



AGENCY FOR HEALTHCARE RESEARCH AND QUALITY



The Healthcare Cost and Utilization Project (HCUP)

HCUP Database Overview

Agency for Healthcare Research and Quality (AHRQ)
April 12, 2022

Introduction to HCUP



What Is HCUP?

The HCUP Partnership



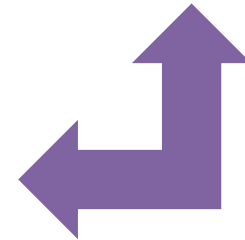
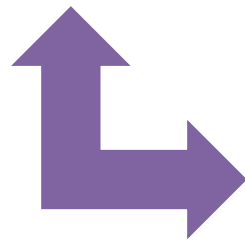
State



Federal



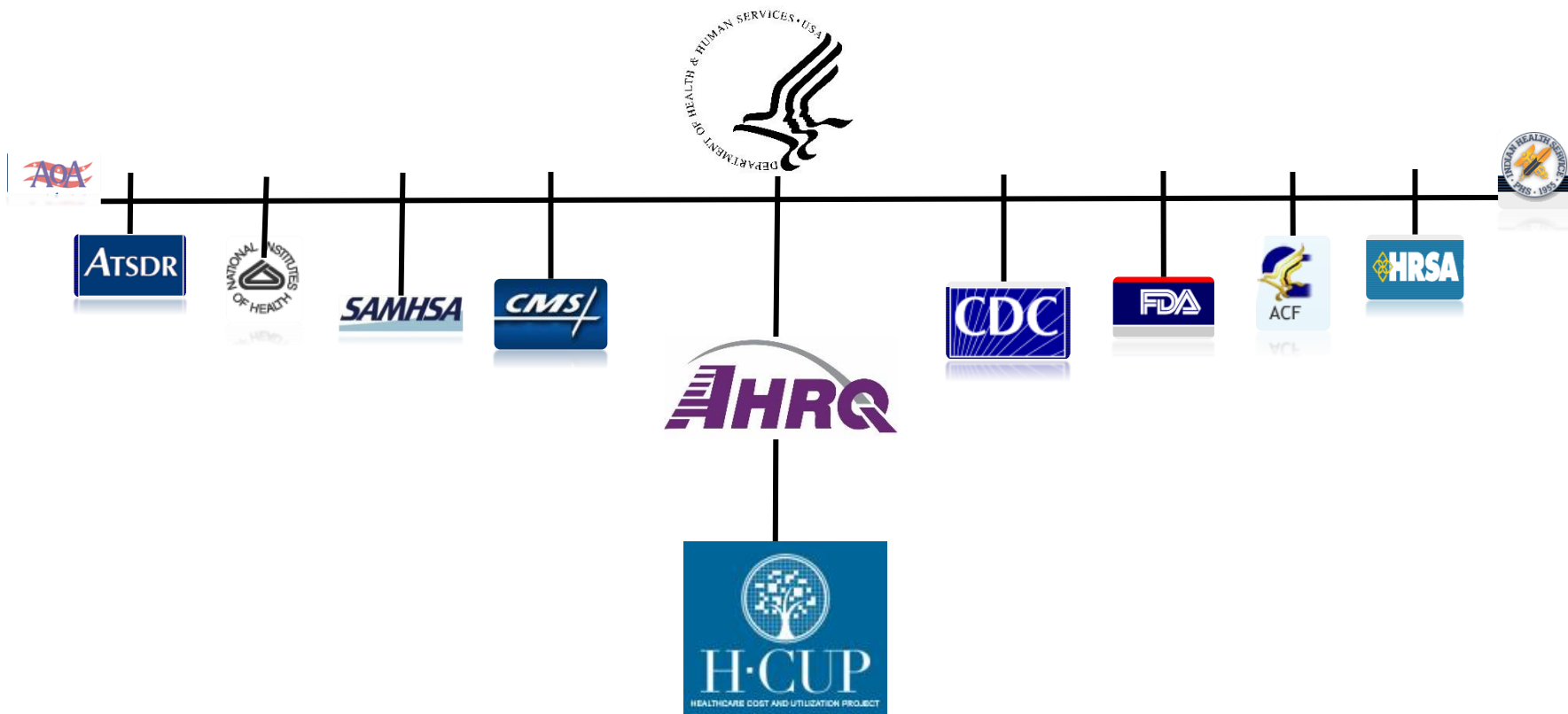
Industry



Sponsored by the Agency for Healthcare Research and Quality



The Agency for Healthcare Research and Quality (AHRQ) is a Federal agency under the Department of Health and Human Services.



Available HCUP Resources

Federal-State-Private Partnership

HCUP is a comprehensive set of **publicly available all-payer** healthcare data (including self-pay and those billed as “no charge”)



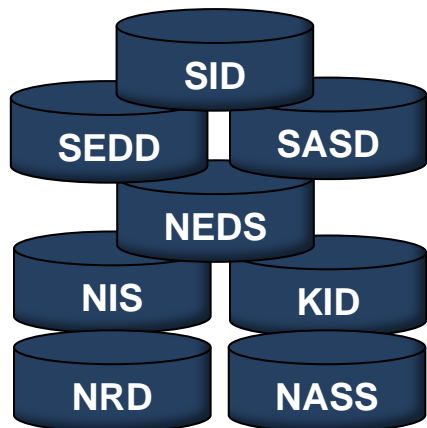
Includes **multiyear** inpatient and outpatient data based on **hospital billing** records

HCUP Databases

Online Tools

Analytics

User Support



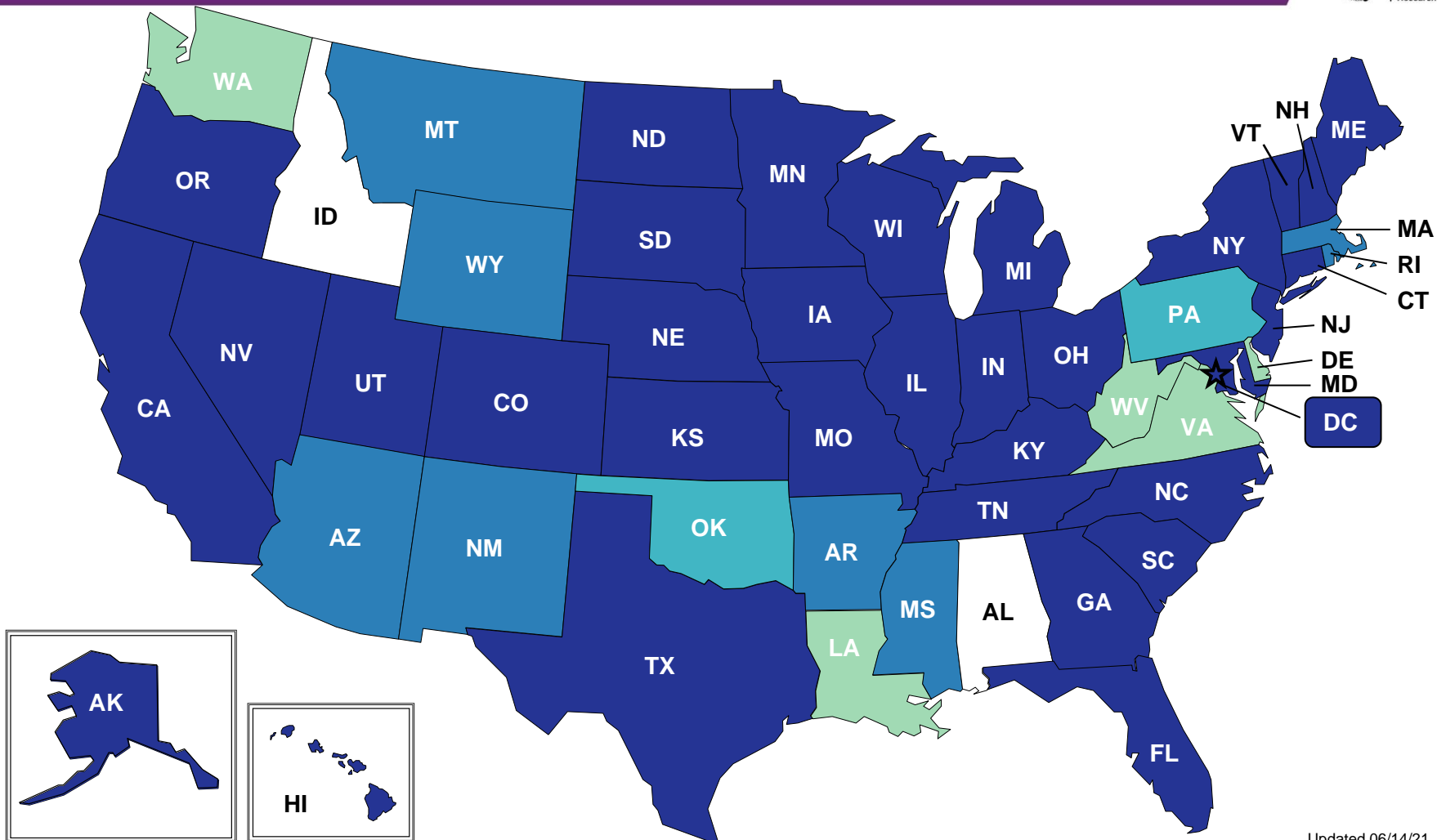
HCUP Data Partners



Alaska Department of Health and Social Services
Alaska State Hospital and Nursing Home Association
Arizona Department of Health Services
Arkansas Department of Health
California Office of Statewide Health Planning and Development
Colorado Hospital Association
Connecticut Hospital Association
Delaware Health Statistics Center & Office of Vital Statistics
District of Columbia Hospital Association
Florida Agency for Health Care Administration
Georgia Hospital Association
Hawaii Laulima Data Alliance
Hawaii University of Hawai'i at Hilo
Illinois Department of Public Health
Indiana Hospital Association
Iowa Hospital Association
Kansas Hospital Association
Kentucky Cabinet for Health and Family Services
Louisiana Department of Health
Maine Health Data Organization
Maryland Health Services Cost Review Commission
Massachusetts Center for Health Information and Analysis
Michigan Health & Hospital Association
Minnesota Hospital Association (provides data for Minnesota and North Dakota)
Mississippi State Department of Health
Missouri Hospital Industry Data Institute

