Emergency Department Patient Survey 2022–23

Technical Supplement

March 2024

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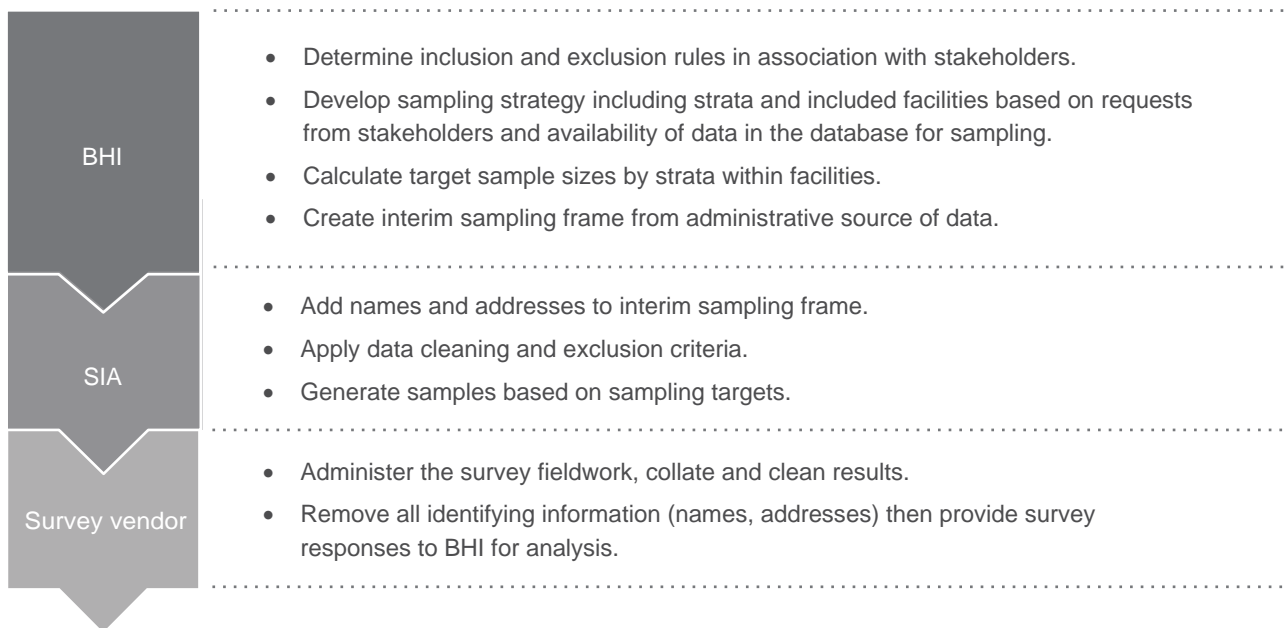**health**
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Contents

Introduction

This technical supplement outlines the sampling methodology, data management and analysis of the results of the Emergency Department Patient Survey (EDPS) 2022–23. Further supporting information is available in historical technical supplements for EDPS, 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 *BHI Strategic Plan 2023–26*, 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 sample design and data collection phases for patient survey projects.

Figure 1   Organisational responsibilities in sample design and data collection

BHI
- Determine inclusion and exclusion rules in association with stakeholders.
- Develop sampling strategy including strata and included facilities based on requests from stakeholders and availability of data in the database for sampling.
- Calculate target sample sizes by strata within facilities.
- Create interim sampling frame from administrative source of data.

SIA
- Add names and addresses to interim sampling frame.
- Apply data cleaning and exclusion criteria.
- Generate samples based on sampling targets.

Survey vendor
- Administer the survey fieldwork, collate and clean results.
- Remove all identifying information (names, addresses) then provide survey responses to BHI for analysis.

Emergency Department Patient Survey

EDPS 2022–23 was undertaken as part of the NSW Patient Survey Program. The first EDPS was conducted from April 2013 to March 2014. Subsequent cycles of the survey were conducted from April 2014 to March 2015 (EDPS 2014–15), April 2015 to June 2016 (EDPS 2015–16), and by financial year since July 2016.

