

2021 National and State HAI Data Report

Introduction: Welcome to the 2021 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

National and State HAI Progress Report

Standardized Utilization Ratios

Inpatient Rehabilitation Facilities

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

(IHSN).

IRF	
National	State
b	b
b	b
b	b

]

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 (2021) in sync with rebaseline work, CDC has developed multivariable logistic regression models (“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),

2021 Annual National and State HAI Progress Report

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

Table 1	National standardized utilization ratios (SURs) and facility-specific summary SURs: Central line days (CLDs) Urinary catheter days (UCDs) Ventilator days (VDs)
Table 2	State-specific SURs for CLDs from Inpatient rehabilitation facilities: All locations combined
Table 3	State-specific SURs for UCDs from Inpatient rehabilitation facilities: All locations combined
Table 4	State-specific SURs for VDs from Inpatient rehabilitation facilities 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 inpatient ref

Additional Resources

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

rehabilitation facilities (IRFs)

e-508.pdf

Device and Patient Population	No. of Facilities Reporting ¹	No. of Device Days	
		Observed	Predicted
Central line days, all⁴	740	402,007	468,409.9542
ICUs⁵	150	147,477	186,859.1727
Wards⁶	590	254,530	281,550.7815
Urinary catheter days, all⁴	1,156	712,257	758,885.2685
	390	439,537	441,736.3183
Wards⁶	766	272,720	317,148.9502
Ventilator days, all⁴	34	1,765	1,706.9462
	8	1,149	636.2495
	26	616	1,070.6967

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 ≥ 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
5. Data from all ICUs; excludes wards (and other non-critical care locations). Data contained in this table are re
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 1a. 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 N	No. Facilities Significantly < National SUR N
0.8582	0.8556	0.8609	740	277	37%	364
0.7892	0.7852	0.7933	150	56	37%	77
0.9040	0.9005	0.9075	590	204	35%	297
0.9386	0.9364	0.9408	1,156	407	35%	544
0.9950	0.9921	0.9980	390	153	39%	178
0.8599	0.8567	0.8631	766	283	37%	343
1.0340	0.9866	1.0831	34	7	21%	26
1.8059	1.7037	1.9127	8	.	.	.
0.5753	0.5312	0.6221	26	6	23%	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 2021. 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.

Facility-specific SURs using device days data reported to NHSN during 2021 for inpatient rehabilitation facilities (IRF), urinary catheter days (UCDs), and ventilator days (VDs).

Facility with SUR	<u>Percentile</u>							
	5%	10%	15%	20%	25%	30%	35%	40%
National SUR								
49%	0.1593	0.3225	0.4040	0.4548	0.5120	0.5565	0.6229	0.6827
51%	0.1742	0.3255	0.3775	0.4315	0.5129	0.5451	0.5783	0.6220
50%	0.1478	0.3225	0.4084	0.4556	0.5110	0.5756	0.6378	0.6941
47%	0.2737	0.4016	0.4660	0.5259	0.5801	0.6380	0.7036	0.7703
46%	0.3793	0.4658	0.5629	0.6290	0.7072	0.7743	0.8342	0.8823
45%	0.2498	0.3722	0.4345	0.4939	0.5447	0.5930	0.6439	0.6990
76%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
77%	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.
 listed device days in 2021.
 calculated nor included in the distribution of facility-specific SURs.

d.
 patient rehabilitation facilities.

es), by device type and patient population:

ile Distribution of Facility-specific SURs³

Median									
45%	50%	55%	60%	65%	70%	75%	80%	85%	90%
0.7290	0.7688	0.8334	0.9159	0.9852	1.0480	1.1416	1.2291	1.3610	1.5232
0.6514	0.7255	0.7576	0.8118	0.8940	0.9381	1.0359	1.0754	1.1665	1.3264
0.7387	0.7829	0.8522	0.9495	1.0118	1.0849	1.1734	1.2810	1.3996	1.5484
0.8299	0.8819	0.9331	0.9749	1.0250	1.0979	1.1710	1.2622	1.3596	1.4985
0.9236	0.9659	0.9967	1.0497	1.1103	1.1667	1.2416	1.3203	1.4036	1.4875
0.7596	0.8221	0.8803	0.9340	0.9886	1.0473	1.1149	1.2370	1.3125	1.5167
0.0000	0.0000	0.0000	0.0000	0.0136	0.0137	0.1242	1.4979	1.5699	3.5722
0.0000	0.0000	0.0000	0.0000	0.0136	0.0407	0.1242	0.7320	1.5699	2.6635

95%

1.8800

1.4855

1.9374

1.7537

1.7165

1.7594

5.1760

.

