

Adult Admitted Patient Survey 2021

Technical Supplement

November 2022

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Please note there is the potential for minor revisions of data in this report.

Please check the online version at bhi.nsw.gov.au for any amendments or errata.

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The conclusions in this report are those of BHI and no official endorsement by the NSW Minister for Health, the NSW Ministry of Health or any other NSW public health organisation is intended or should be inferred.

Contents

Introduction	2
Data collection and analysis	6
Reporting	13
Appendix 1 – Survey response summary	15
Appendix 2 – Rates of missing or ‘Don’t know’/‘Can’t remember’ responses	20
Appendix 3 – Derived measures	25
References	30

Introduction

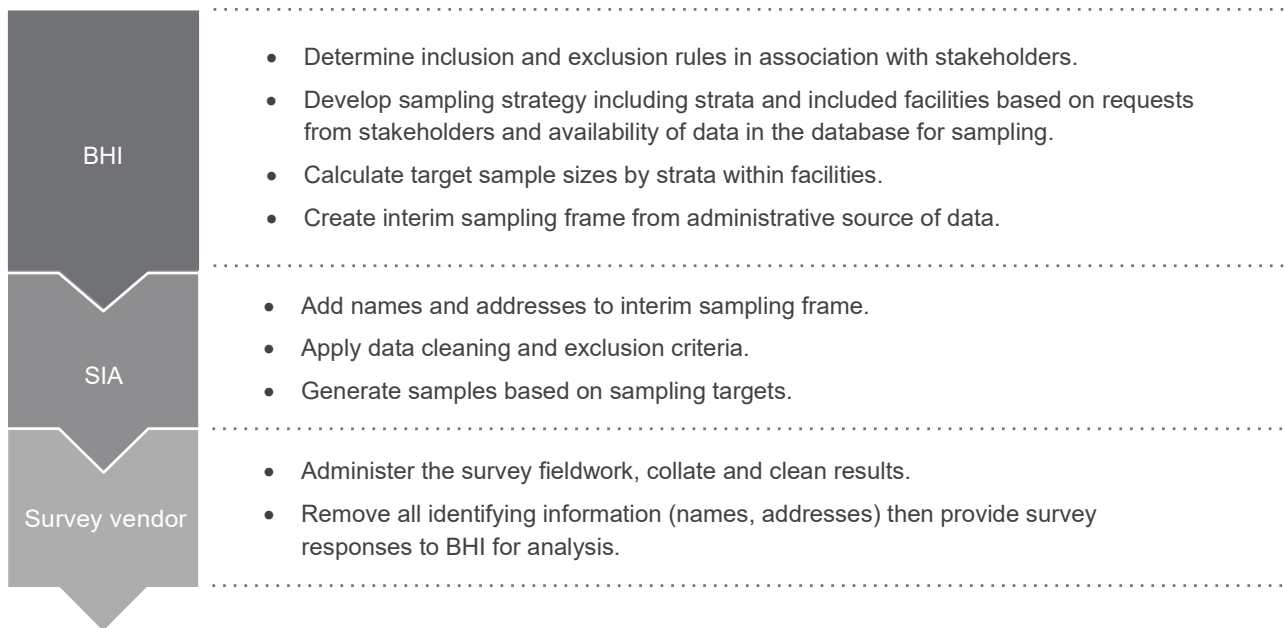
This technical supplement outlines the sampling methodology, data management and analysis of the results of the Adult Admitted Patient Survey (AAPS) 2021. Further supporting information is available in historical technical supplements for Adult Admitted Patient Surveys in previous years, available at 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 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 *NSW Patient Survey Program Strategy 2019–22* which ensures all patient surveys maximise benefits to patients and deliver unique value for 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

AAPS 2021 was undertaken as part of the NSW Patient Survey Program. The survey has been conducted annually since 2013 and is mailed to adult patients who are admitted to a NSW public hospital between January and December.

The survey questionnaire is reviewed each year. Content changes between the 2020 and 2021 questionnaires are available in a development report on BHI's website at bhi.nsw.gov.au/nsw_patient_survey_program/adult_admitted_patient_survey

Inclusion and exclusion criteria for admitted patients

The survey questionnaire is sent to eligible patients aged 18+ years who were discharged from a NSW public hospital between January and December 2021. 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 response to the increased and ongoing use of virtual care, the questionnaire was amended for the July to December 2021 patient cohorts to include seven questions about patients' experiences with virtual care outpatient appointments.

