Mortality burden of disease and injury in the Northern Territory 1999–2018

NORTHERN TERRITORY GOVERNMENT

Document title	Mortality burden of disease and injury in the Northern Territory 1999–2018
Contact details	Population and Digital Health, Department of Health
Approved by	CE
Date approved	22 August 2022
Document review	NA
TRM number	EFILE2022/11929

Acronyms	Full form
ABS	Australian Bureau of Statistics
ACR	Australian Coordinating Registry
AIHW	Australian Institute of Health and Welfare
BOD	Burden of disease and injury
CI	Confidence interval
CODURF	Cause of death unit record files
DALY	Disability-adjusted life years
LE	Life expectancy at birth
NT	Northern Territory
YLD	Years lived with disability
YLL	Years of life lost

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Acknowledgements

The authors thank the staff of Births, Deaths and Marriages offices in the Northern Territory and Australia wide, who are responsible for death data collection. The authors thank the staff of Australian Bureau of Statistics and Australian Coordinating Registry for their dedication in death data coding and management.

Population and Digital Health

Suggested citation:

Yuejen Zhao, Ramakrishna Chondur, Shuqin Li, Paul Burgess: Mortality burden of disease and injury in the Northern Territory 1999–2018. Darwin, Department of Health, 2022.

Population and Digital Health
Department of Health

ISBN: 978-0-6488177-6-5

An electronic version is available at:

https://health.nt.gov.au/data-and-research/Innovation-and-research

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Contents

Summary

The current study presents the results of life expectancy, years of life lost (YLL), all-cause and cause specific mortality in the Northern Territory (NT) for the past twenty years from 1999 to 2018. It describes 219 causes of deaths from the NT burden of disease and injury (BOD) study by counting deaths, measuring YLL and life expectancy for both Aboriginal and non-Aboriginal populations. Life expectancy, mortality and YLL are important indicators for health outcomes and health need assessments. Life expectancy at birth is widely accepted as a headline indicator of population health, which measures the number of years an average person is expected to live at birth based on current public health and mortality patterns. YLL is the fatal BOD measure for premature deaths using the age at death linked with the World Health Organisation (WHO) standard life expectancies. This study focused on the five-year period from 2014 to 2018 and compares the results with those from the three previous NT BOD studies, conducted since 1999. Underlying cause and nine additional causes of death were used to analyse deaths by disease groups, developed by WHO and Australian Institute of Health and Welfare for BOD studies. This study compares life expectancy, mortality and fatal BOD between NT subpopulations and the total Australian population by key demographic and geographic variables including age, sex, Aboriginal status and NT health region. The results of this study will provide valuable information to inform health policy, service planning, long-term investment and economic development in the NT.

Key findings

- Between 2014 and 2018, there were 5,593 deaths among NT residents with 157,135 YLL due to premature deaths. The number of deaths increased by 10% and YLL by 5% since the previous study (1999–2003). Between 1999–2003 and 2014–2018, population increased by 23%.
- Aboriginal people constituted 46% of deaths and 56% of YLL, disproportionately higher than the population proportion (30%).
- Aboriginal median YLL dropped from 39 years in 1999 to 35 years in 2018. Non-Aboriginal median YLL dropped from 26 years in 1999 to 22 years in 2018.
- From 2014 to 2018, the all-cause age-standardised YLL rate was 129.3 and 177.8 years per 1,000 females and males respectively in the NT, approximately 58% and 53% higher than the Australian female and male averages in 2015. Men experienced a 37% higher YLL rate than women.
- The greatest health discrepancy between Aboriginal and non-Aboriginal population measured in YLL was in the 35 to 39 year age group with a rate ratio of 8.0. Overall, the NT Aboriginal age-standardised YLL rate was 3.46 times the NT non-Aboriginal rate from 2014 to 2018, and 3.84 times the Australian 2015 average. Aboriginal health disparity measured in YLL rate ratio was greater in females than males (4.41 and 3.06).
- There has been a sizeable reduction in the gaps in life expectancy at birth between the Aboriginal and non-Aboriginal population between 1999 and 2018. Life expectancy at birth in NT Aboriginal females increased by 4.92 years from 64.75 in 1999 to 69.68 years in 2018. The life expectancy at birth in NT Aboriginal males also increased by 8.97 years from 56.61 in 1999 to 65.58 years in 2018. The Aboriginal female and male life expectancy gap narrowed by 4.15 and 5.38 years (21% and 26%) respectively in comparison with their non-Aboriginal counterparts.
- Over the study period from 2014 to 2018, cancer, cardiovascular disease and unintentional injury were the top three causes of YLL. As a cause of death, intentional injury was more common in non-Aboriginal males than females, and kidney disease was more common in Aboriginal females than males.

- In the NT Aboriginal population, cardiovascular disease and cancer explained nearly half of YLL (47%) after the age of 30 years. Intentional and unintentional injuries accounted for 67% of YLL between 5 and 29 years of age.
- In the NT non-Aboriginal population, cancer alone accounted for 41% of YLL over the age of 40 years. Intentional and unintentional injuries contributed to 75% of YLL between 10 and 39 years of age.
- In the 5–34 years age group, unintentional injury was the leading cause of YLL in males and intentional injury was the leading cause of YLL in females.
- For people 85 years and older, neurological conditions (including dementia) was the leading cause of YLL in the Aboriginal population, and cardiovascular disease (including coronary heart disease) was most prominent in the non-Aboriginal population.
- In terms of age-standardised YLL rate ratio comparing the NT Aboriginal population to the non-Aboriginal population, key differences were seen for kidney disease (20.41 times), oral disorder (7.33 times such as periodontal disease), endocrine disorders (6.86 times, such as diabetes), cardiovascular disease (4.27 times) and cancer (2.05 times).
- Cardiovascular disease contributed one-quarter of the total Aboriginal YLL gap. Cancer and kidney disease together contributed another 27%, followed by respiratory disease contributing 9%.
- The Top End region experienced the highest level of YLL among all NT health regions, followed by Barkly, East Arnhem, Big Rivers and Central Australia. Greater Darwin had the lowest rate of YLL in the NT. All-cause age-standardised YLL rate decreased in all regions between 1999 and 2018. However, the YLL rates in Barkly and East Arnhem were higher during 2014 to 2018 than from 2009 to 2013.
- While the crude mortality rate between 1999 and 2018 increased slightly, the age-standardised mortality rate declined, suggesting that the total deaths per population did not decrease in the NT, but the age at death became older.
- Both age-standardised and crude YLL rates decreased from 1999 to 2018 in the NT. The greatest decrease in age-specific mortality was in Aboriginal people aged 85 years and over. The age-standardised YLL rate decreased more in males than females, and decreased more in the Aboriginal than non-Aboriginal population between 1999 and 2018.
- Cardiovascular disease was the leading cause of YLL for the Aboriginal population, followed by cancer. Cancer was the leading cause of YLL for the non-Aboriginal population, followed by cardiovascular disease. The next two leading groups were unintentional and intentional injury for both the Aboriginal and non-Aboriginal population in 2014–2018.
- The NT overall age-standardised YLL rate fell by 10% in the Aboriginal population and 7% in the non-Aboriginal population between 2009–2013 and 2014–2018, with the greatest reduction in endocrine (39%) and neurological disorders (24%) respectively. The reductions between 2009–2013 and 2014–2018 were smaller than the reductions between 2004–2008 and 2009–2013.
- The NT overall age-standardised YLL rate fell by 3% in females and 10% in males between 2009–2013 and 2014–2018, with the greatest reduction in mental (39%) and endocrine disorders (37%) respectively.
- Fatal burden of diabetes decreased in the Aboriginal population, whereas liver cancer, mouth and pharyngeal cancer and cancers with unknown primary site increased.
- In the non-Aboriginal population, coronary heart disease and lung cancer remained the top two life-shortening diseases, followed by suicide and chronic obstructive pulmonary disease (COPD).
- The largest reductions in YLL were road traffic injury, homicide, alcohol use disorder and lower respiratory infections. The largest increases in YLL were chronic kidney disease, lung cancer, COPD and bowel cancer.

- Lower respiratory infection was the most life-shortening infectious disease, followed by tuberculosis and urinary tract infection in the Aboriginal population, but followed by urinary tract infection and melioidosis in the non-Aboriginal population.
- The top leading fatal cardiovascular diseases were coronary heart disease and stroke, followed by rheumatic heart disease in the Aboriginal population, but followed by aortic aneurysm in the non-Aboriginal population.
- The leading life-threatening cancers in the Aboriginal population were lung cancer, liver cancer, and mouth and pharyngeal cancer. The most life-threatening cancers in the non-Aboriginal population were lung, bowel and breast cancer.
- The leading life-shortening injuries, regardless of Aboriginality, were suicide and self-inflicted injuries, and road traffic injuries for occupants. This was followed by homicide and violence in the Aboriginal population and by falls in the non-Aboriginal population.
- Alcohol, drug and depressive disorders were ranked the top three mental conditions in both the Aboriginal and non-Aboriginal population.
- YLL rate decreased at a much faster rate (roughly 30% faster) in avoidable than unavoidable YLL rate from 1999 to 2018.

There had been continued improvements in life-years lost and mortality rates in both the Aboriginal and non-Aboriginal population in the NT between 1999 and 2018. These improvements occurred in both avoidable and unavoidable causes of death.

Introduction

While financial costs associated with treating disease and injury in the Northern Territory (NT) are considerable, the loss of human life is much more serious and consequential. The burden of disease and injury (BOD) is measured by the World Health Organisation (WHO) using a composite measure that incorporates both fatal BOD by years of life lost (YLL) due to premature death and non-fatal BOD by years lived with disability (YLD) due to morbidity.[1] Previous Australian and NT BOD studies provided strong evidence that the NT had the highest BOD on a per capita basis in Australia.[1-4] Between 2004 and 2013, the NT total YLL rate was 177.9 years per 1,000 population, 86% higher than the national average. The NT Aboriginal YLL rate was 387.6 per 1,000, 4.06 times the Australian overall rate. The NT non-Aboriginal YLL rate was 115.7 per 1,000, 23% higher than the Australian non-Indigenous population.[4]

Since the first report in 1996, WHO has systematically documented the global BOD methodology.[5] In Australia, the Australian Institute of Health and Welfare (AIHW) published the first BOD study in 1999.[6] The AIHW has recently completed the 2018 Australian and Indigenous BOD studies comparing BOD results between different population groups and between different time periods.[7]

In the NT, three BOD studies were undertaken for the periods 1994–1998, 1999–2003 and 2004–2013 to align with each census and the national BOD studies for population denominators and BOD comparators. We also compared BOD in the Aboriginal and non-Aboriginal population within the NT or nationally. The time has come again when the updated BOD and other health outcome measures are required to inform health care policy and support regional health service planning in a timely manner.

This study aims to

- provide updated estimates for YLL in the NT focusing on the latest five-year period from 2014 to 2018 when mortality data was available, and compare the results with the national studies and previous NT studies back to 1999;
- monitor YLL and other traditional mortality measures including life expectancy and all-cause and disease-specific mortality rates; and
- provide the health outcome information by key demographic and geographic variables such as age, sex, Aboriginal status and health regions to inform service and policy development.

Methods

Death data

The cause of death unit record files (CODURF) were sourced from Australian Coordinating Registry (ACR) including all deaths registered in Australia, together with demographic information of the deceased NT residents. Death data covered the period from 1999 to 2018. Underlying and associated causes of death were coded in the International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10). Deaths of the NT residents were extracted to estimate YLL, regardless of whether the deaths occurred in the NT or elsewhere in Australia. YLL was estimated on the basis of the standard life expectancy by single year age at death used in the 2010 global BOD study, consistent with the AIHW methodology.[5, 8] Sensitivity analysis was undertaken to decide whether year of death or registration was used for time trend analysis. Choosing year of death instead of year of registration provided a more accurate measure for the total mortality (4% more in 2018). Redistribution of ill-defined causes followed the method of the last NT BOD study.[4]

Disease group classification

The YLL analysis followed the global BOD classification of diseases and injuries adapted by the Australian BOD study.[8] However, the NT BOD study made a few variations to account for issues which are specific to the NT (see full list in Appendix):

- The injuries group was subdivided into intentional and unintentional injuries due to the high overall BOD from injuries in the NT.
- Melioidosis was included as a separate disease in the infectious diseases group.
- Scabies was included as a separate disease in the skin disorder group.
- COVID-19 was added as a new disease in the infectious diseases group for the sake of projection and planning.

For mortality and YLL analysis, 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 provided in the ACR CODURF. If there was no classifiable sequential cause within all available multiple causes of death, the redistribution was based on key demographics by the multiple-imputation of missing classification,[9] by using preliminary BOD and cause of death data with frequencies greater than 300.

This NT BOD study is guided by the Australian and global studies. Australian BOD data was gathered from AIHW.[7] Global BOD data was sourced from the Institute for Health Metrics and Evaluation in the United States.[10]

Mortality, years of life lost and life expectancy

Total BOD is measured in disability adjusted life years (DALY), which is the composite measure of YLL and YLD. YLL represents a substantial improvement in measurement of deaths, shifting from counting deaths to measuring the additional life-years each deceased person should have expected to live by cross-referencing their age at death with the standard life table used in the recent Australian BOD study.[5, 7] YLL is a measure for early or premature deaths in a population, which is more accurate than simply calculating the rate based on number of deaths and population. YLD is measured by the prevalence of disease or injury induced disability and years for an individual living with the condition weighted by a disability weight (proportion of death) formulated by WHO and the global BOD studies.[5] The disability weight is ranged from perfect health (weight = 0) to death (weight = 1). Direct age standardisation was based on the 2001 Australian estimated resident population,[11] consistent with the national BOD studies.

Mean, rate, proportion, ratio and rank were used as appropriate for statistical analysis of the fatal BOD. The residual groups (other) were not included in ranking.

Life expectancy at birth (LE) was generated from the abridged period life tables that use five-year age groups capped at age 85 years or more.[12] Age-standardised mortality rate by sex and Aboriginal status was adjusted using age, sex and Aboriginality specific mortality rates. The estimated resident population (ERP) data of the NT from the Australian Bureau of Statistics (ABS),[13] stratified by age, sex, Aboriginal status and health region [14], were used as denominators in the calculation of mortality rate and YLL rate. There are six health regions in the NT (see the NT map in Appendix): Barkly, Big Rivers, Central Australia, East Arnhem, Greater Darwin and Top End. The whole NT is remote or very remote in ABS standard remoteness classifications except Greater Darwin, which is outer regional.[15] The health region resident population was estimated from the ABS annual ERP and Indigenous Regions Aboriginal ERP updates.[15, 16]

Potentially avoidable mortality

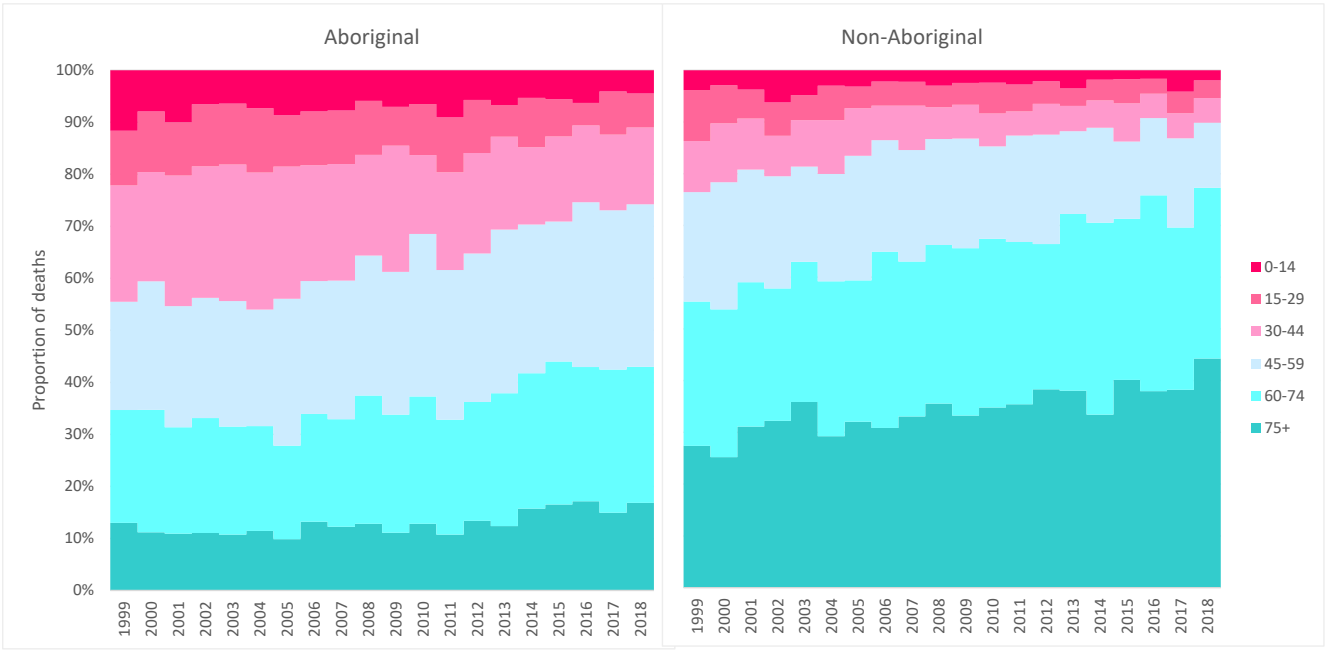
Potentially avoidable mortality is a key performance indicator used in the national healthcare agreement by AIHW [17] to identify areas where the risks of death and YLL are potentially preventable and treatable by providing individualised primary and hospital care. This report used this classification to compare the avoidable and unavoidable mortality in YLL between the Aboriginal and non-Aboriginal population in the NT between 1999 and 2018.

Results

All-cause mortality, life expectancy at birth and years of life lost

In the five-year period from 2014 to 2018, there were 5,593 deaths among NT residents (Table 1), of which 46% were Aboriginal. The number of Aboriginal deaths was much higher than the proportion of Aboriginal population (30%).[13] The proportion of deaths in the 45 years and above age group increased from 50% in 1999 (grey and green area in Figure 1) to 75% in 2018 among the Aboriginal population, whereas in the non-Aboriginal population this proportion increased from 75% in 1999 to 90% in 2018. Aboriginal median age at death increased from 48 years in 1999 to 52 years in 2018. Non-Aboriginal median age at death increased from 62 years in 1999 to 67 years in 2018. Table 1 shows 49% of total deaths during 2014–2018 were among people aged 65 years and over (47% for males and 51% for females). This compares to 31% of Aboriginal and 63% of non-Aboriginal deaths in ages 65 years and above. Aboriginal deaths in the age groups less than 10 and 35 to 49 years were 2–3 times higher than non-Aboriginal deaths. Between the two reported periods 2009-2013 and 2014-2018, there was a significant increase (15%) in Aboriginal deaths in the age group 65 years and above as compared to a 9% increase in non-Aboriginal deaths.

Figure 1. Age pattern of all-cause deaths by Aboriginal status, Northern Territory, 1999–2018



In the five-year period from 2014 to 2018, the LE was 65.93 years for Aboriginal males — 13.98 years lower than for non-Aboriginal males (79.91 years). For Aboriginal females the LE was 68.81 years — 16.62 years lower than non-Aboriginal females (85.43 years). Between the study periods 2009–2013 and 2014–2018, LE improved in both gender groups, and both Aboriginal and non-Aboriginal populations. Overall, the LE gap narrowed by 1.84 years for males and widened slightly by 0.36 years for females. The Aboriginal LE improvement for males (2.91 years) was much faster than for females (0.56 years). The non-Aboriginal population also had a higher LE improvement for males (1.07 years) than females (0.92 years), (see Table 2).

Table 1. All-cause deaths by age, sex and Aboriginal status, Northern Territory, 2009–2018

	2009–2013				2014–2018				Total
Age	**Aboriginal**		**Non-Aboriginal**		**Aboriginal**		**Non-Aboriginal**		
(years)	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	
0-	56	73	31	28	57	53	27	29	354
5-	8	6	0	4	1	7	2	0	28
10-	12	11	5	5	4	9	4	7	57
15-	16	33	7	14	19	26	8	13	136
20-	27	56	8	38	15	40	10	38	232
25-	31	46	9	48	31	55	13	34	267
30-	32	72	9	20	40	53	11	37	274
35-	59	93	18	46	45	83	11	33	388
40-	91	105	15	44	74	90	24	48	491
45-	93	121	47	80	105	118	32	66	662
50-	126	138	35	134	128	148	45	98	852
55-	103	118	57	167	125	138	70	161	939
60-	83	116	72	185	147	145	84	203	1035
65-	89	86	78	219	131	93	104	250	1050
70-	94	90	81	223	78	87	118	273	1044
75-	69	52	83	199	105	63	104	259	934
80-	45	28	98	190	88	42	133	207	831
85+	61	32	240	162	78	39	255	222	1089
Total	**1095**	**1276**	**893**	**1806**	**1271**	**1289**	**1055**	**1978**	**10663**

Table 2. Life expectancy at birth (in years) by sex and Aboriginal status, Northern Territory, 2009–2018

	2009-2013		2014-2018		Improvement	
	Female	Male	Female	Male	Female	Male
Aboriginal	68.25	63.02	68.81	65.93	0.56	2.91
Non-Aboriginal	84.50	78.84	85.43	79.91	0.92	1.07
Gap	16.25	15.82	16.62	13.98	0.36	-1.84

The proportion of YLL in those aged 45 years and over increased from 30% in 1999 (grey and green area in Figure 2) to 50% in 2018 in the Aboriginal population, whereas in the non-Aboriginal population the YLL proportion for the same age bracket increased from 50% in 1999 to 65% in 2018. There was a total of 157,135 YLL for the NT residents between 2014 and 2018 (Table 3), of which 56% were Aboriginal, much higher than the population proportion (30%). The total number of YLL in 2014–2018 was 2% higher than in 2009–2013, albeit below the population increase (5%). Median YLL in the Aboriginal population dropped by four years from 39 years in 1999 to 35 years in 2018 and from 26 years in 1999 to 22 years in 2018 in the non-Aboriginal population.

Figure 2. Age pattern of all-cause years of life lost by Aboriginal status, Northern Territory, 1999–2018

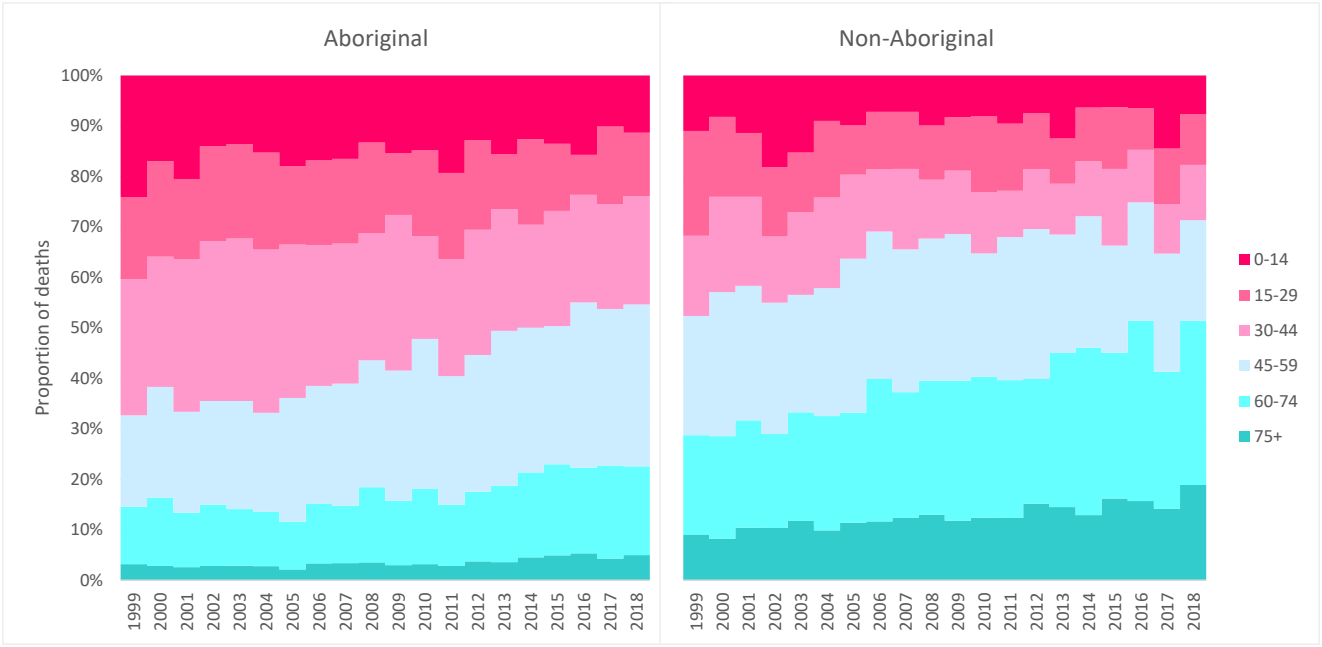


Table 3. Years of life lost by age, sex and Aboriginal status, Northern Territory, 2009–2018

	2009-2013				2014-2018				Total
Age	Aboriginal		Non-Aboriginal		Aboriginal		Non-Aboriginal		
(years)	Female	Male	Female	Male	Female	Male	Female	Male	
0-	4802	6244	2665	2390	4884	4541	2318	2486	30331
5-	632	479	0	317	79	549	160	0	2215
10-	881	812	371	367	294	666	295	520	4207
15-	1108	2286	484	955	1320	1786	550	899	9388
20-	1736	3602	513	2433	968	2568	641	2442	14902
25-	1850	2732	536	2864	1822	3255	774	2019	15852
30-	1737	3904	486	1097	2162	2879	602	2011	14878
35-	2914	4588	894	2260	2235	4083	549	1638	19162
40-	4053	4688	652	1973	3301	4001	1065	2121	21854
45-	3700	4823	1866	3160	4168	4714	1295	2616	26342
50-	4441	4874	1228	4706	4498	5193	1568	3434	29941
55-	3131	3613	1744	5072	3781	4189	2111	4874	28515
60-	2163	3011	1871	4803	3847	3796	2175	5270	26936
65-	1926	1846	1674	4737	2835	2020	2236	5376	22648
70-	1621	1581	1409	3840	1354	1532	2052	4743	18133
75-	941	692	1098	2655	1409	848	1386	3465	12493
80-	441	281	931	1821	865	413	1279	2016	8048
85+	360	187	1283	946	424	223	1316	1332	6071
Total	**38437**	**50243**	**19707**	**46395**	**40247**	**47253**	**22371**	**47264**	**311917**

Age and sex

During 2014–2018, the YLL rates in males were higher than females in all age groups with the exception of 0–4 age group (Figure 3). The highest male to female sex ratio was 2.7 in the 20–24 years of age group. In 2014–2018, the all-cause age-standardised YLL rate was 129.3 and 177.8 years per 1,000 females and males respectively in the NT. The ratio of age-standardised YLL rates describes the relative disparity in fatal burden after controlling for age.

