

Rural Hospital Adult Admitted Patient Survey 2019–20

Technical Supplement

June 2021

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Please note that there is the potential for minor revisions of data in this report.
Please check the online version at **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.

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NSW Patient Survey Program

The New South Wales (NSW) Patient Survey Program began sampling patients in NSW public health facilities from 2007. Up to mid-2012, the program was coordinated by the NSW Ministry of Health (Ministry). Responsibility for the NSW Patient Survey Program was transferred from the Ministry to the Bureau of Health Information (BHI) in 2012.

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 Strategy 2019–22, which ensures that all patient surveys maximise benefits to patients and deliver unique value for the NSW health system.

This document outlines the sampling methodology, data management and analysis of the results of the Rural Hospital Adult Admitted Patient Survey 2019–20.

For more information on how to interpret results and statistical analysis of differences between facilities and NSW, please refer to the Guide to Interpreting Differences on BHI's website at bhi.nsw.gov.au/nsw_patient_survey_program

Rural Hospital Adult Admitted Patient Survey

The Rural Hospital Adult Admitted Patient Survey asks adults admitted to a NSW public hospital in a rural location to provide feedback about the care they received. The Rural Hospital Adult Admitted Patient Survey 2019–20 was sent to people who were admitted to hospital between July 2019 and June 2020.

This is the first time BHI has reported on the Rural Hospital Adult Admitted Patient Survey and therefore there are no comparisons with previous years' results.

BHI previously conducted a Small and Rural Hospitals Survey. Following a major review of that questionnaire, it was replaced by the Rural Hospital Adult Admitted Patient Survey which includes a large number of new and updated questions specific to healthcare in rural and regional areas.

The changes made to the questionnaire content between the Small and Rural Hospitals Survey 2016 and the Rural Hospital Adult Admitted Patient Survey 2019–20 are documented in the development report on BHI's website.

This is also the first time the scope of the survey of adult patients admitted to small facilities has been restricted to include rural hospitals only. The Small and Rural Hospitals Survey, which ran in 2015 and 2016, included adults admitted to small hospitals in major cities as well as in rural settings. Small hospitals are defined as hospitals in peer groups D, F3, F4 and F6. Rural hospitals are defined by the rurality of the location of the hospital, based on the Australian Statistical Geography Standard Remoteness Structure developed by the Australian Bureau of Statistics.¹

Producing survey samples

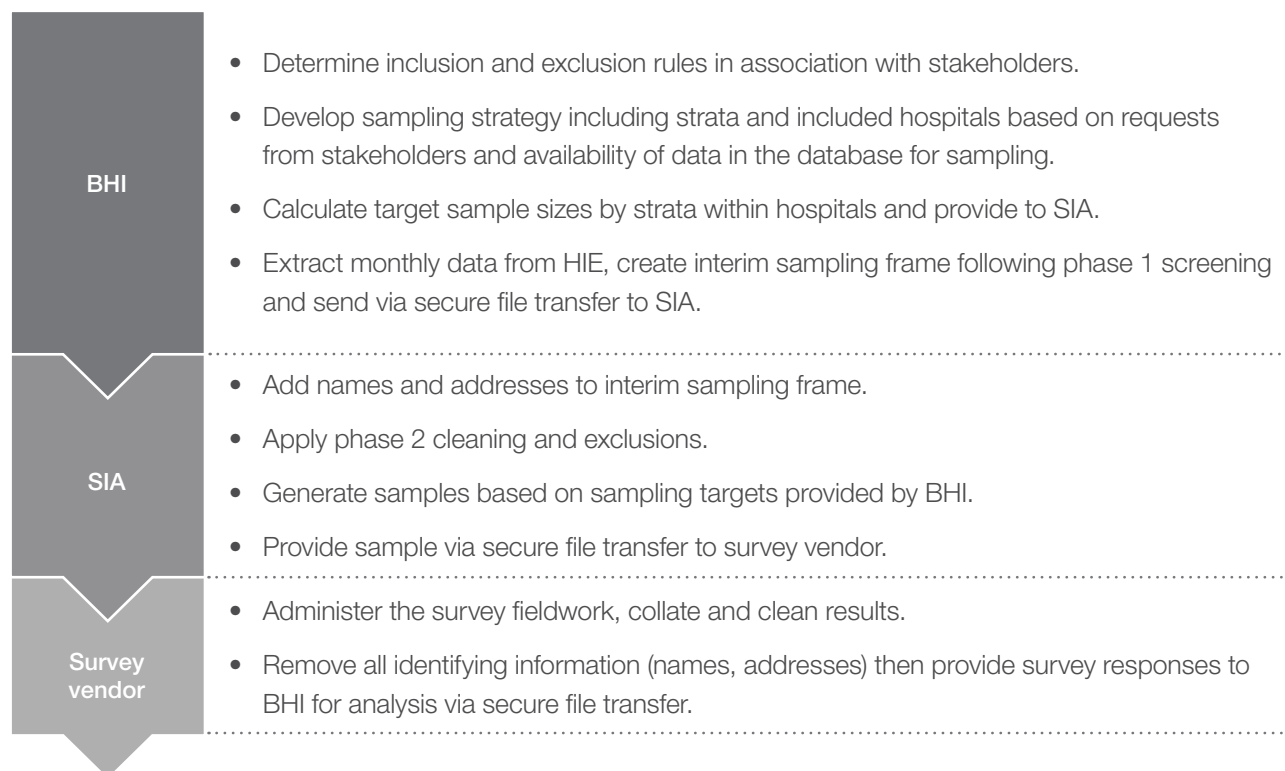
The NSW Patient Survey Program assures patients that their responses will be confidential and no identifying information will be given to the hospitals they attended. BHI does this through a number of mechanisms, including:

- data suppression (for example, results for LHDs and hospitals with fewer than 30 responses are suppressed)
- reporting aggregated results
- anonymisation of patient comments
- segregation of roles when constructing the survey samples (Figure 1).

The sampling method for the NSW Patient Survey Program is a collaboration between BHI, the survey vendor and the Ministry’s Systems Information and Analytics (SIA) branch (see Figure 1). NSW Health’s Health Information Exchange (HIE) is the main source of data for the sampling frame.