Montana Hospital Association
Nebraska Hospital Association
Nevada Department of Health and Human Services
New Hampshire Department of Health & Human Services
New Jersey Department of Health
New Mexico Department of Health
New York State Department of Health
North Carolina Department of Health and Human Services
North Dakota (data provided by the Minnesota Hospital Association)
Ohio Hospital Association
Oklahoma State Department of Health
Oregon Healthy Authority
Oregon Association of Hospitals and Health Systems
Pennsylvania Health Care Cost Containment Council
Rhode Island Department of Health
South Carolina Revenue and Fiscal Affairs Office
South Dakota Association of Healthcare Organizations
Tennessee Hospital Association
Texas Department of State Health Services
Utah Department of Health
Vermont Association of Hospitals and Health Systems
Virginia Health Information
Washington State Department of Health
West Virginia Health Care Authority
Wisconsin Department of Health Services
Wyoming Hospital Association

HCUP Participation by Data Type



Updated 06/14/21

Partners Providing:	Inpatient Data	Inpatient and Ambulatory Surgery and Services Data	Inpatient and Emergency Department Data	Inpatient, Ambulatory Surgery and Services, and Emergency Department Data	Non-participating

Introduction to HCUP

What Is the
Foundation of
HCUP Data?

The Foundation of HCUP Data Is Hospital Billing Data



UB-04
CMS 1500

Demographic
Data

Diagnoses
Procedures
Charges

1500
HEALTH INSURANCE CLAIM FORM
APPROVED BY NATIONAL UNIFORM CLAIM COMMITTEE: 09/08

1. MEDICARE MEDICAID TRICARE CHAMPVA GROUP HEALTH PLAN
2. PATIENT'S NAME (Last Name, First Name, Middle Initial)
3. PATIENT'S BIRTH DATE
4. PATIENT'S ADDRESS (No. Street)
5. CITY
6. STATE
7. ZIP CODE
8. TELEPHONE (Include Area Code)
9. OTHER INSURED'S NAME (Last Name, First Name, Middle Initial)
10. PATIENT'S CONDITION
11. PATIENT'S DATE OF BIRTH
12. EMPLOYER'S NAME OR SCHOOL NAME
13. INSURANCE PLAN NAME OR PROGRAM NAME
14. DATE OF CURRENT ILLNESS (First symptoms or injury) OR RELIQUARY ACCIDENT OR FREGNANCY(LMP)
15. PATIENT HAS HAD SAME OR GIVE FIRST DATE MM/DD/YY
16. NAME OF PROVIDER OR OTHER SOURCE
17. NPI
18. RESERVED FOR LOCAL USE
19. DIAGNOSIS OR NATURE OF ILLNESS OR INJURY (Please Items 1, 2, 3 or 4 to Item 24E by Line)
20. ICD-9-CM CODE
21. ICD-9-CM CODE
22. ICD-9-CM CODE
23. DATES OF SERVICE FROM TO
24. PROCESSES, SERVICES, OR SUPPLIES
25. FEDERAL TAX ID NUMBER
26. PATIENT'S ACCOUNT NO.
27. FACILITY ASSIGNMENT
28. TOTAL CHARGE
29. AMOUNT PAID
30. BALANCE DUE
31. SIGNATURE OF PHYSICIAN OR SUPPLIER
32. PROVIDER FACILITY LOCATION INFORMATION
33. BILLING PROVIDER NPI & PIN #
34. PROVIDER NAME
35. PROVIDER ADDRESS

UB-04
CMS 1500

1. PATIENT NAME
2. PATIENT ADDRESS
3. BIRTHDATE
4. SEX
5. DATE
6. ADMISSION
7. ICD-9-CM CODE
8. ICD-9-CM CODE
9. ICD-9-CM CODE
10. ICD-9-CM CODE
11. ICD-9-CM CODE
12. ICD-9-CM CODE
13. ICD-9-CM CODE
14. ICD-9-CM CODE
15. ICD-9-CM CODE
16. ICD-9-CM CODE
17. ICD-9-CM CODE
18. ICD-9-CM CODE
19. ICD-9-CM CODE
20. ICD-9-CM CODE
21. ICD-9-CM CODE
22. ICD-9-CM CODE
23. ICD-9-CM CODE
24. ICD-9-CM CODE
25. ICD-9-CM CODE
26. ICD-9-CM CODE
27. ICD-9-CM CODE
28. ICD-9-CM CODE
29. ICD-9-CM CODE
30. ICD-9-CM CODE
31. ICD-9-CM CODE
32. ICD-9-CM CODE
33. ICD-9-CM CODE
34. ICD-9-CM CODE
35. ICD-9-CM CODE
36. ICD-9-CM CODE
37. ICD-9-CM CODE
38. ICD-9-CM CODE
39. ICD-9-CM CODE
40. ICD-9-CM CODE
41. ICD-9-CM CODE
42. ICD-9-CM CODE
43. ICD-9-CM CODE
44. ICD-9-CM CODE
45. ICD-9-CM CODE
46. ICD-9-CM CODE
47. ICD-9-CM CODE
48. ICD-9-CM CODE
49. ICD-9-CM CODE
50. ICD-9-CM CODE
51. ICD-9-CM CODE
52. ICD-9-CM CODE
53. ICD-9-CM CODE
54. ICD-9-CM CODE
55. ICD-9-CM CODE
56. ICD-9-CM CODE
57. ICD-9-CM CODE
58. ICD-9-CM CODE
59. ICD-9-CM CODE
60. ICD-9-CM CODE
61. ICD-9-CM CODE
62. ICD-9-CM CODE
63. ICD-9-CM CODE
64. ICD-9-CM CODE
65. ICD-9-CM CODE
66. ICD-9-CM CODE
67. ICD-9-CM CODE
68. ICD-9-CM CODE
69. ICD-9-CM CODE
70. ICD-9-CM CODE
71. ICD-9-CM CODE
72. ICD-9-CM CODE
73. ICD-9-CM CODE
74. ICD-9-CM CODE
75. ICD-9-CM CODE
76. ICD-9-CM CODE
77. ICD-9-CM CODE
78. ICD-9-CM CODE
79. ICD-9-CM CODE
80. ICD-9-CM CODE
81. ICD-9-CM CODE
82. ICD-9-CM CODE
83. ICD-9-CM CODE
84. ICD-9-CM CODE
85. ICD-9-CM CODE
86. ICD-9-CM CODE
87. ICD-9-CM CODE
88. ICD-9-CM CODE
89. ICD-9-CM CODE
90. ICD-9-CM CODE
91. ICD-9-CM CODE
92. ICD-9-CM CODE
93. ICD-9-CM CODE
94. ICD-9-CM CODE
95. ICD-9-CM CODE
96. ICD-9-CM CODE
97. ICD-9-CM CODE
98. ICD-9-CM CODE
99. ICD-9-CM CODE
100. ICD-9-CM CODE

The Making of HCUP Data

Patient enters hospital



Billing record created



States store data in varying formats



Hospital sends billing data and any additional data elements to data organizations

AHRQ standardizes data to create uniform HCUP databases



744	98	749	2	79	257	5	290
745	25	614	4	84	541	4	549
746	66	195	1	78	669	3	523
747	43	726	3	46	211	4	970
748	81	533	6	98	83	8	40
749	51	418	4	69	496	1	613
750	16	575	2	77	571	1	995
751	2	326	4	44	638	2	958
752	63	521	4	18	217	7	721
753	38	867	4	44	446	2	71
754	50	418	0	59	216	4	799
755	22	806	3	46	573	2	994
756	94	740	6	55	247	1	218
757	36	852	8	8	289	3	559
758	63	386	1	94	838	5	613
759	17	766	8	92	799	5	612
760	54	735	3	29	556	6	503
761	5	263	4	78	125	8	997
762	48	100	3	94	484	8	206
763	23	916	6	15	556	9	327
764	11	251	4	17	125	6	192
765	30	976	1	9	561	6	39

The Making of HCUP Data, Cont'd.



- Quality checks are performed
- Additional data elements are available:
 - ▶ Value-added variables (supplemental variables for revisit analyses, injury indicators, indicators for observation and emergency department [ED] services)
 - ▶ Hospital characteristics (teaching status, ownership/control, bed size)
 - ▶ Diagnosis-related groups and severity measures
 - 3M™ All Patient Refined Diagnosis Related Groups (APR-DRGs)

Final Product: HCUP Databases



- Uniform databases enable analyses across years and settings of care
- One hospital encounter = one record in the HCUP databases
- Data contain clinical and resource use information included in a typical discharge abstract, with safeguards to protect the privacy of individual patients, physicians, and hospitals
- HCUP excludes information that could directly identify individuals

Overview of the HCUP Databases



What Types of
HCUP Databases
Are Available?

