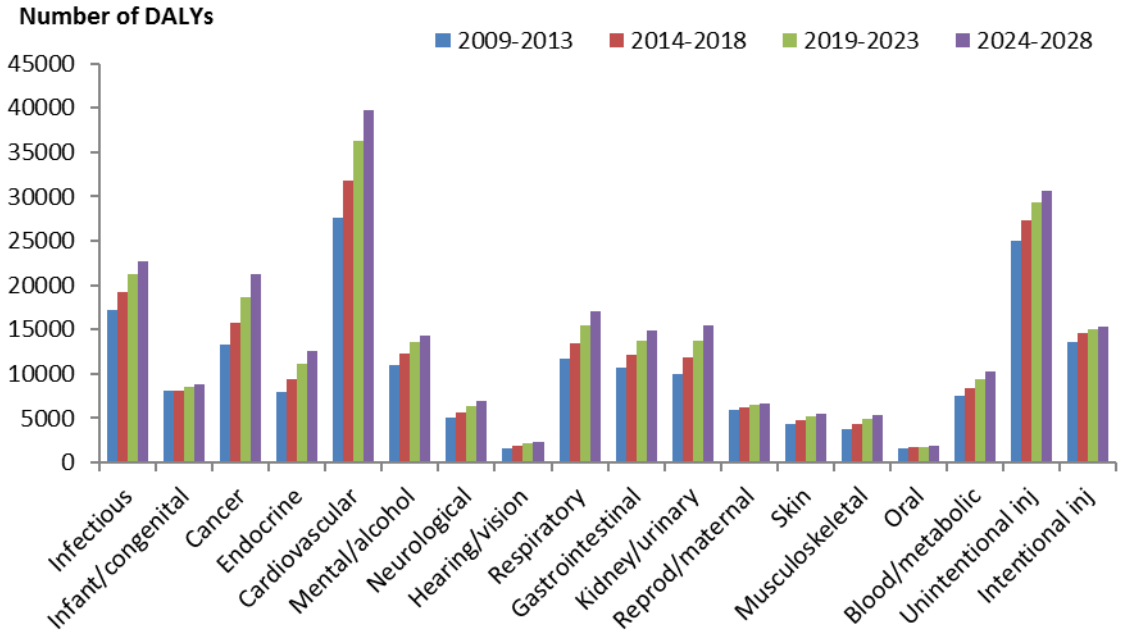
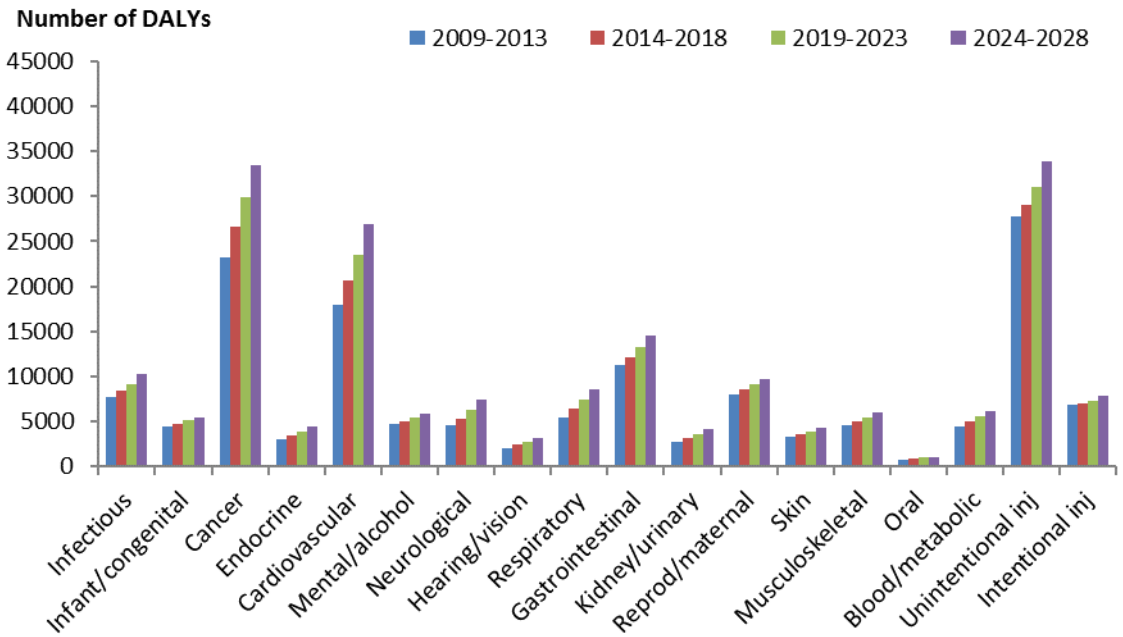


Figure 56. Estimated or projected total burden by disease group and period, Northern Territory non-Aboriginal population, 2009-2028



Discussion

This report describes the burden of disease in the NT between 2004 and 2013. Burden is measured in disability-adjusted life-years (DALY) and its components, years of life lost (YLL) (fatal burden) and years lived with disability (YLD) (non-fatal burden). These were analysed by demographic characters, disease group and specific causes. This report updates previous NT BOD reports and provides more accurate, robust and timely estimates for the NT. The report incorporates information over a longer period (fifteen years) than the national study (1 year) to minimise random variation resulting from the relatively small number of deaths and patients in the small NT population.

