

# 2022 National and State HAI Data Report

**Introduction:**

Welcome to the 2022 National and State HAI Data Report using the 2015 baseline by comparing the number of observed device days to the number of predicted device days. 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

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# National and State HAI Progress Report

## Standardized Utilization Ratios

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### Inpatient Rehabilitation Facilities

and risk adjustment calculations. Standardized utilization ratios (SURs) are used to describe device-assisted ventilator days.

(IHSN).

IRF	
National	State
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]

sociated HAIs

## 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 standardized to compare with a reference baseline population as well as over time. Accordingly, CDC has

### **Development of SUR models**

SUR models were developed for the following measures: central line days, urinary catheter days and ventilator inpatient rehabilitation facilities (IRF), long-term acute care hospitals (LTACH) (and NICU for central line). 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 is

### **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

### **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).

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

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

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

tilator days. They were available for the healthcare setting of acute care hospitals (ACH), critical access hospit: days).

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

redicted device days;

1.0.

cility-level).

number of predicted device days.

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

als (CAH),

## 2022 Annual National and State HAI Progress Report

### Inpatient Rehabilitation Facilities: Full series of tables for all national and state data

<b>Table 1</b>	<b>National standardized utilization ratios (SURs) and facility-specific summary SURs:</b> Central line days (CLDs) Urinary catheter days (UCDs) Ventilator days (VDs)
<b>Table 2</b>	<b>State-specific SURs for CLDs from Inpatient rehabilitation facilities:</b> All locations combined
<b>Table 3</b>	<b>State-specific SURs for UCDs from Inpatient rehabilitation facilities:</b> All locations combined
<b>Table 4</b>	<b>State-specific SURs for VDs from Inpatient rehabilitation facilities</b> All locations combined
<b>Table 5</b>	<b>Changes in national SURs, 2022 compared to 2021:</b> Central Line Days (CLDs) Urinary Catheter Days (UCDs) Ventilator days (VDs)
<b>Table 6</b>	<b>Changes in state SURs, 2022 compared to 2021:</b> 6a. Central Line Days (CLDs) 6b. Urinary Catheter Days (UCDs) 6c. Ventilator Days (VDs)
<b>Appendix A</b>	Factors used in NHSN risk-adjusted SUR calculation of the device utilization in inpatient ref
<b>Additional Resources</b>	Technical Appendix HAI Progress Report Home Page SUR Guide: <a href="https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sur-guid">https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sur-guid</a>

Rehabilitation facilities (IRFs)

e-508.pdf



Device and Patient Population	No. of Facilities Reporting <sup>1</sup>	No. of Device Days	
		Observed	Predicted
<b>Central line days, all<sup>4</sup></b>	741	392,961	470,453.7810
<b>ICUs<sup>5</sup></b>	159	150,147	197,400.3754
<b>Wards<sup>6</sup></b>	582	242,814	273,053.4056
<b>Urinary catheter days, all<sup>4</sup></b>	1,171	722,975	771,735.0871
	410	453,660	462,812.5889
<b>Wards<sup>6</sup></b>	761	269,315	308,922.4982
<b>Ventilator days, all<sup>4</sup></b>	37	1,854	1,792.2040
	8	1,044	642.4930
	29	810	1,149.7111

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 t
3. Facility-specific percentiles are only calculated if at least 20 facilities had  $\geq 1.0$  predicted number of device da
4. Data from all ICUs, wards, and other non-critical care locations. Data contained in this table are reported fron
5. Data from all ICUs; excludes wards (and other non-critical care locations). Data contained in this table are rej
6. Data from all wards (for this table, wards also include step-down, mixed acuity, and specialty care areas [incl

**Table 1. National standardized utilization ratios (SURs) and facility-specific summary**  
**Table 1. Central line days (CLDs), urinary**

SUR	95% CI for SUR		No. Facilities with ≥1 Predicted Device Days	Facility-specific SURs		
	Lower	Upper		No. Facilities with SUR	No. Facilities Significantly > National SUR	No. Facilities Significantly < National SUR
				N	% <sup>2</sup>	N
0.8353	0.8327	0.8379	741	289	39%	342
0.7606	0.7568	0.7645	159	64	40%	74
0.8893	0.8857	0.8928	582	209	36%	287
0.9368	0.9347	0.9390	1,171	448	38%	538
0.9802	0.9774	0.9831	410	165	40%	184
0.8718	0.8685	0.8751	761	293	39%	341
1.0345	0.9882	1.0824	37	7	19%	28
1.6249	1.5286	1.7258	8	.	.	.
0.7045	0.6573	0.7543	29	6	21%	20

less than 5 reporting facilities. This may be different from those reported in the SIR tables due to exclusion of facilities with a national SUR 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 inpatient rehabilitation facilities; as such, data from ACHs, CAHs and LTACHs are excluded (including hematology/oncology, bone marrow transplant). Data contained in this table are reported from inpatient rehabilitation facilities; as such, data from ACHs, CAHs and LTACHs are excluded (including hematology/oncology, bone marrow transplant).

of SURs using device days data reported to NHSN during 2022 for inpatient rehabilitation facilities (IRF), urinary catheter days (UCDs), and ventilator days (VDs).

