

2017 National and State HAI Data Report

Introduction:

Welcome to the 2017 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

Critical Access Hospitals

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

CAH	
National	State
p	p
p	p
p	p

]

zations

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 days in intensive care units (ICU), inpatient rehabilitation facilities (IRF), long-term acute care hospitals (LTACH) (and NICU for central line days). Using the NHSN data (2017) 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 :

STEPS to compute SUR at the location level

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

Logit p_{hat} = intercept + x_1 + X_2 + X_3 +

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

2: Then, compute the probability of device use

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

3: Calculate predicted device days as follows:

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

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

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

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

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, region, etc.).

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>

ies. To monitor the progress of healthcare acquired infections (HAI) prevention efforts, device utilization in any h
s 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 hospita
days).

ession 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;

l.0.

ility-level).

number of predicted device days.

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

Is (CAH),

2017 Annual National and State HAI Progress Report

Critical access hospitals: 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 Critical access hospitals 2a. All locations combined 2b. Critical care locations only 2c. Ward (non-critical care) locations only
Table 3	State-specific SURs for UCDs from Critical access hospitals 3a. All locations combined 3b. Critical care locations only 3c. Ward (non-critical care) locations only
Table 4	State-specific SURs for VDs from Critical access hospitals 4a. All locations combined 4b. Critical care locations only 4c. Ward (non-critical care) locations only
Table 5	Changes in national SURs, 2017 compared to 2016 Central Line Days (CLDs) Urinary Catheter Days (UCDs) Ventilator days (VDs)
Table 6	Changes in state SURs, 2017 compared to 2016 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 Critical acce
Additional Resources	Technical Appendix HAI Progress Report Home Page SUR Guide: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sur-guid

ss hospitals (CAHs)

le-508.pdf

Table 1. National standardize

Population	No. of Facilities Reporting ¹	No. of Device days			95% CI	
		Observed	Predicted	SUR	Lower	Upper
Central line days, all⁴	738	154,403	139,494.8237	1.1069	1.1014	1.1124
ICUs⁵	209	14,127	16,431.3803	0.8598	0.8457	0.8739
Wards⁶	716	140,276	123,063.4434	1.1399	1.1339	1.1459
Urinary catheter days, all⁴	867	294,796	335,989.8498	0.8774	0.8742	0.8806
	210	37,237	45,097.4957	0.8257	0.8173	0.8341
Wards⁶	847	257,559	290,892.3541	0.8854	0.8820	0.8888
Ventilator days, all⁴	197	4,128	3,970.6094	1.0396	1.0083	1.0709
	133	3,359	3,684.0363	0.9118	0.8813	0.9423
	84	769	286.5732	2.6834	2.4987	2.8681

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 d
4. Data from all ICUs, wards (and other non-critical care locations). Data contained in this table are reported fr
5. Data from all ICUs; excludes wards (and other non-critical care locations), and NICUs. Data contained in thi
6. Data from all wards (for this table wards also include step-down, mixed acuity, and specialty care areas [inc

device utilization ratios (SURs) and facility-specific summary SURs using device days data reported to NHSN data
 Table 1a. Central line days (CLD)

for SUR	Facility-specific SURs						5%	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	% ²		
1.1124	736	226	31	400	54	0.0000	0.0436	
0.8740	207	69	33	75	36	0.0000	0.1827	
1.1458	715	219	31	390	55	0.0000	0.0433	
0.8806	867	304	35	392	45	0.2089	0.3103	
0.8341	210	89	42	57	27	0.2502	0.3963	
0.8889	847	297	35	384	45	0.2089	0.3098	
1.0717	180	32	18	98	54	0.0000	0.0000	
0.9430	127	28	22	66	52	0.0000	0.0000	
2.8782	70	5	7	60	86	0.0000	0.0000	

less than 5 reporting facilities. This may be different from those reported in the SIR tables due to exclusion and inclusion 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 2017. If a facility's predicted number of device days was <1.0, a facility-specific SUR was neither calculated nor reported from acute care hospitals; as such, data from ACHs, IRFs and LTACHs are excluded. Data from critical access hospitals are reported from critical access hospitals; as such, data from ACHs, IRFs and LTACHs are excluded. Data from critical access hospitals (including hematology/oncology, bone marrow transplant). Data contained in this table are reported from critical access hospitals.

uring 2017 for Critical access hospitals (CAHs), by device type and patient population
 CLDs), urinary catheter days (UCDs), and ventilator days (VDs).

Percentile Distribution of Facility-specific SURs³

Median									
15%	20%	25%	30%	35%	40%	45%	50%	55%	60%
0.1653	0.3021	0.4191	0.5012	0.6075	0.7058	0.7955	0.8756	0.9605	1.0791
0.2786	0.3193	0.3897	0.4704	0.5539	0.6105	0.6996	0.7670	0.8628	1.0028
0.1635	0.2809	0.4237	0.5244	0.6098	0.7129	0.7977	0.8877	0.9808	1.0852
0.3896	0.4675	0.5317	0.6100	0.6594	0.7180	0.7668	0.8078	0.8722	0.9287
0.4595	0.5283	0.5938	0.6777	0.7143	0.7489	0.8005	0.9035	0.9675	1.0642
0.3897	0.4675	0.5322	0.6118	0.6594	0.7176	0.7640	0.8168	0.8727	0.9348
0.0000	0.0000	0.0000	0.0000	0.0465	0.0988	0.1586	0.2507	0.3507	0.5058
0.0000	0.0000	0.0620	0.1030	0.1601	0.2098	0.3258	0.4033	0.5065	0.6674
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

clusion criteria. Refer to the technical appendix for details.
 ice days in 2017.
 nor included in the distribution of facility-specific SURs.

ss hospitals; as such, data from ACHs, IRFs and LTACHs are excluded.

65%	70%	75%	80%	85%	90%	95%
1.1942	1.3162	1.4753	1.6610	1.8625	2.1863	2.9059
1.1060	1.1963	1.3077	1.6215	1.7992	2.1775	2.5420
1.2113	1.3501	1.4877	1.6740	1.9024	2.2474	2.9295
0.9935	1.0679	1.1492	1.2394	1.3501	1.5093	1.7425
1.1615	1.2173	1.3244	1.3963	1.4669	1.6423	1.9012
1.0060	1.0865	1.1501	1.2537	1.3662	1.5416	1.7586
0.5721	0.7269	0.8899	1.2106	1.7164	2.1964	4.9788
0.7693	0.8890	1.1524	1.5081	1.7951	2.2878	3.1524
0.0000	0.0000	0.1749	0.5523	0.5681	1.1492	27.6533

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

State	No. of Facilities Reporting ¹	No. of Device days			95% CI
		Observed	Predicted	SUR	Lower
Alaska	3	.	.	.	.
Alabama	3	.	.	.	.
Arkansas	12	2,124	1,854.6352	1.1452	1.0973
Arizona	4	.	.	.	.
California	32	7,608	6,306.5250	1.2064	1.1795
Colorado	16	1,626	2,469.4660	0.6584	0.6270
Connecticut	0	.	.	.	.
D.C.	0	.	.	.	.
Delaware	0	.	.	.	.
Florida	8	1,756	2,872.0344	0.6114	0.5833
Georgia	14	5,058	3,768.2923	1.3423	1.3056
Guam	0	.	.	.	.
Hawaii	2	.	.	.	.
Iowa	48	7,694	7,448.4143	1.0330	1.0101
Idaho	6	1,259	993.0079	1.2679	1.1992
Illinois	40	8,949	6,899.5644	1.2970	1.2703
Indiana	35	6,490	6,480.6293	1.0014	0.9773
Kansas	55	10,513	7,120.5453	1.4764	1.4484
Kentucky	15	4,325	3,315.0714	1.3046	1.2662
Louisiana	6	2,369	1,301.2919	1.8205	1.7483
Massachusetts	3	.	.	.	.
Maryland	0	.	.	.	.
Maine	15	5,404	4,791.6713	1.1278	1.0980
Michigan	27	2,696	4,184.9625	0.6442	0.6202
Minnesota	31	4,866	4,159.6093	1.1698	1.1373
Missouri	20	5,163	3,422.5302	1.5085	1.4678
Mississippi	7	1,163	1,565.7380	0.7428	0.7010
Montana	9	1,856	2,009.4188	0.9237	0.8823
North Carolina	10	2,306	2,788.1422	0.8271	0.7938
North Dakota	10	1,677	1,674.8139	1.0013	0.9542
Nebraska	17	2,307	1,833.2886	1.2584	1.2079
New Hampshire	13	3,019	3,795.0341	0.7955	0.7675
New Jersey	0	.	.	.	.
New Mexico	9	1,870	1,834.6803	1.0193	0.9738
Nevada	2	.	.	.	.
New York	5	560	1,133.4850	0.4941	0.4544
Ohio	19	4,393	4,393.1928	1.0000	0.9707
Oklahoma	12	1,920	1,640.3119	1.1705	1.1190
Oregon	20	5,033	4,680.2495	1.0754	1.0460
Pennsylvania	15	5,354	4,681.4483	1.1437	1.1133

