USER GUIDE:

COST-TO-CHARGE RATIO (CCR) FOR EMERGENCY DEPARTMENT FILES

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Agency for Healthcare Research and Quality
Healthcare Cost and Utilization Project (HCUP)
Email: hcup@ahrq.gov
Website: https://hcup-us.ahrq.gov

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Michigan Health & Hospital Association
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South Dakota Association of Healthcare Organizations
Tennessee Hospital Association
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Utah Department of Health and Human Services
Vermont Association of Hospitals and Health Systems
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EXECUTIVE SUMMARY

- The Healthcare Cost and Utilization Project (HCUP) Cost-to-Charge Ratio (CCR) Files are hospital-level files that can be linked to HCUP inpatient and emergency department databases to facilitate the conversion of total charges into hospital costs (expenses) for providing care. The CCRs are constructed using information from the Healthcare Cost Report Information System (HCRIS) files submitted by hospitals to the Centers for Medicare & Medicaid Services (CMS).
- Separate CCR Files are released for each emergency department (ED) database type. This document describes the following CCR for ED Files:
    - CCR for the HCUP Central Distributor State Emergency Department Databases (CCR-SEDD)
    - CCR for the Nationwide Emergency Department Sample (CCR-NEDS)
- The CCR Files are released for each data year and should be used with the corresponding year and database to ensure an appropriate match for the year and database-specific hospital identifiers.
- In February 2026, the structure of the CCR-SEDD was revised. Previously, there was a combined multi-state CCR-SEDD file per data year (2012-2023) that included information for most SEDD. The previously combined multi-state CCR-SEDD files have been split into State-specific files. There is one CCR-SEDD file per SEDD for each data year. The unit of observation within the CCR-SEDD remains hospitals in the SEDD, identified by the HCUP hospital identification number (HOSPID). The availability of data elements within the CCR-SEDD continues to depend on HCUP Partner permission for data release.
- This document provides an overview of the CCR for ED Files (e.g., background, file structure, and usage information), as well as information about the CCR methodology (e.g., source data, development process, and validations studies), data elements, file contents, and other considerations and recommendations for use. A separate Excel Appendix includes year specific information about the CCR for ED Files.
- A separate user guide is available for the CCR for Inpatient Files.

OVERVIEW

Background

The Healthcare Cost and Utilization Project (HCUP) Cost-to-Charge Ratio (CCR) for Emergency Department (ED) Files are hospital-level files that can be linked to HCUP ED databases to facilitate the conversion of total charges into hospital costs (expenses) for providing care. The files are designed to supplement the data elements in the HCUP ED databases, which contain data on total charges for each ED visit. *Charges* represent the amount a hospital billed for the case; *costs* reflect the expenses incurred in the production of hospital services, such as wages, supplies, and utility costs. Neither charges nor costs represent the amounts that hospitals receive in payment.

Constructed from appropriate cost centers in the hospital cost reports obtained from the Centers for Medicare & Medicaid Services (CMS) Healthcare Cost Report Information System (HCRIS),[1] the CCR for ED Files are annual datasets that provide hospital-specific CCRs based on all-payer ED costs for nearly every hospital in each year's collection of the HCUP Central Distributor State Emergency Department Databases (SEDD) and Nationwide Emergency Department Sample (NEDS) starting in data year 2012.

See Appendix A for information about the history of CCRs and CMS cost reports.

General File Structure

The HCUP CCR for ED Files provide an estimate of all-payer, ED CCRs for hospitals in corresponding HCUP databases. The publicly available files are provided as comma-separated value (CSV) text files that use a comma to separate values on each record. Records are included for all community hospitals from the corresponding HCUP database that match with both the American Hospital Association (AHA) Annual Survey Database and the CMS HCRIS file for the corresponding fiscal year.

