Australian Government

Australian Institute of Health and Welfare

Indigenous identification in hospital separations data

Quality report

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Contents

Acknowledgments

Abbreviations

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AHMAC	Australian Health Ministers' Advisory Council
AHMC	Australian Health Ministers' Conference
AIHW	Australian Institute of Health and Welfare
COAG	Council of Australian Governments
ED	Emergency Department
METeOR	Metadata Online Registry
NAGATSIHID	National Advisory Group on Aboriginal and Torres Strait Islander Health Information and Data
NHIPPC	National Health Information and Performance Principle Committee
NHISSC	National Health Information Standards and Statistics Committee
NHMD	National Hospital Morbidity Database
NICU	Neonatal Intensive Care Unit
NIRA	National Indigenous Reform Agreement (Closing the Gap)
NIRAPIMG	National Indigenous Reform Agreement Performance Information Management Group
RSE	Relative standard error
SCoH	Standing Council on Health

Symbols

—	nil or rounded to zero
. .	not applicable
n.a.	not available
n.p.	not publishable because of small numbers, confidentiality or other concerns about the quality of the data

Summary

This report presents the results of a study on the quality of Indigenous identification in records of hospitalisations in public hospitals in Australia (the study). The study was conducted in 2011 and 2012 by the AIHW, in collaboration with state and territory authorities. The report presents an analysis of hospital separations data and estimates of correction factors that can be applied to the data for analysis purposes at four levels: the national level; national by remoteness; state and territory level and remoteness levels within jurisdictions.

Key findings

An estimated 88% of Indigenous patients were correctly identified in Australian public hospital admission records in 2011-12.

The weighted completeness (and confidence intervals) of Indigenous identification for public hospitals in 2011-12 was: 80% (76-83%) in New South Wales, 78% (71-84%) in Victoria, 87% (84-91%) in Queensland, 96% (92-98%) in Western Australia, 91% (85-95%) in South Australia, 64% (53-74%) in Tasmania, 58% (46-69%) in the Australian Capital Territory and 98% (96-99%) in the Northern Territory.

There were wide variations in Indigenous identification by remoteness, ranging from 77% (72-81%) in major cities to 99% (96-100%) in very remote areas.

Recommendations

The major recommendations of this report are:

- The data for all jurisdictions should be used in any analyses of Indigenous hospitalisation rates.
- The Indigenous identification completeness estimates from this study should be used in data quality information to accompany all data analyses.
- All states and territories should be included in national analyses of Indigenous admitted patient care for data from 2010–11 onwards.
- Correction factors are to be utilised to adjust total hospital separations data (public hospitals and public and private hospitals combined) at: national level; national by remoteness; state and territory level and remoteness within jurisdictions.

For more recommendations see Section 5.

1 Introduction

1.1   Background

Improving the accuracy of Indigenous identification in a number of data collections is an important and ongoing body of work for all states and territories. In 2008, the Council of Australian Governments (COAG) agreed to the National Indigenous Reform Agreement (NIRA) (Closing the Gap), which required states and territories to '…ensure their data is of high quality, and is available for reporting, including research and evaluation'.

Through Schedule F of the NIRA it was agreed that the Commonwealth and states and territories will undertake the following actions to improve performance indicator data:

- assess the extent to which the Indigenous population is accurately identified in key data sets
- develop the evidence base on what strategies are likely to impact positively on the propensity of the Indigenous population to identify.

The AIHW was tasked with conducting and managing studies at the national level. This included developing a study methodology, sampling strategies and providing the final assessment of the level of under-identification of Indigenous peoples in each data set.

To complete this task, the AIHW led an analysis of the level of Indigenous identification in key data sets. This included producing a baseline report and undertaking five-yearly studies to monitor identification levels over time. The AIHW has also helped jurisdictions improve procedures for collecting Indigenous status in health data by providing training material to staff involved in data collection.

A continuing assessment of the impact of this work on identification in data sets is a useful tool for measuring improvements and reporting on Indigenous use of health services. The Australian Health Ministers' Advisory Council (AHMAC) provided funding for the AIHW to ensure that this study was nationally consistent and independent.

For all states and territories, the level of under-identification was assessed through a data quality study in public hospitals that compared the results of face-to-face interviews with patients where Indigenous status was ascertained with the information recorded in the patients' administrative records (see Chapter 2 for more information).

1.2   Aims of the data quality study

The Indigenous under-identification in hospitals data quality study sought to identify correction factors for Indigenous identification, based on an estimate of current under-identification in hospital separation data at these levels:

- national
- national by remoteness
- state and territory
- remoteness within jurisdictions.

A previous study published in 2010 allowed for the use of correction factors at national, state and territory, and national by remoteness levels only. The current study has sought to build

on the results of the previous study by providing correction factors for remoteness within jurisdiction level and increasing the precision of estimates more generally by increasing the sample sizes. This study now also includes the Australian Capital Territory.

With this in mind, states and territories agreed to aim for a calculation of correction factors by the remoteness categories in Table 1.1. In some jurisdictions, combining remoteness categories was necessary in order to collect a sufficient sample for analysis.