Facilities with SUR	Percentile							
	5%	10%	15%	20%	25%	30%	35%	40%
National SUR								
46%	0.2025	0.3410	0.4058	0.4699	0.5158	0.5701	0.6193	0.6737
47%	0.2375	0.3340	0.4357	0.4752	0.5133	0.5426	0.5943	0.6305
49%	0.1570	0.3410	0.4056	0.4609	0.5169	0.5708	0.6277	0.6814
46%	0.2639	0.3900	0.4934	0.5623	0.6158	0.6716	0.7338	0.7837
45%	0.3425	0.4814	0.5886	0.6546	0.7400	0.7842	0.8348	0.8788
45%	0.2431	0.3469	0.4652	0.5274	0.5711	0.6232	0.6772	0.7310
76%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
69%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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

d.  
 patient rehabilitation facilities.

ns), by device type and patient population:

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**ile Distribution of Facility-specific SURs<sup>3</sup>**

<b>Median</b>									
<b>45%</b>	<b>50%</b>	<b>55%</b>	<b>60%</b>	<b>65%</b>	<b>70%</b>	<b>75%</b>	<b>80%</b>	<b>85%</b>	<b>90%</b>
0.7297	0.7922	0.8546	0.9068	0.9737	1.0232	1.0893	1.1757	1.2743	1.4346
0.6921	0.7382	0.7805	0.8362	0.8846	0.9210	0.9903	1.0349	1.1268	1.2552
0.7418	0.8103	0.8714	0.9456	1.0062	1.0597	1.1211	1.1989	1.3466	1.5018
0.8355	0.8845	0.9455	0.9968	1.0619	1.1127	1.1849	1.2596	1.3636	1.5075
0.9081	0.9694	1.0081	1.0474	1.0968	1.1646	1.2164	1.2672	1.3326	1.4700
0.7737	0.8331	0.8903	0.9483	1.0305	1.0963	1.1532	1.2404	1.3736	1.5103
0.0000	0.0000	0.0000	0.0000	0.1694	0.4259	0.8361	1.1632	1.5772	2.0362
0.0000	0.0000	0.0000	0.0331	0.1694	0.6835	0.8361	1.1632	1.4820	1.6730

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**95%**

1.7241

1.3905

1.8158

1.7764

1.6895

1.8195

4.6515

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2.0362

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

State	No. of Facilities	No. of Device Days			95% CI	
		Observed	Predicted	SUR	Lower	Upper
Alabama	8	4,566	5,044.4059	0.9052	0.8792	
Alaska	1	.	.	.	.	.
Arizona	8	3,151	4,317.7546	0.7298	0.7046	
Arkansas	12	6,138	6,869.3816	0.8935	0.8714	
California	73	39,785	51,241.6797	0.7764	0.7688	
Colorado	18	11,973	12,345.8499	0.9698	0.9525	
Connecticut	5	1,164	1,683.0189	0.6916	0.6527	
Delaware	4	.	.	.	.	.
D.C.	2	.	.	.	.	.
Florida	29	19,858	27,872.5355	0.7125	0.7026	
Georgia	19	8,902	9,323.5316	0.9548	0.9351	
Guam	0	.	.	.	.	.
Hawaii	0	.	.	.	.	.
Idaho	4	.	.	.	.	.
Illinois	30	19,933	20,999.3657	0.9492	0.9361	
Indiana	26	14,427	15,935.7641	0.9053	0.8906	
Iowa	13	4,751	4,415.6056	1.0760	1.0457	
Kansas	10	4,941	4,087.9684	1.2087	1.1753	
Kentucky	10	6,375	7,733.8353	0.8243	0.8043	
Louisiana	24	9,152	9,609.9858	0.9523	0.9330	
Maine	4	.	.	.	.	.
Maryland	3	.	.	.	.	.
Massachusetts	6	3,212	3,077.9612	1.0435	1.0079	
Michigan	23	12,631	13,031.7750	0.9692	0.9525	
Minnesota	6	3,134	3,020.0719	1.0377	1.0019	
Mississippi	8	2,756	2,270.7154	1.2137	1.1690	
Missouri	19	6,747	9,423.4873	0.7160	0.6990	
Montana	3	.	.	.	.	.
Nebraska	7	1,837	2,220.2097	0.8274	0.7902	
Nevada	7	7,820	10,413.7379	0.7509	0.7344	
New Hampshire	2	.	.	.	.	.
New Jersey	6	4,307	6,964.9449	0.6184	0.6001	
New Mexico	4	.	.	.	.	.
New York	38	18,210	21,103.0630	0.8629	0.8504	
North Carolina	14	14,033	16,803.6797	0.8351	0.8214	
North Dakota	2	.	.	.	.	.
Ohio	28	13,655	14,395.3368	0.9486	0.9328	
Oklahoma	14	5,682	5,457.5786	1.0411	1.0143	
Oregon	6	1,219	2,057.5003	0.5925	0.5599	
Pennsylvania	67	48,158	58,906.6633	0.8175	0.8103	
Puerto Rico	2	.	.	.	.	.
Rhode Island	2	.	.	.	.	.
South Carolina	25	14,451	22,641.5498	0.6383	0.6279	