Figure 3. Age-specific years of life lost per 1,000 population by sex and male to female rate ratio, Northern Territory, 2014–2018

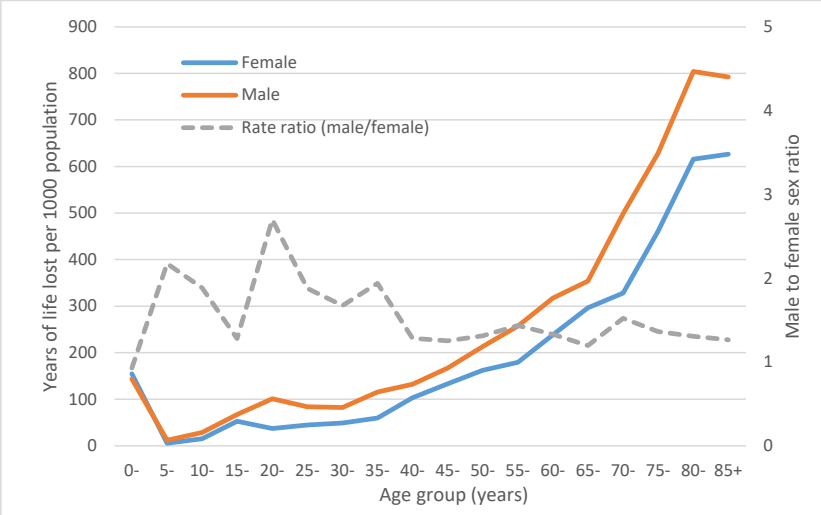


Table 4. Years of life lost rate per 1,000 population, Northern Territory 2014–2018 vs Australia 2015

	Northern Territory		Australia		Rate ratio*	
Age	Female	Male	Female	Male	Female	Male
0-	154.8	143.5	57.3	68.2	2.7	2.1
5-	5.4	11.8	5.9	6.9	0.9	1.7
10-	15.0	28.3	7.1	8.0	2.1	3.5
15-	52.6	67.3	14.8	29.2	3.6	2.3
20-	37.3	100.7	14.0	36.9	2.7	2.7
25-	44.6	83.8	16.5	40.4	2.7	2.1
30-	49.0	81.9	19.7	47.1	2.5	1.7
35-	59.6	115.5	32.0	55.3	1.9	2.1
40-	103.0	132.0	41.0	73.9	2.5	1.8
45-	133.4	167.2	55.3	92.2	2.4	1.8
50-	162.2	213.0	74.8	120.4	2.2	1.8
55-	179.2	257.2	93.4	158.1	1.9	1.6
60-	238.5	317.5	117.1	202.8	2.0	1.6
65-	296.1	353.7	151.6	252.0	2.0	1.4
70-	327.8	498.6	208.8	331.3	1.6	1.5
75-	461.3	628.5	292.2	444.9	1.6	1.4
80-	615.6	803.8	412.4	594.0	1.5	1.4
85+	626.3	792.0	641.7	802.0	1.0	1.0
Crude rate	106.4	147.9	82.1	116.2	1.3	1.3
Age-std.	129.3	177.8			1.6	1.5

Note: * Northern Territory vs Australia. Age-std = Age-standardised rate.

In comparison with the Australian average in 2015, the NT crude YLL rate was about 30% higher in both males and females. The highest NT to Australia rate ratios were in adolescent males aged 10–14 years (3.5) and adolescent females aged 14–19 years (3.6) (Table 4). In 2014–2018, the all-cause age-standardised YLL rate was 129.3 and 177.8 years per 1,000 females and males respectively in the NT, approximately 58% and 53% higher than the Australian female and male averages in 2015. Men experienced a 37% higher YLL rate than women.

Figure 4. Age-specific years of life lost per 1,000 population by Aboriginal status, and Aboriginal vs non-Aboriginal rate ratio, Northern Territory, 2014–2018

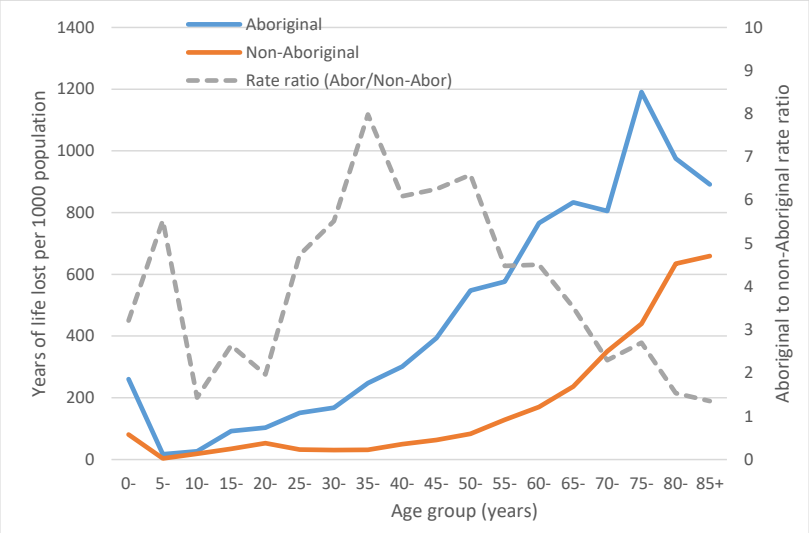


Table 5. Years of life lost rate per 1,000 population, Aboriginal vs non-Aboriginal, Northern Territory, 2014–2018

	Aboriginal			Non-Aboriginal			Rate ratio*		
Age	Female	Male	Total	Female	Male	Total	Female	Male	Total
0-	281.7	240.7	260.3	79.4	82.6	81.0	3.5	2.9	3.2
5-	4.3	28.2	16.7	6.2	0.0	3.0	0.7	+∞	5.5
10-	17.0	34.4	26.2	13.4	23.1	18.3	1.3	1.5	1.4
15-	81.6	101.3	91.9	28.4	40.4	34.8	2.9	2.5	2.6
20-	59.3	143.6	103.4	23.9	76.6	52.5	2.5	1.9	2.0
25-	113.5	185.3	151.0	18.3	44.5	31.9	6.2	4.2	4.7
30-	147.4	186.8	167.6	14.4	45.4	30.4	10.2	4.1	5.5
35-	176.3	317.0	247.2	16.2	44.7	31.0	10.9	7.1	8.0
40-	269.1	333.3	300.9	35.4	61.7	49.4	7.6	5.4	6.1
45-	354.0	436.0	393.3	44.4	79.2	62.9	8.0	5.5	6.3
50-	481.4	621.6	547.6	55.9	106.8	83.1	8.6	5.8	6.6
55-	509.6	653.7	576.4	82.9	169.0	128.7	6.1	3.9	4.5
60-	707.2	837.0	766.2	109.8	219.4	169.9	6.4	3.8	4.5
65-	854.4	805.0	833.1	161.9	292.2	236.3	5.3	2.8	3.5
70-	659.0	1001.9	805.3	246.2	429.0	350.4	2.7	2.3	2.3
75-	1173.2	1219.7	1190.2	285.3	561.9	440.0	4.1	2.2	2.7
80-	962.5	1001.6	974.8	494.9	772.5	634.4	1.9	1.3	1.5
85+	900.9	873.1	891.2	570.2	779.9	659.4	1.6	1.1	1.4
Total	220.0	253.3	236.8	55.1	104.4	81.1	4.0	2.4	2.9

Note: * Aboriginal vs non-Aboriginal; +∞ = Positive infinity.

Aboriginal status

Over the period 2014–2018, the YLL rates were substantially higher in the Aboriginal population for all age groups (Figure 4). Table 5 shows that the total crude YLL rate was 236.8 years per 1,000 population (220.0 for females, 253.3 for males). The disparity in YLL rate measured in rate ratio appeared to peak at 8.0 in the age group 35–39 years.

In 2014–2018, the top three disease groups in terms of total YLL were cancer, cardiovascular disease and unintentional injury (Table 6), followed by intentional injury, infant condition and respiratory disease. Cardiovascular disease was the most common group of YLL in the Aboriginal population, whereas in the non-Aboriginal population, cancer was the leading group of YLL. Kidney disease in Aboriginal females and unintentional injury in Aboriginal males were the third most common YLL after cancer. Unintentional injury was the third most common YLL behind cardiovascular disease in the non-Aboriginal population. If we followed exactly the AIHW groupings by combining unintentional with intentional injury, injuries became the second leading group of YLL, regardless of Aboriginality. If unintentional injury was combined with intentional injury, injuries became the top leading YLL group for males and the third leading YLL group in females. Figures 5 and 6 display the hierarchical tree maps on YLL for disease groups by sex and Aboriginality in the NT between 2014 and 2018.

Table 6. Years of life lost (rank in parentheses) by cause of death, sex and Aboriginal status, Northern Territory, 2014–2018

	Aboriginal		Non-Aboriginal		Total
	Female	Male	Female	Male	
Cancer	6802 (2)	6967 (2)	8586 (1)	14210 (1)	36564 (1)
Cardiovascular	7355 (1)	11676 (1)	3011 (2)	8405 (2)	30447 (2)
Unint. injury	3269 (4)	6425 (3)	2051 (3)	8294 (3)	20039 (3)
Inten. injury	2986 (7)	5791 (4)	1693 (5)	4871 (4)	15341 (4)
Infant	3035 (5)	3570 (5)	2003 (4)	1833 (6)	10441 (5)
Respiratory	3021 (6)	2380 (7)	1118 (6)	2692 (5)	9211 (6)
Kidney	3932 (3)	2770 (6)	380 (10)	437 (12)	7520 (7)
Gastrointestinal	2415 (8)	2119 (8)	835 (8)	1671 (7)	7039 (8)
Infectious	2258 (10)	1525 (9)	743 (9)	1066 (10)	5592 (9)
Endocrine	2274 (9)	969 (12)	338 (11)	1072 (9)	4653 (10)
Neurological	1112 (11)	1060 (11)	870 (7)	1421 (8)	4463 (11)
Blood	781 (12)	1077 (10)	281 (12)	578 (11)	2717 (12)
Musculoskeletal	743 (13)	232 (14)	219 (13)	240 (14)	1434 (13)
Mental	111 (14)	433 (13)	174 (14)	320 (13)	1039 (14)
Skin	81 (15)	101 (15)	48 (15)	153 (15)	383 (15)
Hearing	30 (17)	76 (17)	0 (17.5)	0 (17)	106 (16)
Oral	0 (18)	83 (16)	6 (16)	0 (17)	89 (17)
Reproductive	43 (16)	0 (18)	0 (17.5)	0 (17)	43 (18)
Total	40247	47253	22358	47264	157121

Notes: Inten = Intentional; Unint = Unintentional.

Figure 5. Contributions by disease group to years of life lost by sex, Aboriginal population, Northern Territory, 2014–2018

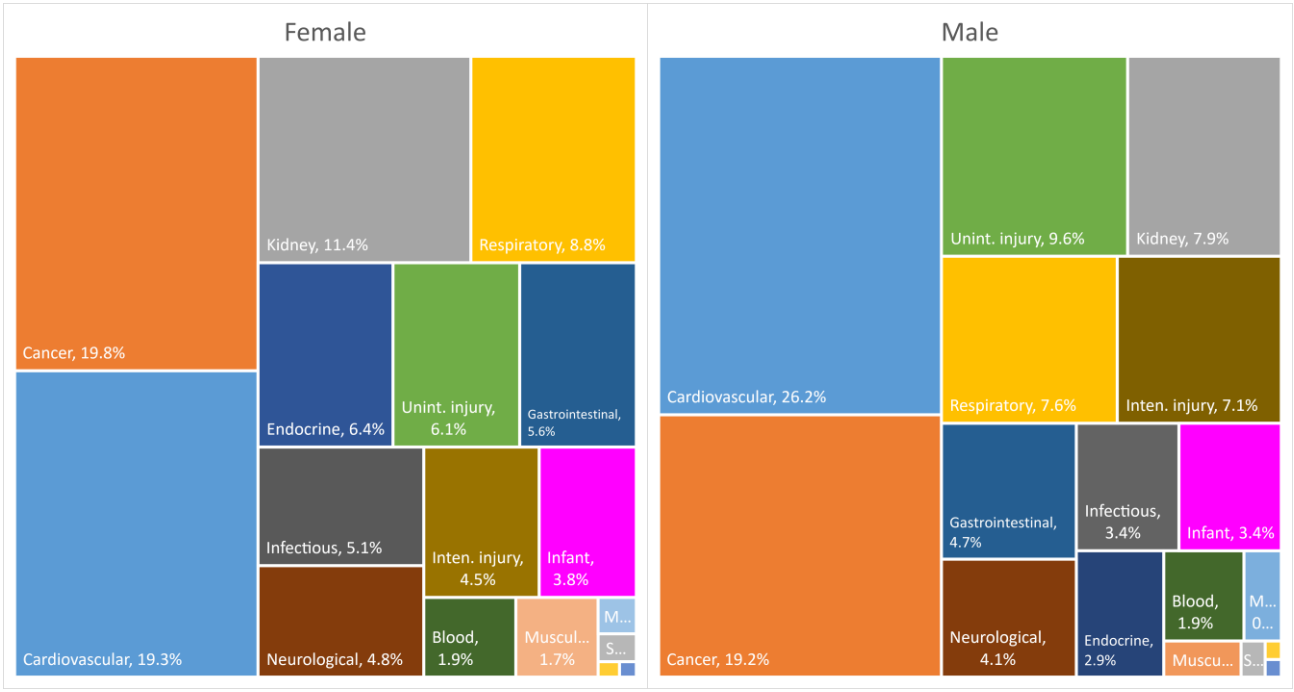


Figure 6. Contributions by disease group to years of life lost by sex, non-Aboriginal population, Northern Territory, 2014–2018

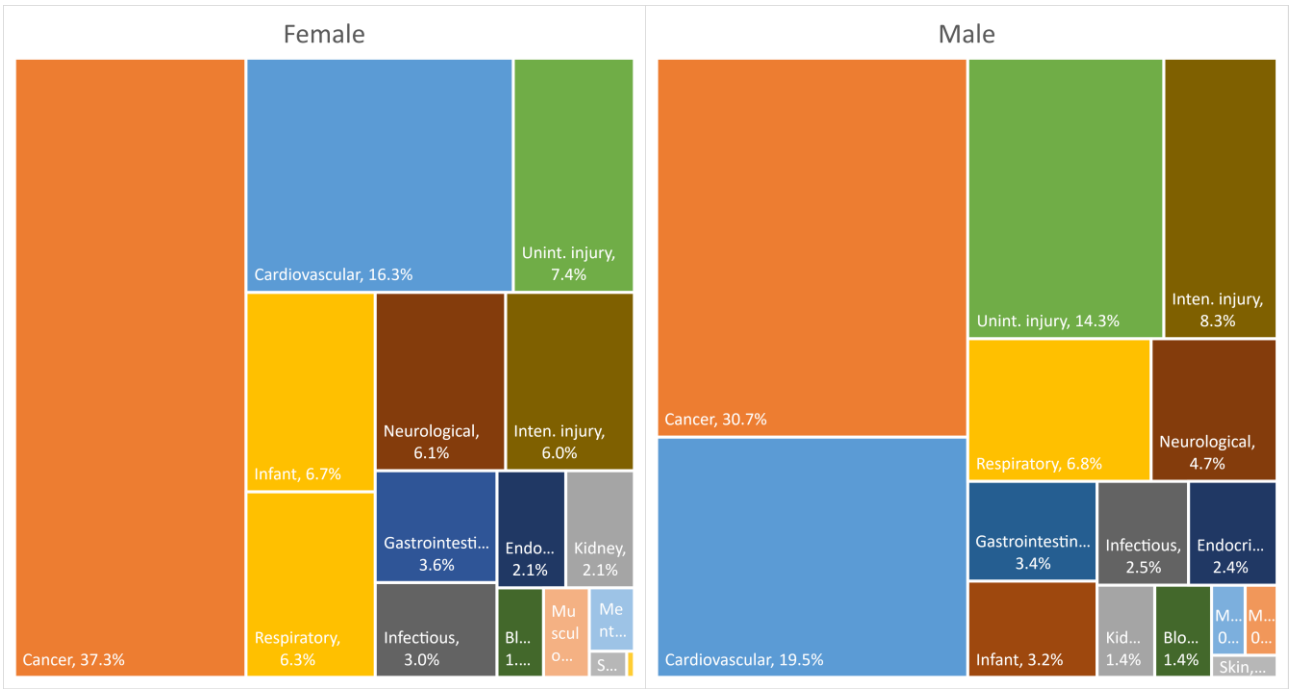


Figure 7. Years of life lost and proportions by disease group and five-year age group, Aboriginal population, Northern Territory, 2014–2018

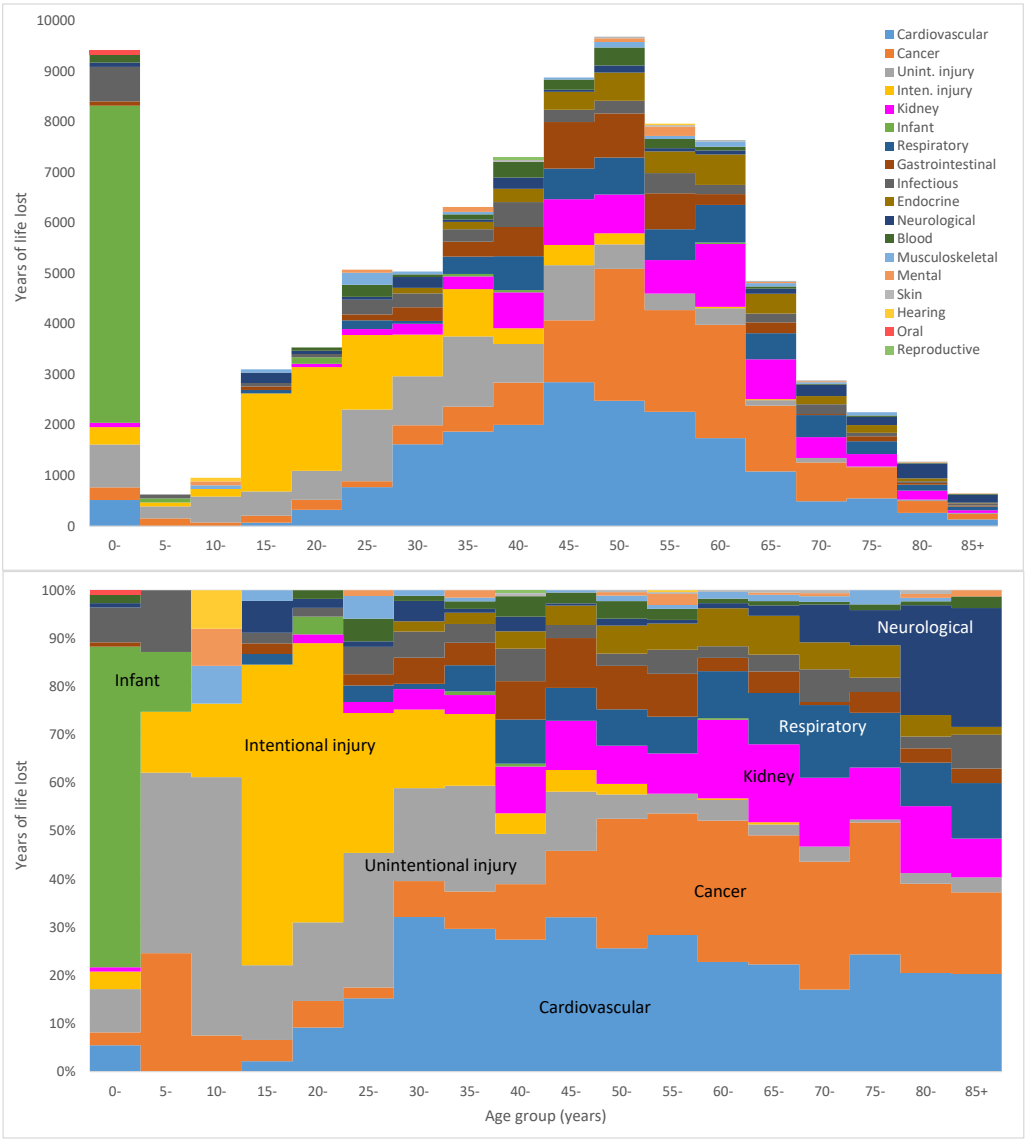
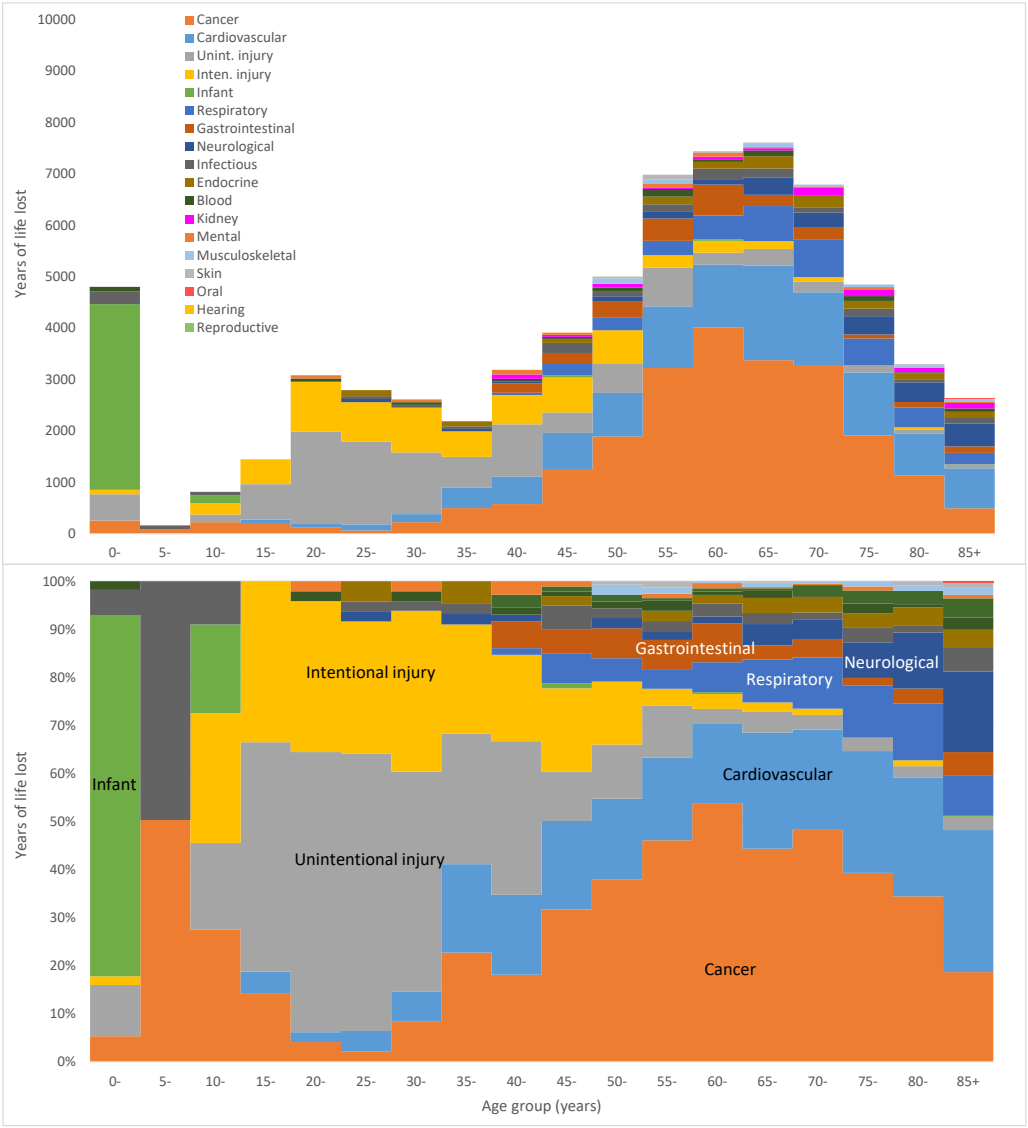


Figure 7 illustrates YLL and proportion by disease groups and five-year age groups in the Aboriginal population during 2014–2018. The dominant disease groups of YLL were cardiovascular disease and cancer after the age of 30 years, which explained nearly half of YLL (47%). Of the Aboriginal total fatal BOD in the age group 5–29 years, intentional and unintentional injuries accounted for 67% of total YLL. In the youngest age group (0–4 years), infant conditions alone was responsible for the majority of YLL (67%).

