

2022 Nat S

Introduction:

Welcome to the 2022 National and State HAI Progress Report using the 2015 bas
by comparing the number of observed device days to the number of predicted dev
This report is created by CDC staff with the National Healthcare Safety Network (N

Scope of report:

Device Days Types
Central line days (CLDs) by locations
Urinary catheter days (UCDs) by locations
Ventilator days (VDs) by locations

National and State HAI Progress Report

Standardized Utilization Ratios

Long Term Acute Care Hospitals

eline and risk adjustment calculations. Standardized utilization ratios (SURs) are used to describe device
ice days.
IHSN).

LTACH	
National	State
p	p
p	p
p	p

]

» utilization

Development of the NHSN Standardized Utilization Ratio (SUR): Methodology

Rationale

Traditionally, NHSN has been providing a crude measure of device utilization rate to the healthcare facilities. This measure is standardized to compare with a reference baseline population as well as over time. Accordingly, CDC has developed

Development of SUR models

SUR models were developed for the following measures: central line days, urinary catheter days and ventilator days in inpatient rehabilitation facilities (IRF), long-term acute care hospitals (LTACH) (and NICU for central line days). Using the NHSN data (2022) in sync with rebaseline work, CDC has developed multivariable logistic regression models (see “Extra-binomial Variation in Logistic Linear Models,” Applied Statistics, 31, 144–148.). Unit of analysis in all the

STEPS to compute SUR at the location level

1: First, calculate the logit scale value of p_{hat} , using parameter estimates of corresponding SUR model.

Logit p_{hat} = intercept + x_1 + x_2 + x_3 +

(Risk factors are provided in appendices for individual matrix of measure and healthcare setting)

2: Then, compute the probability of device use

$p_{hat} = [e^{\text{logit}(p_{hat})}] / [1 + e^{\text{logit}(p_{hat})}]$

3: Calculate predicted device days as follows:

Predicted Device Days = p_{hat} * In-patient days

4: Finally, derive SUR value at the location by dividing number of observed device days with number of predicted device days

$SUR = \text{Observed Device Days} / \text{Predicted Device Days}$

Note that SUR will not be calculated if Predicted Device Days is < 1 due to minimum precision criteria of 1.0.

STEPS to compute SUR at higher level above location

Do the same computation as in step 1, 2, 3 at location level.

Sum the observed device days and predicted device days up to the level of aggregation desired (e.g., facility-level).

Then, derive SUR value at the desired aggregate level by dividing number of observed device days with number of predicted device days.

SUR Guide: <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sur-guide-508.pdf>

To monitor the progress of healthcare acquired infections (HAI) prevention efforts, device utilization in any health developed statistical models to make SUR values available for different measures (e.g., central line days, urinary c

or days. They were available for the healthcare setting of acute care hospitals (ACH), critical access hospitals (C).

on models that correct over dispersion by the Williams' method (Reference: Williams, D. A. (1982), e SUR models are at the location level.

ted device days;

level).

ber of predicted device days.

healthcare setting/location needs to be
(catheter days) at various healthcare settings.

(AH),

2022 Annual National and State HAI Progress Report

Long-Term Acute Care Hospitals: Full series of tables for all national and state data

Table 1 **National standardized utilization ratios (SURs) and facility-specific summary**
Central line days (CLDs)
Urinary catheter days (UCDs)
Ventilator days (VDs)

Table 2 **State-specific SURs for CLDs from Long term acute care hospitals:**
All locations combined

Table 3 **State-specific SURs for UCDs from Long term acute care hospitals:**
All locations combined

Table 4 **State-specific SURs for VDs from Long term acute care hospitals:**
All locations combined

Table 5 **Changes in national SURs, 2022 compared to 2021:**
Central Line Days (CLDs)
Urinary Catheter Days (UCDs)
Ventilator days (VDs)

Table 6 **Changes in state SURs, 2022 compared to 2021:**
6a. Central Line Days (CLDs)
6b. Urinary Catheter Days (UCDs)
6c. Ventilator Days (VDs)

Appendix A Factors used in NHSN risk-adjusted SUR calculation of the device utilization in k

Additional Resources Technical Appendix
HAI Progress Report Home Page
SUR Guide: <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nh>

ry SURs:

ong-term acute care hospitals (LTACHs)

isn-sur-guide-508.pdf

Table 1. Natio

Device and Patient Population	No. of Facilities Reporting ¹	No. of Device days	
		Observed	Predicted
Central line days, all⁴	393	1,536,064	2,570,031.4158
ICUs⁵	67	98,300	166,539.6078
Wards⁶	10	6,417	15,311.3853
Urinary catheter days, all⁴	393	1,343,208	1,759,405.0491
	67	85,847	132,856.2275
Wards⁶	26	9,195	27,712.5629
Ventilator days, all⁴	162	501,042	433,377.1699
	37	47,503	45,220.2385
	4	.	.

