

2021 National and State HAI Progress Report

Introduction:

Welcome to the 2021 National and State HAI Progress Report using the 2015 baseline. This report is created by CDC staff with the National Healthcare Safety Network (NHSN).

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
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]

» 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 dev

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 (2021) 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 th

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

$$p_{hat} = \frac{e^{\text{logit}(p_{hat})}}{1 + e^{\text{logit}(p_{hat})}}$$

3: Calculate predicted device days as follows:

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

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

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

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),

2021 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, 2021 compared to 2020:**
Central Line Days (CLDs)
Urinary Catheter Days (UCDs)
Ventilator days (VDs)

Table 6 **Changes in state SURs, 2021 compared to 2020:**
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

Device and Patient Population	No. of Facilities Reporting ¹	No. of Device days	
		Observed	Predicted
Central line days, all⁴	392	1,665,995	2,684,825.2712
ICUs⁵	68	113,257	191,123.0521
Wards⁶	9	4,484	13,549.8554
Urinary catheter days, all⁴	392	1,471,741	1,862,818.8341
	68	104,196	152,969.2843
Wards⁶	20	7,073	21,229.0306
Ventilator days, all⁴	174	616,827	495,377.9579
	39	60,459	53,789.7577
	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
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

Table 1. National standardized utilization ratios (SURs) and

SUR	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 Significantly > SUR
				N	%		N
0.6205	0.6196	0.6215	392	190	48%	178
0.5926	0.5891	0.5961	68	46	68%	19
0.3309	0.3214	0.3407	9	.	.	.
0.7901	0.7888	0.7913	392	194	49%	179
0.6812	0.6770	0.6853	68	44	65%	19
0.3332	0.3255	0.3410	20	1	5%	19
1.2452	1.2421	1.2482	174	62	36%	98
1.1240	1.1151	1.1330	39	26	67%	11
.	.	.	4	.	.	.

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 2021. 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-

facility-specific summary SURs using device days data reported to NHSN during 2021 for long term acute care hospitals (LTACHs) and short-term acute care hospitals (STACHs).
 Table 1a. Central line days (CLDs), urinary catheter days (UCDs), and ventilator days (VDs).

with SUR < National %	Percentile							
	5%	10%	15%	20%	25%	30%	35%	40%
45%	0.3047	0.3831	0.4129	0.4359	0.4689	0.5050	0.5451	0.5693
28%	0.2367	0.2648	0.3791	0.4312	0.5048	0.5940	0.6319	0.6828
.
46%	0.3562	0.4712	0.5228	0.5822	0.6176	0.6563	0.6826	0.7134
28%	0.2129	0.2790	0.4241	0.4716	0.5595	0.6474	0.7142	0.8051
95%	0.0774	0.0966	0.1145	0.1294	0.1381	0.1604	0.1861	0.1953
56%	0.2343	0.5309	0.6721	0.7315	0.8259	0.8851	0.9369	0.9753
28%	0.4539	0.5112	0.5264	0.9032	0.9373	1.0654	1.2199	1.3882
.

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

d device days in 2021.

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

cluded.

term acute care hospitals.