3.9756

Table 2. State-specific standardized utilization ratios (SURs) and facility-specific summary SUI
Table 2. Central line days (CL)

State	No. of Facilities	No. of Device Days			95% CI	
		Observed	Predicted	SUR	Lower	Upper
Alabama	7	5,137	5,093.0532	1.0086	0.9813	
Alaska	1	.	.	.	.	.
Arizona	9	3,461	3,978.4657	0.8699	0.8413	
Arkansas	14	6,126	7,790.9144	0.7863	0.7668	
California	73	40,191	48,641.9256	0.8263	0.8182	
Colorado	18	10,916	11,218.3307	0.9731	0.9549	
Connecticut	5	1,289	1,828.6147	0.7049	0.6672	
Delaware	3	.	.	.	.	.
District of Col	2	.	.	.	.	.
Florida	28	21,223	27,773.2974	0.7642	0.7539	
Georgia	19	10,994	9,424.2391	1.1666	1.1449	
Guam	0	.	.	.	.	.
Hawaii	0	.	.	.	.	.
Idaho	3	.	.	.	.	.
Illinois	31	21,958	24,032.8270	0.9137	0.9017	
Indiana	29	16,763	17,179.7820	0.9757	0.9611	
Iowa	12	4,562	4,441.5085	1.0271	0.9977	
Kansas	10	6,766	3,830.5475	1.7663	1.7247	
Kentucky	9	5,411	6,457.7132	0.8379	0.8158	
Louisiana	25	9,342	10,130.0964	0.9222	0.9037	
Maine	4	.	.	.	.	.
Maryland	3	.	.	.	.	.
Massachusetts	7	3,761	3,855.3236	0.9755	0.9447	
Michigan	22	12,095	12,290.4690	0.9841	0.9667	
Minnesota	6	3,140	3,194.4236	0.9830	0.9490	
Mississippi	8	2,706	2,725.3884	0.9929	0.9560	
Missouri	17	6,241	7,739.3689	0.8064	0.7866	
Montana	3	.	.	.	.	.
Nebraska	7	1,565	2,227.7880	0.7025	0.6683	
Nevada	11	7,489	9,528.1552	0.7860	0.7683	
New Hampshire	2	.	.	.	.	.
New Jersey	6	4,107	7,150.5202	0.5744	0.5570	
New Mexico	3	.	.	.	.	.
New York	39	19,703	21,401.2890	0.9206	0.9079	
North Carolina	13	14,066	16,255.6703	0.8653	0.8511	
North Dakota	2	.	.	.	.	.
Ohio	27	14,554	14,403.2336	1.0105	0.9942	
Oklahoma	15	5,118	4,984.6757	1.0267	0.9989	
Oregon	6	1,417	2,151.2753	0.6587	0.6251	
Pennsylvania	66	50,593	59,549.5121	0.8496	0.8422	
Puerto Rico	3	.	.	.	.	.
Rhode Island	3	.	.	.	.	.
South Carolina	25	11,813	22,045.8885	0.5358	0.5262	

South Dakota	3	.	.	.	.
Tennessee	18	6,824	11,551.7200	0.5907	0.5768
Texas	73	38,474	43,415.4237	0.8862	0.8774
Utah	5	2,367	2,428.1678	0.9748	0.9361
Vermont	2	.	.	.	.
Virgin Islands	0	.	.	.	.
Virginia	12	7,112	8,268.8665	0.8601	0.8403
Washington	12	4,601	4,748.0583	0.9690	0.9413
West Virginia	2	.	.	.	.
Wisconsin	16	5,926	6,303.3779	0.9401	0.9164
Wyoming	1	.	.	.	.
	740	402,007	468,409.9542	0.8582	0.8556