1. The number of reporting facilities included in the SUR calculation; SURs are not calculated when there are less
2. Percent of facilities with at least one predicted device day that had an SUR significantly greater than or less than
3. Facility-specific percentiles are only calculated if at least 20 facilities had ≥ 1.0 predicted number of device days i
4. Data from all ICUs, wards, and other non-critical care locations. Data contained in this table are reported from lo
5. Data from all ICUs; excludes wards (and other non-critical care locations), and NICUs. Data contained in this tab
6. Data from all wards (for this table, wards also include step-down, mixed acuity, and specialty care areas [includin

onal standardized utilization ratios (SURs) and facility-specific summary SURs using device day:

SUR	95% CI for SUR		Facility-specific SURs			
	Lower	Upper	No. Facilities with ≥ 1	No. Facilities with SUR		No. Facilities
			Predicted Device Days	Significantly > National SUR		Significantly SUR
				N	%	N
0.5977	0.5968	0.5986	393	193	49%	176
0.5902	0.5866	0.5940	67	40	60%	22
0.4191	0.4089	0.4295	10	2	20%	7
0.7634	0.7622	0.7647	393	183	47%	174
0.6462	0.6419	0.6505	67	46	69%	17
0.3318	0.3251	0.3386	26	1	4%	23
1.1561	1.1529	1.1594	162	58	36%	93
1.0505	1.0411	1.0599	37	23	62%	11

than 5 reporting facilities. This may be different from those reported in the SIR tables due to exclusion of the nominal value of the national SUR. This is only calculated if at least 10 facilities had ≥ 1.0 predicted in 2022. If a facility's predicted number of device days was <1.0 , a facility-specific SUR was neither calculated for long-term acute care hospitals; as such, data from ACHs, IRFs and CAHs are excluded. Data are reported from long-term acute care hospitals; as such, data from ACHs, IRFs and CAHs are excluded (e.g., hematology/oncology, bone marrow transplant). Data contained in this table are reported from long-

s data reported to NHSN during 2022 for long term acute care hospitals (LTACHs), by device type
Table 1. Central line days (CLDs), urinary catheter days (UCDs), and ventilator days (VDs).

with SUR < National %	Percenti							
	5%	10%	15%	20%	25%	30%	35%	40%
45%	0.2552	0.3312	0.3761	0.4100	0.4475	0.4805	0.5117	0.5481
33%	0.2060	0.3134	0.3411	0.3644	0.4647	0.5191	0.5709	0.6202
70%	.	.	.	.	.	.	.	.
44%	0.3170	0.4391	0.5245	0.5728	0.6113	0.6427	0.6707	0.7108
25%	0.1978	0.3463	0.3949	0.4928	0.5285	0.6675	0.7151	0.7415
88%	0.1284	0.1383	0.1496	0.2043	0.2079	0.2220	0.2960	0.3000
57%	0.3307	0.4702	0.6090	0.6766	0.7392	0.7898	0.8530	0.8913
30%	0.3581	0.4441	0.5881	0.6622	0.9477	0.9825	1.0200	1.1354
.

and inclusion criteria. Refer to the technical appendix for details.

d device days in 2022.

ulated nor included in the distribution of facility-specific SURs.

cluded.

term acute care hospitals.

95%

1.1317

1.2582

.

1.3790

1.2916

0.9738

1.8980

2.5115

Table 2. State-specific standardized utilization ratios (SURs) and facility-specific summary SURs (Table 2. C)

