



# **Overview of HCUP**



## HCUP – PROJECT OVERVIEW 2019

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## **EXECUTIVE SUMMARY**

### **Purpose**

This Project Overview Binder is intended to provide a definitive source of information regarding all aspects of the Healthcare Cost and Utilization Project (HCUP, pronounced “H-Cup”). HCUP would not be possible without the voluntary cooperation of State data organizations, hospital associations, and private data organizations – known as “HCUP Partners” – that provide data to the project for research and public health use. This binder provides HCUP Partners with an annual update on project developments and serves as a guide for exploring the latest resources available to HCUP Partners. The Project Overview Binder is also a useful introduction for potential Partners, providing an overall description of the project, as well as information on HCUP participation and benefits.

### **Background**

The Agency for Healthcare Research and Quality (AHRQ) sponsors HCUP, a Federal-State-Industry partnership established to develop and maintain a family of longitudinal health care databases, related software tools, products, and technical support services. The HCUP databases integrate data collected by HCUP Partners into a national resource of hospital inpatient, ambulatory surgery and services, and emergency department data. HCUP databases are used to support health services research and policy analyses on issues such as costs, utilization and access to care, quality of care, medical practice patterns, and medical treatment effectiveness.

HCUP is directed and funded by AHRQ. Development and analysis of the HCUP databases are accomplished by AHRQ through its primary contractor, Watson Health, and several key subcontractors, including Social and Scientific Systems (SSS), M.L. Barrett, Inc., RAND Corporation, the National Association of Health Data Organizations (NAHDO), Ohio State University (OSU) and University of California, Davis. As of March 2019, 48 States and the District of Columbia participated in HCUP.

### **Project Goals**

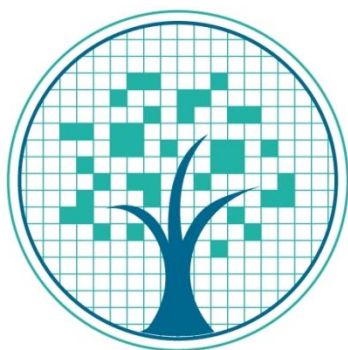
In support of AHRQ's mission, the goals of HCUP are to:

1. Create and enhance a powerful source of national, State, and all-payer health care data.
2. Produce a broad set of software tools and products to facilitate the use of HCUP and other administrative data.
3. Enrich a collaborative partnership with statewide data organizations aimed at increasing the quality and use of health care data.
4. Conduct and translate research to inform decisionmaking and improve health care delivery.

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**H·CUP**

HEALTHCARE COST AND UTILIZATION PROJECT

# **HCUP PROJECT DESCRIPTION**

**2019**

# HCUP PROJECT DESCRIPTION

## I. Introduction

As health care costs escalate in the United States and quality of care concerns become more pronounced, the need for accurate and timely health care data has increased dramatically. Policymakers, administrators, and the research community require comprehensive and precise data resources in order to evaluate cost, quality, and access to care. The Agency for Healthcare Research and Quality (AHRQ) sponsors one such resource, the Healthcare Cost and Utilization Project (HCUP, pronounced “H-Cup”).

HCUP develops and maintains a family of health care databases, related software tools, support services, and products – resources grounded in a vital Federal-State-Industry partnership. HCUP databases integrate the data collected by State data organizations, hospital associations, and private data organizations to create a national health care information resource of hospital inpatient, ambulatory surgery and services, and emergency department data. HCUP features the largest collection of longitudinal hospital care data in the U.S., containing a wealth of all-payer, encounter-level information beginning in 1988.

The multi-State databases contain discharge-level information in a uniform format while actively protecting patient privacy. HCUP databases facilitate cutting-edge research on a broad range of health policy and health services issues, including:

- Cost and quality of health services
- Medical practice patterns
- Access to health care programs
- Hospital costs and utilization, including utilization by special populations
- Diffusion of medical technology
- Effects of market forces on hospitals including trends by payer
- Treatment outcomes at the national, regional, State, and community levels

Because of their large size and scope, HCUP databases enable unique analyses. HCUP databases include information on specific medical conditions and procedures, including rare events; they are useful in tracking utilization for population subgroups, such as minorities, children, women, and the uninsured. To augment the HCUP databases, AHRQ has developed publicly-available software tools and Web-based products that can be applied by users with varying levels of research experience.

## II. Goals and Research Benefits

The goals for HCUP are to:

1. Create and enhance a powerful source of national, State, and all-payer health care data.
2. Produce a broad set of software tools and products to facilitate the use of HCUP and other administrative data.
3. Enrich a collaborative partnership with statewide data organizations aimed at increasing the quality and use of health care data.

4. Conduct and translate research to inform decisionmaking and improve health care delivery.

The collaboration of Federal, State, and Industry Partners creates a mutually beneficial opportunity for sharing data and building a national resource. HCUP research benefits extend to a diversity of institutions and individuals:

**Policymakers:** HCUP data enable policymakers to develop effective and informed recommendations on crucial health care policy issues such as cost, utilization, quality, and access to health care.

**Hospital Industry:** HCUP affords hospital associations, hospitals, and provider alliances an opportunity to obtain national health care databases. Hospital industry members are able to make national comparisons of efficiency, cost, value, and quality of service.

**Health Data Organizations:** Participants in HCUP gain the opportunity to contribute to the health care knowledge base at a national level. This, in turn, highlights the value of State-level data. Health data organizations – our “HCUP Partners” – provide data to the project. Through participation in HCUP, Partners can compare their health care statistics to other States and to regional and national indicators. HCUP Partners with new or expanded data collection programs may utilize HCUP technical support and can benefit from the experience of other organizations already collecting these data.

**Researchers:** The comprehensive data available in HCUP databases enable researchers to conduct health services research in many different areas, including, but not limited to, quality of care, medical practice patterns, and treatment outcomes.

### III. HCUP Databases

HCUP has created a family of longitudinal databases for data years 1988 through 2017 and is currently adding 2018 data as participating data organizations complete and release their annual or quarterly data. This section briefly describes the HCUP databases.

#### A. Intramural Databases

Intramural databases are available only to authorized AHRQ staff, their contractors, and guest researchers.<sup>1</sup> These files are only utilized for AHRQ research efforts and reports. An example of an AHRQ report that uses intramural databases is the National Healthcare Quality and Disparities Report (QDR). This is a congressionally mandated report to which multiple Federal agencies contribute health services statistics.

The intramural databases contain the universe of the inpatient or outpatient discharge records received from participating HCUP Partners translated into a uniform format to facilitate multi-State comparisons and analyses. These State-level databases contain a core set of clinical and non-clinical information on all patients, regardless of payer, including persons covered by Medicare, Medicaid, private insurance, and the uninsured. In addition to the core set of uniform

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<sup>1</sup> “Guest researchers” is a term used by AHRQ to describe academic scientists, Federal employees, or graduate/Ph.D. level students who have been authorized to use Agency resources to further their research or training. For specific approved projects, guest researchers are sometimes given access to HCUP intramural data under supervision and guidance of a member of the HCUP team.

data elements common to each HCUP database, some HCUP Partners include additional data elements of interest to researchers (e.g., patient's race or principal language spoken).

HCUP develops and maintains the following State intramural databases:

1. Intramural State Inpatient Databases (SID) – The Intramural SID contain all inpatient discharges from a census of hospitals from 48 States and the District of Columbia. These data represent 97 percent of all annual discharges in the U.S. AHRQ researchers use the Intramural SID to investigate questions unique to one HCUP Partner; to compare data from two or more HCUP Partners; to conduct market area variation analyses; and to identify State-specific trends in inpatient care utilization, access, charges, quality, and outcomes. Additional information is available on the HCUP User Support (HCUP-US) Web site at [www.hcup-us.ahrq.gov/sidoverview.jsp](http://www.hcup-us.ahrq.gov/sidoverview.jsp).
2. Intramural State Ambulatory Surgery and Services Databases (SASD) – The Intramural SASD contain data for ambulatory surgery and other outpatient services from hospital-owned facilities. In addition, some HCUP Partners provide ambulatory surgery and outpatient services from nonhospital-owned facilities. AHRQ researchers use the Intramural SASD to compare ambulatory surgery patterns; to conduct market area research or small area variation analyses; and to identify State-specific trends in ambulatory surgery utilization, access, charges, quality, and outcomes. Reports from intramural data are used by policymakers. Additional information is available at [www.hcup-us.ahrq.gov/sasdooverview.jsp](http://www.hcup-us.ahrq.gov/sasdooverview.jsp).
3. Intramural State Emergency Department Databases (SEDD) – The Intramural SEDD contain hospital-affiliated emergency department encounters that do not result in admission. AHRQ researchers can use the Intramural SEDD to conduct market area research or small area variation analyses; identify patterns of care for patients with various demographic and clinical characteristics; and examine State-specific trends in emergency department utilization, access, charges, and outcomes. Additional information is available at [www.hcup-us.ahrq.gov/seddoverview.jsp](http://www.hcup-us.ahrq.gov/seddoverview.jsp).

## **B. Restricted-Access Public Release Databases**

The HCUP databases made available to the public are restricted-access public release files. Restricted-access public release files are derived from the intramural databases, with additional restrictions on content to meet the public release requirements of both AHRQ and each participating HCUP Partner organization. The restricted-access public release databases include data elements approved by each participating HCUP Partner and exclude information that might directly or indirectly increase the risk for re-identification of a person.

Restricted-access public release databases are distributed to researchers through the HCUP Central Distributor. All purchasers and users of HCUP data must complete an application, take the online HCUP Data Use Agreement (DUA) Training Course, and sign an HCUP DUA before receiving the data. In addition, applicants intending to purchase any of the Central Distributor State Databases are required to describe how the data will be used. This process enables AHRQ to ensure that the researchers' planned use is consistent with HCUP policies and with the existing Memorandum of Agreement (MOA) signed with each HCUP Partner organization.

The following databases are distributed through the HCUP Central Distributor to researchers outside of AHRQ who submit an application, take online HCUP DUA training, and sign an HCUP DUA:

1. National (Nationwide) Inpatient Sample (NIS) – The NIS is a unique and powerful database of hospital inpatient stays. The NIS database consists of a sample of discharges equal to approximately 20 percent of the total discharges from U.S. community hospitals and is the largest publicly available all-payer inpatient health care database in the United States. The NIS is produced annually, and the sample is designed to be nationally representative. Beginning with the 2012 NIS, the database was redesigned to improve national estimates, have better data confidentiality, and reduce sampling error. Researchers and policymakers use the NIS to identify, track, and analyze national trends in health care utilization, access, charges, quality, and outcomes. More information about the NIS is available on HCUP-US at [www.hcup-us.ahrq.gov/nisoverview.jsp](http://www.hcup-us.ahrq.gov/nisoverview.jsp).
2. Kids' Inpatient Databases (KID) – The KID is the only all-payer inpatient care database for children in the United States. Researchers and policymakers can use the KID to identify, track, and analyze national trends in health care utilization, access, charges, quality, and outcomes. The KID's large sample size enables analyses of both common and rare conditions such as congenital anomalies, uncommon treatments, and organ transplantation. The KID has been produced every three years since INSERT YEAR. Because hospital discharge data for 2015 contains a mix of ICD-9-CM and ICD-10-CM/PCS data and because of the complexities of analyzing a mixed data year, the KID was not released for 2015. Instead it was released for 2016. The 2016 KID is comprised of ICD-10-CM/PCS data only. Additional information is available on HCUP-US at [www.hcup-us.ahrq.gov/kidoverview.jsp](http://www.hcup-us.ahrq.gov/kidoverview.jsp).
3. The Nationwide Ambulatory Surgery Sample (NASS) will be released annually starting in 2019, beginning with the 2016 data year. The NASS will be the largest all-payer ambulatory surgery database that has been constructed in the U.S., with an approximate 50 percent sample of major ambulatory surgery visits performed in hospital-owned facilities.
4. Nationwide Emergency Department Sample (NEDS) – The NEDS contains emergency department encounters for patients that are treated and released from the Emergency Department (ED), as well as patients admitted to the hospital through the ED. The NEDS was created to enable analyses of ED utilization patterns and support public health professionals, administrators, policymakers, and clinicians in their decisionmaking regarding this critical source of care. This database addresses a large gap in health care data – the lack of nationally representative encounter-based information on emergency care. Additional information is available at [www.hcup-us.ahrq.gov/nedsoverview.jsp](http://www.hcup-us.ahrq.gov/nedsoverview.jsp).
5. Nationwide Readmissions Database (NRD) – The NRD combines the SID with verified patient linkage numbers to create estimates of national readmission rates. States, counties, and hospitals are not identifiable in the NRD. The database includes patients with and without repeat hospital visits during a year and those who have died in the hospital. The NRD addresses the increasing need for nationally representative

information on hospital readmissions. Additional information is available at [www.hcup-us.ahrq.gov/nrdoverview.jsp](http://www.hcup-us.ahrq.gov/nrdoverview.jsp).

6. Central Distributor SID, SASD, and SEDD – HCUP Partners may also choose to make available restricted-access public release versions of their SID, SASD, and SEDD files. AHRQ distributes these databases on behalf of participating HCUP Partners. These individual State databases include 100 percent of the records processed by AHRQ for those data organizations that release restricted-access public release versions of their databases. Typically, these databases differ from the intramural files because some data elements have been restricted under Partner direction. For more information, refer to [www.hcup-us.ahrq.gov/tech\\_assist/centdist.jsp](http://www.hcup-us.ahrq.gov/tech_assist/centdist.jsp).

### **C. Using HCUP Data in Conjunction with Other Data Sources**

For the purposes of research and aggregate statistical reporting, users are able to link the HCUP databases to external databases containing information about hospital and community characteristics. The type of linkage that is possible depends on the particular database. Examples of external databases available to link to HCUP databases are provided here.

Hospital characteristics such as bed size, ownership, utilization, finances, and staffing are available from the American Hospital Association (AHA) Annual Survey Database™ and the Medicare Cost Reports (MCR). Intramural HCUP databases can be linked to these hospital-based files. Restricted-access public release HCUP databases can be linked to the AHA Survey and MCR only in States for which the HCUP Partner has explicitly approved the release of hospital identifiers.

Community information such as population counts, sociodemographic indicators, and measures of community health care resources are available from the U.S. Census and from the Area Health Resource File (AHRF). Intramural HCUP databases can be linked to these external files. Restricted-access public release databases can be linked to these external files in States for which the HCUP Partner has explicitly approved the release of the necessary linkage elements. A sample of external databases that are used to link to HCUP databases is available in the Annual Activities Report within the HCUP Project Overview Binder.

## **IV. Confidentiality and Privacy Protection**

AHRQ is authorized to obtain data for research purposes “to enhance the quality, appropriateness, and effectiveness of health services.”<sup>2</sup> AHRQ is also charged with promoting the protection of individually identifiable patient information used in health services research and health care quality improvement. AHRQ staff members and contractors must sign an AHRQ Staff-Contractor Agreement to obtain access to any HCUP database. In addition, they must complete the required privacy, security, and confidentiality training in order to obtain access to any HCUP database.

Any effort to determine the identity of any person contained in HCUP databases (including, but not limited to, patients, physicians, and other health care providers), or to use the information for any purpose other than for research, analysis, and aggregate statistical reporting violates the AHRQ confidentiality statute<sup>3</sup> and the conditions of the DUAs required of all persons who are

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<sup>2</sup> Amendment to Title IX of the Public Health Service Act, the Healthcare Research and Quality Act of 1999, PL 106129.

<sup>3</sup> Section 944(c) of the Public Health Service Act (42 U.S.C. 299c-3(c)).

given access to HCUP data. The identity of institutions included in the databases is protected from disclosure by the AHRQ confidentiality statute. This statute restricts the use of any information that permits identification of establishments for purposes other than those for which the information was originally supplied. Additional information is provided in the HCUP Data Security Plan, which is included as an attachment to each HCUP MOA.

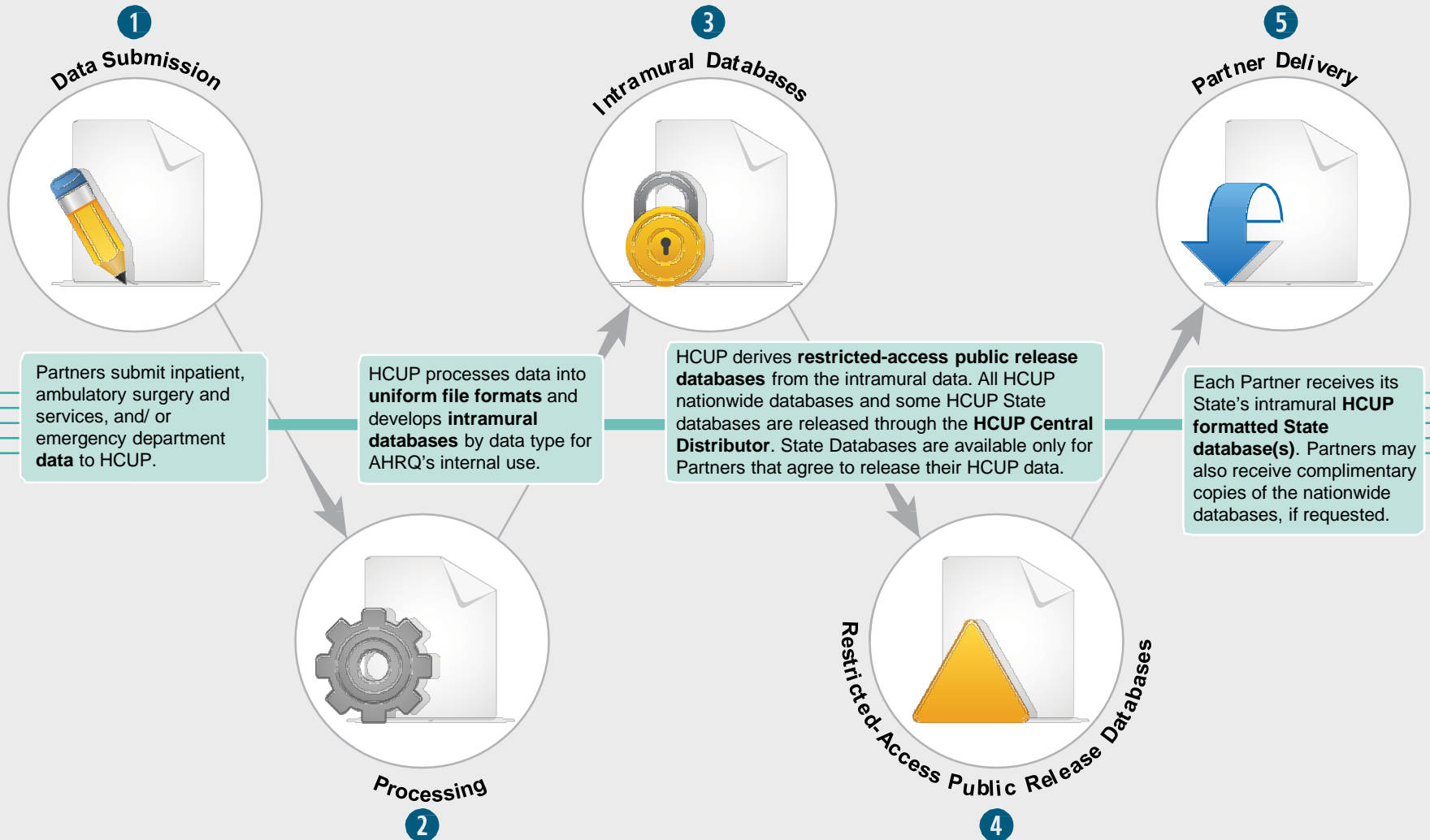
## **V. HCUP Contacts**

For additional information regarding HCUP, please contact either of the following individuals:

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# Development of Healthcare Cost and Utilization Project (HCUP) Databases





# Agency for HealthCare Research and Quality (AHRQ) Use of Healthcare Cost and Utilization Project (HCUP) Data: SUMMARY OF PARTNER AGREEMENTS

## HCUP Databases

SID

SASD

SEDD

NIS

KID

NASS

NEDS

NRD

**HCUP State Databases:** SID-State Inpatient Databases, SASD-State Ambulatory Surgery and Services Databases, SEDD-State Emergency Department Databases

**HCUP Nationwide Databases:** NIS-National (Nationwide) Inpatient Sample, KID-Kids' Inpatient Database, NASS-Nationwide Ambulatory Surgery Sample, NEDS-Nationwide Emergency Department Sample, NRD-Nationwide Readmissions Database



### PERMISSION INCLUDED IN THE MOA

#### Research, Reports, and Publications

*examples:*

AHRQ Intramural Studies  
Articles in Peer-Reviewed Journals  
Conference Presentations  
HCUP Statistical Briefs  
HCUP Methods Series

#### Software Tools

*examples:*

Clinical Classifications Software (CCS)  
Chronic Condition Indicator (CCI)  
Elixhauser Comorbidity Software  
Procedure Classes  
Utilization Flags  
Surgery Flags

### ADDITIONAL PERMISSION REQUESTED

#### HCUPnet\*

*examples:*

Community-level Statistics  
State-level Aggregate Statistics from the  
SID, SASD, and SEDD

#### National Healthcare Quality and Disparities Report (QDR\*)

*examples:*

Appendices and Derivative Products  
State Snapshots Web site  
QDRnet

#### HCUP Supplemental Files

*examples:*

Cost-to-Charge Ratio (CCR)  
Hospital Market Structure (HMS)  
Variables for Revisit Analyses  
AHA Linkage Files

#### HCUP Fast Stats\*

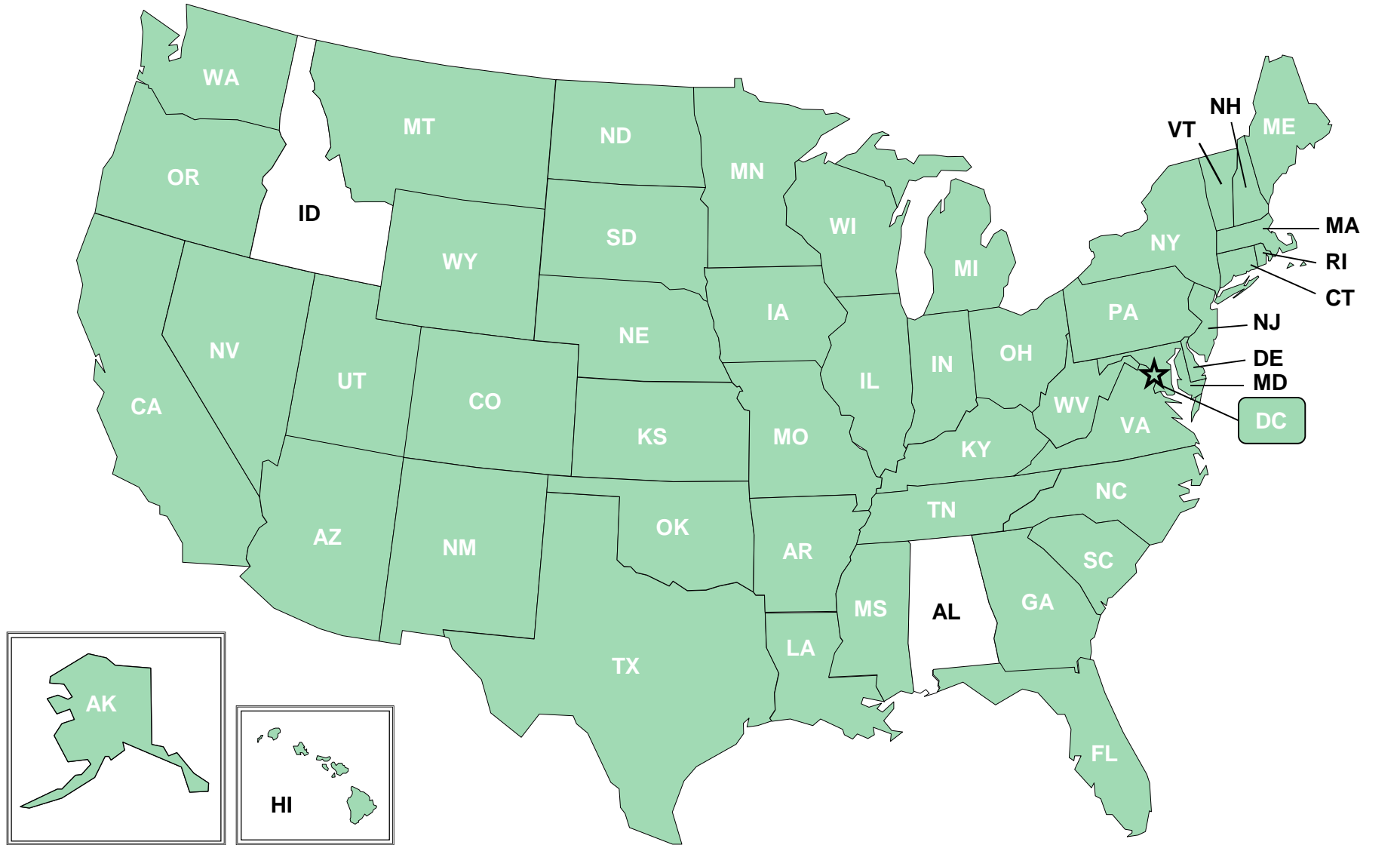
*examples:*

State Trends in Hospital Use by Payer



\*AHRQ requests Partner approval only for State-and community-level reporting in HCUPnet and State-level reporting in National Healthcare Quality and Disparities Report (QDR) and HCUP Fast Stats; HCUP national statistics are released for all Partners in HCUPnet, QDR, and HCUP Fast Stats.