HCUP Databases Include Different Hospital Settings and Geographic Levels



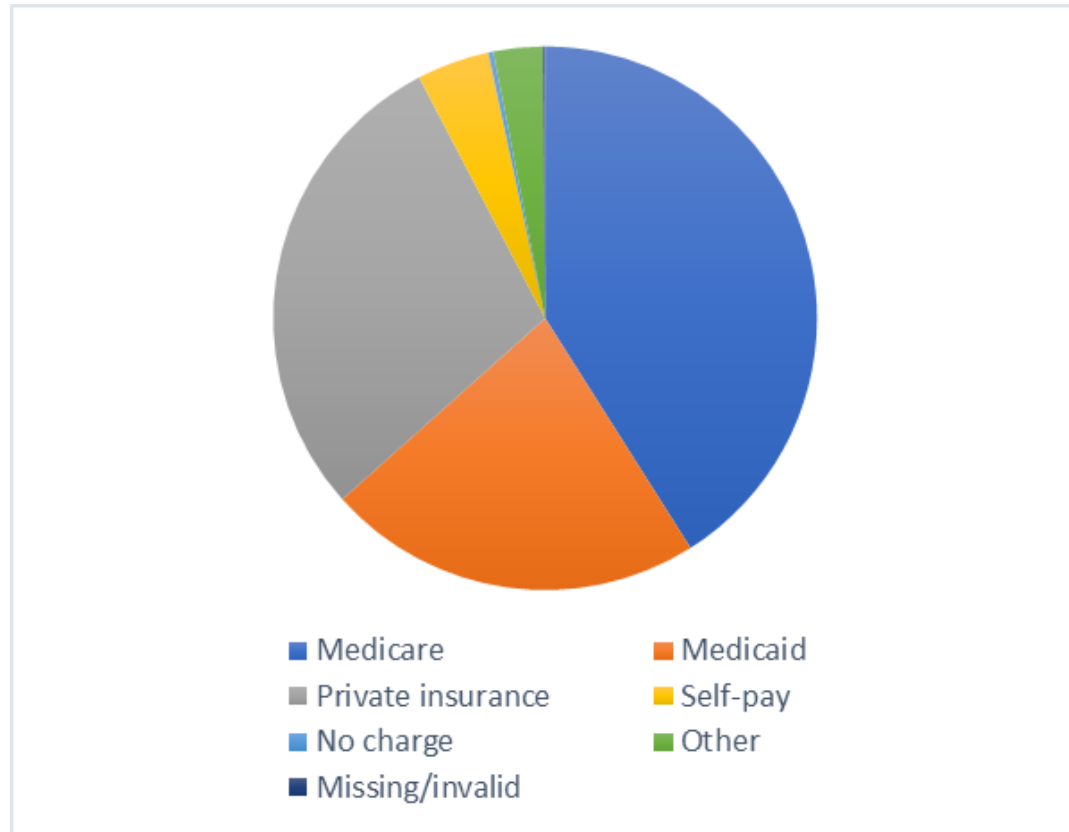
- Constant across all databases
 - ▶ Include all-payer data
 - ▶ Similar type of hospitals
- Different hospital settings
 - ▶ Inpatient databases
 - Discharge abstracts for patients admitted for an inpatient stay
 - ▶ Outpatient databases
 - Ambulatory surgery encounters
 - ED visits during which patients are treated and released from the ED
- Varying geographic levels
 - ▶ State
 - ▶ Nationwide

HCUP databases do not include physician office visits, pharmacy, and laboratory/radiology information

What Does *All-Payer* Include?

Unlike many other data sources, HCUP includes **all-payer** data. This means hospital encounters billed to:

- Medicare
- Medicaid
- Private insurance
- Self-pay
- Those billed as “no charge”
- Other (e.g., State and local programs, workers’ compensation)



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2019

HCUP Data Come Mostly From Community Hospitals



American Hospital Association Definition:

Non-Federal, short-term general, and other special hospitals that are open to the public

Included*	Excluded
Multispecialty general hospitals	Non-Federal long-term care hospitals
OB-GYN	Psychiatric
Ear, nose, and throat	Alcoholism/chemical dependency facilities
Orthopedic	Long-term care rehabilitation
Pediatric	Department of Defense/Department of Veterans Affairs/Indian Health Service
Public	College infirmaries
Academic medical centers	Prison hospitals

*Sometimes this also includes short-term rehabilitation and long-term acute care hospitals. Availability varies across HCUP States.

Community Hospitals Provide a Range of Services

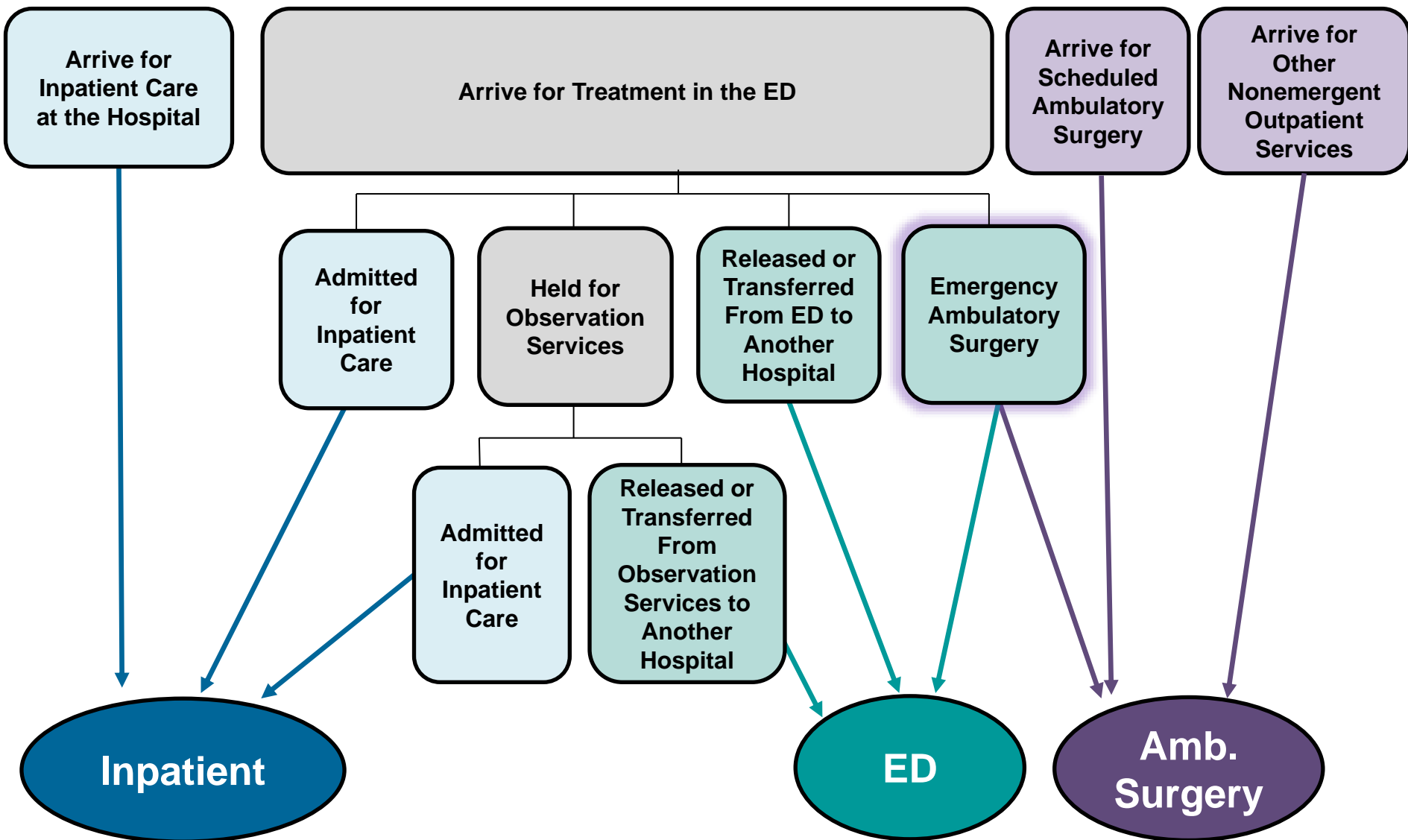


- HCUP generally does not receive data from noncommunity hospitals, such as psychiatric facilities
- However, if patients are treated for a mental health condition in a community hospital, their information is included

Mental, Behavioral, and Neurodevelopmental Disorders, Top Five Principal Diagnoses	Total Number of Discharges
1. Depressive disorders	509,655
2. Schizophrenia spectrum and other psychotic disorders	391,150
3. Alcohol-related disorders	334,410
4. Bipolar and related disorders	257,130
5. Suicidal ideation/attempt/intentional self-harm	115,230

Source: Weighted national estimates from the 2019 National Inpatient Sample (NIS), Clinical Classifications Software Refined (CCSR) default for principal diagnosis assignment, v2021.2.

Pathways of Care Reflected in HCUP Databases



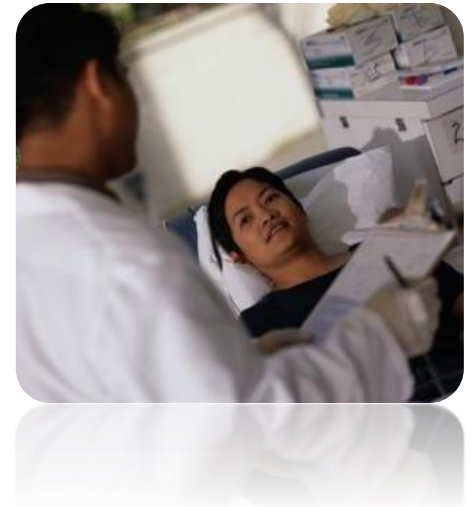
Overview of the HCUP Databases



What Are the HCUP
State Databases?