State	Facilities	No. of Device days			95% CI
		Observed	Predicted	SUR	Lower
Alabama	8	19,140	32,266.5806	0.5932	0.5848
Alaska	1	.	.	.	.
Arizona	6	17,816	33,927.2247	0.5251	0.5175
Arkansas	8	23,251	35,395.3955	0.6569	0.6485
California	22	147,897	219,434.8368	0.6740	0.6706
Colorado	6	19,822	46,698.3020	0.4245	0.4186
Connecticut	2	.	.	.	.
D.C.	1	.	.	.	.
Delaware	2	.	.	.	.
Florida	27	123,511	220,935.4818	0.5590	0.5559
Georgia	12	42,612	72,973.8749	0.5839	0.5784
Guam	0	.	.	.	.
Hawaii	1	.	.	.	.
Idaho	2	.	.	.	.
Illinois	8	46,350	71,411.5104	0.6491	0.6432
Indiana	8	28,532	45,731.1905	0.6239	0.6167
Iowa	2	.	.	.	.
Kansas	3	.	.	.	.
Kentucky	9	31,397	44,968.9284	0.6982	0.6905
Louisiana	29	103,053	147,692.3863	0.6978	0.6935
Maine	0	.	.	.	.
Maryland	2	.	.	.	.
Massachusetts	13	49,559	172,882.6663	0.2867	0.2842
Michigan	17	42,066	84,828.8370	0.4959	0.4912
Minnesota	2	.	.	.	.
Mississippi	8	21,578	42,473.9830	0.5080	0.5013
Missouri	10	35,075	54,657.0732	0.6417	0.6350
Montana	1	.	.	.	.
Nebraska	3	.	.	.	.
Nevada	8	41,999	48,867.0911	0.8595	0.8513
New Hampshire	0	.	.	.	.
New Jersey	12	31,849	61,972.2425	0.5139	0.5083
New Mexico	3	.	.	.	.
New York	2	.	.	.	.
North Carolina	8	30,416	49,364.6604	0.6161	0.6093
North Dakota	2	.	.	.	.
Ohio	25	82,938	125,469.4855	0.6610	0.6565
Oklahoma	10	48,739	59,923.4924	0.8134	0.8062
Oregon	1	.	.	.	.
Pennsylvania	17	44,151	86,894.3657	0.5081	0.5034
Puerto Rico	0	.	.	.	.
Rhode Island	0	.	.	.	.
South Carolina	6	24,973	40,277.5660	0.6200	0.6124

South Dakota	1	.	.	.	.
Tennessee	9	26,086	60,006.9108	0.4347	0.4295
Texas	57	282,689	394,296.7806	0.7169	0.7143
Utah	3	.	.	.	.
Vermont	0	.	.	.	.
Virgin Islands	0	.	.	.	.
Virginia	6	16,614	30,859.3221	0.5384	0.5302
Washington	1	.	.	.	.
West Virginia	5	15,205	27,746.2072	0.5480	0.5393
Wisconsin	4	.	.	.	.
Wyoming	0	.	.	.	.
All US	393	1,536,064	2,570,031.4158	0.5977	0.5968

1. The number of reporting facilities included in the SUR calculation; SURs are not calculated when there are le
2. Percent of facilities with at least one predicted device day that had an SUR significantly greater than or less tl
3. Facility-specific percentiles are only calculated if at least 20 facilities had ≥ 1.0 predicted number of device da
4. Data from all ICUs, wards, and other non-critical care locations. Data contained in this table are reported from

Using device days data reported to NHSN during 2022 for long term acute care hospitals (LTACHs)
 central line days (CLDs), all locations⁴

Upper for SUR	Facility-specific SURs					10%
	No. Facilities with ≥1 Predicted Device Days	No. Facilities with SUR		No. Facilities with SUR		
		Significantly > National SUR	Significantly < National SUR	Significantly > National SUR	Significantly < National SUR	
	N	% ²	N			
0.6016	8	.	.	.	.	.
.
0.5329	6	.	.	.	.	.
0.6654	8	.	.	.	.	.
0.6774	22	16	73%	4	18%	0.4852
0.4304	6	.	.	.	.	.
.
.
.
0.5622	27	8	30%	15	56%	0.3649
0.5895	12	7	58%	5	42%	.
.
.
0.6550	8	.	.	.	.	.
0.6312	8	.	.	.	.	.
.
.
0.7060	9	.	.	.	.	.
0.7020	29	21	72%	8	28%	0.3942
.
.
0.2892	13	4	31%	9	69%	.
0.5006	17	4	24%	12	71%	.
.
0.5148	8	.	.	.	.	.
0.6485	10	5	50%	4	40%	.
.
.
0.8677	8	.	.	.	.	.
.
0.5196	12	5	42%	5	42%	.
.
.
0.6231	8	.	.	.	.	.
.
0.6655	25	16	64%	7	28%	0.4647
0.8206	10	6	60%	4	40%	.
.
0.5129	17	4	24%	12	71%	.
.
.
0.6278	6	.	.	.	.	.

.
0.4400	9	.	.	.	.	.
0.7196	57	36	63%	17	30%	0.3876
.
.
0.5466	6	.	.	.	.	.
.
0.5568	5	.	.	.	.	.
.
.
0.5986	393	193	49%	176	45%	0.3312

ss than 5 reporting facilities. This may be different from those reported in the SIR tables due to exclusion than the nominal value of the national SUR. This is only calculated if at least 10 facilities had ≥ 1.0 predicted days in 2022. If a facility's predicted number of device days was <1.0 , a facility-specific SUR was neither calculated for long-term acute care hospitals.

