Adult Admitted Patient Survey 2023

Technical Supplement

August 2024

bureau of health information

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Introduction

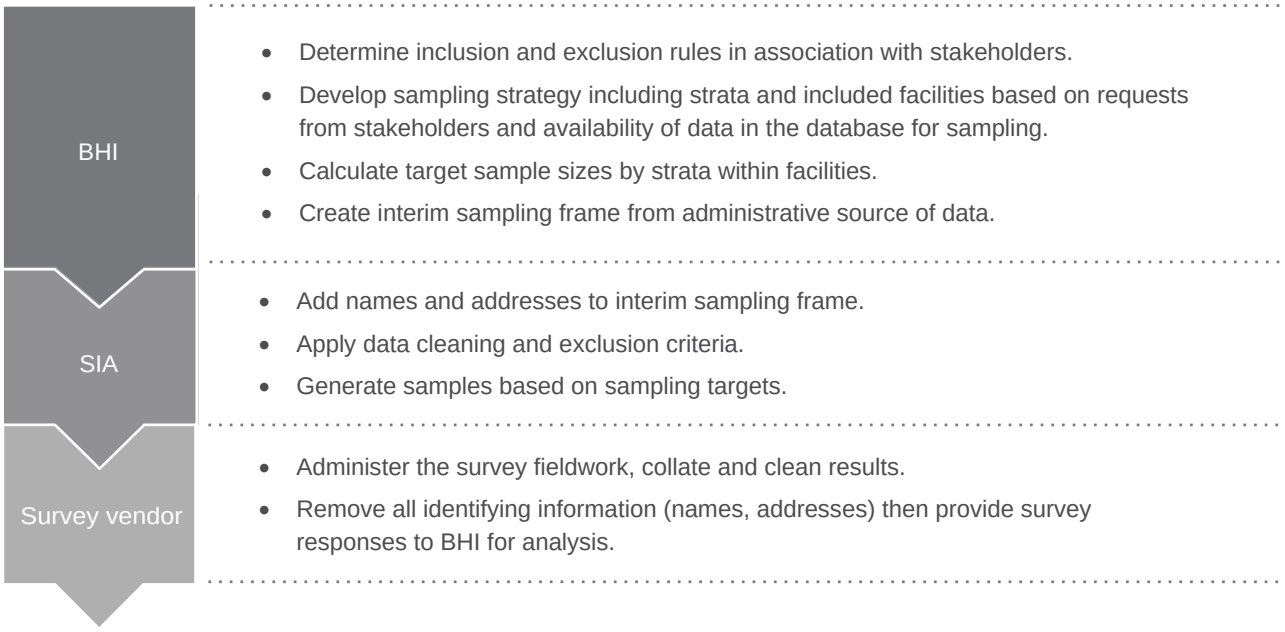
This technical supplement outlines the sampling methodology, data management and analysis of the results of the Adult Admitted Patient Survey (AAPS) 2023. Further supporting information is available in historical technical supplements for AAPS, available at bhi.nsw.gov.au

The New South Wales (NSW) Patient Survey Program began sampling patients in NSW public health facilities from 2007. The program was coordinated by the NSW Ministry of Health (Ministry) until mid-2012 when responsibility was transferred from the Ministry to the Bureau of Health Information (BHI). BHI has a contract with a survey vendor to support data collection, while BHI conducts all survey analysis.

The aim of the NSW Patient Survey Program is to measure and report on patients' experiences in public healthcare facilities in NSW, on behalf of the Ministry and local health districts (LHDs). The survey program is guided by the BHI *Strategic Plan 2023–2026*, which ensures all patient surveys maximise benefits to patients and deliver unique value to the NSW health system.

Data collection for the NSW Patient Survey Program is a collaboration between BHI, the survey vendor and the Ministry's Systems Information and Analytics (SIA) branch. Figure 1 shows the organisational responsibilities for the sampling design and data collection phases for patient survey projects.

Figure 1 Organisational responsibilities in sampling and data collection



Adult Admitted Patient Survey

BHI conducted the Adult Admitted Patient Survey 2023 as part of the NSW Patient Survey Program. The survey has been conducted annually since 2013 and is mailed to adult patients who were admitted to a NSW public hospital between January and December.

The survey questionnaire is reviewed each year. In response to the increased and ongoing use of virtual care, for the April to September 2023 patient cohort, a 13-question module about patients' experiences with virtual care outpatient and general practitioner (GP) appointments was sent to all eligible patients. For January to December 2023, an additional 11-question module about Aboriginal patients' experiences of care was sent to those whose administrative clinical record indicates they are an Aboriginal and/or Torres Strait Islander person.

Content changes between the 2022 and 2023 questionnaires are available in a development report on BHI's website at Bureau of Health Information - Patient survey questionnaire materials (nsw.gov.au)

Inclusion and exclusion criteria for admitted patients

The survey questionnaire was sent to eligible patients aged 18+ years who were discharged from a NSW public hospital between January and December 2023. Patients were eligible if the last 'episode of care' for their most recent hospital stay in a sampling month was for acute or rehabilitation care.

In Phase 1 screening, a series of exclusion criteria was applied to consider a range of factors including the potentially high vulnerability of particular patient groups and/ or patients with particularly sensitive reasons for admission; certain patients' ability to answer questions about their experiences; and the relevance of the survey questions to particular patient groups.

