



Chronic kidney disease

Web report

Cat. no: CDK 16

Updated: 15 July 2020

The Australian Institute of Health and Welfare (AIHW) has developed core monitoring information on the prevalence, incidence, hospitalisation and deaths from chronic kidney disease (CKD) in Australia. This is updated on a regular basis on the AIHW website to ensure that current information and trends are readily available.

Key findings

1. An estimated 1 in 10 Australian adults (10%)—about 1.7 million people in 2011–12—had biomedical signs of CKD
2. 1.8 million hospitalisations were associated with CKD in 2017–18—16% of all hospitalisations in Australia
3. 70% of CKD hospitalisations (excluding dialysis) occur at ages 65 and over
4. In 2018, there were 16,800 CKD-related deaths— 79% had CKD listed as an associated cause
5. In 2017-18, Indigenous Australians had regular dialysis rates that were 11 times as high as the non-Indigenous rate

What is chronic kidney disease?

Chronic kidney disease (CKD) refers to all conditions of the kidney, lasting at least 3 months, affecting the filtration and removal of waste from the blood by the kidneys (indicating kidney dysfunction), and/or leakage of protein or albumin in the urine (indicating kidney damage). CKD is common, costly and often detected too late to be reversible, but it is largely preventable because many of its risk factors—high blood pressure, tobacco smoking, overweight and obesity, and impaired glucose regulation—are modifiable (Kidney Health Australia 2019).

Box 1: Stages of kidney disease

Early stages (1–2)

There are usually no symptoms as the kidneys are still able to function when they are slightly damaged. This makes diagnosis difficult.

Middle stages (3–4)

Level of waste (urea and creatinine) in the blood rises and the person starts to feel unwell. Kidney function slows down with increased urination.

End stage (5)

Person requires dialysis or a transplant to stay alive.

Source: Adapted from Kidney Health Australia 2007; Kidney Health Australia 2015

References

Kidney Health Australia 2007. Chronic kidney disease (CKD) management in general practice. Melbourne: Kidney Health Australia.

Kidney Health Australia 2015. [Chronic kidney disease \(CKD\) management in general practice, 3rd edn](#). Melbourne: Kidney Health Australia. Viewed 23 April 2020.

Kidney Health Australia 2019. [Evidence document: a compendium to the National Strategic Action Plan for Kidney Disease](#). Viewed 24 April 2020.

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How many Australians have chronic kidney disease?

All chronic kidney disease

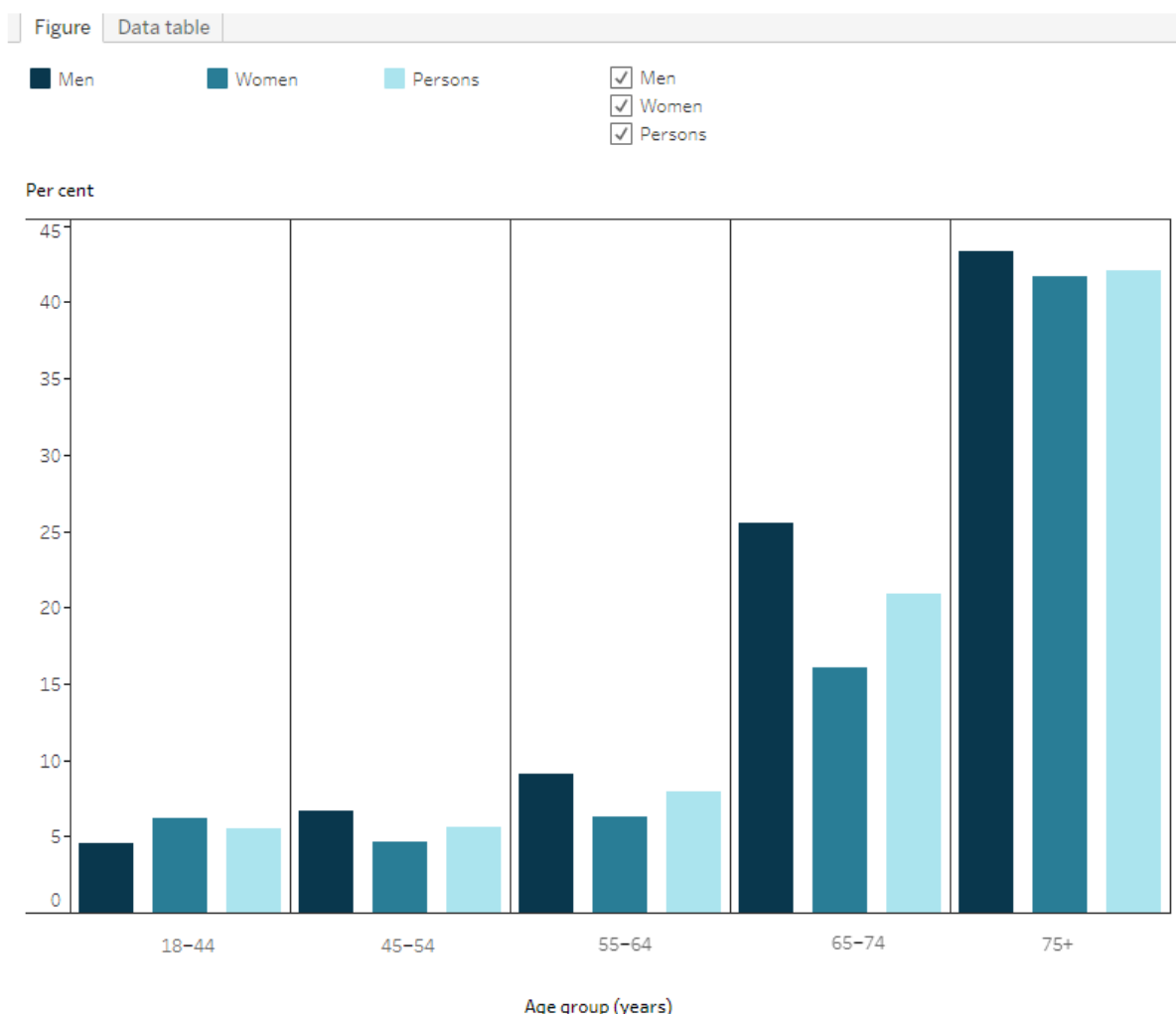
An estimated 1.7 million (10%) Australian adults aged 18 and over had [biomedical signs](#) of chronic kidney disease (CKD) in 2011–12, based on measured data from the Australian Bureau of Statistics (ABS) [2011–12 Australian Health Survey](#).

The vast majority (97%) showed early signs of the disease (stages 1–3). CKD remains a highly under-diagnosed condition—only 10% of survey respondents who showed biomedical signs of CKD also [self-reported](#) that they had the condition. Therefore, this section reports measured data from the ABS 2011–12 Australian Health Survey, rather than self-reported data from the more recent ABS 2017–18 National Health Survey.

In 2011–12, the [prevalence](#) of biomedical signs of CKD among adults:

- was similar for men and women (10% for both)
- increased rapidly after age 74, with rates among those aged 75 and over twice as high (42%) as for those aged 65–74 (21%), and around 7 times as high as for those aged 18–54 (6%) (Figure 1).

Figure 1: Prevalence of CKD, among people aged 18 and over, by age group and sex, 2011–12



Prevalence of CKD, among persons aged 18 and over, by age group and sex, 2011–12

Note: Based on the presence of biomedical signs of CKD detected by abnormal results of the kidney filtration rate (eGFR) and urinary albumin creatinine ratio (ACR).

Source: AIHW analysis of the ABS Microdata: Australian Health Survey (AHS): Core Content - Risk Factors and Selected Health Conditions, 2011–12.

<http://www.aihw.gov.au/>

Change over time

Between 1999–2000 and 2011–12, the CKD prevalence rate remained stable, at around 10% among adults aged 25 and over. There was no difference between men and women in the prevalence of CKD in both surveys.

The number of Australians with a moderate-to-severe loss of kidney function (stages 3–5) nearly doubled over this period (from 322,000 in 1999–2000 to 604,000 in 2011–12) (AIHW 2018). This increase was mostly driven by an increase in CKD stage 3 due to growth in the size of the population aged 65 and over.