Table 1.1: Remoteness areas within jurisdictions for which correction factors are expected

State/territory	Remoteness areas
New South Wales	Major cities, Inner regional, Outer regional, Remote/ Very remote
Victoria	Major cities, Inner regional, Outer regional
Queensland	Major cities, Inner regional, Outer regional, Remote/Very remote
Western Australia	Major cities, Inner regional, Outer regional, Remote, Very remote
South Australia	Major cities, Inner regional/Outer regional, Remote/Very remote
Tasmania	Inner regional
Australian Capital Territory	Major cities
Northern Territory	Outer regional, Remote, Very remote

1.3 Previous studies

The following section provides details of the previous studies conducted during 2007 and 2008. The final results were published in 2010 as *Indigenous identification in hospital separations data — quality report* (AIHW 2010a).

Other published assessments of the quality of Indigenous identification in hospitals data before the 2010 study are: *Improving the quality of Indigenous identification in hospital separations data* (AIHW 2005) and *Assessing the quality of identification of Aboriginal and Torres Strait Islander people in hospital data* (AIHW: AHMAC & ATSIHWIU 1999). Details of these publications can be found on the AIHW website at <http://www.aihw.gov.au/publications>.

The 2007 to 2008 Indigenous Identification data quality study and the 2006 Australian Capital Territory hospital data linkage study

The previous report *Indigenous identification in hospital separations — data quality study* outlined two separate projects that comprised the national assessment undertaken between 2006 and 2008 by the AIHW, in collaboration with state and territory health authorities. The report was published in 2010.

Firstly, a study was undertaken on Indigenous identification in hospital separations by interviewing patients about their Indigenous status and then comparing the patient response with the patient's admitted hospital record. The study excluded private hospitals.

The 2007 to 2008 study conducted 9,630 interviews with patients in 7 states and territories.

To assess the level of Indigenous identification in administrative data in the Australian Capital Territory, a data linkage project was undertaken between the AIHW, ACT Health and Winnunga Nimmityjah Aboriginal Health Service.

Administrative data provided by ACT Health and Winnunga Nimmityjah Aboriginal Health Service from the period 2002–03 were used. The linkage was conducted in 2006 using name-based linkage.

Outcomes

An estimated 89% of Indigenous patients were correctly identified in Australian public hospital admission records in 2007–08. In other words, 11% of Indigenous patients were either not identified or incorrectly identified in the hospital record and the estimated 'true' number of hospital admissions for Indigenous persons was found to be approximately 12% higher than reported.

States and territories

In 2007 to 2008, the results of the studies supported expanding national reporting to include data for New South Wales, Victoria, Queensland, South Australia, Western Australia, and the Northern Territory (public hospitals only). Levels of Indigenous identification were 80% or higher for those jurisdictions. Previously national level analysis of hospital separations data for Indigenous persons was restricted to Queensland, South Australia, Western Australian and the Northern Territory (public hospitals only).

For Tasmania and the Australian Capital Territory, the levels of Indigenous identification were not considered acceptable for analysis purposes.

The levels of assessed completeness of Indigenous identification for public hospitals were:

- 88% (84–93%) in NSW
- 84% (75–100%) in Victoria
- 86% (82–89%) in Queensland
- 97% (95–99%) in Western Australia
- 87% (80–100%) in South Australia
- 48% (28–68%) in Tasmania
- 96% (95–98%) in the Northern Territory.

Results of the 2006 data linkage project in the Australian Capital Territory indicated that the assessed completeness of administrative data relating to Indigenous status was in the order of 59%.

Notably, however, the confidence intervals for Victoria and Tasmania were very wide and had a lower bound of less than 80%, indicating uncertainty about the accuracy of the level of identification in those jurisdictions.

Remoteness areas

The study showed that there were acceptable levels of Indigenous identification for all remoteness areas, ranging from 80% in Major cities to 97% in Remote and Very remote areas. The results of the study supported analyses by remoteness areas, in aggregate, across states and territories for which the levels of identification were considered to be acceptable. The sample size in the 2007 to 2008 study was insufficient to allow assessment of the quality of Indigenous identification by remoteness area within jurisdictions.

2 The Indigenous identification in hospitals separations data quality study

2.1 Project organisation

The AIHW, state and territory health authorities and the Department of Premier and Cabinet in Tasmania worked in partnership to deliver the study.

The AIHW provided national ethics approval; developed the survey and sample design specifications; developed advice in consultation with jurisdictions; coordinated the survey; conducted analysis of the survey results; and prepared this report for publication.

The states and territories were responsible for obtaining specific ethics approvals where necessary, conducting patient interviews, comparing the interview results to hospital admissions, and collating and providing the collected data to the AIHW.

States and territories also provided valuable input to drafts of this report.