# HCUP Partners Providing Inpatient Data

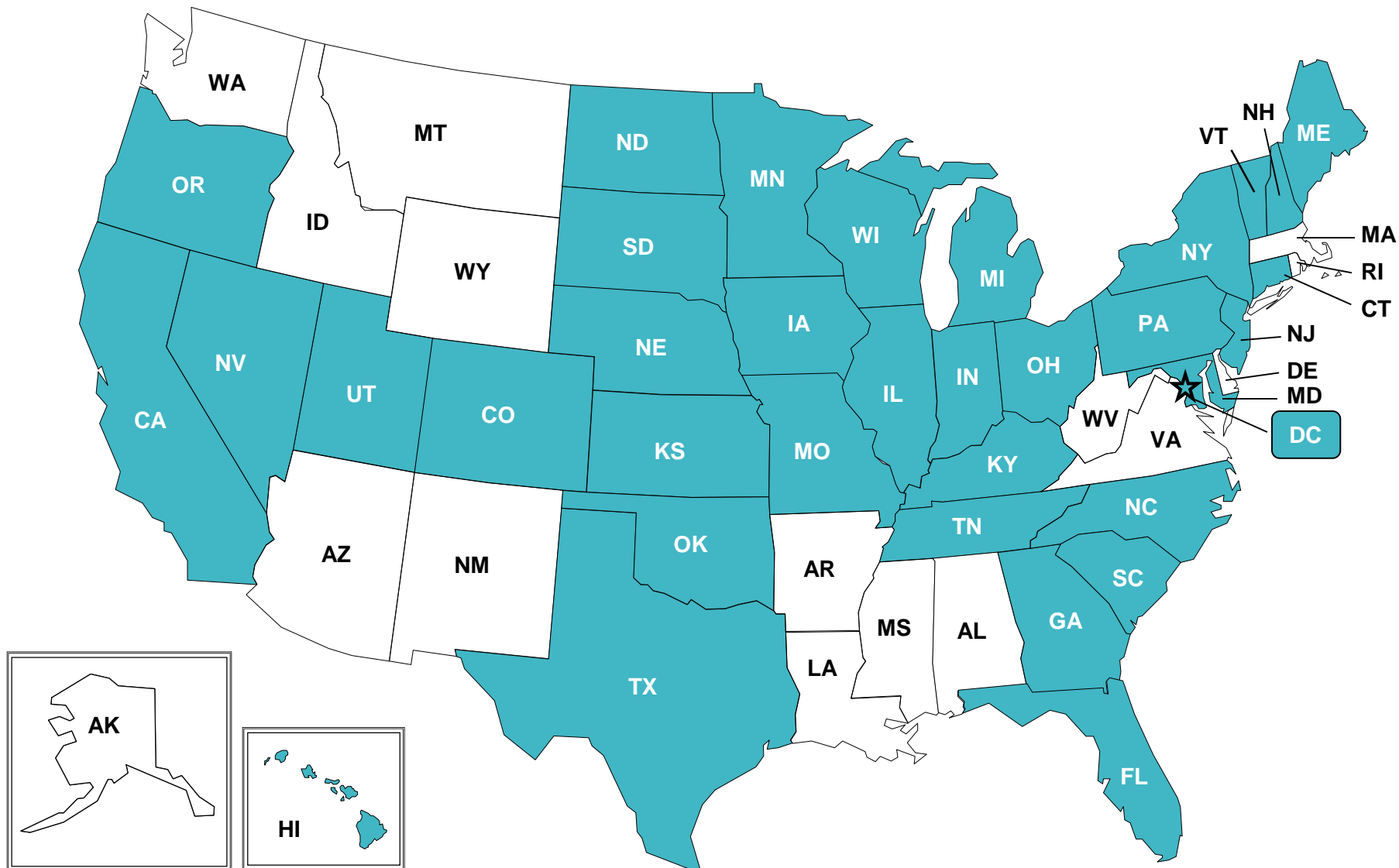


**Partners  
Providing:**

Inpatient  
Data

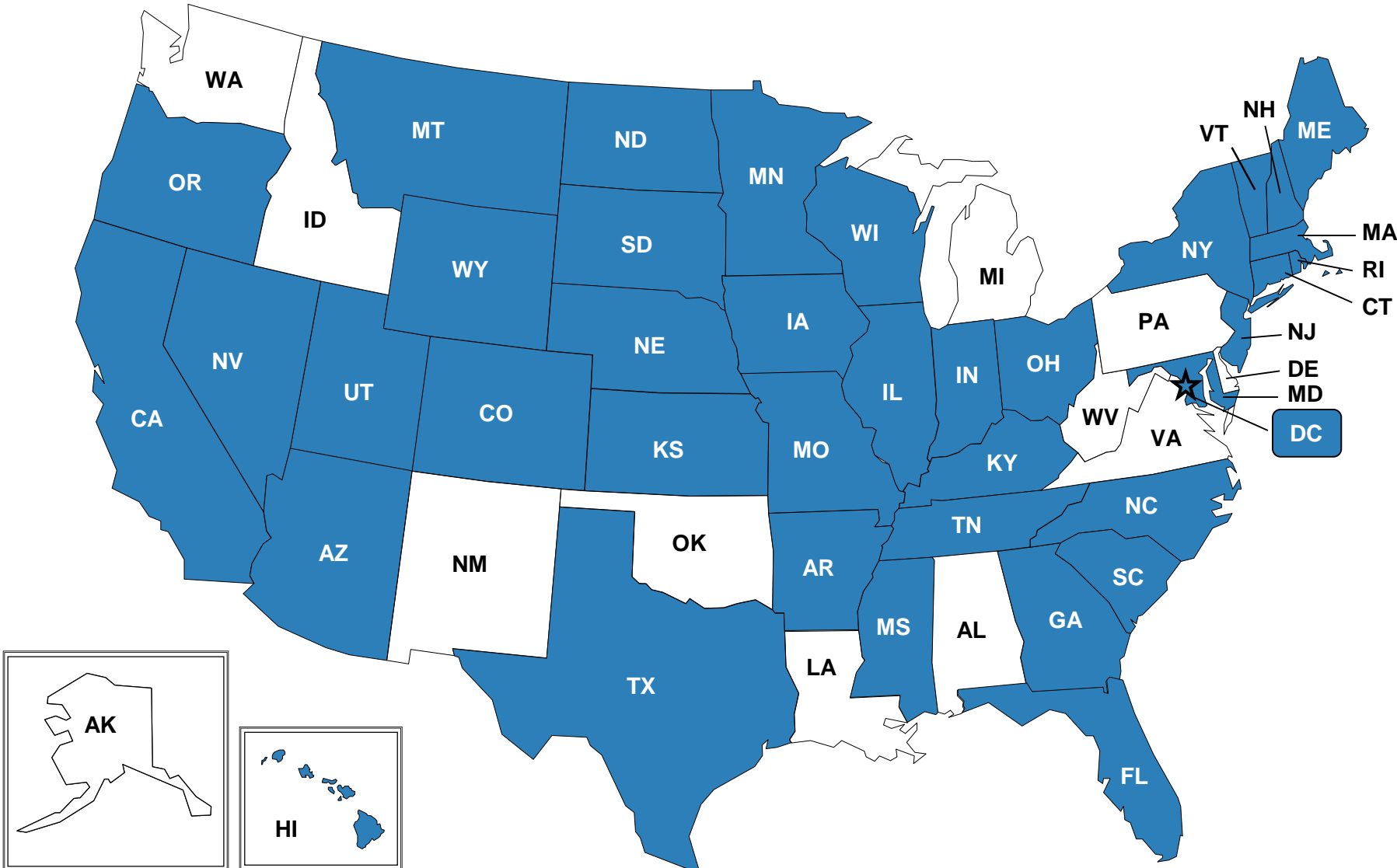
Non-  
participating

# HCUP Partners Providing Ambulatory Surgery & Services Data



Partners Providing:	Ambulatory Surgery & Services Data	Non- participating

## HCUP Partners Providing Emergency Department Data

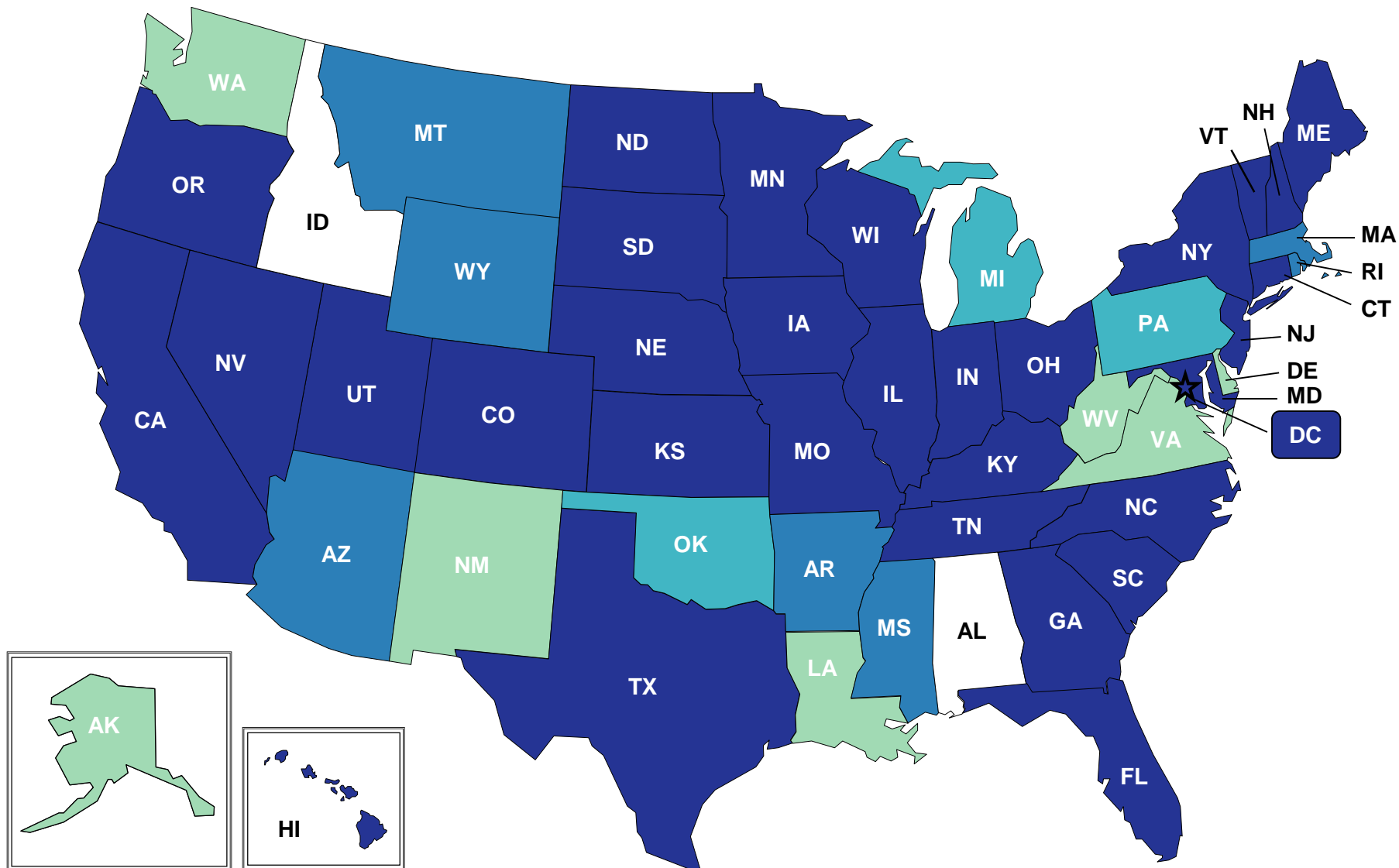


## Partners Providing:

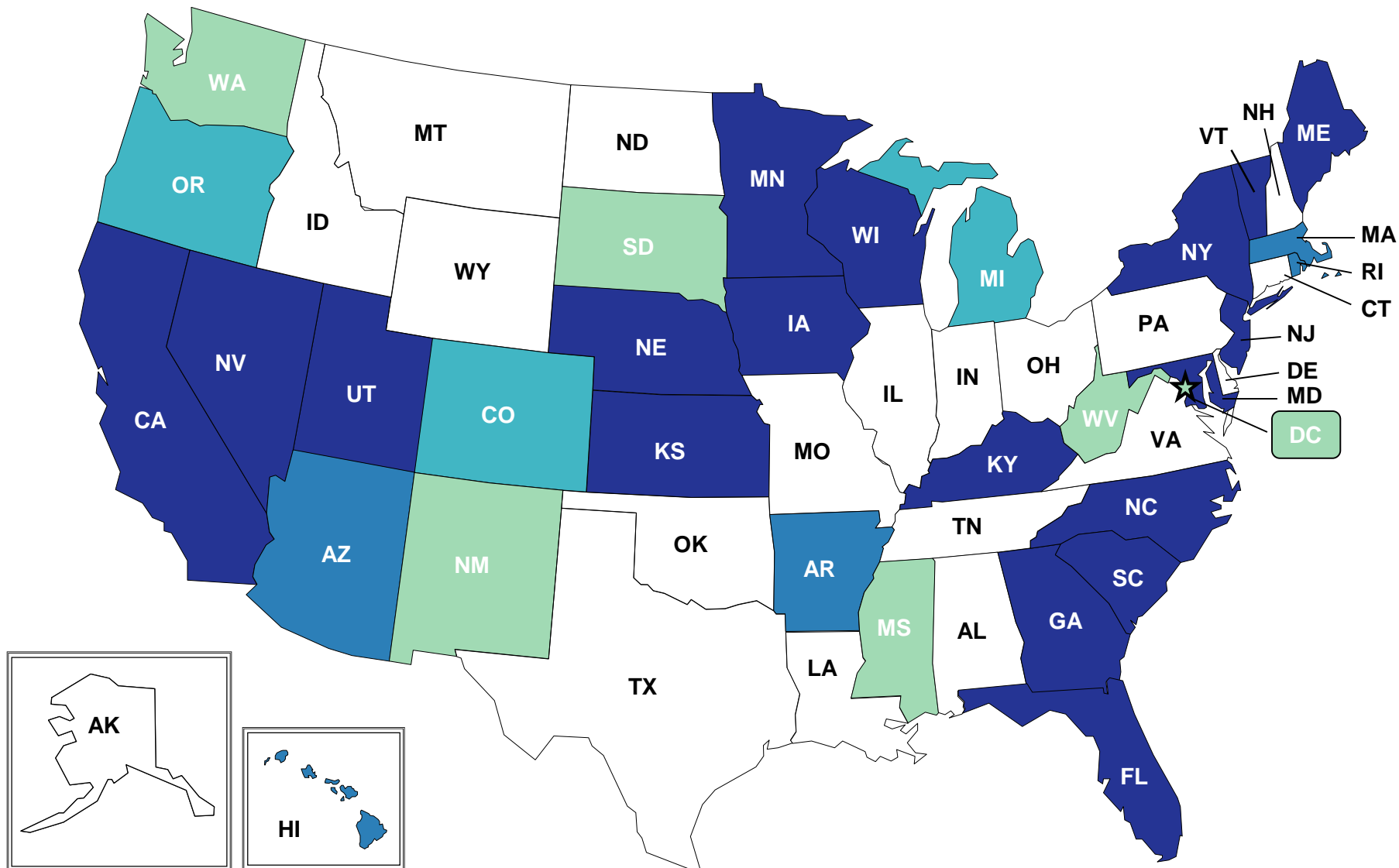
## Emergency Department Data

Non-  
participating

# HCUP Partner Participation by Data Type



# State Databases Available for Purchase through the HCUP Central Distributor



Database Availability (varies by year):	State Inpatient Database (SID)	SID and State Ambulatory Surgery & Services Database (SASD)	SID and State Emergency Department Database (SEDD)	SID, SASD and SEDD	Non- participating
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**Partner Participation in HCUP**

State	State Inpatient Databases		State Ambulatory Surgery and Services Databases		State Emergency Department Databases		National (Nationwide) Inpatient Sample	Kids' Inpatient Database <small>Released every three years, starting with 1997**</small>	Nationwide Emergency Department Sample	Nationwide Readmissions Database
	Intramural SID	Central Distributor*	Intramural SASD	Central Distributor*	Intramural SEDD	Central Distributor *	NIS	KID	NEDS	NRD
Alaska	2010-2012, 2015-2017						2010-2012 2015-2016	2012-2016		2010-2012 2015-2016
Arizona	1989-2017	1990-2017			2005-2017	2005-2017	1989-2001, 2003-2016	1997-2016	2006-2016	
Arkansas	2004-2017	2004-2016			2013-2017	2013-2016	2004-2016	2006-2016	2013-2016	2010-2016
California	1988-2017	2003-2011	2005-2017	2005-2011	2005-2017	2005-2011	1988-2016	1997-2016	2006-2016	2010-2016
Colorado	1988-2017	1990-2016	1988-2017	1997-2016	2017		1988-2016	1997-2016		
Connecticut	1993-2017		1993-2017		1996-2017		1993-2016	1997-2016	2006-2016	
Delaware	2016-2017									
District of Columbia	2013-2017	2013-2016	2014-2017		2014-2017		2013-2016	2016	2014-2016	
Florida	1988-2017	1990-2016	1997-2017	1997-2016	2005-2017	2005-2016	1988-2016	1997-2016	2006-2016	2010-2016
Georgia	1997-2017	2010-2017	2002-2017	2010-2017	2002-2017	2010-2017	1997-2016	1997-2016	2006-2016	2010-2016
Hawaii	1996-2016	1996-2016	2007-2016		2003-2016	2003-2016	1997-2016	1997-2016	2006-2016	2010-2016
Illinois	1988-2017		2009-2017		2009-2017		1988-2016	1997, 2003-2016	2009-2016	
Indiana	2003-2017		2003-2017		2003-2017		2003-2016	2003-2016	2006-2016	
Iowa	1988-2017	1990-2017	1996, 2004-2017	2004-2017	2004-2017	2004-2017	1988-2016	1997-2016	2006-2016	2013-2016
Kansas	1993-2017	2011-2016	2005-2017	2011-2016	2005-2017	2011-2016	1993-2016	1997-2016	2006-2016	
Kentucky	2000-2017	2000-2017	2000-2017	2000-2017	2008-2017	2008-2017	2000-2016	2000-2016	2008-2016	
Louisiana	2008-2017						2008-2016	2009-2016		2010-2016
Maine	1999-2003, 2006-2017	1999-2003, 2006-2017	1999-2003, 2006-2017	1999-2003, 2006-2016	1999-2003, 2006-2017	1999-2003, 2006-2016	1999-2002, 2007-2011, 2014-2016	2000, 2009, 2016	2006-2009, 2011-2012, 2014-2016	
Maryland	1990-2017	1990-2017	1990-2017	1997-2017	1999-2017	1999-2017	1993-2016	1997-2016	2006-2016	2014-2016
Massachusetts	1988-2017	1990-2016			2002-2017	2002-2016	1988-2016	1997-2016	2006-2016	2010-2016
Michigan	1999-2017	1999-2016	2004-2017	2004-2016			2001-2016	2003-2016		
Minnesota	2001-2017	2014-2017	2001-2017	2014-2017	2001-2017	2014-2017	2001-2016	2003-2016	2006-2016	
Mississippi	2010-2011, 2013-2017	2010-2011 2013-2017			2016-2017		2010-2011 2015-2016	2016	2016	2010-2011 2015-2016
Missouri	1995-2017		1999-2017		1999-2017		1995-2016	1997-2016	2006-2016	2010-2016
Montana	2009-2017				2014-2017		2009-2016	2009-2016	2014-2016	
Nebraska	2001-2017	2001-2017	2001-2017	2001-2017	2001-2017	2001-2017	2001-2016	2003-2016	2006-2016	2010-2016
Nevada	2002-2017	2002-2016	2011-2017	2011-2016	2010-2017	2010-2016	2002-2016	2003-2016	2010-2016	2013-2016
New Hampshire	2003-2009		2003-2009		2003-2009		2003-2009	2003-2009	2006-2009	
New Jersey	1988-2017	1990-2016	1988-2017	1997-2016	2004-2017	2004-2016	1988-2016	1997-2016	2006-2016	
New Mexico	2007-2017	2007-2016					2009-2016	2009-2016		2010-2016
New York	1988-2017	1990-2016	1988-2017	1997-2016	2005-2017	2006-2016	1993-2016	1997-2016	2007-2016	2010-2016
North Carolina	2000-2017	2000-2016	2000-2017	2000-2016	2007-2017	2007-2016	2000-2016	2000-2016	2007-2016	
North Dakota	2011-2017		2013-2017		2011-2017		2011-2016	2012-2016	2011-2016	
Ohio	2002-2017		2005-2017		2005-2017		2002-2016	2003-2016	2006-2016	
Oklahoma	2005-2017		2006-2017				2005-2016	2006-2016		
Oregon	1993-2017	1993-2017	2010-2017	2010-2017	2015-2017		1993-2016	1997-2016	2016	2015-2016
Pennsylvania	1989-2003, 2008-2017		1999-2001, 2013-2017				1989-2003, 2008-2016	1997-2000 2009-2016		2015-2016
Rhode Island	2001-2017	2002-2016			2006-2017	2007-2016	2001-2016	2003-2016	2007-2016	
South Carolina	1993-2017	1995-2016	1996-2017	2000-2016	1999-2017	2000-2016	1993-2016	1997-2016	2006-2016	2010-2016
South Dakota	2002-2017	2007-2017	2005-2017		2005-2017		2002-2016	2003-2016	2006-2016	2013-2016
Tennessee	1995-2017		1999-2017		2000-2017		1995-2016	1997-2016	2006-2016	2010-2016
Texas	2000-2017		2011-2017		2015-2017		2000-2016	2000-2016	2015-2016	
Utah	1997-2017	1997-2016	1997-2017	1997-2016	2000-2017	2000-2016	1997-2016	1997-2016	2006-2016	2010-2016
Vermont	2001-2017	2001-2016	2001-2017	2001-2016	2002-2017	2002-2016	2001-2016	2003-2016	2006-2016	2012-2016
Virginia	1999-2004, 2006-2017						1999-2004, 2006-2016	2000-2016		2010-2016
Washington	1988-2017	1990-2017					1988-2016	1997-2016		2010-2016
West Virginia	2000-2017	2000-2017					2000-2016	2000-2016		
Wisconsin	1989-2017	1990-2017	1994-2017	1998-2017	2004-2017	2004-2017	1989-2016	1997-2016	2006-2016	2013-2016
Wyoming	2007-2017				2014-2017		2007-2016	2009-2016	2014-2016	2015-2016
Currently participating	49	32	35	21	39	23	48	48	38	27

**Note: For Intramural databases, the data years match the Partner's HCUP MOA, and extend through the current processing year. Data years listed for all other databases reflect files available through the Central Distributor (state databases, NIS, KID, NEDS and NRD).**

\* Efforts to gain 2017 Central Distributor participation are currently underway.

**Current as of March 6, 2019**

\*\* The Kids' Inpatient Database was released in 1997, 2000, 2003, 2006, 2009, 2012, and 2016. Date ranges shown above include only those years.



**H·CUP**  
HEALTHCARE COST AND UTILIZATION PROJECT

## **HCUP FACT SHEET**

**2019**



# The Healthcare Cost and Utilization Project Fact Sheet

## What is the Healthcare Cost and Utilization Project (HCUP)?

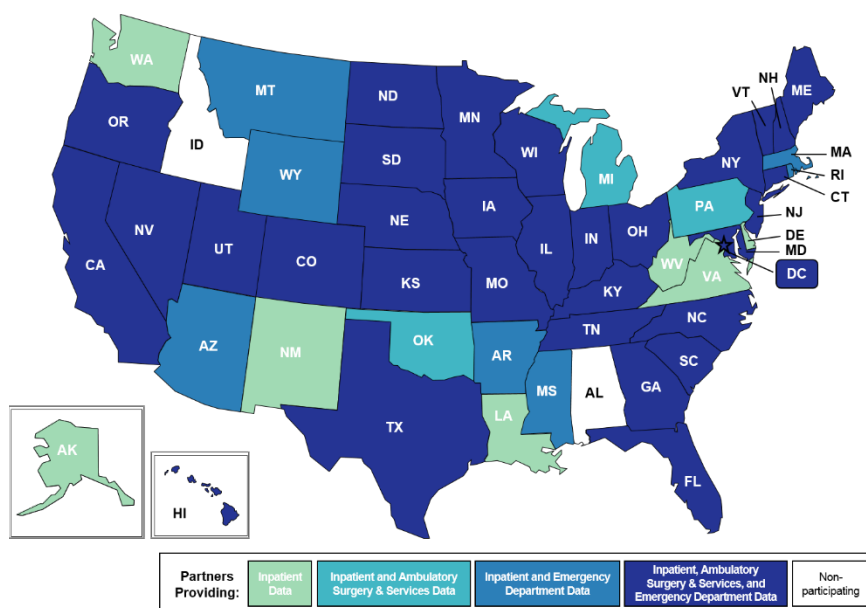
HCUP is a family of health care databases, software tools, reports, and other related products developed through a Federal-State-Industry partnership and sponsored by the Agency for Healthcare Research and Quality (AHRQ). The project builds on the data collection efforts of State data organizations, hospital associations, and private data organizations (known as "HCUP Partners"). Without HCUP Partners' voluntary data contributions, this national resource supporting health services research and policy would not be possible.

## Why is HCUP important?

HCUP includes the largest collection of all-payer, encounter-level hospital care data in the United States. HCUP provides reliable, comprehensive information that can be used to answer questions about health care use, access, outcomes, and costs related to hospital inpatient stays, ambulatory surgery and services, emergency department visits, and readmissions. HCUP databases, software tools, and reports enable research on a broad range of current health care issues and trends that are useful to policymakers, researchers, administrators, and consumers.

## How are the HCUP databases developed?

### HCUP Partners



- AHRQ transforms administrative health care data acquired from HCUP Partners into research-ready, uniform databases with a common set of data elements.
- Currently, 49 Partners (48 States and the District of Columbia) provide HCUP with statewide inpatient data, 35 Partners provide ambulatory surgery and services data, and 39 Partners provide emergency department data. The inpatient data represent more than 97 percent of inpatient discharges from community hospitals.

## What databases are available from HCUP?

- **The National (Nationwide) Inpatient Sample (NIS)** is the largest publicly available all-payer inpatient database in the United States, yielding national estimates of hospital inpatient stays. Released annually, the NIS approximates 20 percent of the discharges from all U.S. community hospitals and currently contains data from more than seven million hospital stays. Researchers and policymakers use the NIS to identify, track, and analyze national trends in health care utilization, access, charges, quality, and outcomes.
- **The Kids' Inpatient Database (KID)** is the largest publicly available, all-payer, national pediatric database in the U.S., and was designed to facilitate study of hospital services, outcomes and charges for children and adolescents. It contains a sample of two to three million hospital pediatric discharges per year. The KID database is available every three years from 1997-2012 and for 2016.6. Because of the ICD-9-CM to ICD-10-CM/PCS coding transition during 2015, the 2015 KID was not produced. The 2016 KID is comprised of ICD-10-CM/PCS data only.
- **The Nationwide Emergency Department Sample (NEDS)** is a unique and powerful database that yields national estimates of emergency department (ED) visits. Released annually, the NEDS database enables researchers to study a broad range of conditions and procedures related to ED use. It includes approximately 31 million records each year for patients who were either treated in the ED and released or treated in the ED and admitted to the same hospital.

- **The Nationwide Readmissions Database (NRD)** supports analyses of repeat hospital visits in a year, addressing the need for nationally representative information on hospital readmissions for all ages and payers, including the uninsured. The NRD is released annually.
- **The State Inpatient Databases (SID)** contain a powerful collection of hospital inpatient discharge information. The SID can be used to investigate questions that are unique to one State or to compare data from two or more States.
- **The State Ambulatory Surgery and Services Databases (SASD)** include encounter-level data for ambulatory surgery (AS) and other outpatient services from hospital-owned facilities. Some States provide data for ambulatory surgery and outpatient services from nonhospital-owned facilities.
- **The State Emergency Department Databases (SEDD)** contain discharge information on all ED visits that do not result in a hospital admission.

Additional information about these databases is available at [www.hcup-us.ahrq.gov/databases.jsp](http://www.hcup-us.ahrq.gov/databases.jsp).

### **How do researchers obtain HCUP databases?**

**Restricted-Access Public Release Nationwide Databases and Select State Databases** (when permitted by HCUP Partners) may be purchased through the HCUP Central Distributor at [www.hcup-us.ahrq.gov/tech\\_assist/centdist.jsp](http://www.hcup-us.ahrq.gov/tech_assist/centdist.jsp). The nationwide databases are delivered via secure digital download. The State-specific databases include data elements approved by each participating HCUP Partner while excluding data that might directly or indirectly identify a person. State-specific databases are delivered via hard copy media (DVD). All purchasers and users of HCUP data must complete a brief online Data Use Agreement (DUA) training course and sign a DUA.

### **What software tools and supplemental files are available from HCUP?**

- **Software Tools and Supplemental Files** are developed and maintained by AHRQ to enhance the value of the HCUP databases. HCUP tools also can be used with HCUP data as well as with non-HCUP hospital administrative databases. HCUP tools include Clinical Classifications Software (CCS), Chronic Condition Indicator (CCI), Elixhauser Comorbidity Software, Procedure Classes, Surgery Flags, and Utilization Flags. All tools are free of charge and available for download from the HCUP User Support (HCUP-US) Web site. HCUP also offers several supplemental files that are designed for use with and add value to HCUP databases, including HCUP Supplemental Variables for Revisit Analyses, Cost-to-Charge Ratio (CCR) Files, Hospital Market Structure (HMS) Files, American Hospital Association (AHA) Linkage Files, and NIS and KID Trend Weights Files. Additional information is available at [www.hcup-us.ahrq.gov/tools\\_software.jsp](http://www.hcup-us.ahrq.gov/tools_software.jsp).
- **HCUPnet** is a free, on-line query system that uses precalculated HCUP data to provide quick-access statistical information about hospital inpatient ambulatory surgery and emergency department utilization. HCUPnet delivers statistics at the national level and for Partners that agree to participate, at the State, region, and community-levels. Users generate tables and graphs via this easy-to-use interactive tool, accessed at [www.hcupnet.ahrq.gov/](http://www.hcupnet.ahrq.gov/).
- **AHRQ Quality Indicators (QIs)** are measures of health care quality associated with processes of care that occur in the inpatient setting. The AHRQ QIs consist of four modules measuring various aspects of quality: Prevention Quality Indicators (PQIs), Inpatient Quality Indicators (IQIs), Patient Safety Indicators (PSIs), and Pediatric Quality Indicators (PDIs). The QIs are analyzed with free software available from AHRQ that is designed to be used with HCUP and other administrative data. Additional information is available at [www.qualityindicators.ahrq.gov/](http://www.qualityindicators.ahrq.gov/).
- **HCUP Fast Stats** provides easy access to the latest HCUP-based statistics on health care information topics. HCUP Fast Stats uses visual statistical displays in stand-alone graphs, trend figures, or simple tables and maps to convey complex information at a glance. Information is updated regularly (quarterly or annually, as newer data become available) and available at a national and State-level. Additional information is available at [www.hcup-us.ahrq.gov/faststats/landing.jsp](http://www.hcup-us.ahrq.gov/faststats/landing.jsp).

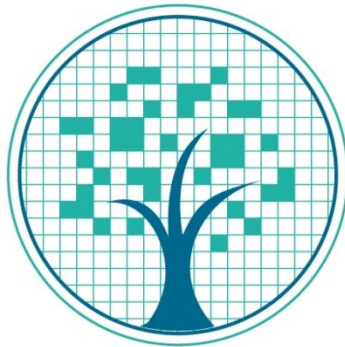
### **What reports does HCUP produce?**

- **HCUP Statistical Briefs** are short, focused reports with descriptive statistics on hospital use and cost topics
- **HCUP Infographics** provide visual representations of HCUP Statistical Brief data
- **HCUP Methods Series Reports** address methodological issues in HCUP databases, tools, and supplemental files

Additional information is available at [www.hcup-us.ahrq.gov/reports.jsp](http://www.hcup-us.ahrq.gov/reports.jsp).

### **What support services are offered to HCUP users?**

**Technical Assistance** is available to facilitate use of HCUP. The user-friendly HCUP-US Web site, [www.hcup-us.ahrq.gov](http://www.hcup-us.ahrq.gov), contains extensive documentation about the project. HCUP [FAQs](#) answer commonly asked questions. [HCUP's Online Tutorial Series](#) offer on-demand, interactive training on conducting research with HCUP data and tools. HCUP training Webinars and workshops educate users in both online and in-person settings. HCUP presentations at conferences keep researchers up-to-date on current research with HCUP data. User questions are responded to by experienced technical staff at 866-290-HCUP or [hcup@ahrq.gov](mailto:hcup@ahrq.gov). More information is available at [www.hcup-us.ahrq.gov/techassist.jsp](http://www.hcup-us.ahrq.gov/techassist.jsp) and [www.hcup-us.ahrq.gov/news/events.jsp](http://www.hcup-us.ahrq.gov/news/events.jsp).



**H·CUP**

HEALTHCARE COST AND UTILIZATION PROJECT

## **BENEFITS OF HCUP PARTNERSHIP**

**2019**

## **BENEFITS OF HCUP PARTNERSHIP**

Participation in the Healthcare Cost and Utilization Project (HCUP) represents a unique opportunity to contribute to a national database built from State-level data. HCUP offers data organizations a voice at the Federal level and a forum to exchange ideas and help shape the Agency for Healthcare Research and Quality (AHRQ) research agenda. In addition, HCUP returns complimentary copies of the HCUP databases to participating data organizations (i.e., “HCUP Partners”), creates diverse tools and data products, and provides HCUP Partner-exclusive technical support, software tools, and reports to help enhance the value of HCUP Partner organizations’ data.

### **1. Contribution to a National Database Project**

Through participation in HCUP, data organizations help to increase the visibility of their data and further demonstrate the value of the data beyond the uses within the organization. HCUP contributes to important research that is published regularly in clinical and scientific health services research journals. Without HCUP Partners’ voluntary data contributions, this national resource for health services research and policy would not be possible.

### **2. Formatted Research Databases**

AHRQ returns copies of its uniformly formatted, State Inpatient Databases (SID), State Ambulatory Surgery and Services Databases (SASD), and State Emergency Department Databases (SEDD) to contributing HCUP Partners. In addition, AHRQ provides HCUP Partners with complimentary copies of the National (Nationwide) Inpatient Sample (NIS), Kids’ Inpatient Database (KID), Nationwide Emergency Department Sample (NEDS), and Nationwide Readmissions Database (NRD) upon receipt of a signed Data Use Agreement (DUA). HCUP plans to release a new nationwide data base, the Nationwide Ambulatory Surgery Sample (NASS) in 2019. HCUP Partners may also receive HCUP supplemental data such as Cost-to-Charge Ratio (CCR) and Hospital Market Structure (HMS) data for their State upon request.

### **3. Participation in the HCUP Central Distributor**

The HCUP Central Distributor is maintained by AHRQ, on behalf of HCUP Partner organizations, to distribute restricted-access public release versions of HCUP data. HCUP Partners may choose to make the HCUP versions of their SID, SASD, and SEDD available to qualified researchers through the Central Distributor. Participation in the release of HCUP State Databases is voluntary. HCUP Partners participate at no cost to their organizations. Each participating HCUP Partner determines the content and price of the public release version of its SID, SASD, and SEDD files. AHRQ also restricts certain content to meet its confidentiality requirements. AHRQ collects the data fees from researchers and sends the collected amount to the HCUP Partners.