The age distribution of YLL by disease group in the non-Aboriginal population was considerably different from the Aboriginal population (Figures 7 and 8). Cancer alone accounted for 41% of YLL over the age of 40 years in the NT non-Aboriginal population, whereas intentional and unintentional injuries were attributable to 75% of YLL between 10 and 39 years of age at death. Cancer and infectious diseases were the leading disease groups, explaining 100% of YLL in ages 5–9 years, whereas infant conditions explained 75% of YLL in ages 0–4 years in the NT non-Aboriginal population.

Figure 8. Years of life lost and proportions by disease group and five-year age group, non-Aboriginal population, Northern Territory, 2014–2018



Figures 9 and 10 show the top five disease groups of YLL by age group, sex and Aboriginal status for the period 2014–2018. The results show that in those age groups between 5 and 34 years, unintentional injury was the leading group in males, while intentional injury was leading in females. Cardiovascular disease and cancer were the leading disease groups of YLL for those aged 45 and 84 years, regardless of sex and Aboriginality. In the older age group 85 years and over, cardiovascular disease was the leading disease group of YLL in the non-Aboriginal population, whereas neurological condition was most prominent in the Aboriginal population.

Figure 9. Five leading cause of years of life lost by 10-year age group and sex, Aboriginal population, Northern Territory, 2014–2018

Female	0-	5-	15-	25-	35-	45-	55-	65-	75-	85+
1	Infant	Intentional	Intentional	Cardiovascular	Cardiovascular	Cardiovascular	Cancer	Cancer	Cancer	Neurological
2	Infectious	Musculoskeletal	Unintentional	Intentional	Unintentional	Cancer	Cardiovascular	Cardiovascular	Cardiovascular	Cardiovascular
3	Unintentional	Unintentional	Neurological	Unintentional	Respiratory	Kidney	Kidney	Kidney	Neurological	Cancer
4	Cardiovascular	Infectious	Cancer	Infectious	Cancer	Gastrointestinal	Endocrine	Respiratory	Kidney	Respiratory
5	Intentional	Gastrointestinal	Infectious	Kidney	Kidney	Unintentional	Respiratory	Endocrine	Respiratory	Kidney
Male										
1	Infant	Unintentional	Intentional	Unintentional	Cardiovascular	Cardiovascular	Cardiovascular	Cancer	Cancer	Neurological
2	Unintentional	Cancer	Unintentional	Intentional	Unintentional	Cancer	Cancer	Cardiovascular	Cardiovascular	Cardiovascular
3	Cardiovascular	Infectious	Cardiovascular	Cardiovascular	Intentional	Gastrointestinal	Kidney	Kidney	Respiratory	Cancer
4	Intentional	Infant	Cancer	Cancer	Cancer	Unintentional	Respiratory	Respiratory	Neurological	Respiratory
5	Blood	Hearing	Neurological	Neurological	Kidney	Kidney	Gastrointestinal	Endocrine	Kidney	Unintentional

Figure 10. Five leading cause of years of life lost by 10-year age group and sex, non-Aboriginal population, Northern Territory, 2014–2018

Female	0-	5-	15-	25-	35-	45-	55-	65-	75-	85+
1	Infant	Infant	Intentional	Intentional	Cancer	Cancer	Cancer	Cancer	Cancer	Cardiovascular
2	Unintentional	Cancer	Cancer	Unintentional	Unintentional	Intentional	Cardiovascular	Cardiovascular	Cardiovascular	Cancer
3	Cancer	Infectious	Unintentional	Cancer	Cardiovascular	Cardiovascular	Gastrointestinal	Respiratory	Neurological	Neurological
4	Intentional	Intentional	Cardiovascular	Infectious	Intentional	Unintentional	Respiratory	Unintentional	Respiratory	Respiratory
5	Infectious	Unintentional	Blood	Cardiovascular	Gastrointestinal	Infectious	Unintentional	Neurological	Endocrine	Gastrointestinal
Male										
1	Infant	Cancer	Unintentional	Unintentional	Unintentional	Cancer	Cancer	Cancer	Cancer	Cardiovascular
2	Unintentional	Intentional	Intentional	Intentional	Intentional	Cardiovascular	Cardiovascular	Cardiovascular	Cardiovascular	Cancer
3	Infectious	Unintentional	Cancer	Cardiovascular	Cardiovascular	Intentional	Unintentional	Respiratory	Respiratory	Neurological
4	Blood	Infectious	Mental	Cancer	Cancer	Unintentional	Gastrointestinal	Neurological	Neurological	Respiratory
5	Cancer	Cardiovascular	Cardiovascular	Endocrine	Endocrine	Respiratory	Respiratory	Gastrointestinal	Endocrine	Infectious

Figure 11. Years of life lost and rates by age and sex, top four disease groups, Northern Territory, 2014–2018

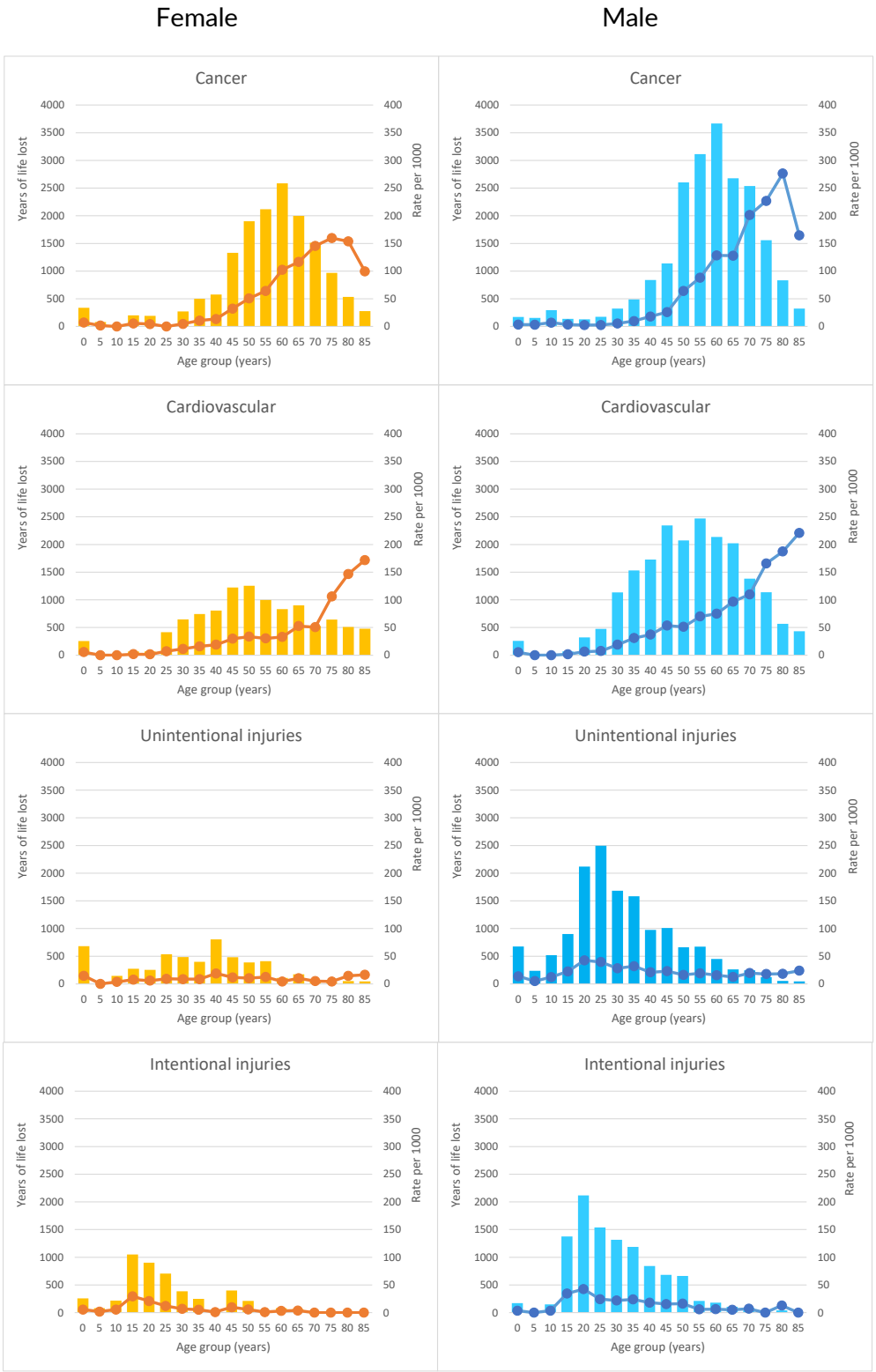


Figure 11 compares age-specific YLL and YLL rate per 1,000 population between males and females for four leading disease groups of mortality burden. Figure 12 compares age-specific YLL and YLL rate per 1,000 population by Aboriginality for the four leading disease groups.

Figure 12. Years of life lost and rates by age and Aboriginal status, top four disease groups, Northern Territory, 2014–2018

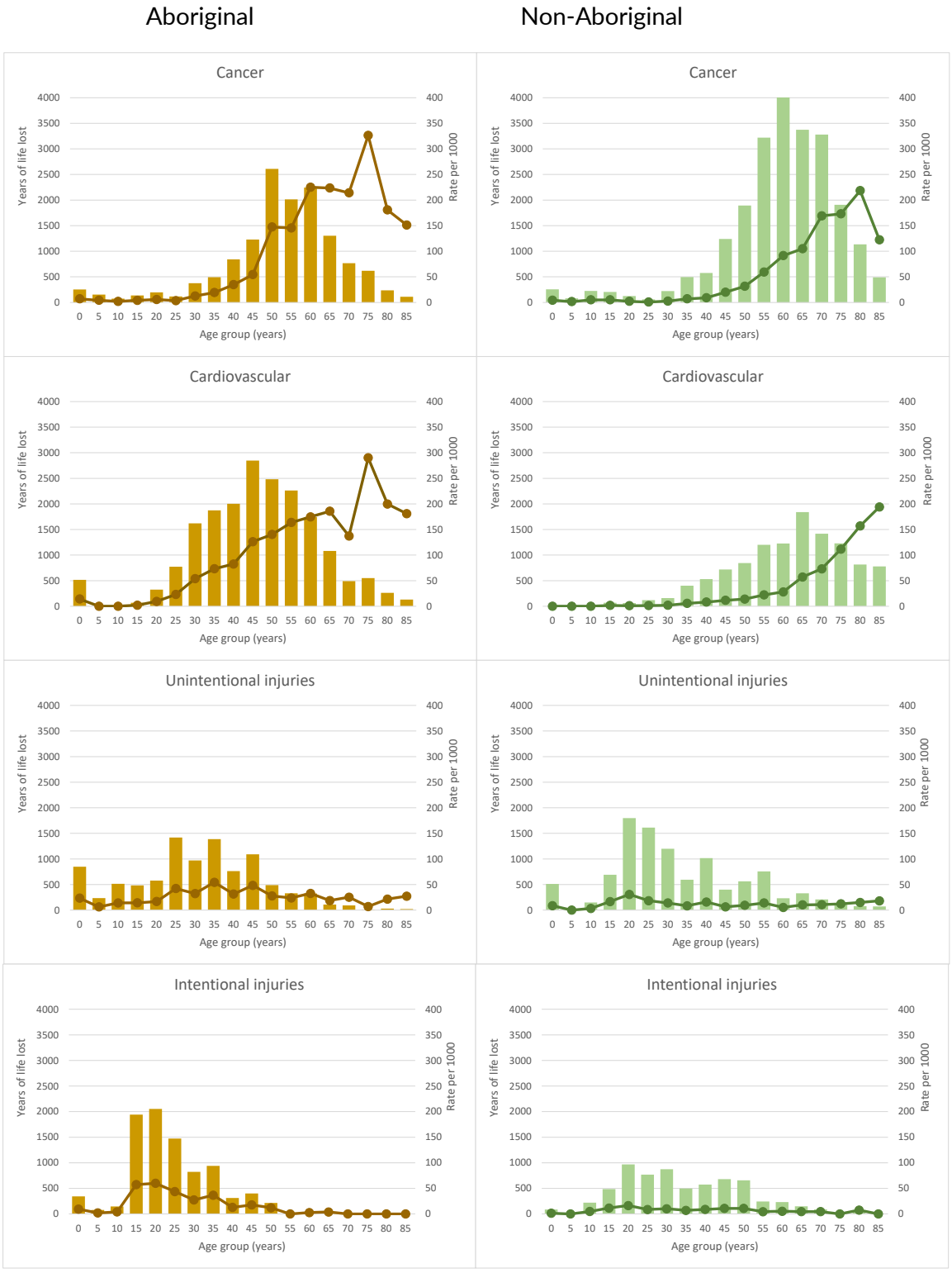


Table 7. Age-standardised years of life lost rate (per 1,000 population) and rate ratio by Aboriginal status and disease group, Northern Territory 2014–2018 vs Australia 2015

	Northern Territory				Australia	Rate ratio#		
	Total	Abor	Non-Abor	Rate ratio*	2015	Total	Abor	Non-Abor
Cancer	39.3	66.4	32.4	2.05	30.0	1.31	2.21	1.08
Cardiovascular	31.8	78.2	18.3	4.27	18.3	1.73	4.26	1.00
Unint. injury	15.9	27.4	11.8	2.32	14.1	1.12	3.38	1.36
Inten. injury	11.9	20.4	7.4	2.77				
Respiratory	10.8	27.5	6.6	4.18	4.7	2.31	5.87	1.41
Kidney	7.8	32.8	1.6	20.41	1.7	4.49	18.93	0.93
Infant	7.3	12.2	4.4	2.81	3.6	2.02	3.40	1.21
Neurological	7.1	15.3	5.0	3.07	6.0	1.17	2.54	0.83
Gastrointestinal	6.7	17.4	3.4	5.12	3.8	1.78	4.64	0.91
Infectious	5.3	14.3	2.6	5.44	2.3	2.32	6.25	1.15
Endocrine	5.0	15.9	2.3	6.86	1.7	2.90	9.25	1.35
Blood	2.5	6.5	1.2	5.26	1.3	1.92	4.98	0.95
Musculoskeletal	1.5	4.0	0.8	5.34	0.6	2.43	6.60	1.24
Mental	1.0	2.1	0.6	3.31	0.6	1.74	3.78	1.14
Skin	0.4	0.9	0.3	2.74	0.2	1.99	4.01	1.47
Hearing	0.1	0.3	0.0	+∞	0.0	+∞	+∞	…
Oral	0.1	0.2	0.0	7.33	0.0	8.49	17.16	2.34
Reproductive	0.0	0.1	0.0	+∞	0.0	1.02	3.74	0.00
Total	154.4	342.0	98.8	3.46	99.0	1.56	3.45	1.00
95%CI	153.8-155.1	340.5-343.6	98.1-99.4	3.43-3.50	…	1.56-1.56	3.43-3.48	0.99-1.00

Notes: +∞ = Positive infinity; … = Unavailable; CI = Confidence interval; Inten = Intentional; Unint = Unintentional; Abor=Aboriginal; * Abor/Non-Abor; # Northern Territory/Australia.

Table 7 shows the age-standardised YLL rates by disease groups between the Aboriginal and non-Aboriginal population in the NT during 2014–2018, in comparison with the Australian average. In the NT, the total age-standardised YLL rate in the Aboriginal population was 3.46 times the non-Aboriginal rate ($P < 0.01$). This was much higher than the crude YLL rate ratio in Table 5 (2.9 for the total NT, 4.0 for females, 2.4 for males).

In comparison with the Australian average YLL rate in 2015, the NT Aboriginal population experienced a mortality burden 3.45 times the Australian average ($P < 0.01$), similar to the rate ratio between the NT Aboriginal and non-Aboriginal population. There appeared no major difference in DALY rate between the NT non-Aboriginal and Australian average. The total NT age-standardised YLL rate ratio was 1.56. The highest Aboriginal to non-Aboriginal rate ratio was found to be 20.41 in kidney disease, besides the hearing and reproductive conditions (positive infinity seemingly due to zero YLL rate nationally). Oral and endocrine conditions were the next highest groups in the NT Aboriginal population with rate ratios of 17.16 and 9.25 respectively, relative to the national averages.

Table 8 displays the age-standardised YLL rate ratios between the Aboriginal and non-Aboriginal population by sex and disease groups. It is clear that the Aboriginal health disparity measured in YLL rate ratio was greater in females than males (4.41 and 3.06, both $P < 0.01$). Cancer remained a leading cause of mortality in the Aboriginal female population, with a mortality burden 2.34 times that of non-Aboriginal

women. In the Aboriginal male population, cardiovascular disease was the leading cause of mortality, with a mortality burden 4.12 times that of non-Aboriginal males.

Table 8. Age-standardised years of life lost per 1,000 population and Aboriginal to non-Aboriginal rate ratio by sex and disease group, Northern Territory, 2014–2018

	Aboriginal		Non-Aboriginal		Rate ratio	
	Female	Male	Female	Male	Female	Male
Cancer	61.1	72.7	26.1	38.0	2.34	1.91
Cardiovascular	59.6	99.3	11.4	24.1	5.23	4.12
Unint. injury	18.7	36.5	5.2	17.7	3.62	2.06
Inten. injury	13.9	26.8	4.2	10.2	3.32	2.62
Respiratory	27.3	28.7	4.4	8.4	6.23	3.41
Kidney	35.1	30.1	1.5	1.7	24.00	17.50
Infant	11.7	12.8	4.7	4.0	2.48	3.19
Neurological	14.8	15.6	4.2	5.8	3.49	2.69
Gastrointestinal	17.2	17.9	2.5	4.2	6.92	4.32
Infectious	15.7	12.8	2.1	3.1	7.48	4.19
Endocrine	19.9	10.8	1.5	3.0	13.56	3.67
Blood	5.9	7.1	0.8	1.7	7.70	4.21
Musculoskeletal	5.3	2.7	0.7	0.8	7.01	3.60
Mental	1.1	3.3	0.5	0.7	2.13	4.56
Skin	0.8	0.9	0.2	0.5	4.76	1.84
Hearing	0.2	0.3	0.0	0.0	+∞	+∞
Oral	0.0	0.3	0.0	0.0	0.00	+∞
Reproductive	0.3	0.0	0.0	0.0	+∞	...
Total	308.4	378.7	69.9	123.8	4.41	3.06
95%CI	306.2-310.6	376.4-380.9	69.1-70.7	122.8-124.8	4.40-4.43	3.05-3.07

Notes: +∞ = Positive infinity; ... = Unavailable; CI = Confidence interval; Inten = Intentional; Unint = Unintentional.

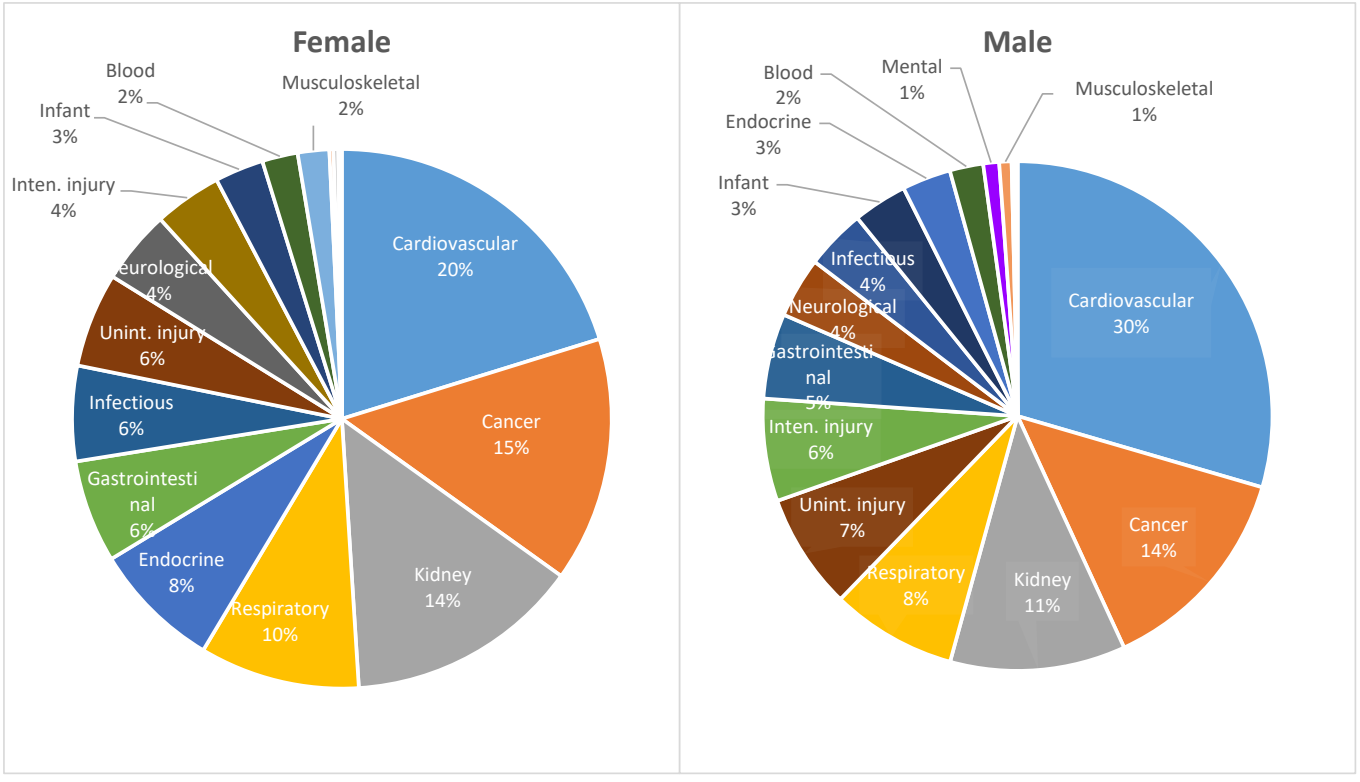
Table 9 provides further information on the level of differences in YLL rates by disease groups and contribution to the overall differences in YLL rates between the Aboriginal and non-Aboriginal population. Cardiovascular disease contributed to one-quarter of the total gap. Cancer and kidney disease together contributed to another 27% of the total difference, followed by respiratory disease contributing 9%. Further analysis of the Aboriginal gap by sex in Figure 13 reveals that males suffered greater health disparity in cardiovascular disease than females. Females experienced greater gaps than males in cancer, kidney and respiratory diseases between the Aboriginal and non-Aboriginal population.