BHI has access to de-identified unit record hospital data from selected tables of the HIE database. Use of an encrypted patient number allows de-duplication of patients within a hospital. For the Rural Hospital Adult Admitted Patient Survey, sampling frames were extracted on a monthly basis, with the date of discharge used to define eligible patients. Target sample sizes for each hospital were calculated in advance, as explained later in this report.

Figure 1 **Organisational responsibilities in sampling and survey processing, Rural Hospital Adult Admitted Patient Survey 2019–20**



Inclusion criteria

Data for patients who were admitted to a NSW public hospital in a rural location between July 2019 and June 2020 were passed through two phases of screening to create a frame of patients eligible to participate in the Rural Hospital Adult Admitted Patient Survey 2019–20. BHI conducted phase 1 screening, and SIA conducted phase 2 screening. Many of the inclusion and exclusion criteria were developed in response to stakeholder advice.

Geographic location and peer group were the selection criteria for hospitals participating in the survey.

Phase 1 screening

Inclusions

- Patients aged 18+ years who received either 'acute' or 'rehabilitation care' in hospital (episode of care types 1 and 2) and were admitted to a NSW public hospital that reported data to the Admitted Patient Data Collection tables in the statewide HIE and is located in an inner regional, outer regional, remote or very remote area in NSW with a peer group classification:
 - D: Community hospitals
 - F3: Multipurpose services
 - F4: Sub-acute
 - F6: Rehabilitation.
- Patients aged 18+ years who received either 'acute' or 'rehabilitation care' in Coledale or Port Kembla hospitals. Although these two facilities are designated to be in 'major cities' according to the Australian Statistical Geography Standard¹, they have a peer group classification of F4: Sub-acute.

Exclusions

Gower Wilson, Kiama and Portland hospitals were excluded on the basis of low volumes.

The following patients were excluded from the sampling frame:

- patients who died during their hospital admission – mode of separation of 6 (death with autopsy) or 7 (death without autopsy)
- patients receiving Acute and Post-Acute Care (APAC) services.

A series of further exclusion criteria were 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. Therefore, patients with the following procedures or diagnoses recorded for their hospital stay were omitted:

- admitted for a termination of pregnancy procedure: procedure code 35643-03
- admitted to a psychiatric unit during any hospital stay during the sampling month
- treated for maltreatment syndromes: ICD-10 code = T74 in any diagnosis field, including neglect or abandonment, physical abuse, sexual abuse, psychological abuse, other maltreatment syndromes and 'unspecified'
- treated for contraceptive management: ICD-10 code = Z30 in any diagnosis field, including general counselling and advice on contraception, surveillance of contraceptive drugs, surveillance of contraceptive device, other contraceptive management and 'unspecified'
- who gave birth in the target hospital during the sampling month: ICD-10 code Z37.0, Z37.2 or O80-O84; or procedure code 90467, 90468, 90469, 90470 or 16520
- admitted for pregnancy with an abortive outcome: ICD-10 code = O00-O08

- 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)
- intentional self-harm: ICD-10 code between X60 and X84
- sequelae of intentional self-harm: ICD-10 code = Y87.0
- unspecified event, undetermined intent: ICD-10 code commencing with Y34
- 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: ICD10 code commencing with Z91.5
- admitted for same-day haemodialysis: procedure code 13100-00 in any procedure field.

Patients meeting the following exclusion criteria were also removed in Phase 1 screening:

- same-day patients who stayed for less than three hours
- same-day patients transferred to another hospital
- records that do not include a date of birth.

Where patients had multiple admitted hospital stays within the sampling month, their most recent hospital stay was retained for sampling. The questionnaire instructed the patient to respond to the survey based on their most recent admission in the particular month.

Many of these exclusions require knowing the diagnosis codes. Coding of admitted patient records should occur within six weeks after discharge, but can vary. At the NSW level in 2019, by the time sampling was undertaken, approximately 6% of records had not been completely coded. However, the level of coding completeness differed by month and by hospital. Of the 98 hospitals included in the Rural Hospital Adult Admitted Patient Survey 2019–20, 24 had more than 70% of records with incomplete coding in at least one month. The hospitals with two or more months

with more than 70% of records with incomplete coding were Yass (5 months); Lourdes, Pambula and Bombala (4 months); Rylstone (3 months); and Gloucester (2 months). Patients whose records had incomplete diagnosis coding were not excluded because the exclusion of these records may affect the ability to meet the sample size required to ensure robust results are available at hospital level.

Phase 2 screening

BHI provided the interim sampling frame to SIA, who added patient name and address information. Patients then underwent a second phase of screening. This resulted in exclusions for administrative/logistical reasons, or where death had been recorded after discharge, but before the final sampling frame was prepared.

Exclusions

Patients meeting the following exclusion criteria were removed in Phase 2 screening:

- invalid address (including those with addresses listed as hotels, motels, nursing homes, community services, Mathew Talbot Hostel, 100 William Street, army quarters, jails, unknown)
- invalid name (including 'twin', 'baby of')
- invalid date of birth
- on the 'do not contact' list
- sampled in the previous six months for any BHI patient survey
- mode of separation of death for a subsequent admission to hospital
- 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 those eligible to participate in the Rural Hospital Adult Admitted Patient Survey 2019–20.

Drawing the sample

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 sampled completely at random.

Calculation of sample sizes and reporting frequency

Sample size calculation ensures that the sufficient number of patients are receiving the questionnaire to ensure that the level of accuracy of the results is fit for purpose.

Monthly sample sizes were determined before the start of the survey cycle. Although sampling was undertaken monthly, sample size calculations were based on the reporting frequency. For the Rural Hospital Adult Admitted Patient Survey 2019–20, all hospitals were sampled for annual reporting.

Sample sizes were defined at the hospital level, with patients selected within hospital using simple random sampling without replacement.

Monthly hospital-level targets were based on data collated from January to December 2018 (after Phase 1 of the screening process).

The sample size calculation aimed for a confidence interval around an expected proportion of 0.8 of ± 0.07 at the hospital level.

The required sample size for each hospital (i) was estimated using the following equation:

$$S_i = \frac{x^2 N_i P(1-P)}{d^2 (N_i - 1) + x^2 P(1-P)}$$

Where:

S_i = desired sample size for the reporting period, for hospital i

x^2 = tabulated value of chi-squared with one degree of freedom at 5% level of significance (3.841)

N_i = patient population per reporting period, for hospital i

P = expected proportion of patients giving a positive response to the question on satisfaction with overall care (0.8), based on previous levels of response to patient surveys

d = degree of accuracy of the 95% confidence interval expressed as a proportion (± 0.07).