South Dakota	3	.	.	.	.
Tennessee	18	6,919	10,925.0172	0.6333	0.6185
Texas	74	37,597	42,757.8805	0.8793	0.8704
Utah	5	2,370	2,575.8062	0.9201	0.8836
Vermont	2	.	.	.	.
Virgin Islands	0	.	.	.	.
Virginia	13	7,878	9,077.0890	0.8679	0.8489
Washington	12	4,671	6,109.2379	0.7646	0.7429
West Virginia	3	.	.	.	.
Wisconsin	18	5,846	6,258.3573	0.9341	0.9104
Wyoming	1	.	.	.	.
<b>All US</b>	<b>741</b>	<b>392,961</b>	<b>470,453.7810</b>	<b>0.8353</b>	<b>0.8327</b>

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

Rs using device days data reported to NHSN during 2022 for inpatient rehabilitation facilities (IRFs)  
 Table 2. Central line days (CLDs), all locations<sup>4</sup>

for SUR	Facility-specific SURs					10%
	No. Facilities with ≥1 Predicted Device Days	No. Facilities with SUR Significantly > National SUR	No. Facilities with SUR Significantly < National SUR			
Upper		N		N		
0.9317	8	.	.	.	.	.
.	.	.	.	.	.	.
0.7556	8	.	.	.	.	.
0.9161	12	3	25%	4	33%	.
0.7841	73	22	30%	40	55%	0.3113
0.9873	18	11	61%	6	33%	.
0.7322	5	.	.	.	.	.
.	.	.	.	.	.	.
0.7224	29	6	21%	17	59%	0.3631
0.9748	19	12	63%	4	21%	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.9625	30	17	57%	9	30%	0.3896
0.9202	26	15	58%	9	35%	0.4917
1.1069	13	4	31%	7	54%	.
1.2427	10	5	50%	4	40%	.
0.8447	10	2	20%	5	50%	.
0.9720	24	12	50%	9	38%	0.3358
.	.	.	.	.	.	.
.	.	.	.	.	.	.
1.0801	6	.	.	.	.	.
0.9862	23	10	43%	8	35%	0.5549
1.0745	6	.	.	.	.	.
1.2596	8	.	.	.	.	.
0.7332	19	3	16%	12	63%	.
.	.	.	.	.	.	.
0.8659	7	.	.	.	.	.
0.7677	7	.	.	.	.	.
.	.	.	.	.	.	.
0.6371	6	.	.	.	.	.
.	.	.	.	.	.	.
0.8755	38	16	42%	20	53%	0.1569
0.8490	14	6	43%	8	57%	.
.	.	.	.	.	.	.
0.9646	28	13	46%	11	39%	0.4194
1.0684	14	7	50%	7	50%	.
0.6264	6	.	.	.	.	.
0.8248	67	29	43%	29	43%	0.3685
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.6487	25	7	28%	18	72%	0.2937



0.6484	18	2	11%	11	61%	
0.8882	74	28	38%	29	39%	0.4156
0.9577	5	.	.	.	.	.
.	.	.	.	.	.	.
0.8872	13	7	54%	4	31%	.
0.7867	12	2	17%	9	75%	.
.	3	.	.	.	.	.
0.9583	18	9	50%	7	39%	.
.	.	.	.	.	.	.
<b>0.8379</b>	<b>741</b>	<b>289</b>	<b>39%</b>	<b>342</b>	<b>46%</b>	<b>0.3410</b>

There are less than 5 reporting facilities. This may be different from those reported in the SIR tables due to error or less than the nominal value of the national SUR. This is only calculated if at least 10 facilities had ≥ 1.0 device days in 2022. If a facility's predicted number of device days was <1.0, a facility-specific SUR was not reported from inpatient rehabilitation facilities.