Table 9. Age-standardised years of life lost rate (per 1,000 population) and rate difference by Aboriginal status and disease group, Northern Territory, 2014–2018

	Aboriginal	Non-Aboriginal	Difference	Contribution (%)
Cardiovascular	78.2	18.3	59.9	25%
Cancer	66.4	32.4	34.0	14%
Kidney	32.8	1.6	31.2	13%
Respiratory	27.5	6.6	20.9	9%
Unint. injury	27.4	11.8	15.6	6%
Gastrointestinal	17.4	3.4	14.0	6%
Endocrine	15.9	2.3	13.6	6%
Inten. injury	20.4	7.4	13.1	5%
Infectious	14.3	2.6	11.7	5%
Neurological	15.3	5.0	10.3	4%
Infant	12.2	4.4	7.9	3%
Blood	6.5	1.2	5.3	2%
Musculoskeletal	4.0	0.8	3.3	1%
Mental	2.1	0.6	1.5	1%
Skin	0.9	0.3	0.6	0%
Hearing	0.3	0.0	0.3	0%
Oral	0.2	0.0	0.1	0%
Reproductive	0.1	0.0	0.1	0%
Total	342.0	98.7	243.3	100%

Notes: Inten = Intentional; Unint = Unintentional.

Figure 13. Disease contributions by sex to the difference in age-standardised years of life lost rates between Aboriginal and non-Aboriginal populations, Northern Territory, 2014–2018



Health region

Figure 14 demonstrates the age-standardised YLL rate by health regions. Top End experienced the highest level of fatal BOD in the NT. Greater Darwin had the lowest level of YLL rate among all health regions. Alarmingly, the age-standardised YLL rates in Barkly and East Arnhem were higher in 2014–2018 than 2009–2013. It is evident from Figure 15 that the gap in age-standardised YLL rates between the Aboriginal and non-Aboriginal population in the NT remote areas remained around 250 YLL per 1,000 population, albeit with clear improvements over time across remote and non-remote areas.

Figure 14. Age-standardised years of life lost rate per 1,000 population by health region, Northern Territory, 2004–2018

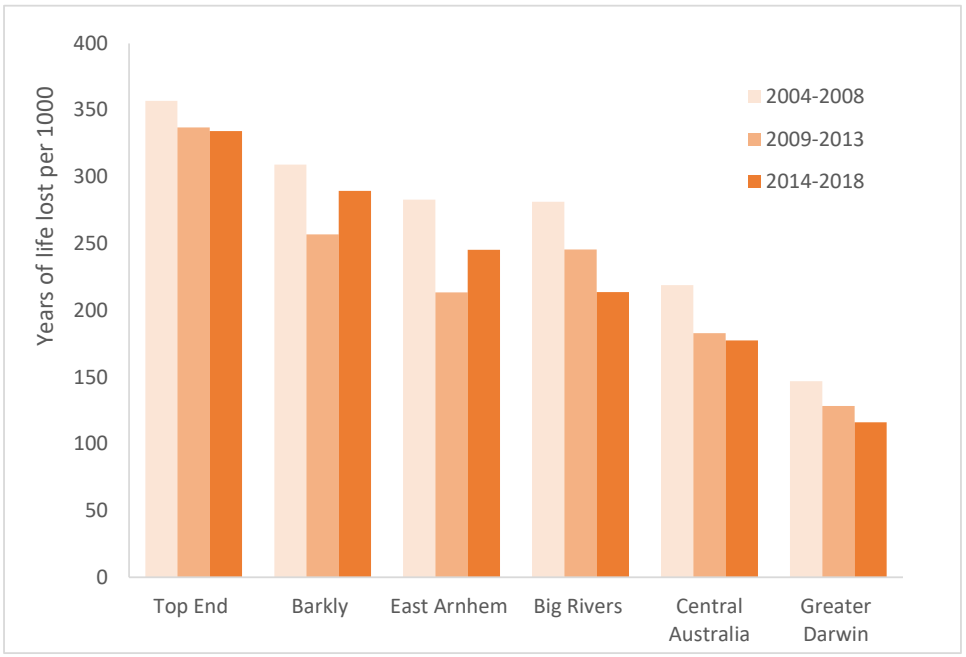
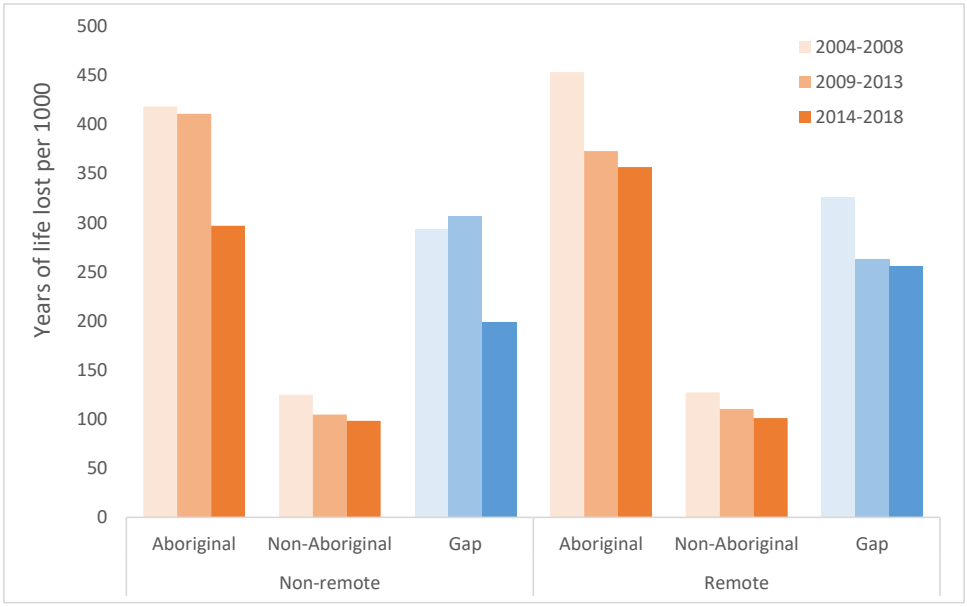


Figure 15. Age-standardised years of life lost per 1,000 and the gap between Aboriginal and non-Aboriginal populations by remoteness, Northern Territory, 2004–2018



Trends in mortality

All-cause mortality and years of life lost rate

The overall age-standardised mortality rate declined between 1999 and 2018. In contrast, the crude mortality rate increased slightly from 4.4 to 4.5 deaths per 1,000 population, suggesting that the number of deaths increased, but the age at death also increased over time for the NT residents (Figure 16). It is reassuring to note that both crude and age-standardised YLL rates decreased in the NT from 1999 to 2018 (Figure 17). Further analysis of age-specific mortality rate by Aboriginality in Figure 18 shows that there was a substantial drop in mortality in Aboriginal people aged 85 years and over during this period, especially for Aboriginal population.

Figure 16. All-cause age-standardised mortality rate compared with crude mortality rate, Northern Territory, 1999–2018

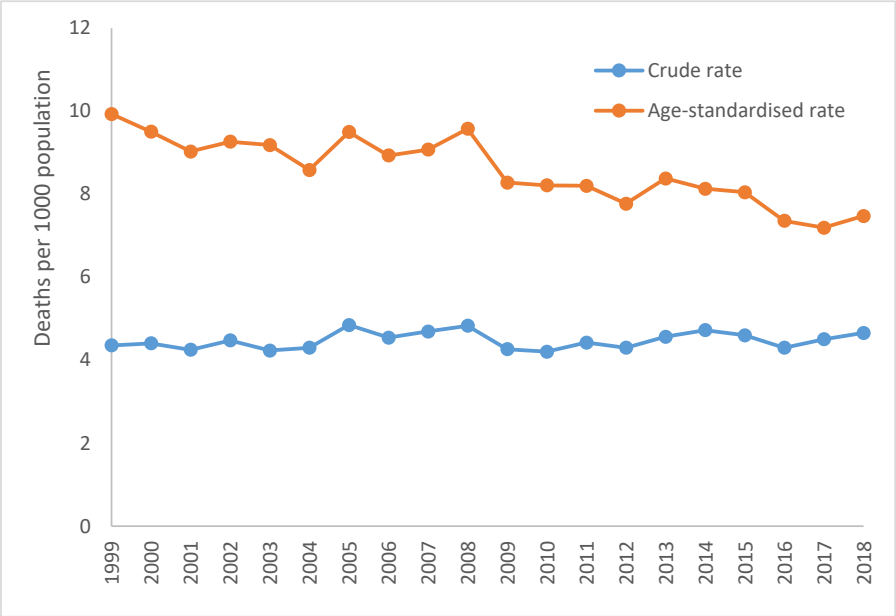


Figure 17. All-cause age-standardised and crude years of life lost rates, Northern Territory, 1999–2018

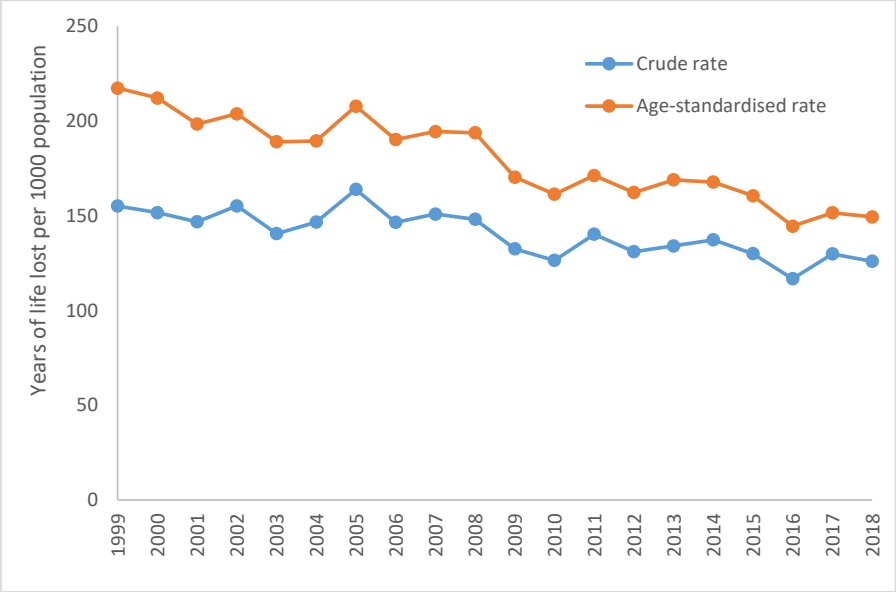
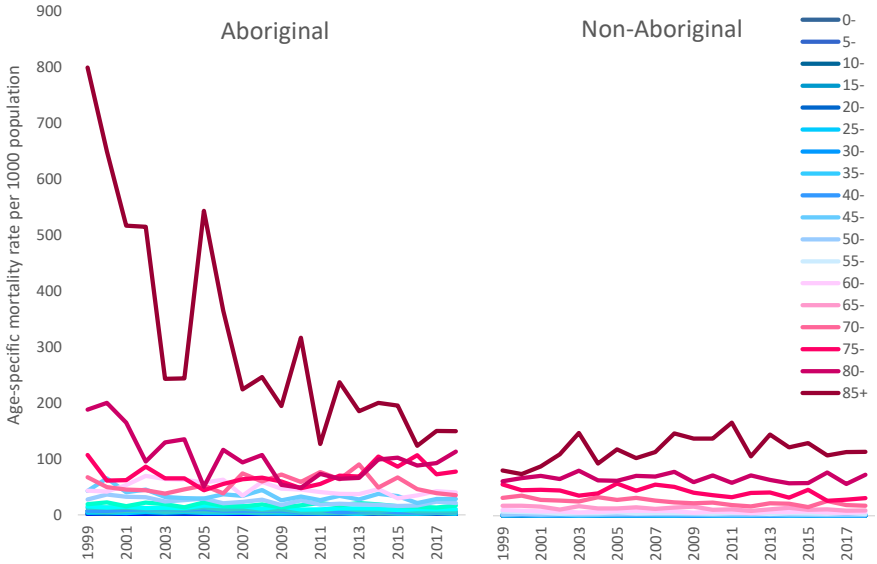


Figure 18. Age-specific mortality rate per 1,000 population by Aboriginal status, Northern Territory, 1999–2018



Mortality by sex and Aboriginal status

Mortality improved in the NT between 1999 and 2018 for both males and females, irrespective of whether measured by the number of deaths or YLL (Figure 19) after controlling for age. This improvement was more pronounced in males than females. Similarly, the level of mortality improved during this period in both the Aboriginal and non-Aboriginal population (Figure 20) after controlling for age. This improvement was greater in the Aboriginal population.

Figure 19. Age-standardised mortality and years of life lost rates by sex with linear trend (dotted line), Northern Territory, 1999–2018

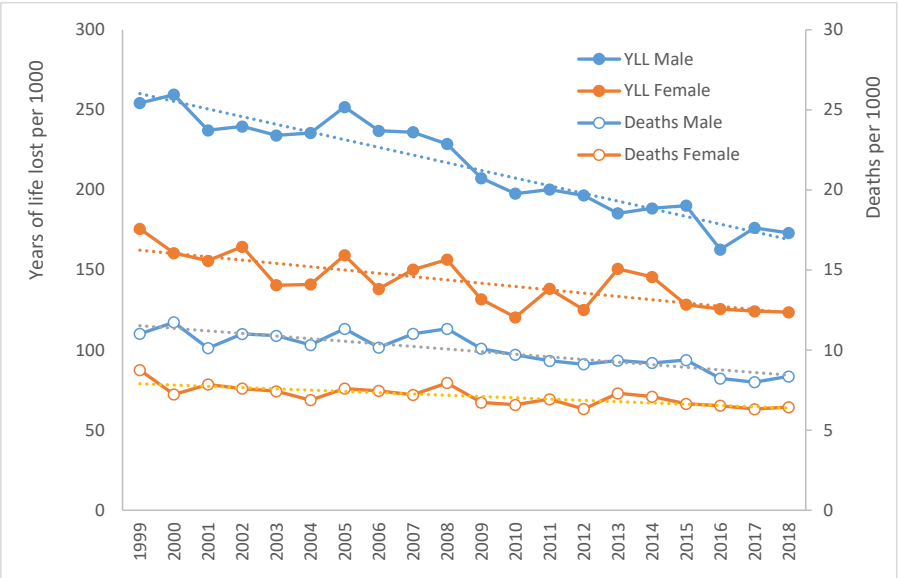
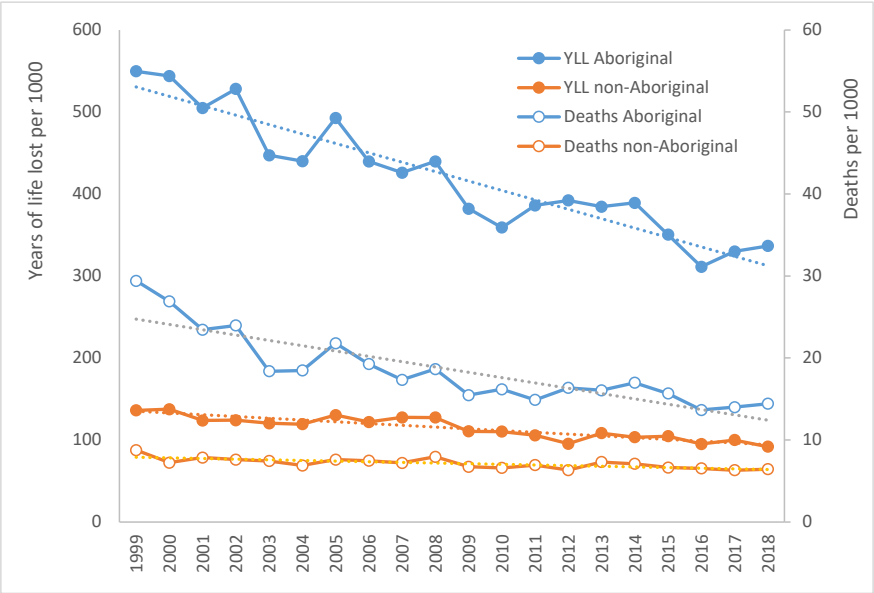


Figure 20. Age-standardised mortality and years of life lost rates by Aboriginal status with linear trend (dotted line), Northern Territory, 1999–2018



Changes in mortality patterns

Table 10. Ranked causes for years of life lost by Aboriginal status and disease group, Northern Territory, 2004–2018

	Aboriginal			Non-Aboriginal		
	2004-2008	2009-2013	2014-2018	2004-2008	2009-2013	2014-2018
Cardiovascular	1	1	1	2	2	2
Cancer	2	2	2	1	1	1
Kidney	9	4	3	11	12	11
Respiratory	5	5	4	4	4	5
Unint. injury	3	3	5	3	3	3
Inten. injury	7	6	6	5	6	4
Gastrointestinal	6	8	7	6	8	8
Endocrine	4	7	8	10	10	10
Neurological	10	10	9	7	5	6
Infectious	8	9	10	9	9	9
Infant	11	11	11	8	7	7
Blood	12	12	12	12	11	12
Musculoskeletal	14	14	13	13	13	13
Mental	13	13	14	14	14	14
Skin	15	15	15	15	15	15
Hearing	18	17	16	17	18	17
Oral	17	17	17	17	17	16
Reproductive	16	16	18	16	16	17

Notes: Inten = Intentional; Unint = Unintentional.

Cardiovascular disease and cancer were consistently the leading causes of YLL for the Aboriginal and non-Aboriginal population respectively (Table 10). Cancer and cardiovascular disease swapped positions between the Aboriginal and non-Aboriginal population. Kidney disease was the ninth most life-shortening

disease for the Aboriginal population in 2004–2008 and rose to third in 2014–2018 with increased YLL during this period (Figure 21). Unintentional injury was consistently the third most life-shortening cause of YLL in the non-Aboriginal population, with marginal reduction in the total YLL (Table 11).

Figure 21. Age-standardised years of life lost per 1,000 population by Aboriginal status and disease group, Northern Territory, 2004–2018

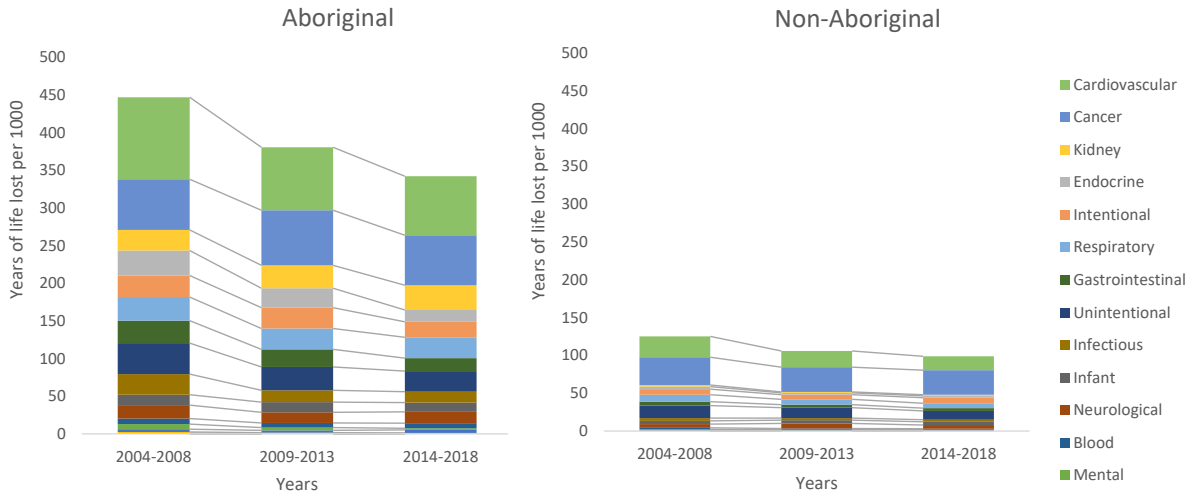


Table 11. Age-standardised years of life lost per 1,000 (rank in parentheses) by Aboriginal status and disease groups, Northern Territory, 2004–2018

	Aboriginal			Non-Aboriginal		
	2004-2008	2009-2013	2014-2018*	2004-2008	2009-2013	2014-2018
Cardiovascular	108.7 (1)	83.6 (1)	78.2 (1)	27.7 (2)	21.5 (2)	18.3 (2)
Cancer	67.5 (2)	73.0 (2)	66.4 (2)	36.6 (1)	32.7 (1)	32.4 (1)
Kidney	27.1 (9)	30.5 (4)	32.8 (3)	2.1 (11)	1.2 (12)	1.6 (11)
Respiratory	31.4 (5)	27.7 (5)	27.5 (4)	9.0 (4)	6.9 (4)	6.6 (5)
Unint. injury	41.1 (3)	30.9 (3)	27.4 (5)	16.5 (3)	13.7 (3)	11.8 (3)
Inten. injury	28.6 (7)	27.5 (6)	20.4 (6)	7.5 (5)	6.3 (6)	7.4 (4)
Gastrointestinal	29.8 (6)	23.4 (8)	17.4 (7)	5.5 (6)	4.2 (8)	3.4 (8)
Endocrine	33.3 (4)	25.9 (7)	15.9 (8)	3.4 (10)	2.3 (10)	2.3 (10)
Neurological	17.9 (10)	14.3 (10)	15.3 (9)	5.0 (7)	6.6 (5)	5.0 (6)
Infectious	27.4 (8)	15.8 (9)	14.3 (10)	3.5 (9)	2.8 (9)	2.6 (9)
Infant	13.7 (11)	13.3 (11)	12.2 (11)	4.3 (8)	4.3 (7)	4.4 (7)
Blood	7.3 (12)	6.0 (12)	6.5 (12)	2.0 (12)	1.6 (11)	1.2 (12)
Musculoskeletal	3.8 (14)	2.9 (14)	4.0 (13)	0.9 (13)	0.9 (13)	0.8 (13)
Mental	6.7 (13)	3.9 (13)	2.1 (14)	0.8 (14)	0.6 (14)	0.6 (14)
Skin	1.4 (15)	1.6 (15)	0.9 (15)	0.5 (15)	0.2 (15)	0.3 (15)
Hearing	0 (18)	0 (17)	0.3 (16)	0 (17)	0 (18)	0 (17)
Oral	0.2 (17)	0 (17)	0.2 (17)	0 (17)	0 (17)	0 (16)
Reproductive	0.9 (16)	0.1 (16)	0.1 (18)	0.1 (16)	0.1 (16)	0 (17)
Total	447.0	380.5	342.0	125.2	105.8	98.7
Five-year reduction		-15%	-10%		-15%	-7%

Notes: Inten = Intentional; Unint = Unintentional; * Sorted by Aboriginal YLL in 2014–2018.

The overall five-year reduction in total YLL rate per 1,000 population was 10% and 7% respectively in the Aboriginal and non-Aboriginal population between the study periods 2009–2013 and 2014–2018 (Table 11), which declined from a high of 15% reduction for both the Aboriginal and non-Aboriginal population between the previous two periods (2004–2008 vs 2009–2013). The five-year reduction in total YLL rate was 3% in females and 10% in males between 2009–2013 and 2014–2018 (Table 12). The reduction in YLL slowed compared with the previous two periods (2004–2008 vs 2009–2013).

Table 12. Age-standardised years of life lost per 1,000 (rank in parentheses) by sex and disease group, Northern Territory, 2004–2018

	Female			Male		
Disease group*	2004-2008	2009-2013	2014-2018	2004-2008	2009-2013	2014-2018
Cancer	32.5 (2)	32.8 (1)	34.0 (1)	50.9 (2)	47.0 (1)	44.4 (1)
Cardiovascular	32.9 (1)	25.3 (2)	23.2 (2)	54.4 (1)	43.3 (2)	39.7 (2)
Unintentional	14.3 (3)	11.5 (3)	9.0 (5)	31.6 (3)	24.6 (3)	22.2 (3)
Intentional	7.2 (9)	7.6 (6)	7.6 (6)	21.4 (4)	17.8 (4)	15.8 (4)
Respiratory	8.2 (6)	9.1 (4)	9.6 (3)	17.1 (5)	13.0 (5)	12.0 (5)
Kidney	7.6 (7)	7.5 (7)	9.2 (4)	6.0 (11)	6.1 (11)	6.5 (9)
Infant	6.2 (11)	7.3 (8)	7.2 (7)	9.6 (8)	8.4 (8)	7.3 (7)
Neurological	7.0 (10)	7.2 (9)	6.8 (8)	7.8 (10)	8.9 (7)	7.5 (6)
Gastrointestinal	9.4 (4)	8.0 (5)	6.3 (9)	12.3 (6)	9.1 (6)	7.0 (8)
Infectious	7.4 (8)	4.7 (11)	5.6 (11)	10.1 (7)	6.4 (10)	5.0 (10)
Endocrine	8.6 (5)	6.6 (10)	5.7 (10)	9.0 (9)	6.8 (9)	4.3 (11)
Blood	3.5 (12)	2.3 (12)	2.0 (12)	2.7 (13)	2.7 (12)	3.0 (12)
Musculoskeletal	1.8 (13)	1.8 (13)	2.0 (13)	1.2 (14)	0.8 (14)	1.1 (14)
Mental	1.4 (14)	1.0 (14)	0.6 (14)	2.7 (12)	1.7 (13)	1.3 (13)
Skin	0.9 (15)	0.4 (15)	0.3 (15)	0.4 (15)	0.6 (15)	0.6 (15)
Hearing	0 (17)	0 (18)	0 (17)	0 (18)	0 (16)	0.1 (16)
Oral	0 (17)	0 (17)	0 (18)	0.1 (17)	0 (16)	0.1 (17)
Reproductive	0.3 (16)	0.3 (16)	0.1 (16)	0.2 (16)	0 (16)	0 (18)
Total	149.3	133.3	129.3	237.7	197.2	177.8
Reduction		-11%	-3%		-17%	-10%

Notes: Inten = Intentional; Unint = Unintentional; * Sorted by Northern Territory total YLL in 2014–2018.