In Phase 1, screening with 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 and Post-Acute Care (APAC) services
- been admitted for a termination of pregnancy procedure: procedure code 35643-03
- been admitted to a psychiatric unit during any hospital stay during the sampling month
- received care for maltreatment syndromes: ICD-10 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: ICD10 code = Z30 in any diagnosis field, including 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 codes Z37.0, Z37.2, O80-O84 or procedure codes 90467, 90468, 90469, 90470 or 16520
- been admitted for pregnancy with an abortive outcome: ICD-10 code = O00-O08
- the diagnosis of stillborn baby: ICD-10 code = Z37 in any diagnosis field (including single stillbirth, twins (one liveborn and one stillborn), twins (both stillborn) and other multiple births (some liveborn)
- suffered intentional self-harm, or sequelae of intentional self-harm: ICD-10 code between X60 and X84 or ICD-10 code = Y87.0
- suffered an unspecified event, undetermined intent: ICD-10 code commencing with Y34
- experienced suicidal ideation: ICD-10 code = R45.81
- family history of other mental and behavioural disorders: ICD-10 code commencing with Z81.8

- personal history of self-harm: ICD-10 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 can vary. The level of coding completeness by month at the hospital level ranged from 33% to 100%; 59 of the 88 hospitals had coding completeness of over 95% for each of the 12 months. On 14 occasions, across eight hospitals, the level of coding completeness was less than 70%. Six of these occurred in one hospital. It had an average coding completeness of 75%. Only one other hospital had an average coding completeness of less than 95%.

Records with incomplete diagnosis coding were not excluded because this may impact the ability to meet the sample size required to ensure robust results are available 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, Mathew Talbot Hostel, 100 William Street, army quarters, jails and unknown)
- had an invalid name (including 'twin', 'baby of')
- had an invalid date of birth
- were on the 'do not contact' list
- were sampled in the previous six months for any BHI patient survey
- had mode of separation of death for a subsequent admission to hospital
- were 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 AAPS 2021.

Inclusion and exclusion criteria for hospitals

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 AAPS 2021 because they are located in major cities.

Sample design

Sample design is part of the mechanism that ensures the results of the survey are representative of the population. It does this by carefully selecting patients across hospitals and demographic characteristics.

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 AAPS 2021 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 AAPS 2021, 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). The additional 12 hospitals had an annual measurement frequency. Because of estimated small numbers 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 design effects by LHD and overall are provided in Appendix 1.

Data collection and analysis

Data collection

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 two weeks after the initial survey pack, with a reminder letter containing the full survey pack sent to people who had not responded approximately three weeks after the first reminder. This aims 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 secure transfer to BHI servers for processes which are password protected with access by authorised staff only.

Response rate and completion of questionnaires

The response rate is the percentage of people sampled who actually completed and returned or submitted their responses. The number of surveys mailed, the number of responses, response rates and design effects by 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 64 non-text questions (this includes questions that were correctly skipped). 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 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 hospitals that had larger sampling proportions.

Weights were calculated in two stages:

1. for each quarter of data as they became available
2. once 12 months of data were available.

For each quarter of data, responses were weighted at the hospital level where possible, to match the population by age (18–49 years or 50+ years) and stay type (same-day or overnight). This weighting was completed for hospitals that were sampled for quarterly reporting and at the LHD level for hospitals that were sampled for semi-annual reporting.

A weight was calculated for respondents in each stratum (facility) using the following equation:

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

Where:

N_i = total number of patients eligible for the survey in the i th stratum.

n_i = number of respondents in the i th stratum.

If the stratum cell size within a hospital was five or fewer, and the weight was greater than the median weight, cells within that hospital were aggregated.

The interim quarterly weights were then passed through the generalised regression weights (GREGWT) macro, 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).

Once the four quarters of data were available, they were aggregated. The weights for hospitals sampled on the basis of semi-annual reporting were recalculated at the hospital level. The adjusted (annual) weights were used to report results based on the full 12 months of data. For annual weighting, the GREGWT macro was used, in two stages, to ensure weights were equal to populations at the margins. Weights were set to the maximum of 400.