Finally, sample sizes were inflated to account for non-responses to the survey. This was done by dividing the target sample size by the expected response rate. A response rate of 40% was used for the Rural Hospital Adult Admitted Patient Survey 2019–20.

In addition, a minimum monthly target of six patients was applied to all hospitals (e.g. if calculations required fewer than six patients in any hospital, this was increased to six patients).

For each month of sampling, SIA randomly selected patients within each hospital, according to these targets.

Hospitals were included in the survey even if the target sample size was unattainable. For these hospitals, a census of patients was undertaken. Of the 97 hospitals included, 65 were expected to require a census.

In terms of expected number of responses, 32 hospitals were not expected to achieve a sample size of 30 and only 14 were expected to achieve a sample size of 100 or more responses.

The sample was designed to collect data from patients who were admitted from July 2019 to June 2020. However, due to a technical issue, this survey did not collect data for patients who were admitted in August 2019. Sample sizes for the remainder of the year were increased to account for the loss of this one month. However, the loss of a month would have reduced numbers of responses for hospitals that were subject to census.

Data collection and analysis

Data collection

Patients sampled received a paper questionnaire and were given the option to complete the questionnaire online. Respondents were asked to return (for paper questionnaire) or submit (for electronic questionnaire) their completed questionnaire to the survey vendor. Paper questionnaires were scanned for fixed response options and manually entered in the case of free-text fields.

All text entry fields were checked for potential identifiers (e.g. mention of patient or staff names and contact details, day of the week, gender of healthcare provider) and any that were found were replaced with 'XXXX'. However, on rare occasions, details may not be detected by coders, and these comments should be anonymised on detection by LHDs, who are provided comments for their hospitals.

Following this, each record was checked for any completion errors. Reasonable adjustments were made, such as removing responses where the respondent did not correctly follow the instructions or where the respondent provided multiple answers to a single response question.

At the end of this process, the survey vendor transferred the prepared de-identified records securely to BHI's servers, all of which are password protected with only authorised staff access.

The process of data collection ensures BHI does not have access to patient names and contact details to maintain respondent confidentiality. This process also ensures that, in the context of BHI's reporting function, identifying information can never be released to LHDs or publicly disclosed.

For the Rural Hospital Adult Admitted Patient Survey 2019–20, data was collected from patients who were admitted to one of 97 NSW public hospitals in July 2019 and from September 2019 to June 2020.

Data analysis

For the Rural Hospital Adult Admitted Patient Survey 2019–20, there were 12,054 questionnaires mailed and 4,487 responses received.

Completeness of questionnaires

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, 56 of the 65 non-text questions (this includes questions that were correctly skipped).

Response rate

The response rate is the percentage of people sampled who actually completed and returned or submitted their response. The number mailed is adjusted to remove patients who were found to be out of scope after mailing occurred. As no oversampling occurred, there was no need to create a weighted response rate for the Rural Hospital Adult Admitted Patient Survey 2019–20. The response rates are shown in Tables 1 and 2.

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 the different sampling proportions used at the hospital level were accounted for, so that LHD results were not unduly influenced by small hospitals with larger sampling proportions.

Weights were calculated once 11 months of data were available.

For the Rural Hospital Adult Admitted Patient Survey 2019–20, hospital was the only stratum in the weighting process. 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 i^{th} stratum

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

The hospital-level weights did not need any modification. The maximum weight was 29, for one observation; remaining weights were less than eight. A sensitivity analysis indicated that removing this response from the survey did not affect results at LHD, peer group or NSW levels and so it remained in the dataset.

A sensitivity analysis was also undertaken to assess the impact of using post-stratification weights by age group and sex at LHD level. The impact on results at LHD level was minimal and was considered insufficient to warrant changing from the current weighting process.²

Assessment of weights

Weights were assessed to ensure that undue emphasis was not applied to individual responses. For this, the ratio of the maximum to median annual weight and the design effect (DEFF) at the LHD, peer group and NSW levels were reviewed.

The DEFF estimates the increase in variance of estimates due to the complex sample design over that of a simple random sample. It is estimated as $(1 + \text{coefficient of variance [weights] by the power of 2})$. The DEFF was calculated for each LHD, peer group and for NSW, using the annual dataset (the 11 months of data).

A DEFF of two indicates that the variance of estimates will be double the sample variance that would have been obtained if simple random sampling had been done. A DEFF of two is considered large. If this occurs, the weights for hospitals and LHDs that had the large DEFF will be reviewed to combine cells across strata, where possible, to reduce the weights for those hospitals and LHDs.

For the Rural Hospital Adult Admitted Patient Survey 2019–20, the maximum DEFF was 1.3 for LHDs.

Generally speaking, LHDs with the largest DEFFs are those that have the greatest range in patient volumes across hospitals within the LHD. The standard errors at the LHD level are fairly small because of the sample sizes at that level. Therefore, the increase in standard errors caused by the sample design (and leading to a larger DEFF at LHD level) is more than offset by the fact that each hospital sampled has sufficient sample size to allow hospital-level reporting. In addition, the estimates at the LHD level have appropriate distribution of respondents between large and small hospitals.

Sample sizes, survey responses, DEFF, and response rates based on the full year of data are shown in Table 1 (by LHD and NSW), and in Table 2 (by hospital). For hospital level, all DEFFs had a value of 1 as hospital was the only stratum in the weighting process. Therefore, Table 2 does not include DEFF.