, by device type and patient population:

<b>Median</b>			
<b>25%</b>	<b>50%</b>	<b>75%</b>	<b>90%</b>
.	.	.	.
.	.	.	.
.	.	.	.
0.4647	0.7164	0.9415	1.1875
.	.	.	.
.	.	.	.
.	.	.	.
0.5296	0.6522	0.8726	1.0067
.	.	.	.
.	.	.	.
.	.	.	.
0.7630	0.9812	1.1931	1.4527
0.5892	1.0097	1.5069	1.6700
.	.	.	.
.	.	.	.
0.4257	0.9257	1.3567	1.6035
.	.	.	.
.	.	.	.
0.6065	0.8660	1.1551	1.3501
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.3986	0.6410	1.2228	1.7241
.	.	.	.
0.5497	0.8918	1.2194	1.5965
.	.	.	.
0.5460	0.8138	1.1684	1.5139
.	.	.	.
0.4614	0.5585	0.9456	1.1916

.	.	.	.
.	.	.	.
0.5708	0.8232	1.0931	1.7722
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
<b>0.5158</b>	<b>0.7922</b>	<b>1.0893</b>	<b>1.4346</b>

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







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**Table 3. State-specific standardized utilization ratios (SURs) and facility-specific summary SUR**

Table

State	No. of Facilities	No. of Device Days			95% CI
		Observed	Predicted	SUR	Lower
Alabama	18	21,503	17,805.8685	1.2076	1.1915
Alaska	2	.	.	.	.
Arizona	22	19,059	18,529.0662	1.0286	1.0141
Arkansas	26	18,266	16,821.8874	1.0858	1.0702
California	75	35,019	44,785.9481	0.7819	0.7738
Colorado	20	11,287	11,530.0449	0.9789	0.9610
Connecticut	7	1,892	3,289.5237	0.5752	0.5497
D.C.	4	.	.	.	.
Delaware	2	.	.	.	.
Florida	68	55,508	62,430.1386	0.8891	0.8818
Georgia	31	15,494	17,383.1740	0.8913	0.8774
Guam	0	.	.	.	.
Hawaii	1	.	.	.	.
Idaho	6	2,697	3,042.4208	0.8865	0.8535
Illinois	42	24,384	29,094.0960	0.8381	0.8276
Indiana	36	20,235	19,944.7584	1.0146	1.0007
Iowa	18	5,802	6,199.8816	0.9358	0.9120
Kansas	19	10,192	9,712.9561	1.0493	1.0291
Kentucky	16	11,883	13,087.0498	0.9080	0.8918
Louisiana	56	20,125	20,163.5677	0.9981	0.9844
Maine	5	2,228	2,767.9570	0.8049	0.7720
Maryland	4	.	.	.	.
Massachusetts	12	17,070	16,095.5804	1.0605	1.0447
Michigan	39	19,439	21,650.2272	0.8979	0.8853
Minnesota	11	4,168	4,997.8685	0.8340	0.8089
Mississippi	11	3,579	5,689.8189	0.6290	0.6087
Missouri	31	17,344	18,313.8325	0.9470	0.9330
Montana	4	.	.	.	.
Nebraska	10	4,130	5,109.5662	0.8083	0.7839
Nevada	10	13,950	12,057.9077	1.1569	1.1378
New Hampshire	7	3,973	5,023.7525	0.7908	0.7665
New Jersey	17	19,603	22,256.7526	0.8808	0.8685
New Mexico	9	6,000	5,682.6677	1.0558	1.0294
New York	44	17,699	27,160.6458	0.6516	0.6421
North Carolina	25	13,323	18,756.1149	0.7103	0.6983
North Dakota	5	1,373	2,150.3940	0.6385	0.6054
Ohio	52	26,814	30,235.4022	0.8868	0.8762
Oklahoma	23	11,986	12,795.7964	0.9367	0.9200
Oregon	8	1,711	2,910.1247	0.5879	0.5606
Pennsylvania	68	46,127	48,257.9813	0.9558	0.9471
Puerto Rico	5	1,876	3,527.0659	0.5319	0.5082
Rhode Island	4	.	.	.	.
South Carolina	26	15,257	18,740.7244	0.8141	0.8013



South Dakota	4	.	.	.	.
Tennessee	30	18,089	20,031.1162	0.9030	0.8899
Texas	154	124,064	109,031.3099	1.1379	1.1315
Utah	11	4,112	5,063.4724	0.8121	0.7876
Vermont	2	.	.	.	.
Virgin Islands	0	.	.	.	.
Virginia	26	15,359	19,128.5182	0.8029	0.7903
Washington	14	10,267	6,496.4207	1.5804	1.5500
West Virginia	8	8,390	6,691.0560	1.2539	1.2273
Wisconsin	20	6,581	7,052.1108	0.9332	0.9109
Wyoming	3	.	.	.	.
<b>All US</b>	<b>1,171</b>	<b>722,975</b>	<b>771,735.0871</b>	<b>0.9368</b>	<b>0.9347</b>

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 facility-specific percentile.
3. Facility-specific percentiles are only calculated if at least 20 facilities had  $\geq 1.0$  predicted number of device days.
4. Data from all ICUs, wards, and other non-critical care locations. Data contained in this table are reported for the entire year.