2.2 Ethics approval

The Australian Institute of Health and Welfare Ethics Committee was established under section 16(1) of the *Australian Institute of Health and Welfare Act 1987*. The committee is required to advise on the ethical acceptability of AIHW activities involving information that can identify a person (identifiable data). As the study involved direct contact with patients and the collection of potentially identifiable information, the AIHW sought and obtained approval from the AIHW Ethics Committee prior to the commencement of data collection activities. To secure approval, a collection of information packages for patients was developed. These packages explained the objectives of the study, what information would be collected from the interviewer and how that information would be used after collection. This information emphasised that patient consent was required for the interview to proceed and ensured that patients knew they were able to refuse to participate. The information package can be found at Appendix B. Ethics approvals within states and territories varied due to differing policies and procedures in each jurisdiction. For the majority of jurisdictions, ethics approval was not required, as the study was seen as a data quality exercise and not a research project; however, some jurisdictions did require specific ethics approvals in their states, regions or hospitals. This activity was undertaken by the jurisdictions.

2.3 Independence of the study

In order to maintain the validity of data obtained from the study, steps were taken to ensure the data collection process maintained a high standard of independence, both in terms of staff used to conduct the survey and from the normal administrative practices of the hospital and jurisdictions while the study was conducted. To support this process, AHMAC provided funding specifically to support independence.

To help jurisdictions ensure that their conduct of the study was independent, the AIHW developed an overarching framework for independence to be used as the minimum standard. A copy of the independence framework can be found at Appendix C.

All jurisdictions agreed to provide the AIHW with a proposal on how they intended to ensure the independence of the study (based on the framework of independence) and additionally to request any funding required to assist jurisdictions with undertaking identified actions for independence (for example, hiring of contract staff independent of the hospital to conduct interviews). Once jurisdictions had completed all data collection and collation tasks they agreed to provide a report outlining how they had achieved independence. Summaries of the reports provided by states and territories are at Appendix C.

An Independence Advisory Group for the study was formed to provide advice, review and critique the approaches of jurisdictions to ensure independence; and to allocate the funding to support the independence activities of jurisdictions.

The Independence Advisory Group comprised nominees from:

- the AIHW (Chair)
- the National Advisory Group on Aboriginal and Torres Strait Islander Health Information Data (NAGATSIHID)
- the Department of Health and Ageing (DoHA).

2.4   Project governance

The AIHW and jurisdictions agreed that the appropriate mechanism for the governance of the study was to form a steering committee.

The steering committee included representatives from all states and territories (nominated by state and territory members of the National Health Information Standards and Statistics Committee (NHISSC)) and the AIHW. The steering committee was responsible for making key decisions about the conduct of the study and promoting nationally agreed outcomes and consistency across jurisdictions wherever possible.

The steering committee agreed that NHISSC was the appropriate body to report to as they are a standing committee of the National Health Information and Performance Principal Committee (NHIPPC)). NHIPPC is one of several principal committees that report to the Australian Health Ministers' Advisory Council (AHMAC). AHMAC provides support to the Standing Council on Health (SCoH) under arrangements for the Council of Australian Governments (COAG).

Additionally it was agreed that updates on progress would be reported to NAGATSIHID given their role in providing broad strategic advice to the AHMAC on Aboriginal and Torres Strait Islander health and health service delivery and to National Indigenous Reform Agreement Performance Indicator Group (NIRAPIMG) given their oversight role on Indigenous data issues for the NIRA.

The AIHW coordinated reporting to NHISSC on behalf of the steering committee and provided secretariat support to the steering committee.

3 Method

3.1 Introduction

The method used in the study did not differ markedly from previous studies carried out in 1998 and 2007 to 2008. The 2007 to 2008 study recommended that private hospitals be included in any future survey; however, this was determined not to be feasible due to extensive differences in governance, data collection and reporting arrangements.

3.2 Method

The study was undertaken by interviewing a sample of admitted patients about their Indigenous status through a face-to-face questionnaire while they were in hospital, and by comparing their responses with the Indigenous status information recorded on the hospital admission records.

The answer provided by the patient via the questionnaire was considered to be the 'true' measure of Indigenous status.

When the Indigenous status given at the interview matched the hospital admission record, this was considered a match. When the interview Indigenous status did not match the hospital record, this was considered an error.

Data were collected from April 2011 to June 2012.

Sampling strategy

The sampling strategy was developed to ensure a sufficient sample of Indigenous separations by state and territory and at remoteness level nationally and within jurisdictions would be captured. Additionally the sample was designed to be large enough to enable robust estimates of completeness and correction factors to be derived at national level, state or territory level, remoteness level and remoteness within state and territory level.

When designing the sample, consideration was given to ensuring that the study would be able to be completed in a cost-efficient and timely manner.

Admitted patient data from the National Hospital Morbidity Database (NHMD) from 2009–10 were used to calculate the anticipated total number of separations of patients during the study period between April 2011 and June 2012. This in turn was used to calculate the sample.

A 'separation' refers to an episode of admitted patient care. It can be a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay beginning or ending in a change of type of care (for example, from acute care to rehabilitation). Separation also means the process by which an admitted patient completes an episode of care by being discharged, dying, being transferred to another hospital or by a change of care type (AIHW 2011).