Puerto Rico	0	.	.	.	.
Rhode Island	0	.	.	.	.
South Carolina	5	959	1,110.5432	0.8635	0.8102
South Dakota	15	1,046	1,178.5436	0.8875	0.8350
Tennessee	6	1,093	722.0180	1.5138	1.4260
Texas	26	5,218	4,106.1366	1.2708	1.2366
Utah	5	384	383.8021	1.0005	0.9041
Virginia	5	2,009	1,679.9827	1.1958	1.1444
Virgin Islands	0	.	.	.	.
Vermont	8	2,200	2,878.4713	0.7643	0.7329
Washington	37	11,407	8,106.9874	1.4071	1.3814
Wisconsin	58	13,273	10,725.7126	1.2375	1.2166
West Virginia	16	2,692	3,298.2749	0.8162	0.7858
Wyoming	14	669	1,469.3993	0.4553	0.4217
All US	738	154,403	139,494.8237	1.1069	1.1014

1. The number of reporting facilities included in the SUR calculation; SURs are not calculated when the
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 de
4. Data from all ICUs and wards (and other non-critical care locations). Data contained in this table are

URs using device days data reported to NHSN during 2017 for critical access hospitals (CAHs), by device type (Ds), all locations⁴

for SUR	Facility-specific SURs					Percentile Distribution		
	Upper	No. Facilities with ≥ 1 Predicted Device Days	No. Facilities with SUR Significantly > National SUR	No. Facilities with SUR Significantly < National SUR			10%	25%
		N	% ²	N				
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1.1947	12	5	42	5	42	.	.	.
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1.2337	32	10	31	20	63	0.0436	0.2722	.
0.6910	16	4	25	7	44	.	.	.
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0.6405	8
1.3796	14	3	21	9	64	.	.	.
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1.0562	48	15	31	17	35	0.0538	0.7193	.
1.3394	6
1.3241	39	17	44	19	49	0.0650	0.4189	.
1.0260	35	7	20	21	60	0.3041	0.5641	.
1.5048	55	20	36	28	51	0.0000	0.3041	.
1.3440	15	7	47	8	53	.	.	.
1.8949	6	.	.	.	.	.	.	.
.
.
1.1582	15	5	33	6	40	.	.	.
0.6689	27	3	11	21	78	0.0000	0.2810	.
1.2030	30	10	33	16	53	0.0000	0.3465	.
1.5501	20	12	60	5	25	0.3990	1.0906	.
0.7864	7
0.9664	9
0.8614	10	1	10	7	70	.	.	.
1.0501	10	5	50	5	50	.	.	.
1.3106	17	7	41	6	35	.	.	.
0.8243	13	2	15	9	69	.	.	.
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1.0662	9
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0.5363	5
1.0298	19	3	16	14	74	.	.	.
1.2238	12	4	33	4	33	.	.	.
1.1054	20	5	25	13	65	0.2083	0.5370	.
1.1746	15	7	47	7	47	.	.	.

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0.9195	5
0.9426	15	6	40	8	53	.	.
1.6056	6
1.3056	26	10	38	12	46	0.0000	0.4774
1.1045	5
1.2490	5
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0.7967	8
1.4331	37	16	43	16	43	0.0523	0.6799
1.2587	58	14	24	34	59	0.0000	0.2171
0.8474	16	2	13	10	63	.	.
0.4908	14	1	7	13	93	.	.
1.1124	736	226	31	400	54	0.0436	0.4191

re are 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 or 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 2017. If a facility's predicted number of device days was <1.0 , a facility-specific SUR was neither calculated nor reported from critical access hospitals; as such, data from ACHs, IRFs and LTACHs are excluded.

type and patient population:

tion of Facility-specific SURs³

Median

50% 75% 90%

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0.7702	1.5995	2.3038
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1.0509	1.5544	2.0573
.	.	.
0.9075	1.7813	2.8709
0.8494	1.1346	2.0119
0.9492	1.6773	2.7810
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0.6826	0.9037	1.3149
0.7380	1.5658	2.5327
1.5098	1.8230	2.3536
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0.8551	1.4886	2.0725
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.	.	.
1.2408	1.9493	2.9777
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.	.	.
.	.	.
1.1418	1.9024	2.6716
0.7656	1.2536	2.3337
.	.	.
.	.	.
0.8756	1.4753	2.1863

and inclusion criteria. Refer to the technical appendix for details.
ed device days in 2017.
xcluded nor included in the distribution of facility-specific SURs.

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Table 2. State-specific standardized utilization ratios (SURs) and facility-specific summary S
Table 2b. Central line days (CLDs),

State	No. of Facilities	No. of Device days			95% CI
		Observed	Predicted	SUR	Lower
Alaska	1	.	.	.	.
Alabama	1	.	.	.	.
Arkansas	1	.	.	.	.
Arizona	1	.	.	.	.
California	15	2,221	1,405.4382	1.5803	1.5156
Colorado	4	.	.	.	.
Connecticut	0	.	.	.	.
D.C	0	.	.	.	.
Delaware	0	.	.	.	.
Florida	2	.	.	.	.
Georgia	2	.	.	.	.
Guam	0	.	.	.	.
Hawaii	1	.	.	.	.
Iowa	3	.	.	.	.
Idaho	2	.	.	.	.
Illinois	16	568	1,063.5843	0.5340	0.4915
Indiana	16	717	859.0085	0.8347	0.7752
Kansas	5	654	872.8879	0.7492	0.6934
Kentucky	3	.	.	.	.
Louisiana	1	.	.	.	.
Massachusetts	2	.	.	.	.
Maryland	0	.	.	.	.
Maine	3	.	.	.	.
Michigan	8	307	368.3298	0.8335	0.7441
Minnesota	5	232	294.5005	0.7878	0.6912
Missouri	6	386	285.7530	1.3508	1.2211
Mississippi	1	.	.	.	.
Montana	3	.	.	.	.
North Carolina	4	.	.	.	.
North Dakota	3	.	.	.	.
Nebraska	3	.	.	.	.
New Hampshire	6	290	459.5375	0.6311	0.5615
New Jersey	0	.	.	.	.
New Mexico	5	356	306.3972	1.1619	1.0458
Nevada	2	.	.	.	.
New York	2	.	.	.	.
Ohio	11	573	922.2240	0.6213	0.5720
Oklahoma	1	.	.	.	.
Oregon	13	1,505	1,002.4682	1.5013	1.4269
Pennsylvania	7	413	466.4189	0.8855	0.8031

Puerto Rico	0	.	.	.	.
Rhode Island	0	.	.	.	.
South Carolina	2	.	.	.	.
South Dakota	0	.	.	.	.
Tennessee	1	.	.	.	.
Texas	9	142	521.1202	0.2725	0.2304
Utah	0	.	.	.	.
Virginia	4	.	.	.	.
Virgin Islands	0	.	.	.	.
Vermont	4	.	.	.	.
Washington	9	1,284	949.3997	1.3524	1.2800
Wisconsin	12	373	471.5508	0.7910	0.7137
West Virginia	7	263	335.5557	0.7838	0.6933
Wyoming	2	.	.	.	.
All US	209	14,127	16,431.3803	0.8598	0.8457

1. The number of reporting facilities included in the SUR calculation; SURs are not calculated when the
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 d
4. Data from all ICUs; excludes wards (and other non-critical care locations), and NICUs. Data containe

URs using device days data reported to NHSN during 2017 for critical access hospitals (CAHs), by device t critical care locations⁴

for SUR	Facility-specific SURs						10%	25%
	Upper	No. Facilities with ≥1 Predicted Device Days	No. Facilities with SUR		No. Facilities with SUR			
		Significantly > National SUR	Significantly < National SUR					
		N	N					
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1.6471	15	9	60	3	20	.	.	
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0.5793	15	2	13	4	27	.	.	
0.8975	16	4	25	5	31	.	.	
0.8083	5	
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0.9308	8	
0.8942	4	
1.4908	6	
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0.7069	6	
.	
1.2874	5	
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0.6738	11	1	9	6	55	.	.	
.	
1.5786	13	7	54	3	23	.	.	
0.9741	7	

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0.3202	9
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1.4280	9
0.8744	12	4	33	5	42	.	.
0.8829	7
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0.8740	207	69	33	75	36	0.1827	0.3897

re are 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 or 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 2017. If a facility's predicted number of device days was <1.0, a facility-specific SUR was neither calculated nor reported in this table. Data from critical access hospitals; as such, data from ACHs, IRFs and LTACHs are excluded.

