National Key Performance Indicators for Aboriginal and Torres Strait Islander primary health care

Results for 2017

National Key Performance Indicators for Aboriginal and Torres Strait Islander primary health care series no. 5

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Please note that there is the potential for minor revisions of data in this report. Please check the online version at <www.aihw.gov.au> for any amendments.

Contents

Acknowledgments

Abbreviations

AATSIHS	Australian Aboriginal and Torres Strait Islander Health Survey
ABS	Australian Bureau of Statistics
ACR	albumin/creatinine ratio
ACT	Australian Capital Territory
AHMAC	Australian Health Ministers' Advisory Council
AIHW	Australian Institute of Health and Welfare
AIR	Australian Immunisation Register
ASGS	Australian Statistical Geography Standard
AUDIT	Alcohol Use Disorders Identification Test
AUDIT-C	Alcohol Use Disorders Identification Test-C
BMI	body mass index
CARPA	Central Australian Rural Practitioners Association
CIS	clinical information system
COAG	Council of Australian Governments
COPD	chronic obstructive pulmonary disease
CVD	cardiovascular disease
DoH	Department of Health
eGFR	estimated glomerular filtration rate
ERP	estimated resident population
GP	general practitioner
GPMP	General Practitioner Management Plan
HbA1c	glycated haemoglobin
HPV	human papillomavirus
L	litre
MBS	Medicare Benefits Schedule
mcg	microgram
METeOR	Metadata Online Registry
mg	milligrams
min	minute
mL	millilitre

mmHg	millimetres of mercury
mmol	millimoles
NATSISS	National Aboriginal and Torres Strait Islander Social Survey
NHMRC	National Health and Medical Research Council
nKPI	national Key Performance Indicators
NPDC	National Perinatal Data Collection
NSW	New South Wales
NT	Northern Territory
NVDPA	National Vascular Disease Prevention Alliance
OSR	Online Service Reporting
Pap	Papanicolaou
PCIS	Primary Care Information System
Qld	Queensland
RACGP	Royal Australian College of General Practitioners
SA	South Australia
Tas	Tasmania
TCA	Team Care Arrangement
Vic	Victoria
WA	Western Australia

Symbols

—	nil or rounded to zero
. .	not applicable
n.p.	not publishable because of small numbers, confidentiality, or other concerns about the quality of the data
no.	number
↑	favourable increase
↑	unfavourable increase
↓	favourable decrease
↓	unfavourable decrease
~	no change
<	less than
≤	less than or equal to
>	greater than
≥	greater than or equal to
≠	not equal to

Summary

This is the fifth national report on the Indigenous primary health care national Key Performance Indicators (nKPIs) data collection. It presents data on all 24 nKPI indicators for the first time.

Data for this collection are provided to the Australian Institute of Health and Welfare (AIHW) by primary health care organisations that receive funding from the Australian Government Department of Health to provide services to Aboriginal and Torres Strait Islander people. Some primary health care organisations included in the collection receive additional funding from other sources, including state and territory health departments.

As of the June 2017 data collection, changes have been made to the data extraction method, with the Department of Health introducing a new direct load reporting process. This allowed Communicare, Medical Director, and Primary Care Information System (PCIS) clinical information systems (CISs) to generate nKPI data within their clinical system, and transmit directly to the OCHREStreams portal. Best Practice services were provided with an interim tool while MMEx has always had direct load capability.

The new process was introduced to provide a greater level of consistency between CISs, but the change in the extraction method means that data from June 2017 onwards are not comparable with earlier collections.

As the June 2017 collection represents a new baseline for the collection, this report only presents data for June and December 2017.

For 2 indicators (Kidney function tests recorded and Kidney function test results) only December 2017 results are presented due to unresolved data quality issues in June 2017.

See Chapter 2 for more information on the change in extraction method, data quality, and the impact on the collection, and Appendix E for data improvement projects and the nKPI/Online Service Reporting (OSR) review under way.

Improvements were seen for most indicators between June and December 2017. Although data from these 2 reporting periods are not comparable with earlier reporting periods, an overall pattern of improvement is in keeping with the pattern of improvement previously reported for the period June 2012 to May 2015 (see AIHW 2017). This indicates that health organisations continue to show progress in service provision.

The good news

Between June and December 2017, improvements were seen in 16 out of a possible 23 measures for which comparable data for both periods were available (see Table S1 for details). Results for a further indicator remained stable between reporting periods.

The improvements were seen in 12 of the 15 process-of-care measures with comparable data. Improvements were also seen in 4 of the 8 outcome measures, while 1 outcome measure remained stable. The largest improvements (4 or 5 percentage points) were seen in the recording practices for the measuring of:

• influenza immunisations for clients with type 2 diabetes, which rose from 31% to 36%

• influenza immunisations for clients with chronic obstructive pulmonary disease (COPD), which rose from 32% to 37%

• influenza immunisations for clients aged 50 and over, which rose from 32% to 36%.

Things to work on

For the 3 process-of-care indicators that did not show improvements—glycated haemoglobin (HbA1c) result recorded (6 months), cervical screening, and Medicare Benefits Schedule (MBS) health assessment for those aged 0–4—the changes were very small (0.5, 0.4, and 0.1 percentage points, respectively).

In the case of cervical screening, this might be due to changes to the cervical screening program, which took effect from 1 December 2017 (see Chapter 4 for details).

Three outcome measures that did not show improvements—HbA1c result of 7% or less, low birthweight, and smoking status of women who gave birth in the previous 12 months—saw changes of between 0.8 and 1.8 percentage points.

Table S1: Summary of nKPIs, June 2017 and December 2017

Indicator group	June 2017			December 2017			Change in national proportion over time
	Numerator	Denominator	Proportion (%)	Numerator	Denominator	Proportion (%)	
Maternal and child health indicators							
PI13: First antenatal visit—before 13 weeks	2,456	6,265	39.2	2,597	6,300	41.2	←
PI01: Birthweight recorded	5,685	8,182	69.5	5,747	7,897	72.8	←
PI03: MBS health assessment—aged 0–4	13,482	38,769	34.8	13,846	39,935	34.7	→
PI02: Birthweight result—low	650	5,691	11.4	711	5,754	12.4	←
PI11: Smoking status of females who gave birth within the previous 12 months—current smoker	2,824	5,763	49.0	2,915	5,855	49.8	←
Preventative health indicators							
PI09: Smoking status recorded	170,336	211,116	80.7	186,680	229,309	81.4	←
PI16: Alcohol consumption status recorded	138,915	222,152	62.5	143,759	228,659	62.9	←
PI03: MBS health assessment—aged 25 and over	82,970	165,906	50.0	86,933	172,169	50.5	←
PI20: Risk factors assessed to enable cardiovascular disease (CVD) assessment	39,175	85,025	46.1	44,440	94,614	47.0	←
PI22: Cervical screening—previous 2 years	27,749	100,810	27.5	28,515	105,213	27.1	→
PI14: Immunised against influenza—clients aged 50 and over	18,553	58,170	31.9	21,704	61,011	35.6	←
PI10: Smoking status result—current smoker	87,737	170,336	51.5	96,058	186,680	51.5	~
PI12: Body Mass Index (BMI) classified as overweight or obese	82,300	115,884	71.0	84,641	119,648	70.7	→
PI17: Alcohol Use Disorders Identification Test-C (AUDIT-C)—4 or over (males) or 3 or over (females)	25,289	55,240	45.8	28,064	61,533	45.6	→
PI21: Absolute CVD risk—high	2,983	8,916	33.5	4,233	13,683	30.9	→

Table S1 (continued): Summary of nKPIs, June 2017 and December 2017

Indicator group	June 2017			December 2017			Change in national proportion over time
	Numerator	Denominator	Proportion (%)	Numerator	Denominator	Proportion (%)	
Chronic disease management indicators							
PI07: General Practitioner Management Plan—clients with type 2 diabetes	21,694	40,453	53.6	23,142	42,326	54.7	←
PI08: Team Care Arrangement—clients with type 2 diabetes	20,681	40,453	51.1	22,247	42,326	52.6	←
PI23: Blood pressure result recorded—clients with type 2 diabetes	25,750	40,225	64.0	26,886	41,950	64.1	←
PI05: HbA1c result recorded (6 months)—clients with type 2 diabetes	19,790	40,453	48.9	20,292	41,897	48.4	→
PI18: Kidney function test recorded—clients with:							
type 2 diabetes	n.p.	n.p.	n.p.	19,092	30,501	62.6	..
cardiovascular disease	n.p.	n.p.	n.p.	8,264	14,282	57.9	..
PI15: Immunised against influenza—clients with:							
type 2 diabetes	4,993	16,309	30.6	6,088	16,885	36.1	←
chronic obstructive pulmonary disease	686	2,150	31.9	836	2,256	37.1	←
PI24: Blood pressure result of 130/80mmHg or less—clients with type 2 diabetes	10,547	25,750	41.0	11,474	26,886	42.7	←
PI06: HbA1c result (6 months, 7% or less)—clients with type 2 diabetes	7,583	19,790	38.3	7,415	20,292	36.5	→
PI19: Kidney function test result:							
Estimated glomerular filtration rate (eGFR), result of 60 mL/min/1.73 m^2 or over—clients with:							
type 2 diabetes	n.p.	n.p.	n.p.	14,401	17,724	81.3	..
cardiovascular disease	n.p.	n.p.	n.p.	6,300	8,264	76.2	..
Albumin/creatinine ratio, result of less than 2.5 (males) or less than 3.5 (females)—clients with type 2 diabetes	n.p.	n.p.	n.p.	6,108	15,538	39.3	..

Notes

1. Health outcome indicators are shaded green.
2. The indicator 'PI04: Child immunisation' is excluded, due to concerns over data validity.

1   Introduction

This is the fifth report in a series about the Indigenous primary health care national Key Performance Indicators (nKPIs) data collection. It includes data for the periods ending 30 June 2017 and 30 December 2017.

In the December 2017 reporting period, data were collected from 231 primary health care organisations that receive funding from the Department of Health to provide primary health care services, mainly to Aboriginal and Torres Strait Islander people.

In the June 2017 reporting period, data were collected from 228 primary health care organisations.

Some primary health care organisations that report receive additional funding from other sources, including state and territory health departments.

The primary health care organisations include Aboriginal Community Controlled Health Services, state and territory-managed organisations, Primary Health Networks, and other non-government organisations.

This report is designed to highlight the major areas of achievement against the nKPIs by primary health care service providers, as well as the areas where organisations can improve the delivery of services to their Indigenous regular clients. These findings need to be understood in the context of the constraints within which organisations operate (for example, limited resources or accessibility), and the possibility that some results might relate to data collection issues rather than to service-delivery issues.

There is sound evidence to support the contribution that performance indicator systems can make to the delivery of effective primary health care when they are integrated with sound continuous quality improvement strategies (Bailie et al. 2007).

Continuous quality improvement is one component of a broader health system response required to improve primary health care delivery. The nKPI data submitted to the AIHW are run through a validation process. Clean data are then reported back to the health organisations to support continuous quality improvement processes that help improve the delivery of primary health care and health outcomes for Aboriginal and Torres Strait Islander people.

On their own, the nKPI data will not lead to positive change, improvements in service delivery or improved outcomes. But nKPIs and other data sets can make an important contribution when they are used by health service providers at the local level as part of broader continuous quality improvement processes to identify opportunities and to measure progress towards achieving change. For some organisations, getting the most value out of the nKPIs will require substantial change to their internal management and clinical systems, and putting processes in place to collect high-quality data. Taking the time to review and make sense of the data, and to adopt continuous quality improvement practices, requires organisational resources, commitment, capability, and capacity.

The nKPI data are also intended to support progress towards the Council of Australian Governments (COAG) Closing the Gap targets, in particular in the areas of child health and chronic diseases. Further, these will support the national health goals set out in the *Implementation Plan for the National Aboriginal and Torres Strait Islander Health Plan 2013–2023.*

The nKPI collection

Altogether, 24 nKPIs have received approval and endorsement for reporting from the National Health Information Standards and Statistics Committee, the National Health Information and Performance Principal Committee, and the Australian Health Ministers' Advisory Council (AHMAC).

This report is the first time that data for all 24 indicators are being reported, with the final 2 indicators—Alcohol Use Disorders Identification Test (AUDIT-C) result, and cardiovascular disease (CVD) risk assessment result—reported for the first time in June 2017.

The indicators focus on maternal and child health, preventative health, and chronic disease management (see Appendix A for details of the development of the nKPIs). These are some of the key focus areas in achieving the objectives of closing the gap in life expectancy between Indigenous and non-Indigenous Australians by 2031, and of halving the gap in child mortality by 2018.

The nKPIs build on a body of work in Australia that integrates primary health care effectiveness data with quality improvement methods. This work includes the:

• Australian Primary Care Collaboratives Program
• Audit and Best Practice for Chronic Disease program
• Northern Territory Aboriginal Health Key Performance Indicators project
• Queensland Aboriginal and Islander Health Council Health Information System
• Healthy for Life program.

Changes since June 2016

Starting with the June 2017 collection, changes were made to the electronic data extraction method for most organisations. This means that the June 2017 collection represents a new baseline for the collection moving forward, as data from earlier collections are not comparable with data from June 2017 onwards.

Consequently, only June 2017 and December 2017 data are presented in this report. For 2 indicators (Kidney function tests recorded, and Kidney function test results) only December 2017 results are presented, due to unresolved data quality issues in June 2017 (see Chapter 2 for more details).

nKPI clients

The population of interest in the nKPIs is the Indigenous regular client population of those primary health care organisations that are required to report against the nKPIs. A regular client is defined as a person who has an active medical record—that is, a client who attended the primary health care organisation at least 3 times in the previous 2 years.

Tables and figures in this report use the term 'client' in place of 'Indigenous regular client'. But the stated definition of Indigenous regular client applies to data presented in tables and figures.

The definition of Indigenous regular client used for this report is in line with the Royal Australian College of General Practitioners' (RACGP) definition of a patient with an active medical record (RACGP 2010). This definition does have limitations, though, including for clients who attend multiple health organisations.

Organisations in metropolitan and regional centres are likely to have larger transient client populations due to temporary mobility between remote communities and urban centres (Kainz et al. 2012). Although visiting Indigenous Australians might meet the 'Indigenous regular client' criteria in a particular organisation, they might not receive the majority of their health care from that organisation.

Two indicators covered in this report do not involve Indigenous regular clients (as defined)—birthweight recorded, and birthweight result. These indicators include all babies born in the previous 12 months, so the requirement to have attended 3 times in the previous 2 years does not apply.

In December 2017, 362,000 Indigenous regular clients were reported to have attended 228 Indigenous primary health care organisations (the remaining 3 organisations that reported in December 2017 did not provide valid data for their total number of Indigenous regular clients).

As the nKPI data collection does not currently collect an age and sex breakdown of the total number of Indigenous regular clients, Figure 1.1 provides an age and sex breakdown of the nKPI population, based on valid indicator data for PI09—smoking status recorded of Indigenous regular clients aged 15 or over (from 215 organisations), and PI03—child (aged 0–4) health assessments (from 217 organisations).

The numbers presented in the graph are not directly comparable with the total number of Indigenous regular clients cited above (from 228 organisations), as the data provided for these indicators are from a different number of organisations and cannot be reliably validated against the total number of Indigenous regular clients (See Chapter 2 for more details). This means that the numbers presented in Figure 1.1 are an underestimate of the total number of Indigenous regular clients in the collection.

In December 2017, 39,900 clients aged 0–4, and 229,000 Indigenous regular clients aged 15 and over attended organisations that reported nKPI data.

For clients aged 15 and over, where information on sex was available, the data show that the majority of clients (57%) were female. The 15–24 age group had the highest number of clients (58,200), and the 65-and-over age group had the fewest clients (16,600) (Figure 1.1).

Figure 1.1: Number of clients attending organisations that reported nKPI data, by age and sex, December 2017
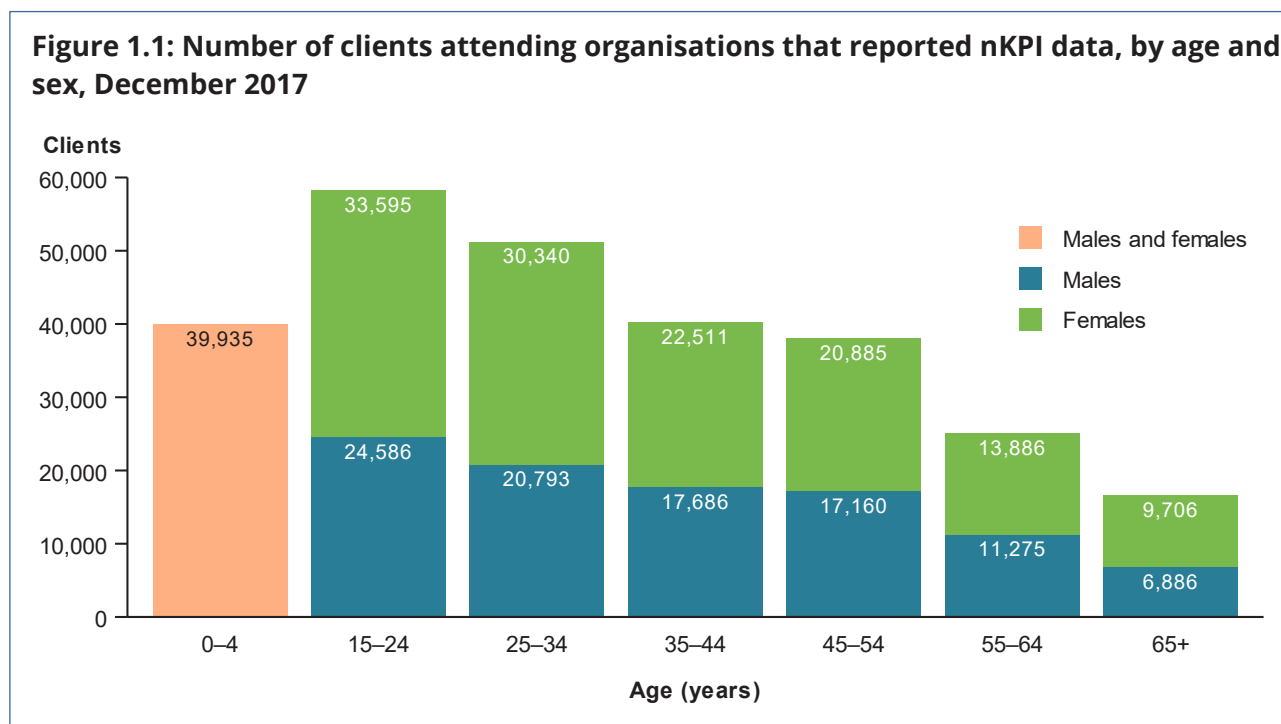
nKPI organisations

In the June 2017 reporting period, 228 organisations provided nKPI data, while in the December 2017 reporting period 231 organisations provided nKPI data (see Appendix A, Table A1 for details on the number of organisations contributing nKPI data by reporting period).

The number of organisations included in the analyses varies by indicator for each period, depending on the quality of the data submitted (see Appendix B, Table B1). This means the national averages reported are based on differing numbers of organisations, which could limit comparability for some purposes.

The governance arrangements for organisations reporting nKPI data in December 2017 differ, and include:

- Aboriginal Community Controlled Health Services, including 'auspiced' organisations (62%) (an auspiced organisation is an independent or semi-independent body funded by an Australian Government-funded organisation to provide health services)
- state and territory government-managed organisations (35%)
- Primary Health Networks (1%)
- other non-government organisations (2%) (Table 1.1).

For the purposes of nKPI reporting, organisations may provide data for an individual health care service, for multiple sites, and through an intermediary—for example, where organisations are funded by Primary Health Networks to deliver services, combined data can be reported through Primary Health Networks (the fund-holder organisation).

For the June and December 2017 collections, organisations reported nKPI data directly to OCHREStreams, a web portal designed to reduce reporting burden. AIHW was able to access this data by using OCHREStreams.

Table 1.1: Number of organisations, by type of governance arrangement and state and territory, December 2017

Governance arrangement	NSW/ACT	Vic/Tas	Qld	WA	SA	NT	Total	%
Aboriginal and Torres Strait Islander Community Controlled Health Services	39	27	35	15	11	16	143	61.9
State, territory and local government	12	2	2	6	5	54	81	35.1
Other non-government	—	2	1	—	—	1	4	1.7
Primary Health Networks	3	—	—	—	—	—	3	1.3
Total	54	31	38	21	16	71	231	100.0

In December 2017, of the 228 organisations who provided valid data for their total number of Indigenous regular clients:

- the Northern Territory had the most organisations (71)
- most Northern Territory organisations (56) were in *Very remote* areas
- New South Wales and the Australian Capital Territory combined had the largest number of organisations in *Major cities* (12) (Figure 1.2).

Figure 1.2: Number of organisations contributing nKPI data, by state and territory and remoteness area, December 2017
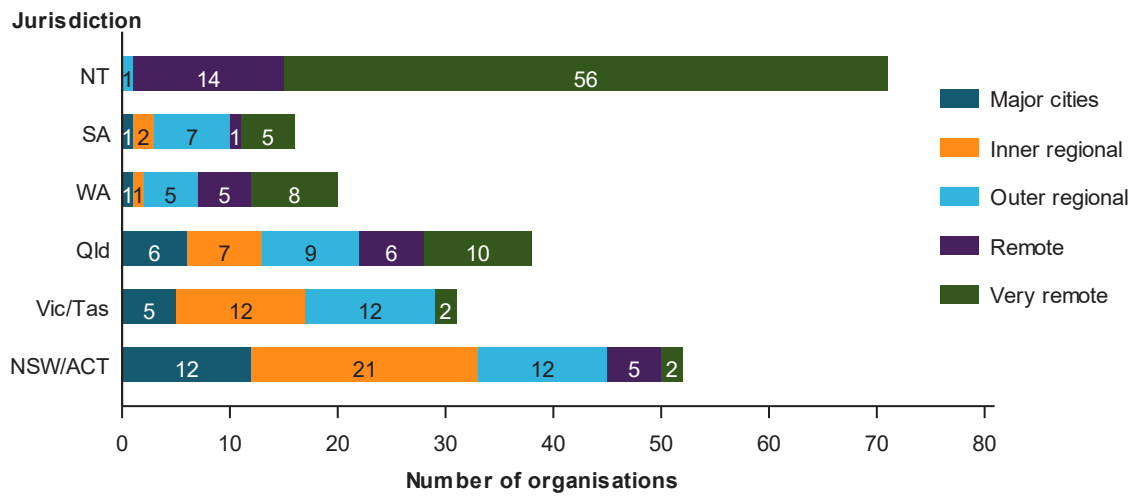
Note: Due to small numbers, organisations in the Australian Capital Territory have been combined with those in New South Wales, and organisations in Tasmania have been combined with those in Victoria.

- In December 2017, 228 organisations reporting nKPI data saw a combined total of 362,000 clients for relevant health conditions or disease management.
- Queensland (31%) and the Northern Territory (24%) together accounted for more than half of these clients (199,000).
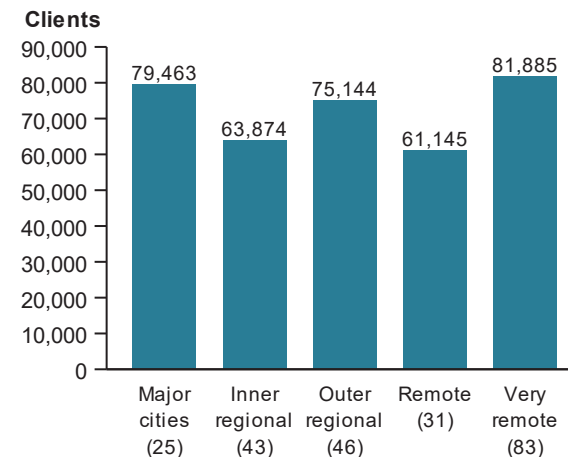- South Australia had the lowest number of clients (15,100, or 4%) (Figure 1.3).

Figure 1.3: Number of clients, by state and territory, December 2017
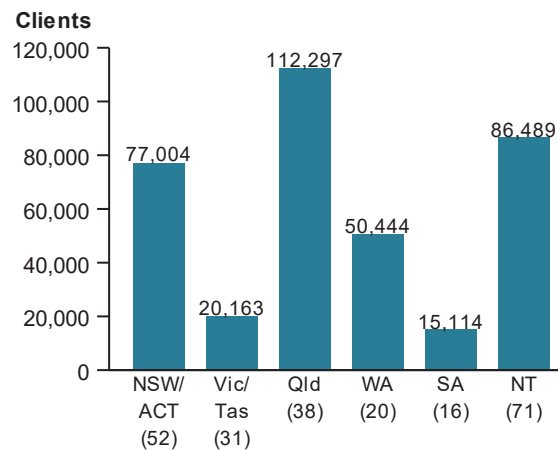
Note: Numbers of organisations are in brackets.

- In December 2017, the number of Indigenous regular clients was highest in organisations in *Very remote* areas (81,900 or 23%), and lowest in Remote areas (61,100 or 17%) (Figure 1.4).
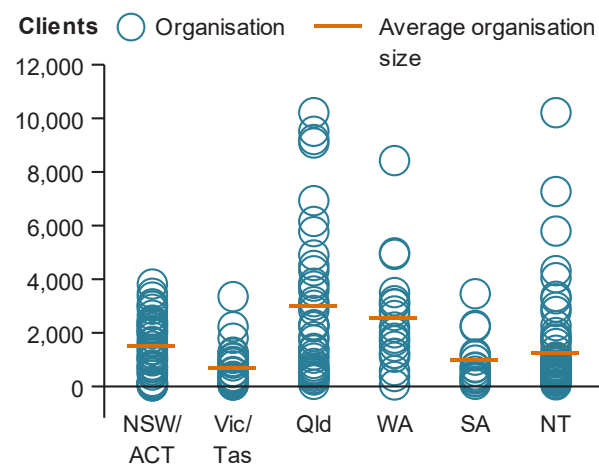
Figure 1.4: Number of clients, by remoteness area, December 2017

*Note:* Numbers of organisations are in brackets.

- The size of organisations varied by state and territory.
- The average number of Indigenous regular clients at each organisation was highest in Queensland (3,000), and lowest in Victoria/Tasmania (650) (Figure 1.5).
- In Victoria/Tasmania, half of the organisations had fewer than 320 Indigenous regular clients, while half of the organisations in Western Australia had more than 2,100 Indigenous regular clients.

Figure 1.5: Organisation size, by state and territory, December 2017

- Organisation size also varied by remoteness area.
- The average number of clients at each organisation was highest in *Major cities* (3,200), and lowest in *Very remote* areas (990) (Figure 1.6).
- Half of the organisations in *Very remote* areas had fewer than 600 Indigenous regular clients, while half of the organisations in *Major cities* had more than 2,300 Indigenous regular clients.

Figure 1.6: Organisation size, by remoteness area, December 2017
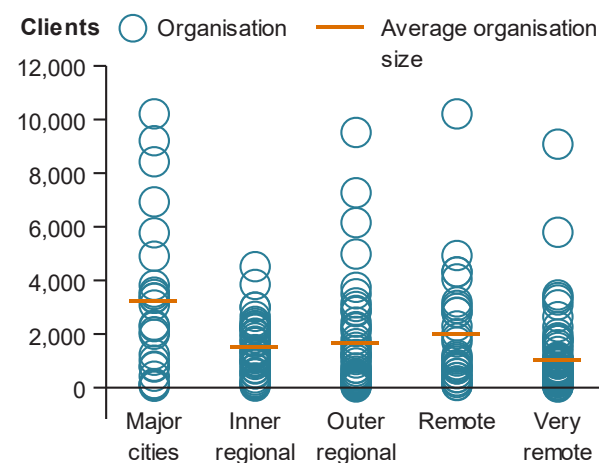
Organisations reporting nKPI data are located across all states and territories, and remoteness areas (Figure 1.7).

Figure 1.7: Organisation location map, showing state and territory and remoteness area, December 2017
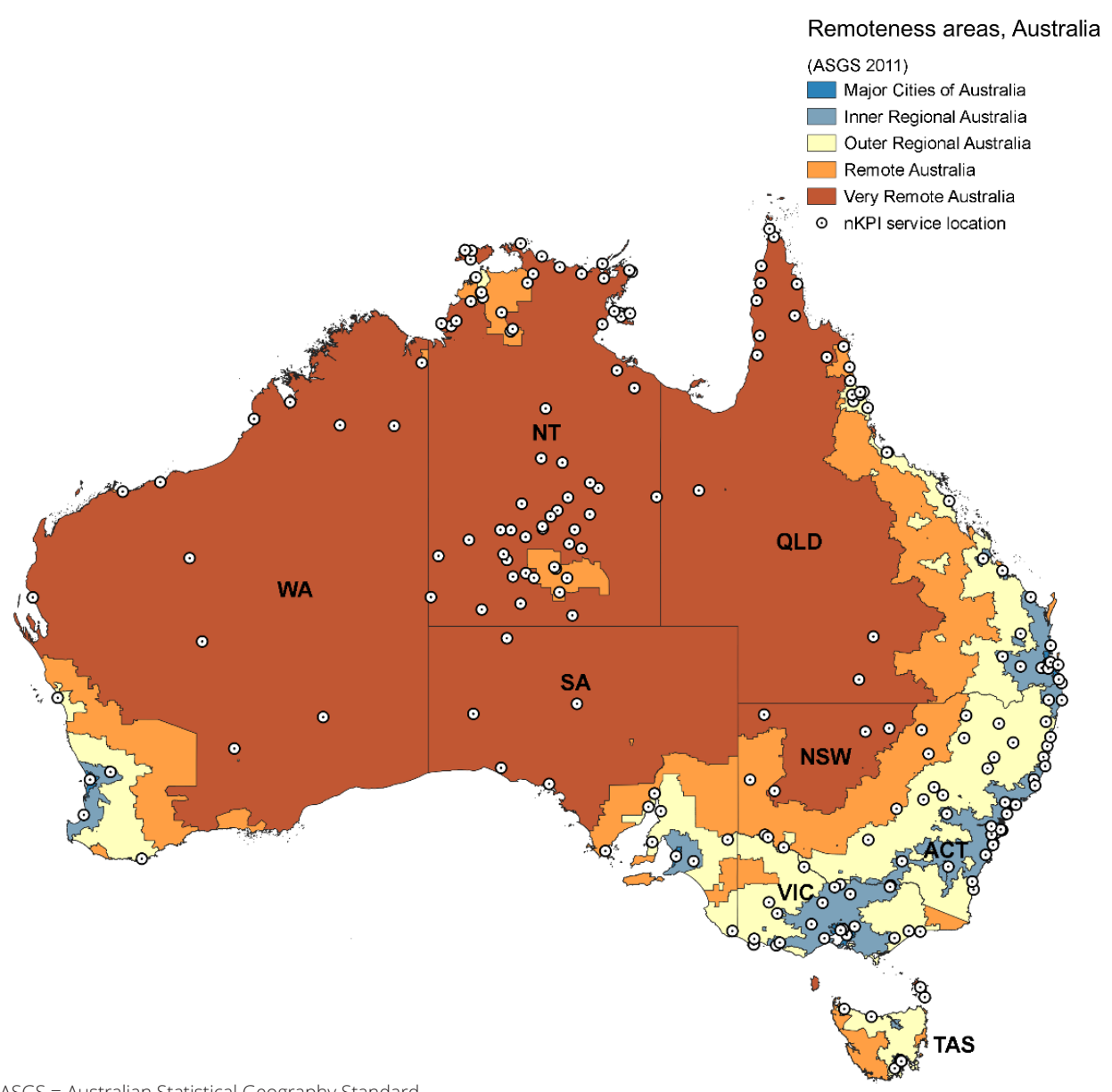
ASGS = Australian Statistical Geography Standard
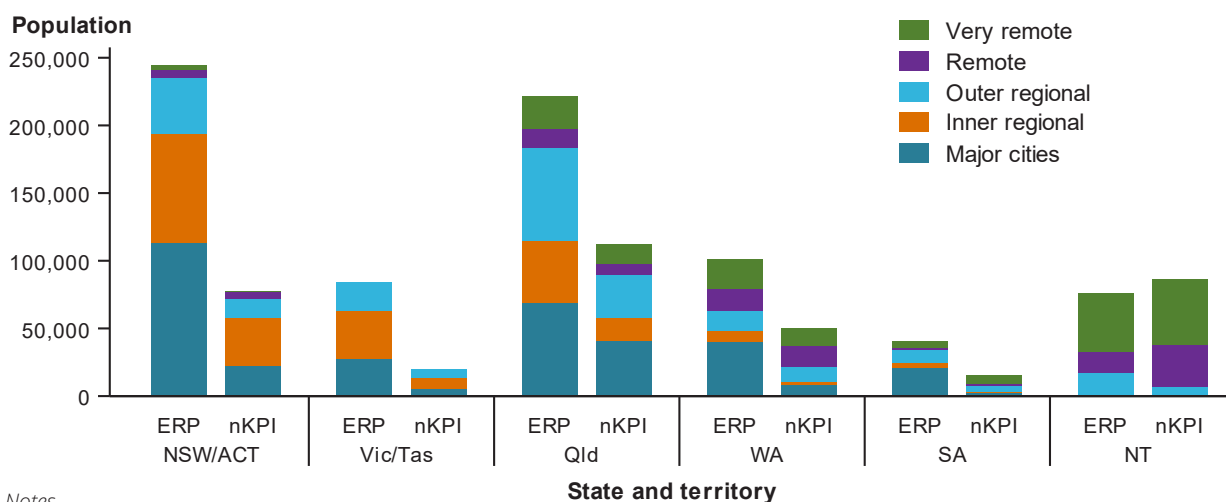
Notes

1. Some nKPI organisations might operate in multiple locations. Where this has occurred, only 1 site is shown on the map.

2. Multiple organisations might be located in a small geographical area, so not all organisations will be visible on the map.

The remoteness distribution of the nKPI Indigenous regular client population in each jurisdiction does not necessarily reflect the remoteness distribution of the Indigenous estimated resident populations (ERP) in respective jurisdictions (Figure 1.8).

Also, there are likely to be differences in the level of Indigenous identification between the Census-based population estimates and the nKPI client population—Indigenous status in the Census is based on self identification alone, while Aboriginal primary health care organisations may also consider community recognition and descent. These factors should be taken into account when comparing data across jurisdictions and remoteness areas.

Aboriginal and Torres Strait Islander people living in *Major cities* and some regional areas might have access to more health service options than those living in *Remote* and *Very remote* areas.

Figure 1.8: nKPI Indigenous client population and the estimated resident Indigenous population, by remoteness area, December 2017


Notes

1. Overall, nKPI Indigenous regular clients represented over 95% of the ERP in *Remote* and *Very remote* areas. This might be a reflection of a high proportion of visitors in these areas, resulting in the counting of individuals at multiple health organisations.
2. *Outer regional, Remote,* and *Very remote* areas of Victoria and Tasmania have been combined, due to small numbers, and reported as *Outer regional*.
3. ERP is the AIHW Estimated Resident Population (based on ABS 2011 census data) as at 31 December 2017, and excludes population in external territories.

• The nKPI client population shown in Figure 1.9 represents almost a quarter (24%) of the total Indigenous population in Victoria/Tasmania, and just over half (51%) of the total Indigenous population in Queensland. These figures need to be treated cautiously, as clients attending more than 1 organisation in a particular state or territory can be counted more than once (though the extent of over counting is unknown). This is why the proportion of Indigenous regular clients in the Northern Territory is higher than the estimated resident population (113%). There is also a greater choice of primary health care organisations in more urban areas, including those that do not report against the nKPIs. This could also contribute to differences between jurisdictions.

Figure 1.9: nKPI Indigenous client population as a proportion of the estimated resident Indigenous population, December 2017 (%)
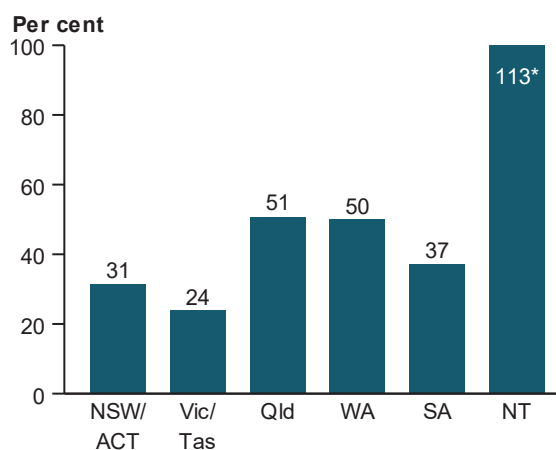
Note: Percentage of the Indigenous population is shown at the top of the columns. Result marked * exceeds 100%, likely due to clients attending more than 1 organisation (leading to double-counting).

Structure of this report

Following this introductory chapter, the remaining chapters of this report are organised as follows:

- Chapter 2 presents a detailed discussion of data quality issues affecting the June 2017 and December 2017 data collections.
- Chapters 3–5 present data for groups of indicators organised into 3 related themes—maternal and child health, preventative health, and chronic disease management. Results are presented at the national level for June 2017 and December 2017, and by age and sex where applicable. Data quality and interpretation issues affecting specific indicators are also discussed.
- Chapter 6, written by the Department of Health, sets out the Department's view of the main findings in forming an overall conclusion.

This report also has the following appendixes:

- Appendix A lists the 24 approved nKPIs, with a background to the development of the data collection.
- Appendix B provides information on the number of organisations contributing valid data to each indicator.
- Appendix C compares nKPIs results where possible, with national data for Aboriginal and Torres Strait Islander people, and with national data for the general Australian population.
- Appendix D presents graphs showing organisation variation, with median and quartile boundaries of organisations, by state and territory and remoteness area.
- Appendix E presents information on current Department of Health projects to improve data quality in both the OSR and nKPI data collections.
- Appendix F provides an explanatory guide to the figures presented in this report.

Supplementary online tables with nKPI results can be found online at <https://www.aihw.gov.au/reports/indigenous-health-welfare-services/nkpis-indigenous-australians-health-care-2017/data> and include data broken down by age, sex, remoteness area, and state and territory.

The text in this report contains numbers that have been rounded. Percentages and changes over time are presented in figures and tables without rounding. As a result, caution should be taken if differences are calculated using rounded numbers in the text, which might be different to those shown in tables.

2   Data quality

The quality, completeness, and timeliness of data are important elements of a data collection as accurate information is needed to inform effective service delivery, better policies, and programs.

As discussed in Chapter 1, the nKPI data are used for a variety of purposes, including the development of continuous quality improvement strategies at health service level and monitoring progress against high-level policy initiatives.

As a result, the AIHW works closely with health organisations to ensure the internal validity and the time series data are as accurate as possible. But factors beyond the control of the AIHW and the organisations can affect the quality of the data collected.

The nKPI data are collected every 6 months on the census dates of 30 June and 31 December each year. To date, data have been collected for 10 reporting periods (due to technical issues, no data were collected in December 2016), with December 2017 being the most recent collection.

Initially the collection was started with 11 indicators, with about 100 Indigenous-specific primary health organisations participating. Over time, the number of indicators increased to the full set of 24, and the number of organisations participating grew to about 240.

These ongoing changes also posed some challenges to ensuring data quality, as health organisations needed time to get used to reporting data against new indicators, and the AIHW needed to support new organisations starting to report.

Also, with these changes, there was no time for the data collection to stabilise and mature before technological changes aimed at improving data collection process occurred.

Until June 2016, the nKPI data were extracted from health organisations' CISs, largely by a single tool, PenCAT. As this tool was compatible only with Medical Director, Best Practice, PractiX, Communicare, and a version of Medinet, some organisations submitted data manually. Organisations using MMEx software submitted data directly to OCHREStreams.

For the June 2017 nKPI data collection, the Department of Health introduced a new direct load reporting process, which allowed Communicare, Medical Director, and PCIS clinical software systems to generate nKPI data within their clinical system, and transmit directly to the OCHREStreams portal (see Box 2.1).

As Best Practice did not have an in-built extraction program, Best Practice organisations were provided with the Telstra Health tool Elicio to extract and transform their data, and send to OCHREStreams.

Some Best Practice organisations used a Structured Query Language script, developed by the Improvement Foundation, in conjunction with the manual submission form to submit data. MMEx has always been a direct load process, but some changes were also made to the MMEx extraction process as a result of the Data Validation Project led by Doll Martin Associates.

The June 2017 data collection underwent the standard data quality assessment once the data were submitted to the AIHW. But the level of assistance required from AIHW by health organisations to correct their data was considerably greater in June 2017 than in the previous reporting period.

The number of resubmissions was considerably higher than in June 2016; around 83% of organisations (189) received at least 1 exception report to correct their data. This compares with 24% of organisations (58) for the June 2016 collection.

The total number of exception reports for the June 2017 was 286, compared with 92 in June 2016. This might be due to limited testing of the new direct load process before its implementation.

In addition, 228 organisations provided nKPI data for the June 2017 collection, close to 5% lower than in June 2016 (241 organisations). Three organisations were given exemptions from reporting due to ongoing technical issues. For reasons unknown to AIHW, 10 organisations did not submit data in June 2017.

Box 2.1. Changes to the extraction process in June 2017

For the June 2017 nKPI data collection, changes were made to the data extraction process for Communicare, Medical Director, and PCIS following the introduction of a new direct load reporting process by the Department of Health.

The direct load process allows health organisations using Communicare, Medical Director, and PCIS to generate nKPI data within their clinical system, and transmit directly to the OCHREStreams portal.

As Best Practice did not have an in-built extraction program, organisations with Best Practice were provided with the Elicio tool (an extraction tool developed by the Improvement Foundation using software from Telstra Health).

Some Best Practice organisations used a Structured Query Language script, developed by the Improvement Foundation, in conjunction with the manual submission form to submit data. MMEx has always been a direct load process, but some changes were also made to the MMEx extraction process as a result of the Data Validation Project led by Doll Martin Associates.

The new process means that, while previously there were 2 extraction tools (PenCAT and MMEx) providing a level of consistency between CISs, there are now 5 extraction tools, noting that the PenCAT and MMEx have not been independently validated by a third party.

Data quality issues

As is standard practice, the AIHW used several criteria to assess the quality of data submitted for the June 2017 collection, which are:

- the validation rule violations for indicator for each CIS (analysis by CIS is important to identify anomalies specific to each system)
- zero-to-integer revisions
- an analysis of time series data.

Violation of validation rules

AIHW has developed a set of internal validation rules to check the data submitted by each service, to ensure that the data are internally consistent, and meet methodological requirements specified for each indicator. In this respect, internal validation refers to logic 'checks' that AIHW applies by looking at numerators and denominators for all indicators.

These rules have been classified into the following categories:

- **Population group comparison: illogical inference**—indicators referring to a specific population group should be less than indicators within a broader population group (for example, there should not be fewer total female Indigenous regular clients than female Indigenous regular clients who have not had a hysterectomy).
- **Population group comparison ≠ values**—indicators that have clients with the same condition should be equal.
- **Denominator components ≠ values**—for indicators with multiple categories in the numerator, the denominator should be the same for each category.
- **N > D**—the numerator should be less than or equal to the denominator.

- **Sum N ≠ D**—for some indicators with multiple categories in the numerator, the sum of the numerator should equal the denominator.
- **Sum N ≥ D**—for some indicators with multiple categories in the numerator, the sum of the numerator is expected to be less than the denominator.
- **Sum N > D**—for some indicators with multiple categories in the numerator, the sum of the numerator should be less than or equal to the denominator.
- **Tests over time**—the number of tests performed in the previous 6 months should be less than or equal to the number of tests performed in the previous 12 months.

The number of indicators and number of organisations affected by internal validations varied considerably across CISs.

The CISs with the highest number of internal validation issues were PCIS (369), Best Practice (159) and Communicare (127). After accounting for the number of organisations using each CIS, results show that PCIS (7.2) and Best Practice (6.1) had the highest rate of internal validation issues per service. PCIS (34) and Best Practice (29) also had the greatest number of rules that were violated, indicating a broader range of issues, followed by Communicare (20), MMEx (10), and Medical Director (8) (Table 2.1).

Table 2.1: Internal validation issues, by CIS type

CIS	Number of organisations	Number of internal validation issues	Number of issues per service	Number of rules violated
Best Practice	26	159	6.1	29
Communicare	78	127	1.6	20
Medical Director	34	13	0.4	8
MMEx	10	27	2.7	10
PCIS	51	369	7.2	34
Total	**199**	**695**	**3.5**	**49**

Zero-to-integer revisions

In addition to internal validation issues, another potential source of error occurs when extraction tools fail to 'pick up' data. To examine the extent to which this issue affected the nKPI collection, AIHW looked at the data submissions of all organisations that submitted revised data via the exception report process.

The organisations' first (original) data submissions were compared with the final (revised) submissions to identify all instances in which organisations revised a zero value to a nonzero (integer) value. The analysis focused on revisions where the original submission had zeros in the numerator only, as well as where there were zeros in both the numerator and denominator.

As with the internal validations, the number of zero-to-integer revisions varied considerably across CISs. Organisations using Best Practice had the most zero-to-integer revisions (48 revisions), followed by Communicare (12 revisions), and Medical Director (11 revisions).

Additionally, on a revisions per service basis, Best Practice had the highest number of revisions per service (1.8). Results also showed that Best Practice had a total of 12 indicators with revisions, and Communicare and Medical Director had 4 indicators with revisions each (Table 2.2).

Detailed results by CIS type showed that of the 48 zero-to-integer revisions of organisations using Best Practice, 26 were numerator only revisions, and 22 were numerator and denominator revisions. Most revisions were for Best Practice organisations that used the Elicio extraction method (45 revisions).

Additionally, 46% of the revisions for Best Practice were for PI18: Kidney function test recorded, and PI19: Kidney function test result. The 48 total Best Practice revisions occurred in submissions for only 12 of the 26 Best Practice organisations, 9 of which had used the Elicio extraction method, and 3 had used the Structured Query Language script.

Table 2.2: Zero-to-integer revisions, by CIS type

CIS	Number of organisations	Number of zero-to-integer revisions	Number of revisions per service	Number of indicators with revisions
Best Practice	26	48	1.8	12
Communicare	78	12	0.2	4
Medical Director	34	11	0.3	4
MMEx	10	—	—	—
PCIS	51	—	—	—
Total	**199**	**71**	**0.4**	**13**

Results for Communicare showed that most (10 of 12) Communicare zero-to-integer revisions were numerator and denominator revisions. Only 2 were numerator only revisions.

Of the 11 zero-to-integer revisions in organisations using Medical Director, 4 were numerator only revisions, and 7 were numerator and denominator revisions.

Time-trend anomalies

The gold standard for determining whether changes are a result of a change in method, such as a new extraction tool is parallel testing. In the absence of that method, time-trend analysis can assist in identifying anomalies in results, but it is difficult to distinguish between 'real world' changes and artefacts of a change in the extraction tool.

For the nKPI collection, this is particularly problematic at the service level, because of the historical variations observed in the data. For the June 2017 collection, time trend issues were further obscured by the volume of internal validation errors. Organisations were often unable to advise as to whether changes identified at the service level were due to 'real world' changes or a result of the new extraction method.

Another complicating factor for June 2017 collection was the lack of comparable data for December 2015, and no data for December 2016. This meant that time-trend analysis needed to be done on annual June time periods, with only 4 historical periods available (June 2013–June 2016, as June 2012 has not been used, because it was the first collection, and only collected data for some indicators for a smaller number of organisations).

To provide a more accurate assessment of whether the new extraction method introduced time trends issues, analyses were conducted on data aggregated by CIS type. To ensure an accurate comparison, only organisations that reported valid data in all 5 annual June reporting periods since June 2013 were included. The number of organisations included varies per indicator, ranging from 157 to 225.

Two methods were used in the time-trend analysis:

1. An analysis was done by CIS type to determine whether June 2017 results were outside the minimum and maximum expected values based on annual inter-period changes between June 2013 and June 2016.

2. An analysis focused on those indicators that fell outside the expected range of the minimum/maximum analysis described in method 1. For those indicators, the percentage point difference between 2017 and 2016 results was calculated, and presented under a range of cut-off points for each CIS type of:
   – more than 0 to less than 5 percentage points
   – 5 to less than 10 percentage points
   – 10 or more percentage points.

   A violation of the minimum/maximum analysis, and a change of 10 or more percentage points for a large number of indicators is unusual, so raises serious concerns about their accuracy.

These methods have very generous levels of tolerance. Indicators that did not meet this threshold are likely to have been affected by the methodological change in extraction, and in some cases might also reflect a possible error, with the extraction process warranting further investigation. Analyses were conducted using organisations' initial submissions and final submissions to determine whether data had changed between the first and final submissions, and to assist in determining whether a break in series had occurred.

Findings from time-series analysis

Table 2.3 shows the results of time-series analyses done on organisations' initial submissions. Table 2.4 shows the results of time-series analyses done on organisations' final submissions, noting that there was little difference in the results for the 2 submissions.

For initial submissions (Table 2.3), Medical Director had the highest number of indicators (21) that fell outside the minimum/maximum expected values, followed by Best Practice (17) and PCIS (16). The analysis was done on the 22 indicators for which time series data was available.

Table 2.3: Number of indicators violating previous minimum/maximum change (2013–2016), and percentage point change (2016–2017), by CIS type (initial submissions)

Absolute percentage point change to June 2017	Best Practice	Communicare	Medical Director	MMEx	PCIS
>0–<5	9 (41%)	10 (45%)	14 (64%)	11 (50%)	2 (9%)
5–<10	4 (18%)	1 (5%)	4 (18%)	1 (5%)	4 (18%)
10+	4 (18%)	2 (9%)	3 (14%)	1 (5%)	10 (45%)
Total	**17 (77%)**	**13 (59%)**	**21 (95%)**	**13 (59%)**	**16 (73%)**
No. of indicators with no min/max violations	5 (23%)	9 (41%)	1 (5%)	9 (41%)	6 (27%)

Table 2.4: Number of indicators violating previous minimum/maximum change (2013–2016) and percentage point change between 2016 and 2017, by CIS type (final submissions)

Absolute percentage point change to June 2017	Best Practice	Communicare	Medical Director	MMEx	PCIS
>0–<5	9 (41%)	9 (41%)	13 (59%)	8 (36%)	3 (14%)
5–<10	2 (9%)	4 (18%)	4 (18%)	4 (18%)	4 (18%)
10+	4 (18%)	1 (5%)	3 (14%)	1 (5%)	9 (41%)
Total	**15 (68%)**	**14 (64%)**	**20 (91%)**	**13 (59%)**	**16 (73%)**
No. of indicators with no min/max violations	7 (32%)	8 (36%)	2 (9%)	9 (41%)	6 (27%)

Applying the second level of analysis to the initial submission, and looking at indicators that fell outside the expected range of the minimum/maximum analysis, and where the change was 10 percentage points or greater, PCIS had the highest number of violations (10) followed by Best Practice (4), Medical Director (3), Communicare (2), and MMEx (1).

PCIS also had 3 indicators for which the change was 20–30 percentage points, and 2 indicators where the change was 30 percentage points or greater. Medical Director had 1 indicator where the change was 20–30 percentage points, and 2 indicators where the change was 30 percentage points or greater. Best Practice had 1 indicator where the change was 20–30 percentage points, and 1 indicator where the change was 30 percentage points or greater. MMEx had 1 indicator where the change was 30 percentage points or greater.

Overall, the results indicated that at least 1 CIS for each of 14 indicators (out of the possible 22 indicators) failed the time-trend analysis tests before the data was cleaned. Of the 14 indicators, 11 were unfavourable changes.

At least 1 CIS for each of 13 indicators (out of a possible 22 indicators with trend data) also failed these tests after the data was cleaned. Of these 13 indicators, 10 had unfavourable changes.

In addition, issues affecting several indicators across several CISs emerged during the timetrend analysis. They are as follows:

- **PI04: Child immunisation**—This indicator has historically been problematic, with ongoing concerns about the data quality issues with the childhood immunisation data collected from primary health care organisations. Consequently, the large increases for this indicator for MMEx and PCIS might be an accurate correction to the data, although results remain lower than the Australian Immunisation Register (AIR) results.

- **PI13: First antenatal visit**—Communicare and Medical Director appeared to have issues with this indicator. For Medical Director, this was confirmed by a user service. The issue affected the numerator categories 'No visit recorded' (which decreased between June 2016 and June 2017), and 'Timing of visit not recorded' (which conversely increased over this period). A possible explanation is that for June 2017, some numerator data previously reported in the category 'No visit recorded' has been reported in the category 'Timing of visit not recorded'. Closer analysis of data from organisations using Best Practice also showed decreases in the numerator category 'No visit recorded', and increases for 'Timing of visit not recorded' between June 2016 and June 2017. For MMEx, the Doll Martin Associates *2017 Data Validation Project report* noted that records were being included in the 'Timing of visit not recorded' numerator even when there was no visit. The issue was expected to be fixed in the next release.

