

The Key Facility-specific Percentile Distributions For The Standardized Infection Ratios (SIRs) and the Standardized Utilization Ratios (SURs) in NHSN

Description and Source of Percentile Distribution

The percentile distribution of facility-specific SIRs and SURs are calculated along with the annual SIRs and SURs published in the healthcare-associated infections (HAI) Progress Report. The HAI Progress Report uses NHSN data to summarize progress made in HAI prevention over time at the state and national levels. The percentile distribution of facility-specific SIRs and SURs are calculated if the facility had at least one predicted HAI (SIR), or device day (SUR). These facility-specific SIRs and SURs are used to create National percentile distributions for each infection and device type if at least 20 facilities had sufficient data to calculate an SIR or SUR. For detailed information about the calculation of the percentile distribution of facility-specific SIRs and SURs, see the [Technical Appendix](#) of the HAI Progress Report page.

The percentile distribution of facility-specific SIRs and SURs, based on the national data, have now been included in the NHSN SIR/SUR Analysis Reports.

NHSN Reports Containing Percentile Distribution

The percentile distributions are available for HAIs followed in the Patient Safety Component using non-CMS SIR and SUR reports under the NHSN Analysis function. The percentile distribution is calculated for acute care hospitals, critical access hospitals, long-term acute care hospitals and inpatient rehabilitation facilities. Percentile distributions are included on SIR and SUR reports for the following HAIs:

- **Device-associated HAIs (CLABSI, CAUTI and VAE)**
 - By orgID overall
 - By Location Type
 - ICU, WARD and NICU (CLABSI only)
- **Surgical Site Infections:**
 - **Adult and Pediatric Complex Admission/Readmission SIR Model only**
 - By orgID overall
 - By procedure categories
- **MDRO: CDI and MRSA at facility-wide inpatient**

Generating the SIR/SUR Reports to Gather Percentile Distribution

For this guide, we are using the SUR- Acute Care Hospital Central Line Device Use report to demonstrate how to generate and interpret the percentile distribution. There are no new additional steps to modifying your SIR /SUR reports to generate the percentile distribution; the SIR_pctl and SUR_pctl columns are included on your report by default.

When selecting your *Time Period*, select the matching *Group by* option using the Display Option Tab for the report you are generating, as shown in the first two screenshots below. You can generate the report by any of the Group by options, *Summary Month*, *Quarter*, *Half Year*, or *Year*. Click Run once modifications have been made. Optionally, the report can also be exported.

This screenshot shows the 'Modify SUR - Acute Care Hospital Central Line Device Use' interface. At the top, there is a header bar with the title and a 'Show descriptive variable names (Print List)' checkbox. Below the header, there are four tabs: 'Title/Format', 'Time Period', 'Filters', and 'Display Options'. The 'Time Period' tab is selected and highlighted in green. Under the 'Time Period' section, there are fields for 'Date Variable' (set to 'Summary Year/Month'), 'Beginning' (01/2018), and 'Ending' (03/2018). A 'Clear Time Period' button is also present. A checkbox at the bottom of this section is labeled 'Enter Date variable/Time period at the time you click the Run button'.

This screenshot shows the same interface as the previous one, but with the 'Display Options' tab selected and highlighted in green. The 'SUR Options' section is visible, featuring a 'Group by' dropdown menu set to 'Summary Year/Month'. At the bottom right, there are four buttons: 'Run', 'Save...', 'Export...', and 'Close'. A yellow callout bubble with the number '4' points to the 'Run' button.

If exporting your data:

- The SIR/SUR and supporting statistics (including the percentiles) are not available in the exported file if the report is exported without modifications
- To **include** the SIR/SUR and supporting statistics in the exported file, please export the report with modifications

This screenshot is identical to the previous one, showing the 'Display Options' tab selected. However, a yellow callout bubble with the number '4' now points to the 'Export...' button instead of the 'Run' button.

Interpreting Percentile Distribution

Below are the two output tables from our example. The SUR percentile is available on two output tables; the *Overall By OrgID and the By OrgID/Location Type tables*. In our example below, data is displayed by month for 2018M01 through 2018M03. The SUR percentile (SUR_pctl) for 2018M01 shows 67. This can be interpreted as 67% of facilities in the nation (with at least 1 predicted device day) had a SUR equal to or lower than 1.005.

I. Overall by month

National Healthcare Safety Network
SUR for Central Line Device Use for Acute Care Hospitals (2015 baseline) - By OrgID
 As of: December 30, 2019 at 4:00 PM
 Date Range: BS2_CLAB_RATE SALL summaryYM 2018M01 to 2018M03

orgID=10018 medType=M

orgID	ccn	summaryYM	num CLDays	num PredDDays	SUR	SUR_pval	SUR95CI	SUR_pctl
10018	12345	2018M01	1700	1,691.999	1.005	0.8522	0.958, 1.053	67
10018	12345	2018M02	750	1,194.474	0.628	0.0000	0.584, 0.674	28
10018	12345	2018M03	1000	1,433.369	0.698	0.0000	0.655, 0.742	35

- This report includes central line utilization data from acute care hospitals for 2015 and forward.
- The SUR is only calculated if number of predicted device days (numPredDDays) is ≥ 1 . Lower bound of 95% Confidence Interval only calculated when number of observed device days > 0 .
- The predicted device utilization days is calculated based on national aggregate NHSN data from 2015. It is risk adjusted for CDC location, hospital beds, medical school affiliation type, and facility type.

Source of aggregate data: 2015 NHSN CLABSI Data
 Source of Percentile Distribution: 2018 National HAI Progress Report: <https://www.cdc.gov/hai/data/portal/progress-report.html>
 Data contained in this report were last generated on December 26, 2019 at 11:11 AM. to include data beginning January 2015 through December 2019

In our example facility, there was data available for only ICU locations for 2018M01 through 2018M03 (screenshot below). Using 2018M01, the SUR Percentile can be interpreted as, 27% of facilities in the nation (with at least 1 predicted device day) had a SUR equal to or lower than 0.670.

II. By orgID/Location Type

National Healthcare Safety Network
SUR for Central Line Device Use for Acute Care Hospitals (2015 baseline) - By OrgID/Location Type
 As of: December 30, 2019 at 4:00 PM
 Date Range: BS2_CLAB_RATE SALL summaryYM 2018M01 to 2018M03

orgID=10018 medType=M

orgID	ccn	locationType	summaryYM	num CLDays	numPredDDays	SUR	SUR_pval	SUR95CI	SUR_pctl
10018	12345	CC	2018M01	800	1,194.474	0.670	0.0000	0.625, 0.717	27
10018	12345	CC	2018M02	750	1,194.474	0.628	0.0000	0.584, 0.674	23
10018	12345	CC	2018M03	1000	1,433.369	0.698	0.0000	0.655, 0.742	29
10018	12345	WARD_ONC	2018M01	900	497.525	1.809	0.0000	1.694, 1.930	93

The footnotes include valuable information regarding the source of the percentiles data and how to access them.

Additional Resources

HAI Progress Report: <https://www.cdc.gov/hai/data/portal/progress-report.html>

SIR Guide: <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf>

NHSN Analysis Page: <https://www.cdc.gov/nhsn/ps-analysis-resources/index.html>

NHSN Quick Reference Guides: <https://www.cdc.gov/nhsn/ps-analysis-resources/reference-guides.html>

Keys to Success with NHSN Data: <https://www.cdc.gov/nhsn/ps-analysis-resources/keys-to-success.html>



**Centers for Disease
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