Table 1 Sample size, responses, response rates and design effects (DEFF) by LHD and overall, Rural Hospital Adult Admitted Patient Survey 2019–20

LHD	Sample size (questionnaires mailed)	Survey responses	Response rate (%)	DEFF
Far West	150	33	22	1.1
Hunter New England	2,752	1,071	39	1.3
Illawarra Shoalhaven	473	204	43	1.0
Mid North Coast	581	258	44	1.0
Murrumbidgee	3,522	1,381	39	1.2
Northern NSW	302	121	40	1.0
Southern NSW	661	270	41	1.1
Western NSW	3,613	1,149	32	1.3
NSW	12,054	4,487	37	1.3

Table 2 Peer group, rurality, sample size, responses and response rates by hospital, Rural Hospital Adult Admitted Patient Survey 2019–20

Hospital	Peer group	Rurality of hospital	Sample size (questionnaires mailed)	Survey responses	Response rate (%)
Barham-Koondrook Soldiers Memorial Hospital	D	Outer regional, remote or very remote	100	39	39
Bellinger River District Hospital	D	Outer regional, remote or very remote	267	112	42
Bonalbo Hospital	D	Outer regional, remote or very remote	24	14	58
Canowindra Soldiers Memorial Hospital	D	Inner regional	191	74	39
Cobar Health Service	D	Outer regional, remote or very remote	182	40	22
Condobolin Health Service	D	Outer regional, remote or very remote	109	31	28
Coonabarabran Health Service	D	Outer regional, remote or very remote	255	100	39
Cootamundra District Hospital	D	Inner regional	278	118	42
Corowa Health Service	D	Inner regional	264	119	45
Crookwell District Hospital	D	Inner regional	247	105	43
Dungog Hospital	D	Inner regional	126	57	45
Finley Hospital	D	Inner regional	192	83	43
Glen Innes Hospital	D	Outer regional, remote or very remote	265	106	40
Gloucester Soldiers Memorial Hospital	D	Inner regional	282	139	49
Hay Health Service	D	Outer regional, remote or very remote	140	56	40

Hospital	Peer group	Rurality of hospital	Sample size (questionnaires mailed)	Survey responses	Response rate (%)
Lachlan Health Service - Parkes	D	Outer regional, remote or very remote	278	100	36
Leeton Health Service	D	Outer regional, remote or very remote	244	68	28
Molong Multipurpose Service	D	Inner regional	92	46	50
Narrandera District Hospital	D	Outer regional, remote or very remote	247	91	37
Narromine Health Service	D	Outer regional, remote or very remote	173	60	35
Pambula District Hospital	D	Outer regional, remote or very remote	65	31	48
Quirindi Hospital	D	Outer regional, remote or very remote	202	75	37
Scott Memorial Hospital - Scone	D	Inner regional	280	104	37
Temora District Hospital	D	Outer regional, remote or very remote	247	117	47
Tenterfield Hospital	D	Outer regional, remote or very remote	192	76	40
Tocumwal Hospital	D	Inner regional	109	38	35
Tomaree Hospital	D	Inner regional	264	92	35
Tumut Health Service	D	Inner regional	261	89	34
Wauchope District Memorial Hospital	D	Inner regional	260	130	50
Wee Waa Hospital	D	Outer regional, remote or very remote	91	24	26
Wellington Health Service	D	Outer regional, remote or very remote	197	69	35
Wentworth Health Service	D	Outer regional, remote or very remote	36	13	36
West Wyalong Health Service	D	Outer regional, remote or very remote	191	66	35
Wilson Memorial Hospital - Murrurundi	D	Outer regional, remote or very remote	56	23	41
Yass District Hospital	D	Inner regional	222	83	37
Balranald Multipurpose Service	F3	Outer regional, remote or very remote	114	20	18
Baradine Multipurpose Service	F3	Outer regional, remote or very remote	77	21	27
Barraba Multipurpose Service	F3	Outer regional, remote or very remote	135	42	31
Batlow/Adelong Multipurpose Service	F3	Outer regional, remote or very remote	36	11	31
Berrigan Health Service	F3	Outer regional, remote or very remote	50	22	44

Hospital	Peer group	Rurality of hospital	Sample size (questionnaires mailed)	Survey responses	Response rate (%)
Bingara Multipurpose Service	F3	Outer regional, remote or very remote	107	41	38
Blayney Multipurpose Service	F3	Inner regional	67	23	34
Bombala Hospital	F3	Outer regional, remote or very remote	72	27	38
Boorowa Multipurpose Service	F3	Inner regional	47	15	32
Bourke Multipurpose Service	F3	Outer regional, remote or very remote	233	37	16
Braidwood Multipurpose Health Service	F3	Inner regional	23	11	48
Brewarrina Multipurpose Service	F3	Outer regional, remote or very remote	58	8	14
Collarenebri Multipurpose Service	F3	Outer regional, remote or very remote	29	1	3
Coolah Multipurpose Service	F3	Outer regional, remote or very remote	88	30	34
Coolamon-Ganmain Hospital	F3	Inner regional	70	28	40
Coonamble Multipurpose Service	F3	Outer regional, remote or very remote	165	30	18
Culcairn Multipurpose Service	F3	Inner regional	48	13	27
Dorrigo Health Campus	F3	Outer regional, remote or very remote	54	16	30
Dunedoo Multipurpose Service	F3	Outer regional, remote or very remote	45	18	40
Gilgandra Multipurpose Service	F3	Outer regional, remote or very remote	159	63	40
Grenfell Multipurpose Service	F3	Outer regional, remote or very remote	105	40	38
Gulgong Multipurpose Service	F3	Outer regional, remote or very remote	96	35	36
Gundagai District Hospital	F3	Inner regional	235	85	36
Guyra Multipurpose Service	F3	Outer regional, remote or very remote	97	32	33
Henty Health Service	F3	Inner regional	18	7	39
Hillston Multipurpose Service	F3	Outer regional, remote or very remote	35	13	37
Holbrook Health Service	F3	Inner regional	46	19	41
Jerilderie District Hospital	F3	Outer regional, remote or very remote	41	21	51
John Prior Multipurpose Service - Boggabri	F3	Outer regional, remote or very remote	47	15	32
Junee Multipurpose Service	F3	Inner regional	93	34	37
Kyogle Memorial Hospital	F3	Inner regional	217	85	39