- **PI18: Kidney function test recorded—type 2 diabetes**—Best Practice and Medical Director appeared to have issues with this measure. Unexpected decreases were identified for the categories 'Any test recorded' and 'Both estimated glomerular filtration rate (eGFR) and albumin/creatinine ratio (ACR) tests recorded'. But closer analysis of Communicare and PCIS also showed anomalies in at least 1 of the numerator categories. For Communicare, a decrease was seen in the 'both eGFR and ACR tests recorded' while increases were seen for the categories 'ACR test only recorded' and 'eGFR test only recorded'. A possible contributing factor is that for June 2017 not all pathology results were picked up. This issue warrants investigation. In the past, 'eGFR and ACR' has been the largest category. This is in keeping with best practice, which recommends that both tests be done (RACGP 2016).

- **PI18: Kidney function test recorded—CVD**—Communicare and Medical Director appeared to have issues with this measure. Both CISs showed decreases in the numerator 'Number of tests recorded' between June 2016 and June 2017. A possible contributing factor is that for June 2017 not all pathology results were picked up.

- **PI19: Kidney function test result—type 2 diabetes**—It is possible that the issues discussed with PI18 also affected this indicator, as the 2 indicators are linked. The analysis only looked at the categories 'eGFR results of 90 and over' and 'eGFR results of less than 15'. Both Best Practice and Medical Director saw decreases for the category 'eGFR results of 90 and over', while Best Practice also saw an increase for the category 'eGFR results of less than 15'.

- **PI19: Kidney function test result—CVD**—Time-trend anomalies for this indicator were very similar to those for PI19 Type 2 diabetes, affecting Best Practice and Medical Director.

- **Chronic diseases**—The Doll Martin Associates *2017 Data Validation Project report* noted discrepancies between CISs in the specification of the codes used for the chronic diseases Type 2 diabetes, CVD and COPD. While this meant that changes were expected in the denominators for the relevant indicators, there were some particularly unusual fluctuations for COPD. Communicare saw an increase of 43% between June 2016 and June 2017 (from 646 to 922), while PCIS saw an increase of 46% (from 175 to 255).

Status of the December 2017 data collection

The December 2017 collection saw an improvement over June 2017, possibly as a result of the data validation activities funded by the Department of Health. The number of exception reports fell by 27% in December 2017 (208) from June 2017 (286), although this was still higher than in June 2016 (92).

The average number of internal validations errors per organisation fell from 3.5 in June 2017 to 1.2 in December 2017. But the average number of invalid zeros rose slightly from 0.3 to 0.4.

Despite the efforts under way to address the data quality issues identified in the June 2017 collection period before the December 2017 collection, not all identified issues were resolved in time. The time-trend anomalies identified in the June 2017 collection remained an issue for the December 2017 collection for the following indicators:

- **PI13: First antenatal visit**—issues identified in the June 2017 collection with the categories 'No visit recorded' and 'Timing of visit not recorded' for Communicare and Medical Director continued.

- **PI18: Kidney function test recorded—type 2 diabetes**—issues with Best Practice and Medical Director continued. For both CISs, the test results category 'Both eGFR and ACR tests recorded' were lower in June 2017 and December 2017 than in June 2016. For Best Practice, the June 2017 and December 2017 results for the category 'eGFR test only' continued to be considerably higher than June 2016. For Medical Director, the June 2017 and December 2017 results for the category 'ACR test only' continued to be considerably higher than June 2016.

- **PI18: Kidney function test recorded—CVD**—issues continued for Medical Director in December 2017. The overall number of 'eGFR tests' were lower for June 2017 and December 2017 than for June 2016.

- **PI19: Kidney function test result**—type 2 diabetes and CVD—there were ongoing issues with Best Practice and Medical Director with the category 'eGFR result of 90 and over' for both CISs. For Best Practice, there was an ongoing issue with the category 'eGFR result of less than 15'.

Implications for national reporting

The time-series anomalies indicate that the change in extraction method constitutes a break in series. The June 2017 collection represents a new baseline for the collection moving forward for 19 of the 24 indicators. As a result, this report only presents data for 2 collection periods—June and December 2017.

In addition to the break in series, 3 indicators had particularly unusual time-trend issues (PI13: First antenatal visit, PI18: Kidney function test recorded, and PI19: Kidney function test result), suggesting potential extraction errors.

PI13 has been included in this report by combining the 2 categories 'No visit recorded' and 'Timing of visit not recorded'. The data quality of PI18 and PI19 in the June 2017 collection meant that the indicators could not be reported for that period. For December 2017, the data quality for these 2 indicators improved, except for data from organisations using Best Practice or Medical Director, due to ongoing data quality issues for these CISs.

The Department of Health has initiated several projects to improve data quality in both the OSR and nKPI data collections (see Appendix E for more information).

Additional considerations for interpreting nKPI data

The nKPIs, like performance indicator systems generally, are useful but imperfect measures of system characteristics that are agreed to be important. To maximise their usefulness, data users need to understand where and how the nKPI data might depart from the reality that the indicators are trying to measure. The following data issues relevant to most nKPIs should be considered when interpreting the results in this report:

Regular clients

As mentioned in Chapter 1, a regular client is defined as a person who has attended the primary health care organisation at least 3 times in the previous 2 years. All of the indicators, except the 2 on birthweight, are based on regular clients at the organisation. But the following should be noted when interpreting results:

- The concept of a visit varies within CISs, and might be captured differently for services, clinical items, diagnoses, clinical procedures, episodes of care, client contact, and other variables used in CIS data (DMA 2017). While vendors have been addressing these issues since the release of the report in July 2017, any residual impact on results for the June and December 2017 collections has not been quantified.

- There are various scenarios where a client would or would not be considered a regular client, which should be considered when interpreting the data. These might include the following:
  - Some clients might attend an organisation 3 times in 2 years, but have another primary health-care organisation as their primary place of care. At the organisational level, this provides an invalid measure of the extent to which a person is receiving appropriate care from the provider they visit 3 or more times, but which is not their main provider. Examples include where a patient declines a particular service, having recently received it at their usual service, or a clinician being able to see results due to a linked CIS or shared electronic health records. At the national level, this will lead to double-counting of that person and underestimate the national proportion of people who are receiving appropriate health care.
  - Some clients might be transient, and stay in a community only temporarily. Organisations with a large proportion of transient clients who are counted as regular clients might appear to have poorer results than other organisations, as they have less capacity to follow up on patients, including those with chronic diseases. These organisations might also choose to allow a client's usual primary health-care organisation to provide some MBS item services, including health checks, General Practitioner Management Plans (GPMPs), and Team Care Arrangements (TCAs). This would underestimate the national proportion of people who are receiving appropriate health care. Analysis of data in 2016 found that the nKPI definition leads to a higher count of regular clients for many indicators compared with a definition that restricts the denominator to the usual clients of a health care organisation. The impact of this was that out of a possible 24 measures, 21 measures had better results when the definition was restricted (see AIHW 2017).
  - Clients might access different health care organisations in the same general location, and might not use the same organisation consistently. They might use various organisations for different purposes; for example, favouring 1 when they want increased privacy and another because it bulk bills (Bailie et al. 2013). This behaviour might be more common in regions with more health care options, and less frequent in areas where local health care options are more limited (for example, *Very remote* areas). This could result in variations in the make-up of regular clients between regions.
  - Organisations operating out of regional centres in a given remoteness area (for example, Alice Springs, which is classified as a *Remote* area) might have higher levels of regular clients who are not their usual clients than other *Remote* organisations. This is because they might be regional centres used in transit, and because they provide a wider array of health care options.

Information on data quality can be found on the AIHW's Metadata Online Registry (METeOR) website <http://meteor.aihw.gov.au/content/index.phtml/itemId/706629>.

Other considerations

- The number of organisations that provided valid data is different for different indicators. For example, organisations providing data with a zero denominator for indicators because they had no clients to whom they could provide the particular services relevant to the indicator, or organisations with inconsistent data, are excluded from the relevant indicator analysis.

- There might be double-counting of the same client at multiple organisations, due to a high level of mobility among Indigenous Australians. The extent of this, nationally, is unknown and difficult to quantify.

- Where an organisation has a small denominator—that is, fewer than 20 Indigenous regular clients—small changes in the numerator can have a large impact on the overall proportion for that organisation. This partly accounts for some of the large variation seen in the figures presenting distribution of organisations' results in chapters 3–5, and the figures in Appendix D.

- The proportion of organisations with a denominator of fewer than 20 Indigenous regular clients exceeded 10% of all contributing organisations for 13 of the 24 indicators (see Table B1). One indicator measure, PI15: Immunised against influenza—clients with COPD, had 82% of organisations with a denominator of fewer than 20 Indigenous regular clients. This was higher than for all other measures (see Appendix B).

- For maternal and child health indicators, 11%–55% of organisations contributing to these indicators had denominators of fewer than 20 clients. For preventative health indicators, 0%–27% of organisations contributing to these indicators, and 6%–82% of organisations contributing to chronic disease management indicators, had denominators of fewer than 20 Indigenous regular clients (see Appendix B).

- Due to the way in which data have been extracted for organisations funded by the Northern Territory Government since December 2015 (the exclusion of measurements or tests conducted outside an individual organisation), results might be underestimated for:
    - PI03: MBS health assessment—aged 0–4
    - PI05: Glycated haemoglobin (HbA1c) result recorded
    - PI07: General Practitioner Management Plan
    - PI08: Team Care Arrangement
    - PI09: Smoking status recorded
    - PI14: Immunised against influenza—aged 50 and over
    - PI15: Immunised against influenza—clients with type 2 diabetes or COPD
    - PI16: Alcohol consumption status recorded
    - PI22: Cervical screening
    - PI23: Blood pressure result recorded—clients with type 2 diabetes.

- Results for the indicators on birthweight recorded and birthweight result might be underestimated for Northern Territory Government services in June 2017, and to a lesser extent in December 2017. This is due to data provided by the Northern Territory Government Midwifery Group Practice not having been entered as having occurred at the client's usual health centre.

In addition to these broader considerations, many of the indicators discussed in this report should also be interpreted in light of contextual information applying to a particular indicator or group of indicators only. See the beginning of the indicator chapters 3–5 for details.

3   Maternal and child health indicators

Indicators of maternal and child health included in the nKPIs cover the following process-of-care and healthoutcome indicators:

Process-of-care indicators	Health-outcome indicators
PI13: First antenatal visit—before 13 weeks	**PI02:** Birthweight result—low
PI01: Birthweight recorded	**PI11:** Smoking status of females who gave birth within the previous 12 months
PI04: Child immunisation	
PI03: MBS health assessment—aged 0–4	

Why are these indicators important?

Antenatal care is strongly associated with improved health outcomes, and with preventing future health problems for women and their babies. It provides an opportunity to find, treat, and provide advice on chronic or pre-existing conditions that might cause pregnancy-related complications, such as hypertension, diabetes, mental health problems, sexually transmitted infections, tobacco and alcohol misuse, inadequate nutrition, and unhealthy weight.

Early and ongoing antenatal care can reduce the risk of adverse outcomes associated with pregnancy-related complications (Kelly et al. 2010; ODPHP 2018). But low attendance or non-attendance of antenatal care visits is associated with an increased risk of preterm birth, neonatal death, and low birthweight babies (Cox et al. 2011, Mbuagbaw et al. 2015).

Low birthweight is a significant determinant of an infant's current and future health. Low birthweight babies have higher mortality rates in infancy and childhood, and are more likely to develop chronic diseases such as CVD and diabetes in adulthood (OECD 2015; Scott 2014). Measuring birthweight allows infants with low birthweight can be given early and suitable intervention, which can mitigate some of the adverse outcomes associated with low birthweight (Malik & Spiker 2017).

Smoking during pregnancy is the most common preventable risk factor for pregnancy complications (Bar-zeev et al. 2017; Gould et al. 2014). It has been associated with poor perinatal outcomes, such as growth restriction, preterm birth, and low birthweight (Gould et al. 2014; Mendelsohn et al. 2014).

Based on 2016 perinatal data, age-standardised rates of smoking during pregnancy show that Indigenous mothers were 3.7 times as likely to smoke during pregnancy as their nonIndigenous counterparts (AIHW analysis of National Perinatal Data Collection).

Rates of smoking during pregnancy are decreasing for both Indigenous and non-Indigenous mothers. The age-standardised proportion of Indigenous mothers who smoked during pregnancy fell from 50% in 2009 to 43% in 2016, while for non-Indigenous mothers the proportion fell from 16% in 2009 to 12% in 2016 (AIHW 2018a).

Child health assessments provide an opportunity for primary health care teams to identify health issues that require treatment, referral, and follow-up (Fernald et al. 2013). In Australia, Indigenous child health assessment can be provided under item 715 of the MBS, an annual health check that was designed specifically for Indigenous clients (DoH 2018c).

On a national level, usage rates based on the number of checks billed to the MBS 715 for children aged 0–4 rose from 10% in 2010 to 29% in 2017(AIHW 2016c; AIHW analysis of MBS data).

Immunisation is important in reducing morbidity and mortality caused by vaccine-preventable diseases, and has been influential in preventing disease in Aboriginal and Torres Strait Islander children (Naidu et al. 2013).

In Australia, children are expected to have received immunisations by the time they are aged 1, 2, and 5. In 2017, compared with non-Indigenous Australian children, a lower proportion of Indigenous children had received these vaccinations at age 1 (92% compared with 94%) and 2 (88% compared with 90%). But this pattern was reversed at age 5, with 96% of Indigenous children immunised, compared with 94% of non-Indigenous Australian children (DoH 2018a, 2018b).

Summary

A summary of results for the maternal and child health indicators is provided in Table 3.1. The number of organisations contributing data on these indicators ranged from 203 to 216, and organisations were located across all states and territories and remoteness areas.

Table 3.1: Summary of maternal and child health indicators, December 2017

Indicator[a]	Clients seen (no.)[b]	Clients seen (%)	Number of organisations included in the analyses[c]	Minimum–maximum organisation result (%)
PI13: First antenatal visit— before 13 weeks	2,597	41.2	203	0.0–100.0
PI01: Birthweight recorded	5,747	72.8	216	0.0–100.0
PI03: MBS health assessment— aged 0–4	13,846	34.7	215	0.0–100.0
PI02: Birthweight result—low	711	12.4	203	0.0–100.0
PI11: Smoking status of females who gave birth within the previous 12 months— current smoker	2,915	49.8	203	0.0–100.0

(a) Of organisations contributing to these indicators, 11%–55% had denominators of fewer than 20 clients (see Table B.1 for organisation proportions by indicator).

(b) 'Clients seen' is the total clients (sum of numerators) for all organisations with valid data.

(c) Excludes organisations providing data with a zero denominator for indicators, as they had no clients to whom they could provide the services to be counted in those indicators.

Note: The indicator 'PI04: Child immunisation' is not included in this table, due to apparent ongoing issues with data validity.

Source: AIHW analyses of the nKPI data collection.

Things to consider when interpreting the data

In addition to the broader data quality issues outlined in Chapter 2, some of the indicators discussed in this chapter should also be interpreted in light of contextual information applying to those particular indicators or group of indicators.

- **Babies' records** (rather than mothers' records) are the specified source of data for indicators on birthweight recorded and results. But data from organisations using MMEx source this information from the mother's records (DMA 2017). The impact of this on results has not been quantified. The standard nKPI Indigenous regular client definition does not apply to these indicators—the baby is considered a client and counted in the nKPIs even if they attended only once, and their parents are not regular clients of the organisation. This might lead to the inclusion of babies who visited the organisation purely for acute care, and whose carers might not have been able to confirm birthweight.

- **Multiple births** should not be included in birthweight results, as babies born as part of multiple births are more likely to have a lower birthweight. But Medical Director and Communicare do not exclude multiple births, as this information is not captured in the baby's record. Nor do Medical Director and Communicare exclude babies with 'unknown gestational age' from the low birthweight indicator (DMA 2017). Although this finding was not expected to significantly affect the nKPIs, it is possible it might inflate the proportion of low birthweight babies recorded in the data.

- **Babies' birthweight** data might be underestimated, as results for Northern Territory Government organisations were provided by the Northern Territory Government Midwifery Group Practice, but not entered as having occurred at the client's usual health centre. While this affects both reporting periods presented in this report, this was rectified for some Northern Territory Government organisations in December 2017.

- **Antenatal visits** data appeared to have been affected by data extraction issues in June 2017 and December 2017 (see Chapter 2 for details).

- **MBS items** are not claimed by all organisations, either because they do not have a general practitioner (GP) present, they are not eligible to claim them, or they choose not to do so. As a result, the indicators based on MBS items might not reflect all related health care activities carried out in an organisation. These indicators include MBS health assessment (item 715) for children aged 0–4. In the case of child health checks, children may receive comprehensive health checks provided within a model of care that does not suit or allow for the check to be claimed as an MBS item. MBS health checks are counted in Communicare at a point in the process before its submission. Only claims explicitly discarded after a rejection are subsequently excluded (DMA 2017). The impact of this has not been quantified.

- **GP availability** might be limited in some areas, and have an impact on the results reported by organisations. For example, limited GP availability might affect an organisation being able to claim MBS items (child and adult health checks, GPMPs, and TCAs).

- **Shared care arrangements** between hospitals and primary health organisations, between primary care organisations, or between primary health care organisations and other providers of similar care are not consistently supported by automatic data sharing. This could lead to lower rates of data recording for some indicators, such as birthweight results and antenatal care. Similarly, it will be difficult for organisations to obtain information on their regular clients who may choose to receive cervical screening elsewhere.

- **Smoking status categories** are not yet fully agreed. For example, there is not yet universally accepted guidance on how long a person needs to have quit smoking to be considered an ex-smoker rather than a smoker. An increased number of types of exsmokers might improve data quality, and lead to more frequent updating of clients' records.

- **Smoking status of women who gave birth in the previous 12 months** records smoking status during pregnancy retrospectively, and the information is updated only when women's smoking status category is changed. As such, this indicator is a proxy for smoking during pregnancy.

- **Data extraction for Northern Territory Government organisations** excludes measurements or tests conducted outside an individual organisation since December 2015, so results might be an underestimate for PI03: MBS health assessment—aged 0–4.

3.1 First antenatal visit

PI13—Proportion of Indigenous regular clients who had their first antenatal care visit within specified periods

Nationally, as at December 2017, 41% of female Aboriginal and Torres Strait Islander regular clients who gave birth in the previous 12 months had their first antenatal visit before 13 weeks of pregnancy. This compares with 39% in June 2017 (Figure 3.1.1).

The age distribution showed that in December 2017, the proportion of females attending their first antenatal visits before 13 weeks of pregnancy rose to age 34, then fell slightly thereafter (Figure 3.1.1).
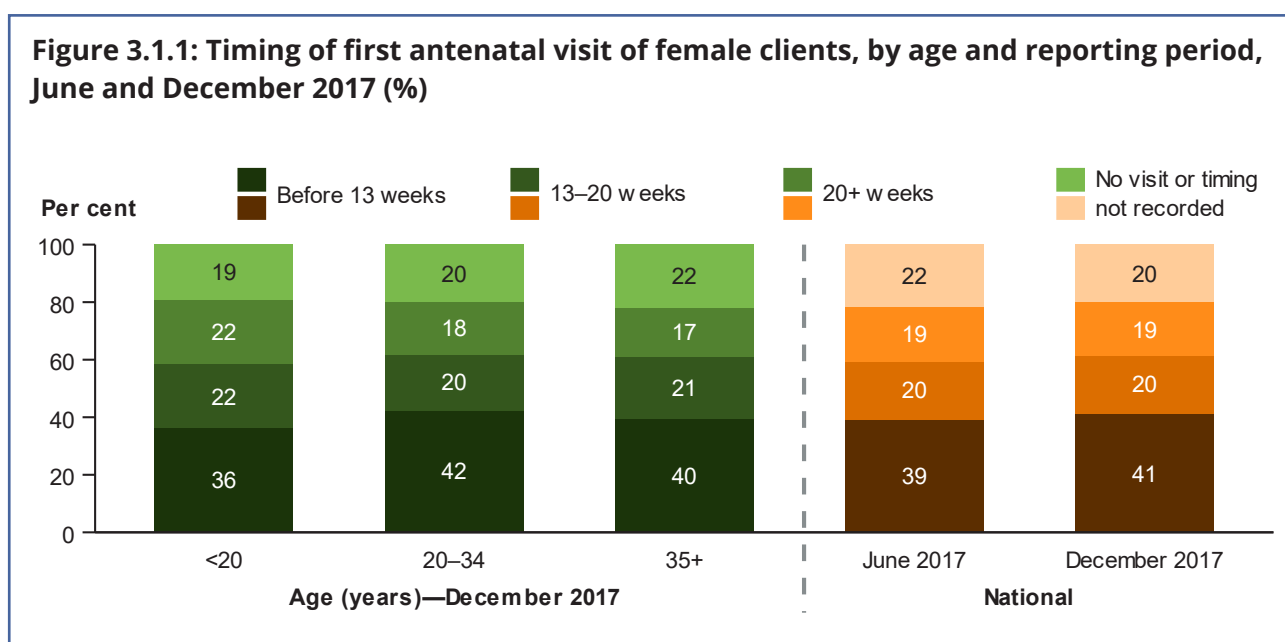
Figure 3.1.1: Timing of first antenatal visit of female clients, by age and reporting period, June and December 2017 (%)

National variation data showed a very broad distribution of results (a range of 0%–100%). About half (52%) of the organisations had small client numbers (that is, fewer than 20) (Figure 3.1.2).

- About half of the organisations (102 of 203) had 36% or more female clients attending their first antenatal visit before 13 weeks of pregnancy.
- In the top 25% of organisations—that is those with the best results—53% or more female clients had their first antenatal visit before 13 weeks of pregnancy.
- In the bottom 25% of organisations, 19% or fewer female clients had their first antenatal visit before 13 weeks of pregnancy.
- Most organisations (20 out of the 22) with a result of 0%, and all 6 organisations with a result of 100% had small client numbers.

Figure 3.1.2: Distribution of female clients who had their antenatal visit before 13 weeks of pregnancy, by number of organisations, December 2017 (%)
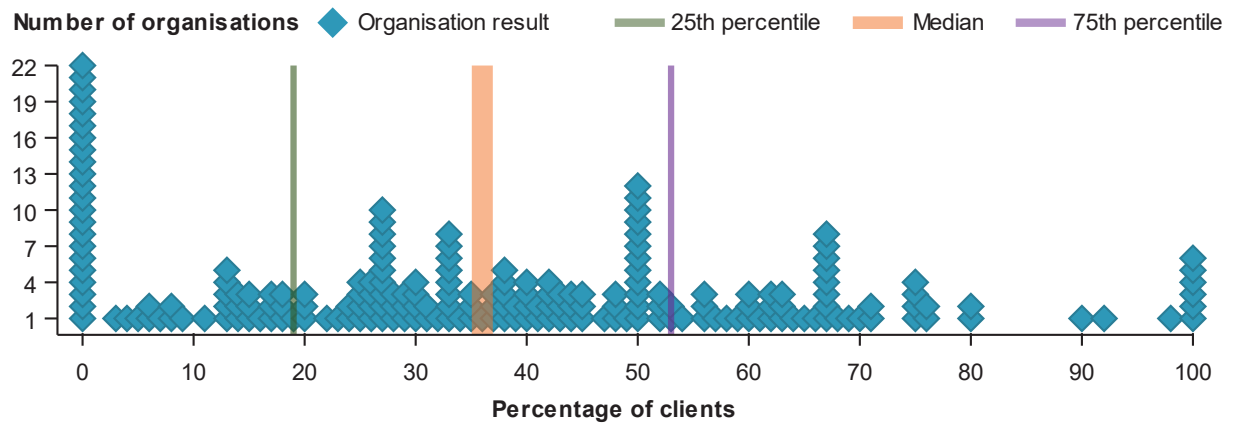
Organisation size analysis for December 2017 showed that the proportion of females who had their first antenatal visit before 13 weeks of pregnancy was similar across organisations of all sizes.

Organisations with fewer than 500 clients, and those with 1,001–2,000 clients had the lowest percentage of women attending their first antenatal visit before 13 weeks of pregnancy (39%). Organisations with more than 2,000 regular clients had the highest percentage (42%) (Figure 3.1.3).

Figure 3.1.3: Female clients who had their first antenatal visit before 13 weeks of pregnancy, by organisation size, December 2017 (%)
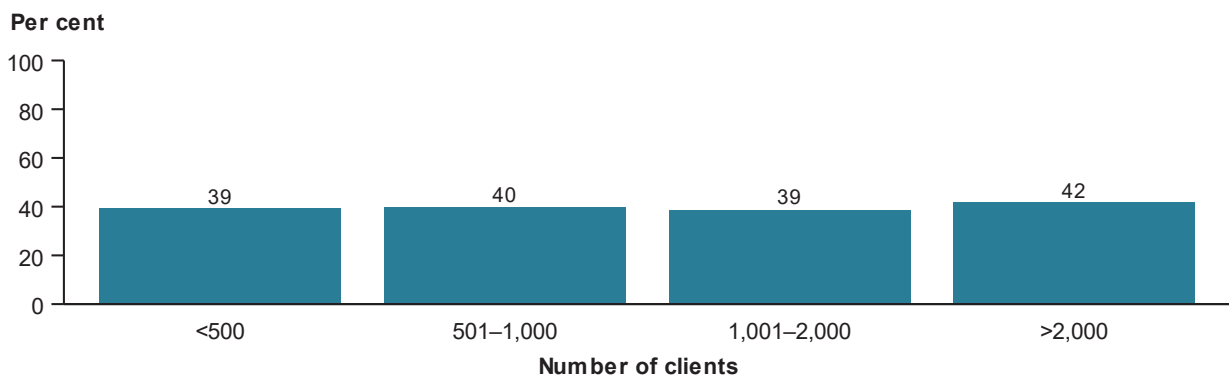
3.2 Birthweight recorded

PI01—Proportion of Indigenous babies born within the previous 12 months whose birthweight has been recorded

Nationally, as at December 2017, 73% of Aboriginal and Torres Strait Islander babies born in the previous 12 months had their birthweight recorded at the primary health care organisation. This compares with 69% in June 2017 (Figure 3.2.1).

Figure 3.2.1: Babies with birthweight recorded, by reporting period, June and December 2017 (%)
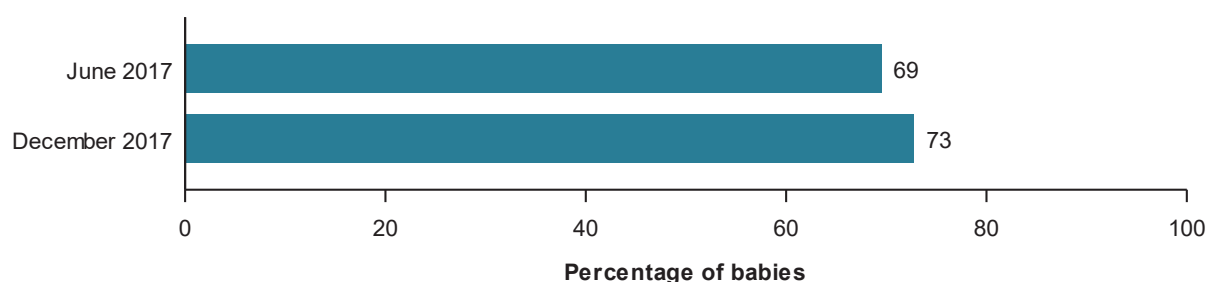
National variation data showed a very broad distribution of results (a range of 0%–100%). About half (47%) of the organisations had small client numbers (Figure 3.2.2).

- About half of the organisations (109 of 216) recorded the birthweight for 72% or more of all babies born.
- The top 25% of organisations recorded birthweight for 92% or more of babies born.
- The bottom 25% of organisations recorded birthweight for 45% or fewer of babies born.
- All 13 organisations with a result of 0%, and 18 of the 37 organisations with a result of 100% had small client numbers.

Figure 3.2.2: Distribution of babies with birthweight recorded, by number of organisations, December 2017 (%)
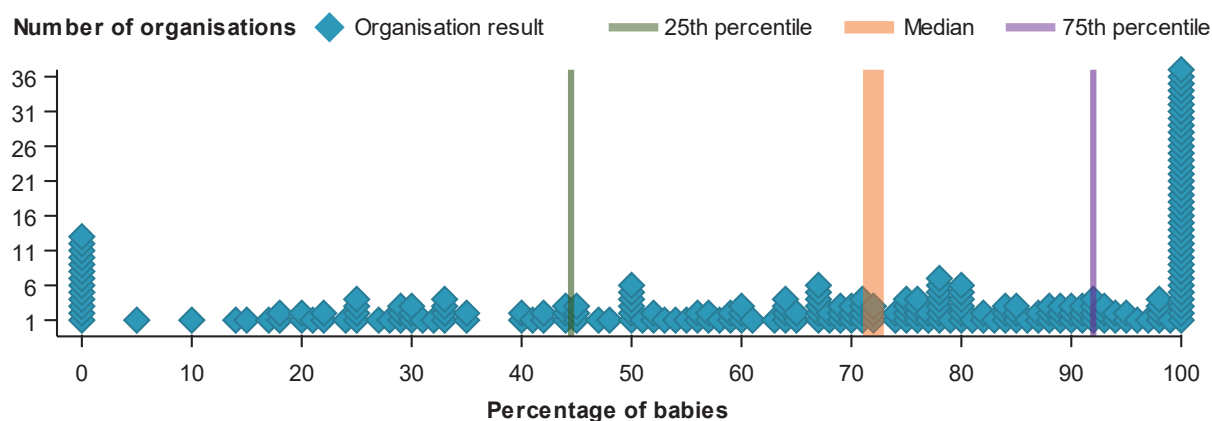
Organisation size analysis for December 2017 showed the recording of birthweight was highest in organisations with fewer than 500 clients (83%), and lowest in organisations with 501–1,000 clients (67%) (Figure 3.2.3).

Figure 3.2.3: Babies with birthweight recorded, by organisation size, December 2017 (%)

Per cent

Number of clients	Per cent
<500	83
501–1,000	67
1,001–2,000	74
>2,000	71
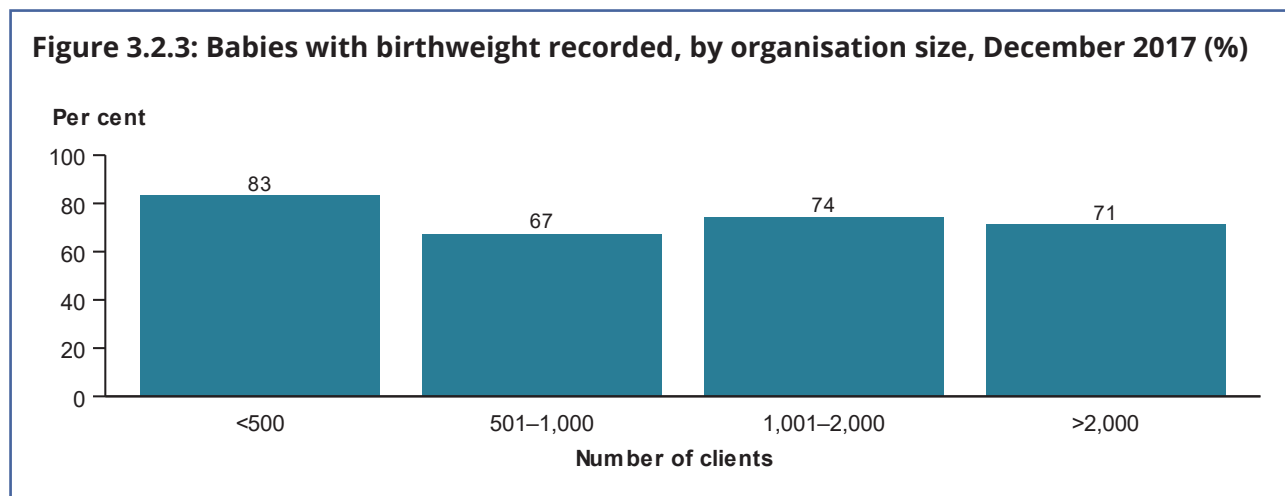
3.3 MBS health assessment (item 715) for children aged 0–4

PI03—Proportion of Indigenous regular clients for whom an MBS health assessment for Aboriginal and Torres Strait Islander people (MBS item 715) was claimed

Nationally, as at December 2017, 35% of Aboriginal and Torres Strait Islander regular clients aged 0–4 had an MBS health assessment claimed for them in the previous 12 months. This is the same result as in June 2017 (Figure 3.3.1).

Figure 3.3.1: Clients aged 0–4 who had an MBS health assessment claimed in the previous 12 months, by reporting period, June and December 2017 (%)
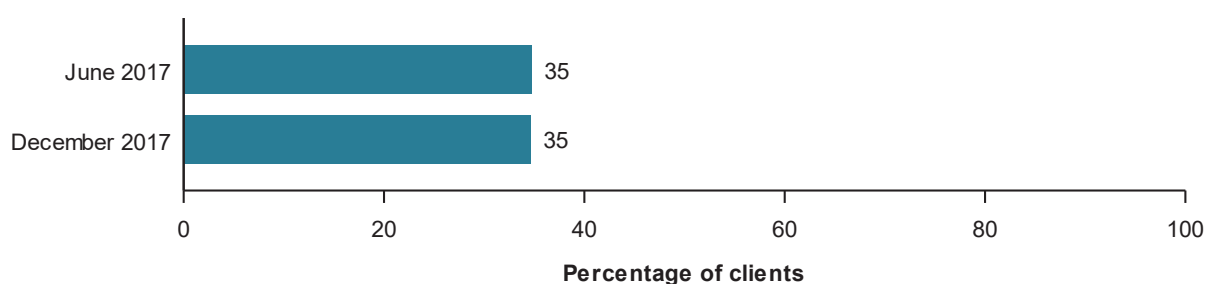
National variation data showed a broad distribution of results, with the vast majority (around 98%) of organisations reporting that they had claimed an MBS health assessment for 0%–70% of their clients. More than 1 in 10 (11%) organisations had small client numbers (Figure 3.3.2).

- Around half of the organisations (110 of 215) claimed an MBS health assessment for 30% or more of clients aged 0–4.

- The top 25% of organisations claimed an MBS health assessment for 46% or more of their clients aged 0–4.

- The bottom 25% of organisations claimed an MBS health assessment for 16% or fewer of their clients aged 0–4.

- Of the 24 organisations with a result of 0%, 21 organisations commented that they either do not perform or cannot claim MBS health checks, or that employment of a GP was pending. The 3 remaining organisations had a small number of clients.

Figure 3.3.2: Distribution of clients aged 0–4 who had an MBS health assessment claimed in the previous 12 months, by number of organisations, December 2017 (%)
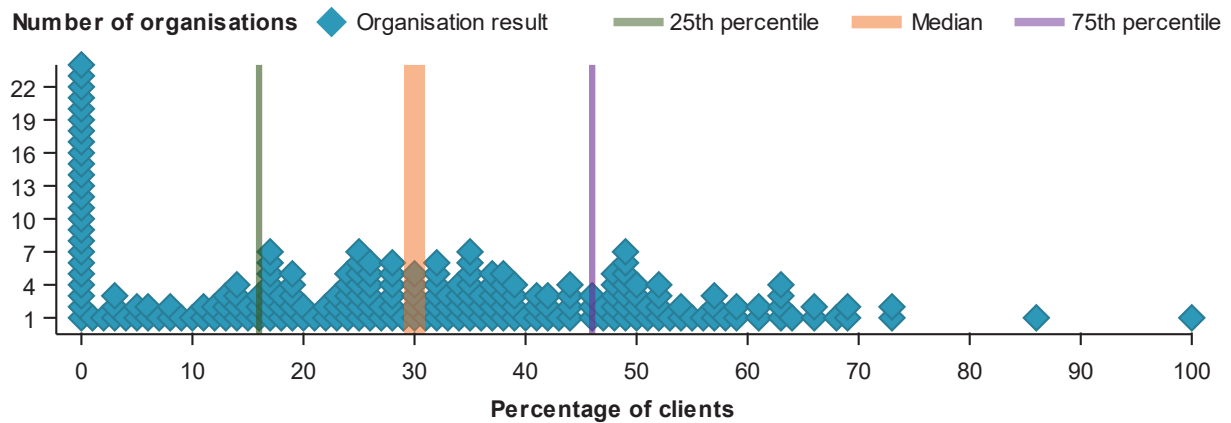
Organisation size analysis for December 2017 showed that the proportion of MBS health assessments claimed for clients aged 0–4 increased with organisation size.

Claiming of MBS health assessments was highest in organisations with more than 2,000 clients (38%), and lowest in organisations with fewer than 500 clients (22%) (Figure 3.3.3).

Figure 3.3.3: Clients aged 0–4 who had an MBS health assessment claimed in the previous 12 months, by organisation size, December 2017 (%)
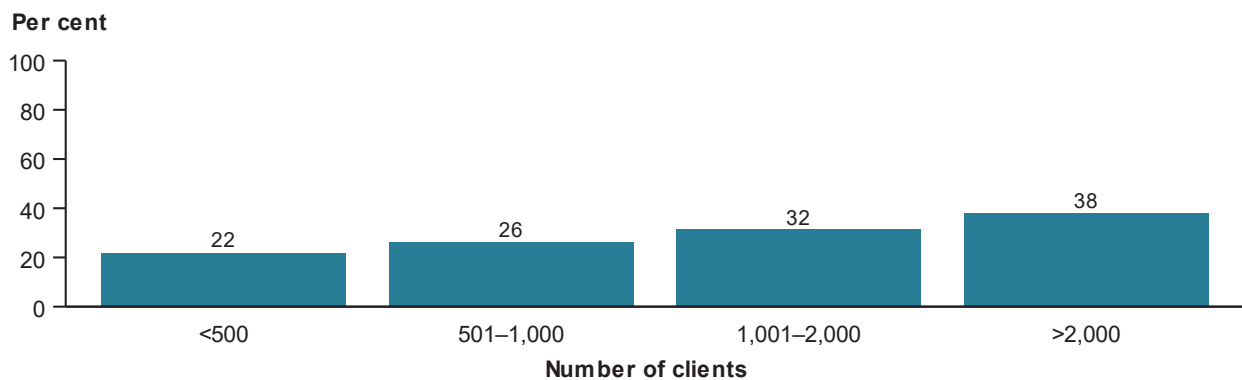
3.4 Child immunisation

PI04—Proportion of Indigenous children who are fully immunised

This indicator is presented differently because of apparent data validation issues.

The AIR (formerly the Australian Childhood Immunisation Register) shows that nationally in 2017, 96% of Aboriginal and Torres Strait Islander children were fully immunised at age 5 (DoH 2018a).

This was similar to the national immunisation rate for all children aged 5 (94%) (DoH 2018b). For Indigenous children aged 12 to less than15 months, in December 2017, the proportion who were fully immunised ranged from 88% in Western Australia to 95% in Tasmania (DoH 2018a).

For all children in this age group, the proportion who were fully immunised ranged from 93% in Western Australia to 95% in the Australian Capital Territory, Victoria, and Tasmania (DoH 2018b).

This nKPI indicator relates to the proportion of Indigenous children recorded by the health care organisations as being fully immunised. For December 2017, the nKPI data indicate that primary health care records are capturing far fewer cases of fully immunised Indigenous children than AIR records (19–31 percentage points less at the national level) (Figure 3.4.1). This suggests there are data quality issues with the childhood immunisation data collected from primary health care organisations.

Anecdotal evidence indicates that some organisations might not rely on their internal CIS to track immunisation status. Also, in some instances, the primary health care providers participating in the nKPI collection might not be the only or major vaccination provider, which might reduce the priority that some organisations give to maintaining immunisation status information within their CIS.

The nKPI data show large variations among states and territories for the proportion of children (aged 24–<36 months) recorded as being fully immunised—from 57% in Queensland to 92% in South Australia.

This variation was not found in the AIR data (see Figure 3.4.1). Further, jurisdictions with lower rates of immunisation tend to have a wider spread of recorded immunisation rates across organisations in the nKPI collection (see figures 3.4.2, 3.4.3, and 3.4.4). This suggests that the issue might be limited to particular organisations. It is probable that data extracted for some health organisations only count children aged 24–<36 months as being fully immunised if they have had 2 doses of for measles, mumps, and rubella (rather than 1 dose, as per the nKPI specifications).

The Doll Martin Associates *2017 Data Validation Project report* found that Communicare defines a fully immunised child as a child with no outstanding immunisation reviews (DMA 2017). The impact of this on results has not been quantified.

Investigation into how different organisations record childhood immunisations—and how this relates to variation in roles and responsibilities for immunisation provision between different providers—might be useful for informing future data collections.

Figure 3.4.1: Children aged 1, 2, and 5 recorded as fully immunised, AIR (2017), by state and territory, and nKPI (December 2017), national (%)

Source: AIR annualised quarterly report on childhood immunisation coverage for the December 2016, March 2016, June 2017, and September 2017 assessment quarters and nKPI December 2017.

Figure 3.4.2: Children aged 12–<24 months recorded as fully immunised (nKPI data), by state and territory, with median and quartile boundaries of organisations, December 2017 (%)
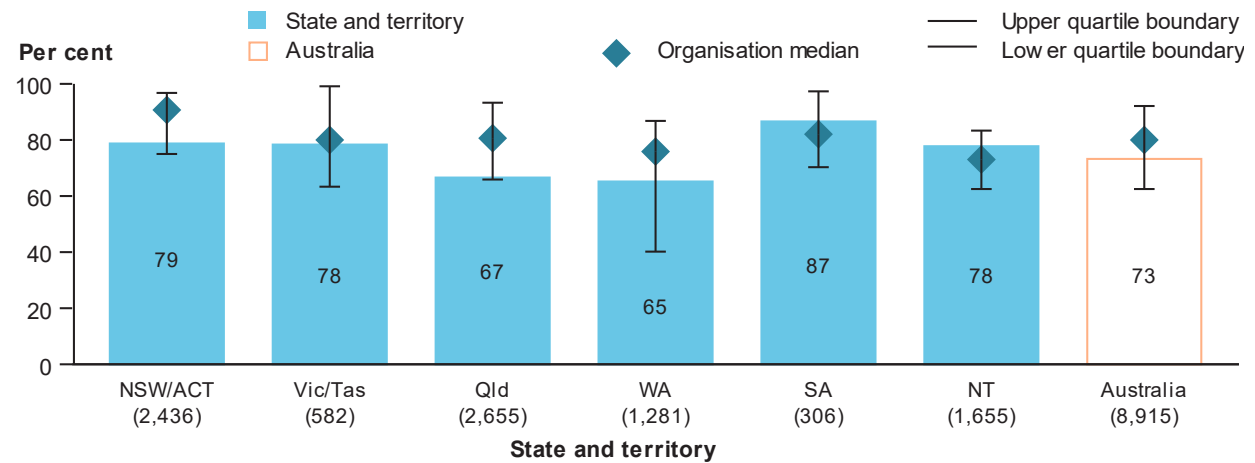
Note: Number of Indigenous children aged 12–<24 months who are regular clients is in brackets.

Figure 3.4.3: Children aged 24–<36 months recorded as fully immunised (nKPI data), by state and territory, with median and quartile boundaries of organisations, December 2017 (%)
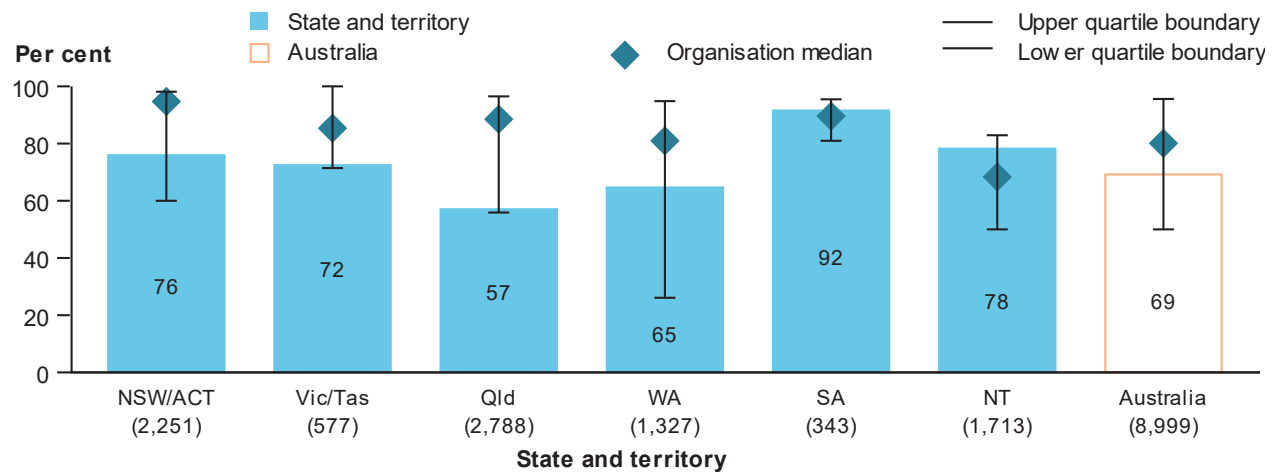
Note: Number of Indigenous children aged 24–<36 months who are regular clients is in brackets.

Figure 3.4.4: Children aged 60 months to <72 months recorded as fully immunised (nKPI data), by state and territory, with median and quartile boundaries of organisations, December 2017 (%)
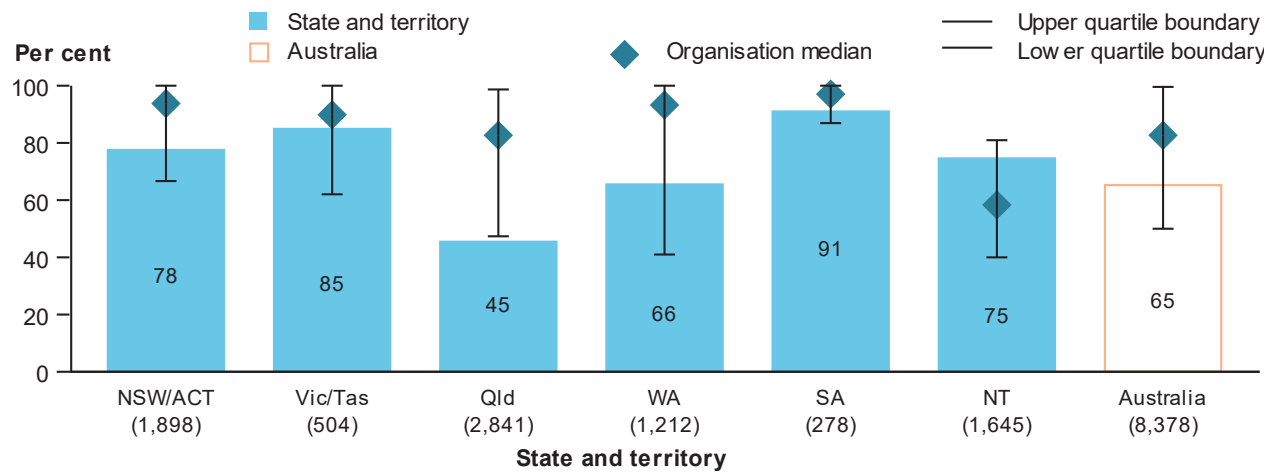
Note: Number of Indigenous children aged 60–<72 months who are regular clients is in brackets.

3.5 Birthweight result

PI02—Proportion of Indigenous babies born within the previous 12 months whose birthweight results were low, normal, or high

Nationally, as at December 2017, 12% of Aboriginal and Torres Strait Islander babies born in the previous 12 months were categorised as being of low birthweight. This compares with 11% in June 2017 (Figure 3.5.1).

Figure 3.5.1: Babies with low, normal, or high birthweight, by reporting period, June and December 2017 (%)
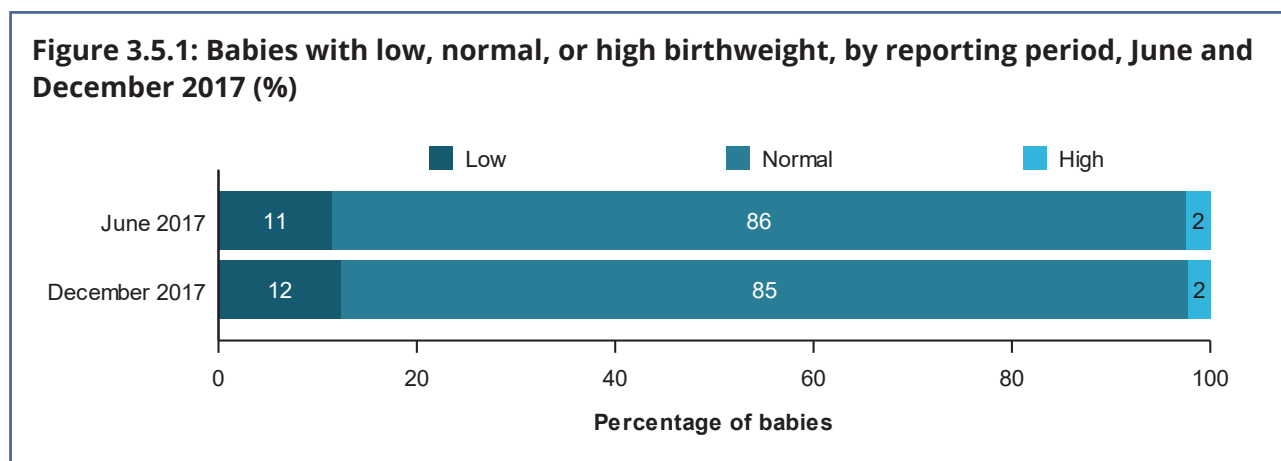
National variation data showed that results for the vast majority (96%) of organisations had 0%–30% of babies' birthweights recorded as low. Around half (52%) of these organisations had small client numbers (Figure 3.5.2).

• About half of the organisations (104 of 203) categorised 10% or fewer of babies born as being of low birthweight.

• In the top 25% of organisations, 0% of babies were of low birthweight.

• In the bottom 25% of organisations, 16% or more of babies were of low birthweight.

• The majority of organisations reporting 0% (58 of the 60 organisations), and organisations reporting 25% and greater (16 of the 18 organisations) had small client numbers.

Figure 3.5.2: Distribution of babies with low birthweight, by number of organisations, December 2017 (%)
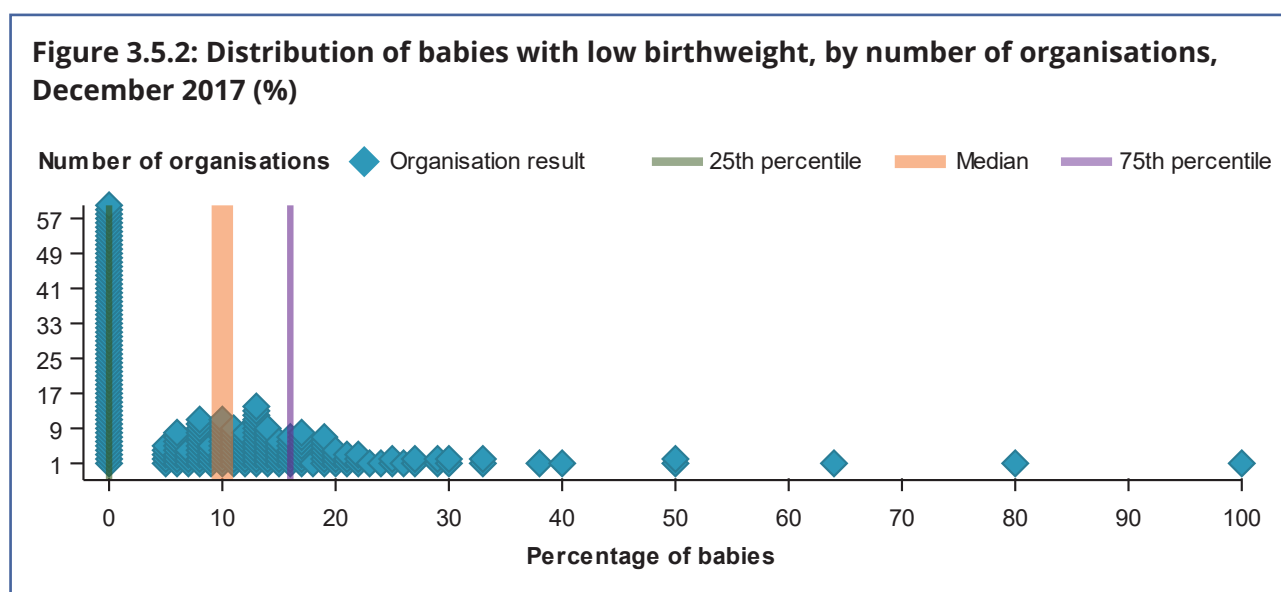
Organisation size analysis for December 2017 showed that the proportion of babies categorised as being of low birthweight was similar across organisation sizes, but was slightly higher in organisations with 1,001–2,000 clients (14%), and slightly lower in organisations with fewer than 500 clients (11%) (Figure 3.5.3).

