

Appendix 3: Technical notes

Definitions

If not otherwise indicated, data elements were defined according to the 2004–05 definitions in the *National health data dictionary* version 12.0 and version 12.0 supplement (NHDC 2003, AIHW 2004b) (summarised in the glossary).

Data presented by state or territory refer to the state or territory of the hospital, not to the state or territory of the usual residence of the patient. The exceptions are Tables 4.5 and 4.8, 8.11 and 9.19, which are based on data on the state or territory of usual residence. In addition, the state or territory of usual residence of the patient is reported against the state or territory of hospitalisation in Tables 7.7, 7.8, 7.9 and 7.10.

Data presentation

Except as noted below, the totals in tables include data only for those states and territories for which data were available, as indicated in the tables. For example, for some tables and figures dealing with Indigenous status, data have been presented only for selected states and territories, and the totals in these tables do not include the data for the other states and territories (Tables 8.9, 9.22 and 10.20, and Figures 9 and 8.1).

The exceptions relate to tables in which data were not published for confidentiality reasons (for private hospitals in Tasmania, the Australian Capital Territory and the Northern Territory), or because only one public hospital was represented in the cell, or because a proportion related to a small number of events and was therefore not very meaningful.

Private hospital data are suppressed for a particular diagnosis, procedure or AR-DRG, where there are fewer than three reporting units, or there are three or more reporting units and one contributed more than 85% of the total separations, or there are three or more reporting units and two contributed more than 90% of the total separations.

Data on the length of stay have been suppressed if there were fewer than 10 separations in the category being presented (50 separations in Table 4.11). Data on elective surgery waiting times were suppressed if there were fewer than 10 elective surgery admissions in the category being presented. The abbreviation 'n.p.' has been used in these tables to denote these suppressions. For these tables, the totals include the suppressed information.

Throughout the publication, percentages may not add up to 100.0 due to rounding. Percentages and population rates printed as 0.0 or 0 may denote less than 0.05 or 0.5, respectively.

Population rates

Population rates presented in Chapters 2, 4, 7 and 8 are age-standardised, calculated using the direct standardisation method and 5-year age groups. The total Australian population for 30 June 2001 was used as the population for which expected rates were calculated. The Australian Bureau of Statistics population estimates for 31 December 2004 were used for the

observed rates (Table A3.1 accompanying this report on the Internet). The exceptions were Tables 4.6, 4.7, 4.9, 4.10, 8.7, 8.8, 8.11, 8.12, 8.13, 9.20, 9.21 and 9.22, and Figures 9, 10 and 8.1, for which the 30 June 2004 population estimates (by Indigenous status, selected countries or regions of birth, Remoteness Areas and quintile of socioeconomic advantage/disadvantage, as appropriate) were used for the observed rates (Tables A3.2, A3.3 and A3.4 accompanying this report on the Internet). Crude population rates in Chapters 2, 3, 6, 9, 10 and 12 were calculated using the population estimates for 31 December 2004.

Standardised separation rate ratios

For some tables reporting comparative separation rates (Tables 4.5 to 4.10, 8.7, 8.8, 8.11 to 8.13 and 9.19 to 9.22), standardised separation rate ratios (SRRs) are presented. The ratios are calculated by dividing the age-standardised separation rate for a population of interest (an observed rate) by the age-standardised separation rate for a comparison population (the expected rate). In these tables a 95% confidence interval for the SRR has also been presented. The calculations are as follows:

Standardised separation rate ratio = observed rate/expected rate

Standard error (SRR) = $\sqrt{\text{observed rate/expected rate}}$

95% confidence interval (SRR) = SRR \pm 1.96 \times Standard error (SRR)

A confidence interval for the separation rate can be obtained by multiplying the upper and lower 95% confidence levels for the SRR by the crude rate for the population.

Thus a standardised separation ratio of 1 indicates that the population of interest (for example, Indigenous peoples) had a separation rate similar to that of the comparison group (for example, other Australians). An SRR of 1.2 indicates that the population of interest had a rate that was 20% greater than that of the comparison population and an SRR of 0.8 indicates a rate 20% smaller. If the 95% confidence interval of the SRR contains 1, the rate for the population of interest is not significantly different (at the 95% confidence level) from that of the comparison population. Similarly, if the 95% confidence interval does not contain 1, then there is a significant difference (at the 95% confidence level).

Newborn episodes of care

The *Newborn* care type was introduced in 1998–99 for the hospital morbidity data to report a single episode of care for all patients aged 9 days or less at admission, regardless of their qualification status and whether they changed qualification status during their hospital stay. Thus these episodes can include qualified days only, a mixture of qualified days and unqualified days, or only unqualified days. Qualified days are considered to be the equivalent of acute care days and *Newborn* episodes with qualified days only are considered to be equivalent to *Acute care* episodes. In this report, *Newborn* episodes with at least one qualified day have been included in all the tables reporting separations. Records for *Newborn* episodes with no qualified days do not meet admission criteria for all purposes, so they have been excluded from this report, except as specified in Chapter 7. The number of patient days reported in this publication for *Newborn* episodes is equal to the number of qualified days, so for newborns with a mixture of qualified and unqualified days the number of patient days reported is less than the actual length of stay for the episode.

Tasmanian and Northern Territory hospitals and private hospitals in South Australia did not report any *Newborn* episodes with a mixture of qualified and unqualified days (Table 7.11), and private hospitals in Victoria did not report most *Newborn* episodes with no qualified days. In South Australia qualified and unqualified newborn care are defined as separate episodes of care but for the purpose of supplying data to the National Hospital Morbidity Database separate episodes occurring within a single stay in hospital are bundled together. The practice of generating a new episode on a care change within a single stay in hospital is followed by public but not private hospitals in South Australia. For Tasmania, where a newborn's qualification status was considered qualified at any point during the episode of care, the entire episode was reported as qualified days. As a consequence of the reporting method used, the number of *Newborn* episodes with qualified days only includes those who may have had an unqualified component in their stay. For this reason the average length of stay for *Newborn* episodes with qualified days only in Tasmanian public hospitals is not directly comparable to that in other states.

Information on reporting practices for *Newborn* episodes prior to 2004–05 is available in previous *Australian hospital statistics* publications (AIHW 2002, 2003, 2004a, 2005a).

Hospital boarders and posthumous organ procurement

For some states and territories, the data provided to the National Hospital Morbidity Database included records for *Hospital boarders* and for *Posthumous organ procurement* activity (see glossary). These records were provided on an optional basis as they do not represent admitted patient care.

The records for *Hospital boarders* were excluded from this report. There were 32,836 records for *Hospital boarders* reported to the National Hospital Morbidity Database in 2004–05, mainly from Western Australia, Queensland and the Northern Territory.

Similarly, records for *Posthumous organ procurement* activity were excluded from this report. There were 79 records of *Posthumous organ procurement* reported to the National Hospital Morbidity Database in 2004–05. Most of these records were from Queensland and Western Australia, with small numbers from the Northern Territory and Tasmania. The numbers of records for *Posthumous organ procurement* in those states/territories were similar to the figures reported to the Australia and New Zealand Organ Donation Registry for organ donation during the year ending December 2004 (www.anzdata.org.au).

Quality of ICD-10-AM coded data

Diagnosis, procedure and external cause data for 2004–05 were reported to the National Hospital Morbidity Database by all states and territories using the fourth edition of the *International statistical classification of diseases and related health problems, 10th revision, Australian modification* (ICD-10-AM) (NCCH 2004).

The quality of coded diagnosis, procedure and external cause data can be assessed using coding audits in which, in general terms, selected records are independently recoded, and the resulting codes compared with the codes originally assigned for the separation. There are no national standards for this auditing, so it is not possible to use information on coding audits to make quantitative assessments of data quality on a national basis.

The quality and comparability of the coded data can, however, be gauged by information provided by the states and territories on the quality of the data, by the numbers of diagnosis and procedure codes reported and by assessment of apparent variation in the reporting of additional diagnoses. The comparability of the data can also be influenced by state-specific coding standards.

State and territory comments on the quality of the data

The following information has been provided by the states and territories to provide some insight into the quality of the coded data in the National Hospital Morbidity Database.

No statewide audit was performed on New South Wales data in 2004–05. Hospitals perform formal audits on ICD-10-AM coded data at a local level. Data edits are monitored regularly and consistent errors are identified and rectified by individual hospitals.

No statewide external audit of 2004–05 data was conducted in Victoria. Based on the results of the previous statewide external audit of 2000–01 data coded data is of high quality.

Coding quality checks are conducted regularly by source hospitals in Queensland, and ICD-10-AM validations are automatically conducted as part of the general processing of morbidity data. In February 2004 the Clinical Classification Management Project was endorsed with the goal of improving the quality of coded morbidity data and of standardising coding practices within Queensland Health. The 2-year project commenced in October 2004 with the appointment of two clinical classification auditors/educators. Numerous coding audits have been conducted at hospitals throughout Queensland, with audit criteria modified to suit individual hospital priority areas. Education has been developed and delivered in line with the needs of the coding workforce. Opportunities have been identified for sharing information and practices to increase coding standardisation across Queensland.