Table 2. State-specific standardized utilization ratios (SURs) and facility-specific summary S
Table 2c. Central line days (CLD)

State	No. of Facilities	No. of Device days			95% CI
		Observed	Predicted	SUR	Lower
Alaska	3	.	.	.	.
Alabama	3	.	.	.	.
Arkansas	12	2,092	1,825.1268	1.1462	1.0979
Arizona	4	.	.	.	.
California	31	5,387	4,901.0868	1.0991	1.0701
Colorado	14	1,468	2,268.5058	0.6471	0.6146
Connecticut	0	.	.	.	.
D.C.	0	.	.	.	.
Delaware	0	.	.	.	.
Florida	8	1,388	2,616.4896	0.5305	0.5031
Georgia	13	4,861	3,451.1648	1.4085	1.3693
Guam	0	.	.	.	.
Hawaii	2	.	.	.	.
Iowa	48	7,678	7,408.2923	1.0364	1.0134
Idaho	5	1,102	814.9080	1.3523	1.2742
Illinois	35	8,381	5,835.9801	1.4361	1.4056
Indiana	35	5,773	5,621.6208	1.0269	1.0007
Kansas	53	9,859	6,247.6574	1.578	1.5471
Kentucky	14	4,068	2,988.9631	1.361	1.3197
Louisiana	6	2,329	1,265.9519	1.8397	1.7662
Massachusetts	2	.	.	.	.
Maryland	0	.	.	.	.
Maine	15	5,273	4,672.8214	1.1284	1.0983
Michigan	27	2,389	3,816.6327	0.6259	0.6012
Minnesota	31	4,634	3,865.1087	1.1989	1.1648
Missouri	20	4,777	3,136.7772	1.5229	1.4802
Mississippi	6	1,118	1,502.1725	0.7443	0.7016
Montana	9	1,728	1,854.2957	0.9319	0.8887
North Carolina	9	1,756	2,133.3597	0.8231	0.7853
North Dakota	10	1,569	1,492.0486	1.0516	1.0005
Nebraska	16	2,058	1,405.0090	1.4648	1.4025
New Hampshire	13	2,729	3,335.4966	0.8182	0.7879
New Jersey	0	.	.	.	.
New Mexico	9	1,514	1,528.2831	0.9907	0.9417
Nevada	2	.	.	.	.
New York	5	486	1,025.8319	0.4738	0.433
Ohio	19	3,820	3,470.9687	1.1006	1.0661
Oklahoma	12	1,904	1,591.7922	1.1961	1.1433
Oregon	20	3,528	3,677.7813	0.9593	0.928
Pennsylvania	15	4,941	4,215.0294	1.1722	1.1399

Puerto Rico	0	.	.	.	.
Rhode Island	0	.	.	.	.
South Carolina	0	.	.	.	.
South Dakota	15	1,046	1,178.5436	0.8875	0.835
Tennessee	6	1,088	704.8728	1.5435	1.4539
Texas	23	5,076	3,585.0164	1.4159	1.3773
Utah	5	384	383.8021	1.0005	0.9041
Virginia	5	1,786	1,331.0142	1.3418	1.2807
Virgin Islands	0	.	.	.	.
Vermont	7	1,926	1,651.7162	1.1661	1.1148
Washington	37	10,123	7,157.5877	1.4143	1.387
Wisconsin	58	12,900	10,254.1618	1.258	1.2365
West Virginia	16	2,429	2,962.7192	0.8199	0.7877
Wyoming	13	611	1,404.5509	0.435	0.4015
All US	716	140,276	123,063.4434	1.1399	1.1339

1. The number of reporting facilities included in the SUR calculation; SURs are not calculated when the
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 d
4. Data from all wards (for this table wards also include step-down, mixed acuity, and specialty care are

URs using device days data reported to NHSN during 2017 for critical access hospitals (CAHs), by device t (CLDs), wards⁴

for SUR	Facility-specific SURs						10%	25%
	Upper	No. Facilities with ≥1 Predicted Device Days	No. Facilities with SUR		No. Facilities with SUR			
		Significantly > National SUR	Significantly < National SUR	N	N			
.	
.	
1.1961	12	5	42	6	50	.	.	
.	
1.1288	31	9	29	19	61	0.0436	0.2239	
0.6809	14	4	29	7	50	.	.	
.	
.	
0.559	8	.	.	.	.	.	.
1.4485	13	3	23	9	69	.	.	
.	
1.0598	48	14	29	18	38	0.0538	0.7193	
1.434	5	.	.	.	.	.	.
1.4671	35	16	46	15	43	0.0650	0.4214	
1.0537	35	6	17	20	57	0.3041	0.5641	
1.6094	53	19	36	29	55	0.0000	0.3041	
1.4033	14	7	50	7	50	.	.	
1.9155	6	.	.	.	.	.	.
.	
.	
1.1592	15	5	33	7	47	.	.	
0.6514	27	2	7	21	78	0.0000	0.2579	
1.2338	30	10	33	16	53	0.0000	0.3465	
1.5665	20	12	60	4	20	0.4088	1.1203	
0.7888	6	.	.	.	.	.	.
0.9766	9	.	.	.	.	.	.
0.8623	9	.	.	.	.	.	.
1.1046	10	5	50	5	50	.	.	
1.5291	16	7	44	5	31	.	.	
0.8493	13	2	15	10	77	.	.	
.	
1.0415	9	.	.	.	.	.	.
.	
0.5173	5	.	.	.	.	.	.
1.1359	19	4	21	13	68	.	.	
1.2508	12	4	33	4	33	.	.	
0.9913	20	5	25	13	65	0.2083	0.4451	
1.2052	15	6	40	7	47	.	.	

.
.
.
0.9426	15	6	40	8	53	.	.
1.6374	6	.	.	.	.	.	.
1.4552	23	8	35	11	48	0.0872	0.3816
1.1045	5	.	.	.	.	.	.
1.4052	5	.	.	.	.	.	.
.
1.219	7	.	.	.	.	.	.
1.442	37	15	41	16	43	0.0523	0.6799
1.2798	58	14	24	34	59	0.0000	0.2171
0.8529	16	2	13	10	63	.	.
0.4706	13	1	8	12	92	.	.
1.1458	715	219	31	390	55	0.0433	0.4237

re are less than 5 reporting facilities. This may be different from those reported in the SIR tables due to exclusion or 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 2017. If a facility's predicted number of device days was <1.0 , a facility-specific SUR was neither calculated nor reported (including hematology/oncology, bone marrow transplant). Data contained in this table are reported from critical care units.

type and patient population:

Median		
50%	75%	90%
.	.	.
.	.	.
.	.	.
.	.	.
0.6811	1.4042	2.2474
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
1.0509	1.5544	2.0573
.	.	.
1.2961	1.8459	2.8709
0.8586	1.1346	2.1192
0.9492	1.6773	2.9103
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
0.6423	0.8510	1.2083
0.7432	1.5373	2.5327
1.4975	1.8496	2.3077
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
0.8391	1.4396	1.8951
.	.	.

.	.	.
.	.	.
.	.	.
.	.	.
1.2067	1.9493	2.5400
.	.	.
.	.	.
.	.	.
1.0997	1.9680	2.6716
0.6993	1.2438	2.3203
.	.	.
.	.	.
0.8877	1.4877	2.2474

and inclusion criteria. Refer to the technical appendix for details.
 ed device days in 2017.
 ulated nor included in the distribution of facility-specific SURs.
 al access hospitals; as such, data from ACHs, IRFs and LTACHs are exclude

Table 3. State-specific standardized utilization ratios (SURs) and facility-specific su
Table 3a. Urinary catheter days (I