Separate CCR Files are released for each data year and should be used with the corresponding year of the SEDD or NEDS to ensure an appropriate match of the year-specific hospital identifiers. In February 2026, the structure of the CCR-SEDD files was revised. Previously, there was one combined multi-state CCR-SEDD file per data year (2001-2023) that included information for all States with available data. The previously combined multi-state CCR-SEDD files have been split into State-specific files. There is one CCR-SEDD file per SEDD in each data year. The structure of the CCR Files for the NEDS remains one file per data year.

[1] For more information, visit www.cms.gov/Research-Statistics-Data-and-Systems/Downloadable-Public-Use-Files/Cost-Reports.

Usage

Linkage Between the CCR for ED Files and the HCUP ED Databases

The CCR Files can be linked to discharge records in the HCUP databases using the HCUP hospital identification number, which is a unique hospital number exclusive to the HCUP data. The name of the data element representing the hospital identification number varies by file type, as summarized in Table 1.

Table 1. Linkage and CCR Data Elements by CCR File

CCR File	Linkage Data Element	CCR Data Element(s)
CCR-SEDD	HOSPID	APECC, GAPECC
CCR-NEDS	HOSP_ED*	CCR_NEDS

Abbreviations: APECC, all-payer ED cost-to-charge ratio; CCR, cost-to-charge ratio; GAPECC, group average all-payer ED cost-to-charge ratio; NEDS, Nationwide Emergency Department Sample; SEDD, State Emergency Department Databases.
* HOSP_ED does not link to other HCUP databases or to external databases.

For the CCR-NEDS, the CCR records can be merged directly with the discharge records in the corresponding NEDS database using the linkage data element HOSP_ED.

For the CCR-SEDD, the linkage data element is HOSPID, but HOSPID is not always on the SEDD Core File. The following explains how to link the CCR-SEDD to the SEDD Core file for three different scenarios:

- **For States that release an HCUP AHA Linkage File**, HOSPID is not on the SEDD Core. Linkage between the CCR File and the SEDD is achieved in two steps. First, link the AHA Linkage File to the SEDD Core file by the data elements HOSPST and DSHOSPID to add the data element HOSPID. Second, link the resulting file with the CCR File for the SEDD by the data element HOSPID. The AHA Linkage Files can be downloaded from the HCUP AHA Linkage Files page on the HCUP User Support (HCUP-US) website.

- **The AHA Linkage file for four States (Iowa, Minnesota, Nebraska, and North Dakota)** are discharge-level files that are available by request from the HCUP Central Distributor to purchasers whose organizational affiliation and ownership meet the Partner's eligibility criteria. HOSPID is not on the SEDD Core file. Linkage between the CCR-SEDD for these States is achieved in two steps. First, link records in the AHA Linkage File to the SEDD by KEY to add the data element HOSPID. Second, linking the resulting file to the CCR-SEDD by HOSPID.

- **For States that do not release an HCUP AHA Linkage File**, HOSPID is included on their SEDD Core file. For these States, the data elements from the CCR File can be merged onto the SEDD by HOSPID.

The HCUP hospital identifier (HOSPID, HOSP_NEDS) on the CCR CSV text file is enclosed in quotations to preserve leading zeros. As a result, some software applications may interpret the data element as a character variable, which in turn would not match the numeric version of the hospital identifier on the SEDD or NEDS. Users should load the hospital identifier data element on the CCR File as numeric or convert it to numeric prior to merging it with HCUP database files.

Cost Computation

The cost of ED care for a discharge is estimated by multiplying TOTCHG on the SEDD (total charges reported on the discharge record) and TOTCHG_ED on the NEDS (total charges for ED services) by the CCR. The data element representing the CCR varies by file type, as summarized in Table 1.

- **For the CCR-SEDD**, both the hospital-specific all-payer ED CCR (data element APECC) and the group average all-payer ED CCR (data element GAPECC) are included, with some exceptions. The values of APECC are not available if either the underlying data needed to create the ratio is missing in the HCRIS files or the release of the hospital-specific CCR is not permitted by the HCUP Partner organization. Analysts can use the APECC, when available, and can otherwise use the weighted group average, GAPECC.