The Department of Health, Western Australia, performed audits on random samples of 2004–05 admitted patient data from 16 public hospitals, comprising teaching, non-teaching and rural hospitals. The audit aimed to assess the accuracy of ICD-10-AM coding, adherence to admission policy and compliance with other reporting requirements. The National Centre for Classification in Health's Performance Indicators for Coding Quality (PICQ) software and in-house quality activities were also applied to all cases received by the department.

In South Australia, a major audit of coding practices in major metropolitan hospitals based on 2004–05 data is nearing completion, and a summary of the key findings will be included in the next edition of *Australian hospital statistics*.

In Tasmania, hospitals continue to conduct coding quality improvement activities using the Australian Coding Benchmark Audit tool and PICQ. Validation of ICD-10-AM data also occurs routinely as the data are processed from the hospitals. A Statewide Recoding Study Working Group was formed to implement recommendations from a previous statewide recoding study and a coding audit will be conducted in 2006.

The quality of coding in the Australian Capital Territory remains within nationally accepted standards. The Australian Capital Territory continues to use PICQ in public hospitals as a tool in improving the overall coding quality of medical records and completed a coding audit.

The Northern Territory maintained coding quality activities through the Coders' Forum and application of the PICQ tool.

Number of diagnosis codes

The National Hospital Morbidity Database contains data on principal diagnoses and additional diagnoses. Additional diagnoses include comorbidities (coexisting conditions) and/or complications which may contribute to longer lengths of stay, more intensive treatment or the use of greater resources. Ideally, the number of additional diagnoses recorded for a patient should be related to the person's clinical condition, and not be restricted by administrative or technical limitations. The AIHW requested that the states and territories report a maximum of 50 diagnosis codes.

Table A3.5 presents information on the number of diagnosis codes (principal and additional) reported to the National Hospital Morbidity Database. There are differences between the states and territories in the maximum number of diagnoses reported; for example, in the public sector, 45 diagnoses for New South Wales, 75 for Queensland and 26 for South Australia. For both the public and private sectors, the average number of diagnosis codes per separation varied little among the jurisdictions, however, there was some variation in the reporting of additional diagnoses as discussed below.

Overall, the average number of codes reported for the public sector was slightly higher than for the private sector. In the public sector 20.8% of records had five or more diagnosis codes (889,909), but in the private sector only 10.0% of records fell into this category (274,247). It may be that more complicated cases were treated in public hospitals, or there may have been differences in coding practices.

Number of procedure codes

Table A3.6 presents information on the number of procedure codes reported to the National Hospital Morbidity Database. Ideally, the number of procedures recorded for a patient should reflect the procedures undertaken, and not be restricted by administrative or technical limitations. There were marked differences between the states and territories in the maximum number of procedures reported, ranging from 25 for South Australia to 74 for Western Australia. However, with the exception of the Northern Territory, the average number of procedure codes per separation in the public sector varied little among the jurisdictions, as was the case in the private sector. The AIHW requested a maximum of 50 codes, so this may have restricted the number of codes reported by New South Wales, Queensland and Tasmania.

In recent years the reporting of five or more procedure codes for a separation has increased in both sectors. In the public sector, 7.7% of records had five or more procedure codes in 2004–05 compared with 7.2% in 2003–04 and 6.9% in 2002–03 (AIHW 2004a, 2005a). In the private sector, 8.6% of records had five or more procedure codes in 2004–05 compared with 8.2% in 2003–04 and 7.6% in 2002–03. The higher rate of recording five or more procedures in the private sector than in the public sector may be due to differences in coding practices between the sectors.

Apparent variation in reporting of additional diagnoses

A measure of apparent variation among Australian states and territories in the reporting and coding of additional diagnoses is the proportion of separations in the lowest-resource split for adjacent AR-DRGs, standardised to the national distribution of adjacent AR-DRGs to take into account differing casemixes (Coory and Cornes, 2005).

An adjacent AR-DRG is a set of AR-DRGs that are split on a basis supplementary to the principal diagnoses and procedures that are used to define the adjacent AR-DRG grouping, for example on the basis of the inclusion of significant additional diagnoses, also known as complications or co-morbidities (CCs). Adjacent AR-DRGs are signified in the AR-DRG classification by having the first three characters in common. For example, A08A *Autologous Bone Marrow Transplant W Catastrophic CC* and A08B *Autologous Bone Marrow Transplant W/O Catastrophic CC* are considered adjacent and the adjacent AR-DRG can be referred to as A08 *Autologous Bone Marrow Transplant*. The allocation of fourth letter codes is hierarchical with the highest resource utilisation level being assigned an A and the lowest resource utilisation level the lowest letter in the sequence.

The underlying assumption in the method is that variation in the proportions of AR-DRGs within an adjacent AR-DRG is caused by variation in the reporting and coding of additional diagnoses relevant to the split of the adjacent AR-DRG into individual AR-DRGs. A corollary of this assumption is that any variation seen was not caused by age, diagnosis, socioeconomic or other effects. This assumption is less likely to be valid when comparing hospital sectors which have differing casemix or the smaller jurisdictions due to differing population profiles, and the limitations of the standardisation method used.

The data were directly standardised by scaling the distribution of adjacent AR-DRGs in each jurisdiction/sector to the same distribution as the national total. The resulting proportions of separations in the lowest-resource AR-DRG within the adjacent AR-DRG are therefore comparable.

Because the analysis concentrates on differences in reporting additional diagnoses that are significant in AR-DRG assignment within the adjacent AR-DRG groupings, adjacent AR-DRGs where the partitioning involved factors other than or in addition to additional diagnoses were excluded from the analysis. This included adjacent AR-DRGs with splits involving age, malignancy, mental health legal status, birth weight, discharge status (including transfers, left against medical advice and death) or procedures (for example, common duct exploration).

Five groups of adjacent AR-DRGs are covered.

1. All applicable adjacent AR-DRGs (that is, excluding adjacent AR-DRGs with other factors affecting partitioning as detailed above)
2. Adjacent DRGs where the lowest split was without CCs
3. Adjacent DRGs where the lowest split was without severe or catastrophic CCs
4. Major medical conditions: adjacent AR-DRGs E61 *Pulmonary embolism*, F62 *Heart failure and shock*, T60, *Septicaemia*. These adjacent AR-DRGs are selected because admission for these conditions is seen to be relatively non-discretionary and less likely than for other AR-DRGs to be influenced by variation in admission practices.
5. Vaginal and caesarean deliveries

The above categories overlap and in particular *Vaginal and caesarean deliveries* is a subset of the second category, and *Major medical conditions* is a subset of the third category. See Table A3.8 (accompanying this report on the Internet) for the list of AR-DRGs included.

For the Northern Territory, data for *All adjacent AR-DRGS* and for *Adjacent AR-DRGs with a severe or catastrophic complication as the lowest resource level AR-DRG* were suppressed due to limitations with direct standardisation for groups that report a limited range of AR-DRGs (see the discussion of relative stay indexes below).

Table A3.7 shows that there are differences between jurisdictions in the proportion of separations that group to the lowest resource split for adjacent AR-DRGs. In the private sector there was slightly less variation between the highest and the lowest proportions than in the public sector.

State-specific coding standards

The Australian Coding Standards were developed for use in both public and private hospitals with the aim of satisfying sound coding convention according to ICD-10-AM. Although all states and territories instruct their coders to follow the Australian Coding Standards, some jurisdictions also apply state-specific coding standards to deal with state-specific reporting requirements. These standards may be in addition to or instead of the relevant Australian Coding Standard, and may affect the comparability of ICD-10-AM coded data.

For example, there are variations in coding standards between jurisdictions with regard to the reporting of external cause codes and place of occurrence codes. The Australian Coding Standard requires a place of occurrence code to be reported if an external cause code in the range V00–Y89 has been reported, and requires an activity when injured code to be recorded if the external cause code is in the range V00–Y34. The Western Australian coding standard requires the mandatory recording of a place of occurrence and activity when injured code for all records with a diagnosis code in the range S00–T98, regardless of the external cause code reported. The Victorian coding standard does not require the recording of external cause, place of occurrence or activity when injured if the care type is *Rehabilitation*.

ICD-10-AM codes used for selected analyses

A number of tables in this report use ICD-10-AM codes to define diagnoses and procedures. The codes are presented in Table A3.9 (accompanying this report on the Internet) and relate to:

- Figures 13, 14, 15 and 16 in the ‘Hospitals at a glance’ section
- Tables 4.5, 4.6 and 4.7, which present statistics on selected procedures
- Tables 4.8, 4.9 and 4.10, which present statistics on selected potentially preventable hospitalisations
- Table 4.14 which presents statistics indicating adverse events associated with hospitalisations
- Tables 9.19, 9.20 and 9.21, which present statistics on renal failure hospitalisations.

AR-DRG versions, cost weights and cost estimates

Information based on AR-DRGs is presented in Chapters 2, 4, 7, 12 and in this appendix.