Patients were excluded from the target population if they had:

- died during their hospital admission (mode of separation of '6' or '7')
- received Acute Post-Acute Care (APAC) hospital-in-the-home services
- been admitted for a termination of pregnancy – intervention code 35643-03
- been admitted to a psychiatric unit during any hospital stay during the sampling month
- been treated for maltreatment syndromes, ICD-10-AM code = T74 in any diagnosis field, including neglect or abandonment, physical abuse, sexual abuse, psychological abuse, other maltreatment syndromes or 'unspecified'
- been treated for contraceptive management, ICD-10-AM code = Z30 in any diagnosis field, including insertion of contraceptive device, general counselling and advice on contraception, surveillance of contraceptive drugs, surveillance of contraceptive device, other contraceptive management, or 'unspecified'
- given birth in the target hospital during the sampling month, ICD-10-AM codes Z37, O80-O84, or intervention codes 90467, 90468, 90469, 90470 or 16520
- been admitted for pregnancy with an abortive outcome, ICD-10-AM code = O00-O08
- a diagnosis of stillborn baby, ICD-10-AM code = Z37.1, Z37.3, Z37.4. Z37.6 and Z37.7 in any diagnosis field (including single stillbirth, twins (one liveborn and one stillborn), twins (both stillborn) and other multiple births (some liveborn)
- intentionally self-harmed, or presented with sequelae of intentional self-harm, ICD-10-AM code between X60 and X84 or ICD-10 code = Y87.0

- an unspecified event or undetermined intent, ICD-10-AM code commencing with Y34 or Y87.0
- suicidal ideation, ICD-10-AM code = R45.81
- family history of other mental and behavioural disorders, ICD-10-AM code commencing with Z81.8
- a personal history of self-harm, ICD-10-AM code commencing with Z91.5
- been admitted for same-day haemodialysis, procedure code 13100-00 in any procedure field
- been same-day patients who stayed for less than three hours
- been same-day patients transferred to another hospital.

Many of these exclusions require knowledge of the diagnosis codes. Coding of admitted patient records should occur within six weeks of discharge but the timing can vary.

Records with incomplete diagnosis coding were not excluded because the exclusion of these records may have impacted the ability to meet the sample size required to ensure robust results at the hospital level.

The sampling frame then passed through a second phase of screening to exclude patients who had:

- an invalid address (including those with addresses listed as hotels, motels, nursing homes, community services, jails and unknown or overseas)
- an invalid name (including 'twin', 'baby of')
- an invalid date of birth
- been included on the 'do not contact' list
- been sampled in the previous six months for any BHI patient survey
- a mode of separation of death for a subsequent admission to hospital
- been recorded as deceased according to the NSW Registry of Birth Deaths & Marriages and/or activity and performance reporting data collections, prior to the sample being provided to the survey vendor.

The remaining patients were considered to be the final sampling frame and eligible to participate in the Adult Admitted Patient Survey 2023.

Inclusion and exclusion criteria for facilities

NSW public hospitals were included if they had a peer group classification of either:

- A1: Principal referral
- A3: Ungrouped acute – tertiary referral
- B1: Major hospitals group 1
- B2: Major hospitals group 2
- C1: District group 1
- C2: District group 2.

An additional 12 hospitals in peer groups D and F were included in the Adult Admitted Patient Survey 2023, because they are located in major cities and would not be included in patient surveys BHI conducts of hospitals in peer groups D and F in rural locations.

Sample design

Sample design is part of the mechanism that ensures the survey results are representative of the population. This is done through careful selection of patients across hospitals and demographic characteristics.

BHI and the Centre for Aboriginal Health are working together to collect the experiences and outcomes of care for Aboriginal people admitted to NSW public hospitals. In 2023, an oversample of adult patients who identified as Aboriginal using administrative data was invited to participate in the survey.

For non-Aboriginal patients, a stratified sample design was applied, with each hospital defined as a stratum. Within each hospital, patients were further stratified by the following variables:

- age group: 18–49 years or 50+ years, based on the age variable
- stay type: same-day or overnight admission, based on the start and end times of the last admitted patient stay in the month.

Simple random sampling without replacement was applied within each stratum to create a final sample of patients who were mailed a survey. The sampling frame for the Adult Admitted Patient Survey 2023 was based on data from NSW Health's Health Information Exchange (HIE) Admitted Patient Data Collection (APDC). Targets of monthly sampling (sample size) for each facility were calculated based on data from the previous year, after phase 1 screening, and the measurement frequency.

The measurement frequency equates to the periods for which results are reportable. For the Adult Admitted Patient Survey 2023, all hospitals were sampled with a semi-annual measurement frequency with the exception of A1–C2 hospitals in LHDs with fewer than three hospitals, which were sampled with a quarterly measurement frequency (Far West LHD, Central Coast LHD and St Vincent's Health Network). These hospitals were sampled with a quarterly measurement frequency to ensure they had sufficient survey responses for quarterly internal reporting of LHD-level key performance indicators (KPIs). The additional 12 hospitals, in peer groups D and F, had an annual measurement frequency. Due to an estimated small number of eligible patients attending these hospitals, all eligible patients in some hospitals were invited to undertake the survey (census sampling).

The number of surveys mailed, the number of responses, response rates and survey design effects (DEFF) by hospital, LHD and overall are provided in Appendix 1.

Data collection and analysis

Data collection

The selected patients were invited to complete the questionnaire by either returning the hard-copy questionnaire or by submitting an online response. Hard-copy questionnaires were scanned for fixed response options and responses in free-text fields were entered manually.

A first reminder letter was sent approximately 10 days after the initial survey pack, with a final reminder letter containing the full survey pack sent to people who had not responded approximately three weeks after the first reminder. The exception was for December patients, who only received one reminder. The aim of sending staged reminders is to meet or exceed international best practice response rates, resulting in optimal precision in estimates.

The resultant survey data were anonymised and underwent quality assurance checks before being securely transferred to BHI servers, which are password-protected with access by authorised staff only, for processing.

Response rate and completion of questionnaires

The response rate is the percentage of people sampled who completed and returned or submitted their responses. The number of surveys mailed, the number of responses, response rates and design effects by hospital, LHD and overall are provided in Appendix 1.

Survey completeness is a measure of how many questions each respondent answered as a proportion of all questions. The completeness of responses was high overall, with respondents answering, on average, 52 of the 59 non-text questions (this includes questions that were correctly skipped, but not questions in the module). Appendix 2 presents the rates of missing or 'Don't know'/'Can't remember' responses for all questions.