State	No. of Facilities	No. of Device days			95% CI
		Observed	Predicted	SUR	Lower
Alaska	5	1,723	2,965.5830	0.5810	0.5540
Alabama	4	.	.	.	.
Arkansas	13	4,886	4,242.9317	1.1516	1.1196
Arizona	4	.	.	.	.
California	30	16,840	13,809.1358	1.2195	1.2012
Colorado	20	4,208	5,721.4702	0.7355	0.7135
Connecticut	0	.	.	.	.
D.C.	0	.	.	.	.
Delaware	0	.	.	.	.
Florida	8	4,739	6,099.1961	0.7770	0.7551
Georgia	15	4,314	8,260.1555	0.5223	0.5069
Guam	0	.	.	.	.
Hawaii	2	.	.	.	.
Iowa	64	17,698	21,002.8276	0.8426	0.8303
Idaho	7	3,269	2,570.0026	1.2720	1.2290
Illinois	40	13,212	14,645.5398	0.9021	0.8868
Indiana	35	13,884	13,989.6798	0.9924	0.9760
Kansas	62	14,434	17,061.4279	0.8460	0.8323
Kentucky	15	7,474	7,089.4488	1.0542	1.0306
Louisiana	6	2,115	2,791.8205	0.7576	0.7258
Massachusetts	3	.	.	.	.
Maryland	0	.	.	.	.
Maine	15	8,265	10,357.5741	0.7980	0.7809
Michigan	29	6,937	9,115.5444	0.7610	0.7432
Minnesota	76	17,908	23,188.3658	0.7723	0.7610
Missouri	22	6,061	7,908.5655	0.7664	0.7473
Mississippi	8	2,245	3,247.7156	0.6913	0.6631
Montana	10	3,957	4,621.9638	0.8561	0.8298
North Carolina	10	5,778	6,633.4640	0.8710	0.8488
North Dakota	12	4,563	4,176.1091	1.0926	1.0613
Nebraska	25	4,226	6,257.3787	0.6754	0.6552
New Hampshire	13	7,333	7,943.2944	0.9232	0.9022
New Jersey	0	.	.	.	.
New Mexico	9	4,787	4,170.2366	1.1479	1.1157
Nevada	2	.	.	.	.
New York	6	2,046	2,665.6557	0.7675	0.7348
Ohio	20	9,600	10,195.5253	0.9416	0.9229
Oklahoma	13	4,134	3,664.8404	1.1280	1.0940
Oregon	25	12,719	12,195.2467	1.0429	1.0249
Pennsylvania	15	9,563	9,687.0458	0.9872	0.9676
Puerto Rico	0	.	.	.	.

Rhode Island	0	.	.	.	.
South Carolina	5	1,575	2,410.9064	0.6533	0.6216
South Dakota	37	4,956	7,589.1495	0.6530	0.6351
Tennessee	6	1,322	1,470.0232	0.8993	0.8518
Texas	32	10,248	10,087.5908	1.0159	0.9964
Utah	7	904	1,268.6639	0.7126	0.6672
Virginia	5	3,125	3,732.4337	0.8373	0.8083
Virgin Islands	0	.	.	.	.
Vermont	3	.	.	.	.
Washington	37	18,175	18,118.7220	1.0031	0.9886
Wisconsin	58	20,314	22,935.1211	0.8857	0.8736
West Virginia	19	5,570	7,757.4237	0.7180	0.6994
Wyoming	15	2,682	3,118.8112	0.8599	0.8278
All US	867	294,796	335,989.8498	0.8774	0.8742

1. The number of reporting facilities included in the SUR calculation; SURs are not calculated when there
2. Percent of facilities with at least one predicted device day that had an SUR significantly greater than or
3. Facility-specific percentiles are only calculated if at least 20 facilities had ≥ 1.0 predicted number of dev
4. Data from all ICUs and wards (and other non-critical care locations). This excludes NICUs. Data conta

.
0.6861	5	.	.	.	.	.
0.6714	37	6	16	21	57	0.1483
0.9488	6	.	.	.	.	.
1.0357	32	17	53	12	38	0.2832
0.7602	7	.	.	.	.	.
0.8670	5	.	.	.	.	.
.
.
1.0177	37	18	49	14	38	0.3209
0.8980	58	18	31	29	50	0.3920
0.7370	19	4	21	13	68	.
0.8930	15	4	27	6	40	.
0.8806	867	304	35	392	45	0.3103

are less than 5 reporting facilities. This may be different from those reported in the SIR tables due to exclusion of facilities with 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 2017. If a facility's predicted number of device days was <1.0 , a facility-specific SUR was neither calculated nor reported. Data in this table are reported from critical access hospitals; as such, data from ACHs, IRFs and LTACHs

DAHs), by device type and patient population:

Median			
25%	50%	75%	90%
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.5665	1.1351	1.4229	1.7493
0.4834	0.8417	1.2559	1.5039
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.6426	0.8530	1.2318	1.4539
.	.	.	.
0.5639	1.0387	1.3812	1.6895
0.6919	0.8519	1.0612	1.9611
0.4711	0.8071	1.1836	1.5416
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.5207	0.7208	0.9281	1.4795
0.4611	0.6704	0.9642	1.2543
0.6144	0.7967	1.0172	1.3501
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.3845	0.5916	0.8589	1.0791
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.7645	0.8508	1.1186	1.2695
.	.	.	.
0.6962	0.9857	1.3365	1.5637
.	.	.	.
.	.	.	.

.	.	.	.
0.3348	0.6499	0.9086	1.4510
0.5493	1.0200	1.4671	1.7318
.	.	.	.
.	.	.	.
0.6654	0.9368	1.2168	1.5107
0.5347	0.7934	1.0284	1.2070
.	.	.	.
.	.	.	.
0.5317	0.8078	1.1492	1.5093

clusion and inclusion criteria. Refer to the technical appendix for details.
predicted device days in 2017.
er calculated nor included in the distribution of facility-specific SURs.
are excluded.

Table 3. State-specific standardized utilization ratios (SURs) and facility-specific summary S
Table 3b. Urinary catheter days (UCDs)

State	No. of Facilities	No. of Device days			95% CI
		Observed	Predicted	SUR	Lower
Alaska	1	.	.	.	.
Alabama	1	.	.	.	.
Arkansas	1	.	.	.	.
Arizona	1	.	.	.	.
California	14	4,832	3,768.0066	1.2824	1.2466
Colorado	3	.	.	.	.
Connecticut	0	.	.	.	.
D.C.	0	.	.	.	.
Delaware	0	.	.	.	.
Florida	2	.	.	.	.
Georgia	2	.	.	.	.
Guam	0	.	.	.	.
Hawaii	1	.	.	.	.
Iowa	3	.	.	.	.
Idaho	2	.	.	.	.
Illinois	15	1,470	3,002.1516	0.4896	0.4651
Indiana	16	2,409	2,426.0310	0.9930	0.9539
Kansas	4	.	.	.	.
Kentucky	3	.	.	.	.
Louisiana	1	.	.	.	.
Massachusetts	2	.	.	.	.
Maryland	0	.	.	.	.
Maine	3	.	.	.	.
Michigan	8	900	1,040.2452	0.8652	0.8101
Minnesota	10	1,121	1,654.9056	0.6774	0.6386
Missouri	7	808	814.9356	0.9915	0.9249
Mississippi	1	.	.	.	.
Montana	3	.	.	.	.
North Carolina	4	.	.	.	.
North Dakota	3	.	.	.	.
Nebraska	4	.	.	.	.
New Hampshire	6	929	1,297.8360	0.7158	0.6709
New Jersey	0	.	.	.	.
New Mexico	5	1,225	865.3338	1.4156	1.3380
Nevada	2	.	.	.	.
New York	2	.	.	.	.
Ohio	11	1,672	2,604.5658	0.6419	0.6117
Oklahoma	1	.	.	.	.
Oregon	13	2,932	2,831.1930	1.0356	0.9986
Pennsylvania	7	1,163	1,317.2706	0.8829	0.8332

Puerto Rico	0	.	.	.	.
Rhode Island	0	.	.	.	.
South Carolina	0	.	.	.	.
South Carolina	2	.	.	.	.
Tennessee	1	.	.	.	.
Texas	9	766	1,471.7592	0.5205	0.4846
Utah	0	.	.	.	.
Virginia	4	.	.	.	.
Virgin Islands	0	.	.	.	.
Vermont	2	.	.	.	.
Washington	9	2,814	2,681.3160	1.0495	1.0113
Wisconsin	12	1,346	1,331.7642	1.0107	0.9577
West Virginia	7	877	947.6838	0.9254	0.8657
Wyoming	2	.	.	.	.
All US	210	37,237	45,097.4957	0.8257	0.8173

1. The number of reporting facilities included in the SUR calculation; SURs are not calculated when the
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 d
4. Data from all ICUs; excludes wards (and other non-critical care locations), and NICUs. Data containe

URs using device days data reported to NHSN during 2017 for critical access hospitals (CAHs), by device type, critical care locations⁴

for SUR	Facility-specific SURs						10%	25%
	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	N	N		
.	
.	
.	
1.3189	14	9	64	2	14	.	.	
.	
.	
.	
.	
.	
.	
.	
.	
0.5152	15	7	47	4	27	.	.	
1.0333	16	7	44	1	6	.	.	
.	
.	
.	
.	
.	
0.9231	8	.	.	.	.	.	.
0.7179	10	4	40	4	40	.	.	
1.0616	7	.	.	.	.	.	.
.	
.	
.	
.	
0.7630	6	.	.	.	.	.	.
.	
1.4966	5	.	.	.	.	.	.
.	
.	
0.6733	11	2	18	7	64	.	.	
.	
1.0736	13	5	38	2	15	.	.	
0.9347	7	.	.	.	.	.	.