95%

1.1671

1.1878

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1.4558

1.3953

0.7252

2.0056

2.0555

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	20,325	34,945.2757	0.5816	0.5737
Alaska	1	.	.	.	.
Arizona	6	22,001	38,480.6464	0.5717	0.5642
Arkansas	8	20,666	36,080.0630	0.5728	0.5650
California	22	154,179	229,253.5061	0.6725	0.6692
Colorado	6	19,455	44,882.8888	0.4335	0.4274
Connecticut	2	.	.	.	.
D.C.	1	.	.	.	.
Delaware	2	.	.	.	.
Florida	27	126,667	227,682.8231	0.5563	0.5533
Georgia	12	49,472	83,880.9014	0.5898	0.5846
Guam	0	.	.	.	.
Hawaii	1	.	.	.	.
Idaho	2	.	.	.	.
Illinois	9	53,600	86,161.3605	0.6221	0.6168
Indiana	9	36,561	54,058.7763	0.6763	0.6694
Iowa	2	.	.	.	.
Kansas	3	.	.	.	.
Kentucky	9	33,651	48,814.7807	0.6894	0.6820
Louisiana	28	107,259	154,619.2496	0.6937	0.6895
Maine	0	.	.	.	.
Maryland	2	.	.	.	.
Massachusetts	12	52,723	124,282.4256	0.4242	0.4206
Michigan	17	45,041	89,114.1899	0.5054	0.5008
Minnesota	2	.	.	.	.
Mississippi	7	23,467	45,465.0185	0.5162	0.5096
Missouri	10	35,947	55,835.7019	0.6438	0.6372
Montana	1	.	.	.	.
Nebraska	4	.	.	.	.
Nevada	8	44,157	51,267.6051	0.8613	0.8533
New Hampshire	0	.	.	.	.
New Jersey	12	38,889	63,937.5091	0.6082	0.6022
New Mexico	3	.	.	.	.
New York	1	.	.	.	.
North Carolina	8	34,907	55,333.0498	0.6309	0.6243
North Dakota	2	.	.	.	.
Ohio	25	93,778	139,826.9865	0.6707	0.6664
Oklahoma	10	51,417	61,727.6597	0.8330	0.8258
Oregon	1	.	.	.	.
Pennsylvania	17	51,131	92,805.3485	0.5509	0.5462
Puerto Rico	0	.	.	.	.
Rhode Island	0	.	.	.	.
South Carolina	6	23,011	38,336.4576	0.6002	0.5925

South Dakota	1	.	.	.	.
Tennessee	8	26,006	53,994.2382	0.4816	0.4758
Texas	58	309,234	437,237.9261	0.7072	0.7048
Utah	3	.	.	.	.
Vermont	0	.	.	.	.
Virgin Islands	0	.	.	.	.
Virginia	6	20,701	34,895.3637	0.5932	0.5852
Washington	1	.	.	.	.
West Virginia	5	21,793	25,062.8516	0.8695	0.8581
Wisconsin	4	.	.	.	.
Wyoming	0	.	.	.	.
All US	392	1,665,995	2,684,825.2712	0.6205	0.6196

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

s using device days data reported to NHSN during 2021 for long term acute care hospitals (LTACH):
 central line days (CLDs), all locations⁴

for SUR	Facility-specific SURs						10%
	Upper	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			
0.5897	8	.	.	.	.	.
.	
0.5793	6	.	.	.	.	.
0.5806	8	.	.	.	.	.
0.6759	22	16	73%	5	23%	0.4618	
0.4396	6	.	.	.	.	.
.	
.	
0.5594	27	8	30%	18	67%	0.4011	
0.5950	12	6	50%	5	42%	.	
.	
.	
0.6274	9	.	.	.	.	.
0.6833	9	.	.	.	.	.
.	
0.6968	9	.	.	.	.	.
0.6978	28	17	61%	11	39%	0.3849	
.	
.	
0.4279	12	4	33%	6	50%	.	
0.5101	17	2	12%	13	76%	.	
.	
0.5228	7	.	.	.	.	.
0.6505	10	4	40%	5	50%	.	
.	
0.8694	8	.	.	.	.	.
.	
0.6143	12	8	67%	4	33%	.	
.	
0.6375	8	.	.	.	.	.
.	
0.6750	25	16	64%	9	36%	0.4924	
0.8402	10	6	60%	3	30%	.	
.	
0.5557	17	6	35%	9	53%	.	
.	
0.6080	6	.	.	.	.	.

.
0.4875	8	.	.	.	.	.
0.7097	58	38	66%	18	31%	0.4279
.
.
0.6014	6	.	.	.	.	.
.
0.8811	5	.	.	.	.	.
.
.
0.6215	392	190	48%	178	45%	0.3831

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 2021. If a facility's predicted number of device days was <1.0 , a facility-specific SUR was neither calculated nor reported for that facility. Data for long-term acute care hospitals.

s), by device type and patient population:

Median			
25%	50%	75%	90%
.	.	.	.
.	.	.	.
.	.	.	.
0.6226	0.7073	0.7682	0.9402
.	.	.	.
.	.	.	.
0.4464	0.5018	0.7032	0.8603
.	.	.	.
.	.	.	.
.	.	.	.
0.5118	0.7693	0.9814	1.7041
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.5265	0.6719	0.8223	0.9710
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.

.	.	.	.
0.5783	0.7176	0.9103	1.0141
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.4689	0.6256	0.8199	1.0025

and inclusion criteria. Refer to the technical appendix for details
 ed device days in 2021.
 culated nor included in the distribution of facility-specific SURs.