Figure 3.5.3: Babies with low birthweight, by organisation size, December 2017 (%)

Per cent

Number of clients	Per cent
<500	11
501–1,000	12
1,001–2,000	14
>2,000	12
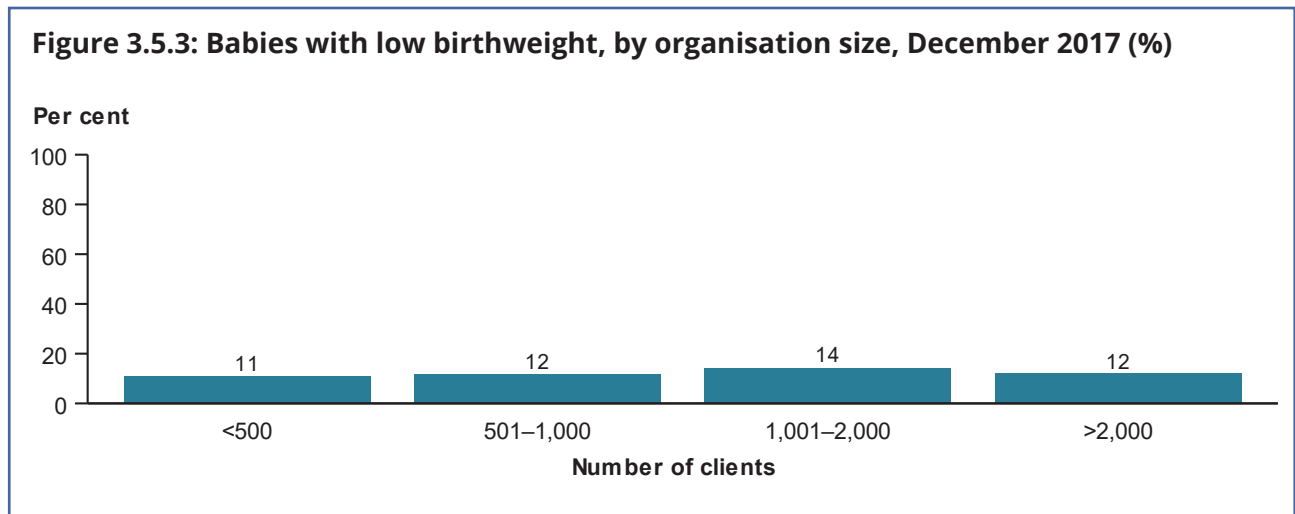
3.6 Smoking status of females who gave birth within the previous 12 months

PI11—Proportion of female Indigenous regular clients who gave birth within the previous 12 months with a smoking status of 'current smoker', 'ex-smoker', or 'never smoked'

Nationally, as at December 2017, half (50%) of female Aboriginal and Torres Strait Islander regular clients aged 15 and over who gave birth in the previous 12 months had their smoking status recorded as current smoker. This compares with 49% in June 2017 (Figure 3.6.1).

The age distribution showed that in December 2017, the proportion of females who gave birth in the previous 12 months and had a smoking status recorded as current smokers was lowest in females aged 15–19 (45%), then increased with age (Figure 3.6.1).

Figure 3.6.1: Smoking status for female clients who gave birth in the previous 12 months, by age of mother and reporting period, June and December 2017 (%)
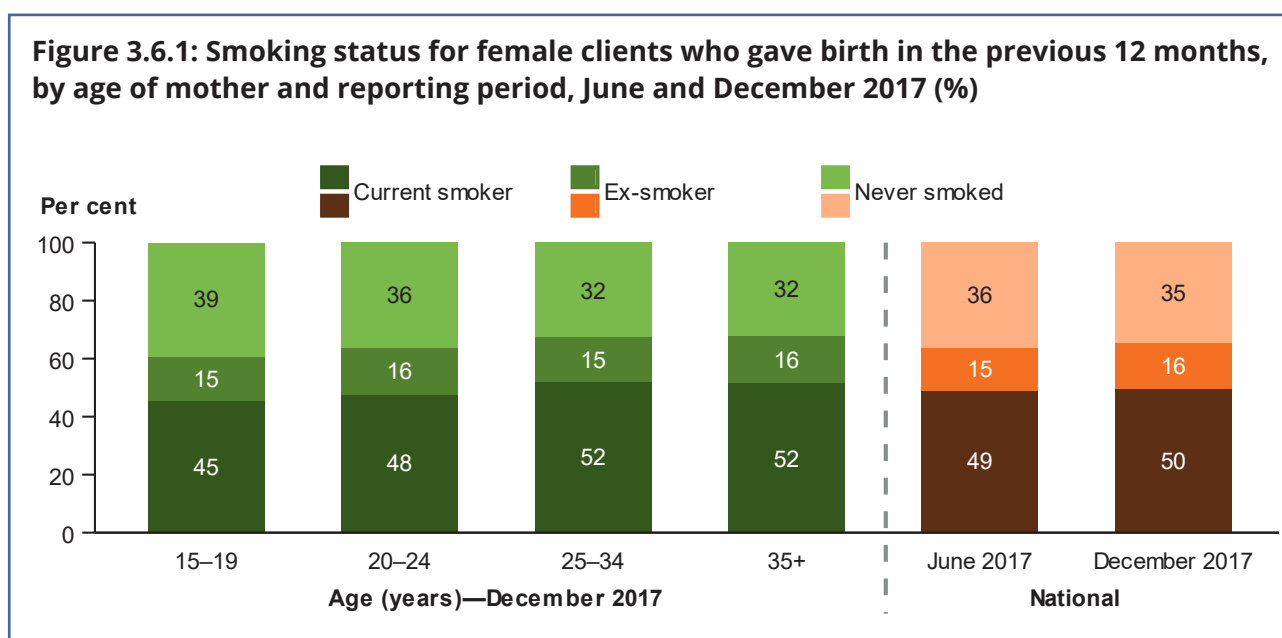
National variation data showed a very broad distribution of results (a range of 0%–100%). Around half (55%) of the organisations had fewer than 20 clients (Figure 3.6.2).

- Around half of the organisations (107 of 203) recorded 50% or fewer of females who gave birth in the previous 12 months as current smokers.
- The top 25% of organisations recorded 38% or fewer of females who gave birth in the previous 12 months as current smokers.
- The bottom 25% of organisations recorded 63% or more of females who gave birth in the previous 12 months as current smokers.
- All 11 organisations with a result of 0%, 17 of the 23 organisations with a result of 50%, and all 7 organisations with a result of 100% had small client numbers.

Figure 3.6.2: Distribution of female clients who gave birth in the previous 12 months who were current smokers, by number of organisations, December 2017 (%)
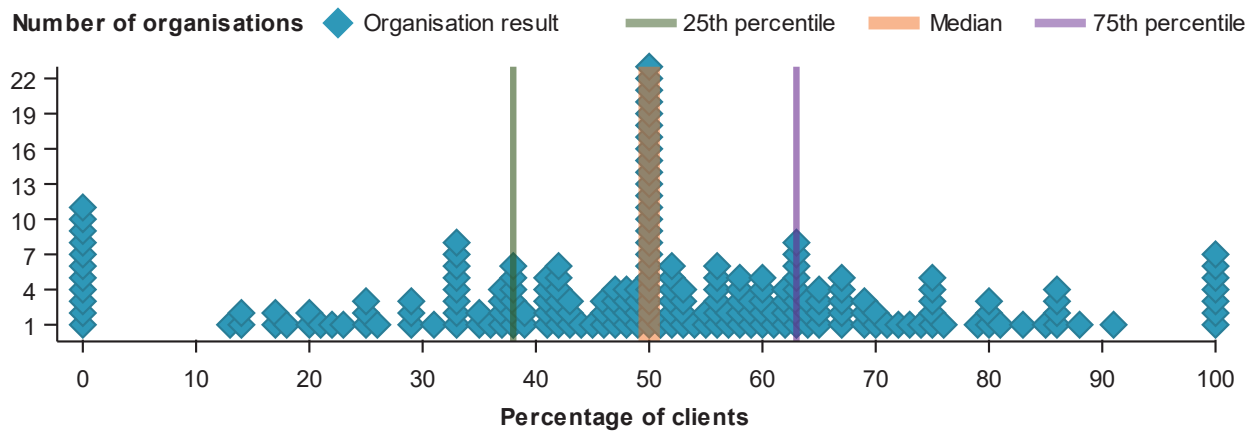
Organisation size analysis for December 2017 showed that the proportion of female clients who gave birth in the previous 12 months, and had a smoking status of current smoker, was highest in organisations with more than 2,000 clients and 501–1,000 clients (both 51%), and lowest in organisations with fewer than 500 clients (44%) (Figure 3.6.3).

Figure 3.6.3: Female clients who gave birth in the previous 12 months who were current smokers, by organisation size, December 2017 (%)
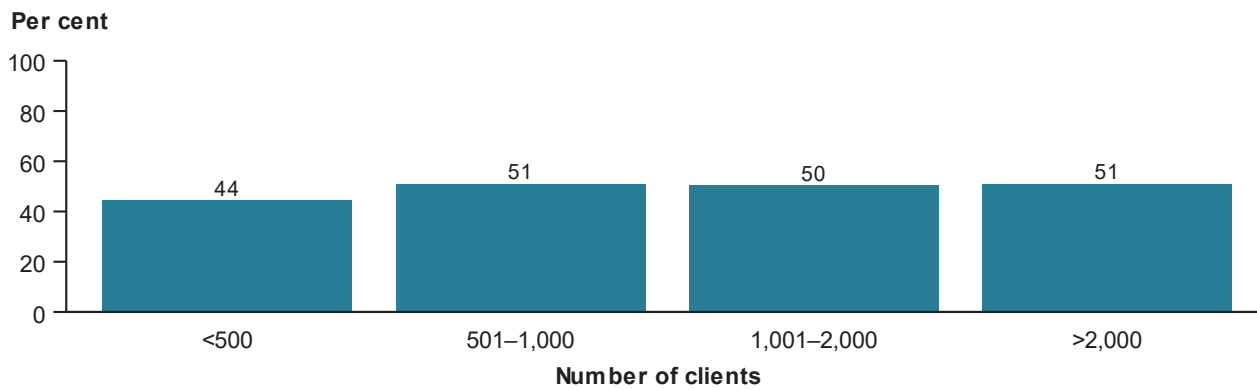
4   Preventative health indicators

Indicators of preventative health included in the nKPIs cover the following process-of-care and health-outcome indicators:

Process-of-care indicators	Health-outcome indicators
PI09: Smoking status recorded	**PI10:** Smoking status result
PI16: Alcohol consumption status recorded	**PI12:** BMI classified as overweight or obese
PI03: MBS health assessment—aged 25 and over	**PI17:** AUDIT-C result
PI20: Risk factors assessed to enable CVD assessment	**PI21:** Absolute CVD risk assessment result
PI22: Cervical screening	
PI14: Immunised against influenza—aged 50 and over	

Why are these important?

Routine health assessments can provide valuable information on a patient's current health status (including chronic conditions and issues requiring referral and follow-up care), and on behaviours that affect health status (such as physical activity, smoking, stress, and quality of life).

Although health assessments are not intended to be diagnostic tools, nor complete health histories, they do provide a mechanism to engage patients in their own health, leading to better health choices and improved health behaviours in the long term (Fernald et al. 2013).

Tobacco smoking is a major contributor to serious diseases, such as cancer, chronic lung disease, and heart disease (AIHW 2016b; IGCD 2012).

Data from the 2014–15 National Aboriginal and Torres Strait Islander Social Survey (NATSISS) indicate that 42% of Indigenous Australians aged 15 or over reported being a current smoker. The ageadjusted rate shows that Indigenous Australians were 2.7 times as likely as nonIndigenous Australians to be current smokers (ABS 2015, 2016b).

Tobacco use was responsible for 23% of the total gap in disease burden between Indigenous and non-Indigenous Australians in 2011 (AIHW 2016a).

Current RACGP guidelines advise primary healthcare organisations to systematically identify and document smoking status as a first step in smoking cessation intervention (NACCHO & RACGP 2018).

Smoking status recording increases the likelihood of doctors providing brief counselling and advice to quit, practices that help increase smoking cessation (Papadakis et al. 2010). Simple advice from physicians can increase smokers' motivation to quit and to remain non-smokers 12 months later (Stead et al. 2013).

Excessive alcohol consumption can lead to severe health problems such as CVD, liver disease, pancreatitis, mental health conditions, and cancer. It also increases injuries from traffic and other accidents, and is associated with social problems, such as violence, assault, and imprisonment (NHMRC 2009).

The current RACGP guidelines recommend annual screenings of alcohol consumption for all Indigenous Australians aged 15 and over, through tools like Alcohol Use Disorders Identification Test (AUDIT), AUDIT-C, and Indigenous Risk Impact Screen (NACCHO & RACGP 2018). This enables at-risk individuals to be identified early, and provided with timely interventions and assistance, which can lead to a better prognosis, and reduce the risk of secondary disorders developing (Deady 2009; Islam et al. 2018).

Primary care interventions can also raise awareness of the negative outcomes of hazardous alcohol consumption, and motivate behaviour change (O'Donnell et al. 2013).

Cervical screenings are effective at detecting and treating cervical abnormalities when they are still precancerous, and have been found to significantly reduce the incidence and mortality of cervical cancer (AIHW 2018b). Indigenous women experience higher cervical cancer incidence and mortality than nonIndigenous women (Saville 2014).

From 1 December 2017, a new program for the National Cervical Screening Program was implemented, and this will replace the previous Papanicolaou (Pap) smear test with a human papillomavirus (HPV) test (DoH 2018d). New indicator measures that include both HPV tests and pap tests will be introduced from the June 2018 reporting period.

Influenza vaccination is strongly recommended for elderly people, as they experience higher rates of complications, hospitalisation, and death from influenza (Jefferson et al. 2010). Vaccinations are particularly important for elderly Aboriginal and Torres Strait Islander people, as these rates are particular high among this population ATAGI 2018b).

Between 2005 and 2010, the rate of hospitalisation for influenza among Indigenous Australians aged 50 and over was 4.6 times as high as that for non-Indigenous Australians (NCIRS 2013).

Under the National Indigenous Pneumococcal and Influenza Immunisation Program, influenza vaccinations were provided free of charge to Indigenous Australians aged over 50, as well as those aged 15–49 who were considered medically at risk (DoHA 2004). But current recommendations have now expanded to include all Indigenous Australians aged 6 months to 5 years, and those aged over 15 (NACCHO & RACGP 2018).

Being overweight or obese is a risk factor for several health issues, including type 2 diabetes, CVD, coronary heart disease, stroke, and hypertension (Jensen et al. 2014).

The National Health and Medical Research Council (NHMRC) currently recommends the use of body mass index (BMI) to classify overweight or obesity in adults (NHMRC 2013).

Using calculations based on BMI, the 2012–13 Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS) found that 30% of Indigenous Australians aged 25 and over were overweight, and 43% were obese (ABS 2014).

Overweight or obese adults might benefit from advice and assistance from primary care clinicians about lifestyle change, including the development of appropriate weight loss and weight management programs (NHMRC 2013).

Although CVD is largely preventable, it is the leading cause of death among Indigenous Australians (AIHW 2015). Multiple modifiable factors (such as smoking status, high blood pressure, and BMI) and non-modifiable factors (such as, age, sex, family history, and social history) contribute to the risk of developing CVD. These factors can be used to categorise an individual's risk of developing CVD as being low (less than 10% probability of CVD in the next 5 years), moderate (10%–15% probability of CVD in the next 5 years), or high (greater than 15% probability of CVD in the next 5 years) risk, which can then guide treatment decisions. CVD risk factors may be additive, so the assessment of CVD risk should account for multiple risk factors together rather than separately (NVDPA 2012b).

Absolute CVD risk assessment calculations in the nKPIs are based on either the National Vascular Disease Prevention Alliance (NVDPA or Framingham method), or the method in the Central Australian Rural Practitioners Association (CARPA) Standard Treatment Manual. As the CARPA includes an additional allowance for Indigenous populations, for the nKPIs, CARPA scores are adjusted downwards by 5% to make data comparable with the NVDPA method.

Adults with some conditions do not require absolute CVD risk assessment, as they are already known to be clinically determined high risk. These are:

- diabetes and aged over 60
- diabetes with microalbuminuria (more than 20 mcg/min or a urinary albumin:creatinine ratio of more than 2.5 mg/mmol for males, and more than 3.5 mg/mmol for females)
- moderate or severe chronic kidney disease (persistent proteinuria or eGFR of less than 45 mL/min/1.73 m²)
- a previous diagnosis of familial hypercholesterolaemia
- systolic blood pressure of 180 mmHg or over, or diastolic blood pressure of 110 mmHg or over
- serum total cholesterol of more than 7.5 mmol/L (NVDPA 2012b).

Summary

A summary of results for the preventative health indicators is provided in Table 4.1.

The number of organisations contributing data on these indicators ranged from 129 to 215, and organisations were located across all states and territories, and remoteness areas.

Table 4.1: Summary of preventative health indicators, December 2017

Indicator[a]	Clients seen (no.)[b]	Clients seen (%)	Number of organisations included in the analyses[c]	Minimum–maximum organisation result (%)
PI09: Smoking status recorded	186,680	81.4	215	7.0–100.0
PI16: Alcohol consumption status recorded	143,759	62.9	214	0.0–100.0
PI03: MBS health assessment—aged 25 and over	86,933	50.5	213	0.0–90.5
PI20: Risk factors assessed to enable CVD assessment	44,440	47.0	198	0.0–96.0
PI22: Cervical screening—previous 2 years	28,515	27.1	209	0.0–73.5
PI14: Immunised against influenza—aged 50 and over	21,704	35.6	207	0.0–95.0
PI10: Smoking status result—current smoker	96,058	51.5	215	10.0–86.4
PI12: BMI classified as overweight or obese	84,641	70.7	214	11.9–100.0
PI17: AUDIT-C result—4 or over (males) or 3 or over (females)	28,064	45.6	164	0.0–100.0
PI21: Absolute CVD risk—high	4,233	30.9	129	0.0–100.0

(a) Of organisations contributing to these indicators, 0%–33% had denominators of fewer than 20 clients (see Table B1 for organisation proportions by indicator).

(b) 'Clients seen' is the total clients (sum of numerators) for all organisations with valid data.

(c) Excludes organisations providing data with a zero denominator for indicators, as they had no clients to whom they could provide the services to be counted in those indicators.

Source: AIHW analyses of the nKPI data collection.

Things to consider when interpreting the data

In addition to the broader data quality issues outlined in Chapter 2, some of the indicators discussed in this chapter should also be interpreted in light of contextual information applying to those particular indicator or group of indicators.

• **MBS items** are not claimed by all organisations, either because they do not have a GP present, they are not eligible to claim them, or they choose not to do so. As a result, the indicators based on MBS items might not reflect all related health-care activities carried out in an organisation. These indicators include MBS health assessment (item 715) for adults aged 25 and over. In addition, the business rule in Communicare is that an item 715 claim is counted at a point in the process before its submission. Only claims explicitly discarded after a rejection are subsequently excluded (DMA 2017). The impact of this has not been quantified.

• **Influenza vaccination** does not include clients who are offered a vaccination, but refuse. Also, organisations might not have records of immunisations that occurred at other places, such as workplaces.

• **GP availability** might be limited in some areas, and have an impact on the results reported by organisations. For example, limited GP availability might affect an organisation's ability to claim MBS items (child and adult health checks, GPMPs, and TCAs).

• **Shared care arrangements** between hospitals and primary health organisations, between primary care organisations, or between primary health care organisations and other providers of similar care are not consistently supported by automatic data sharing. This could lead to lower rates of data recording for some indicators, such as birthweight results and antenatal care. Similarly, it will be difficult for organisations to obtain information on their regular clients who may choose to receive cervical screening elsewhere.

• **Smoking status categories** are not yet fully agreed. For example, there is not yet universally accepted guidance on how long a person needs to have quit smoking to be considered an ex-smoker rather than a smoker. An increased number of types of exsmokers might enhance data quality, and lead to more frequent updating of clients' records.

• **Time-stamped records** normally ensure that a record or activity is fairly recent. But the smoking status recorded, smoking status result, and alcohol consumption indicators are based on the most recent record for the client (that is, treated as having been updated in the previous 2 years), regardless of how old that record is. As a result, the indicator might not reflect the current smoking or alcohol consumption status of the Indigenous regular client population, unless the data have been collected recently for all or most clients.

• **Differential BMI testing** might occur in some organisations where BMI might be more likely to be measured in clients who look underweight, overweight, or obese. This would result in the proportion of overweight or obese Indigenous regular clients being higher than it actually is.

• **Recording of alcohol consumption status** (PI16) is not restricted to a particular test or format for this indicator. Organisations can use tests such as AUDIT or AUDIT-C, or simply record whether or not the client consumes alcohol. However, for the indicator on AUDITC results (PI17), only AUDIT-C results are included. This means that, for some services, test results in PI17 are a subset of the tests reporting in PI16.

• **CVD risk factors** assessment requires information on diabetes status. For the June 2017 collection, MMEx restricted the count of clients with all the necessary risk factor information (that is, the numerator) to clients with a type 2 diabetes diagnosis, leading to an under-count for this indicator. MMEx results for June 2017 are excluded from results presented in this chapter for the indicators.

- **Absolute cardiovascular risk assessments** can be calculated using the NVDPA or the CARPA method. As the CARPA method applies an extra 5% for Indigenous Australians, nKPI data should have the 5% loading removed to make the data comparable with NVDPA data. As the PCIS system is unable to deduct the 5% because the data are captured as categorical scores (low, medium, high), services using PCIS (predominantly the Northern Territory Government) are not included in the national results presented in this chapter.

- **Data extraction for Northern Territory Government organisations** excludes measurements or tests conducted outside an individual organisation. This means results might be underestimated for PI09: Smoking status recorded, PI16: Alcohol consumption status recorded, and PI22: Cervical screening.

4.1 Smoking status recorded

PI09—Proportion of Indigenous regular clients whose smoking status has been recorded

Nationally, as at December 2017, 81% of Aboriginal and Torres Strait Islander regular clients aged 15 and over had their smoking status recorded in the previous 2 years. This is the same as June 2017 (Figure 4.1.1).

The age and sex distribution showed that in December 2017, the proportion of Indigenous regular clients whose smoking status had been recorded rose with age for both males and females, until ages 55–64, and then fell slightly thereafter. Males aged 15–44 were less likely to have their smoking status recorded than females (Figure 4.1.1).

Figure 4.1.1: Smoking status of clients aged 15 and over recorded in the previous 2 years, by sex, age group, and reporting period, June and December 2017 (%)
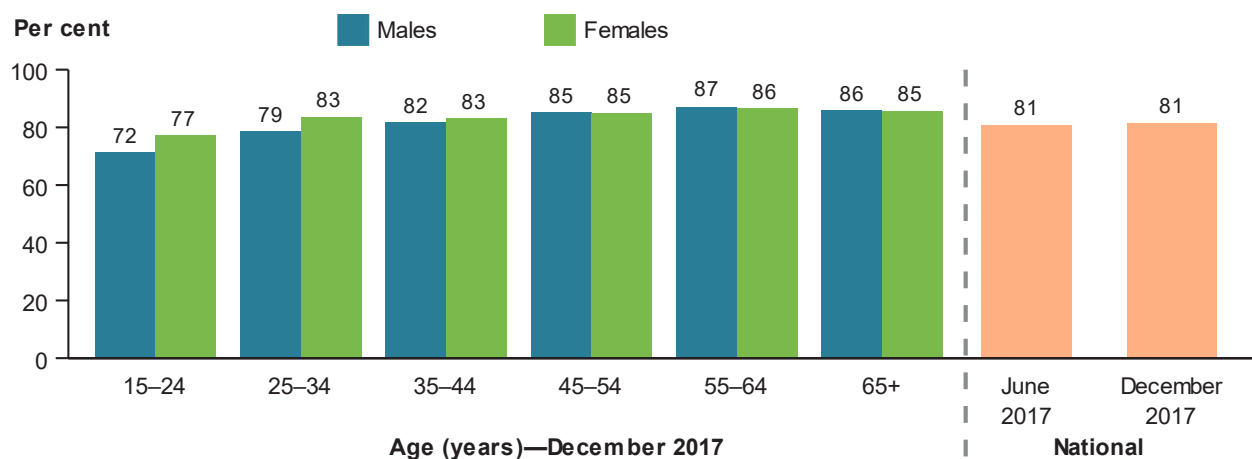
National variation data showed a broad distribution of results, with two-thirds (69%) of organisations recording smoking status in 70%–100% of cases (Figure 4.1.2).

- More than half of the organisations (112 of 215) recorded smoking status for 84% or more of their clients.
- The top 25% of organisations recorded smoking status for 94% or more of their clients.
- The bottom 25% of organisations recorded smoking status for 57% or fewer of their clients.

Figure 4.1.2: Distribution of smoking status of clients aged 15 and over recorded in the previous 2 years, by number of organisations, December 2017 (%)
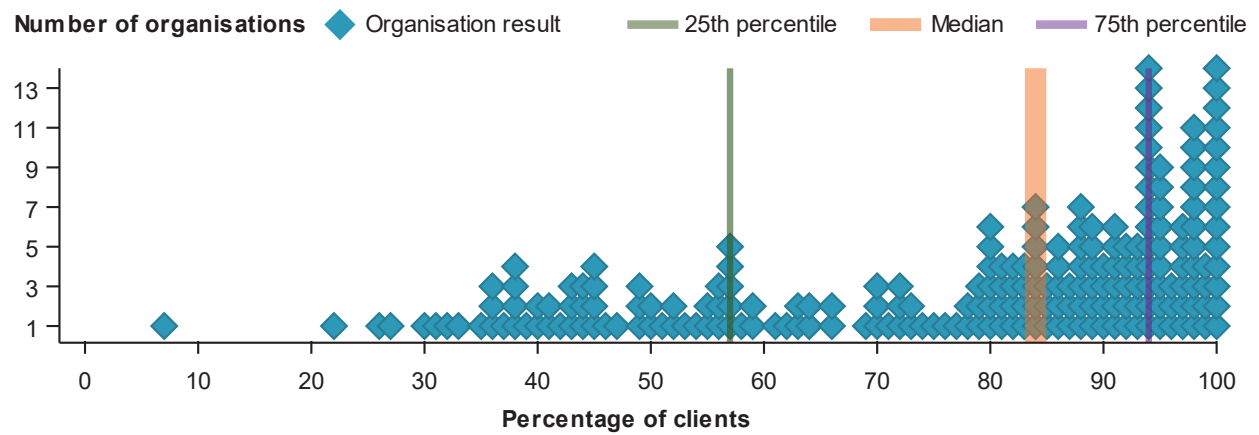
Organisation size analysis for December 2017 showed that the recording of smoking status increased with organisation size. Recording was highest in organisations with more than 2,000 clients (85%), and lowest in organisations with fewer than 500 clients (64%) (Figure 4.1.3).

Figure 4.1.3: Smoking status of clients aged 15 and over recorded in the previous 2 years, by organisation size, December 2017 (%)
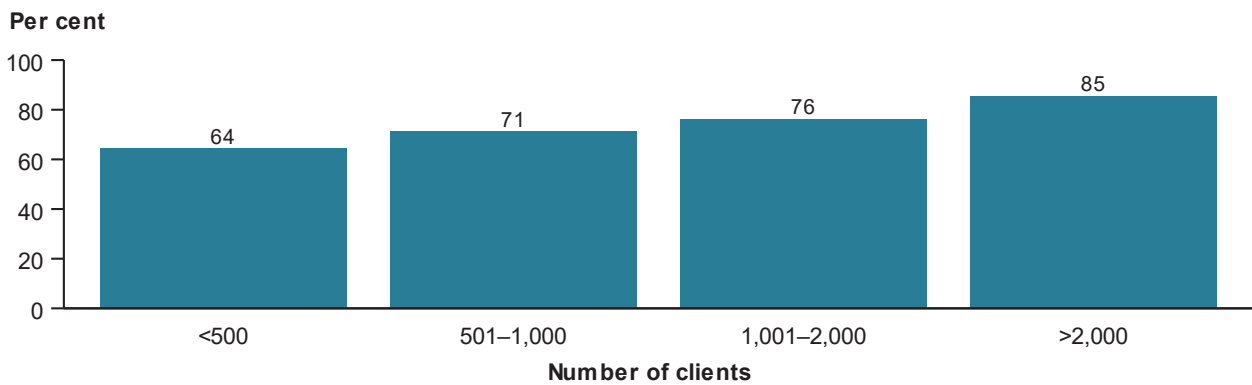
4.2 Alcohol consumption recorded

PI16—Proportion of Indigenous regular clients whose alcohol consumption status has been recorded

Nationally, as at December 2017, 63% of Aboriginal and Torres Strait Islander regular clients aged 15 and over had their alcohol consumption status recorded in the previous 2 years. This is the same as June 2017 (Figure 4.2.1).

The age and sex distribution showed that in December 2017, the proportion of Indigenous regular clients whose alcohol consumption status had been recorded rose with age for both males and females until age 64, then fell slightly thereafter (Figure 4.2.1).

Figure 4.2.1: Alcohol consumption status of clients aged 15 and over recorded in the previous 2 years, by sex, age group, and reporting period, June and December 2017 (%)
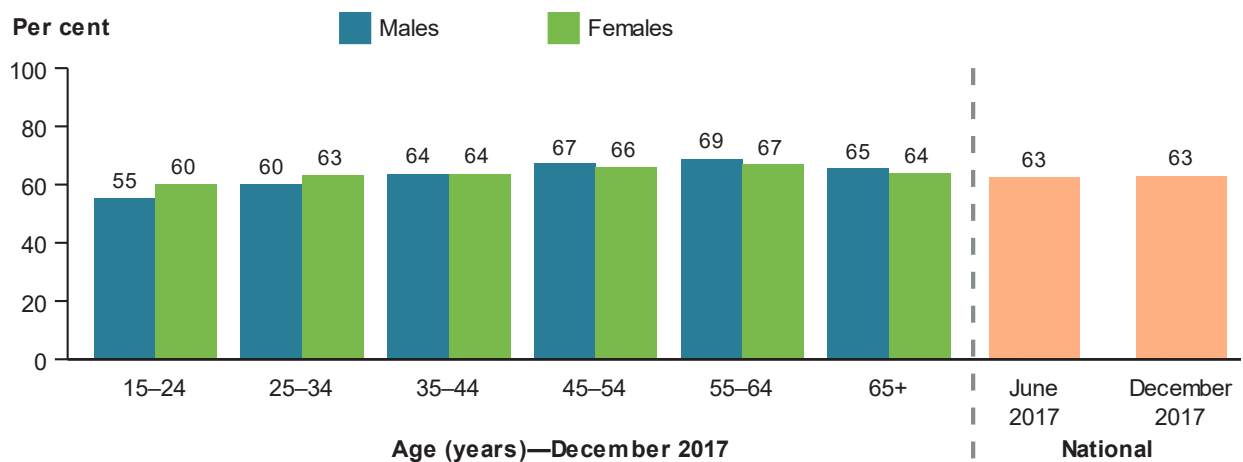
National variation data showed a broad distribution of results, with the majority (93%) of organisations recording their clients' alcohol consumption in 30%–100% of cases (Figure 4.2.2).

- About half of the organisations (109 of 214) recorded the alcohol consumption of 56% or more of their clients.
- The top 25% of organisations recorded alcohol consumption for 71% or more of their clients.
- The bottom 25% of organisations recorded alcohol consumption for 43% or fewer of their clients.

Figure 4.2.2: Distribution of alcohol consumption status of clients aged 15 and over recorded in the previous 2 years, by number of organisations, December 2017 (%)
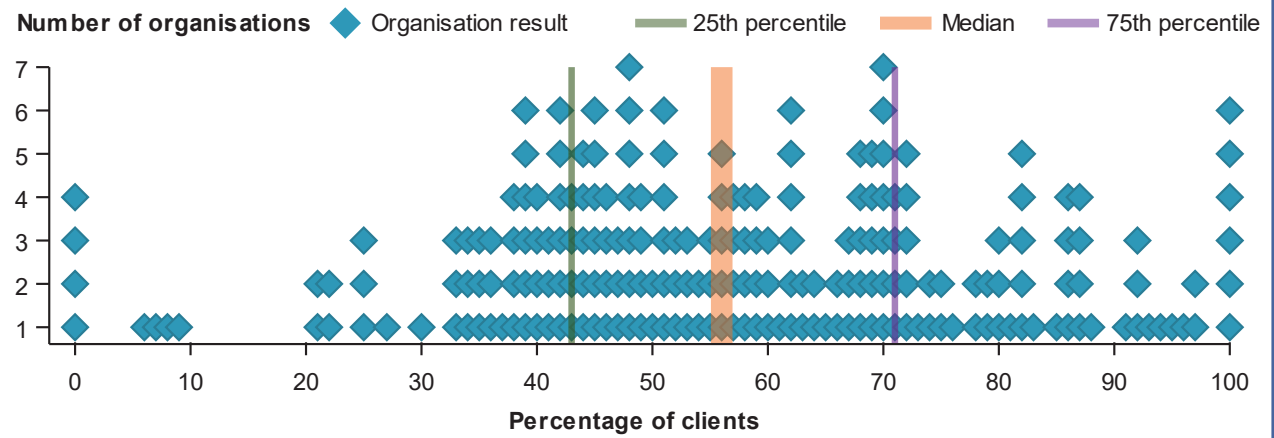
Organisation size analysis for December 2017 showed the recording of alcohol consumption status increased with organisation size. Recording was highest in organisations with more than 2,000 clients (67%), and lowest in organisations with fewer than 500 clients (51%) (Figure 4.2.3).

Figure 4.2.3: Alcohol consumption status of clients aged 15 and over recorded in the previous 2 years, by organisation size, December 2017 (%)
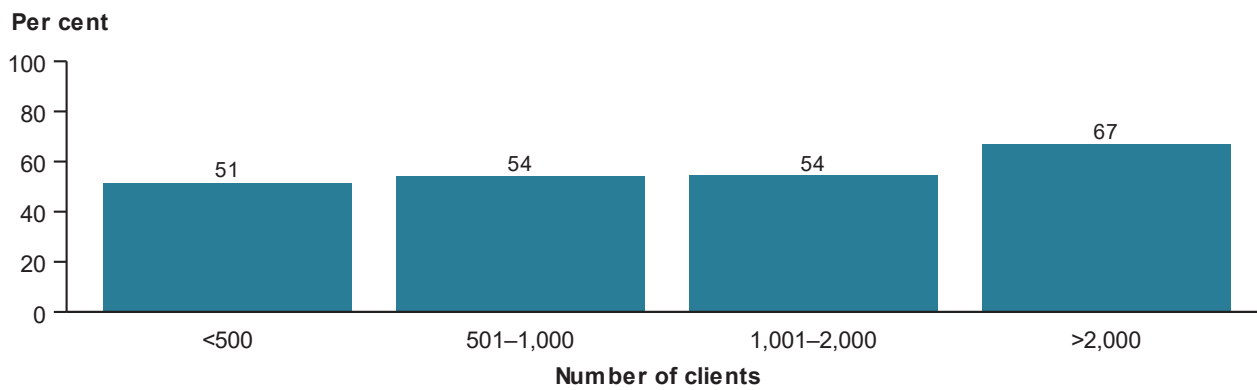
4.3 MBS health assessment (item 715) for adults aged 25 and over

PI03—Proportion of Indigenous regular clients for whom an MBS health assessment for Aboriginal and Torres Strait Islander people (MBS item 715) was claimed

Nationally, as at December 2017, 50% of Aboriginal and Torres Strait Islander regular clients aged 25 and over had an MBS health assessment claimed for them in the previous 2 years. This is the same as in June 2017 (Figure 4.3.1).

The age and sex distribution showed that in December 2017, the proportion of Indigenous clients for whom an MBS health assessment was claimed rose with age for both males and females up to age 64, then fell slightly thereafter. Males were slightly more likely than females to have had an MBS health assessment claimed (Figure 4.3.1).

Figure 4.3.1: Clients aged 25 and over who had an MBS health assessment claimed in the previous 2 years, by sex, age group, and reporting period, June and December 2017 (%)
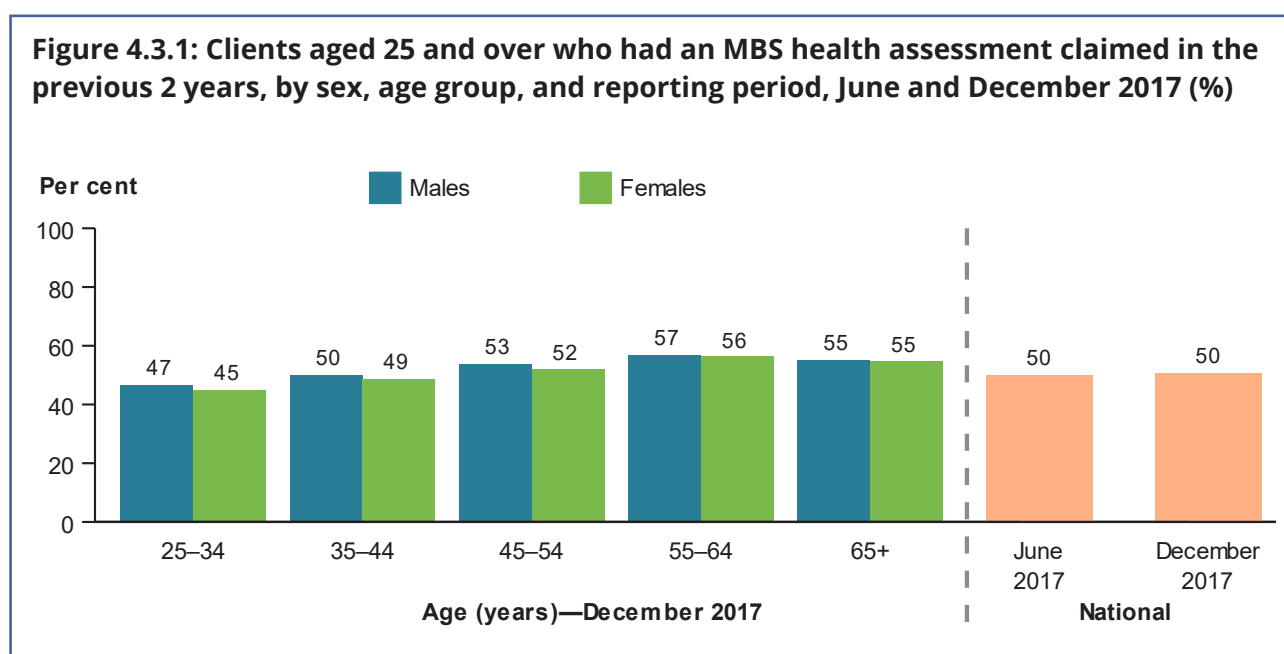
National variation data showed a broad distribution of results, with the majority (89%) of organisations reporting that they had claimed an MBS health assessment for 10%–80% of their clients (Figure 4.3.2).

- More than half of the organisations (110 of 213) claimed an MBS health assessment for 42% or more of their clients aged 25 and over.
- The top 25% of organisations claimed an MBS health assessment for 58% or more of their clients aged 25 and over.
- The bottom 25% of organisations claimed an MBS health assessment for 27% or fewer of their clients aged 25 and over.
- Of the 16 organisations with a result of 0%, 15 commented that they either do not perform or cannot claim MBS health checks.

Figure 4.3.2: Distribution of clients aged 25 and over who had an MBS health assessment claimed in the previous 2 years, by number of organisations, December 2017 (%)
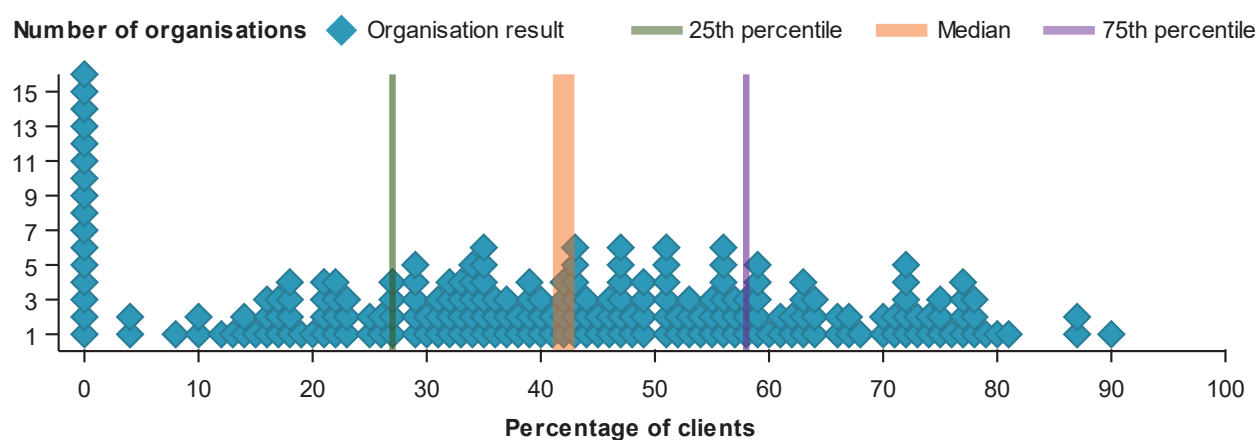
Organisation size analysis for December 2017 showed that the proportion of MBS health assessments claimed for clients aged 25 and over increased with organisation size.

Claiming of MBS health assessments was highest in organisations with more than 2,000 clients (55%) and lowest in organisations with fewer than 500 clients (31%) (Figure 4.3.3).

Figure 4.3.3: Clients aged 25 and over who had an MBS health assessment claimed in the previous 2 years, by organisation size, December 2017 (%)
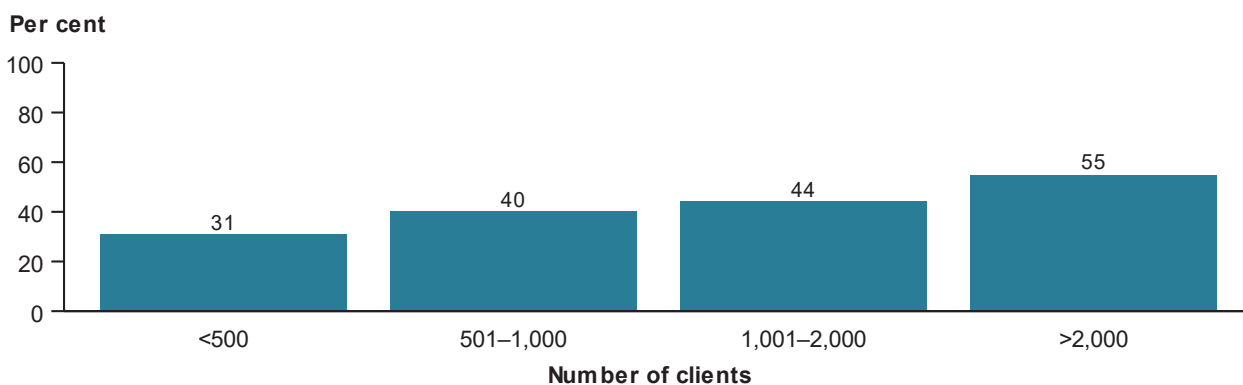
4.4 Risk factors assessed to enable cardiovascular disease (CVD) risk assessment

PI20—Proportion of Indigenous regular clients who have had the necessary risk factors assessed to enable CVD assessment

Nationally, as at December 2017, 47% of Aboriginal and Torres Strait Islander regular clients aged 35–74 with no known CVD had the necessary risk factors recorded in the previous 2 years to enable a CVD assessment. This compares with 46% in June 2017 (Figure 4.4.1).

The age and sex distribution showed that in December 2017, the proportion of Indigenous regular clients who had the necessary risk factors assessed to enable a CVD assessment rose with age for both males and females, with a slight decrease for males aged 65–74 (Figure 4.4.1).

Figure 4.4.1: Clients aged 35–74 who had the necessary risk factors recorded in the previous 2 years to enable a CVD assessment, by sex, age group, and reporting period, June and December 2017 (%)
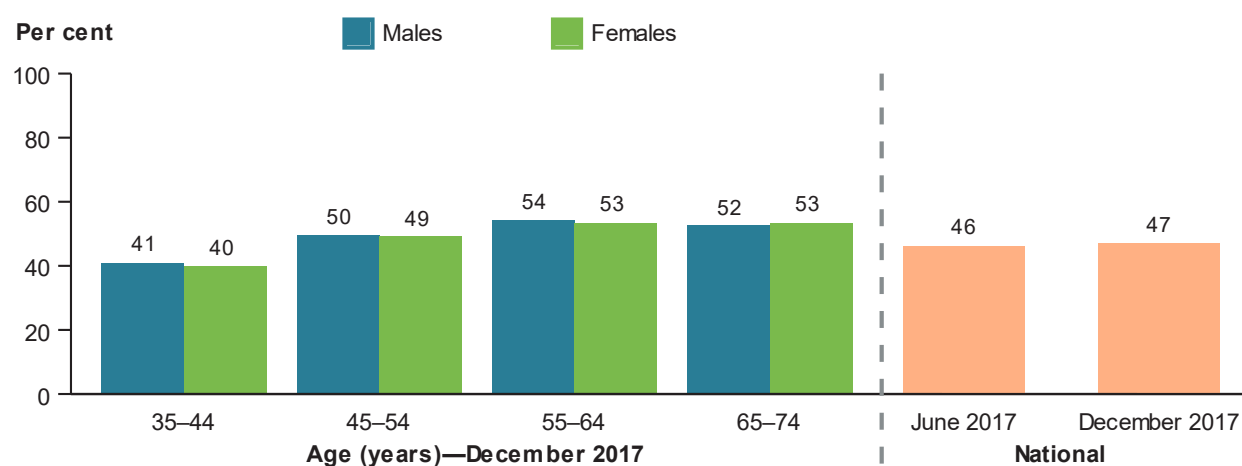
National variation data showed a broad distribution of results, with the majority (83%) of organisations recording the necessary risk factors to enable a CVD assessment for 20%–70% of their clients (Figure 4.4.2).

- About half of the organisations (103 of 198) recorded the necessary risk factors to enable a CVD assessment for 45% or more of their clients.
- The top 25% of organisations recorded the necessary risk factors to enable a CVD assessment for 58% or more of their clients.
- The bottom 25% of organisations recorded the necessary risk factors to enable a CVD assessment for 37% or fewer of their clients.

Figure 4.4.2: Distribution of clients aged 35–74 who had the necessary risk factors recorded in the previous 2 years to enable a CVD assessment, by number of organisations, December 2017 (%)
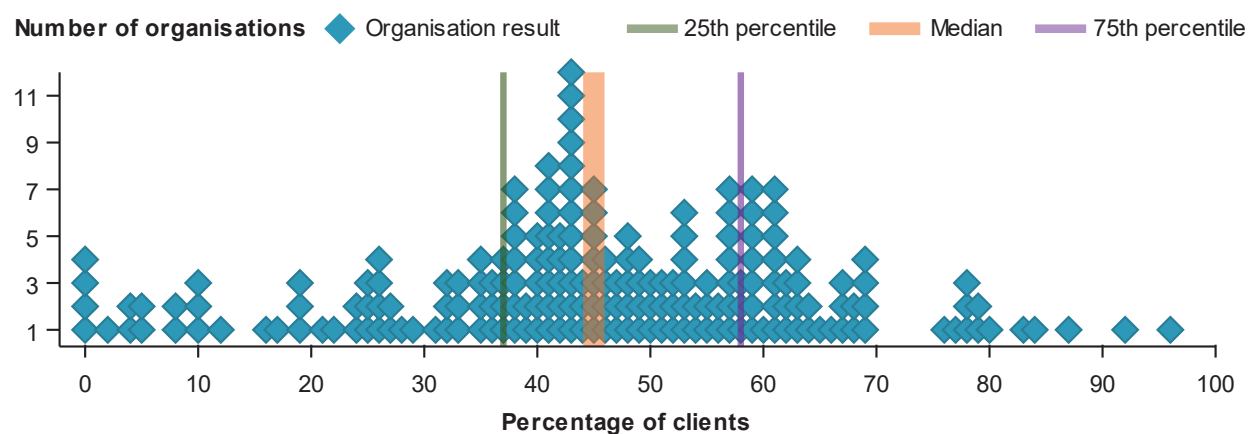
Organisation size analysis for December 2017 showed the recording of the necessary risk factors for clients with no known CVD was highest in organisations with more than 2,000 clients (48%), and lowest in organisations with fewer than 500 clients (40%) (Figure 4.4.3).

Figure 4.4.3: Clients aged 35–74 who had the necessary risk factors recorded in the previous 2 years to enable a CVD assessment, by organisation size, December 2017 (%)
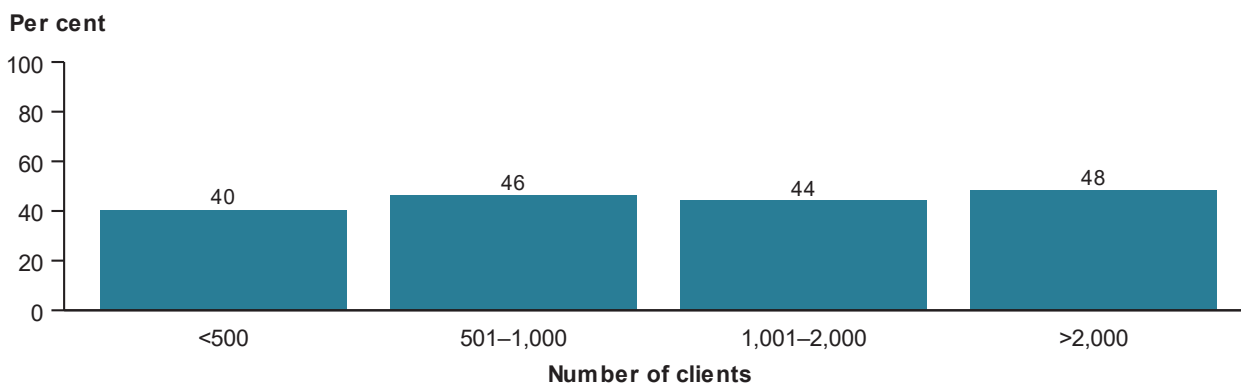
4.5 Cervical screening

PI22—Proportion of Indigenous regular clients who have had a cervical screening

Nationally, as at December 2017, 27% of female Aboriginal and Torres Strait Islander regular clients aged 20–69 who have not had a hysterectomy had a cervical screening in the previous 2 years. This compares with 28% in June 2017 (Figure 4.5.1).

Figure 4.5.1: Timing of cervical screening for female clients aged 20–69, by reporting period, June and December 2017 (%)
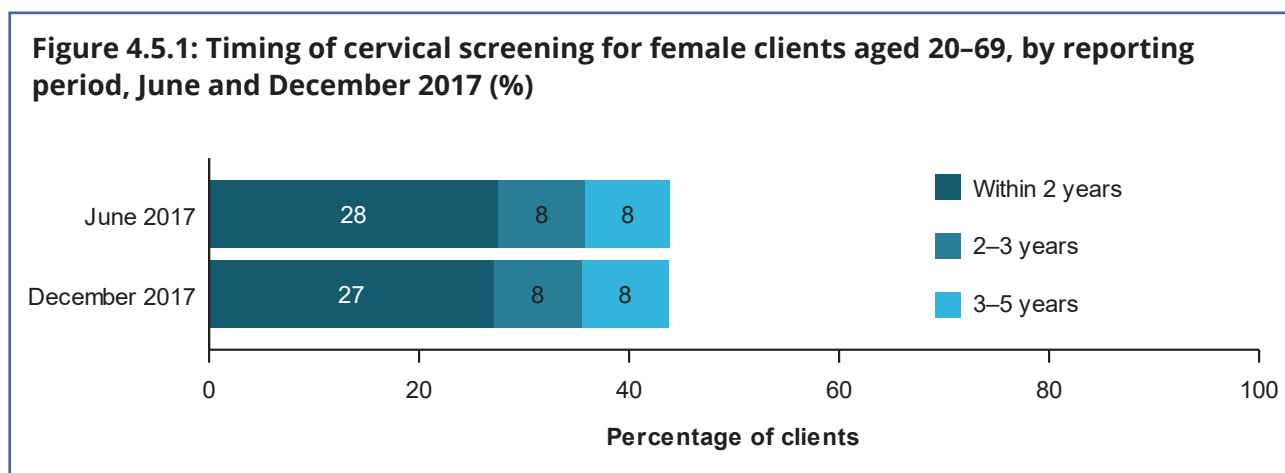
National variation data showed organisation results were concentrated around the median, with the vast majority (95%) recording a cervical screening for 0%–50% of their female clients (Figure 4.5.2).