Hospital	Peer group	Rurality of hospital	Sample size (questionnaires mailed)	Survey responses	Response rate (%)
Lake Cargelligo Multipurpose Health Service	F3	Outer regional, remote or very remote	61	23	38
Lightning Ridge Multipurpose Service	F3	Outer regional, remote or very remote	116	29	25
Lockhart and District Hospital	F3	Outer regional, remote or very remote	66	27	41
Manilla Hospital	F3	Outer regional, remote or very remote	162	57	35
Merriwa Multipurpose Service	F3	Outer regional, remote or very remote	3	2	67
Murrumburrah-Harden District Hospital	F3	Inner regional	126	51	40
Nimbin Multipurpose Centre	F3	Inner regional	29	7	24
Nyngan Health Service	F3	Outer regional, remote or very remote	87	33	38
Oberon Multipurpose Service	F3	Inner regional	144	47	33
Peak Hill Multipurpose Service	F3	Outer regional, remote or very remote	52	27	52
Rylstone Multipurpose Service	F3	Outer regional, remote or very remote	149	62	42
Tottenham Multipurpose Service	F3	Outer regional, remote or very remote	24	14	58
Trangie Multipurpose Service	F3	Outer regional, remote or very remote	27	14	52
Trundle Multipurpose Service	F3	Outer regional, remote or very remote	21	11	52
Tullamore Multipurpose Service	F3	Outer regional, remote or very remote	6	2	33
Tumbarumba Multipurpose Service	F3	Outer regional, remote or very remote	41	13	32
Urana Health Service	F3	Outer regional, remote or very remote	29	14	48
Urbenville and District Multipurpose Service	F3	Outer regional, remote or very remote	32	15	47
Vegetable Creek Multipurpose Service - Emmaville	F3	Outer regional, remote or very remote	4	3	75
Walcha Multipurpose Service	F3	Outer regional, remote or very remote	95	45	47
Walgett Multipurpose Service	F3	Outer regional, remote or very remote	185	21	11
Warialda Multipurpose Service	F3	Outer regional, remote or very remote	174	64	37
Warren Multipurpose Service	F3	Outer regional, remote or very remote	129	39	30

Hospital	Peer group	Rurality of hospital	Sample size (questionnaires mailed)	Survey responses	Response rate (%)
Werris Creek Multipurpose Service	F3	Inner regional	2	1	50
Bourke Street Health Service	F4	Inner regional	32	13	41
Coledale Hospital	F4	Major cities	112	44	39
David Berry Hospital	F4	Inner regional	136	63	46
Lourdes Hospital & Community Health Service	F4	Inner regional	74	24	32
Mercy Care Centre Young	F4	Inner regional	117	58	50
Mercy Health Albury	F4	Inner regional	90	43	48
Port Kembla Hospital	F4	Major cities	225	97	43
Wingham Hospital	F6	Inner regional	168	73	43

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 patient population.

Table 3 shows demographic characteristics of respondents against the patient population. The four columns show the following:

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

Table 3 Demographic characteristics of patient population and respondents, Rural Hospital Adult Admitted Patient Survey 2019–20

Demographic variable	Sub-group	% in patient population	% in eligible population	% in respondents (unweighted)	% in respondents (weighted)
LHD	Far West	1	1	1	1
	Hunter New England	26	27	24	27
	Illawarra Shoalhaven	3	3	5	3
	Mid North Coast	7	8	6	8
	Murrumbidgee	30	31	31	31
	Northern NSW	2	2	3	2
	Southern NSW	5	5	6	5
	Western NSW	26	24	26	24
Peer group	D	66	69	58	69
	F3	28	26	33	26
	F4	5	4	8	4
	F6	1	1	2	1
Age group	18–49 years	16	#	5	6
	50+ years	84	#	95	94
Separation group	Overnight	80	#	83	76
	Same day	20	#	17	24
Aboriginal status	Non-Aboriginal	91	#	98	97
	Aboriginal and/or Torres Strait Islander	9	#	2	3
Sex	Male	47	#	45	45
	Female	53	#	55	55

Data not available.

Reporting

Confidentiality

BHI does not receive any confidential patient information and only publishes aggregated data and statistics. Any question must include a minimum of 30 respondents at the reporting level (hospital, LHD, 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. For the Rural Hospital Adult Admitted Patient Survey 2019–20, there were 41 hospitals with less than 30 respondents and, therefore, their results were suppressed at the hospital level. However, they still contributed to the LHD and NSW-level results.

Suppression rules

At the hospital and LHD levels, if the number of respondents was between 30 and 49 with at least a 20% response rate, or more than 49 with less than a 20% response rate, results were checked for representativeness of the NSW patient population for key patient characteristics (age group). If these results were found to be representative of the NSW population, they were publicly released and accompanied by an 'interpret with caution' note. If the results were found not to be representative of the NSW population, they were suppressed for that hospital or LHD.

For the Rural Hospital Adult Admitted Patient Survey 2019–20, 57 hospitals had at least 30 respondents. Among these, 19 hospitals had 30 to 49 respondents and a response rate of at least 20%. While their results were publicly released, they were accompanied by an 'interpret with caution' note. There were two hospitals that had 30 to 49 respondents and a response rate of less than 20%. Therefore, their results were released internally only.

For questions asking about types of complications (i.e. experienced an infection, uncontrolled bleeding, a negative reaction to medication, 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 did not capture information on patient clinical conditions that might influence results for these questions.

Interpret with caution

All sample surveys are subject to sampling error (i.e. the difference between results based on surveying a selection of respondents, and the results if all people who received care were surveyed). The true result is expected to fall within the 95% confidence interval 19 times out of 20.

Where the confidence interval was wider than 20 percentage points, results 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.

Statistical analysis

Data were analysed for the period July 2019 to June 2020 combined, as well as by quarter. Analysis was undertaken in SAS V9.4 using the SURVEYFREQ procedure, with hospital, age and stay type as strata variables. Results were obtained for each individual survey question. Results were weighted for all questions including patient socio-demographic characteristics, except for questions related to self-reported health status.

The result (percentage) for each response option in the questionnaire was determined using the following method:

Numerator – the (weighted) number of survey respondents who selected a specific response option to a certain question, minus exclusions.

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.

Unless otherwise specified, missing responses and those who responded 'don't know/can't remember' to questions were excluded from analysis. The exception is 'don't know/can't remember' responses for questions that ask about a third party (e.g. if family had enough opportunity to talk to a doctor) or when the percentage responding with this option was greater than 10%.

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, are handled. This is because it is also assumed these patients did so randomly and therefore any missing responses do not relate to their experience of care.

When reporting on questions used to filter respondents through the questionnaire rather than

asking about hospital performance, the 'don't know/can't remember' option and missing responses were also reported. Appendix 1 presents the rates of missing or 'don't know' responses.

