2019 Nat
S

Introduction:

Welcome to the 2019 National and State HAI Progress Report using the 2015 bas
by comparing the number of observed device days to the number of predicted dev
This report is created by CDC staff with the National Healthcare Safety Network (N

Scope of report:

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

tional and State HAI Progress Report
tandardized Utilization Ratios

Long Term Acute Care Hospitals

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

ACH	
National	State
☑	☑
☑	☑
☑	☑

e utilization

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

Rationale

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

Development of SUR models

SUR models were developed for the following measures: central line days, urinary catheter days and ventilato
inpatient rehabilitation facilities (IRF), long-term acute care hospitals (LTACH) (and NICU for central line days
Using the NHSN data (2019) in sync with rebaseline work, CDC has developed multivariable logistic regressio
"Extra-binomial Variation in Logistic Linear Models," Applied Statistics, 31, 144–148.). Unit of analysis in all th

STEPS to compute SUR at the location level

1: First, calculate the logit scale value of p_hat, using parameter estimates of corresponding SUR model.
Logit p_hat= intercept + x1 + X2 + X3 + ……
(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^logit(p_hat)] / [1+ e^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 predic
SUR = Observed Device Days / Predicted Device Days

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

STEPS to compute SUR at higher level above location

Do the same computation as in step 1, 2, 3 at location level.
Sum the observed device days and predicted device days up to the level of aggregation desired (e.g., facility-
Then, derive SUR value at the desired aggregate level by dividing number of observed device days with numb

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

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

or days. They were available for the healthcare setting of acute care hospitals (ACH), critical access hospitals (C
).
on models that correct over dispersion by the Williams' method (Reference: Williams, D. A. (1982),
e SUR models are at the location level.

cted device days;

level).
ber of predicted device days.

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

CAH),

2019 Annual National and State HAI Progress Report
Long-Term Acute Care Hospitals: Full series of tables for all national and state data

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

ry SURs:

ong-term acute care hospitals (LTACHs)

ısn-sur-guide-508.pdf

Device and Patient Population	No. of Facilities	No. of Device days	
	Reporting[1]	Observed	Predicted
Central line days, all[4]	431	1,978,596	2,798,866.9915
ICUs[5]	75	126,943	185,022.4346
Wards[6]	424	1,851,653	2,613,844.5569
Urinary catheter days, all[4]	431	1,482,964	1,890,473.6627
	75	102,373	146,034.8697
Wards[6]	424	1,380,591	1,744,438.7929
Ventilator days, all[4]	274	637,097	548,249.4321
	54	67,614	68,386.9506
	268	569,483	479,862.4814

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

Table 1. National standardized utilization ratios (SURs) and

95% CI for SUR			Facility-specific SURs			
SUR	Lower	Upper	No. Facilities with ≥1 Predicted Device Days	No. Facilities with SUR Significantly > National SUR N	%	No. Facilities Significantly SUR N
0.7069	0.7060	0.7079	431	209	48%	188
0.6861	0.6823	0.6899	75	48	64%	21
0.7084	0.7074	0.7094	424	207	49%	183
0.7844	0.7832	0.7857	431	215	50%	179
0.7010	0.6967	0.7053	75	47	63%	22
0.7914	0.7901	0.7928	424	206	49%	177
1.1621	1.1592	1.1649	274	83	30%	162
0.9887	0.9813	0.9962	54	37	69%	14
1.1868	1.1837	1.1898	268	78	29%	160

than 5 reporting facilities. This may be different from those reported in the SIR tables due to exclusion a
ı the nominal value of the national SUR. This is only calculated if at least 10 facilities had ≥ 1.0 predicte
n 2019. If a facility's predicted number of device days was <1.0, a facility-specific SUR was neither calc
ong-term acute care hospitals; as such, data from ACHs, IRFs and CAHs are excluded.
ble are reported from long-term acute care hospitals; as such, data from ACHs, IRFs and CAHs are exc
ıg hematology/oncology, bone marrow transplant]). Data contained in this table are reported from long-t

facility-specific summary SURs using device days data reported to NHSN during 2019 for long ter

Table 1a. Central line days (CLDs), urinary catheter days (UCDs), and ventilator days (VDs).