The GREGWT macro was run with the following benchmarks for annual weighting:

- benchmark 1: hospital
- benchmark 2: quarter x LHD
- benchmark 3: hospital, stay type and age group.

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 is 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 in 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 2021

Demographic variable	Sub-group	% of target population	% of eligible population	% of respondents (unweighted)	% of respondents (weighted)
LHD	Central Coast	5	5	6	5
	Far West	0	0	2	0
	Hunter New England	13	13	18	13
	Illawarra Shoalhaven	5	5	6	5
	Mid North Coast	5	5	6	5
	Murrumbidgee	3	3	5	3
	Nepean Blue Mountains	5	5	6	5
	Northern NSW	6	6	10	6
	Northern Sydney	7	8	5	8
	South Eastern Sydney	10	11	7	11
	South Western Sydney	12	12	6	12
	Southern NSW	3	3	9	3
	St Vincent's Health Network	2	2	2	2
	Sydney	8	8	4	8
	Western NSW	4	4	7	4
Western Sydney	9	10	4	10	
Peer group	A1	45	45	16	45
	A3	3	3	4	3
	B	35	36	24	36
	C1	10	10	19	10
	C2	6	6	32	6
	D	0	0	2	0
	F (F4 and F6)	0	0	3	0
Age group	18–49	31	34	12	32
	50+	69	66	88	68
Stay type	Overnight	66	63	59	63
	Same Day	34	37	41	37

Demographic variable	Sub-group	% of target population	% of eligible population	% of respondents (unweighted)	% of respondents (weighted)
Aboriginal status	Non-Aboriginal	96	#	98	98
	Aboriginal	4	#	2	2
Sex*	Male	49	#	47	47
	Female	51	#	53	53

* Information on sex is drawn from administrative data.

Data not available.

Standardised comparisons between hospitals and the NSW result

To enable fairer comparisons between a hospital and the NSW result, BHI used logistic mixed models in PROC GLIMMIX procedure¹ and sampling weights, adjusting for patient characteristics to estimate the odds of a pre-defined experience (e.g. 'very good' for the overall rating of care question) for a hospital compared with an 'average' hospital at the state level.

Therefore, when a hospital is flagged as having a significantly higher or lower result than NSW, this should reflect differences in patient experiences rather than differences in a hospital's patient mix. This analysis is currently applied at the hospital level and not at LHD level.

The model calculates an estimate for each hospital's random intercept and produces a p-value to indicate how likely these estimates are to be significantly different from the average, or NSW value. To reduce the likelihood of identifying a significant difference due to chance when there are a large number of comparisons, a P-value of 0.01 was used.

Sampling weights were used in all models to ensure the comparisons were representative of the NSW patient population. The covariates included in the modelling for AAPS 2021 were based on results of a thorough study conducted in 2018, that were age, gender, education and language spoken at home.

When results are flagged as 'interpret with caution' (see page 13) or when the model did not converge, comparisons are not highlighted as significant due to the possible lack of precision.

Monthly trend analysis

In the Snapshot report for AAPS 2021, patients' overall ratings of care are presented for each month of 2021 in comparison with 2019 and 2020, to provide insights into patient experience at different times throughout the year. The NSW-level data was analysed by month and weighted by the annual weight. The results were compared without adjustment to identify any changes in patient experience over time. Changes in patient experience could be due to factors not accounted for in the analyses such as patient characteristics, or by changes in the system (e.g. the introduction of a new policy).

Analyses of differences in patient experiences

To examine differences in experiences between any two patient groups in AAPS 2021, 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 rural) as the explanatory variable. Responses with a missing value for the explanatory variable were excluded from the analysis.

Models examining the impact of rurality of hospital were adjusted for age, gender, education and language spoken at home. Results for all measures by this sub-group analysis, without significance testing, at the state level can be found on the BHI Data Portal at bhi.nsw.gov.au/data-portal

Association analysis of virtual care experiences

Patients admitted between July and December 2021 were asked if they had a virtual care appointment with a hospital or outpatient clinic in the three months after their discharge from hospital. These 1,189 patients were also asked how many virtual care appointments they had with a hospital or outpatient clinic in the past 12 months: 68% had 1 or 2, 21% had 3 to 5, and 11% had more than 5.