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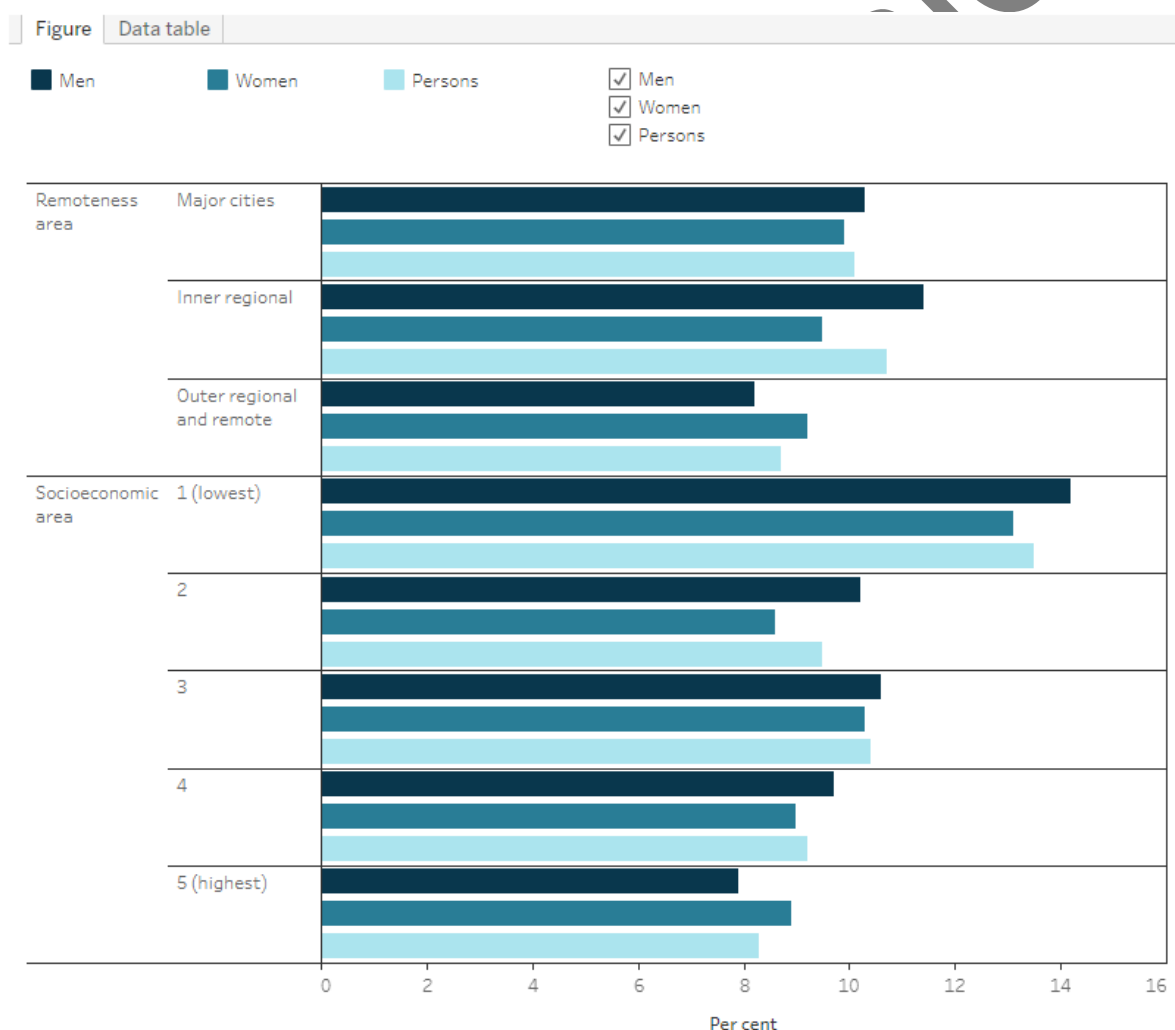
Variations between population groups

In 2011–12, the prevalence of biomedical signs of CKD among adults was similar across [remoteness](#) areas, but increased with [socioeconomic](#) disadvantage (Figure 2).

Proportions were:

- similar in Major cities (10%), Inner regional (11%) and Outer regional/Remote (8.7%) areas
- highest among those in the lowest socioeconomic area (14%) compared with those in the highest socioeconomic area (8.3%).

Figure 2: Prevalence of CKD, for persons aged 18 and over, by remoteness and socioeconomic area, 2011–12



Prevalence of CKD, for persons aged 18 and over, by remoteness and socioeconomic area, 2011–12

Note: Based on the presence of biomedical signs of CKD detected by abnormal results of the kidney filtration rate (eGFR) and urinary albumin creatinine ratio (ACR).

Source: AIHW analysis of the ABS Microdata: Australian Health Survey (AHS): Core Content - Risk Factors and Selected Health Conditions, 2011–12. <http://www.aihw.gov.au/>

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Aboriginal and Torres Strait Islander people

An estimated 1 in 5 (18%) Indigenous adults (59,600 people) had biomedical signs of CKD, according to the ABS 2012–13 National [Aboriginal and Torres Strait Islander Health Measures Survey](#).

Indigenous adults were twice as likely to have biomedical signs of CKD as non-Indigenous adults (22% and 10%, respectively), after taking into account differences in the age structure of the populations.

Treated end-stage kidney disease

Information on the [prevalence](#) and [incidence](#) of people with end-stage kidney disease (ESKD) can be obtained from the [Australia and New Zealand Dialysis and Transplant Registry \(ANZDATA\)](#). This registry includes people who receive kidney replacement therapy (KRT) in the form of a kidney transplant or dialysis, but does not contain information on those people with ESKD who do not receive KRT.

This section reports the incidence and trends of new patients with end-stage disease receiving KRT registered in the ANZDATA.

ESKD is the most severe form of chronic kidney disease. Only half of people with ESKD undertake KRT, as other strategies may be more suited for patients receiving end-of-life medical care (AIHW 2016).

In 2018, there were around 3,100 new cases of ESKD in Australia. This equates to 8 cases diagnosed every day, or an incidence rate of 11 cases per 100,000 population.

The leading causes of ESKD among new patients were:

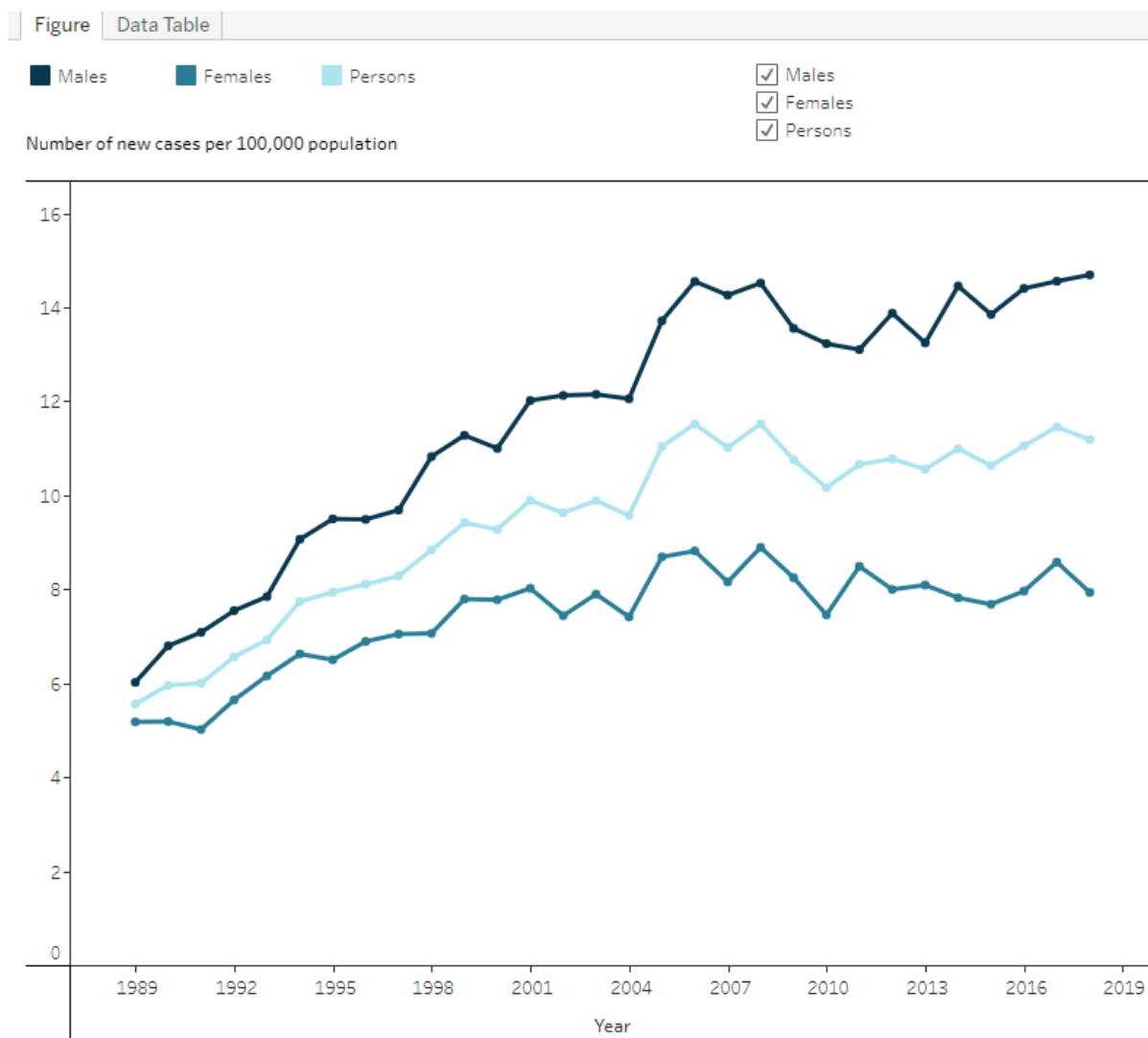
- diabetes (38%)
- glomerulonephritis—a type of kidney inflammation (16%)
- hypertension (13%)
- polycystic disease—presence of multiple cysts in the kidney (6.6%).

Trends by age and sex

Age standardised incidence rates of treated ESKD have almost doubled from 6 persons per 100,000 population in 1989 to 11 persons per 100,000 in 2018. This increase was greater for males, from 6 cases per 100,000 population in 1989 to 15 cases per 100,000 in 2018, than for females, increasing from 5 to 8 cases per 100,000 population from 1989 to 2018 (Figure 3).

Since 2006, the incidence rate has remained largely unchanged among both males and females.