The report uses the most up-to-date mortality and morbidity data and applies the standard BOD methodology with disease group and specific cause classifications tailored for distinctive NT health issues. It directly compares the NT Aboriginal and non-Aboriginal populations, and compares results against national estimates. The report provides information on regional variation within the NT along with trends over time. The contribution to the total BOD by key risk factors is also assessed, most of which were modifiable. The findings of this study provide a significant account of population ill-health which will inform health policy and the planning of health care services.

This study closely followed the methodology and classification of the most recent national BOD study.[10,12] Consequently, the results of this study are comparable to the national estimates, with the exception of risk factor assessment for which a different methodology was applied. The results of this study should not be compared directly with previous BOD studies of the NT and Australia due to technical changes in the methods between studies, including differences in cause classifications and standard life expectancies.

A caution should be exercised in interpreting age-standardised rates used in this report, which adjusted the relatively young NT population to the age distribution of Australian population. This age-standardisation process tends to increase the emphasis on these diseases that are associated with older ages. While age-standardised rates provide fair comparison between population groups, crude rates are more useful for planning purposes.

There are several limitations in the methods and data sources applied to the study:

- For the non-fatal component, there was a lack of prevalence data for many causes. Instead, prevalence was estimated using health service data.
- Comorbidity can cause overestimation of non-fatal burden by summing all cause-specific YLDs without adjustment. This study did not make adjustment for comorbidity bias.
- For risk factor analysis, we applied the methods developed by the second Australian BOD study.

This report presents information on the total BOD and, separately, the fatal burden from premature death and non-fatal burden due to disability. Based on the most recent data available, it is apparent that:

- Total burden of disease (as measured by the age-standardised DALY rate) is greater for the NT population than for Australians as a whole.
- Burden of disease is much greater for the NT Aboriginal population than for the NT non-Aboriginal population, and Aboriginal people elsewhere in Australia. The BOD gap between Aboriginal and non-Aboriginal populations in the NT is greater than for Australia as a whole.
- Unintentional injuries, cardiovascular diseases and cancers are the leading disease groups for causing BOD in the NT, with infectious diseases also significant in the Aboriginal population.
- Chronic conditions such as coronary heart disease, diabetes, chronic kidney disease and chronic obstructive pulmonary disease (COPD) are leading drivers of the BOD gap between Aboriginal and non-Aboriginal people. The gap is a result of early onset and higher prevalence of these conditions in the Aboriginal population.
- Non-fatal burden accounted for over half of the BOD. The leading disease groups contributing to non-fatal burden of disease are unintentional injuries, infectious diseases and cardiovascular diseases, with mental/alcohol conditions also prevalent for Aboriginal people.
- Premature deaths caused by self-harm, violence and road traffic injuries are a major contribution to fatal burden, as are chronic conditions such as cardiovascular diseases, cancers, diabetes, chronic liver disease, chronic kidney disease and COPD.
- BOD rate is higher in remote than urban areas.
- There was a moderate improvement in fatal burden (YLL rate) despite a small deterioration in non-fatal burden (YLD rate) over the fifteen years of this study. The lower fatal burden reflects lower death rates in people aged under 75 years, but this may have resulted in a higher YLD rate in more recent years. There may be a trend of reducing fatal burden in most of the population that is being partially offset by the increased burden from disability.[24]
- The disease burden gap between Aboriginal and non-Aboriginal people is largely the result of high levels of infectious diseases, injuries caused by self-harm and violence, and early onset and high levels of chronic diseases in the Aboriginal population.
- Socio-economic disadvantage, tobacco smoking, high body mass, physical inactivity, alcohol, high blood pressure and high blood cholesterol level and low fruit-vegetable intake contribute to the disease burden in the NT as whole and the excessive burden in the Aboriginal population.