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 ≥ 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 2021 for inpatient rehabilitation facilities (IRFs
Ds), 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	
1.0365	7	.	.	.	.	.
.
0.8993	9	.	.	.	.	.
0.8062	14	6	43%	8	57%	.
0.8344	73	19	26%	42	58%	0.3018
0.9915	18	9	50%	6	33%	.
0.7442	5	.	.	.	.	.
.
0.7745	28	8	29%	17	61%	0.3350
1.1886	19	15	79%	4	21%	.
.
.
0.9258	31	16	52%	15	48%	0.1990
0.9906	29	16	55%	8	28%	0.5098
1.0573	12	3	25%	7	58%	.
1.8088	10	6	60%	3	30%	.
0.8605	9	.	.	.	.	.
0.9410	25	12	48%	11	44%	0.1177
.
.
1.0071	7	.	.	.	.	.
1.0017	22	9	41%	12	55%	0.4279
1.0178	6	.	.	.	.	.
1.0308	8	.	.	.	.	.
0.8266	17	5	29%	8	47%	.
.
0.7380	7	.	.	.	.	.
0.8039	11	3	27%	8	73%	.
.
0.5921	6	.	.	.	.	.
.
0.9336	39	13	33%	24	62%	0.1629
0.8797	13	5	38%	8	62%	.
.
1.0270	27	12	44%	10	37%	0.3957
1.0552	15	7	47%	5	33%	.
0.6936	6	.	.	.	.	.
0.8570	66	25	38%	31	47%	0.2079
.
.
0.5456	25	2	8%	21	84%	0.3420

0.6049	18	4	22%	12	67%	.
0.8951	73	30	41%	29	40%	0.2217
1.0147	5	.	.	.	.	.
.
0.8803	12	5	42%	5	42%	.
0.9974	12	3	25%	6	50%	.
.
0.9643	16	7	44%	6	38%	.
.
0.8609	740	277	37%	364	49%	0.3225

There are less than 5 reporting facilities. This may be different from those reported in the SIR tables due to a count of 1 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 2021. 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:

Median			
25%	50%	75%	90%
.	.	.	.
.	.	.	.
.	.	.	.
0.4473	0.6674	0.9240	1.5889
.	.	.	.
.	.	.	.
.	.	.	.
0.5101	0.7170	0.9669	1.2296
.	.	.	.
.	.	.	.
.	.	.	.
0.5511	0.9221	1.3800	1.5341
0.7551	1.0534	1.5157	1.7948
.	.	.	.
.	.	.	.
0.3811	0.9762	1.3180	2.0007
.	.	.	.
.	.	.	.
.	.	.	.
0.5143	0.7753	1.1800	1.3835
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.3979	0.5357	1.3058	2.2685
.	.	.	.
.	.	.	.
0.6234	0.8384	1.2258	1.5516
.	.	.	.
.	.	.	.
0.5581	0.8271	1.1933	1.3992
.	.	.	.
.	.	.	.
0.3978	0.5783	0.6940	0.8770

.	.	.	.
0.5334	0.9006	1.1301	1.3771
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.5120	0.7688	1.1416	1.5232

exclusion and inclusion criteria. Refer to the technical appendix for details.
.0 predicted device days in 2021.
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 SURs
Table 3. Urinary catheter days (L