Figure 22 displays the top 30 causes of YLL in the NT Aboriginal population across three study periods from 2004 to 2018. It is evident that the top cause remained coronary heart disease, followed by chronic kidney disease, chronic obstructive pulmonary disease (COPD) and suicide. Diabetes was the fifth leading cause, with the ranking reduced from second position in 2004–2008 to fifth position in 2014–2018. Alarmingly, apart from lung cancer (the sixth most fatal illness), liver cancer, mouth and pharyngeal cancer, and cancers with unknown primary site were on the rise. Ranks of stroke ranked tenth in 2014–2018, which dropped from ninth in 2009–2013 and seventh in 2004–2008.

The top 30 causes of YLL in the NT non-Aboriginal population between 2004 and 2018 are shown in Figure 23. Coronary heart disease and lung cancer remained the top two life-shortening diseases across the three study periods, followed by suicide and COPD. Road traffic injury and bowel cancer were the fifth and sixth most life-shortening illness in 2014–2018.

Figure 22. Leading 30 causes of years of life lost age-standardised rate with 95% confidence intervals and rank changes, Aboriginal population, Northern Territory, 2004–2018

	2004-2008				2009-2013				2014-2018			
BOD Description	BOD	AS YLL Rate	95%CI-LL	95%CI-UL	BOD	AS YLL Rate	95%CI-LL	95%CI-UL	BOD	AS YLL Rate	95%CI-LL	95%CI-UL
Coronary heart disease	E01	54.85	53.51	56.21	E01	47.91	46.81	49.03	E01	45.90	44.91	46.91
Diabetes	D01	31.38	30.27	32.53	K01	28.19	27.19	29.23	K01	31.77	30.86	32.70
Chronic kidney disease	K01	24.49	23.47	25.53	D01	25.32	24.44	26.22	I02	20.73	19.95	21.53
Chronic liver disease	J08	22.76	22.08	23.46	C09	19.87	19.10	20.66	S09	15.38	15.01	15.76
Chronic obstructive pulmc	I02	22.63	21.50	23.80	S09	19.11	18.67	19.55	D01	15.20	14.59	15.84
Suicide and self-inflicted i	S09	20.00	19.55	20.46	I02	17.42	16.57	18.30	C09	13.02	12.47	13.60
Stroke	E02	17.77	16.80	18.78	J08	16.06	15.52	16.60	J08	12.19	11.76	12.64
Lung cancer	C09	16.55	15.83	17.31	T02	11.88	11.50	12.26	G02	10.40	9.68	11.16
Other cardiovascular disea	E11	14.86	13.94	15.82	E02	10.51	9.91	11.13	T02	9.05	8.72	9.38
Road traffic injuries - mot	T02	13.88	13.47	14.32	E11	9.96	9.39	10.55	E02	8.55	8.05	9.08
Dementia	G02	10.64	9.52	11.82	I07	8.53	8.10	8.97	E11	7.18	6.76	7.61
Lower respiratory infectio	A16	9.64	9.09	10.21	S10	8.41	8.10	8.73	C06	6.90	6.46	7.35
Other infections	A33	9.15	8.46	9.89	C06	7.92	7.42	8.44	E03	6.49	6.19	6.80
Homicide and violence	S10	8.62	8.29	8.97	G02	7.80	7.05	8.59	C01	6.40	6.03	6.79
Road traffic injuries – othe	T03	8.25	7.90	8.62	E03	6.98	6.65	7.33	C28	6.34	5.92	6.78
Rheumatic heart disease	E03	8.12	7.69	8.58	C28	6.42	5.98	6.88	R06	5.59	5.28	5.91
Unknown primary	C28	8.05	7.55	8.58	R06	5.96	5.55	6.39	S10	5.06	4.83	5.29
Other chronic respiratory	I07	7.13	6.64	7.64	C01	5.71	5.34	6.11	I07	4.87	4.56	5.20
Other blood and metaboli	R06	6.35	5.82	6.92	T11	5.40	5.13	5.68	T03	4.86	4.63	5.11
Other unintentional injuri	T11	5.27	4.98	5.59	B01	5.15	4.97	5.35	A33	4.77	4.44	5.11
Mouth and pharyngeal car	C01	5.21	4.84	5.61	T03	5.05	4.80	5.31	A16	4.66	4.32	5.03
Liver cancer	C06	4.64	4.20	5.12	A33	5.00	4.65	5.36	B01	4.39	4.22	4.58
Bowel cancer	C05	4.48	4.13	4.85	A16	4.96	4.57	5.38	C13	3.96	3.61	4.32
Pre-term birth and low bir	B01	4.02	3.86	4.21	C13	4.02	3.69	4.37	C08	3.47	3.16	3.79
Cardiomyopathy	E08	3.96	3.67	4.27	C08	3.51	3.14	3.92	T11	3.43	3.21	3.66
Poisoning	T05	3.90	3.68	4.13	E08	3.37	3.13	3.61	C05	3.20	2.93	3.48
Breast cancer	C13	2.78	2.49	3.10	C05	2.96	2.65	3.28	B02	3.14	2.99	3.29
Falls	T06	2.16	1.93	2.42	T05	2.95	2.73	3.18	E08	2.98	2.76	3.21
Birth trauma and asphyxia	B02	1.93	1.82	2.06	T06	1.90	1.70	2.11	T05	2.93	2.74	3.13
Pancreatic cancer	C08	1.83	1.49	2.22	B02	1.82	1.71	1.94	T06	2.56	2.31	2.84

rank no change	A	Infectious	D	Endocrine	G	Neurologic	J	Gastrointes	M	Skin	R	Blood
ranked higher	B	Infant	E	Cardiovascu	H	Hearing	K	Kidney	N	Musculoske	S	Intentional
ranked lower	C	Cancer	F	Mental	I	Respiratory	L	Reproducti	O	Oral	T	Unintentior

Figure 23. Leading 30 causes of years of life lost age-standardised rate with 95% confidence intervals and rank changes, non-Aboriginal population, Northern Territory, 2004–2018

	2004-2008				2009-2013				2014-2018			
BOD Description	BOD	AS YLL Rate	95%CI-LL	95%CI-UL	BOD	AS YLL Rate	95%CI-LL	95%CI-UL	BOD	AS YLL Rate	95%CI-LL	95%CI-UL
Coronary heart disease	E01	14.77	14.35	15.20	E01	11.67	11.34	12.01	E01	8.74	8.49	9.00
Lung cancer	C09	8.72	8.41	9.03	C09	7.29	7.04	7.54	C09	7.19	6.97	7.40
Suicide and self-inflicted i	S09	6.90	6.70	7.10	I02	5.84	5.60	6.10	S09	7.00	6.82	7.18
Road traffic injuries - mot	T02	6.40	6.22	6.59	S09	5.39	5.23	5.55	I02	5.42	5.21	5.63
Chronic obstructive pulmc	I02	6.21	5.93	6.49	G02	4.22	3.97	4.47	T02	3.96	3.83	4.09
Stroke	E02	5.23	4.96	5.51	T02	4.09	3.95	4.23	C05	3.78	3.63	3.94
Unknown primary	C28	3.87	3.66	4.09	C05	3.53	3.36	3.71	G02	3.06	2.88	3.26
Bowel cancer	C05	3.80	3.60	4.00	E02	3.03	2.85	3.21	E02	3.05	2.90	3.22
Other cardiovascular disea	E11	3.59	3.39	3.80	C28	3.00	2.83	3.17	E11	2.39	2.26	2.53
Diabetes	D01	3.28	3.08	3.49	T11	2.81	2.69	2.93	J08	2.24	2.14	2.35
Chronic liver disease	J08	3.23	3.08	3.38	E11	2.40	2.24	2.56	D01	2.24	2.11	2.38
Dementia	G02	2.84	2.62	3.08	J08	2.36	2.24	2.48	C28	2.14	2.02	2.26
Other unintentional injuri	T11	2.76	2.63	2.89	D01	2.29	2.14	2.46	C17	1.78	1.65	1.91
Prostate cancer	C17	1.96	1.79	2.13	C13	1.79	1.68	1.91	C13	1.77	1.68	1.87
Other infections	A33	1.87	1.72	2.03	C06	1.61	1.50	1.72	T06	1.74	1.62	1.85
Chronic kidney disease	K01	1.85	1.68	2.02	C17	1.53	1.39	1.67	C08	1.70	1.59	1.82
Breast cancer	C13	1.76	1.64	1.89	R06	1.42	1.32	1.54	T05	1.66	1.57	1.74
Poisoning	T05	1.72	1.64	1.82	T06	1.33	1.22	1.45	C06	1.47	1.37	1.56
Other blood and metaboli	R06	1.71	1.59	1.84	C08	1.26	1.16	1.36	C31	1.39	1.30	1.49
Falls	T06	1.70	1.56	1.85	C01	1.20	1.11	1.30	C25	1.35	1.25	1.45
Pancreatic cancer	C08	1.67	1.53	1.82	C21	1.12	1.05	1.21	C01	1.33	1.24	1.42
Mouth and pharyngeal car	C01	1.62	1.50	1.75	C25	1.12	1.03	1.22	K01	1.30	1.19	1.41
Road traffic injuries - mot	T01	1.21	1.13	1.29	T05	1.09	1.02	1.17	T11	1.28	1.21	1.36
Brain and central nervous	C21	1.07	0.98	1.16	K01	1.06	0.95	1.18	B02	1.15	1.08	1.22
Leukaemia	C25	0.97	0.86	1.07	C11	1.03	0.96	1.11	R06	1.13	1.04	1.23
Melanoma of the skin	C11	0.73	0.65	0.80	C31	0.99	0.90	1.09	C21	1.12	1.04	1.20
Liver cancer	C06	0.69	0.61	0.78	T01	0.98	0.91	1.05	A33	1.03	0.95	1.12
Other malignant neoplasn	C31	0.63	0.56	0.71	A33	0.92	0.82	1.03	T01	1.03	0.96	1.10
Cardiomyopathy	E08	0.61	0.53	0.70	E08	0.87	0.80	0.94	C11	0.97	0.90	1.05
Birth trauma and asphyxia	B02	0.42	0.38	0.47	B02	0.70	0.65	0.76	E08	0.93	0.86	1.01

rank no change	A	Infectious	D	Endocrine	G	Neurologic	J	Gastrointes	M	Skin	R	Blood
ranked higher	B	Infant	E	Cardiovascu	H	Hearing	K	Kidney	N	Musculoske	S	Intentional
ranked lower	C	Cancer	F	Mental	I	Respiratory	L	Reproducti	O	Oral	T	Unintentior

The top ten causes of YLL with the greatest levels of variation (relative linear changes) over the period from 1999 to 2018 are illustrated in Figure 24. The largest improvements in YLL were road traffic injury, homicide, alcohol use disorder and lower respiratory infections. The largest increases in YLL were chronic kidney disease, lung cancer, COPD and bowel cancer, followed by liver cancer and dementia.

The overall age-standardised YLL rate followed in a downward trajectory for all health regions, notwithstanding a clear regional difference (Figure 25). Greater Darwin experienced the lowest YLL rate, followed by Central Australia, Big Rivers and East Arnhem. Top End and Barkly experienced the poorest health outcomes measured in the YLL rate.

Figure 24. Top ten causes of death with the greatest levels of relative decrease (-ve) and increase (+ve)

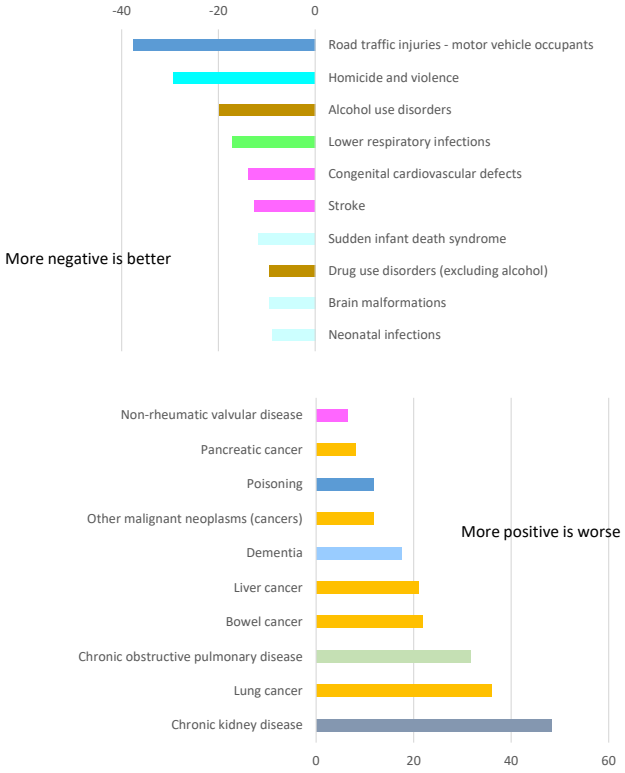


Figure 25. Age-standardised years of life lost rates by health region, Northern Territory, 1999–2018

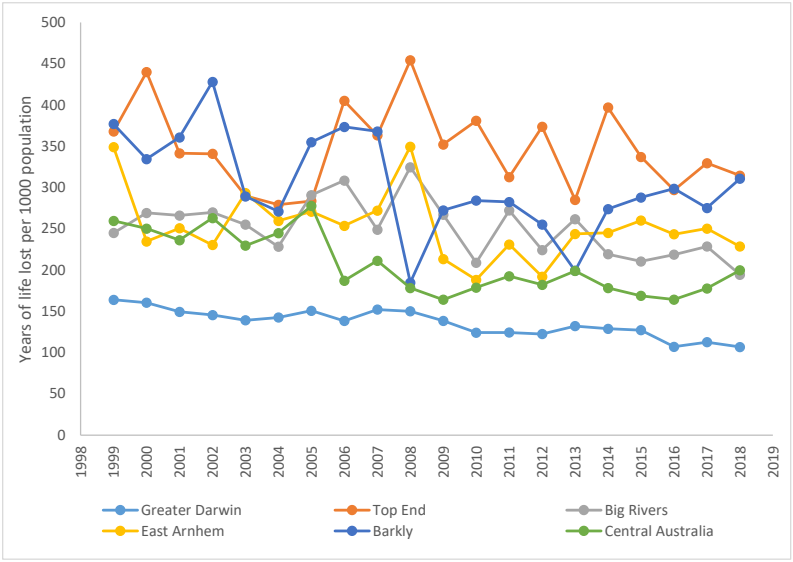


Table 13. Life expectancy by sex, Northern Territory 2014–2018 vs Australia 2016–2018

Age group	Northern Territory		Australia		Difference	
(years)	Female	Male	Female	Male	Female	Male
0-	80.16	76.36	84.87	80.73	4.71	4.37
5-	75.86	71.98	80.18	76.06	4.31	4.09
10-	70.89	67.03	75.20	71.09	4.31	4.06
15-	65.96	62.15	70.23	66.13	4.27	3.98
20-	61.20	57.44	65.30	61.26	4.10	3.81
25-	56.37	52.88	60.37	56.43	4.00	3.56
30-	51.57	48.23	55.45	51.62	3.87	3.38
35-	46.80	43.58	50.55	46.83	3.76	3.25
40-	42.06	39.06	45.70	42.08	3.64	3.02
45-	37.52	34.61	40.90	37.40	3.38	2.78
50-	33.11	30.29	36.17	32.80	3.06	2.51
55-	28.83	26.15	31.53	28.32	2.70	2.17
60-	24.62	22.17	26.99	24.00	2.37	1.83
65-	20.66	18.41	22.56	19.87	1.90	1.45
70-	16.95	14.77	18.29	15.93	1.34	1.16
75-	13.38	11.66	14.27	12.30	0.89	0.64
80-	10.43	9.10	10.60	9.07	0.17	-0.03
85+	8.42	7.52	7.45	6.39	-0.97	-1.13

Table 14. Life expectancy at birth between Aboriginal and non-Aboriginal population by sex, Northern Territory, 1999–2018

	Aboriginal		Non-Aboriginal		LE gap	
Year	Female	Male	Female	Male	Female	Male
1999	64.75	56.61	84.33	77.38	19.58	20.76
2000	63.91	57.78	87.88	76.42	23.97	18.63
2001	65.66	57.37	83.38	79.82	17.71	22.46
2002	64.57	56.96	84.24	77.79	19.67	20.83
2003	68.70	58.21	82.43	77.63	13.73	19.42
2004	67.29	58.85	85.59	78.24	18.30	19.39
2005	65.36	57.94	83.48	76.88	18.13	18.95
2006	68.32	58.94	83.36	78.67	15.04	19.73
2007	66.38	61.38	85.05	76.58	18.67	15.20
2008	65.67	61.03	82.95	76.52	17.28	15.50
2009	68.53	62.92	85.14	77.81	16.60	14.89
2010	69.57	63.33	84.71	78.01	15.13	14.68
2011	68.21	62.74	83.95	78.86	15.74	16.13
2012	68.83	61.95	85.78	80.83	16.95	18.87
2013	66.70	64.62	83.38	79.12	16.68	14.49
2014	66.52	64.09	85.56	79.31	19.03	15.23
2015	68.30	65.96	85.71	78.72	17.41	12.76
2016	69.67	68.35	85.64	80.27	15.97	11.92
2017	69.93	65.94	85.45	80.31	15.52	14.37
2018	69.68	65.58	85.10	80.96	15.42	15.38
Improvement	4.92	8.97	0.77	3.58	4.15*	5.38*
95% CI	(3.20-6.65)	(7.91-10.02)	(-0.35-1.89)	(2.78-4.39)	(2.10-6.21)	(4.05-6.71)
% since 1999	7.6%	15.8%	0.9%	4.6%	-21.2%	-25.9%

Notes: * Life expectancy gap reduction; CI = Confidence interval; LE = Life expectancy at birth.

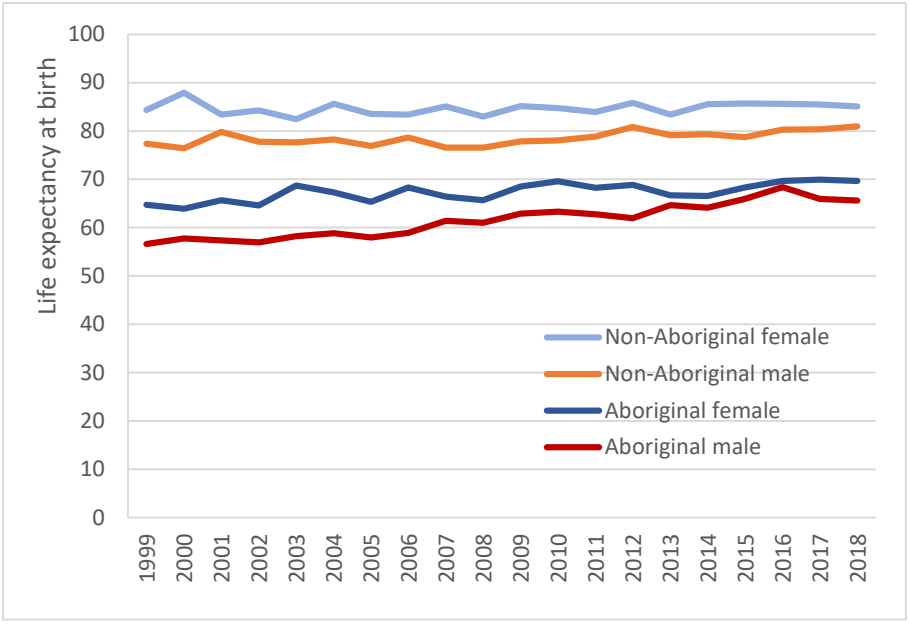
Trends in life expectancy at birth

Over the period 2014–2018, LE was 80.16 and 76.36 years in NT females and males respectively, 4.71 and 4.37 years shorter than the 2016–2018 Australian average (Table 13). In the NT from 1999 to 2018, Aboriginal LE in females improved by 4.92 years from 64.75 to 69.68 years and in males improved by 8.97 years from 56.61 to 65.58 years (Table 14). These improvements were greater for the Aboriginal than non-Aboriginal population.

Table 15. Life expectancy at birth and progression by sex and Aboriginal status, Northern Territory vs Australia, 1999–2018

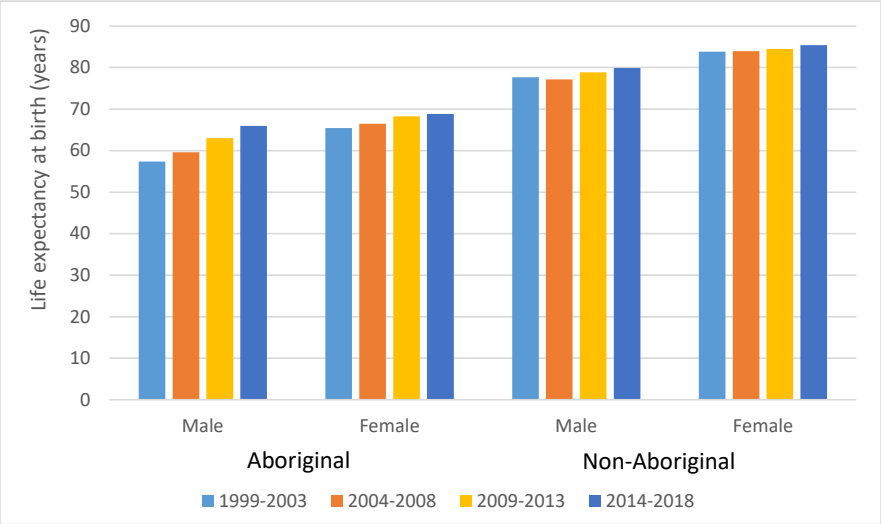
	Life expectancy at birth				Progress			Overall
	1999-2003	2004-2008	2009-2013	2014-2018	1999-2008	2004-2013	2009-2018	increase
Aboriginal								
Male	57.39	59.62	63.02	65.93	2.23	3.40	2.91	14.9%
Female	65.42	66.50	68.25	68.81	1.08	1.75	0.56	5.2%
Non-Aboriginal								
Male	77.64	77.17	78.84	79.91	-0.47	1.67	1.07	2.9%
Female	83.80	83.92	84.50	85.49	0.12	0.58	0.99	2.0%
Gap								
Male	20.25	17.55	15.82	13.98	-0.13	-0.22	-0.31	-30.9%
Female	18.38	17.42	16.25	16.68	-0.05	-0.12	-0.09	-9.3%
Northern Territory								
Male	72.16	72.47	74.87	76.36	0.31	2.41	1.48	5.8%
Female	77.82	78.47	79.59	80.16	0.64	1.12	0.57	3.0%
Australia								
Male	77.61	79.07	80.29	81.09	1.47	1.22	0.79	4.5%
Female	82.93	83.85	84.70	85.19	0.92	0.85	0.49	2.7%

Figure 26. Life expectancy at birth comparing Aboriginal with non-Aboriginal population by sex, Northern Territory, 1999–2018



The gap in LE narrowed by 4.15 years for females, from 19.58 years in 1999 to 15.42 in 2018. The gap also narrowed for males by 5.38 years, from 20.76 years in 1999 to 15.38 in 2018 (Table 14). This represents a 21.2% and 25.9% reduction of Aboriginal LE gap for females and males based on the 1999 levels (Figure 26). These changes were highly statistically significant (P < 0.001). Figure 27 shows that LE improvement was most pronounced for Aboriginal males (15%), followed by Aboriginal females (5%), non-Aboriginal males (3%) and non-Aboriginal females (2%) over the past 20 years from 1999 to 2018.