with SUR < National %	Percenti 5%	10%	15%	20%	25%	30%	35%	40%
44%	0.3458	0.4211	0.4676	0.5163	0.5543	0.5854	0.6150	0.6540
28%	0.2440	0.3506	0.4789	0.5427	0.5841	0.6843	0.7121	0.7825
43%	0.3434	0.4211	0.4686	0.5175	0.5547	0.5793	0.6142	0.6529
42%	0.3367	0.4435	0.5088	0.5722	0.6185	0.6659	0.7071	0.7389
29%	0.2638	0.3044	0.3501	0.4149	0.4951	0.6752	0.7084	0.7832
42%	0.3561	0.4494	0.5102	0.5782	0.6249	0.6678	0.7071	0.7389
59%	0.1663	0.3902	0.5188	0.6206	0.7169	0.7555	0.8223	0.8573
26%	0.3614	0.5632	0.5806	0.6206	0.8651	1.0213	1.0716	1.2085
60%	0.0030	0.2526	0.4579	0.5507	0.6784	0.7376	0.8150	0.8554

and inclusion criteria. Refer to the technical appendix for details.
ed device days in 2019.
ulated nor included in the distribution of facility-specific SURs.

cluded.
erm acute care hospitals.

rm acute care hospitals (LTACHs), by device type and patient population:

ile Distribution of Facility-specific SURs[3]

		Median							
45%	**50%**	**55%**	**60%**	**65%**	**70%**	**75%**	**80%**	**85%**	**90%**
0.6874	0.7221	0.7650	0.7979	0.8281	0.8659	0.8996	0.9687	1.0435	1.1303
0.8149	0.8474	0.8797	0.9131	0.9316	0.9595	1.0358	1.0585	1.0885	1.1085
0.6973	0.7249	0.7665	0.8040	0.8312	0.8694	0.9046	0.9790	1.0657	1.1448
0.7770	0.8156	0.8492	0.8835	0.9261	0.9741	1.0172	1.0789	1.1722	1.2379
0.8838	0.9221	0.9557	0.9747	0.9951	1.0336	1.0605	1.1321	1.1938	1.2520
0.7770	0.8145	0.8498	0.8828	0.9261	0.9757	1.0171	1.0945	1.1759	1.2517
0.9141	0.9966	1.0551	1.1112	1.1710	1.2462	1.3214	1.4120	1.5314	1.7623
1.2325	1.3076	1.4572	1.6015	1.7199	1.7855	1.8176	1.8792	1.9190	2.0822
0.9022	0.9920	1.0530	1.1204	1.1717	1.2444	1.3178	1.4188	1.5499	1.7655

95%
1.2601
1.2327
1.2891
1.4340
1.3357
1.4340
2.0315
2.2239
2.0223

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

State	Facilities	No. of Device days			95% CI f
		Observed	Predicted	SUR	Lower
Alabama	8	27,649	38,168.6095	0.7244	0.7159
Alaska	1	.	.	.	.
Arizona	6	22,534	33,627.5182	0.6701	0.6614
Arkansas	8	23,132	35,596.1329	0.6498	0.6415
California	23	183,500	243,416.7637	0.7539	0.7504
Colorado	7	23,140	37,877.7737	0.6109	0.6031
Connecticut	3	.	.	.	.
D.C.	2	.	.	.	.
Delaware	1	.	.	.	.
Florida	26	133,719	218,888.9068	0.6109	0.6076
Georgia	13	56,558	84,206.8664	0.6717	0.6661
Guam	0	.	.	.	.
Hawaii	1	.	.	.	.
Idaho	2	.	.	.	.
Illinois	10	60,350	86,319.5554	0.6991	0.6936
Indiana	11	43,581	64,399.9140	0.6767	0.6704
Iowa	2	.	.	.	.
Kansas	3	.	.	.	.
Kentucky	9	38,859	54,568.2217	0.7121	0.7051
Louisiana	31	118,473	145,870.8073	0.8122	0.8076
Maine	0	.	.	.	.
Maryland	2	.	.	.	.
Massachusetts	12	74,319	147,869.5609	0.5026	0.4990
Michigan	20	53,741	101,071.9659	0.5317	0.5272
Minnesota	2	.	.	.	.
Mississippi	7	27,637	46,458.0059	0.5949	0.5879
Missouri	10	37,542	54,672.6615	0.6867	0.6797
Montana	1	.	.	.	.
Nebraska	4	.	.	.	.
Nevada	10	56,248	58,883.7809	0.9552	0.9474
New Hampshire	0	.	.	.	.
New Jersey	12	47,251	65,982.4019	0.7161	0.7097
New Mexico	3	.	.	.	.
New York	1	.	.	.	.
North Carolina	8	42,685	53,776.1632	0.7938	0.7863
North Dakota	2	.	.	.	.
Ohio	28	106,886	139,475.3829	0.7663	0.7618
Oklahoma	12	51,322	62,217.0982	0.8249	0.8178
Oregon	1	.	.	.	.
Pennsylvania	21	55,099	96,426.2327	0.5714	0.5666
Puerto Rico	0	.	.	.	.
Rhode Island	0	.	.	.	.
South Carolina	6	30,509	42,559.5411	0.7169	0.7089