- **For the CCR-NEDS**, a single CCR is provided (CCR_NEDS), with values based on the APECC when available or the GAPECC otherwise. In addition, CCRs in the CCR-NEDS are perturbed slightly to further protect hospital and Partner identity.

Applying CCRs to the NEDS

NEDS records include both treat-and-release visits (from the SEDD) and ED visits that result in admission to the same hospital (from the HCUP State Inpatient Databases [SID]). Both types of records can include information on ED charges (data element TOTCHG_ED).

- For treat-and-release ED visit records (identified by HCUPFILE="SEDD")
    - TOTCHG_ED is the total hospital charge for services performed while the patient was in the ED.
    - CCR_NEDS can be used to convert these ED charges to ED costs.
    - The percentage of ED treat-and-release records missing information on ED charges has declined over time (e.g., 12% of ED treat-and-release records in the 2018 NEDS have a missing value for TOTCHG_ED and 1% of ED treat-and-release records in the 2022 NEDS have a missing value for TOTCHG_ED).
- For admitted ED visit records (identified by HCUPFILE="SID")
    - TOTCHG_ED represents the portion of total inpatient charges attributed to ED unit of the hospital. There may be other services performed while the patient was in the ED (e.g., CT scan, laboratory tests) that will not be captured in TOTCHG_ED because there is no information on a SID record that identifies whether these services occurred while the patient was in the ED or during the

inpatient stay. For this reason, ED charges (and costs) for admitted patients are potentially underestimated.

- CCR_NEDS can be used to convert these ED charges to ED costs, with the understanding that the CCR has not been fine-tuned for the limitations of the charges included in TOTCHG_ED on a SID record.
- TOTCHG_ED is missing for a substantial number of ED admission records because this information is not available for all hospitals.
- *For the reasons outlined above, users should be cautious when interpreting the ED costs estimated for admitted ED visit records and document the percentage of records that were missing the information. It is not appropriate to use the inpatient CCR to estimate costs for ED admissions. The inpatient CCR was calculated based on all hospital costs and charges and is not sensitive to a specific type of service (e.g., ED, room-and-board, lab).*

Additional Data Elements

In addition to the linkage and CCR data elements summarized above, the CCR Files contain supplemental data elements that may be of interest to users. These data elements are summarized in the Data Elements section.

CCR METHODOLOGY

Development of the CCR Files

Source Data

The CCRs are constructed from cost and charge information contained in hospital cost reports obtained from the CMS HCRIS; this information is delineated by hospital cost center. HCRIS covers Medicare-reimbursable facilities, including hospitals.

Hospital-Specific Cost-to-Charge Ratios

The HCRIS hospital cost reports are downloaded for use by HCUP after most hospitals have filed them. The HCUP convention has been to obtain the publicly available HCRIS cost reports after the first quarter of the second year following the HCRIS data year. For example, the HCRIS 2017 data files were downloaded in April 2019.

Inpatient charges, outpatient charges, and total costs are extracted from HCRIS data by hospital identifier/provider number (CMS Certification Number, or CCN) and HCRIS standard cost center. Additional financial and hospital characteristic data are also extracted at this time.

After the CMS extract has been prepared, cost centers are organized into the following HCUP service groups:

- Routine Care Group
- Specialty Care Group
- Labor & Delivery Services Group
- Intermediate Care Services (Ancillary Services Group 1)

- All Other Non-Accommodation Cost Centers (Ancillary Services Group 2)
- Emergency Services Group

The Routine Care, Specialty Care, Labor & Delivery, and Ancillary Services Groups are used for calculation of the inpatient CCR. The Emergency Services Group is used to calculate the ED CCR.

For a complete mapping of HCRIS cost centers to HCUP service groups, see Appendix B.

There are several reasons why the service groupings are used in the calculations. First, grouping standard cost centers can lessen the impact of data entry errors at the hospital level and limit the effect of any misalignment in the mapping of cost and charge data from the hospital accounting systems to the HCRIS cost centers. Second, the creation of service-group level CCRs allows for more sensitive data quality checks (i.e., outlier identification).