It should be noted that an individual may have a number of separations during a hospital stay. The sample strategy took this factor into consideration.

Sample size

As sample sizes are the main determinants of the quality of estimates that could be produced from the study, the AIHW sought to increase the sample size significantly from the study conducted over 2007 and 2008, which completed 9,640 interviews.

By selecting a larger sample size, the current study has been able obtain more reliable estimates of the proportion of Indigenous people correctly recorded at national level; national by remoteness; state and territory level and remoteness levels within jurisdictions. To achieve this outcome the current study conducted 20,099 interviews. This exceeded the nationally required sample size of 18,320.

The formula to determine the required sample sizes by state and territory level, remoteness level within jurisdictions and hospital level can also be found in Appendix A.

Details of proposed sample sizes that were provided to jurisdictions can be found in Appendix A.

Selection of hospitals

The selection of hospitals was based on their ability to provide sufficient patient turnover to provide enough interviews for the study sample during a three-month period.

Hospitals were selected based on the following principles:

- if they participated in the previous study (to enable comparison or further analysis of changes in Indigenous data quality since the previous study)
- if the hospital had a high number of estimated Indigenous separations during a period of three months (in order to have a capacity to achieve the allocated Indigenous interviews)
- the location of the hospital (based on the remoteness of hospital location).

By using these principles, the AIHW was able to select hospitals with a reasonably high proportion of Indigenous separations and a sufficient number of estimated total separations for the period 2009 to 2010.

State and territories, in consultation with the AIHW agreed to the final selection of hospitals.

Selection of patients

The following patient groups were included wherever they were part of the hospital's total separations:

- same day patients (including those admitted for dialysis, chemotherapy, rehabilitation and mental health same-day care)
- children (less than 18 years old)
- qualified newborn babies including babies in neonatal intensive care units (NICU) and special care nurseries
- Emergency Department (ED) only admissions (patients admitted to the ED and not transferred to a ward)
- admitted hospital in the home (or equivalent service) patients.

This approach was taken with the aim of ensuring the sample was representative of the particular hospital's total separations population (where possible). The samples covered all age groups, wards and parts of the hospital. In practice a patient might have multiple

separations and admissions during the interview period (both formal and statistical). Where this occurred, the patient should only have been interviewed once.

The following patients were excluded from the study based on either their status or their illness:

- patients considered by the person in charge of the ward to be not well enough or not competent to give consent
- unqualified newborns
- hospital boarders
- patients in adult intensive care units
- patients that for any reason presented a risk to the health or safety of the interviewer (for example, isolated infectious patients and secluded mental health patients)
- very long-stay patients such as those patients waiting for placement in residential aged care facilities and those patients living in the hospital in a long-term nursing home type bed
- residential aged care clients such as those living in multipurpose services associated with hospitals.

Completeness and correction factors

Completeness refers to the number of records in which an Indigenous person has been correctly recorded in both the interview and the hospital record. In other words, when a person identifies as Indigenous at the interview, the hospital record also has the correct Indigenous status recorded. The completeness is reflected as a percentage.

The correction factor which is calculated from the survey data takes into account a number of other outcomes:

- number of patients in hospital correctly identified as Indigenous in hospital records and in the interview
- number of patients in the hospital record identified as Indigenous but non-Indigenous in the interview
- number of patients in the hospital record identified as Indigenous but not stated/inadequately described in the interview
- number of patients in the hospital record identified as non-Indigenous but Indigenous in the interview
- number of patients in the hospital record as not stated/inadequately described in hospital records and Indigenous at the interview.

See Appendix A for more information.

Weighting

To reduce the potential for bias within the sample of patients, a weighting strategy was used, as it was anticipated that the number of Indigenous patients captured in the sample would not necessarily be representative of the wider population within a jurisdiction or remoteness level. The weighting strategy therefore sought to adjust for over or under-represented Indigenous patients, hospitals or remoteness areas.

See Appendix A for more information.

Confidence intervals

Confidence intervals were calculated based on the weighted completeness proportions using the Wilson's score interval for all jurisdictions and remoteness areas.

See Appendix A for more information.

4 Results

This section presents the estimates of Indigenous identification levels for national level; national by remoteness; state and territory level and by remoteness levels within jurisdictions. The raw results from the study were adjusted for the representativeness of the surveyed hospitals and 95% confidence intervals were calculated. These results are presented below.

4.1 Study results

A total of 20,099 patient interviews were completed in the 8 states and territories that participated in the Indigenous under-identification in hospital separations data study.

Adequate sample sizes were obtained for all states and territories and for all remoteness areas nationally and planned remoteness within jurisdiction levels. Where there were difficulties obtaining a sufficient sample size for some remoteness levels within jurisdictions, remoteness levels were combined. For example, New South Wales, Queensland and South Australia combined the *Remote* and *Very remote* categories. In addition, South Australia combined *Inner regional* and *Outer regional* remoteness levels.

National

The results of the study for Australia are presented in Table 4.1.