• About half of the organisations (106 of 209) recorded a cervical screening in the previous 2 years for 24% or more of their female clients.

• The top 25% of organisations recorded a cervical screening in the previous 2 years for 35% or more of their female clients.

• The bottom 25% of organisations recorded a cervical screening within the previous 2 years for 15% or fewer of their female clients.

Figure 4.5.2: Distribution of female clients aged 20–69 who had a cervical screening in the previous 2 years, by number of organisations, December 2017 (%)
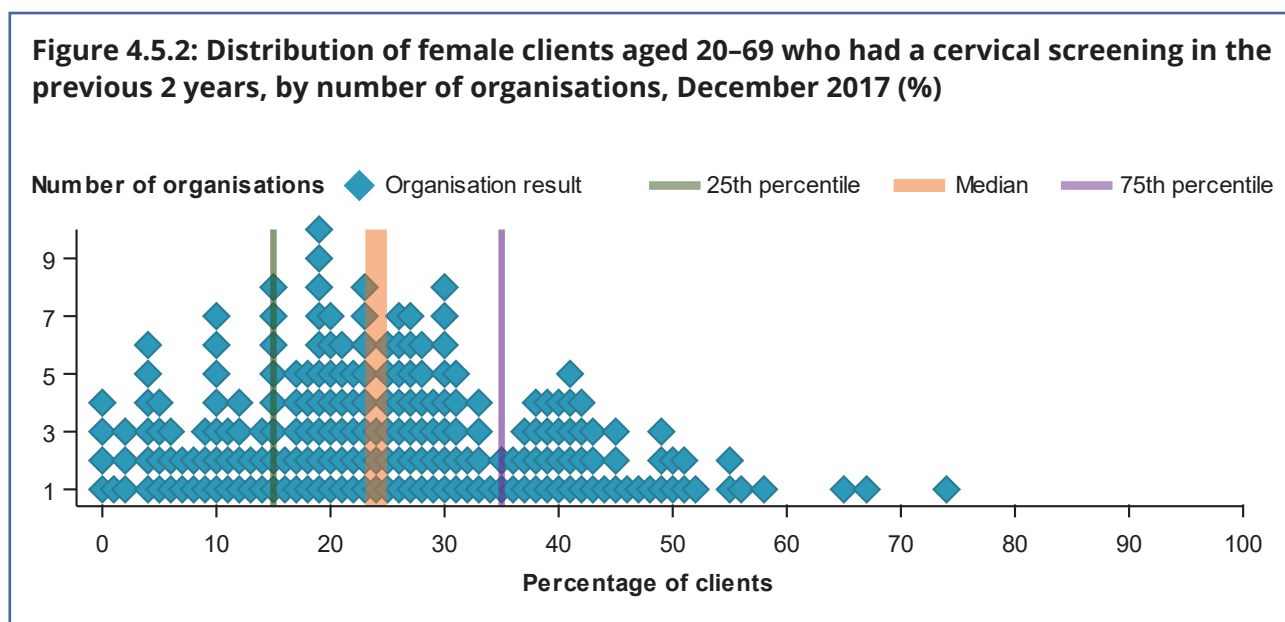
Organisation size analysis for December 2017 showed that cervical screening was highest in organisations with more than 2,000 clients (28%), and lowest for organisations with fewer than 500 clients (23%) (Figure 4.5.3).

Figure 4.5.3: Female clients aged 20–69 who had a cervical screening in the previous 2 years, by organisation size, December 2017 (%)
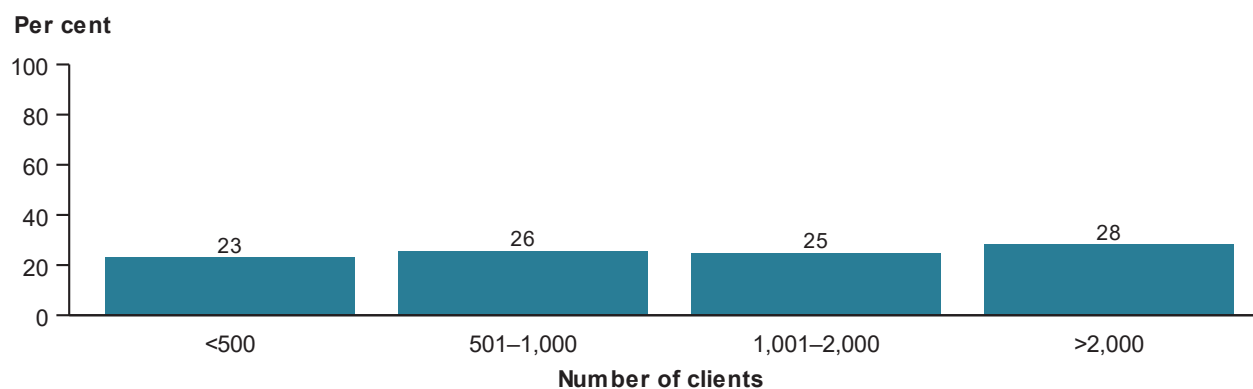
4.6 Immunised against influenza—Indigenous regular clients aged 50 and over

PI14—Proportion of Indigenous regular clients aged 50 and over who are immunised against influenza

Nationally, as at December 2017, 36% of Aboriginal and Torres Strait Islander regular clients aged 50 and over were immunised against influenza. This compares with 32% in June 2017 (Figure 4.6.1).

Figure 4.6.1: Clients aged 50 and over who were immunised against influenza, by reporting period, June and December 2017 (%)
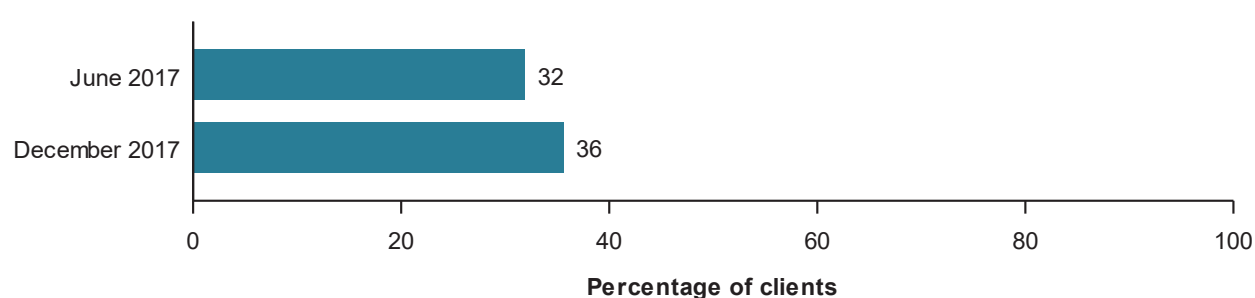
National variation data showed results were concentrated around the median, with the vast majority (around 98%) of organisations reporting that 0%–70% of their clients aged 50 and over were immunised against influenza (Figure 4.6.2).

- About half of the organisations (105 of 207) immunised 37% or more of their clients aged 50 and over against influenza.
- The top 25% of organisations immunised 47% or more clients against influenza.
- The bottom 25% of organisations immunised less than 26% of their clients against influenza.

Figure 4.6.2: Distribution of clients aged 50 and over who were immunised against influenza, by number of organisations, December 2017 (%)
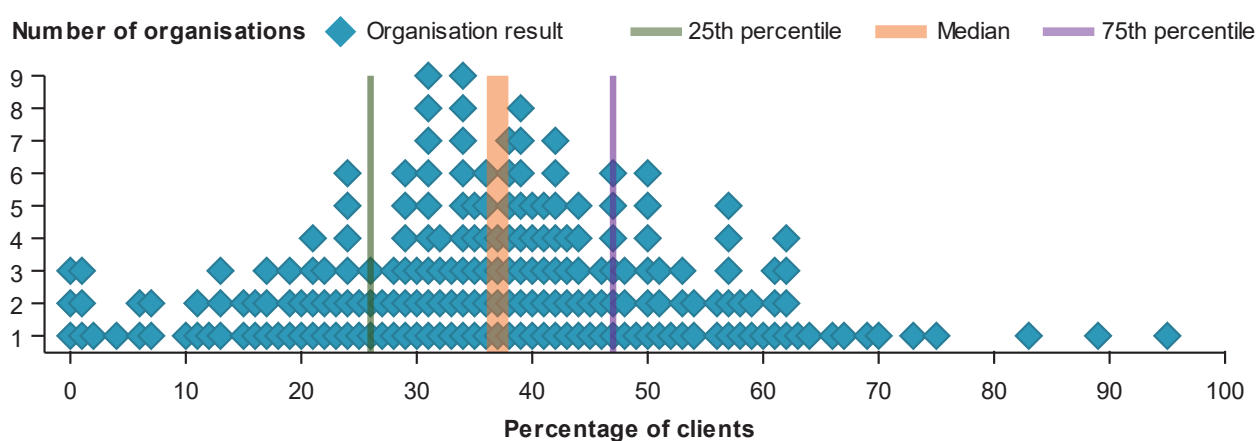
Organisation size analysis for December 2017 showed that the proportion of clients aged 50 and over who were immunised against influenza was highest in organisations with 501–1,000 clients (37%), and lowest in organisations with fewer than 500 clients (33%) (Figure 4.6.3).

Figure 4.6.3: Clients aged 50 and over who were immunised against influenza, by organisation size, December 2017 (%)

4.7 Smoking status result

PI10—Proportion of Indigenous regular clients with a smoking status result with a smoking status of 'current smoker', 'ex-smoker', or 'never smoked'

Nationally, as at December 2017, half (51%) of Aboriginal and Torres Strait Islander regular clients aged 15 and over were current smokers. This compares with 52% in June 2017. One-third (33%) of clients had a smoking status recorded as 'never smoked' in the previous 2 years for both June and December 2017 (Figure 4.7.1).

The age and sex distribution showed that in December 2017, the proportion of Indigenous clients with a smoking status result of current smoker was highest in males aged 25–44 (67%), and lowest in women aged 65 and over (22%).

Across all age groups, a higher proportion of males than females were current smokers. The highest proportion of females who had never smoked were those aged 65 and over (50%), while for males, it was those aged 15–24 (48%) (Figure 4.7.1).
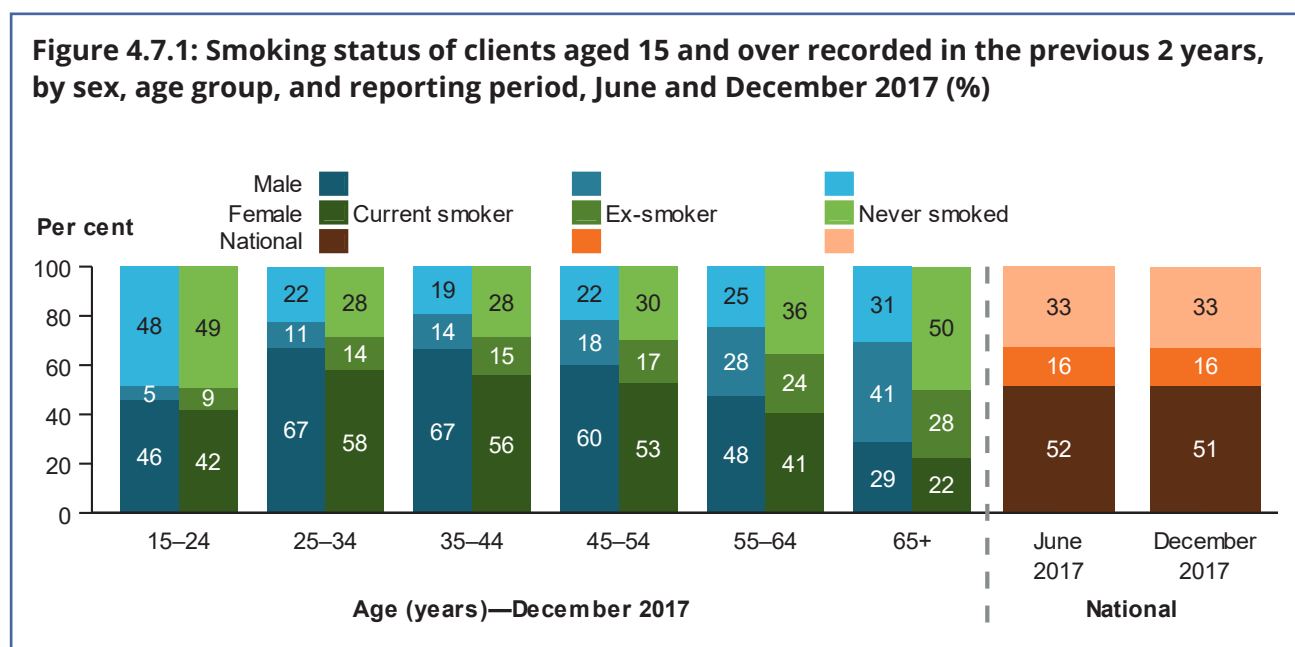
Figure 4.7.1: Smoking status of clients aged 15 and over recorded in the previous 2 years, by sex, age group, and reporting period, June and December 2017 (%)

National variation data showed results were concentrated around the median, with the vast majority (98%) of organisations reporting that 20%–80% of their clients aged 15 and over were current smokers (Figure 4.7.2).

- More than half of the organisations (113 of 215) had 52% or fewer of their clients who were current smokers.

- The top 25% of organisations recorded that 45% or fewer of their clients were current smokers.

- The bottom 25% of organisations recorded that 59% or more of their clients were current smokers.

Figure 4.7.2: Distribution of clients aged 15 and over who were current smokers in the previous 2 years, by number of organisations, December 2017 (%)
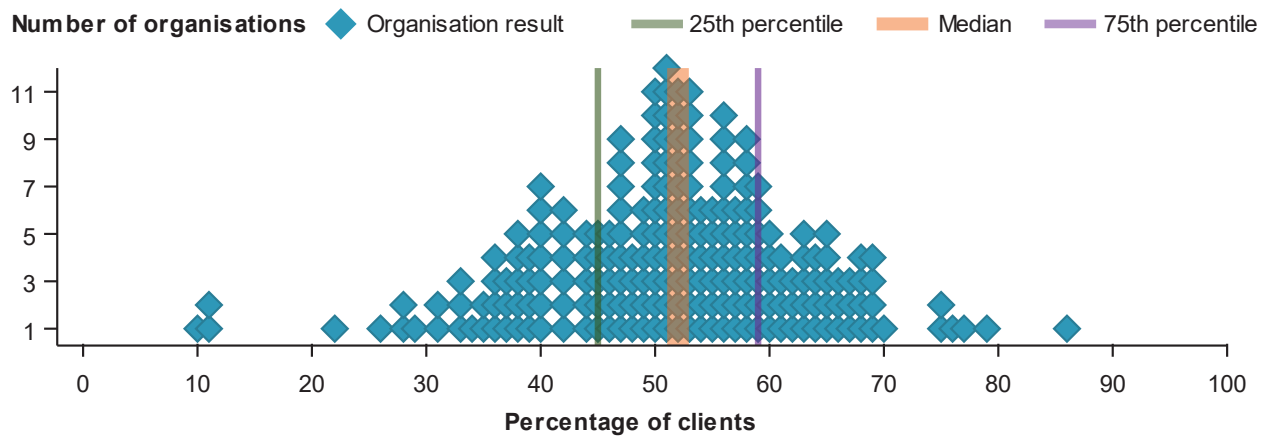
Organisation size analysis for December 2017 showed that the proportion of current smokers was highest in organisations with 501–1,000 clients (54%), and lowest in organisations with fewer than 500 clients (50%) (Figure 4.7.3).

Figure 4.7.3: Clients aged 15 and over who were current smokers in the previous 2 years, by organisation size, December 2017 (%)
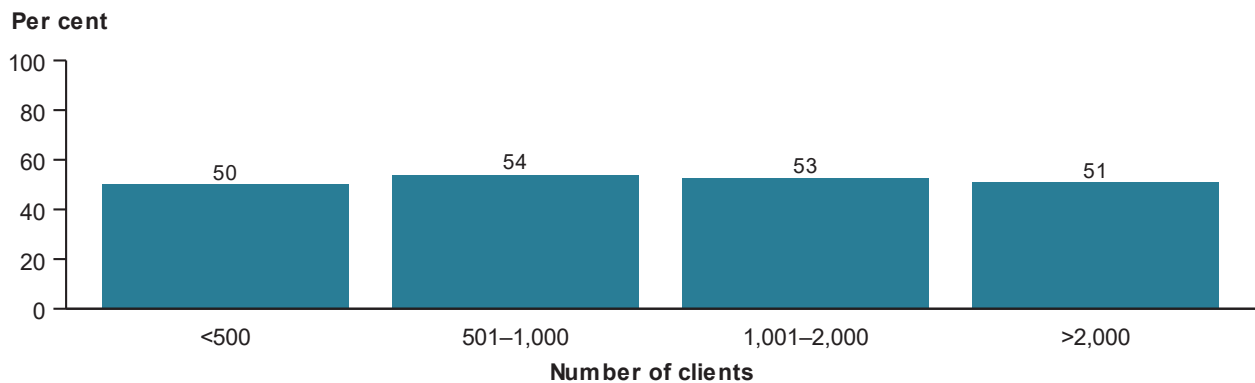
4.8 Body mass index classified as overweight or obese

PI12—Proportion of Indigenous regular clients who are classified as overweight or obese

Nationally, as at December 2017, 71% of Aboriginal and Torres Strait Islander regular clients aged 25 and over had their BMI classified overweight (BMI of 25–30) or obese (BMI of 30 or more) in the previous 2 years. Of these, 27% had a BMI classified as overweight, and 44% had a BMI classified as obese. This is the same as June 2017 (Figure 4.8.1).

The age and sex distribution showed that in December 2017, the proportion of Indigenous regular clients whose BMI classified them as overweight or obese was higher in females than males across all age groups. The percentage of clients who were classified as obese rose with age for both males and females up until age 64, then fell slightly thereafter (Figure 4.8.1).

Figure 4.8.1: Clients aged 25 and over with a BMI classified as overweight or obese in the previous 2 years, by sex, age group, and reporting period, June and December 2017 (%)
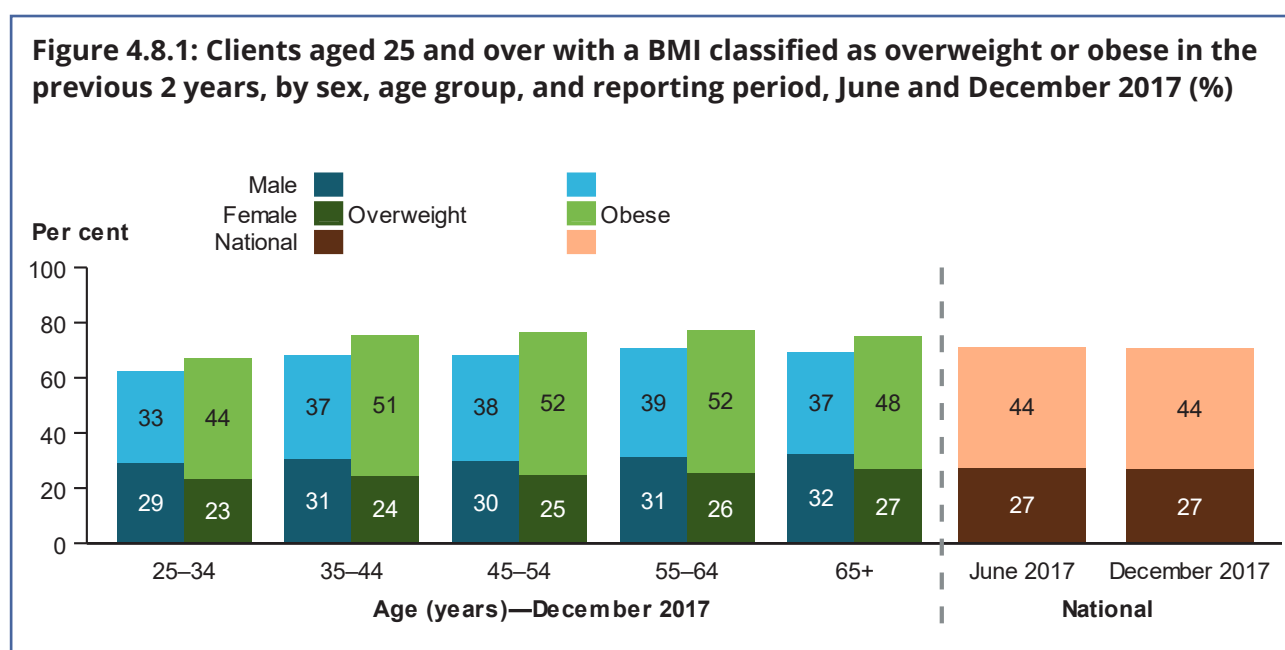
National variation data showed a narrow distribution of results, with the majority (85%) of the organisations classifying 60%–90% of their clients aged 25 and over as overweight or obese (Figure 4.8.2).

- More than half of the organisations (114 of 214) classified up to 73% of their clients as overweight or obese.
- The top 25% of organisations classified 67% or fewer clients as overweight or obese.
- The bottom 25% of organisations classified 76% or more of their clients as overweight or obese.
- Two organisations had a result of 100%, and both had small client numbers.

Figure 4.8.2: Distribution of clients aged 25 and over with a BMI classified as overweight or obese in the previous 2 years, by number of organisations, December 2017 (%)
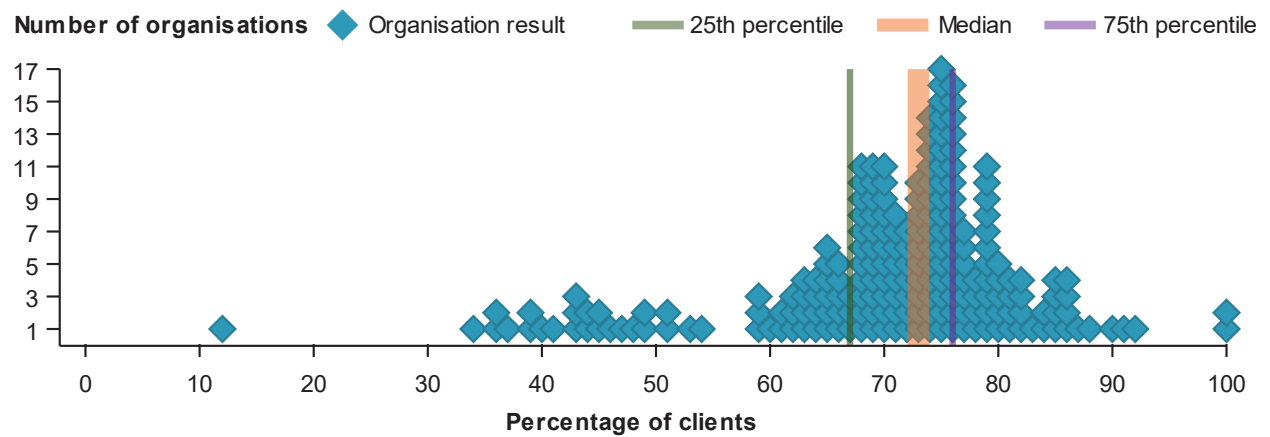
Organisation size analysis for December 2017 showed that the proportion of clients classified as overweight or obese according to their BMI was similar across organisation sizes.

The proportion was slightly lower in organisations with fewer than 500 and 501–1,000 clients (69%), and slightly higher in organisations with more than 2,000 clients (71%) (Figure 4.8.3).

Figure 4.8.3: Clients aged 25 and over with a BMI classified as overweight or obese in the previous 2 years, by organisation size, December 2017 (%)
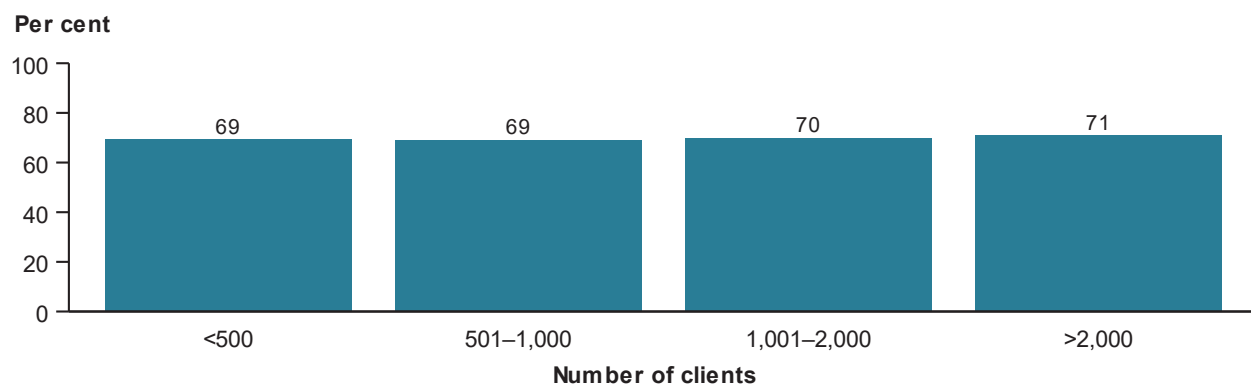
4.9 AUDIT-C result

PI17—Proportion of Indigenous regular clients with an AUDIT-C result within specified levels

Nationally, as at December 2017, an estimated 46% of Aboriginal and Torres Strait Islander regular clients aged 15 and over had a positive AUDIT-C result recorded in the previous 2 years of 4 or over for males or 3 or over for females. A positive AUDIT-C score indicates clients are drinking at levels that put them at risk of harm. Results for June 2017 were the same as those for December 2017 (Figure 4.9.1).

The age and sex distribution showed that in December 2017, the proportion of males recording a positive AUDIT-C score of 4 or over increased up to age 25–34 and then fell up to age 65 and over.

For females, the proportion recording a positive score of 3 or over rose up to age 35–44, then fell to age 65 and over. Males were more likely to record a positive AUDIT-C result than females in all age groups (Figure 4.9.1).

Figure 4.9.1: Clients aged 15 and over who had an AUDIT-C result recorded in the previous 2 years, by sex, age group, and reporting period, June and December 2017 (%)
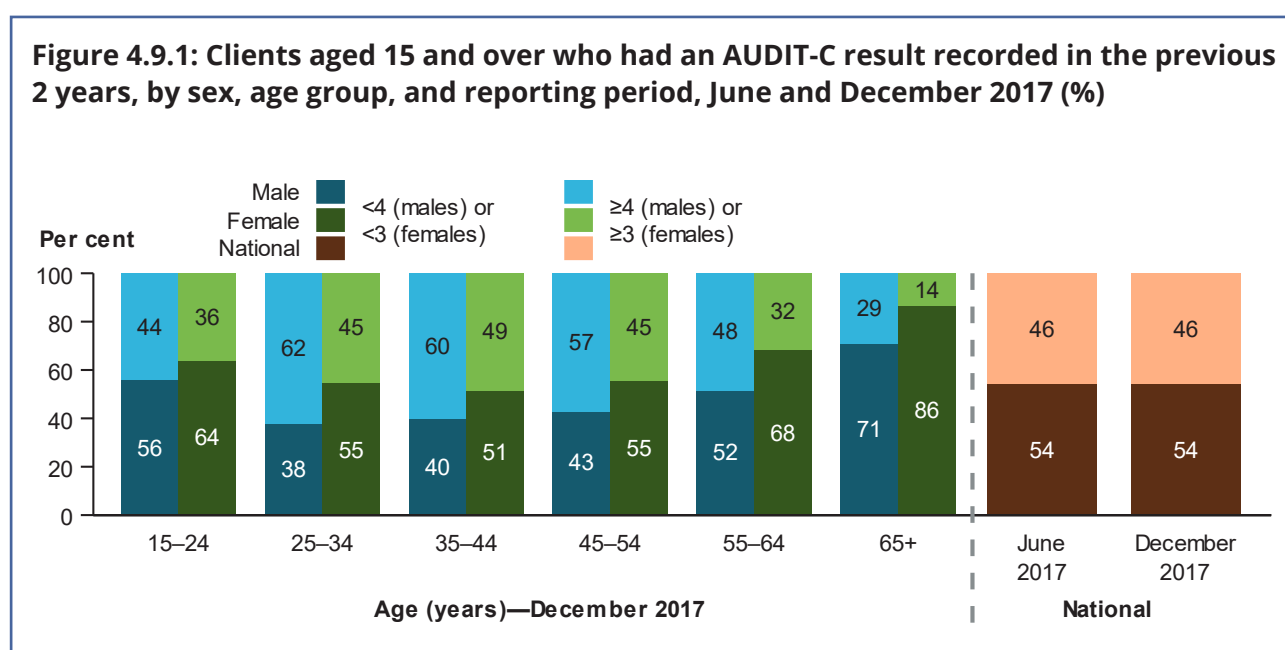
National variation data showed a broad distribution of results, with the majority (88%) of organisations reporting that 30%–90% of clients recorded an AUDIT-C result of 4 or over for males or 3 or over for females. Almost 1 in 5 (18%) of the organisations had small client numbers (Figure 4.9.2).

- Around half of the organisations (83 of 164) had 60% or fewer of their clients recording an AUDIT-C result of 4 or over for males or 3 or over for females. This indicates that a large proportion of their clients are at risk of harm.

- The top 25% of organisations recorded 43% or fewer clients as having an AUDIT-C result of 4 or over for males or 3 or over for females.

- The bottom 25% of organisations recorded 76% or fewer clients as having an AUDIT-C result of 4 or over for males or 3 or over for females.

- All 12 organisations with a result of 100%, and the single organisation with a result of 0% had small client numbers.

Figure 4.9.2: Distribution of clients aged 15 and over who had an AUDIT-C result of 4 or over for males and 3 or over for females recorded in the previous 2 years, by number of organisations, December 2017 (%)
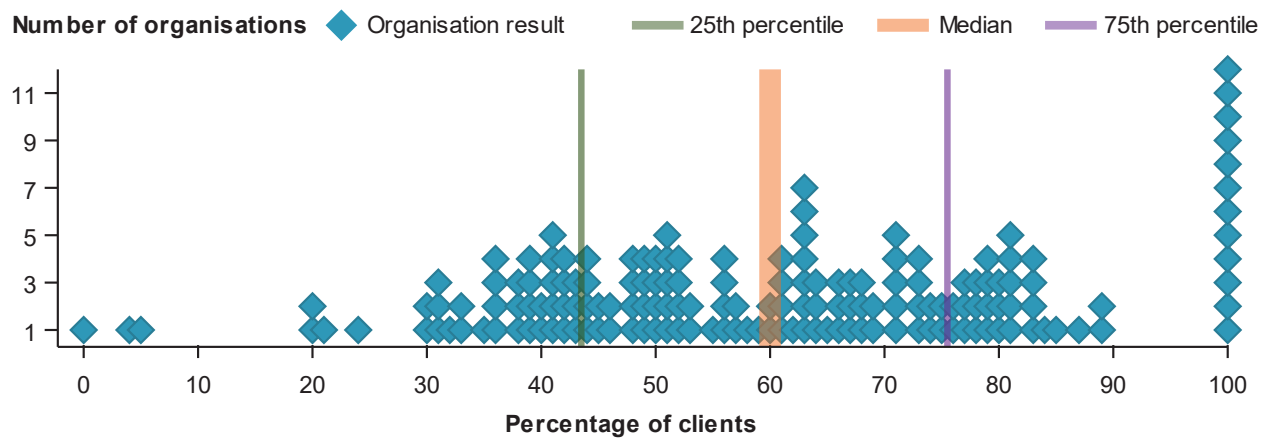
Organisation size analysis for December 2017 showed that the proportion of clients who had an AUDIT-C result of 4 or over for males or 3 or over for females decreased with organisation size.

Recording was highest in organisations with fewer than 500 clients (57%), and lowest in organisations with more than 2,000 clients (43%) (Figure 4.9.3).

Figure 4.9.3: Clients aged 15 and over who had an AUDIT-C result of 4 or over for males or 3 or over for females recorded in the previous 2 years, by organisation size, December 2017 (%)
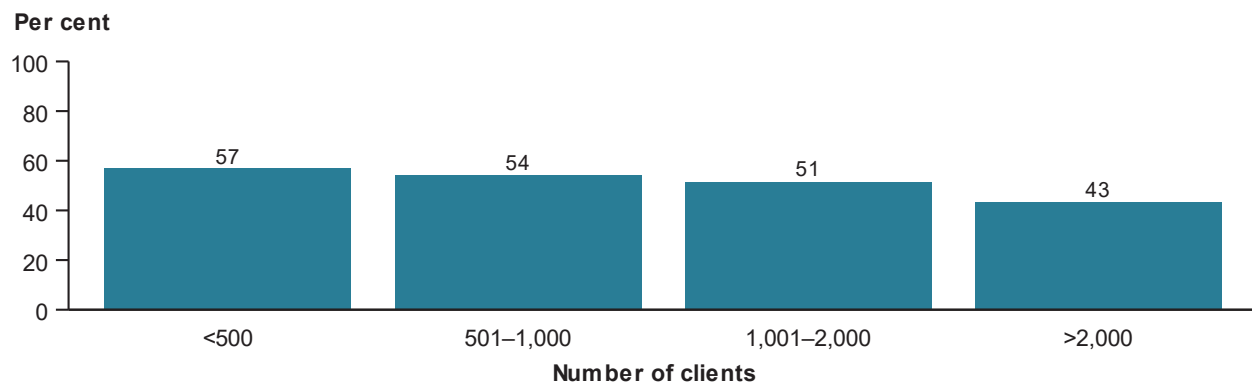
4.10 Cardiovascular disease risk assessment result

PI21—Proportion of Indigenous regular clients with no known CVD, aged 35–74, who have had an absolute CVD risk assessment with results within specified levels

Nationally, as at December 2017, an estimated 31% of Aboriginal and Torres Strait Islander regular clients aged 35–74 had a CVD risk assessment result that classified them as being at high risk (greater than 15% probability of CVD in the next 5 years). This compares with 33% in June 2017 (Figure 4.10.1).

This nKPI indicator was collected for the first time in June 2017, and only 2 data points are available to assess its stability and reliability. Results should be treated with caution, as national population coverage of CVD risk assessment was low—at 21% nationally—although considerably higher among services using PCIS (52%).

For services using PCIS, an estimated 47% of Indigenous regular clients were classified as being at high risk in both June and December 2017. These results can be expected to be higher than the rest of the nKPI results, as data have been reported using the CARPA method without deducting the 5% loading for Indigenous Australians. For this reason, services using PCIS (predominantly the Northern Territory Government) are not included in the national results.

As a point of comparison, a study of primary health care patients in the Northern Territory found that about half of clients aged 35–74 for whom a risk assessment had been completed were classified as high risk based on the CARPA calculation (Burgess et al. 2015).

These results and the nKPI results are higher than those found in a recent population study, which found 15.7% (95% CI, 13.0–18.3%) of Indigenous Australians without prior CVD were at high absolute CVD risk. The majority (12.9%) of high-risk assessments were based on clinical criteria, while only 2.7% were categorised as high risk based on the Framingham risk equation. However, clients of primary health care services are generally at higher risk than the broader population (Calabria et al. 2018).

The age distribution of CVD risk assessment results in December 2017 showed the proportion of high-risk clients increased with age for both males and females. A greater proportion of males than females recorded a high-risk result (Figure 4.10.1).

The nKPI results for December 2017 show that 12% of males aged 65–74 were assessed nationally as being at 'low risk'. But according to the Australian recommendations (NVDPA 2012a), all males 65 and over are considered moderate risk regardless of other risk factors. This might reflect data quality issues with the indicator.

Figure 4.10.1: Clients aged 35–74 who had a CVD risk assessment result recorded in the previous 2 years, by sex, age group, and reporting period, June and December 2017 (%)
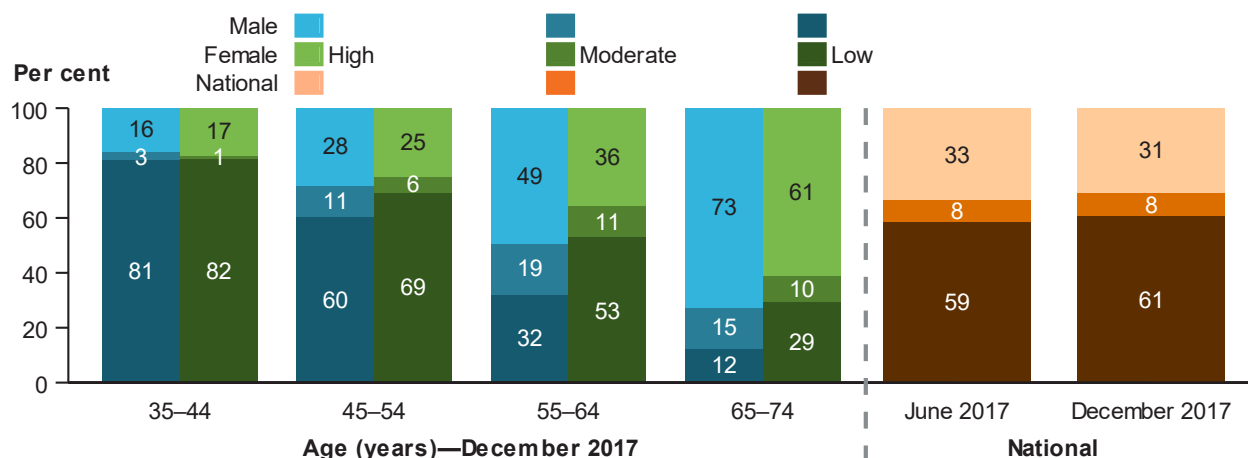
National variation data showed a broad distribution of results, with the vast majority (about 97%) of organisations recording a CVD risk assessment as high risk for 0%–70% of their clients. One-third (33%) of the organisations had small client numbers (Figure 4.10.2).

- Around half of the organisations (66 of 129) assessed 29% or fewer clients to be at high risk, based on the CVD risk assessment.
- The top 25% of organisations recorded 15% or fewer of clients as being at high risk of CVD.
- The bottom 25% of organisations recorded 42% or more of clients being at high risk of CVD.
- A total of 15 of the 16 organisations with a result 0%, and the 3 organisations with results of more than 90% had small client numbers.

Figure 4.10.2: Distribution of clients aged 35–74 who were at high risk of CVD in the previous 2 years, by number of organisations, December 2017 (%)
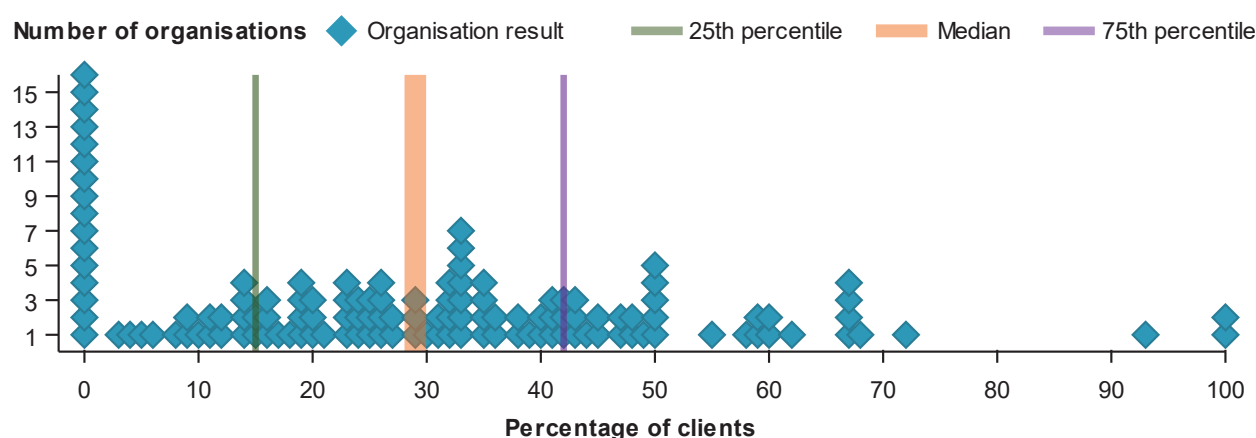
Organisation size analysis for December 2017 showed that the proportion of clients who had a CVD risk assessment recorded as high risk was highest in organisations with 500–1,000 clients (35%), and was 31% in all other organisation size groups (Figure 4.10.3).

Figure 4.10.3: Clients aged 35–74 who were at high risk of CVD in the previous 2 years, by organisation size, December 2017 (%)

5   Chronic disease management indicators

Indicators of chronic disease management included in the nKPIs cover the following processof-care indicators and health-outcome indicators:

Process-of-care indicators	Health-outcome indicators
PI07: General Practitioner Management Plan	**PI24**: Blood pressure result
PI08: Team Care Arrangement	**PI06:** HbA1c result
PI23: Blood pressure result recorded	**PI19:** Kidney function test result
PI05: HbA1c result recorded	
PI18: Kidney function test recorded	
PI15: Immunised against influenza	

Why are these important?

Chronic diseases are major causes of morbidity and mortality among Aboriginal and Torres Strait Islander people (AIHW 2016a). In addition, chronic diseases have a large economic burden, with an estimated $27 billion incurred from direct health care costs associated with chronic diseases in 2008–2009 (AHMAC 2017).

Effective management of chronic disease can delay the progression of disease, improve quality of life, increase life expectancy, and decrease the need for high-cost interventions, leading to long-term cost savings (AHMAC 2017; Thomas et al. 2014).

Collaborations between health care providers, bundling intervention strategies, and initiatives that account for multiple risk factors and conditions can be effective in addressing the social burden of chronic disease (Bauer et al. 2014). The MBS includes items for GPMPs and TCAs to support a structured, coordinated approach to the management of patients with chronic conditions (DoH 2014a).

Individuals with type 2 diabetes are at a higher risk of developing high blood pressure. Those with type 2 diabetes and high blood pressure have twice the risk of developing cardiovascular diseases— the leading cause of death in people with diabetes—as well as an increased risk of diabetic eye disease and nephropathy (RACGP 2016; Salanitro & Roumie 2010).

Measuring and assessing blood pressure in primary health care can help manage blood pressure, by enabling timely and suitable interventions and pharmacotherapies to be implemented (RACGP 2016).

The RACGP diabetes management guidelines currently recommend a target blood pressure of 130/80 mmHg for people with type 2 diabetes. Managing a healthy blood pressure can reduce the risk and slow the progression of cardiovascular disease, nephropathy, and diabetic eye disease (RACGP 2016). This is particularly important for Aboriginal and Torres Strait Islander people, as they experience higher rates of diabetes and diabetic eye disease (AIHW 2015; RACGP 2016).

Diabetes, which affects Indigenous Australians at a disproportionately high level, can cause significant health complications, and is often accompanied by other health conditions such as CVD and chronic kidney disease (Burrow & Ride 2016).

HbA1c is an effective diagnostic and monitoring tool for diabetes (d'Emden et al. 2015). HbA1c levels reflect the mean glycaemia over the previous 2–3 months. Primary care clinicians can use HbA1c recordings to inform decisions around the assessment and monitoring of type 2 diabetes and glycaemic complications (RACGP 2016). The current RACGP guidelines recommend clients with type 2 diabetes have an HbA1c test every 6 months if glycaemic targets are met, and every 3 months if targets are not met (RACGP 2016).

CVD, diabetes, and chronic kidney disease are highly comorbid, and their interactions lead to worse health outcomes. These chronic diseases are more prevalent, appear earlier, progress faster, and more likely to occur together in the Indigenous population than the nonIndigenous population (AIHW 2015).

Diabetes and CVD have complex causal relationships with chronic kidney disease (AIHW 2015). Complications from diabetes can damage capillaries that filter blood in the kidneys. CVD, especially hypertension, can also damage the blood vessels in the kidneys, which leads to a reduced blood supply. Both diseases lead to a decline in kidney function and contribute to chronic kidney disease (Alani et al. 2014; Shahbazian & Rezaii 2013).

Conversely, chronic kidney disease can also increase the risk of CVD (Alani et al. 2014). Managing the comorbidity of CVD, diabetes, and chronic kidney disease is a challenge (Coyne 2011). Regular screening of kidney function in patients with CVD and type 2 diabetes enables the comorbidity levels to be observed, and is important in disease management and prevention (AIHW 2015).

The current RACGP guidelines recommend an annual screening of kidney function in patients with CVD and type 2 diabetes for albuminuria by ACR (spot urine sample), and annual estimation of the eGFR (Kidney Health Australia 2015a; RACGP 2016)

An eGFR result of 90 mL/min/1.73 m^2 or over indicates normal kidney function, while an eGFR of 60–89 mL/min/1.73 m² indicates mildly reduced kidney function. An eGFR of less than that indicates moderately to severely reduced kidney function (Kidney Health Australia 2015b).

While immunisation against influenza is recommended for all Aboriginal and Torres Strait Islander people aged 15 and over, it is particularly important for those who are at a greater risk of complications from influenza infection, such as those with diabetes and COPD (ATAGI 2018a).

Individuals with diabetes and COPD have a higher risk of severe influenza, developing complications from influenza infection, and being hospitalised (Hsu et al. 2016; Hulme et al. 2017). Providing influenza vaccinations to people with type 2 diabetes and COPD substantially reduces their risk of hospitalisation and death from influenza and pneumonia (ATAGI 2013).

Summary

A summary of results for the chronic disease management indicators is provided in Table 5.1.

The number of organisations contributing data on these indicators ranged from 138 to 207, and were located across all states and territories, and remoteness areas.

Table 5.1: Summary of chronic disease management indicators, December 2017

Indicator[a]	Clients seen (no.)[b]	Clients seen %	Number of organisations included in the analyses[c]	Minimum–maximum organisation result (%)
PI07: General Practitioner Management Plan—clients with type 2 diabetes	23,142	54.7	207	0.0–100.0
PI08: Team Care Arrangement—clients with type 2 diabetes	22,247	52.6	207	0.0–100.0
PI23: Blood pressure result recorded—clients with type 2 diabetes	26,886	64.1	205	0.0–100.0
PI05: HbA1c result recorded—clients with type 2 diabetes (6 months)	20,292	48.4	203	1.8–100.0
PI18: Kidney function test recorded—clients with:				
type 2 diabetes (total)	19,092	62.6	150	0.0–100.0
CVD	8,264	57.9	148	0.0–100.0
PI15: Immunised against influenza—clients with:				
type 2 diabetes	6,088	36.1	202	0.0–100.0
COPD	836	37.1	184	0.0–100.0
PI24: Blood pressure of 130/80 mmHg or less—clients with type 2 diabetes	11,474	42.7	204	0.0–100.0
PI06: HbA1c result—clients with type 2 diabetes (6 months)				
7% or less	7,415	36.5	203	0.0–100.0
PI19: Kidney function test, eGFR, result of 60 mL/min/1.73 m^2 or over—clients with:				
type 2 diabetes	14,401	81.3	143	50.0–100.0
CVD	6,300	76.2	138	0.0–100.0
PI19: Kidney function test, ACR, result of less than 2.5 (males) or less than 3.5 (females)—clients with type 2 diabetes	6,108	39.3	145	0.0–100.0

(a) Of organisations contributing to these indicators, 6%–82% had denominators of fewer than 20 clients. The indicator 'Immunised against influenza—clients with COPD' had 90% of organisations with a denominator of fewer than 20 clients.

(b) 'Clients seen' is the total clients (sum of numerators) for all organisations with valid data.

(c) Excludes organisations providing data with a zero denominator for indicators, as they had no clients to whom they could provide the services to be counted in those indicators.

Source: AIHW analyses of the nKPI data collection.

Things to consider when interpreting the data

In addition to the broader data quality issues outlined in Chapter 2, some of the indicators discussed in this chapter should also be interpreted in light of contextual information applying to those particular indicator or group of indicators.

- **MBS items** are not claimed by all organisations, either because they do not have a GP present, they are not eligible to claim them, or they choose not to do so. As a result, the indicators based on MBS items might not reflect all related health-care activities carried out in an organisation. These indicators include GPMPs and TCAs for clients with type 2 diabetes.

- **Influenza vaccination** does not include clients who are offered a vaccination, but refuse. Also, organisations might not have records of immunisations that occurred at other places, such as workplaces.

- **Pathology results** held at an organisation might not reflect all pathology tests that have occurred for its Indigenous regular clients. Organisations without systems in place might not have recorded the information, or results might not have been picked up accurately.

- **GP availability** might be limited in some areas, and have an impact on the results reported by organisations. For example, limited GP availability might affect an organisation's ability to claim MBS items (child and adult health checks, GPMPs, and TCAs).

- **Access to allied health providers** might be limited in some areas, in which case TCAs might not be practical. This is often the case in remote regions.

- **Clinical definitions** for type 2 diabetes, CVD and COPD vary across CISs, as different coding schemes are used. Medical Director uses doctor command language (DOCLE) codes, Communicare uses International Classification of Primary Care 2nd edition (ICPC2), and MMEx uses Systematized Nomenclature of Medicine (SNOMED). This leads to some variation in the patients who will be picked up by different CISs (DMA 2017). This issue is currently the subject of review by the Clinical Coding Working Group.

- **Data extraction for Northern Territory Government organisations** excludes measurements or tests conducted outside an individual organisation since December 2015. This means results might be underestimated for PI05: HbA1c result recorded, PI07: GPMP, PI08: TCA, PI14: Immunised against influenza—aged 50 and over, PI15: Immunised against influenza—clients with type 2 diabetes or COPD, PI23: Blood pressure result recorded—clients with type 2 diabetes.

5.1 General Practitioner Management Plan—clients with type 2 diabetes

PI07—Proportion of Indigenous regular clients with a chronic disease for whom a GPMP (MBS item 721) was claimed

Nationally, as at December 2017, 55% of Aboriginal and Torres Strait Islander regular clients with type 2 diabetes had a GPMP (MBS item 721) claimed for them in the previous 2 years. This compares with 54% in June 2017 (Figure 5.1.1).

The distribution of age and sex showed that in December 2017, the proportion of Indigenous regular clients with type 2 diabetes who had a GPMP (MBS item 721) claimed rose with age for both males and females until age 55–64, then fell slightly for males, but remained the same for females aged 65 and over (Figure 5.1.1).
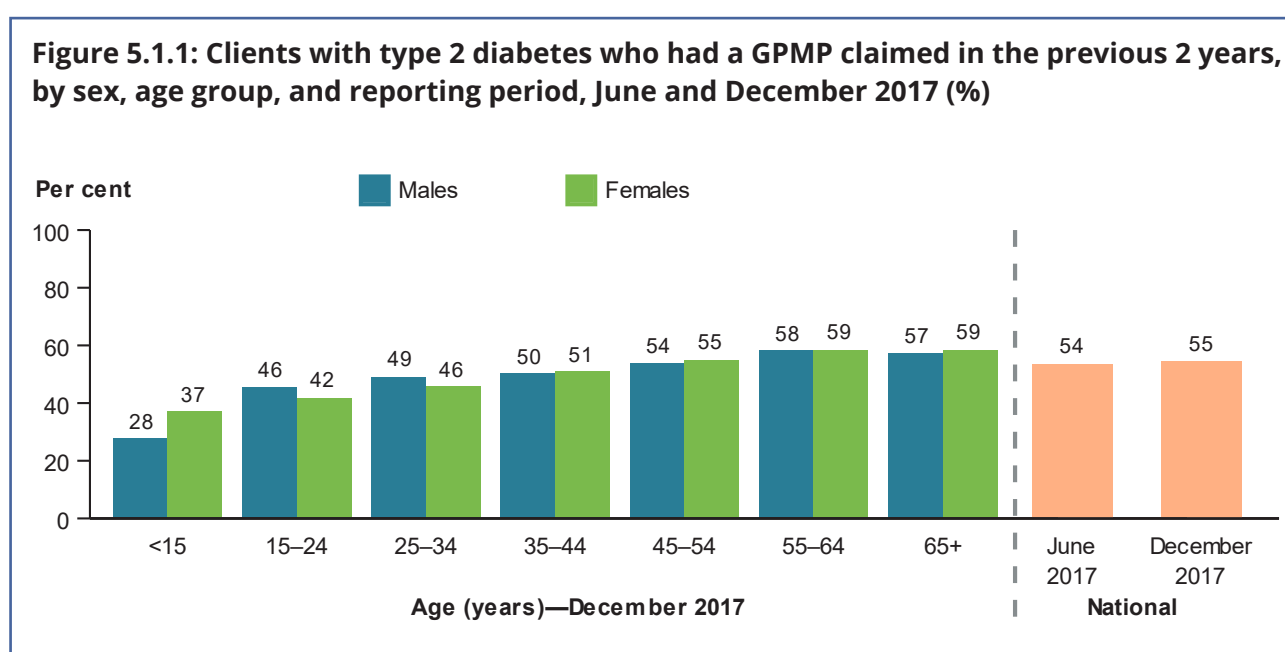
Figure 5.1.1: Clients with type 2 diabetes who had a GPMP claimed in the previous 2 years, by sex, age group, and reporting period, June and December 2017 (%)

National variation data showed a broad distribution of results, with the vast majority (94%) of organisations claiming a GPMP for 10%–90% of their clients with type 2 diabetes (Figure 5.1.2).