AR-DRG-based analyses included separations only if the care type was reported as *Acute*, or was not reported, or if the care type was *Newborn* and the separation had at least one qualified day. Thus separations for *Rehabilitation*, *Palliative care*, *Geriatric evaluation and management*, *Psychogeriatric care*, *Maintenance care*, *Other admitted patient care*, and *Newborn care* with no qualified days were excluded.

AR-DRG versions

Each separation in the National Hospital Morbidity Database was classified to AR-DRG version 4.2 (DHAC 2000) and AR-DRG version 5.0 (DoHA 2002) or AR-DRG version 5.1 (DoHA 2004b) on the basis of demographic and clinical characteristics of the patient.

Each AR-DRG version is based on a specific edition of ICD-10-AM. The ICD coded data for 1998-99 and 1999-2000 were reported using the first edition of ICD-10-AM to which AR-DRG version 4.1 applies. For 2000-01 and 2001-02 the data were reported using the second edition of ICD-10-AM to which AR-DRG version 4.2 applies. For 2002-03 and 2003-04 the data were reported using the third edition of ICD-10-AM to which AR-DRG version 5.0 applies, and version 5.1 was the relevant AR-DRG version for the 2004-05 data which were reported using the fourth edition of ICD-10-AM.

For time series comparisons, AR-DRG version 4.2 is not compatible with AR-DRG version 5.0 or AR-DRG version 5.1. However for most purposes AR-DRG version 5.0 and AR-DRG version 5.1 can be regarded as comparable. The differences between the features of AR-DRG version 5.0 and AR-DRG version 4.2 were summarised in Appendix 3 of *Australian hospital statistics 2002-03* (AIHW 2004a) and should be taken into consideration when comparing data using the two classifications.

AR-DRG-based time series data in Tables 12.5 and 12.6 use AR-DRG version 5.0 for 2000-01 to 2003-04 and AR-DRG version 5.1 for 2004-05. For the purpose of this analysis, the ICD coded data for 2000-01 and 2001-02 (provided as second edition of ICD-10-AM codes) were mapped forward to the third edition of ICD-10-AM and then grouped to AR-DRG version 5.0. As AR-DRG version 5.0 was developed to be generated from the third edition ICD-10-AM codes, the data presented in these tables for 2000-01 to 2001-02 may not be comparable for a small number of AR-DRGs.

Similarly, the AIHW's AR-DRG online data cubes (www.aihw.gov.au) present AR-DRG versions 4.0, 4.1 and 4.2 based on the relevant AR-DRG versions for 1997-98 to 2001-02, and for the years 2002-03 to 2004-05 the supplied third and fourth edition ICD-10-AM codes were mapped backwards to second edition ICD-10-AM codes to group the data for those years to AR-DRG version 4.2. Similarly, for the AR-DRG version 5.0/5.1 cube, which covers the years 1998-99 to 2004-05, the data for 1998-99 to 2001-02 based on earlier editions of ICD-10-AM were mapped forwards to the third edition ICD-10-AM codes and then grouped to AR-DRG version 5.0.

AR-DRG cost weights and cost estimates

Cost weights and cost estimates are prepared each year by the Department of Health and Ageing through the National Hospital Cost Data Collection (NHCDC) (DoHA 2005a). The average cost weight information provides a guide to the expected resource use for separations, with a value of 1.00 representing the theoretical average for all separations. The NHCDC essentially estimates the average cost of each AR-DRG each year and the cost weight is the average cost for that AR-DRG divided by the average cost across all AR-DRGs (\$3,119 for the public sector in 2003-04). Separate cost weights are estimated for the public and private sectors because of the differences in the range of costs recorded in public and private hospitals.

The latest available cost weights (at the time of publication of this report) were for version 5.0 AR-DRGs for 2003-04 for public hospitals (DoHA 2005a), and for version 4.2 AR-DRGs for 2002-03 for private hospitals (DoHA 2004). When the NHCDC 2004-05 results become

available updated information using those data will be provided in the tables accompanying this report on the internet at www.aihw.gov.au.

In Tables 2.3, 2.4, 4.1, 4.2, 7.10, chapter 12 and in this appendix, average cost weights using public cost weights are based on the AR-DRG version 5.0 2003–04 national public sector estimated cost weights. These were applied to AR-DRG version 5.0 DRGs for 2000–01 to 2003–04 and AR-DRG version 5.1 DRGs for 2004–05. In Tables 2.3 and 2.4, average cost weights using private cost weights are presented based on the AR-DRG version 4.2 2002–03 national private sector estimated cost weights (DoHA 2004a) applied to AR-DRG version 4.2 DRGs.

The *cost by volume* estimates for public hospitals presented in Table 7.10, chapter 12 and the supplementary chapter 12 tables (accompanying this report on the internet) are calculated by applying the AR-DRG version 5.0 2003–04 national public sector estimated average costs to the AR-DRG version 5.1 data for 2004–05. Cost by volume estimates have not been presented for the private sector as the most recent AR-DRG cost estimates available for private hospitals were for 2002–03.

Cost per casemix-adjusted separation

The cost per casemix-adjusted separation (Tables 4.1 and 4.2) is an indicator of the efficiency of public acute care hospitals. It is a measure of the average recurrent expenditure for each admitted patient, adjusted using AR-DRG cost weights for the resources expected to be used for the separation. A synopsis of the methods used in this analysis is presented below, and more detail is available in *Australian hospital statistics 2000–01* (AIHW 2002).

Definition

The formula used to calculate the cost per casemix-adjusted separation is:

$$\frac{\text{Recurrent expenditure} \times \text{IFRAC}}{\text{Total separations} \times \text{Average cost weight}}$$

where:

- recurrent expenditure is as defined by the recurrent expenditure data elements in the *National health data dictionary* (NHDC 2003)
- IFRAC (admitted patient cost proportion) is the estimated proportion of total hospital expenditure that related to admitted patients
- total separations excludes *Newborns* with no qualified days and records that do not relate to admitted patients (*Hospital boarders* and *Posthumous organ procurement*)
- average cost weight is a single number representing the relative expected resource use for the separations.

Recurrent expenditure

For the medical labour cost category, data are available only for public patients, as private patients are charged directly by their doctor for medical services, and these charges are not included in the recurrent expenditure figures. The proportion of patients other than public patients can vary, therefore medical costs for these patients are estimated, and the

expenditure increased to resemble what it would be if all patients had been public patients. The estimation is based on the salary/sessional and VMO expenditure per patient day for public patients, applied to all patients.

For the first time this year costs per casemix adjusted separation for states and territories for which it was available were calculated excluding depreciation, as previously, and also including depreciation.

Admitted patient cost proportion

To determine the costs associated with admitted patients, an admitted patient cost proportion (or inpatient fraction, IFRAC) is used. The IFRAC was provided to the AIHW for most hospitals by the states and territories and is the proportion of total hospital expenditure that related to the provision of care for admitted patients. For a few small hospitals where the IFRAC was not available, the admitted patient costs were estimated using the Health and Allied Services Advisory Council (HASAC) ratio.

Total separations

The formula used to calculate the cost per casemix-adjusted separation includes all admitted patient separations and their associated costs. It is appropriate to include the acute care separations, which comprise approximately 97% of the total for the hospitals included in the analysis (Table A3.10), as cost weights are available for them. However, the 3% of separations that are not acute care are also included and, as there are no cost weights for these separations, the average cost weight for the acute separations for each hospital is used. This method may affect the estimates of cost-weighted separations (see below) for each state and territory, depending on the proportion of non-acute separations for the state or territory. The non-acute admitted patients (including rehabilitation care patients) generally have higher costs per separation than acute care patients because, although their daily costs are lower, these patients typically have longer lengths of stay.

Comparisons between the states and territories should therefore take into consideration the uncertainty introduced by these episodes for which the cost weights were unavailable. There is variation in the number and length of stay for the non-acute care separations between jurisdictions (Table A3.10).

To refine the method to remove this anomaly would require estimates of expenditure for acute care for admitted patients (acute care IFRACs). For 2004–05, such estimates were available for some jurisdictions, as presented below.

There is also some variation between states and territories in the ways in which periods of hospitalisation are split into episodes of care (for example, *Newborn* care). In states or territories where there is a clear delineation in funding arrangements between acute and non-acute services, splitting episodes into acute and other components may be different from where there is no such funding delineation.

Average cost weights

Hospital morbidity data provided to the National Hospital Morbidity Database were used to estimate average cost weights for the hospitals reported in this analysis.

The average cost weight for a hospital or group of hospitals (Table 4.2, for example) is calculated as the number of casemix-adjusted separations divided by the number of separations. It represents in a single number the overall relative expected use of resources by

a hospital. For example, a hospital with an average cost weight of 1.08 has an 8% more costly casemix than the national average (by design equal to 1.00).

The average cost weight for a group of hospitals is multiplied by the total number of separations for that group to produce the number of casemix-adjusted separations (the denominator). The term 'cost per casemix-adjusted separation' derives from this use of the number of separations adjusted by relative costliness.