In some cases, the results from several responses were combined to form a 'derived measure'. For information about how these measures were developed, please see Appendix 2.

Reporting by population group

Results were generated for each question in the survey at the NSW, LHD and hospital levels. In addition, results were reported for the groups, levels and at the indicated reporting frequency outlined in Table 4.

Table 4 Levels of reporting, Rural Hospital Adult Admitted Patient Survey 2019–20

Grouping	Reporting frequency	NSW	Peer group	LHD	Hospital
All patients	Annual	✓	✓	✓	✓
Age group: self-reported – administrative data used where question on year of birth was missing or invalid	Annual	✓	✓	✓	✓
Sex: self-reported – administrative data used where question on gender was missing or invalid	Annual	✓	✓	✓	✓
Main language spoken at home	Annual	✓	✓	✓	✓
Education level	Annual	✓	✓	✓	✓
Longstanding health condition	Annual	✓	✓	✓	✓
Quintile of disadvantage: based on the Australian Bureau of Statistics Index of Relative Socio-demographic Disadvantage	Annual	✓	✓	✓	✓
Rurality of patient residence: based on ARIA+* category of postcode of respondent residence – outer regional, remote and very remote combined	Annual	✓	✓	✓	✓

*Accessibility and Remoteness Index of Australia (ARIA+) is the standard Australian Bureau of Statistics measure of remoteness. For more information refer to abs.gov.au/websitedbs/d3310114.nsf/home/remoteness+structure

Standardised comparisons

Previously, BHI's approach to comparisons between hospitals and NSW results in BHI reports relied on a basic method (overlapping confidence intervals) to determine if the experiences reported for each hospital differed significantly from the NSW result. While this method is commonly used to highlight differences in survey results, it cannot account for differences in the mix of patient characteristics across hospitals.

To enable fairer comparisons across hospitals and as part of the implementation of standardised comparisons, BHI reporting now takes the mix of patient characteristics at each hospital (including age, sex, education level and language) into account. Therefore, when a hospital is flagged as having a significantly higher or lower result than NSW, this reflects differences in patient experiences rather than differences that can be explained by the mix of characteristics among a hospital's patients.

The difference in results between the former and new methods might not be entirely due to adjustment for patient characteristics. The difference could also be partly due to the different method used for identifying the outliers (i.e. overlapping confidence intervals vs. significant testing).

The standardised comparison is currently only applied for results at the hospital level and not at the LHD level.

Methodology

The survey asks patients questions about different aspects of their care, such as accessibility and timeliness, the physical environment of the hospital, safety and hygiene, communication and information, and whether they were treated with respect and dignity.

For survey questions related to aspects of care (performance questions), the percentage of respondents who selected the most positive response category was compared between each hospital and

NSW. For example, one question asked patients: 'If asked about your hospital experience by friends and family, how would you respond?' It had the following response options:

- I would speak highly of the hospital
- I would neither speak highly nor be critical
- I would be critical of the hospital.

In this case, the most positive response is 'I would speak highly of the hospital' (i.e. the event), and the other two responses are grouped together for the analyses (i.e. the reference group).

Logistic regression mixed models were used for all analyses, with hospitals as random intercept terms. Patient characteristics were fixed covariates in the model.

For each performance question in the survey, the most positive response option was treated as the 'event' and the other response options were grouped to create a binary dependent variable.

The general formula for the logistic mixed model is:

$$g(E(Y_i)) = \beta X_i + b_i Z_i$$
$$b_i \sim N(0; D)$$

where:

- the link function $g(\cdot)$ is the logistic function $g(\pi_{ij}) = \log\left(\frac{\pi_{ij}}{1-\pi_{ij}}\right)$
- X_i is the design matrix for fixed effect covariates
- β is the vector containing estimates for fixed effect covariates
- Z_i is the design matrix for random effects, $i=1$ to number of hospitals
- b_i is the vector of random intercepts (hospitals), $i=1$ to number of hospitals.

Covariate selection

Differences in patient experiences between groups may reflect differences in experiences of care. However, they may also reflect differences in expectations or the way various groups tend to respond to surveys. To enable fairer comparisons across hospitals, the enhanced reporting method considers which patient characteristics may be consistently associated with more positive or less positive reported experiences.

Information regarding rurality of patients and socioeconomic status (SES) were also considered as they may relate to response tendency. However, BHI chose not to include factors such as rurality or SES as these factors may reflect differences in care. Instead, analyses of results by these patient groups are presented in BHI's interactive data portal, Healthcare Observer, to allow hospitals to see which patient groups reported more or less positive experiences of care.

A list of all patient characteristics considered for inclusion in the model for standardised comparisons, and how they were sourced, is included in Table 5.

Information on patient health status such as self-reported overall health or mental health status could also influence both experiences of care and responding tendency. However, these were not considered for inclusion in the model. Currently BHI only standardises comparisons for experience of care questions by adjusting patient, not clinical or health, characteristics.

For age and sex, missing values were filled in using administrative data. Following this, there was no missing data for age and sex. Missing data for other patient characteristics were included in all analyses as an extra category in the model. Missing data in performance-related questions were excluded from all analyses.

Table 5 Patient characteristics considered for adjustment, Rural Hospital Adult Admitted Patient Survey 2019–20

Variable	Source	Categories
Age group	Survey question, or using administrative data if missing	18–34, 35–54, 55–74, 75+ years
Sex	Survey question, or using administrative data if missing	Female, male
Education level	Survey question	Completed year 12, trade/technical certificate/diploma, university degree, postgraduate degree, missing
Language mainly spoken at home	Survey question	English, other than English, missing
Survey mode	Response data	Paper, online

Table 6 presents a list of covariates considered for adjustment by selection stage. These patient characteristics were then passed through two selection stages, as follows:

1. Univariate models were fitted for each patient characteristic (covariate) for all performance-related questions in the survey. Covariates with $p < 0.1$ in the univariate models for at least 50% of the questions were considered for inclusion in the multivariate model.
2. Multivariate logistic mixed models were fitted across all performance-related questions in the survey using the covariates selected from stage one, with age and sex included in all models. Forward stepwise modelling was used based on the equation above, including age, sex and all additional covariates added appropriately following a forward stepwise approach. Selected interaction terms were also tested.