- About half of the organisations (107 of 207) claimed a GPMP for 54% or more of their clients with type 2 diabetes.
- The top 25% of organisations claimed a GPMP for 65% or more of their clients with type 2 diabetes.
- The bottom 25% of organisations claimed a GPMP for 37% or fewer of their clients with type 2 diabetes.
- Of the 9 organisations with a result of 0%, 6 organisations had small client numbers.

Figure 5.1.2: Distribution of clients with type 2 diabetes who had a GPMP claimed in the previous 2 years, by number of organisations, December 2017 (%)
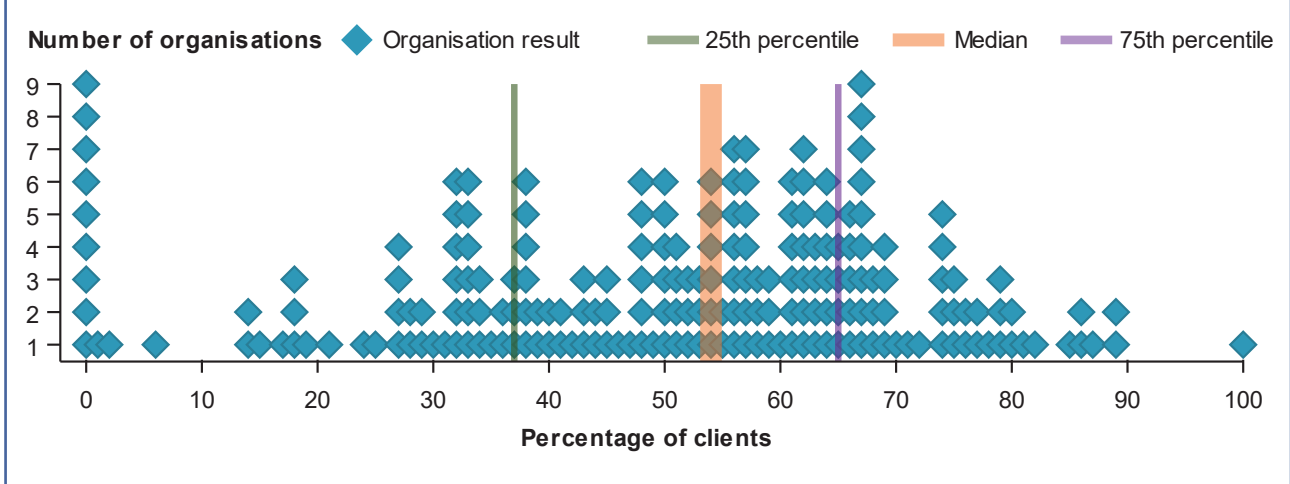
Organisation size analysis for December 2017 showed that the proportion of clients with type 2 diabetes who had a GPMP claimed for them increased with organisation size.

Claiming of GPMPs was highest in organisations with more than 2,000 clients (59%), and lowest in organisations with fewer than 500 clients (44%) (Figure 5.1.3).

Figure 5.1.3: Clients with type 2 diabetes who had a GPMP claimed in the previous 2 years, by organisation size, December 2017 (%)
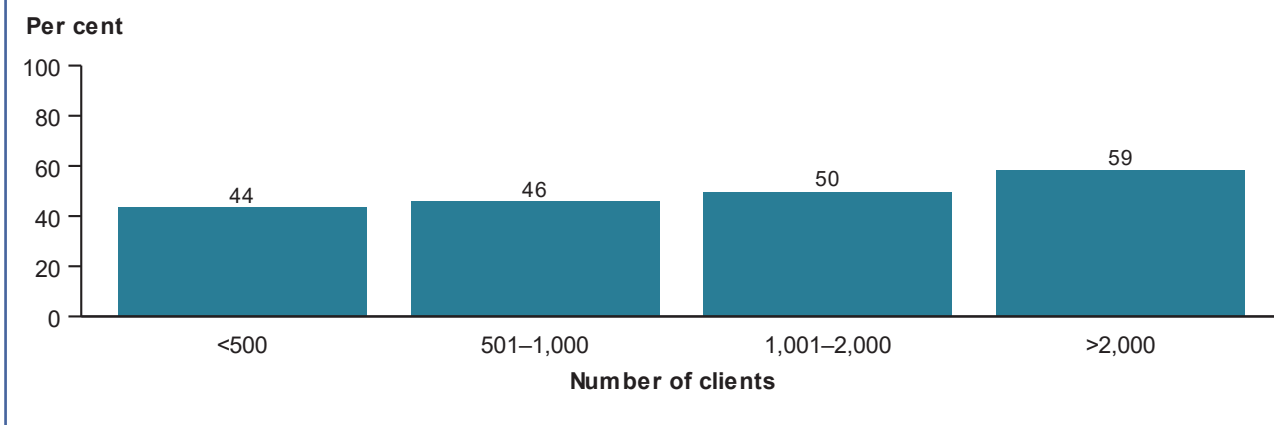
5.2 Team Care Arrangement—clients with type 2 diabetes

PI08—Proportion of Indigenous regular clients with a chronic disease for whom a TCA (MBS item 723) was claimed

Nationally, as at December 2017, 53% of Aboriginal and Torres Strait Islander regular clients with type 2 diabetes had a TCA (MBS item 723) claimed for them in the previous 2 years. This compares with 51% in June 2017 (Figure 5.2.1).

The distribution of age and sex showed that in December 2017, the proportion of Indigenous regular clients with type 2 diabetes who had a TCA (MBS item 723) claimed rose with age for males and females until age 55–64, but fell slightly thereafter (Figure 5.2.1).

Figure 5.2.1: Clients with type 2 diabetes who had a TCA claimed in the previous 2 years, by sex, age group, and reporting period, June and December 2017 (%)
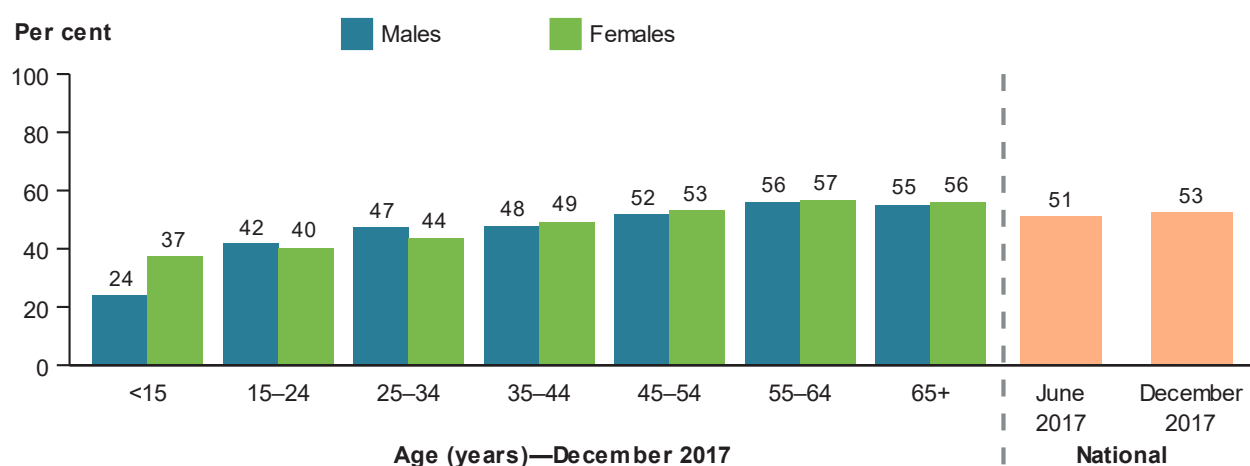
National variation data showed a broad distribution of results, with the vast majority (93%) of organisations claiming a TCA for 10%–90% of their clients with type 2 diabetes. A total of 7% of organisations had small client numbers (Figure 5.2.2).

- About half of the organisations (105 of 207) claimed a TCA for 52% or more of their clients with type 2 diabetes.
- The top 25% of organisations claimed a TCA for 64% or more of their clients with type 2 diabetes.
- The bottom 25% of organisations claimed a TCA for 34% or fewer of their clients with type 2 diabetes.
- A total of 6 of the 11 organisations with a result of 0%, and the single organisation with a result of 100% had small client numbers.

Figure 5.2.2: Distribution of clients with type 2 diabetes who had a TCA claimed in the previous 2 years, by number of organisations, December 2017 (%)
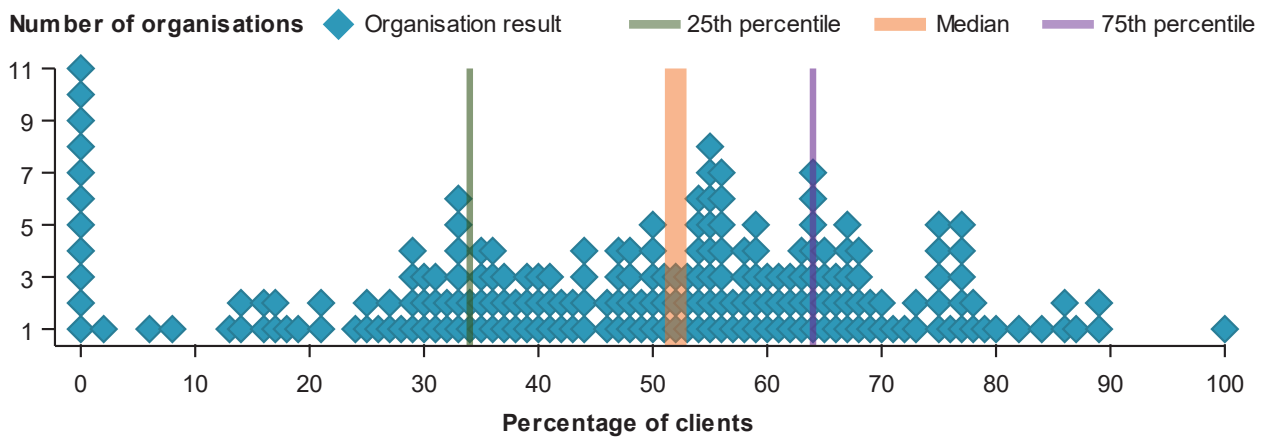
Organisation size analysis for December 2017 showed that the proportion of clients with type 2 diabetes who had a TCA claimed for them increased with organisation size.

Claiming of TCAs was highest in organisations with more than 2,000 clients (56%), and lowest in organisations with fewer than 500 clients (42%) (Figure 5.2.3).

Figure 5.2.3: Clients with type 2 diabetes who had a TCA claimed in the previous 2 years, by organisation size, December 2017 (%)
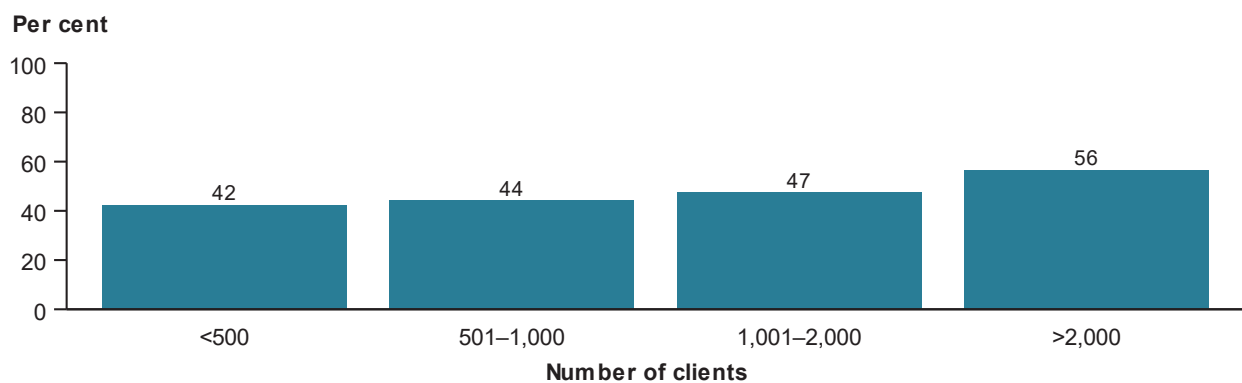
5.3 Blood pressure result recorded—clients with type 2 diabetes

PI23—Proportion of Indigenous regular clients with type 2 diabetes who have had a blood pressure measurement result recorded

Nationally, as at December 2017, 64% of Aboriginal and Torres Strait Islander regular clients with type 2 diabetes had a blood pressure result recorded in the previous 6 months. This is the same as in June 2017 (Figure 5.3.1).

The distribution of age and sex showed that in December 2017, the proportion of Indigenous regular clients with type 2 diabetes who had their blood pressure result recorded rose with age for males and females up to age 55–64, but fell slightly thereafter (Figure 5.3.1).
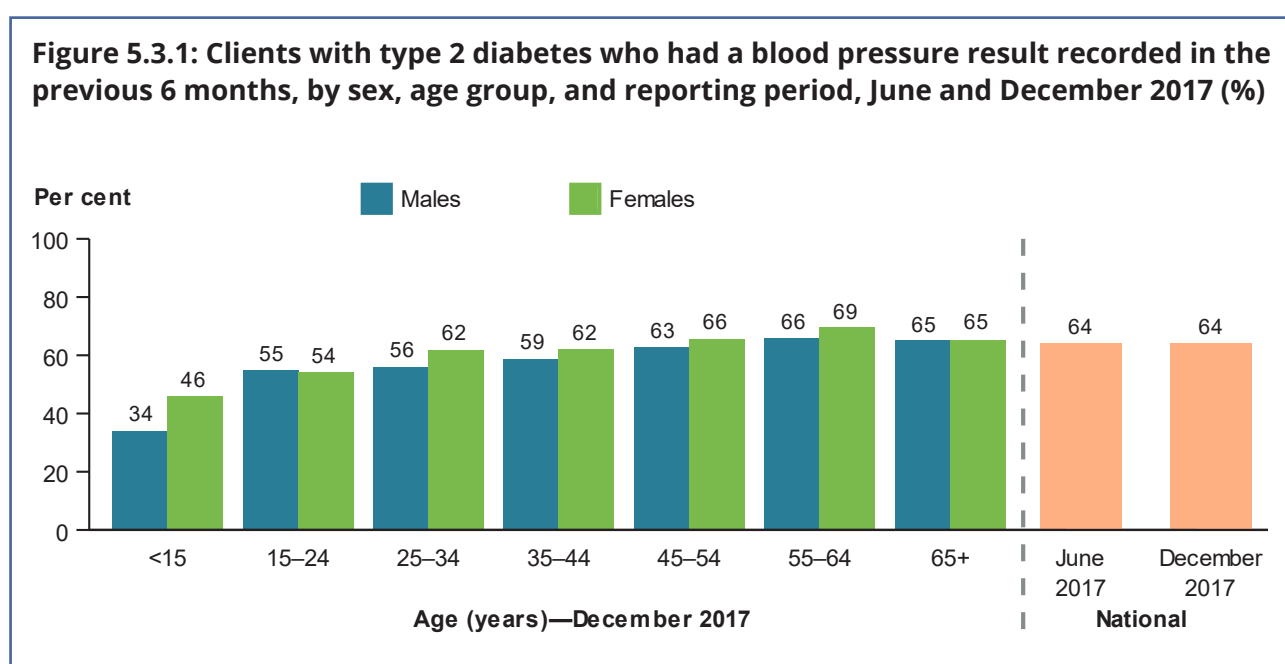
Figure 5.3.1: Clients with type 2 diabetes who had a blood pressure result recorded in the previous 6 months, by sex, age group, and reporting period, June and December 2017 (%)

National variation data showed results were concentrated around the median, with the vast majority (93%) of organisations recording blood pressure for 30%–90% of their clients with type 2 diabetes. A total of 7% of organisations had small client numbers (Figure 5.3.2).

• About half of the organisations (107 of 205) recorded blood pressure for 64% or more of their clients with type 2 diabetes.

• The top 25% of organisations recorded blood pressure for 72% or more of their clients with type 2 diabetes.

• The bottom 25% of organisations recorded blood pressure for 51% or fewer of their clients with type 2 diabetes.

• All 3 organisations with a result of 100%, and the single organisation with a result of 0% had small client numbers.

Figure 5.3.2: Distribution of clients with type 2 diabetes who a had blood pressure result recorded in the previous 6 months, by number of organisations, December 2017 (%)
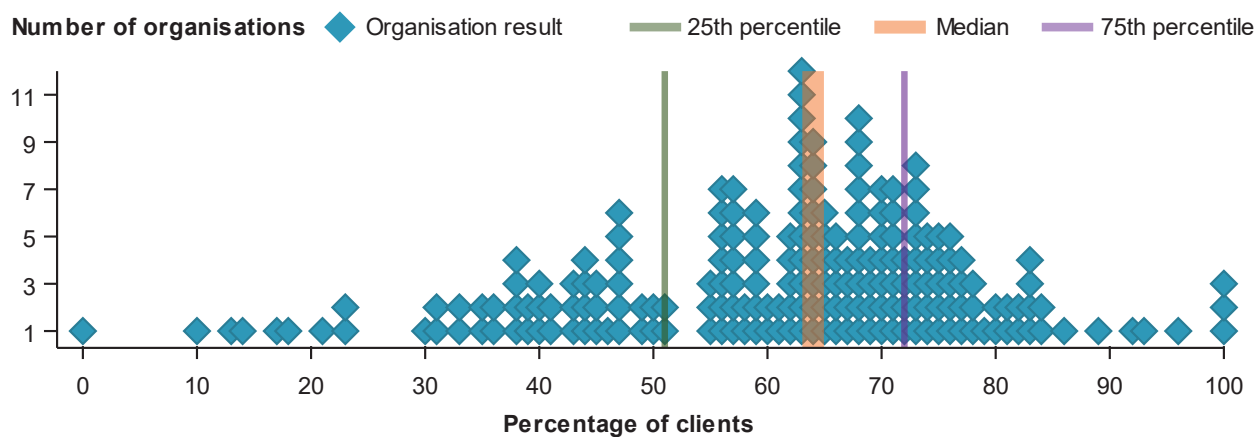
Organisation size analysis for December 2017 showed that the recording of a blood pressure result for clients with type 2 diabetes increased with organisation size.

Recording was highest in organisations with more than 2,000 clients (67%), and lowest in organisations with fewer than 500 clients (50%) (Figure 5.3.3).

Figure 5.3.3: Clients with type 2 diabetes who had a blood pressure result recorded in the previous 6 months, by organisation size, December 2017 (%)
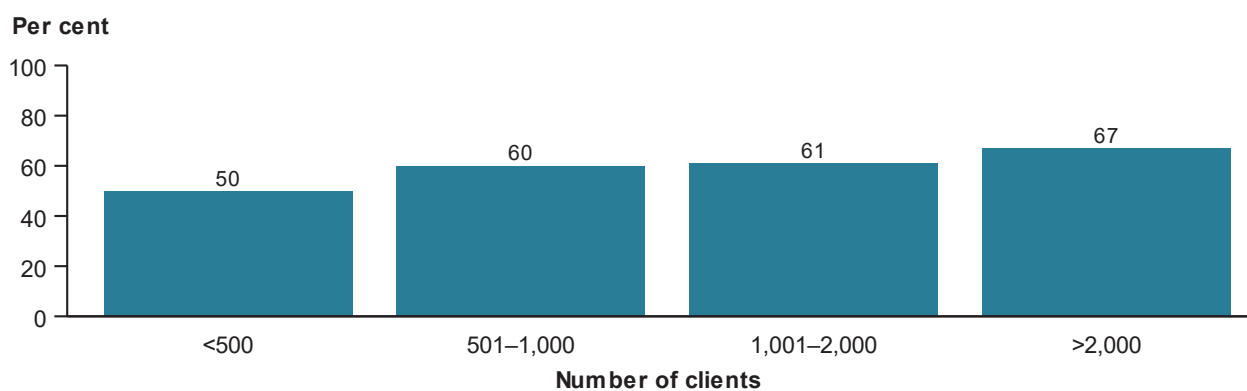
5.4 HbA1c result recorded—clients with type 2 diabetes

PI05—Proportion of Indigenous regular clients with type 2 diabetes who have had an HbA1c measurement result recorded

Nationally, as at December 2017, 48% of Aboriginal and Torres Strait Islander regular clients with type 2 diabetes had their HbA1c result recorded in the previous 6 months, and a further 16% had a result recorded in the previous 6–12 months

A total of 64% had a result recorded in the previous 12 months, compared with 63% in June 2017 (Figure 5.4.1).

The distribution of age and sex showed that in December 2017, the proportion of Indigenous regular clients with type 2 diabetes who had their HbA1c measurement results recorded in the previous 6 months was lowest among males and females aged 15 and younger, and highest among males and females aged 55–64 (Figure 5.4.1).
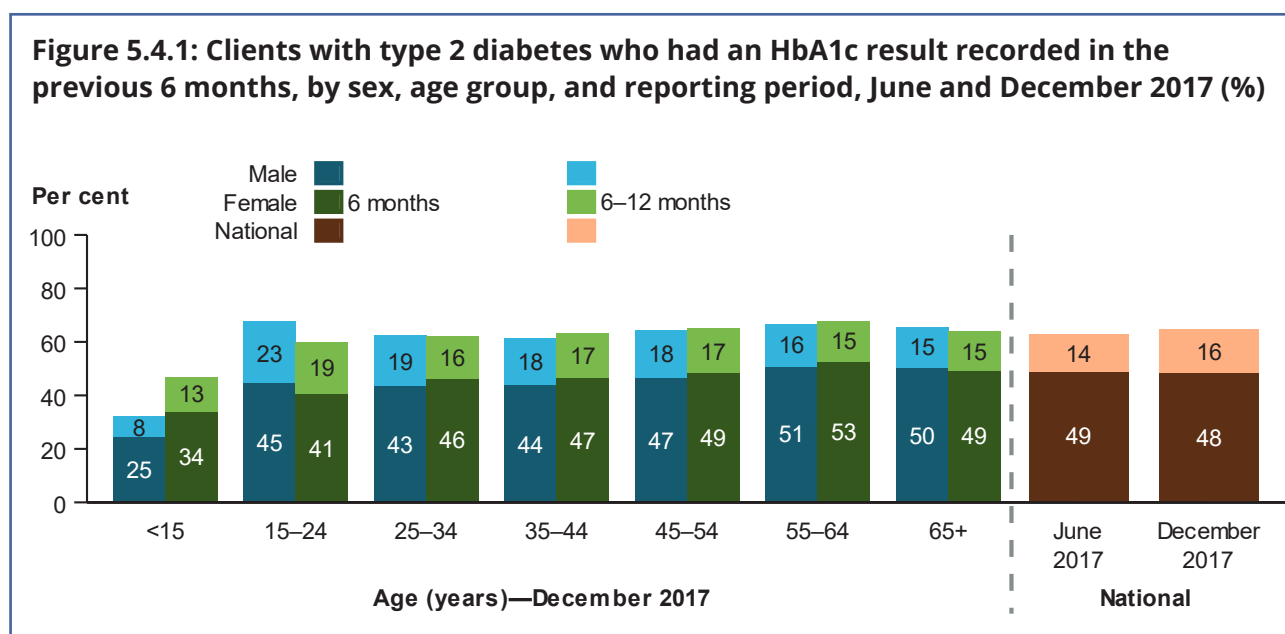
Figure 5.4.1: Clients with type 2 diabetes who had an HbA1c result recorded in the previous 6 months, by sex, age group, and reporting period, June and December 2017 (%)

National variation data showed results were concentrated around the median, with the vast majority (94%) of the organisations recording HbA1c results for 20%–80% of their clients with type 2 diabetes (Figure 5.4.2).

• About half of the organisations (103 of 203) recorded an HbA1c result in the previous 6 months for 48% or more of their clients with type 2 diabetes.

• The top 25% of organisations recorded an HbA1c result for 55% or more of their clients with type 2 diabetes.

• The bottom 25% of organisations recorded an HbA1c result for 37% or fewer of their clients with type 2 diabetes.

• Both organisations with a result of 100% had small client numbers.

Figure 5.4.2: Distribution of clients with type 2 diabetes who had an HbA1c result recorded in the previous 6 months, by number of organisations, December 2017 (%)
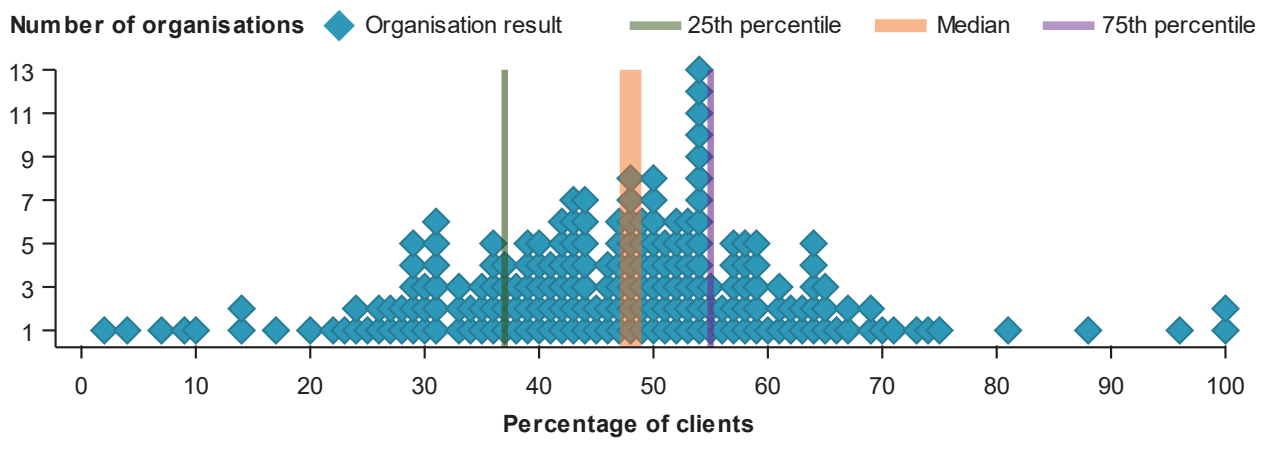
Organisation size analysis for December 2017 showed that the recording of an HbA1c result in the previous 6 months for clients with type 2 diabetes was highest in organisations with more than 2,000 clients (50%), and lowest in organisations with fewer than 500 clients (40%) (Figure 5.4.3).

Figure 5.4.3: Clients with type 2 diabetes who had an HbA1c result recorded in the previous 6 months, by organisation size, December 2017 (%)
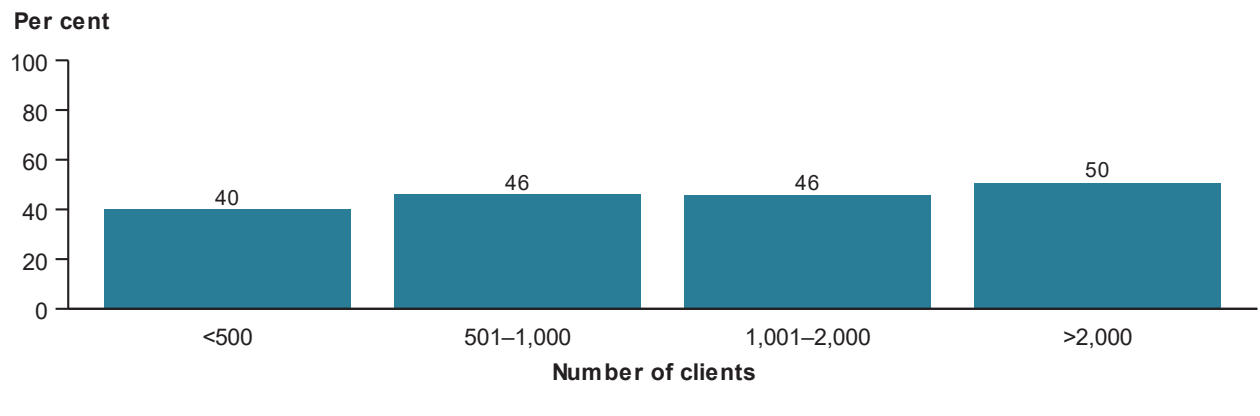
5.5 Kidney function test recorded—clients with type 2 diabetes

PI18—Proportion of Indigenous regular clients with type 2 diabetes who have had a kidney function test

Nationally, as at December 2017, 63% of Aboriginal and Torres Strait Islander regular clients aged 15 and over with type 2 diabetes had either an eGFR or ACR recorded, or both an eGFR and an ACR recorded in the previous 12 months (Figure 5.5.1). Due to quality issues, June 2017 data are not presented (see Chapter 2 for more details).

The distribution of age and sex showed that in December 2017, the proportion of Indigenous regular clients with type 2 diabetes who had a kidney function test (eGFR, ACR, or both eGFR and ACR) done was higher in males than females aged 15–24. In all other age groups, the male and female proportions were similar (Figure 5.5.1).

Figure 5.5.1: Clients aged 15 and over with type 2 diabetes who had a kidney function test (eGFR, ACR, or eGFR and ACR) recorded in the previous 12 months, by sex and age group, December 2017 (%)
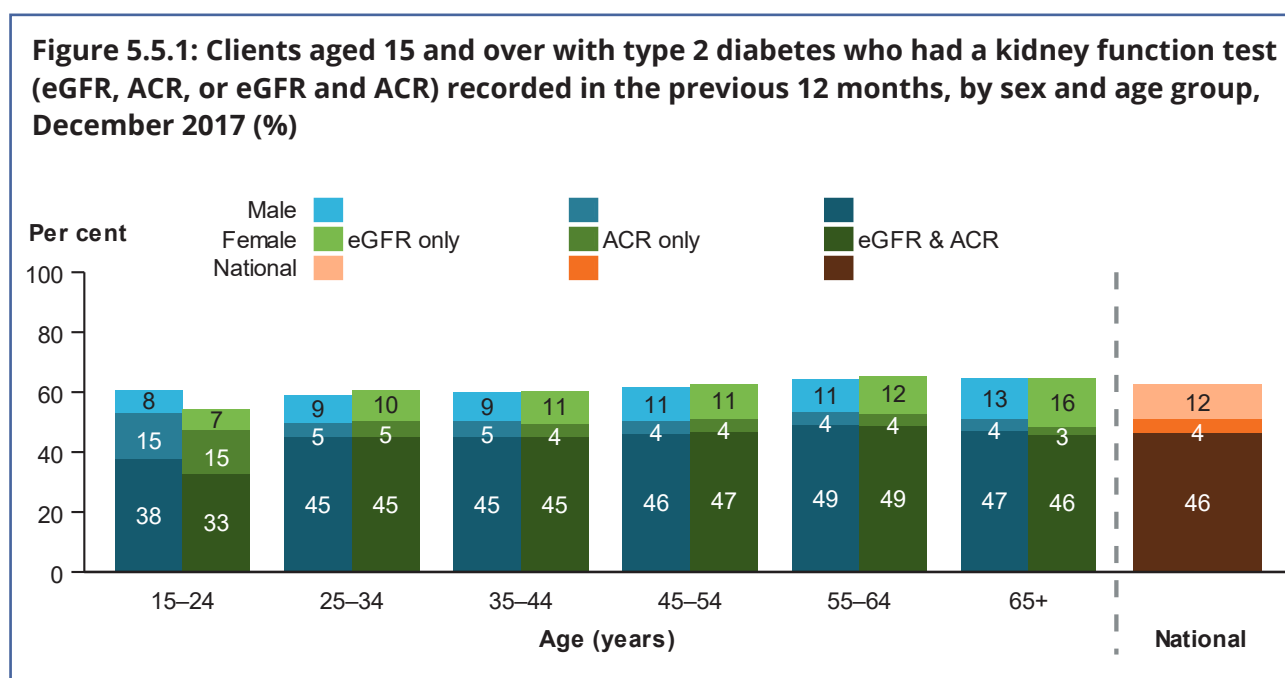
National variation data showed a broad distribution of results, with the vast majority (95%) of organisations recording a kidney function test (eGFR, ACR, or eGFR and ACR) for 20%–100% of their clients aged 15 and over with type 2 diabetes. A total of 7% of organisations had small client numbers (Figure 5.5.2).

- About half of the organisations (76 of 150) recorded a kidney function test (eGFR, ACR, or eGFR and ACR) for 61% or more of their clients with type 2 diabetes.
- The top 25% of organisations recorded a kidney function test for 69% or more of their clients with type 2 diabetes.
- The bottom 25% of organisations recorded a kidney function test for 48% or fewer of their clients with type 2 diabetes.
- A total of 3 of the 4 organisations with a result of 0%, and both organisations with a result of 100% had small client numbers.

Figure 5.5.2: Distribution of clients aged 15 and over with type 2 diabetes who had a kidney function test (eGFR, ACR, or eGFR and ACR) recorded in the previous 12 months, by number of organisations, December 2017 (%)
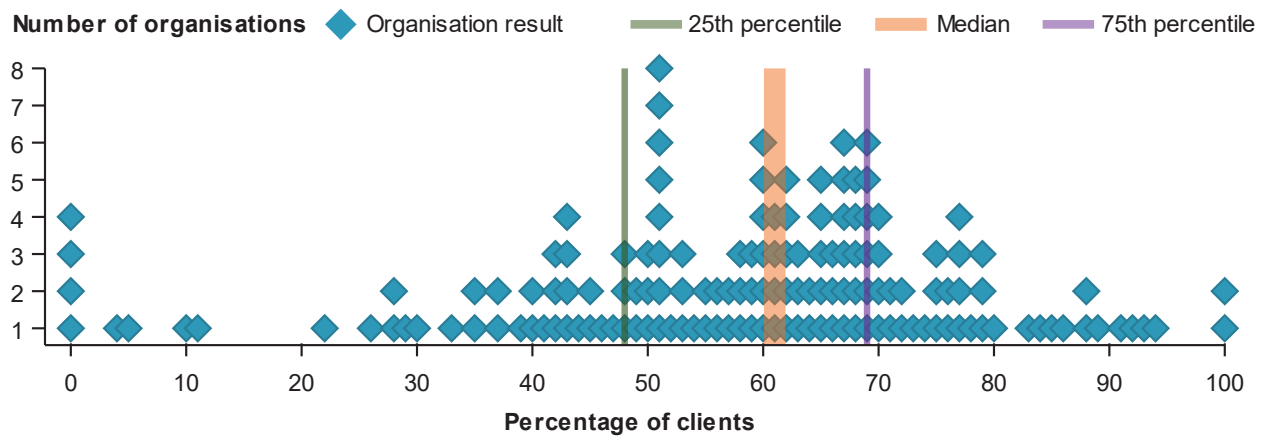
Organisation size analysis for December 2017 showed that the recording of kidney function tests in the previous 12 months for clients with type 2 diabetes was highest in organisations with more than 2,000 clients (66%), and lowest in organisations with fewer than 500 clients (50%) (Figure 5.5.3).

Figure 5.5.3: Clients aged 15 and over with type 2 diabetes who had a kidney function test (eGFR, ACR, or eGFR and ACR) recorded in the previous 12 months, by organisation size, December 2017 (%)
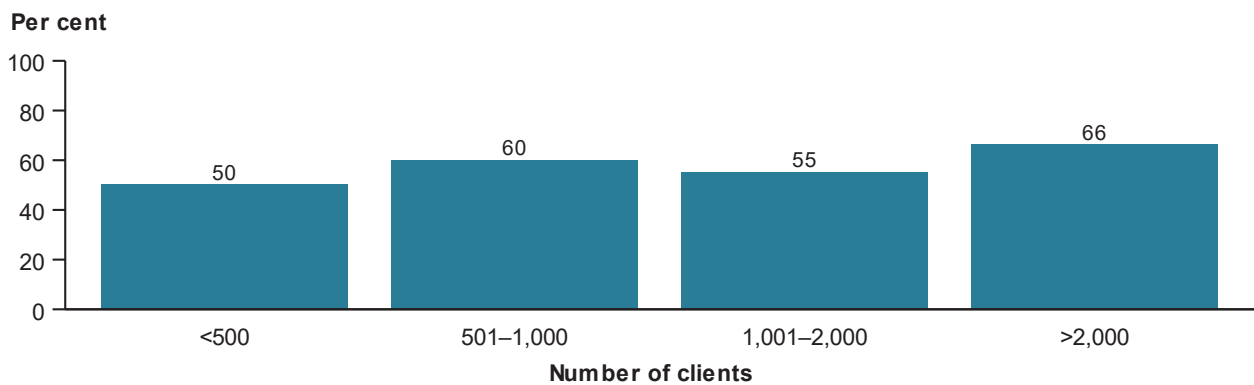
5.6 Kidney function test recorded—clients with cardiovascular disease

PI18—Proportion of Indigenous regular clients with cardiovascular disease who have had a kidney function test

Nationally, as at December 2017, 58% of Aboriginal and Torres Strait Islander regular clients aged 15 and over with CVD had an eGFR recorded in the previous 12 months (Figure 5.6.1). Due to quality issues, June 2017 data are not presented (see Chapter 2 for more details).

The distribution of age and sex showed that in December 2017, the proportion of Indigenous regular clients with CVD clients who had an eGFR recorded rose with age for both males and females, though males experienced a slight fall at age 65 and over (Figure 5.6.1).

Figure 5.6.1: Clients aged 15 and over with CVD who had a kidney function test (eGFR) recorded in the previous 12 months, by sex and age group, December 2017 (%)
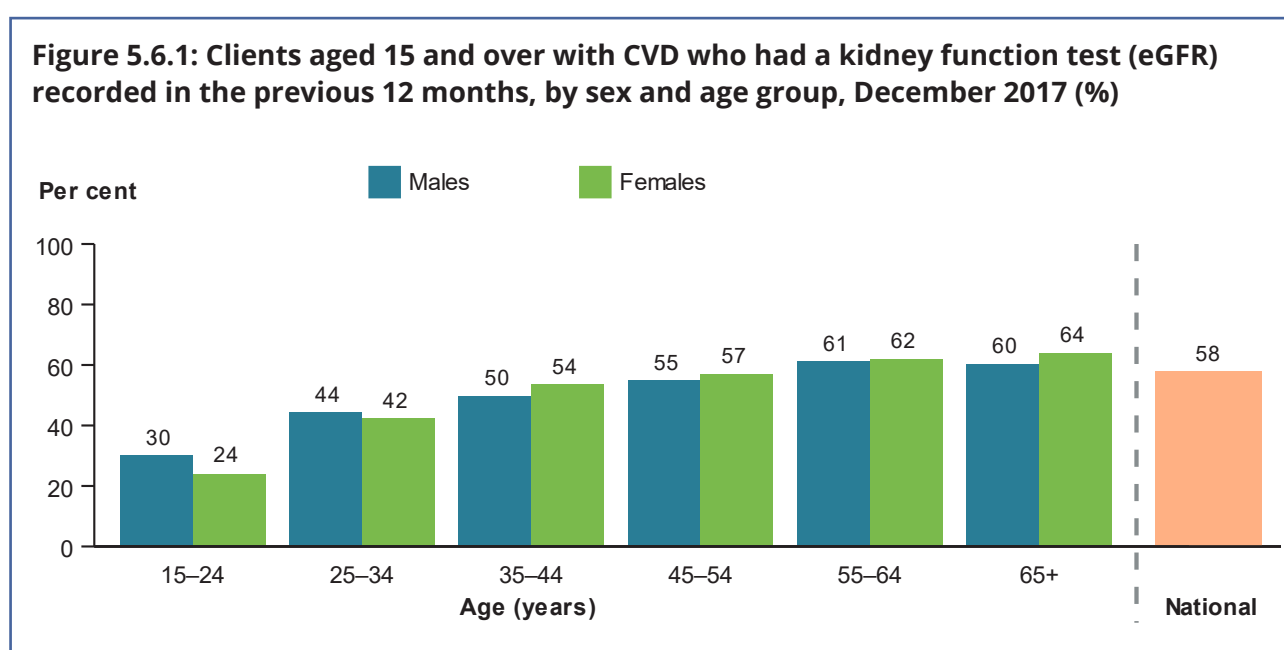
National variation data showed a broad distribution of results, with the majority (84%) of organisations recording a kidney function test (eGFR) for 20%–80% of their clients aged 15 and over with CVD. About one-third (32%) of organisations had small client numbers (Figure 5.6.2).

- About half of the organisations (77 of 148) recorded a kidney function test (eGFR) for 55% or more of their clients with CVD.
- The top 25% of organisations recorded a kidney function test for 66% or more of their clients with CVD.
- The bottom 25% of organisations recorded a kidney function test for 39% or fewer of their clients with CVD.
- A total of 6 of the 10 organisations with a result of 0%, and all 4 organisations with a result of 100% had small client numbers.

Figure 5.6.2: Distribution of clients aged 15 and over with CVD who had a kidney function test (eGFR) recorded in the previous 12 months, by number of organisations, December 2017 (%)
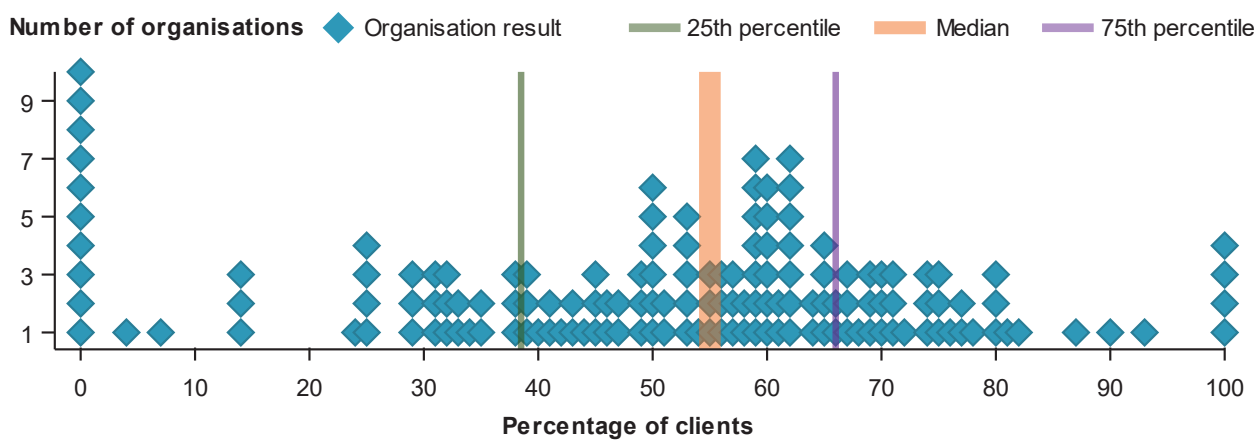
Organisation size analysis for December 2017 showed that the recording of kidney function tests in the previous 12 months for clients with CVD was highest in organisations with more than 2,000 clients (60%), and lowest in organisations with fewer than 500 clients (37%) (Figure 5.6.3).

Figure 5.6.3: Clients aged 15 and over with CVD who had a kidney function test (eGFR) recorded in the previous 12 months, by organisation size, December 2017 (%)
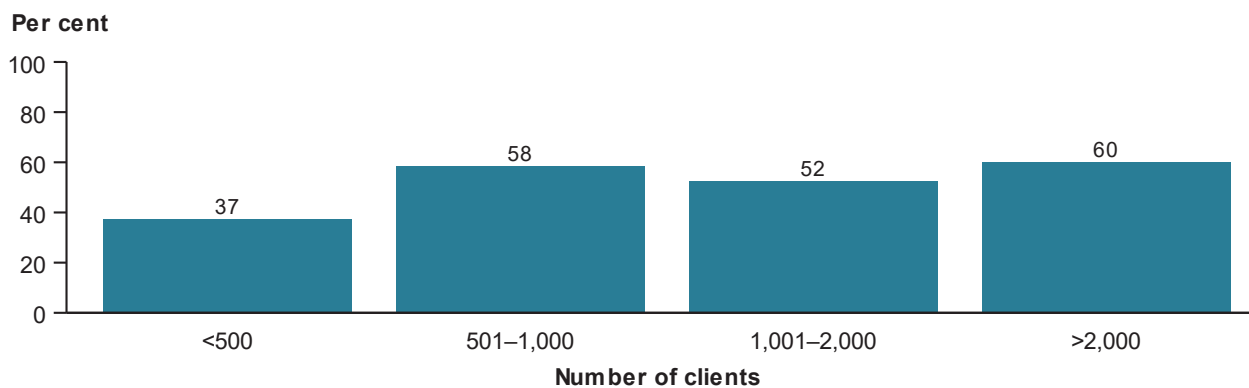
5.7 Immunised against influenza—clients with type 2 diabetes

PI15—Proportion of Indigenous regular clients with type 2 diabetes who are immunised against influenza

Nationally, as at December 2017, 36% of Aboriginal and Torres Strait Islander regular clients aged 15–49 with type 2 diabetes were immunised against influenza. This compares with 31% in June 2017 (Figure 5.7.1).

The distribution of age and sex showed that in December 2017, the proportion of Indigenous regular clients with type 2 diabetes who were immunised against influenza rose with age for both males and females (Figure 5.7.1). Across all age groups, a higher proportion of females than males were immunised.

Figure 5.7.1: Clients aged 15–49 with type 2 diabetes who were immunised against influenza, by sex, age group, and reporting period, June and December 2017 (%)
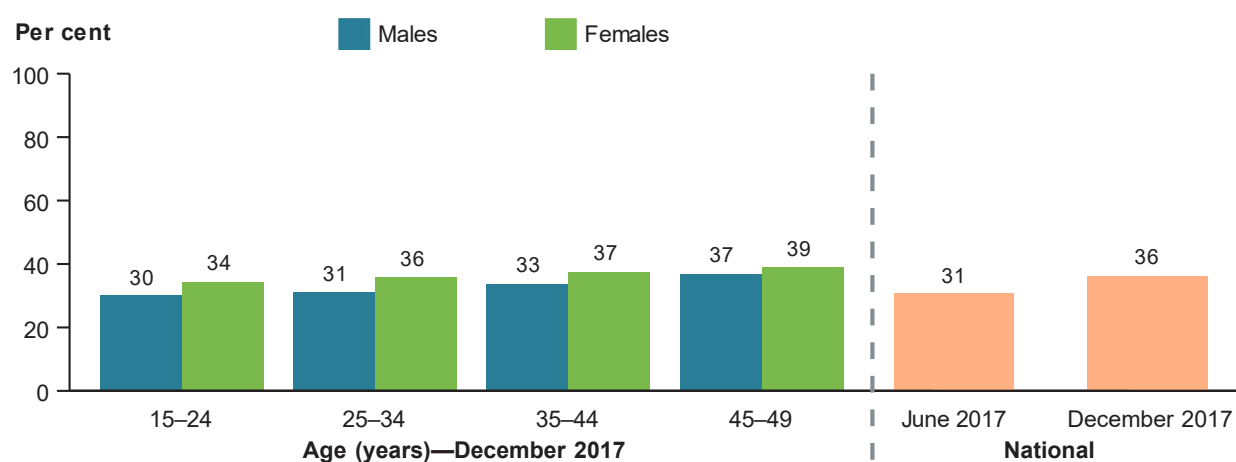
National variation data showed that the results were concentrated around the median, with the vast majority (97%) of organisations reporting that 0%–70% of their clients with type 2 diabetes were immunised against influenza. Around 1 in 5 organisations (19%) had small client numbers (Figure 5.7.2).

- About half of the organisations (106 of 202) had 32% or more of their clients with type 2 diabetes immunised against influenza.
- The top 25% of organisations reported that 45% or more of their clients with type 2 diabetes were immunised against influenza.
- The bottom 25% of organisations reported that 21% or fewer of their clients with type 2 diabetes were immunised against influenza.
- A total of 10 of the 11 organisations with a result of 0%, and both organisations with a result of 100% had small client numbers.

Figure 5.7.2: Distribution of clients aged 15–49 with type 2 diabetes who were immunised against influenza, by number of organisations, December 2017 (%)
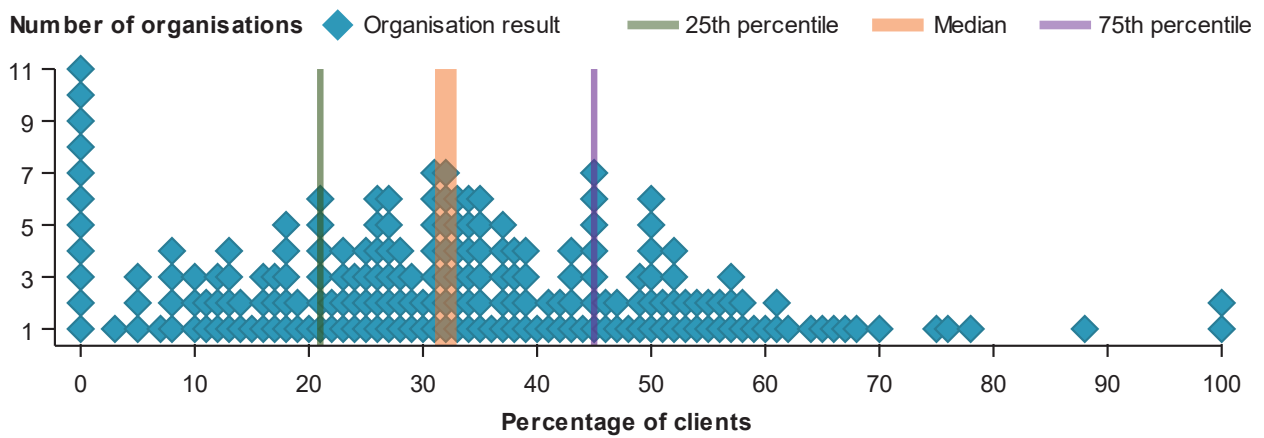
Organisation size analysis for December 2017 showed that the proportion of clients aged 15–49 with type 2 diabetes immunised against influenza was highest in organisation with 501–1,000 clients (39%), and lowest in organisations with 1,001–2,000 clients (33%) (Figure 5.7.3).

Figure 5.7.3: Clients aged 15–49 with type 2 diabetes who were immunised against influenza, by organisation size, December 2017
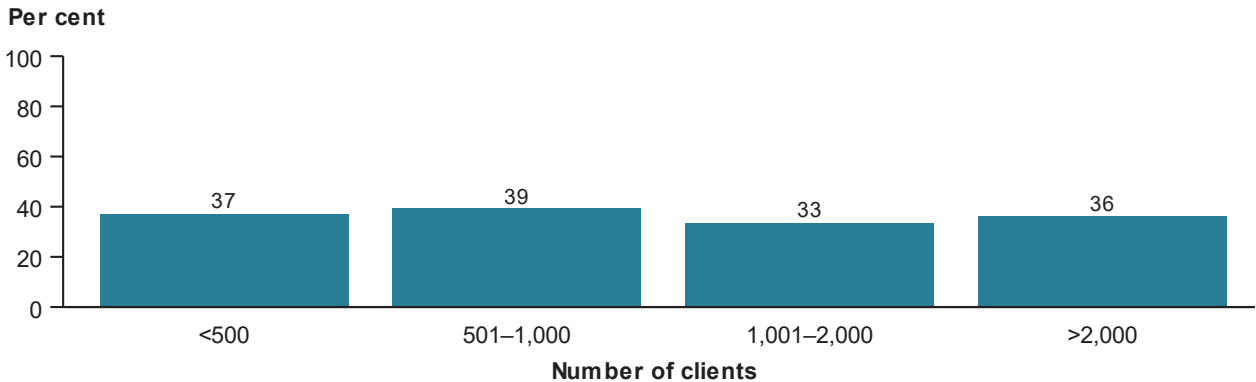
5.8 Immunised against influenza—clients with chronic obstructive pulmonary disease

PI15—Proportion of Indigenous regular clients with COPD who are immunised against influenza

Nationally, as at December 2017, 37% of Aboriginal and Torres Strait Islander regular clients aged 15–49 with COPD were immunised against influenza. This compares with 32% in June 2017 (Figure 5.8.1).

The distribution of age and sex showed that in December 2017, the proportion of Indigenous regular male clients with COPD who were immunised against influenza rose with age until age 35–44, and then fell slightly. For females, the proportion fluctuated—it rose to age 25–34, then fell for those aged 35–44, before rising again (Figure 5.8.1).