Is using device days data reported to NHSN during 2022 for inpatient rehabilitation facilities (IRFs),  
 e 3. Urinary catheter days (UCDs), all locations<sup>4</sup>

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	N				
1.2238	18	12	67%	4	22%	.	
.	.	.	.	.	.	.	
1.0433	22	9	41%	9	41%	0.6581	
1.1017	26	14	54%	7	27%	0.7389	
0.7901	75	17	23%	50	67%	0.3421	
0.9971	20	6	30%	9	45%	0.4422	
0.6015	7	.	.	.	.	.	
.	.	.	.	.	.	.	
.	.	.	.	.	.	.	
0.8965	68	24	35%	27	40%	0.3904	
0.9054	31	10	32%	18	58%	0.4707	
.	.	.	.	.	.	.	
.	.	.	.	.	.	.	
0.9204	6	.	.	.	.	.	
0.8487	42	11	26%	19	45%	0.4591	
1.0286	36	18	50%	9	25%	0.6082	
0.9601	18	7	39%	8	44%	.	
1.0698	19	9	47%	8	42%	.	
0.9244	16	7	44%	8	50%	.	
1.0120	56	22	39%	24	43%	0.2728	
0.8389	5	.	.	.	.	.	
.	.	.	.	.	.	.	
1.0765	12	7	58%	3	25%	.	
0.9106	39	18	46%	18	46%	0.4057	
0.8596	11	4	36%	6	55%	.	
0.6499	11	2	18%	8	73%	.	
0.9612	31	9	29%	17	55%	0.4648	
.	.	.	.	.	.	.	
0.8332	10	2	20%	7	70%	.	
1.1763	10	7	70%	2	20%	.	
0.8157	7	.	.	.	.	.	
0.8932	17	5	29%	6	35%	.	
1.0828	9	.	.	.	.	.	
0.6613	44	8	18%	31	70%	0.1870	
0.7225	25	6	24%	17	68%	0.3904	
0.6729	5	.	.	.	.	.	
0.8975	52	20	38%	21	40%	0.3552	
0.9536	23	10	43%	11	48%	0.3903	
0.6163	8	.	.	.	.	.	
0.9646	68	31	46%	26	38%	0.5650	
0.5564	5	.	.	.	.	.	
.	.	.	.	.	.	.	
0.8271	26	4	15%	18	69%	0.4931	

0.9163	30	10	33%	15	50%	0.4328
1.1442	154	87	56%	47	31%	0.5219
0.8372	11	4	36%	6	55%	.
.	.	.	.	.	.	.
0.8157	26	6	23%	19	73%	0.3304
1.6112	14	8	57%	2	14%	.
1.2809	8	.	.	.	.	.
0.9560	20	6	30%	9	45%	0.4846
.	.	.	.	.	.	.
<b>0.9390</b>	<b>1,171</b>	<b>448</b>	<b>38%</b>	<b>538</b>	<b>46%</b>	<b>0.3900</b>

≥ less than 5 reporting facilities. This may be different from those reported in the SIR tables due to exclusions less 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 nor reported from inpatient rehabilitation facilities.

**by device type and patient population:**

<b>Median</b>			
<b>25%</b>	<b>50%</b>	<b>75%</b>	<b>90%</b>
.	.	.	.
.	.	.	.
0.7689	0.9230	1.3593	1.5950
0.8655	1.0813	1.3760	1.7092
0.5615	0.7242	0.9268	1.4048
0.6466	0.9128	1.1150	1.6194
.	.	.	.
.	.	.	.
.	.	.	.
0.7132	0.9067	1.0780	1.2800
0.5425	0.7999	1.1504	1.4180
.	.	.	.
.	.	.	.
0.6622	0.8938	1.0110	1.2653
0.7686	1.0722	1.5108	1.7764
.	.	.	.
.	.	.	.
.	.	.	.
0.5611	0.8924	1.3051	1.8706
.	.	.	.
.	.	.	.
0.5536	0.9820	1.2072	1.4934
.	.	.	.
.	.	.	.
0.5653	0.7776	1.0619	1.2273
.	.	.	.
.	.	.	.
.	.	.	.
0.3386	0.6582	0.9135	1.1698
0.5060	0.5735	0.9698	1.3939
.	.	.	.
0.6793	0.9527	1.1705	1.4247
0.5023	0.8867	1.3158	1.4885
.	.	.	.
0.6715	0.9838	1.1544	1.3762
.	.	.	.
.	.	.	.
0.6662	0.7613	0.9478	1.2404

0.5378	0.8569	1.0273	1.3318
0.7826	1.0723	1.3492	1.6210
0.5043	0.7518	0.9664	1.1545
0.6569	0.7908	1.1238	1.8015
<b>0.6158</b>	<b>0.8845</b>	<b>1.1849</b>	<b>1.5075</b>

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.