The accuracy of the identification of Indigenous persons in the admissions records of participating hospitals on a national level was found to be 88%.

Table 4.1: Completeness and 95% confidence intervals, national level

	Total sample	Weighted completeness	95% confidence interval lower bound	95% confidence interval upper bound
Australia	20,099	88%	87%	90%

National by remoteness

The results of the study by remoteness level are presented in Table 4.2.

The accuracy of the identification of Indigenous persons in the admissions records of participating hospitals increased with increasing remoteness and with adjusted completeness from 77% in *Major cities* to 99% in *Very remote*.

Table 4.2: Completeness and 95% confidence intervals, national by remoteness

Remoteness categories within Australia	Total sample	Weighted completeness	95% confidence interval lower bound	95% confidence interval upper bound
Major cities	10,351	77%	72%	81%
Inner regional	6,313	85%	81%	88%
Outer regional	2,374	95%	93%	97%
Remote	849	97%	95%	98%
Very remote	212	99%	96%	100%
Total	**20,099**	**88%**	**87%**	**90%**

State and territory

The results of the study by state and territory level are presented in Table 4.3.

The accuracy of the identification of Indigenous persons in the admissions records of participating hospitals varied between jurisdictions from 58% in the Australian Capital Territory to 98% in the Northern Territory.

Table 4.3 Completeness and 95% confidence intervals, by state and territory

State/territory	Total sample	Weighted completeness	95% confidence interval lower bound	95% confidence interval upper bound
New South Wales	5,109	80%	76%	83%
Victoria	4,307	78%	71%	84%
Queensland	3,516	87%	84%	91%
Western Australia	1,482	96%	92%	98%
South Australia	1,243	91%	85%	95%
Tasmania	1,772	64%	53%	74%
Australian Capital Territory	1,857	58%	46%	69%
Northern Territory	813	98%	96%	99%
Total	**20,099**	**88%**	**87%**	**90%**

Remoteness levels within jurisdictions

The results of the study by remoteness level within jurisdictions are presented in Table 4.4.

The weighted completeness ranged between 58% in *Major cities* to 100% in the combined *Remote/Very remote* category.

The weighted completeness for *Outer regional*, *Remote* and *Very remote* suggests a very accurate rate of identification in these areas.

Table 4.4: Completeness and 95% confidence intervals, by remoteness level within jurisdictions

State/ territory	Remoteness category	Total sample	Weighted completeness	95% confidence interval lower bound	95% confidence interval upper bound
New South Wales	Major cities	2,941	67%	56%	76%
	Inner regional	1,381	90%	84%	94%
	Outer regional	586	90%	82%	95%
	Remote and Very remote	201	98%	93%	99%
Victoria	Major cities	2,426	71%	56%	82%
	Inner regional	1,312	84%	70%	93%
	Outer regional	569	90%	78%	95%
Queensland	Major cities	1,956	72%	62%	80%
	Inner regional	974	82%	71%	89%
	Outer regional	544	95%	90%	97%
	Remote and Very remote	42	100%	88%	100%
Western Australia	Major cities	507	96%	80%	99%
	Inner regional	712	90%	72%	97%
	Outer regional	125	100%	92%	100%
	Remote	70	90%	74%	96%
	Very remote	68	100%	92%	100%
South Australia	Major cities	664	86%	70%	94%
	Inner regional and Outer regional	299	97%	90%	99%
	Remote and Very remote	280	99%	91%	100%
Tasmania	Inner regional	1,772	64%	53%	74%
Australian Capital Territory	Major cities	1,857	58%	46%	69%
Northern Territory	Outer regional	413	97%	92%	99%
	Remote	340	98%	96%	99%
	Very remote	60	98%	89%	100%
Total		**20,099**	**88%**	**87%**	**90%**

Note: A number of jurisdictions were unable to reach a specified sample within the time period for some levels of the remoteness level categories. In these instances a combined category has been created.

Estimated correction factors

This section presents estimated correction factors that can be applied to the data to estimate the 'true' numbers of separations for Indigenous patients.

Correction factors were produced for national level; national by remoteness; state and territory level and remoteness levels within jurisdictions. Correction factors can be used to estimate the 'true' number of records for Indigenous persons by multiplying the number of Indigenous persons in the hospital record by the weighted correction factor. For example, using the correction factor at the national level of 1.09, this suggests that the 'true' number of Indigenous persons should be about 9% higher than indicated in the hospital record. Details of how correction factors are calculated can be found in Appendix A.

Table 4.5 presents correction factors by national, national remoteness and state and territories.

Table 4.5: Estimated correction factors, by national, national remoteness and state and territories

State	Correction factor	Remoteness area	Correction factor
New South Wales	1.20	Major cities	1.21
Victoria	1.23	Inner regional	1.11
Queensland	1.08	Outer regional	1.04
Western Australia	1.01	Remote	1.00
South Australia	1.09	Very remote	1.00
Tasmania	1.37		
Australian Capital Territory	1.69		
Northern Territory	1.00		
Total	**1.09**	**Total**	**1.09**

Table 4.6 presents weighted correction factors for each remoteness level within jurisdiction.