.
.
.
.
0.5583	9.	.	.	.	.	.	.
.
.
.
1.0888	9.	.	.	.	.	.	.
1.0658	12	4	33	0	0	.	.
0.9882	7.	.	.	.	.	.	.
.
0.8341	210	89	42	57	27	0.3963	0.5938

re are less than 5 reporting facilities. This may be different from those reported in the SIR tables due to exclusion or 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 2017. If a facility's predicted number of device days was <1.0, a facility-specific SUR was neither calculated in this table are reported from critical access hospitals; as such, data from ACHs, IRFs and LTACHs are excluded

Table 3. State-specific standardized utilization ratios (SURs) and facility-specific summary S
Table 3c. Urinary catheter day

State	No. of Facilities	No. of Device days			95% CI
		Observed	Predicted	SUR	Lower
Alaska	5	1,607	2,848.6460	0.5641	0.5371
Alabama	4	.	.	.	.
Arkansas	13	4,725	4,159.5935	1.1359	1.1039
Arizona	4	.	.	.	.
California	28	12,008	10,041.1292	1.1959	1.1746
Colorado	19	3,776	5,262.6160	0.7175	0.6949
Connecticut	0	.	.	.	.
D.C.	0	.	.	.	.
Delaware	0	.	.	.	.
Florida	8	3,999	5,377.4807	0.7437	0.7209
Georgia	14	3,757	7,364.5169	0.5101	0.4940
Guam	0	.	.	.	.
Hawaii	2	.	.	.	.
Iowa	64	17,618	20,889.5140	0.8434	0.8310
Idaho	6	2,917	2,067.0088	1.4112	1.3607
Illinois	36	11,742	11,643.3882	1.0085	0.9903
Indiana	35	11,475	11,563.6488	0.9923	0.9743
Kansas	62	13,319	15,165.0721	0.8783	0.8634
Kentucky	14	6,219	6,168.4464	1.0082	0.9833
Louisiana	6	1,972	2,692.0123	0.7325	0.7007
Massachusetts	2	.	.	.	.
Maryland	0	.	.	.	.
Maine	15	7,989	10,021.9155	0.7972	0.7798
Michigan	29	6,037	8,075.2992	0.7476	0.7289
Minnesota	75	16,787	21,533.4602	0.7796	0.7678
Missouri	22	5,253	7,093.6299	0.7405	0.7207
Mississippi	7	2,149	3,068.1926	0.7004	0.6713
Montana	10	3,720	4,183.8618	0.8891	0.8609
North Carolina	9	4,268	4,784.2123	0.8921	0.8656
North Dakota	12	4,213	3,659.9393	1.1511	1.1167
Nebraska	24	3,480	4,980.9537	0.6987	0.6757
New Hampshire	13	6,404	6,645.4584	0.9637	0.9403
New Jersey	0	.	.	.	.
New Mexico	9	3,562	3,304.9028	1.0778	1.0429
Nevada	2	.	.	.	.
New York	6	1,634	2,361.6195	0.6919	0.6589
Ohio	20	7,928	7,590.9595	1.0444	1.0216
Oklahoma	13	3,926	3,527.8100	1.1129	1.0785
Oregon	25	9,787	9,364.0537	1.0452	1.0246
Pennsylvania	15	8,400	8,369.7752	1.0036	0.9823

Puerto Rico	0	.	.	.	.
Rhode Island	0	.	.	.	.
South Carolina	5	1,348	1,968.8516	0.6847	0.6488
South Dakota	37	4,956	7,589.1495	0.6530	0.6351
Tennessee	6	1,251	1,421.6014	0.8800	0.8322
Texas	29	9,482	8,615.8316	1.1005	1.0785
Utah	7	904	1,268.6639	0.7126	0.6672
Virginia	5	2,240	2,746.8689	0.8155	0.7822
Virgin Islands	0	.	.	.	.
Vermont	2	.	.	.	.
Washington	37	15,361	15,437.4060	0.9951	0.9794
Wisconsin	58	18,968	21,603.3569	0.8780	0.8656
West Virginia	19	4,693	6,809.7399	0.6892	0.6697
Wyoming	14	2,506	2,935.6648	0.8536	0.8207
All US	847	257,559	290,892.3541	0.8854	0.8820

1. The number of reporting facilities included in the SUR calculation; SURs are not calculated when the
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 d
4. Data from all wards (for this table wards also include step-down, mixed acuity, and specialty care are

URs using device days data reported to NHSN during 2017 for critical access hospitals (CAHs), by device types (UCDs), wards⁴

for SUR	Facility-specific SURs						10%	25%
	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	N	N		
0.5922	5	.	.	.	.	.	.
1.1687	13	7	54	2	15	.	.	
1.2175	28	16	57	10	36	0.2593	0.5792	
0.7407	19	8	42	7	37	.	.	
.	
.	
0.7670	8	.	.	.	.	.	.
0.5267	14	2	14	11	79	.	.	
.	
0.8559	64	25	39	26	41	0.4596	0.6426	
1.4632	6	.	.	.	.	.	.
1.0268	36	20	56	10	28	0.4326	0.5622	
1.0106	35	11	31	16	46	0.4218	0.6919	
0.8933	62	22	35	27	44	0.2284	0.4711	
1.0335	14	6	43	4	29	.	.	
0.7654	6	.	.	.	.	.	.
.	
0.8148	15	2	13	8	53	.	.	
0.7666	29	5	17	18	62	0.2319	0.4205	
0.7914	75	16	21	45	60	0.2386	0.4775	
0.7608	22	5	23	10	45	0.4744	0.6144	
0.7305	7	.	.	.	.	.	.
0.9180	10	5	50	4	40	.	.	
0.9191	9	.	.	.	.	.	.
1.1862	12	6	50	3	25	.	.	
0.7222	24	3	13	16	67	0.1283	0.3645	
0.9875	13	8	62	2	15	.	.	
.	
1.1136	9	.	.	.	.	.	.
.	
0.7261	6	.	.	.	.	.	.
1.0676	20	9	45	6	30	0.5707	0.7889	
1.1481	13	6	46	6	46	.	.	
1.0661	25	13	52	10	40	0.5074	0.6780	
1.0252	15	7	47	5	33	.	.	

.
.
0.7220	5	.	.	.	.	.	.
0.6714	37	6	16	23	62	0.1483	0.3348
0.9298	6	.	.	.	.	.	.
1.1229	29	14	48	9	31	0.2533	0.5914
0.7602	7	.	.	.	.	.	.
0.8498	5	.	.	.	.	.	.
.
1.0109	37	19	51	13	35	0.3209	0.6654
0.8906	58	18	31	28	48	0.3920	0.5347
0.7091	19	3	16	13	68	.	.
0.8875	14	4	29	7	50	.	.
0.8889	847	297	35	384	45	0.3098	0.5322

re are 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 or 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 2017. If a facility's predicted number of device days was <1.0 , a facility-specific SUR was neither calculated nor reported. Data are reported for critical care units [including hematology/oncology, bone marrow transplant]. Data contained in this table are reported from critical care units.

type and patient population:

Median		
50%	75%	90%
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.	.	.
1.1318	1.4816	1.7360
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0.8530	1.2318	1.4691
.	.	.
1.1018	1.4260	1.7321
0.7844	1.1200	2.1273
0.8176	1.1836	1.5487
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.	.	.
0.6955	0.9011	1.4795
0.6831	0.9552	1.2938
0.7790	0.9854	1.3501
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.	.	.
0.6044	0.8628	1.0766
.	.	.
.	.	.
.	.	.
.	.	.
0.9495	1.1188	1.5221
.	.	.
0.9886	1.4277	1.5637
.	.	.

.	.	.
.	.	.
.	.	.
0.6499	0.9086	1.4510
.	.	.
1.0465	1.4080	1.7318
.	.	.
.	.	.
.	.	.
1.0125	1.2168	1.5719
0.7990	1.0284	1.3176
.	.	.
.	.	.
0.8168	1.1501	1.5416

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

ed device days in 2017.