Figure 3: Trends in the rate of new treated cases of ESKD, by sex, 1989 to 2018



Trends in the rate of new treated cases of ESKD, by sex, 1989 to 2018
 Note: Age-standardised to the 2001 Australian Standard Population.
 Source: AIHW analysis of ANZDATA.
<http://www.aihw.gov.au/>

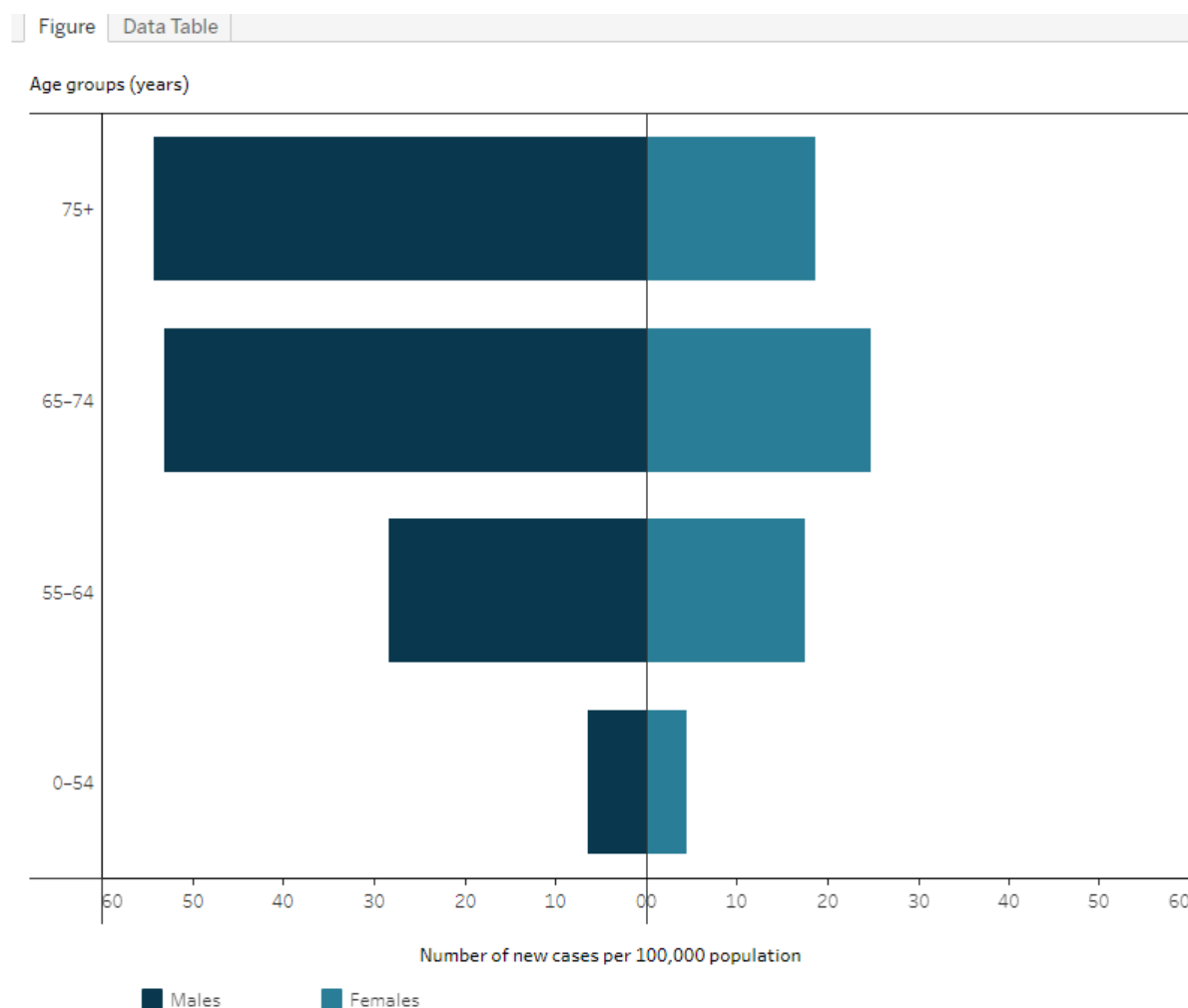
In 2018, the age-specific incidence rates for treated ESKD were higher for males than females across all age groups.

Incidence rates increased with age. The rates for males aged 65–74 and 75 and over were almost 2 times as high as the 55–64 year olds, and over 8 times as high as 0–54 year olds.

Females aged 65–74 had the highest rate, at 1.4 times as high as 55–64 year olds and 5.6 times as high for females aged under 55. In contrast, females aged 75 and over had slightly lower incidence rates than those aged 65–74 (19 and 25 per 100,000, respectively) (Figure 4).

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Figure 4: Incidence of treated ESKD, by age group and sex, 2018



Incidence of treated ESKD, by age group and sex, 2018
Source: AIHW analysis of ANZDATA.
<http://www.aihw.gov.au/>

Variations between population groups

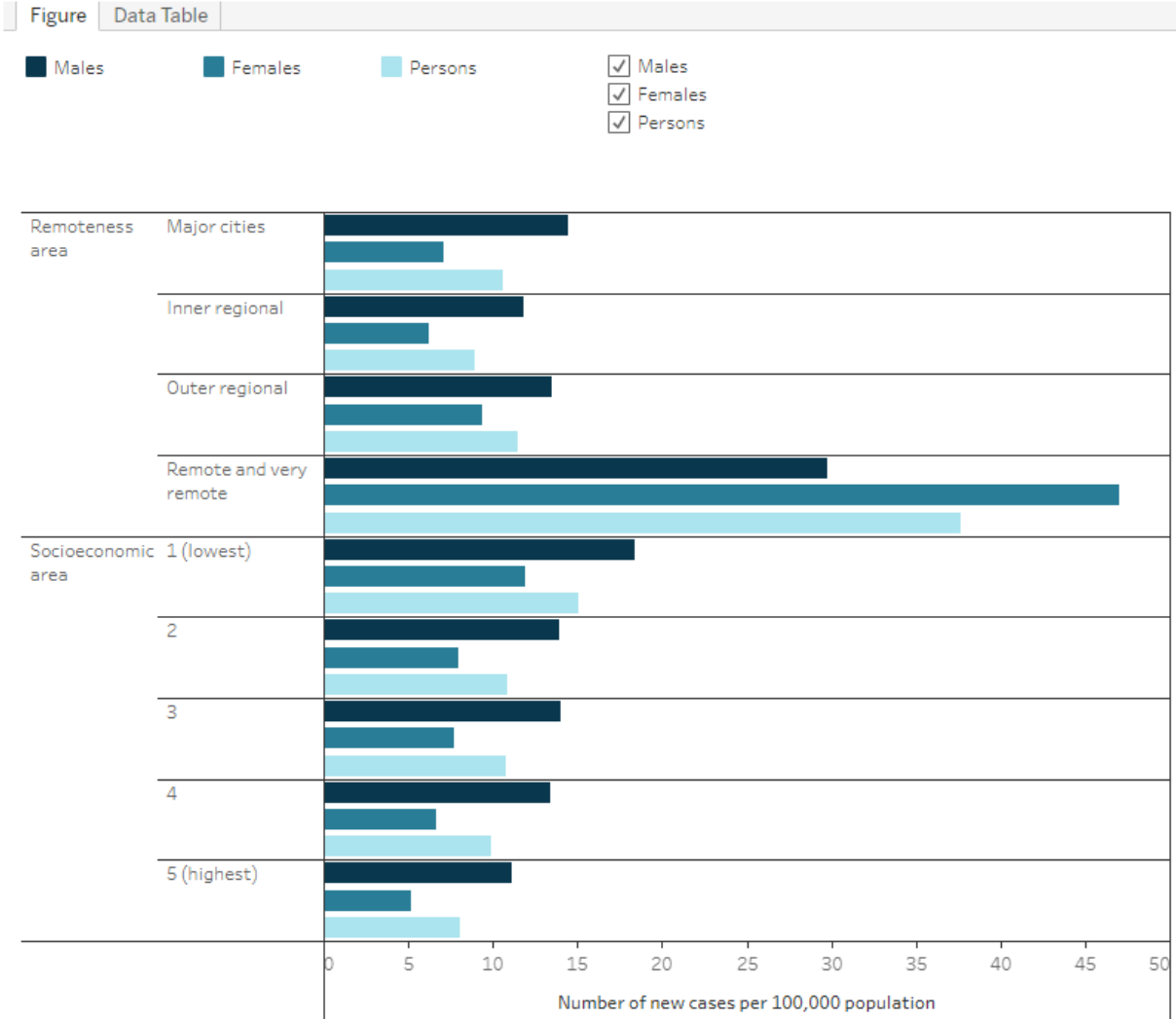
Between 2014–2018, the incidence of treated cases of ESKD increased with [remoteness](#) and [socioeconomic](#) disadvantage.

After adjusting for differences in age structure between population groups, the incidence rates were:

- 3.5 times as high in *Remote and very remote* areas compared with *Major cities*— almost 7 times as high for females (47 and 7 per 100,000 population, respectively) and twice as high for males (30 and 14 per 100,000, respectively).
- 1.9 times as high in the lowest socioeconomic areas compared with the highest socioeconomic areas— 2.3 times as high for females (12 and 5 per 100,000, respectively) and 1.7 times as high for males (18 and 11 per 100,000, respectively) (Figure 5).

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Figure 5: Incidence of treated ESKD, by remoteness and socioeconomic area, 2014–2018



Incidence of treated ESKD, by remoteness and socioeconomic area, 2014–2018
 Notes:
 1. Age-standardised to the 2001 Australian Standard Population.
 2. Several years of data were aggregated to increase the stability of the rate by small categories.
 Source: AIHW analysis of ANZDATA.
<http://www.aihw.gov.au/>

Aboriginal and Torres Strait Islander people

Between 2014–2018, the incidence rate of treated ESKD was 39 per 100,000 among Indigenous Australians. After adjusting for the difference in the age structure of the populations:

- The rate among Indigenous Australians was almost 7 times the rate for non-Indigenous Australians (63 and 9 per 100,000, respectively).
- The differences between Indigenous Australians and non-Indigenous Australians were greater for females than males—almost 11 times as high for females (66 and 6

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per 100,000, respectively) and almost 5 times as high for males (58 and 13 per 100,000, respectively).

References

AIHW (Australian Institute of Health and Welfare) 2016. [Incidence of end-stage kidney disease in Australia 1997–2013](#). Cat. no. PHE 211. Canberra: AIHW.

AIHW (Australian Institute of Health and Welfare) 2018. [Chronic kidney disease prevalence among Australian adults over time](#). AIHW cat. no. CDK 6. Canberra: AIHW.