South Dakota	1	.	.	.	.
Tennessee	9	36,634	60,050.1587	0.6101	0.6038
Texas	69	387,299	466,375.4530	0.8304	0.8278
Utah	4	.	.	.	.
Vermont	0	.	.	.	.
Virgin Islands	0	.	.	.	.
Virginia	6	27,123	37,089.6602	0.7313	0.7226
Washington	3	.	.	.	.
West Virginia	4	.	.	.	.
Wisconsin	6	20,382	26,416.4324	0.7716	0.7610
Wyoming	0	.	.	.	.
All US	**431**	**1,978,596**	**2,798,866.9915**	**0.7069**	**0.7060**

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

s using device days data reported to NHSN during 2019 for long term acute care hospitals (LTACH
entral line days (CLDs), all locations[4]

for SUR	Facility-specific SURs					
Upper	No. Facilities with ≥1 Predicted Device Days	No. Facilities with SUR Significantly > National SUR		No. Facilities with SUR Significantly < National SUR		10%
		N	%[2]	N		
0.7330	8	.	.	.	.	.
.	.	.	.	.	.	.
0.6789	6	.	.	.	.	.
0.6583	8	.	.	.	.	.
0.7573	23	14	61%	9	39%	0.4878
0.6188	7	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.6142	26	7	27%	17	65%	0.4441
0.6772	13	5	38%	8	62%	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.7047	10	5	50%	2	20%	.
0.6831	11	7	64%	2	18%	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.7192	9	.	.	.	.	.
0.8168	31	24	77%	6	19%	0.4686
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.5062	12	3	25%	8	67%	.
0.5362	20	3	15%	16	80%	0.3187
.	.	.	.	.	.	.
0.6019	7	.	.	.	.	.
0.6937	10	3	30%	6	60%	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.9631	10	7	70%	0	0%	.
.	.	.	.	.	.	.
0.7226	12	8	67%	3	25%	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.8013	8	.	.	.	.	.
.	.	.	.	.	.	.
0.7709	28	18	64%	7	25%	0.5912
0.8321	12	7	58%	4	33%	.
.	.	.	.	.	.	.
0.5762	21	4	19%	16	76%	0.4337
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.7250	6	.	.	.	.	.

.	.	.	.	.	.	.
0.6163	9	.	.	.	.	.
0.8331	69	47	68%	18	26%	0.4772
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.7400	6	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.7822	6	.	.	.	.	.
.	.	.	.	.	.	.
0.7079	**431**	**209**	**48%**	**188**	**44%**	**0.4211**

ss than 5 reporting facilities. This may be different from those reported in the SIR tables due to exclusion
han the nominal value of the national SUR. This is only calculated if at least 10 facilities had ≥ 1.0 predict
ys in 2019. If a facility's predicted number of device days was <1.0, a facility-specific SUR was neither cal
l from long-term acute care hospitals.

s), by device type and patient population:

Median			
25%	**50%**	**75%**	**90%**
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.6088	0.7759	0.8602	0.9958
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.4965	0.6132	0.7657	0.8780
.	.	.	.
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.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.7572	0.9354	1.1563	1.3155
.	.	.	.
.	.	.	.
.	.	.	.
0.3774	0.5476	0.6181	1.0617
.	.	.	.
.	.	.	.
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.	.	.	.
.	.	.	.
0.6847	0.7703	0.8793	1.2449
.	.	.	.
.	.	.	.
0.5001	0.5625	0.6480	0.7891
.	.	.	.
.	.	.	.
.	.	.	.