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

al access hospitals; as such, data from ACHs, IRFs and LTACHs are exclude

Table 4. State-specific standardized utilization ratios (SURs) and facility-specific summary S
Table 4a. Ventilator days (VD)

State	No. of Facilities	No. of Device days			95% CI
		Observed	Predicted	SUR	Lower
Alaska	2	.	.	.	.
Alabama	0	.	.	.	.
Arkansas	3	.	.	.	.
Arizona	1	.	.	.	.
California	14	905	387.9924	2.3325	2.1843
Colorado	3	.	.	.	.
Connecticut	0	.	.	.	.
D.C.	0	.	.	.	.
Delaware	0	.	.	.	.
Florida	4	.	.	.	.
Georgia	1	.	.	.	.
Guam	0	.	.	.	.
Hawaii	0	.	.	.	.
Iowa	3	.	.	.	.
Idaho	2	.	.	.	.
Illinois	6	8	50.5830	0.1582	0.0735
Indiana	20	102	359.1885	0.2840	0.2327
Kansas	4	.	.	.	.
Kentucky	2	.	.	.	.
Louisiana	1	.	.	.	.
Massachusetts	1	.	.	.	.
Maryland	0	.	.	.	.
Maine	5	25	61.0401	0.4096	0.2709
Michigan	13	53	153.2490	0.3458	0.2617
Minnesota	4	.	.	.	.
Missouri	4	.	.	.	.
Mississippi	0	.	.	.	.
Montana	4	.	.	.	.
North Carolina	5	106	211.1690	0.5020	0.4130
North Dakota	2	.	.	.	.
Nebraska	0	.	.	.	.
New Hampshire	6	120	174.6748	0.6870	0.5721
New Jersey	0	.	.	.	.
New Mexico	4	.	.	.	.
Nevada	2	.	.	.	.
New York	2	.	.	.	.
Ohio	12	244	283.7782	0.8598	0.7569
Oklahoma	2	.	.	.	.
Oregon	10	170	188.2454	0.9031	0.7748
Pennsylvania	9	652	198.1922	3.2897	3.0444

Puerto Rico	0	.	.	.	.
Rhode Island	0	.	.	.	.
South Carolina	3	.	.	.	.
South Dakota	0	.	.	.	.
Tennessee	2	.	.	.	.
Texas	8	46	45.3540	1.0142	0.7512
Utah	0	.	.	.	.
Virginia	3	.	.	.	.
Virgin Islands	0	.	.	.	.
Vermont					
Washington	8	391	327.3117	1.1946	1.0805
Wisconsin	14	72	181.4164	0.3969	0.3128
West Virginia	5	89	133.9145	0.6646	0.5369
Wyoming	3	.	.	.	.
All US	197	4,128	3,970.6094	1.0396	1.0083

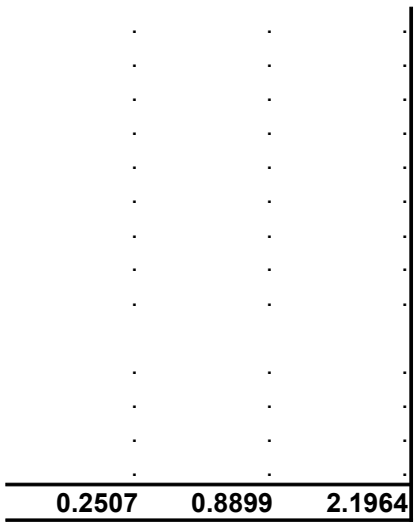
1. The number of reporting facilities included in the SUR calculation; SURs are not calculated when the
2. Percent of facilities with at least one predicted device day that had an SUR significantly greater than
3. Facility-specific percentiles are only calculated if at least 20 facilities had ≥ 1.0 predicted number of d
4. Data from all ICUs and wards (and other non-critical care locations). This excludes NICUs. Data con

URs using device days data reported to NHSN during 2017 for critical access hospitals (CAHs), by device type (s), all locations⁴

for SUR	Facility-specific SURs						10%	25%
	Upper	No. Facilities with ≥1 Predicted Device Days	No. Facilities with SUR		No. Facilities with SUR			
		Significantly > National SUR	Significantly < National SUR					
		N	N					
2.4883	11	9	82	2	18			
0.3003	5							
0.3433	20	0	0	14	70	0.0000	0.0000	
0.5957	5							
0.4489	11	2	18	8	73			
0.6046	5							
0.8185	6							
0.9729	11	2	18	7	64			
1.0467	9							
3.5497	9							

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1.3411	6
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1.3175	7
0.4969	14	1	7	7	50	.	.
0.8139	5
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1.0717	180	32	18	98	54	0.0000	0.0000

re are less than 5 reporting facilities. This may be different from those reported in the SIR tables due to exclusion or 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 2017. If a facility's predicted number of device days was <1.0, a facility-specific SUR was neither calculated nor reported in this table are reported from critical access hospitals; as such, data from ACHs, IRFs and LTACHs are excluded.



and inclusion criteria. Refer to the technical appendix for details.
ed device days in 2017.
culated nor included in the distribution of facility-specific SURs.
cluded.

Table 4. State-specific standardized utilization ratios (SURs) and facility-specific summary S
Table 4b. Ventilator days (VDs), c

State	No. of Facilities	No. of Device days			95% CI
		Observed	Predicted	SUR	Lower
Alaska	0	.	.	.	.
Alabama	0	.	.	.	.
Arkansas	0	.	.	.	.
Arizona	1	.	.	.	.
California	10	905	379.3356	2.3858	2.2341
Colorado	2	.	.	.	.
Connecticut	0	.	.	.	.
D.C.	0	.	.	.	.
Delaware	0	.	.	.	.
Florida	2	.	.	.	.
Georgia	1	.	.	.	.
Guam	0	.	.	.	.
Hawaii	0	.	.	.	.
Iowa	1	.	.	.	.
Idaho	1	.	.	.	.
Illinois	4	.	.	.	.
Indiana	16	99	338.1514	0.2928	0.2392
Kansas	2	.	.	.	.
Kentucky	2	.	.	.	.
Louisiana	1	.	.	.	.
Massachusetts	1	.	.	.	.
Maryland	0	.	.	.	.
Maine	3	.	.	.	.
Michigan	6	47	134.0668	0.3506	0.2605
Minnesota	2	.	.	.	.
Missouri	4	.	.	.	.
Mississippi	0	.	.	.	.
Montana	2	.	.	.	.
North Carolina	3	.	.	.	.
North Dakota	2	.	.	.	.
Nebraska	0	.	.	.	.
New Hampshire	5	120	162.0739	0.7404	0.6166
New Jersey	0	.	.	.	.
New Mexico	3	.	.	.	.
Nevada	2	.	.	.	.
New York	2	.	.	.	.
Ohio	8	132	265.5165	0.4971	0.4176
Oklahoma	0	.	.	.	.
Oregon	8	168	174.3787	0.9634	0.8258
Pennsylvania	5	129	173.0931	0.7453	0.6247

Puerto Rico	0	.	.	.	.
Rhode Island	0	.	.	.	.
South Carolina	2	.	.	.	.
South Dakota	0	.	.	.	.
Tennessee	1	.	.	.	.
Texas	6	45	38.659	1.164	0.8592
Utah	0	.	.	.	.
Virginia	3	.	.	.	.
Virgin Islands	0	.	.	.	.
Vermont	0	.	.	.	.
Washington	7	391	324.1019	1.2064	1.0912
Wisconsin	9	66	155.4624	0.4245	0.331
West Virginia	4	.	.	.	.
Wyoming	2	.	.	.	.
All US	133	3,359	3,684.0363	0.9118	0.8813

1. The number of reporting facilities included in the SUR calculation; SURs are not calculated when the
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 d
4. Data from all ICUs; excludes wards (and other non-critical care locations), and NICUs. Data contain

URs using device days data reported to NHSN during 2017 for critical access hospitals (CAHs), by device t
ritical care locations⁴

for SUR	Facility-specific SURs						10%	25%
	Upper	No. Facilities with ≥1 Predicted Device Days	No. Facilities with SUR		No. Facilities with SUR			
		Significantly > National SUR	Significantly < National SUR					
		N	N					
2.545	10	9	90	1	10			
0.3549	16	0	0	11	68.75			
0.4622	6							
0.8821	5							
0.5876	7							
1.1176	7							
0.8825	5							

1.5437	5	.	.	.	.	.	.

1.3305	7	.	.	.	.	.	.
0.5367	9	.	.	.	.	.	.

0.943	127	28	22	66	52	0.0000	0.0620

re are 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 or 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 2017. If a facility's predicted number of device days was <1.0 , a facility-specific SUR was neither calculated nor reported. Data from critical access hospitals; as such, data from ACHs, IRFs and LTACHs are excluded.

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0.4033	1.1524	2.2878

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

ed device days in 2017.

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

ed.