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Impact

Burden of disease

Burden of disease analysis assesses the health impact on a population of different diseases, conditions, injuries and risk factors. [The Australian Burden of Disease Study 2015](#) used information from a range of sources to quantify the fatal and non-fatal effects of these diseases.

Kidney and urinary diseases accounted for 1.4% of Australia's total burden of disease in 2015. Chronic kidney disease (CKD) represented the majority of burden from this disease group comprising 1.2% of total burden in 2015 (increasing from 0.8% in 2003 and 0.9% in 2011). Of the total CKD burden, 77% was due to fatal burden and 23% to non-fatal burden (AIHW 2019).

Reference

AIHW (Australian Institute of Health and Welfare) 2019. [Australian Burden of Disease Study: impact and causes of illness and death in Australia 2015](#). Australian Burden of Disease series no. 19. Cat. no. BOD 22. Canberra: AIHW. Viewed 25 April 2020.

Hospital care for chronic kidney disease

All chronic kidney disease

There were approximately 1.8 million [hospitalisations](#) where chronic kidney disease (CKD) was recorded as the principal and/or additional diagnosis in 2017–18, according to the Australian Institute of Health and Welfare [National Hospital Morbidity Database](#). This represents 16% of all hospitalisations in Australia. Dialysis accounted for the vast majority (79%) of these hospitalisations.

Note that hospitalisation data presented here are based on admitted patient episodes of care, including multiple events experienced by the same individual.

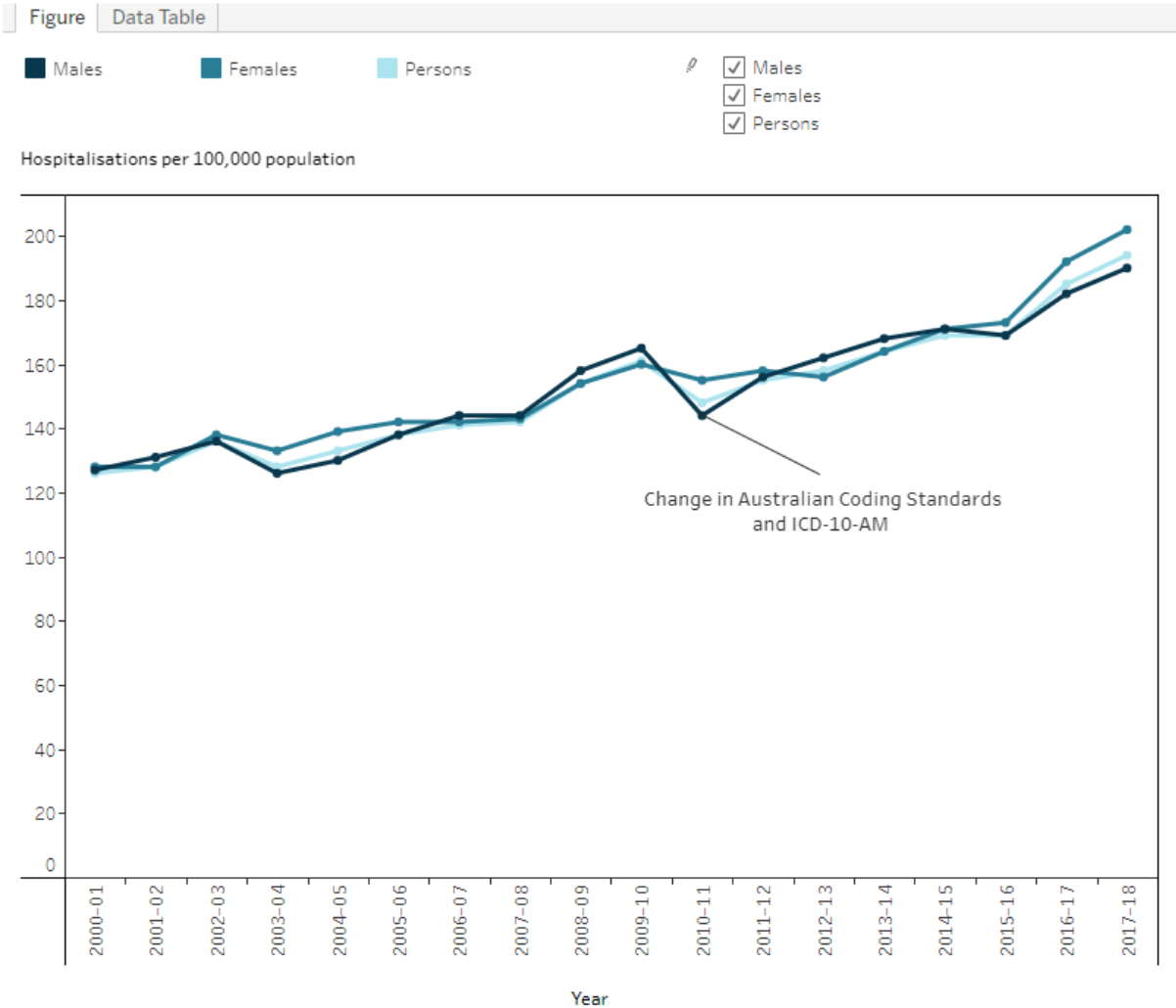
In 2017–18 there were around:

- 51,300 hospitalisations with CKD (excluding regular dialysis) as the [principal diagnosis](#)— the diagnosis largely responsible for hospitalisation.
- 315,700 hospitalisations with CKD (excluding regular dialysis) as an [additional diagnosis](#)— a coexisting condition with the principal diagnosis or a condition arising during hospitalisation that affects patient management.
- 1.4 million hospitalisations for regular dialysis as the principal diagnosis only (13% of all hospitalisations in Australia).

Trends for CKD as the principal diagnosis (excluding regular dialysis)

The number of hospitalisations for CKD as the principal diagnosis (excluding regular dialysis) more than doubled between 2000–01 and 2017–18, from 24,100 to 51,300 hospitalisations. Over this same period, the [age-standardised](#) rate increased by 54% (126 and 194 per 100,000 population, respectively) (Figure 1).

Figure 1: Trends in CKD hospitalisations as a principal diagnosis (excluding regular dialysis), by sex, 2000-01 to 2017-18



Trends in CKD hospitalisation rates as a principal diagnosis (excluding regular dialysis), by sex, 2000-01 to 2017-18
 Notes:
 1. Age-standardised to the 2001 Australian Standard Population.
 2. Changes in the Australian Coding Standards and ICD-10-AM coding rules for diabetes between 2010-11 and 2011-12 in the National Hospital Morbidity Database had an impact on the drop in diabetes-related CKD hospitalisation rates.
 Source: AIHW analysis of the National Hospital Morbidity Database.
<http://www.aihw.gov.au/>

CKD hospitalisations as a principal or additional diagnosis

When CKD coexists with a different principal diagnosis but affects patient care during hospitalisation, it is recorded as an additional diagnosis. Excluding regular dialysis, CKD is more often coded as an additional diagnosis.

Where CKD was listed as an additional diagnosis, the leading principal diagnoses in 2017-18 were:

- diseases of the circulatory system (18%)

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- injury, poisoning and certain consequences of external causes (10%)
- diseases of the respiratory system (9.8%)
- diseases of the genitourinary system (8.2%).

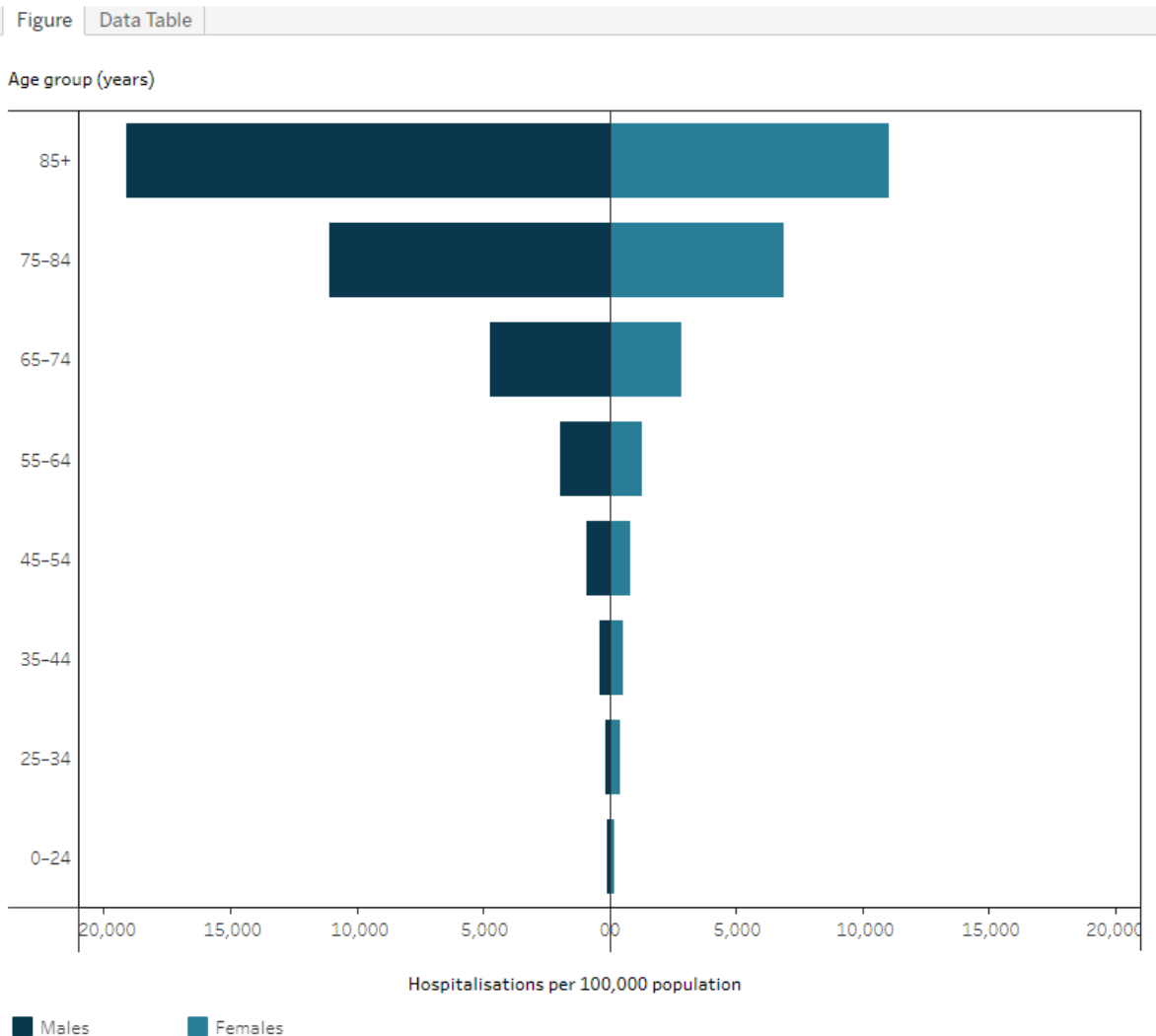
Age and sex

In 2017–18, CKD hospitalisation rates (as a principal or additional diagnosis):