To determine if there is an association between positive experiences for virtual care services in the three months after discharge from hospital, patient characteristics and utilisation of virtual care, three questions were selected for modelling including:

- Q52: Overall, how would you rate the virtual care you received?
- Q53: Compared with in-person appointments, was your virtual care experience...?
- Q55: Thinking about your experiences of virtual care, what have been the benefits for you?

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. The independent factor was “How many virtual care appointments have you had with a hospital or outpatient clinic over the past 12 months (not counting any appointments with your general practitioner/family doctor)?” with responses grouped into ‘1 to 2’, ‘3 to 5’, ‘more than 5’. Responses to ‘Don’t know/Can’t remember’ were excluded.

The relationship between the independent factor and each outcome was modelled using logistic regression in SURVEYLOGISTIC procedure, adjusting for age, gender, education level and language spoken at home. The adjusted odds ratio and confidence interval were used to assess the magnitude of the association.

Statistical software

SAS software version 9.4 was used for all statistical analyses, and hospital was included as a strata variable.

Reporting

Confidentiality and suppression rules

BHI does not receive any confidential patient information and only publishes aggregated data and statistics. Any 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. However, data still contribute to the NSW level result and/or LHD level result. Coledale Hospital was not reportable for AAPS 2021 as it had fewer than 30 respondents. The results suppressed still contribute to NSW-level results.

For questions asking about types of complications (i.e. experienced an infection, uncontrolled bleeding, a negative reaction to medication or complications as a result of surgery), results are reported at NSW level because of low prevalence at the hospital and LHD levels. However, the combined complication prevalence (i.e. had any complication) is reported at all levels. No statistical comparison was done for these questions as the survey data currently do not capture information on patient clinical conditions that might influence results for these questions.

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 was more than 49 with a response rate less than 20%, results are publicly reported and an 'interpret with caution' note appended to the hospital to indicate an 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'*.

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

Facilities are classified as 'urban' and 'rural' using the Accessibility and Remoteness Index of Australia (ARIA+), the ABS 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 ABS measure of remoteness. For more information, see abs.gov.au/websitedbs/d3310114.nsf/home/remoteness+structure

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 2021

NSW/LHD	Questionnaires mailed	Responses	Adjusted response rate %	DEFF
NSW	55,417	19,304	33	2.8
LHD				
Central Coast	2,901	1,075	36	1.4
Far West	1,336	399	29	1.7
Hunter New England	9,803	3,425	34	3.5
Illawarra Shoalhaven	2,614	1,070	39	2.9
Mid North Coast	2,798	1,167	41	2.4
Murrumbidgee	2,641	959	36	2.7
Nepean Blue Mountains	3,089	1,104	33	3.7
Northern NSW	4,984	1,968	38	3.7
Northern Sydney	2,577	915	34	1.9
South Eastern Sydney	3,998	1,296	32	2.0
South Western Sydney	3,959	1,143	28	2.0
Southern NSW	4,166	1,656	40	1.6
St Vincent's Health Network	1,519	386	26	1.4
Sydney	2,403	724	30	1.3
Western NSW	3,899	1,316	33	2.3
Western Sydney	2,730	701	26	1.7

Table 3 Number of surveys mailed, responses, response rates and design effects (DEFF) by hospital, Adult Admitted Patient Survey 2021

LHD	Hospital	Questionnaires mailed	Responses	Adjusted response rate %	DEFF
Central Coast	Gosford Hospital	1,378	502	36	5.5
	Woy Woy Hospital	156	63	40	1.6
	Wyong Hospital	1,367	510	38	7.0
Far West	Broken Hill Health Service	1,336	399	29	2.0
Hunter New England	Armidale Hospital	684	260	38	3.1
	Belmont Hospital	697	273	39	7.5
	Calvary Mater Newcastle	679	243	36	5.5
	Cessnock Hospital	674	222	33	3.7
	Gunnedah Hospital	464	154	33	4.0
	Inverell Hospital	666	239	36	3.7
	John Hunter Hospital	701	212	30	2.3
	Kurri Kurri Hospital	737	391	58	3.3
	Maitland Hospital	709	216	30	7.0
	Manning Hospital	713	289	41	7.5
	Moree Hospital	515	123	26	2.2
	Muswellbrook Hospital	650	197	31	6.6
	Narrabri Hospital	550	162	28	5.7
	Singleton Hospital	684	219	32	2.3
	Tamworth Hospital	680	225	33	3.0
Illawarra Shoalhaven	Coledale Hospital	47	25	53	7.9
	Milton Ulladulla Hospital	349	156	45	5.0
	Port Kembla Hospital	155	74	48	5.9
	Shellharbour Hospital	685	286	44	1.7
	Shoalhaven District Memorial Hospital	707	293	41	2.4
	Wollongong Hospital	671	236	34	8.7