Calculation of the service group and hospital-wide CCRs proceeds as follows:

- For each hospital, inpatient charges, outpatient charges, and costs are summed for cost centers in the Emergency Services Group.
- By hospital, emergency services total costs are transformed to outpatient costs by multiplying total costs by the proportion of outpatient charges.
- Finally, the emergency department CCR is calculated as the quotient of emergency services outpatient costs and charges. Note that this CCR is applicable for treat and release (outpatient) emergency department encounters since it is based on outpatient charges and estimated outpatient costs.

Hospital-specific CCRs calculated in this way are not included in the CCR Files when there is no cost information in the HCRIS data.

Both operating costs and capital-related costs are included in the calculation of hospital-specific CCRs.

Group Average Cost-to-Charge Ratios

The group average all-payer ED CCR (data element GAPECC) is a weighted average for the hospitals in peer groups (defined by four dimensions: State, urbanicity, ownership, and bed size), using the proportion of each hospital's beds relative to its peer group as the weight for each hospital.

These averages are based on clean observations from all hospitals in the SEDD maintained by AHRQ, including SEDD that are not released through the HCUP Central Distributor. Clean records are defined as HCUP hospitals that have records in both the AHA and CMS data, when the CMS files are acquired. These records have a matching hospital in the CMS cost report, have availability of certain completed data items in the report, and pass certain quality checks. Note that a group average can be based on only one hospital in the peer group (defined by State and hospital type). The group average may incorporate non-HCUP hospitals. Both operating costs and capital-related costs are included in the calculation of GAPECC.

The hospital type for grouping peer hospitals (data element HTYPE) is calculated within State, using hospital characteristics obtained from the AHA Annual Survey. These include hospital urban/rural location, type of ownership/control, and bed size. The GAPECC is calculated within State and for each of these groupings.

Urban is defined as being part of a Metropolitan Statistical Area. For type of ownership/control, State and local nongovernment hospitals are included in the *not-for-profit* categories. *Beds* are the total hospital beds set up (as reported in each year's AHA Annual Survey Database). *Teaching status*, which is often used for grouping HCUP hospitals, was not incorporated into the definition of HTYPE. This indicator is not present in the CMS hospital cost reports. A proxy measure, the ratio of interns and residents per bed, was tested in regression analyses, and the cost ratios by the proxy for teaching status were not significantly different. Therefore, only ownership and bed size were used for defining HTYPE. (See Table 2 for a summary of HTYPE values.)

Outliers

The hospital-specific CCR is set to missing (masked) if any of the following conditions are met:

- The inpatient hospital-specific CCR was identified as an outlier and masked (see Appendix C for inpatient CCR outlier information)
- The Emergency Services Group CCR is less than zero or greater than 4.

The ED CCR upper limit of 4.0 identifies only about 0.5 percent of hospitals as outliers. Note that the CCR-NEDS CCR upper limit is set at 1.87 to further protect hospital confidentiality.

See the HCUP CCR Outlier Methodologies document on the HCUP-US website for more information.

DATA ELEMENTS

Table 2 provides a summary of data elements included on the CCR for ED Files.

Common Data Elements

As reviewed in Table 1, linkage variables (HOSPID, HOSP_ED) allow users to merge the CCR Files with HCUP databases. The CCR variables (APECC, GAPECC, and CCR_NEDS) can be used to convert hospital charges to hospital costs. CCR Files also include data year (data element YEAR) and area wage index (data elements WAGEINDEX or WI_X), which is an index computed by CMS to indicate the relative hospital wage level in a geographic area compared with the national average hospital wage level (see Appendix D for more information). Wage index data element is called WI_X in the CCR-SEDD and WAGEINDEX in the CCR-NEDS.

Data Elements Available on a Subset of Files

Additional data elements are available on only some CCR for ED Files.