Weighting of data

Survey responses were weighted to optimise the degree to which results were representative of the experiences and outcomes of the overall eligible patient population. At the NSW and LHD levels, weights also ensured that the different sampling proportions used at the hospital level were accounted for, so that LHD results were not unduly influenced by small facilities that had larger sampling proportions.

Weights were calculated for all hospitals once 12 months of data were available. An initial weight was calculated for respondents in each hospital using the following equation:

$$w_i = \frac{N_i}{n_i}$$

Where:

N_i = total number of patients eligible for the survey in the ith hospital.

n_i = number of respondents in the i^{th} hospital.

Within each hospital, sampling and weighting were stratified into eight strata, comprising two age groups (18–49 years and 50+ years), two separation groups (admitted same day and overnight) and two Aboriginality groups (Aboriginal/Torres Strait Islander, and non-Aboriginal). Prior to weighting, stratum cells with no respondents were combined with adjoining strata.

The weights were then adjusted to marginal benchmarks through the generalised regression weighting macro (GREGWT), a survey-specific SAS program developed by the Australian Bureau of Statistics (ABS) to assist with weighting of complex survey data. It uses iterative, proportional fitting to ensure that the weights at the margins equal the population totals even though it is often impossible for the weights to equal the population at the individual cell level (i.e., within each hospital and stratum).

The following benchmarks were applied:

- quarter x peer group
- quarter x LHD
- peer group x Aboriginality
- LHD x service category
- LHD x age group
- LHD x Aboriginality
- hospital x service category
- hospital x age group
- hospital x Aboriginality.

Additional explanations for the benchmarks are:

- Aboriginality: Aboriginal and non-Aboriginal
- age group: 18-49 and 50+
- service category: ‘Overnight and ‘Same Day.

After the first cycle through the GREGWT macro, a process was undertaken that identified strata with low numbers of responses and high weights. Following further aggregation, the GREGWT macro was run again, creating the final weights. Quality assessment included looking at the agreement between the eligible population and sum of weights at the hospital-stratum level, the overall distribution of weights (to avoid outliers), number of hospitals with a design effect greater than two, and the ratio of maximum to median weight at the hospital level. The weights were then trimmed at the first and 99th percentiles to prevent individual patients from having too much influence on the results. This reduced the maximum weight without greatly changing the overall distribution of the weights. Additionally, within a given hospital, any weights that were larger than six times the median weight were identified as outlier weights and trimmed to the limit.

Weighted percentages

All the results in the report were weighted. The weighted percentage of patients selecting each response option in the questionnaire was determined using the SURVEYFREQ procedure with a finite population correction factor and the Clopper-Pearson method adjusting for the sampling weights. Weighted percentages were calculated as follows:

- **Numerator** – the weighted number of survey respondents who selected a specific response option to a certain question
- **Denominator –** the weighted number of survey respondents who selected any of the response options to a certain question, minus exclusions
- **Calculation –** the numerator/denominator x 100.

When reporting on questions used to identify sub-cohorts, the 'Don't know'/'Can't remember' option and missing responses were also reported. Appendix 2 presents the rates of missing or 'Don't know'/'Can't remember' responses for all questions.

It is assumed that no bias was introduced by the way patients who did not respond to the whole survey, or did not respond to specific questions, were handled. This is because it is also assumed these patients did so randomly and therefore any missing responses do not relate to the experience of care.

For some questions, the results from several responses were combined to form a 'derived measure'. For information about how these measures were developed, please see Appendix 3.

Comparing weighted and unweighted patient characteristics

One of the aims of sample weights is to ensure that, after weighting, the characteristics of the respondents closely reflect the characteristics of the eligible population.

Table 1 shows demographic characteristics of respondents against the eligible population. The four columns denote:

1. percentage of target population – the patient population prior to the phase 2 screening process
2. percentage of eligible population – the final sampling frame from which the sample was drawn (limited demographic variables are available at this level)
3. percentage of respondents (unweighted) – respondents to the survey, not adjusted for unequal sampling
4. percentage of respondents (weighted) – respondents to the survey, adjusted by weighting to be representative of the eligible population.

Table 1 Demographic characteristics of target population and respondents, Adult Admitted Patient Survey 2023

Demographic variable	Sub-group	% of target population	% of eligible population	% of respondents (unweighted)	% of respondents (weighted)
LHD	Central Coast	6	5	6	6
	Far West	0	0	1	0
	Hunter New England	12	11	17	11
	Illawarra Shoalhaven	5	5	6	5
	Mid North Coast	5	4	7	4
	Murrumbidgee	3	3	5	3
	Nepean Blue Mountains	5	5	5	5
	Northern NSW	6	6	10	6
	Northern Sydney	7	8	4	8
	South Eastern Sydney	11	12	7	12
	South Western Sydney	12	13	6	13
	Southern NSW	2	2	8	2
	St Vincent's Health Network	2	2	2	2
	Sydney	9	9	4	10
	Western NSW	4	4	7	4
	Western Sydney	10	10	4	10
Peer group	A1	46	47	19	46
	A3	3	3	3	3
	B	35	35	27	36
	C1	10	9	19	9
	C2	5	5	28	5
	D	0	0	1	0
	F (F4 and F6)	0	0	2	0
Age group	18-49	30	32	12	30
	50+	70	68	88	70
Stay type	Overnight	65	61	57	61
	Same Day	35	39	43	39

Demographic variable	Sub-group	% of target population	% of eligible population	% of respondents (unweighted)	% of respondents (weighted)
Aboriginal status	Not Aboriginal	95	96	87	96
	Aboriginal and/or Torres Strait Islander	5	4	13	4
Sex*	Male	49	48	48	48
	Female	51	52	52	52

* Information on sex is drawn from administrative data.