State	No. of Facilities	No. of Device Days			95% CI
		Observed	Predicted	SUR	Lower
Alabama	18	21,646	17,570.0364	1.2320	1.2156
Alaska	2	.	.	.	.
Arizona	21	18,222	17,487.3319	1.0420	1.0269
Arkansas	27	16,694	16,388.8548	1.0186	1.0033
California	75	33,419	43,888.0915	0.7615	0.7533
Colorado	19	9,562	10,679.9144	0.8953	0.8775
Connecticut	7	1,643	3,433.0906	0.4786	0.4559
D.C.	4	.	.	.	.
Delaware	2	.	.	.	.
Florida	59	53,794	58,039.1841	0.9269	0.9191
Georgia	31	15,287	16,696.3538	0.9156	0.9012
Guam	0	.	.	.	.
Hawaii	1	.	.	.	.
Idaho	6	3,202	3,035.8137	1.0547	1.0187
Illinois	39	22,226	29,347.4173	0.7573	0.7474
Indiana	38	19,228	20,581.9871	0.9342	0.9211
Iowa	18	5,688	6,345.1585	0.8964	0.8733
Kansas	20	10,721	10,395.4235	1.0313	1.0119
Kentucky	15	13,743	13,237.8456	1.0382	1.0209
Louisiana	54	19,276	19,422.6476	0.9924	0.9785
Maine	5	2,510	2,970.3653	0.8450	0.8124
Maryland	4	.	.	.	.
Massachusetts	12	16,800	16,211.3978	1.0363	1.0207
Michigan	39	17,757	21,601.4907	0.8220	0.8100
Minnesota	11	4,527	5,100.8604	0.8875	0.8619
Mississippi	11	3,840	6,108.4714	0.6286	0.6090
Missouri	31	17,348	18,741.5017	0.9256	0.9119
Montana	4	.	.	.	.
Nebraska	10	4,019	5,153.2503	0.7799	0.7561
Nevada	14	13,563	11,553.5970	1.1739	1.1543
New Hampshire	7	3,486	4,978.7470	0.7002	0.6772
New Jersey	18	21,074	22,151.9729	0.9513	0.9385
New Mexico	9	6,214	5,259.8178	1.1814	1.1523
New York	46	18,740	28,136.0767	0.6660	0.6566
North Carolina	24	13,027	18,556.1162	0.7020	0.6900
North Dakota	4	.	.	.	.
Ohio	50	28,573	30,013.0173	0.9520	0.9410
Oklahoma	23	10,701	12,283.4795	0.8712	0.8548
Oregon	8	2,056	3,044.9081	0.6752	0.6465
Pennsylvania	67	47,989	49,055.4887	0.9783	0.9695
Puerto Rico	6	1,596	3,671.5655	0.4347	0.4138
Rhode Island	4	.	.	.	.
South Carolina	26	12,756	17,101.3259	0.7459	0.7330

South Dakota	4	.	.	.	.
Tennessee	30	16,794	19,288.4083	0.8707	0.8576
Texas	151	127,719	105,660.5586	1.2088	1.2021
Utah	11	4,076	5,203.6969	0.7833	0.7595
Vermont	2	.	.	.	.
Virgin Islands	0	.	.	.	.
Virginia	26	14,574	19,326.0295	0.7541	0.7420
Washington	14	9,571	6,731.6309	1.4218	1.3935
West Virginia	8	7,129	6,429.5731	1.1088	1.0833
Wisconsin	18	5,973	6,747.9542	0.8852	0.8629
Wyoming	3	.	.	.	.
All US	1,156	712,257	758,885.2685	0.9386	0.9364

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 ≥ 1.0 predicted number of device
4. Data from all ICUs, wards, and other non-critical care locations. Data contained in this table are reported f

using device days data reported to NHSN during 2021 for inpatient rehabilitation facilities (IRFs), long-term acute care hospitals (LTACHs), and skilled nursing facilities (SNFs), 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	N	Significantly < National SUR	N	
1.2485	18	12	67%	5	28%	.	
.	
1.0572	21	11	52%	8	38%	0.6731	
1.0342	27	13	48%	8	30%	0.4178	
0.7696	75	15	20%	50	67%	0.3985	
0.9134	19	4	21%	8	42%	.	
0.5021	7	.	.	.	.	.
.	
.	
0.9347	59	27	46%	22	37%	0.4225	
0.9302	31	9	29%	19	61%	0.4965	
.	
.	
1.0917	6	.	.	.	.	.
0.7674	39	5	13%	26	67%	0.4782	
0.9475	38	16	42%	13	34%	0.5748	
0.9200	18	5	28%	9	50%	.	
1.0510	20	4	20%	10	50%	0.4265	
1.0556	15	10	67%	5	33%	.	
1.0066	54	19	35%	25	46%	0.4324	
0.8786	5	.	.	.	.	.
.	
1.0521	12	5	42%	4	33%	.	
0.8342	39	12	31%	20	51%	0.2753	
0.9136	11	2	18%	5	45%	.	
0.6487	11	2	18%	9	82%	.	
0.9395	31	11	35%	15	48%	0.3827	
.	
0.8043	10	1	10%	8	80%	.	
1.1938	14	7	50%	5	36%	.	
0.7237	7	.	.	.	.	.
0.9643	18	6	33%	7	39%	.	
1.2111	9	.	.	.	.	.
0.6756	46	14	30%	31	67%	0.2535	
0.7142	24	4	17%	15	63%	0.4300	
.	
0.9631	50	18	36%	18	36%	0.4814	
0.8878	23	7	30%	12	52%	0.3557	
0.7049	8	.	.	.	.	.
0.9871	67	25	37%	24	36%	0.5447	
0.4564	6	.	.	.	.	.
.	
0.7589	26	5	19%	18	69%	0.4839	