- were between 1.3 and 2 times higher for females than males before the age of 45. From age 45, age-specific rates were higher for males than females.
- increased with age, with the majority (70%) occurring in those aged 65 and over. CKD hospitalisation rates for males and females were highest in those aged 85 and over (19,100 and 11,000 per 100,000 population, respectively)—at least 1.6 times as high as those in the 75–84 age group (11,100 and 6,900 per 100,000, respectively) (Figure 2).

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Figure 2: CKD hospitalisation rates as a principal or additional diagnosis (excluding regular dialysis), by age group and sex, 2017–18



CKD hospitalisation rates as a principal or additional diagnosis (excluding regular dialysis), by age group and sex, 2017–18
 Source: AIHW analysis of the National Hospital Morbidity Database.
<http://www.aihw.gov.au/>

Variations between population groups

In 2017–18, CKD hospitalisation rates (as the principal or an additional diagnosis, excluding regular dialysis) increased with [remoteness](#) and [socioeconomic](#) disadvantage.

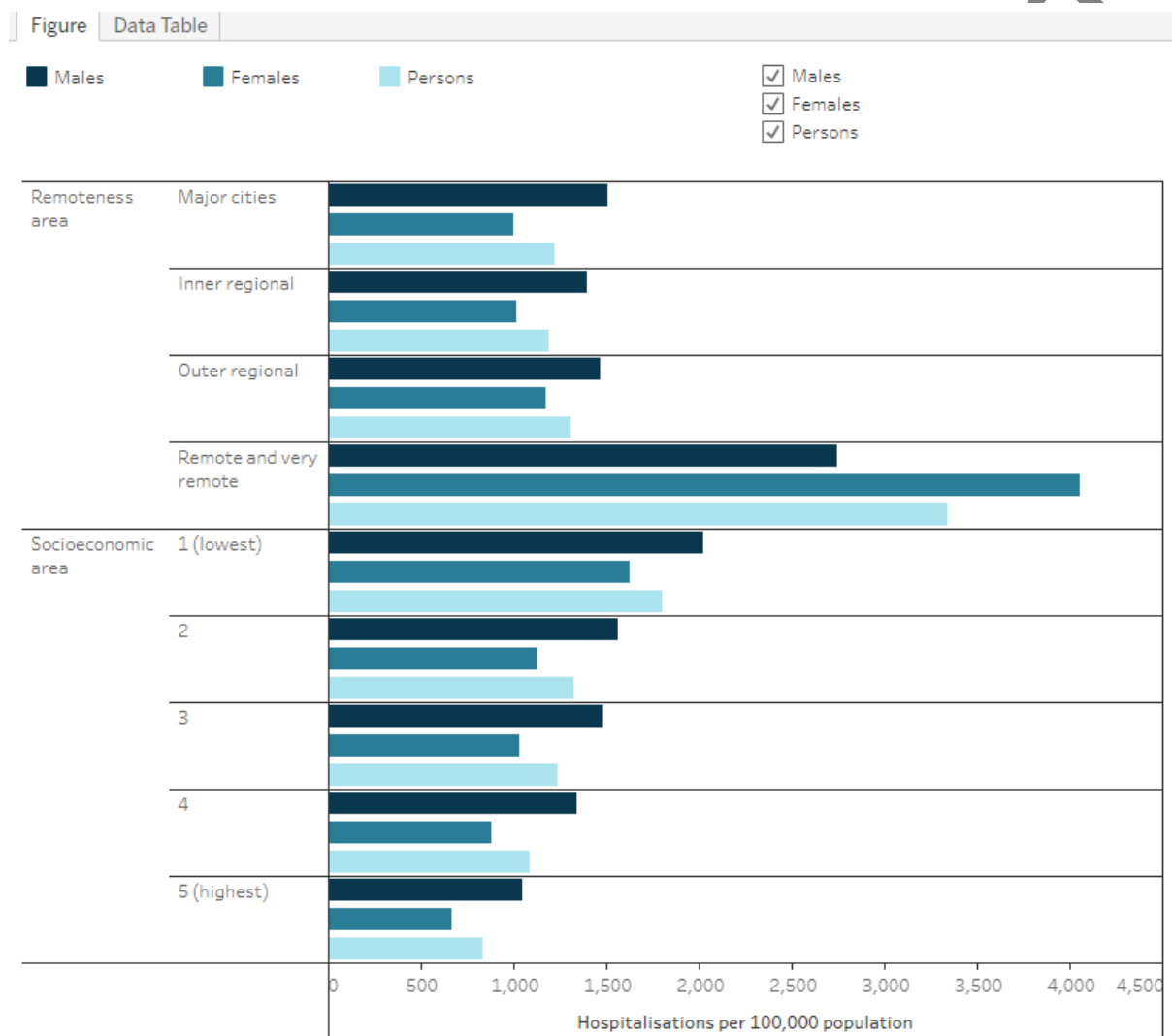
After adjusting for differences in the age structure of the population areas, CKD hospitalisation rates were:

- 2.7 times as high for people living in *Remote and very remote* areas compared with *Major cities*. The difference in these rates was much larger for females than males—4 times as high for females (4,100 and 1,000 per 100,000 population, respectively) and 1.8 times as high for males (2,700 and 1,500 per 100,000, respectively).

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- twice as high for people living in the lowest socioeconomic areas compared with those living in the highest socioeconomic areas —over twice as high for females (1,600 and 700 per 100,000) and almost twice as high for males (2,000 and 1,000 per 100,000, respectively) (Figure 3).

Figure 3: CKD hospitalisation rates as a principal or additional diagnosis (excluding regular dialysis), by remoteness and socioeconomic area, 2017–18



CKD hospitalisation rates as a principal or additional diagnosis (excluding regular dialysis), by remoteness and socioeconomic area, 2017–18

Notes:

1. Age-standardised to the 2001 Australian Standard Population.

2. Hospitalisation rates have been calculated using population estimates for Australia, which includes Other Territories.

Source: AIHW analysis of the National Hospital Morbidity Database.

<http://www.aihw.gov.au/>

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Aboriginal and Torres Strait Islander people

In 2017–18, there were around 27,000 hospitalisations for CKD (as the principal or an additional diagnosis) among [Aboriginal and Torres Strait Islander](#) people, a rate of 3,300 per 100,000 population.

After adjusting for differences in the age structure between the two population groups:

- The rate among Indigenous Australians was almost 5 times the rate among non-Indigenous Australians (5,700 and 1,200 per 100,000, respectively).
- The differences in CKD hospitalisation rates between Indigenous and non-Indigenous Australians were greater for females than males— almost 7 times as high for females (6,300 and 954 per 100,000, respectively) and almost 4 times as high for males (5,100 and 1,400 per 100,000, respectively).

Regular dialysis

Dialysis is the most common reason for hospitalisation in Australia, accounting for 1.4 million hospitalisations for CKD as the principal diagnosis (13% of all hospitalisations) in 2017–18.