The CCR-SEDD also include hospital type for grouping peer hospitals (data element HTYPE). The GAPECC is calculated within State and for each of these groupings. Although HTYPE is

not provided on the CCR-NEDS, it is helpful to know how this variable is defined to create peer groups using all hospitals within each State. The values of HTYPE are missing if the HCUP Partner organization restricted release of this type of information. (The Group Average Cost-to-Charge Ratios development section provides more information about how HTYPE is used to calculate GAPECC.)

The CCR-SEDD include State postal code (data element Z013).

The CCR-SEDD also include the geographic adjustment factor (data element GAF), which represents the capital cost adjustment index for Core-Based Statistical Areas (CBSAs). GAF is used in calculating the Medicare reimbursement payments for capital costs. This data element may prove useful in regression calculations. However, analysts should note that values of GAF are missing if the HCUP Partner organization restricted the release of the data element. See Appendix D for more information.

Table 2. Data Elements on the CCR for ED Files

Data Element Category	Data Element	Data Type	Coding Notes	CCR Files and Data Years
Hospital ID Number	HOSPID	Character*	HCUP hospital identification number	SEDD 2012+
	HOSP_ED	Character*	N hospital identification number	NEDS 2012+
Cost-to-Charge Ratio	APECC	Numeric (decimal values)	Hospital-specific all-payer ED CCR. Set to missing when there is no cost information in the HCRIS (PPS) data or the calculated cost-to-charge value is deemed an outlier.	SEDD 2012+
	GAPECC	Numeric (decimal values)	Group average all-payer ED CCR, which is a weighted average for the hospitals in peer groups (see HTYPE variable), using the proportion of each hospital's beds relative to its peer group as the weight for each hospital.	SEDD 2012+
	CCR_NEDS	Numeric (decimal values)	NEDS-specific CCR populated with the hospital-specific, all-payer ED CCR (APECC) when available and hospital group average CCR (GAPECC) when the APECC is not available.	NEDS 2012+
Hospital Characteristics	HTYPE	Numeric	Hospital type for grouping peer hospitals, calculated within State, using bed size, ownership/control, and urban/rural location. 1 = investor-owned, under 100 beds 2 = investor-owned, 100 or more beds 3 = not-for-profit, rural, under 100 beds 4 = not-for-profit, rural, 100 or more beds 5 = not-for-profit, urban, under 100 beds	SEDD 2012+

Data Element Category	Data Element	Data Type	Coding Notes	CCR Files and Data Years
			6 = not-for-profit, urban, 100–299 beds 7 = not-for-profit, urban, 300 or more beds.	
	Z013	Character	Two-character State postal code (from AHA)	SEDD, 2012+
Area Wage Index	WI_X	Numeric	Area wage index computed by CMS to measure the relative hospital wage level in a CBSA compared with the national average hospital wage level.	SEDD, 2012+
	WAGEINDEX	Numeric	Area wage index computed by CMS to measure the relative hospital wage level in a CBSA compared with the national average hospital wage level.	NEDS 2012+
Geographic Adjustment Factor	GAF	Numeric (decimal values)	Capital cost adjustment factor for CBSAs	SEDD, 2012+
Year	YEAR	Numeric	Data year	SEDD, 2012+ NEDS 2012+

Abbreviations: AHA, American Hospital Association; CBSA, Core-Based Statistical Area; CCR, cost-to-charge ratio; CMS, Centers for Medicare & Medicaid Services; HCRIS, Healthcare Cost Report Information System; HCUP, Healthcare Cost and Utilization Project; NEDS, Nationwide Emergency Department Sample; PPS, Prospective Payment System; SEDD, State Emergency Department Databases.

CONSIDERATIONS

Revised Versions of the CCR Files for the SEDD

In September 2021, AHRQ released revised versions of the combined multi-state 2017–2018 CCR-SEDD. These files were updated to accord with current Partner restrictions and to add State data that were not permissible at the time of the original release.