Standardised comparisons between hospitals and the NSW result

Overview

In 2023, BHI introduced a new statistical approach for the Adult Admitted Patient Survey 2022 results to support fairer assessment of hospital performance based on patient experience measures. This approach aimed to improve precision when flagging LHD and hospital performance as significantly higher (green) or significantly lower (red) than the NSW result in the Snapshot report and supplementary data tables.

When looking at performance over time, the focus should be on the changes in percentage results rather than on whether those results are flagged as green or red, noting that year-on-year differences may not reflect clinically or statistically significant differences, and that changes in a hospital's patient mix may contribute to changes in results.

Some patient groups tend to respond more positively to surveys. This means that hospitals with higher proportions of patients with these socio-demographic characteristics tend to have higher patient experience ratings and vice versa. Before identifying an LHD or hospital's result as significantly higher or lower than NSW, the statistical model accounts for the characteristics of its patients (i.e., age, gender, education and language spoken at home). Therefore, green and red flags are more likely to reflect actual differences in experiences rather than a difference in the socio-demographic mix of patients.

For the AAPS 2023 results, this approach was applied to hospital results and LHD results.

The statistical model

Across survey information products, BHI reports on the weighted percentage of patients selecting a particular survey response option (i.e., the actual result). These percentages do not change when standardised comparisons are applied (i.e., green and red flags are overlaid on the actual results).

This statistical approach, introduced since 2023, involves two stages. BHI uses similar statistical methods to assess hospital performance in its mortality and readmissions reporting. This two-stage process enables the assignment of green and red flags to outlier hospitals/LHDs after consideration is given to each actual result, socio-demographic mix of patients, sample size, and the NSW result. Outlier flags should be used to compare a hospital/LHD's performance to the NSW result each year, recognising that the NSW result also changes each year.

Stage 1 – Calculating risk-adjusted results for each hospital

This stage involves calculating risk-adjusted results by accounting for the socio-demographic characteristics of patients at each hospital/LHD, specifically those that can influence self-reported patient experience ratings (age, gender, education and language spoken at home). The risk-adjusted percentages are not reported but used to determine whether a green or red flag is applied to the actual result. Selection of the patient characteristics used in these calculations is based on a thorough study BHI conducted in 2018.

The statistical program used to conduct the analysis in stage 1 is PROC SURVEYLOGISTIC. The dependent variable used in the statistical model is the binary version of a given performance question, usually based on the percentage of patients who selected the most positive response option. The model derives a predicted probability of respondents selecting the most positive response option based on the socio-demographic mix of the respective hospital/LHD's patients. The predicted probabilities are multiplied by the survey weights to give a predicted number of patients in the eligible population that would have the same response (i.e., the expected result).

The risk-adjusted ratio (aR) is calculated by taking the ratio of the weighted number of respondents who selected the most positive response option (numerator or actual result) to the number of respondents in the population predicted to also respond the same way according to the model (denominator or expected result).

The risk-adjusted percentage is calculated for each hospital/LHD by scaling to the question-specific NSW result using the following formula:

$$Adjusted\ percentage = aR \times weighted\ NSW\ percentage.$$

The adjusted percentage can be interpreted as how the hospital/LHD would perform if the socio-demographic mix was the same as the reference population (NSW results). This adjusted percentage can therefore be used to report fairer comparisons of self-reported experiences between hospitals/LHDs and the NSW results, when it is compared to the NSW results after considering the effective size of each hospital/LHD.

Stage 2 – Comparing each hospital/LHD's risk-adjusted result with the NSW result

This stage involves comparing a hospital/LHD's risk-adjusted result with the NSW result after considering the effective sample size for each hospital/LHD.

To identify outlier hospital/LHD results, funnel plots with control limits at a 99% confidence level were created for self-reported experience questions to compare each hospital/LHD's risk-adjusted result with the NSW result. This process uses the exact binomial method described by Spiegelhalter[1] and the effective sample size.

Effective sample size is the number of respondents for each hospital/LHD divided by the hospital-level design effect. Therefore, the control limits take into account the sampling method. Hospitals/LHDs that fall outside the control limits are considered outliers and flagged as significantly higher or lower than the NSW result, after taking into account differences in the socio-demographic mix of a hospital/LHD's patients. To reduce the likelihood of identifying outliers due to chance, 99% control limits were used.

Standardised comparisons are not applied:

- when results are flagged as 'interpret with caution' (see page 14), due to reduced precision of the actual result
- for questions regarding problems or complications, because patients who have more complex conditions are more likely to experience problems or clinical complications, and comparisons have not been adjusted for patient complexity.

Analyses of differences in experiences between patient groups

To examine differences in experiences between any two patient groups, a logistic regression model was used with adjustment for confounders and sampling using the SURVEYLOGISTIC procedure. A p-value of 0.05 was used to determine if the differences were statistically significant.

For each question, the pre-defined, most positive response option was used to create a dichotomised variable such that the most positive response was coded as 1, and all other responses, excluding invalid and missing responses, were coded as 0. Logistic regression was used to fit these binary variables as outcomes and 'rurality of hospital' (urban versus large rural hospitals) as the explanatory variable after accounting for differences in patient characteristics between these two groups on the basis of age, gender, education and language spoken at home. Responses with a missing value were excluded from the analysis. When comparing the results of experiences with care in urban and large rural hospitals, results are presented across the most positive response option.

To examine differences in experiences between patients who did and did not have surgery during their admission, deterministic linked data were used for patients who gave permission for their survey responses to be linked with other information from administrative health records. Patients were classified as 'surgical' or 'non-surgical' based on Australian Refined Diagnosis Related Group (AR-DRG), where x01x-x39x are used to define 'surgical'. Missing codes were grouped into the 'non-surgical' group.

Statistical software

SAS software version 9.4 was used for all statistical analyses, and facility and sampling variables were included as strata variables.