Figure 5.8.1: Clients aged 15–49 with COPD who were immunised against influenza, by sex, age group, and reporting period, June and December 2017 (%)
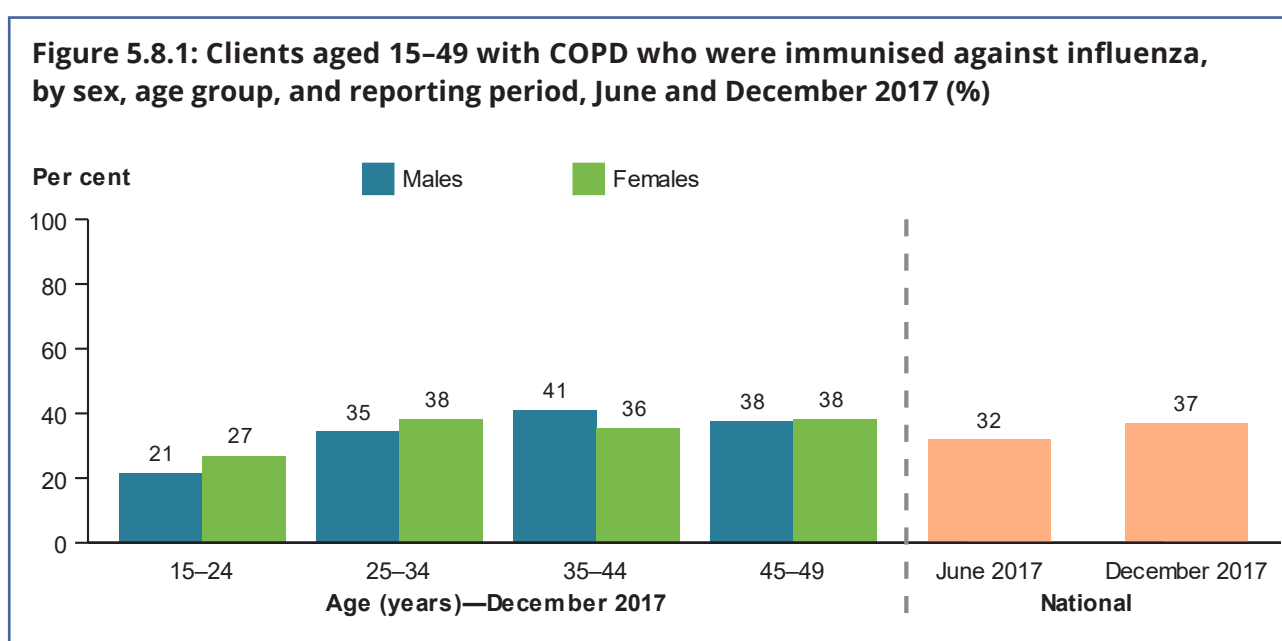
National variation data showed a broad distribution of results, with the majority of organisations (90%) reporting that 0%–70% of their clients with COPD were immunised against influenza. Around 4 in 5 organisations (82%) had small client numbers (Figure 5.8.2).

- About half of the organisations (98 of 184) had 33% or more of their clients with COPD immunised against influenza.
- The top 25% of organisations reported that 50% or more of their clients with COPD were immunised against influenza.
- The bottom 25% of organisations reported that 7% or fewer of their clients with COPD were immunised against influenza.
- A total of 40 of the 41 organisations with a result of 0%, and all 12 organisations with a result of 100% had small numbers of clients.

Figure 5.8.2: Distribution of clients aged 15–49 with COPD who were immunised against influenza, by number of organisations, December 2017 (%)
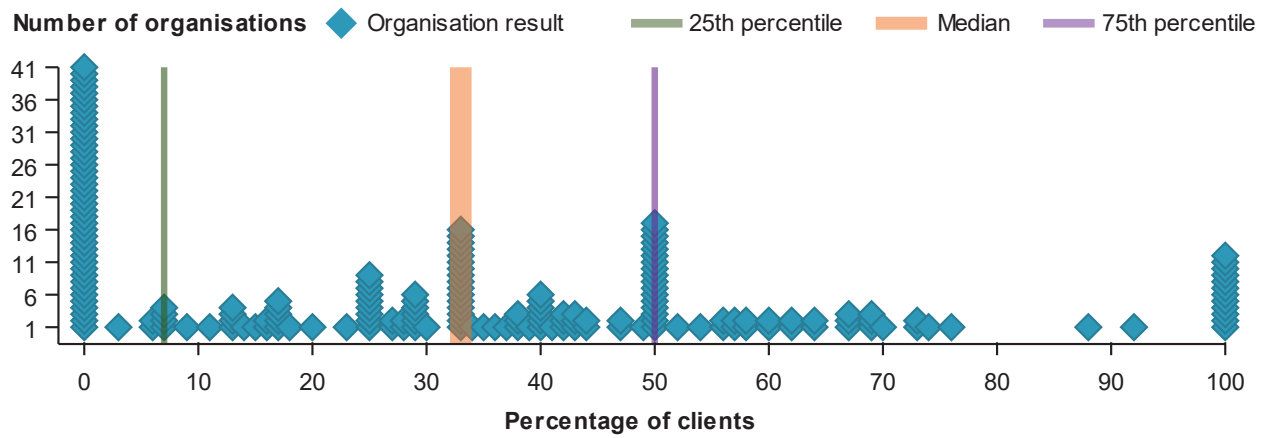
Organisation size analysis for December 2017 showed that the proportion of clients aged 15–49 with COPD who were immunised against influenza was highest in organisations with fewer than 500 clients (43%), and lowest in organisations with 1,001–2,000 clients (26%) (Figure 5.8.3).

Figure 5.8.3: Clients aged 15–49 with COPD who were immunised against influenza, by organization size, December 2017 (%)
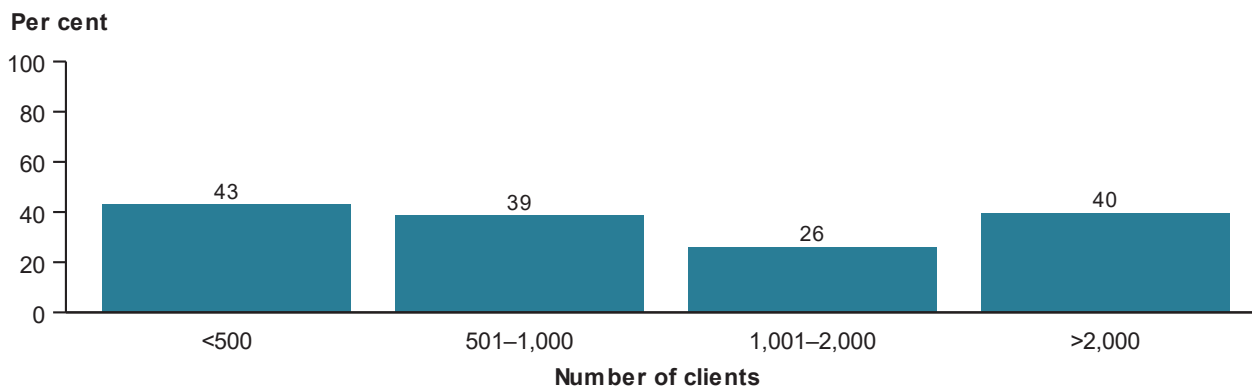
5.9   Blood pressure result—clients with type 2 diabetes

PI24—Proportion of Indigenous regular clients with type 2 diabetes whose blood pressure measurement result was 130/80 mmHg or less

Nationally, as at December 2017, 43% of Aboriginal and Torres Strait Islander regular clients with type 2 diabetes had a blood pressure result of 130/80 mmHg or less recorded in the previous 6 months. This compares with 41% in June 2017 (Figure 5.9.1).

The distribution in age and sex showed that in December 2017, the proportion of Indigenous regular clients with type 2 diabetes with a blood pressure result of 130/80 mmHg or less was higher in females than males across all ages, except the youngest and oldest age groups (under 15 and 65 and over).

The proportion of male Indigenous clients with a blood pressure result of 130/80 mmHg or less fell with age until the age of 35–44, and then rose thereafter. For females, the proportion fell to age 45–54, before remaining relatively stable (Figure 5.9.1).
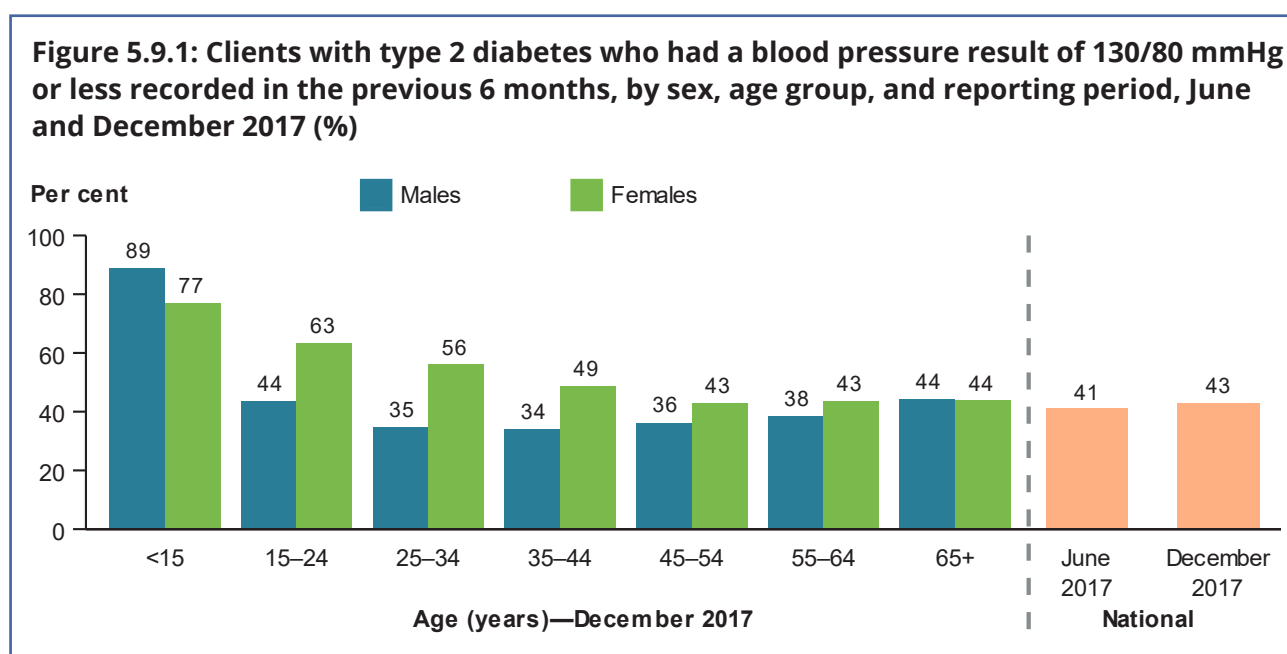
Figure 5.9.1: Clients with type 2 diabetes who had a blood pressure result of 130/80 mmHg or less recorded in the previous 6 months, by sex, age group, and reporting period, June and December 2017 (%)

National variation data showed results were concentrated around the median, with the vast majority of organisations (96%) recording blood pressure results of 130/80 mmHg or less for 20%–70% of their clients with type 2 diabetes. A total of 13% of organisations had small client numbers (Figure 5.9.2).

• About half of the organisations (110 of 204) had 42% or more of their clients with type 2 diabetes recording a blood pressure result of 130/80 mmHg or less.

• The top 25% of organisations recorded 50% or more clients with type 2 diabetes as having a blood pressure result of 130/80 mmHg or less recorded.

• The bottom 25% of organisations recorded 36% or fewer clients with type 2 diabetes as having a blood pressure result of 130/80 mmHg or less.

• The 2 organisations with a result of less than 20%, and both organisations with a result of 100% had small numbers of clients.

Figure 5.9.2: Distribution of clients with type 2 diabetes who had a blood pressure result of 130/80 mmHg or less recorded in the previous 6 months, by number of organisations, December 2017 (%)

Number of organisations ◆ Organisation result — 25th percentile — Median — 75th percentile
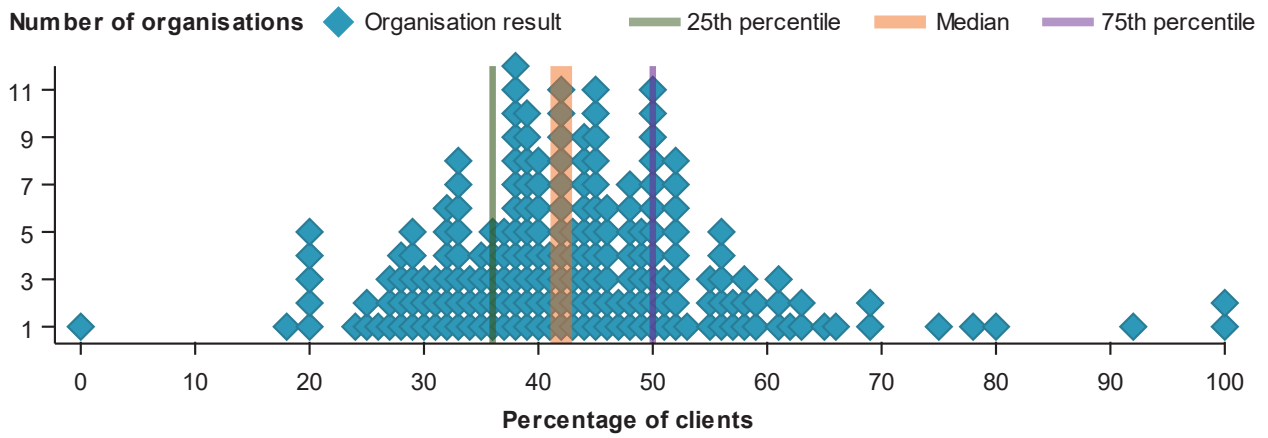
Organisation size analysis for December 2017 showed that the proportion of clients with type 2 diabetes who had a blood pressure result of 130/80 mmHg or less recorded were similar across all organisation sizes (Figure 5.9.3).

Figure 5.9.3: Clients with type 2 diabetes who had a blood pressure result of 130/80 mmHg or less recorded in the previous 6 months, by organisation size, December 2017 (%)
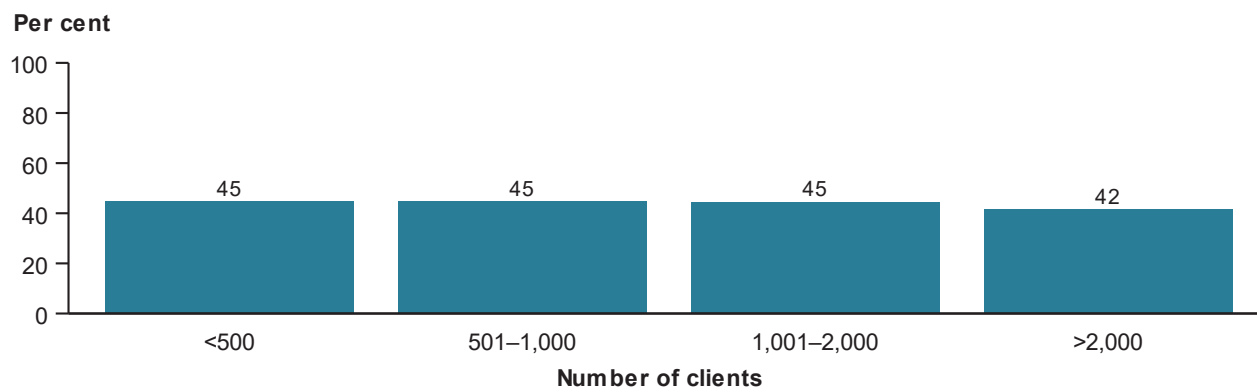
5.10 HbA1c result—clients with type 2 diabetes

PI06—Proportion of Indigenous regular clients with type 2 diabetes whose HbA1c measurement result was within a specified level

Nationally, as at December 2017, 37% of Aboriginal and Torres Strait Islander regular clients with type 2 diabetes had an HbA1c measurement result of 7% or less recorded in the previous 6 months. This compares to 38% in June 2017 (Figure 5.10.1).

The distribution of age and sex showed that in December 2017, the proportion of males with type 2 diabetes who had an HbA1c measurement result of 7% or less fell between those aged 15 or under and 15–24, then rose with age thereafter. For females, the proportion rose steadily with age (Figure 5.10.1).

Figure 5.10.1: HbA1c results of clients with type 2 diabetes recorded in the previous 6 months, by sex, age group, and reporting period, June and December 2017 (%)
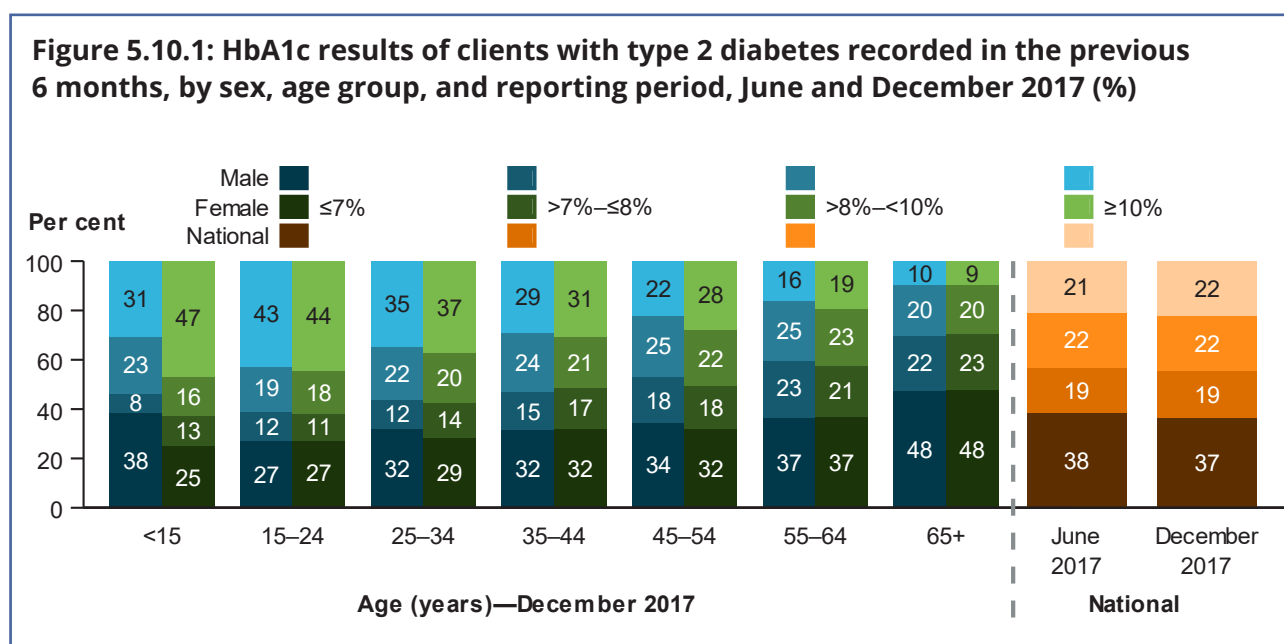
National variation data showed that results were concentrated around the median, with the vast majority of organisations (92%) reporting an HbA1c result of 7% or less for 20%–60% of type 2 diabetes clients. One in 5 organisations (20%) had small client numbers (Figure 5.10.2).

• About half of the organisations (106 of 203) had 36% or more of their clients with type 2 diabetes recording an HbA1c result of 7% or less.

• The top 25% of organisations recorded 43% or more clients with type 2 diabetes as having an HbA1c result of 7% or less.

• The bottom 25% of organisations recorded 30% or fewer clients with type 2 diabetes as having an HbA1c result of 7% or less.

• All organisations with a result of 0% and 100%, and 7 of the 10 organisations with a result of 50% had small client numbers.

Figure 5.10.2: Distribution of clients with type 2 diabetes who had an HbA1c result of 7% or less recorded in the previous 6 months, by number of organisations, December 2017 (%)

Number of organisations ◆ Organisation result — 25th percentile — Median — 75th percentile
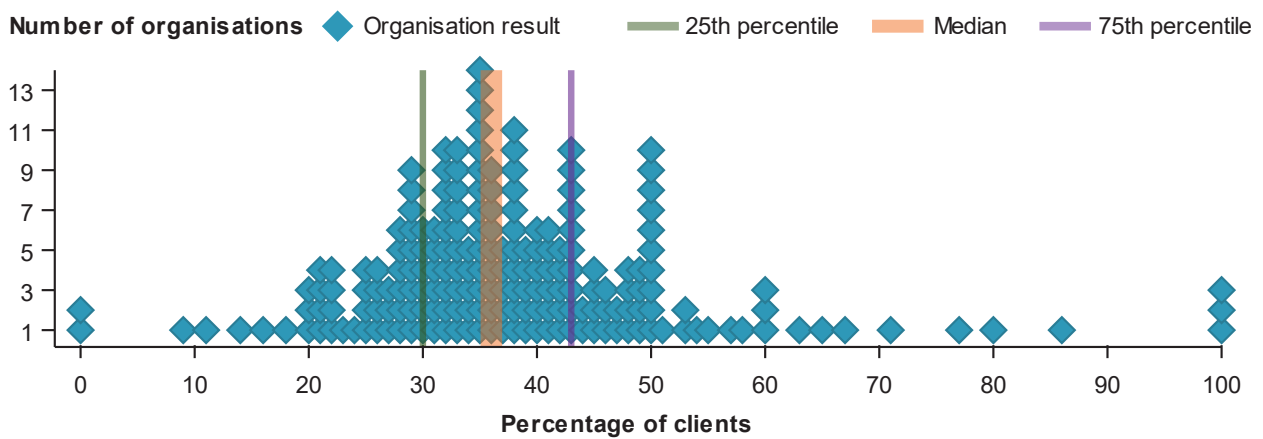
Organisation size analysis for December 2017 showed that the proportion of clients with type 2 diabetes whose HbA1c result was 7% or less in the previous 6 months was highest in the larger organisations (37% for both those with 1,001–2,000 and those with more than 2,000 clients), and lowest in organisations with fewer than 500 clients (33%) (Figure 5.10.3).

Figure 5.10.3: Clients with type 2 diabetes who had an HbA1c result of 7% or less recorded in the previous 6 months, by organisation size, December 2017 (%)
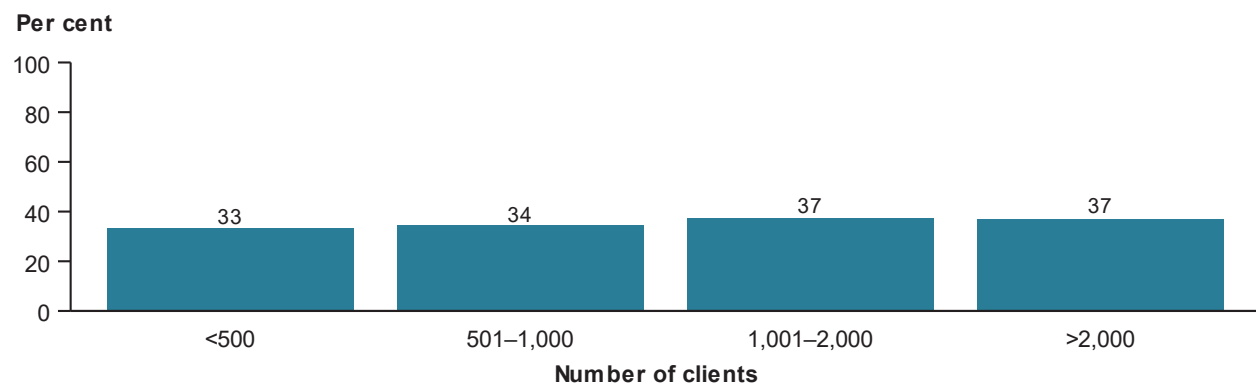
5.11 Kidney function test result—clients with type 2 diabetes—eGFR

PI19—Proportion of Indigenous regular clients with type 2 diabetes who have had an eGFR kidney function test with results within specified levels

Nationally, as at December 2017, 81% of Aboriginal and Torres Strait Islander regular clients aged 15 and over with type 2 diabetes had an eGFR recorded in the previous 12 months of 60 mL/min/1.73 m² or over (Figure 5.11.1). Due to quality issues, June 2017 data are not presented (see Chapter 2 for more details).

The distribution of age and sex showed that in December 2017, the proportion of both male and female clients with type 2 diabetes who had an eGFR result of 60 mL/min/1.73 m² or over fell with age. This indicates that kidney function decreased with age (Figure 5.11.1).

Figure 5.11.1: Clients aged 15 and over with type 2 diabetes who had an eGFR result of 60 mL/min/1.73 m² or over recorded in the previous 12 months, by sex and age group, December 2017 (%)
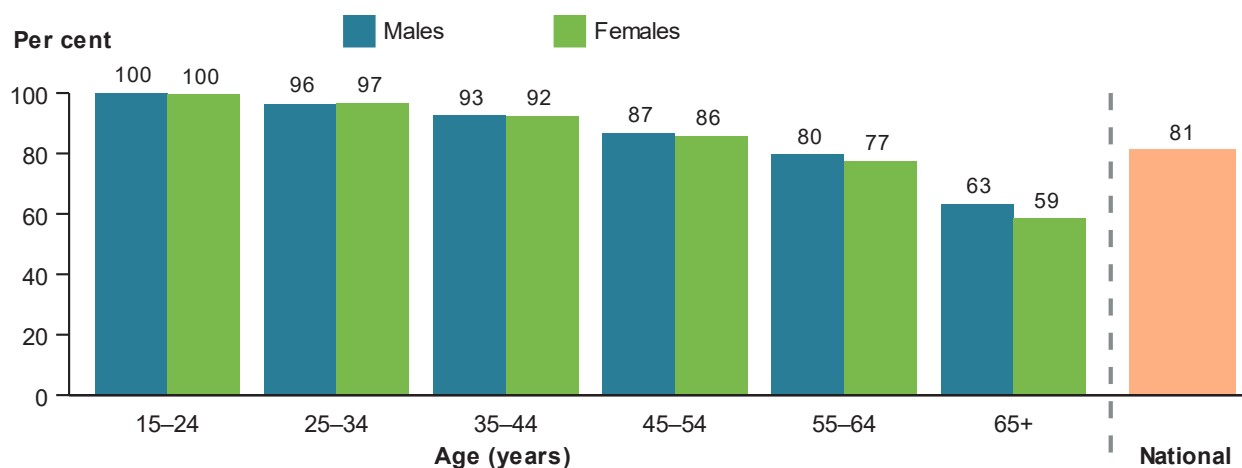
National variation data showed that the vast majority of organisations (93%) reported an eGFR result of 60 mL/min/1.73 m² or over for 65%–95% of clients with type 2 diabetes. A total of 14% of organisations had small client numbers (Figure 5.11.2).

- About half of the organisations (74 of 143) had 84% or more of their clients with type 2 diabetes recording an eGFR result of 60 mL/min/1.73 m² or over.

- The top 25% of organisations recorded 88% or more clients with type 2 diabetes as having an eGFR result of 60 mL/min/1.73 m² or over.

- The bottom 25% of organisations recorded 80% or fewer clients with type 2 diabetes as having an eGFR result of 60 mL/min/1.73 m² or over.

- Of the 7 organisations with a result of 100%, 6 had small client numbers.

Figure 5.11.2: Distribution of clients aged 15 and over with type 2 diabetes who had an eGFR result of 60 mL/min/1.73 m² or over recorded in the previous 12 months, by number of organisations, December 2017 (%)
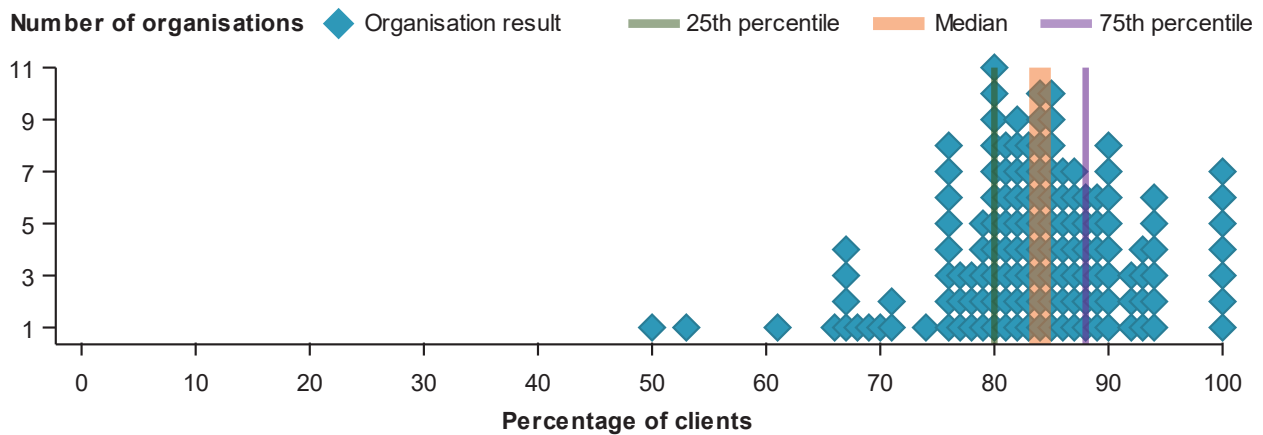
Organisation size analysis for December 2017 showed that the proportion of clients with type 2 diabetes whose eGFR result was 60 mL/min/1.73 m² or over decreased with organisation size.

Recording was highest in organisations with fewer than 500 clients (85%), and lowest in organisations with more than 2,000 clients (80%) (Figure 5.11.3).

Figure 5.11.3: Clients aged 15 and over with type 2 diabetes who had an eGFR result of 60 mL/min/1.73 m² or over recorded in the previous 12 months, by organisation size, December 2017 (%)
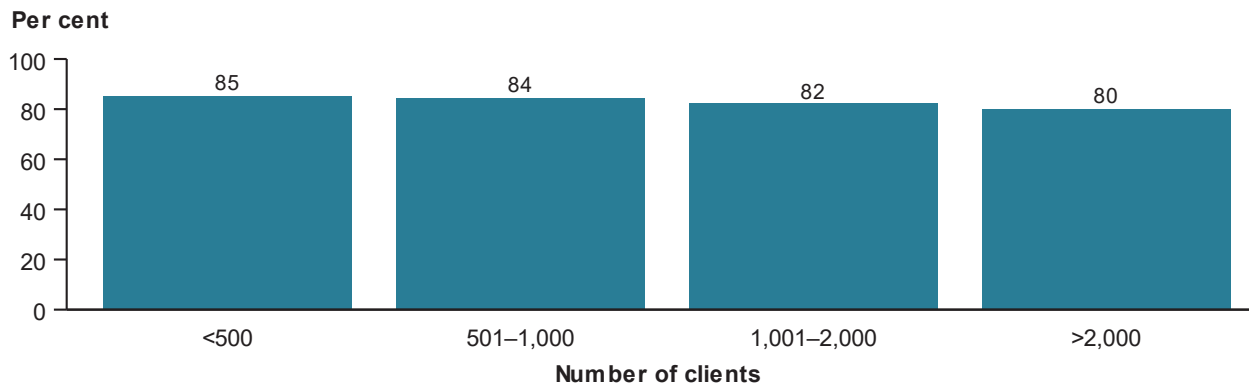
5.12 Kidney function test result—clients with type 2 diabetes—ACR

PI19—Proportion of Indigenous regular clients with type 2 diabetes who have had an ACR kidney function test with results within specified levels

Nationally, as at December 2017, 39% of Aboriginal and Torres Strait Islander regular clients aged 15 and over with type 2 diabetes had an ACR recorded in the previous 12 months, with a healthy result of less than 2.5 for males or less than 3.5 for females (Figure 5.12.1). Due to data quality issues, June 2017 data are not presented (see Chapter 2 for more details).

The distribution of age and sex showed that in December 2017, the proportion of male clients with type 2 diabetes who had a healthy ACR result fell with age. For female clients, the proportion fluctuated, with the largest decrease between ages 15–24 and 25–34. The proportion of those with healthy ACR results was higher in females than males for every age group (Figure 5.12.1).

Figure 5.12.1: ACR results for clients aged 15 and over with type 2 diabetes, by sex and age group, December 2017 (%)
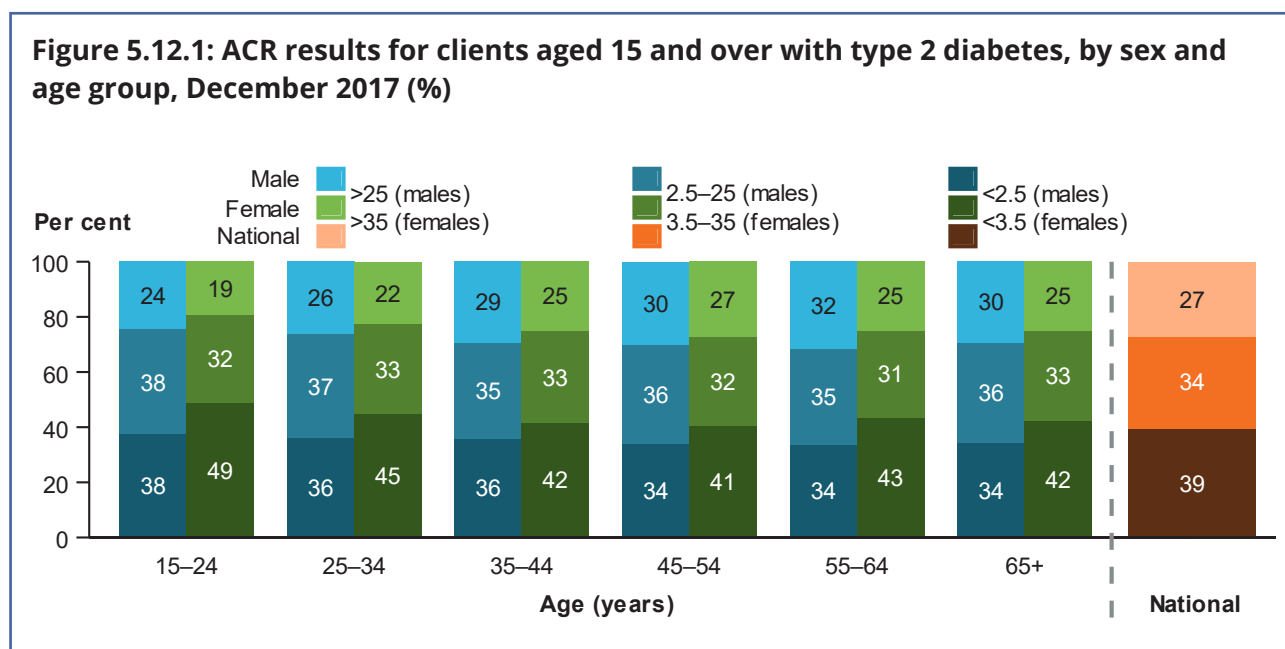
National variation data showed that the vast majority of organisations (95%) reported a healthy ACR result of less than 2.5 for males or less than 3.5 for females for 5%–70% of clients with type 2 diabetes. About 1 in 5 (19%) organisations had small client numbers (Figure 5.12.2).

• About half of the organisations (74 of 145) had 36% or more of their clients with type 2 diabetes recording a healthy ACR result.

• The top 25% of organisations recorded 48% or more of clients with type 2 diabetes as having a healthy ACR result.

• The bottom 25% of organisations recorded 28% or fewer clients with type 2 diabetes as having a healthy ACR result.

• All 4 organisations with a result of 0%, both organisations with a result of 100%, and 3 of the 6 organisations with a result of 60% had small client numbers.

Figure 5.12.2: Distribution of clients aged 15 and over with type 2 diabetes who had an ACR result of less than 2.5 for males or less than 3.5 for females recorded in the previous 12 months, by number of organisations, December 2017 (%)
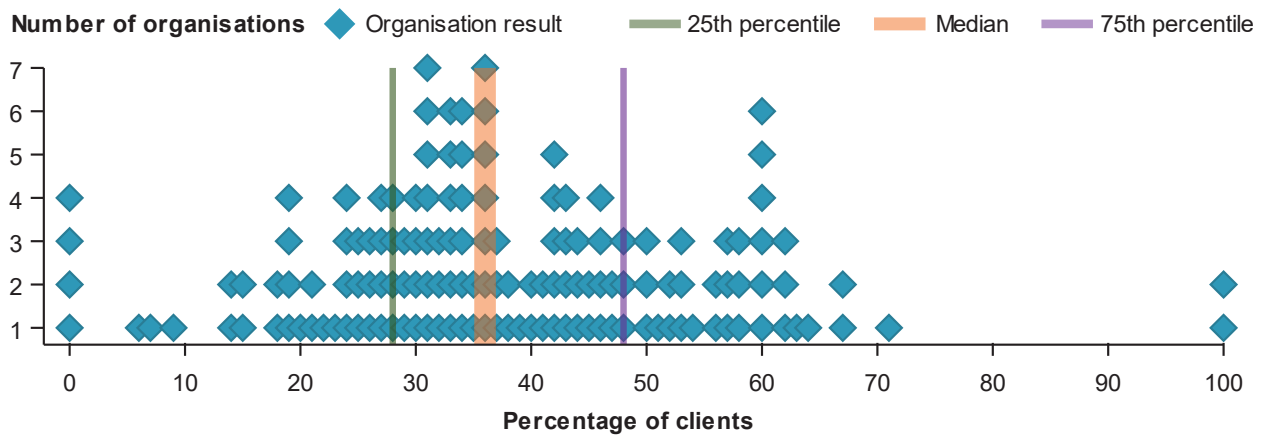
Organisation size analysis for December 2017 showed that the proportion of clients with type 2 diabetes who recorded a healthy ACR result of less than 2.5 for males or less than 3.5 for females increased with organisation size.

Recording was highest in organisations with more than 2,000 clients (42%), and lowest in organisations with fewer than 500 clients (30%) (Figure 5.12.3).

Figure 5.12.3: Clients aged 15 and over with type 2 diabetes who had an ACR result of less than 2.5 for males or less than 3.5 for females recorded in the previous 12 months, by organisation size, December 2017 (%)
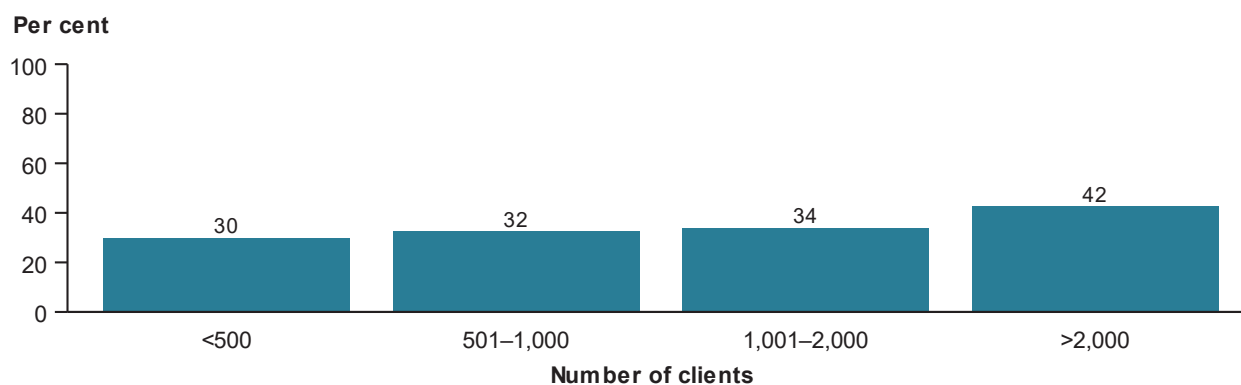
5.13 Kidney function test result—clients with cardiovascular disease—eGFR

PI19—Proportion of Indigenous regular clients with CVD who have had an eGFR kidney function test with results within specified levels

Nationally, as at December 2017, 76% of Aboriginal and Torres Strait Islander regular clients aged 15 and over with CVD had an eGFR recorded in the previous 12 months of 60 mL/min/1.73 m² or over (Figure 5.13.1). Due to data quality issues, June 2017 data are not presented (see Chapter 2 for more details).

The distribution of age and sex showed that in December 2017, the proportion of both male and female clients with CVD who had an eGFR result of 60 mL/min/1.73 m² or over fell with age. This indicates that kidney function decreased with age (Figure 5.13.1).

Figure 5.13.1: Clients aged 15 and over with CVD who had an eGFR result of 60 mL/min/1.73 m² or over recorded in the previous 12 months, by sex and age group, December 2017 (%)
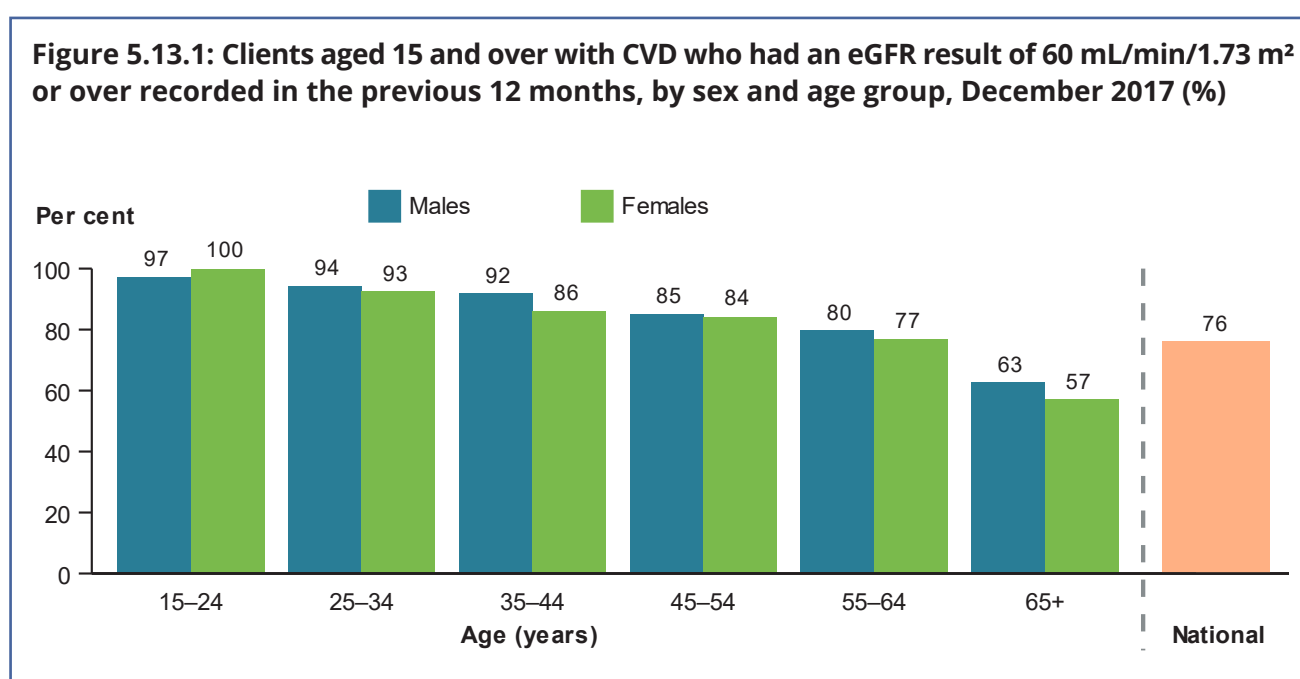
National variation data showed the majority of organisations (80%) reported an eGFR result of 60 mL/min/1.73 m² or over for 55%–90% of clients with CVD. Almost half of organisations (47%) had small client numbers (Figure 5.13.2).

• About half of the organisations (72 of 138) had 77% or more of their clients with CVD recording an eGFR result of 60 mL/min/1.73 m² or over.

• The top 25% of organisations recorded 85% or more clients with CVD as having an eGFR result of 60 mL/min/1.73 m² or over.

• The bottom 25% of organisations recorded 71% or fewer clients with CVD as having an eGFR result of 60 mL/min/1.73 m² or over.

• All 10 organisations with a result of 50% or fewer, and all 16 organisations with a result of 100% had small client numbers.

Figure 5.13.2: Distribution of clients aged 15 and over with CVD who had an eGFR result of 60 mL/min/1.73 m² or over recorded in the previous 12 months, by number of organisations, December 2017 (%)
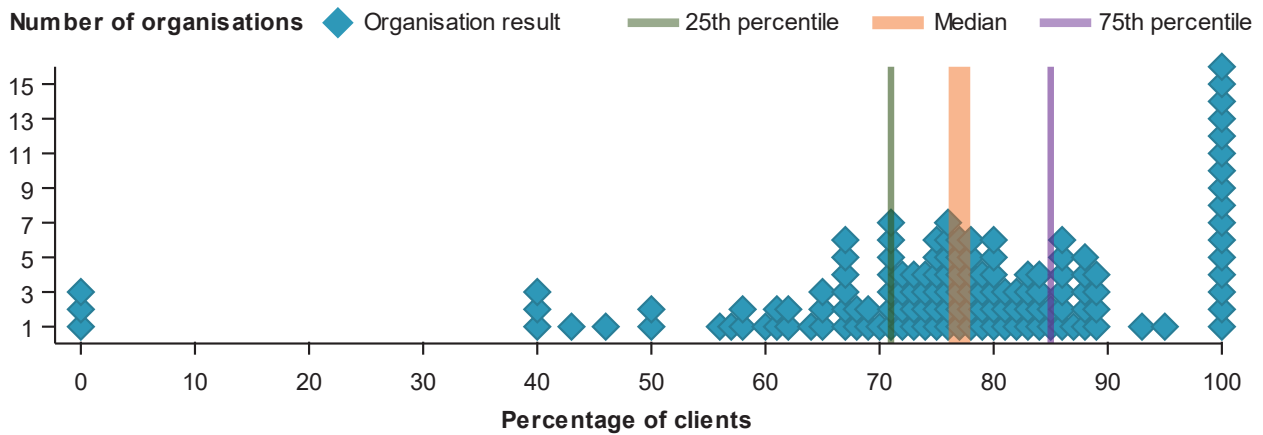
Organisation size analysis for December 2017 showed that the proportion of clients with CVD whose eGFR result was 60 mL/min/1.73 m² or over was highest in organisations with 501–1,000 clients (80%), and lowest in organisations with 1,001–2,000 clients (72%) (Figure 5.13.3).

Figure 5.13.3: Clients aged 15 and over with CVD who had an eGFR result of 60 mL/min/1.73 m² or over recorded in the previous 12 months, by organisation size, December 2017 (%)
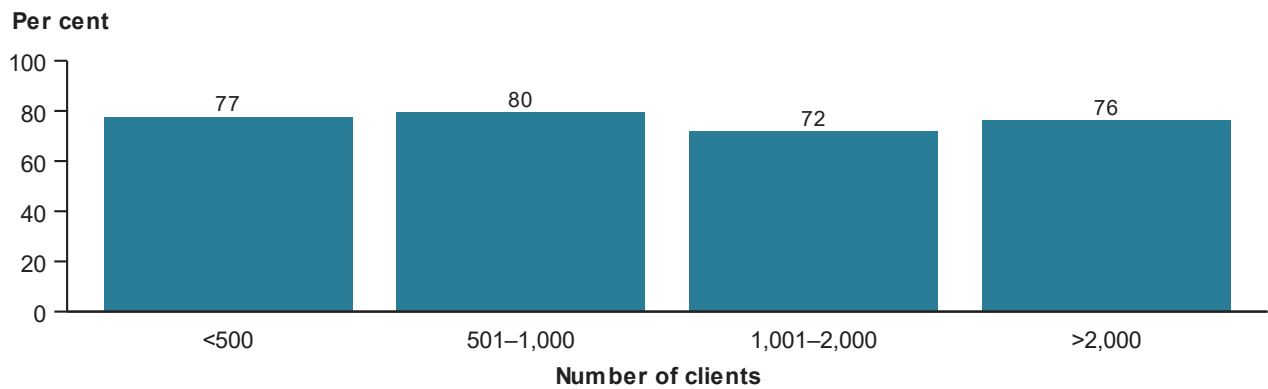
6   Discussion

This chapter was written by the Department of Health.

This chapter discusses the fifth comprehensive analysis of the nKPI data reported by primary health care organisations that are funded to deliver services to Aboriginal and Torres Strait Islander people.

The nKPIs have been collected by organisations since June 2012, and reported by AIHW since 2014. The indicators have been progressively developed, and now include the full set of 24 reporting measures.

While there was initial apprehension in the sector about publishing nKPI results, it has become an important element of transparency, and supports continuous quality improvement for Aboriginal Community Controlled Health Services. It also highlights how the data can be improved, and enables policy to be focused in specific areas.

Since the first nKPI report was published in May 2014, there have been strong improvements in results across several indicators between June 2012 and May 2015—such as in the recording of birthweight—which shows that health services are using their data to drive improved health processes.

The Australian Government Department of Health (DoH) has also been able to use these data to inform policy development, and manage programs to improve Aboriginal and Torres Strait Islander health.

This report only presents data for June and December 2017, as there has been a break in time series, due to the introduction of a new data extraction method (the direct load process, which enables each software to extract nKPI data).

Table 6.1 shows indicators where improvements have been made over the past 2 reporting periods. These changes should be considered with caution, as the number of reporting periods compared are not sufficient.

Previous national reports based on longer time series data showed improvement across several indicators, but for some, there have been no significant improvements, and others have shown declines over time. The indicators that have not improved are a mix of both process-of-care and health-outcome indicators.

It is understood that health-outcome indicators are difficult areas for health organisations alone to influence, and require patient participation, including, usually, behaviour and lifestyle changes.

In addition, improvements in population health as the result of these changes take significant time to see, and can be affected by other factors. These include the social determinants and cultural determinants of health, which might be beyond the capacity of organisations or individuals to meaningfully address.

For process-of-care indicators that have shown little improvement, further investigation might be required by individual services to better understand these results, and improve future outcomes.

The Implementation Plan for the National and Torres Strait Islander Health Plan 2013–2023, released by the Australian Government in October 2015, has a set of 20 indicators for Indigenous health-care processes and outcomes at the national level (see Implementation Plan Goals for the Aboriginal and Torres Strait Islander Health Plan 2013–2023: technical companion document 2015).

Some of the plan's goal indicators are similar to the nKPIs making it useful to compare nKPI results at a national level with the indicators for the relevant IP goals. nKPI results for June 2016 at a national level showed that nKPI organisations at a national level were generally on track to meet the 2023 plan's goals (see AIHW 2017).

In June 2018, DoH commissioned the AIHW to review all aspects of the data collections in the nKPI (and the OSR) data collections, including their objectives, collection processes, modules, and specific items from various perspectives (policy, clinical, technological, and administrative). This will improve the collections so they are more useful, and fit for purpose over the long term. This review will be complete by December 2018, and the Australian Government will make decisions about implementation of the AIHW findings in 2019.

Data improvements

DoH is working to interrogate and validate the quality of the nKPI and OSR data collections, and improve to their quality and reliability (see Appendix E for more details).

These improvements have broken the data time series, but were necessary, as the data transformations coded by the extraction products had not been externally checked nor validated. DoH judged that the long-term benefits of improving the quality of the data and its collection processes outweighed the advantage of longitudinal consistency.

The improvements are streamlining and improving the process of reporting, with various data quality projects that address each part of the reporting chain.

Data context and comparison

The Health Data Portal offers each health service a data visualisation dashboard. This shows their own nKPI data from December 2014 onwards, overlayed with national and state averages and indicator-specific trajectories to provide context around their performance.

Health services can also compare their nKPI values with de-identified groups of other health services who share particular characteristics, such as number of doctors or clients, degree of remoteness, or mix of services provided.

Data review and improvement

The new Health Data Portal will receive and store reported data. A major new feature is the application of automated validation on submitted data. Health services will receive near realtime feedback on validation results, and will have the opportunity to correct errors and explain apparent anomalies in advance. This will result in higher-quality data, and save significant time for health services and the AIHW.

Report generation

The Data Validation Project has analysed the calculations applied to clinical data to produce nKPI and OSR values in each of the major clinical information systems, resulting in corrections and improvements from each software vendor. The project is developing a repeatable revalidation process, using a control data set of dummy patient records.

Data capture

The Data Quality Assessment and Support Project is reviewing the way in which health services capture clinical data, and has proposed options for supporting improved data management practices across the sector.