Figure 27. Progress in life expectancy at birth comparing Aboriginal with non-Aboriginal population by sex, Northern Territory, 1999–2018



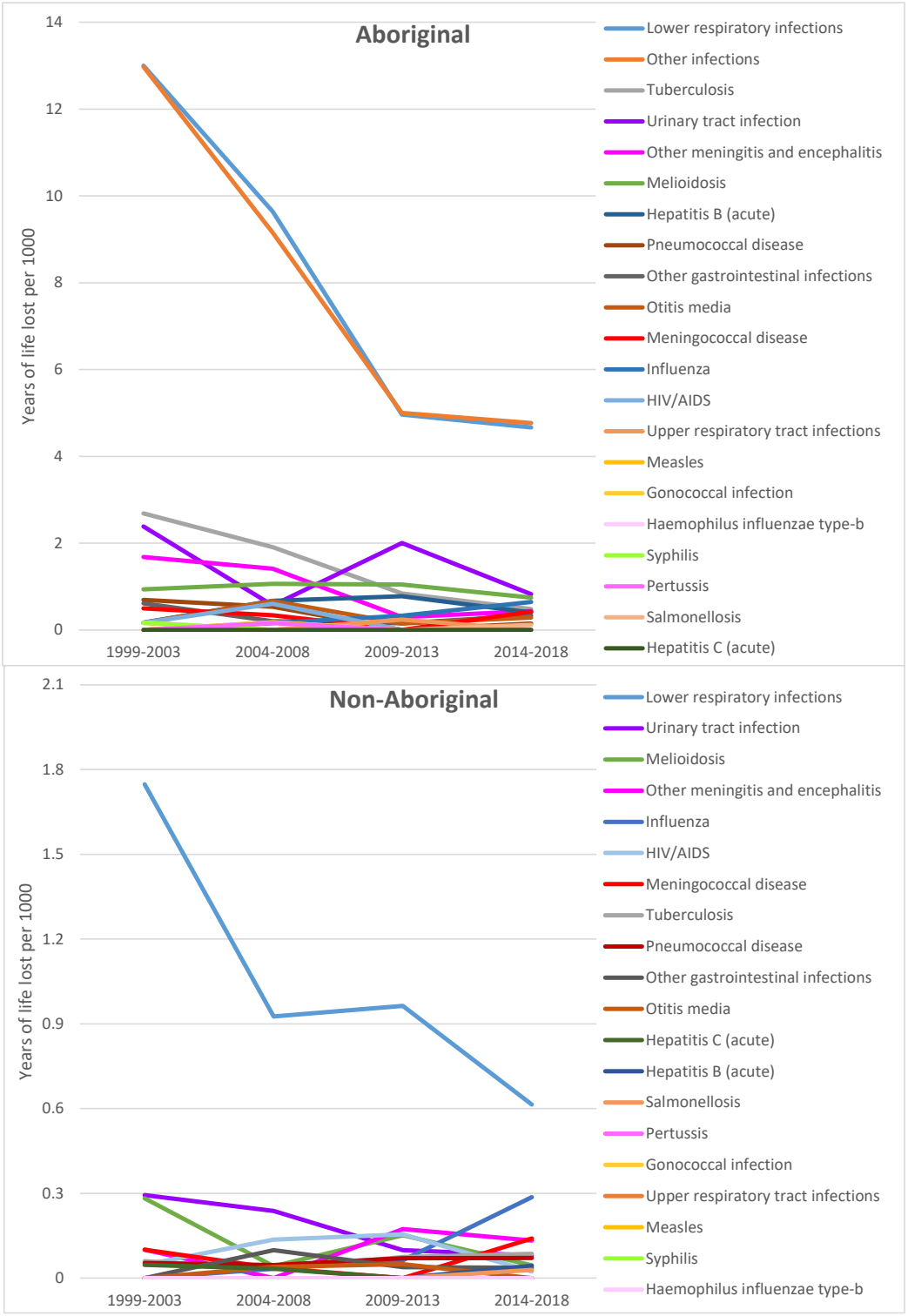
Trends in cause-specific mortality and years of life lost

To identify and understand effective interventions in reducing premature deaths and the Aboriginal LE gap, both age-standardised mortality and YLL rates are analysed by broad disease groups. Details are further provided at the disease and injury level for the Aboriginal and non-Aboriginal population separately.

Infectious diseases

Lower respiratory infection was the leading infectious disease cause of YLL in both the Aboriginal and non-Aboriginal population in the NT in 1999–2018, followed by tuberculosis and urinary tract infection in the Aboriginal population and urinary tract infection and melioidosis in the non-Aboriginal population (Figure 28). Note that the scale of YLL rate was different in the Aboriginal population (14) from non-Aboriginal (2.1) population.

Figure 28. Age-standardised years of life lost rate by infectious diseases and Aboriginal status, Northern Territory, 1999–2018

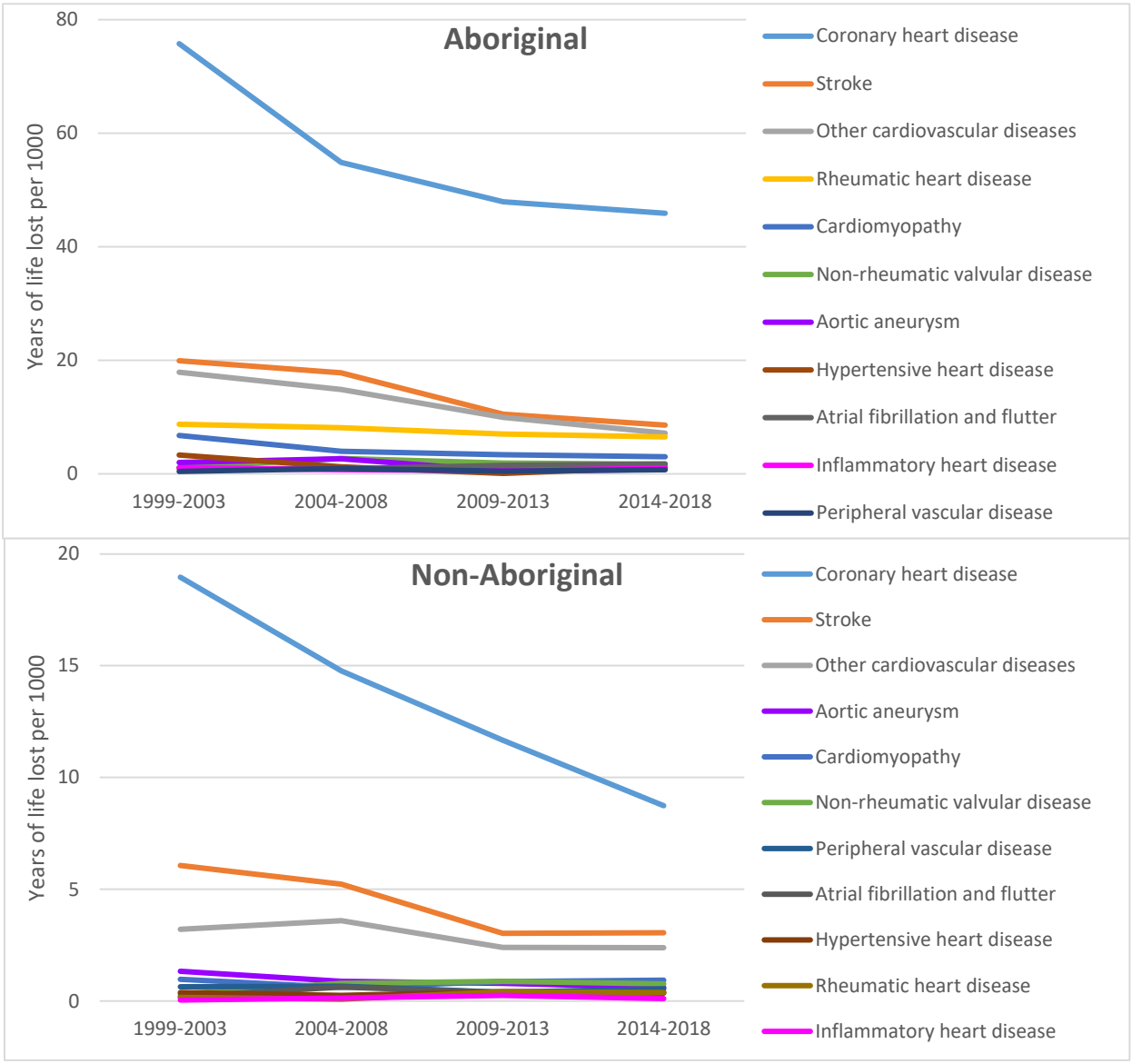


Note: The scales of Y axis are different between Aboriginal and non-Aboriginal populations.

Cardiovascular diseases

The top three cardiovascular cause of YLL were identical for the Aboriginal and non-Aboriginal population: coronary heart disease, stroke and the other cardiovascular disease group. The fourth most life-shortening cardiovascular disease was rheumatic heart disease in the Aboriginal population and aortic aneurysm in the non-Aboriginal population (Figure 29).

Figure 29. Age-standardised years of life lost rate by cardiovascular diseases and Aboriginal status, Northern Territory, 1999–2018

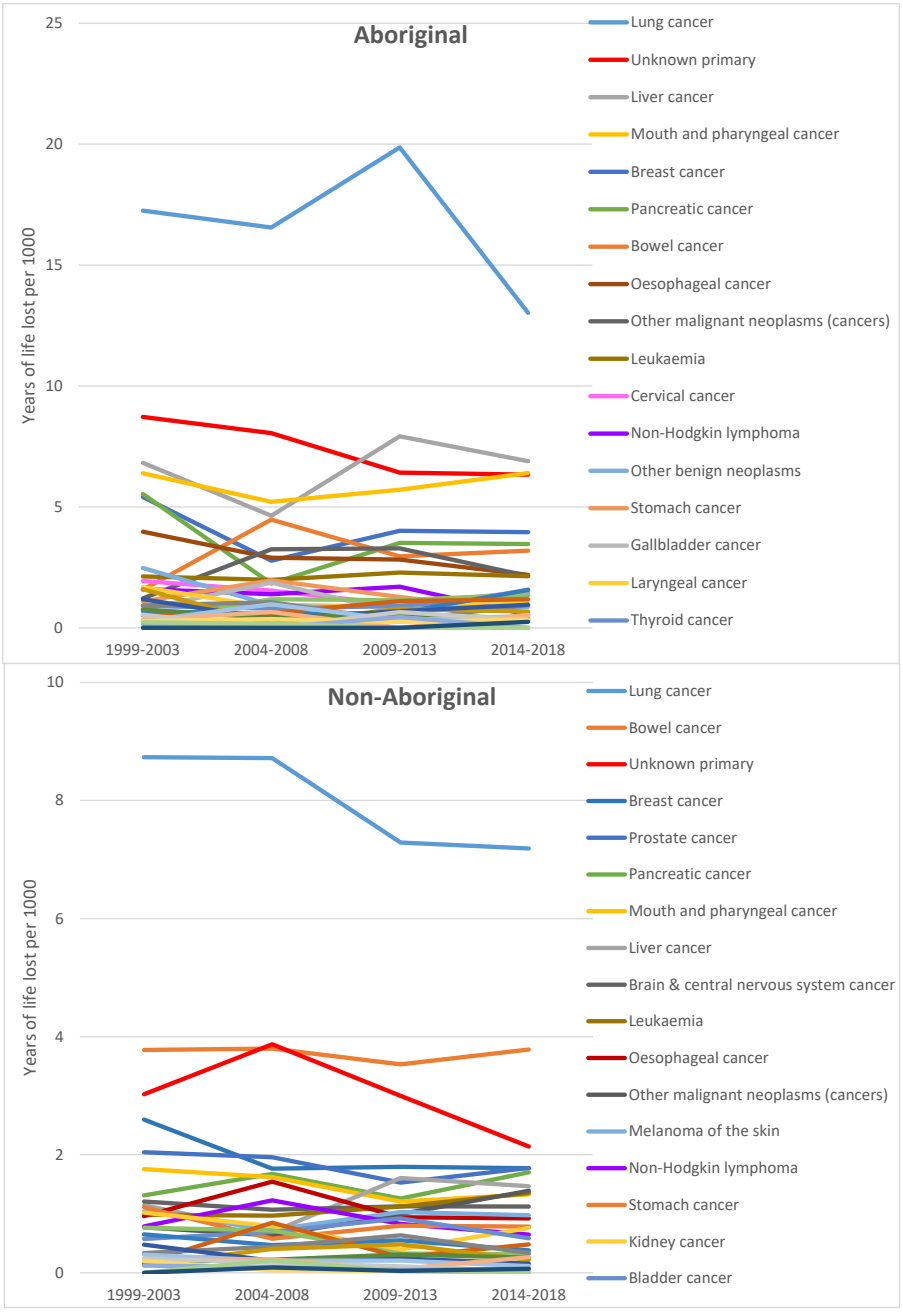


Note: The scales of Y axis are different between Aboriginal and non-Aboriginal populations.

Cancers

The top four cancers contributing to YLL in the NT Aboriginal population were lung cancer, cancer of unknown primary site, liver cancer, and mouth and pharyngeal cancer (Figure 30). The top four leading YLL cancers in the NT non-Aboriginal population were lung, bowel, unknown primary site and breast cancer.

Figure 30. Age-standardised years of life lost rate by cancers and Aboriginal status, Northern Territory, 1999–2018

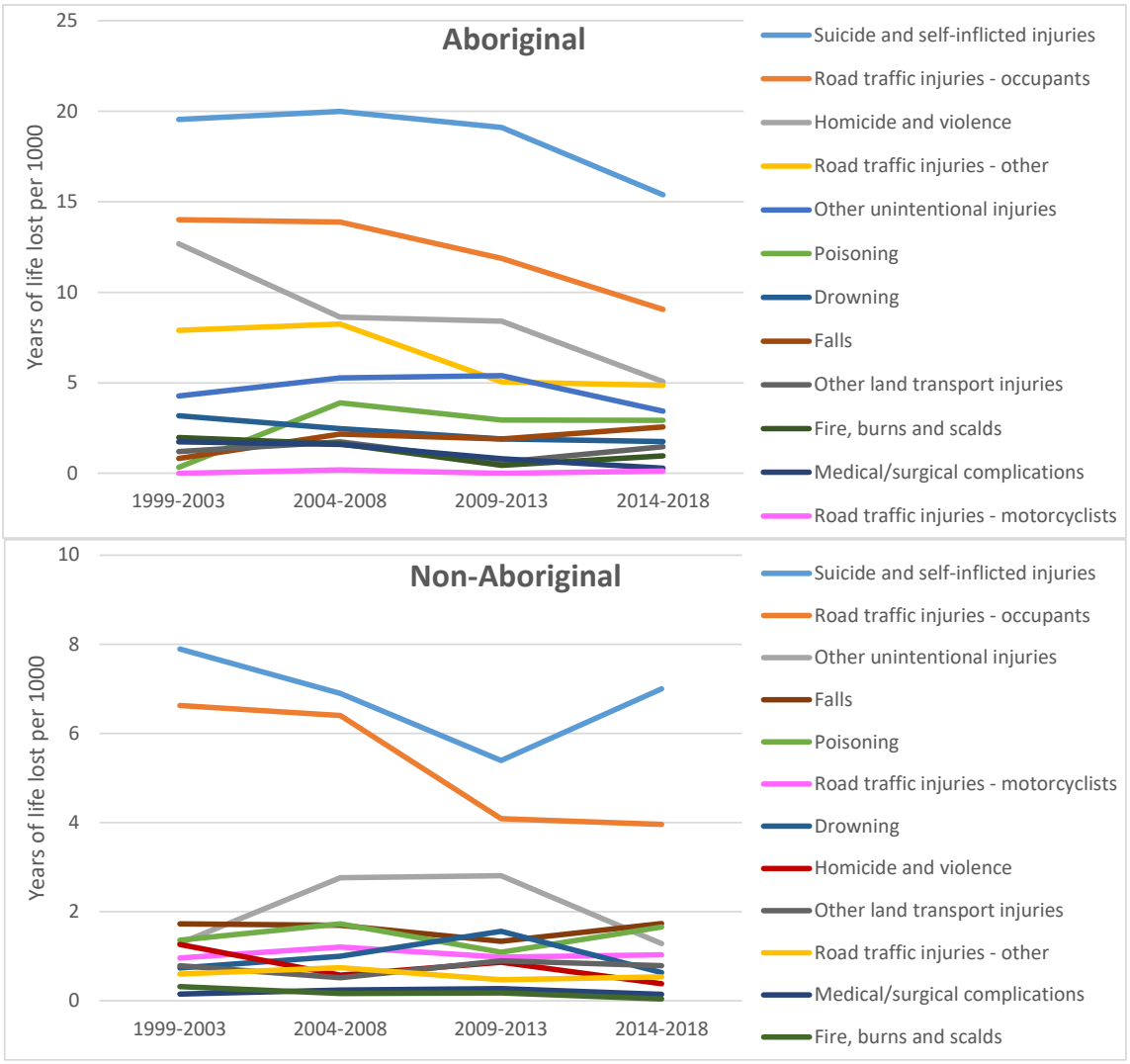


Note: The scales of Y axis are different between Aboriginal and non-Aboriginal populations.

Injury

The predominant life-shortening injuries were suicide/self-inflicted injuries, and road traffic injuries for occupants, regardless of Aboriginality (Figure 31). The third most life-shortening injury for the Aboriginal population was homicide and violence, and for the non-Aboriginal population it was falls.

Figure 31. Age-standardised years of life lost rate by type of injury and Aboriginal status, Northern Territory, 1999–2018

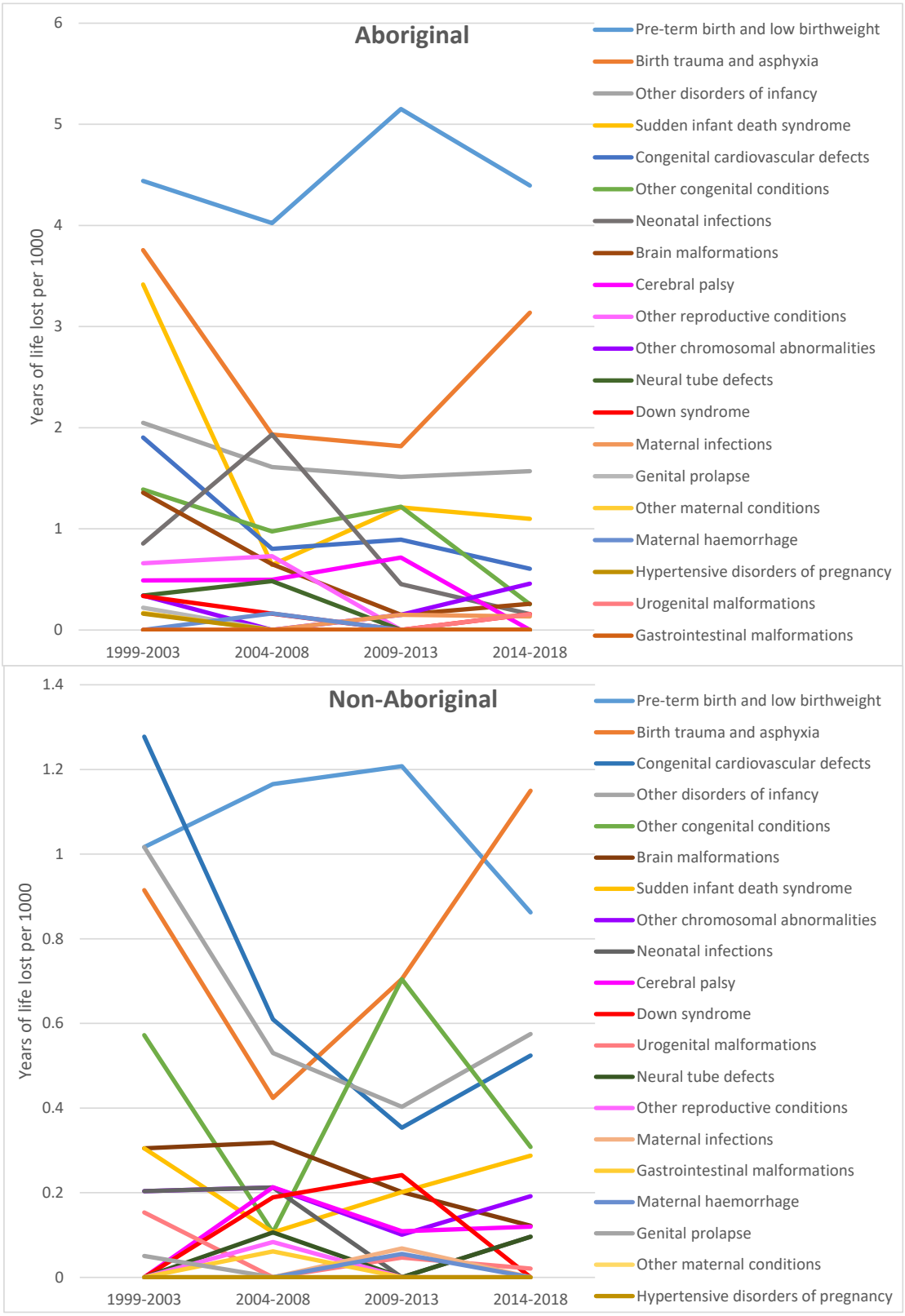


Note: The scales of Y axis are different between Aboriginal and non-Aboriginal populations.

Infant and maternal disorders

Pre-term birth and low birthweight, birth trauma and asphyxia were the predominant causes of YLL in infant and maternal conditions (Figure 32), followed by other infant disorders in the Aboriginal population and congenital cardiovascular defects in the non-Aboriginal population.

Figure 32. Age-standardised years of life lost rate by infant and maternal disorders and Aboriginal status, Northern Territory, 1999–2018

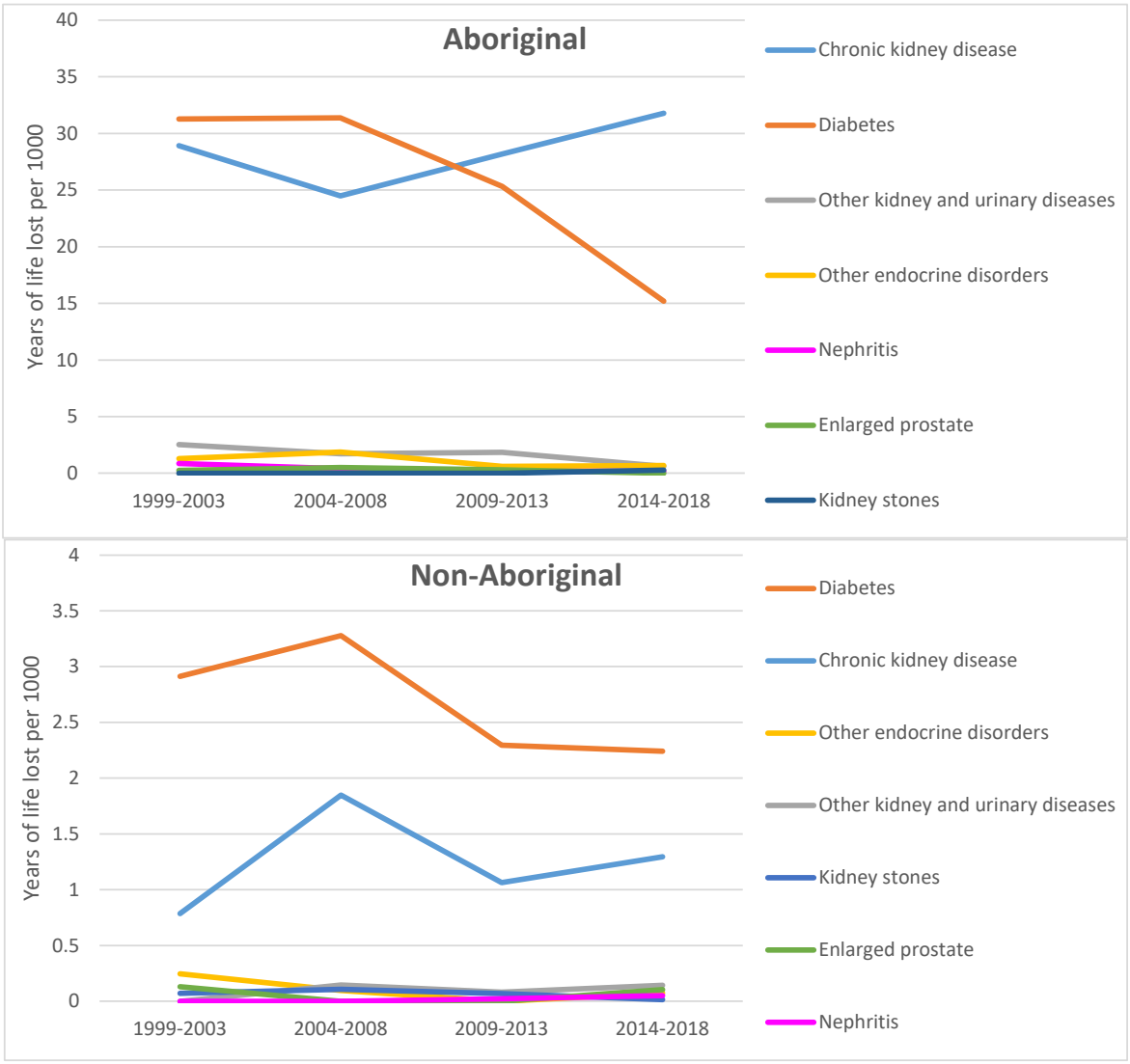


Note: The scales of Y axis are different between Aboriginal and non-Aboriginal populations.