### **4. Networking Opportunities**

- **HCUP Partner Activities**

HCUP Partners are invited to participate in Webinars to receive and exchange technical expertise. These Webinars provide a forum for AHRQ and the Partners to inform each

other of the challenges and accomplishments of the past year, as well as to help set priorities for the coming year. Partners are invited to help plan agendas, participate in presentations, and share their perspectives on the data needs of the future in a Federal-State dialogue.

- **Workgroups**

HCUP Partners can participate in workgroups that help to inform the project and support the goals of HCUP Partners. AHRQ has introduced several topics by presenting background information to Partners on them to explore the level of interest. These workgroups focus on topics in specific areas of interest to Partners and AHRQ or may provide support in areas identified as high priority by Partners. Workgroups are formed on an as-needed basis and all HCUP Partners are invited to participate.

## **5. Technical Support**

- **Software Tools**

HCUP tools and software have been developed by AHRQ to enhance the value of administrative health care data. AHRQ currently maintains several software tools, including Clinical Classifications Software for Mental Health and Substance Abuse (CCS-MHSA), Clinical Classifications Software for Services and Procedures, Chronic Condition Indicators (CCI) for ICD-9-CM, Comorbidity Software, Procedure Classes, CCS for Mortality Reporting, CCS for ICD-9-CM, Surgery Flags, and Utilization Flags that may be applied to hospital administrative data to enhance analyses. AHRQ also has developed beta version of Clinical Classifications Software (CCS) for ICD-10-CM/PCS, Condition Indicator for ICD-10-CM, Elixhauser Comorbidity Software for ICD-10-CM, Procedure Classes for ICD-10-PCS, and Utilization Flags for ICD-10-PCS. Software tools are free of charge and available for download from the HCUP User Support (HCUP-US) Web site at [www.hcup-us.ahrq.gov/tools\\_software.jsp](http://www.hcup-us.ahrq.gov/tools_software.jsp). In addition to the publicly available tools, AHRQ develops tools and reports for exclusive use of HCUP Partners. These products must be accessed through the secure, password-protected Partners section of HCUP-US ([www.hcup-us.ahrq.gov/login.jsp](http://www.hcup-us.ahrq.gov/login.jsp)).

- **HCUP Fast Stats**

HCUP Fast Stats is an interactive, online tool that provides easy access to the latest HCUP-based statistics for select State and national health information topics. HCUP Fast Stats uses side-by-side comparisons of visual statistical displays, trend figures, or simple tables to convey complex information at a glance. Topics currently available in HCUP Fast Stats include the State Trends in Hospital Use by Payer; National Hospital Utilization and Costs; and Opioid-Related Hospital Use, National and State. HCUP Fast Stats presents statistics using data from HCUP's NIS, NEDS, SID, and SEDD. Further updates and enhancements will be made to HCUP Fast Stats over time. For more information about HCUP Fast Stats, please visit the HCUP-US Web site at [www.hcup-us.ahrq.gov/faststats/landing.jsp](http://www.hcup-us.ahrq.gov/faststats/landing.jsp).

- **HCUPnet**

HCUPnet is a free online query system based on HCUP data. It provides access to health statistics and information on hospital inpatient, ambulatory surgery, and emergency department utilization. With Partner permission, State- and community-level statistics are also reported. For more information about HCUPnet, please visit [www.hcupnet.ahrq.gov](http://www.hcupnet.ahrq.gov).

- **Analytic and Methods Reports**

AHRQ produces analytic and methods reports from HCUP data. Analytic reports on health care topics are an important means of communicating findings about health care quality, safety, effectiveness, and efficiency. Reports include Race Data Quality, Patient Border Crossing, and other topical reports developed exclusively for Partners. AHRQ also performs technical analyses that often become Methods Series Reports or HCUP Projections available to both HCUP Partners and the public.

In 2018, the following Methods Series Reports were released:

- [Methods Applying AHRQ Quality Indicators to Healthcare Cost and Utilization Project \(HCUP\) Data for the 2017 National Healthcare Quality and Disparities Report \(QDR\)](#)
- [An Examination of CHIP and Medicaid Expected Payer Coding in HCUP Databases](#)
- [Population Denominator Data Sources and Data for Use with HCUP Databases \(Updated with 2017 Population Data\)](#)
- [User Guide: An Examination of Expected Payer Coding in HCUP Databases \(Updated for 2016 HCUP Data\) \(PDF file, 559 KB\) Supplements 1-3](#)

- **Subject Matter Expertise**

AHRQ and IBM Watson Health (Watson Health) HCUP staff provides subject matter expertise on data use issues. HCUP team members provide analytic guidance to assist in the interpretation or use of administrative data and serve as collaborators to explore specific questions. These collaborations have examined issues regarding race and ethnicity, mental health, emergency department utilization, patient State of residence (border crossing), methodologies for identifying readmissions across time and hospital settings, methodologies for converting charges to cost data, and market variables.

- **Technical Assistance to Data Users**

AHRQ and Watson Health answer questions about HCUP databases, software tools, supplemental files, and other products, with the objective of clarifying issues and fostering the use of HCUP. Affiliations of users contacting HCUP Technical Assistance include universities, government agencies, health care providers, research organizations, and HCUP Partners. Approximately 2,000 inquiries are responded to each year. For technical assistance inquiries, AHRQ maintains both a dedicated toll-free phone number 1-866-290-HCUP and special email address [hcup@ahrq.gov](mailto:hcup@ahrq.gov).

- **HCUP Partners Section of HCUP-US**

The Partners section of the HCUP-US Web site is a secure, password-protected section on HCUP-US that contains information and documents of specific interest to HCUP Partner organizations. It provides a dedicated web location for HCUP Partners to find information on current HCUP activities, easily access HCUP-related documents and resources, and links to request a copy of the current HCUP Memorandum of Agreement (MOA) and Partner-specific data element lists. A username and password are required to access the secure HCUP-US Partner section. To log in, go to [www.hcup-us.ahrq.gov/login.jsp](http://www.hcup-us.ahrq.gov/login.jsp).



# **HCUP PARTNERSHIP REQUIREMENTS AND RESPONSIBILITIES**

**2019**

# HCUP PARTNERSHIP REQUIREMENTS AND RESPONSIBILITIES

## A. HCUP Partnership Requirements

The Healthcare Cost and Utilization Project (HCUP) databases enable research on a broad range of health policy issues, including cost and quality of health services, medical practice patterns, access to health care, and outcomes of treatments at the national, State, and local market levels. For this reason, the Agency for Healthcare Research and Quality (AHRQ) sets high standards for inclusion of State-level data in HCUP. Data organizations are evaluated for HCUP partnership through a process that involves the detailed review of data documentation, collection practices, release policies, and contractual arrangements.

This section highlights the basic requirements for data organizations to participate in HCUP and become “HCUP Partners”. These requirements have been established to maintain high quality in the development of the HCUP databases.

To participate in HCUP, a data organization must:

### 1. Designate someone as the HCUP “Partner Representative”

The HCUP Partner Representative acts as the primary contact for HCUP agreements, data inquiries, and feedback. HCUP Partners sometimes designate additional contacts, such as one to receive and handle HCUP agreements on behalf of the Partner Representative, and/or another to coordinate technical data issues.

### 2. Contribute statewide inpatient discharge data

Inpatient discharge data must be available from all, or nearly all, acute care non-Federal hospitals in the State for all types of payers, including self-pay and the uninsured. These data are used in the Intramural State Inpatient Databases (SID). In addition, HCUP Partners must:

- i. Agree to participate in the National Inpatient Sample (NIS). All, or nearly all, acute care hospitals within the State must permit their data to be sampled for the NIS. In addition, hospitals must permit HCUP to include synthetic hospital numbers on the NIS (assigned by AHRQ to each hospital in the State), with the understanding that States and hospitals are not able to be identified in the NIS.
- ii. Permit their data to be linked to the American Hospital Association (AHA) Annual Survey Database™ for internal project purposes. This linkage is necessary in order to obtain characteristics of hospitals for intramural research and to permit weighting of the sample data to obtain national estimates for the NIS, Kids’ Inpatient Database (KID), Nationwide Emergency Department Sample (NEDS), and Nationwide Readmissions Database (NRD). The AHA data will also be included in the new Nationwide Ambulatory Surgery Sample (NASS), to be released publicly in 2019.
- iii. Supply the discharge data required for participation, as well as any optional data elements approved by the HCUP Partner organization. A full list of required and optional data elements requested by AHRQ is provided in the HCUP Data Elements Table that accompanies the Sample HCUP Memorandum of Agreement (MOA). The HCUP Data Elements Table is also provided in a separate section of the HCUP Project Overview Binder. At a minimum, the following data elements are required:
  - Hospital identification numbers

- Total charges (required for inpatient data; requested for outpatient visits)
- Diagnosis codes
- Procedure codes
- Expected source of payment
- Patient ZIP Code (five-digit).

### **3. Supply data to HCUP in a timely manner**

Inpatient data are customarily requested by HCUP on a calendar year basis and are requested within one month of releasing annual calendar year files to assure timely development of the SID. Many HCUP Partners submit data more frequently (e.g., quarterly). Inpatient data from all HCUP Partner organizations are expected within 12 months from the close of each calendar year to meet the deadlines for production of the HCUP NIS, NRD, KID and related reports. Partner organizations are encouraged to provide outpatient data within one month of releasing annual files to assure timely development of the HCUP NEDS, which is sampled from the SID and State Emergency Department Databases (SEDD). HCUP may also work with HCUP Partners to obtain quarterly data for HCUP Fast Stats ([www.hcup-us.ahrq.gov/faststats/landing.jsp](http://www.hcup-us.ahrq.gov/faststats/landing.jsp)) to facilitate comparisons of trends in utilization between and across States, as well as planning for emergency preparedness.

### **4. Establish a published price for the data**

AHRQ purchases data at the rates set by each HCUP Partner organization. The organization must have an established rate structure for the purchase of research data, or it must create a standard rate structure.

## **B. Responsibilities of the HCUP Partner Representative**

The individual designated as the HCUP Partner Representative has five core areas of responsibility:

### **1. Assure that agreements are properly and expeditiously executed**

The HCUP Partner Representative submits contractual agreements to the appropriate individual(s) in their organization for signature, and ensures that signed agreements are forwarded to AHRQ's Primary Contractor, IBM Watson Health (Watson Health). Agreements include the initial HCUP MOA and periodic amendments. The HCUP Partner may designate a secondary contact (called an "MOA Contact") who coordinates execution of any HCUP agreements or requests on their behalf.

### **2. Assure that HCUP data requests are met in a timely manner**

The Partner Representative alerts HCUP to their processes for requesting research oriented (non-public) data and any relevant requirements and/or deadlines. Processes may include review by an Institutional Review Board (IRB), review by a health data committee/board, clarifying special statutory requirements (e.g., confidential data use agreements), preparation of the data for shipment to Watson Health, and invoicing for the data.

### **3. Resolve questions regarding data provided to HCUP**

When converting Partner-supplied data into HCUP databases, HCUP programmers may have questions regarding the submitted data. The Partner Representative is asked to facilitate obtaining answers to these questions from his/her staff or vendors. The HCUP Partner Representative may designate a programmer or other staff as a “Technical Contact” to handle data-related questions, including inquiries about database content and documentation.

### **4. Provide representation at HCUP Partner activities**

AHRQ hosts HCUP Partner activities such as Webinars and workgroups, which Partner Representatives are encouraged to attend. The purpose of these activities is to provide a forum for AHRQ and the HCUP Partners to share information surrounding the accomplishments and challenges related to collecting, disseminating, and protecting data. These activities provide a setting for the exchange of ideas and insights between experts in the field of health care data. Topics of discussion typically include new HCUP initiatives, data privacy and security, the timeliness and quality of health care data, expansion of data types beyond the inpatient setting, changing priorities, and an exchange of information regarding HCUP Partners’ programs and legislative efforts.

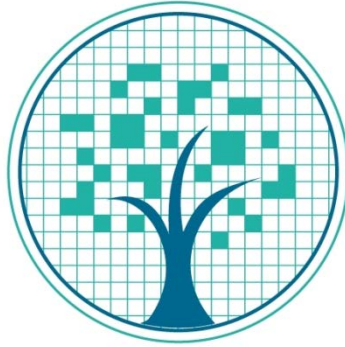
### **5. Designate additional contact persons**

Through its primary contractor, Watson Health, AHRQ maintains regular contact with Partner Representatives to keep them informed of new HCUP developments. AHRQ periodically apprises its Partners of new HCUP products, research uses of HCUP databases, data standards developments affecting the partnership, and upcoming events. The HCUP Partner Representative may designate staff to be the contact person for specific issues, including MOA amendments, annual data requests or applications, routine communications and coordination with HCUP, workgroup participation, and for AHRQ Quality Indicator (QI) initiatives. In addition, Partner Representatives designate an individual to be listed on AHRQ’s public-facing HCUP User Support (HCUP-US) Web site for their State. Other persons within the HCUP Partner organization who wish to be informed of HCUP activities can be included on the mailing list to receive general news about HCUP. The Partner Representative may assign him/herself for any or all of these activities and/or designate other staff members within their organization.

If you would like to clarify these requirements and responsibilities, or if you believe that your organization cannot meet all of these requirements and responsibilities, please contact either of the following individuals:

Carol Stocks, Ph.D., R.N.  
AHRQ  
HCUP Project Manager  
(301) 427-1422  
[Carol.Stocks@ahrq.hhs.gov](mailto:Carol.Stocks@ahrq.hhs.gov)

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**H·CUP**

HEALTHCARE COST AND UTILIZATION PROJECT

## **ONLINE RESOURCES**

**2019**

## HCUP ONLINE RESOURCES

### HCUP USER SUPPORT WEB SITE

#### The Public Access HCUP-US Web Site

The Healthcare Cost and Utilization Project (HCUP) User Support (HCUP-US) Web site – [www.hcup-us.ahrq.gov](http://www.hcup-us.ahrq.gov) – provides detailed information on HCUP databases, including: the online purchase of HCUP databases; free tools and software; database documentation; HCUP publications; and access to technical support.

- **Home page** – Introduces HCUP, its databases, products, and support services, including a link for joining the Agency for Healthcare Research and Quality's (AHRQ) HCUP mailing list.
- **Databases** – Includes descriptions of the HCUP databases, with detailed technical documentation, related reports, and Data Use Agreement (DUA) requirements.
- **Tools and Software** – Provides links to HCUPnet, the AHRQ Quality Indicators™ (QIs), HCUP Fast Stats, and other HCUP analytic tools. HCUP tools and software have been developed by AHRQ to enhance the value of administrative health care data. These analytic tools utilize clinical measures and include the Clinical Classifications Software (CCS), Chronic Condition Indicator (CCI), Elixhauser Comorbidity Software, Procedure Classes, Surgery Flags, and Utilization Flags. Many of HCUP's tools have also been converted to beta versions for use with ICD-10-CM/PCS data and will continue to undergo refinements over the next several years to adjust discontinuities between ICD-9-CM and ICD-10-CM/PCS tools. HCUP also offers supplemental files designed to augment and enhance the HCUP databases. These include Cost-to-Charge Ratio (CCR) Files, Hospital Market Structure (HMS) Files, Supplemental Variables for Revisit Analyses, American Hospital Association (AHA) Linkage Files, Nationwide Inpatient Sample (NIS) and Kids' Inpatient Database (KID) Trend Weights Files (NIS and KID Trend Weights Files), and NIS Hospital Ownership Files.
- **Reports** – Includes links to HCUP publications, including HCUP Statistical Briefs, HCUP Methods Series, HCUP Infographics, Topical Reports on priority populations, Inpatient Stays Involving Malnutrition, Clostridium Difficile Hospitalizations, and Mental Health and Substance Use Disorders. The page also includes Research Spotlights and a search feature for peer-reviewed journal articles and other publications that use HCUP data and/or tools and software. An ICD-10-CM/PCS Resources page summarizes issues for researchers using HCUP and other administrative databases that include ICD-10-CM/PCS coding. This page documents key differences in the structure of HCUP databases due to the transition, provides general guidance and forewarning to users analyzing outcomes that may be impacted by the transition to ICD-10-CM/PCS, and lists other helpful Federal or State Web resources.
- **HCUP Fast Stats** – HCUP Fast Stats provides easy access to the latest HCUP-based statistics on health information topics at State and national levels. HCUP Fast Stats uses visual statistical displays in stand-alone graphs, trend figures, or simple tables to convey complex information at a glance. Information is updated regularly (quarterly or annually, as newer data become available). HCUP Fast Stats currently includes three topics: State Trends in Hospital use by Payer, National Hospital Utilization and Costs, and Opioid-Related Hospital Use, National and State, including new interactive maps.

- **News and Events** – Contains the collection of quarterly HCUP e-News issues, HCUP Announcements, a calendar of events, databases, and product releases, HCUP Outstanding Article of the Year Awards, and the HCUP Virtual Exhibit Booth.
- **Purchase HCUP Data** – Applications for Nationwide and State Databases, as well as requests for complimentary supplemental files that augment information contained in these HCUP databases, may be submitted through the online HCUP Central Distributor. All users interested in purchasing HCUP databases are required to execute an online DUA as well as complete the required HCUP DUA training course. HCUP Nationwide Databases are delivered via secure download from the HCUP-US Web site. Purchased State Databases are delivered on hard copy media (DVD).
- **Technical Assistance** – Provides information for users, including detailed database overviews, access to the Central Distributor Web page for ordering HCUP databases, HCUP Frequently Asked Questions (FAQs), HCUP publishing requirements, an interactive HCUP Overview Course, the HCUP Online Tutorial Series, the HCUP DUA Training Course, and contact information for technical support and for purchasing HCUP databases.
- **Data Innovations** – Provides information about activities as well as products and tools sponsored by AHRQ to improve and enhance clinical content, race/ethnicity data, laboratory data, and collection of “Present on Admission (POA)” indicators in administrative databases. Resources are also available for researchers using HCUP and other administrative databases that include ICD-10-CM/PCS coding.

## The Secure HCUP-US Partners Section

A username and password are required to access the secure Partners section of the HCUP-US Web site. To gain access, Partners should log in to [www.hcup-us.ahrq.gov/login.jsp](http://www.hcup-us.ahrq.gov/login.jsp). This section of the HCUP-US Web site contains information and documents of specific interest HCUP Partner organizations.

The Partners section provides easy navigation to Partnership information and topics from HCUP, including:

- **Map of HCUP Partner Organizations** – Includes hyperlinks to Partner data organization Web sites.
- **Partner Events and Activities**
  - **What’s New – Partner Updates** – Features items from the HCUP Partner Calendar that may be of particular interest.
  - **Partner Calendar** – Provides Partners with information about upcoming and recent HCUP events and initiatives. An archive of all events is also available.
  - **Partner Meetings** – Provides agendas, slides, minutes, and other meeting materials from the HCUP Partner Webinar series.
  - **Partner Workgroups** – Includes slides, minutes and materials from periodic workgroups. Recent meetings include presentations on Cross-Border Hospitalization Data Exchange, Introduction to Patient Identifiers and CMS MACRA Policy, All Payer Claims Data (APCD) Linkage with Hospital Discharge Data, and Payer Typology.

- **Partner Contacts** – Contains contact information for Partner representatives and Web sites. HCUP team contacts are provided in a separate section for questions and feedback.
- **MOA Partnership Information** – Includes documents used to formalize the HCUP Partnership (sample HCUP Memorandum of Agreement (MOA), Data Security Plan, and other references), Central Distributor overview for Partners, information related to the redesign of the 2012 NIS, and AHRQ uses of HCUP data including links to Partner materials for the National Healthcare Quality and Disparities Report (QDR), and other resources. Partners may request a copy of the “My HCUP Data Elements” State-specific report for all data elements supplied to HCUP by their organization and released on HCUP databases.
- **HCUP Partner Resources**
  - **Exclusive Tools and Reports for Partners** – Includes analytic tools and reports designed in response to Partner requests for more statistical feedback on data quality and editing, and to improve data collection. Available tools include ICD-10-CM/PCS Resources and Code Edits; Border Crossing Reports (including tables and graphs for overall, alcohol-related, and substance-use related hospital stays); Race Data Quality Tables; and Toolkits for collecting enhanced data. Previously issued reports and resources are available in the archives section.
  - **National Data Standards** – Provides information on issues related to national data standards including summaries of the National Uniform Billing Committee (NUBC) and the National Uniform Claims Committee (NUCC) meetings and other important data standards topics of current interest such as Cross-Border Hospitalization Data Exchanges. Previous summaries, highlighted topics, and links to national data standards Web sites are available in the archive section.
  - ***Clostridium Difficile* Infection (CDI) Toolkit** – Includes a comprehensive set of materials for data organizations and stakeholders ranging from links to national initiatives, educational materials, and national and State reports.
  - **Community-Level Statistics** – Includes presentation slides from the November 2014 and November 2015 HCUP Partners Webinars, which introduced the Community-Level Statistics topic that was launched on HCUPnet in late 2013, and discussed new features added to the Community-Level Statistics pathway in 2014. Community-Level Statistics provide information by State, county, and sub-State region (groups of counties) for hospital stays overall, by various characteristics, by AHRQ Prevention Quality Indicators (PQIs) and Pediatric Quality Indicators (PDIs), as well as displays of statistics by county-level maps. Features added in 2018 include alcohol and other substance use statistics, aggregate year ranges, maps, and U.S.–Mexico border statistics. For more information, see HCUPnet below.
  - **Readmissions Activities** – Includes methods on the development of the Supplemental Variables for Revisit Analyses from workgroup sessions held in 2009 and slides from the HCUP Readmissions Methods Webinar held in 2012. Contains methods used to identify patient revisits and readmissions across time and hospital settings.
  - **Race and Ethnicity Activities** – Includes useful information on racial and ethnic disparities in health care, resources for improving race and ethnicity data collection, related data measurement issues, and materials from workgroups held with Partners.

- **Archives** – The archives section provides Partners with a variety of previously issued reports and resources. These include resources related to data collection and coding of inpatient and outpatient data; reports on topics such as external cause of injury codes (E codes), observation status, and encrypted patient identifiers; and archival materials mentioned above.
- **HCUP Information**
  - **HCUP Summary Fact Sheet** – Provides a succinct overview of HCUP.
  - **HCUP Description** – Provides a detailed description of HCUP.
  - **HCUP Project Overview** – Contains copies of HCUP Annual Activities Reports, as well as an electronic version of the current HCUP Project Overview Binder.

For more information on the password-protected HCUP-US Partners section or to receive a username and password, please contact Kathy Hickey at Watson Health ([Kathy.Hickey@us.ibm.com](mailto:Kathy.Hickey@us.ibm.com)).

## HCUPNET

HCUPnet – available at [www.hcupnet.ahrq.gov](http://www.hcupnet.ahrq.gov) – is a free, online query system that provides instant access to precalculated statistics and data tables based on HCUP data. Using HCUPnet's easy, step-by-step query system, users can generate tables and graphs on national statistics and trends for community hospitals in the United States. In addition, State, region, and county-level statistics are available for those States that have agreed to participate. HCUPnet provides statistics on 30-day readmissions to the hospital based on the Nationwide Readmissions Database (NRD).

HCUPnet has query paths that allow users to generate national, regional, and State estimates on visits for children, mental health and substance abuse, and emergency department visits. HCUPnet also provides community-level statistics for participating HCUP Partners, which includes the number of hospital discharges, length of stay, costs by diagnostics categories and procedures, and AHRQ Prevention Quality Indicators (PQIs) and Pediatric Quality Indicators (PDIs).

HCUPnet generates statistics using data from HCUP's NIS, Kids' Inpatient Database (KID), Nationwide Emergency Department Sample (NEDS), NRD, State Inpatient Databases (SID), State Emergency Department Databases (SEDD), and State Ambulatory Surgery and Services Databases (SASD).

## AHRQ QUALITY INDICATORS (QIs)

AHRQ QIs – available at [www.qualityindicators.ahrq.gov](http://www.qualityindicators.ahrq.gov) – are measures of healthcare quality that make use of readily available hospital inpatient administrative data. The AHRQ QIs may be used with HCUP data to highlight potential quality concerns, identify areas that need further study and investigation, and track changes over time. AHRQ revised its naming approach to better reflect the fiscal year in which the software was released rather than the incremental version number. The current versions of the software are called SAS QI v2018 ICD-10-CM/PCS (Non-risk Adjusted) and WinQI v2018 ICD-10-CM/PCS (Non-risk Adjusted) ("v2018 software). The v2018 software is currently available for all four QI modules for use with ICD-10-CM/PCS data and includes numerators, denominators, and observed rates; however, it does not include risk-adjustment, smoothed rates, and calculations of provider-level

composites. Risk-adjusted rates cannot be added to the software until a full-year reference population is available for testing. AHRQ anticipates including the risk adjustment in the next version of the software, v2019, expected to be released in Spring/Summer of 2019.

The AHRQ QIs consist of four modules measuring various aspects of quality:

- **Prevention Quality Indicators (PQIs)** identify hospital admissions that evidence suggests could have been avoided, at least in part, through high-quality outpatient care.
- **Inpatient Quality Indicators (IQIs)** reflect quality of care inside hospitals including inpatient mortality for medical conditions and surgical procedures; possible overuse, underuse, or misuse of procedures; and volume of procedures for which there is evidence that a higher volume may be associated with lower mortality.
- **Patient Safety Indicators (PSIs)** also reflect quality of care inside hospitals but focus on potentially avoidable complications and iatrogenic events.
- **Pediatric Quality Indicators (PDIs)** reflect both quality of care inside hospitals and identify potentially avoidable hospitalizations among children.

Software and user guides for all four modules are available for download to assist users in applying the AHRQ QIs to their own data.



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## *Sample Memorandum of Agreement*

### **HEALTHCARE COST AND UTILIZATION PROJECT (HCUP) MEMORANDUM OF AGREEMENT**

This Memorandum of Agreement (MOA) is made between the [<organization name>](#), a [<hospital association / State data organization / private data organization>](#), in the State or Commonwealth of [<State name>](#), referred to within this agreement as the “Data Organization,” and the Agency for Healthcare Research and Quality (AHRQ), U.S. Public Health Service, Department of Health and Human Services. The MOA establishes conditions of participation of the Data Organization and AHRQ in the Healthcare Cost and Utilization Project (HCUP).

This MOA supersedes the previous Agreement executed on [<date>](#) and will remain in effect until replaced or terminated by either party.

#### **I. DESCRIPTION OF HCUP**

HCUP builds on the data collection efforts of State data organizations, hospital associations, and private data organizations to create a national information resource of encounter-level health care data. HCUP is made possible through the voluntary participation of Data Organizations that allow the use of their data for the project to create research databases, build software tools for use with administrative data, write research publications, and produce other information resources disseminated by AHRQ. These products inform research on a broad range of health policy issues, including cost and quality of health services, medical practice patterns, access to health care programs, and outcomes of treatments. Further information about the project is available on the HCUP-US Web site: [www.hcup-us.ahrq.gov](http://www.hcup-us.ahrq.gov). Web site references in this document are provided for informational purposes only unless stated otherwise.

The release of information collected, assembled, or used by AHRQ is controlled by Section 944(c) of the Public Health Service Act (42 U.S.C. 299c-3(c)) (“the AHRQ Confidentiality Statute”). This Act precludes releasing information that might identify individuals who have been described in, or who might have been the source of, the information. The AHRQ Confidentiality Statute requires the data collected by AHRQ that identify individuals or establishments be used only for the purpose for which they were supplied. AHRQ and authorized contractor staff with access to HCUP data are required to complete privacy training and sign Staff/Contractor Agreements that specify privacy protections and restrictions placed on the use of HCUP data ([www.hcup-us.ahrq.gov/partner/MOARef/StaffContractorAgreement.pdf](http://www.hcup-us.ahrq.gov/partner/MOARef/StaffContractorAgreement.pdf)).

## II. LEVELS OF PARTICIPATION FOR DATA ORGANIZATIONS

### A. DESCRIPTION OF BASIC PARTICIPATION

All Data Organizations that participate in HCUP (referred to as “HCUP Partners”) meet the criteria for inclusion of State-level data in HCUP, or “basic participation.” This means that a Data Organization has agreed to the inclusion of their data in the Intramural<sup>1</sup> State Inpatient Databases (SID) and the National Inpatient Sample (NIS). A brief description of these databases follows.

1. Intramural State Inpatient Databases (Intramural SID) – The HCUP Intramural SID are produced annually and contain 100 percent of inpatient discharge records for all or almost all hospitals in States participating in HCUP. Intramural databases are available only to authorized AHRQ staff, their contractors, and guest researchers.<sup>2</sup> The data are used for research, aggregate statistical reporting, and development of software tools that assist in analysis of administrative health care data. More information about the SID is available in the *State Inpatient Databases Overview* on HCUP-US: [www.hcup-us.ahrq.gov/sidoverview.jsp](http://www.hcup-us.ahrq.gov/sidoverview.jsp).
2. National Inpatient Sample (NIS)<sup>3</sup> – The HCUP NIS approximates a 20 percent stratified sample of all discharges from U.S. community hospitals, excluding rehabilitation and long-term acute care hospitals. The NIS is produced annually, and the sample is designed to be nationally representative. The NIS is referred to as a “restricted-access public release database”<sup>4</sup> because it is made available to researchers and analysts outside of AHRQ. Dissemination of restricted-access public release databases is accomplished through a mechanism called the HCUP Central Distributor (described below in Section II.D). More information about the NIS is available in the *National Inpatient Sample Overview* on HCUP-US: [www.hcup-us.ahrq.gov/nisoverview.jsp](http://www.hcup-us.ahrq.gov/nisoverview.jsp).

### B. DESCRIPTION OF ADDITIONAL PARTICIPATION – NATIONWIDE DATABASES

Participation in the additional nationwide databases such as the Kids’ Inpatient Database (KID), the Nationwide Emergency Department Sample (NEDS), and the Nationwide Readmissions Database (NRD) is optional; however, HCUP Data Organizations customarily contribute data to these databases.