The validity of comparisons of average cost weights is limited by differences in the extent to which each jurisdiction's psychiatric care services are integrated into its public hospital system. For example, in Victoria, almost all public psychiatric hospitals are mainstreamed into acute hospital services and psychiatric patient data are therefore included in the acute hospital reports. Cost weights are not as useful as measures of resource requirements for acute psychiatric care because the relevant AR-DRGs are less homogeneous than for other acute care.

Cost per acute care and non-psychiatric acute care casemix-adjusted separation

Because cost weights are available only for acute care separations, the cost per casemix-adjusted separation analysis applies these cost weights to all separations. The methodology would be refined if cost weights became available for other care types, or if the analysis were to be restricted to acute care activity and expenditure. As AR-DRG cost weights are likely to be less useful as measures of resource requirements for psychiatric acute care than for other acute care, a further refinement would be to restrict the analysis to non-psychiatric acute care activity and expenditure.

Restriction to acute care activity requires estimates to be made by the states and territories of expenditure on acute care admitted patients (supplied as acute care IFRACs), and for separations relating to non-acute care patients to be excluded from the analysis. Restriction to non-psychiatric acute care activity requires estimates to be made by the states and territories of expenditure on non-psychiatric acute care admitted patients (supplied as non-psychiatric acute care IFRACs), and of expenditure for separations relating to non-acute care patients and to psychiatric acute care patients to be excluded from the analysis. Psychiatric acute care activity is excluded from the hospital morbidity data by excluding separations if one or more psychiatric care days were reported for the separation (indicating that care was provided in a specialised psychiatric unit). This methodology is still under development.

New South Wales, Victoria, Western Australia and Tasmania provided estimates of expenditure on acute care admitted patients, so estimates of the cost per casemix-adjusted acute care separation are presented for these jurisdictions (Table A3.11). Separations were included only if their care type was *Acute, Newborn* with at least one qualified day or for which the care type was *Not reported*.

The reported acute care and non-psychiatric acute care IFRACs were the same as the IFRACs for all care types for some hospitals that had reported non-acute admitted patient care activity. Those hospitals were excluded from the analysis if they reported more than 1,000 patient days for non-acute separations. Several hospitals reported acute care IFRACs that gave an estimated cost per day of over \$1,000, which was considered an unreasonably high estimate for non-acute care types.

For New South Wales, fifteen hospitals were excluded from the analysis (28% of separations). Five hospitals were omitted for both Victoria and Western Australia, (7% and 28% of separations respectively). For Tasmania, there were no hospitals excluded.

The estimated cost per acute care casemix-adjusted separation for the hospitals included was \$3,363 in New South Wales, \$3,046 in Victoria, \$3,400 in Western Australia, and \$3,483 in Tasmania. The cost per casemix-adjusted separation for all separations in these hospitals was \$3,501, \$3,378, \$3,555 and \$3,648 respectively (Table A3.11), so the effect of restricting the analysis to acute care admitted patients was to decrease the estimated cost by 3.9% in New South Wales, 9.8% in Victoria, 4.4% in Western Australia and 4.5% in Tasmania.

The estimated cost per acute non-psychiatric casemix-adjusted separation for the selected hospitals was \$3,352 in New South Wales, \$3,013 in Victoria and \$3,468 in Western Australia. The effect of restricting the analysis to acute non-psychiatric admitted patients was to decrease the estimated cost by 4.3% in New South Wales, 10.8% in Victoria and 2.4% in Western Australia (Table A3.12).

The estimated cost per acute care casemix-adjusted separation, including depreciation for the selected hospitals was \$3,501 in New South Wales, \$3,382 in Victoria and \$3,555 in Western Australia (Table A3.11). The estimated cost per acute non-psychiatric casemix-adjusted separation, including depreciation for the selected hospitals was \$3,501 in New South Wales, \$3,159 in Victoria and \$3,520 in Western Australia (Table A3.12).

These analyses would be further improved if all jurisdictions increased their capacity to separate costs for psychiatric services, other acute services, sub-acute services (for example, rehabilitation) and non-acute services.

Cost per casemix-adjusted separation, including capital

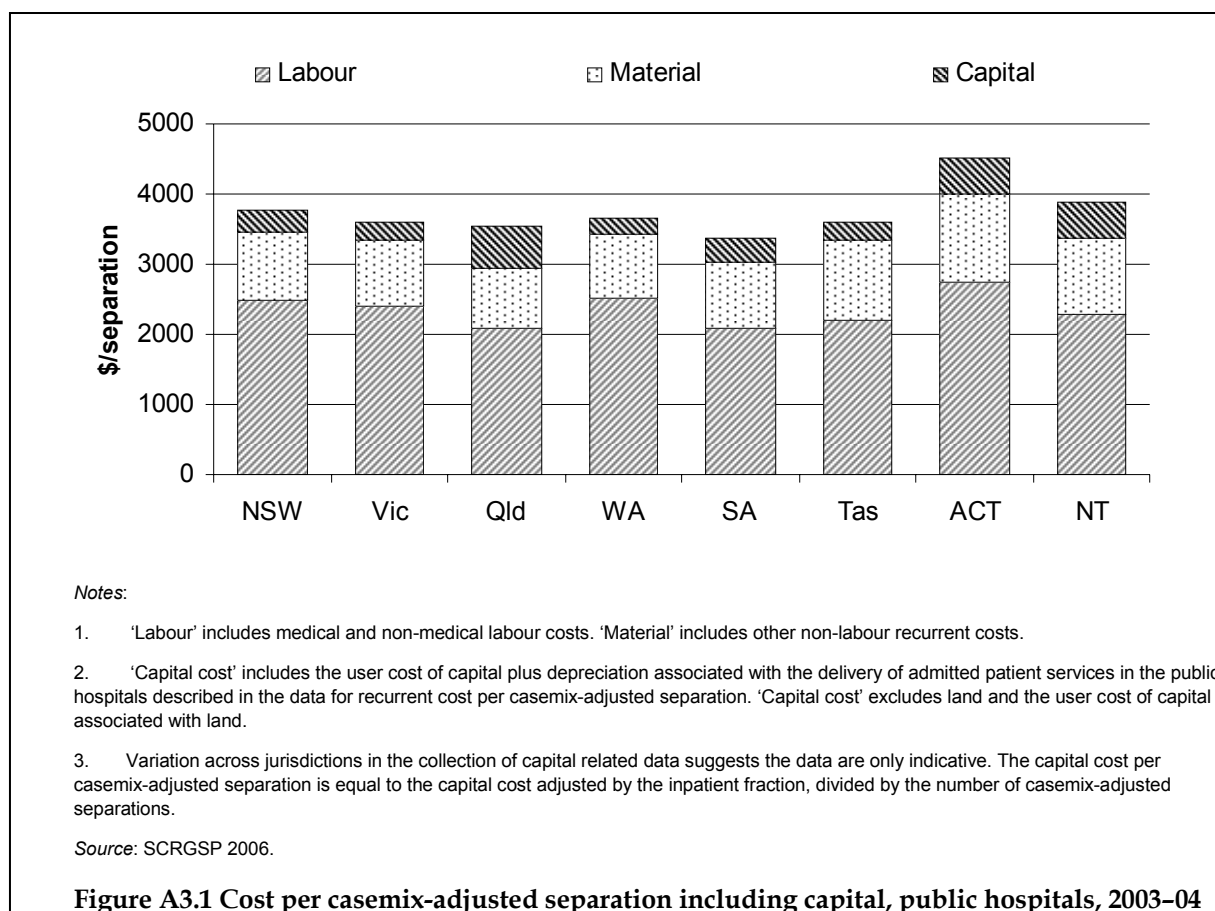
The cost per casemix-adjusted separation analysis includes recurrent expenditure and, for the first time this year, includes depreciation for those states that reported it (see above, and Chapter 4).

The Steering Committee for the Review of Government Service Provision (SCRGSP) reported 'total costs per casemix-adjusted separation' by state and territory for 2003–04 (SCRGSP 2006). It was defined as the recurrent cost per casemix-adjusted separation plus the capital costs (depreciation and the user cost of capital of buildings and equipment) per casemix-adjusted separation.

'Depreciation is defined as the cost of consuming an asset's services, and is measured by the reduction in value of an asset over the financial year. The user cost of capital is the opportunity cost of the capital and is equivalent to the return forgone from not using the funds to deliver other government services or to retire debt. Interest payments represent a user cost of capital and so should be excluded from recurrent expenditure where user costs of capital are calculated separately and added to recurrent costs. Interest expenses were deducted directly from capital costs in all jurisdictions to avoid double counting' (SCRGSP 2006).

The total cost per casemix adjusted separation by jurisdiction (including capital costs), as published by SCRGSP for 2003–04, is presented in Figure A3.1. The data exclude the user cost of capital associated with land. Excluding the user cost of capital for land, the total cost per casemix-adjusted separation ranged from \$4,503 in the Australian Capital Territory to \$3,363 in South Australia (SCRGSP 2006).

Further details about the SCRGSP calculation of total cost per casemix-adjusted separation are available in the *Report on government services 2005* (SCRGSP 2006).