, by device type and patient population:

Median			
25%	50%	75%	90%
.	.	.	.
.	.	.	.
.	.	.	.
0.5988	0.7419	0.8438	0.9030
.	.	.	.
.	.	.	.
.	.	.	.
0.4494	0.5433	0.6518	0.7771
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.5481	0.7025	0.9180	1.6718
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.5706	0.6765	0.7315	0.7950
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.

.	.	.	.
0.5144	0.7411	0.9306	1.0530
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.4475	0.6098	0.7889	0.9971

and inclusion criteria. Refer to the technical appendix for details.
 ed device days in 2022.
 iculated nor included in the distribution of facility-specific SURs.

Table 3. State-specific standardized utilization ratios (SURs) and facility-specific summary SURs
Table 3. Urinary C

State	No. of Facilities	No. of Device days			95% CI	
		Observed	Predicted	SUR	Lower	Upper
Alabama	8	23,426	20,147.5248	1.1627	1.1479	
Alaska	1	.	.	.	.	.
Arizona	6	17,158	24,040.9916	0.7137	0.7031	
Arkansas	8	22,766	22,659.6681	1.0047	0.9917	
California	22	143,117	155,004.1810	0.9233	0.9185	
Colorado	6	25,919	32,515.3798	0.7971	0.7875	
Connecticut	2	.	.	.	.	.
D.C.	1	.	.	.	.	.
Delaware	2	.	.	.	.	.
Florida	27	109,075	159,501.8309	0.6838	0.6798	
Georgia	12	44,059	53,512.8139	0.8233	0.8157	
Guam	0	.	.	.	.	.
Hawaii	1	.	.	.	.	.
Idaho	2	.	.	.	.	.
Illinois	8	41,797	49,317.6282	0.8475	0.8394	
Indiana	8	24,181	33,862.6847	0.7141	0.7051	
Iowa	2	.	.	.	.	.
Kansas	3	.	.	.	.	.
Kentucky	9	25,660	31,095.2903	0.8252	0.8152	
Louisiana	29	89,978	87,166.6065	1.0323	1.0255	
Maine	0	.	.	.	.	.
Maryland	2	.	.	.	.	.
Massachusetts	13	35,477	107,394.8551	0.3303	0.3269	
Michigan	17	37,896	55,301.1863	0.6853	0.6784	
Minnesota	2	.	.	.	.	.
Mississippi	8	17,002	27,822.9773	0.6111	0.6020	
Missouri	10	31,607	39,432.2328	0.8016	0.7927	
Montana	1	.	.	.	.	.
Nebraska	3	.	.	.	.	.
Nevada	8	32,370	31,681.2816	1.0217	1.0106	
New Hampshire	0	.	.	.	.	.
New Jersey	12	27,195	40,405.9401	0.6730	0.6651	
New Mexico	3	.	.	.	.	.
New York	2	.	.	.	.	.
North Carolina	8	24,541	32,395.1640	0.7576	0.7481	
North Dakota	2	.	.	.	.	.
Ohio	25	62,047	91,005.7579	0.6818	0.6764	
Oklahoma	10	42,781	41,788.8989	1.0237	1.0141	
Oregon	1	.	.	.	.	.
Pennsylvania	17	41,143	61,380.5119	0.6703	0.6639	
Puerto Rico	0	.	.	.	.	.
Rhode Island	0	.	.	.	.	.
South Carolina	6	15,426	28,733.6146	0.5369	0.5284	

South Dakota	1	.	.	.	.
Tennessee	9	24,895	38,738.6314	0.6426	0.6347
Texas	57	234,182	268,789.0346	0.8712	0.8677
Utah	3	.	.	.	.
Vermont	0	.	.	.	.
Virgin Islands	0	.	.	.	.
Virginia	6	18,661	21,702.0959	0.8599	0.8476
Washington	1	.	.	.	.
West Virginia	5	16,600	18,219.6319	0.9111	0.8973
Wisconsin	4	.	.	.	.
Wyoming	0	.	.	.	.
All US	393	1,343,208	1,759,405.0491	0.7634	0.7622

1. The number of reporting facilities included in the SUR calculation; SURs are not calculated when there are less than 20 facilities.
2. Percent of facilities with at least one predicted device day that had an SUR significantly greater than or less than 1.0.
3. Facility-specific percentiles are only calculated if at least 20 facilities had ≥ 1.0 predicted number of device day.
4. Data from all ICUs, wards, and other non-critical care locations. Data contained in this table are reported from the most recent data available.