The survey questionnaire is reviewed each year. In response to the increased interest in rural health, for the January to March 2023 cohort, a 17-question module (rural focus questions) which contained questions of particular relevance to patients in rural areas, was sent to eligible patients.

Content changes between the 2021–22 and 2022–23 questionnaires are available in a development report on BHI's website at
https://www.bhi.nsw.gov.au/nsw_patient_survey_program#currentQuestionnaires

Inclusion and exclusion criteria for patients

The survey questionnaire was sent to eligible patients who visited an ED in a public hospital between July 2022 and June 2023. Where patients had multiple visits within the sampling month, their most recent ED visit was retained for sampling.

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 visiting an ED, 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 on arrival or died in the ED (mode of separation of 03 or 08, respectively)

- not waited for treatment or left before treatment (mode of separation of 06 and 07, respectively)

- been aged 18+ years in peer group A2 hospitals (Paediatric specialist hospitals)

- been aged 0–17 years in peer group A3 hospitals (Ungrouped acute – tertiary referral hospitals).

- a sensitive diagnosis or were likely to be visiting ED only for a COVID-19 test for their last ED visit in the sampling period. These criteria are summarised in Table 1.

Table 1   Exclusion criteria for COVID-19 or sensitive diagnoses

Exclusion group	Identification
Patients likely to be visiting an ED only for a COVID-19 test (must also be in triage category 5 and discharged from ED)	• SNOMED-CT-AU codes: 840539006, 840544004 or 840546002 or ICD-10-AM code: U07.1, U07.2 or U06.0 • 'presenting problem'* field includes the text 'CORONA' or 'COVID'.
Patients who have intentionally self-harmed	• T14.9 plus SNOMED-CT codes 403583006, 440144004, 276853009, 284744004 (deliberate self-cutting/injury due to suicide attempt/self-inflicted injury/burning self) • Z04.9 plus SNOMED-CT code 248062006 (deliberate self-harm) • T65.9 plus SNOMED-CT codes 410061008, 86849004 (suicidal deliberate poisoning) • T59.9 plus SNOMED-CT codes 418409002, 219125007, 57335002 (suicide and self-inflicted poisoning by gases in domestic use/poisoning of undetermined intent by corrosive, acid or caustic alkali) • T75.4 plus SNOMED-CT codes 219359001, 224946001 (injury of unknown intent by electrocution/self-electrocution).
Patients who have expressed suicidal ideation	ICD-10 R45.81
Patients recorded with maltreatment syndromes/abuse in any diagnosis field	ICD-10 T74
Patients who experienced a stillbirth	ICD-10 P96.9
Patients who experienced pregnancy with an abortive outcome	ICD-10 O00-O08
Patients recorded as receiving contraceptive management	ICD-10 Z30, ICD-10 T83.9, ICD-10 O26.9
Patients admitted for a termination of pregnancy procedure	ICD-10 O75.9, ICD-10 P96.9

* The 'presenting problem' is the clinical interpretation of the problem or concern identified by the triage clinician as the main reason for the person's presentation to the ED.

The patient was excluded for the conditions in Table 1 if the code was identified in either of the two diagnosis fields: SNOMED-CT were 'discharge' or 'admission' diagnosis (ed_diagnosis_type = 'D' or 'P', respectively), ICD-10-AM were 'principal' or 'additional diagnosis'* (ed_diagnosis_type = 'P' or '1' respectively). SNOMED-CT codes were mapped to the ICD-10 equivalent using a look-up table that is created by the Independent Hospital Pricing Authority (IHPA). The mapping of SNOMED-CT to ICD-10 for intentional self-harm was too broad. For instance, only one of the 86 SNOMED-CT codes mapped to Z04.9 (deliberate self-harm), related to deliberate self-harm. Therefore, patients excluded for Intentional self-harm based on the ICD-10 code, who attended a hospital that used SNOMED-CT for coding, were only excluded if they had the specific SNOMED-CT codes.