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

State	No. of Facilities	No. of Device days			95% CI
		Observed	Predicted	SUR	Lower
Alabama	8	25,661	22,852.3214	1.1229	1.1092
Alaska	1	.	.	.	.
Arizona	6	19,847	26,697.9999	0.7434	0.7331
Arkansas	8	24,637	24,240.2227	1.0164	1.0037
California	22	159,294	164,160.7264	0.9704	0.9656
Colorado	6	24,329	31,546.2697	0.7712	0.7616
Connecticut	2	.	.	.	.
D.C.	1	.	.	.	.
Delaware	2	.	.	.	.
Florida	27	109,577	165,195.4402	0.6633	0.6594
Georgia	12	47,232	60,550.6311	0.7800	0.7730
Guam	0	.	.	.	.
Hawaii	1	.	.	.	.
Idaho	2	.	.	.	.
Illinois	9	49,269	59,563.4471	0.8272	0.8199
Indiana	9	30,378	39,481.7864	0.7694	0.7608
Iowa	2	.	.	.	.
Kansas	3	.	.	.	.
Kentucky	9	25,894	33,498.2238	0.7730	0.7636
Louisiana	28	95,304	94,718.7057	1.0062	0.9998
Maine	0	.	.	.	.
Maryland	2	.	.	.	.
Massachusetts	12	33,677	83,501.3939	0.4033	0.3990
Michigan	17	43,138	59,057.0613	0.7304	0.7236
Minnesota	2	.	.	.	.
Mississippi	7	21,635	30,252.5803	0.7151	0.7057
Missouri	10	33,778	40,853.5324	0.8268	0.8180
Montana	1	.	.	.	.
Nebraska	4	.	.	.	.
Nevada	8	33,339	36,447.9331	0.9147	0.9049
New Hampshire	0	.	.	.	.
New Jersey	12	34,105	43,812.8077	0.7784	0.7702
New Mexico	3	.	.	.	.
New York	1	.	.	.	.
North Carolina	8	29,057	38,391.2451	0.7569	0.7482
North Dakota	2	.	.	.	.
Ohio	25	75,824	98,449.9774	0.7702	0.7647
Oklahoma	10	47,484	43,123.5978	1.1011	1.0913
Oregon	1	.	.	.	.
Pennsylvania	17	45,716	65,480.7474	0.6982	0.6918
Puerto Rico	0	.	.	.	.
Rhode Island	0	.	.	.	.
South Carolina	6	14,980	26,813.5949	0.5587	0.5498

South Dakota	1	.	.	.	.
Tennessee	8	25,849	34,078.8752	0.7585	0.7493
Texas	58	263,370	296,560.9819	0.8881	0.8847
Utah	3	.	.	.	.
Vermont	0	.	.	.	.
Virgin Islands	0	.	.	.	.
Virginia	6	20,028	24,580.9001	0.8148	0.8035
Washington	1	.	.	.	.
West Virginia	5	22,381	16,292.7121	1.3737	1.3558
Wisconsin	4	.	.	.	.
Wyoming	0	.	.	.	.
All US	392	1,471,741	1,862,818.8341	0.7901	0.7888

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 2021 for long term acute care hospitals (LTACHs), b
 catheter days (UCDs), all locations⁴

for SUR	Facility-specific SURs					10%
	No. Facilities with ≥1 Predicted Device Days	No. Facilities with SUR Significantly > National SUR N		No. Facilities with SUR Significantly < National SUR N		
1.1367	8	.	.	.	.	.
0.7538	6	.	.	.	.	.
1.0291	8	.	.	.	.	.
0.9751	22	18	82%	3	14%	0.5174
0.7809	6	.	.	.	.	.

0.6672	27	6	22%	20	74%	0.4070
0.7871	12	4	33%	7	58%	.

0.8345	9	.	.	.	.	.
0.7781	9	.	.	.	.	.

0.7824	9	.	.	.	.	.
1.0126	28	20	71%	6	21%	0.5177

0.4076	12	2	17%	10	83%	.
0.7374	17	8	47%	8	47%	.

0.7247	7	.	.	.	.	.
0.8357	10	4	40%	6	60%	.

0.9246	8	.	.	.	.	.

0.7867	12	7	58%	4	33%	.

0.7656	8	.	.	.	.	.

0.7757	25	9	36%	16	64%	0.5358
1.1110	10	7	70%	2	20%	.