Table 6.1: Change in indicator result, June–December 2017

Indicator group	National change	Percentage points
Maternal and child health indicators		
PI13: First antenatal visit—before 13 weeks	↑	2.0
PI01: Birthweight recorded	↑	3.3
PI03: MBS health assessment—aged 0–4	↓	–0.1
PI02: Birthweight result—low	↑	0.9
PI11: Smoking status of females who gave birth within the previous 12 months—current smoker	↑	0.8
Preventative health indicators		
PI09: Smoking status recorded	↑	0.7
PI16: Alcohol consumption status recorded	↑	0.3
PI03: MBS health assessment—aged 25 and over	↑	0.5
PI20: Risk factors assessed to enable cardiovascular disease (CVD) assessment	↑	0.9
PI22: Cervical screening—previous 2 years	↓	–0.4
PI14: Immunised against influenza—aged 50 and over	↑	3.7
PI10: Smoking status result—current smoker	~	–0.1
PI12: Body Mass Index (BMI) classified as overweight or obese	↓	–0.3
PI17: Alcohol Use Disorders Identification Test-C (AUDIT-C)— 4 or over (males) or 3 or over (females)	↓	–0.2
PI21: Absolute CVD risk—high	↓	–2.5
Chronic disease management indicators		
PI07: General Practitioner Management Plan—clients with type 2 diabetes	↑	1.0
PI08: Team Care Arrangement—clients with type 2 diabetes	↑	1.4
PI23: Blood pressure result recorded—clients with type 2 diabetes	↑	0.1
PI05: HbA1c result recorded (6 months)—clients with type 2 diabetes	↓	–0.5
PI15: Immunised against influenza—clients with:		
type 2 diabetes	↑	5.4
chronic obstructive pulmonary disease	↑	5.1
PI24: Blood pressure result of 130/80 mmHg or less—clients with type 2 diabetes	↑	1.7
PI06: HbA1c result (6 months, 7% or less)—clients with type 2 diabetes	↓	–1.8

Notes

1. The indicator 'PI04: Child immunisation' is excluded, due to concerns over data validity.

2. The indicators 'PI18: Kidney function test recorded' and 'PI19: Kidney function test result' are not presented due to concerns over data quality affecting June 2017.

Appendix A: Background to the nKPI collection and indicator technical specifications

Background

The set of 24 nKPIs were developed in 2010 under the mandate of the National Indigenous Reform Agreement at the request of COAG, which subsequently received in-principle approval from AHMAC in 2011. The National Indigenous Reform Agreement stipulates that the approval of data elements be sought through the National Health Information Agreement governance process.

Development of data specifications

A technical working group, chaired by DoH, provided expert advice on developing the data specification for the nKPIs, and for their subsequent implementation. It was also a forum for reviewing information that had been brought together on KPIs already used in primary health care in states and territories, and for validating and providing assurance that the proposed national data set would be clinically appropriate.

The group included representatives of the National Aboriginal Community Controlled Health Organisation and its state and territory affiliates, state governments, the AIHW, and other technical experts. Membership was selected to ensure that the group had the expertise required to:

• robustly develop evidence-based indicators

• confirm the clinical relevance and operability of the indicators in primary health care settings

• facilitate alignment with data collected through clinical information systems and reported through the web-based reporting system developed for this purpose by the Australian Government.

DoH established the Aboriginal and Torres Strait Islander Health Services Data Advisory Group (known until June 2016 as the OCHREStreams Advisory Group) to provide advice on the continuing development of the OCHREStreams web portal and its associated data collections, including the nKPIs. OCHREStreams is the web portal aimed at reducing the reporting burden for organisations that provide primary health-care and other services to Aboriginal and Torres Strait Islander people.

Approval

The National Advisory Group on Aboriginal and Torres Strait Islander Health Information and Data supported the draft set of indicators. The indicators and data specifications were approved and endorsed by National Health Information Standards and Statistics Committee, the National Health Information and Performance Principal Committee, and AHMAC between 2011 and 2015, as the indicators were finalised.

Organisations contributing nKPI data

The nKPI data have been collected for 10 reporting periods, after an initial trial involving about 80 organisations with previous data collection experience. The nKPI collection began with 90 organisations that had participated in the Healthy for Life program, a continuous quality improvement program for organisations providing care to Indigenous Australians, funded by the Australian Government.

Organisations reported to the AIHW on several indicators, many of which were similar to the nKPIs. In return, the AIHW provided organisations with reports and PowerPoint presentations to assist them in their local continuous quality improvement processes. Previous participation in Healthy for Life was associated with better results against the nKPIs (AIHW 2014). The number of participating organisations increased over time to a peak of 241 in June 2016. In the December 2017 reporting period, 231 organisations provided nKPI data (Table A1).

Table A1: Number of organisations contributing nKPI data, by reporting period, June 2012 to December 2017

Reporting period	Number of organisations
June 2012	90
December 2012	173
June 2013[a]	206
December 2013	207
June 2014	210
December 2014[b]	233
May 2015	242
December 2015	240
June 2016	241
June 2017[c]	228
December 2017	231

(a) Northern Territory Government organisations that received funding from DoH reported for the first time.

(b) The remaining Northern Territory Government organisations began reporting.

(c) Some organisations were no longer required to report, or were exempt from reporting.

The nKPIs specifications

To ensure alignment with other reporting, data definitions and specifications being used by other national and state collections—including those already in the AIHW's METeOR—were used wherever possible in this report. A full list of the nKPIs is available on METeOR at <http://meteor.aihw.gov.au/content/index.phtml/itemId/686315>.

Cervical screening indicator (PI22)

From 1 December 2017, a new program for the National Cervical Screening Program was implemented. This marked a change from the previous recommendation of Pap smears every 2 years for most females aged 18–69 to HPV testing every 5 years for most females aged 25–74 (DoH 2018d). While the current Pap test can detect abnormal cell changes, the new Cervical Screening Test detects the persistent HPV infection that causes the abnormal cell changes before cancer develops. Clinical trials have shown that screening for HPV every 5 years is more effective than, and just as safe as, screening with a Pap test every 2 years (AIHW 2018b; DoH 2018d).

The nKPIs have been updated to keep in line with clinical best practice, and December 2017 will be the final reporting period where cervical screening alone will be recorded. New indicator measures which include both HPV testing, and cervical screening will be introduced from June 2018 to capture the transition period between the 2 screening methods. As of 1 December 2017, this indicator has been revised to reflect the change to 'Proportion of female regular clients who are Aboriginal and/or Torres Strait Islander, aged 20–74, who have not had a hysterectomy, and who have had a cervical screening (either Pap test or HPV test) in the previous 2, 3 and 5 years'.

nKPI descriptions

Table A2 shows the indicators included in this report, and the final 2 indicators that were collected for the first time in June 2017 (PI17: AUDIT-C result, and PI21: Absolute CVD risk assessment result). Each indicator is presented with its identification number as assigned in METeOR—for example, 'PI01'—and an expanded description of what it is meant to measure.

Table A2: nKPIs and their description

Indicator	Description
PI01: Proportion of Indigenous babies born within the previous 12 months whose birthweight has been recorded	Proportion of Aboriginal and/or Torres Strait Islander babies born within the previous 12 months whose birthweight has been recorded at the primary health care service.
PI02: Proportion of Indigenous babies born within the previous 12 months whose birthweight results were low, normal or high	Proportion of Aboriginal and/or Torres Strait Islander babies born within the previous 12 months whose birthweight results were categorised as 1 of the following: • low (less than 2,500 grams) • normal (2,500 grams to less than 4,500 grams) • high (4,500 grams and over).
PI03: Proportion of regular clients for whom an MBS Health Assessment for Aboriginal and Torres Strait Islander People (MBS item 715) was claimed	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 0–4 and for whom an MBS health assessment for Aboriginal and Torres Strait Islander people was claimed within the previous 12 months AND proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 25 and over and for whom an MBS health assessment for Aboriginal and Torres Strait Islander people was claimed within the previous 24 months.
PI04: Proportion of Indigenous children who are fully immunised	Proportion of Aboriginal and/or Torres Strait Islander children who are regular clients, aged: • 12 months to less than 24 months • 24 months to less than 36 months • 60 months to less than 72 months and who are 'fully immunised'.
PI05: Proportion of regular clients with type 2 diabetes who have had an HbA1c measurement result recorded	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, have type 2 diabetes and who have had an HbA1c measurement result recorded at the primary health care service within the previous 6 months AND proportion of regular clients who are Aboriginal and/or Torres Strait Islander, have type 2 diabetes and who have had an HbA1c measurement result recorded at the primary health care service within the previous 12 months.

(continued)

Table A2 (continued): nKPIs and their description

Indicator	Description
PI06: Proportion of regular clients with type 2 diabetes whose HbA1c measurement result was within a specified level	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, have type 2 diabetes and whose HbA1c measurement result was categorised as one of the following: As recorded in the previous 6 months AND as recorded in the previous 12 months: • less than or equal to 7% • greater than 7% but less than or equal to 8% • greater than 8% but less than 10% • greater than or equal to 10%.
PI07: Proportion of regular clients with a chronic disease for whom a GP Management Plan (MBS item 721) was claimed	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, have a chronic disease and for whom a GPMP was claimed within the previous 24 months.
PI08: Proportion of regular clients with a chronic disease for whom a Team Care Arrangement (MBS item 723) was claimed	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, have a chronic disease and for whom a TCA was claimed within the previous 24 months.
PI09: Proportion of regular clients whose smoking status has been recorded	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 15 and over and whose smoking status has been recorded at the primary health care service within the previous 24 months.
PI10: Proportion of regular clients with a smoking status result	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 15 and over and whose smoking status has been recorded within the previous 24 months as 1 of the following: • current smoker • ex-smoker • never smoked.
PI11: Proportion of regular clients who gave birth within the previous 12 months with a smoking status of 'current smoker', 'ex-smoker' or 'never smoked'	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 15 and over, who gave birth within the previous 12 months and whose smoking status has been recorded within the previous 12 months as 1 of the following: • current smoker • ex-smoker • never smoked.
PI12: Proportion of regular clients who are classified as overweight or obese	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 25 and over and who have had their BMI classified as overweight or obese within the previous 24 months.
PI13: Proportion of regular clients who had their first antenatal care visit within specified periods	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, who gave birth within the previous 12 months and who had gestational age recorded at their first antenatal care visit, with results either: • less than 13/40 weeks • 13/40 weeks to less than 20/40 weeks • at or after 20/40 weeks • no result.

(continued)

Table A2 (continued): nKPIs and their description

Indicator	Description
PI14: Proportion of regular clients aged 50 and over who are immunised against influenza	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 50 and over and who are immunised against influenza.
PI15: Proportion of regular clients with type 2 diabetes or COPD who are immunised against influenza	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 15–49, are recorded as having type 2 diabetes or COPD and are immunised against influenza.
PI16: Proportion of regular clients whose alcohol consumption status has been recorded	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 15 and over and who have had their alcohol consumption status recorded at the primary health care service within the previous 24 months.
PI17: Proportion of regular clients who had an AUDIT-C with result within specified levels	Proportion of regular Aboriginal and/or Torres Strait Islander clients, aged 15 and over, who have had an AUDIT-C result recorded in the previous 24 months with a score of either: • greater than or equal to 4 in males and 3 in females • less than 4 in males and 3 in females.
PI18: Proportion of regular clients with a selected chronic disease who have had a kidney function test	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 15 and over who are recorded as having type 2 diabetes and have had an estimated glomerular filtration rate (eGFR) recorded AND/OR an albumin/creatinine ratio (ACR) or other micro albumin test result recorded within the previous 12 months AND proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 15 and over who are recorded as having cardiovascular disease (CVD) and have had an eGFR recorded within the previous 12 months.
PI19: Proportion of regular clients with a selected chronic disease who have had a kidney function test with results within specified levels	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 15 and over, who are recorded as having type 2 diabetes or CVD and who have had an eGFR recorded within the previous 12 months with a result of (mL/min/1.73 m²): • greater than or equal to 90 • greater than or equal to 60 but less than 90 • greater than or equal to 45 but less than 60 • greater than or equal to 30 but less than 45 • greater than or equal to 15 but less than 30 • less than 15.
PI20: Proportion of regular clients who have had the necessary risk factors assessed to enable CVD assessment	Proportion of Aboriginal and/or Torres Strait Islander regular clients with no known CVD, aged 35–74, with information available to calculate their absolute CVD risk.

(continued)

Table A2 (continued): nKPIs and their description

Indicator	Description
PI21: Proportion of regular clients aged 35 to 74 who have had an absolute cardiovascular disease risk assessment with results within specified levels	Proportion of Aboriginal and/or Torres Strait Islander regular clients, aged 35–74 and with no known history of CVD, who have had an absolute CVD risk assessment recorded within the previous 2 years and whose CVD risk was categorised as 1 of the following: • high (greater than 15% chance of a cardiovascular event in the next 5 years) • moderate (10%–15% chance of a cardiovascular event in the next 5 years) • low (less than 10% chance of a cardiovascular event in the next 5 years).
PI22: Proportion of regular clients who have had a cervical screening	Proportion of female regular clients who are Aboriginal and/or Torres Strait Islander, aged 20–69, who have not had a hysterectomy and who have had a cervical screening within the previous 2 years, 3 years and 5 years.
PI23: Proportion of regular clients with type 2 diabetes who have had a blood pressure measurement result recorded	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, have type 2 diabetes and who have had a blood pressure measurement result recorded at the primary health care service within the previous 6 months.
PI24: Proportion of regular clients with type 2 diabetes whose blood pressure measurement result was less than or equal to 130/80 mmHg	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, have type 2 diabetes and whose blood pressure measurement result, recorded within the previous 6 months, was less than or equal to 130/80 mmHg.

Appendix B: Data completeness

The completeness of the data submitted by organisations is an important determination of the quality of the national analyses. Data might be incomplete due to:

- internal inconsistency (for example, numerator is greater than denominator, numbers not matching between linked indicators, subgroup totals not adding up to the total)

- organisations commenting, when submitting data, that their data are incomplete or incorrect and could not be corrected

- organisations indicating that they did not provide a particular service, so no data are available (for example, health assessments were not part of an organisation's regular service)

- an organisation sharing an information recording system with another organisation, and being unable to separate its clients from all clients of the combined organisations as a result

- auspiced organisations that collect data from other organisations, often sharing a single patient information recall system and a single governance body, where the data for individual organisations are combined, and include duplicate clients.

This means that data for some indicators must be excluded for organisations if unresolved data quality issues remain. This results in different numbers of organisations with valid data for different indicators.

For example, if 200 organisations submitted data, and all organisations provided valid data for PI01, then that indicator would have 200 organisations contributing data. But some of the same 200 organisations might not have valid data for PI03, and this would result in fewer organisations contributing data to that indicator (see Table B1 for the number of organisations contributing valid data for each indicator for the December 2017 collection period).

The number of organisations included in the analyses varies for each period by indicator, depending on the quality of the data submitted (see Table B1). This means that the national averages reported are based on differing numbers of organisations, which could limit comparability for some purposes.

Data for PI18: Kidney function test recorded, and PI19: Kidney function test result are excluded due to data quality issues (see Chapter 2 for more details).

In addition, when analysing and presenting data at the national level:

- there are some paired indicators where the numerator for 1 is the denominator for the other (for example: PI05 and PI06; PI09 and PI10; and PI23 and PI24), so if data for a single indicator in a pair is excluded due to data quality issues, data from the other indicator in the pair are also excluded

- some jurisdictions have an insufficient number of organisations to perform meaningful analysis, so Tasmanian data are combined with Victorian data, and Australian Capital Territory data are combined with New South Wales data

- some organisations (like the Queensland Aboriginal and Islander Health Council) use nKPI data to issue their own reports, and these data might be reported differently, because of different data 'cleaning' processes.

Table B1: Number of organisations contributing valid data, and number of Indigenous regular clients, by indicator, December 2017

Indicator	Number of organisations with valid data[a]	Number of organisations included in the analyses[b]	Number of clients	Organisations with denominators of <20 clients (%)[c]
Maternal and child health indicators				
PI13: First antenatal visit	214	203	6,300	51.7
PI01: Birthweight recorded	220	216	7,897	46.8
PI03: MBS health assessment—aged 0–4	217	215	39,935	11.2
PI02: Birthweight result	220	203	5,754	52.2
PI11: Smoking status of females who gave birth within the previous 12 months	216	203	5,855	55.2
PI04: Child immunisation				
12–<24 months	217	209	8,915	42.6
24–<36 months	217	208	8,999	43.8
60–<72 months	217	212	8,378	45.3
Preventative health indicators				
PI09: Smoking status recorded	215	215	229,309	—
PI16: Alcohol consumption status recorded	214	214	228,659	—
PI03: MBS health assessment— aged 25 and over	213	213	172,169	—
PI20: Risk factors assessed to enable CVD assessment	198	198	94,614	0.5
PI22: Cervical screening	209	209	105,213	1.4
PI14: Immunised against influenza— aged 50 and over	209	207	61,011	3.9
PI10: Smoking status result	215	215	186,680	0.9
PI12: BMI classified as overweight or obese	214	214	119,648	3.7
PI17: AUDIT-C result recorded	164	164	61,533	18.3
PI21: Absolute CVD risk assessment result	129	129	13,683	33.3
Chronic disease management indicators				
PI07: General Practitioner Management Plan—clients with type 2 diabetes	208	207	42,326	6.8
PI08: Team Care Arrangement—clients with type 2 diabetes	208	207	42,326	6.8
PI23: Blood pressure result recorded— clients with type 2 diabetes	206	205	41,950	6.8
PI05: HbA1c result recorded (6 months)— clients with type 2 diabetes	204	203	41,897	6.4
PI18: Kidney function test recorded— clients with:				
type 2 diabetes	151	150	30,501	7.3
CVD	150	148	14,282	31.8

(continued)

National Key Performance Indicators for Aboriginal and Torres Strait Islander primary health care: results for 2017

Table B1 (continued): Number of organisations contributing valid data, and number of Indigenous regular clients, by indicator, December 2017

Indicator	Number of organisations with valid data[a]	Number of organisations included in the analyses[b]	Number of clients	Organisations with denominators of <20 clients (%)[c]
PI15: Immunised against influenza— clients with:				
type 2 diabetes	206	202	16,885	18.8
COPD	207	184	2,256	81.5
PI24: Blood pressure result of 130/80 mmHg or less—clients with type 2 diabetes	206	204	26,886	13.2
PI06: HbA1c result (6 months)—clients with type 2 diabetes	204	203	20,292	20.2
PI19: Kidney function test result—clients with:				
type 2 diabetes—eGFR	151	143	17,724	14.0
type 2 diabetes—ACR	151	145	15,538	18.6
CVD—eGFR	150	138	8,264	47.1

(a) Organisations with valid data after exclusion due to inconsistent data or organisation comments.

(b) Excludes organisations providing data with a zero denominator for indicators, as they had no clients to whom they could provide the services to be counted in those indicators.

(c) Proportion of organisations that had fewer than 20 clients, but were included in the analysis for each indicator.

Table B2: Number of organisations included in analyses^(a), by indicator, June and December 2017

Indicator	June 2017	December 2017
Maternal and child health indicators		
PI13: First antenatal visit	198	203
PI01: Birthweight recorded	214	216
PI03: MBS health assessment—aged 0–4	213	215
PI02: Birthweight result	204	203
PI11: Smoking status of females who gave birth within the previous 12 months	205	203
PI04: Child immunisation		
12–<24 months	208	209
24–<36 months	210	208
60–<72 months	210	212
Preventative health indicators		
PI09: Smoking status recorded	207	215
PI16: Alcohol consumption status recorded	214	214
PI03: MBS health assessment—aged 25 and over	211	213
PI20: Risk factors assessed to enable CVD assessment	189	198
PI22: Cervical screening	208	209
PI14: Immunised against influenza—aged 50 and over	203	207
PI10: Smoking status result	207	215
PI12: BMI classified as overweight or obese	213	214
PI17: AUDIT-C result recorded	148	164
PI21: Absolute CVD risk assessment result	102	129
Chronic disease management indicators		
PI07: General Practitioner Management Plan—clients with type 2 diabetes	202	207
PI08: Team Care Arrangement—clients with type 2 diabetes	202	207
PI23: Blood pressure result recorded—clients with type 2 diabetes	199	205
PI05: HbA1c result recorded (6 months)—clients with type 2 diabetes	202	203
PI18: Kidney function test recorded—clients with:		
type 2 diabetes	. .	150
CVD	. .	148
PI15: Immunised against influenza—clients with:		
type 2 diabetes	198	202
COPD	177	184
PI24: Blood pressure result of 130/80 mmHg or less—clients with type 2 diabetes	198	204

(continued)

Table B2 (continued): Number of organisations included in analyses[a], by indicator, June and December 2017

Indicator	June 2017	December 2017
PI06: HbA1c result (6 months)—clients with type 2 diabetes	198	203
PI19: Kidney function test result—clients with:		
type 2 diabetes—eGFR	. .	143
type 2 diabetes—ACR	. .	145
CVD—eGFR	. .	138

(a) Excludes organisations that did not provide valid data for the indicator, and those organisations providing data with a zero denominator for indicators, as they had no clients to whom they could provide the services to be counted in those indicators.

Appendix C: Comparison of nKPI results

This appendix includes a summary of organisations' results across nKPIs and compares the results with national data for Aboriginal and Torres Strait Islander people and national data for all Australians.

Care must be taken in comparing other data sets with the nKPIs. Many are not directly comparable with the nKPI data because of different indicator definitions, collection periods, and populations. For instance, regular clients might be less healthy than other clients of an organisation. The nKPIs are not suitable as estimates of population-level disease or activity prevalence, but over time, they might contribute to these.

Table C1 provides comparison data with other national collections of data about Indigenous Australians.

Table C2 provides comparisons with data collections for non-Indigenous Australians and the general Australian population, including both Indigenous and nonIndigenous Australians. When a data collection also has Indigenous-specific data, these are included, to enable comparisons between the nKPI data and other data collections.

For some indicators related to clients with type 2 diabetes (GPMP, TCA, blood pressure recorded, blood pressure result, HbA1c result recorded, and HbA1c result), the only comparison data available are from the former Health for Life data collection, which reported for the last time in June 2011. For comparative indicator data from the Healthy for Life program, see AIHW 2017.

Comparison with national Indigenous data

There are several indicators where the nKPI statistical mean differs appreciably from data from other national sources (Table C1). These include:

• PI04: Child immunisation

• PI10: Smoking status result—current smoker

• PI13: First antenatal visit

• PI14: Immunised against influenza—aged 50 and over.

More current smokers were recorded among the nKPI organisations' regular clients than among Aboriginal and Torres Strait Islander people who took part in the 2014–15 NATSISS, which is the closest national comparison.

Regular clients have attended the organisations 3 times in the previous 2 years, so might be less healthy than the general population. Smoking causes negative health effects, so it is possible that smokers are more likely to be regular clients at nKPI organisations.

People participating in surveys such as the self-reported AATSIHS might be reluctant to admit to smoking—but might be more willing to divulge this information to their regular primary health care provider.

The National Perinatal Data Collection (NPDC) provides the closest national comparison data for the antenatal and perinatal nKPIs. But it is different, as it is based on notification forms completed by midwives and other staff in hospitals.

In addition, the NPDC data cover babies whose mothers are Aboriginal and/or Torres Strait Islander, while the nKPIs cover Aboriginal and Torres Strait Islander babies. The proportion of women whose first antenatal care visit was before 13 weeks of pregnancy is higher in NPDC data than in data for the nKPIs. This difference might also indicate room for improvement in the quality of nKPI data. As the nKPI indicator on smoking during pregnancy is a proxy indicator (that is, it captures the smoking status of women who gave birth in the previous 12 months), comparisons with NPDC data, should be treated with caution.

The proportion of clients aged 50 and over who were immunised against influenza in the preceding year was higher in the 2012–13 AATSIHS than in the nKPI data. AATSIHS data are self-reported, and might be subject to errors of memory about timing of vaccination.

As many regular clients have been vaccinated against influenza outside of their primary care organisation, those organisations participating in the nKPI data may not have total visibility of immunisations that occur elsewhere, or might not yet be consistently recording this information.

Comparison with national data for all Australians

Table C2 compares nKPI data with statistics for the non-Indigenous population in Australia or with the Australian total (which includes Indigenous Australians) when appropriate comparison data are available. When a data set includes Indigenous-specific information, these are included in Table C2 to help compare data sets.

Comparison between the nKPI and NPDC results suggests that a lower proportion of mothers in the nKPI population (41%) attend antenatal visits in the first trimester than Australian mothers as a whole (62%), and more than twice the proportion of Indigenous babies (12%) have low birthweight than Australian babies (5%) as a whole.

The nKPI results suggest that a much lower proportion of Indigenous women have cervical screenings than the general population, with 27% of relevant Indigenous regular clients having received the screening in the previous 2 years, compared with 55% of women in the general population.

Among nKPI Indigenous regular clients aged 50 and over, around 36% were immunised against influenza. This compares with around 73% of the general Australian population aged 65 and over in the Newspoll Omnibus Survey (DoH 2014b). But the methods of the 2 collections differ. The nKPIs look at whether a primary health care organisation has a record that its regular client has been immunised. This is likely to underestimate the true rate of immunisation, as some clients would have received influenza vaccinations elsewhere and not informed the primary health care organisation.

Additionally, the nKPIs capture the proportion of clients aged over 50 who were immunised in the previous 12 months, whereas the Newspoll Omnibus Survey captures the proportion of clients aged over 65 over the past 6 months (January to June). Further, as the Newspoll Omnibus Survey relies on people's recall of whether they have been immunised in the six months, this may lead to skewed results.

Comparing nKPI results with those of all Australians from population surveys suggests that smoking rates among Indigenous people might be about 3.3 times as high as the non-Indigenous population. A lower proportion of Indigenous people than non-Indigenous people have a BMI classified as overweight, but a larger proportion of Indigenous people have a BMI classified as obese.

Table C1: National Key Performance Indicator results, December 2017

Indicator	Subcomponent	Numerator	Denominator	Mean (%)	Bottom quarter (%)	Top quarter (%)	Comparable national data (%)	Comparable national data collection
Maternal and child health indicators								
PI13: First antenatal visit	Before 13 weeks	2,597	6,300	41.2	18.8	52.9	56.4[a]	NPDC
PI03: MBS health assessment	Aged 0–4	13,846	39,935	34.7	16.0	45.6	29.4	Medicare Australia
PI04: Child immunisation[b]	12–<24 months	6,529	8,915	73.2	62.5	92.1	92.2	AIR
	24–<36 months	6,229	8,999	69.2	50.0	95.6	88.2	AIR
	60–<72 months	5,466	8,378	65.2	50.0	99.6	96.2	AIR
PI02: Birthweight result[c]	Low	711	5,754	12.4	—	15.7	10.2	NPDC
	Normal	4,915	5,754	85.4	81.5	100.0	88.4	NPDC
	High	128	5,754	2.2	—	2.2	1.4	NPDC
PI11: Smoking status of females who gave birth within the previous 12 months	Current smoker	2,915	5,855	49.8	38.5	62.5	44.1[d]	NPDC
	Ex-smoker	918	5,855	15.7	3.8	22.2	†	
	Never smoked	2,022	5,855	34.5	22.2	42.3	†	

(continued)

Table C1 (continued): National Key Performance Indicator results, December 2017

Indicator	Subcomponent	Numerator	Denominator	Mean (%)	Bottom quarter (%)	Upper quarter (%)	Comparable national data (%)	Comparable national data collection
Preventative health indicators								
PI03: MBS health assessment	Aged 25 and over	86,933	172,169	50.5	26.7	57.9	64.8[(e)]	Medicare Australia
PI14: Immunised against influenza	Aged 50 and over	21,704	61,011	35.6	26.3	46.9	56.8	AATSIHS 2012–13
PI10: Smoking status result	Current smoker	96,058	186,680	51.5	45.4	58.6	41.9	NATSISS 2014–15
	Ex-smoker	29,326	186,680	15.7	11.6	18.2	22.4	NATSISS 2014–15
	Never smoked	61,296	186,680	32.8	26.1	38.5	35.7	NATSISS 2014–15
PI12: BMI classified as overweight or obese	Overweight or obese	84,641	119,648	70.7	66.9	76.5	73.5	AATSIHS 2012–13

† The nKPIs are the only source of national data for Indigenous Australians for these indicators.

(a) Data are based on Indigenous status of the mother. Data are for mothers who gave birth to a baby of at least 20 weeks' gestation. Includes results for 'not stated' for greater comparability with nKPI data.

(b) The nKPI collection currently underestimates the proportion of Aboriginal and Torres Strait Islander children who have been immunised because it relies on organisations' internal records.

(c) Data are based on Indigenous status of the mother. Data relate to live born singleton babies of at least 20 weeks' gestation. Low birthweight is defined as less than 2,500 grams.

(d) Data are based on Indigenous status of the mother. Data relate to mother's smoking status at any time during pregnancy. Data are for women who gave birth to a baby of at least 20 weeks' gestation. Excludes women whose smoking status during pregnancy was not stated.

(e) Data are for January 2016–December 2017 (24 months), and do not exclude double-counting. As a result, comparisons with nKPI data, which removes double-counting, should be interpreted with caution.

Notes

1. Data are for organisations that provided valid data. The total number of organisations that participated in the nKPI data collection process in December 2017 was 231.

2. AATSIHS data are for 2012–13 (ABS 2014, 2016a; AIHW analysis of ABS data); AIR data are as at 27 April 2018 (DoH 2018a); Medicare Australia data are for January 2017–December 2017 (PI03: MBS health assessment—aged 0–4) or January 2016–June 2017 (PI03: MBS health assessment—aged 25 and over) (DHS 2018); NATSISS data are for 2014–15 (ABS 2016b); NPDC data are for 2016 (AIHW analysis of the NPDC).

3. AIR data are for children aged 12–<15 months, 24–<27 months, and 60–<63 months, while nKPI data are for children aged 12–<24 months, 24–<36 months and 60–<72 months.

Sources: AATSIHS; AIR; AIHW nKPI data collection; NPDC; DHS; NATSISS.

Table C2: National Key Performance Indicator results, December 2017, with non-Indigenous comparisons

Indicator	Subcomponent	nKPI result (%)	Indigenous (%)	Non-Indigenous (%)	General population (%)	Comparison source
Maternal and child health indicators						
PI13: First antenatal visit	Before 13 weeks	41.2	56.4	62.1	61.9[a]	NPDC[b]
PI02: Birthweight result	Low	12.4	10.2	4.8	5.1[a]	NPDC[c]
PI11: Smoking status of females who gave birth within the previous 12 months	Current smoker	49.8	44.1	8.3	9.9[a]	NPDC[d]
Preventative health indicators						
PI22: Cervical screening	Previous 2 years	27.1	†	..	55.4	National Cervical Screening Program[e]
	Previous 3 years	35.5	†	..	68.6	National Cervical Screening Program[e]
	Previous 5 years	43.7	†	..	81.9	National Cervical Screening Program[e]
PI14: Immunised against influenza	Aged 50 and over	35.6	56.8	..	73	AATSIHS 2012–13 Newspoll Omnibus Survey[f]
PI10: Smoking status result	Current smoker	51.5	41.9	..	15.5	NATSISS 2014–15[g]
	Ex-smoker	15.7	22.4	..	30	National Health Survey 2014–15[g]
	Never smoked	32.8	35.7	..	54.6	
PI12: BMI classified as overweight or obese	Overweight	27.1	30.3	37.5	37.5	AATSIHS 2012–13[h]
	Obese	43.6	43.3	29.3	29.4	Australian Health Survey 2011–12[h]

† The nKPIs are the only source of national data for Indigenous Australians for these indicators.

(a) General population comparison data include mothers/births to mothers whose Indigenous status was not stated.

(b) Comparison data are based on Indigenous status of the mother. Data are for mothers who gave birth to a baby of at least 20 weeks' gestation. Includes results for 'not stated' for greater comparability with nKPI data.

(c) Comparison data are based on Indigenous status of the mother. Data relate to live singleton births of at least 20 weeks' gestation. Low birthweight is defined as less than 2,500 grams.

(d) Comparison data are based on Indigenous status of the mother. Data relate to the mother's smoking status at any time during pregnancy. Data are for women who gave birth to a baby of at least 20 weeks' gestation. Excludes women whose smoking status during pregnancy was not stated.

(e) Comparison data are for 2015–2016 (2 years), 2014–2016 (3 years), and 2012–2016 (5 years). Calculations are for the number of women screening as a percentage of the ABS estimated resident population for women aged 20–69.

(continued)

Table C2 (continued): National Key Performance Indicator results, December 2017, with non-Indigenous comparisons

(f) Comparison Indigenous data are from a national population survey. Comparison general population data are from a population survey for people aged 65 and over. Results are also for 6 months, in contrast to the nKPI collection which captures 12 months.

(g) Comparison data are from 2014–15 and are based on population surveys, not health organisation records.

(h) Comparison Indigenous and non-Indigenous data are from AATSIHS 2012–13; general population comparison data are from Australian Health Survey 2011–12. Both sources population surveys, not health organisation records.

Note: AATSIHS data are for 2012–13 (ABS 2014, 2016a; AIHW analysis of ABS data); Australian Health Survey data are for 2011–12 (ABS 2013); AIR data are as at 27 April 2018 (DoH 2018a); Medicare Australia data are for January 2017–December 2017 (PI03: MBS health assessment—aged 0–4) or January 2016–June 2017 (PI03: MBS health assessment—aged 25 and over) (DHS 2018); NATSISS data are for 2014–15 (ABS 2016b); National Health Survey data are for 2014 (DoH 2014b); National Health Survey data are for 2014–15 (ABS 2015); NPDC data are for 2016 (AIHW analysis of the NPDC).

Sources: AATSIHS; NPDC; Australian Health Survey; AIR; DHS; NATSISS; National Cervical Screening Program; National Health Survey; Newspoll Omnibus Survey.

Appendix D: State and territory and remoteness variation figures

Two types of information are presented in the figures in this appendix. The interquartile range provides a measure of variation of results of organisations in a jurisdiction or level of remoteness. It is equal to the difference between the 75th and 25th percentiles. Organisation median values show the point above and below which 50% of organisations are performing.

Figure D1: First antenatal visit before 13 weeks, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)
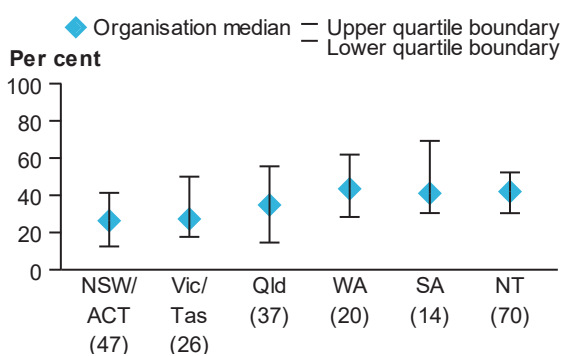
Note: Number of organisations is in brackets.

Figure D2: First antenatal visit before 13 weeks, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)
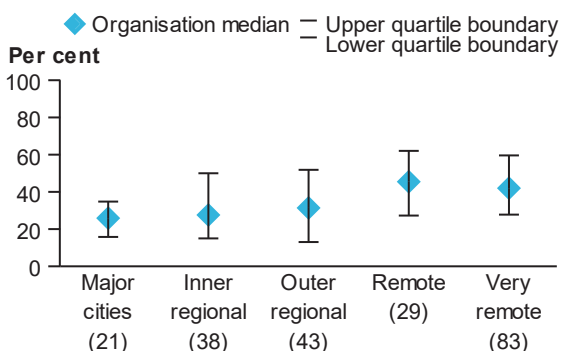
Note: Number of organisations is in brackets.

Figure D3: Birthweight recorded, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)
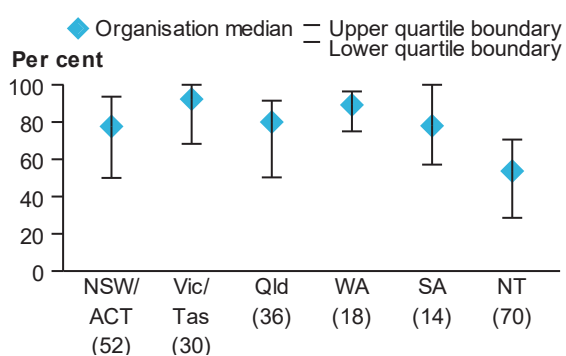
Note: Number of organisations is in brackets.

Figure D4: Birthweight recorded, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)
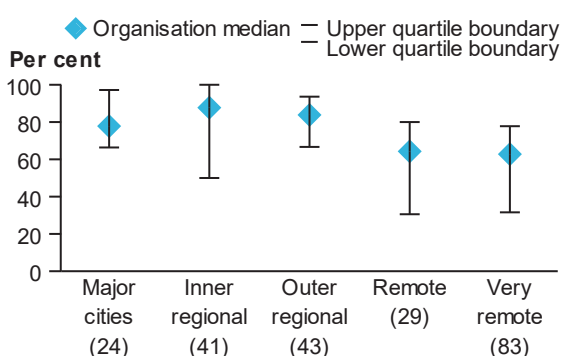
Note: Number of organisations is in brackets.

Figure D5: MBS health assessment— aged 0–4, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median ─ Upper quartile boundary
Lower quartile boundary

Per cent
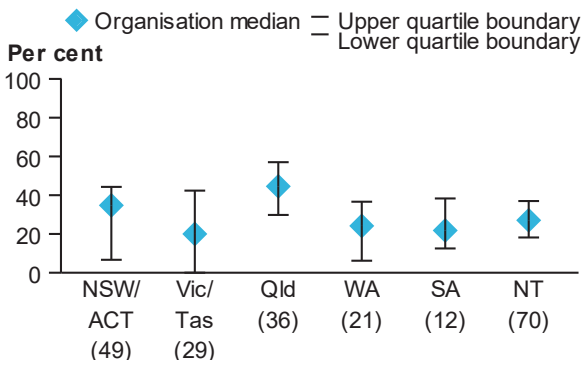
Note: Number of organisations is in brackets.

Figure D6: MBS health assessment— aged 0–4, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median ─ Upper quartile boundary
Lower quartile boundary

Per cent
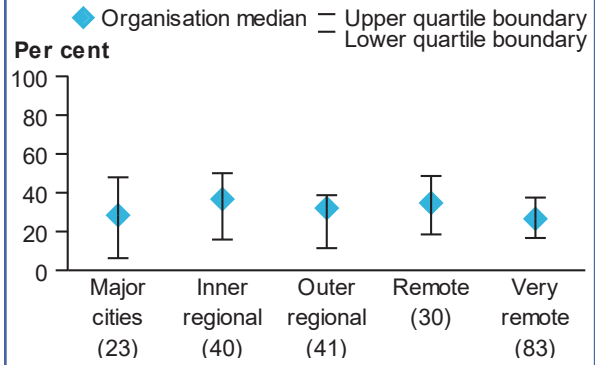
Note: Number of organisations is in brackets.

Figure D7: Birthweight result—low, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median ─ Upper quartile boundary
Lower quartile boundary

Per cent
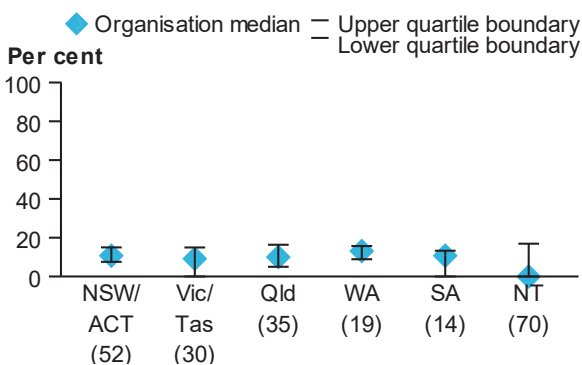
Note: Number of organisations is in brackets.

Figure D8: Birthweight result—low, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median ─ Upper quartile boundary
Lower quartile boundary

Per cent
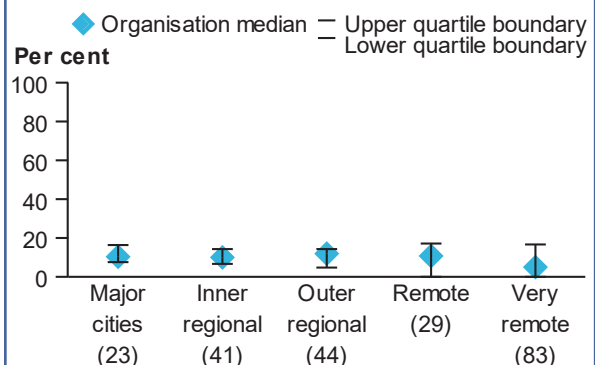
Note: Number of organisations is in brackets.

Figure D9: Smoking status of women who gave birth in the previous 12 months—current smoker, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median ─ Upper quartile boundary
Lower quartile boundary

Per cent
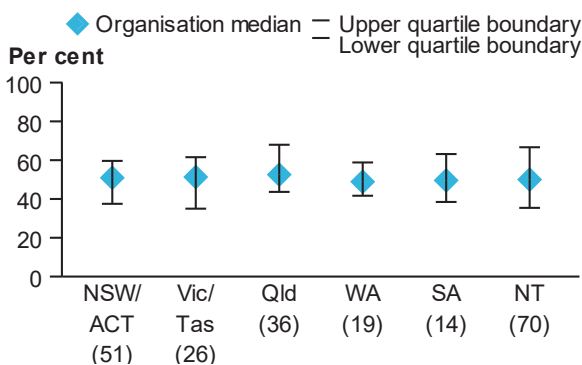
Note: Number of organisations is in brackets.

Figure D10: Smoking status of women who gave birth in the previous 12 months—current smoker, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median ─ Upper quartile boundary
Lower quartile boundary

Per cent
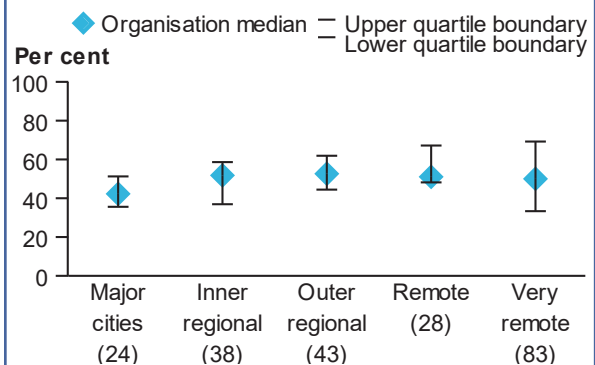
Note: Number of organisations is in brackets.

Figure D11: Smoking status recorded, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)
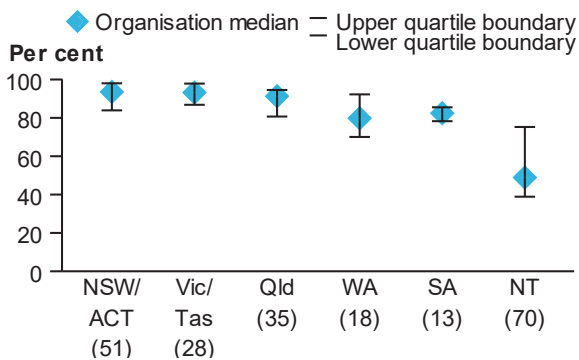
Note: Number of organisations is in brackets.

Figure D12: Smoking status recorded, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)
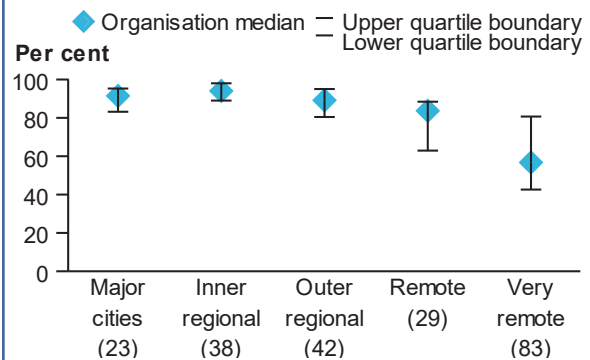
Note: Number of organisations is in brackets.

Figure D13: Alcohol consumption recorded, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)
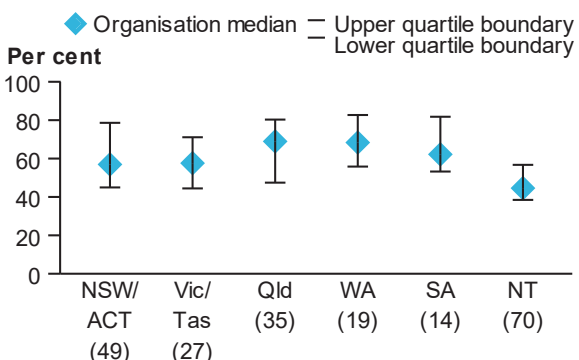
Note: Number of organisations is in brackets.

Figure D14: Alcohol consumption recorded, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)
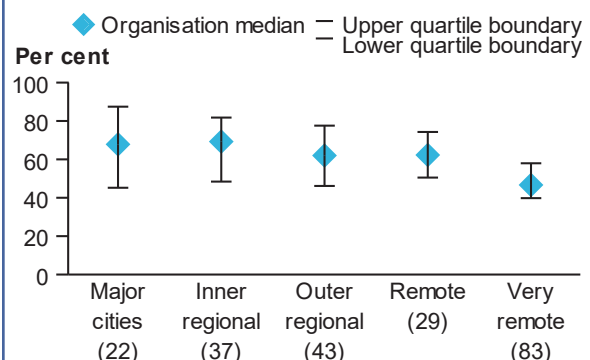
Note: Number of organisations is in brackets.

Figure D15: MBS health assessment—aged 25 and over, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)
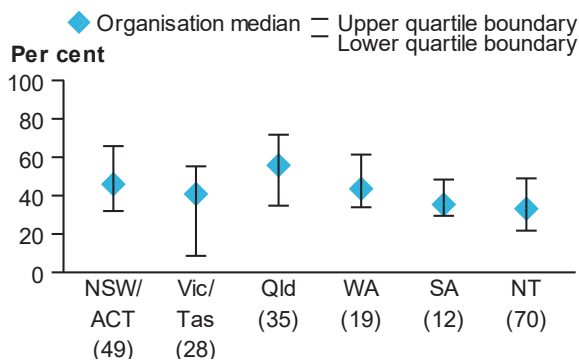
Note: Number of organisations is in brackets.

Figure D16: MBS health assessment—aged 25 and over, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)
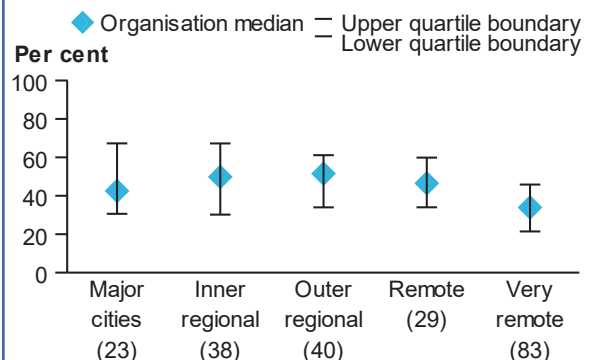
Note: Number of organisations is in brackets.

Figure D17: Risk factors assessed to enable CVD assessment, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median — Upper quartile boundary
                          Lower quartile boundary

Per cent

x-axis: NSW/ACT (39), Vic/Tas (25), Qld (33), WA (19), SA (12), NT (70)
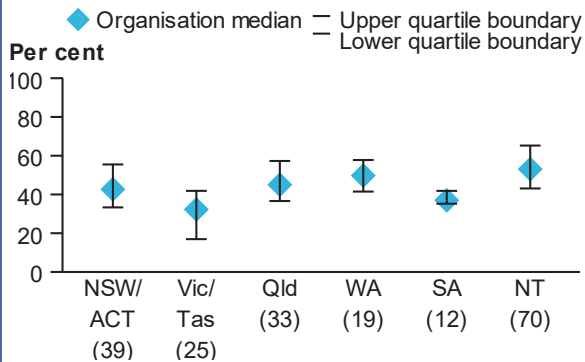
Note: Number of organisations is in brackets.

Figure D18: Risk factors assessed to enable CVD assessment, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median — Upper quartile boundary
                          Lower quartile boundary

Per cent

x-axis: Major cities (16), Inner regional (32), Outer regional (39), Remote (29), Very remote (82)
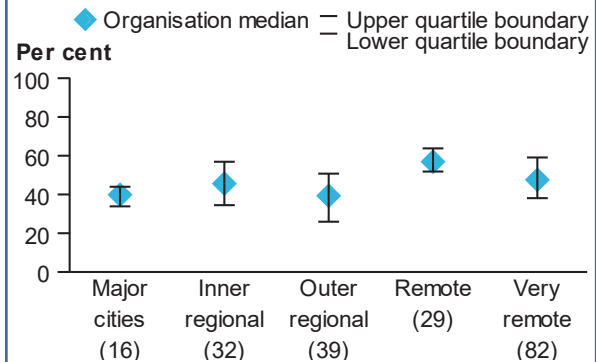
Note: Number of organisations is in brackets.

Figure D19: Cervical screening—previous 2 years, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median — Upper quartile boundary
                          Lower quartile boundary

Per cent

x-axis: NSW/ACT (47), Vic/Tas (27), Qld (35), WA (19), SA (12), NT (69)
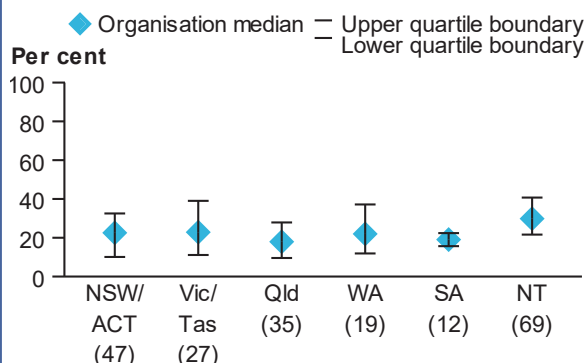
Note: Number of organisations is in brackets.

Figure D20: Cervical screening—previous 2 years, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median — Upper quartile boundary
                          Lower quartile boundary

Per cent

x-axis: Major cities (20), Inner regional (38), Outer regional (40), Remote (29), Very remote (82)
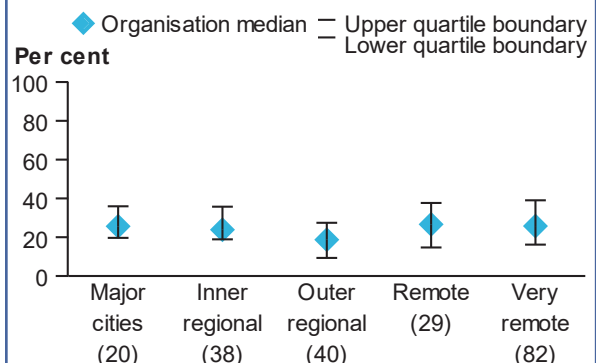
Note: Number of organisations is in brackets.

Figure D21: Immunised against influenza—clients aged 50 and over, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median — Upper quartile boundary
                          Lower quartile boundary

Per cent

x-axis: NSW/ACT (45), Vic/Tas (27), Qld (36), WA (19), SA (12), NT (70)
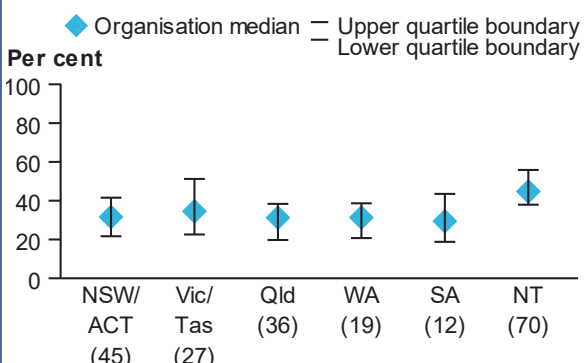
Note: Number of organisations is in brackets.

Figure D22: Immunised against influenza—clients aged 50 and over, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median — Upper quartile boundary
                          Lower quartile boundary

Per cent

x-axis: Major cities (20), Inner regional (37), Outer regional (40), Remote (29), Very remote (83)
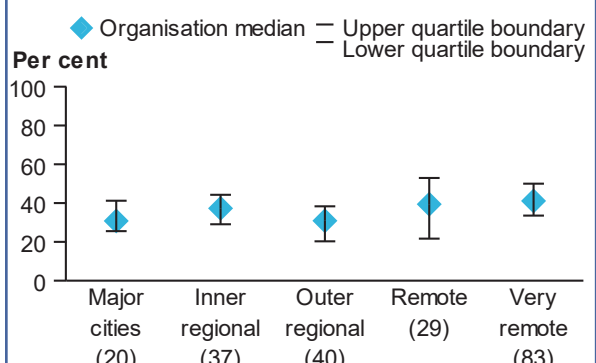
Note: Number of organisations is in brackets.

Figure D23: Smoking status result—current smoker, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)
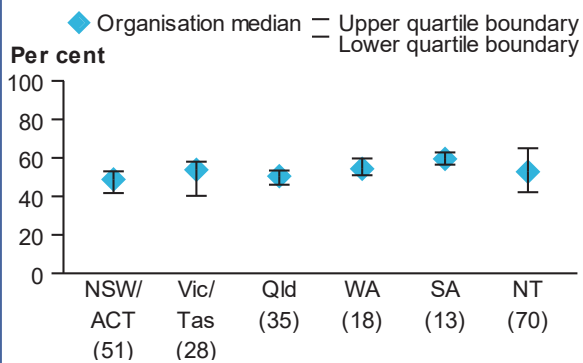
Note: Number of organisations is in brackets.