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

State	No. of Facilities	No. of Device Days			95% CI
		Observed	Predicted	SUR	Lower
Alabama	0	.	.	.	.
Alaska	0	.	.	.	.
Arizona	0	.	.	.	.
Arkansas	0	.	.	.	.
California	7	389	345.9983	1.1243	1.0166
Colorado	0	.	.	.	.
Connecticut	0	.	.	.	.
D.C.	0	.	.	.	.
Delaware	1	.	.	.	.
Florida	0	.	.	.	.
Georgia	1	.	.	.	.
Guam	0	.	.	.	.
Hawaii	0	.	.	.	.
Idaho	0	.	.	.	.
Illinois	1	.	.	.	.
Indiana	1	.	.	.	.
Iowa	0	.	.	.	.
Kansas	0	.	.	.	.
Kentucky	0	.	.	.	.
Louisiana	2	.	.	.	.
Maine	0	.	.	.	.
Maryland	0	.	.	.	.
Massachusetts	2	.	.	.	.
Michigan	3	.	.	.	.
Minnesota	0	.	.	.	.
Mississippi	0	.	.	.	.
Missouri	0	.	.	.	.
Montana	0	.	.	.	.
Nebraska	0	.	.	.	.
Nevada	1	.	.	.	.
New Hampshire	0	.	.	.	.
New Jersey	0	.	.	.	.
New Mexico	0	.	.	.	.
New York	3	.	.	.	.
North Carolina	0	.	.	.	.
North Dakota	0	.	.	.	.
Ohio	1	.	.	.	.
Oklahoma	1	.	.	.	.
Oregon	0	.	.	.	.
Pennsylvania	6	1,186	465.3315	2.5487	2.4068
Puerto Rico	1	.	.	.	.

Rhode Island	0	.	.	.	.
South Carolina	1	.	.	.	.
South Dakota	0	.	.	.	.
Tennessee	2	.	.	.	.
Texas	2	.	.	.	.
Utah	0	.	.	.	.
Vermont	0	.	.	.	.
Virgin Islands	0	.	.	.	.
Virginia	0	.	.	.	.
Washington	0	.	.	.	.
West Virginia	1	.	.	.	.
Wisconsin	0	.	.	.	.
Wyoming	0	.	.	.	.
<b>All US</b>	<b>37</b>	<b>1,854</b>	<b>1,792.2040</b>	<b>1.0345</b>	<b>0.9882</b>

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

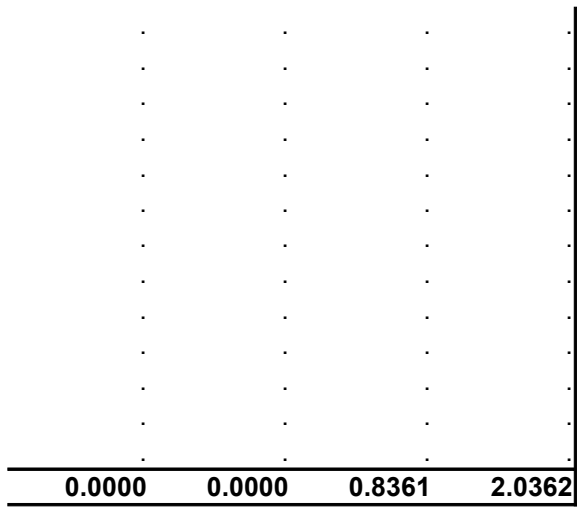
Using device days data reported to NHSN during 2022 for inpatient rehabilitation facilities (IRFs), k  
 Table 4. Ventilator days (VDs), all locations<sup>4</sup>

for SUR	Facility-specific SURs			10%
	Upper	No. Facilities with ≥1 Predicted Device Days	No. Facilities with SUR Significantly > National SUR N	
1.2403	7	.	.	.
2.6968	6	.	.	.

.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
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.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
1.0824	37	7	19%	28	76%	0.0000

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 in the tables for inpatient rehabilitation facilities.





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







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**Table 5. Changes in national standardized utilization ratios (SURs) using HAI data reported from all NHSN inpatient rehabilitation facilities 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
<b>CLDs, all locations<sup>1</sup></b>	0.8582	0.8353	3%	Decrease	0.0000
ICU <sup>2</sup>	0.7892	0.7606	4%	Decrease	0.0000
Ward <sup>3</sup>	0.9040	0.8893	2%	Decrease	0.0000
<b>UCDs, all locations<sup>1</sup></b>	0.9386	0.9368	0%	No change	0.2665
	0.9950	0.9802	1%	Decrease	0.0000
	0.8599	0.8718	1%	Increase	0.0000
<b>VDs, all locations<sup>1</sup></b>	1.0340	1.0345	0%	No change	0.9892
ICUs <sup>2</sup>	1.8059	1.6249	10%	Decrease	0.0135
Wards <sup>3</sup>	0.5753	0.7045	22%	Increase	0.0001

\* 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 transplai

nt]).