0.7046	17	6	35%	10	59%	.

0.5677	6	.	.	.	.	.

0.7678	8	.	.	.	.	.
0.8915	58	36	62%	17	29%	0.6052
.
0.8261	6	.	.	.	.	.
1.3918	5	.	.	.	.	.
.
0.7913	392	194	49%	179	46%	0.4712

ss than 5 reporting facilities. This may be different from those reported in the SIR tables due to exclusion a
 van the nominal value of the national SUR. This is only calculated if at least 10 facilities had ≥ 1.0 predicted
 /s in 2021. If a facility's predicted number of device days was <1.0 , a facility-specific SUR was neither calcul
 i long-term acute care hospitals.

.	.	.	.
.	.	.	.
0.7317	0.9188	1.1173	1.3662
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.6176	0.8069	1.0382	1.2796

and inclusion criteria. Refer to the technical appendix for detailed device days in 2021.
 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	6	8,256	9,091.2530	0.9081
Alaska	0	.	.	.
Arizona	1	.	.	.
Arkansas	2	.	.	.
California	17	135,150	91,308.3851	1.4801
Colorado	2	.	.	.
Connecticut	0	.	.	.
D.C.	0	.	.	.
Delaware	2	.	.	.
Florida	11	53,302	36,924.7199	1.4435
Georgia	6	16,618	21,162.6525	0.7853
Guam	0	.	.	.
Hawaii	1	.	.	.
Idaho	0	.	.	.
Illinois	8	44,447	32,578.3030	1.3643
Indiana	3	.	.	.
Iowa	0	.	.	.
Kansas	0	.	.	.
Kentucky	5	14,535	13,148.6672	1.1054
Louisiana	5	1,420	2,878.0100	0.4934
Maine	0	.	.	.
Maryland	2	.	.	.
Massachusetts	7	24,089	19,676.1321	1.2243
Michigan	4	.	.	.
Minnesota	0	.	.	.
Mississippi	2	.	.	.
Missouri	7	12,643	13,884.2424	0.9106
Montana	0	.	.	.
Nebraska	0	.	.	.
Nevada	4	.	.	.
New Hampshire	0	.	.	.
New Jersey	10	31,246	21,936.7446	1.4244
New Mexico	1	.	.	.
New York	1	.	.	.
North Carolina	3	.	.	.
North Dakota	0	.	.	.
Ohio	3	.	.	.
Oklahoma	2	.	.	.
Oregon	0	.	.	.
Pennsylvania	16	42,461	38,991.6896	1.0890
Puerto Rico	0	.	.	.
Rhode Island	0	.	.	.

South Carolina	6	13,477	14,267.6489	0.9446
South Dakota	0	.	.	.
Tennessee	8	28,769	23,982.4512	1.1996
Texas	23	63,645	61,338.8267	1.0376
Utah	1	.	.	.
Vermont	0	.	.	.
Virgin Islands	0	.	.	.
Virginia	1	.	.	.
Washington	1	.	.	.
West Virginia	3	.	.	.
Wisconsin	0	.	.	.
Wyoming	0	.	.	.
All US	174	616,827	495,377.9579	1.2452

1. The number of reporting facilities included in the SUR calculation; SURs are not calculated when there are no reported 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 value.
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.

SURs using device days data reported to NHSN during 2021 for long term acute care hospitals (LTACHs) - Table 4. Ventilator days (VDs), all locations⁴

<u>95% CI for SUR</u>		<u>Facility-specific SURs</u>				
<u>Lower</u>	<u>Upper</u>	<u>No. Facilities with ≥1 Predicted Device Days</u>	<u>No. Facilities with SUR Significantly > National SUR</u>	<u>No. Facilities with SUR</u>	<u>No. Facilities with SUR Significantly < National SUR</u>	
			<u>N</u>	<u>N</u>	<u>N</u>	
0.8887	0.9279	6
.
.
1.4723	1.4881	17	15	88%	2	12%
.
.
1.4313	1.4558	11	7	64%	3	27%
0.7734	0.7973	6
.
.
1.3517	1.3770	8
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1.0875	1.1235	5
0.4682	0.5196	5
.
.
1.2089	1.2398	7
.
.
0.8948	0.9266	7
.
.
1.4086	1.4402	10	9	90%	1	10%
.
.
.
1.0786	1.0994	16	4	25%	11	69%
.
.