.	.	.	.
.	.	.	.
0.6160	0.8824	0.9969	1.1845
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
0.5543	**0.7221**	**0.8996**	**1.1303**

and inclusion criteria. Refer to the technical appendix for details
ted device days in 2019.
culated nor included in the distribution of facility-specific SURs.

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

Table 3. Urinary C

State	No. of Facilities	No. of Device days			95% CI
		Observed	Predicted	SUR	Lower
Alabama	8	27,825	26,118.9016	1.0653	1.0529
Alaska	1	.	.	.	.
Arizona	6	20,629	24,814.6156	0.8313	0.8201
Arkansas	8	23,770	25,120.5615	0.9462	0.9343
California	23	154,019	170,876.5485	0.9013	0.8969
Colorado	7	23,154	27,037.0326	0.8564	0.8454
Connecticut	3	.	.	.	.
D.C.	2	.	.	.	.
Delaware	1	.	.	.	.
Florida	26	111,218	152,505.2200	0.7293	0.7250
Georgia	13	48,060	60,844.9538	0.7899	0.7829
Guam	0	.	.	.	.
Hawaii	1	.	.	.	.
Idaho	2	.	.	.	.
Illinois	10	49,985	59,048.1093	0.8465	0.8391
Indiana	11	33,316	46,385.0056	0.7182	0.7106
Iowa	2	.	.	.	.
Kansas	3	.	.	.	.
Kentucky	9	28,866	35,338.8318	0.8168	0.8075
Louisiana	31	87,894	87,341.8492	1.0063	0.9997
Maine	0	.	.	.	.
Maryland	2	.	.	.	.
Massachusetts	12	35,249	91,963.7088	0.3833	0.3793
Michigan	20	46,425	68,090.3293	0.6818	0.6756
Minnesota	2	.	.	.	.
Mississippi	7	23,924	31,049.4650	0.7705	0.7608
Missouri	10	28,203	38,666.3280	0.7294	0.7209
Montana	1	.	.	.	.
Nebraska	4	.	.	.	.
Nevada	10	39,323	39,491.3695	0.9957	0.9859
New Hampshire	0	.	.	.	.
New Jersey	12	34,398	45,194.1554	0.7611	0.7531
New Mexico	3	.	.	.	.
New York	1	.	.	.	.
North Carolina	8	29,425	36,285.2422	0.8109	0.8017
North Dakota	2	.	.	.	.
Ohio	28	77,931	97,960.5294	0.7955	0.7900
Oklahoma	12	44,804	41,873.4901	1.0700	1.0601
Oregon	1	.	.	.	.
Pennsylvania	21	46,445	68,605.1979	0.6770	0.6709
Puerto Rico	0	.	.	.	.
Rhode Island	0	.	.	.	.
South Carolina	6	13,579	29,722.5533	0.4569	0.4492

South Dakota	1	.	.	.	.
Tennessee	9	28,924	38,160.7408	0.7580	0.7493
Texas	69	261,190	297,012.3692	0.8794	0.8760
Utah	4	.	.	.	.
Vermont	0	.	.	.	.
Virgin Islands	0	.	.	.	.
Virginia	6	19,794	25,412.7404	0.7789	0.7681
Washington	3	.	.	.	.
West Virginia	4	.	.	.	.
Wisconsin	6	12,414	17,342.8026	0.7158	0.7033
Wyoming	0	.	.	.	.
All US	**499**	**1,482,964**	**1,890,473.6627**	**0.7844**	**0.7832**

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

using device days data reported to NHSN during 2019 long term acute care hospitals (LTACHs), by Catheter days (UCDs), all locations[4]