Table 4. State-specific standardized utilization ratios (SURs) and facility-specific summary S
Table 4c. Ventilator days (

State	No. of Facilities	No. of Device days			95% CI
		Observed	Predicted	SUR	Lower
Alaska	2	.	.	.	.
Alabama	0	.	.	.	.
Arkansas	3	.	.	.	.
Arizona	0	.	.	.	.
California	5	0	8.6568	0.0000	.
Colorado	2	.	.	.	.
Connecticut	0	.	.	.	.
D.C.	0	.	.	.	.
Delaware	0	.	.	.	.
Florida	2	.	.	.	.
Georgia	0	.	.	.	.
Guam	0	.	.	.	.
Hawaii	0	.	.	.	.
Iowa	2	.	.	.	.
Idaho	1	.	.	.	.
Illinois	2	.	.	.	.
Indiana	5	3	21.0372	0.1426	0.0363
Kansas	2	.	.	.	.
Kentucky	1	.	.	.	.
Louisiana	0	.	.	.	.
Massachusetts	0	.	.	.	.
Maryland	0	.	.	.	.
Maine	2	.	.	.	.
Michigan	7	6	19.1822	0.3128	0.1268
Minnesota	3	.	.	.	.
Missouri	0	.	.	.	.
Mississippi	0	.	.	.	.
Montana	2	.	.	.	.
North Carolina	2	.	.	.	.
North Dakota	0	.	.	.	.
Nebraska	0	.	.	.	.
New Hampshire	3	.	.	.	.
New Jersey	0	.	.	.	.
New Mexico	2	.	.	.	.
Nevada	0	.	.	.	.
New York	0	.	.	.	.
Ohio	7	112	18.2616	6.1331	5.0735
Oklahoma	2	.	.	.	.
Oregon	4	.	.	.	.
Pennsylvania	4	.	.	.	.

Puerto Rico	0	.	.	.	.
Rhode Island	0	.	.	.	.
South Carolina	2	.	.	.	.
South Dakota	0	.	.	.	.
Tennessee	1	.	.	.	.
Texas	2	.	.	.	.
Utah	0	.	.	.	.
Virginia	0	.	.	.	.
Virgin Islands	0	.	.	.	.
Vermont	0	.	.	.	.
Washington	2	.	.	.	.
Wisconsin	8	6	25.954	0.2312	0.0937
West Virginia	3	.	.	.	.
Wyoming	1	.	.	.	.
All US	84	769	286.5732	2.6834	2.4987

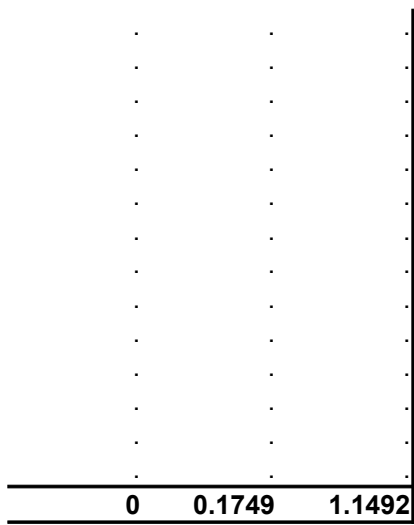
1. The number of reporting facilities included in the SUR calculation; SURs are not calculated when the
2. Percent of facilities with at least one predicted device day that had an SUR significantly greater than
3. Facility-specific percentiles are only calculated if at least 20 facilities had ≥ 1.0 predicted number of d
4. Data from all wards (for this table wards also include step-down, mixed acuity, and specialty care are

URs using device days data reported to NHSN during 2017 for critical access hospitals (CAHs), by device t (VDs), wards⁴

for SUR	Facility-specific SURs				10%	25%
	Upper	No. Facilities with ≥ 1 Predicted Device Days	No. Facilities with SUR Significantly > National SUR N	No. Facilities with SUR Significantly < National SUR N		
0.3461	2	.	.	.	.	.
0.3881	5	.	.	.	.	.
0.6506	5	.	.	.	.	.
7.3511	6	.	.	.	.	.

0.4808	7						
2.8782	70	5	7.1429	60	85.7143	0	0

re are less than 5 reporting facilities. This may be different from those reported in the SIR tables due to exclusion or 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 2017. If a facility's predicted number of device days was <1.0, a facility-specific SUR was neither calculated as [including hematology/oncology, bone marrow transplant]. Data contained in this table are reported from critical



and inclusion criteria. Refer to the technical appendix for details.
 ed device days in 2017.
 ulated nor included in the distribution of facility-specific SURs.
 al access hospitals; as such, data from ACHs, IRFs and LTACHs are exclude

Table 5. Changes in national standardized utilization ratios (SURs) using HAI data reported from all NHSN critical access hospitals reporting during 2017 by HAI and patient population: Central line days (CLDs), urinary catheter days (UCDs), and ventilator days (VDs), 2017 compared to 2016

	2016 SUR	2017 SUR	Percent Change	Direction of Change, Based on Statistical Significance	p-value
CLDs, all locations¹	1.1240	1.1069	-2%	DECREASE	0.0001
ICU ²	0.9146	0.8598	-6%	DECREASE	0.0000
Ward ³	1.1541	1.1399	-1%	DECREASE	0.0018
UCDs, all locations¹	0.9174	0.8774	-4%	DECREASE	0.0000
	0.8391	0.8257	-2%	DECREASE	0.0323
	0.9302	0.8854	-5%	DECREASE	0.0000
VDs, all¹	0.9564	1.0396	9%	INCREASE	0.0004
ICUs ²	0.8255	0.9118	10%	INCREASE	0.0001
Wards ³	2.6305	2.6834	2%	NO CHANGE	0.7106

* Statistically significant, $p < 0.0500$

1. Data from all ICUs, wards (and other non-critical care locations), and NICUs. This excludes LTAC locations (or facilities) and IRF locations.
2. Data from all ICUs; excludes wards (and other non-critical care locations), NICUs, LTAC locations (or facilities), and IRF locations (or facilities).
3. Data from all wards (for this table wards also include step-down and specialty care areas [including hematology/oncology, bone marrow transplant, etc.]).

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ocations (or facilities).

(or facilities).

arrow transplant]. This excludes LTAC locations [or facilities] and IRF locations [or facilities]).

Table 6. Changes in state-specific standardized utilization ratios (SURs) between 2016 and 2017 from NHSN Critical Access Hospitals
6a. Central line days (CLDs), all locations¹

State ²	All Critical Access Hospitals Reporting to NHSN				
	2016 SUR	2017 SUR	Percent Change	Direction of Change, Based on Statistical Significance	p-value
Alaska	0.9794	0.7977	-19%	DECREASE	0.0000
Alabama	0.6460	0.4951	-23%	DECREASE	0.0002
Arkansas	1.2657	1.1452	-10%	DECREASE	0.0011
Arizona	0.6464	0.8547	32%	INCREASE	0.0002
California	1.0754	1.2064	12%	INCREASE	0.0000
Colorado	0.6773	0.6584	3%	NO CHANGE	0.4967
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.3998	0.6114	53%	INCREASE	0.0000
Georgia	1.3442	1.3423	0%	NO CHANGE	0.9458
Guam	.	.	.	.	.
Hawaii	2.3410	2.9651	27%	INCREASE	0.0000
Iowa	1.1569	1.0330	-11%	DECREASE	0.0000
Idaho	1.5933	1.2679	-20%	DECREASE	0.0000
Illinois	1.1346	1.2970	14%	INCREASE	0.0000
Indiana	1.1260	1.0014	-11%	DECREASE	0.0000
Kansas	1.6092	1.4764	-8%	DECREASE	0.0000
Kentucky	1.3550	1.3046	4%	NO CHANGE	0.1858
Louisiana	2.1694	1.8205	-16%	DECREASE	0.0000
Massachusetts	1.8996	0.5346	-72%	DECREASE	0.0000
Maryland	.	.	.	.	.
Maine	1.2655	1.1278	-11%	DECREASE	0.0000
Michigan	0.5331	0.6442	21%	INCREASE	0.0000
Minnesota	0.9490	1.1698	23%	INCREASE	0.0000
Missouri	1.3141	1.5085	15%	INCREASE	0.0000
Mississippi	0.7391	0.7428	0%	NO CHANGE	0.9125
Montana	0.7846	0.9237	18%	INCREASE	0.0000
North Carolina	0.6895	0.8271	20%	INCREASE	0.0000
North Dakota	0.7103	1.0013	41%	INCREASE	0.0000
Nebraska	1.1156	1.2584	13%	INCREASE	0.0003
New Hampshire	1.0956	0.7955	-27%	DECREASE	0.0000
New Jersey	.	.	.	.	.
New Mexico	0.5988	1.0193	70%	INCREASE	0.0000
Nevada	1.3512	0.9984	-26%	DECREASE	0.0000
New York	1.3426	0.4941	-63%	DECREASE	0.0000
Ohio	0.5417	1.0000	85%	INCREASE	0.0000
Oklahoma	1.1104	1.1705	5%	NO CHANGE	0.3154
Oregon	1.0706	1.0754	0%	NO CHANGE	0.8241
Pennsylvania	1.1902	1.1437	-4%	DECREASE	0.0393
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	0.7389	0.8635	17%	INCREASE	0.0030
South Dakota	0.1281	0.8875	593%	INCREASE	0.0000
Tennessee	2.9304	1.5138	-48%	DECREASE	0.0000
Texas	1.1914	1.2708	7%	INCREASE	0.0015
Utah	0.4838	1.0005	107%	INCREASE	0.0000
Virginia	1.0233	1.1958	17%	INCREASE	0.0000
Virgin Islands	.	.	.	.	.
Vermont	1.2622	0.7643	-39%	DECREASE	0.0000
Washington	1.4150	1.4071	1%	NO CHANGE	0.6717
Wisconsin	1.2539	1.2375	1%	NO CHANGE	0.3117
West Virginia	1.0290	0.8162	-21%	DECREASE	0.0000
Wyoming	0.7118	0.4553	-36%	DECREASE	0.0000
All US	1.1240	1.1069	-2%	DECREASE	0.0001