LHD	Hospital	Questionnaires mailed	Responses	Adjusted response rate %	DEFF
Mid North Coast	Coffs Harbour Health Campus	687	254	37	4.7
	Kempsey District Hospital	709	280	42	8.3
	Macksville District Hospital	703	325	45	4.9
	Port Macquarie Base Hospital	699	308	44	5.6
Murrumbidgee	Deniliquin Health Service	572	213	37	3.0
	Griffith Base Hospital	685	208	30	4.7
	Wagga Wagga Base Hospital	689	247	36	6.8
	Young Health Service	695	291	43	2.9
Nepean Blue Mountains	Blue Mountains District Anzac Memorial Hospital	683	287	42	3.6
	Hawkesbury District Health Service	685	187	28	5.5
	Lithgow Hospital	674	261	40	3.1
	Nepean Hospital	691	192	28	3.6
	Springwood Hospital	356	177	50	4.6
Northern NSW	Ballina District Hospital	681	291	43	4.2
	Byron Central Hospital	524	178	34	5.4
	Casino & District Memorial Hospital	616	262	41	1.6
	Grafton Base Hospital	679	272	40	11.6
	Lismore Base Hospital	688	269	38	8.0
	Macleay District Hospital	418	166	40	4.3
	Murwillumbah District Hospital	689	281	42	2.8
	The Tweed Hospital	689	249	36	7.7
Northern Sydney	Greenwich Hospital	202	88	44	1.9
	Hornsby Ku-ring-gai Hospital	690	233	34	5.3
	Mona Vale Hospital	305	110	36	6.7
	Royal North Shore Hospital	690	246	35	4.8
	Ryde Hospital	690	238	34	2.3

LHD	Hospital	Questionnaires mailed	Responses	Adjusted response rate %	DEFF
South Eastern Sydney	Calvary Health Care Kogarah	359	134	37	4.9
	Prince of Wales Hospital	689	173	25	4.7
	Royal Hospital for Women	682	248	34	4.1
	St George Hospital	687	197	29	5.5
	Sutherland Hospital	695	240	35	4.1
	Sydney Hospital and Sydney Eye Hospital	690	239	34	4.0
	Uniting War Memorial Hospital – Waverley	196	65	33	11.3
South Western Sydney	Bankstown-Lidcombe Hospital	669	172	25	4.5
	Bowral and District Hospital	691	296	42	4.4
	Braeside Hospital - Fairfield	268	77	29	4.7
	Camden Hospital	281	114	41	5.8
	Campbelltown Hospital	682	180	26	3.4
	Fairfield Hospital	687	134	19	4.6
	Liverpool Hospital	681	170	25	4.1
Southern NSW	Batemans Bay District Hospital	714	288	42	2.7
	Cooma Hospital and Health Service	663	253	39	2.0
	Goulburn Base Hospital	688	264	39	3.1
	Moruya Hospital	706	281	40	5.2
	Queanbeyan Hospital and Health Service	691	264	37	4.9
	South East Regional Hospital	704	306	45	6.7
St Vincent's Health Network	St Joseph's Hospital - Auburn	150	43	29	4.4
	St Vincent's Hospital Sydney	1,369	343	26	4.0

LHD	Hospital	Questionnaires mailed	Responses	Adjusted response rate %	DEFF
Sydney	Balmain Hospital	188	67	36	2.1
	Canterbury Hospital	676	166	24	1.8
	Concord Repatriation General Hospital	685	223	32	3.4
	Royal Prince Alfred Hospital	854	268	32	3.0
Western NSW	Bathurst Health Service	688	212	31	4.3
	Cowra Health Service	649	246	38	6.8
	Dubbo Hospital	678	204	30	3.9
	Lachlan Health Service – Forbes	502	164	34	1.4
	Mudgee Health Service	695	254	37	3.1
	Orange Health Service	687	236	34	2.2
Western Sydney	Auburn Hospital	685	166	24	5.6
	Blacktown Hospital	682	182	27	2.3
	Mount Druitt Hospital	673	186	28	3.7
	Westmead Hospital	690	167	24	4.5