1. Kids’ Inpatient Database (KID) – The KID is a sample of pediatric inpatient discharge records (for newborns, children, and adolescents) extracted from the collection of HCUP Intramural SID and produced approximately every three years. The KID is made available as a restricted-access public release database to researchers and analysts outside of AHRQ through the HCUP Central Distributor. More information about the KID is provided in the *Kids’ Inpatient Database Overview* on HCUP-US: [www.hcup-us.ahrq.gov/kidoverview.jsp](http://www.hcup-us.ahrq.gov/kidoverview.jsp).
2. Nationwide Ambulatory Surgery Sample (NASS) - The NASS consists of a sample of hospital-owned outpatient surgery facilities, either within the hospital itself or in hospital-owned free-standing facilities, constructed from the HCUP Intramural State Ambulatory

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<sup>1</sup> “Intramural” refers to activities that take place under the direction of AHRQ staff and are bound by AHRQ policies and procedures.

<sup>2</sup> “Guest researchers” is a term used by AHRQ to describe academic scientists, Federal employees, or graduate/PhD level students who have been authorized to use Agency resources to further their research or training. For specific approved projects, guest researchers are sometimes given access to HCUP intramural data under supervision and guidance of a member of the HCUP team.

<sup>3</sup> Nationwide Inpatient Sample was renamed National Inpatient Sample to reflect sample design changes effective with the 2012 NIS.

<sup>4</sup> “Restricted-access public release” means the HCUP State and nationwide data are available to the public under certain restricted conditions that include an application process for receipt of State databases, an electronic training course, and submission of a signed HCUP Data Use Agreement for State and nationwide databases.

Surgery and Services Databases (SASD). The NASS is produced annually and represents approximately 50 percent of hospital-owned outpatient surgery facilities in the U.S., including all of their in-scope major surgeries. The NASS enables researchers to analyze selected ambulatory surgery utilization patterns and supports public health professionals, administrators, policymakers, and clinicians in their decision-making regarding this critical source of care. The NASS tracks information about ambulatory surgery visits across the country, including geographic, hospital and patient characteristics, and the nature of visits (e.g., types of surgeries performed). Weights are provided to calculate national estimates. Starting with 2016, the NASS is made available as a restricted-access public release database to researchers and analysts outside of AHRQ through the HCUP Central Distributor. More information about the NASS will be available on HCUP-US when the files are released in calendar year 2019.

3. **Nationwide Emergency Department Sample (NEDS)** – The NEDS consists of a sample of hospital-based emergency departments (EDs) from the collection of the HCUP Intramural SID and State Emergency Department Databases (SEDD). The database contains records for patients that are treated and released from the ED, as well as patients admitted to the hospital through the ED. The sampling strategy for the NEDS approximates a 20 percent stratified sample of U.S. community hospitals with emergency departments and includes all ED-related discharges from the selected hospitals. Starting with 2006 data, the NEDS is made available as a restricted-access public release database to researchers and analysts outside of AHRQ through the HCUP Central Distributor. More information about the NEDS is available in the *Nationwide Emergency Department Sample Overview* on HCUP-US: [www.hcup-us.ahrq.gov/nedsoverview.jsp](http://www.hcup-us.ahrq.gov/nedsoverview.jsp).
4. **Nationwide Readmissions Database (NRD)** – The NRD is a calendar-year, discharge-level database constructed from the HCUP SID with verified patient linkage numbers that can be used to track a person across hospitals within a State. The NRD was designed to support various types of analyses of national readmission rates. The database includes discharges for patients with and without repeat hospital visits in a year and those who have died in the hospital. Repeat stays may or may not be related. The criteria to determine the relationship between hospital admissions is left to the analyst using the NRD. The NRD was constructed as a sample of convenience consisting of 100 percent of the eligible discharges. Discharge weights for national estimates are developed using the target universe of U.S. community hospitals (excluding rehabilitation and long-term acute care hospitals) in the United States. Starting with data year 2013, the NRD is made available as a restricted-access public release database to researchers and analysts outside of AHRQ through the HCUP Central Distributor. More information about the NRD is available in the *Nationwide Readmissions Database Overview* on HCUP-US: [www.hcup-us.ahrq.gov/nrdoverview.jsp](http://www.hcup-us.ahrq.gov/nrdoverview.jsp).

### **C. DESCRIPTION OF ADDITIONAL PARTICIPATION - OUTPATIENT DATA**

Participation in the following Intramural outpatient databases is optional.

1. **Intramural State Ambulatory Surgery and Services Databases (Intramural SASD)** – The Intramural SASD are produced annually and are available only to authorized AHRQ staff, their contractors, and guest researchers. The SASD contain data for ambulatory surgery and other outpatient services from hospital-owned facilities. In addition, some States provide ambulatory surgery and outpatient services from nonhospital-owned facilities. More information about the SASD is available in the *State Ambulatory Surgery and Services Databases Overview* on HCUP-US: [www.hcup-us.ahrq.gov/sasdooverview.jsp](http://www.hcup-us.ahrq.gov/sasdooverview.jsp).

2. Intramural State Emergency Department Databases (**Intramural SEDD**) – The Intramural SEDD are produced annually and are available only to authorized AHRQ staff, their contractors, and guest researchers. The SEDD contain data for outpatient encounters in hospital-affiliated emergency departments for visits that do not result in hospitalizations. More information about the SEDD is available in the *State Emergency Department Databases Overview* on HCUP-US: [www.hcup-us.ahrq.gov/seddoverview.jsp](http://www.hcup-us.ahrq.gov/seddoverview.jsp).

#### **D. DESCRIPTION OF ADDITIONAL PARTICIPATION - HCUP CENTRAL DISTRIBUTOR STATE DATABASES**

Participation in release of State Databases through the HCUP Central Distributor is optional. On behalf of participating Data Organizations, AHRQ prepares and distributes the following restricted-access public release versions of HCUP databases for research use outside of AHRQ:

- HCUP Central Distributor State Inpatient Databases (**CD-SID**)
- HCUP Central Distributor State Ambulatory Surgery and Services Databases (**CD-SASD**)
- HCUP Central Distributor State Emergency Department Databases (**CD-SEDD**).

AHRQ's dissemination of databases through the HCUP Central Distributor is provided at no cost to participating Data Organizations. Each Data Organization sets the purchase price for their HCUP State Databases, and payments received from sales are reimbursed to the Data Organization through AHRQ's contractors. Each Data Organization determines the data elements included in the HCUP Central Distributor version of their SID, SASD, and SEDD, within the AHRQ-defined framework applied to all databases.

The HCUP Central Distributor is described more fully on the "HCUP MOAs and Partnership Documentation" section of HCUP-US. This information includes:

- HCUP Central Distributor Overview: [www.hcup-us.ahrq.gov/partner/MOARef/CDoverview.pdf](http://www.hcup-us.ahrq.gov/partner/MOARef/CDoverview.pdf)
- HCUP Central Distributor Reimbursement Procedures: [www.hcup-us.ahrq.gov/partner/MOARef/CDreimbursement.pdf](http://www.hcup-us.ahrq.gov/partner/MOARef/CDreimbursement.pdf)
- Sample HCUP DUA: [www.hcup-us.ahrq.gov/partner/MOARef/HCUPDUA.pdf](http://www.hcup-us.ahrq.gov/partner/MOARef/HCUPDUA.pdf).

### **III. RESPONSIBILITIES OF AHRQ**

AHRQ (directly or through its contractors):

1. Agrees to purchase the data files in Section IV.A.1 below, consistent with provisions of applicable Federal regulations. These regulations require AHRQ to purchase data at a reasonable published price established for other comparable data purchasers.
2. Agrees to abide by the terms of the HCUP Data Security Plan provided on HCUP-US: [www.hcup-us.ahrq.gov/partner/MOARef/DataSecurityPlan.pdf](http://www.hcup-us.ahrq.gov/partner/MOARef/DataSecurityPlan.pdf). Changes to the HCUP Data Security Plan will be reported to HCUP Data Organizations.
3. Agrees to be the custodian of the data files provided by the Data Organization, and as such, will be responsible for observing all conditions of use and ensuring that authorized contractors to whom it provides HCUP data agree to the same restrictions and conditions.

4. Agrees to provide a list of data elements included in the HCUP databases for review by the Data Organization. The list is available in the electronic *HCUP Data Elements Table* on HCUP-US ([www.hcup-us.ahrq.gov/partner/MOARef/HCUPdata\\_elements.pdf](http://www.hcup-us.ahrq.gov/partner/MOARef/HCUPdata_elements.pdf)). Data elements included in HCUP databases may change over time; should this occur, changes will be reported to HCUP Data Organizations.
5. Agrees not to alter the data element listings included in Table 1 of this Agreement, *HCUP Intramural State Databases – Approval for Selected Data Elements*, or Table 2, *HCUP Central Distributor (CD) Databases – Restrictions on Release of Data Elements*, without prior approval from your Data Organization.
6. Agrees not to release outside of AHRQ (its authorized staff, contractors, and guest researchers) any data elements obtained from the Data Organization without the express written permission of the Data Organization other than those agreed upon and authorized in this Agreement and any future amendments.
7. Agrees to these additional non-statutory requirements, as specified by the Data Organization. Describe: \_\_\_\_\_  
\_\_\_\_\_
8. Approximately two (2) years after creating the files for a given data year, or at the conclusion of a contract period, all source data received from the Data Organization will be destroyed, returned, or transferred to a subsequent authorized primary contractor. When source data are destroyed, certification of the data destruction will be sent to the Data Organization.
9. With the exception of source data, there is no expiration date for AHRQ's continued use of databases and products created under this agreement, within the restrictions of this agreement.

#### IV. RESPONSIBILITIES OF THE DATA ORGANIZATION

##### A. PROVIDING DATA FOR HCUP

The Data Organization:

1. (a) Agrees to supply for HCUP the Data Organization's inpatient data in annual or more frequent periodic data sets, including: data already provided for calendar years <1998-20XX>; and future years beginning <20XX>. -OR, for new MOA- ... more frequent periodic data sets, beginning with calendar year <20XX>.
- (b) Agrees to supply for HCUP the Data Organization's following data in annual or more frequent periodic data sets, **if listed in Section VI. Database Participation**:
  - i. Ambulatory Surgery and Services Data
  - ii. Emergency Department Data
  - iii. Observation Services Data Files
  - iv. Physician Data Files
  - v. Other
2. (a) Agrees to permit AHRQ to use the supplied file(s) for development of the following HCUP databases:

- i. Intramural State Inpatient Databases (SID)
- ii. National Inpatient Sample (NIS)

(b) Agrees to permit AHRQ to use the supplied file(s) for the development of the following HCUP databases or files, **if listed in Section VI. Database Participation:**

- i. Kids' Inpatient Database (KID)
- ii. Nationwide Ambulatory Surgery and Services Database (NASS)
- iii. Nationwide Emergency Department Sample (NEDS)
- iv. Nationwide Readmissions Database (NRD)
- v. Intramural State Ambulatory Surgery and Services Databases (SASD)
- vi. Intramural State Emergency Department Databases (SEDD)
- vii. Intramural Observation Services (OS) File
- viii. Intramural Physician Files

(c) Agrees to supply to AHRQ the requested data elements for development of the HCUP Intramural State Databases, listed in the electronic *HCUP Data Elements Table\** on HCUP-US, if collected by the Data Organization; further agrees to allow use of the data elements requested by AHRQ in Table 1 of this Agreement.

(d) Agrees to allow AHRQ to release on the NIS and other restricted-access public release databases, **if listed in Section VI. Database Participation,** the requested data elements listed in the electronic *HCUP Data Elements Table\** on HCUP-US, with the exception of the data elements explicitly restricted in Table 2 of this Agreement.

\*The full list of data elements used in the HCUP databases is maintained in the electronic *HCUP Data Elements Table* on HCUP-US: [www.hcup-us.ahrq.gov/partner/MOAREf/HCUPdata\\_elements.pdf](http://www.hcup-us.ahrq.gov/partner/MOAREf/HCUPdata_elements.pdf).

## **B. *RELEASING HCUP CENTRAL DISTRIBUTOR STATE DATABASES***

The Data Organization:

1. (a) Agrees to allow AHRQ to release to authorized requestors, through the HCUP Central Distributor, the following restricted-access public release databases, **if listed in Section VI. Database Participation:**

- i. HCUP Central Distributor SID
- ii. HCUP Central Distributor SASD
- iii. HCUP Central Distributor SEDD

(b) Agrees to allow AHRQ to release on the HCUP Central Distributor State Databases the requested data elements listed in the electronic *HCUP Data Elements Table\** on HCUP-US, with the exception of the data elements explicitly excluded in Table 2 of this Agreement.

Data Organizations will be re-contacted periodically and asked to review and give approval for new data elements proposed to be added to their HCUP Central Distributor State Databases.

\*The full list of data elements released on the HCUP Central Distributor State Databases is maintained in the electronic *HCUP Data Elements Table* on HCUP-US: [www.hcup-us.ahrq.gov/partner/MOARef/HCUPdata\\_elements.pdf](http://www.hcup-us.ahrq.gov/partner/MOARef/HCUPdata_elements.pdf).

### **C. *RELEASING HOSPITAL-LEVEL SUPPLEMENTAL FILES***

The Data Organization:

1. (a) Agrees to allow AHRQ to release to authorized requestors, through the HCUP Central Distributor, the following hospital-level supplemental files, designed for use with the HCUP restricted-access public release databases, **if listed in Section VI. Database Participation:**
  - i. Hospital Market Structure (HMS) Files
  - ii. Cost-to-Charge Ratio (CCR) Files
  - iii. Price-to-Charge Ratio (PCR) Files

Full descriptions of the HCUP Supplemental Files are available at: [www.hcup-us.ahrq.gov/tools\\_software.jsp](http://www.hcup-us.ahrq.gov/tools_software.jsp).

(b) Agrees to allow AHRQ to release on the HCUP Hospital-Level Supplemental Files the requested data elements listed in the electronic *HCUP Data Elements Table*\* on HCUP-US, with the exception of the data elements explicitly excluded in Table 2 of this Agreement.

\*The full list of data elements used in HCUP supplemental files is maintained in the electronic *HCUP Data Elements Table* on HCUP-US: [www.hcup-us.ahrq.gov/partner/MOARef/HCUPdata\\_elements.pdf](http://www.hcup-us.ahrq.gov/partner/MOARef/HCUPdata_elements.pdf).

### **D. *RESEARCH USES OF THE DATA***

The Data Organization:

1. (a) Agrees to allow authorized AHRQ staff, their contractors, and guest researchers to utilize HCUP intramural and restricted-access public release databases for research, tool development, and aggregate statistical reporting. Examples of such use include, but are not limited to research such as:
  - i. The National Healthcare Quality and Disparities Report (QDR): [www.hcup-us.ahrq.gov/partner/nhdr\\_nhdr.jsp](http://www.hcup-us.ahrq.gov/partner/nhdr_nhdr.jsp).
  - ii. Conducting national and State-level health research studies, public health studies, and studies related to administrative data.
  - iii. Conducting studies related to the development and testing of software tools for the analysis of administrative data.
- (b) Tools and Products: [www.hcup-us.ahrq.gov/partner/MOARef/toolsandproducts.pdf](http://www.hcup-us.ahrq.gov/partner/MOARef/toolsandproducts.pdf).
- (c) Aggregate statistical reporting of national data and, where permitted by data organizations under separate agreement, State-level and community-level data, on web-based software tools such as:
  - i. HCUPnet: [www.hcupnet.ahrq.gov](http://www.hcupnet.ahrq.gov)

- ii. QR/DRnet: [www.nhqdrnet.ahrq.gov/inhqdrdr/](http://www.nhqdrnet.ahrq.gov/inhqdrdr/)
  - iii. Fast Stats: [www.hcup-us.ahrq.gov/faststats/landing.jsp](http://www.hcup-us.ahrq.gov/faststats/landing.jsp)
- (d) Dissemination of aggregate statistical results from research and analyses using the HCUP data in peer-reviewed journal articles, other publications, conference presentations, and tables developed to provide assistance to other organizations for research and public health purposes.
- i. The HCUP Annual Activities Report:  
[www.hcup-us.ahrq.gov/partner/MOAREf/annual\\_activities.pdf](http://www.hcup-us.ahrq.gov/partner/MOAREf/annual_activities.pdf)

**TABLE 1: HCUP INTRAMURAL STATE DATABASES –  
APPROVAL FOR SELECTED DATA ELEMENTS**

**State Name**

**Approved By:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(Please Print)

**The Data Organization agrees to supply to AHRQ the data elements listed in the electronic *HCUP Data Elements Table* on HCUP-US for AHRQ’s development and use of the HCUP Intramural State Databases. AHRQ requests specific approval to include the data elements listed in Table 1 below. Data elements have been indicated by “Will supply”, “Collected/Not supplied” or “Not collected” based on guidance from your Data Organization. “N/A” means HCUP does not include this data element in the listed database. Please confirm these designations or notify HCUP if additional data elements in this table can be supplied by your organization.**

Requested Data Elements: Used to create de-identified HCUP Data Elements	Converted to these HCUP Data Elements	Intramural State Databases		
		Inpatient Data	Ambulatory and Services Surgery Data	Emergency Department Data
<b>EXAMPLE:</b> Discharge date (month, day, year)	Discharge year and quarter; LOS	<i>Will supply</i>	<i>Collected/Not supplied</i>	<b>File not requested</b>
Encrypted person number, i.e., unique person identifier	HCUP person number (reassigned a unique code) <sup>5</sup> ; Visit linkage variable			
Encrypted medical record number	MRN reassigned a unique code			
Date of birth (month, day, and year)	Age in years; Age in months (if <11 years); Age in days (if <1 year)			
Admission/Start of care date (month, day, year)	Admission month; Admission on weekend; LOS			
Discharge date (month, day, year)	Discharge year, quarter and month; LOS			
Date of principal procedure (month, day, year) – for ICD procedure codes	Days from admission to procedure			
Dates of secondary procedures (month, day, year) – for ICD procedure codes	Days from admission to procedure			
Dates of CPT/HCPCS procedures (month, day, year – from patient file)	Days from admission to procedure	N/A		

<sup>5</sup> The term “reassigned a unique code” refers to a method for masking the original encrypted identification numbers by assigning an arbitrary identification number.

Requested Data Elements: Used to create de-identified HCUP Data Elements	Converted to these HCUP Data Elements	Intramural State Databases		
		Inpatient Data	Ambulatory and Services Surgery Data	Emergency Department Data
Service Date, associated with revenue/ service detail file (month, day, year – from separate rev code layout)	Days from admission to service	N/A		
Onset of Symptom/Illness Date	No derived elements			
Patient ZIP Code (5-digit)	Synthetic (encrypted); Three-digit ZIP Code			
Patient City	No derived elements			
Patient town of residence (e.g., township, borough, parish, or other political entity similar to a county)	No derived elements			
Census tract	No derived elements			
Patient Country (if not U.S.)	No derived elements			
Physician ID numbers (as many as are collected)	Reassigned a unique code			
Physician name (as many as are collected by the organization)	No derived elements			
<b>Additional Data Elements Requiring Special Approval, as Defined by Data Organization</b>				
EX: Hospital identifier <note: list here only if requires IRB or application approval>	Retained as provided; assigned to HOSPID			
<b>Comments Specific to this State's Supplied Data</b>				

State Name

Date \_\_\_\_\_

Table 2 describes restricted data elements on the Central Distributor Databases and Supplemental Files. “N/A” means HCUP does not include this data element in the listed database or does not release a Supplemental File for this data type.

## Central Distributor Databases

	Central Distributor Databases							
Restricted Data Elements	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD
	HCUP Supplemental Files for Linkage to Central Distributor Databases							
Restricted Data Elements	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD
<b>Cost-to-Charge Ratio (CCR) File:</b>								
<b>Hospital Market Structure (HMS) File:</b>								
<b>Revisit Variables<sup>6</sup></b> Includes VisitLink, a verified synthetic patient number for visit linkage and DaysToEvent, a numerical count variable, to determine timing between events. Both are essential for revisit analyses:								
<b>Price-to-Charge Ratio (PCR) File:</b>								
<b>Further Restrictions (Specific to this State's Data)</b>								
<b>Comments</b>								
<p><b><u>Hospital Identifiers in National Databases:</u></b> Beginning with the 2012 data, the NIS and KID were redesigned to be a sample of discharges rather than a sample of hospitals. State and hospital identifiers were removed from the redesigned databases. State and hospital identifiers have never been included in the NEDS or NRD. Additional information is provided in the 2012 NIS Redesign Report: <a href="http://www.hcup-us.ahrq.gov/reports/methods/2014-04.pdf">www.hcup-us.ahrq.gov/reports/methods/2014-04.pdf</a>.</p> <p><b><u>Supplemental Variables for Revisit Analysis</u></b></p> <p><sup>6</sup> Revisit variables (VisitLink, DaysToEvent) were released as stand-alone supplemental files from 2003-2008. Beginning with 2009, revisit data elements were integrated into the Central Distributor State databases.</p>								

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## V. AGREEMENT OF BOTH PARTIES

Each person signing this Agreement hereby represents that he or she is authorized to enter into this Agreement by the organization for which he or she is signing.

This Agreement is voluntary and shall remain in effect until either party terminates the Agreement through written notification. Provisions of this Agreement may be waived or modified by an agreement in writing signed by the Data Organization and AHRQ.

The undersigned acknowledges these conditions and agrees to abide by them:

By: \_\_\_\_\_  
Data Organization Representative, Signature Date

By: \_\_\_\_\_  
AHRQ Representative, Signature Date

Data Organization Representative: \_\_\_\_\_  
(Please Print)

Name of Data Organization: \_\_\_\_\_

Address of Data Organization: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_

AHRQ Representative: Carol Stocks, HCUP Project Manager

Name of Agency: Center for Delivery, Organization, and Markets

Agency for Healthcare Research and Quality

Address of Agency: 5600 Fishers Lane | Room # 07W06 | Mail Stop # 7W25B

Rockville, MD 20857

Telephone: 301-427-1422 Fax: 301-427-1430 Email: Carol.Stocks@ahrq.hhs.gov

These documents are made part of this Agreement by reference:

1. HCUP Data Elements: [www.hcup-us.ahrq.gov/partner/MOAREf/HCUPdata\\_elements.pdf](http://www.hcup-us.ahrq.gov/partner/MOAREf/HCUPdata_elements.pdf)
2. HCUP Data Security Plan: [www.hcup-us.ahrq.gov/partner/MOAREf/DataSecurityPlan.pdf](http://www.hcup-us.ahrq.gov/partner/MOAREf/DataSecurityPlan.pdf).

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## VI. DATABASE PARTICIPATION - **State Name**

Approval of Database Participation supersedes previous approval on: \_\_\_\_/\_\_\_\_/\_\_\_\_

Approved by: \_\_\_\_\_  
Print Title  
Signature Date

### 1. PROVIDING DATA FOR HCUP

**THE DATA ORGANIZATION AGREES TO SUPPLY** for HCUP, in annual or more frequent periodic data sets, the following data types:

Data Type	Beginning Data Year
Inpatient Discharge Data	<b>Example: 2008</b>
Ambulatory Surgery and Services Data	
Emergency Department Data	
Physician Data	
Observation Stays Data	

### 2. PARTICIPATION IN HCUP DATABASES

**THE DATA ORGANIZATION AGREES TO** permit AHRQ to use the supplied file(s) for the development of the following HCUP databases:

Database	Beginning Data Year
National Inpatient Sample (NIS)	
Kids' Inpatient Database (KID)	
Nationwide Ambulatory Surgery Sample (NASS)	
Nationwide Emergency Department Sample (NEDS)	
Nationwide Readmissions Database (NRD)	
Intramural State Inpatient Database (SID)	
Intramural State Ambulatory Surgery and Services Databases (SASD)	
Intramural State Emergency Department Database (SEDD)	
Intramural Physician Files	
Intramural Observation Stay Files	

### 3. RELEASING HCUP CENTRAL DISTRIBUTOR STATE DATABASES

**THE DATA ORGANIZATION AGREES TO** allow AHRQ to release to authorized requestors, through the HCUP Central Distributor, the following restricted-access public release databases:

Database	Beginning Data Year
National Inpatient Sample (NIS)	
Kids' Inpatient Database (KID)	
Nationwide Ambulatory Surgery Sample (NASS)	
Nationwide Emergency Department Sample (NEDS)	
Nationwide Readmissions Database (NRD)	
Central Distributor SID	
Central Distributor SASD	
Central Distributor SEDD	

### 4. RELEASING HOSPITAL-LEVEL SUPPLEMENTAL FILES

**THE DATA ORGANIZATION AGREES TO** allow AHRQ to release to authorized requestors, through the HCUP Central Distributor, the following hospital-level supplemental files, designed for use with the HCUP restricted-access public release databases:

Supplemental Files/Variables	Beginning Data Year
Hospital Market Structure (HMS) Files	
Cost-to-Charge Ratio (CCR) Files	
Price-to-Charge Ratio (PCR) Files	
Revisit Variables for Central Distributor State Databases (Includes VisitLink, a verified synthetic patient number and DaystoEvent, a numerical count)	

variable to determine timing between events.) <i>Revisit data elements were released as stand-alone supplemental files from 2003-2008. Beginning with 2009, revisit data elements were integrated into the Central Distributor State files.</i>	
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## **DATA USE AGREEMENT for the Nationwide Databases from the Healthcare Cost and Utilization Project Agency for Healthcare Research and Quality**

This Data Use Agreement (“Agreement”) governs the disclosure and use of data in the HCUP Databases from the Healthcare Cost and Utilization Project (HCUP) which are maintained by the Center for Delivery, Organization, and Markets (CDOM) within the Agency for Healthcare Research and Quality (AHRQ). Any person (“the data recipient”) seeking permission from AHRQ to access HCUP Databases must sign and submit this Agreement to AHRQ or its agent, and complete the online Data Use Agreement Training Course at [www.hcup-us.ahrq.gov](http://www.hcup-us.ahrq.gov), as a precondition to the granting of such permission.

Section 944(c) of the Public Health Service Act (42 U.S.C. 299c-3(c)) (“the AHRQ Confidentiality Statute”), requires that data collected by AHRQ that identify individuals or establishments be used only for the purpose for which they were supplied. Pursuant to this Agreement, data released to AHRQ for the HCUP Databases are subject to the data standards and protections established by the Health Insurance Portability and Accountability Act of 1996 (HIPAA) (P.L. 104-191) and implementing regulations (“the Privacy Rule”). Accordingly, HCUP Databases may only be released in “limited data set” form, as that term is defined by the Privacy Rule, 45 C.F.R. § 164.514(e). HCUP data may only be used by the data recipient for research which may include analysis and aggregate statistical reporting. AHRQ classifies HCUP data as protected health information under the HIPAA Privacy Rule, 45 C.F.R. § 160.103. By executing this Agreement, the data recipient understands and affirms that HCUP data may only be used for the prescribed purposes, and consistent with the following standards:

*No Identification of Persons*—The AHRQ Confidentiality Statute prohibits the use of HCUP data to identify any person (including but not limited to patients, physicians, and other health care providers). The use of HCUP Databases to identify any person constitutes a violation of this Agreement and may constitute a violation of the AHRQ Confidentiality Statute and the HIPAA Privacy Rule. This Agreement prohibits data recipients from releasing, disclosing, publishing, or presenting any individually identifying information obtained under its terms. AHRQ omits from the data set all direct identifiers that are required to be excluded from limited data sets as consistent with the HIPAA Privacy Rule. AHRQ and the data recipient(s) acknowledge that it may be possible for a data recipient, through deliberate technical analysis of the data sets and with outside information, to attempt to ascertain the identity of particular persons. Risk of individual identification of persons is increased when observations (i.e., individual discharge records) in any given cell of tabulated data is  $\leq 10$ . This Agreement expressly prohibits any attempt to identify individuals, including by the use of vulnerability analysis or penetration testing. In addition, methods that could be used to identify individuals directly or indirectly shall not be disclosed, released, or published. Data recipients shall not attempt to contact individuals for any purpose whatsoever, including verifying information supplied in the data set. Any questions about the data must be referred exclusively to AHRQ. By executing this Agreement, the data recipient understands and agrees that actual and considerable harm will ensue if he or she attempts to identify individuals. The data recipient also understands and agrees that actual and considerable harm will ensue if he or she intentionally or negligently discloses, releases, or publishes information that identifies individuals or can be used to identify individuals.

*Use of Establishment Identifiers*—The AHRQ Confidentiality Statute prohibits the use of HCUP data to identify establishments unless the individual establishment has consented. Permission is obtained from the HCUP data sources (i.e., state data organizations, hospital associations, and data consortia) to use the identification of hospital establishments (when such identification appears in the data sets) for research, analysis, and aggregate statistical reporting. This may include linking institutional information from outside data sets for these purposes. Such purpose does *not* include the use of information in the data sets concerning individual establishments for commercial or competitive purposes involving those individual establishments, or to determine the rights, benefits, or privileges of establishments. Data recipients are prohibited from identifying establishments directly or by inference in disseminated material. In addition, users of the data are prohibited from contacting establishments for the purpose of verifying information supplied in the data set. Any questions about the data must be referred exclusively to AHRQ. Misuse of identifiable HCUP data about hospitals or any other establishment constitutes a violation of this Agreement and may constitute a violation of the AHRQ Confidentiality Statute.

**The undersigned data recipients provide the following affirmations concerning HCUP data:**

Protection of Individuals

- I will not release or disclose, and will take all necessary and reasonable precautions to prohibit others from releasing or disclosing, any information that directly or indirectly identifies persons. This includes attempts to identify individuals through the use of vulnerability analysis or penetration testing.
- *[For State Databases]* I will not release or disclose information where the number of observations (i.e., individual discharge records) in any given cell of tabulated data is  $\leq 10$ . The publication of a cell containing a value of 1 to 10 is prohibited.
- *[For Nationwide Databases]* I acknowledge that the release or disclosure of information where the number of observations (i.e., individual discharge records) in any given cell of tabulated data is  $\leq 10$  can increase the risk for identification of persons. I will consider this risk and avoid publication of a cell containing a value of 1 to 10.
- I will not attempt to link, and will prohibit others from attempting to link, the discharge records of persons in the data set with individually identifiable records from any other source.
- I will not attempt to use and will take all necessary and reasonable precautions to prohibit others from using the data set to contact any persons in the data for any purpose.