Using device days data reported to NHSN during 2022 for long term acute care hospitals (LTACHs), catheter days (UCDs), all locations⁴

Upper for SUR	Facility-specific SURs					10%
	No. Facilities with ≥1 Predicted Device Days	No. Facilities with SUR		No. Facilities with SUR		
		Significantly > National SUR		Significantly < National SUR		
		N		N		
1.1777	8	.	.	.	.	.
.
0.7244	6	.	.	.	.	.
1.0178	8	.	.	.	.	.
0.9281	22	17	77%	5	23%	0.6717
0.8069	6	.	.	.	.	.
.
.
0.6879	27	6	22%	18	67%	0.4109
0.8311	12	6	50%	4	33%	.
.
.
0.8557	8	.	.	.	.	.
0.7231	8	.	.	.	.	.
.
0.8353	9	.	.	.	.	.
1.0390	29	22	76%	6	21%	0.6299
.
0.3338	13	3	23%	10	77%	.
0.6922	17	6	35%	11	65%	.
.
0.6203	8	.	.	.	.	.
0.8104	10	5	50%	3	30%	.
.
1.0329	8	.	.	.	.	.
.
0.6811	12	6	50%	5	42%	.
.
0.7671	8	.	.	.	.	.
.
0.6872	25	6	24%	15	60%	0.4834
1.0335	10	7	70%	3	30%	.
.
0.6768	17	5	29%	10	59%	.
.
0.5454	6	.	.	.	.	.

0.6507	9	.	.	.	.	.	.
0.8748	57	38	67%	12	21%	0.6321	.
.
0.8723	6	.	.	.	.	.	.
0.9250	5	.	.	.	.	.	.
.
0.7647	393	183	47%	174	44%	0.4391	.

ss than 5 reporting facilities. This may be different from those reported in the SIR tables due to exclusion ar
 an the nominal value of the national SUR. This is only calculated if at least 10 facilities had ≥ 1.0 predicted
 /s in 2022. If a facility's predicted number of device days was <1.0 , a facility-specific SUR was neither calcu
 i long-term acute care hospitals.

by device type and patient population:

Median			
25%	50%	75%	90%
.	.	.	.
.	.	.	.
.	.	.	.
0.8555	1.0256	1.1111	1.2386
.	.	.	.
.	.	.	.
.	.	.	.
0.5728	0.6628	0.7878	1.1037
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.8050	0.9604	1.2633	1.3790
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.6140	0.6986	0.7971	0.8600
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.

.	.	.	.
0.7404	0.8630	1.0322	1.2676
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.6113	0.7677	1.0206	1.2671

and inclusion criteria. Refer to the technical appendix for details.
 | device days in 2022.
 | related nor included in the distribution of facility-specific SURs.

Table 4. State-specific standardized utilization ratios (SURs) and facility-specific summary

T:

State	No. of Facilities	No. of Device days		
		Observed	Predicted	SUR
Alabama	5	4,128	4,227.4756	0.9765
Alaska	0	.	.	.
Arizona	0	.	.	.
Arkansas	3	.	.	.
California	17	112,055	94,104.2332	1.1908
Colorado	2	.	.	.
Connecticut	0	.	.	.
D.C.	0	.	.	.
Delaware	2	.	.	.
Florida	11	45,096	33,468.6064	1.3474
Georgia	6	13,229	15,799.9974	0.8373
Guam	0	.	.	.
Hawaii	1	.	.	.
Idaho	0	.	.	.
Illinois	7	40,234	30,796.5954	1.3064
Indiana	2	.	.	.
Iowa	0	.	.	.
Kansas	0	.	.	.
Kentucky	5	11,773	10,679.9110	1.1024
Louisiana	6	2,437	2,769.3178	0.8800
Maine	0	.	.	.
Maryland	2	.	.	.
Massachusetts	6	17,416	14,812.8862	1.1757
Michigan	2	.	.	.
Minnesota	0	.	.	.
Mississippi	2	.	.	.
Missouri	7	9,767	11,864.2858	0.8232
Montana	0	.	.	.
Nebraska	0	.	.	.
Nevada	3	.	.	.
New Hampshire	0	.	.	.
New Jersey	9	20,103	16,983.2180	1.1837
New Mexico	1	.	.	.
New York	1	.	.	.
North Carolina	3	.	.	.
North Dakota	0	.	.	.
Ohio	2	.	.	.
Oklahoma	1	.	.	.
Oregon	0	.	.	.
Pennsylvania	16	34,955	33,423.0232	1.0458
Puerto Rico	0	.	.	.
Rhode Island	0	.	.	.