Figure D24: Smoking status result—current smoker, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)
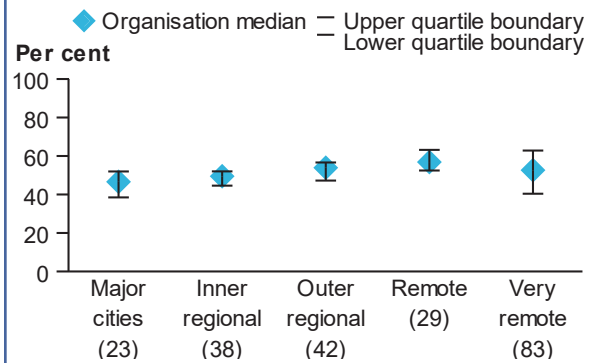
Note: Number of organisations is in brackets.

Figure D25: BMI classified as overweight or obese, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)
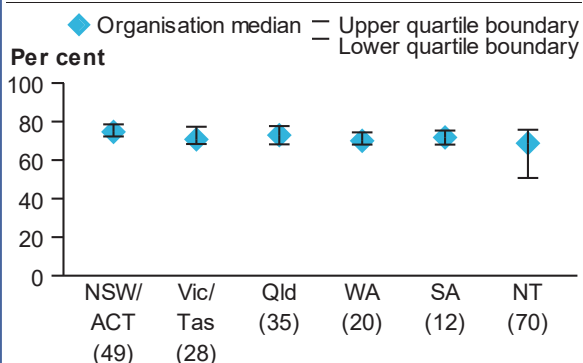
Note: Number of organisations is in brackets.

Figure D26: BMI classified as overweight or obese, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)
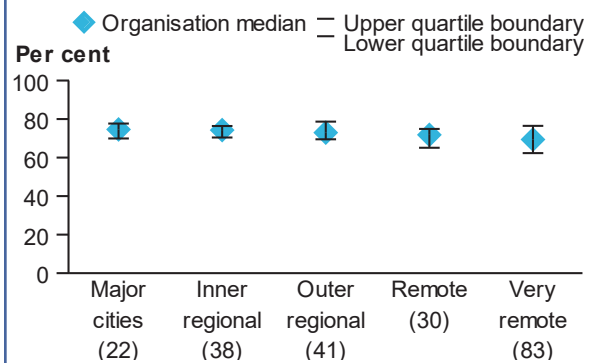
Note: Number of organisations is in brackets.

Figure D27: AUDIT-C result—4 or over for men or 3 or over for women, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)
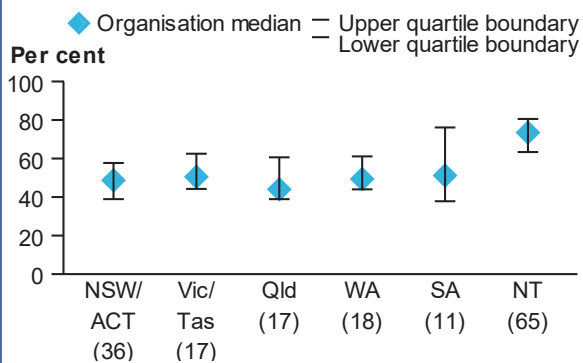
Note: Number of organisations is in brackets.

Figure D28: AUDIT-C result—4 or over for men or 3 or over for women, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)
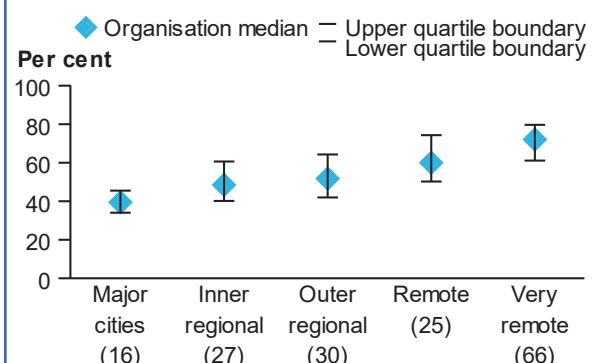
Note: Number of organisations is in brackets.

Figure D29: CVD risk assessment result—high risk, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median ─ Upper quartile boundary
─ Lower quartile boundary

Per cent

Note: Number of organisations is in brackets.
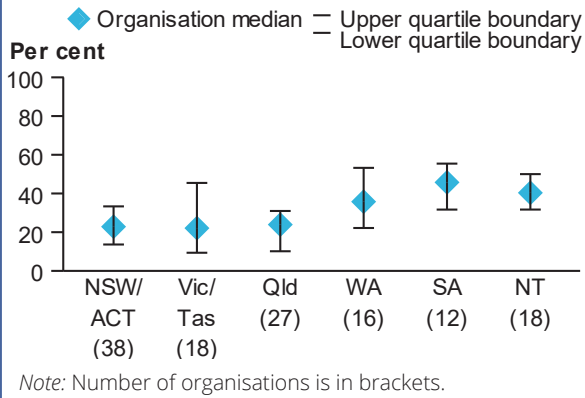
Figure D30: CVD risk assessment result—high risk, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median ─ Upper quartile boundary
─ Lower quartile boundary

Per cent

Note: Number of organisations is in brackets.
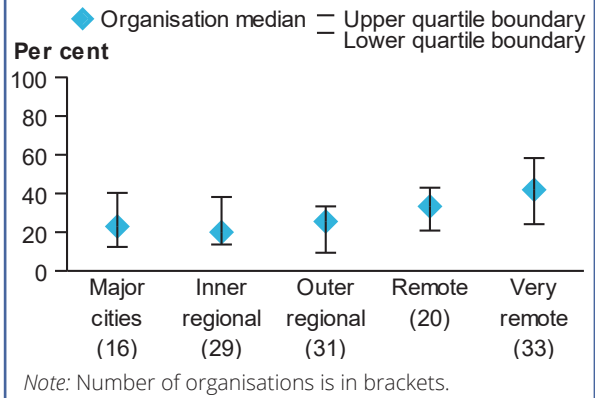
Figure D31: General Practitioner Management Plan claimed, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median ─ Upper quartile boundary
─ Lower quartile boundary

Per cent

Note: Number of organisations is in brackets.
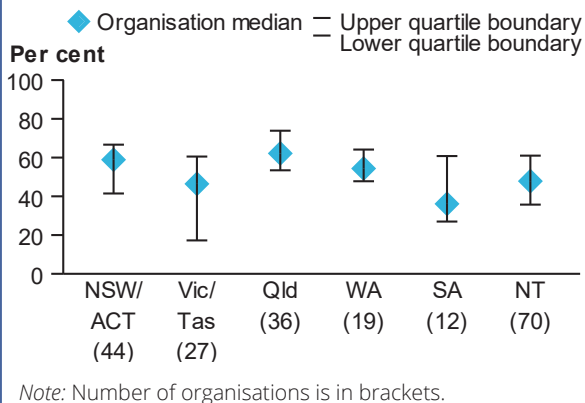
Figure D32: General Practitioner Management Plan claimed, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median ─ Upper quartile boundary
─ Lower quartile boundary

Per cent

Note: Number of organisations is in brackets.
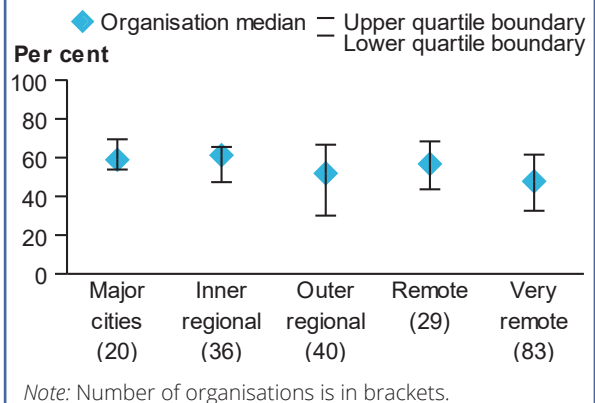
Figure D33: Team Care Arrangement claimed, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median ─ Upper quartile boundary
─ Lower quartile boundary

Per cent

Note: Number of organisations is in brackets.
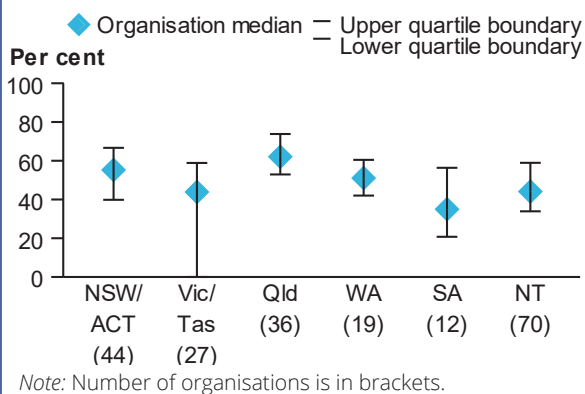
Figure D34: Team Care Arrangement claimed, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median ─ Upper quartile boundary
─ Lower quartile boundary

Per cent

Note: Number of organisations is in brackets.
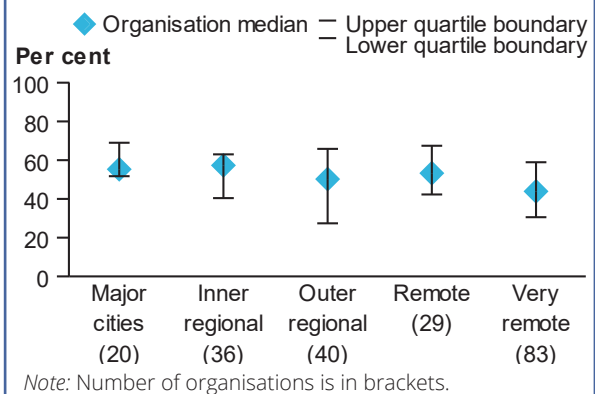
Figure D35: Blood pressure recorded—clients with type 2 diabetes, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median — Upper quartile boundary
— Lower quartile boundary

Per cent

NSW/ACT (42), Vic/Tas (27), Qld (36), WA (19), SA (12), NT (70)
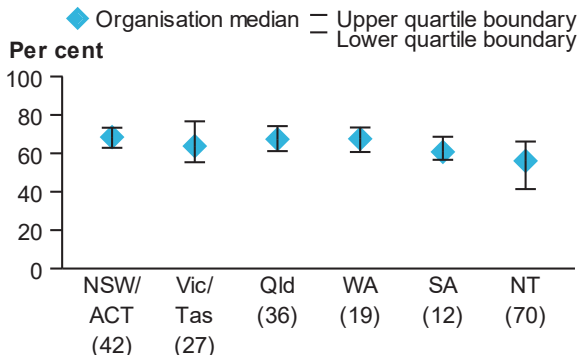
Note: Number of organisations is in brackets.

Figure D36: Blood pressure recorded—clients with type 2 diabetes, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median — Upper quartile boundary
— Lower quartile boundary

Per cent

Major cities (20), Inner regional (34), Outer regional (40), Remote (29), Very remote (83)
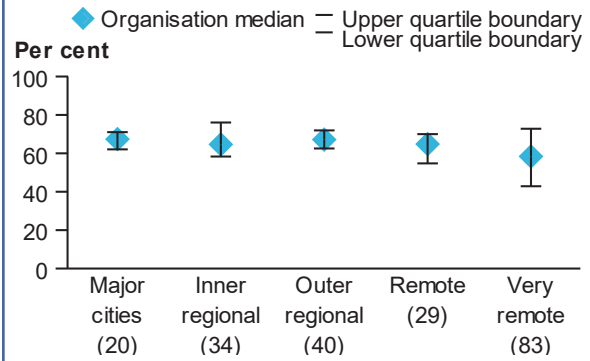
Note: Number of organisations is in brackets.

Figure D37: HbA1c result recorded (6 months)—clients with type 2 diabetes, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median — Upper quartile boundary
— Lower quartile boundary

Per cent

NSW/ACT (43), Vic/Tas (25), Qld (35), WA (19), SA (12), NT (70)
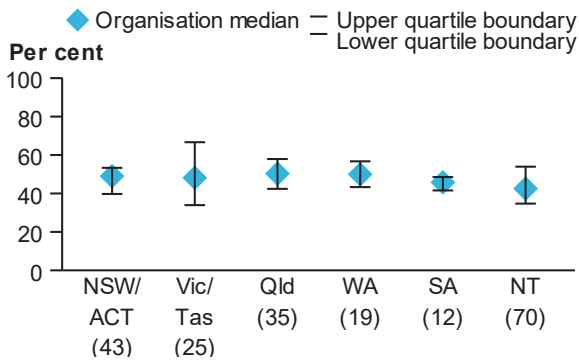
Note: Number of organisations is in brackets.

Figure D38: HbA1c result recorded (6 months)—clients with type 2 diabetes, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median — Upper quartile boundary
— Lower quartile boundary

Per cent

Major cities (18), Inner regional (34), Outer regional (40), Remote (29), Very remote (83)
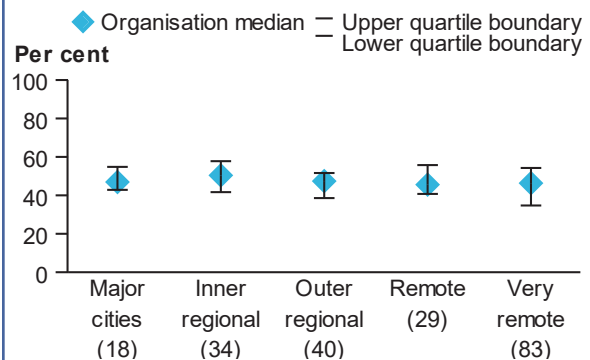
Note: Number of organisations is in brackets.

Figure D39: Kidney function test recorded—clients with type 2 diabetes, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median — Upper quartile boundary
— Lower quartile boundary

Per cent

NSW/ACT (22), Vic/Tas (18), Qld (11), WA (18), SA (12), NT (70)
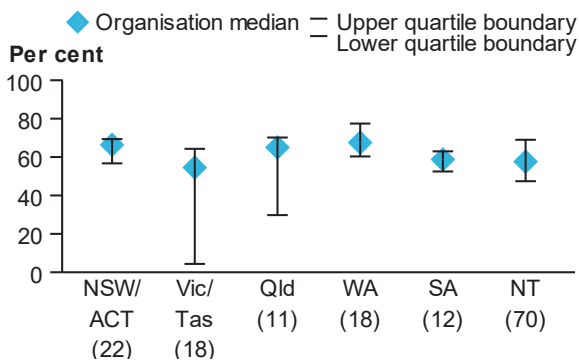
Note: Number of organisations is in brackets.

Figure D40: Kidney function test recorded—clients with type 2 diabetes, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median — Upper quartile boundary
— Lower quartile boundary

Per cent

Major cities (11), Inner regional (17), Outer regional (26), Remote (23), Very remote (74)
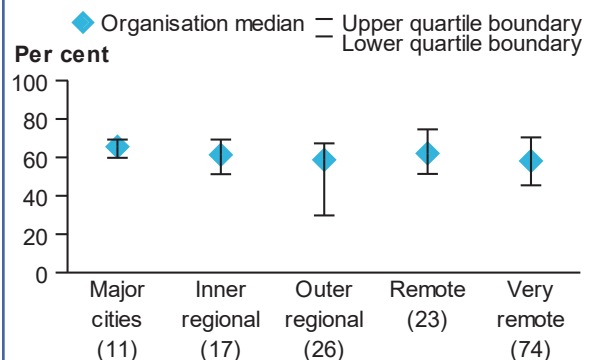
Note: Number of organisations is in brackets.

Figure D41: Kidney function test recorded—clients with CVD, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median   ─ Upper quartile boundary
                         ─ Lower quartile boundary

Per cent

NSW/ACT (21), Vic/Tas (18), Qld (10), WA (19), SA (12), NT (70)
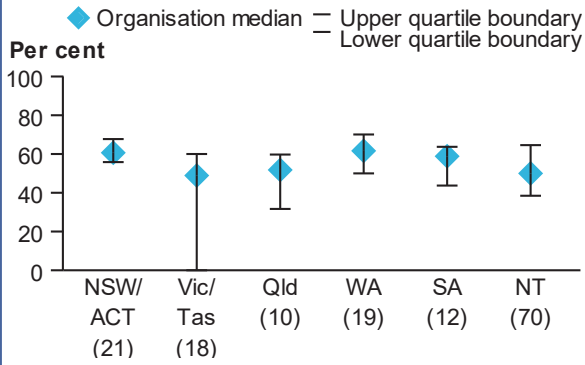
Note: Number of organisations is in brackets.

Figure D42: Kidney function test recorded—clients with CVD, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median   ─ Upper quartile boundary
                         ─ Lower quartile boundary

Per cent

Major cities (12), Inner regional (17), Outer regional (24), Remote (23), Very remote (74)
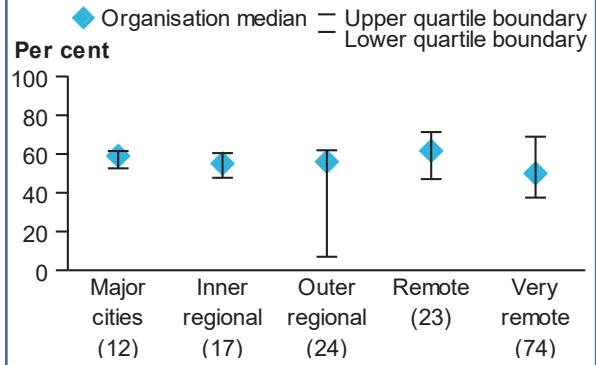
Note: Number of organisations is in brackets.

Figure D43: Immunised against influenza—clients with type 2 diabetes, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median   ─ Upper quartile boundary
                         ─ Lower quartile boundary

Per cent

NSW/ACT (43), Vic/Tas (26), Qld (35), WA (20), SA (12), NT (70)
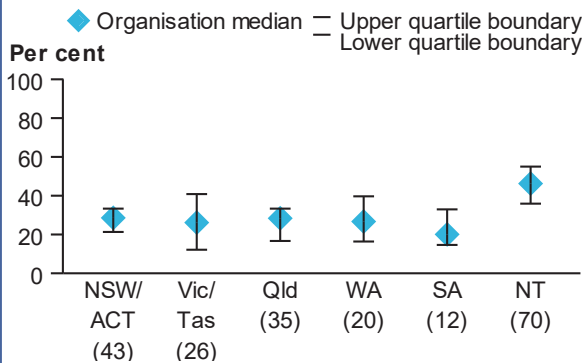
Note: Number of organisations is in brackets.

Figure D44: Immunised against influenza—clients with type 2 diabetes, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median   ─ Upper quartile boundary
                         ─ Lower quartile boundary

Per cent

Major cities (19), Inner regional (34), Outer regional (40), Remote (30), Very remote (83)
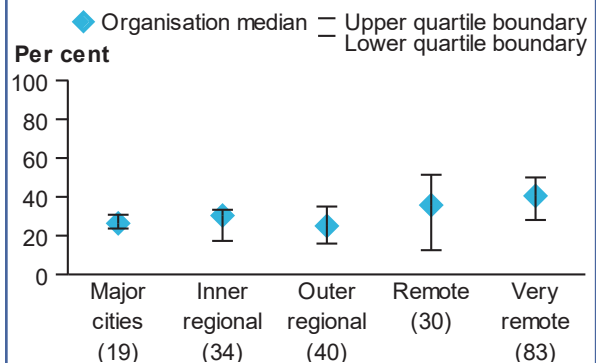
Note: Number of organisations is in brackets.

Figure D45: Immunised against influenza—clients with COPD, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median   ─ Upper quartile boundary
                         ─ Lower quartile boundary

Per cent

NSW/ACT (44), Vic/Tas (25), Qld (36), WA (20), SA (12), NT (70)
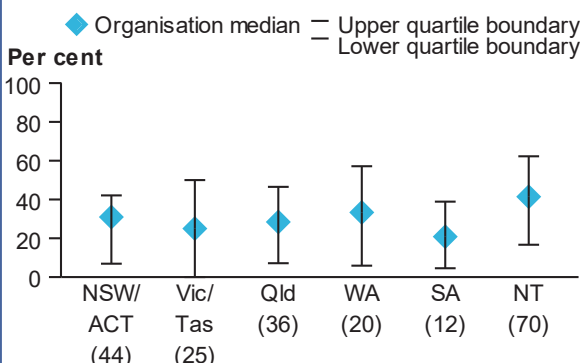
Note: Number of organisations is in brackets.

Figure D46: Immunised against influenza—clients with COPD, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median   ─ Upper quartile boundary
                         ─ Lower quartile boundary

Per cent

Major cities (20), Inner regional (35), Outer regional (39), Remote (30), Very remote (83)
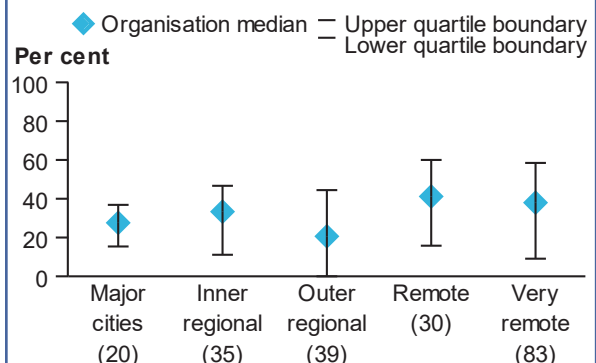
Note: Number of organisations is in brackets.

Figure D47: Blood pressure result of 130/80 mmHg or less—clients with type 2 diabetes, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)
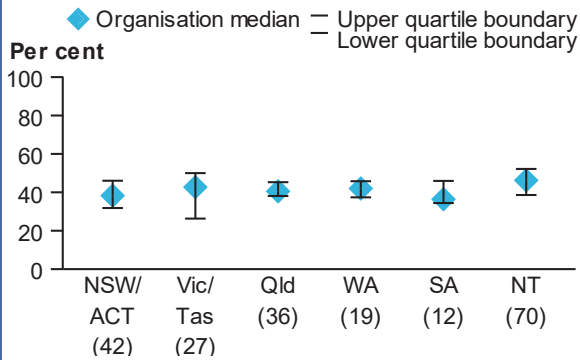
Note: Number of organisations is in brackets.

Figure D48: Blood pressure result of 130/80 mmHg or less—clients with type 2 diabetes, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)
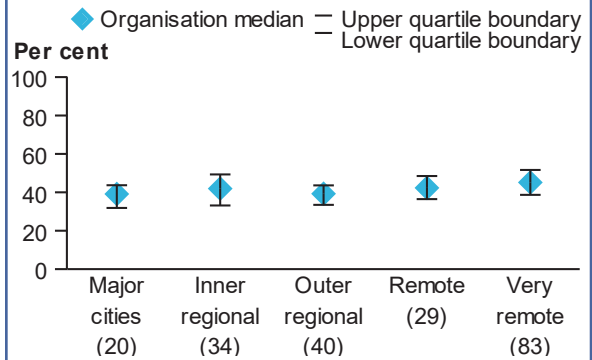
Note: Number of organisations is in brackets.

Figure D49: HbA1c result of 7% or less (6 months)—clients with type 2 diabetes, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)
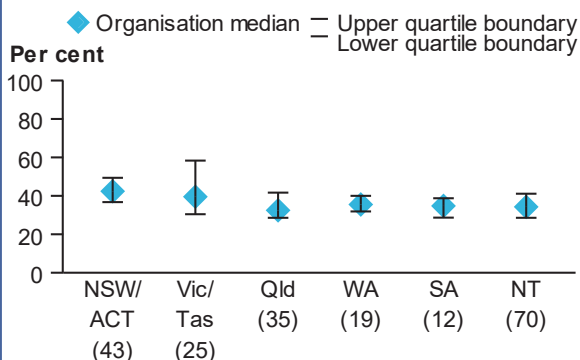
Note: Number of organisations is in brackets.

Figure D50: HbA1c result of 7% or less (6 months)—clients with type 2 diabetes, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)
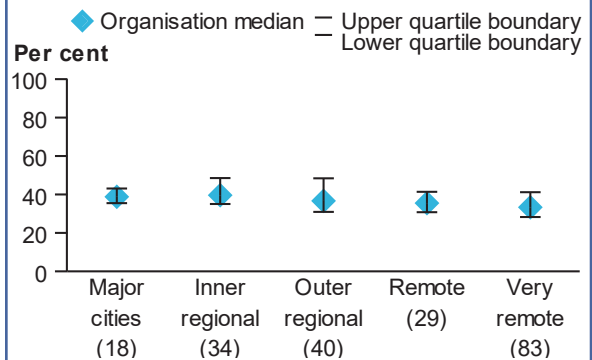
Note: Number of organisations is in brackets.

Figure D51: Kidney function test result of 60 mL/min/1.73 m² or over—clients with type 2 diabetes, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)
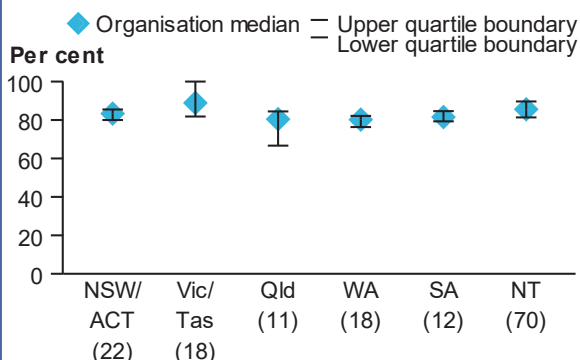
Note: Number of organisations is in brackets.

Figure D52: Kidney function test result of 60 mL/min/1.73 m² or over—clients with type 2 diabetes, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)
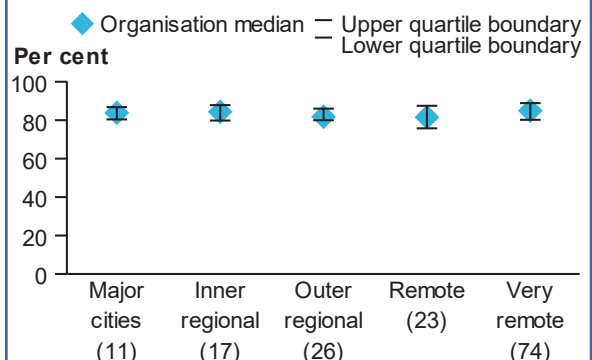
Note: Number of organisations is in brackets.

Figure D53: Kidney function test result of 60 mL/min/1.73 m² or over—clients with CVD, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median — Upper quartile boundary
— Lower quartile boundary

Per cent

NSW/ACT (21), Vic/Tas (18), Qld (10), WA (19), SA (12), NT (70)
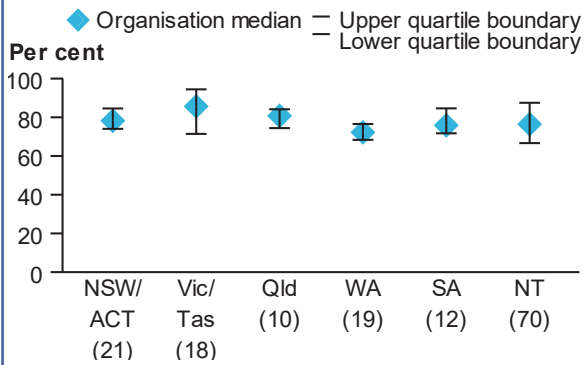
Note: Number of organisations is in brackets.

Figure D54: Kidney function test result of 60 mL/min/1.73 m² or over—clients with CVD, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median — Upper quartile boundary
— Lower quartile boundary

Per cent

Major cities (12), Inner regional (17), Outer regional (24), Remote (23), Very remote (74)
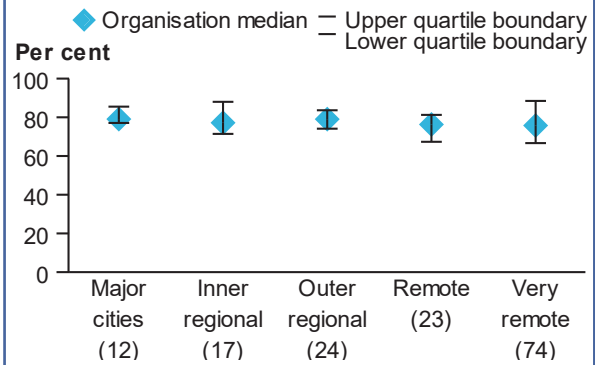
Note: Number of organisations is in brackets.

Figure D55: Kidney function test result of less than 2.5 for males or less than 3.5 for females—clients with type 2 diabetes, by state and territory, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median — Upper quartile boundary
— Lower quartile boundary

Per cent

NSW/ACT (22), Vic/Tas (18), Qld (11), WA (18), SA (12), NT (70)
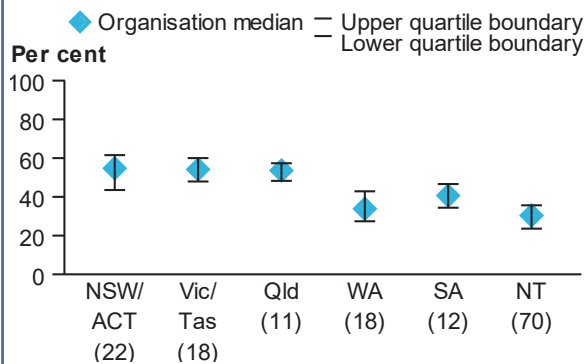
Note: Number of organisations is in brackets.

Figure D56: Kidney function test result of less than 2.5 for males or less than 3.5 for females—clients with type 2 diabetes, by remoteness area, with median and quartile boundaries of organisations, December 2017 (%)

◆ Organisation median — Upper quartile boundary
— Lower quartile boundary

Per cent

Major cities (11), Inner regional (17), Outer regional (26), Remote (23), Very remote (74)
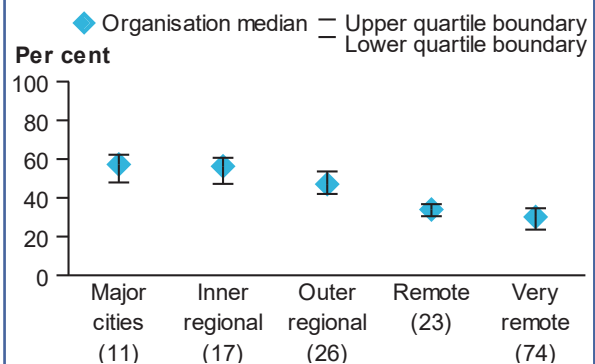
Note: Number of organisations is in brackets.

Appendix E: Data improvement projects

This section on the work being done to improve data quality was written by the Department of Health.

Background

In 2011, the National Aboriginal and Torres Strait Islander Health Plan 2013-2023 was developed, and the AHMAC approved a set of 24 nKPIs to track and evaluate the Closing the Gap health outcomes of Aboriginal and Torres Strait Islander people.

The nKPIs have been collected bi-annually since June 2012 (starting with about 90 organisations, and growing to about 230 in the December 2017 collection period). The AIHW has produced national reports on the data set since May 2014.

The nKPIs are a mix of process-of-care and health-outcome indicators. They focus on chronic disease prevention and management and maternal and child health, which are 2 key areas for achieving the objective of Closing the Gap in life expectancy between Indigenous and non-Indigenous Australians.

During the initial years of nKPI and OSR reporting, data were extracted from health organisations' CIS, and values were calculated from that data by third-party software products. These data were then stored in OCHREStreams, a data portal developed and managed by an external provider.

While this resulted in a stable collection process, and consistency in the data flowing through to the AIHW during 2012–2015, the data transformations coded by the extraction products were never externally checked, nor was an objective validation done to confirm that the results were comparable or accurate.

The third-party data extraction and transformation process imposed a level of consistency across the CISs, but some health organisations in the Aboriginal Community Controlled Health Services sector felt that these calculated values did not reflect their underlying data, and some CIS vendors observed that the process of making data from different systems consistent resulted in a loss of data fidelity.

A decision was made in 2017 to remove the need for extraction tools entirely by working with CIS vendors to develop 'direct load'—the capability in each CIS to extract, transform, encrypt, and send nKPI and OSR data directly to the data portal.

In parallel, DoH replaced the OCHREStreams data portal from 2018 by improving its existing enterprise Health Data Portal and Enterprise Data Warehouse to add functionality for Indigenous data collection. As well as further reducing reliance on external providers, the Health Data Portal will provide a simple, reliable and up-to-date mechanism, supporting modern data analytics capability, and aligning with the relevant Australian Government digital transformation standards.

Current and planned data quality improvement initiatives

In June 2017 the mechanism for direct load from CIS to OCHREStreams was used for the first time. In parallel, a project started to objectively validate the nKPI values calculated through direct load by 3 of the major CISs (Communicare, MMEx, and Medical Director). Further, a validation process for OSR values is scheduled for completion during 2018. The focus now is to maintain and progressively improve the direct-load collection mechanism and the quality of the data collected, across all parts of the collection chain.

The projects to implement direct load, and to add Indigenous reporting capability to the Health Data Portal are key enablers for various data quality improvement projects currently under way or planned. Each project falls the categories of:

- data quality—storage and access (improvements in the way in which submitted data are received, stored, and made accessible)
- data quality—generation and transmission (improvements to the accuracy of the directload data from each CIS, and the consistency of data calculations between CISs)
- data quality—content and currency (improvements to data practices and processes in health organisations, along with activities to keep collections up to date).

Data quality—storage and access

The key project in this category is the DoH Health Data Portal. The new portal will replace the current OCHREStreams portal from December 2018. The expected benefits from this project include:

- higher levels of sector acceptance and take-up resulting from the Health Data Portal codesign process used to plan and implement the portal, which involved consultation workshops around Australia throughout the design and development phases, along with continuous sector feedback on prototypes of key features
- faster turnaround, more engaged health organisations, and streamlining of work, because automated validation on submission and revision of data, which will empower health organisations to fix identified problems, and respond with comments to identified potential problems before data submissions reach the AIHW
- a data dashboard, showing each health organisation its own data and comparison data, which will further engage and empower many health organisation, giving them timely and early insight into how their results compare to, for example, national averages and nKPI trajectories relevant to the Implementation Plan for the National Aboriginal and Torres Strait Islander Health Plan. For many health organisations, this will directly support local efforts to improve data quality between collections.

Data quality—generation and transmission

Following on from the initial validation of nKPI and OSR data during 2017, the Data Validation Project will deliver a repeatable nKPI/OSR data validation process, using a specially developed control data set of a minimum of 700 dummy patient records, designed to test each vendor's process for producing nKPI and OSR data values.

This will enable DoH (or other parties) to re-validate test data in any clinical system when CIS vendors issue software updates or when indicators are changed. This validation process, to be in place in 2018, will provide assurance to the sector that changes to their clinical software by CIS vendors will not degrade their data quality.

During 2018, the nKPI/OSR Specification Harmonisation project will see the removal of any differences between the master nKPI definition in METeOR, the AIHW User Guide and Improvement Foundation documents which provide additional information for CIS vendors. This will ensure we eliminate misunderstandings and help to reduce the impact on data quality of vendor interpretation of the specifications.

During 2018, Best Practice Software will develop a direct-load capability, bringing it into line with Communicare, Medical Director and MMEx. This will allow Best Practice health services to report directly from its system, saving time for health services as well as producing better-quality data.

DoH's newly-formed Clinical Coding Working Group will help map relevant chronic disease codes across Communicare (International Classification of Primary Care 2nd edition), MMEx (Systematized Nomenclature of Medicine; SNOMED), Medical Director (doctor command language; DOCLE), and International Statistical Classification of Diseases and Related Health Problems 10th revision; ICD-10). This will result in greater data consistency across the major CISs.

Data quality—content and currency

The Data Quality Assessment and Support Project has focused on reviewing and making recommendations for improving data within health services, as well as sharing examples of good practice within the sector.

This project involved multi-skilled teams visiting 53 reporting health services to review and assess aspects of their data practices and processes, especially those relevant to the proposed Indigenous Australians' Health Programme Funding Model (scheduled for implementation from 1 July 2019).

This delivered immediate benefits to health services through the review process, and an individual report with recommendations. Feedback from health services was very positive.

The project also provided DoH with an overall understanding of the maturity of data management processes among participating services. It established areas of focus for any future data quality improvement support activities. Further work might be considered to better support the development of the data maturity of the sector.

By documenting, for all CIS products, the linkages between each calculated nKPI and OSR value and the underlying clinical data fields, the nKPI/OSR Mapping Project will ensure that health services gain better insight into data gaps or under-reporting caused by entering data into non-standard fields. This will enable health services to review their data entry practices and achieve more comprehensive data capture.

Reviews will be conducted of both the nKPI and OSR collections during 2018. This will ensure that both collections remain aligned to current objectives, including that:

• Closing the Gap targets are considered
• the indicator set/modules balance the need for data against the need to minimise reporting burden
• the individual indicators/questions are both relevant and collectable from existing data
• the indicator specifications are correct, and give practical guidance to CIS vendors.

To enable many of these activities, DoH is building direct relationships with CIS vendors (rather than working through third parties). This will result in improved communication, better CIS vendor support for health services, and more efficient specification, scheduling, and rollout of software upgrades relevant to nKPI and OSR reporting.

Working more closely and effectively with vendors will also enable continuous improvement of all CIS direct-load mechanisms over time. Direct load has been used for 1 collection (June 2017) by 3 CIS vendors, with the fourth major CIS vendor (Best Practice) intending to develop this facility during 2018. Over time it will be possible to make corrections and improvements to the direct-load feed supplied by each CIS vendor, while some of the projects discussed in this section will provide improvement opportunities. This will improve the stability and accuracy of direct load.

For more information, please contact <indigenousreporting@health.gov.au>.

Aboriginal and Torres Strait Islander nKPI and OSR Review

DoH has funded the AIHW to review the nKPI and OSR data collections.

The review aims to identify the strengths and weaknesses of the 2 collections as they currently exist, and develop options to improve the collections to better meet the needs of the funders, health services, policymakers, and researchers in the future, particularly in the context of changing policies (such as the Closing the Gap refresh).

The review will assess the collections' objectives, collection processes, modules, and specific items from various perspectives (policy, clinical, technological, and administrative). A final report will be provided to DoH, with recommendations and actionable options to:

• better align the 2 collections, particularly around consistency of terminology and business and counting rules

• reduce the reporting burden on services

• understand and better exploit potential synergies between the 2 collections

• ensure the data are useful and have value to numerous stakeholders, including the Indigenous-specific primary health care services who collect and report the data, their supporting organisations, policymakers, and researchers

• ensure the data support current and emergent health priorities, including clinical and non-clinical items (such as ear health, eye health, and sexually transmitted infections).
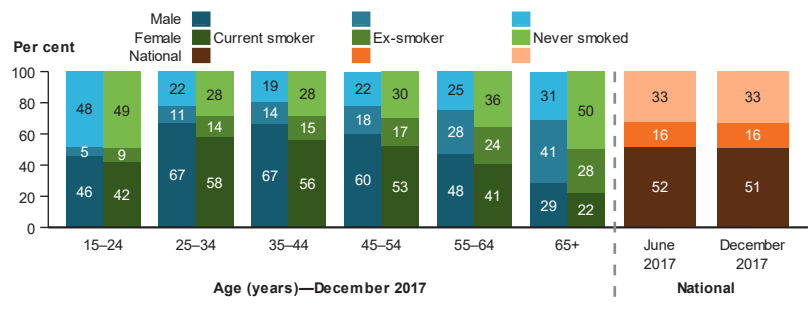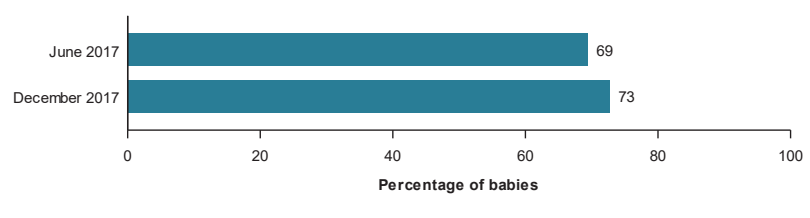
Appendix F: Guide to the figures

Table F1: Explanatory guide to figures in chapters 1 and 3–5, and Appendix D

Reference figures with example	Description

Figures 1.1; 3.4.1; 4.1.1; 4.2.1; 4.3.1; 4.4.1; 5.1.1; 5.2.1; 5.3.1; 5.6.1; 5.7.1; 5.8.1; 5.9.1; 5.11.1; 5.13.1

These clustered column charts show the value of the vertical axis by the variable on the horizontal axis. Colour is used to differentiate between the different variables being displayed in the legend and on the horizontal axis.

For example, this chart shows the percentage of Indigenous regular clients whose smoking status had been recorded by gender—males and females—and by collection period.

Figures 1.2; 1.8; 3.5.1; 4.5.1

These stacked bar charts show the value of the horizontal axis by the variable on the vertical axis. Colour is used to differentiate between the different variables being displayed in the legend.

For example, this chart shows the percentage of babies with a birthweight recorded as low, normal, or high, by collection period.

Figures 1.3; 1.4; 1.9; 3.1.3; 3.2.3; 3.3.3; 3.5.3; 3.6.3; 4.1.3; 4.2.3; 4.3.3; 4.4.3; 4.5.3; 4.6.3; 4.7.3; 4.8.3; 4.9.3; 4.10.3; 5.1.3; 5.2.3; 5.3.3; 5.4.3; 5.5.3; 5.6.3; 5.7.3; 5.8.3; 5.9.3; 5.10.3; 5.11.3; 5.12.3; 5.13.3

These column charts show the value of the vertical axis by the variable on the horizontal axis.

For example, this chart shows the percentage of females who had their first antenatal visit before 13 weeks of pregnancy, by organisation size.

Figures 1.5; 1.6

These vertical bubble charts show the number of clients in an organisation by state and territory or remoteness area. The bubbles show the number of clients recorded per organisation. The orange line shows the average organisation size for a state or territory or remoteness area.

For example, this figure shows that, on average, Victoria/Tasmania had the lowest number of clients, while Queensland had the highest. Additionally, New South Wales/ Australian Capital Territory had the most even distribution, while Northern Territory and Queensland had a greater spread.

(continued)

Table F1 (continued): Explanatory guide to figures in chapters 1 and 3–5, and Appendix D

Reference figures with example	Description
Figures 3.1.1; 3.6.1; 4.7.1; 4.8.1; 4.9.1; 4.10.1; 5.4.1; 5.5.1; 5.10.1; 5.12.1	These stacked cluster column charts show the value of the vertical axis by the variable on the horizontal axis. Colour is used to differentiate between the different variables being displayed in the legend, and the horizontal axis. For example, this chart shows the percentage of Indigenous regular clients with a smoking status result, by smoking status, gender, and collection period.
Figures 3.1.2; 3.2.2; 3.3.2; 3.5.2; 3.6.2; 4.1.2; 4.2.2; 4.3.2; 4.4.2; 4.5.2; 4.6.2; 4.7.2; 4.8.2; 4.9.2; 4.10.2; 5.1.2; 5.2.2; 5.3.2; 5.4.2; 5.5.2; 5.6.2; 5.7.2; 5.8.2; 5.9.2; 5.10.2; 5.11.2; 5.12.2; 5.13.2	These histograms show the distribution of organisation results. Results are rounded to a whole number, and each diamond represents an organisation result. The y-axis value changes, depending on the number of organisations that achieved a result. For example, this chart shows the distribution of antenatal visits before 13 weeks of pregnancy. The median result is 36%, with the top 25% of organisations having 53% or more, and the bottom 25% of organisations having 19% or fewer.
Figures 3.2.1; 3.3.1; 4.6.1	These bar charts show the value of the horizontal axis by the variable of the vertical axis. For example, this chart shows the percentage of babies with a birthweight recorded, by collection period.

(continued)

Table F1 (continued): Explanatory guide to figures in chapters 1 and 3–5, and Appendix D

Reference figures with example	Description

Figures 3.4.2; 3.4.3; 3.4.4

These vertical bar charts show the value of the vertical axis by the variable on the horizontal axis, as well as the median value and quartile boundaries per variable. The interquartile range for a state or territory is included to indicate the variation in results of organisations in a jurisdiction. Median values for organisations in a jurisdiction show the point above and below which 50% of the organisations are performing.

For example, this chart shows the percentage of Indigenous children aged 12–<24 months recorded as being fully immunised by state and territory, including the median, upper, and lower quartile boundary.

In some cases, the interquartile limits for a state or territory are higher than the overall average for all clients in a jurisdiction (for example, Queensland in this chart). In these cases, most organisations have higher results based on a smaller number of clients, while a few organisations with low results and large numbers of clients are pushing the overall jurisdiction result down.

Appendix D—Figure D1–56
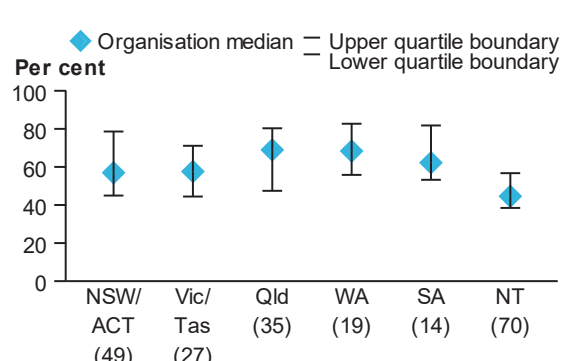
Note: Number of organisations is in brackets.

These scatterplots show the value of the vertical axis by the variable on the horizontal axis, as well as the upper and lower quartile boundaries of the median.

For example, this chart shows the median percentage of Indigenous regular clients with alcohol consumption recorded, by state and territory, including the upper and lower quartile boundaries.

Glossary

Aboriginal: A person of Aboriginal descent who identifies as being Aboriginal, and is accepted as such by the community in which he or she lives.

albumin/creatinine ratio (ACR): A measure of renal function that assesses albumin in the urine.

auspiced service: An independent or semi-independent body that has been sponsored by an Australian Government-funded organisation to provide health services.

AUDIT-C: An Alcohol Use Disorders Identification Test screening tool, which is sensitive to the early detection of risky and high-risk (or hazardous and harmful) drinking.

birth: Birth of a viable fetus, which is defined as a birth occurring after 20 weeks of pregnancy or the fetus weighing more than 400 grams at birth (live, still, singleton, multiple).

birthweight: Birthweight is defined as low (birthweight of less than 2,500 grams), normal (birthweight of 2,500–4,499 grams), or high (birthweight of 4,500 grams and over).

body mass index (BMI): A measure of an adult's weight (body mass) relative to height, used to assess the extent of weight deficit or excess, where height and weight have been measured. BMI is the weight in kilograms divided by the square of the height in metres.

cardiovascular disease (CVD): Any disease of the circulatory system, namely the heart (cardio) or blood vessels (vascular).

cervical screening: A procedure involving a Pap test, which is used to detect cancer and pre-cancerous abnormalities of the cervix.

chronic obstructive pulmonary disease (COPD): Serious, progressive and disabling longterm lung disease where damage to the lungs—usually because of both emphysema and chronic bronchitis—obstructs oxygen intake, and causes increasing shortness of breath.

continuous quality improvement: A tool for improving the quality of services provided by organisations involving a systematic approach to collecting and reviewing data or information to identify areas for improvement.

estimated glomerular filtration rate (eGFR): A measure of how well the kidneys filter waste from the blood. The eGFR is the best measure of kidney function.

first antenatal visit: The contact at which the initial antenatal check-ups are done—for example, to confirm pregnancy, establish history, and conduct blood tests.

fully immunised: Describes children who have received all immunisations according to the AIR.

- Children aged 12–<24 months are required to have received all immunisations that are due at 6 months:
  - 3 doses of diphtheria, tetanus, and whooping cough
  - 3 doses of polio
  - 2 or 3 doses of haemophilus influenzae type B
  - 2 or 3 doses of hepatitis B.
- Children aged 24–<36 months are required to have received all immunisations that are due at 12 months:
  - 3 doses of diphtheria, tetanus, and whooping cough
  - 3 doses of polio
  - 3 or 4 doses of haemophilus influenzae type B
  - 3 doses of hepatitis B,
  - 1 dose of measles, mumps, and rubella.

- Children aged 60–<72 months are required to have received all immunisations that are due at age 4
  - 4 doses of diphtheria, tetanus, and whooping cough
  - 4 doses of polio
  - 2 doses of measles, mumps, and rubella.

General Practitioner Management Plan (GPMP): Chronic disease management plan carried out according to the MBS Schedule (item 721).

haemoglobin A1c (HbA1c or glycated haemoglobin): A measurement that acts as an indicator of time-averaged blood glucose levels (over the previous 2–3 months). It is used as the best marker of long-term diabetes control (Jones et al. 2011).

indicator: See definition for national Key Performance Indicators.

Indigenous baby: A baby with at least 1 parent who identifies as being Aboriginal or Torres Strait Islander (born both to mothers who are Indigenous and to mothers who are non-Indigenous).

influenza: An acute contagious viral respiratory infection marked by fever, muscle aches, headache, cough, and sore throat.

MBS health assessment: Health assessment for those aged 0–4 and 25, which are done according to the MBS Schedule (item 715).

measure: See definition for national Key Performance Indicator measure.

MMEx: An e-health platform that includes a client information management system.

national Key Performance Indicators (nKPIs): A set of indicators that monitor the major health issues of the regular client population of Indigenous-specific primary health care services.

national Key Performance Indicator measure (nKPI measure): An nKPI or a part of an nKPI which was analysed and described separately from the other parts of the nKPI.

primary health care organisations: Organisations that receive funding from DoH to provide primary health care services. While some primary healthcare organisations constitute an individual health care clinic, others have multiple clinics, and provide combined data for all their clinics. Other nKPI reporting organisations are intermediaries (for example, Primary Health Networks), which might also combine the data for the clinics where they subcontract services.

OCHREStreams: A web portal that aims to reduce the burden of reporting for organisations (health services) that provide primary health-care and other services to Aboriginal and Torres Strait Islander people.

regular client: A client who has visited a particular primary health care provider 3 or more times in the previous 2 years.

remoteness area: A measure in the Australian Statistical Geography Standard used to classify areas across Australia based on their distance from different services. The main categories are *Major cities*, *Inner regional*, *Outer regional*, *Remote*, and *Very remote*.

smoking status: Current smoker includes those who smoke daily, weekly, or less often than weekly; ex-smoker refers to a person who does not smoke at all now, but has smoked at least 100 cigarettes, or a similar amount of other tobacco product, in his/her lifetime; never smoked refers to a person who does not smoke now, and has smoked fewer than 100 cigarettes, or a similar amount of other tobacco product, in his/her lifetime.

Team Care Arrangement (TCA): Chronic disease management plan carried out according to the MBS Schedule (item 723).

time-stamped records: Records that are associated with a particular time and/or date of the record being made, or the activity being recorded.

type 2 diabetes: The most common form of diabetes, occurring mostly in people aged 40 or over, and marked by reduced or less effective insulin.

vaccination: The process of administering a vaccine to a person to produce immunity against infection.

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Related publications

This report, *National Key Performance Indicators for Aboriginal and Torres Strait Islander primary health care: results for 2017*, is the fifth national report on the national Key Performance Indicators (nKPIs) data collection.

The following recent AIHW publications about Aboriginal and Torres Strait Islander health might be of interest:

- AIHW 2013. Aboriginal and Torres Strait Islander health services report 2011–12: Online Services Report—key results. Cat. no. IHW 104. Canberra: AIHW.

- AIHW 2013. Healthy for Life: results for July 2007–June 2011. Cat. no. IHW 84. Canberra: AIHW.

- AIHW 2014. Aboriginal and Torres Strait Islander health organisations: Online Services Report—key results 2012–13. Cat. no. IHW 139. Canberra: AIHW.

- AIHW 2014. National Key Performance Indicators for Aboriginal and Torres Strait Islander primary health care: first national results June 2012 to June 2013. National key performance indicators for Aboriginal and Torres Strait Islander primary health care series. Cat. no. IHW 123. Canberra: AIHW.

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- AIHW 2018. Aboriginal and Torres Strait Islander health organisations: Online Services Report—key results 2016–17. Aboriginal and Torres Strait Islander health services report no. 9. Cat. no. IHW 196. Canberra: AIHW.

This fifth national report on the national Key Performance Indicators (nKPIs) data collection is based on data from 231 primary health care organisations that receive funding from the Australian Government Department of Health to provide services primarily to Aboriginal and Torres Strait Islander people. Information is presented for December 2017, for 24 'process-of-care' and 'health outcome' indicators, focusing on maternal and child health, preventative health, and chronic disease management. The report shows improvements for the majority of indicators between June and December 2017.

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