Protection of Establishments

- I will not publish or report, through any medium, data that could identify individual establishments directly or by inference.
- When the identities of establishments are not provided in the data sets, I will not attempt to use and will take all necessary and reasonable precautions to prohibit others from using the data set to learn the identity of any establishment.
- I will not use and will take all necessary and reasonable precautions to prohibit others from using the data set concerning individual establishments: (1) for commercial or competitive purposes involving those individual establishments; or (2) to determine the rights, benefits, or privileges of individual establishments.
- I will not contact and will take all necessary and reasonable precautions to prohibit others from contacting establishments identified in the data set to question, verify, or discuss data in the HCUP databases.
- *[For Nationwide Databases]* I acknowledge that the HCUP NIS, KID, and NRD may contain data elements from proprietary restricted computer software (e.g., 3M™ APR DRGs) supplied by private vendors to AHRQ for the sole purpose of supporting research and analysis with the HCUP NIS, KID, and NRD. While I may freely use these data elements in my research work using the HCUP NIS, KID, and NRD I agree that I will not use and will prohibit others from using these proprietary data elements for any commercial purpose. In addition, I will enter into a separate agreement with the appropriate organization or firm for the right to use such proprietary data elements for commercial purposes. In particular, I agree not to disassemble, decompile, or otherwise reverse-engineer the proprietary software, and I will prohibit others from doing so.

Limitations on the Disclosure of Data and Safeguards

- I acknowledge and affirm that I am personally responsible for compliance with the terms of this Agreement, to the exclusion of any other party, regardless of such party's role in sponsoring or funding the research that is the subject of this Agreement.
- *[For State Databases]* I will not share or disclose HCUP State data, without approval from AHRQ, for any purpose other than the project described and approved at the time of data purchase. Any subsequent data use requires the submission of a request (more information at [www.hcup-us.ahrq.gov/tech\\_assist/centdist.jsp](http://www.hcup-us.ahrq.gov/tech_assist/centdist.jsp)) and approval from AHRQ before the data may be used for a new purpose.

- [For State Databases] I will only allow access to HCUP State data for those working on projects approved by AHRQ, and I will require that they become authorized users of the HCUP data by signing a copy of this Data Use Agreement and completing the online Data Use Agreement Training Course at [www.hcup-us.ahrq.gov/](http://www.hcup-us.ahrq.gov/). Before granting any individual access to the data set, I will submit the signed data use agreements to the address at the end of this Agreement.
- [For Nationwide Databases] I will only allow access to HCUP Nationwide data to those who have become authorized users of the HCUP data by signing a copy of this Data Use Agreement and completing the online Data Use Agreement Training Course at [www.hcup-us.ahrq.gov/](http://www.hcup-us.ahrq.gov/). Before granting any individual access to the data set, I will submit the signed data use agreements to the address at the end of this Agreement.
- I will not use or disclose and I will prohibit others from using or disclosing the data set, or any part thereof, except for research, analysis, and aggregate statistical reporting, and only as permitted by this Agreement.
- I will not redistribute HCUP data by posting on any Website or other publicly-accessible online repository.
- I will ensure that the data are kept in a secured environment and that only authorized users will have access to the data.
- I acknowledge and affirm that interpretations, conclusions, and/or opinions that I reach as a result of my analyses of the data sets are my interpretations, conclusions, and/or opinions, and do not constitute the findings, policies, or recommendations of the U.S. Government, the U.S. Department of Health and Human Services, or AHRQ.
- [For State Databases] I will acknowledge in all reports based on these data that the source of the data is the specific state(s) or data organization(s) that submitted data to HCUP, e.g., “state name(s), State Inpatient Databases (SID), Healthcare Cost and Utilization Project (HCUP), Agency for Healthcare Research and Quality.” Substitute “State Ambulatory Surgery and Services Databases (SASD)” or “State Emergency Department Databases (SEDD),” as appropriate.
- [For Nationwide Databases] I agree to acknowledge in all reports based on these data that the source of the data is the “National Inpatient Sample (NIS), Healthcare Cost and Utilization Project (HCUP), Agency for Healthcare Research and Quality.” Substitute “Nationwide Inpatient Sample (NIS)” (if using data prior to 2012), “Kids’ Inpatient Database (KID),” “Nationwide Emergency Department Sample (NEDS),” or “Nationwide Readmissions Database (NRD)” as appropriate.
- I will indemnify, defend, and hold harmless AHRQ and the data organizations that provide data to AHRQ for HCUP from any or all claims and losses accruing to any person, organizations, or other legal entity as a result of violation of this Agreement. This provision applies only to the extent permitted by Federal and State law.
- I agree to report the violation or apparent violation of any term of this Agreement to AHRQ without unreasonable delay and in no case later than 30 calendar days of becoming aware of the violation or apparent violation.

#### Terms, Breach, and Compliance

Any violation of the terms of this Agreement shall be grounds for immediate termination of this Agreement. AHRQ shall determine whether a data recipient has violated any term of the Agreement. AHRQ shall determine what actions, if any, are necessary to remedy a violation of this Agreement, and the data recipient(s) shall comply with pertinent instructions from AHRQ. Actions taken by AHRQ may include but not be limited to providing notice of the termination or violation to affected parties and prohibiting data recipient(s) from accessing HCUP data in the future.

In the event AHRQ terminates this Agreement due to a violation, or finds the data recipient(s) to be in violation of this Agreement, AHRQ may direct that the undersigned data recipient(s) immediately return all copies of the HCUP Databases to AHRQ or its designee without refund of purchase fees.

### Acknowledgment

I understand that this Agreement is requested by the United States Agency for Healthcare Research and Quality to ensure compliance with the AHRQ Confidentiality Statute. My signature indicates that I understand the terms of this Agreement and that I agree to comply with its terms. I understand that a violation of the AHRQ Confidentiality Statute may be subject to a civil penalty of up to \$14,140 under 42 U.S.C. 299c-3(d), and that deliberately making a false statement about this or any matter within the jurisdiction of any department or agency of the Federal Government violates 18 U.S.C. § 1001 and is punishable by a fine, up to five years in prison, or both. Violators of this Agreement may also be subject to penalties under state confidentiality statutes that apply to these data for particular states.

Signed: EXHIBIT ONLY Date: \_\_\_\_\_

Print or Type Name: \_\_\_\_\_

Title: \_\_\_\_\_

Organization: \_\_\_\_\_

Address: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP Code: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_

The information above is maintained by AHRQ only for the purpose of enforcement of this Agreement and for notification in the event data errors occur.

Note to Purchaser: Shipment of the requested data product will only be made to the person who signs this Agreement, unless special arrangements that safeguard the data are made with AHRQ or its agent.

### Submission Information

Please send signed HCUP Data Use Agreements and proof of online training to:

**HCUP Central Distributor  
Social & Scientific Systems, Inc.  
8757 Georgia Avenue, 12th Floor  
Silver Spring, MD 20910  
E-mail: [HCUPDistributor@AHRQ.gov](mailto:HCUPDistributor@AHRQ.gov)  
Fax: (866) 792-5313**

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0935-0206. The time required to complete this information collection is estimated to average 30 minutes per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this form, please write to: Agency for Healthcare Research and Quality, Attn: Reports Clearance Officer, 5600 Fishers Lane, Rockville, Maryland 20857.

OMB Control No. 0935-0206 expires 01/31/2019. [OMB renewal pending]



## **HCUP DATA SECURITY PLAN**

The HCUP project team gives careful consideration toward achieving the balance between protection of data privacy and our nation's need for the use of data in health care research. The following document describes the privacy, confidentiality, and security protections in place to ensure adherence to Federal and State law as well as agreements made with Data Organizations participating in the project.

Changes to the HCUP Data Security Plan will be reported to HCUP Data Organizations.



**Healthcare Cost and Utilization Project  
Agency for Healthcare Research and Quality**

**HCUP DATA SECURITY PLAN**

April 3, 2018

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**Healthcare Cost and Utilization Project**  
**Agency for Healthcare Research and Quality**

**HCUP DATA SECURITY PLAN**

**I INTRODUCTION**

The Agency for Healthcare Research and Quality's (AHRQ) mission is to produce evidence to make health care safer, higher quality, more accessible, equitable, and affordable, and to work within the U.S. Department of Health and Human Services and with other partners to make sure that the evidence is understood and used. AHRQ maintains the Healthcare Cost and Utilization Project (HCUP), a national resource of health care information that includes the largest collection of hospital discharge data in the United States. HCUP databases support health services research that will improve the quality of health care and promote evidence-based decision-making. The information is used for research on a broad range of policy and health issues including cost and quality of health services, access to health care programs, medical practice patterns, and outcomes of treatments. The HCUP project team gives careful consideration toward achieving the balance between protection of data privacy and our nation's need for the use of data in health care research. To that end, this document describes the privacy, confidentiality, and security protections in place to ensure adherence to Federal and State law as well as agreements made with Data Organizations participating in the project. The terms "Data Organization" and / or "HCUP Partners" refer to the State government

agencies, hospital associations, and private data organizations that contribute administrative health data to the project, making the creation of HCUP databases possible.

Under the Healthcare Research and Quality Act of 1999, 42 U.S.C. §299 et seq., AHRQ is authorized to collect data for the purposes of enhancing the quality, appropriateness, and effectiveness of health services, and improving access to health services. AHRQ fulfills this mission in part by engaging in public health activities, such as promoting improvements in clinical and health system practices, including practices aimed at the prevention of disease and other health conditions.<sup>1</sup> For example, AHRQ is authorized to develop and disseminate information to consumers and professionals regarding health care quality, technology assessment, and the scientific evidence supporting health practices.<sup>2</sup> Congress has also authorized AHRQ to undertake initiatives that advance public and private efforts to improve health care quality nationwide.<sup>3</sup>

## **II PRIVACY PROTECTION FOR DATA RECEIVED FROM HCUP PARTNERS**

### **A. Statutory Data Protections**

AHRQ has used discharge data for research since the early 1980s, subject to its statutory privacy protections.<sup>4</sup> The release of information collected, assembled, or used by AHRQ and its contractors is restricted by the Agency's confidentiality statute that prohibits the use or release, without appropriate consent, of data that identify individuals who or organizations that provided the data or are described in the data. Thus, AHRQ is obligated to protect data privacy for each data set that Data Organizations supply to HCUP. Specific requirements for use of data are stipulated in a detailed Memorandum of Agreement (MOA) that is established between AHRQ and each participating Data Organization. Among other things, each MOA includes

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<sup>1</sup> 42 U.S.C. §299(b).

<sup>2</sup> 42 U.S.C. §299a(a).

<sup>3</sup> 42 U.S.C. §299b-1, 299b-2, 299b-3.

<sup>4</sup> Section 944(c) of the Public Health Service Act (42 U.S.C. 299c-3(c)).

requirements for protecting health data as mandated by State or other law. In some cases, these laws may be more protective of privacy than the HIPAA Privacy Rule.

AHRQ interprets its own confidentiality statute to apply to any person with access to data collected by AHRQ or in connection with a project that AHRQ has funded. By signing HCUP's data use agreement (DUA), a researcher is agreeing to comply with all of the conditions and restrictions contained in that agreement. The researcher is also acknowledging that violations of the HCUP DUA constitute violation of AHRQ's statutory confidentiality provisions and may result in civil, and possibly criminal, penalties.

The HIPAA Privacy Rule protects individually identifiable health information by establishing conditions for its use and disclosure by "covered entities." Disclosure of protected health information from covered entities for the purpose of research is allowed by the Privacy Rule under section 164.502 and 164.512(i). AHRQ and most Data Organizations participating in HCUP are not covered entities because they do not fit the definition of (1) a health plan, (2) a health care clearinghouse, or (3) a health care provider that electronically transmits health information in connection with standard financial or administrative transactions; however, AHRQ data policies are generally consistent with the requirements of the HIPAA Privacy Rule.

#### **B. Privacy Protections for Use of HCUP Databases by AHRQ Staff and Contractors**

The Center for Delivery, Organization, and Markets (CDOM), HCUP's home center at AHRQ, maintains a set of policies and procedures for protecting HCUP data privacy. Contractors working with AHRQ researchers are required to submit a security plan outlining the privacy protections they will use in handling HCUP data.

Each staff member, contractor, and guest researcher<sup>5</sup> given access to any HCUP data is required to review guidelines for protection of HCUP data and receive training in privacy, security, and confidentiality.<sup>6</sup> In addition, staff, contractors, and guest researchers must sign the AHRQ Staff / Contractor Agreement and an HCUP DUA specific for State and Nationwide databases (see section III for descriptions of the databases) before being given access to data.

### **III STRUCTURE OF FILES AND ACCESS TO DATA**

AHRQ requests data from participating Data Organizations to develop files for a number of HCUP products and to facilitate internal AHRQ research and public health efforts. AHRQ's Primary Contractor is responsible for obtaining statewide discharge data and processing those data into the uniformly formatted HCUP databases.

#### **A. Source Data**

Source data refers to the files received from participating Data Organizations (HCUP Partners) in their original format. AHRQ's Primary Contractor is the sole holder of source data supplied by participating data organizations. Unformatted source data received by the Primary Contractor are not released to AHRQ or any of the other HCUP-related contractors. Source data may not be used by AHRQ or its Primary Contractor for purposes other than the development of HCUP databases as described in the HCUP Memorandum of Agreement (MOA) executed with each participating Data Organization.

HCUP requests that the Data Organization providing source data will encrypt, re-identify, or remove all direct patient identifiers, such as medical record numbers or Social Security Numbers, before supplying the data to HCUP. If the Data Organization is unable to obscure

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<sup>5</sup> "Guest researcher" is a term used by AHRQ to describe academic scientists, Federal employees, or graduate/Ph.D. level students who have been authorized to use Agency resources to further their research or training. For specific approved projects, guest researchers are sometimes given access to HCUP intramural data under supervision and guidance of a member of the HCUP team.

<sup>6</sup> The on-line HCUP Data Security and Confidentiality Course for AHRQ staff and contractors.

personal identifiers, the Primary Contractor will immediately encrypt the identifiers and destroy all copies of the original file that contain the supplied identifiers.

#### **B. HCUP Intramural Databases**

Intramural databases are AHRQ versions of data used by AHRQ staff, their contractors, and guest researchers for activities related to research, public health, and the development of HCUP tools, products, and reports. These databases are also used in producing aggregate statistics for technical support to other Federal agencies, for the development of State discharge statistics used in [HCUPnet](#) and Fast Stats (with permission from Data Organizations); for the maintenance and development of [AHRQ Quality Indicators](#); and in the National Healthcare Quality and Disparities Report (QDR), and their derivative products. HCUP Intramural databases differ from the restricted-access public release databases (described below) because they may contain data elements that are not released outside of AHRQ.

Intramural databases are available only to authorized AHRQ staff, their contractors, and guest researchers, who must abide by statutory limits on disclosure<sup>7</sup> and the special restrictions imposed under AHRQ and HCUP data use agreements. Access to the HCUP Intramural databases must be approved by the HCUP Project Manager and use of these files are reported to HCUP Partners in the *HCUP Annual Activities Report and HCUP Overview Binder*.

#### **C. HCUP Data Development Files**

AHRQ also maintains Data Development (DD) files containing person-level information that is not included in the HCUP Intramural databases, such as full dates (e.g., admission and discharge, date of birth), source-supplied encrypted identifiers, and other indirect patient and physician identifiers. Starting with data year 2012, the five-digit ZIP Codes are not separated into DD files unless required by HCUP Partners.

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<sup>7</sup> Section 944(c) of the Public Health Service Act (42 U.S.C. 299c-3(c)).

DD files can be used only for specific, restricted purposes. DD files may be used to address problems discovered after construction of HCUP databases; and by AHRQ researchers and their contractors to develop analytic files for specific research projects. A proposed use of DD files must undergo an internal review and be given special permission by the HCUP Project Manager.

**D. HCUP Restricted-Access Public Release Databases**

HCUP produces a number of databases for use by researchers outside of AHRQ. These “restricted-access public release” databases include the National (Nationwide) Inpatient Sample (NIS), the Kids’ Inpatient Database (KID), the Nationwide Emergency Department Sample (NEDS), and the Nationwide Readmissions Database (NRD). Restricted-access public release versions of the State Inpatient Databases (SID), the State Ambulatory Surgery and Services Databases (SASD), and the State Emergency Department Databases (SEDD) are also available for some States. Release of the HCUP databases to researchers outside of AHRQ has always been governed by detailed HCUP data use agreements. HCUP data use agreements contain all the features that would be required for a covered entity to release a limited data set under the HIPAA Privacy Rule. Restricted-access public release databases are made available to both internal and external data users only after completion of required training<sup>8</sup> and submission of a signed HCUP DUA. In addition, before restricted-access public release State-level databases are released (SID, SASD, and SEDD), AHRQ reviews the statement of intended use provided by the applicant to ensure that the planned use of the data is consistent with HCUP policies and with Partner and HCUP data use requirements.

HCUP Partners that make available their State-level restricted-access public release files specify the data elements that AHRQ may include. Although HCUP Partners may permit the release of certain identifiers, it is AHRQ’s policy that HCUP’s restricted-access public release files may not contain individual identifiers, full dates, or data elements that must be excluded from a limited data set as defined under HIPAA.<sup>9</sup> If the data organization concludes that

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<sup>8</sup> HCUP Data Use Agreement training at [www.hcup-us.ahrq.gov](http://www.hcup-us.ahrq.gov).

<sup>9</sup> As defined in 45 C.F.R. §164.514(c)(2).

confidentiality should also be provided for its institutions, (e.g., hospitals), institutional identifiers are encrypted or removed as well.

#### **IV WORKING WITH CONTRACTORS**

Much of the work to create and analyze HCUP databases, tools, products, and reports is accomplished through contract services. Contractors are engaged to conduct essential functions of the HCUP project. The “Primary Contractor” is responsible for core components of the HCUP project and such tasks as data acquisition, data processing, database creation, documentation, and special analyses. “Secondary Contractors” are engaged to perform other work that contributes to the HCUP project, such as research expertise, maintenance, development, validation of HCUP products and tools, and data programming for research projects conducted by AHRQ staff.

##### **A. Primary Contractor**

The HCUP Project Manager oversees and directs all activities performed under contract by the Primary Contractor. This includes obtaining statewide discharge data and processing it into the uniformly formatted HCUP databases. Using the completed and delivered HCUP databases, the Primary Contractor provides additional support to AHRQ for other HCUP software tools, products, research, and reports developed for the project. This includes maintaining multiple HCUP tools (such as Clinical Classifications Software (CCS), Comorbidity Software, AHRQ’s Cost-to-Charge Ratios, etc.), developing new tools (such as refining CCS classifications), developing the data analyses and content for HCUP Statistical Briefs, Fast Stats, other series reports, and conducting data analysis for AHRQ reports to external audiences (such as the National Healthcare Quality and Disparities Report).

Truven Health Analytics is AHRQ’s Primary Contractor responsible for the core work of developing, maintaining, and expanding the HCUP databases. Truven Health Analytics also works with the subcontractors, Social & Scientific Systems (SSS), M.L. Barrett, Inc., RAND Corporation, Ohio State University, and others to develop, maintain, distribute, and analyze the HCUP databases on behalf of AHRQ.

## **B. Secondary Contractors**

AHRQ Project Managers are assigned to oversee and direct all activities performed under independent contract by Secondary Contractors that utilize HCUP data. These activities may be directed by the Center for Delivery, Organization, and Markets (CDOM) or by other Centers within AHRQ and are limited to specific AHRQ project objectives. This type of work includes data programming for AHRQ staff research projects and producing aggregate statistics for other Federal agencies and other organizations at AHRQ's direction. It also includes activities such as the maintenance, refinement, expansion (i.e., development of new measures and tools), and validation of the AHRQ Quality Indicators. The creation of some HCUP tools have been accomplished by Secondary Contractors, which perform work on tasks such as the AHRQ Quality Indicators (QIs), the online [HCUPnet](#) statistical query system, and the online [QR/DRnet](#) query system.

## **C. Contractor Access to Data**

Contractors have different levels of access to HCUP data, and all data access is limited to the level required to accomplish AHRQ-specified work. Contracts between the Federal government and HCUP-related contractors contain sections governing the authorized use of data under the contracts. These sections restrict the publication and dissemination of material derived from contracts, and they specify that the contractors have no rights to data collected or developed under the contracts. The contracts also contain provisions for penalty and debarment from Federal contracting should these restrictions be violated. All contractors maintain responsibility for assuring compliance with contractual requirements and protection of data. All contractors assure that their subcontractors are held to the same level of responsibility for compliance with contractual requirements and protection of data.

# **V PROCEDURAL AND PHYSICAL PROTECTIONS**

## **A. AHRQ Staff / Contractor Agreements**

AHRQ staff, their contractors, and guest researchers with access to HCUP data are required to sign the AHRQ Staff / Contractor Agreement that specifies privacy protections and

restrictions placed on use of the data. They are also required to receive privacy, security, and confidentiality training on an annual basis that includes information on the appropriate (and inappropriate) use of HCUP data. The Staff / Contractor Agreements prohibit AHRQ, contractor staff, and guest researchers from giving access to HCUP files, providing confidential information derived from such files, or otherwise sharing such information with unauthorized individuals. The Agreement also prohibits use of the data for any purpose other than AHRQ-related work, and it prohibits access and use of data after employment has been terminated.

#### **B. HCUP Data Use Agreements**

All persons given access to HCUP databases are required to sign an HCUP Data Use Agreement and complete the online DUA training before being given access to data. These agreements place limitations on how HCUP data may be used. Criminal and civil penalties exist for violation of the Federal statute.<sup>10</sup>

Users must agree, among other things, to use the data for research and statistical purposes only and to make no attempt to identify individuals. In addition, users must agree not to identify establishments directly or by inference in published or disseminated material.

#### **C. Security of HCUP Data**

The HCUP IT systems are in conformance with the standards set forth by the Federal Information Security Management Act (FISMA) and National Institute of Standards and Technology (NIST) Special Publication (SP) 800-37, Revision 1, *Guide for Applying the Risk Management Framework to Federal Information Systems*. HCUP IT systems hosted by the Primary Contractor have received security authorizations to operate from the Federal

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<sup>10</sup> Violation of the AHRQ Confidentiality Statute may be subject to a civil penalty of up to \$14,140 under 42 U.S.C. 299c-3(d). Deliberately making a false statement about this or any matter within the jurisdiction of any department or agency of the Federal Government violates 18 U.S.C. § 1001 and is punishable by a fine, up to five years in prison, or both. Violators of the HCUP DUA may also be subject to penalties under state confidentiality statutes that apply to these data for particular states.

Government and are compliant with all Public Law (PL)-107-347, Office of Management and Budget (OMB) mandates, Federal Information Processing Standards (FIPS), and additional applicable NIST guidance. This guidance includes, but is not limited to FIPS 199, FIPS 200, NIST SP 800-18, NIST SP 800-30, NIST SP 800-37, NIST SP 800-53 Revision 4, NIST SP 800-53A Revision 4, and NIST SP 800-60. All NIST and FIPS documentation can be found at the NIST website at [www.csrc.nist.gov](http://www.csrc.nist.gov).

Data are protected by stringent security measures throughout the data life cycle, whether stored on media or electronically. In general, media (such as tapes, cartridges, disks, DVDs, and other storage devices), reports, listings, and any other material containing sensitive information are kept in locked files, locked offices, or controlled-access storage rooms. Data materials may be removed from storage by authorized project staff, but those materials must remain under the staff member's direct supervision. All materials are locked away at the end of each working day or whenever not in immediate use. Electronic files may only reside on secure authorized computer systems and be accessed through a secure network or encrypted Virtual Private Network (VPN). Critical backup files for disaster recovery are encrypted and housed at a secure, offsite location. Access to secure storage locations is controlled by the HCUP Project Manager, contractor Project Directors, and/or a delegate, as appropriate to each site.

The following is a brief outline of HCUP data security protections:

Procedure	Source Data	Intramural Databases	Data Development Files	Restricted-Access Public Release Databases
<b>General Measures</b>				
Use	<ul style="list-style-type: none"> <li>* Used by Primary Contractor for HCUP file creation and verification on dedicated secure servers</li> <li>* Restrictions on use per AHRQ HCUP policy, the AHRQ Staff-Contractor Agreement and HCUP DUAs</li> </ul>	<ul style="list-style-type: none"> <li>* Used by AHRQ researchers or their contractors for research, public health, and the development of HCUP tools, products, and reports</li> <li>* Restrictions on use per AHRQ HCUP policies, the AHRQ Staff-Contractor Agreement and HCUP DUAs</li> </ul>	<ul style="list-style-type: none"> <li>* Used by AHRQ researchers or their contractors for research, public health, and the development of HCUP tools, products, and reports</li> <li>* Restrictions on use per AHRQ HCUP policy, the AHRQ Staff-Contractor Agreement and HCUP DUAs</li> </ul>	<ul style="list-style-type: none"> <li>* Released through the HCUP Central Distributor for research, analysis and aggregate statistical reporting</li> <li>* Restrictions on use per HCUP DUAs</li> </ul>
Data Access	<ul style="list-style-type: none"> <li>* Data are held solely by the Primary Contractor</li> <li>* Access is granted only to authorized project staff</li> </ul>	<ul style="list-style-type: none"> <li>* Access for research use requires Project Manager approval</li> <li>* Access is granted only to authorized project staff</li> </ul>	<ul style="list-style-type: none"> <li>* Access for research use requires Project Manager approval</li> <li>* Access is granted only to authorized project staff</li> </ul>	<ul style="list-style-type: none"> <li>* Access is granted through the Central Distributor application process</li> </ul>
<b>Media</b>				
Shipping	<ul style="list-style-type: none"> <li>* Data are shipped from HCUP Partner organizations to the HCUP primary contractor (Truven Health Analytics) according to Partner's policies and procedures.</li> <li>* Media containing data is identified by a tracking number assigned</li> </ul>	<ul style="list-style-type: none"> <li>* Database files are encrypted</li> <li>* Data are shipped separately from documentation and passwords</li> <li>* All shipments are confirmed</li> </ul>	<ul style="list-style-type: none"> <li>* Database files are encrypted</li> <li>* Data are shipped separately from documentation and passwords</li> <li>* All shipments are confirmed</li> </ul>	<ul style="list-style-type: none"> <li>* Database files are encrypted</li> <li>* Data are delivered together with accompanying documentation to data users approved through an application process</li> <li>* Password is provided separately</li> </ul>

Procedure	Source Data	Intramural Databases	Data Development Files	Restricted-Access Public Release Databases
	by the originating party * Data are not shipped from the HCUP Primary Contractor unless being returned to the HCUP Partner organization * All shipments are confirmed			
Media Storage	* Media are kept in secure, limited-access rooms or locked cabinets at the Primary Contractor's work site * Media are never removed from the Primary Contractor's work site unless specifically requested by the HCUP Partner organization to return the media.	* Media are kept in secure, limited-access rooms or locked cabinets * All sensitive data files must be encrypted before removal from a secure environment	* Media are kept in secure, limited-access rooms or locked cabinets * All sensitive data files must be encrypted before removal from a secure environment	* Media are kept in secure, limited-access rooms or locked cabinets
<b>Electronic Files</b>				
Electronic File Storage	* All HCUP computers storing source data are located in secure, limited-access rooms * Media are kept in secure, limited-access rooms or locked cabinets at the Primary Contractor's work site	* All HCUP computers storing intramural data, are kept in secure, limited-access rooms * Media are kept in secure, limited-access rooms or locked cabinets	* All HCUP computers storing DD data are kept in secure, limited-access rooms * Media are kept in secure, limited-access rooms or locked cabinets	* All HCUP computers storing HCUP data are kept in secure, limited-access rooms * Media are kept in secure, limited-access rooms or locked cabinets * Nationwide data available for download are stored on a secure FTP server
Access Method	* Access through	* Access through	* Access through	* Access is granted

<b>Procedure</b>	<b>Source Data</b>	<b>Intramural Databases</b>	<b>Data Development Files</b>	<b>Restricted-Access Public Release Databases</b>
	dedicated secure servers or remotely via a secure (encrypted) VPN connection using identification verification and password authentication	dedicated secure servers or remotely via a secure (encrypted) VPN connection using identification verification and password authentication	dedicated secure servers or remotely via a secure (encrypted) VPN connection using identification verification and password authentication	through the Central Distributor application process
Secure File Transfer Protocol (SFTP) Download	<ul style="list-style-type: none"> <li>* HCUP Partner SFTP site is utilized to obtain data from some Data Organizations</li> <li>* Data are encrypted during transmission</li> <li>* Decryption key or password authentication is required to obtain data</li> <li>* Data are transferred directly to a server maintained by the Primary Contractor*</li> </ul> <p>Source data obtained directly through SFTP are stored exclusively at the Primary Contractor's secure facility and never offsite</p>	N/A	N/A	<ul style="list-style-type: none"> <li>* SFTP download for dissemination of nationwide databases purchased through the Central Distributor Ordering Website began in 2016</li> <li>* Data are encrypted during transmission and downloads require user log-in and verification process</li> <li>* Nationwide data available for download are stored on a SFTP server</li> </ul>

#### **D. Physical Access to Facilities**

AHRQ and its contractors control physical access to facilities using electronic methods, security procedures, and/or personnel. Entering the AHRQ premises requires electronic screening and, for visitors, interaction with security personnel. Entrance to the Primary

Contractor offices (Truven Health Analytics) requires that all visitors must first register at the reception desk, and thereafter must be escorted by a Truven Health Analytics employee.

AHRQ and contractor offices are equipped with locking storage cabinets and/or locking doors. Truven Health Analytics maintains an electronic key-card protected secure storage room for on-site archiving of data tapes, cartridges, disks, DVDs, or other storage devices and a separate key-card protected secure environment for its Secure Network and computer facilities. Removable disks or other storage devices with sensitive information are stored in locked cabinets or secured areas. Other contractors must employ similar procedures.

#### **E. Secure Data Disposal**

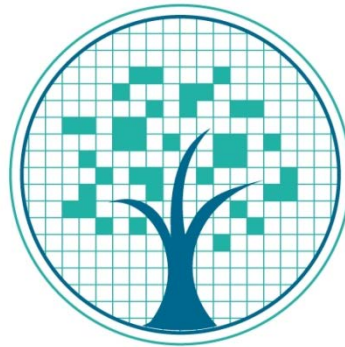
Data files will be destroyed once they are no longer required by the project. Destruction cycles vary by type of file.

At AHRQ's direction, the Primary Contractor destroys source data approximately two years after file development, and sends notification of destruction to the AHRQ Project Manager. At the conclusion of the HCUP contract, all remaining source data held by the Primary Contractor will be destroyed or transferred to the next HCUP contractor (without regard to the time period said data have been in the possession of the incumbent Primary Contractor); final disposition of source data will only occur at the direction of the HCUP Project Manager and with permission from the Data Organization(s).