State Inpatient Databases (SID)

- The SID include all inpatient stays regardless of payer from most, if not all, hospitals in a given State
- In data year 2019, there are SID for 48 States and District of Columbia
 - ▶ Together, SID encompass more than 95 percent of all U.S. hospital discharges
- 36 HCUP Partners make their HCUP SID available to the public for purchase through the HCUP Central Distributor



State Ambulatory Surgery and Services Databases (SASD)

- The SASD include encounters for ambulatory surgery and other outpatient services regardless of payer from most, if not all, hospital-owned facilities in a given State
 - ▶ Some SASD include encounters from nonhospital-owned facilities
- In data year 2019, there are SASD for 34 States and District of Columbia
- 26 HCUP Partners make their HCUP SASD available to the public for purchase through the HCUP Central Distributor



State Emergency Department Databases (SEDD)

- The SEDD include ED visits regardless of payer from most, if not all, hospital-owned EDs in a given State
 - ▶ SEDD include encounters in which the patient:
 - Was treated in the ED and then released from the ED
 - Was transferred to another hospital or health facility
 - Left against medical advice
 - Died while receiving ED care
- In data year 2019, there are SEDD for 40 States and District of Columbia
- 30 HCUP Partners make their HCUP SEDD available for purchase through the HCUP Central Distributor



The SID include data for ED visits that result in an admission to the same hospital

Overview of the HCUP Databases



What Are the HCUP
Nationwide
Databases?

National Inpatient Sample (NIS)

Starting HCUP Database



The NIS is drawn from the SID, covering more than 95 percent of the U.S. population.

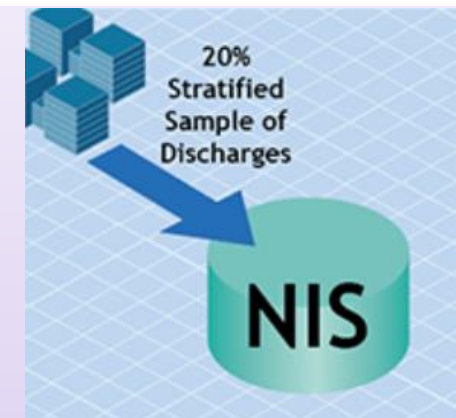
Sampling Strata



- Ownership/control
- Bed size
- Teaching status
- Urban/rural location
- U.S. census division

*State **not** included

Sample Design



The NIS approximates a 20 percent **stratified sample of discharges** from all hospitals in the SID.

Kids' Inpatient Database (KID)

Starting HCUP Database



The KID is drawn from **pediatric discharges** in the SID.

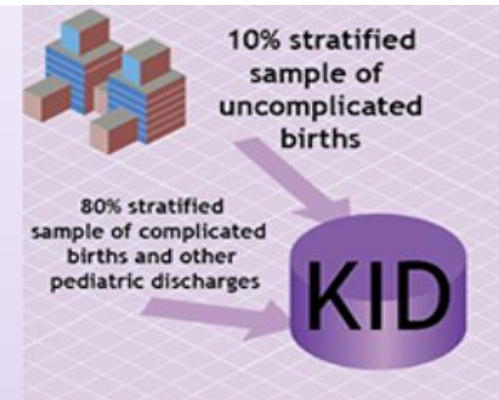
Sampling Strata



- Uncomplicated births
- Complicated births
- Pediatric nonbirths

*State **not** included

Sample Design



The KID is a systematic random sample design, 10 percent **uncomplicated births** and 80 percent **complicated births and other pediatric discharges**.

Nationwide Ambulatory Surgery Sample (NASS)

Starting HCUP Database



The NASS is drawn from SASD encounters with **selected major ambulatory surgeries**.

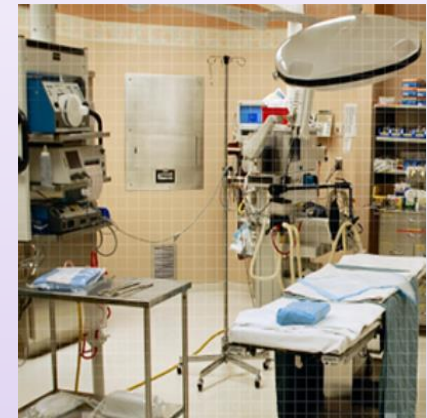
Sampling Strata



- U.S. region
- Bed size
- Urban/rural location
- Teaching status
- Ownership/control

*State **not** included

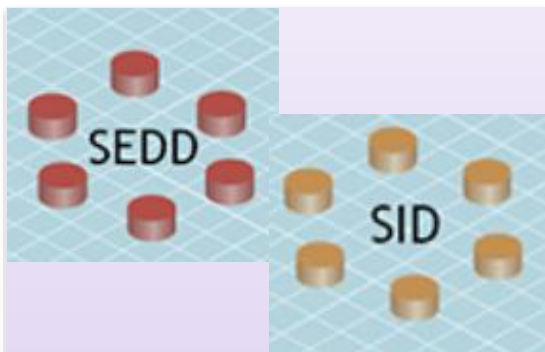
Sample Design



The NASS is a 100 percent sample of **major ambulatory surgery encounters** from hospital-owned facilities in the SASD, after certain exclusions.

Nationwide Emergency Department Sample (NEDS)

Starting HCUP Database



The NEDS is drawn from **SEDD** (ED treat-and-release visits) and **SID** (ED visits resulting in a hospital stay).

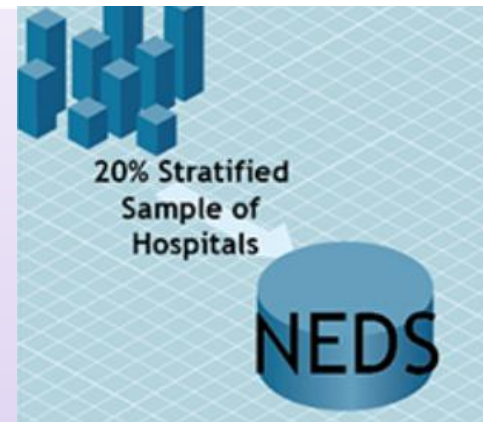
Sampling Strata



- U.S. region
- Urban/rural location
- Teaching status
- Ownership/control
- Trauma center

*State **not** included

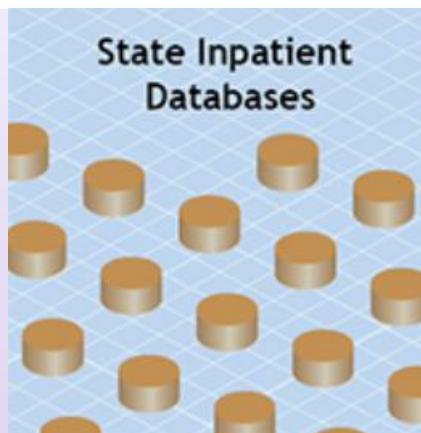
Sample Design



The NEDS is a 20 percent **stratified sample of hospital-owned EDs** from the SID and SEDD. Roughly 87 percent of ED visits are treat and release, and 13 percent result in a hospital stay.

Nationwide Readmissions Database (NRD)

Starting HCUP Database



The NRD is drawn from SID that have **verified patient linkage numbers**.

Sampling Strata



- U.S. region
 - Urban/rural location
 - Teaching status
 - Bed size
 - Ownership/control
 - Patient age and sex
- *State **not** included

Sample Design



The NRD is a **100 percent sample of discharges from the SID**, after certain discharge and hospital exclusions.

Comparison of the HCUP Inpatient Databases



	HCUP Inpatient Databases			
HCUP database	SID	NIS	KID	NRD
States	48 States + DC	48 States + DC	48 States + DC	30 States
Hospitals	4,500	4,500	4,000	2,500
Inpatient discharges	34 million	7 million	3 million	18 million
Derived from	--	SID	SID	SID
Uses	Examine State and local market area statistics on healthcare utilization, access, quality, patient safety, etc. Readmission analyses possible in some States.	Generate national and regional estimates of healthcare utilization, access, quality, patient safety, etc.	Generate national and regional <u>pediatric</u> estimates of healthcare statistics.	Generate national estimates of all-cause and condition-specific readmissions.

Comparison of the HCUP Outpatient Databases



	Emergency Department Data		Ambulatory Surgery and Services Data	
HCUP database	SEDD	NEDS	SASD	NASS
States	40 States + DC	40 States + DC	34 States + DC	34 States + DC
Hospitals	3,600	1,000	3,400	3,000
Outpatient records	103 million ED visits	33 million ED visits	19 million ambulatory surgery encounters	9 million major ambulatory surgery encounters
Derived from	–	SID and SEDD	–	SASD
Uses	Examine ED visits at hospital-affiliated EDs that do not result in an admission for a given State.	Generate national and regional estimates for hospital-owned ED visits.	Study encounter-level data for ambulatory surgeries and other outpatient services from hospital-owned facilities.	Generate national and regional estimates of major ambulatory surgery encounters performed in hospital-owned facilities.

Overview of the HCUP Databases



What Data Elements
Are Available in the
HCUP Databases?