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 a 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 EDPS 2022–23.

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* 'Additional diagnosis' refers to an additional diagnosis or condition which either: existed at the time the person presented to the ED; OR arose while the person was in ED; OR is expected to affect the person's treatment care plan and/or length of stay in the ED.

Inclusion and exclusion criteria for emergency departments

NSW public hospital emergency departments were included if the hospitals had a peer group classification of either:

- – A1: Principal referral
- – A2: Paediatric specialist
- – A3: Ungrouped acute – tertiary referral
- – B1: Major hospitals group 1
- – B2: Major hospitals group 2
- – C1: District group 1
- – C2: District group 2

In addition, EDPS 2022–23 also includes any hospital in peer groups lower than C2 that are located in major cities based on the Accessibility and Remoteness Index of Australia (ARIA+).

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 groups: 0–17 years, 18–49 years or 50+ years, based on the age variable

- Separation groups: admitted (separation mode 01,10 or 11) or non-admitted (separation mode 04, 05 or 09) based on the 'mode of separation' variable.

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 EDPS 2022–23 was based on data from NSW Health's Health Information Exchange (HIE) Emergency Department Data Collection (EDDC). 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 EDPS 2022–23, all hospitals were sampled with a semi-annual measurement frequency. The exception was LHDs with fewer than three hospitals (Far West LHD, Central Coast LHD, St Vincent's Health Network and Sydney Children's Hospitals Network). These hospitals were sampled with a quarterly measurement frequency to ensure they had sufficient survey responses for quarterly internal reporting of LHD-level key performance indicators (KPIs).

From 2021–22, the mailing target per measurement period per hospital was set at 625, assuming the response rate of 20% to yield adequate responses for robust reporting. Data extraction for sampling occurred at the end of the survey month. Due to differences in coding patterns, patients attending Hawkesbury hospital were not fully identified during the automatic sampling process. As a result, fewer patients (n=69) patients from this hospital were included in this survey compared to the previous survey (n=199).

The number of surveys mailed, the number of responses, response rates and survey design effects by hospital, 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 approximately two weeks after the initial survey pack, with a third 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, which are password-protected with access by authorised staff only, for processing.

Response rate and completion of questionnaires

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

Survey completeness is a measure of how many questions each respondent answered as a proportion of all questions. The completeness of responses was high overall, with respondents answering, on average, 39 of the 43 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 eligible patient population. At the NSW and LHD levels, weights also ensured that the different sampling proportions used at the hospital level were accounted for, so that LHD results were not unduly influenced by small facilities that had larger sampling proportions.

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

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

Where:

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

n_i = number of respondents in the ith hospital.

Within each hospital, sampling and weighting were stratified into six strata, comprising of three age groups (0–17 years, 18–49 years and 50+ years) and two separation groups (admitted and non-admitted from the ED). Prior to weighting, stratum cells with no respondents were combined with adjoining strata.

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

The following benchmarks were applied:

- separation group x age group
- peer group x age group
- quarter x peer group
- quarter x LHD
- LHD x age group
- hospital x separation group
- hospital x age_U50.

Additional explanations for the benchmarks:

- age_U50: Under 50 and 50+
- age group: some cells with zero or very low responses were combined. Values for age group included: under 18, 18-49, and 50+.
- separation group: cells with very low responses were combined. Values for separation group included 'admitted' and 'non-admitted'.

After the first cycle through the GREGWT macro, a process was undertaken that identified strata with low numbers of responses and high weights. Following further aggregation, the GREGWT macro was run again, creating the final weights. Quality assessment included looking at the agreement between the eligible population and sum of weights at the hospital-stratum- level, the overall distribution of weights (to avoid outliers), number of hospitals with a design effect greater than 2, and the ratio of maximum to median weight at the hospital level. The weights were then trimmed at the 1st and 99th percentiles to prevent individual patients from having too much influence on the results. This reduced the maximum weight without greatly changing the overall distribution of the weights. Additionally, within a given hospital, any weights that were larger than six times the median weight were identified as an outlier weights and trimmed to the limit.