After the Primary Contractor completes the processing of source data into the HCUP databases, and allowing sufficient time for quality control and problem investigation, the intermediate files are deleted during routine storage management. Files may remain on backup media in a secure location for a period of time until overwritten through normal backup media rotation. The final HCUP databases are retained by the Primary Contractor for the duration of the project.

Printed output and documents containing confidential information are shredded when disposal is required. Electronic, optical, or magnetic records are securely erased or shredded to obliterate individual discharge data when disposal becomes necessary.

In the event of termination of the AHRQ contract with the Primary Contractor, AHRQ will retain the HCUP intramural, data development, and restricted-access public release databases to support longitudinal research.



**H·CUP**  
HEALTHCARE COST AND UTILIZATION PROJECT

## **HCUP DATA ELEMENTS**

The following table lists the data elements that are used by AHRQ to construct the HCUP Intramural databases (utilized for internal research purposes at AHRQ). These include the HCUP State Inpatient Databases (SID), State Ambulatory Surgery and Services Databases (SASD), State Emergency Department Databases (SEDD), National (Nationwide) Inpatient Sample (NIS), Kids' Inpatient Database (KID), Nationwide Ambulatory Surgery Sample (NASS), Nationwide Emergency Department Sample (NEDS), and Nationwide Readmissions Database (NRD).

## HCUP Data Elements Requested for Development of the HCUP Databases

This table includes the data elements requested from all Data Organizations participating in the project (“HCUP Partners”) and is provided to show how the supplied data are utilized in creating the HCUP Intramural and Central Distributor databases. In addition to customarily collected data elements, the table includes additional State-specific elements that may not be part of UB-04 specifications. If a Data Organization has a more limited list of data elements, its data may still be useful and requested for HCUP. This table is updated annually or more frequently if needed, and changes are reported to HCUP Partners.

*HCUP State databases* include: Intramural State Inpatient Databases (SID); Intramural State Ambulatory Surgery and Services Databases (SASD); Intramural State Emergency Department Databases (SEDD); Central Distributor SID; Central Distributor SASD; and Central Distributor SEDD.

*HCUP Nationwide databases* include: National (Nationwide) Inpatient Sample (NIS); Kids' Inpatient Database (KID); Nationwide Ambulatory Surgery Sample (NASS), Nationwide Emergency Department Sample (NEDS); and Nationwide Readmissions Database (NRD). Note that the NASS is a new HCUP database, scheduled for release in late 2019, beginning with 2016 data.

Descriptions of the HCUP databases are provided in the *Project Description* section of the HCUP Project Overview Binder.

### Organization of the Tables

The first column, labeled “Provided by HCUP Partners,” shows the data elements requested from each Data Organization. Blank cells indicate the field is not requested from HCUP Partners. Instead, AHRQ will create or assign the data elements from other sources.

The second column, labeled “Included in HCUP databases,” lists the data element name or description included in the HCUP databases.

The database columns include an ‘X’ if the data element is included in the respective HCUP databases, or “disc.” if the element was discontinued.

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**Visit these HCUP-US Web pages for descriptions of the HCUP Data Elements and more information about the HCUP databases:**

#### **Nationwide Databases**

NIS: [www.hcup-us.ahrq.gov/db/nation/nis/nisdde.jsp](http://www.hcup-us.ahrq.gov/db/nation/nis/nisdde.jsp)  
KID: [www.hcup-us.ahrq.gov/db/nation/kid/kiddde.jsp](http://www.hcup-us.ahrq.gov/db/nation/kid/kiddde.jsp)  
NASS: [www.hcup-us.ahrq.gov/databases.jsp](http://www.hcup-us.ahrq.gov/databases.jsp) Available late 2019  
NEDS: [www.hcup-us.ahrq.gov/db/nation/neds/nedsdde.jsp](http://www.hcup-us.ahrq.gov/db/nation/neds/nedsdde.jsp)  
NRD: [www.hcup-us.ahrq.gov/db/nation/nrd/nrddde.jsp](http://www.hcup-us.ahrq.gov/db/nation/nrd/nrddde.jsp)

#### **Intramural State Databases (password access)**

SID: [www.hcup-us.ahrq.gov/db/state/siddist/siddist\\_ddeavailbyyear.jsp](http://www.hcup-us.ahrq.gov/db/state/siddist/siddist_ddeavailbyyear.jsp)  
SASD: [www.hcup-us.ahrq.gov/db/state/sasddist/sasddist\\_ddeavailbyyear.jsp](http://www.hcup-us.ahrq.gov/db/state/sasddist/sasddist_ddeavailbyyear.jsp)  
SEDD: [www.hcup-us.ahrq.gov/db/state/sedddist/sedddist\\_ddeavailbyyear.jsp](http://www.hcup-us.ahrq.gov/db/state/sedddist/sedddist_ddeavailbyyear.jsp)

#### **Central Distributor State Databases**

CD-SID: [www.hcup-us.ahrq.gov/db/state/siddist/siddist\\_ddeavailbyyear.jsp](http://www.hcup-us.ahrq.gov/db/state/siddist/siddist_ddeavailbyyear.jsp)  
CD-SASD: [www.hcup-us.ahrq.gov/db/state/sasddist/sasddist\\_ddeavailbyyear.jsp](http://www.hcup-us.ahrq.gov/db/state/sasddist/sasddist_ddeavailbyyear.jsp)  
CD- SEDD: [www.hcup-us.ahrq.gov/db/state/sedddist/sedddist\\_ddeavailbyyear.jsp](http://www.hcup-us.ahrq.gov/db/state/sedddist/sedddist_ddeavailbyyear.jsp)

#### **HCUP Supplemental Files**

American Hospital Association Linkage Files:  
[www.hcup-us.ahrq.gov/db/state/ahalinkage/aha\\_linkage.jsp](http://www.hcup-us.ahrq.gov/db/state/ahalinkage/aha_linkage.jsp)  
Cost-to-Charge Ratio (CCR) Files:  
[www.hcup-us.ahrq.gov/db/state/costtocharge.jsp](http://www.hcup-us.ahrq.gov/db/state/costtocharge.jsp)  
Hospital Market Structure (HMS) Files:  
[www.hcup-us.ahrq.gov/toolssoftware/hms/hms.jsp](http://www.hcup-us.ahrq.gov/toolssoftware/hms/hms.jsp)  
Supplemental Variables for Revisit Analysis:  
[www.hcup-us.ahrq.gov/toolssoftware/revisit/revisit.jsp](http://www.hcup-us.ahrq.gov/toolssoftware/revisit/revisit.jsp)

**HCUP Data Elements**  
**Requested for Development of the HCUP Databases**  
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**HCUP Data Elements  
Requested for Development of the HCUP Databases**

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**Execute the HCUP MOA, complete the following steps:**

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**Review Column #1 for an overview of the standard data elements requested from HCUP Partners.**

**Review Column #2 for the name or type of “HCUP data elements” created from the supplied files.**

You may use the hyperlinks contained in this document to access descriptions of HCUP data elements available on the HCUP User Support Web site (HCUP-US). Some descriptions require password-access (go to [www.hcup-us.ahrq.gov/login.jsp](http://www.hcup-us.ahrq.gov/login.jsp) and enter a user name and password to gain access to these documents).

The HCUP data elements are generally consistent with the UB-04 data specifications. Some data supplied by HCUP Partners are mapped into HCUP uniformly formatted data elements (usually indicated by the term “uniform”). Additional measures are assigned by HCUP using clinical groupers (e.g., APR-DRGs, etc.), HCUP software tools for ICD-9-CM, ICD10-CM/PCS, and CPT codes (e.g., Elixhauser Comorbidity Software, Clinical Classifications Software (CCS), Chronic Condition Indicators, and Procedure Classes), externally defined indicators (e.g., STIPDA injury indicators), or data obtained from external sources (e.g., hospital structural characteristics, median income of patient’s ZIP Code, urban-rural designations).

**Review Columns #3-4 to determine which data elements are contained in the HCUP Intramural databases.**

HCUP’s Intramural State Databases include versions of HCUP data for use by researchers within AHRQ.

The HCUP Data Development files contain certain indirect identifiers supplied by data organizations that are used in the construction of the HCUP databases. These elements are used to develop uniform indicators and encrypted measures. They are stored in data development-only files, with access granted by permission of the HCUP Project Officer only under specific, limited circumstances. In these instances, only designated programmers will have access to the files on behalf of AHRQ researchers and their contractors. Information contained in the Data Development file is not included in any of the HCUP databases.

**Review Columns #5-11 to determine which data elements are contained in each HCUP Central Distributor database.**

HCUP’s Central Distributor Databases are referred to as “restricted-access public release files”; that is, they are publicly available, but only under restricted conditions. HCUP Partners specify the data elements that AHRQ may include in their State-level restricted-access public release files. Although HCUP Partners may permit the release of certain identifiers, it is AHRQ’s policy that HCUP’s restricted-access public release files may not contain identifiers or other data elements that must be excluded from a limited data set.

**Execute an HCUP MOA:** In the HCUP Memorandum of Agreement (MOA), Table 1, confirm which of the data elements listed under “Provided by HCUP Partners” will be supplied. In the HCUP MOA Table 2, confirm if any “HCUP data elements” contained within this document may **not** be released in the associated Central Distributor Databases (NIS, KID, NASS, NEDS, NRD, CD-SID, CD-SASD, and CD-SEDD).

**HCUP Data Elements  
Requested for Development of the HCUP Databases**

Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
LINKAGE ELEMENTS												
Hospital number (as assigned by the data organization)	<a href="#">Data source hospital ID</a>		X	Disc.	Disc.				X	X	X	The identifier assigned by the data organization to identify a hospital. § <i>Discontinued on the NIS and KID beginning with 2012.</i>
	<a href="#">HCUP hospital ID number</a>		X	Disc.	Disc.				X	X	X	Assigned by HCUP to each hospital in the state. HOSPID links HCUP databases. Available in HCUP Hospital file. <i>Discontinued on the NIS and KID beginning with 2012.</i>
	<a href="#">AHA hospital ID</a>		X	Disc.	Disc.				X	X	X	Assigned from the American Hospital Association (AHA), Annual Survey Database. § Available in HCUP Hospital file. <i>Discontinued on the NIS and KID beginning with 2012.</i>
	<a href="#">Hospital NPI</a>		X						X	X	X	Contains National Provider Identifier (NPI) if the data organization provides both a state-specific hospital identifier and the NPI for the facility. <i>Added to HCUP data in 2008</i>
	<a href="#">NIS hospital ID</a>				X							

§ Not available for some states on the restricted access public release files.

**HCUP Data Elements**  
**Requested for Development of the HCUP Databases**

Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
Hospital number - continued	<a href="#">KID hospital ID</a>				X							HOSP_KID is an HCUP hospital identifier created specifically for the KID. <i>Added to KID data in 2012</i>
	<a href="#">NASS hospital ID (KEY NASS)</a>					X						HOSP_NASS is an HCUP hospital identifier created specifically for the NASS.
	<a href="#">NEDS hospital ID</a>						X					HOSP_ED is an HCUP hospital identifier created specifically for the NEDS.
	<a href="#">NRD hospital ID</a>							X				HOSP_NRD is an HCUP hospital identifier created specifically for the NRD.
--	<a href="#">HCUP record ID (KEY)</a>	X	X	Disc.	Disc.				X	X	X	HCUP unique record identifier, or key. Used to link HCUP databases. <i>Discontinued on the NIS beginning with 2012.</i>
--	<a href="#">HCUP record ID – NIS only (KEY NIS)</a>			X								HCUP unique record identifier for the respective database. Does not link to other HCUP databases or previous years.  KEY_NIS is assigned for the National Inpatient Sample (NIS). <i>Added to HCUP data in 2012</i>
–	<a href="#">HCUP record ID – KID only (RECNUM)</a>				X							RECNUM is assigned for the Kids' Inpatient Database (KID). <i>Included in the KID for 1997, 2003 and subsequent years</i>
–	<a href="#">HCUP record ID – NASS only (KEY NASS)</a>					X						KEY_NASS is assigned for Nationwide Ambulatory Surgery Sample (NASS)

§ Not available for some states on the restricted access public release files.

**HCUP Data Elements**  
**Requested for Development of the HCUP Databases**

Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
--	<a href="#">HCUP record ID – NEDS only</a> (KEY_ED)						X					KEY_ED is assigned for the Nationwide Emergency Department Sample (NEDS).
--	<a href="#">HCUP record ID – NRD only</a> (KEY_NRD)							X				KEY_NRD is assigned for the Nationwide Readmissions Database (NRD).
Data source record identifier	DSRECID	X										Links unique records across source data files (for character data)
Data source record number	DSRECNUM	X										Links unique records across source data files (for numeric data)
<b>PATIENT INFORMATION</b>												
Medical record number, encrypted	MRN (as received from source)	X										Provided data must be encrypted by the data organization.
	<a href="#">MRN</a> (reassigned a unique code)		X						X	X	X	HCUP reassigns a unique code to encrypted medical record numbers received from Partners to protect patient identity.
Mother's medical record number, encrypted	Mother's MRN (as received from source)	X										Mother's medical record number for a newborn.
	<a href="#">Mother's MRN</a> (reassigned a unique code)		X						X	X	X	HCUP reassigns a unique code to encrypted mother's medical record number to protect patient identity.
Person number, encrypted or assigned by source	Person number (as received from source)	X										An encrypted social security number or other identifier that uniquely identifies an individual so that multiple admissions by the same patient can be linked within and across institutions. Used to track readmissions.

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	<a href="#">Person number</a> (reassigns a unique code)		X						X	X	X	HCUP reassigned a unique code to patient numbers received from Partners to protect patient identity.
	<a href="#">Visit Link</a> <a href="#">Days to Event</a>		X						X	X	X	HCUP creates verified person numbers for States that have encrypted person identifiers. The visit linkage variable for each unique patient (VisitLink) can be used in tandem with the number of days between visits (DaysToEvent) to study readmissions. § <i>Added to HCUP data in 2003. Released as supplemental files from 2003-2008. Included on the State core files beginning with 2009. Beginning with 2013, AHRQ no longer releases a States' person numbers (reassigned a unique code) in conjunction with its visit linkage variables.</i>
	<a href="#">NRD Visit Link</a> <a href="#">NRD Days to Event</a>							X				Patient linkage number specific to the NRD and timing variable used to identify days between admissions. Not linkable to any other HCUP or external databases.

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HOSPITAL INFORMATION												
--	<a href="#">Hospital state postal code</a>		X	Disc.	Disc.				X	X	X	Assigned by HCUP. Two-character state postal code, e.g., 'CA' for California. <i>Discontinued on the NIS and KID beginning with 2012.</i>
--	<a href="#">Hospital state-county FIPS code</a>		X	Disc.	Disc.				X	X	X	Assigned by HCUP. § <i>Discontinued on the NIS and KID beginning with 2012.</i>
--	AHA-defined: <a href="#">hospital name</a> <a href="#">address</a> <a href="#">city</a> <a href="#">ZIP Code</a>		X	Disc.	Disc.							Assigned by HCUP from AHA Annual Survey Database. Not available for some states on the NIS and KID. § <i>Discontinued on the NIS and KID beginning with 2012.</i>
--	<a href="#">Freestanding ambulatory surgery center</a>		Disc.							Disc.	Disc.	Assigned by HCUP. Indicates whether ambulatory surgery center is a freestanding or hospital-based facility (0/1). Discontinued in 2018.
	<a href="#">Hospital-owned Ambulatory Surgery Center</a>		X							X		Indicates whether ambulatory surgery center is hospital-owned (0/1). <i>Added to HCUP in 2018.</i>

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PHYSICIAN INFORMATION												
Physician identification numbers – as many as collected	Physician identifiers (as received from source)	X										Physician identification differs by state. May be state license number, UPIN, NPI, other, or mix.
	<a href="#">Physician identifiers</a> (reassigns a unique code)		X	Disc.	Disc.				X	X	X	HCUP reassigned a unique code to physician identification numbers to protect identity. <i>Discontinued on the NIS beginning with 2010 and on the KID beginning with 2012.</i>
Physician name	Physician name (as received from source)	X										Names of physicians providing patient's care. May be supplied on a separate physician file, with linkage through the physician ID.
Physician specialty	<a href="#">Physician specialty</a> (as received from source)		X						X	X	X	The specialty of each physician. May be supplied on a separate physician file, with linkage through the physician ID.
Physician licensing board	<a href="#">Physician licensing board</a> (as received from source)		X						X	X	X	The type of medical or specialist board licensing each physician. May be supplied on a separate physician file, with linkage through the physician ID.

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Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
PATIENT DEMOGRAPHICS												
Date of birth	Date of birth	X										Supplied as full date, with four-digit year, month and day. Obtaining this date is important for calculating uniform ages, as a key characteristic for verifying the correct assignment of patient numbers, and to enable certain edit checks.
	<a href="#">Birth month</a> and <a href="#">year</a>								X	X	X	Full dates are not released. Birth month (BMONTH) and year (BYEAR) are derived from birth date during processing.
Patient age	<a href="#">Age in years</a> at admission		X	X	X	X	X	X	X	X	X	Age of the patient in years on the date of admission. Usually calculated by HCUP from admission and birth date. Ages 90 or older are set to 90 on the nationwide databases beginning with the 2012 data year.
	<a href="#">Neonate Age</a>		X	X	X				X	X	X	Indicator of neonatal age 28 days or younger at admission (0/1 indicator). <i>Added to HCUP NIS and KID in 2012. Added to HCUP State databases in 2015.</i>
	<a href="#">Age in days</a> (when age is less than 1 year)		X	Disc.	Disc.				X	X	X	Age in days on the date of admission, for ages under 1 year. May be calculated by HCUP. <span style="color: red;">§</span> <i><u>Discontinued</u> on the NIS and KID beginning with 2012.</i>

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Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
	<a href="#">Age in months</a> (when age is less than 11 years)		X		Disc.				X	X	X	Age in months on the date of admission, for ages of less than 11 years. May be calculated by HCUP. § <i>Discontinued on the KID beginning with 2012.</i>
Patient sex	<a href="#">Female</a>		X	X	X	X	X	X	X	X	X	The gender of the patient.
Patient race	<a href="#">Race, uniform</a>		X	X	X	X		X	X	X	X	The race of the patient. HCUP groups the supplied race codes into uniform categories. NRD will release only if all States in the NRD report race. <i>Will be included in the NASS when all Partners in NASS report Race.</i>
	<a href="#">Race</a> (as received from source)		X						X	X	X	Retained as provided by the source. Ethnicity information is coded in HISPANIC_X.
--	<a href="#">Race edit checks</a> <a href="#">RACE_EDIT</a>		X						X			Race edit checks. Four-level flag of potential signals that the coding of race/ethnicity at a hospital is limited. <i>Added to the SID in 2017.</i>
Patient ethnicity	<a href="#">Hispanic</a> (uniform)		X									Hispanic ethnicity of the patient. HCUP groups the supplied race and ethnicity codes into uniform categories (Hispanic, not Hispanic; white, black, other). <i>Added to the intramural SID, SASD and the SEDD in 2015.</i>
	<a href="#">Hispanic_X</a> (as received from source)		X						X	X	X	Retained as provided by the source. Ethnicity of the patient. Indicates if the patient is Hispanic, and sometimes to show the region of origin, (e.g. Mexican, Puerto Rican, etc.).

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Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
Patient county	Patient state-county <a href="#">FIPS code</a> PSTCO_GEO PSTCO_POP		X						X	X	X	FIPS code: As reported by source or derived from ZIP code.  <i>Added to HCUP data 2018:</i> PSTCO_GEO: Assigned from ZIP code geographic centroid map data. PSTCO_POP: Assigned from ZIP code population center using Claritas data.
Patient city of residence	<a href="#">Patient City PCITY</a>		X									As reported by source. <i>Added to HCUP data 2017.</i>
Patient state of residence	Patient <a href="#">state postal code</a>		X						X	X	X	As reported by source or derived from ZIP code.
Patient ZIP code (5-digit)	<a href="#">ZIP Code</a> (5 digit)	Disc.	X						X	X	X	The 5-digit ZIP Code of the patient's residence. Moved to the Intramural core files starting with 2014 data unless otherwise required by HCUP Partner. § <i>ZIP Codes for one State remain in the Data Development files.</i>
	<a href="#">Synthetic ZIP Code</a> (synthetic)		X						X	X	X	HCUP masks ZIP codes to obscure 4 <sup>th</sup> and 5 <sup>th</sup> digits. This is done in a manner that does not allow placement of a specific patient within a narrower ZIP code-based geography. §
	<a href="#">ZIP Code</a> (first 3 digits)		X						X	X	X	HCUP removes the 4 <sup>th</sup> and 5 <sup>th</sup> digits from the supplied ZIP Code for public release.
	<a href="#">Median income quartiles</a> (national distribution) <a href="#">ZIPINC_QRTL</a>		X	X	X	X	X	X	X	X	X	HCUP assigns four broad categories based on the <i>national distribution</i> of the median household income of the patient's ZIP code.

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	<a href="#">Median income quartiles</a> (state-specific distribution)		X						X	X	X	HCUP assigns four broad categories based on the <i>state-specific distribution</i> of the median household income of the patient's ZIP code of residence.
	Median household income (ungrouped)	X										Assigned to Data Development files starting with 2005 data year (MEDINC).
<b>CLINICAL INFORMATION</b>												
Admission date (month, day, year)	Admission date (month, day, year)	X										The date the patient was admitted for inpatient care or the start of care. Obtaining the complete date (month, day, and year) allows HCUP to calculate a uniformly defined LOS and perform edit checks.
	<a href="#">Admission on weekend</a>		X	X	X	X	X	X	X	X	X	Admission day "on weekend" is derived from admission date during processing.
	<a href="#">Admission month</a>		X	X	X	X	X		X	X	X	Full dates are not released. Admission month (AMONTH) and year (AYEAR) are derived from admission date during processing. §
	<a href="#">Admission year</a>								X	X	X	
Discharge date (month, day, and year)	Discharge date (month, day, year)	X										Date patient is discharged from hospital. May be called "through date" or "statement covers period."
	Discharge <a href="#">month</a>		X					X	X	X	X	Full dates are not released. Discharge month (DMONTH) is derived from discharge date during processing. § Month was added to intramural SID, SASD and SEDD in 2013.

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Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
	<a href="#">Discharge quarter</a> (uniform) and <a href="#">year</a>		X	X	X	X	X	X	X	X	X	Full dates are not released. Discharge quarter (DQTR) and year (YEAR) are derived from discharge date during processing.
	Discharge quarter (as received from source)			Disc.	Disc.							<i>Added to HCUP data in 2006. <u>Discontinued</u> on the NIS and KID beginning with 2012.</i>
Admission hour/ Discharge hour	<a href="#">Admission hour</a> <a href="#">Discharge hour</a>		X						X	X	X	Hour of the day at which the patient was admitted and discharged. Included on HCUP databases only if both times are provided.  <i>Added to the SASD and the SEDD in 2001, and the SID in 2003.</i>
Length of stay (same day stay = 0 days)	Length of stay ( <a href="#">cleaned</a> )		X	X	X			X	X	X	X	Length of hospital stay in days. HCUP keeps two versions: 1) as supplied by source (LOS_X), and 2) a cleaned version that sets extreme values to missing (LOS).  Admission and discharge on same day is coded as zero (0).
	Length of stay ( <a href="#">as received from source</a> )		X	Disc.	Disc.				X	X	X	<i>Discontinued on the NIS and KID beginning with 2012.</i>
	<a href="#">Length of stay for NEDS</a> (inpatient only)						X					LOS_IP indicates length of stay from SID-based (inpatient) records in the NEDS.

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Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
Type of admission/ visit	<a href="#">Type of admission</a>		X	Disc.	Disc.				X	X	X	The priority of the admission or type of admission or visit (emergency, urgent, elective, newborn). Rarely reported for outpatient encounters.  <i>Discontinued on the NIS and KID beginning with 2012.</i>
	<a href="#">Elective admission</a>			X	X			X				A yes/no indicator that is derived from the Type of Admission.  <i>Added to the KID in 2003 and the NIS beginning in 2002.</i>
Point of origin / Source of admission	Point of origin <a href="#">(UB-04 coding)</a> and <a href="#">(as received from source)</a>		X	Disc.	Disc.				X	X	X	Replaces "Source of Admission" in the UB-04 specifications. HCUP keeps two versions: 1) as supplied, 2) using UB-04 coding. <i>Added to HCUP data in 2007.</i> <i>Added to the KID in 2009.</i>  <i>Discontinued on the NIS and KID beginning with 2012.</i>
	Admission source <a href="#">(UB-92 coding)</a> <a href="#">(uniform)</a> <a href="#">(as received from source)</a>		X	Disc.	Disc.				X	X	X	To accommodate different time frames for adopting the new coding, HCUP continued to use Admission Source elements where appropriate. Valid until Oct 1, 2007. Replaced by "Point of Origin."  HCUP keeps three versions: 1) using UB-92 coding ( <i>added to HCUP data in 2002</i> ), 2) grouped into uniform categories, 3) as supplied ( <i>added to HCUP data in 1998</i> ).  <i>Discontinued on the NIS and KID beginning with 2012.</i>

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Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
	Transfer Indicator ( <a href="#">TRAN_IN</a> )		X	X	X				X			<p>"Transfer in" is derived from Admission Source and Point of Origin. This data element indicates the type of transfer: from an acute care hospital; another type of health care facility; or not a transfer.</p> <p><i>Added to the NIS in 2008.</i>  <i>Added to SID and KID in 2009.</i></p>
Patient discharge status	Disposition of patient ( <a href="#">as received from source</a> )		X						X	X	X	Disposition or patient discharge status, retained as provided by the source.
	Disposition of patient ( <a href="#">uniform</a> )		X	X	X	X		X	X	X	X	<p>HCUP keeps three additional versions:</p> <p>1) grouped into uniform categories,  2) UB-92 coding (through 2006)  3) UB-04 coding (valid for 2007-2011).</p>
	Disposition of patient ( <a href="#">UB-92 coding</a> ) ( <a href="#">UB-04 coding</a> )		X	Disc.	Disc.				X	X	X	<u><i>DISPUB04 was discontinued on the NIS and KID beginning with 2012.</i></u>
	Disposition of patient <a href="#">from ED</a> and <a href="#">from inpatient</a> admission						X					DISP_IP and DISP_ED indicate the disposition of the patient at discharge from an inpatient stay or emergency department.
	Transfer Indicator ( <a href="#">TRAN_OUT</a> )		X	X	X				X			<p>"Transfer out" is derived from uniform discharge status. This data element indicates the type of transfer: to an acute care hospital; another type of health care facility; or not a transfer.</p> <p><i>Added to the HCUP state data in 2009. Added to the NIS in 2010. Added to the KID in 2012.</i></p>

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Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
Principal and secondary diagnoses – as many as collected	Diagnoses <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-CM)</a>		X	X	X	X	X	X	X	X	X	The first-listed diagnosis is the principal ICD-9-CM or ICD-10-CM diagnosis established to be chiefly responsible for the admission of the patient for treatment.  <i>Added ICD-10-CM diagnoses to the HCUP data in Q4 2015.</i>
	Admitting Diagnoses <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-CM)</a>		X						X			ICD-9-CM code that describes the patient's diagnosis at the time of admission. HCUP added ICD-10-CM admitting diagnosis in 2015.  <i>Added to SID beginning with 2012. Added ICD-10-CM version in Q4 2015.</i>
	Number of reported diagnoses <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-CM)</a>		X	X	X	X	X	X	X	X	X	The total number of diagnoses (valid and invalid) coded on the discharge record.  <i>Added ICD-10-CM version in Q4 2015.</i>
Patient's reason for visit – as many as collected	<a href="#">Reason for visit</a>	X	X							X	X	The ICD-9-CM diagnosis codes describing the patient's reason for visit at time of outpatient registration. Beginning Q4 2015, the visit reason is stored in the data element as ICD-10-CM visit reason.  <i>Added to the HCUP databases in 2003.</i>

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Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
Diagnosis Code Qualifier (ICD Revision)	Diagnosis codes <a href="#">ICD version indicator</a>		Disc.	Disc.	Disc.		Disc.	Disc.	Disc.	Disc.	Disc.	Indicator of whether ICD-9-CM or ICD-10-CM coding system was used for diagnoses. <i>Added to HCUP state databases in 2014. Added to the NIS, NEDS and NRD in 2015. Added to the KID in 2016. Discontinued in 2018.</i> <i>Will be added to the NASS if NASS databases are created pre-2016.</i>
External Cause of Injury codes (if coded separately from diagnosis fields)	<a href="#">External Cause of Injury / Morbidity (ICD-9-CM)</a> <a href="#">(ICD-10-CM)</a>		Disc.	Disc.	Disc.		Disc.	Disc.	Disc.	Disc.	Disc.	Cause of injury and/or place of occurrence E codes (ICD-9-CM) or cause of morbidity (ICD-10-CM). <i>Beginning with 2003, HCUP creates distinct fields for E codes, including any reported in the diagnosis array or provided separately by the source.</i> <i>Discontinued in 2017. HCUP includes external cause of morbidity codes with other diagnoses in the diagnosis-related data elements (I10_DXn, I10_NDX, and DXPOAn); no longer retained in separate data elements. .</i>
	<a href="#">Number of Cause of Injury / Morbidity Codes (ICD-9-CM)</a> <a href="#">(ICD-10-CM/PCS)</a>		Disc.	Disc.	Disc.		Disc.	Disc.	Disc.	Disc.	Disc.	The total number of External Cause of Injury (E-codes) or Cause of Morbidity codes (valid and invalid) coded on the discharge record.
External Cause of Morbidity codes	<a href="#">External Cause of Morbidity Code</a>		X	X	X		X	X	X	X	X	ICD-10-CM external cause of morbidity codes (i.e., codes starting with V, W, X, and Y). <i>Added to HCUP data in Q4 2015.</i>

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	<a href="#">Number of reported External Cause of Morbidity codes</a>		X	X	X		X	X	X	X	X	The total number of external cause of morbidity codes (valid and invalid) coded on the discharge record. <i>Added to HCUP data in Q4 2015.</i>
Present on admission (POA) indicator	Diagnosis present at admission ( <a href="#">ICD-9-CM</a> ) ( <a href="#">ICD-10-CM</a> ) I10-DXPOAn		X			X		X	X	X	X	Indicator of diagnosis or E code was present at the time the order for inpatient admission occurred. Called DxAtAdmitn in earlier years. To be released on NRD when all participating states provide POA. <i>Added to HCUP state data in 2007.</i> <i>Will be included in the NASS when all Partners in NASS report POA.</i>
	E codes present at admission ( <a href="#">ICD-9-CM</a> ) ( <a href="#">ICD-10-CM</a> )		Disc.			Disc.			Disc.	Disc.	Disc.	<i>Discontinued in 2017. HCUP includes external cause of morbidity codes with other diagnoses in the diagnosis-related data elements (I10_DXn, I10_NDX, and DXPOAn); no longer retained in separate data elements.</i>
	POA discharge- and hospital-level <a href="#">edits</a>		X						X	X	X	Indicators that 1) a discharge has POA missing on all nonexempt diagnoses or secondary diagnoses; 2) a hospital has POA reported as Y on all diagnoses on all discharges, 3) a hospital has POA reported as missing on all non-Medicare discharges or 15% or more of all nonexempt diagnoses. <i>Added to HCUP data in 2014</i>

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Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
Principal and secondary procedures – as many as collected	Procedures <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-PCS)</a>		X	X	X			X	X	X	X	The ICD-9-CM or ICD-10- PCS codes that identify the principal and all other significant procedures performed during the stay. Provide additional, secondary procedures if available. <i>HCUP added ICD-10-PCS procedures in 2015.</i>
	Procedures for NEDS – from SID (ICD-9-CM) (ICD-10-PCS)						X					PR_IP and I10_PR_IP include the ICD-9-CM or ICD-10-PCS procedures that were retained from SID-based records in the NEDS.
	<a href="#">Procedures for NEDS</a> – from SEDD (ICD-9-CM)						X					PR_ED includes the ICD-9-CM procedures that were retained from SID-based records in the NEDS. There is no equivalent ICD-10- PCS data element.
	Number of reported procedures <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-CM)</a>		X	X	X		X	X	X	X	X	The total number of ICD-9-CM procedures (valid and invalid) coded on the discharge record. For data beginning in the fourth quarter of 2015, the count of procedures is stored in the data element I10_NPR to indicate the implementation of the ICD-10-CM/PCS coding system. <i>The number of procedures from the SEDD (NPR_ED) was discontinued in the NEDS beginning 2015.</i>

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Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
Procedure coding method used	Procedure type indicator <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-PCS)</a>		X						X	X	X	Indicates type of procedure code reported on the record: ICD-9-CM, CPT/HCPCS, or both. Beginning in the fourth quarter of 2015, the element I10_PROCTYPE indicates type of procedure code reported on the record: ICD-10-PCS, CPT/HCPCS, or both. <i>Added to the NIS, NEDS, and NRD in 2015.</i>
Procedure Code Qualifier (ICD Revision)	Procedure code <a href="#">ICD version indicator</a>		Disc.	Disc.			Disc.	Disc.	Disc.	Disc.	Disc.	Indicator of whether ICD-9-CM or ICD-10-PCS coding system was used for procedures. <i>Added to HCUP intramural state databases in 2014. Added to the NIS, NEDS, and NRD in 2015.</i>  <i>Discontinued in 2018.</i>
Date of principal and secondary procedures	<a href="#">Date of procedure(s)</a>	X										As many dates of ICD-9-CM or ICD-10-PCS procedures as are collected by the data organization. May include procedures performed before the date of admission (e.g., pre-admission tests).
	Procedure <a href="#">month</a> and <a href="#">year</a>								X	X	X	Full dates are not released. Procedure month (PRMONTHb) and year (PRYEARn) are derived from procedure date during processing. §
Days from admission to procedure(s)	<a href="#">Days from admission to procedure</a> (for ICD-9-CM or ICD-10-PCS codes)		X	X	X			X	X	X	X	HCUP assigns values from dates for ICD-9-CM or ICD-10-PCS procedures during processing or from supplied fields. To be released on NRD when available from all participating States.