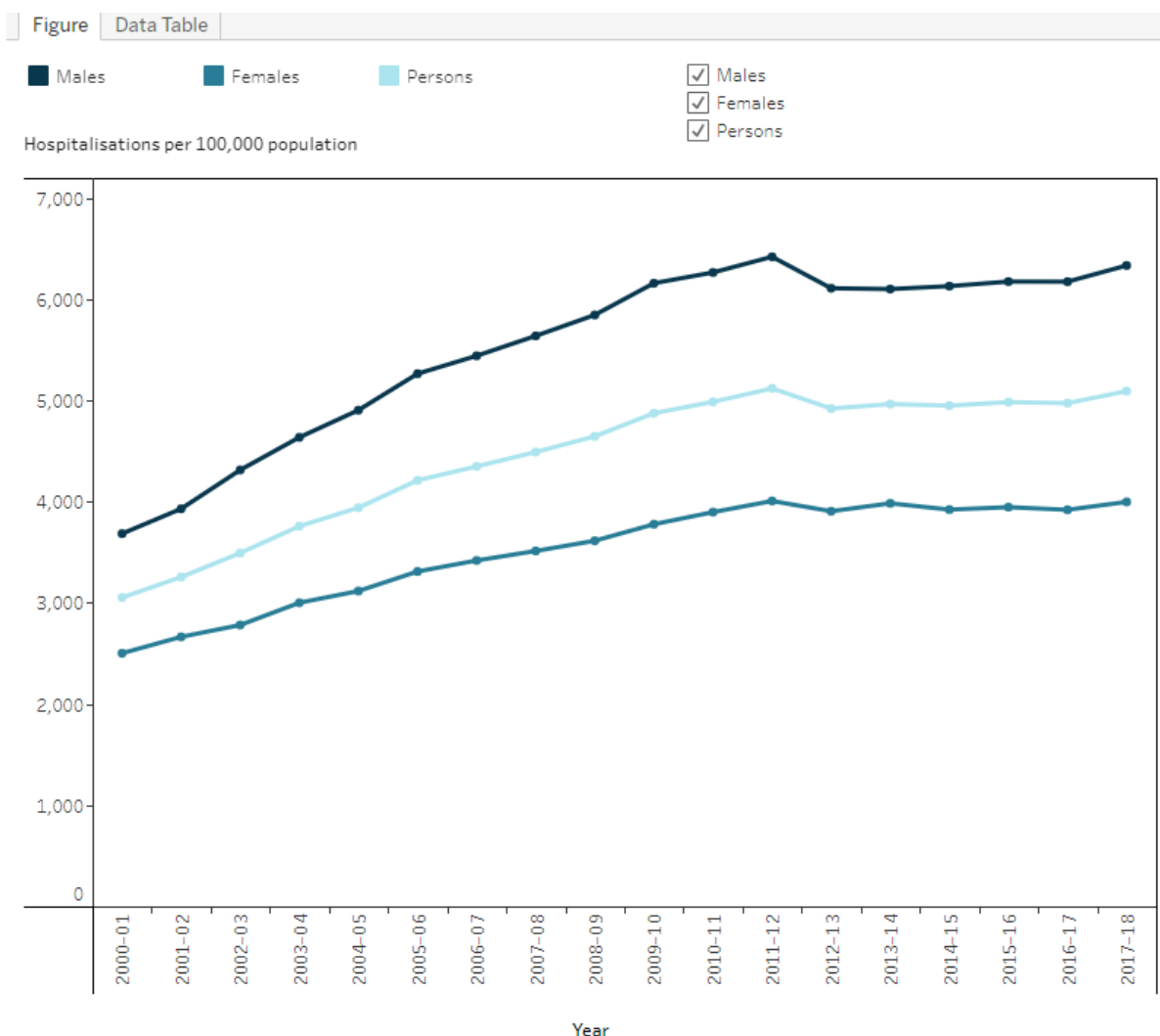
Hospitalisations data count the number of dialysis episodes rather than the number of people who receive dialysis. On average, dialysis patients attend 3 sessions per week. For information on how many people receive dialysis, see [Australia and New Zealand Dialysis and Transplant Registry \(ANZDATA\)](#).

Trends

The number of hospitalisations for regular dialysis increased by 144% between 2000–01 and 2017–18, from 582,400 to 1.4 million hospitalisations. In addition, the age-standardised rate increased by more than 67%, from 3,100 to 5,100 per 100,000 population (Figure 4).

The rate of hospitalisation for regular dialysis among males was consistently higher than for females over the period, with both showing similar trends and rates of increase.

Figure 4: Trends in hospitalisation rates for regular dialysis (principal diagnosis), by sex, 2000–01 to 2017–18



Trends in hospitalisation rates for regular dialysis (principal diagnosis), by sex, 2000–01 to 2017–18

Note: Age-standardised to the 2001 Australian Standard Population.

Source: AIHW analysis of the National Hospital Morbidity Database.

<http://www.aihw.gov.au/>

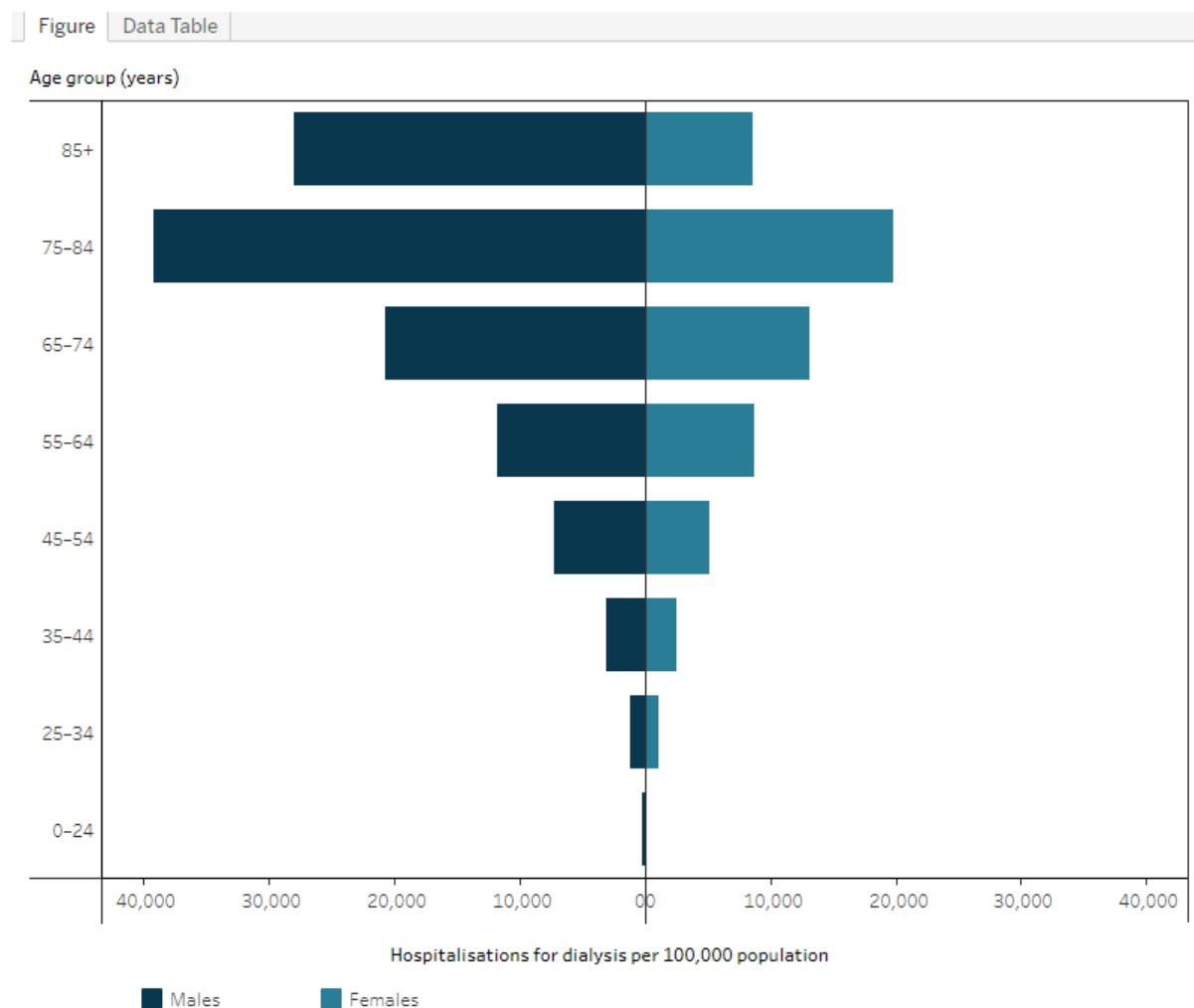
Age and sex

In 2017–18, CKD hospitalisation rates for regular dialysis (as the principal diagnosis):

- were 1.6 times as high among males as females. Age-specific rates for males were higher than females across all age groups.
- increased with age up to 75–84, with three-in-four (76%) hospitalisations occurring in those aged 55 and over. CKD hospitalisation rates for regular dialysis for males and females were highest in those aged 75–84 (39,100 and 19,800 per 100,000 population, respectively) (Figure 5).

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Figure 5: Hospitalisation rates for regular dialysis (principal diagnosis), by age group and sex, 2017–18



Hospitalisation rates for regular dialysis (principal diagnosis), by age group and sex, 2017–18
 Source: AIHW analysis of the National Hospital Morbidity Database.
<http://www.aihw.gov.au/>

Variations between population groups

In 2017–18, CKD hospitalisation rates for regular dialysis (as the principal diagnosis) increased with [remoteness](#) and [socioeconomic](#) disadvantage.