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 2021

Number	Question	Missing %	'Don't know'/'Can't remember' %	Missing + 'Don't know'/'Can't remember' %*
1	Were the staff you met on your arrival to hospital polite and welcoming?	0.89	1.97	2.86
2	How well organised was the admission process?	1.01		1.01
3	How clean were the areas of the hospital you used during your stay?	0.92		0.92
4	How would you rate the food you were served while in hospital?	1.42		1.42
5	Were you given enough privacy during your stay at the hospital?	2.73		2.73
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?	4.26		4.26
7	Did the health professionals who treated you introduce themselves to you?	2.27	1.43	3.70
8	Did the health professionals ask your name or check your identification band before giving you any medications, treatments or tests?	2.39	2.27	4.66
9	Did you have enough time to discuss your health or medical problem with the health professionals?	2.50	1.74	4.24
10	Did the health professionals explain things in a way you could understand?	2.57		2.57
11	Did you have confidence and trust in the health professionals treating you?	2.67		2.67
12	Were the health professionals kind and caring towards you?	2.70		2.70
13	Overall, how would you rate the doctors who treated you?	2.62		2.62
14	Overall, how would you rate the nurses who treated you?	2.64		2.64

Number	Question	Missing %	'Don't know'/'Can't remember' %	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?	3.13		3.13
16	How much information about your condition or treatment was given to your family, carer or someone close to you?	3.13	5.73	8.86
17	Did you ever receive contradictory information about your condition or treatment from the health professionals?	4.26		4.26
18	In your opinion, did the health professionals who treated you know enough about your care and treatment?	2.82		2.82
19	Did the health professionals give you the support you needed to help with any worries or fears related to your care and treatment?	2.71		2.71
20	Were you involved, as much as you wanted to be, in decisions about your care and treatment?	2.80		2.80
21	When the health professionals spoke about your care in front of you, were included in the conversation?	2.66		2.66
22	Did the health professionals listen carefully to any views and concerns you had?	2.72		2.72
23	How would you rate how well the health professionals worked together as a team?	2.72		2.72
24	Were you treated with respect and dignity while in hospital?	2.50		2.50
25	Were your cultural or religious beliefs respected by the hospital staff?	3.08		3.08
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?	2.83		2.83
27	Were you ever in any pain while in hospital?	3.80		3.80
28	Do you think the health professionals did everything they could to help manage your pain?	1.95		1.95

Number	Question	Missing %	'Don't know'/'Can't remember' %	Missing + 'Don't know'/'Can't remember' %*
29	Did health professionals explain what would happen during your tests, operations or procedures in a way you could understand?	1.41	2.19	3.60
30	Did health professionals explain the results or outcome of your tests, operations or procedures in a way you could understand?	1.49	2.32	3.81
31	During your hospital stay or soon after, did you experience any problem related to your care and treatment?	2.33		2.33
32	Was the impact of this problem...?	3.26		3.26
33	Were the health professionals open with you about this problem?	3.01		3.01
34	Were the health professionals responsive in addressing this problem?	3.72		3.72
35	Did you feel involved in decisions about your discharge from hospital?	1.87		1.87
36	At the time you were discharged, did you feel that you were well enough to leave the hospital?	2.02		2.02
37	Thinking about when you left hospital, were you given enough information about how to manage your care at home?	1.63		1.63
38	Was your family and home situation taken into account when you were discharged?	1.71	2.23	3.95
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)?	2.03		2.03
40	Were you told who to contact if you were worried about your condition or treatment after you left hospital?	2.31	9.25	11.56
41	Were you given or prescribed any new medication to take at home?	2.78		2.78
42	Did a health professional in the hospital tell you about medication side effects to watch for?	4.56		4.56
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)?	3.14	11.73	14.87