Data Elements Common to the HCUP Databases

- Patient demographics
 - ▶ Age, sex, urban/rural location
- Clinical information
 - ▶ Diagnoses and procedures
- Discharge information
 - ▶ Expected payment source, discharge status
- Resources
 - ▶ Length of stay, total charges
- Hospital characteristics
 - ▶ Bed size, ownership
 - ▶ Only on HCUP nationwide databases



Some Data Elements Vary by State

- Race/ethnicity
- Patient county
- Patient ZIP Code
- Birthweight
- Revenue center codes and units
- Additional and/or more detailed expected payer information
- Detailed charges
- Synthetic patient linkage numbers
- Synthetic physician identifiers
- Physician specialty
- Hospital identifier (unencrypted)



Example: Payer Detail Varies by State

PAY1_X		PAY1 (Standardized)	
Value	Description	Value	Description
010	Medicare	1	Medicare
011	Medicare (HMO)		
012	Medicare (Managed care - Other)		
013	Medicare (fee for service)		
020	Medi-Cal	2	Medicaid
021	Medi-Cal (HMO)		
022	Medi-Cal (Managed care - Other)		
023	Medi-Cal (fee for service)		
030	Private Coverage	3	Private insurance
031	Private Coverage (HMO)		
032	Private Coverage (Managed care - Other)		
033	Private Coverage (fee for service)		
08n, where n=0-3	Self-pay	4	Self-pay
--		5	No charge

Example: Race Detail Varies by State

RACE_X		RACE (Standardized)	
Value	Description	Value	Description
1	White	1	White
2	Black	2	Black
3	Hispanic	3	Hispanic
4	Hawaiian	4	Asian or Pacific Islander
5	Chinese		
6	Filipino		
7	Japanese		
8	Other Asian		
9	Other Pacific Islander		
10	Native American	5	Native American
11	Mixed or Other	6	Other

Example: HCUP Supplemental Variables for Revisit Analyses



- Availability varies by State, specifically those that provide synthetic patient identifiers to HCUP
- Allow linkage across settings and time (e.g., hospital readmissions, ED visits following hospital discharge)
- Adhere to strict privacy guidelines

Clinical Classifications Software for Services and Procedures

The Clinical Classifications Software for Services and Procedures is one in a family of databases and software tools developed as part of the Healthcare Cost and Utilization Project (HCUP), a Federal-State-Industry partnership sponsored by the Agency for Healthcare Research and Quality.

Search HCUP-US

HCUP Home Databases **Research Tools** Reports Data Visualizations Data Query Tools News & Events Purchase HCUP Data Technical Assistance

Tools for ICD-10-CM/PCS
Clinical Classifications Software Refined (CCSR)
Elixhauser Comorbidity Software Refined for ICD-10-CM
Procedure Classes Refined for ICD-10-PCS

Beta Versions of Tools for ICD-10-CM/PCS
Chronic Condition Indicator (CCI) for ICD-10-CM

Tools for CPT and HCPCS Level II
CCS for Services and Procedures
Surgery Flags for Services and Procedures

Tools for ICD-9-CM
Clinical Classifications Software (CCS) for ICD-9-CM
Chronic Condition Indicator (CCI) for ICD-9-CM
Elixhauser Comorbidity Software for ICD-9-CM
Utilization Flags for Revenue Center Codes and ICD-9-CM
Procedure Classes for ICD-9-CM
Surgery Flags for ICD-9-CM

HCUP Supplemental Files
NIS-Trend Weights Files
NIS Hospital Ownership Files
NIS 1993-2002 Discharge-Level Supplemental Files
KID-Trend File
Cost-to-Charge Ratio (CCR) Files
Hospital Market Structure (HMS) Files
Supplemental Variables for Revisit Analyses
American Hospital Association (AHA) Linkage Files

www.hcup-us.ahrq.gov/toolssoftware/revisit/revisit.jsp

Overview of the HCUP Databases



What Are Benefits and
Limitations of HCUP
Databases?

Benefits and Limitations of HCUP Databases

Benefits

Large number of records

Uniformity in coding

Longevity of available data

Ease of access

All payers, including self-pay, or those billed as “no charge”

Availability at local, State, regional, and national level

Supplemental variables included to facilitate research

Limitations

Limited clinical details

Exclusion of some hospital types (e.g., Veterans Affairs, Department of Defense)

Differences in the way information is recorded across hospitals

Not representative of complete episodes of care

Lack of hospital characteristic information in State databases

Inability to link nationwide databases to non-HCUP data sources

Purchasing the HCUP Databases



Interested in
Purchasing an
HCUP Database?

The HCUP Database Process

- Processed data sent to HCUP Partners
- State databases become available to the public through the online HCUP Central Distributor and will be shipped to approved purchasers
- Nationwide databases become available for download through the HCUP Central Distributor



HCUP Databases Available Through HCUP Central Distributor



- ▶ The HCUP Central Distributor provides one-stop shopping for purchasing State and nationwide databases
- ▶ Cost and availability of databases vary across years
- ▶ Some Partner organizations may place additional restrictions on the sale of their State data

**HCUP Central Distributor
website:**

[www.hcup-
us.ahrq.gov/tech_assist/centdist.jsp](http://www.hcup-us.ahrq.gov/tech_assist/centdist.jsp)

Steps to Purchase HCUP Databases Online



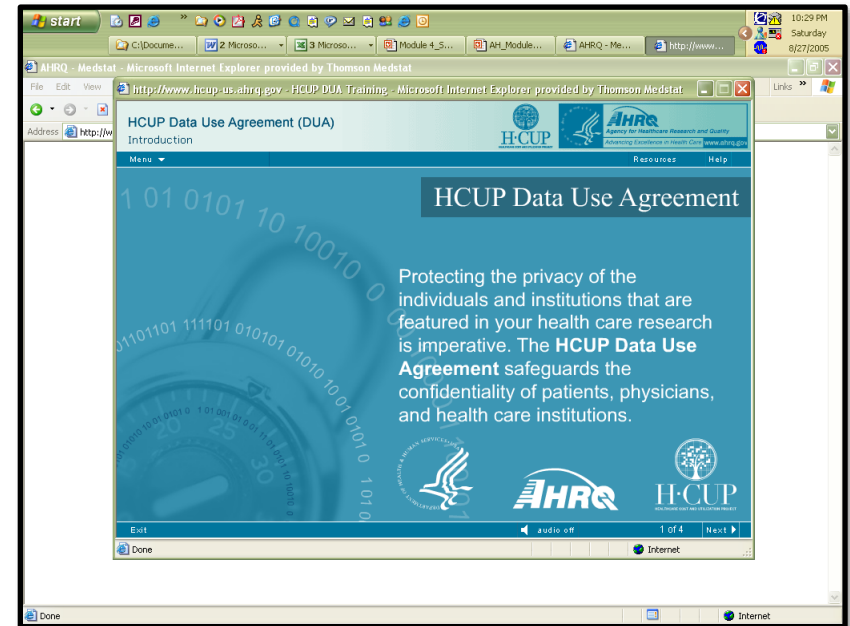
Step	Description	HCUP-US Website
1	Take the Data Use Agreement (DUA) online training	www.hcup-us.ahrq.gov/tech_assist/dua.jsp
2	Read and sign the HCUP DUA	www.hcup-us.ahrq.gov/tech_assist/centdist.jsp
3	Log in or register for an account and create your profile under “My Account”	
4	Submit online order and complete further instructions listed on the “Thank You” page.	
5	Download nationwide databases online or receive delivery of State databases through the mail.	

For assistance, contact the HCUP Central Distributor:
Email: hcup@ahrq.gov

Web-Based DUA Course

Purpose of the course:

- ▶ Emphasize the importance of **data protection**
- ▶ Reduce the risk of **inadvertent violations**
- ▶ Describe your **individual responsibility** when using HCUP data



Takes 15 minutes to complete

www.hcup-us.ahrq.gov/tech_assist/dua.jsp

Pricing Information per Data Year

Nationwide databases (NIS, KID, NASS, NEDS, NRD)

- ▶ **NIS**: \$750 beginning 2017, student price \$150
- ▶ **KID**: \$500 beginning 2016, student price \$100
- ▶ **NASS**: \$1,000 beginning 2016, student price \$200
- ▶ **NEDS**: \$1,000 beginning 2016, student price \$200
- ▶ **NRD**: \$1,000 beginning 2015, student price \$200

State databases (SID, SASD, SEDD)

- ▶ Varies by State, database, year, and type of applicant
- ▶ \$50–\$3,200



**Some 2020 State
databases now
available!**

Partners Releasing Databases Through HCUP Central Distributor








- Alaska
- Arizona
- Arkansas
- California
- Colorado
- Delaware
- District of Columbia
- Florida
- Georgia
- Hawaii
- Iowa
- Indiana
- Kansas
- Kentucky
- Maine
- Maryland
- Massachusetts
- Michigan
- Minnesota
- Mississippi
- Missouri
- Nebraska
- Nevada
- New Jersey
- New Mexico
- New York
- North Carolina
- Oregon
- Rhode Island
- South Carolina
- South Dakota
- Utah
- Vermont
- Washington
- West Virginia
- Wisconsin

Remember:

Not all States participate in all years and for all databases.

Software Requirements for Working With the Full HCUP Files

Software Package	Load Programs	Format Programs	Example Statistical Coding	HCUP Software Tools
	X	X	X	X
	X		X	
	X			
			X	
			X	

MS Excel and Access are NOT GOOD options!

HCUP Research Tools



What Are the HCUP
Research Tools?