In February 2026, the structure of the CCR-SEDD was revised. Previously, there was one combined multi-state CCR-SEDD file per data year (20121-2023) that included information for all States with available data. The most recent combined multi-state CCR-SEDD files have been split into State-specific files. There is one CCR-SEDD file per SEDD for each data year. The unit of observation within the CCR-SEDD remains hospitals in the SEDD, identified by the HCUP hospital identification number (HOSPID). The availability of data elements within the CCR-SEDD continues to depend on HCUP Partner permission for data release.

See Appendix E for additional information on the CCR-SEDD available *prior to March 2026.*

FILE-SPECIFIC INFORMATION

CCR for the SEDD

Almost all States participating in the HCUP Central Distributor SEDD have an accompanying CCR-SEDD. For most states the CCR-SEDD is available for purchasers of the corresponding

SEDD. The CCR-SEDD for four States—Iowa, Minnesota, Nebraska, and North Dakota—are available by request from the HCUP Central Distributor to purchasers whose organizational affiliation and ownership meet the Partner's eligibility criteria. Information on the availability of the CCR-SEDD by State and data year is listed in a separate Appendix to this User Guide (in Excel format).

Starting in March 2026, the CCR-SEDD are State-specific files and have the filename of CCR_SEDD_<YYYY>_<SS>, where <YYYY> is the data year and <SS> is the 2-character State abbreviation. The filenames of the CCR-SEDD acquired before March 2026 are listed in a separate Appendix to this User Guide (in Excel format).

CCR for the NEDS

There is one record for each hospital (identified by the data element HOSP_ED) in the CCR-NEDS. All hospitals have a nonmissing value for the CCR (data element CCR_NEDS). Details on the number of hospitals included in each year of the CCR-NEDS are provided in the separate Appendix to this User Guide (in Excel format).

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APPENDIX A: ORIGINS OF COST-TO-CHARGE RATIOS AND COST REPORTS

CCRs have likely been used on an ad hoc basis by hospitals for estimating treatment costs for a considerable time. The impetus for creating a national database of hospital accounting data was Medicare prospective payment, which was established by the Social Security Amendments Act of 1983, with implementation starting in 1984. At that time, CMS, then known as the Health Care Financing Administration (HFCA), established the inpatient prospective payment system (PPS) as a means of controlling rapidly increasing hospital expenditures that threatened solvency of the Medicare Trust Fund. The fundamental concepts behind PPS were (1) creation of categories of inpatient encounters within which intensity of service delivery was similar (diagnosis-related groups, or DRGs) and (2) reimbursement to hospitals based on the costs of services within DRGs. This led to development of the cost reports, used by HCFA to estimate national costs of service delivery for DRGs, among other uses. DRG cost estimates relied on CCRs calculated from the cost reports and were integral to creation of DRG "relative weights," which determine payments to hospitals based on DRGs (see Pettengill and Vertrees, 1982, for a discussion of initial development of DRGs and relative weights).

Once the cost reports became accessible to the public, CCRs began being used to estimate service delivery costs for individual hospitals, hospital systems, and peer groups. This in turn led to a focus on hospital cost-efficiency analysis and benchmarking. AHRQ developed a methodology for estimating hospital inpatient costs based on the cost reports in the early 2000s (Friedman et al., 2002). More recently, AHRQ developed a methodology for estimating the cost of treat-and-release emergency department visits (Pickens et al., 2021).

APPENDIX B: ASSIGNMENT OF HCRIS COST CENTERS TO HCUP SERVICE GROUPS

The table below details the mapping between HCRIS cost centers and HCUP service groups.