Reporting

Confidentiality and suppression rules

BHI does not receive any confidential patient information and only publishes aggregated data and statistics. Each question must have a minimum of 30 respondents at the reporting level (hospital, LHD or NSW) for results to be reported. This ensures there are enough respondents for reliable estimates to be calculated, and that patient confidentiality and privacy are protected.

When the number of respondents for a hospital or LHD was fewer than 30, results were suppressed. The suppressed results still contribute to NSW-level results and/ or LHD level results.

Interpret with caution

All data collected using surveys are subject to sampling error (i.e., the difference between results based on a sample of a target population, and the results if all people who received care were surveyed). The 95% confidence interval of the average is expected to contain the true result 19 times out of 20.

Where the confidence interval was wider than 20 percentage points, results for individual questions are noted with a '*' to indicate 'interpret with caution'. In addition, percentages of 0 or 100, which do not have confidence intervals, are also noted as 'interpret with caution' where the number of respondents was fewer than 200.

Where the number of respondents was between 30 and 49 with a response rate at or above 20%, or the number of respondents more than 49 with a response rate less than 20%, results are publicly reported and an 'interpret with caution' note is appended to the hospital to indicate uncertainty about the representativeness of the result.

Reporting by population groups

In addition to reporting results for all respondents, BHI also reports the results by specific groups, as follows:

- age group
- gender
- education level
- language spoken at home
- longstanding health condition – ‘had condition/s’, ‘none reported’
- rurality of facility – ‘urban, ‘rural’
- self-reported Aboriginality – ‘Aboriginal, ‘non-Aboriginal’.

The above results, where they satisfy BHI’s suppression rules, are available on the BHI Data Portal at bhi.nsw.gov.au/data-portal

Hospitals are classified as ‘urban’ and ‘rural’ using the Accessibility and Remoteness Index of Australia (ARIA+), the Australian Bureau of Statistics’ measure of remoteness. Urban facilities include those classified as ‘Major Cities of Australia’ according to ARIA+. Rural facilities include those classified as ‘Inner Regional Australia’, ‘Outer Regional Australia’, ‘Remote Australia’ and ‘Very Remote Australia’.

ARIA+ is the standard measure of remoteness. For more information, see abs.gov.au

Appendix 1

Survey response summary

Table 2 Number of surveys mailed, responses, response rates and design effects (DEFF) by LHD and overall, Adult Admitted Patient Survey 2023

	Questionnaires mailed	Responses	Adjusted response rate (%)	DEFF
NSW	77,033	20,721	29.9	
Local health district				
Central Coast	4,613	1,273	32.1	1.8
Far West	1,201	299	25.5	1.0
Hunter New England	11,841	3,504	30.5	3.0
Illawarra Shoalhaven	4,151	1,202	33.8	2.7
Murrumbidgee	3,849	949	28.2	2.3
Mid North Coast	4,438	1,367	36.3	2.6
Nepean Blue Mountains	4,376	1,127	28.2	3.2
Northern NSW	6,594	2,038	35.1	3.0
Northern Sydney	3,046	874	29.8	1.8
South Eastern Sydney	5,268	1,428	30.1	2.0
Southern NSW	4,979	1,718	35.2	1.7
St Vincent's Health Network	1,917	431	25.2	1.3
South Western Sydney	5,930	1,299	25.0	2.1
Sydney	3,814	845	25.7	1.8
Western NSW	6,482	1,536	28.4	2.2
Western Sydney	4,534	831	22.2	1.7

Table 3 Number of surveys mailed, responses, response rates and design effects (DEFF) by hospital, Adult Admitted Patient Survey 2023

LHD name	Hospital name	Rurality of hospital	Questionnaires mailed	Responses	Adjusted response rate (%)	DEFF
Central Coast	Gosford Hospital	Urban	2,325	612	31.3	1.7
	Woy Woy Hospital	Urban	154	60	39.0	1.0
	Wyong Hospital	Urban	2,134	601	33.1	1.5
Far West	Broken Hill Health Service	Rural	1,201	299	25.5	1.0
Hunter New England	Armidale Hospital	Rural	897	290	34.0	1.6
	Belmont Hospital	Urban	923	304	35.3	1.5
	Calvary Mater Newcastle	Urban	943	259	29.9	1.6
	Cessnock Hospital	Rural	821	258	31.8	1.5
	Gunnedah Hospital	Rural	292	87	29.0	1.3
	Inverell Hospital	Rural	595	172	30.3	1.8
	John Hunter Hospital	Urban	1,347	286	27.1	1.5
	Kurri Kurri Hospital	Urban	808	384	48.5	1.0
	Maitland Hospital	Urban	973	266	28.1	1.5
	Manning Hospital	Rural	934	297	34.3	1.6
	Moree Hospital	Rural	350	94	24.9	2.1
	Muswellbrook Hospital	Rural	582	165	30.0	1.3
	Narrabri Hospital	Rural	403	98	24.2	1.7
	Singleton Hospital	Rural	786	250	32.4	1.4
	Tamworth Hospital	Rural	1,187	294	28.7	1.5
Illawarra Shoalhaven	Coledale Hospital	Urban	1	0	0.0	
	Milton Ulladulla Hospital	Rural	455	192	41.8	1.1
	Port Kembla Hospital	Urban	77	22	28.5	1.0
	Shellharbour Hospital	Urban	862	325	40.2	1.2
	Shoalhaven District Memorial Hospital	Rural	1,290	343	33.6	1.8
	Wollongong Hospital	Urban	1,466	320	30.9	1.7