Appendix

Table A. Disease groups and specific diseases

Infectious diseases	**Cancer and other neoplasms**
HIV/AIDS	Mouth and pharyngeal cancer
Tuberculosis	Laryngeal cancer
Hepatitis A	Oesophageal cancer
Hepatitis B (acute)	Stomach cancer
Hepatitis C (acute)	Bowel cancer
Syphilis	Liver cancer
Gonococcal infection	Gallbladder cancer
Sexually transmitted chlamydial infections	Pancreatic cancer
Other sexually transmitted infections	Lung cancer
Campylobacteriosis	Mesothelioma
Salmonellosis	Melanoma of the skin
Rotavirus	Non–melanoma skin cancers
Other gastrointestinal infections	Breast cancer
Upper respiratory tract infections	Cervical cancer
Otitis media	Uterine cancer
Lower respiratory infections	Ovarian cancer
Influenza	Prostate cancer
Diphtheria	Testicular cancer
Pertussis	Bladder cancer
Tetanus	Kidney cancer
Measles	Brain and central nervous system cancer
Rubella	Thyroid cancer
Varicella–zoster	Non–Hodgkin lymphoma
Haemophilus influenza type–b	Hodgkin Lymphoma
Pneumococcal disease	Leukaemia
Meningococcal disease	Myeloma
Other meningitis and encephalitis	Other lymphohaematopoietic (blood) cancers
Dengue	Unknown primary
Ross River virus	Benign & uncertain brain tumours
Barmah Forest virus	Breast in situ
Malaria	Other malignant neoplasms (cancers)
Trachoma	Other benign, in situ and uncertain neoplasms
Melioidosis	**Infant and congenital conditions**
Other infections	Pre-term birth and low birthweight complications
Gastrointestinal disorders	Birth trauma and asphyxia
Gastroduodenal disorders	Cerebral palsy
Appendicitis	Neonatal infections
Abdominal wall hernia	Sudden infant death syndrome
Vascular disorders of intestine	Other disorders of infancy
Intestinal obstruction without hernia	Neural tube defects
Inflammatory bowel disease	Brain malformations
Diverticulitis	Congenital cardiovascular defects
Chronic liver disease	Cleft lip and/or palate
Gall bladder and bile duct disease	Gastrointestinal malformations
Pancreatitis	Urogenital malformations
Gastro oesophageal reflux disorder (GORD)	Downs syndrome
Functional gastrointestinal disorders	Other chromosomal abnormalities
Other gastrointestinal diseases	Other congenital conditions

Cardiovascular diseases	**Neurological conditions**
Coronary heart disease	Epilepsy
Stroke	Dementia
Rheumatic heart disease	Parkinson disease
Non–rheumatic valvular disease	Multiple sclerosis
Hypertensive heart disease	Migraine
Atrial fibrillation and flutter	Motor neurone disease
Inflammatory heart disease	Gillian–Barre Syndrome
Cardiomyopathy	Other neurological conditions
Aortic aneurysm	**Mental and substance use disorders**
Peripheral vascular disease	Depressive disorders
Other cardiovascular diseases	Anxiety disorders
Respiratory diseases	Bipolar affective disorder
Asthma	Alcohol use disorders
Chronic obstructive pulmonary disease	Drug use disorders (excluding alcohol)
Interstitial lung disease	Schizophrenia
Sarcoidosis	Eating disorders
Pneumoconiosis	Autism spectrum disorders
Upper respiratory diseases	Attention deficit hyperactivity disorder
Other respiratory diseases	Conduct disorder
Endocrine disorders	Intellectual disability
Diabetes	Other mental and substance use disorders
Other endocrine disorders	**Oral disorders**
Kidney and urinary diseases	Dental caries
Chronic kidney disease	Severe tooth loss
Enlarged prostate	Periodontal disease
Kidney stones	Other oral disorders
Other kidney and urinary diseases	**Blood and metabolic disorders**
Reproductive and maternal conditions	Cystic fibrosis
Maternal haemorrhage	Haemophilia
Maternal infections	Haemolytic anaemias
Hypertensive disorders of pregnancy	Iron-deficiency anaemia
Obstructed labour	Protein–energy deficiency
Early pregnancy loss	Other blood and metabolic disorders
Gestational diabetes	**Hearing and vision disorders**
Other maternal conditions	Refractive disorders (Vision loss)
Endometriosis	Cataract and other lens disorders (Vision loss)
Uterine fibroids	Glaucoma (Vision loss)
Genital prolapse	Age–related macular degeneration (Vision loss)
Polycystic ovarian syndrome	Other vision disorders (Vision loss)
Infertility	Hearing loss
Other reproductive conditions	Other hearing and vestibular disorders
Musculoskeletal conditions	**Intentional injuries**
Osteoarthritis	Suicide and self–inflicted injuries
Gout	Homicide and violence
Rheumatoid arthritis	**Unintentional injuries**
Back pain and problems	Road traffic injuries - motorcyclists
Other musculoskeletal conditions	Road traffic injuries - motor vehicle occupants
Skin disorders	Road traffic injuries – other
Dermatitis and eczema	Other land transport injuries
Psoriasis	Poisoning
Acne	Falls
Ulcers	Fire, burns and scalds
Skin infections (including Cellulitis)	Drowning
Scabies	Other unintentional injuries
Other skin disorders	All other external causes of injury

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Burden of Disease and Injury Study

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