for SUR	Facility-specific SURs					
Upper	No. Facilities with ≥1 Predicted Device Days	No. Facilities with SUR Significantly > National SUR N		No. Facilities with SUR Significantly < National SUR N		10%
1.0779	8	.	.	.	.	.
.	.	.	.	.	.	.
0.8427	6	.	.	.	.	.
0.9583	8	.	.	.	.	.
0.9058	23	17	74%	5	22%	0.5135
0.8674	7	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.7336	26	13	50%	12	46%	0.4615
0.7969	13	7	54%	4	31%	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.8540	10	5	50%	3	30%	.
0.7260	11	5	45%	4	36%	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.8263	9	.	.	.	.	.
1.0130	31	20	65%	9	29%	0.4951
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.3873	12	2	17%	10	83%	.
0.6880	20	3	15%	15	75%	0.4694
.	.	.	.	.	.	.
0.7803	7	.	.	.	.	.
0.7380	10	3	30%	7	70%	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
1.0056	10	7	70%	2	20%	.
.	.	.	.	.	.	.
0.7692	12	7	58%	4	33%	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.8202	8	.	.	.	.	.
.	.	.	.	.	.	.
0.8011	28	13	46%	12	43%	0.5750
1.0799	12	10	83%	2	17%	.
.	.	.	.	.	.	.
0.6832	21	6	29%	12	57%	0.3213
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.4646	6	.	.	.	.	.

.	.	.	.	.	.	.
0.7667	9	.	.	.	.	.
0.8828	69	45	65%	18	26%	0.5603
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.	.	.	.	.	.	.
0.7898	6	.	.	.	.	.
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.	.	.	.	.	.	.
0.7285	6	.	.	.	.	.
.	.	.	.	.	.	.
0.7857	**75**	**47**	**63%**	**22**	**29%**	**0.3044**

ss than 5 reporting facilities. This may be different from those reported in the SIR tables due to exclusion a
ıan the nominal value of the national SUR. This is only calculated if at least 10 facilities had ≥ 1.0 predicte
/s in 2019. If a facility's predicted number of device days was <1.0, a facility-specific SUR was neither calcu
from long-term acute care hospitals.

device type and patient population:

Median			
25%	**50%**	**75%**	**90%**
.	.	.	.
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0.7971	0.9296	1.0328	1.0986
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0.5614	0.7883	0.8752	1.1065
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0.7045	0.9902	1.3446	1.6175
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.	.	.	.
0.5901	0.7050	0.7568	0.8963
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0.6409	0.7836	0.9748	1.1722
.	.	.	.
.	.	.	.
0.5182	0.7168	0.8492	1.0754
.	.	.	.
.	.	.	.
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.	.	.	.
0.7562	0.9194	1.1490	1.2702
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.	.	.	.
0.4951	**0.9221**	**1.0605**	**1.2520**

nd inclusion criteria. Refer to the technical appendix for detail
d device days in 2019.
ulated nor included in the distribution of facility-specific SURs.

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

State	No. of Facilities	No. of Device days		
		Observed	Predicted	SUR
Alabama	7	7,224	12,077.2154	0.5982
Alaska	1	.	.	.
Arizona	2	.	.	.
Arkansas	2	.	.	.
California	18	119,188	77,396.9002	1.5400
Colorado	5	8,162	10,394.6216	0.7852
Connecticut	2	.	.	.
D.C.	2	.	.	.
Delaware	0	.	.	.
Florida	15	57,357	36,814.6266	1.5580
Georgia	8	16,936	18,396.5363	0.9206
Guam	0	.	.	.
Hawaii	1	.	.	.
Idaho	0	.	.	.
Illinois	9	49,004	35,875.5210	1.3659
Indiana	6	11,256	18,973.7168	0.5932
Iowa	0	.	.	.
Kansas	1	.	.	.
Kentucky	5	12,569	10,006.3957	1.2561
Louisiana	19	6,070	11,467.7441	0.5293
Maine	0	.	.	.
Maryland	2	.	.	.
Massachusetts	8	26,999	30,853.4693	0.8751
Michigan	10	12,067	10,227.6304	1.1798
Minnesota	1	.	.	.
Mississippi	2	.	.	.
Missouri	7	8,305	10,793.2827	0.7695
Montana	0	.	.	.
Nebraska	0	.	.	.
Nevada	6	10,186	11,131.5897	0.9151
New Hampshire	0	.	.	.
New Jersey	10	28,610	23,400.7614	1.2226
New Mexico	1	.	.	.
New York	1	.	.	.
North Carolina	4	.	.	.
North Dakota	0	.	.	.
Ohio	11	15,963	15,555.4657	1.0262
Oklahoma	9	6,200	5,897.3687	1.0513
Oregon	0	.	.	.
Pennsylvania	21	40,354	37,469.7248	1.0770
Puerto Rico	0	.	.	.
Rhode Island	0	.	.	.