HCUP Software Tools Augment HCUP and *Other Administrative Databases*



- Designed to be used with HCUP and other administrative databases
- Available for different coding systems, which vary based on setting of care

Diagnosis Related

ICD-10-CM
ICD-9-CM

Procedure Related

ICD-10-PCS
HCPCS Level I (CPT®)
HCPCS Level II
ICD-9-CM

Abbreviations: CPT, Current Procedural Terminology; HCPCS, Healthcare Common Procedure Coding System; ICD-9-CM, International Classification of Diseases, Ninth Revision, Clinical Modification; ICD-10-CM/PCS, International Classification of Diseases, Tenth Revision, Clinical Modification/Procedure Coding System.

www.hcup-us.ahrq.gov/tools_software.jsp

Examples of HCUP Software Tools



Diagnosis-Related Tools

Clinical Classifications Software Refined (CCSR) for ICD-10-CM: groups similar diagnosis codes into broad clinical categories

Elixhauser Comorbidity Software Refined for ICD-10-CM: identifies comorbidities based on secondary diagnoses

Procedure-Related Tools

Clinical Classifications Software Refined (CCSR) for ICD-10-PCS: groups similar procedure codes into broad procedure categories

Surgery Flags Software for Services and Procedures: categorizes a subset of CPT procedures codes by use of operating room and degree of invasiveness

HCUP Supplemental Files Augment Applicable HCUP Databases



- Designed to be used exclusively with the HCUP databases to provide access to additional data elements or analytically useful information
- Examples include:
 - HCUP Cost-to-Charge Ratio (CCR) Files
 - American Hospital Association (AHA) Linkage Files

www.hcup-us.ahrq.gov/tools_software.jsp

Overview of HCUP Resources

What Types of
Online Resources
Does HCUP Have
Available?

Types of HCUP Resources



- Analytic reports
 - ▶ Descriptive brief reports on select topics
 - ▶ Methodological reports to facilitate use of the HCUP databases
- Data visualizations
 - ▶ Interactive visual displays of select HCUP data
- Precalculated statistics
 - ▶ Online query tools
 - ▶ Topic-specific tables and figures
 - ▶ Database-specific information
- Search option for publications based on HCUP databases

Statistical Briefs Are Descriptive Reports on Specific Healthcare Topics



Changes in Hospitalizations and In-Hospital Deaths for Adults Aged 65 Years and Older in the Initial Period of the COVID-19 Pandemic (April–September 2020), 13 States

STATISTICAL BRIEF #285
September 2021

Zhengyi Fang, M.S., and Pamela L. Owens, Ph.D.

Introduction

Annually, there are approximately 13.2 million hospitalizations for adults aged 65 years and older in the United States, including for medical conditions (67 percent), surgeries (25 percent), injuries (6 percent), and mental health and substance use conditions (2 percent).¹ With the COVID-19 pandemic beginning in early 2020, hospital utilization changed considerably, as areas of the country saw spikes in COVID-19 cases and subsequent hospitalizations. Adults aged 65+ years, especially those living in nursing homes, are vulnerable to COVID-19 due to their age, underlying frailty, and communal living conditions.² The Centers for Disease Control and Prevention (CDC) recently reported that while there was no increased rate of COVID-19 infection among adults aged 65+ years compared with those aged 16–29 years, there were increased rates of hospitalization (4–9 times) and death (95–230 times) among adults aged 65+ years.³ Hospitalizations related to COVID-19 varied by State and across time.⁴ Little is known, however, about the impact of the initial period of the pandemic on hospitalizations and in-hospital deaths overall for adults aged 65+ years.

This Healthcare Cost and Utilization Project (HCUP) Statistical Brief presents data from 13 States on hospitalizations across time periods with a focus on the initial impact of the COVID-19 pandemic. The number of hospitalizations and in-hospital deaths for patients aged 65 years and older is presented overall and by patient characteristics across 13 States from April to September 2020 using quarterly HCUP Inpatient data compared with State-level averages from April to September in 2016–2019 using the HCUP State Inpatient Databases (SID). The percentages of all hospitalizations and in-hospital deaths related to COVID-19 during the April–September 2020 timeframe are also provided. Because of the large sample size of the HCUP data, small differences can be statistically significant but not meaningful. Thus, only differences greater than or equal to 10 percent are discussed in the text.

This analysis is limited to discharges for adults aged 65 years and older treated in community, nonrehabilitation hospitals in 13 States (Colorado, Georgia, Iowa, Kentucky, Maryland, Michigan, Minnesota, Mississippi, Missouri, New Jersey, Ohio, South Carolina, and Vermont) for which HCUP data were available for April–September 2016–2019 and April–September 2020. These States account for 24.7 percent of the resident U.S. population in 2019.^{5,6} Information contained in this Statistical Brief was primarily obtained from the HCUP Summary Trend Tables.⁷ The Summary Trend Tables, accessed as downloadable tables, provide State-specific monthly trends in hospital utilization for the most recent HCUP data available. These tables were also used to create the HCUP Visualization of Inpatient Trends in COVID-19 and Other Conditions⁸ and will be updated as more quarterly data become available.

Highlights

- Across 13 States, in the beginning of the pandemic (relative to the same period in the 4 prior years), on average, for adults 65 years and older, there were:
 - 16 percent fewer hospitalizations
 - 30 percent more in-hospital deaths
 - 133 percent more in-hospital deaths among Hispanic patients
- Across 13 States between April and September 2020, among patients aged 65 years and older, the percentage of in-hospital deaths related to COVID-19 was higher for patients:
 - From large metro areas compared with rural areas (35 vs. 22 percent, respectively)
 - Who were Hispanic compared with non-Hispanic White or Black (59 vs. 23 and 43 percent, respectively)
 - From the highest income communities compared with other income communities (34 vs. 27 and 31 percent)
 - With Medicaid as the expected payer compared with all other payers (47 vs. 30–35 percent)

Example figure from Statistical Brief #285: Changes in Hospitalizations and In-Hospital Deaths for Adults Aged 65 Years and Older in the Initial Period of the COVID-19 Pandemic (April–September 2020), 13 States

Figure 4. Number of hospitalizations, in-hospital deaths, and percentage of each related to COVID-19 among adults aged 65+ years by patient race/ethnicity in April–September 2020 compared with the average of all hospitalizations in April–September 2016–2019, 13 States

Patient race/ethnicity	Time period	Number of hospitalizations	Apr–Sep, 2020	Number of in-hospital deaths	Apr–Sep, 2020
			percent related to COVID-19		percent related to COVID-19
White NH	Apr–Sep, 2016–2019	1,325,300		43,800	
	Apr–Sep, 2020	1,087,500	5.1%	51,100	23.1%
Black NH	Apr–Sep, 2016–2019	218,800		7,700	
	Apr–Sep, 2020	199,500	13.9%	13,500	43.2%
Hispanic	Apr–Sep, 2016–2019	38,900		1,200	
	Apr–Sep, 2020	35,100	17.3%	2,800	58.6%
Other NH	Apr–Sep, 2016–2019	37,300		1,400	
	Apr–Sep, 2020	33,000	14.4%	2,700	47.8%

Abbreviation: NH, non-Hispanic

Notes: Number of hospitalizations and in-hospital deaths is rounded to the nearest hundred. Counts for 2016–2019 represent the mean number of hospitalizations or in-hospital deaths during April–September across these 4 years.

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), 2016–2019 State Inpatient Databases (SID) and 2020 quarterly data from 13 States (CO, GA, IA, KY, MD, MI, MN, MO, MS, NJ, OH, SC, and VT) (available as of March 2021)

HCUP Findings-At-A-Glance Reports Available for Select Topics



Treat-and-Release Emergency Department Visits for Maternal Care, Other than Delivery, 2019

Figure 1a. Number and aggregate cost of treat-and-release emergency department visits for maternal care (other than delivery) by expected primary payer in the United States, 2019

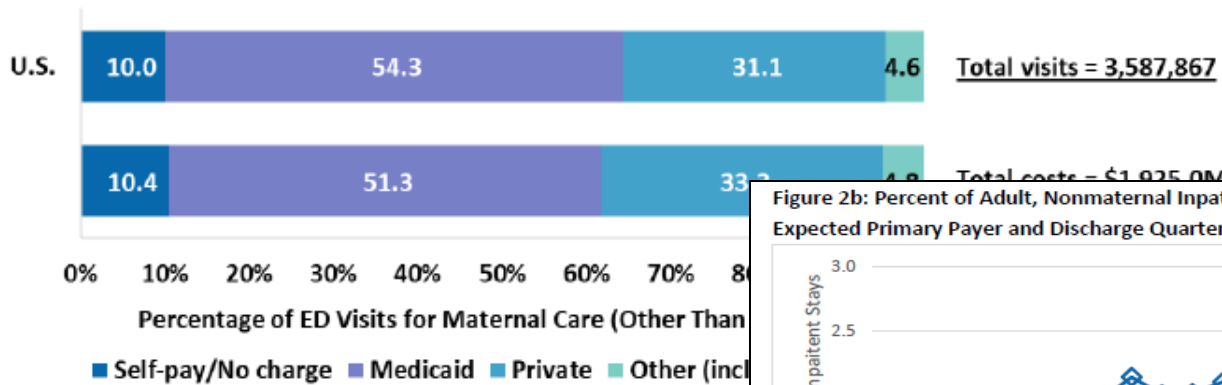
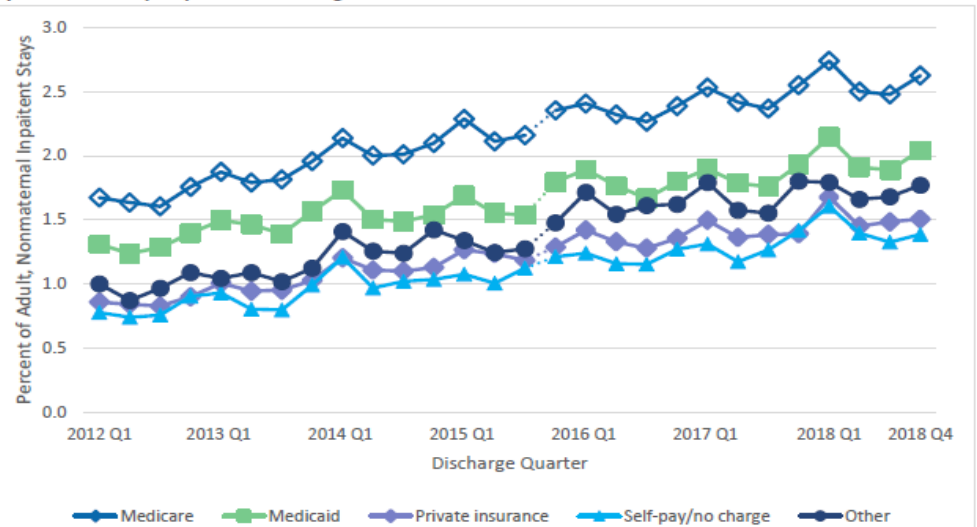