South Carolina	6	12,086	15,814.0888	0.7643
South Dakota	0	.	.	.
Tennessee	9	25,719	24,442.8013	1.0522
Texas	21	46,766	46,793.1361	0.9994
Utah	1	.	.	.
Vermont	0	.	.	.
Virgin Islands	0	.	.	.
Virginia	1	.	.	.
Washington	1	.	.	.
West Virginia	1	.	.	.
Wisconsin	0	.	.	.
Wyoming	0	.	.	.
All US	162	501,042	433,377.1699	1.1561

1. The number of reporting facilities included in the SUR calculation; SURs are not calculated when there are no predicted device days.
2. Percent of facilities with at least one predicted device day that had an SUR significantly greater than or less than the expected SUR.
3. Facility-specific percentiles are only calculated if at least 20 facilities had ≥ 1.0 predicted number of device days.
4. Data from all ICUs and wards (and other non-critical care locations). Data contained in this table are reported as of 12/31/2019.

Table 4. Ventilator days (VDs), all locations⁴

95% CI for SUR		Facility-specific SURs				
Lower	Upper	No. Facilities with ≥1 Predicted Device Days	No. Facilities with SUR Significantly > National SUR		No. Facilities with SUR Significantly < National SUR	
			N		N	
0.9470	1.0066	5	.	.	.	.
.
.
1.1838	1.1977	17	9	53%	5	29%
.
.
1.3350	1.3599	11	7	64%	4	36%
0.8231	0.8516	6	.	.	.	.
.
.
1.2937	1.3193	7	.	.	.	.
.
.
1.0826	1.1224	5	.	.	.	.
0.8456	0.9155	6	.	.	.	.
.
.
1.1584	1.1933	6	.	.	.	.
.
.
0.8070	0.8397	7	.	.	.	.
.
.
.
1.1674	1.2002	9	.	.	.	.
.
.
.
1.0349	1.0569	16	4	25%	11	69%
.
.

0.7507	0.7780	6	.	.	.	.
.
1.0394	1.0651	9	.	.	.	.
0.9904	1.0085	21	6	29%	12	57%
.
.
.
.
.
.
1.1529	1.1594	162	58	36%	93	57%

re less than 5 reporting facilities. This may be different from those reported in the SIR tables due to exclusion of facilities with a predicted number of device days less than the nominal value of the national SUR. This is only calculated if at least 10 facilities had ≥ 1.0 predicted device days in 2022. If a facility's predicted number of device days was < 1.0 , a facility-specific SUR was neither calculated nor reported from long-term acute care hospitals.

.
.
0.4384	0.7677	0.9692	1.2559	1.4999
.
.
.
.
.
0.4702	0.7392	1.0230	1.3323	1.6259

on and inclusion criteria. Refer to the technical appendix for details.
 cted device days in 2022.
 calculated nor included in the distribution of facility-specific SURs.

Table 5. Changes in national standardized utilization ratios (SURs) using HAI data reported from all NHSN long term acute care hospitals reporting during 2022 by HAI and patient population: Central line days (CLDs), urinary catheter days (UCDs), and ventilator days (VDs), 2022 compared to 2021

	2021 SUR	2022 SUR	Percent Change	Direction of Change, Based on Statistical Significance	p-value
CLDs, all locations¹	0.6205	0.5977	4%	Decrease	0.0000
ICU ²	0.5926	0.5902	0%	No change	0.3647
Ward ³	0.3309	0.4191	27%	Increase	0.0000
UCDs, all locations¹	0.7901	0.7634	3%	Decrease	0.0000
	0.6812	0.6462	5%	Decrease	0.0000
	0.3332	0.3318	0%	No change	0.7932
VDs, all¹	1.2452	1.1561	7%	Decrease	0.0000
ICUs ²	1.1240	1.0505	7%	Decrease	0.0000
Wards ³	.	.	.	.	.

* Statistically significant, p < 0.0500

1. Data from all ICUs, wards, and other non-critical care locations.

2. Data from all ICUs; excludes wards (and other non-critical care locations).

3. Data from all wards (for this table, wards also include step-down and specialty care areas [including hematology/oncology, bone marrow trans

plant]).