South Carolina	6	11,815	13,003.0898	0.9086
South Dakota	0	.	.	.
Tennessee	9	26,936	23,445.8358	1.1489
Texas	50	60,204	72,192.9649	0.8339
Utah	2	.	.	.
Vermont	0	.	.	.
Virgin Islands	0	.	.	.
Virginia	3	.	.	.
Washington	2	.	.	.
West Virginia	3	.	.	.
Wisconsin	3	.	.	.
Wyoming	0	.	.	.
All US	**274**	**637,097**	**548,249.4321**	**1.1621**

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

SURs using device days data reported to NHSN during 2019 for long term acute care hospitals (LTA
able 4. Ventilator days (VDs), all locations[4]

95% CI for SUR		Facility-specific SURs				
Lower	Upper	No. Facilities with ≥1 Predicted Device Days	No. Facilities with SUR Significantly > National SUR N		No. Facilities with SUR Significantly < National SUR N	
0.5845	0.6121	7	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
1.5312	1.5487	18	14	78%	4	22%
0.7683	0.8024	5	.	.	.	.
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.	.	.	.	.	.	.
1.5453	1.5708	15	10	67%	5	33%
0.9068	0.9346	8	.	.	.	.
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.	.	.	.	.	.	.
1.3539	1.3781	9	.	.	.	.
0.5824	0.6043	6	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
1.2343	1.2782	5	.	.	.	.
0.5161	0.5428	19	1	5%	14	74%
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.	.	.	.	.	.	.
0.8647	0.8856	8	.	.	.	.
1.1589	1.2010	10	2	20%	6	60%
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.7530	0.7861	7	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.8974	0.9329	6	.	.	.	.
.	.	.	.	.	.	.
1.2085	1.2369	10	5	50%	3	30%
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.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
1.0104	1.0422	11	2	18%	6	55%
1.0254	1.0777	9	.	.	.	.
.	.	.	.	.	.	.
1.0665	1.0875	21	6	29%	12	57%
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0.8924	0.9251	6	.	.	.	.
.	.	.	.	.	.	.
1.1352	1.1626	9	.	.	.	.
0.8273	0.8406	50	4	8%	42	84%
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1.1592	**1.1649**	**274**	**83**	**30%**	**162**	**59%**

ɾe less than 5 reporting facilities. This may be different from those reported in the SIR tables due to exclusio
ːss than the nominal value of the national SUR. This is only calculated if at least 10 facilities had ≥ 1.0 pred
ɛ days in 2019. If a facility's predicted number of device days was <1.0, a facility-specific SUR was neither c
ɔrted from long-term acute care hospitals.

CHs), by device type and patient population:

		Median		
10%	25%	50%	75%	90%
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0.7343	0.8686	1.0308	1.2621	1.4325
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.	.	.	.	.
0.3269	0.4806	0.8282	0.9970	1.1833
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0.3902	**0.7169**	**0.9966**	**1.3214**	**1.7623**

ɔn and inclusion criteria. Refer to the technical appendix for details.
icted device days in 2019.
calculated nor included in the distribution of facility-specific SURs.

Table 5. Changes in national standardized utilization ratios (SURs) using HAI data reported from all NHSN long term acute care hospitals reporting during 2019 by HAI and patient population: Central line days (CLDs), urinary catheter days (UCDs), and ventilator days (VDs), 2019 compared to 2018

	2018 SUR	2019 SUR	Percent Change	Direction of Change, Based on Statistical Significance	p-value
CLDs, all locations[1]	0.7530	0.7069	-6%	DECREASE	0.0000
ICU[2]	0.7397	0.6861	-7%	DECREASE	0.0000
Ward[3]	0.7539	0.7084	-6%	DECREASE	0.0000
UCDs, all locations[1]	0.8489	0.7844	-8%	DECREASE	0.0000
	0.7775	0.7010	-10%	DECREASE	0.0000
	0.8543	0.7914	-7%	DECREASE	0.0000
VDs, all[1]	1.1298	1.1621	3%	INCREASE	0.0000
ICUs[2]	1.0099	0.9887	-2%	DECREASE	0.0000
Wards[3]	1.1439	1.1868	4%	INCREASE	0.0000

* 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 transp

ɔlant].