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**HCUP Data Elements**  
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Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
PAYMENT INFORMATION												
Total charges for stay or visit	Total charges <a href="#">(cleaned)</a>		X	X	X	X		X	X	X	X	The total of all charges for the stay or visit, in dollars. May be provided as the charges corresponding to revenue center 0001. HCUP keeps two versions: 1) as supplied by data source (TOTCHG_X) 2) verified to remove unreasonably high or low charges per day (TOTCHG).
	Total charges <a href="#">(as received from source)</a>		X	Disc.	Disc.				X	X	X	<i>Discontinued on the NIS and KID beginning with 2012.</i>
	Total charges for NEDS <a href="#">(inpatient)</a> and <a href="#">ED</a>							X				

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**HCUP Data Elements**  
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Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
Expected payer, grouped – as many as collected	Expected payer ( <a href="#">as received from source</a> )		X	Disc.	Disc.				X	X	X	<p>The type of plan from which the provider expects payment for the bill. May be aggregated at a relatively high level (such as Medicare, Medicaid, HMO, commercial insurance, etc.) or provided with greater detail. HCUP keeps two versions:</p> <p>1) as supplied by data source (PAY1_X – PAY3_X), and</p> <p>2) HCUP uniform format (PAYn).</p> <p>Note: Tertiary payer is not included on the NIS, KID, and NEDS. Secondary and Tertiary payer are not included in the NASS. <i>Discontinued payer as supplied by source (PAY1_X, PAY2_X) and secondary payer (PAY2) on the NIS and KID beginning with 2012.</i></p>
	Expected payer ( <a href="#">uniform</a> )		X	X	X	X	X	X	X	X	X	
Expected payer, by plan name – as many as collected	Expected payer, ( <a href="#">by plan name</a> )		X						X	X	X	Detailed identification or names of health plans from which the provider expects payment for the bill. This data identifies specific payers such as individual HMO plans or insurance carriers.
Type of Bill	<a href="#">Bill type</a>		X						X	X	X	<p>Standard UB-04 code indicating the specific type of bill (i.e., hospital inpatient, outpatient, adjustment, and void).</p> <p><i>Excluded from the SID for 2005-2012.</i></p>

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**HCUP Data Elements**  
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Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
SERVICE DETAIL												
Revenue codes	Revenue center codes, associated with charges (grouped <a href="#">revenue codes</a> and <a href="#">charges</a> ) or (line item <a href="#">revenue codes</a> and <a href="#">charges</a> )		X						X	X	X	Revenue center codes identify specific accommodation, ancillary service, or billing calculations. Many states use UB-04 codes; some states have developed their own coding scheme.
CPT/HCPCS codes – as many as collected	CPT/HCPCS, <a href="#">(array)</a> or <a href="#">(line item)</a>		X			X			X	X	X	The CPT and/or HCPCS procedure codes provided as an array (CPTn) or line item entries (CPTHCPCS) are retained as provided by the source.
	<a href="#">Number of reported CPT/HCPCS codes</a>		X			X	X		X	X	X	The total number CPT/HCPCS procedures (valid and invalid) coded on the discharge record.
CPT/HCPCS modifiers	CPT/HCPCS modifiers <a href="#">(array)</a> or <a href="#">(line item)</a>		X			X			X	X	X	CPT/HCPCS modifiers (CPTM1_n and CPTM2_n) and line item modifiers (CPTMOD1 and CPTMOD2) are retained as provided by the source.  <i>Will be included in the NASS when all Partners in NASS report CPT modifiers.</i>
Rates	Accommodation rates <a href="#">(array)</a> or <a href="#">(line item)</a>		X						X			The daily rate (RATEn) and line item rate (RATE) are retained as provided by the source.

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**HCUP Data Elements**  
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Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
Service date/day	Days from admission to outpatient CPT/HCPCS service ( <a href="#">line item</a> )		X						X	X	X	HCUP calculates days from admission date to the outpatient CPT/HCPCS service (SERVDAY) during processing. Date of service is not retained on the HCUP databases.
Units of service	Units, associated with ( <a href="#">array</a> ) or ( <a href="#">line item</a> )		X						X	X	X	Unit of service (UNITn) and line item units (UNITS) are retained as provided by the source.
Total Charges by revenue code	<a href="#">Line item charges</a> or <a href="#">Charge summary, reported with associated revenue center(s)</a> or <a href="#">Detail charges, reported without revenue codes</a>		X						X	X	X	Total charges related to the revenue code. Charges may be reported in association with a corresponding revenue code field (per UB-04 specifications) or reported by revenue type (defined by data organization's charge detail fields). HCUP uses three different schemes for retaining charges: 1) CHARGE: Associated with a corresponding line item revenue code (REVCODE). 2) REVCHGn: Grouped by revenue center (REVCDn). <i>Added to HCUP data in 2005.</i> 3) CHGn: Detailed charge array for grouped revenue centers – in a fixed order defined by data organization.

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Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
DISEASE SEVERITY MEASURES – ASSIGNED BY HCUP												
--	<a href="#">All Patient Refined DRG</a> (3M APR-DRG)		X	X	X			X				<p>Severity measures were added to HCUP data beginning with 2002 NIS, 2003 KID, and 2003 Intramural SID.</p> <p>Measures created by HCUP using licensed software are not available on Central Distributor State databases.</p> <p><b>APS-DRGs</b> are assigned using software developed by Ingenix (now OptumInsight), and weights developed using the NIS. <i>Discontinued on the 2010 NIS and KID, and the 2011 intramural SID.</i></p> <p><b>Disease Staging</b> was assigned using software developed by Medstat.</p> <p><i>HCUP discontinued weights for mortality, LOS, and total charges beginning with the 2008 NIS, 2009 KID, and 2009 intramural SID.</i></p> <p><i>Discontinued disease category and stage of principal diagnosis beginning with the 2011 data.</i></p>
--	<a href="#">All-Payer Severity-Adjusted DRG</a> (Ingenix APS-DRG)		X	Disc	Disc							
--	<a href="#">Disease Staging</a> (Medstat)		X	Disc.	Disc.							

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**HCUP Data Elements**  
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Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
--	<a href="#">Elixhauser Comorbidity Measures</a>			Disc.	Disc.			Disc.	Disc.			<p>Comorbidity measures include the prefix "CM_."</p> <p><i>Added to HCUP data beginning with the 2002 NIS and SID, and 2003 KID.</i></p> <p><i>Discontinued on NIS, KID, and NRD in Q4 2015.</i></p> <p><i>Discontinued on SID in 2016.</i></p> <p><i>Available as standalone ICD-10-CM tool on HCUP-US.</i></p>
<b>DISEASE SEVERITY MEASURES – As Provided by Data Organization</b>												
All Patient Refined DRG	<a href="#">APR DRG</a> (as received from source)		X						X			<p>Retained as provided by the source. Called ADRG to distinguish from APR-DRG created under HCUP's license with 3M.</p> <p>Only released on the Central Distributor SID if measures are provided by Data Organization.</p>
All-Payer Severity-Adjusted DRG	<a href="#">APS DRG</a> (as received from source)		X						X			<p>Retained as provided by the source. Called APSDRG_X to distinguish from APS-DRG created under HCUP's license with 3M.</p> <p>Only released on the Central Distributor SID if measures are provided by Data Organization.</p>
Ambulatory Patient Group (APG)	<a href="#">APG</a> code, <a href="#">category</a> , and <a href="#">type</a> (as received from source)		X							X	X	<p>Classification system used for outpatient data. Retained as provided by the source.</p>

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**HCUP Data Elements**  
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Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
Ambulatory Payment Classification code	<a href="#">Ambulatory Payment Classification (APC)</a> (as received from source)		X							X	X	In most cases, the unit of payment under the Medicare Outpatient Prospective Payment System (OPPS) is the APC. CMS assigns individual services (HCPCS codes) to APCs based on similar clinical characteristics and similar costs. The payment rate and copayment calculated for an APC apply to each service within the APC.  <i>Added to HCUP data in 2008.</i>
Refined DRG (Solucient RDRG)	<a href="#">Refined DRG</a> (as received from source)		X						X			Retained as provided by the source.

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Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
HCUP SOFTWARE TOOLS												
Beginning with Q4 2015, the measures assigned from HCUP Tools for ICD-10-CM/PCS are no longer provided on HCUP nationwide data. The standalone software for ICD-10-CM/PCS tools remains available for users to run the most current versions at <a href="http://www.hcup-us.ahrq.gov/tools_software.jsp">www.hcup-us.ahrq.gov/tools_software.jsp</a> .												
--	<a href="#">Clinical Classifications Software (CCS)</a> for diagnoses, <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-CM)</a> procedures, <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-PCS)</a>			Disc.	Disc.		Disc.	Disc.	Disc.	Disc.	Disc.	HCUP assigns Clinical Classification Software (CCS) categories. Assigned for diagnoses (DXCCSn), procedures (PRCCSn), and E codes (E_CCSn). <i>Discontinued</i> on NIS, KID, NEDS, and NRD in Q4 2015. <i>Discontinued</i> on State data in 2016. CCS for diagnoses to be included in the NASS when ICD-10_CM is available. Available as standalone ICD-10-CM tool on HCUP-US.
	<a href="#">Clinical Classifications Software (CCS)</a> for E Codes <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-CM)</a>		Disc.	Disc.	Disc.		Disc.	Disc.	Disc.	Disc.	Disc.	<i>Discontinued</i> in 2017. HCUP includes external cause of morbidity codes with other diagnoses in the diagnosis-related data elements (I10_DXn, I10_NDX, and DXPOAn); no longer retained in separate data elements.
	CCS for procedures from <a href="#">ED</a> and <a href="#">inpatient admission</a>						X	Disc.				PRCCS_IP and PRCCS_ED indicate the procedure CCS categories for SID and SEDD-based records in the NEDS.  <i>Discontinued or temporarily discontinued</i> on HCUP data in 2015. Available as standalone ICD-10-PCS and CPT/HCPCS tools on HCUP-US.

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**HCUP Data Elements**  
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Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
	Multi-Level CCS for diagnoses, <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-CM)</a> procedures, <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-PCS)</a> and E Codes <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-CM)</a>		X	Disc.	Disc.	X		Disc.	Disc.	Disc.	Disc.	Groups single-level CCS categories into broader body systems or condition categories (DXMCCSn, PRMCCSn, E_MCCSn). Also splits single-level CCS categories to provide more detailed information about conditions. Includes only principal diagnosis, procedure, and E code in NRD.  <i>Added to the SID, SASD and SEDD in 2007. Added to the NIS and KID in 2009, for principal diagnosis, procedure, and E Code only.</i>  <i>Discontinued on NIS, KID, NEDS, and NRD in Q4 2015. Available as standalone ICD-10-CM tool on HCUP-US.</i>  <i>Discontinued or temporarily discontinued I10 categories on the Central Distributor files in 2016.</i>
--	<a href="#">CCS-Services and Procedures</a>		X			X	X		X	X	X	HCUP assigns Clinical Classification Software categories using CPT/HCPCS-based data (CPTCCSn).

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**HCUP Data Elements**  
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Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
	CCS for Mental Health and Substance Abuse ( <a href="#">CCS-MHSA</a> ) for <a href="#">general</a> and <a href="#">specific</a> categories		Disc.	Disc.	Disc.				Disc.	Disc.	Disc.	<p><i>Beginning with 2008, the CCS for Mental Health and Substance Abuse (CCS-MHSA) categories were permanently integrated into the Clinical Classifications Software (CCS).</i></p> <p>The CCS-MHSA assigns variables that identify mental health and substance abuse-related diagnoses using the ICD-9-CM diagnosis codes, at the general (CCSMGNn) and specific (CCSMSPn) classifications.</p> <p><i>Included in HCUP data only for 2005-2006.</i></p>
--	Chronic Condition Indicator ( <a href="#">ICD-9-CM</a> ) ( <a href="#">ICD-10-CM</a> )			Disc.	Disc.		Disc.	Disc.	Disc.	Disc.	Disc.	<p>Assigned based on diagnoses to indicate chronic and non-chronic conditions.</p> <p><i>Added to HCUP data in 2005. §</i></p> <p><i><u>Discontinued</u> on NIS, KID, NEDS, and NRD in Q4 2015.</i></p> <p><i><u>Discontinued</u> on State data in 2016.</i></p> <p><i>Available as standalone ICD-10-CM tool on HCUP-US.</i></p>

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**HCUP Data Elements**  
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Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
	Number of chronic conditions <a href="#">(NCHRONIC)</a>  (BODYSYSTEMn) <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-CM)</a>		X	Disc.	Disc.			Disc.	Disc.	Disc.	Disc.	The number of chronic conditions on each record. <i>NCHRONIC</i> was added to the NIS in 2008. Added to the SID, SASD, SEDD, and KID in 2009. BodySystem was added to HCUP data in 2014.  <i>Discontinued</i> on NIS, KID, and NRD in Q4 2015. <i>Discontinued</i> on State data in 2016. Available as standalone ICD-10-CM tool on HCUP-US. <i>Discontinued</i> ICD-10-CM-PCS on State data in 2016.
--	Procedure classes <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-PCS)</a>		X	Disc.	Disc.		Disc.	Disc.	Disc.	Disc.	Disc.	Assigned to each procedure to indicate minor/major therapeutic and diagnostic procedures. Added to HCUP data in 2005. <i>Discontinued or temporarily discontinued</i> on NIS, KID, NEDS, and NRD in Q4 2015. <i>Discontinued</i> on State data in 2016.  <i>Discontinued or temporarily discontinued</i> ICD-10-CM-PCS on Central Distributor State data in 2016. Available as standalone ICD-10-CM tool on HCUP-US.

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**HCUP Data Elements  
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Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
--	<p>Surgery Flag Software</p> <p>Broad definition  <a href="#">(Surgery Flag – Broad)</a>  SASD:  <a href="#">(HCUP_SURGERY_BROAD_I9)</a>  <a href="#">(HCUP_SURGERY_BROAD_CPT)</a></p> <p>Narrow definition  <a href="#">(Surgery Flag – Narrow)</a>  SASD:  <a href="#">(HCUP_SURGERY_NARROW_I9)</a>  <a href="#">(HCUP_SURGERY_NARROW_CPT)</a></p>		X						2011 only	X	2011 only	<p>Identifies surgeries based on ICD-9-CM and CPT codes. Not assigned for ICD-10-PCS codes.</p> <p>AHRQ revised the HCUP definitions of ambulatory surgery in collaboration with an expert medical coder and general surgeon.</p> <p>Number of reported ICD-9-CM procedures or CPT procedures that qualify as a surgery using a broad definition or using a narrow definition.</p> <p><i>Included in HCUP 2011 data (one year only). Reinstated in HCUP SASD beginning with 2015.</i></p> <p><i><u>Discontinued or temporarily discontinued the ICD-9-CM based broad and narrow definitions in Q4 2015. Available as standalone ICD-10-PCS tool on HCUP-US.</u></i></p> <p><i><u>Discontinued or temporarily discontinued the ICD-9-CM based broad and narrow definitions in 2016.</u></i></p>

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**HCUP Data Elements**  
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Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
--	Utilization Flags ( <a href="#">ICD-9-CM</a> ) ( <a href="#">ICD-10-PCS</a> )								Disc.	Disc.	Disc.	Assigned based on a combination of UB-04 revenue codes and ICD-9-CM procedure codes. Only available if source provides revenue codes. Utilization flags include the prefix "U_." <i>Beginning with Q4 2015, only 10 of the 30 utilization flags were included on HCUP data.</i> <i>Discontinued or temporarily discontinued the ICD-10-PCS utilization flags from Central Distributor State files in 2016.</i>
<b>HCUP SUPPLEMENTAL FILES</b>												
--	<a href="#">Hospital-specific Cost-to-Charge Ratios</a> (CCR File)		X	Disc.	Disc.			X	X			HCUP creates an estimate of the cost of hospital services from the Medicare Cost Reports (MCR), beginning with the 2000 HCUP files. Descriptions of the file and data elements are provided at <a href="http://www.hcup-us.ahrq.gov/db/state/costtocharge.jsp">www.hcup-us.ahrq.gov/db/state/costtocharge.jsp</a> . Released on a separate file. Can be linked to the NIS, KID, NRD, and SID. §
--	<a href="#">Price-to-Charge Ratios</a> (PCR File)		X						X			HCUP creates an estimate of the payer-specific price of hospital services from financial files provided by certain States. Released on a separate file. Can be linked to the SID. §

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**HCUP Data Elements**  
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Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
--	<a href="#">Hospital Market Structure measures</a> (HMS File)		X	Disc.	Disc.				X			<p>HCUP creates measures of hospital market competition. Descriptions of the file and data elements are provided at <a href="http://www.hcup-us.ahrq.gov/toolssoftware/hms/hms.jsp">www.hcup-us.ahrq.gov/toolssoftware/hms/hms.jsp</a>.</p> <p>Files for 1997, 2000, and 2003 are currently available.</p> <p>Released on a separate file. Can be linked to the NIS, KID, and SID. §</p> <p><i>Discontinued on the NIS and KID beginning with 2012.</i></p>
--	HCUP Supplemental Files <a href="#">for Revisit Analyses</a>		X						X	X	X	<p>HCUP creates data elements to identify inpatient, ambulatory surgery, and ED readmissions (a linkage variable [VisitLink] for each unique patient and number of days between visits). Descriptions of the file and data elements are provided at <a href="http://www.hcup-us.ahrq.gov/toolssoftware/revisit/revisit.jsp">www.hcup-us.ahrq.gov/toolssoftware/revisit/revisit.jsp</a>.</p> <p><i>The revisit data elements 2003-2008 data were released on supplemental files. Beginning with 2009, revisit elements were included in the core files. Can be linked to SID, SASD and SEDD. §</i></p>

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Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
--	American Hospital Association <a href="#">Linkage File</a>								X	X	X	HCUP creates a public-release file containing a small number of AHA data elements. Information about the file is provided at <a href="http://www.hcup-us.ahrq.gov/db/state/ahalinkage/aha_linkage.jsp">www.hcup-us.ahrq.gov/db/state/ahalinkage/aha_linkage.jsp</a> . Beginning with 2013, a “ <u>hospital non-rehab, non-long term acute care</u> ” indicator was added. Released on a separate file. Can be linked to CD SID, SASD and SEDD. §
<b>OTHER VALUE-ADDED MEASURES</b>												
--	<a href="#">DRG</a> and <a href="#">MDC</a> groups		X	X	X		X	X	X			HCUP assigns two versions: 1) the current version in use on discharge date 2) version 24, in 2006 to 2014. 3) version 32, only available for 2015. 4) version 35, starting in 2017. Note: version 18 was assigned for 1998-2006 processing.
--	<a href="#">DRG_NoPOA</a> and <a href="#">MDC_NoPOA</a>		X	X	X		X	X	X			HCUP calculates DRG and MDC at discharge without present on admission codes. <i>DRG_NoPOA added to the SID, NIS and NEDS in 2008. Added to the KID in 2009.</i> <i>MDC_NoPOA was added to the NIS, KID, and NEDS in 2009. Added to the SID in 2010.</i>
	<a href="#">DRG version</a>		X	X	X		X	X	X			Indicates the version of the DRG Grouper used to assign the DRG and MDC data elements

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Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
--	<a href="#">Died during hospitalization</a>		X	X	X			X	X	X	X	A yes/no indicator derived from disposition during processing.
--	<a href="#">Died during ED visit</a>						X					Indicates whether the patient died in the ED, died in the hospital, or did not die.
--	Hours in emergency department <a href="#">(DURATION)</a>		X							X	X	HCUP calculates time spent in the emergency department in hours and minutes. <i>Added to HCUP data in 2011.</i>
--	Hospital birth <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-CM)</a>		X	Disc.	X				Disc.	Disc.	Disc.	HCUP-assigned indicator that identifies discharges for births. Available on the KID for all years. <i>Added to HCUP data in 2006. Discontinued on NIS and KID in Q4 2015.</i> <i>Discontinued on State intramural outpatient data in 2017.</i>
--	<b>Injury Diagnoses</b>  Any injury <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-CM)</a>  Multiple Injuries <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-CM)</a>		Disc.				Disc.		Disc.	Disc.	Disc.	Injuries are identified from ICD-9-CM diagnosis codes using a scheme recommended by the State and Territorial Injury Prevention Directors Association (STIPDA). <i>Added to NEDS in 2009. Discontinued on NEDS in Q4 2015.</i> <i>Added to HCUP State data in 2011. Added ICD-10-CM based injury measures in Q4 2015 only; discontinued in 2016.</i>

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Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
	<a href="#">Mechanism of injury</a> (11 measures)		Disc.				Disc.		Disc.	Disc.	Disc.	<p>Mechanism and manner of injury are identified using external cause-of-injury codes (E Codes), consistent with a classification system used by the CDC. Severity is assigned using a publicly-available Stata program for Injury Classification (ICDPIC).</p> <p>Mechanism of injury flags use the prefix "INJURY_."</p> <p>Manner/intent of injury flags use the prefix "INTENT_."</p> <p><i>Indicator of self-harm was added to the NEDS in 2006; other measures were added to NEDS in 2009. Added to HCUP State data in 2011.</i></p> <p><i>Discontinued on HCUP data in Q4 2015. Measures have not yet been defined by the CDC for ICD-10-CM codes.</i></p>
	Manner/intent of injury (3 measures): <a href="#">Assault</a> <a href="#">Unintentional</a> <a href="#">Intentional self-harm</a>		Disc.				Disc.		Disc.	Disc.	Disc.	
	Injury <a href="#">severity score</a>		Disc.				Disc.		Disc.	Disc.	Disc.	
--	Neonatal-maternal <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-CM)</a>		X	Disc.	Disc.				Disc.	Disc.	Disc.	<p>Indicator of neonatal or maternal diagnosis/procedure. <i>Discontinued on NIS and KID in Q4 2015.</i></p> <p><i>Discontinued on Intramural State data in 2018.</i></p> <p><i>Discontinued on Central Distributor State files in 2016.</i></p>

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Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
--	Major operating room procedure indicator (ORPROC) <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-CM)</a>		X	Disc.	Disc.			Disc.	Disc.	Disc.	Disc.	Indicates presence of at least one major procedure during the stay (0/1 indicator). <i>Added to the NIS in 2008.</i> <i>Added to the SID and KID in 2009.</i> <i>Temporarily unavailable on NIS, KID, and NRD in Q4 2015.</i> <i>Temporarily unavailable on Central Distributor State files in 2016.</i> <i>Available as standalone Procedure Classes for ICD-10-PCS tool on HCUP-US.</i>
--	Observation stay time <a href="#">(OS_TIME)</a>		X						X	X	X	HCUP calculates time spent in observation services (OS) from "units" reported in association with revenue center code 762. <i>Added to HCUP data in 2011.</i>
--	Service Line <a href="#">(ICD-9-CM)</a> <a href="#">(ICD-10-CM)</a>		X	Disc.				Disc.	Disc.			Indicator of five types of service (maternal & neonatal, mental health/substance use, injury, surgical, medical) <i>Added to HCUP NIS, NRD, and intramural SID in 2014.</i> <i>Discontinued on NIS and NRD in Q4 2015.</i> <i>Discontinued on State Central Distributor files in 2016.</i>
—	<a href="#">NRD Same Day Event</a>							X				Identifies transfer and same-day stay pairs records by type
--	<a href="#">Rehab Transfer</a>							X				Indicates a combined record involving transfer to rehabilitation, evaluation, or other aftercare.

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Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
--	Urban/rural patient location: Core Based Statistical Areas (CBSA) ( <a href="#">PL_CBSA</a> )		X						X	X	X	
--	Urban/rural patient location: NCHS Urban-Rural Code ( <a href="#">PL_NCHS</a> ) ( <a href="#">PL_NCHS2006</a> )		X	X	X		X	X	X	X	X	HCUP assigns a categorical urban-rural designation for the patient's county of residence based on National Center for Health Statistics (NCHS) data. <i>Added to the HCUP state databases in 2005; KID and NEDS in 2006; NIS in 2007. Renamed in 2013.</i>
--	Urban/rural patient location: Rural-Urban Continuum (RUCC) Codes ( <a href="#">PL_RUCC</a> ) ( <a href="#">PL_RUCC2003</a> )		Disc.						Disc.	Disc.	Disc.	HCUP assigns a categorical urban-rural designation for the patient's county of residence based on Rural-Urban Continuum Codes (RUCC). <i>Renamed in 2013. Discontinued in 2018.</i>
--	Urban/rural patient location: Urban influence codes (UIC) ( <a href="#">PL_UIC</a> ) ( <a href="#">PL_UIC2003</a> )		Disc.						Disc.	Disc.	Disc.	HCUP assigns a categorical urban-rural designation for the patient's county of residence based on the OMB's Urban Influence Codes (UIC). This categorization emphasizes the relationship of outlying counties to major metropolitan areas. <i>Added to the Intramural files in 2002. Added to the Central Distributor files in 2003. Renamed in 2013. Discontinued in 2018.</i>

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Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
--	Urban-rural patient location: four-category adaptation of UICs ( <a href="#">PL_UR_CAT4</a> )		X	2003-2006	2003				X	X	X	This is a simplified adaptation of the 2003 UICs. <i>Note: the five-category PL_UR_CAT5 was dropped from HCUP data in 2007.</i>
--	Urban/rural patient location - additional measures		X						X	X	X	HCUP has assigned additional measures of patient location to intramural databases in previous years. These measures are based on: Core Based Statistical Area (CBSA) Metropolitan Statistical Area (MSA) ~discontinued 2013 Rural-Urban Commuting Area (RUCA) Codes Rural-Urban Continuum Codes (RUCC).
<b>WEIGHTS AND SAMPLING STRATA FOR NATIONWIDE DATABASES</b>												
--	National discharge weights for <a href="#">NIS</a> , <a href="#">KID</a> , <a href="#">NASS</a> , <a href="#">NEDS</a> , <a href="#">NRD</a>			X	X	X	X	X				Used for weighting discharges in the NIS, KID, NASS, NEDS, and NRD to the "universe" of discharges from all community hospitals located in the U.S.
	Trend weights for <a href="#">NIS</a> and <a href="#">KID</a>			X	X							Used for trend analyses of the 1993-2011 NIS and 1997 KID in place of the original discharge weights. These weights are available on HCUP Supplemental Files.
--	National hospital weights, <a href="#">NIS</a> and <a href="#">NEDS</a>			Disc.			X					Used for weighting sampled hospitals to the "universe" of all community hospitals located in the U.S.  <i><u>Discontinued</u> on the NIS and NEDS beginning with 2012.</i>

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Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
--	HCUP hospital stratum identifiers for NIS and KID: <a href="#">NIS Stratum</a> <a href="#">KID Stratum</a>  <a href="#">Bedsizes</a> <a href="#">Census division*</a> <a href="#">Census region*</a> <a href="#">Control/ownership</a> <a href="#">Location/teaching status</a> (combined)		X	X	X							Assigned to the NIS and KID from the American Hospital Association (AHA), Annual Survey Database.  <i>*Prior to 2012, the NIS and KID were stratified by census region. Beginning with 2012, they are stratified by census division.</i>
--	<a href="#">Children's hospital status</a> , for sampling				Disc.							Assigned based on information provided by the National Association of Children's Hospitals and Related Institutions (NACHRI).  <u>Discontinued on the KID beginning with 2012.</u>
--	HCUP sampling strata identifiers for NASS: NASS_Stratum  Bedsizes Census region Control/ownership Teaching status Location					X						Assigned to the NASS from the American Hospital Association (AHA), Annual Survey Database and information from the Centers for Medicare & Medicaid Services (CMS).