Table 4.6: Estimated correction factors, by remoteness levels within jurisdictions

State/ territory	Remoteness category	Correction factor
NSW	Major cities	1.37
	Inner regional	1.09
	Outer regional	1.08
	Remote and very remote	1.02
VIC	Major cities	1.41
	Inner regional	1.06
	Outer regional	1.09
QLD	Major cities	1.17
	Inner regional	1.12
	Outer regional	1.04
	Remote and Very remote	0.97
WA	Major cities	0.99
	Inner regional	1.02
	Outer regional	1.00
	Remote	1.07
	Very remote	1.00
SA	Major cities	1.16
	Inner regional and outer regional	1.03
	Remote and very remote	1.00
TAS	Inner regional	1.37
ACT	Major cities	1.69
NT	Outer regional	1.03
	Remote	0.99
	Very remote	1.00
Total		**1.09**

Note: A number of jurisdictions were unable to reach a specified sample within the time period for some levels of the remoteness level categories. In these instances a combined category has been created.

Queensland, Western Australia and the Northern Territory have generated a correction factor in some remoteness categories that is less than 1.00. This reflects an outcome where a very high percentage of completeness has been achieved, but where there have been errors for other possible responses such as non-Indigenous people being wrongly identified as Indigenous in the hospital record. See Section 2—Method for more details on the inputs to calculating correction factors.

4.2 Discussion

This section presents the conclusions of this study and provides some comparison with the previous study which was conducted from March 2007 to February 2008 (AIHW 2010).

States and territories

This study used the same methodology as the 2007 to 2008 study with two exceptions. In 2007 to 2008, New South Wales did not include persons under the age of 18, and in 2006 the Australian Capital Territory used data linkage. It should be noted that these studies may differ in coverage.

Table 4.7 provides the state and territory results of the previous study conducted over the period 2007 to 2008 with the state and territory results of the current study conducted over the period 2011 to 2012.

Table 4.7: Weighted completeness, confidence intervals and weighted correction factors for the studies conducted over the periods, 2007 to 2008 and 2011 to 2012, by state and territory

State	Results of previous study conducted over the period 2007 to 2008			Results of this study conducted over the period 2011 to 2012		
	Weighted completeness (%)	Confidence interval (%)	Correction factor	Weighted completeness (%)	Confidence interval (%)	Correction factor
New South Wales	88	84–93	1.13	80	76–83	1.20
Victoria	84	75–100	1.20	78	71–84	1.23
Queensland	86	82–89	1.13	87	84–91	1.08
Western Australia	97	95–99	1.03	96	92–98	1.01
South Australia	87	80–100	1.15	91	85–95	1.09
Tasmania	48	28–68	2.00	64	53–74	1.37
Australian Capital Territory	59	n.a.	1.70	58	46–69	1.69
Northern Territory	96	95–98	1.02	98	96–99	1.00
Australia (Total)	**89**	**87–91**	**1.12**	**88**	**87–90**	**1.09**

For New South Wales:

- The weighted completeness decreased 8 percentage points from 88% in the previous study to 80% in this study, with a deterioration in the correction factor from 1.13 to 1.20 in this study.

For Victoria:

- The weighted completeness decreased 6 percentage points from 84% in the previous study to 78% in this study, with a slight deterioration in the correction factor from 1.20 to 1.23 in this study.

For Queensland:

- The weighted completeness increased 1 percentage point from 86% in the previous study to 87% in this study, with an improvement in the correction factor from 1.13 to 1.08.

For Western Australia:

- The weighted completeness decreased 1 percentage point from 97% in the previous study to 96% in this study, with an improvement in the correction factor from 1.03 to 1.01.

For South Australia:

- The weighted completeness increased 4 percentage points from 87% in the previous study to 91% in this study, with an improvement in the correction factor from 1.15 to 1.09.

For Tasmania:

- The weighted completeness increased 16 percentage points from 48% in the previous study to 64% in this study, with an improvement in the correction factor from 2.00 to 1.37.

- Comparisons with the previous report results are problematic as an incorrect confidence interval for Tasmania was published in 2010. The correct confidence interval should have been 28–68%. The tables in this report where this is relevant reflect this change.

- Given the wide confidence intervals for Tasmanian data in the previous study, it should be noted that that study had a very small sample of Indigenous patients and that the estimates are not considered being sufficiently reliable for general use or comparison.

For the Australian Capital Territory:

- The weighted completeness decreased by 1 percentage point from 59% in the previous study to 58% in this study, with an improvement in the correction factor from 1.70 to 1.69.

For the Northern Territory:

- The weighted completeness increased by 2 percentage points from 96% in the previous study to 98% in this study, with an improvement in the correction factor from 1.02 to 1.00.