0.8839	30	6	20%	17	57%	0.4081
1.2154	151	91	60%	39	26%	0.5654
0.8076	11	3	27%	6	55%	.
.
0.7664	26	4	15%	16	62%	0.3941
1.4505	14	7	50%	5	36%	.
1.1347	8	.	.	.	.	.
0.9078	18	5	28%	9	50%	.
.
0.9408	1,156	407	35%	544	47%	0.4016

≥ 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 2021. 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:

Median			
25%	50%	75%	90%
.	.	.	.
.	.	.	.
0.8471	1.0363	1.1940	1.3106
0.7900	0.9917	1.3044	1.4716
0.5418	0.7085	0.9478	1.2361
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.5793	0.9401	1.1273	1.5006
0.5856	0.7562	1.0612	1.2927
.	.	.	.
.	.	.	.
0.5590	0.7448	0.9196	1.1618
0.7193	1.0085	1.3378	1.6514
.	.	.	.
0.7103	0.8745	1.0190	1.5981
.	.	.	.
0.5762	0.8800	1.2465	1.8526
.	.	.	.
.	.	.	.
0.4408	0.8537	1.2345	1.4723
.	.	.	.
.	.	.	.
0.4847	0.8708	1.1838	1.5917
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.3722	0.5546	1.0835	1.4862
0.4841	0.6221	0.9380	1.2252
.	.	.	.
0.7220	0.9172	1.1799	1.4317
0.4939	0.7881	1.2912	1.5861
.	.	.	.
0.7522	0.9578	1.1082	1.5404
.	.	.	.
.	.	.	.
0.5285	0.6054	0.9927	1.1279

.	.	.	.
0.5301	0.7582	0.9444	1.3147
0.8334	1.1286	1.4129	1.7537
.	.	.	.
.	.	.	.
0.5096	0.6713	0.9827	1.2171
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.5801	0.8819	1.1710	1.4985

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 3. State-specific standardized utilization ratios (SURs) and facility-specific summary SURs
Table 3. Ventilator days (VDs)

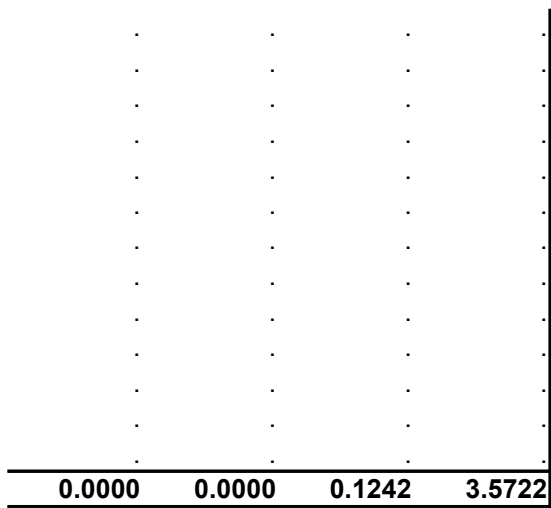
State	No. of Facilities	No. of Device Days			95% CI
		Observed	Predicted	SUR	Lower
Alabama	0	.	.	.	.
Alaska	0	.	.	.	.
Arizona	0	.	.	.	.
Arkansas	0	.	.	.	.
California	6	357	346.6018	1.0300	0.9272
Colorado	0	.	.	.	.
Connecticut	0	.	.	.	.
D.C.	0	.	.	.	.
Delaware	0	.	.	.	.
Florida	0	.	.	.	.
Georgia	1	.	.	.	.
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	1	.	.	.	.
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	1,182	465.2274	2.5407	2.3989
Puerto Rico	2	.	.	.	.