Weighted percentages

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

Numerator: the (weighted) number of survey respondents who selected a specific response option to a certain question.

Denominator: the (weighted) number of survey respondents who selected any of the response options to a certain question, minus exclusions.

Calculation: the numerator/denominator x 100.

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

It is assumed that no bias 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 2 shows demographic characteristics of respondents against the eligible population. The four columns denote:

1. percentage of target population: the patient population prior to the phase 2 screening process

2. percentage of eligible population: the final sampling frame from which the sample was drawn. Limited demographic variables are available at this level

3. percentage of respondents (unweighted): respondents to the survey, not adjusted for unequal sampling

4. percentage of respondents (weighted): respondents to the survey, adjusted by weighting to be representative of the eligible population.

Table 2   Demographic characteristics of target population and respondents, EDPS 2022–23

Demographic variable	Sub-group	% of target population	% of eligible population	% of respondents (unweighted)	% of respondents (weighted)
LHD	Central Coast	6	6	6	6
	Far West	1	1	3	0
	Hunter New England	13	13	18	13
	Illawarra Shoalhaven	6	6	6	6
	Mid North Coast	5	5	6	5
	Murrumbidgee	3	3	4	3
	Nepean Blue Mountains	5	5	4	5
	Northern NSW	8	8	11	7
	Northern Sydney	6	6	4	7
	South Eastern Sydney	9	9	5	9
	South Western Sydney	10	11	6	10
	Southern NSW	4	4	8	4
	St Vincent's Health Network	2	2	2	2
	Sydney	6	6	3	6
	Sydney Children's Hospitals Network	4	4	4	4
	Western NSW	5	5	7	4
	Western Sydney	7	7	3	8
Peer group	A1	34	34	18	35
	A2	4	4	4	4
	A3	2	3	2	2
	B	33	33	24	33
	C1	13	13	18	13
	C2	13	13	32	12
	D	0	0	1	0
Age group	0–17 years	25	24	17	26
	18–49 years	35	35	15	35
	50+ years	40	40	68	38

Demographic variable	Sub-group	% of target population	% of eligible population	% of respondents (unweighted)	% of respondents (weighted)
Separation group	Admitted emergency	28	27	29	26
	Non-admitted emergency	72	73	71	74
Aboriginal status	Non-Aboriginal	92	92	97	97
	Aboriginal	7	7	3	3
Sex*.	Male	51	51	48	48
	Female	49	49	52	52

* Information on sex is drawn from administrative data.

Standardised comparisons between hospitals and the NSW result

Overview

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

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

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

For the EDPS 2022–23 results, this approach was applied to hospital results and LHD results.

The statistical model

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

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

Stage 1 – Calculating risk-adjusted results for each hospital/LHD

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

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

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

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

$$\textit{Adjusted percentage} = \textit{aR} \times \textit{weighted NSW percentage}$$

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

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

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

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

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

Standardised comparisons are not applied:

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

Statistical software

SAS software version 9.4 was used for all statistical analyses and facility 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. The suppressed results still contribute to NSW-level results and/or LHD level results.

Interpret with caution

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

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

Where the number of respondents was between 30 and 49 with a response rate at or above 20%, or the number of respondents more than 49 with a response rate less than 20%, results are publicly reported and an 'interpret with caution' note 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 hospital: '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

Hospitals are classified as 'urban' and 'rural' using the Accessibility and Remoteness Index of Australia (ARIA+), the ABS measure of remoteness. Urban hospitals include those classified as 'Major Cities of Australia' according to ARIA+. Rural hospitals 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/statistics/standards/australian-statistical-geography-standard-asgs-edition-3/jul2021-jun2026/remoteness-structure

Similar to the previous survey, there were some patients who self-reported their age as older than their administrative age, especially among the two hospitals in the Sydney Children's Hospitals Network (SCHN). The administrative age (rather than the self-reported age) was used to report the results by age groups in the BHI Data Portal and across all relevant products. In addition, the self-reported education level at these two hospitals showed a high proportion of respondents with a university or postgraduate degree. This could be due to parents or carers providing their education level, rather than the patients (the children). As a result, results for education level for these two hospitals, SCHN and peer group A2 (paediatric specialist) are not included in all relevant products.