If confidence intervals from the previous study and the current study are used to compare results, the pattern of improvement in levels of Indigenous identification between the two studies is less striking. Where the confidence intervals overlap between the two studies, an improvement in the Indigenous identification accuracy cannot be confirmed. Additionally, the confidence intervals nationally and in some states and territories tightened, indicating that the precision of the estimates has improved.

The current study indicates that New South Wales had a significant decrease in weighted completeness (88% to 80%). Victoria also had a drop in weighted completeness from 84% to 78%, however, this decrease is not significant.

The improved correction factors for Queensland, Western Australia, South Australia, Tasmania, the Australian Capital Territory and the Northern Territory may indicate that hospital administration data collection processes have improved.

Remoteness areas

Table 4.8 provides the remoteness level results of the previous study conducted over the period 2007 to 2008 with the remoteness level results of the current study conducted over the period 2011 to 2012.

Note that the analysis of remoteness areas in the previous study excluded the data for Tasmania and the Australian Capital Territory.

Table 4.8: Weighted completeness, confidence intervals and correction factors for the studies conducted over the periods, 2007 to 2008 and 2011 to 2012, by remoteness level

Remoteness	Results of previous study conducted over the period 2007 to 2008			Results of this study conducted over the period 2011 to 2012		
	Weighted completeness (%)	Confidence interval	Correction factor	Weighted completeness (%)	Confidence interval	Correction factor
Major cities	80	73–86	1.25	77%	72–81	1.21
Inner regional	90	86–94	1.11	85%	81–88	1.11
Outer regional	94	92–97	1.06	95%	93–97	1.04
Remote	n/a	n/a	n/a	97%	95–98	1.00
Very remote	n/a	n/a	n/a	99%	96–100	1.00
Remote/Very remote	90	96–98	1.03	..	..	
Australia (Total)	**89**	**87–91**	**1.12**	**88%**	**87–90**	**1.09**

.. not applicable

The weighted completeness at the *Major cities* remoteness area level decreased by 3 percentage points since the previous study; however, the confidence interval and correction factor improved.

The weighted completeness for *Inner regional* decreased by 5 percentage points in this study, and the confidence interval increased. The correction factor remained consistent with the previous study.

The previous study used a combined *Remote/Very remote* remoteness category.

There has been an overwhelming trend of Indigenous identification data improving as the remoteness category decreases (*Major cities* to *Very remote*).

5 Guidelines and recommendations

Improving the quality of Indigenous identification in hospital separations data (AIHW 2005) and *Indigenous identification in hospital separations data – quality report* (AIHW 2010a) included a number of agreed guidelines for Indigenous data analysis. In this report, the AIHW has updated these guidelines based on the results of the 2011–12 study.

This chapter presents the revised guidelines (Section 5.1) and also recommendations for improving the quality of Indigenous identification in hospital data (Section 5.2).

The correction factors provided in this report should be used to adjust total hospital data from the 2010–11 reference year onwards.

5.1 Recommendations on application of correction factors and data analysis guidelines

The following recommendations are provided to guide all national reporting of hospitalisations by Indigenous status.

Overall

1. Data for all states and territories may be used for analysis of hospitalisations by Indigenous status. All data that are reported should be accompanied by appropriate data quality information based on the study reported in this publication.

Application of correction factors

2. The correction factors are to be utilised to adjust total hospital separations rates data (public hospitals and public and private hospitals combined) at:

    – national level

    – national by remoteness

    – state and territory level

    – remoteness levels within jurisdictions.

3. Correction factors are based on total hospitalisations and not subsets (such as for particular patient types), and therefore should only be used for analyses of hospitalisations data in total. Any use of subsets of hospitalisations should be considered on a case-by-case basis.

4. While the correction factors are based on the location of hospitals, some hospitalisations for patients are likely to occur in hospitals outside the remoteness category or jurisdiction where they live. It is likely to be an issue where there is a substantial difference in completeness factors between where the patients live and where they are hospitalised, for example between major cities and inner regional areas as is the case for New South Wales, Victoria and Queensland.

5. Rates for both *Indigenous* and *Other Australian* should be adjusted by the correction factor (*Indigenous* multiplied by the correction factor and *Other Australian* reduced by the corrected difference between raw and corrected data). Any adjusted data should be presented with raw data.

6. When adjusting combined public and private hospital data a caveat should accompany the data indicating that the quality of identification in public hospitals is not necessarily indicative of the quality of private hospital data. Use of private hospital data alone is not recommended.

Data analysis guidelines

7. When presenting hospital data, raw and adjusted data should both be reported.

    – Raw data should be presented using the categories *Indigenous*, *Non-Indigenous* and *Not stated/inadequately described*.

    – For all data that have been adjusted for the purposes of analysis, *Not stated/inadequately described* and *Non-Indigenous* should be combined under the category *Other Australians*.

8. When reporting data for the Northern Territory data, a statement should appear noting that it is likely that a relatively high proportion of *Not stated/inadequately described* data is likely *Indigenous* given the population profile of the Northern Territory. This is not the case for all other states and territories.