Table 6. Changes in state-specific standardized utilization ratios (SURs) between 2021 and 2022 from NHSN Long Term Acute Care Hospitals

6a. Central line days (CLDs), all locations¹

State ²	All Long Term Acute Care Hospitals Reporting to NHSN				
	2021 SUR	2022 SUR	Percent Change ³	Direction of Change, Based on Statistical Significance	p-value
Alabama	0.5816	0.5932	2%	No change	0.0507
Alaska	.	.	.	.	.
Arizona	0.5717	0.5251	8%	Decrease	0.0000
Arkansas	0.5728	0.6569	15%	Increase	0.0000
California	0.6725	0.6740	0%	No change	0.5501
Colorado	0.4335	0.4245	2%	Decrease	0.0378
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.5563	0.5590	0%	No change	0.2251
Georgia	0.5898	0.5839	1%	No change	0.1312
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	0.6221	0.6491	4%	Increase	0.0000
Indiana	0.6763	0.6239	8%	Decrease	0.0000
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	0.6894	0.6982	1%	No change	0.1047
Louisiana	0.6937	0.6978	1%	No change	0.1813
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	0.4242	0.2867	32%	Decrease	0.0000
Michigan	0.5054	0.4959	2%	Decrease	0.0050
Minnesota	.	.	.	.	.
Mississippi	0.5162	0.5080	2%	No change	0.0924
Missouri	0.6438	0.6417	0%	No change	0.6677
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	0.8613	0.8595	0%	No change	0.7524
New Hampshire	.	.	.	.	.
New Jersey	0.6082	0.5139	16%	Decrease	0.0000
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	0.6309	0.6161	2%	Decrease	0.0026
North Dakota	.	.	.	.	.
Ohio	0.6707	0.6610	1%	Decrease	0.0024
Oklahoma	0.8330	0.8134	2%	Decrease	0.0002
Oregon	.	.	.	.	.
Pennsylvania	0.5509	0.5081	8%	Decrease	0.0000
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	0.6002	0.6200	3%	Increase	0.0004
South Dakota	.	.	.	.	.
Tennessee	0.4816	0.4347	10%	Decrease	0.0000
Texas	0.7072	0.7169	1%	Increase	0.0000
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	0.5932	0.5384	9%	Decrease	0.0000
Washington	.	.	.	.	.
West Virginia	0.8695	0.5480	37%	Decrease	0.0000
Wisconsin	.	.	.	.	.
Wyoming	.	.	.	.	.
All US	0.6205	0.5977	4%	Decrease	0.0000

* Statistically significant, p < 0.0500

1. Data from all ICUs, wards, and other non-critical care locations.

2. Percent change and subsequent calculations are not calculated for states without SUR in either 2021 and/or 2022.

3. For states with >>100% value in the percent change field, the p-value cannot be estimated due to sparse data reported within the facility type.

The p-value is indicated as inestimable when the numerator and/or denominator of percent change = 0.

Table 6. Changes in state-specific standardized utilization ratios (SURs) between 2021 and 2022 from NHSN Long Term Acute Care Hospitals

6b. Urinary catheter days (UCDs), all locations¹

	All Long Term Acute Care Hospitals Reporting to NHSN				
	2021 SUR	2022 SUR	Direction of Change, Based on Statistical Significance		p-value
Alabama	1.1229	1.1627	4%	Increase	0.0001
Alaska	.	.	.	.	.
Arizona	0.7434	0.7137	4%	Decrease	0.0001
Arkansas	1.0164	1.0047	1%	No change	0.2088
California	0.9704	0.9233	5%	Decrease	0.0000
Colorado	0.7712	0.7971	3%	Increase	0.0002
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.6633	0.6838	3%	Increase	0.0000
Georgia	0.7800	0.8233	6%	Increase	0.0000
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	0.8272	0.8475	2%	Increase	0.0003
Indiana	0.7694	0.7141	7%	Decrease	0.0000
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	0.7730	0.8252	7%	Increase	0.0000
Louisiana	1.0062	1.0323	3%	Increase	0.0000
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	0.4033	0.3303	18%	Decrease	0.0000
Michigan	0.7304	0.6853	6%	Decrease	0.0000
Minnesota	.	.	.	.	.
Mississippi	0.7151	0.6111	15%	Decrease	0.0000
Missouri	0.8268	0.8016	3%	Decrease	0.0001
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	0.9147	1.0217	12%	Increase	0.0000
New Hampshire	.	.	.	.	.
New Jersey	0.7784	0.6730	14%	Decrease	0.0000
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	0.7569	0.7576	0%	No change	0.9167
North Dakota	.	.	.	.	.
Ohio	0.7702	0.6818	11%	Decrease	0.0000
Oklahoma	1.1011	1.0237	7%	Decrease	0.0000
Oregon	.	.	.	.	.
Pennsylvania	0.6982	0.6703	4%	Decrease	0.0000
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	0.5587	0.5369	4%	Decrease	0.0005
South Dakota	.	.	.	.	.
Tennessee	0.7585	0.6426	15%	Decrease	0.0000
Texas	0.8881	0.8712	2%	Decrease	0.0000
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	0.8148	0.8599	6%	Increase	0.0000
Washington	.	.	.	.	.
West Virginia	1.3737	0.9111	34%	Decrease	0.0000
Wisconsin	.	.	.	.	.
Wyoming	.	.	.	.	.
All US	0.7901	0.7634	3%	Decrease	0.0000