**Table 6. Changes in state-specific standardized utilization ratios (SURs) between 2021 and 2022 from NHSN Inpatient Rehabilitation Facilities**  
**6a. Central line days (CLDs), all locations<sup>1</sup>**

State <sup>2</sup>	All Inpatient Rehabilitation Facilities Reporting to NHSN				
	2021 SUR	2022 SUR	Percent Change <sup>3</sup>	Direction of Change, Based on Statistical Significance	p-value
Alabama	1.0086	0.9052	10%	Decrease	0.0000
Alaska	.	.	.	.	.
Arizona	0.8699	0.7298	16%	Decrease	0.0000
Arkansas	0.7863	0.8935	14%	Increase	0.0000
California	0.8263	0.7764	6%	Decrease	0.0000
Colorado	0.9731	0.9698	0%	No change	0.8003
Connecticut	0.7049	0.6916	2%	No change	0.6380
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.7642	0.7125	7%	Decrease	0.0000
Georgia	1.1666	0.9548	18%	Decrease	0.0000
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	0.9137	0.9492	4%	Increase	0.0001
Indiana	0.9757	0.9053	7%	Decrease	0.0000
Iowa	1.0271	1.0760	5%	Increase	0.0251
Kansas	1.7663	1.2087	32%	Decrease	0.0000
Kentucky	0.8379	0.8243	2%	No change	0.3755
Louisiana	0.9222	0.9523	3%	Increase	0.0288
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	0.9755	1.0435	7%	Increase	0.0051
Michigan	0.9841	0.9692	2%	No change	0.2320
Minnesota	0.9830	1.0377	6%	Increase	0.0318
Mississippi	0.9929	1.2137	22%	Increase	0.0000
Missouri	0.8064	0.7160	11%	Decrease	0.0000
Montana	.	.	.	.	.
Nebraska	0.7025	0.8274	18%	Increase	0.0000
Nevada	0.7860	0.7509	4%	Decrease	0.0048
New Hampshire	.	.	.	.	.
New Jersey	0.5744	0.6184	8%	Increase	0.0007
New Mexico	.	.	.	.	.
New York	0.9206	0.8629	6%	Decrease	0.0000
North Carolina	0.8653	0.8351	3%	Decrease	0.0029
North Dakota	.	.	.	.	.
Ohio	1.0105	0.9486	6%	Decrease	0.0000
Oklahoma	1.0267	1.0411	1%	No change	0.4707
Oregon	0.6587	0.5925	10%	Decrease	0.0066
Pennsylvania	0.8496	0.8175	4%	Decrease	0.0000
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	0.5358	0.6383	19%	Increase	0.0000
South Dakota	.	.	.	.	.
Tennessee	0.5907	0.6333	7%	Increase	0.0000
Texas	0.8862	0.8793	1%	No change	0.2823
Utah	0.9748	0.9201	6%	Decrease	0.0469
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	0.8601	0.8679	1%	No change	0.5808
Washington	0.9690	0.7646	21%	Decrease	0.0000
West Virginia	.	.	.	.	.
Wisconsin	0.9401	0.9341	1%	No change	0.7275
Wyoming	.	.	.	.	.
<b>All US</b>	<b>0.8582</b>	<b>0.8353</b>	<b>3%</b>	<b>Decrease</b>	<b>0.0000</b>

\* 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 Inpatient Rehabilitation Facilities**  
**6b. Urinary Catheter Days (UCDs), all locations<sup>1</sup>**