Within each outcome (i.e. performance-related survey question) the models were ranked by the Akaike Information Criterion (AIC) – the model with the smallest AIC value was assigned the highest rank of 1. The AIC was recommended as an appropriate method for selecting models where different fixed effects are included as it applies a penalty for the number of covariates in order to protect against model overfitting.³

The following values were obtained:

- number of questions for which the model was ranked first
- mean rank across all questions
- mean AIC value across all questions.

These values were used to identify the optimal model to create adjusted comparisons for the survey results, with each survey from the NSW Patient Survey Program assessed independently. That is, the optimal model had a high count of 1st ranking, a low mean rank, and a low mean AIC relative to other models, across all performance-related questions in the survey.

Table 6 Covariates considered for adjustment for comparisons at each selection stage, Rural Hospital Adult Admitted Patient Survey 2019–20

Available for adjustment	Passed univariate model selection threshold (stage 1)	Passed multivariate model selection threshold (stage 2)	After consultation with expert panel and confirmed by sensitivity analyses
Age group	✓	✓	✓
Sex	✓	✓	✓
Education	✓		
Language mainly spoken at home			
Survey mode			

Finally, covariates that marginally improved the model were excluded by comparing the models' AIC values, to define a parsimonious number of patient-related covariates to use in standardised comparisons. Covariates that were not part of patient characteristics (e.g. whether patients were staying overnight or had a same-day admission) were not included in the testing. This is because standardised comparisons are intended to control for differences in patient characteristics only, and some of these factors were considered to be under the control of hospital management rather than patients.

Age and sex were chosen for adjustment for the comparison model.

Model-based comparisons

The model calculates an estimate for each hospital's random intercept and produces a p-value to indicate how likely these estimates are different from the average, or NSW value.

The exponential values of the estimated hospital random intercepts based on the random intercept logistic regression model can be used to estimate the odds of a positive experience (e.g. 'very good' for overall care question) for the hospital with reference to an 'average' hospital. The p-value for each hospital intercept estimate was used to determine if the hospital was significantly different from NSW, when adjusted for patient characteristics, using the following guidelines:

- If the p-value was less than the significance level (0.01) and the solution for the hospital random intercept was greater than 0, the hospital was flagged as having a more positive result than NSW.
- If the p-value was less than the significance level and the random effect solution was less than 0, the hospital was flagged as having a less positive result than NSW.

- If the p-value was greater than the significance level, the hospital was flagged grey as not significantly different to NSW.
- For results flagged as 'interpret with caution', comparisons are not highlighted due to the lack of precision in the result.

When making multiple comparisons there is an increased likelihood of flagging a difference that is not 'real', but due to chance. To mitigate this issue, a p-value of 0.01 was used to reduce the likelihood of identifying differences due to chance to one comparison in 100 (from one in 20, with the more commonly used p-value of 0.05). Sampling weights were used in all models to ensure the comparisons were representative of the NSW patient population.

Statistical software

SAS software version 9.4 was used for all statistical analyses. The PROC SURVEYFREQ procedure was used to adjust for the sampling weights when calculating the percentages and related confidence intervals.

The PROC GLIMMIX procedure and 'weight statement' was used for performing logistic mixed models to compare hospital results with NSW, adjusting for covariates and sampling weights.⁴

The calculation of percentages and standardised comparisons were adjusted for sampling weights using these SAS procedures.

Appendix 1

Unweighted percentage of missing and 'Don't know' responses

Table 7 Percentage of 'Don't know' and/or missing responses by question, Rural Hospital Adult Admitted Patient Survey 2019–20

Question number	Question text	Missing %	Don't know %	Missing + Don't know %*
1	What is the distance between your home and the hospital?	1.2	3.9	5.1
2	If you came to the hospital from home, did you have any difficulties organising transport to the hospital?		2.2	2.2
3	How clean were the areas (e.g. room, toilet) you used during your stay at the hospital?		0.8	0.8
4	Were you given enough privacy when being examined or treated?		0.9	0.9
5	Was a call button placed within easy reach?	2.3	0.9	3.2
6	Did the health professionals introduce themselves to you?		2.5	2.5
7	If you needed to talk to a health professional, did you get the opportunity to do so?		2.7	2.7
8	When you had important questions to ask a health professional, did they answer in a way you could understand?		3.0	3.0
9	In your opinion, did the health professionals who treated you know enough about your care and treatment?		3.0	3.0
10	Did you have confidence and trust in the health professionals treating you?		2.9	2.9
11	Did you see the health professionals wash their hands, or use hand gel to clean their hands, before touching you?	9.8	3.6	13.4
12	In your opinion, were there enough health professionals on duty to care for you in the hospital?		3.7	3.7
13	Did the health professionals ask your name or check your identification band before giving you any medications, treatments or tests?	2.9	3.3	6.2
14	Were the health professionals kind and caring towards you?		3.3	3.3
15	Overall, how would you rate the health professionals who treated you?		3.3	3.3
16	During your stay in the hospital, how much information about your condition or treatment was given to you?		2.9	2.9
17	How much information about your condition or treatment was given to your family, carer or someone close to you?	5.1	3.5	8.6
18	Did the health professionals explain things in a way you could understand?		3.1	3.1
19	Did you ever receive contradictory information about your condition or treatment from the health professionals?		4.8	4.8
20	I was involved as much as I wanted in making decisions about my treatment and care...		3.3	3.3
21	My views and concerns were listened to...		3.3	3.3
22	How would you rate how well the health professionals worked together?		2.9	2.9
23	Did you feel you were treated with respect and dignity while you were in the hospital?		2.7	2.7
24	Do you think the health professionals did everything they could to help manage your pain?		2.9	2.9
25	While in hospital, did you have any tests, operations or procedures?		5.1	5.1