Endocrine and kidney diseases

Age-standardised YLL rate of diabetes in the NT Aboriginal population was 15–30 times higher than in the non-Aboriginal population (Figure 33). The difference in chronic kidney disease YLL rates between the Aboriginal and non-Aboriginal population was about 10 times. The diabetes YLL rate appeared to have decreased and chronic kidney disease increased in both the Aboriginal and non-Aboriginal population between 1999 and 2018.

Figure 33. Age-standardised years of life lost rate for endocrine and kidney diseases by Aboriginal status, Northern Territory, 1999–2018

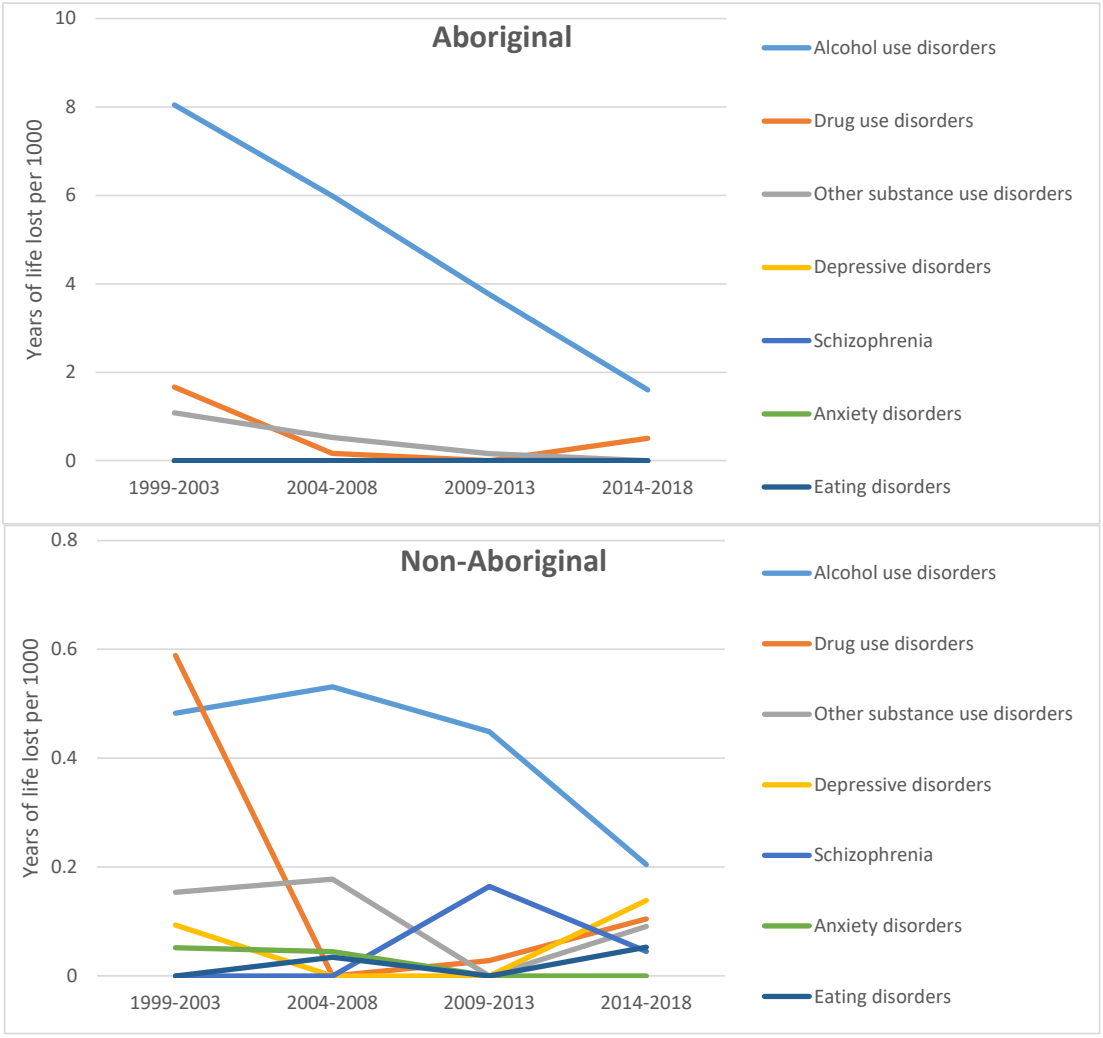


Note: The scales of Y axis are different between Aboriginal and non-Aboriginal populations.

Mental disorders

Alcohol, drug and depressive disorders were the top three life-shortening mental conditions in the NT (Figure 34). The age-standardised YLL rate of alcohol use disorder in the NT Aboriginal population decreased linearly between 1999 and 2018, but was still about 10 times the non-Aboriginal counterpart in 2014–2018.

Figure 34. Age-standardised years of life lost rate by mental disorders and Aboriginal status, Northern Territory, 1999–2018

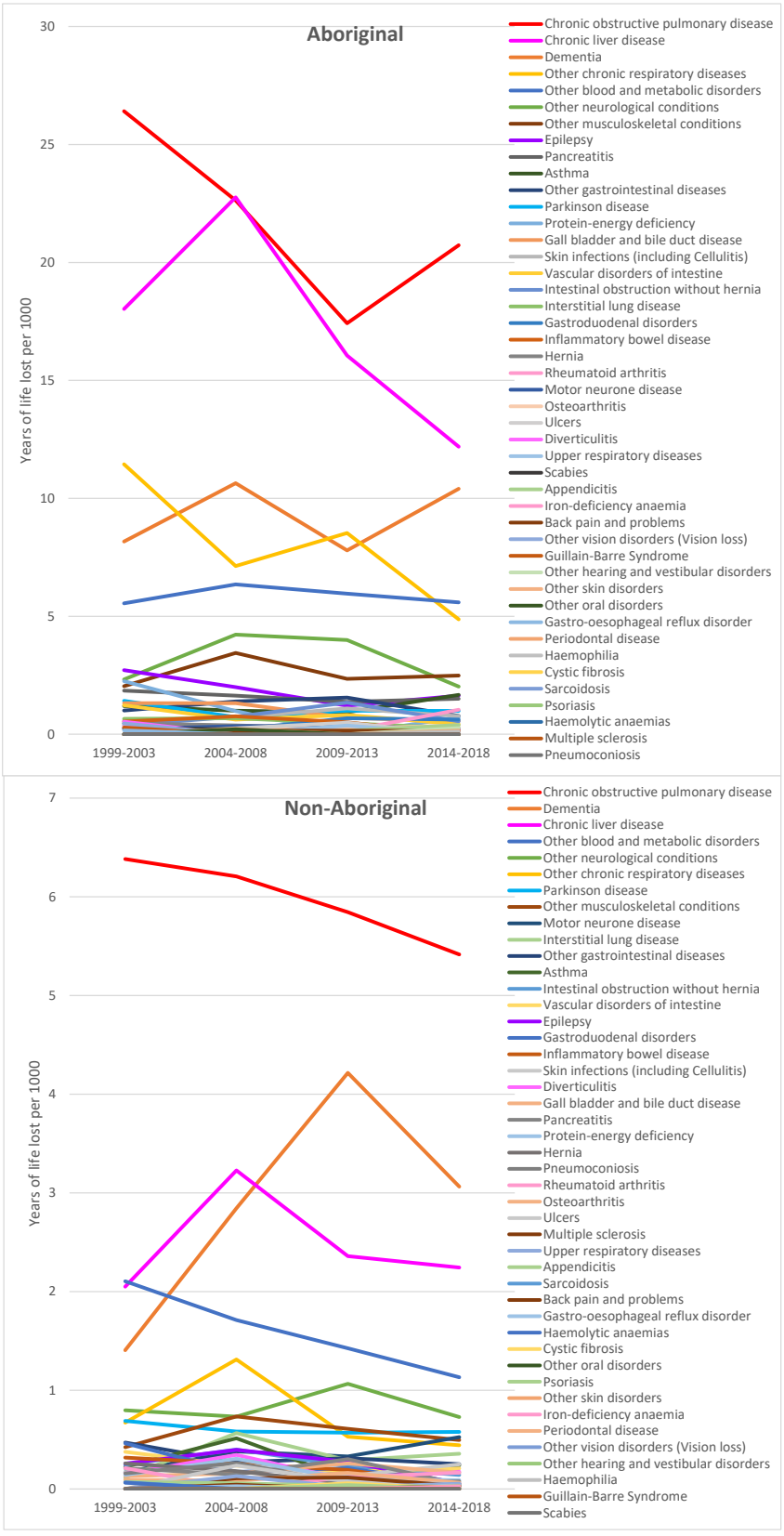


Note: The scales of Y axis are different between Aboriginal and non-Aboriginal populations.

Other chronic diseases

COPD, chronic liver disease and dementia appear to be the most life-shortening other chronic conditions in both the Aboriginal and non-Aboriginal population (Figure 35). The Aboriginal YLL rates were about 4–5 times higher than the non-Aboriginal rates.

Figure 35. Age-standardised years of life lost rate for other chronic diseases by Aboriginal status, Northern Territory, 1999–2018



Note: The scales of Y axis are different between Aboriginal and non-Aboriginal populations.

Potentially avoidable mortality

Using the AIHW definition,[17] potentially avoidable causes of YLL can be identified. It is shown in Figure 36 that in the Aboriginal population, the majority of YLL was avoidable YLL. In the non-Aboriginal population, the majority of YLL became unavoidable. The avoidable YLL rate decreased 55% faster than the unavoidable YLL rate in the Aboriginal population. The avoidable YLL rate in the Aboriginal population decreased 4.5 times faster than the avoidable rate in the non-Aboriginal population.

Figure 36. Years of life lost per 1,000 population by avoidability category and Aboriginal status, Northern Territory, 1999–2018

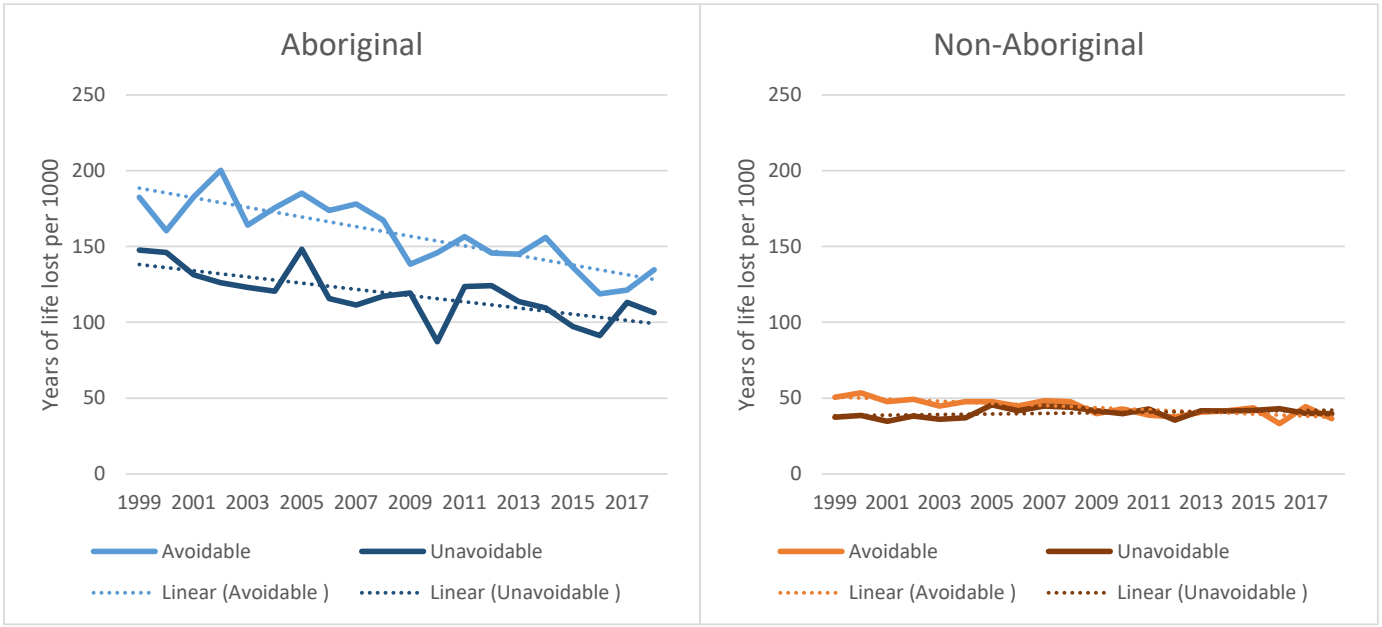
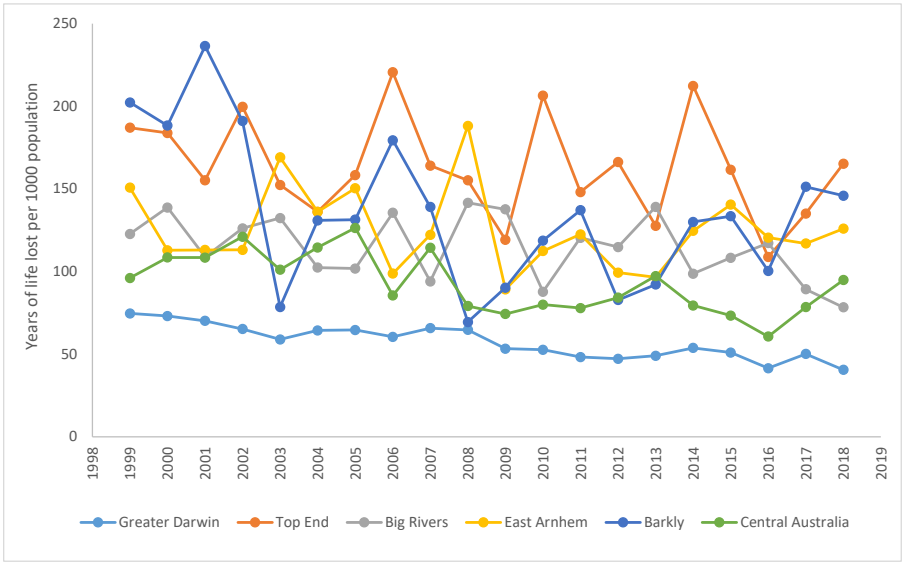


Figure 37. Age-standardised avoidable years of life lost per 1,000 population by health regions, Northern Territory, 1999–2018



Avoidable YLL rates gradually declined during 1999–2018 for all health regions (Figure 37). As of 2018, the avoidable YLL rates in Top End were the highest in the NT, followed by Barkly, East Arnhem, Central Australia and Big Rivers. The health region with the lowest avoidable YLL rate in the NT was Greater Darwin. Figure 38 provides more details on YLL rate with trend indicator by health regions.

Figure 38. Age-standardised years of life lost per 1,000 population with five-year trend indicator, by cause of disease and health region, Northern Territory, 1999–2018

BOD	BOD Descript	GD	TE	BR	EA	B	CA	NT Total
A	**Infectious disease**							
A01	HIV/AIDS	0.15	0.00	0.00	0.00	0.00	0.11	0.11
A02	Tuberculosis	0.12	0.96	1.12	0.47	0.26	0.49	0.35
A04	Hepatitis B (acute)	0.06	0.16	0.22	0.29	0.00	0.22	0.12
A05	Hepatitis C (acute)	0.03	0.00	0.00	0.00	0.00	0.00	0.02
A06	Syphilis	0.00	0.00	0.00	0.00	0.00	0.06	0.01
A07	Gonococcal infection	0.00	0.00	0.15	0.00	0.00	0.00	0.01
A11	Salmonellosis	0.01	0.21	0.00	0.00	0.00	0.00	0.01
A13	Other gastrointestinal infections	0.06	0.46	0.13	0.18	0.00	0.17	0.11
A14	Upper respiratory tract infections	0.00	0.00	0.26	0.00	0.00	0.00	0.02
A15	Otitis media	0.06	0.54	0.31	0.00	0.00	0.10	0.12
A16	Lower respiratory infections	1.36	4.46	3.69	3.14	2.61	4.69	2.48
A17	Influenza	0.14	0.34	0.22	0.00	0.24	0.04	0.14
A19	Pertussis	0.00	0.00	0.15	0.00	0.00	0.00	0.02
A21	Measles	0.00	0.00	0.15	0.00	0.00	0.00	0.01
A24	Haemophilus influenzae type-b	0.00	0.00	0.00	0.18	0.00	0.00	0.02
A25	Pneumococcal disease	0.07	0.00	0.08	0.32	0.47	0.26	0.14
A26	Meningococcal disease	0.09	0.19	0.15	0.18	0.00	0.25	0.15
A27	Other meningitis and encephalitis	0.10	0.32	0.45	0.95	2.00	0.59	0.35
A33	Other infections	1.90	4.18	3.54	3.03	4.81	4.39	2.78
A34	Melioidosis	0.26	0.79	0.85	0.58	0.45	0.00	0.32
A35	Urinary tract infection	0.27	0.94	0.46	0.95	2.06	0.45	0.41
B	**Infant condition**							
B01	Pre-term birth and low birthweight cc	1.60	5.15	3.30	2.98	2.04	2.84	2.39
B02	Birth trauma and asphyxia	1.05	2.73	2.29	1.67	2.03	1.79	1.51
B03	Cerebral palsy	0.24	0.00	0.33	0.56	0.00	0.08	0.23
B04	Neonatal infections	0.21	1.30	0.46	0.74	0.51	0.34	0.41
B05	Sudden infant death syndrome	0.30	2.10	2.10	0.75	0.51	0.68	0.75
B06	Other disorders of infancy	0.80	1.87	0.91	2.09	0.49	1.05	1.04
B07	Neural tube defects	0.09	0.19	0.15	0.00	0.53	0.09	0.11
B08	Brain malformations	0.33	0.38	0.43	0.52	0.00	0.35	0.35
B09	Congenital cardiovascular defects	0.59	1.07	1.01	1.89	0.95	0.69	0.81
B11	Gastrointestinal malformations	0.02	0.00	0.00	0.00	0.00	0.00	0.01
B12	Urogenital malformations	0.07	0.00	0.15	0.00	0.00	0.00	0.06
B13	Down syndrome	0.13	0.00	0.30	0.18	0.00	0.09	0.13
B14	Other chromosomal abnormalities	0.24	0.00	0.00	0.37	0.49	0.18	0.20
B15	Other congenital conditions	0.49	0.39	1.07	0.38	0.90	0.85	0.61
C	**Cancer**							
C01	Mouth and pharyngeal cancer	1.81	7.61	3.89	2.62	4.46	1.60	2.32
C02	Laryngeal cancer	0.49	2.29	1.09	0.75	1.41	0.29	0.62
C03	Oesophageal cancer	1.23	5.14	1.54	0.72	2.30	1.01	1.42
C04	Stomach cancer	0.86	0.56	0.40	0.54	1.41	1.16	0.88
C05	Bowel cancer	3.81	4.21	3.26	1.36	3.47	3.26	3.61
C06	Liver cancer	1.46	4.08	4.54	5.81	4.62	2.25	2.18

Notes: ● = Increased; ● = No change; ● = Decreased; B = Barkly, BR = Big Rivers, CA = Central Australia, EA = East Arnhem, GD = Greater Darwin, TE = Top End.

Figure 38. Age-standardised years of life lost per 1,000 population with five-year trend indicator, by cause of disease and health region, Northern Territory, 1999–2018 (continued)

BOD	BOD Descript	GD	TE	BR	EA	B	CA	NT Total
C07	Gallbladder cancer	0.10	0.12	0.51	0.78	0.73	0.76	0.29
C08	Pancreatic cancer	1.55	3.22	2.09	1.97	1.61	2.09	1.78
C09	Lung cancer	8.37	24.69	12.68	15.68	10.41	6.13	9.43
C10	Mesothelioma	0.37	0.38	0.18	0.00	0.00	0.00	0.26
C11	Melanoma of the skin	0.88	0.47	0.37	0.62	1.79	0.82	0.82
C12	Non-melanoma skin cancers	0.61	0.64	0.64	1.24	0.76	0.22	0.58
C13	Breast cancer	2.26	2.70	2.05	3.96	1.87	2.48	2.39
C14	Cervical cancer	0.38	0.57	0.52	0.45	1.92	0.76	0.51
C15	Uterine cancer	0.22	0.29	0.59	0.68	0.93	0.50	0.34
C16	Ovarian cancer	0.43	1.38	0.11	0.65	0.23	0.76	0.50
C17	Prostate cancer	1.86	1.85	1.33	1.13	2.11	1.17	1.66
C18	Testicular cancer	0.08	0.00	0.14	0.00	0.23	0.00	0.06
C19	Bladder cancer	0.64	0.76	0.72	0.96	0.33	0.71	0.67
C20	Kidney cancer	0.75	0.68	0.54	0.51	0.51	0.72	0.70
C21	Brain and central nervous system canc	1.19	0.52	0.31	0.66	0.71	1.19	1.05
C22	Thyroid cancer	0.05	1.20	0.42	0.81	0.00	0.48	0.23
C23	Non-Hodgkin lymphoma	0.94	1.39	1.43	0.39	0.90	0.88	0.96
C24	Hodgkin Lymphoma	0.09	0.00	0.00	0.12	0.37	0.16	0.11
C25	Leukaemia	1.38	1.55	1.76	0.42	1.77	1.42	1.41
C26	Myeloma	0.54	0.54	0.13	0.13	0.29	0.23	0.42
C27	Other lymphohaematopoietic (blood)	0.26	0.37	0.53	0.20	0.00	0.16	0.26
C28	Unknown primary	3.06	5.36	5.81	6.30	7.52	3.81	3.81
C29	Benign and uncertain brain tumours	0.16	0.75	0.98	0.13	0.00	0.09	0.25
C31	Other malignant neoplasms (cancers)	1.15	2.73	1.58	1.21	1.80	0.93	1.26
C32	Other benign, in situ and uncertain ne	0.27	0.67	0.00	1.92	0.74	0.48	0.42
D	**Endocrine disorder**							
D01	Diabetes	4.02	16.00	13.30	12.45	16.62	8.74	6.86
D02	Other endocrine disorders	0.19	0.38	0.26	0.00	0.72	0.59	0.28
E	**Cardiovascular disease**							
E01	Coronary heart disease	15.78	48.68	30.60	36.59	45.97	23.21	21.98
E02	Stroke	4.85	11.14	8.97	7.70	10.94	6.84	6.14
E03	Rheumatic heart disease	0.70	5.76	5.48	5.64	2.55	2.24	2.03
E04	Non-rheumatic valvular disease	0.75	1.38	1.39	1.75	1.67	0.94	0.98
E05	Hypertensive heart disease	0.38	0.15	1.23	0.47	1.17	0.68	0.52
E06	Atrial fibrillation and flutter	0.41	1.24	0.56	0.83	1.51	0.75	0.58
E07	Inflammatory heart disease	0.20	0.71	0.36	0.27	0.88	0.46	0.33
E08	Cardiomyopathy	0.87	2.12	3.13	2.46	4.84	2.29	1.61
E09	Aortic aneurysm	0.98	0.82	0.67	2.17	1.11	1.06	1.01
E10	Peripheral vascular disease	0.53	0.76	0.68	0.17	0.51	0.66	0.58
E11	Other cardiovascular diseases	3.25	7.64	6.73	7.06	15.32	5.87	4.72
F	**Mental illness**							
F01	Depressive disorders	0.06	0.00	0.00	0.00	0.00	0.06	0.05
F02	Anxiety disorders	0.03	0.00	0.00	0.00	0.00	0.00	0.02
F04	Alcohol use disorders	0.78	1.28	2.12	1.41	4.30	2.54	1.37
F05	Drug use disorders (excluding alcohol	0.27	0.00	0.23	0.00	0.00	0.66	0.30
F06	Schizophrenia	0.05	0.16	0.00	0.00	0.00	0.00	0.04
F07	Eating disorders	0.03	0.00	0.00	0.00	0.00	0.00	0.02
F12	Other mental and substance use disor	0.13	0.00	0.41	0.85	0.00	0.11	0.17

Notes: ● = Increased; ● = No change; ● = Decreased; B = Barkly, BR = Big Rivers, CA = Central Australia, EA = East Arnhem, GD = Greater Darwin, TE = Top End.