0.9287	0.9606	6
.
1.1858	1.2135	8
1.0296	1.0457	23	5	22%	16	70%
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1.2421	1.2482	174	62	36%	98	56%

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 2021. 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.

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0.4676	0.6726	1.0701	1.2892	1.5513
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.
0.5309	0.8259	1.0881	1.4492	1.7567

on and inclusion criteria. Refer to the technical appendix for details.
 cted device days in 2021.
 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 2021 by HAI and patient population: Central line days (CLDs), urinary catheter days (UCDs), and ventilator days (VDs), 2021 compared to 2020

	2020 SUR	2021 SUR	Percent Change	Direction of Change, Based on Statistical Significance	p-value
CLDs, all locations¹	0.6692	0.6205	-7%	Decrease	<0.0001
ICU ²	0.6693	0.5926	-11%	Decrease	<0.0001
Ward ³	0.1209	0.3309	>>100%	Increase	<0.0001
UCDs, all locations¹	0.8029	0.7901	-2%	Decrease	<0.0001
	0.7304	0.6812	-7%	Decrease	<0.0001
	0.2724	0.3332	22%	Increase	<0.0001
VDs, all¹	1.2469	1.2452	0%	No Change	0.4358
ICUs ²	1.1703	1.1240	-4%	Decrease	<0.0001
Wards ³	0.0000	0.0000	0%	.	Inestimable

* 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 2020 and 2021 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				
	2020 SUR	2021 SUR	Percent Change ³	Direction of Change, Based on Statistical Significance	p-value
Alabama	0.6377	0.5816	-9%	Decrease	<0.0001
Alaska	.	.	.	.	.
Arizona	0.6316	0.5717	-9%	Decrease	<0.0001
Arkansas	0.5665	0.5728	1%	No Change	0.2545
California	0.6856	0.6725	-2%	Decrease	<0.0001
Colorado	0.4993	0.4335	-13%	Decrease	<0.0001
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.6116	0.5563	-9%	Decrease	<0.0001
Georgia	0.6892	0.5898	-14%	Decrease	<0.0001
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	0.6321	0.6221	-2%	Decrease	0.0070
Indiana	0.7120	0.6763	-5%	Decrease	<0.0001
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	0.6932	0.6894	1%	No Change	0.4697
Louisiana	0.7257	0.6937	-4%	Decrease	<0.0001
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	0.4975	0.4242	-15%	Decrease	<0.0001
Michigan	0.5498	0.5054	-8%	Decrease	<0.0001
Minnesota	.	.	.	.	.
Mississippi	0.5021	0.5162	3%	Increase	0.0028
Missouri	0.6863	0.6438	-6%	Decrease	<0.0001
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	0.9340	0.8613	-8%	Decrease	<0.0001
New Hampshire	.	.	.	.	.
New Jersey	0.7241	0.6082	-16%	Decrease	<0.0001
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	0.8284	0.6309	-24%	Decrease	<0.0001
North Dakota	.	.	.	.	.
Ohio	0.6974	0.6707	-4%	Decrease	<0.0001
Oklahoma	0.8594	0.8330	-3%	Decrease	<0.0001
Oregon	.	.	.	.	.
Pennsylvania	0.6004	0.5509	-8%	Decrease	<0.0001
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	0.6843	0.6002	-12%	Decrease	<0.0001
South Dakota	.	.	.	.	.
Tennessee	0.4866	0.4816	1%	No Change	0.2258
Texas	0.7564	0.7072	-6%	Decrease	<0.0001
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	0.7608	0.5932	-22%	Decrease	<0.0001
Washington	.	.	.	.	.
West Virginia	0.7534	0.8695	15%	Increase	<0.0001
Wisconsin	.	.	.	.	.
Wyoming	.	.	.	.	.
All US	0.6692	0.6205	-7%	Decrease	<0.0001

* 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 2020 and/or 2021.