Table B1. Assignment of HCRIS Cost Centers to HCUP Service Groups

HCRIS Standard Cost Center Description	Inpatient Cost-to-Charge Ratios					Emergency Department Cost-to-Charge Ratios
	Routine Care Group	Specialty Care Group	Labor & Delivery Group	Ancillary Services Group 1	Ancillary Services Group 2	Emergency Services Group
Adults & Pediatrics (General Routine Care)	X					
Intensive Care Unit		X				
Coronary Care Unit		X				
Burn Intensive Care Unit		X				
Surgical Intensive Care Unit		X				
Other Intensive Care		X				
Inpatient Psychiatric Facility Subprovider				X		
Inpatient Rehabilitation Facility Subprovider				X		
Other Subprovider				X		
Nursery		X				
Skilled Nursing Facility				X		
Nursing Facility				X		
Other Long-Term Care				X		
Operating Room, Endoscopy, Prostheses					X	
Recovery Room					X	
Delivery Room & Labor Room			X			
Anesthesiology & Acupuncture					X	
Radiology-Diagnostic					X	X
Radiology-Therapeutic					X	
Radioisotope					X	
CAT Scan					X	X
MRI					X	
Cardiac Catheterization Lab					X	
Laboratory					X	X
PBP Clinical Lab Service Program Only					X	
Whole Blood & Packed Red Blood Cells					X	
Blood Storing, Processing, & Transfusing					X	

HCRIS Standard Cost Center Description	Inpatient Cost-to-Charge Ratios					Emergency Department Cost-to-Charge Ratios
	Routine Care Group	Specialty Care Group	Labor & Delivery Group	Ancillary Services Group 1	Ancillary Services Group 2	Emergency Services Group
Intravenous Therapy					X	
Respiratory Therapy					X	
Physical Therapy					X	
Occupational Therapy					X	
Speech Pathology					X	
Electrocardiology					X	
Electroencephalography					X	
Medical Supplies Charged to Patients					X	
Implants Charged to Patients					X	
Drugs Charged to Patients					X	X
Renal Dialysis					X	
Ambulatory Surgery Center (Non-distinct Part)					X	
Other Ancillary					X	
Rural Health Clinic					X	
Federally Qualified Health Center					X	
Clinic					X	
Emergency Room					X	X
Observation Beds					X	X
Other Outpatient Service					X	
Home Program Dialysis					X	
Ambulance Services					X	
Durable Medical Equipment -Rented					X	
Durable Medical Equipment -Sold					X	
Other Reimbursable Cost Centers (excluding Home Health Agency and Comprehensive Outpatient Rehabilitation Facility)					X	

Abbreviations: CAT, computerized axial tomography; HCRIS, Healthcare Cost Report Information System; HCUP, Healthcare Cost and Utilization Project; MRI, magnetic resonance imaging; PRP, provider-based physician.

APPENDIX C: INPATIENT CCR OUTLIERS

For the ED CCRs, the hospital-specific CCR is set to missing (masked) if the inpatient CCR was identified as an outlier and masked.

HCUP inpatient CCR outliers are identified using upper and lower limits for hospital-wide, routine care, specialty care, labor and delivery, and ancillary services CCRs. Specifically, the hospital-specific CCR is set to missing if any of these conditions are met:

- The Routine Care Group inpatient CCR is less than 0 or greater than 4.
- The Labor & Delivery Group inpatient CCR is greater than 4.
- The Specialty Care Group inpatient CCR is greater than 4.
- The Combined Ancillary Services Group CCR is less than 0 or greater than 4.
- The hospital-wide inpatient CCR is less than .05 or greater than 2.

The inpatient CCR upper limit of 2.0 identifies about 2.5 percent of hospitals as outliers.

APPENDIX D: ADDITIONAL DATA ELEMENT INFORMATION

Area Wage Index (WAGEINDEX or WI_X)

Area wage index is provided on the file to allow researchers to analyze cost differences geographically or to control for price factors beyond the hospital's control. Multivariate studies should not assume strict proportionality. Some analysts use the area wage index to adjust the labor portion of the hospital's estimated cost to reflect local labor market conditions.

The index is computed for each urban CBSA and then linked with the AHA data before it is added to the file. If the AHA-reported CBSA does not match the CMS hospital area, then the Area Health Resources Files and other hospitals in the same county are used to find a matching CBSA. All rural areas in each State are combined for a single wage index. This information is available for download from CMS.[2]

For the HCUP hospitals in each year, all hospitals were matched to an area wage index using CMS files, the AHA Annual Survey, and the Area Health Resources Files in cases where the AHA Survey was incomplete.