Figure 2b: Percent of Adult, Nonmaternal Inpatient Stays with a Diagnosis of Septic Shock, By Expected Primary Payer and Discharge Quarter, 2012-2018

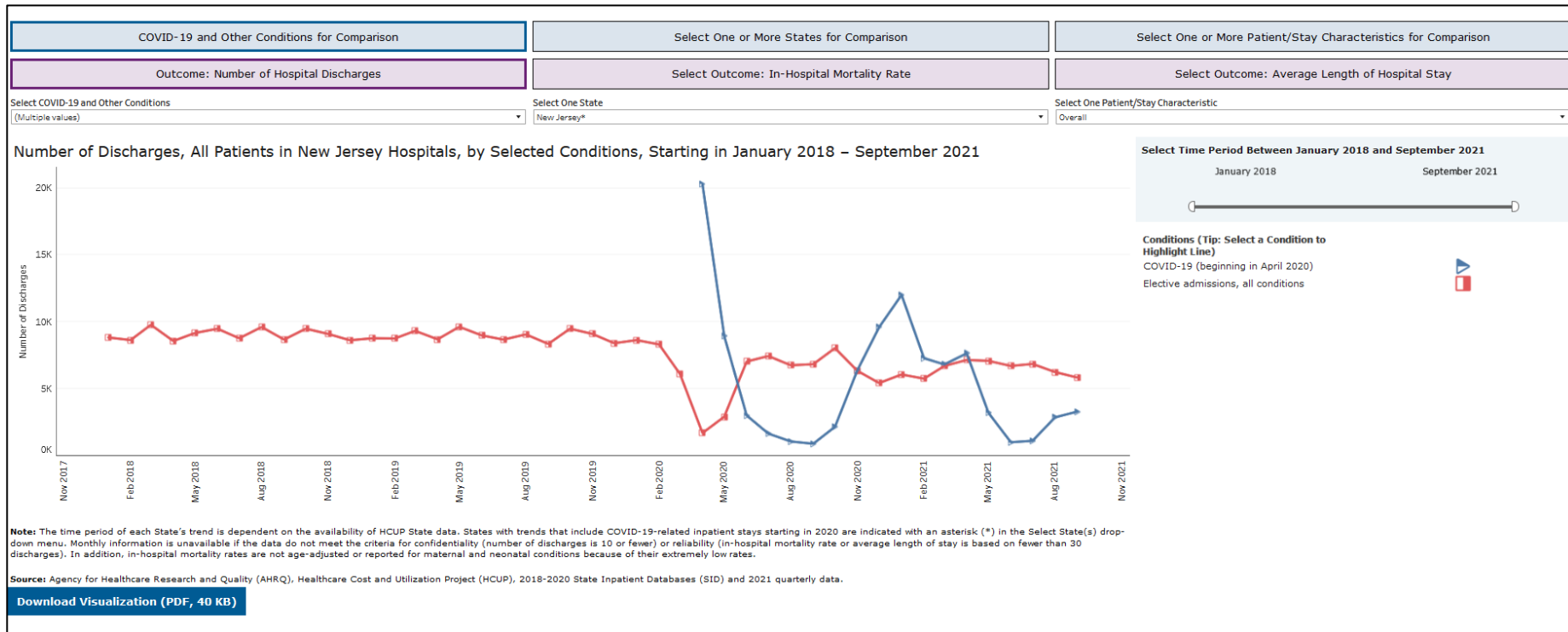


Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), ICD-9-CM Diagnoses from 2012 Q1-2015 Q3 and ICD-10-CM Diagnoses from 2015 Q4-2018 Q4

HCUP Visualization of Inpatient Trends in COVID-19 and Other Conditions



Interactive visual display of State-specific monthly trends in inpatient stays related to COVID-19 and other conditions

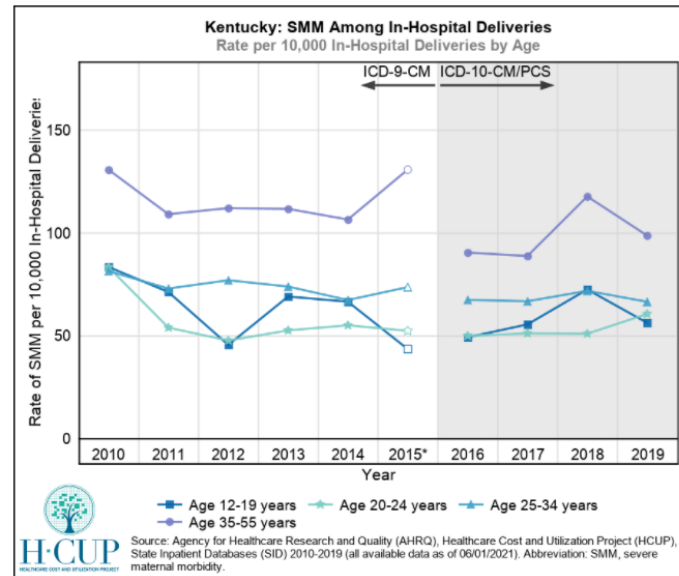
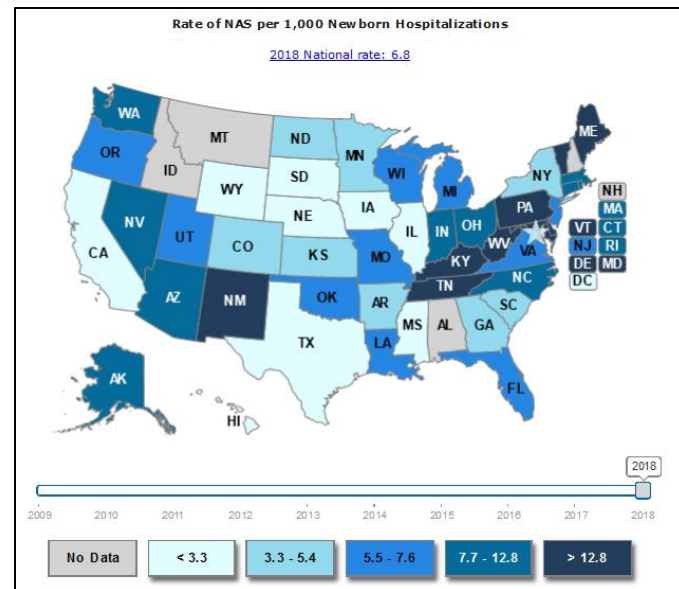


HCUP Fast Stats Compares Statistics for Select Healthcare Topics



- Topics include:
 - ▶ Severe Maternal Morbidity
 - ▶ Neonatal Abstinence Syndrome
 - ▶ Opioid-Related Hospital Use
 - ▶ Hurricane Impact on Hospital Use
 - ▶ National Hospital Utilization and Costs
 - ▶ State Trends in Hospital Use by Payer

www.hcup-us.ahrq.gov/faststats/landing.jsp



Search for Publications Using HCUP Databases



Publications Search
Search for publications based on data or products from the Healthcare Cost and Utilization Project (HCUP).

HCUP Home | Databases | Research Tools | **Reports** | Data Visualizations | Data Query Tools

Approximately 10,800 peer-reviewed publications using HCUP data, products, or tools

HCUP Publications Search

There are two options available to search for articles based on HCUP data or products.

Simple Search: Use the simple search feature available on this page. Select the publication category that you would like to search: Peer-Reviewed Journals, Other Publications, or All Publications. Other publications include government publications. Enter the keyword(s) you would like to search in the text field. Select the search button. The simple search will search for the keyword(s) in all fields.

Advanced Search: Use the [Advanced Search](#) feature to perform a more refined search. Access the Advanced Search feature by selecting one of the links on this page. The Advanced Search allows you to search within specific fields including author, title, periodical, publication, abstract, state, HCUP data year, HCUP database, and HCUP tools and products.

To obtain a list of all articles based on HCUP data or products, select "All Publications" for the publication category and enter a single asterisk (*) as the keyword.

Simple Search

Search For

[Advanced Search](#)

www.hcup-us.ahrq.gov/reports/pubsearch/pubsearch.jsp

What Should You Do If
You Have Questions
About HCUP?