* Statistically significant, p < 0.0500

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

2. States without SUR either in 2016 and/or 2017 and therefore subsequent data not calculated

Table 6. Changes in state-specific standardized utilization ratios (SURs) between 2016 and 2017 from NHSN Critical Access Hospitals

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

	All Critical Access Hospitals Reporting to NHSN				
	2016 SUR	2017 SUR	Percent Change	Direction of Change, Based on Statistical Significance	p-value
Alaska	0.5433	0.5810	7%	NO CHANGE	0.1068
Alabama	0.7744	0.6400	-17%	DECREASE	0.0000
Arkansas	1.3714	1.1516	-16%	DECREASE	0.0000
Arizona	1.0171	0.8369	-18%	DECREASE	0.0000
California	1.1764	1.2195	4%	INCREASE	0.0011
Colorado	0.7653	0.7355	4%	NO CHANGE	0.0889
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.5852	0.7770	33%	INCREASE	0.0000
Georgia	0.6478	0.5223	-19%	DECREASE	0.0000
Guam	.	.	.	.	.
Hawaii	1.0353	0.4929	-52%	DECREASE	0.0000
Iowa	0.8901	0.8426	-5%	DECREASE	0.0000
Idaho	1.1693	1.2720	9%	INCREASE	0.0007
Illinois	0.9367	0.9021	-4%	DECREASE	0.0028
Indiana	0.9700	0.9924	2%	NO CHANGE	0.0604
Kansas	0.9078	0.8460	-7%	DECREASE	0.0000
Kentucky	1.0453	1.0542	1%	NO CHANGE	0.7002
Louisiana	1.0171	0.7576	-26%	DECREASE	0.0000
Massachusetts	1.3101	0.4980	-62%	DECREASE	0.0000
Maryland	.	.	.	.	.
Maine	0.8207	0.7980	3%	NO CHANGE	0.0715
Michigan	0.7495	0.7610	2%	NO CHANGE	0.3953
Minnesota	0.7710	0.7723	0%	NO CHANGE	0.8735
Missouri	0.7850	0.7664	2%	NO CHANGE	0.2730
Mississippi	0.4979	0.6913	39%	INCREASE	0.0000
Montana	0.9039	0.8561	-5%	DECREASE	0.0136
North Carolina	0.9409	0.8710	-7%	DECREASE	0.0000
North Dakota	0.8199	1.0926	33%	INCREASE	0.0000
Nebraska	0.6712	0.6754	1%	NO CHANGE	0.8039
New Hampshire	0.9581	0.9232	-4%	DECREASE	0.0241
New Jersey	.	.	.	.	.
New Mexico	1.0982	1.1479	5%	NO CHANGE	0.0853
Nevada	0.9307	1.0270	10%	INCREASE	0.0162
New York	0.9602	0.7675	-20%	DECREASE	0.0000
Ohio	0.7572	0.9416	24%	INCREASE	0.0000
Oklahoma	0.9088	1.1280	24%	INCREASE	0.0000
Oregon	1.0745	1.0429	-3%	DECREASE	0.0187
Pennsylvania	1.0217	0.9872	-3%	DECREASE	0.0184
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	0.6159	0.6533	6%	NO CHANGE	0.1425
South Dakota	0.9078	0.6530	-28%	DECREASE	0.0000
Tennessee	0.7247	0.8993	24%	INCREASE	0.0005
Texas	1.0638	1.0159	-5%	DECREASE	0.0008
Utah	0.6977	0.7126	2%	NO CHANGE	0.6533
Virginia	0.9182	0.8373	-9%	DECREASE	0.0002
Virgin Islands	.	.	.	.	.
Vermont	0.9544	0.5579	-42%	DECREASE	0.0000
Washington	1.0493	1.0031	-4%	DECREASE	0.0000
Wisconsin	0.9756	0.8857	-9%	DECREASE	0.0000
West Virginia	0.8183	0.7180	-12%	DECREASE	0.0000
Wyoming	0.9604	0.8599	-10%	DECREASE	0.0000
All US	0.9174	0.8774	-4%	DECREASE	0.0000

* Statistically significant, p < 0.0500

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

2. States without SUR either in 2016 and/or 2017 and therefore subsequent data not calculated

Table 6. Changes in state-specific standardized utilization ratios (SURs) between 2016 and 2017 from NHSN Critical Access Hospitals
6c. Ventilator days (VDs), all locations¹

	All Critical Access Hospitals Reporting to NHSN				
	2016 SUR	2017 SUR	Percent Change	Direction of Change, Based on Statistical Significance	p-value
Alaska	0.5409	0.5530	2%	NO CHANGE	0.9977
Alabama	.	.	.	.	.
Arkansas	0.1076	0.0000	100%	NO CHANGE	0.4787
Arizona	1.3560	1.1524	15%	NO CHANGE	0.6270
California	1.8615	2.3325	25%	INCREASE	0.0000
Colorado	0.5228	0.9247	77%	NO CHANGE	0.0977
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.3682	4.6491	1163%	INCREASE	0.0000
Georgia	0.1236	0.0792	36%	NO CHANGE	0.6439
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Iowa	0.0000	0.0000	0%	DECREASE	0.0000
Idaho	1.4136	3.1680	124%	INCREASE	0.0000
Illinois	0.3059	0.1582	48%	NO CHANGE	0.1175
Indiana	0.5845	0.2840	-51%	DECREASE	0.0000
Kansas	0.1094	0.1352	24%	NO CHANGE	0.4020
Kentucky	0.6543	0.9580	46%	INCREASE	0.0357
Louisiana	0.9009	2.4440	171%	NO CHANGE	0.1430
Massachusetts	0.0927	0.3259	252%	NO CHANGE	0.1195
Maryland	.	.	.	.	.
Maine	0.4488	0.4096	9%	NO CHANGE	0.7381
Michigan	0.7846	0.3458	-56%	DECREASE	0.0000
Minnesota	3.5816	0.6135	-83%	DECREASE	0.0000
Missouri	0.4266	0.4227	1%	NO CHANGE	0.9765
Mississippi	.	.	.	.	.
Montana	0.8406	0.3776	-55%	DECREASE	0.0026
North Carolina	0.3814	0.5020	32%	NO CHANGE	0.1047
North Dakota	0.2196	0.4962	126%	INCREASE	0.0347
Nebraska	.	.	.	.	.
New Hampshire	1.3587	0.6870	-49%	DECREASE	0.0000
New Jersey	.	.	.	.	.
New Mexico	1.3200	0.9562	28%	NO CHANGE	0.6105
Nevada	2.0993	3.5886	71%	INCREASE	0.0063
New York	0.5832	0.1652	-72%	DECREASE	0.0018
Ohio	0.1683	0.8598	411%	INCREASE	0.0000
Oklahoma	0.0000	0.0000	0%	DECREASE	0.0000
Oregon	0.7566	0.9031	19%	NO CHANGE	0.1222
Pennsylvania	3.6297	3.2897	9%	NO CHANGE	0.0772
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	0.1628	0.0682	58%	NO CHANGE	0.1857
South Dakota	.	.	.	.	.
Tennessee	0.0000	0.0000	0%	DECREASE	0.0000
Texas	3.5391	1.0142	-71%	DECREASE	0.0000
Utah	.	.	.	.	.
Virginia	0.3711	0.2843	23%	NO CHANGE	0.2156
Virgin Islands	.	.	.	.	.
Vermont	.	.	.	.	.
Washington	1.3905	1.1946	-14%	DECREASE	0.0394
Wisconsin	0.5426	0.3969	-27%	DECREASE	0.0491
West Virginia	0.7631	0.6646	13%	NO CHANGE	0.3266
Wyoming	0.6948	0.1344	-81%	DECREASE	0.0023
All US	0.9564	1.0396	9%	INCREASE	0.0004

* Statistically significant, p < 0.0500

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

2. States without SUR either in 2016 and/or 2017 and therefore subsequent data not calculated

Appendix A. Factors used in NHSN risk adjusted standard utilization ratios (SUR) calculation of the device utilization in Critical Access Hospitals (CAHs).

SUR Type	Validated Parameters for Risk Model
CLDs	Intercept Location type
UCDs	Intercept Location type
VDs	Intercept Location type

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.