All Inpatient Rehabilitation Facilities Reporting to NHSN					
	2021 SUR	2022 SUR	Direction of Change, Based on Statistical Significance		p-value
Alabama	1.2320	1.2076	2%	Decrease	0.0382
Alaska	.	.	.	.	.
Arizona	1.0420	1.0286	1%	No change	0.2112
Arkansas	1.0186	1.0858	7%	Increase	0.0000
California	0.7615	0.7819	3%	Increase	0.0005
Colorado	0.8953	0.9789	9%	Increase	0.0000
Connecticut	0.4786	0.5752	20%	Increase	0.0000
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.9269	0.8891	4%	Decrease	0.0000
Georgia	0.9156	0.8913	3%	Decrease	0.0185
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	1.0547	0.8865	16%	Decrease	0.0000
Illinois	0.7573	0.8381	11%	Increase	0.0000
Indiana	0.9342	1.0146	9%	Increase	0.0000
Iowa	0.8964	0.9358	4%	Increase	0.0212
Kansas	1.0313	1.0493	2%	No change	0.2110
Kentucky	1.0382	0.9080	13%	Decrease	0.0000
Louisiana	0.9924	0.9981	1%	No change	0.5741
Maine	0.8450	0.8049	5%	No change	0.0949
Maryland	.	.	.	.	.
Massachusetts	1.0363	1.0605	2%	Increase	0.0334
Michigan	0.8220	0.8979	9%	Increase	0.0000
Minnesota	0.8875	0.8340	6%	Decrease	0.0037
Mississippi	0.6286	0.6290	0%	No change	0.9790
Missouri	0.9256	0.9470	2%	Increase	0.0333
Montana	.	.	.	.	.
Nebraska	0.7799	0.8083	4%	No change	0.1066
Nevada	1.1739	1.1569	1%	No change	0.2263
New Hampshire	0.7002	0.7908	13%	Increase	0.0000
New Jersey	0.9513	0.8808	7%	Decrease	0.0000
New Mexico	1.1814	1.0558	11%	Decrease	0.0000
New York	0.6660	0.6516	2%	Decrease	0.0369
North Carolina	0.7020	0.7103	1%	No change	0.3404
North Dakota	.	0.6385	.	.	.
Ohio	0.9520	0.8868	7%	Decrease	0.0000
Oklahoma	0.8712	0.9367	8%	Increase	0.0000
Oregon	0.6752	0.5879	13%	Decrease	0.0000
Pennsylvania	0.9783	0.9558	2%	Decrease	0.0004
Puerto Rico	0.4347	0.5319	22%	Increase	0.0000
Rhode Island	.	.	.	.	.
South Carolina	0.7459	0.8141	9%	Increase	0.0000
South Dakota	.	.	.	.	.
Tennessee	0.8707	0.9030	4%	Increase	0.0007
Texas	1.2088	1.1379	6%	Decrease	0.0000
Utah	0.7833	0.8121	4%	No change	0.1023
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	0.7541	0.8029	6%	Increase	0.0000
Washington	1.4218	1.5804	11%	Increase	0.0000
West Virginia	1.1088	1.2539	13%	Increase	0.0000
Wisconsin	0.8852	0.9332	5%	Increase	0.0031
Wyoming	.	.	.	.	.
<b>All US</b>	<b>0.9386</b>	<b>0.9368</b>	<b>0%</b>	<b>No change</b>	<b>0.2665</b>

\* 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 Inpatient Rehabilitation Facilities**  
**6c. Ventilator days (VDs), all locations<sup>1</sup>**

	All Inpatient Rehabilitation Facilities Reporting to NHSN				
	2021 SUR	2022 SUR	Direction of Change, Based on Statistical Significance		p-value
Alabama	.	.	.	.	.
Alaska	.	.	.	.	.
Arizona	.	.	.	.	.
Arkansas	.	.	.	.	.
California	1.0300	1.1243	9%	No change	0.2322
Colorado	.	.	.	.	.
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	.	.	.	.	.
Georgia	.	.	.	.	.
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	.	.	.	.	.
Indiana	.	.	.	.	.
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	.	.	.	.	.
Louisiana	.	.	.	.	.
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	.	.	.	.	.
Michigan	.	.	.	.	.
Minnesota	.	.	.	.	.
Mississippi	.	.	.	.	.
Missouri	.	.	.	.	.
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	.	.	.	.	.
New Hampshire	.	.	.	.	.
New Jersey	.	.	.	.	.
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	.	.	.	.	.
North Dakota	.	.	.	.	.
Ohio	.	.	.	.	.
Oklahoma	.	.	.	.	.
Oregon	.	.	.	.	.
Pennsylvania	2.5407	2.5487	0%	No change	0.9388
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	.	.	.	.	.
South Dakota	.	.	.	.	.
Tennessee	.	.	.	.	.
Texas	.	.	.	.	.
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	.	.	.	.	.
Washington	.	.	.	.	.
West Virginia	.	.	.	.	.
Wisconsin	.	.	.	.	.
Wyoming	.	.	.	.	.
<b>All US</b>	<b>1.0340</b>	<b>1.0345</b>	<b>0%</b>	<b>No change</b>	<b>0.9892</b>

\* 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 inpatient rehabilitation facilities (IRFs).**

Device Type	Validated Parameters for Risk Model
CLDs (non-NICU)	Intercept Facility bed size* Primary diagnosis of stroke admission (in percentile) Primary diagnosis of ortho admission (in percentile)
UCDs	Intercept Proportion of stroke admission (in percentile)
VAE	Intercept only

\* Facility bed size, facility type and medical school type are taken from the Annual Hospital Survey.

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 fo*

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

und at the above website.