HCUP User Support Website



- Find detailed information on HCUP databases, tools, and products
- Access HCUP resources such as HCUP Statistical Briefs, HCUP Fast Stats, Data Visualizations, the HCUP Central Distributor, and more
- Find comprehensive list of HCUP-related publications and database reports
- Access technical assistance

Visit us at

www.hcup-us.ahrq.gov

HCUP User Support (HCUP-US)
The HCUP (encompasses HCUP's) Family of healthcare databases and related software tools and products is made possible by a Federal-State Industry partnership, sponsored by the Agency for Healthcare Research and Quality (AHRQ).

HCUP Home | **Databases** | **Tools & Software** | **Reports** | **Data Visualizations** | **Fast Stats** | **News & Events** | **Purchase HCUP Data** | **Technical Assistance** | **Data Innovations**

Healthcare Cost and Utilization Project (HCUP)

What is HCUP?
The Healthcare Cost and Utilization Project (HCUP) includes the largest collection of longitudinal hospital care data in the United States.

- **Overview of HCUP**
- **Online HCUP Overview Course** is an interactive course that provides information about HCUP data, software tools, and products
- **Frequently Asked Questions**

HCUP Products
Learn about HCUP products including State and nationwide databases, software and online tools, and reports.

- **HCUP Databases** contain information on inpatient stays, emergency department visits, and ambulatory care
- **HCUPdata** is an online query system that provides immediate access to health statistics
- **HCUP Fast Stats** is an online query tool that uses visual displays to compare national or State statistics on a range of healthcare topics
- **HCUP Tools & Software** provide complementary tools and software to use with HCUP and similar databases
- **HCUP Reports** feature findings, publications, and technical reports on HCUP issues

HCUP Services
Utilize HCUP services to purchase HCUP data, get answers to your HCUP-related questions, and learn how to use the HCUP databases.

- **Purchase HCUP data** through the HCUP Central Distributor
- **HCUP Technical Assistance** answers questions and provides support to HCUP users
- **HCUP Online Tutorial Series** provides free tutorials on HCUP data and tools, including training on technical methods for conducting research with HCUP data
- **HCUP Data Use Agreement Training Tool** is a required tutorial for all purchasers and users of HCUP data that defines how the data can be used

Join the HCUP Mailing List
Join the [HCUP Mailing List](#) to receive information on new HCUP data, tools, and products.

What's New

HCUP Fall Webinar Series (9/28/21)
• Registration is now open for the HCUP October 5-7 Webinars.

The 2019 National Inpatient Sample (NIS) is now available (9/23/21)
• The 2019 NIS database was released through the [HCUP Central Distributor](#) on September 22.

Read the latest edition of the HCUP e-News (9/23/21)
• The [Fall 2021 e-News](#) is now available.

HCUP Fast Stats Data Update (9/8/21)
• AHRQ has released new information in [HCUP Fast Stats](#). The new [Severe Maternal Morbidity \(SMM\) Among In-Hospital Deliveries](#) topic focuses on trends in SMM-related in-hospital deliveries at the national and State levels. Further, the [Disrupt, Delayed Hospital Use](#) topic has been updated to include additional 2018, 2019, and 2020 State data, and the [Neonatal Abstinence Syndrome \(NAS\) Among Newborn Hospitalizations](#) topic has been updated to include additional 2018 and 2019 State data.

NEW HCUP Data Visualization (9/7/21)
• AHRQ has updated data in the [HCUP Visualization of Inpatient Trends in COVID-19 and Other Conditions and HCUP Summary Trend Tables](#).

HCUP Statistical Brief #282, 283, 284, and #285 (9/8/21)
• [#282 - Changes in Hospitalizations and In-Hospital Deaths in the Initial Period of the COVID-19 Pandemic \(April-September 2020\)](#), 13 States
• [#283 - Changes in Pediatric Hospitalizations and In-Hospital Deaths in the Initial Period of the COVID-19](#)

Interactive Online HCUP Tutorials and Training Courses

- HCUP Overview Course
- Producing National HCUP Estimates
- Load and Check HCUP Data
- HCUP Tools Loading
- Calculating Standard Errors
- HCUP Sample Design
- Multi-Year Analysis
- Nationwide Readmissions Database (NRD)
- HCUP Software Tools



The image displays a stack of overlapping screenshots from the HCUP training website. The top-most screenshot shows the 'HCUP National Estimates' page, which includes a navigation menu (Introduction, NIS, NEDS, KID, Wrap-Up) and a 'Key Points' section. Below it is the 'Load and Check HCUP Data' page with a similar navigation menu. The next screenshot is the 'HCUP Tools Loading Tutorial' page, featuring an 'Introduction' section and a video player. Below that is the 'HCUP Calculating Standard Errors' page, with a 'Welcome' message and a navigation menu (Introduction, Standard Errors, Standard Errors for Subsets, Significance Testing, Wrap-Up). The next screenshot shows the 'HCUP Sample Design: National Databases' page, with a navigation menu (Introduction, NIS, NEDS, KID, Common Errors, Wrap-Up). Below that is the 'The HCUP Overview Course' page, with an 'Introduction 1a' section. The next screenshot is the 'HCUP Using Multiple Years of Data' page, with a 'menu' and 'resources' section. The bottom-most screenshot is the 'The HCUP Software Tools Tutorial' page, which is a landing page for the software tools tutorial. It features a navigation menu (menu, resources, help) and a grid of four module boxes: 'Tools for ICD-10-CM Diagnoses (Module 1)', 'Tools for ICD-10-PCS Procedures (Module 2)', 'Tools for CPT and HCPCS Level II Services and Procedures (Module 3)', and 'Tools for ICD-9-CM Diagnoses and Procedures (Module 4)'. The page also includes a brief description of the tutorial's organization and navigation instructions.

Visit HCUP's Virtual Exhibit Booth



- Provides materials typically offered at the HCUP conference exhibit booths
- Includes brochures, participation maps, an overview presentation of HCUP, and additional general project information

HCUP Virtual Exhibit Booth
The HCUP Virtual Exhibit Booth provides materials typically offered at HCUP conference exhibit booths. HCUP databases and products are developed by AHRQ through a Federal-State-Industry partnership.

Search HCUP-US

HCUP Virtual Exhibit Booth

The HCUP Virtual Exhibit Booth provides materials typically offered at the HCUP informational booths that conference attendees can visit. A complete listing of HCUP events and activities, including workshops, podium and poster presentations, and exhibit booths, is available on the [Events](#) page.

General Project Information

- New to HCUP? Get to know us and stay connected. ([PDF file](#), 463 KB); [HTML](#))
- What is HCUP? HCUP Fact Sheet ([PDF file](#), 297 KB; [HTML](#))

HCUP Brochures

Nationwide Databases

- National (Nationwide) Inpatient Sample (NIS) ([PDF file](#), 464 KB; [HTML](#))
- Kids' Inpatient Database (KID) ([PDF file](#), 470 KB; [HTML](#))
- Nationwide Emergency Department Sample (NEDS) ([PDF file](#), 466 KB; [HTML](#))
- Nationwide Readmissions Database (NRD) ([PDF file](#), 400 KB; [HTML](#))
- Nationwide Ambulatory Surgery Sample (NASS) ([PDF file](#), 302 KB; [HTML](#))

State Databases

- State Inpatient Databases (SID) ([PDF file](#), 406 KB; [HTML](#))
- State Ambulatory Surgery and Services Databases (SASD) ([PDF file](#), 406 KB; [HTML](#))
- State Emergency Department Databases (SEDD) ([PDF file](#), 406 KB; [HTML](#))

HCUPnet

- Want immediate access to statistics from HCUP data? Learn about HCUPnet ([PDF file](#), 566 KB; [HTML](#))

State Participation in HCUP

HCUP includes inpatient data provided by [49 HCUP Partners](#). In addition, 35 Partners provided ambulatory surgery and services data, and 41 provided emergency department data. The nationwide databases are sampled from the State-level data.

- HCUP Participation Maps ([PDF file](#), 91 KB; [HTML](#))

HCUP Databases Available for Purchase

All of the nationwide HCUP databases and many of the State databases are available for purchase through the [HCUP Central Distributor](#):

- State Databases Available for Purchase through the HCUP Central Distributor ([PDF file](#), 32 KB; [HTML](#))

Note that database availability varies by year. This map represents State participation in the HCUP Central Distributor regardless of year.

A [summary table](#) shows the availability of State-level data by database and year. Complete database availability and pricing information is provided in the Database Catalog, which is found by navigating to the online [HCUP Central Distributor](#).

www.hcup-us.ahrq.gov/news/exhibit_booth.jsp

Using HCUP Technical Assistance

Technical Assistance Team

- Responds to inquiries about HCUP data, products, and tools
- Collects user feedback and suggestions for improvement

Email: hcup@ahrq.gov



Join the HCUP Email List



- HCUP Newsletter, published quarterly
 - ▶ User tech tips
 - ▶ Upcoming events
- New data releases
- New reports

A screenshot of the AHRQ website's email update sign-up page. The page header includes the U.S. Department of Health & Human Services logo and text, and navigation links for 'About Us', 'Careers', 'Contact Us', 'Español', 'FAQ', and 'Email Updates'. The AHRQ logo and tagline 'Agency for Healthcare Research and Quality Advancing Excellence in Health Care' are prominently displayed. A search bar is visible on the right. The main content area is titled 'E-mail Updates' and contains the instruction: 'To sign up for updates or to access your subscriber preferences, please enter your E-mail address.' Below this is a form field labeled '*Email Address' with a text input box. At the bottom of the form are two buttons: 'Submit' and 'Cancel'.

www.subscriptions.ahrq.gov/accounts/USAHRQ/subscriber/new

Questions/Comments?

Email: hcup@ahrq.gov