Geographic Adjustment Factor (GAF)

GAF represents the capital cost adjustment index CBSAs and is used in calculating the Medicare reimbursement payments for capital costs. This data element may prove useful in regression calculations. However, analysts should note that for a number of States contributing hospital data in the SEDD, permission was not provided by the HCP Partner organization to release values of GAF. GAF values are available for download from CMS.[3]

[2] Visit www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Wage-Index-Files for more information. Navigate to the Wage Index page for the year of interest.

[3] Visit https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/FY2020-IPPS-Final-Rule-Home-Page for more information.

APPENDIX E: FILE INFORMATION FOR CCR FILES FOR THE SEDD THAT WERE AVAILABLE PRIOR TO MARCH 2026

Prior to March 2026, there was a combined multi-state CCR-SEDD file for each data year (2012-2023) that included information for most States with available data. Four States (Iowa, Nebraska, Minnesota, and North Dakota) were available in separate State-specific CCR-SEDD files. Starting in March 2026, all CCR-SEDD are State-specific files.

Table E.1 provides the number of records (hospitals) included in the combined multi-state CCR-SEDD (available prior to March 2026) compared with the count of all hospitals in the SEDD maintained by AHRQ (including SEDD that are not released through the HCUP Central Distributor). In addition, the table documents the change in number of hospitals in the CCR-SEDD when a yearly file was updated.

Table E.1. Record (Hospital) Counts by Year for CCR-SEDD Available Before March 2026

Year	Number of Records (Hospitals)		
	CCR-SEDD Distributed in Files with Multiple States [a]	CCR-SEDD Distributed in State-specific Files[a]	Total SEDD[b]
2023	1,733	335	3,353
2022 v2	2,064	320	3,703
2022 v1	2,063	320	3,702
2021	2,152	320	3,610
2020	2,201	323	3,638
2019	2,185	324	3,646
2018 v2	2,191	324	3,590
2018 v1	1,718	324	3,542
2017 v3	1,763	325	3,514
2017 v2	1,458	325	3,514
2017 v1	1,299	325	3,514
2016	1,442	323	3,427
2015	1,441	329	3,368
2014	1,387	331	2,916
2013	1,394	330	2,859
2012	1,331	330	2,787

Abbreviations: CCR, cost-to-charge ratio; SEDD, State Emergency Department Databases.

[a] Excludes States that did not permit AHRQ to release their CCR measures.

[b] This represents the count of all hospitals in the SEDD maintained by AHRQ (including SEDD that are not released through the HCUP Central Distributor).

Table E.2 provides the count of records (hospitals) with hospital-specific and group average CCRs in the CCR-SEDD available prior to March 2026. Where permitted by HCUP Partner organizations, the CCR-SEDD File includes a hospital-specific all-payer ED CCR, APECC. For all hospitals, there is also a weighted group average, GAPECC. Analysts can use the APECC, when available, and can otherwise use the weighted group average, GAPECC.

Table E.2. Records (Hospitals) in the CCR-SEDD Available Before March 2026, by Year and Presence of APECC and GAPECC

Year	Number of Records (Hospitals) With APECC	Percent With APECC	Number of Records (Hospitals) With GAPECC Only
2023	1,010	58%	723
2022 v2	1,333	65%	731
2022 v1	1,332	65%	731
2021	1,314	61%	838
2020	1,342	61%	859
2019	1,333	61%	852
2018 v2	1,366	62%	825
2018	1,324	77%	394
2017 v3	1,071	61%	692
2017 v2	1,071	73%	387
2017 v1	924	71%	375
2016	1,072	74%	370
2015	1,077	75%	364
2014	1,023	74%	364
2013	1,017	73%	377
2012	951	71%	380

Abbreviations: APECC, all-payer ED cost-to-charge ratio; CCR, cost-to-charge ratio; GAPECC, group average all-payer ED cost-to-charge ratio; SEDD, State Emergency Department Databases.