Table 6. Changes in state-specific standardized infection ratios (SURs) between 2018 and 2019 from NHSN Long Term Acute Care Hospitals

6a. Central line days (CLDs), all locations[1]

	All Long Term Acute Care Hospitals Reporting to NHSN				
State[2]	2018 SUR	2019 SUR	Percent Change	Direction of Change, Based on Statistical Significance	p-value
Alabama	0.7208	0.7244	0%	NO CHANGE	0.5629
Alaska	.	.	.	.	.
Arizona	0.6959	0.6701	-4%	DECREASE	0.0000
Arkansas	0.7145	0.6498	-9%	DECREASE	0.0000
California	0.7908	0.7539	-5%	DECREASE	0.0000
Colorado	0.6304	0.6109	-3%	DECREASE	0.0006
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.6668	0.6109	-8%	DECREASE	0.0000
Georgia	0.6855	0.6717	-2%	DECREASE	0.0005
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	0.7658	0.6991	-9%	DECREASE	0.0000
Indiana	0.7298	0.6767	-7%	DECREASE	0.0000
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	0.8004	0.7121	-11%	DECREASE	0.0000
Louisiana	0.8428	0.8122	-4%	DECREASE	0.0000
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	0.5132	0.5026	-2%	DECREASE	0.0001
Michigan	0.5982	0.5317	-11%	DECREASE	0.0000
Minnesota	.	.	.	.	.
Mississippi	0.6979	0.5949	-15%	DECREASE	0.0000
Missouri	0.8040	0.6867	-15%	DECREASE	0.0000
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	0.9289	0.9552	3%	INCREASE	0.0000
New Hampshire	.	.	.	.	.
New Jersey	0.7310	0.7161	-2%	DECREASE	0.0014
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	0.8810	0.7938	-10%	DECREASE	0.0000
North Dakota	.	.	.	.	.
Ohio	0.8036	0.7663	-5%	DECREASE	0.0000
Oklahoma	0.8872	0.8249	-7%	DECREASE	0.0000
Oregon	.	.	.	.	.
Pennsylvania	0.5966	0.5714	-4%	DECREASE	0.0000
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	0.8776	0.7169	-18%	DECREASE	0.0000
South Dakota	.	.	.	.	.
Tennessee	0.6429	0.6101	-5%	DECREASE	0.0000
Texas	0.8811	0.8304	-6%	DECREASE	0.0000
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	0.7395	0.7313	1%	NO CHANGE	0.1968
Washington	.	.	.	.	.
West Virginia	.	.	.	.	.
Wisconsin	0.8386	0.7716	-8%	DECREASE	0.0000
Wyoming	.	.	.	.	.
All US	**0.7530**	**0.7069**	**-6%**	**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 2018 and/or 2019 and therefore subsequent data not calculated

Table 6. Changes in state-specific standardized infection ratios (SURs) between 2018 and 2019 from NHSN Long Term Acute Care Hospitals

6b. Urinary catheter days (UCDs), all locations[1]

	All Long Term Acute Care Hospitals Reporting to NHSN				
	2018 SUR	2019 SUR	Percent Change	Direction of Change, Based on Statistical Significance	p-value
Alabama	1.0086	1.0653	6%	INCREASE	0.0000
Alaska	.	.	.	.	.
Arizona	0.9506	0.8313	-13%	DECREASE	0.0000
Arkansas	1.0933	0.9462	-13%	DECREASE	0.0000
California	0.9688	0.9013	-7%	DECREASE	0.0000
Colorado	1.0174	0.8564	-16%	DECREASE	0.0000
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.8472	0.7293	-14%	DECREASE	0.0000
Georgia	0.9077	0.7899	-13%	DECREASE	0.0000
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	0.9037	0.8465	-6%	DECREASE	0.0000
Indiana	0.8161	0.7182	-12%	DECREASE	0.0000
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	0.8669	0.8168	-6%	DECREASE	0.0000
Louisiana	1.0022	1.0063	0%	NO CHANGE	0.3806
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	0.4181	0.3833	-8%	DECREASE	0.0000
Michigan	0.7710	0.6818	-12%	DECREASE	0.0000
Minnesota	.	.	.	.	.
Mississippi	0.9044	0.7705	-15%	DECREASE	0.0000
Missouri	0.8478	0.7294	-14%	DECREASE	0.0000
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	0.9186	0.9957	8%	INCREASE	0.0000
New Hampshire	.	.	.	.	.
New Jersey	0.9003	0.7611	-15%	DECREASE	0.0000
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	0.8542	0.8109	-5%	DECREASE	0.0000
North Dakota	.	.	.	.	.
Ohio	0.8840	0.7955	-10%	DECREASE	0.0000
Oklahoma	1.0977	1.0700	-3%	DECREASE	0.0001
Oregon	.	.	.	.	.
Pennsylvania	0.6276	0.6770	8%	INCREASE	0.0000
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	0.6543	0.4569	-30%	DECREASE	0.0000
South Dakota	.	.	.	.	.
Tennessee	0.7273	0.7580	4%	INCREASE	0.0000
Texas	0.9358	0.8794	-6%	DECREASE	0.0000
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	0.8919	0.7789	-13%	DECREASE	0.0000
Washington	.	.	.	.	.
West Virginia	.	.	.	.	.
Wisconsin	0.7610	0.7158	-6%	DECREASE	0.0000
Wyoming	.	.	.	.	.
All US	**0.8489**	**0.7844**	**-8%**	**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 2018 and/or 2019 and therefore subsequent data not calculated