Appendix 1

Survey response summary

Table 3   Number of surveys mailed, responses, response rates and design effects (DEFF) by LHD and overall, Emergency Department Patient Survey 2022–23

NSW/LHD		Questionnaires mailed	Responses	Adjusted response rate (%)	DEFF
NSW		107,824	21,715	20.2	2.1
LHD	Central Coast	4,987	1,227	24.2	1.6
	Far West	3,712	575	14.6	1.9
	Hunter New England	20,909	3,863	19.1	2.7
	Illawarra Shoalhaven	4,983	1,217	24.0	1.9
	Mid North Coast	5,002	1,215	23.7	1.9
	Murrumbidgee	4,957	902	17.8	2.2
	Nepean Blue Mountains	4,037	931	22.3	2.5
	Northern NSW	10,612	2,295	21.4	2.2
	Northern Sydney	3,769	926	24.4	1.4
	South Eastern Sydney	4,960	1,073	21.7	1.5
	South Western Sydney	7,495	1,346	18.1	1.7
	Southern NSW	7,470	1,719	21.9	1.9
	St Vincent's Health Network	2,497	499	20.3	1.6
	Sydney	3,736	757	20.5	1.3
	Sydney Children's Hospitals Network	5,002	944	18.9	1.0
	Western NSW	8,724	1,473	16.3	2.2
	Western Sydney	4,972	753	15.3	1.3

Table 4   Number of surveys mailed, responses, response rates and design effects (DEFF) by hospital, Emergency Department Patient Survey 2022–23

LHD name	Hospital name	Rurality of hospital	Questionnaires mailed	Responses	Adjusted response rate (%)	DEFF
Central Coast	Gosford Hospital	Urban	2,494	645	25.8	1.6
	Wyong Hospital	Urban	2,493	582	22.6	1.6
Far West	Broken Hill Health Service	Rural	3,712	575	14.6	1.9
Hunter New England	Armidale Hospital	Rural	1,235	269	21.0	1.8
	Cessnock Hospital	Rural	1,886	323	16.6	1.9
	Gunnedah Hospital	Rural	1,847	301	15.4	1.9
	Inverell Hospital	Rural	1,234	235	18.1	1.8
	Manning Hospital	Rural	1,225	307	24.2	1.9
	Moree Hospital	Rural	1,876	213	11.5	1.7
	Muswellbrook Hospital	Rural	1,818	280	14.8	1.6
	Narrabri Hospital	Rural	1,225	187	14.6	1.9
	Singleton Hospital	Rural	1,261	197	15.3	1.6
	Tamworth Hospital	Rural	1,240	235	18.3	1.9
	Belmont Hospital	Urban	1,256	304	24.5	1.7
	Calvary Mater Newcastle	Urban	1,225	275	22.0	1.9
	John Hunter Hospital	Urban	1,247	285	23.0	1.3
	Kurri Kurri Hospital	Urban	1,080	225	20.7	1.9
	Maitland Hospital	Urban	1,254	227	18.3	1.6
Illawarra Shoalhaven	Milton Ulladulla Hospital	Rural	1,236	344	27.3	1.6
	Shoalhaven District Memorial Hospital	Rural	1,250	316	24.9	1.7
	Shellharbour Hospital	Urban	1,253	273	21.8	1.5
	Wollongong Hospital	Urban	1,244	284	22.6	1.4
Murrumbidgee	Deniliquin Health Service	Rural	1,240	238	18.7	1.5
	Griffith Base Hospital	Rural	1,241	185	14.7	1.4
	Wagga Wagga Base Hospital	Rural	1,234	234	18.7	1.5
	Young Health Service	Rural	1,242	245	18.6	1.6