Rhode Island	0	.	.	.	.
South Carolina	1	.	.	.	.
South Dakota	0	.	.	.	.
Tennessee	2	.	.	.	.
Texas	2	.	.	.	.
Utah	0	.	.	.	.
Vermont	0	.	.	.	.
Virgin Islands	0	.	.	.	.
Virginia	1	.	.	.	.
Washington	0	.	.	.	.
West Virginia	0	.	.	.	.
Wisconsin	0	.	.	.	.
Wyoming	0	.	.	.	.
All US	34	1,765	1,706.9462	1.0340	0.9866

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 ≥ 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 2021 for inpatient rehabilitation facilities (IRFs), b
s), all locations⁴

<u>for SUR</u>	<u>Facility-specific SURs</u>				10%
Upper	No. Facilities with ≥ 1 Predicted Device Days	No. Facilities with SUR Significantly > National SUR N	No. Facilities with SUR Significantly < National SUR N		
1.1411	6				
2.6887	6				



n and inclusion criteria. Refer to the technical appendix for details.
 ted device days in 2021.
 alculated 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 inpatient rehabilitation facilities 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	0.8877	0.8582	-3%	Decrease	<0.0001
ICU ²	0.8091	0.7892	-2%	Decrease	<0.0001
Ward ³	0.9392	0.9040	-4%	Decrease	<0.0001
UCDs, all locations¹	0.9254	0.9386	1%	Increase	<0.0001
	0.9740	0.9950	2%	Increase	<0.0001
	0.8587	0.8599	0%	No Change	0.5984
VDs, all locations¹	0.9469	1.0340	9%	Increase	0.0125
ICUs ²	1.4053	1.8059	29%	Increase	<0.0001
Wards ³	0.5788	0.5753	-1%	No Change	0.9201

* 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 2020 and 2021 from NHSN Inpatient Rehabilitation Facilities