LHD name	Hospital name	Rurality of hospital	Questionnaires mailed	Responses	Adjusted response rate (%)	DEFF
Mid North Coast	Coffs Harbour Health Campus	Rural	1,380	342	33.3	1.7
	Kempsey District Hospital	Rural	935	338	38.3	1.5
	Macksville District Hospital	Rural	827	308	40.2	1.3
	Port Macquarie Base Hospital	Rural	1,296	379	38.1	1.9
Murrumbidgee	Deniliquin Health Service	Rural	504	147	29.0	1.7
	Griffith Base Hospital	Rural	941	209	24.0	1.2
	Wagga Wagga Base Hospital	Rural	1,639	329	27.9	1.2
	Young Health Service	Rural	765	264	34.4	1.4
Nepean Blue Mountains	Blue Mountains District Anzac Memorial Hospital	Urban	838	271	34.8	1.3
	Hawkesbury District Health Service	Urban	937	218	25.3	1.5
	Lithgow Hospital	Rural	768	279	36.6	1.6
	Nepean Hospital	Urban	1,708	308	26.1	1.8
	Springwood Hospital	Urban	125	51	41.4	1.0
Northern NSW	Ballina District Hospital	Rural	764	294	38.1	1.3
	Byron Central Hospital	Rural	295	92	31.3	1.3
	Casino & District Memorial Hospital	Rural	664	230	34.7	1.4
	Grafton Base Hospital	Rural	964	327	37.3	1.5
	Lismore Base Hospital	Rural	1,611	349	34.0	1.4
	Maclean District Hospital	Rural	297	122	40.9	1.2
	Murwillumbah District Hospital	Rural	806	317	39.4	1.4
	The Tweed Hospital	Urban	1,193	307	31.7	1.6

LHD name	Hospital name	Rurality of hospital	Questionnaires mailed	Responses	Adjusted response rate (%)	DEFF
Northern Sydney	Greenwich Hospital	Urban	109	51	46.8	1.0
	Hornsby Ku-ring-gai Hospital	Urban	867	254	30.3	1.2
	Mona Vale Hospital	Urban	251	93	36.9	1.0
	Royal North Shore Hospital	Urban	1,000	272	31.5	1.3
	Ryde Hospital	Urban	819	204	26.2	1.3
South Eastern Sydney	Calvary Health Care Kogarah	Urban	338	142	42.0	1.0
	Prince of Wales Hospital	Urban	1,186	279	28.4	1.5
	Royal Hospital for Women	Urban	829	200	23.7	1.2
	St George Hospital	Urban	930	226	25.7	1.3
	Sutherland Hospital	Urban	931	272	31.9	1.4
	Sydney Hospital and Sydney Eye Hospital	Urban	903	266	31.6	1.7
	Uniting War Memorial Hospital - Waverley	Urban	151	43	28.5	1.0
South Western Sydney	Bankstown-Lidcombe Hospital	Urban	899	190	23.0	1.3
	Bowral and District Hospital	Rural	835	329	40.8	1.2
	Braeside Hospital - Fairfield	Urban	221	59	26.7	1.0
	Camden Hospital	Urban	267	80	28.7	1.6
	Campbelltown Hospital	Urban	1,559	266	22.3	1.6
	Fairfield Hospital	Urban	889	152	19.4	1.2
	Liverpool Hospital	Urban	1,260	223	22.4	1.4

LHD name	Hospital name	Rurality of hospital	Questionnaires mailed	Responses	Adjusted response rate (%)	DEFF
Southern NSW	Batemans Bay District Hospital	Rural	794	292	38.6	1.4
	Cooma Hospital and Health Service	Rural	765	273	35.7	1.3
	Goulburn Base Hospital	Rural	873	286	33.8	1.5
	Moruya Hospital	Rural	822	288	36.7	1.2
	Queanbeyan Hospital and Health Service	Urban	819	249	29.4	1.3
	South East Regional Hospital	Rural	906	330	38.9	1.5
St Vincent's Health Network	St Joseph's Hospital - Auburn	Urban	71	22	31.0	1.0
	St Vincent's Hospital Sydney	Urban	1,846	409	25.2	1.3
Sydney	Balmain Hospital	Urban	167	41	24.6	1.0
	Canterbury Hospital	Urban	835	184	23.2	1.4
	Concord Repatriation General Hospital	Urban	950	200	23.7	1.2
	Royal Prince Alfred Hospital	Urban	1,862	420	29.1	2.1
Western NSW	Bathurst Health Service	Rural	1,035	277	30.7	1.6
	Cowra Health Service	Rural	728	224	30.5	1.5
	Dubbo Hospital	Rural	2,133	370	26.5	1.7
	Lachlan Health Service - Forbes	Rural	410	124	30.9	1.4
	Mudgee Health Service	Rural	802	251	31.5	1.5
	Orange Health Service	Rural	1,374	290	27.8	1.6
Western Sydney	Auburn Hospital	Urban	874	138	16.7	1.2
	Blacktown Hospital	Urban	1,410	259	25.8	1.5
	Mount Druitt Hospital	Urban	1,002	212	23.2	1.5
	Westmead Hospital	Urban	1,248	222	22.2	1.4

Appendix 2

Rates of missing or ‘Don’t know’/‘Can’t remember’ responses

Table 4 Unweighted percentage of missing and ‘Don’t know’/‘Can’t remember’ responses, by question, Adult Admitted Patient Survey 2023

Question number	Question text	Don't know/Can’t remember (%)	Missing (%)	Missing + Don't know/Can’t remember (%)*
1	Were the staff you met on your arrival to hospital polite and welcoming?	1.7	2.0	3.7
2	How well organised was the admission process?		2.7	2.7
3	How clean were the areas of the hospital you used during your stay?		2.1	2.1
4	How would you rate the food you were served while in hospital?		2.6	2.6
5	Were you given enough privacy during your stay at the hospital?		3.1	3.1
6	Did you stay for one or more nights in a room or ward which was only for patients of the same gender as you?		4.2	4.2
7	Did the health professionals who treated you introduce themselves to you?	1.2	2.4	3.6
8	Did the health professionals ask your name or check your identification band before giving you any medications, treatments or tests?	2.1	2.4	4.5
9	Did you have enough time to discuss your health or medical problem with the health professionals?	1.9	2.8	4.7
10	Did the health professionals explain things in a way you could understand?		3.0	3.0
11	Did you have confidence and trust in the health professionals treating you?		2.9	2.9
12	Were the health professionals kind and caring towards you?		2.9	2.9
13	Overall, how would you rate the doctors who treated you?		2.9	2.9
14	Overall, how would you rate the nurses who treated you?		2.9	2.9