LHD name	Hospital name	Rurality of hospital	Questionnaires mailed	Responses	Adjusted response rate (%)	DEFF
Mid North Coast	Coffs Harbour Health Campus	Rural	1,243	293	22.6	1.6
	Kempsey District Hospital	Rural	1,253	255	20.2	1.8
	Macksville District Hospital	Rural	1,248	302	22.7	1.7
	Port Macquarie Base Hospital	Rural	1,258	365	28.4	1.6
Nepean Blue Mountains	Lithgow Hospital	Rural	1,236	270	21.1	1.8
	Blue Mountains District Anzac Memorial Hospital	Urban	1,253	341	27.2	1.4
	Hawkesbury District Health Service	Urban	309	69	22.4	1.3
	Nepean Hospital	Urban	1,239	251	19.8	1.5
Northern NSW	Ballina District Hospital	Rural	1,241	307	24.5	1.5
	Byron Central Hospital	Rural	1,889	286	15.1	1.5
	Casino & District Memorial Hospital	Rural	1,243	234	17.8	2.1
	Grafton Base Hospital	Rural	1,245	259	20.0	1.8
	Lismore Base Hospital	Rural	1,259	282	21.9	1.7
	Maclean District Hospital	Rural	1,238	352	28.1	1.6
	Murwillumbah District Hospital	Rural	1,258	284	22.4	1.8
	The Tweed Hospital	Urban	1,239	291	22.3	1.7
Northern Sydney	Hornsby Ku-ring-gai Hospital	Urban	1,269	273	21.3	1.2
	Royal North Shore Hospital	Urban	1,256	355	28.1	1.2
	Ryde Hospital	Urban	1,244	298	23.7	1.3
Sydney Children's Hospitals Network	Sydney Children's Hospital, Randwick	Urban	2,507	458	18.3	1.0
	The Children's Hospital at Westmead	Urban	2,495	486	19.5	1.0

LHD name	Hospital name	Rurality of hospital	Questionnaires mailed	Responses	Adjusted response rate (%)	DEFF
South Eastern Sydney	Prince of Wales Hospital	Urban	1,251	257	20.2	1.5
	St George Hospital	Urban	1,224	240	19.3	1.3
	Sutherland Hospital	Urban	1,224	325	26.6	1.3
	Sydney Hospital and Sydney Eye Hospital	Urban	1,261	251	19.9	1.4
Southern NSW	Batemans Bay District Hospital	Rural	1,251	289	22.5	1.8
	Cooma Hospital and Health Service	Rural	1,246	285	21.4	1.6
	Goulburn Base Hospital	Rural	1,254	246	18.6	1.6
	Moruya Hospital	Rural	1,251	346	27.7	1.7
	South East Regional Hospital	Rural	1,234	305	23.8	1.7
	Queanbeyan Hospital and Health Service	Urban	1,234	248	19.8	1.5
St Vincent's Health Network	St Vincent's Hospital Sydney	Urban	2,497	499	20.3	1.6
South Western Sydney	Bowral and District Hospital	Rural	1,255	329	26.2	1.5
	Bankstown-Lidcombe Hospital	Urban	1,240	184	15.0	1.3
	Camden Hospital	Urban	1,259	211	16.8	1.4
	Campbelltown Hospital	Urban	1,251	221	17.4	1.2
	Fairfield Hospital	Urban	1,252	183	15.2	1.1
	Liverpool Hospital	Urban	1,238	218	17.8	1.2
Sydney	Canterbury Hospital	Urban	1,254	207	17.0	1.2
	Concord Repatriation General Hospital	Urban	1,238	289	23.6	1.3
	Royal Prince Alfred Hospital	Urban	1,244	261	21.5	1.2