Figure 38. Age-standardised years of life lost per 1,000 population with five-year trend indicator, by cause of disease and health region, Northern Territory, 1999–2018 (continued)

BOD	BOD Descript	GD	TE	BR	EA	B	CA	NT Total
G	**Neurological disease**							
G01	Epilepsy	0.40	0.93	1.12	0.44	2.02	0.90	0.63
G02	Dementia	3.17	3.07	4.10	3.31	6.26	5.72	3.81
G03	Parkinson disease	0.67	0.59	0.72	0.13	0.00	0.78	0.66
G04	Multiple sclerosis	0.05	0.00	0.00	0.00	0.00	0.10	0.05
G06	Motor neurone disease	0.34	0.48	0.14	0.39	0.41	0.33	0.34
G07	Guillain-Barre Syndrome	0.00	0.00	0.13	0.00	0.00	0.00	0.01
G08	Other neurological conditions	0.98	2.16	1.53	2.11	2.08	2.14	1.46
H	**Hearing disease**							
H05	Other vision disorders (Vision loss)	0.00	0.00	0.12	0.00	0.00	0.05	0.02
H07	Other hearing and vestibular disorder	0.00	0.20	0.00	0.00	0.25	0.00	0.02
I	**Respiratory disease**							
I01	Asthma	0.36	0.81	0.55	0.43	1.72	0.37	0.45
I02	Chronic obstructive pulmonary diseas	6.45	28.86	13.17	26.07	8.10	6.28	8.74
I03	Interstitial lung disease	0.38	0.84	0.37	0.17	0.19	0.38	0.40
I04	Sarcoidosis	0.03	0.00	0.00	0.00	0.00	0.00	0.02
I05	Pneumoconiosis	0.13	0.00	0.25	0.00	0.00	0.04	0.11
I06	Upper respiratory diseases	0.05	0.00	0.12	0.00	0.00	0.14	0.07
I07	Other chronic respiratory diseases	1.10	6.65	2.32	2.94	3.58	4.47	2.28
J	**Gastrointestinal disorder**							
J01	Gastroduodenal disorders	0.25	0.66	0.47	0.00	0.45	0.24	0.27
J02	Appendicitis	0.07	0.00	0.07	0.12	0.45	0.07	0.08
J03	Hernia	0.12	0.00	0.42	0.14	0.17	0.28	0.17
J04	Vascular disorders of intestine	0.31	0.40	0.42	0.29	0.26	0.35	0.33
J05	Intestinal obstruction without hernia	0.31	0.33	0.81	0.87	0.00	0.24	0.36
J06	Inflammatory bowel disease	0.13	0.00	0.27	0.00	0.94	0.56	0.24
J07	Diverticulitis	0.25	0.14	0.07	0.00	0.00	0.12	0.19
J08	Chronic liver disease	4.38	8.28	6.58	7.68	4.06	8.98	5.80
J09	Gall bladder and bile duct disease	0.24	0.80	0.12	0.26	0.77	0.47	0.31
J10	Pancreatitis	0.30	0.57	0.70	0.92	1.89	0.82	0.48
J11	Gastro-oesophageal reflux disorder	0.05	0.00	0.00	0.00	0.00	0.00	0.03
J13	Other gastrointestinal diseases	0.37	0.98	0.90	0.15	0.64	0.57	0.49
K	**Kidney disorder**							
K01	Chronic kidney disease	2.87	16.78	11.29	12.79	18.62	10.03	6.30
K02	Enlarged prostate	0.06	0.35	0.23	0.51	0.00	0.08	0.10
K03	Kidney stones	0.11	0.00	0.00	0.00	0.00	0.00	0.07
K04	Other kidney and urinary diseases	0.22	0.72	0.81	0.53	1.31	0.64	0.41
K05	Nephritis	0.03	0.16	0.12	0.00	0.45	0.20	0.09
L	**Reproductive disorder**							
L01	Maternal haemorrhage	0.00	0.17	0.00	0.00	0.00	0.06	0.02
L02	Maternal infections	0.00	0.00	0.14	0.16	0.00	0.06	0.03
L03	Hypertensive disorders of pregnancy	0.00	0.00	0.00	0.00	0.00	0.08	0.02
L07	Other maternal conditions	0.00	0.17	0.00	0.00	0.00	0.00	0.01
L10	Genital prolapse	0.02	0.00	0.00	0.00	0.00	0.06	0.02
L13	Other reproductive conditions	0.05	0.19	0.00	0.00	0.46	0.14	0.08
M	**Skin disorder**							
M02	Psoriasis	0.01	0.00	0.00	0.00	0.00	0.00	0.01
M04	Ulcers	0.14	0.00	0.00	0.00	0.00	0.11	0.10
M05	Skin infections (including Cellulitis)	0.23	0.57	0.32	0.27	0.76	0.45	0.32
M06	Other skin disorders	0.02	0.00	0.00	0.00	0.00	0.00	0.01
M07	Scabies	0.00	0.00	0.00	0.49	0.00	0.10	0.03

Notes: ● = Increased; ● = No change; ● = Decreased; B = Barkly, BR = Big Rivers, CA = Central Australia, EA = East Arnhem, GD = Greater Darwin, TE = Top End.

Figure 38. Age-standardised years of life lost per 1,000 population with five-year trend indicator, by cause of disease and health region, Northern Territory, 1999–2018 (continued)

BOD	BOD Descript	GD	TE	BR	EA	B	CA	NT Total
N	**Musculoskeletal disorder**							
N01	Osteoarthritis	0.12	0.22	0.00	0.00	0.00	0.19	0.12
N03	Rheumatoid arthritis	0.13	0.68	0.07	0.00	0.22	0.23	0.15
N04	Back pain and problems	0.05	0.00	0.00	0.00	0.00	0.06	0.04
N05	Other musculoskeletal conditions	0.65	2.76	1.26	2.12	1.04	1.17	1.03
O	**Oral disorder**							
O03	Periodontal disease	0.00	0.00	0.15	0.00	0.00	0.00	0.01
O04	Other oral disorders	0.01	0.00	0.00	0.00	0.00	0.07	0.02
R	**Blood disorder**							
R01	Cystic fibrosis	0.02	0.00	0.00	0.00	0.00	0.00	0.01
R02	Haemophilia	0.01	0.00	0.00	0.00	0.00	0.00	0.00
R03	Haemolytic anaemias	0.02	0.00	0.00	0.00	0.00	0.00	0.01
R04	Iron-deficiency anaemia	0.03	0.00	0.00	0.00	0.34	0.00	0.03
R05	Protein-energy deficiency	0.19	0.74	0.28	0.47	0.33	0.48	0.31
R06	Other blood and metabolic disorders	1.59	5.31	3.89	3.96	7.36	3.24	2.50
S	**Intentional injury**							
S09	Suicide and self-inflicted injuries	8.64	20.51	10.90	12.77	14.35	12.00	10.84
S10	Homicide and violence	1.52	4.06	5.51	3.13	9.56	4.99	2.97
T	**Unintentional injury**							
T01	Road traffic injuries - motorcyclists	0.94	0.17	0.62	0.31	0.45	0.62	0.75
T02	Road traffic injuries - motor vehicle oc	4.99	12.87	11.70	4.11	12.47	10.02	7.14
T03	Road traffic injuries - other	1.38	4.40	4.62	2.19	3.60	2.48	2.13
T04	Other land transport injuries	0.51	0.99	1.90	1.17	2.94	1.30	0.90
T05	Poisoning	1.76	1.83	1.26	1.56	1.04	2.07	1.77
T06	Falls	1.91	2.59	1.57	0.54	0.77	1.22	1.68
T07	Fire, burns and scalds	0.24	0.38	0.52	0.31	1.44	0.94	0.44
T08	Drowning	1.45	2.65	2.56	0.91	0.36	0.44	1.37
T11	Other unintentional injuries	2.18	5.00	3.65	3.00	5.09	2.94	2.77
T12	Medical/surgical complications	0.30	0.52	0.63	0.45	0.40	0.51	0.39

Notes: ● = Increased; ● = No change; ● = Decreased; B = Barkly, BR = Big Rivers, CA = Central Australia, EA = East Arnhem, GD = Greater Darwin, TE = Top End.

Figure 38 offers details on the average level of YLL rates by health regions and time trend on whether this condition was trending up (red light) or trending down (green light) from 1999 to 2018 for all recorded BOD causes of death in the NT. For example, in intentional injury suicide and self-inflicted injuries, overall YLL rate trended down in the NT. In Big Rivers and East Arnhem the YLL rates went up, while Barkly and Central Australia remained static. The Top End YLL rate ranked the highest (20.51), followed by Barkly (14.35) and East Arnhem (12.77). The health region with the lowest suicide and self-inflicted injury YLL rate was Greater Darwin (8.64) with a downward trend.

Discussion

The results of this BOD study reveal that in the NT there were continued improvements in YLL and mortality rates in both the Aboriginal and non-Aboriginal population between 1999 and 2018. This decrease in fatal BOD occurred in both avoidable and unavoidable causes of death. In 2014–2018, the all-cause age-standardised YLL rate was 129.3 and 177.8 years per 1,000 females and males respectively in the NT, over 50% higher than the Australian average YLL rates in 2015. This rate ratio improved markedly from the last BOD study (86% higher).[4] As expected, YLL rate increased progressively with age, except the very young and very old age groups (0- and 85+). Males had 38% higher levels of YLL than females, similar to the national results. There has been a reduction in the LE gap between the Aboriginal and non-Aboriginal population. The LE gap between the Aboriginal and non-Aboriginal population narrowed by 5.38 years (26%) and 4.15 years (21%) for males and females respectively from 1999 to 2018. The NT total LE improved without interruptions between 1999 and 2018 at a higher rate (5.8% in males, 3.0% in females) than the Australian average (4.5% in males, 2.7% in females). The LE improvement across chronic conditions and injuries is an encouraging outcome, and may be associated with sustained health care investments such as the chronic conditions strategy in the NT.

However, the difference in LE between the Aboriginal and non-Aboriginal population remained large and unacceptable. In 2014–2018, the NT Aboriginal LE was 65.93 years in males and 68.81 years in females, with a gap of 13.98 and 16.68 years respectively between the Aboriginal and non-Aboriginal population. Consistent efforts are required to sustain the positive momentum. It is clear from the results that there is still a long way to go to reach parity. The NT Aboriginal age-standardised YLL rate was 3.46 times the NT non-Aboriginal rate in 2014–2018, and 3.84 times the Australian 2015 average. In all age groups from 0 to 85+ years in 2014–2018, YLL rate was higher in the Aboriginal than non-Aboriginal population, with Aboriginal/non-Aboriginal rate ratio ranging from 1.4 to 8.0. Among all NT health regions, Greater Darwin had the lowest age-standardised YLL rate, followed by Central Australia, Big Rivers and East Arnhem in 2014–2018. Top End and Barkly had the highest age-standardised YLL rate in the NT. Clearly, remote areas had poorer health outcomes than non-remote areas.

In this BOD study, the mortality and YLL measures are aggregated by key demographics and disaggregated by disease groups and specific causes of death (disease or injury). In 2014–2018, cancer overtook cardiovascular disease as the number one leading disease group of YLL in the NT.[4, 18, 19] This change is profound, meaning that although cardiovascular disease was still the number one leading disease group, cancer became increasingly more prevalent in the Aboriginal population. Intentional and unintentional injury disproportionally affected young people aged 5–29 in the Aboriginal population and 15–44 years in the non-Aboriginal population. The top three disease groups with greatest improvements were road traffic injury, homicide and violence, and alcohol use disorders. The top three disease groups with greatest increase in fatal BOD were chronic kidney disease, lung cancer and COPD.

BOD methodology is the best way to measure health outcomes for measuring population health need and outcome.[8] This report focuses on the fatal health outcome causing deaths. The YLL measure has close connection with mortality rate and LE, changing from counting number of deaths to measuring life-years lost. Median age at death and median YLL are also simple measures for premature deaths, which were used to produce details at a fine level for data validation. This report describes BOD by age, sex, Aboriginal status, health region and clinically meaningful disease categories for the NT during a five-year study period from 2014 to 2018, in comparison with previous years since 1999. The results are more robust and accurate than the single year results from the AIHW national BOD reports.[20] Between 1999 and 2018,

there were signs the gap between Aboriginal and non-Aboriginal Territorians was narrowing. In contrast, the reduction of LE gap between males and females stagnated. The study revealed that the Aboriginal population suffered higher mortality and YLL rate across many disease groups including infectious diseases, cardiovascular diseases, cancers, injuries, endocrine and kidney diseases, mental health conditions, infant and maternal conditions.

Choosing year of death instead of year of registration likely provided a more accurate fatal BOD measure because year of registration is not year of death and was affected by the workload of the Birth, Death and Marriage Register and delays in registration of coroner cases. Because injuries are more likely to be a coroner case and have longer delays in death registration, use of year of death makes the YLL measure for injuries more conservative. Sensitivity analysis indicates the potential underestimation is less than 0.4%, given the 2019 CODURF has been used for the analysis. Adjustment is required for timely reporting. The mortality and YLL analysis demonstrated a high degree of variation in distribution of mortality/YLL, largely driven by the small population of the NT and impacted by many health and socioeconomic factors including disability (morbidity), unemployment, education, housing and income. We will investigate YLD, the other half of DALY, in the next phase of BOD study. We have combined five-year data to produce these measures compared with previous results to increase reliability. We have used the international standard unisex LE from the global BOD study to estimate YLL, which generated consistent YLL measures over the entire study period. The use of unisex LE standard explains in part why male YLL rate was much higher than female. While the LE in males was still lower than their female counterpart, the improvement in LE in males was more pronounced than females. The analysis revealed that the reduction of five-year YLL rate in 2014–2018 was more pronounced in males than females.

In summary, this study provides in-depth insights into the patterns of fatal burden of disease and injury in the NT. There were sustained improvements in life expectancy at birth and life-years lost in the NT Aboriginal and non-Aboriginal population between 2014 and 2018. Greater efforts are still required in primary and secondary prevention of cancer, cardiovascular disease and injuries in the NT.

Appendix

Figure A1. The Northern Territory health region map

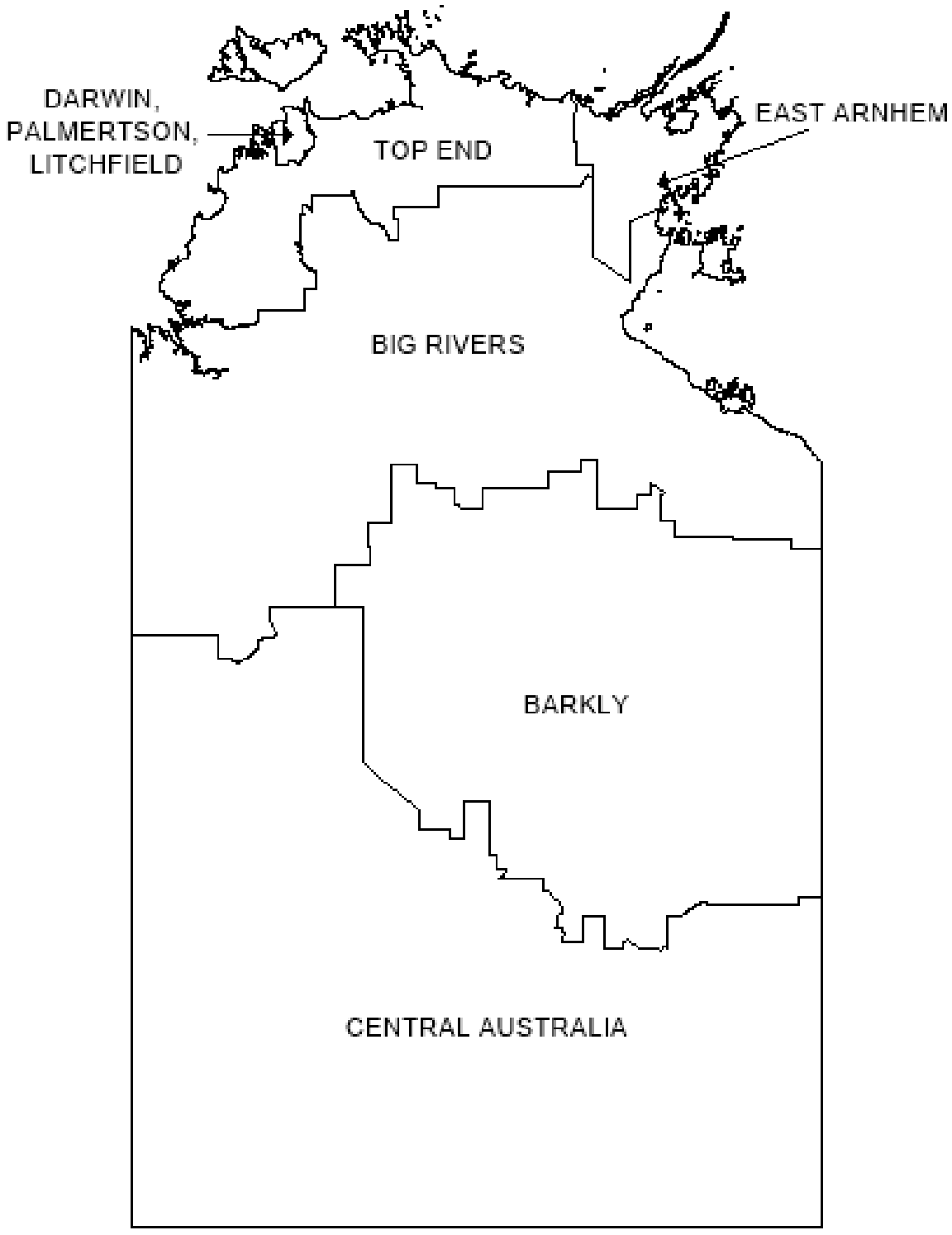


Table A1. Northern Territory burden of disease and injury list

Group	Cause
Infectious diseases	
	HIV/AIDS
	Tuberculosis
	Hepatitis A
	Hepatitis B (acute)
	Hepatitis C (acute)
	Syphilis
	Gonococcal infection
	Sexually transmitted chlamydial infections
	Other sexually transmitted infections
	Campylobacteriosis
	Salmonellosis
	Rotavirus
	Other gastrointestinal infections
	Upper respiratory tract infections
	Otitis media
	Lower respiratory infections
	Influenza
	Diphtheria
	Pertussis
	Tetanus
	Measles
	Rubella
	Varicella–zoster
	Haemophilus influenzae type-b
	Pneumococcal disease
	Meningococcal disease
	Other meningitis and encephalitis
	Dengue
	Ross River virus
	Barmah Forest virus
	Malaria
	Trachoma
	Urinary tract infection
	Melioidosis
	COVID-19
	Other infections
Infant and congenital conditions	
	Pre-term birth and low birthweight complications
	Birth trauma and asphyxia
	Cerebral palsy
	Neonatal infections
	Sudden infant death syndrome
	Other disorders of infancy
	Neural tube defects
	Brain malformations
	Congenital cardiovascular defects
	Cleft lip and/or palate
	Gastrointestinal malformations
	Urogenital malformations
	Down syndrome
	Other chromosomal abnormalities
	Other congenital conditions
Cancer and other neoplasms	
	Mouth and pharyngeal cancer
	Laryngeal cancer
	Oesophageal cancer

	Stomach cancer
	Bowel cancer
	Liver cancer
	Gallbladder cancer
	Pancreatic cancer
	Lung cancer
	Mesothelioma
	Melanoma of the skin
	Non-melanoma skin cancers
	Breast cancer
	Cervical cancer
	Uterine cancer
	Ovarian cancer
	Prostate cancer
	Testicular cancer
	Bladder cancer
	Kidney cancer
	Brain and central nervous system cancer
	Thyroid cancer
	Non-Hodgkin lymphoma
	Hodgkin Lymphoma
	Leukaemia
	Myeloma
	Other lymphohaematopoietic (blood) cancers
	Unknown primary
	Benign and uncertain brain tumours
	Breast in situ
	Other malignant neoplasms (cancers)
	Other benign, in situ and uncertain neoplasms
Cardiovascular diseases	
	Coronary heart disease
	Stroke
	Rheumatic heart disease
	Non-rheumatic valvular disease
	Hypertensive heart disease
	Atrial fibrillation and flutter
	Inflammatory heart disease
	Cardiomyopathy
	Aortic aneurysm
	Peripheral vascular disease
	Other cardiovascular diseases
Respiratory diseases	
	Asthma
	Chronic obstructive pulmonary disease
	Interstitial lung disease
	Sarcoidosis
	Pneumoconiosis
	Upper respiratory diseases
	Other chronic respiratory diseases
Gastrointestinal disorders	
	Gastroduodenal disorders
	Appendicitis
	Hernia
	Vascular disorders of intestine
	Intestinal obstruction without hernia
	Inflammatory bowel disease
	Diverticulitis
	Chronic liver disease
	Gall bladder and bile duct disease
	Pancreatitis
	Gastro-oesophageal reflux disorder

	Functional gastrointestinal disorders
	Other gastrointestinal diseases
Neurological conditions	
	Epilepsy
	Dementia
	Parkinson disease
	Multiple sclerosis
	Migraine
	Motor neurone disease
	Guillain-Barre Syndrome
	Other neurological conditions
Mental and substance use disorders	
	Depressive disorders
	Anxiety disorders
	Bipolar affective disorder
	Alcohol use disorders
	Drug use disorders (excluding alcohol)
	Schizophrenia
	Eating disorders
	Autism spectrum disorders
	Attention deficit hyperactivity disorder
	Conduct disorder
	Intellectual disability
	Other mental and substance use disorders
Endocrine disorders	
	Diabetes
	Other endocrine disorders
Kidney and urinary diseases	
	Chronic kidney disease
	Enlarged prostate
	Kidney stones
	Nephritis
	Other kidney and urinary diseases
Reproductive and maternal conditions	
	Maternal haemorrhage
	Maternal infections
	Hypertensive disorders of pregnancy
	Obstructed labour
	Early pregnancy loss
	Gestational diabetes
	Other maternal conditions
	Endometriosis
	Uterine fibroids
	Genital prolapse
	Polycystic ovarian syndrome
	Infertility
	Other reproductive conditions
Musculoskeletal conditions	
	Osteoarthritis
	Gout
	Rheumatoid arthritis
	Back pain and problems
	Other musculoskeletal conditions
Skin disorders	
	Dermatitis and eczema
	Psoriasis
	Acne
	Ulcers
	Skin infections (including Cellulitis)
	Scabies
	Other skin disorders

Oral disorders	
	Dental caries
	Severe tooth loss
	Periodontal disease
	Other oral disorders
Blood and metabolic disorders	
	Cystic fibrosis
	Haemophilia
	Haemolytic anaemias
	Iron-deficiency anaemia
	Protein-energy deficiency
	Other blood and metabolic disorders
	Hearing and vision disorders
	Refractive disorders (Vision loss)
	Cataract and other lens disorders (Vision loss)
	Glaucoma (Vision loss)
	Age-related macular degeneration (Vision loss)
	Other vision disorders (Vision loss)
	Hearing loss
	Other hearing and vestibular disorders
Unintentional injury	
	Road traffic injuries - motorcyclists
	Road traffic injuries - motor vehicle occupants
	Road traffic injuries - other
	Other land transport injuries
	Poisoning
	Falls
	Fire, burns and scalds
	Drowning
	Other unintentional injuries
Intentional injury	
	Suicide and self-inflicted injuries
	Homicide and violence
	Medical/surgical complications
	Other intentional injuries
Nature of injury	
	Traumatic brain injury
	Spinal cord injury
	Drowning and submersion injuries
	Internal and crush injuries
	Poisoning
	Hip fracture
	Tibia and ankle fracture
	Humerus fracture
	Other fractures
	Dislocations
	Soft tissue injuries
	Burn injuries
	Other injuries

List of tables

List of figures

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