Number	Question	Missing %	'Don't know'/'Can't remember' %	Missing + 'Don't know'/'Can't remember' %*
44	On the day you left hospital, was your discharge delayed?	2.46		2.46
45	Did hospital staff explain the reason for the delay?	2.63		2.63
46	Overall, how would you rate the care you received while in hospital?	1.40		1.40
47	How well organised was the care you received in hospital?	1.36		1.36
48	If asked about your hospital experience by friends and family, how would you respond?	1.58		1.58
49	Did the care and treatment received in hospital help you?	1.42		1.42
50	In the 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?	1.70	1.22	2.92
51	What year were you born?	2.09		2.09
52	How do you describe your gender?	1.98		1.98
53	What is the highest level of education you have completed?	3.98		3.98
54	Language mainly spoken at home	1.94		1.94
55	Aboriginal and/or Torres Strait Islander origin	3.06		3.06
56	Do you have longstanding health conditions that cause you difficulty with your day-to-day activities?	4.98		4.98
57	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)?	3.35		3.35
951	In the three months after your discharge from the hospital, did you have any virtual care appointments - over the telephone or by video call - with a hospital or outpatient clinic?	3.85	3.12	6.97
952	Overall, how would you rate the virtual care you received?	3.52		3.52
953	Compared with in-person appointments, was your virtual care experience...?	5.88		5.88

Number	Question	Missing %	'Don't know'/'Can't remember' %	Missing + 'Don't know'/'Can't remember' %*
954	If given the choice, would you use virtual care again?	4.84	4.40	9.24
955	Thinking about your experiences of virtual care, what have been the benefits for you?	10.61		10.61
956	How did you access your most recent virtual care appointment?	11.98		11.98
957	How many virtual care appointments have you had with a hospital or outpatient clinic over the past 12 months (not counting any appointments with your general practitioner/family doctor)?	9.13	8.85	17.98

* 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 an exception to this rule. For more information on this, please refer to the Data Dictionary: Quintile of disadvantage on BHI's website at [bhi.nsw.gov.au/ data/assets/pdf file/0016/300616/Quintile of Disadvantage.pdf](http://bhi.nsw.gov.au/data/assets/pdf_file/0016/300616/Quintile_of_Disadvantage.pdf)

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 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 2021**

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
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
		Interacted with health professionals before receiving medications, treatment or tests	Yes, always
			Yes, sometimes
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
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?	Not applicable	Not applicable
		Didn't have worries or fears	I didn't have any worries or fears
			Had worries or fears
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?	Had health professionals speak about their care in front of them	Yes, to some extent
			Yes, definitely
			No
Had views and concerns	Q22. Did the health professionals listen carefully to any views and concerns you had?	Had views or concerns	Not applicable
			I didn't have any views or concerns
			Yes, definitely
			Yes, to some extent
			No

Derived measure	Question	Derived measure categories	Original question responses
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 in a way you could understand (derived measure from explanation)	Q29. Did 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 in a way you could understand (derived measure from outcomes)	Q30. Did health professionals explain the results or outcome 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
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
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

Derived measure	Question	Derived measure categories	Original question responses
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
Have a longstanding health condition	Q56. Do you have longstanding health conditions that cause you difficulty with your day-to-day activities?	Has longstanding health condition	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 or multiple sclerosis)
			An intellectual disability
			A mental health condition (e.g. depression)
			A neurological condition (e.g. Alzheimer's, Parkinson's)
		Doesn't have longstanding health condition	None of these
	Missing		

Derived measure	Question	Derived measure categories	Original question responses
Virtual care had benefit	Q955. Virtual care had benefit (derived measure)	Had no benefit	I had no benefits
		Had benefit	<p>I thought it was convenient</p> <p>I saved time</p> <p>I saved money</p> <p>I felt that I received safe, high quality care</p> <p>I felt that I received the right care at the right time</p> <p>I felt at ease being in my own home/surroundings</p> <p>I didn't have to take as much time off work as I would have with an in-person appointment</p> <p>I didn't need to arrange care for children or dependants</p> <p>I was able to have others join the appointment (my family, other members of my healthcare team)</p> <p>I thought it benefitted me in other ways</p>

References

1. SAS Documentation, Example 49.18 Weighted Multilevel Model for Survey Data, 13 December 2019, accessed July 2022. documentation.sas.com/doc/en/pgmsascdc/9.4_3.4/statug/statug_glimmix_examples23.htm