9. Direct age standardisation is recommended for comparing the separation rate for the Indigenous population of interest with the rate for other Australians, across multiple jurisdictions and time periods whenever populations are large enough to provide reliable results. For details refer to *Principles on the use of direct age-standardisation in administrative data collections: for measuring the gap between Indigenous and non-Indigenous Australians (AIHW 2011)*. Caveats should also apply to comparisons between jurisdictional data, and other jurisdictions or national data indicating that there are major differences in the distribution of age groupings for Aboriginal people, compared with non-Aboriginal people and the Australian average.

10. When deriving separation rates for Indigenous populations, the official Australian Bureau of Statistics (ABS) population estimates or projections should be used. ABS Series B estimates are recommended as a denominator. This recommendation remains current pending updated advice from the ABS following the 2011 Census.

11. At the state or territory level, use of data for the sub-categories should be undertaken only with extreme caution given the small numbers involved for some of the categories and because the quality of the data for the individual categories is not known.

12. Use of data for Torres Strait Islander Australians for Queensland is acceptable because numbers are higher than in other jurisdictions and advice from Queensland is that the data quality is acceptable.

5.2 Recommendations for improving Indigenous identification in separations data

These recommendations were also previously published in *Improving the quality of Indigenous identification in hospital separations data* (AIHW 2005) and the 2007 to 2008 study report (AIHW 2010a).

Copies of both reports can be found on the AIHW website at <http://www.aihw.gov.au/publications/>.

Data collection processes

1. Procedures should be established in all hospitals to ensure ascertainment of Indigenous status for every patient at every admission.

2. Indigenous status information should be ascertained for patients being admitted at all public and private hospitals, using the standard Indigenous identification question formulated by the ABS, as set out in the *National health data dictionary (AIHW 2012).*

3. The data recording systems of all hospitals and health authorities should classify Indigenous status using the standard in the *National health data dictionary (AIHW 2012).* In particular:

    –   With the exception of forms for patients to complete, a 'Not stated/inadequately described' category should always be provided.

    –   Responses of 'Not stated/inadequately described' should be permitted in separations records hospitals forward to health authorities.

    –   Data recording systems should not include arrangements whereby the category 'Not stated/inadequately described' (or no category selected at all) defaults either manually or automatically to the 'Neither Aboriginal nor Torres Strait Islander origin' category.

4. Procedures and training should be introduced to ensure that data collection staff ascertain the Indigenous status of all babies born at the hospital and other patients aged less than 1 year. These arrangements should take into consideration the Indigenous status of both the mother and the father, as necessary.

5. A protocol should be established to specifically exclude non-Australian Indigenous patients from identification as Aboriginal or Torres Strait Islander.

Training of data collection staff

6. Comprehensive training in data collection and data quality should be provided to all staff involved in the collection of patient information at all public and private hospitals. It should be provided on an as-needs basis to all new staff and as periodic refresher training to established staff.

7. The training should include information about asking and recording of Indigenous status, and it should accord with the *National best practice guidelines for collecting Indigenous status in health data sets* (AIHW 2010b). It should be directed towards a specific set of outcomes for hospital staff.

8. The training efforts of both public and private hospitals should be supported by provision of centralised training of trainers, a policy and procedures manual, and a question and answer guide.

9. At all hospitals the adequacy of training should be periodically assessed by means of direct evaluation of training outcomes and quality of Indigenous identification.

10. Training of data collection staff should be augmented by their direct participation in the conduct and evaluation of hospital-based data quality studies.

Organisational policies and practices

11. Health authorities should give consideration to carrying out a thorough review of state wide procedures for the collection, recording and verification of Indigenous status information as the basis for planning action to improve Indigenous status data quality.

12. Mechanisms should be established to increase hospital administrators' commitment to improved Indigenous status data quality—for example, by incorporating requirements in service agreements and identifying sources of funding to be directed at the adoption of improved arrangements in private hospitals.

13. Hospital administrators should be encouraged to accompany improved data collection practices with sound arrangements for system oversight and the employment of Indigenous hospital liaison officers.

14. Consideration should be given to instituting a scheme for public recognition of best practice in ascertaining the Indigenous status of hospital patients.

15. An assessment should be made of the potential role of public education in relation to asking about the Indigenous status of hospital patients.

Data monitoring quality studies

16. Each jurisdiction should introduce arrangements for regular monitoring of Indigenous status information in separation records, as a basis for providing continuing feedback on data quality at the hospital level and evaluating changes in data quality stemming from the adoption of new data collection practices.

17. A data quality study of Indigenous identification using patient interviews or another robust methodology should be periodically conducted for public and private hospitals on a nationally coordinated basis, in order to assess data quality and generate comparable and up-to-date under-identification factors.

References

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List of tables

This report presents the results of a study on the quality of Indigenous identification in administrative records of hospitalisations in public hospitals in Australia. An estimated 88% of Indigenous patients were correctly identified in public hospital admission records in 2011–12.

The report also recommends that data for all jurisdictions be included in any analysis of hospitalisations by Indigenous status and that correction factors be used to adjust total hospital data from 2010–11 onwards.