LHD name	Hospital name	Rurality of hospital	Questionnaires mailed	Responses	Adjusted response rate (%)	DEFF
Western NSW	Bathurst Health Service	Rural	1,883	323	16.6	1.6
	Cowra Health Service	Rural	1,242	229	17.3	1.9
	Dubbo Hospital	Rural	1,862	275	14.2	1.8
	Lachlan Health Service - Forbes	Rural	1,236	207	15.9	1.8
	Mudgee Health Service	Rural	1,256	207	16.6	1.7
	Orange Health Service	Rural	1,245	232	17.9	1.7
Western Sydney	Auburn Hospital	Urban	1,244	143	11.5	1.1
	Blacktown Hospital	Urban	1,245	229	18.4	1.4
	Mount Druitt Hospital	Urban	1,236	150	12.1	1.2
	Westmead Hospital	Urban	1,247	231	18.6	1.2

Appendix 2

Rates of missing or 'Don't know/can't remember' responses

Table 5   Unweighted percentage of missing and 'Don't know/can't remember' responses, by question, Emergency Department Patient Survey 2022–23

Number	Question	Missing %	'Don't know/can't remember' %	Missing + 'Don't know/can't remember' %*
1	Was the signposting directing you to the ED easy to follow?	2.5		2.5
2	Were the ED staff you met on your arrival polite and welcoming?	2.1	2.0	4.1
3	Did the ED staff give you enough information about what to expect during your visit?	2.2	3.9	6.1
4	Did the ED staff tell you how long you might have to wait for treatment?	2.4	7.0	9.4
5	While you were waiting to be treated, did the ED staff check on your condition?	2.7	3.3	6.0
6	Did the ED health professionals who treated you introduce themselves to you?	2.1	2.9	4.9
7	Did the ED health professionals explain things in a way you could understand?	2.4		2.4
8	Did you have enough time to discuss your health or medical problem with the ED health professionals?	2.2	2.0	4.2
9	During your ED visit, how much information about your condition or treatment was given to you?	2.4		2.4
10	Were you involved, as much as you wanted to be, in decisions about your care and treatment?	2.4		2.4
11	Did the ED health professionals listen carefully to any views or concerns you had?	2.3		2.3
12	If your family members or someone else close to you wanted to talk to the ED health professionals, did they get the opportunity to do so?	2.4	2.8	5.2
13	How would you rate how well the ED health professionals worked together as a team?	2.3		2.3
14	Did you have confidence and trust in the ED health professionals treating you?	2.3		2.3

Number	Question	Missing %	'Don't know/can't remember' %	Missing + 'Don't know/can't remember' %*
15	Overall, how would you rate the ED health professionals who treated you?	2.4		2.4
16	Did you ever receive contradictory information about your condition or treatment from the ED health professionals?	3.2		3.2
17	Were the ED health professionals kind and caring towards you?	2.4		2.4
18	Were you treated with respect and dignity while in the ED?	2.4		2.4
19	Were you given enough privacy during your visit to the ED?	2.5		2.5
20	Did the ED health professionals give you the support you needed to help with any worries or fears related to your care and treatment?	2.5		2.5
21	Were you ever in pain while in the ED?	3.1		3.1
22	Do you think the ED health professionals did everything they could to help manage your pain?	4.4		4.4
23	How clean was the treatment area in the ED?	1.4		1.4
24	While you were in the ED, did you feel threatened by other patients or visitors?	1.4		1.4
25	What happened at the end of your ED visit?	3.1		3.1
26	Did you feel involved in decisions about your discharge from the ED?	0.9		0.9
27	Thinking about when you left the ED, were you given enough information about how to manage your care at home?	0.6		0.6
28	Was your family and home situation taken into account when you were discharged?	0.6	4.6	5.2
29	Were you told who to contact if you were worried about your condition or treatment after you left the ED?	0.6	9.9	10.6
30	Were you told about what signs or symptoms, related to your illness or treatment, to watch out for after you went home?	0.9		0.9
31	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)?	0.9	12.6	13.5