Relative stay index

Relative stay indexes (RSIs) have been identified as indicators of efficiency and are presented in Tables 2.3, 2.4, 4.1, 4.2, 4.12, 4.13, 12.1 and 12.2. They are calculated as the actual number of patient days for separations in selected AR-DRGs, divided by the number of patient days expected (based on national figures) standardised for casemix. An RSI greater than 1 indicates that an average patient's length of stay is higher than expected given the casemix for the group of separations of interest. An RSI of less than 1 indicates that the length of stay was less than expected.

The standardisation for casemix (based on the AR-DRG version 5.1 and age of the patient for each separation) allows comparisons to be made that take into account variation in types of services provided, but does not take into account other influences on length of stay, such as Indigenous status.

The RSI method includes acute care separations only, and separations were excluded for patients who died or were transferred within 2 days of admission, or separations with length of stay greater than 120 days. Excluded from the analysis were AR-DRGs which are for 'rehabilitation', AR-DRGs which are predominantly same day (such as R63Z *Chemotherapy* and L61Z *Admit for renal dialysis*), AR-DRGs which have a length of stay component in the definition (see Table A3.8 accompanying this report on the internet), and Error AR-DRGs.

This publication is different from previous *Australian hospital statistics* publications in that the RSI methodology has been updated from AR-DRG version 4 to AR-DRG version 5.1.

The analysis using AR-DRG version 5.1 results in the exclusion of a greater number of AR-DRGs with a length of stay component in the definition than in AR-DRG version 4. In addition, some AR-DRGs no longer exist (for example, G41B *Complex therapeutic gastroscopy for non-major digestive diseases, sameday* and 962Z *Unacceptable obstetric diagnosis combination*) and for some AR-DRGs which are named identically in both versions there are notable differences in the number of separations that are assigned to the AR-DRG when the data are grouped to both versions. For example in 2004–05, 261,774 separations were assigned to the AR-DRG G44C *Other colonoscopy, same day* in AR-DRG version 4.2 and 192,267 separations were assigned to AR-DRG G44C *Other colonoscopy, sameday* in AR-DRG version 5.1.

The result is that more separations are excluded from the RSI analysis when using AR-DRG version 5.1 than when using AR-DRG version 4.2.

Comparisons with *Australian hospital statistics 2003–04* should be made with caution, because (in general) the exclusion of additional AR-DRGs with a length of stay in the definition results in ratios slightly further from 1 than were produced by the AR-DRG version 4-based method. This results, for example, in slight increases in private hospital RSIs (0.5% overall) and slight decreases in public hospital RSIs (-0.1% overall).

The AR-DRG version 5-based methodology was also used for the RSI time series in Table 2.3. For the purpose of this analysis, data based on earlier editions of ICD-10-AM (from 2000–01 to 2001–02) were mapped forward to the third edition of ICD-10-AM and then grouped to AR-DRG version 5.0.

Standardisation methods

Two methods are used for standardisation of the length of stay data, and are analogous to direct and indirect age-standardisation methods. The method used generally in this report is analogous to indirect standardisation where the national rates (ALOS) for each AR-DRG (version 5.1) are applied to the relevant population of interest (number of separations for each AR-DRG in the hospital group) to derive the expected number of patient days. Indirect standardisation methods are generally used when rate information for the population of interest (ALOS for each AR-DRG in this analysis) is unknown or subject to fluctuation because of small population sizes. This method provides a measure of efficiency for a hospital, or group of hospitals, based on their actual activity. However, an indirectly standardised rate compares a group with a 'standard population rate' so, using this method, rates for different groups are not strictly comparable because each group has a different casemix to which the national ALOS data have been applied. Therefore, the indirectly standardised data for hospital groups should be compared with the national average of 1.00.

The second method is analogous to direct standardisation where the rate (ALOS) of each AR-DRG for the group of interest is multiplied by the national population (total number of separations in each AR-DRG) to derive the expected number of patient days. This method provides a measure of efficiency for a hospital, or group of hospitals, and is suitable if all or most AR-DRGs are represented in a hospital group. Direct standardisation methods are generally used where the populations and their characteristics are stable and reasonably similar, for example for total separations for New South Wales and Victoria.

Groups can be compared using directly standardised rates as the activity of each group is weighted using the same set of weights, namely the national casemix. However, the ALOS data for AR-DRGs which are not represented in a group need to be estimated. The method

used in this report uses an assumption that the missing AR-DRGs for the hospital group had a relative length of stay that was the same as that for the reported AR-DRGs for the hospital group, weighted by the national distribution of the reported AR-DRGs in the group. Another weakness of direct standardisation is that this method can scale up AR-DRGs to have an impact that does not reflect their relative volume in a hospital group. This weakness can be particularly problematic if the low-volume AR-DRGs are atypical.

The indirect standardised method has been mainly used in this report because of the weaknesses of the direct standardised method. However, the direct standardised methodology has been used (in addition to the indirect standardisation) in Table 2.3 as a time series and in Table 4.13 by state and territory. This allows comparison between the two methods and more direct comparison for those jurisdictions and sectors for which the data are presented. Data for the direct standardised method in the public sector in the Northern Territory are suppressed in Table 4.13, because of problems with using the direct standardisation for hospital groups that reported a limited range of AR-DRGs. For public hospitals in the Northern Territory and private hospitals in South Australia, fewer than 600 of the 632 DRGs used in the national RSI analysis are represented, so results are likely to have been affected by estimation of the missing ALOS data.

Table A3.14 shows the number of AR-DRGs represented in each cell in Table 4.13, so that the number of AR-DRGs for which ALOS was estimated can be derived. For those jurisdictions and sectors for which RSI statistics are presented in Table 4.13, there were between 604 and 632 AR-DRGs represented, meaning that ALOS data was estimated for up to 28 AR-DRGs.

Data on geographical location

Data on geographical location are collected on hospitals in the National Public Hospital Establishments Database and on the area of usual residence of patients in the National Hospital Morbidity Database. These data have been provided as state or territory and Statistical local area (SLA, a small area unit within the Australian Bureau of Statistics Australian Standard Geographic Classification, ASGC) and/or postcode, and have been aggregated to Remoteness Areas.

The ASGC's remoteness structure categorises geographical areas into Remoteness Areas, described in detail on the ABS web site www.abs.gov.au.

The classification is as follows:

- major cities of Australia
- inner regional
- outer regional
- remote
- very remote.

Geographical location of hospital

The Remoteness Area of each public hospital was determined using geo-coded data (with latitude and longitude) for each hospital in 2001 or on the basis of its SLA, postcode or other location information as detailed in *Australian hospital statistics 2002–03* (AIHW 2004a).

Data on the Remoteness Area of hospitals are presented in Chapter 3 (Table 3.2) and Chapter 5 (Table 5.2).

Geographical location of usual residence

Data on the Remoteness Area of usual residence of admitted patients are presented in Figure 10 in the 'Hospitals at a glance' section and in Tables 4.6, 4.9, 8.12 and 9.21. Data on the state or territory of usual residence are reported in Chapter 4 (Tables 4.5 and 4.8), Chapter 7 (Tables 7.7, 7.8, 7.9 and 7.10) and Chapter 9 (Table 9.20).

The data used for these tables were derived from data supplied by the states and territories for the National Hospital Morbidity Database on the area of usual residence of the patients. The *National health data dictionary* specifies that these data should be provided as the state or territory and the SLA of usual residence. Although most separations included data on the state or territory of usual residence, not all states and territories were able to provide information on the area of usual residence in the form of an SLA code. New South Wales, Victoria, Western Australia, Tasmania, the Australian Capital Territory and the Northern Territory were able to provide SLA codes both for patients usually resident in the jurisdiction and for patients not usually resident in the jurisdiction. Queensland and South Australia provided SLA codes for patients usually resident in the jurisdiction and postcodes for patients not usually resident in the jurisdiction.

The AIHW mapped the supplied area of residence data for each separation to 2004 SLA codes and to Remoteness Area categories. This was undertaken on a probabilistic basis as necessary, using ABS concordance information describing the distribution of the population by postcode, Remoteness Areas and SLAs (2004 and previous years). The mapping process identified missing, invalid and superseded codes, but resulted in 99.5% of records being assigned 2004 SLA codes. The remainder of records had a usual residence of *Overseas/Not elsewhere classified* or *Not reported*. Due to the probabilistic nature of this mapping, the SLA and Remoteness Area data for individual separations may not be accurate; however, the overall distribution of separations by geographical areas is considered useful.

Socioeconomic advantage/disadvantage

The Socio-Economic Indexes For Areas 2001 (termed SEIFA 2001 (ABS 2004b)) are generated by the ABS using a combination of 2001 Census data such as income, education, skill level of occupation/unemployment, wealth and living conditions, dwellings without motor vehicles, rent paid, mortgage repayments, and dwelling size. Composite scores are averaged across all people living in areas and defined for areas based on the Census collection districts. However, they are also compiled for higher levels of aggregation including Statistical Local Area. The SEIFAs are described in detail on the ABS web site www.abs.gov.au.