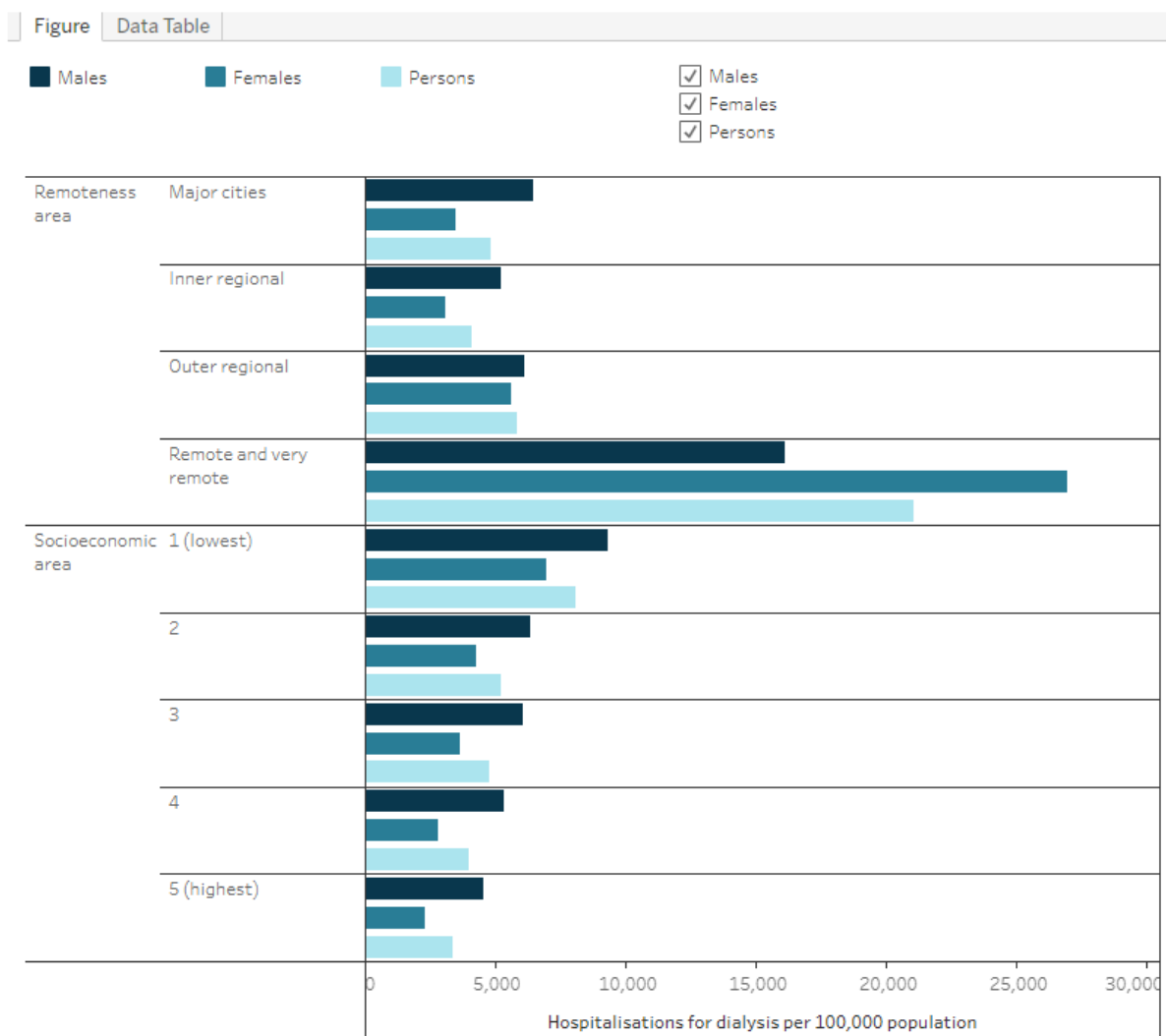
After adjusting for the difference in the age structure of the population groups, CKD hospitalisation rates were:

- more than 4 times as high in *Remote and very remote* areas compared with *Major cities*. The difference in these rates was much larger for females than males—nearly 8 times as high for females (26,900 and 3,500 per 100,000 population, respectively) and 2.5 times as high for males (16,100 and 6,400 per 100,000, respectively) .
- more than twice as high for people living in the lowest socioeconomic areas compared with those living the highest socioeconomic areas—3 times as high for

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females (7,000 and 2,300 per 100,000, respectively) and 2 times as high for males (9,300 and 4,600 per 100,000, respectively) (Figure 6).

Figure 6: Hospitalisation rates for regular dialysis (principal diagnosis), by remoteness and socioeconomic area, 2017–18



Hospitalisation rates for regular dialysis (principal diagnosis), by remoteness and socioeconomic area, 2017–18

Notes:

1. Age-standardised to the 2001 Australian Standard Population.

2. Hospitalisation rates have been calculated using population estimates for Australia, which includes Other Territories.

Source: AIHW analysis of the National Hospital Morbidity Database.

<http://www.aihw.gov.au/>

Aboriginal and Torres Strait Islander people

In 2017–18, there were 233,900 hospitalisations for regular dialysis (as the principal diagnosis) among [Aboriginal and Torres Strait Islander](#) people— a rate of 28,400 per 100,000 population.

After adjusting for the difference in the age structure of the populations:

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- The rate among Indigenous Australians was almost 11 times as high as the rate for non-Indigenous Australians (45,200 and 4,200 per 100,000, respectively).
- The disparity between Indigenous and non-Indigenous Australians was greater for females than males—16 times as high for females (48,800 and 3,000 per 100,000, respectively) and over 7 times as high for males (41,300 and 5,500 per 100,000, respectively).

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Deaths from chronic kidney disease

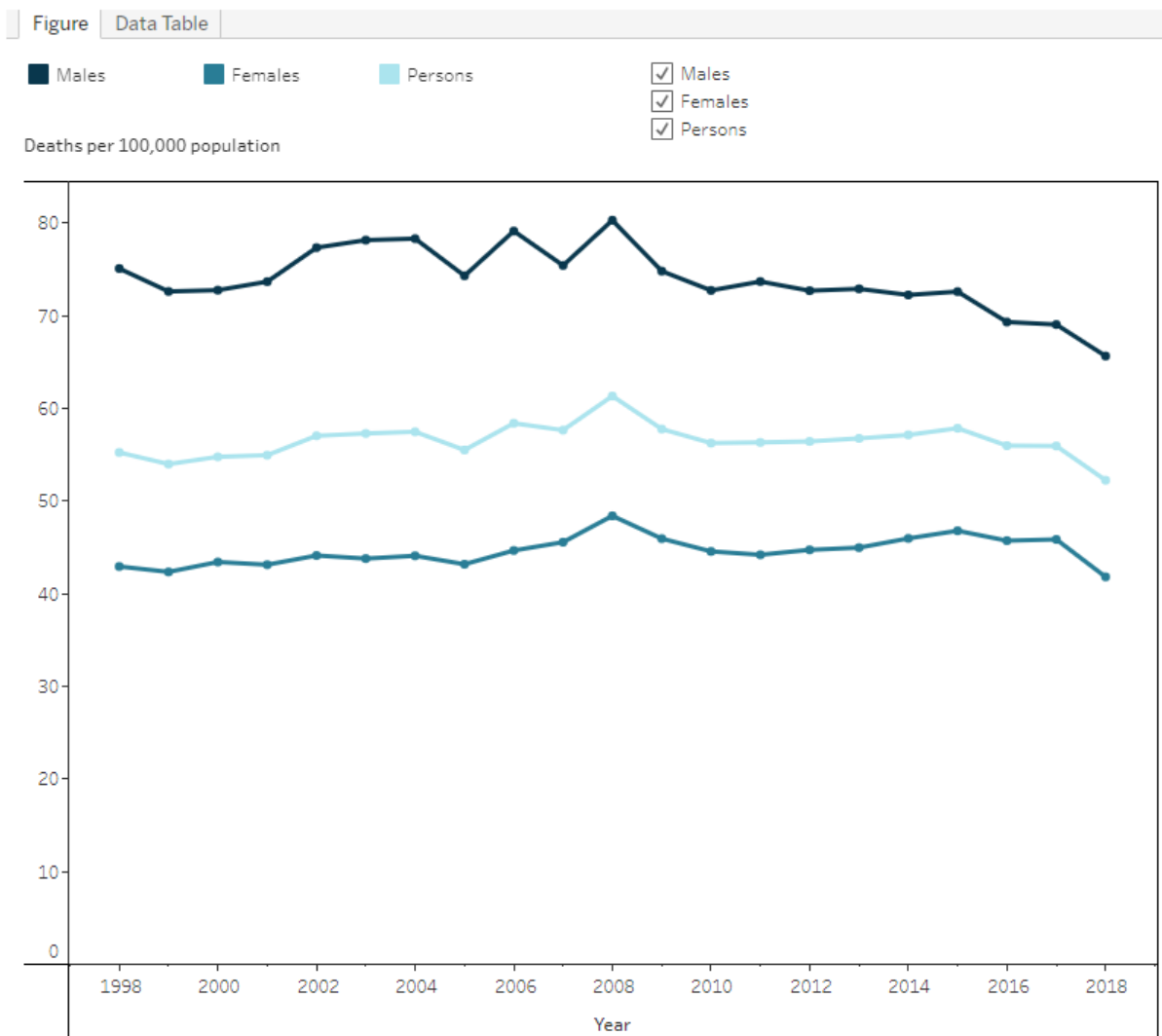
Chronic kidney disease (CKD) contributed to 11% of all deaths in 2018 (around 16,800 deaths), according to the Australian Institute of Health and Welfare [National Mortality Database](#). CKD was the [underlying cause of death](#) in around 3,600 deaths (21% of CKD deaths). It was an [associated cause of death](#) in a further 13,200 deaths (79% of CKD deaths).

Trends

Age-standardised rates for CKD as the underlying or associated cause of death remained relatively stable between 1998 and 2015, followed by a decline to 2018.

On average, CKD was the underlying or associated cause of death in around 13,700 deaths per year between 1998 and 2018. This equates to death rates of 66–80 per 100,000 population for males and 42–48 per 100,000 for females (Figure 1).

Figure 1: Trends in CKD deaths (underlying or associated cause), by sex, 1998 to 2018



Trends in CKD deaths (underlying or associated cause), by sex, 1998 to 2018

Note: Age-standardised to the 2001 Australian Standard Population.

Source: AIHW analysis of the National Mortality Database.