Number	Question	Missing %	'Don't know/can't remember' %	Missing + 'Don't know/can't remember' %*
32	Overall, how would you rate the care you received while in the ED?	1.3		1.3
33	If asked about your experience in the ED by friends and family, how would you respond?	1.5		1.5
34	Did the care and treatment received in the ED help you?	1.5		1.5
35	Did you need to return to this or any other ED within 48 hours of discharge?	1.7	1.3	3.0
36	What year were you born?	2.0		2.0
37	How do you describe your gender?	1.5		1.5
38	What is the highest level of education you have completed?	4.2		4.2
39	Which language do you mainly speak at home?	1.8		1.8
40	Are you of Aboriginal origin, Torres Strait Islander origin, or both?	2.2		2.2
41	Which, if any, of the following longstanding health conditions do you have (including age-related conditions)?	4.1		4.1
42	Does this condition(s) cause you difficulties with your day-to-day activities?	2.8		2.8
43	Do you give permission for BHI to link your answers from this survey to health records related to you (the patient)?	2.2		2.2

* 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

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 6   Derived measures for EDPS 2022–23

Derived measure	Question	Derived measure categories	Original question responses
Needed directions to the ED	Q1. Was the signposting directing you to the ED easy to follow?	Needed directions	Yes, definitely
			Yes, to some extent
			No
		Not applicable	Not applicable
Needed to wait for treatment	Q4. Did the ED staff tell you how long you might have to wait for treatment?	Needed to wait	Yes
			No
		Didn't need to wait	I didn't need to wait for treatment
Needed information about condition or treatment	Q9. During your ED visit, how much information about your condition or treatment was given to you?	Needed information	Not enough
			The right amount
			Too much
		Not applicable	Not applicable
Wanted or needed to be involved in decisions about care and treatment	Q10. Were you involved, as much as you wanted to be, in decisions about your care and treatment?	Wanted or needed involvement	Yes, definitely
			Yes, to some extent
			No
		Didn't want or need involvement	I did not want or need to be involved
Had views or concerns	Q11. Did the ED health professionals listen carefully to any views or concerns you had?	Had views or concerns	Yes, definitely
			Yes, to some extent
			No
		Didn't have views or concerns	I didn't have any views or concerns
Family members or someone else close wanted to talk to the ED health professionals	Q12. If your family members or someone else close to you wanted to talk to the ED health professionals, did they get the opportunity to do so?	Wanted to talk to ED health professionals	Yes, definitely
			Yes, to some extent
			No
			Don't know/can't say
		Not applicable	Not applicable

Derived measure	Question	Derived measure categories	Original question responses
Had worries or fears	Q20. Did the ED health professionals give you the support you needed to help with any worries or fears related to your care and treatment?	Had worries or fears	Yes, definitely
			Yes, to some extent
			No
		Didn't have worries or fears	I didn't have any worries or fears
Discharged from the ED at end of visit	Q25. What happened at the end of your ED visit?	Discharged	I went home or to stay with a friend, relative, or elsewhere
		Admitted or transferred	I was admitted to the same hospital
			I was transferred to a different hospital or healthcare facility
Wanted involvement in decisions about discharge	Q26. Did you feel involved in decisions about your discharge from the ED?	Wanted or needed involvement	Yes, definitely
			Yes, to some extent
			No
		Didn't want or need involvement	I didn't want or need to be involved
Needed information about how to manage care at home	Q27. Thinking about when you left the ED, were you given enough information about how to manage your care at home?	Needed information	Yes, definitely
			Yes, to some extent
			No
		Not applicable	Not applicable
Had family or home situation to consider upon discharge	Q28. Was your family and home situation taken into account when you were discharged?	Had situation to consider	Yes, definitely
			Yes, to some extent
			No
		Not applicable	Not applicable

References

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