Question number	Question text	Don't know/Can't remember (%)	Missing (%)	Missing + Don't know/Can't remember (%)*
15	During your stay in hospital, how much information about your condition or treatment was given to you?		3.2	3.2
16	How much information about your condition or treatment was given to your family, carer or someone close to you?	5.3	3.5	8.8
17	Did you ever receive contradictory information about your condition or treatment from the health professionals?		4.4	4.4
18	In your opinion, did the health professionals who treated you know enough about your care and treatment?		3.4	3.4
19	Did the health professionals give you the support you needed to help with any worries or fears related to your care and treatment?		3.2	3.2
20	Were you involved, as much as you wanted to be, in decisions about your care and treatment?		3.1	3.1
21	When the health professionals spoke about your care in front of you, were you included in the conversation?		3.0	3.0
22	Did the health professionals listen carefully to any views and concerns you had?		3.1	3.1
23	How would you rate how well the health professionals worked together as a team?		2.9	2.9
24	Were you treated with respect and dignity while in hospital?		2.8	2.8
25	Were your cultural or religious beliefs respected by the hospital staff?		3.3	3.3
26	If you needed help with personal care (e.g. eating and drinking, moving around or going to the bathroom), did hospital staff help you within a reasonable timeframe?		2.9	2.9
27	Were you ever in any pain while in hospital?		4.0	4.0
28	Do you think the health professionals did everything they could to help manage your pain? [if patient experienced pain while in hospital]		5.7	5.7

Question number	Question text	Don't know/Can't remember (%)	Missing (%)	Missing + Don't know/Can't remember (%)*
29	Did the health professionals explain what would happen during your tests, operations or procedures in a way you could understand?	2.2	3.1	5.2
30	Did the health professionals explain the results or outcomes of your tests, operations or procedures in a way you could understand?	2.4	3.0	5.4
31	During your hospital stay or soon after, did you experience any problem related to your care and treatment?		3.7	3.7
32	Was the impact of this problem...? [if patient experienced a problem during or shortly after stay]		4.8	4.8
33	Were the health professionals open with you about this problem?		4.6	4.6
34	Were the health professionals responsive in addressing this problem? [if patient experienced problem during or shortly after stay]		4.7	4.7
35	Did you feel involved in decisions about your discharge from hospital?		3.1	3.1
36	At the time you were discharged, did you feel that you were well enough to leave hospital?		3.3	3.3
37	Thinking about when you left hospital, were you given enough information about how to manage your care at home?		2.8	2.8
38	Was your family and home situation taken into account when you were discharged?	2.2	2.9	5.1
39	Thinking about when you left hospital, were adequate arrangements made for any services you needed? (e.g. equipment, home care, community care, follow-up appointments)?		3.1	3.1
40	Were you told who to contact if you were worried about your condition or treatment after you left hospital?	8.9	3.3	12.1
41	Were you given or prescribed any new medication to take at home?		4.1	4.1
42	Did a health professional in the hospital tell you about medication side effects to watch for? [if patient was given or prescribed new medication to take at home]		7.5	7.5

Question number	Question text	Don't know/Can't remember (%)	Missing (%)	Missing + Don't know/Can't remember (%)*
43	Did you receive a document summarising your hospital care (e.g. a digital or physical copy of the letter to your GP or a discharge summary)?	11.0	4.0	15.0
44	On the day you left hospital, was your discharge delayed?		3.6	3.6
45	Did hospital staff explain the reason for the delay? [if patient's discharge was delayed]		3.8	3.8
46	Overall, how would you rate the care you received while in hospital?		1.5	1.5
47	How well organised was the care you received in hospital?		1.5	1.5
48	If asked about your hospital experience by friends and family, how would you respond?		1.9	1.9
49	Did the care and treatment received in hospital help you?		1.9	1.9
50	In the one month following your discharge, were you re-admitted to any hospital or did you go to an emergency department because of complications related to the care you received?	1.1	2.1	3.2
51	In the three months following your discharge, were you re-admitted to any hospital or did you go to an emergency department because of complications related to the care you received?	1.4	2.8	4.2
65	What year were you born?		15.3	15.3
66	How do you describe your gender?		1.8	1.8
67	What is the highest level of education you have completed?		3.8	3.8
68	Which language do you mainly speak at home?		2.0	2.0
69	Are you of Aboriginal origin, Torres Strait Islander origin, or both?		3.2	3.2
70	Which, if any, of the following longstanding conditions do you have (including age-related conditions)?		5.6	5.6
72	Do you give permission for the Bureau of Health Information to link your answers from this survey to health records related to you (the patient)?		3.5	3.5

* Percentages for this column may not equal the sum of the 'Missing (%)' and 'Don't know (%)' columns because they were calculated using unrounded figures.

Appendix 3

Derived measures

Definition

Derived measures are those for which results are calculated indirectly from respondents' answers to a survey question. These tend to be from questions that contain a 'not applicable' type response option and are used to gather information about patients' needs.

Derived measures involve the grouping together of more than one response option to a question. The derived measure 'Quintile of disadvantage' is based on the Index of Relative Socio-economic Disadvantage (IRSD) created by the Australian Bureau of Statistics (ABS). For more information, see abs.gov.au

Statistical methods

Results are expressed as the percentage of respondents who chose a specific response option or options for a question. The reported percentage is calculated as the numerator divided by the denominator (see definitions below). Results are weighted as described in this report.

Numerator

The number of survey respondents who selected a specific response option/s to a certain question, minus exclusions.