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

State ²	All Inpatient Rehabilitation Facilities Reporting to NHSN				
	2020 SUR	2021 SUR	Percent Change ³	Direction of Change, Based on Statistical Significance	p-value
Alabama	1.0588	1.0086	-5%	Decrease	0.0129
Alaska	.	.	.	.	.
Arizona	0.8864	0.8699	2%	No Change	0.3838
Arkansas	0.8424	0.7863	-7%	Decrease	0.0002
California	0.8676	0.8263	-5%	Decrease	<0.0001
Colorado	0.9293	0.9731	5%	Increase	0.0007
Connecticut	.	0.7049	-19%	Decrease	<0.0001
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.8763	0.7642	-13%	Decrease	<0.0001
Georgia	1.0958	1.1666	6%	Increase	<0.0001
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	0.9136	0.9137	0%	No Change	0.9932
Indiana	1.0726	0.9757	-9%	Decrease	<0.0001
Iowa	0.8037	1.0271	28%	Increase	<0.0001
Kansas	1.4535	1.7663	22%	Increase	<0.0001
Kentucky	0.9008	0.8379	-7%	Decrease	0.0009
Louisiana	0.8689	0.9222	6%	Increase	0.0001
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	0.8752	0.9755	11%	Increase	<0.0001
Michigan	0.9438	0.9841	4%	Increase	0.0021
Minnesota	1.0314	0.9830	5%	No Change	0.0605
Mississippi	0.9744	0.9929	2%	No Change	0.4787
Missouri	0.8071	0.8064	0%	No Change	0.9599
Montana	.	.	.	.	.
Nebraska	1.0083	0.7025	-30%	Decrease	<0.0001
Nevada	0.8931	0.7860	-12%	Decrease	<0.0001
New Hampshire	.	.	.	.	.
New Jersey	0.7961	0.5744	-28%	Decrease	<0.0001
New Mexico	.	.	.	.	.
New York	1.0558	0.9206	-13%	Decrease	<0.0001
North Carolina	0.9638	0.8653	-10%	Decrease	<0.0001
North Dakota	.	.	.	.	.
Ohio	0.9805	1.0105	3%	Increase	0.0138
Oklahoma	0.8788	1.0267	17%	Increase	<0.0001
Oregon	0.6626	0.6587	1%	No Change	0.8741
Pennsylvania	0.8478	0.8496	0%	No Change	0.7319
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	0.5585	0.5358	-4%	Decrease	0.0019
South Dakota	.	.	.	.	.
Tennessee	0.6516	0.5907	-9%	Decrease	<0.0001
Texas	0.8756	0.8862	1%	No Change	0.1115
Utah	.	0.9748	-18%	Decrease	<0.0001
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	0.9950	0.8601	-14%	Decrease	<0.0001
Washington	0.8598	0.9690	13%	Increase	<0.0001
West Virginia	.	.	.	.	.
Wisconsin	0.9609	0.9401	2%	No Change	0.2336
Wyoming	.	.	.	.	.
All US	0.8877	0.8582	-3%	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 Inpatient Rehabilitation Facilities					
6b. Urinary Catheter Days (UCDs), all locations ¹					
All Inpatient Rehabilitation Facilities Reporting to NHSN					
	2020 SUR	2021 SUR	Direction of Change, Based on Statistical Significance		p-value
Alabama	1.0944	1.2320	13%	Increase	<0.0001
Alaska	.	.	.	.	.
Arizona	1.0123	1.0420	3%	Increase	0.0062
Arkansas	1.0394	1.0186	2%	No Change	0.0729
California	0.8017	0.7615	-5%	Decrease	<0.0001
Colorado	0.8797	0.8953	2%	No Change	0.2362
Connecticut	.	0.4786	9%	Increase	0.0228
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.9269	0.9269	0%	No Change	0.9909
Georgia	0.8938	0.9156	2%	Increase	0.0378
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	0.8204	1.0547	29%	Increase	<0.0001
Illinois	0.8723	0.7573	-13%	Decrease	<0.0001
Indiana	0.9589	0.9342	-3%	Decrease	0.0123
Iowa	0.9836	0.8964	-9%	Decrease	<0.0001
Kansas	0.9314	1.0313	11%	Increase	<0.0001
Kentucky	0.9178	1.0382	13%	Increase	<0.0001
Louisiana	1.0062	0.9924	1%	No Change	0.1886
Maine	0.8586	0.8450	2%	No Change	0.5700
Maryland	.	.	.	.	.
Massachusetts	1.0115	1.0363	2%	Increase	0.0286
Michigan	0.7629	0.8220	8%	Increase	<0.0001
Minnesota	0.7809	0.8875	14%	Increase	<0.0001
Mississippi	0.6179	0.6286	2%	No Change	0.4550
Missouri	0.8682	0.9256	7%	Increase	<0.0001
Montana	.	.	.	.	.
Nebraska	0.9104	0.7799	-14%	Decrease	<0.0001
Nevada	1.1601	1.1739	1%	No Change	0.3380
New Hampshire	0.6743	0.7002	4%	No Change	0.1105
New Jersey	1.1057	0.9513	-14%	Decrease	<0.0001
New Mexico	1.0808	1.1814	9%	Increase	<0.0001
New York	0.6236	0.6660	7%	Increase	<0.0001
North Carolina	0.5998	0.7020	17%	Increase	<0.0001
North Dakota	.	.	.	.	.
Ohio	1.0475	0.9520	-9%	Decrease	<0.0001
Oklahoma	0.8748	0.8712	0%	No Change	0.7734
Oregon	0.5475	0.6752	23%	Increase	<0.0001
Pennsylvania	0.9080	0.9783	8%	Increase	<0.0001
Puerto Rico	0.4028	0.4347	8%	Increase	0.0394
Rhode Island	1.0418	.	.	.	.
South Carolina	0.6938	0.7459	8%	Increase	<0.0001
South Dakota	.	.	.	.	.
Tennessee	0.8697	0.8707	0%	No Change	0.9164
Texas	1.1545	1.2088	5%	Increase	<0.0001
Utah	0.7640	0.7833	3%	No Change	0.2770
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	0.7862	0.7541	-4%	Decrease	0.0004
Washington	1.5347	1.4218	-7%	Decrease	<0.0001
West Virginia	1.0161	1.1088	9%	Increase	<0.0001
Wisconsin	0.8256	0.8852	7%	Increase	0.0002
Wyoming	.	.	.	.	.
All US	0.9254	0.9386	1%	Increase	<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 Inpatient Rehabilitation Facilities
6c. Ventilator days (VDs), all locations¹

	All Inpatient Rehabilitation Facilities Reporting to NHSN				
	2020 SUR	2021 SUR	Direction of Change, Based on Statistical Significance		p-value
Alabama
Alaska
Arizona
Arkansas
California	1.1493	1.0300	.	No Change	0.1358
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	2.1593	2.5407	18%	Increase	0.0002
Puerto Rico
Rhode Island
South Carolina
South Dakota
Tennessee
Texas
Utah
Vermont
Virgin Islands
Virginia
Washington
West Virginia
Wisconsin
Wyoming
All US	0.9469	1.0340	9%	Increase	0.0125

* 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 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.