Table 6. Changes in state-specific standardized infection ratios (SURs) between 2018 and 2019 from NHSN Long Term Acute Care Hospitals

6c. Ventilator days (VDs), all locations[1]

	All Long Term Acute Care Hospitals Reporting to NHSN				
	2018 SUR	2019 SUR	Percent Change	Direction of Change, Based on Statistical Significance	p-value
Alabama	0.6830	0.5982	-12%	DECREASE	0.0000
Alaska	.	.	.	.	.
Arizona	.	.	.	.	.
Arkansas	.	.	.	.	.
California	1.3756	1.5400	12%	INCREASE	0.0000
Colorado	0.7757	0.7852	1%	NO CHANGE	0.4158
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	1.3592	1.5580	15%	INCREASE	0.0000
Georgia	0.9972	0.9206	-8%	DECREASE	0.0000
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	1.2911	1.3659	6%	INCREASE	0.0000
Indiana	0.8153	0.5932	-27%	DECREASE	0.0000
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	1.2260	1.2561	2%	INCREASE	0.0335
Louisiana	0.5853	0.5293	-10%	DECREASE	0.0000
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	1.1756	0.8751	-26%	DECREASE	0.0000
Michigan	1.1144	1.1798	6%	INCREASE	0.0000
Minnesota	.	.	.	.	.
Mississippi	.	.	.	.	.
Missouri	1.0858	0.7695	-29%	DECREASE	0.0000
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	1.0693	0.9151	-14%	DECREASE	0.0000
New Hampshire	.	.	.	.	.
New Jersey	1.5305	1.2226	-20%	DECREASE	0.0000
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	.	.	.	.	.
North Dakota	.	.	.	.	.
Ohio	0.9338	1.0262	10%	INCREASE	0.0000
Oklahoma	0.9291	1.0513	13%	INCREASE	0.0000
Oregon	.	.	.	.	.
Pennsylvania	0.9729	1.0770	11%	INCREASE	0.0000
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	0.8594	0.9086	6%	INCREASE	0.0000
South Dakota	.	.	.	.	.
Tennessee	1.2491	1.1489	-8%	DECREASE	0.0000
Texas	0.8626	0.8339	-3%	DECREASE	0.0000
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	.	.	.	.	.
Washington	.	.	.	.	.
West Virginia	.	.	.	.	.
Wisconsin	.	.	.	.	.
Wyoming	.	.	.	.	.
All US	**1.1298**	**1.1621**	**3%**	**INCREASE**	**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 2018 and/or 2019 and therefore subsequent data not calculated

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

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

* Facility bed size and facility type are taken from the Annual LTACH Survey.
** LTACH setting categorized as free standing LTACH or LTACH units in Hospitals

Additional Resources

Technical Appendix: http://www.cdc.gov/hai/pdfs/progress-report/tech-appendix.pdf
Explains the methodology used to procedure the HAI Progress Report.

HAI Progress Report Home Page: http://www.cdc.gov/hai/progress-report/index.html
The complete HAI Progress Report, including state-specific fact sheets and the Executive Summary, can be found

at the above website.