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 2020 and 2021 from NHSN Long Term Acute Care Hospitals
6b. Urinary catheter days (UCDs), all locations¹

	All Long Term Acute Care Hospitals Reporting to NHSN				
	2020 SUR	2021 SUR	Direction of Change, Based on Statistical Significance		p-value
Alabama	1.0211	1.1229	10%	Increase	<0.0001
Alaska	.	.	.	.	.
Arizona	0.8002	0.7434	-7%	Decrease	<0.0001
Arkansas	0.8863	1.0164	15%	Increase	<0.0001
California	0.9452	0.9704	3%	Increase	<0.0001
Colorado	0.8756	0.7712	-12%	Decrease	<0.0001
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.7158	0.6633	-7%	Decrease	<0.0001
Georgia	0.7478	0.7800	4%	Increase	<0.0001
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	0.8524	0.8272	-3%	Decrease	<0.0001
Indiana	0.7821	0.7694	-2%	Decrease	0.0379
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	0.7666	0.7730	1%	No Change	0.3450
Louisiana	0.9794	1.0062	3%	Increase	<0.0001
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	0.4284	0.4033	-6%	Decrease	<0.0001
Michigan	0.8001	0.7304	-9%	Decrease	<0.0001
Minnesota	.	.	.	.	.
Mississippi	0.7516	0.7151	-5%	Decrease	<0.0001
Missouri	0.7466	0.8268	11%	Increase	<0.0001
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	1.0004	0.9147	-9%	Decrease	<0.0001
New Hampshire	.	.	.	.	.
New Jersey	0.9174	0.7784	-15%	Decrease	<0.0001
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	0.8451	0.7569	-10%	Decrease	<0.0001
North Dakota	.	.	.	.	.
Ohio	0.8153	0.7702	-6%	Decrease	<0.0001
Oklahoma	1.1621	1.1011	-5%	Decrease	<0.0001
Oregon	.	.	.	.	.
Pennsylvania	0.7295	0.6982	-4%	Decrease	<0.0001
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	0.5779	0.5587	-3%	Decrease	0.0023
South Dakota	.	.	.	.	.
Tennessee	0.7186	0.7585	6%	Increase	<0.0001
Texas	0.8369	0.8881	6%	Increase	<0.0001
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	0.8392	0.8148	-3%	Decrease	0.0026
Washington	.	.	.	.	.
West Virginia	1.1169	1.3737	23%	Increase	<0.0001
Wisconsin	.	.	.	.	.
Wyoming	.	.	.	.	.
All US	0.8029	0.7901	-2%	Decrease	<0.0001

* 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 2020 and/or 2021.

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 2020 and 2021 from NHSN Long Term Acute Care Hospitals
6c. Ventilator days (VDs), all locations¹

	All Long Term Acute Care Hospitals Reporting to NHSN				
	2020 SUR	2021 SUR	Direction of Change, Based on Statistical Significance		p-value
Alabama	0.8072	0.9081	12%	Increase	0.0000
Alaska	.	.	.	.	.
Arizona	.	.	.	.	.
Arkansas	.	.	.	.	.
California	1.4218	1.4801	4%	Increase	0.0000
Colorado	.	.	.	.	.
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	1.5056	1.4435	-4%	Decrease	0.0000
Georgia	1.0101	0.7853	-22%	Decrease	0.0000
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	1.2655	1.3643	8%	Increase	0.0000
Indiana	.	.	.	.	.
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	1.1346	1.1054	-3%	Decrease	0.0291
Louisiana	0.6956	0.4934	-29%	Decrease	0.0000
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	1.0922	1.2243	12%	Increase	0.0000
Michigan	1.4690	.	.	.	.
Minnesota	.	.	.	.	.
Mississippi	.	.	.	.	.
Missouri	0.8462	0.9106	8%	Increase	0.0000
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	.	.	.	.	.
New Hampshire	.	.	.	.	.
New Jersey	1.3132	1.4244	8%	Increase	0.0000
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	.	.	.	.	.
North Dakota	.	.	.	.	.
Ohio	1.3357	.	.	.	.
Oklahoma	0.7093	.	.	.	.
Oregon	.	.	.	.	.
Pennsylvania	1.1492	1.0890	-5%	Decrease	0.0000
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	0.9095	0.9446	4%	Increase	0.0017
South Dakota	.	.	.	.	.
Tennessee	1.1712	1.1996	2%	Increase	0.0043
Texas	0.9506	1.0376	9%	Increase	0.0000
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	.	.	.	.	.
Washington	.	.	.	.	.
West Virginia	.	.	.	.	.
Wisconsin	.	.	.	.	.
Wyoming	.	.	.	.	.
All US	1.2469	1.2452	0%	No Change	0.4358

* 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 2020 and/or 2021.

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.