The SEIFA Index of Advantage/Disadvantage was generated by the ABS using a combination of Census data, including variables measuring both advantage and disadvantage. A higher score on the index indicates that an area has attributes that measure advantage, such as a relatively high proportion of people with high incomes or a skilled workforce. It also means an area has a low proportion of people with variables that measure disadvantage, such as low incomes, and relatively few unskilled people in the workforce. Conversely, a low score on the index indicates that an area has a high proportion of individuals with variables that measure disadvantage, such as low incomes, more employees in unskilled occupations; and a low proportion of people with variables that measure

advantage, such as high incomes or people in skilled occupations. Hence, the index offsets any disadvantage in an area with advantage.

Separation rates by quintile of advantage/disadvantage were generated by the AIHW by using the SEIFA scores for this index for the SLA of usual residence of the patient reported for each separation. The most disadvantaged quintile represents the areas containing the 20% of the population with the least advantage/most disadvantage and the most advantaged quintile represents the areas containing the 20% of the population with the least disadvantage/most advantage.

Patient election status and funding source categories

For *Australian hospital statistics 2001–02* and subsequent publications, Tables 7.2 to 7.5 (previously Tables 6.1 to 6.4) were based on the data elements 'Patient election status' and 'Funding source for hospital patient'. For the purpose of reporting these data from 2001–02 to 2004–05, the 'Patient election status' for patients whose funding source was reported as *Australian Health Care Agreements* and *Reciprocal health care agreements* was categorised as public. Public psychiatric hospital patients were also categorised as public unless another funding source was reported for them. The 'Patient election status' for patients whose funding source was reported as *Private health insurance*, *Self-funded*, *Workers compensation*, *Motor vehicle third party personal claim*, *Other compensation*, *Department of Veterans' Affairs*, *Department of Defence* or *Correctional facility* was categorised as private. Patients whose funding source was reported as *Other hospital or public authority*, *Other* or *Not reported* were categorised according to the reported 'Admitted patient election status'. For 2003–04, the 'Patient election status' for separations for patients whose funding source was reported as *Other hospital or public authority* in private hospitals in Tasmania was categorised as public, because the patients were contracted by a public hospital and the 'Admitted patient election status' was not reported. Tables in Chapters 9, 10 and 12 that present data for public patient separations used 'Patient election status', as described above, as the basis for this category.

To facilitate time series comparisons and to provide some continuity between *Australian hospital statistics* reports for 1999–00 to 2003–04 and this publication, the presentation of information for 2001–02 to 2004–05 in Table 7.1 combines selected funding source categories and includes Medicare eligibility status data. In Table 7.1 for 2001–02 to 2004–05, the category *Compensable* includes patients whose funding source was *Workers compensation*, *Motor vehicle third party personal claim* and *Other compensation*, and the category *Other private* includes private patients whose funding source was not *Department of Veterans' Affairs* or *Compensable*. However, caution should be used when making comparisons over time (Tables 7.1, 9.6, 10.6 and 12.6) as the categories presented are not directly comparable. In previous years there was some variation between jurisdictions in the use of the data element 'Admitted patient election status', with some states and territories using this element to reflect the patient's choice of room or doctor and others to reflect the funding source. Hence, anomalies may exist because patients with the funding source reported as *Department of Defence* and *Correctional facility* have been categorised as 'private patients' for 2001–02 to 2004–05, whereas they may previously have been reported as 'public patients', for example.

Table A3.5 Separations^(a), by number of diagnoses^(b) reported and hospital sector, states and territories, 2004–05

Hospital sector	Number							Total	
	NSW	Vic	Qld	WA	SA	Tas	ACT		NT
Public hospitals									
Separations ^(c)	1,344,246	1,223,429	733,761	383,260	365,596	86,653	63,638	75,891	4,276,474
One diagnosis code only	319,186	343,235	220,699	83,020	100,657	20,641	28,245	7,696	1,123,379
Two diagnosis codes only	333,068	402,154	214,048	106,171	118,525	25,893	13,000	41,563	1,254,422
Three diagnosis codes only	174,957	180,593	105,709	80,620	52,125	14,053	8,006	7,507	623,570
Four diagnosis codes only	130,200	101,397	64,145	38,172	31,825	8,003	5,149	5,296	384,187
Five or more diagnosis codes	385,880	196,048	129,160	75,277	62,464	18,049	9,238	13,793	889,909
Mean diagnosis codes per separation	3.8	2.9	3.0	3.3	2.9	3.2	2.6	3.2	3.2
Maximum number of diagnosis codes	45	40	75	55	26	44	29	30	..
Private hospitals									
Separations ^(c)	747,198	704,267	676,846	308,715	211,829	n.p.	n.p.	n.p.	2,743,876
One diagnosis code only	281,259	275,906	199,512	104,909	73,510	n.p.	n.p.	n.p.	970,179
Two diagnosis codes only	210,552	217,364	202,943	101,020	67,413	n.p.	n.p.	n.p.	830,039
Three diagnosis codes only	119,314	103,710	124,689	50,729	31,566	n.p.	n.p.	n.p.	444,550
Four diagnosis codes only	61,459	49,540	66,630	22,213	16,713	n.p.	n.p.	n.p.	223,607
Five or more diagnosis codes	74,613	56,496	83,072	29,844	22,627	n.p.	n.p.	n.p.	274,247
Mean diagnosis codes per separation	2.4	2.3	2.7	2.4	2.5	n.p.	n.p.	n.p.	2.4
Maximum number of diagnosis codes	20	38	51	50	25	n.p.	n.p.	n.p.	..
	Per cent								
Public hospitals									
One diagnosis code only	23.80	28.06	30.08	21.66	27.53	23.83	44.38	10.15	26.29
Two diagnosis codes only	24.83	32.87	29.17	27.70	32.42	29.90	20.43	54.79	29.35
Three diagnosis codes only	13.04	14.76	14.41	21.04	14.26	16.23	12.58	9.90	14.59
Four diagnosis codes only	9.71	8.29	8.74	9.96	8.70	9.24	8.09	6.98	8.99
Five or more diagnosis codes	28.77	16.02	17.60	19.64	17.09	20.84	14.52	18.18	20.82
Private hospitals									
One diagnosis code only	37.64	39.25	29.48	33.98	34.70	n.p.	n.p.	n.p.	35.37
Two diagnosis codes only	28.18	30.92	29.98	32.72	31.82	n.p.	n.p.	n.p.	30.26
Three diagnosis codes only	15.97	14.75	18.42	16.43	14.90	n.p.	n.p.	n.p.	16.21
Four diagnosis codes only	8.23	7.05	9.84	7.20	7.89	n.p.	n.p.	n.p.	8.15
Five or more diagnosis codes	9.99	8.04	12.27	9.67	10.68	n.p.	n.p.	n.p.	10.00

(a) Separations for which the care type was reported as *Newborn* with no qualified days, and records for *Hospital boarders* and *Posthumous organ procurement* have been excluded.

(b) Codes reporting external causes of injury and poisoning are not included.

(c) Includes separations for which no diagnosis codes were reported.

Note: The Institute requested up to 50 diagnosis codes to be reported.

.. Not applicable.

n.p. Not published.

Table A3.7: Separation^(a) statistics for selected adjacent AR-DRGs^(b), by hospital sector, states and territories, 2004–05

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT ^(c)	Total
All adjacent AR-DRGs split by complications only									
Public hospitals									
Separations	570,720	463,716	358,073	162,979	146,874	39,582	25,448	19,622	1,787,014
Raw proportion in lowest resource level AR-DRG	0.61	0.65	0.68	0.65	0.65	0.69	0.66	0.56	0.64
Standardised proportion in lowest resource level AR-DRG	0.62	0.65	0.69	0.65	0.65	0.69	0.66	n.p.	0.65
95% confidence interval of proportion	0.62–0.62	0.65–0.65	0.69–0.69	0.65–0.66	0.64–0.65	0.69–0.70	0.66–0.67	n.p.	0.65–0.65
Private hospitals									
Separations	136,318	132,356	134,494	59,224	44,925	n.p.	n.p.	n.p.	528,093
Raw proportion in lowest resource level AR-DRG	0.76	0.73	0.74	0.75	0.74	n.p.	n.p.	n.p.	0.74
Standardised proportion in lowest resource level AR-DRG	0.71	0.70	0.70	0.72	0.68	n.p.	n.p.	n.p.	0.70
95% confidence interval of proportion	0.70–0.71	0.70–0.71	0.69–0.70	0.71–0.72	0.67–0.69	n.p.	n.p.	n.p.	0.70–0.71
Adjacent AR-DRGs with a moderate complication as the lowest resource level AR-DRG									
Public hospitals									
Separations	165,687	118,882	87,673	39,046	36,695	9,925	6,806	7,066	471,780
Standardised proportion in lowest resource level AR-DRG	0.52	0.53	0.60	0.55	0.54	0.58	0.55	0.48	0.54
95% confidence interval of proportion	0.52–0.52	0.53–0.53	0.59–0.60	0.54–0.55	0.53–0.54	0.57–0.59	0.54–0.57	0.47–0.49	0.54–0.54
Private hospitals									
Separations	33,824	36,150	35,861	18,251	11,103	n.p.	n.p.	n.p.	141,448
Standardised proportion in lowest resource level AR-DRG	0.55	0.55	0.56	0.58	0.53	n.p.	n.p.	n.p.	0.56
95% confidence interval of proportion	0.54–0.55	0.55–0.56	0.55–0.56	0.57–0.59	0.52–0.54	n.p.	n.p.	n.p.	0.55–0.56
Adjacent DRGs with a severe or catastrophic complication as the lowest resource level AR-DRG									
Public hospitals									
Separations	268,715	212,478	135,906	64,709	65,254	18,793	11,297	9,989	787,141
Standardised proportion in lowest resource level AR-DRG	0.67	0.71	0.74	0.71	0.70	0.75	0.72	n.p.	0.70
95% confidence interval of proportion	0.67–0.67	0.71–0.72	0.74–0.74	0.71–0.72	0.70–0.71	0.74–0.76	0.71–0.74	n.p.	0.70–0.71
Private hospitals									
Separations	102,494	96,206	98,633	40,973	33,822	n.p.	n.p.	n.p.	386,645
Standardised proportion in lowest resource level AR-DRG	0.79	0.78	0.77	0.79	0.76	n.p.	n.p.	n.p.	0.78
95% confidence interval of proportion	0.78–0.79	0.78–0.79	0.77–0.78	0.78–0.79	0.75–0.77	n.p.	n.p.	n.p.	0.78–0.78