* Statistically significant, p < 0.0500

1. Data from all ICUs, wards, and other non-critical care locations.

2. Percent change and subsequent calculations are not calculated for states without SUR in either 2021 and/or 2022.

3. For states with >>100% value in the percent change field, the p-value cannot be estimated due to sparse data reported within the facility type.

The p-value is indicated as inestimable when the numerator and/or denominator of percent change = 0.

Table 6. Changes in state-specific standardized utilization ratios (SURs) between 2021 and 2022 from NHSN Long Term Acute Care Hospitals
6c. Ventilator days (VDs), all locations¹

	All Long Term Acute Care Hospitals Reporting to NHSN				
	2021 SUR	2022 SUR	Direction of Change, Based on Statistical Significance		p-value
Alabama	0.6548	0.9765	49%	Increase	0.0000
Alaska	.	.	.	.	.
Arizona	.	.	.	.	.
Arkansas	.	.	.	.	.
California	1.1203	1.1908	6%	Increase	0.0000
Colorado	.	.	.	.	.
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.5434	1.3474	148%	Increase	0.0000
Georgia	0.3874	0.8373	116%	Increase	0.0000
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	1.0990	1.3064	19%	Increase	0.0000
Indiana	.	.	.	.	.
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	0.7402	1.1024	49%	Increase	0.0000
Louisiana	0.0463	0.8800	1801%	Increase	0.0000
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	0.4749	1.1757	148%	Increase	0.0000
Michigan	.	.	.	.	.
Minnesota	.	.	.	.	.
Mississippi	.	.	.	.	.
Missouri	0.5330	0.8232	54%	Increase	0.0000
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	.	.	.	.	.
New Hampshire	.	.	.	.	.
New Jersey	1.0845	1.1837	9%	Increase	0.0000
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	.	.	.	.	.
North Dakota	.	.	.	.	.
Ohio	.	.	.	.	.
Oklahoma	.	.	.	.	.
Oregon	.	.	.	.	.
Pennsylvania	1.0449	1.0458	0%	No change	0.9063
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	0.9446	0.7643	19%	Decrease	0.0000
South Dakota	.	.	.	.	.
Tennessee	1.1908	1.0522	12%	Decrease	0.0000
Texas	0.4403	0.9994	127%	Increase	0.0000
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	.	.	.	.	.
Washington	.	.	.	.	.
West Virginia	.	.	.	.	.
Wisconsin	.	.	.	.	.
Wyoming	.	.	.	.	.
All US	1.2452	1.1561	7%	Decrease	0.0000

* Statistically significant, p < 0.0500

1. Data from all ICUs, wards, and other non-critical care locations.

2. Percent change and subsequent calculations are not calculated for states without SUR in either 2021 and/or 2022.

3. For states with >>100% value in the percent change field, the p-value cannot be estimated due to sparse data reported within the facility type.

The p-value is indicated as inestimable when the numerator and/or denominator of percent change = 0.

Appendix A. Factors used in NHSN risk adjusted standard utilization ratios (SUR) calculation of the device utilization in Long Term Acute Care Hospitals (LTACHs).

Device Type	Validated Parameters for Risk Model
CLD	Intercept Location type Facility bed size* Facility type* LTACH setting** Proportion of admissions with hemodialysis (in percentile) Length of stay in days (in percentile)
UCD	Intercept Location type Facility bed size* Ventilator days HEMO LTACH setting** Proportion of admissions with ventilator dependence (in percentile) Proportion of admissions with hemodialysis (in percentile) Length of stay in days (in percentile)
VD	Intercept Location type proportion of admissions with ventilator dependence (in percentile)

* Facility bed size and facility type are taken from the Annual LTACH Survey.

** LTACH setting categorized as free standing LTACH or LTACH units in Hospitals

Additional Resources

Technical Appendix: <http://www.cdc.gov/hai/pdfs/progress-report/tech-appendix.pdf>

Explains the methodology used to procedure the HAI Progress Report.

HAI Progress Report Home Page: <http://www.cdc.gov/hai/progress-report/index.html>

The complete HAI Progress Report, including state-specific fact sheets and the Executive Summary, can be found

at the above website.