Question number	Question text	Missing %	Don't know %	Missing + Don't know %*
26	Did health professionals explain what would happen during your tests, operations or procedures in a way you could understand?	1.2	4.7	5.9
27	Did health professionals explain the results or outcome of your tests, operations or procedures in a way you could understand?	1.6	5.0	6.6
28	Were you transferred to the hospital from a larger regional or metropolitan hospital?	0.5	3.0	3.5
29	In your opinion, did this transfer happen at the right time for you?	2.8	4.2	7.1
30	In your opinion, did the transfer benefit you?	1.5	4.9	6.3
31	Not including the reason you went to hospital, during your hospital stay, or soon afterwards, did you experience any of the following complications or problems?		9.3	9.3
32	Was the impact of this complication or problem...?		8.4	8.4
33	In your opinion, were the health professionals open with you about this complication or problem?		10.2	10.2
34	Did you feel involved in decisions about your discharge from the hospital?		3.3	3.3
35	Did hospital staff take your family and home situation into account when planning your discharge?	1.3	3.1	4.3
36	If you went home after being discharged from the hospital, did you have any difficulties organising transport home?		2.6	2.6
37	Were you given or prescribed any new medication to take at home?		3.8	3.8
38	Did a health professional in the hospital tell you about medication side effects to watch for?		4.7	4.7
39	Did the hospital staff give you a document summarising the care you received in the hospital (e.g. a copy of the letter to your GP, a discharge summary)?	14.3	3.7	18.0
40	Did hospital staff tell you who to contact if you were worried about your condition or treatment after you left the hospital?	8.0	3.7	11.6
41	If your discharge was delayed, did a member of staff give you a reason?		4.3	4.3
42	At the time you were discharged, did you feel that you were well enough to leave the hospital?		3.8	3.8
43	Thinking about when you left the hospital, were you given enough information about how to manage your care at home?		3.7	3.7
44	Thinking about when you left the hospital, were adequate arrangements made by the hospital for any services you needed (e.g. equipment, home care, community care, follow-up appointments)?		4.5	4.5
45	After you left the hospital and went home, were the health professionals you saw in your rural community up-to-date about the care you received in the hospital?	3.4	4.8	8.2
46	How much money (that you will not get back) did you pay for expenses related to your hospital stay (e.g. parking, transport, accommodation for those accompanying you)?	3.5	3.5	7.0
47	During the past 12 months, was there a time when you skipped a medical test, treatment, or follow-up appointment that was recommended by a health professional because of the cost?		2.6	2.6
48	Overall, how would you rate the care you received while in hospital?		2.1	2.1

Question number	Question text	Missing %	Don't know %	Missing + Don't know %*
49	How well organised was the care you received in hospital?		2.5	2.5
50	If asked about your hospital experience by friends and family, how would you respond?		5.1	5.1
51	Did the care and treatment you received in the hospital help you?		2.4	2.4
52	In the month following your discharge, did you go to an emergency department because of complications related to the care you received?	0.9	3.0	3.9
53	In the month following your discharge, were you re-admitted to any hospital because of complications related to the care you received?	0.6	2.8	3.4
54	In the three months after your discharge from the hospital, were you provided with any telehealth service(s)?	4.7	7.4	12.1
55	In your opinion, did you benefit from the telehealth service(s)?		6.5	6.5
56	Overall, how would you rate telehealth service(s) as a means of receiving healthcare?		5.3	5.3
57	What year were you born?		12.6	12.6
58	What is your gender?		11.8	11.8
59	What is the highest level of education you have completed?		4.3	4.3
60	Which language do you mainly speak at home?		2.1	2.1
61	Are you of Aboriginal origin, Torres Strait Islander origin, or both?		5.3	5.3
62	Did you receive support, or the offer of support, from an Aboriginal Health Worker while you were in the hospital?	6.2	4.1	10.3
63	Which, if any, of the following longstanding health conditions do you have (including age-related conditions)?		7.6	7.6
64	Does this condition(s) cause you difficulties in your day-to-day activities?		5.6	5.6
65	Do you give permission for the Bureau of Health Information to link your answers from this survey to health records related to you?		5.3	5.3

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

Appendix 2

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* in the supplementary documents section attached to each patient survey results report on BHI's website at bhi.nsw.gov.au/nsw_patient_survey_program

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, to 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 questions and responses in Table 8 were used in the construction of the derived measures.

Table 8 Derived measures for the Rural Hospital Adult Admitted Patient Survey 2019–20 questionnaire

Derived measure	Original question	Derived measure categories	Response options
Came to the hospital from home	Q2. If you came to the hospital from home, did you have any difficulties organising transport to the hospital?	Came to the hospital from home	Yes No
		Did not come to the hospital from home	I didn't come to the hospital from home
It was necessary to provide information to anyone else	Q17. How much information about your condition or treatment was given to your family, carer or someone close to you?	It was necessary	The right amount Too much Not enough
		It wasn't necessary	It wasn't necessary to provide information to anyone else
Wanted or needed explanation of results or outcomes	Q27. Did health professionals explain the results or outcome of your tests, operations or procedures in a way you could understand?	Wanted or needed an explanation	Yes, always Yes, sometimes No, I didn't get any explanation
		Didn't want or need an explanation	I didn't want or need an explanation
Benefitted from the transfer	Q30. In your opinion, did the transfer benefit you?	Benefitted from the transfer	Yes, I was closer to home and/or family Yes, I/family members saved travel time Yes, I saved money Yes, it benefitted my health Yes, it benefitted me in other ways
		Didn't benefit from the transfer	No, I didn't benefit from the transfer
Experienced a complication	Q31. Not including the reason you went to hospital, during your hospital stay, or soon afterwards, did you experience any of the following complications or problems?	Experienced complication	An infection Uncontrolled bleeding A negative reaction to medication A complication as a result of a test, operation or surgical procedure A blood clot A pressure wound or bed sore A fall Any other complication or problem
		None reported	None of these Missing

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About the Bureau of Health Information

The Bureau of Health Information (BHI) is a board-governed organisation that provides independent information about the performance of the NSW healthcare system.

BHI was established in 2009 and supports the accountability of the healthcare system by providing regular and detailed information to the community, government and healthcare professionals. This in turn supports quality improvement by highlighting how well the healthcare system is functioning and where there are opportunities to improve.

BHI manages the NSW Patient Survey Program, gathering information from patients about their experiences and outcomes of care in public hospitals and other healthcare facilities.

BHI publishes a range of reports and information products, including interactive tools, that provide objective, accurate and meaningful information about how the health system is performing.

BHI's work relies on the efforts of a wide range of healthcare, data and policy experts. All of our assessment efforts leverage the work of hospital coders, analysts, technicians and healthcare providers who gather, codify and supply data. Our public reporting of performance information is enabled and enhanced by the infrastructure, expertise and stewardship provided by colleagues from NSW Health and its pillar organisations.

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