(continued)

Table A3.7 (continued): Separation^(a) statistics for selected adjacent AR-DRGs^(b), by hospital sector, states and territories, 2004–05

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT ^(c)	Total
Adjacent AR-DRGs classified as major medical conditions									
Public hospitals									
Separations	17,908	12,161	7,410	3,524	3,775	1,029	557	583	46,947
Standardised proportion in lowest resource level AR-DRG	0.59	0.61	0.67	0.64	0.61	0.72	0.66	0.61	0.62
95% confidence interval of proportion	0.58–0.60	0.60–0.62	0.65–0.68	0.62–0.66	0.59–0.63	0.68–0.77	0.60–0.71	0.56–0.66	0.61–0.62
Private hospitals									
Separations	1,862	3,553	3,372	1,313	1,173	n.p.	n.p.	n.p.	11,679
Standardised proportion in lowest resource level AR-DRG	0.65	0.70	0.66	0.69	0.69	n.p.	n.p.	n.p.	0.68
95% confidence interval of proportion	0.62–0.68	0.68–0.72	0.63–0.68	0.65–0.72	0.65–0.73	n.p.	n.p.	n.p.	0.66–0.69
Adjacent AR-DRGs for vaginal and caesarean delivery									
Public hospitals									
Separations	63,483	42,646	34,592	14,645	12,399	3,531	2,946	2,635	176,877
Standardised proportion in lowest resource level AR-DRG	0.36	0.31	0.43	0.33	0.34	0.36	0.34	0.37	0.36
95% confidence interval of proportion	0.35–0.36	0.30–0.31	0.42–0.43	0.33–0.34	0.33–0.35	0.35–0.38	0.32–0.35	0.35–0.38	0.35–0.36
Private hospitals									
Separations	20,482	19,213	15,987	10,039	4,681	n.p.	n.p.	n.p.	74,345
Standardised proportion in lowest resource level AR-DRG	0.34	0.32	0.36	0.37	0.33	n.p.	n.p.	n.p.	0.34
95% confidence interval of proportion	0.34–0.35	0.32–0.33	0.35–0.36	0.36–0.37	0.32–0.34	n.p.	n.p.	n.p.	0.34–0.35

(a) Separations for which the care type was reported as *Acute*, or *Newborn* with qualified patient days, or was Not reported.

(b) AR-DRG version 5.1, using AR-DRGs as detailed in the text of Appendix 3.

(c) Northern Territory data for some cells were suppressed due to limitations of the method when applied to cells with under-representation of some AR-DRGs.
n.p. Not published

Table A3.11: Summary of separations in public acute hospitals selected for the cost per casemix-adjusted separation analysis^(a) and data for excluded hospitals, states and territories, 2004–05

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Total separations ('000)	1,279	1,200	705	345	345	83	64	76	4,095
Total patient days ('000)	4,788	4,089	2,380	1,163	1,195	322	229	224	14,391
Acute separations^(b)									
Separations ('000)	1,256	1,167	679	340	334	82	62	75	3,994
Patient days ('000)	4,399	3,311	2,060	1,060	1,062	278	198	215	12,584
Acute care psychiatric separations^(c)									
Separations ('000)	23	16	23	6	6	3	1	1	80
Average cost weight ^(d)	1.59	2.30	1.69	1.97	1.93	1.63	1.97	1.74	1.82
Patient days ('000)	272	254	218	85	74	26	14	11	955
Acute care non-psychiatric separations									
Separations ('000)	1,233	1,152	656	334	328	79	61	74	3,915
Patient days ('000)	4,127	3,057	1,842	976	988	252	185	204	11,629
Separations other than acute									
Rehabilitation separations ('000)	13.5	17.4	16.9	2.8	2.2	0.9	1.2	0.7	55.6
Patient days ('000)	241.1	411.2	159.2	66.3	31.1	23.6	15.6	3.6	951.6
Palliative care separations ('000)	4.1	3.2	3.5	0.5	1.4	0.1	0.4	0.0	13.1
Patient days ('000)	43.2	48.8	29.1	4.4	15.6	0.6	6.0	0.3	147.9
Geriatric evaluation and management separations ('000)	0.5	6.9	0.4	0.7	0.0	0.0	0.0	0.0	8.6
Patient days ('000)	4.6	176.4	7.9	7.4	n.p.	0.1	n.p.	1.0	197.5
Psychogeriatric separations	0.2	1.9	0.4	0.0	0.0	0.0	0.0	0.0	2.5
Patient days ('000)	18.5	56.6	7.4	0.4	n.p.	n.p.	n.p.	0.2	83.3
Maintenance separations ('000)	4.6	2.9	4.3	1.1	1.0	0.5	0.3	0.1	14.9
Patient days ('000)	81.8	85.6	115.6	23.9	47.9	20.5	8.8	3.6	387.6
Other separations ('000)	0.0	0.0	0.2	0.0	5.9	0.0	0.0	0.0	6.1
Patient days ('000)	n.p.	0.0	0.9	0.0	38.4	n.p.	0.0	n.p.	39.3
Total separations other than acute									
Separations ('000)	22.9	32.3	25.7	5.1	10.5	1.5	1.9	0.9	100.9
Patient days ('000)	389.1	778.5	320.1	102.3	132.9	44.7	30.5	8.8	1,807.2
Psychiatric separations^(c)									
Separations ('000)	23	18	24	6	7	3	1	1	83
Patient days ('000)	291	311	278	86	92	26	14	11	1,109
Data for excluded hospitals^(e)									
Separations for excluded hospitals ('000)	65	24	29	38	21	3	2	0	182
Per cent of all separations (%)	4.8	2.0	4.0	10.0	5.7	3.9	2.4	..	4.2
Expenditure for excluded hospitals (\$m)	859	281	240	296	204	33	2	..	1,914
IFRAC for excluded hospitals	0.65	0.52	0.73	0.75	0.87	0.71	1.00	..	0.68
Unadjusted cost per separation	8,574	6,171	6,059	5,832	8,584	6,998	1,347	..	7,177

(a) Psychiatric hospitals, drug and alcohol services, mothercraft hospitals, un-peered and other hospitals, hospices, rehabilitation facilities, small non-acute and multipurpose services are excluded from this table, as are some small hospitals with incomplete expenditure information.

(b) Separations for which the care type was reported as *Acute*, or *Newborn* with qualified patient days, or was *Not reported*.

(c) Separations with total days of psychiatric care equal to the total length of stay.

(d) Average cost weight from the National Hospital Morbidity Database, based on acute and unspecified separations and episodes of newborn care with qualified days, using the 2003–04 AR-DRG v 5.0 cost weights (DoHA 2005). An updated version of this table based on 2004–05 AR-DRG v 5.1 cost weights will be made available on the website when available.

(e) Psychiatric hospitals, drug and alcohol services, mothercraft hospitals, unpeered and other hospitals, hospices, rehabilitation facilities, small non-acute and multipurpose services. See Appendix 4 for further information.

.. Not applicable.