Denominator

The number of survey respondents who selected any of the response options to a certain question, minus exclusions.

Exclusions

For derived measures, the following responses are usually excluded:

- Response – 'Don't know'/'Can't remember' or similar non-committal response
- Response – invalid (i.e. respondent was meant to skip a question but did not)
- Response – missing (with the exception of questions that allow multiple responses or a 'none of these' option, for which the missing responses are combined to create a 'none reported' variable).

Interpretation of indicator

The higher the percentage, the more respondents fall into that response category.

The table below shows the questions and responses used in the construction of the derived measures.

Table 5 Derived measures for the Adult Admitted Patient Survey 2023

Derived measure	Question	Derived measure categories	Original question responses
Went through the admission process	Q2. How well organised was the admission process?	Did not go through the admissions process	Not applicable
		Went through the admissions process	Very well organised
			Fairly well organised
			Not well organised
Was served hospital food	Q4. How would you rate the food you were served while in hospital?	Wasn't served hospital food	I wasn't served any hospital food
		Was served hospital food	Very good
			Good
			Neither good nor poor
			Poor
			Very poor
Interacted with health professionals before receiving medications, treatments or tests	Q8. Did the health professionals ask your name or check your identification band before giving you any medications, treatments or tests?	Not applicable/don't know/can't remember	Don't know/can't remember
			Not applicable
		Interacted with health professionals before receiving medications, treatment or tests	Yes, always
			Yes, sometimes
			No
Received information about condition or treatment during stay	Q15. During your stay in hospital, how much information about your condition or treatment was given to you?	Received information	Not enough
			The right amount
			Too much
		Not applicable	Not applicable
Had worries or fears related to care and treatment	Q19. Did the health professionals give you the support you needed to help with any worries or fears related to your care and treatment?	Didn't have worries or fears	I didn't have any worries or fears
		Had worries or fears	Yes, definitely
			Yes, to some extent
			No
Wanted involvement in decisions about care and treatment	Q20. Were you involved, as much as you wanted to be, in decisions about your care and treatment?	Not applicable	I didn't want or need to be involved
		Wanted involvement	Yes, definitely
			Yes, to some extent
			No

Derived measure	Question	Derived measure categories	Original question responses
Health professionals spoke about care in front of them	Q21. When the health professionals spoke about your care in front of you, were you included in the conversation?	Not applicable	Not applicable
		Had health professionals speak about their care in front of them	Yes, definitely
			Yes, to some extent
			No
Had views and concerns	Q22. Did the health professionals listen carefully to any views and concerns you had?	Not applicable	I didn't have any views or concerns
		Had views or concerns	Yes, definitely
			Yes, to some extent
			No
Had religious or cultural beliefs to consider	Q25. Were your cultural or religious beliefs respected by the hospital staff?	Had beliefs to consider	Yes, always
			Yes, sometimes
			No
		Beliefs not an issue	Not applicable
Needed help with personal care	Q26. If you needed help with personal care (e.g. eating and drinking, moving around or going to the bathroom), did hospital staff help you within a reasonable timeframe?	Not applicable	I didn't need help with personal care
		Needed help with personal care	Yes, always
			Yes, sometimes
			No
Had tests, operations or procedures (derived measure from explanation)	Q29. Did the health professionals explain what would happen during your tests, operations or procedures in a way you could understand?	Not applicable/don't know/can't remember	Don't know/can't remember
			Not applicable
		Had tests, operations or procedures	Yes, always
			Yes, sometimes
			No
Had tests, operations or procedures (derived measure from outcomes)	Q30. Did the health professionals explain the results or outcomes of your tests, operations or procedures in a way you could understand?	Not applicable/don't know/can't remember	Don't know/can't remember
			Not applicable
		Had tests, operations or procedures	Yes, always
			Yes, sometimes
			No
Experienced a problem	Q31. During your hospital stay or soon after, did you experience any problem related to your care and treatment?	Experienced problem	Yes
		None reported	No
			Missing

Derived measure	Question	Derived measure categories	Original question responses
Problem occurred in hospital	Q33. Were the health professionals open with you about this problem?	Occurred in hospital	Yes, definitely
			Yes, to some extent
			No
		Occurred after left	Not applicable
Wanted involved in decisions about discharge	Q35. Did you feel involved in decisions about your discharge from hospital?	Wanted involvement	Yes, definitely
			Yes, to some extent
			No
		Didn't want involvement	I didn't want or need to be involved
Needed information about how to manage care at home	Q37. Thinking about when you left hospital, were you given enough information about how to manage your care at home?	Not applicable	Not applicable
		Needed information on how to manage care at home	Yes, definitely
			Yes, to some extent
			No
Needed family and home situation taken into account at discharge	Q38. Was your family and home situation taken into account when you were discharged?	Not applicable	Don't know/can't remember
			Not applicable
		Needed family and home situation taken into account when planning discharge	Yes, definitely
			Yes, to some extent
			No
Needed services after discharge	Q39. Thinking about when you left hospital, were adequate arrangements made for any services you needed? (e.g. equipment, home care, community care, follow-up appointments)?	Not applicable	I didn't need any services
		Needed services after discharge	Yes, definitely
			Yes, to some extent
			No

Derived measure	Question	Derived measure categories	Original question responses
Have a longstanding condition	Q70. Which, if any, of the following longstanding conditions do you have (including age-related conditions)?	Has condition/s	Deafness or severe hearing impairment
			Blindness or severe vision impairment
			A longstanding illness (e.g. cancer, HIV, diabetes, chronic heart disease)
			A longstanding physical condition (e.g. arthritis, spinal injury, multiple sclerosis)
			An intellectual disability
			A mental health condition (e.g. depression)
			A neurological condition (e.g. Alzheimer's, Parkinson's)
		None reported	None of these
			Missing

References

1. Spiegelhalter DJ, Funnel plots for comparing institutional performance, Stat Med 2005, 24(8): 1185-202.