<http://www.aihw.gov.au/>

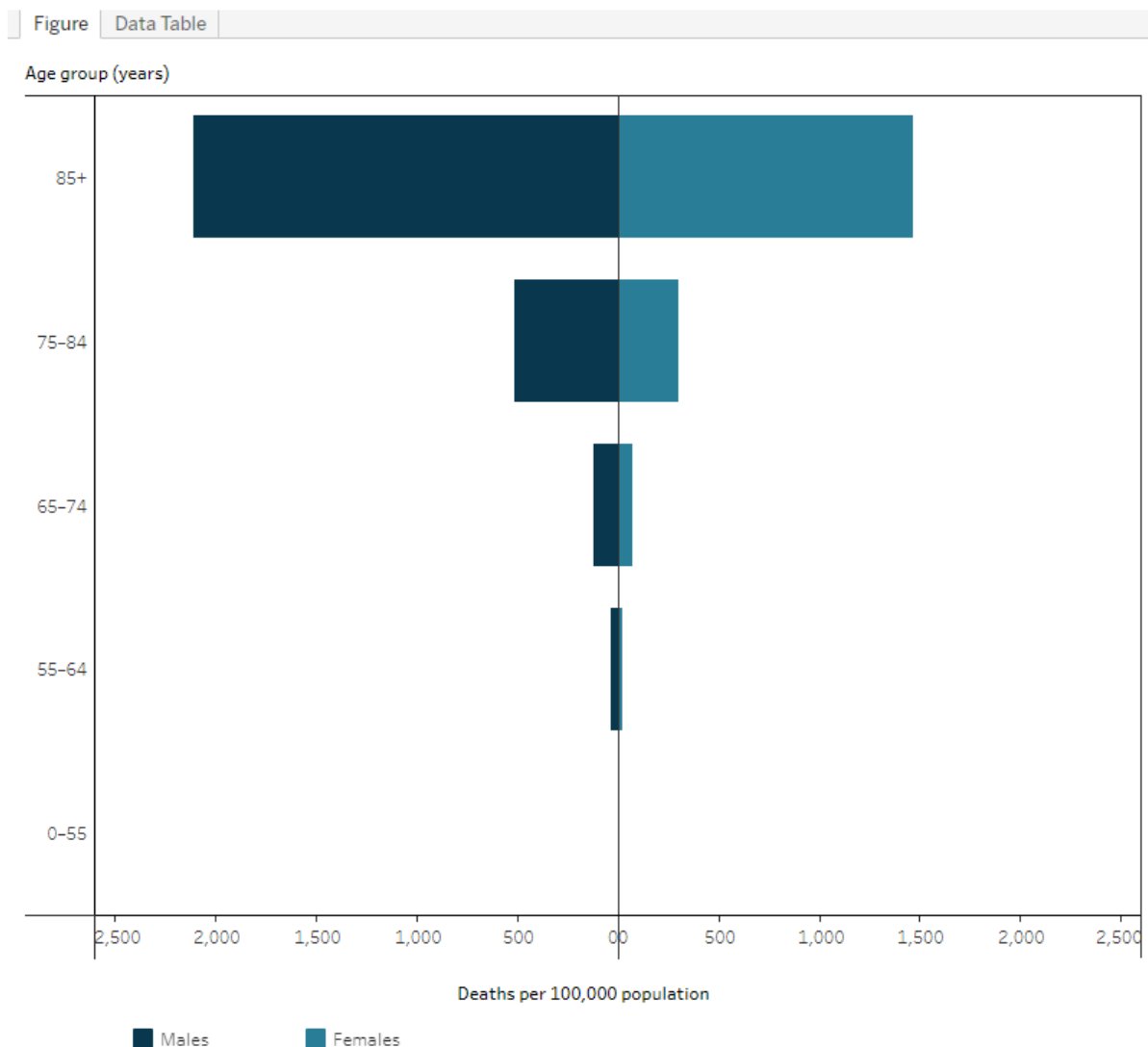
Age and sex

In 2018, CKD death rates (as the underlying or associated cause):

- were 1.6 times higher among males than females (66 and 42 deaths per 100,000 population, respectively). Age-specific rates for males were higher than females across all age groups.
- increased with age, with over half (51%) of CKD deaths occurring in people aged 85 and over. CKD death rates for males and females were highest in the 85 and over age group (2,100 and 1,500 per 100,000, respectively) —at least 4 times as high as for males and females aged 75–84 (516 and 303 per 100,000, respectively) (Figure 2).

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Figure 2: CKD death rates (underlying or associated cause), by age group and sex, 2018



CKD death rates (underlying or associated cause), by age group and sex, 2018

Source: AIHW analysis of the National Mortality Database.

<http://www.aihw.gov.au/>

Variations between population groups

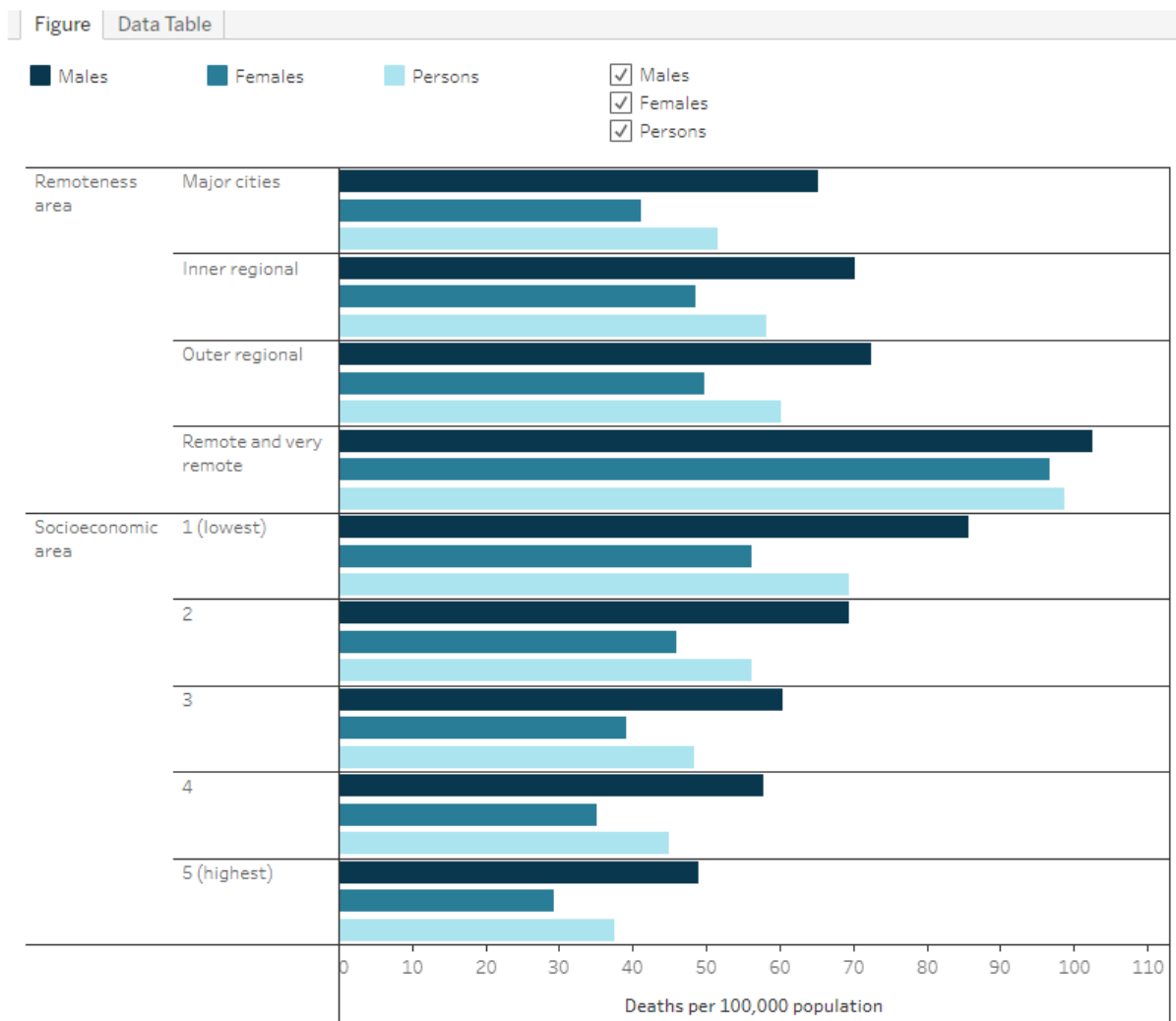
CKD death rates (as the underlying or associated cause of death) increased with [remoteness](#) and [socioeconomic](#) disadvantage. The rates were:

- almost twice as high in *Remote and very remote* areas compared with *Major cities* (99 and 52 per 100,000 population, respectively between 2016–2018). The difference in these death rates was greater for females than males—2.4 times as high for females (97 and 41 per 100,000) and 1.6 times as high for males (103 and 65 per 100,000).

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- almost twice as high in the lowest socioeconomic areas compared with the highest socioeconomic areas (70 and 38 per 100,000, respectively in 2018. This difference was similar for males and females (Figure 3).

Figure 3: CKD death rates (underlying or associated cause), by remoteness and socioeconomic area, 2016–2018



CKD death rates (underlying or associated cause), by remoteness and socioeconomic area, 2016–2018

Notes:

1. Age-standardised to the 2001 Australian Standard Population.

2. Analysis for socioeconomic area is for 2018 only.

Source: AIHW analysis of the National Mortality Database.

<http://www.aihw.gov.au/>

Aboriginal and Torres Strait Islander people

Between 2016–2018 there were 1,500 CKD-related deaths (as the underlying and/or associated cause) among Indigenous Australians, with a rate of 72 per 100,000 population (includes New South Wales, Queensland, Western Australia, South Australia and Northern Territory only).

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After adjusting for differences in the age structure of the populations:

- The death rate among Indigenous Australians was almost 4 times as high as for non-Indigenous Australians (186 and 52 per 100,000, respectively).
- This disparity was higher for females than males— over 4 times as high for Indigenous females (186 and 41 per 100,000, respectively) and 3 times as high for Indigenous males (189 and 66 per 100,000, respectively).

Diseases commonly listed as underlying causes of death for CKD

CKD is often listed as an associated cause when other conditions are the underlying cause of death. In 2018, there were 13,200 deaths where CKD was recorded as an associated cause of death.

CKD was most commonly listed as an associated cause of death for deaths due to:

- diseases of the circulatory system (37%)—mostly coronary heart disease (19%) and other forms of heart disease (11%),
- cancers (19%)
- diseases of respiratory system (8.8%)—mostly chronic obstructive pulmonary disease (3.9%) and pneumonia (2.0%)
- endocrine, nutritional and metabolic diseases (8.8%)—mostly type 2 diabetes (3.7%) and unspecified type of diabetes (2.7%).

Related reports

[Geographical variation in chronic kidney disease](#)

[Indicators of socioeconomic inequalities in cardiovascular disease, diabetes and chronic kidney disease](#)