Table A3.12: Cost per acute casemix-adjusted separation, subset of selected public acute hospitals^(a), New South Wales, Victoria, Western Australia and Tasmania, 2004–05

	NSW	Vic	WA	Tas
Total separations ('000) ^(b)	997	1,110	246	83
Total patient days ('000) ^(b)	3,705	3,831	793	322
Acute separations ('000) ^(c)	976	1,079	243	82
Acute patient days ('000) ^(c)	3,345	3,061	732	278
Proportion of separations acute	97.9%	97.1%	98.8%	98.2%
Proportion of patient days acute	90.3%	79.9%	92.3%	86.1%
Total recurrent expenditure excluding depreciation(\$m)				
Subset hospitals	5,173	5,053	1,190	426
Hospitals in Table 4.1	6,991	5,493	1,737	426
Proportion	74%	92%	69%	100%
Total recurrent expenditure including depreciation(\$m)				
Subset hospitals	5,394	5,233	1,233	n.a.
Hospitals in Table 4.1	7,289	5,688	1,794	n.a.
Proportion	74%	92%	69%	n.a.
Total separations ('000)				
Subset hospitals	997	1,110	246	83
Hospitals in Table 4.1	1,279	1,200	345	83
Proportion	78.0%	92.6%	71.3%	100.0%
Costs relating to acute care separations				
Average cost weight ^(d)	1.081	0.947	0.971	1.074
Casemix-adjusted acute separations ('000)	1,055	1,022	236	88
Acute IFRAC ^(e)	0.656	0.603	0.658	0.693
Total acute patient recurrent expenditure excluding depreciation(\$m)	3,395	3,046	783	295
Total acute patient recurrent expenditure including depreciation(\$m)	3,540	3,155	811	n.a.
Cost per casemix-adjusted acute separation^(f)	3,363	3,053	3,400	3,474
Cost per casemix-adjusted acute separation including depreciation^(f)	3,501	3,382	3,555	n.a.
Cost per casemix-adjusted separation excluding depreciation				
From Table 4.1	3,551	3,430	3,557	3,642
Subset of hospitals	3,501	3,382	3,555	3,642
Percentage this exceeds cost per acute separation for subset hospitals	3.9%	9.7%	4.4%	4.6%
Cost per casemix-adjusted separation including depreciation				
From Table 4.1	3,696	3,548	3,673	n.a.
Subset of hospitals	3,643	3,500	3,681	n.a.
Percentage this exceeds cost per acute separation for subset hospitals	3.9%	3.4%	3.4%	n.a.
Cost of not acute separations in subset excluding depreciation (\$m)	210	419	45	20
Per separation (\$)	9,961	13,244	15,023	13,512
Per patient day (\$)	583	545	740	450
Cost of not acute separations in subset including depreciation (\$m)	219	434	47	n.a.
Per separation (\$)	10,387	13,716	15,567	n.a.
Per patient day (\$)	608	565	766	n.a.

- (a) Excludes psychiatric hospitals, mothercraft hospitals, hospices, small non-acute, un-peered and other hospitals, rehabilitation facilities, and multipurpose services. This subset excludes hospitals where the Inpatient fraction (IFRAC) was equal to the acute IFRAC and more than 1,000 non-acute patient days were recorded. Also excludes hospitals where the apparent cost of not acute patients exceeded \$1,000 per day and more than \$1,000,000 of apparent expenditure on non-acute patient days was reported.
- (b) From the National Hospital Morbidity Database. Separations for which the care type was reported as *Newborn* with no qualified days, and records for *Hospital boarders* and *Posthumous organ procurement* have been excluded. Details of acute separations and patient days and non-acute separations and patient days are presented in Table A3.10.
- (c) Acute separations are separations where the care type is *Acute*, *Newborn* with qualified days, or *Not reported*.
- (d) Average cost weight from the National Hospital Morbidity Database, based on acute and unspecified separations and episodes of newborn care with qualified days, using the 2003–04 AR-DRG version 5.0 cost weights (DoHA 2005).
- (e) The acute IFRAC is that portion of recurrent costs which is for acute admitted patients.
- (f) Includes adjustment for private patient medical costs: \$157 for New South Wales, \$86 for Victoria, \$89 for Western Australia and \$103 for Tasmania.

Table A3.13: Cost per acute non-psychiatric casemix-adjusted separation, subset of selected public acute hospitals^(a), New South Wales, Victoria and Western Australia, 2004–05

	NSW	Vic	WA
Total separations ('000) ^(b)	997	1,110	246
Total patient days ('000) ^(b)	3,705	3,831	793
Acute non-psychiatric separations ('000) ^(c)	958	1,064	240
Acute non-psychiatric patient days ('000) ^(c)	3,128	2,820	691
Proportion of separations acute	96.0%	95.8%	97.5%
Proportion of patient days acute	84.4%	73.6%	87.2%
Total recurrent expenditure excluding depreciation(\$m)			
Subset hospitals	5,173	5,053	1,190
Hospitals in Table 4.1	6,991	5,493	1,737
Proportion	74%	92%	69%
Total recurrent expenditure including depreciation(\$m)			
Subset hospitals	5,394	5,233	1,233
Hospitals in Table 4.1	7,289	5,688	1,794
Proportion	74%	92%	69%
Total separations ('000)			
Subset hospitals	997	1,110	246
Hospitals in Table 4.1	1,279	1,200	345
Proportion	78.0%	92.6%	71.3%
Costs relating to acute non-psychiatric separations			
Average cost weight ^(e)	1.081	0.947	0.971
Casemix-adjusted acute non-psychiatric separations ('000)	1,035	1,008	233
Acute non-psychiatric IFRAC ^(f)	0.635	0.575	0.653
Total acute non-psychiatric patient recurrent expenditure excluding depreciation (\$m)	3,282	2,907	777
Total acute non-psychiatric patient recurrent expenditure including depreciation (\$m)	3,422	3,011	805
Cost per casemix-adjusted acute non-psychiatric separation excluding depreciation^(g)	3,352	3,020	3,468
Cost per casemix-adjusted acute non-psychiatric separation including depreciation^(g)	3,501	3,159	3,520
Cost per casemix-adjusted separation excluding depreciation			
From Table 4.1	3,551	3,430	3,557
Subset of hospitals	3,501	3,382	3,555
Percentage this exceeds cost per acute separation for subset hospitals	4.3%	10.7%	2.4%
Cost per casemix-adjusted separation including depreciation			
From Table 4.1	3,696	3,548	3,673
Subset of hospitals	3,643	3,500	3,681
Percentage this exceeds cost per acute separation for subset hospitals	2.5%	2.0%	3.4%
Cost of not acute non-psychiatric separations in subset excluding depreciation (\$m)	322	558	51
Per separation (\$)	8,162	12,019	8,395
Per patient day (\$)	559	552	503
Cost of not acute non-psychiatric separations in subset excluding depreciation (\$m)	336	578	53
Per separation (\$)	8,510	12,447	8,699
Per patient day (\$)	583	572	521

(a) Excludes psychiatric hospitals, mothercraft hospitals, hospices, small non-acute, un-peered and other hospitals, rehabilitation facilities, and multipurpose services. This subset excludes hospitals where the Inpatient fraction (IFRAC) was equal to the acute IFRAC and more than 1,000 non-acute patient days were recorded. Also excludes hospitals where the apparent cost of non-acute patients exceeded \$1,000 per day and more than \$1,000,000 of apparent expenditure on non-acute patients days was reported.

(b) From the National Hospital Morbidity Database. Separations for which the care type was reported as *Newborn* with no qualified days, and records for *Hospital boarders* and *Posthumous organ procurement* have been excluded. Details of acute separations and patient days and non-acute separations and patient are presented in Table A3.10.

(c) Acute separations are separations where the care type is Acute, Newborn with qualified days, or Not reported. Psychiatric separations are those with psychiatric care days.

(d) Separations for which the care type was reported as *Newborn* with no qualified days, and records for *Hospital boarders* and *Posthumous organ procurement* have been excluded.

(e) Average cost weight from the National Hospital Morbidity Database, based on *acute* and *unspecified* separations and episodes of *newborn* care with qualified days, using the 2003–04 AR-DRG version 5.0 cost weights (DoHA 2005).

(f) The acute non-psychiatric IFRAC is that portion of recurrent costs which is for acute non-psychiatric admitted patients.

(g) Includes adjustment for private patient medical costs: \$154 for New South Wales, \$76 for Victoria and \$88 for Western Australia.

Table A3.14: Count of AR-DRGs version 5.1 contributing to the relative stay index, by sector, and medical/surgical/other type of AR-DRG, states and territories, 2004-05

Type of hospital	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Public hospitals	632	632	632	632	627	618	619	586	632
Medical	323	323	323	323	322	322	322	318	323
Surgical	278	278	278	278	275	266	267	240	278
Other	31	31	31	31	30	30	30	28	31
Private hospitals	611	614	625	604	597	n.p.	n.p.	n.p.	628
Medical	317	316	323	313	311	n.p.	n.p.	n.p.	323
Surgical	266	269	272	265	260	n.p.	n.p.	n.p.	274
Other	28	29	30	26	26	n.p.	n.p.	n.p.	31
All hospitals	632	632	632	632	627	n.p.	n.p.	n.p.	632
Medical	323	323	323	323	322	n.p.	n.p.	n.p.	323
Surgical	278	278	278	278	275	n.p.	n.p.	n.p.	278
Other	31	31	31	31	30	n.p.	n.p.	n.p.	31

n.p. Not published.