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Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
--	HCUP sampling strata identifiers for NEDS: <a href="#">NEDS Stratum</a> <a href="#">Census region</a> <a href="#">Control/ownership</a> <a href="#">Teaching status</a> <a href="#">Trauma center</a> <a href="#">Urban/rural location</a>						X					Assigned to the NEDS from the American Hospital Association (AHA), Annual Survey Database and the Trauma Information Exchange Program (TIEP) database.  Trauma designation was used in place of bed size because (1) bed size was not available, and (2) "trauma" designation was more predictive of outcomes related to ED visits.
--	HCUP sampling strata identifiers for NRD: <a href="#">NRD Stratum</a> <a href="#">Bedsize</a> <a href="#">Control/ownership</a> <a href="#">Teaching status</a> <a href="#">Urban/rural</a>							X				Assigned to the NRD from the American Hospital Association (AHA), Annual Survey Database.  The values of NRD_STRATUM are masked and differ from year to year. The three-digit value represents the hospital's census region, urban/rural location, teaching status, bed size, and ownership/control.
--	<a href="#">Total SASD visits with 1+ narrow surgery</a>					X						Identifies the sources of NEDS records (SID or SEDD)

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Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
HOSPITAL CHARACTERISTICS DERIVED FROM AHA ANNUAL SURVEY DATABASE												
--	<a href="#">Multi-hospital system membership</a>			Disc.	Disc.							Indicates hospital is member of multi-hospital system.  Assigned from the American Hospital Association (AHA), Annual Survey Database. § <i>Added to HCUP data in 2007.</i> <i>Discontinued on the NIS and KID beginning with 2012.</i>
--	<a href="#">Multi-hospital system cluster code</a>			Disc.	Disc.							Code multi-hospital systems as one of the following: <ul style="list-style-type: none"><li>• Centralized Health System</li><li>• Centralized Physician/ Insurance Health System</li><li>• Moderately Centralized Health System</li><li>• Decentralized Health System</li><li>• Independent Health System</li></ul> Assigned from the American Hospital Association (AHA), Annual Survey Database. § <i>Added to HCUP data in 2007.</i> <i>Discontinued on the NIS and KID beginning with 2012.</i>
--	<a href="#">Percentage of RNs among licensed nurses</a>			Disc.	Disc.							Licensed nurses include both RNs and LPNs.  Assigned from the American Hospital Association (AHA), Annual Survey Database. § <i>Added to HCUP data in 2007.</i> <i>Discontinued on the NIS and KID beginning with 2012.</i>

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Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
--	<a href="#">RN FTEs per 1000 adjusted inpatient days</a>			Disc.	Disc.							Assigned from the American Hospital Association (AHA), Annual Survey Database. § Added to HCUP data in 2007. <i>Discontinued on the NIS and KID beginning with 2012.</i>
--	<a href="#">LPN FTEs per 1000 adjusted inpatient days</a>			Disc.	Disc.							Assigned from the American Hospital Association (AHA), Annual Survey Database. § Added to HCUP data in 2007. <i>Discontinued on the NIS and KID beginning with 2012.</i>
--	<a href="#">Nurse Aide FTEs per 1000 adjusted inpatient days</a>			Disc.	Disc.							Assigned from the American Hospital Association (AHA), Annual Survey Database. § Added to HCUP data in 2007. <i>Discontinued on the NIS and KID beginning with 2012.</i>
--	<a href="#">Percentage of all surgeries performed in outpatient setting</a>			Disc.	Disc.							Assigned from the American Hospital Association (AHA), Annual Survey Database. § Added to HCUP data in 2007. <i>Discontinued on the NIS and KID beginning with 2012.</i>
<b>ADDITIONAL MEASURES FOR THE NEDS (DERIVED FROM CORE MEASURES)</b>												
--	<a href="#">HCUP file source for NEDS</a>						X					Identifies the sources of NEDS records (SID or SEDD).
--	Hospital <a href="#">urban-rural location</a>						X	X				The four-level categorization for urban-rural location of hospitals. This is a simplified adaptation of the 2003 version of the Urban Influence Codes (UIC).

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Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
--	<a href="#">Outcome of ED visit</a>						X					Derived from patient disposition. ED event indicates the outcome (treat and release; transferred; admitted to this hospital).
<b>ADDITIONAL MEASURES TO IDENTIFY OUTPATIENT SERVICE TYPE</b>												
Indicator of SASD Visits for NASS	TOTAL_ASVISITS					X						Total SASD visits with one or more narrow surgeries
Indicator of direct inpatient admission from emergency room	<a href="#">Condition Code "P7"</a>		X						X			Replaces Point of Origin value "7" (inpatient admission from this facility's emergency room), discontinued by NUBC as of July 2010. <i>Added to the SID in 2010.</i>
Indicator of ambulatory surgery services	<a href="#">Defined by organization</a> <a href="#">Defined by HCUP</a>		X							X	X	HCUP requests state-defined indicators that patient received each type of service, if separate revenue codes and charges are not provided. HCUP also assigns indicators using project-specific definitions during processing (based on revenue codes, detail charges, CPT codes). <i>Added to the NIS in 2007, discontinued 2012</i> <i>Added to the KID in 2009, discontinued 2012</i> <i>Added two new indicators of AS records to the SID, SASD and SEDD in 2011.</i> <i>Discontinued the HCUP_AS indicator in 2011.</i>
Indicator of emergency department services	<a href="#">Defined by organization</a> <a href="#">Defined by HCUP</a>		X	Disc	Disc			X	X	X	X	
Indicator of observation services	<a href="#">Defined by organization</a> <a href="#">Defined by HCUP</a>		X						X	X	X	

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Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
Indicator of outpatient services	<a href="#">Defined by organization</a>		X							X	X	The indicator of outpatient service (OPservice) is retained as provided by the source. Distinguishes emergency department visits, ambulatory surgery encounters, and other types of outpatient services.
Indicator of free-standing / off-site emergency medical services	Services performed at freestanding ED ( <a href="#">OFFSITE_ED_X</a> )		Disc.							Disc.	Disc.	An indicator that outpatient services were provided by a licensed freestanding emergency medical facility. Also represented by UB-04 Type of Bill 078x (effective July 2012). <i>Discontinued in 2017.</i>
Indicator of services performed off-site	Services performed at off-site location OFFSITE_X		X							X	X	<i>Added to HCUP intramural SID, SASD, and SEDD in 2017.</i>
Location of Service	Service Location		X									Hospital specific codes indicating location of outpatient service (ServiceLocation_X), when departments are not located with the main hospital, are retained as provided by the source. <i>Added to Intramural SASD and SEDD in 2016.</i>
Operating room time	<a href="#">OR time</a>		X							X		Retained as provided for outpatient (ambulatory surgery) visits. Exclusive of pre-operative and post-operative time.

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Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
ADDITIONAL STATE-SPECIFIC DATA ELEMENTS (May not be part of UB-04 specifications)												
Scheduled vs. unscheduled admission	<a href="#">Admission scheduled vs. unscheduled</a>		X						X			Indicator for whether or not the admission was scheduled. An alternative formulation of Admission Type.
Anesthesia	<a href="#">Method of anesthesia</a>		X						X	X	X	Indicates local, regional, general, other or no anesthesia.
APGAR	APGAR at <a href="#">1-minute</a> <a href="#">5-minute</a>		X						X			APGAR score taken at one minute after birth, five minutes after birth, or at an unspecified time (as received from source).
Birth weight of newborn (grams)	<a href="#">Birth weight</a>		X		Disc.				X			Weight of newborn at time of birth in grams (ungrouped) <i>Discontinued on the KID beginning with 2012.</i>
Census tract	<a href="#">Census Tract</a>	X										Retained as provided.
Do not resuscitate	<a href="#">Do not resuscitate indicator</a>		X						X	X	X	Information concerning the existence of a “Do not resuscitate” order.
Homeless indicator	<a href="#">Homeless</a>		X						X	X	X	Flag that indicates the patient is homeless. Retained as provided by the source or assigned based on special value in patient’s ZIP code.

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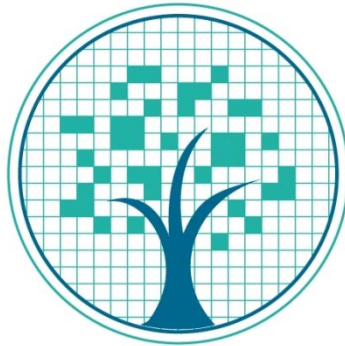
Data Elements		Internal AHRQ and Contractor Use Only		Central Distributor Release								Description/Comments
Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
Marital status	Marital status  ( <a href="#">UB-92 coding</a> )  ( <a href="#">UB-04 coding</a> )  ( <a href="#">as received from source</a> )		X						X	X	X	UB-04 field for public health data reporting. Patient marital status coding changed in 2007. Under UB-92 specifications, this element was required (FL 16). Under UB-04, it was moved to the fields for public health reporting (FL 81). HCUP keeps three versions: 1) UB-92 coding (through 2006) 2) UB-04 coding ( <i>added to HCUP databases in 2008</i> ) 3) as provided by the source.
Time in observation services (hours and minutes)	<a href="#">Observation time</a>		X						X	X	X	Retained as provided.
Onset of Symptom/Illness Date	<a href="#">Onset of Symptom</a>	X										Date when the patient first became aware of symptoms/illness. Based on occurrence codes. <i>Added to HCUP data in 2008.</i>
Medicare managed care	Refer to <a href="#">Expected Payer</a>	X Added to expected payer						X	X	X	X	HCUP uses this information to create uniformly formatted expected payer groupings.
Medicaid managed care	Refer to <a href="#">Expected Payer</a>	X Added to expected payer						X	X	X	X	
Patient country of residence (if other than US)	Patient country code (as received from source)	X										HCUP retains an alphabetic code for the patient country of residence. Usually obtained from patient address. <i>Added to HCUP data in 2008.</i>

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Provided by HCUP Partners	Included in HCUP databases	Data Development Files	Intramural State Databases	NIS	KID	NASS	NEDS	NRD	CD-SID	CD-SASD	CD-SEDD	
Preferred language spoken	<a href="#">Primary Language</a>		X						X	X	X	Retained as provided. § UB-04 field for public health data reporting. Uses ISO 639-2 language codes (may be a subset of all 400+ languages). <i>Added to HCUP data in 2008.</i>
Readmission flag	<a href="#">Readmission</a>		X						X	X	X	An indicator that the patient was readmitted to a provider.
Patient town of residence	<a href="#">Town</a>	X							X	X	X	Retained as provided by the source. Towns are political subdivisions used in place of counties in Northeastern and Western frontier states.
Patient city of residence	Patient City		X									Patient city (as received from source)
Other data elements, as provided by data organization	HCUP intramural data element lists: <a href="#">SID</a> <a href="#">SASD</a> <a href="#">SEDD</a>		X						X	X	X	HCUP retains other state-specific (non UB) elements of interest on the intramural databases.  Elements included on intramural files are eligible for inclusion on the Central Distributor state files.

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# H-CUP

HEALTHCARE COST AND UTILIZATION PROJECT

## **ANNUAL ACTIVITIES REPORT**

**March 26, 2019**



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## INTRODUCTION

The mission of the Agency for Healthcare Research and Quality (AHRQ) is to produce evidence to make health care safer, higher quality, more accessible, equitable, and affordable, and to work with the U.S. Department of Health and Human Services (HHS) and with other partners to make sure that the evidence is understood and used.

AHRQ promotes health care quality improvement by conducting and supporting health services research that develops and presents scientific evidence regarding all aspects of health care. Health services research addresses issues of organization, delivery, financing, utilization, patient and provider behavior, quality, outcomes, effectiveness, and cost. AHRQ develops the knowledge, tools, and data needed to improve the health care system and help Americans, health care professionals, and policymakers make informed health decisions.

The AHRQ-sponsored Healthcare Cost and Utilization Project (HCUP, pronounced “H-Cup”) is a vital resource, helping the Agency achieve its research agenda and thereby furthering its goal of improving the delivery of health care in the United States.

AHRQ releases the HCUP Annual Activities Report each spring to describe HCUP accomplishments in the previous year and to detail current plans for the upcoming year. This report is intended to inform HCUP Partners about project activities and ways in which HCUP data are currently used.

## HEALTHCARE COST AND UTILIZATION PROJECT

In 2018, AHRQ began the first year of a five year plan which will carry HCUP forward from 2018–2022. The scope of the HCUP builds on and maintains a strong foundation of valuable data, useful analytic tools, and important partnerships with State data organizations, hospital associations, and private data organizations (referred to collectively as “HCUP Partners”).

HCUP’s objectives are to accomplish the following:

- Create and enhance a powerful source of national, State, and all-payer health care data.
- Produce a broad set of software tools and products to facilitate the use of HCUP and other administrative data.
- Enrich a collaborative partnership with statewide data organizations aimed at increasing the quality and use of health care data.
- Conduct and translate research to inform decisionmaking and improve health care delivery.

The current plan focuses on the following strategies to increase the impact of HCUP:

- Maintain a strong core while enhancing data tools and measures.

- Improve the value of HCUP by producing and disseminating information derived from the data.
- Explore additional data and linkages that would enable HCUP to examine a wider set of health care encounters.
- Place greater emphasis on and capacity for research analyses that use the breadth and depth of HCUP data to explore the impact of changes in health policy on health care.
- Emphasize the importance of data partnerships.
- Expand outpatient data.

AHRQ continued to hold HCUP Partners Meetings via Webinar on a quarterly schedule during 2018. Partners were invited to provide input regarding their priorities, to suggest possible changes for the project, and to discuss current data activities in their organizations. AHRQ shared challenges and accomplishments of the project as well as upcoming plans and initiatives. Many interesting topics were reported, such as an introduction to the new Nationwide Ambulatory Surgery Sample (NASS) database, and an analysis of the opioid crisis in Missouri. In 2019, AHRQ will continue the HCUP Partners Meetings by Webinar. Notes from the HCUP Partners Meetings are available on the password-protected Partners section of the HCUP-US Web site: [www.hcup-us.ahrq.gov/login.jsp](http://www.hcup-us.ahrq.gov/login.jsp). AHRQ places great value on Partner input and will continue to seek Partner guidance on the use and development of HCUP data.

### Overview of the HCUP Project

HCUP develops and maintains health care databases, related software tools, support services, and products created through a Federal-State-Industry partnership and sponsored by AHRQ. HCUP databases are derived from administrative data and contain encounter-level, clinical and nonclinical information including all-listed diagnoses and procedures, discharge status, patient demographics, and charges for all patients, regardless of payer (e.g., Medicare, Medicaid, private insurance, and the uninsured), beginning in 1988. These databases enable research on a broad range of health policy issues, including cost and quality of health services, medical practice patterns, access to health care programs, and outcomes of treatments at the national, State, and local market levels.

The HCUP databases are based on the data collection efforts of data organizations that maintain statewide data systems and are developed in partnership with AHRQ.

The HCUP databases were revised to include ICD-10-CM/PCS codes beginning with October 2015. To alert users to the change, the file structure for the fourth quarter 2015 and subsequent years differs from the annual files for earlier years. The nationwide and State databases for 2015 include a combination of nine months with ICD-9-CM codes (January 1 – September 30) and three months with ICD-10-CM/PCS codes (October 1 – December 31).

### HCUP Partner Participation by Data Type

The current status of States participating in HCUP data collection and a description of the types of data they provide are displayed in the map below.



each year. It captures information for both treat-and-release visits and visits resulting in a hospital admission.

- **Nationwide Readmissions Database (NRD)** is designed to create national readmission rates. The NRD includes a sample of approximately 14 to 17 million discharges each year for discharges with and without readmissions, taken from HCUP Partners with verified patient linkage numbers. It addresses the need for nationally representative information on hospital readmissions for all ages.
- **State Inpatient Databases (SID)** contain the universe of inpatient discharges from participating States. The data are translated into a uniform format to facilitate multi-State comparisons and analyses. Together, the SID encompass about 97 percent of all U.S. community hospital discharges.
- **State Ambulatory Surgery and Services Databases (SASD)** include encounter-level data for ambulatory surgery and other outpatient services from hospital-owned facilities. In addition, some States provide ambulatory surgery and outpatient services from nonhospital-owned facilities.
- **State Emergency Department Databases (SEDD)** contain data from hospital-affiliated emergency departments for visits that do not result in hospitalizations. The SEDD files include all patients, regardless of payer, providing a unique view of emergency department care in a State or in a defined market over time.

Supplemental files for use with HCUP databases include the following:

- **Cost-to-Charge Ratio Files (CCR Files)** are hospital-level files that facilitate the conversion of inpatient total charges to total costs.
- **Hospital Market Structure Files (HMS Files)** are hospital-level files that contain various measures of hospital market competition. These measures are aggregate and are meant to provide a broad characterization of the intensity of competition that hospitals may be facing under various definitions of market area.
- **Kids' Inpatient Database Trend Weights (KID-Trend Weights) File** is a discharge-level file that provides KID data users with trend weights for the 1997 KID that are calculated in the same way as the weights for the 2000 and later years of the KID.
- **1993-2011 NIS Trend Weights Files** provide revised weights for the 1993-2011 NIS that adjust for changes in the 2012 NIS design. The trend weights were calculated in the same way as weights for the 2012 and later NIS. For trends analysis using NIS data 2011 and earlier, the revised weights should be used to make national estimates comparable to the new design beginning with 2012 data.
- **1993-2002 NIS Supplemental Discharge-Level Files** provide data elements that were not contained on the original 1993-2002 NIS files, which were added to the design in later years. These supplemental data elements are consistently defined across data years to facilitate analysis using earlier years of NIS data. The NIS trend weights are included for convenience.
- **Supplemental Variables for Revisit Analyses** are discharge-level variables designed to facilitate analyses that track patients within a State as well as across time and hospital settings (inpatient, emergency department, and ambulatory surgery) while adhering to strict privacy guidelines. For data years 2003-2008, the revisit variables were provided in separate supplemental files. Beginning with 2009 data, the revisit variables are included in the SID, SASD, and SEDD databases and are no longer released separately.

## Highlights of 2018

In 2018, HCUP focused on expanding the type and number of data projects and resources available to researchers and policymakers. Project achievements during 2018 included the following:

### Databases and Software Tools

- HCUP produced and released the 2016 NIS, KID, NEDS, and NRD.
- HCUP produced and released the 2016 SID, SASD, and SEDD using revised programs that accept ICD-10-CM/PCS data.
- HCUP began creating the 2017 SID, SASD, and SEDD.
- HCUP continued to release the State and nationwide databases via the Central Distributor. In 2018, 3,834 State databases and 3,843 nationwide databases were distributed through the HCUP Central Distributor.
- HCUP made further progress in producing timely information, using quarterly data for 2017–2018 from 24 HCUP Partners to examine trends in inpatient stays, emergency department visits by payer, opioid-related hospital and emergency department use and to perform “quick response” analyses and support analytic research tasks.
- HCUP released the 2016 Partner-approved Cost-to-Charge Ratio (CCR) Files that contain hospital-specific, cost-to-charge ratios based on all-payer inpatient cost for nearly every hospital in the corresponding NIS, KID, NRD, and SID.
- HCUP released 2015 updates for Community Statistics on HCUPnet and continued to develop enhancements. New features include statistics for alcohol and other drug use, statistics for U.S.–Mexico border regions, and time-aggregated statistics across three years of data (to reduce the incidence of insufficient sample size).
- AHRQ added an interactive United States map to the opioid path on HCUP Fast Stats – an online tool that provides easy access to the latest HCUP-based statistics for select State and national health information topics. AHRQ also added more recent data through 2018 where available. Topics currently available in HCUP Fast Stats include the State Trends in Hospital Use by Payer (one for inpatient and one for outpatient); National Hospital Utilization and Costs; and Opioid-Related Hospital Use (national and State).

### Reports and Analyses

- HCUP continued to produce the Statistical Briefs series on the HCUP User Support (HCUP-US) Web site, releasing 13 new Statistical Briefs. The Statistical Briefs covered topics such as geographic variation in substance-related inpatient stays, trends and disparities in delivery involving severe maternal morbidity, opioid-related inpatient stays and emergency department visits among patients 65 and older, and patient safety and adverse events.
- AHRQ released the 2017 National Healthcare Quality and Disparities Report (QDR), which included national and State-level estimates from the 2015 HCUP data. Because of the transition from ICD-9-CM to ICD-10-CM/PCS on October 1, 2015, only the first nine months of the 2015 HCUP data were used for the 2015 QI estimates. The QDR reports are available on QRDRnet ([www.nhqdrnet.ahrq.gov](http://www.nhqdrnet.ahrq.gov)).

- AHRQ provided estimates of selected AHRQ Quality Indicator (QI) measures using 2016 HCUP data that were created in preparation for the next annual QDR. Unlike in previous years, the 2018 QDR and State Snapshots will not include State-specific QI estimates based on 2016 HCUP data, as the updated risk adjustment method for the AHRQ QI software is under development at AHRQ. State-specific QIs may be reported in future QDRs.
- HCUP released four new or updated Methods Series reports. The reports covered topics such as Population Denominator Data Sources and Data for Use with HCUP Databases, examining CHIP and Medicaid Expected Payer Coding, and examining Methods Applying AHRQ Quality Indicators.

### **Presentations and Outreach**

- The User Support team showcased HCUP resources via presentations, Webinars, exhibit booths, and developed 22 presentations for 9 events.
- HCUP presented two HCUP data users' workshops for health services researchers where attendees received in-person, face-to-face training using the HCUP databases and related tools.
- HCUP hosted two two-part Webinar series on HCUP databases, products, and tools.
- AHRQ recognized two health care services researchers (for excellent use of HCUP Data in a clinical and policy field) with the [HCUP Outstanding Article of the Year Award](#) at the 2018 AcademyHealth Annual Research Meeting.
- AHRQ sent an amendment to the HCUP Partners that provide State Ambulatory Surgery and Services Databases (SASD), requesting their participation in a new HCUP restricted-access public release database, the Nationwide Ambulatory Surgery Sample (NASS). An overview of the NASS was provided at the May Partners Meeting webinar.
- HCUP released four quarterly newsletters to provide a summary of HCUP activities.

### **Partnership Activities and Resources**

- HCUP developed the 2016 Border Crossing Report, which provides information on the flow of patients into and out of HCUP States. AHRQ provided two new affiliate reports focused on cross-border hospitalizations for alcohol- and substance-related stays. The reports are available on the HCUP-US Partners page.
- HCUP continued to provide Partners with technical support, software tools, and reports designed to enhance the collection and use of inpatient and outpatient data.
- HCUP began recruiting outpatient quarterly data from Partners for emergency preparedness modeling of hospital utilization and identifying potential medical needs prior to a hurricane event.

### **Objectives for 2019**

In 2019, HCUP will continue to maintain the databases, tools, and reports as part of our commitment to ensure that HCUP remains a unique and valuable resource for health services research. We remain committed to supporting communication among HCUP Partners as well as between Partners and AHRQ. During the coming year, the project goals are to accomplish the following:

- Produce and release the 2017 NIS, NEDS, and NRD.

- Work with Partners to review and seek their permission to release new Emergency Department Cost-to-Charge Ratio Files (ED CCR), designed similarly to the inpatient CCRs.
- Continue to update and refine the beta versions of the HCUP Tools for ICD-10-CM/PCS. A fully refined version of the CCS for ICD-10-CM is expected to be released in 2019. Beginning with October 2015 data, the data elements derived from the HCUP tools are not available in the HCUP databases; users may download and apply the beta versions of the tools from the HCUP-US Web site. Additional information is provided for users on the [ICD-10-CM/PCS Resources Page](#) on HCUP-US.
- Continue to produce HCUP Statistical Briefs—a series of online reports available on the HCUP-US Web site that are designed to summarize HCUP data for policy and nontechnical audiences.
- Generate estimates using HCUP data for the National Healthcare Quality and Disparities Report (QDR).
- Conduct research and analyses using HCUP data to explore the impact of changes in health policy, to analyze trends, and to evaluate structural and clinical factors on health care outcomes.
- Conduct quick turn-around analyses using HCUP data in collaboration with federal agencies and other entities to address timely health issues, forecast medical needs in a disaster, and monitor ongoing trends.
- Explore new types of data related to social determinants of health to expand and enhance the core HCUP data.
- Further enhance the Community-Level Statistics on HCUPnet by adding 2016 data and recruiting new Partners to participate.
- Develop enhancements to HCUP Fast Stats, including development of path using existing structure: select state, one other selection variable (e.g., hurricane or diagnosis) and one radio button (IP/ED). This also includes Coordination and communication to obtain Partner consent.
- Update and add new HCUP Methods Series Reports that assist users with using the HCUP databases and software tools.
- Continue a longitudinal study of Factors Related to County-Level Hot Spots for Opioid-Related Hospitalizations and begin two new studies on Severe Maternal Morbidity and on Robotic Surgeries.
- Communicate changes in databases, tools, and query sites to Partners and provide briefings on research studies.
- AHRQ initiated work on the Assessing and Predicting Medical Needs in a Disaster project – a collaboration with the Assistant Secretary for Planning and Evaluation (ASPE) and the Assistant Secretary for Preparedness and Response (ASPR), supported by the Patient-Centered Outcomes Research Trust Fund (PCORTF). The goal of the project is to build a data resource and online query path containing county-level HCUP data on hospital utilization following natural disasters. This resource, focused initially on hurricanes, will provide a window into community medical needs and inform decisions around the deployment of resources during and following a natural disaster.

## SUMMARY OF HCUP RESEARCH ACTIVITIES FOR 2018

AHRQ conducts exploratory studies using HCUP data to examine current health research topics and to identify areas for further data refinement. The studies described in this section were in response to carefully selected topics that are consistent with the AHRQ research agenda. AHRQ develops this agenda in consultation with many agencies within the Department of Health and Human Services and with prominent health care organizations and institutions. AHRQ's research agenda reflects current priorities and emerging policy issues.

AHRQ also consults with industry experts, public officials, and other researchers to select topics for study. Finally, AHRQ solicits advice from data organizations participating in HCUP concerning product development and research.

In addition to exploratory studies conducted by the HCUP team, HCUP produces software tools and supplemental files to further enhance the administrative databases and to improve their value and ease of use. HCUP also produces methods reports including statistics, findings, and special technical analyses aimed at communicating and disseminating information about HCUP data. Additional information about HCUP software tools, supplemental files, and data reports is provided in the HCUP Project Overview Binder.

Finally, AHRQ researchers use HCUP data to conduct their own research and to engage in collaborations intended for publication in peer-reviewed journals or disseminated through other mediums. AHRQ conducts specific studies using HCUP data in collaboration with other Federal agencies, including the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), and the Substance Abuse and Mental Health Services Administration (SAMHSA). In these instances, an AHRQ HCUP team member works with a colleague at another agency, bringing together expertise in knowledge areas and respective data resources. All collaborations using HCUP data are conducted under the supervision of the AHRQ HCUP researcher.

In 2018, AHRQ investigated numerous HCUP-related topics with the dual goals of developing data for research use and exploring health outcomes to inform policy decisions. Studies that began in 2018 or began earlier but changed significantly in 2018 are listed below. The HCUP databases used in these studies are shown in parentheses.

### Studies Using State Databases

- County-Level Determinants of High Opioid-Related Hospitalization Rates (SID, SEDD)
- Effects of Medicaid Expansion Under the Affordable Care Act on Utilization of Inpatient and Emergency Department Care at Safety-Net and Non-Safety-Net Hospitals (SID, SEDD)
- Emergency Department Utilization After a Hurricane Varies by Age, Condition, and Proximity to the Hurricane (SID, SEDD)
- Impact of Vertical Integration on Hospital Utilization (SID, SEDD)
- Neonatal Abstinence Syndrome (SID)
- Readmission Following Inpatient Treatment for Opioid-Related Conditions (SID, SEDD)
- State Variations in Opioid Treatment Policies: Effects on Opioid-Related Hospital Readmissions (SID, SEDD)

## Studies Using Nationwide Databases

- Population-Based Trends in Pediatric Cardiac Surgery and Interventional Cardiology Procedures in the United States (KID)

## Studies Using Both Nationwide and State Databases

- Intriguing Trends in Perforated Appendicitis Rates in U.S. 1–17-Year-Olds (SID, NIS, KID)

## Ongoing Studies

- National Healthcare Quality and Disparities Report (QDR)

Descriptions of these studies are provided below.

## Studies Using State Databases

### *County-Level Determinants of High Opioid-Related Hospitalization Rates*

**Introduction:** Adverse opioid-related health outcomes, including hospitalization and death, are a significant concern in the United States. Substantial geographic variation in these outcomes exists. Little is known about the role of community-level differences—including social, health, and policy factors—in differentiating areas affected by the opioid crisis. **Objectives:** The objective of this study was to identify community-level factors associated with counties with high versus low opioid-related hospitalization rates. **Methods:** This study used 2016 Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID) for the District of Columbia and 45 States: Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Florida, Hawaii, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming. We examined hospital discharges for patients aged 15 years and older in community acute care hospitals. We used a lasso regression to guide covariate selection followed by a logistic regression to determine factors that were significantly associated with areas with the highest opioid-related hospitalization rates. We examined a variety of county-level factors, including population characteristics (American Community Survey), hospital characteristics (American Hospital Association Annual Survey), opioid prescribing rates (Centers for Disease Control and Prevention [CDC] U.S. Prescribing Rate Maps), pharmacy density (Census County Business Patterns), Medicaid managed care enrollment (Decision Resources Group Managed Market Surveyor), physician and health care facility resources and health professional shortage area designations (Health Resources and Services Administration [HRSA] Area Health Resources Files), reported crimes (Inter-university Consortium for Political and Social Research Uniform Crime Reporting Program), urban/rural classification (National Center for Health Statistics Urban-Rural Classification Scheme for Counties), affiliation with a religious congregation (Association of Statisticians of American Religious Bodies U.S. Religion Census), buprenorphine treatment provider availability (Substance Abuse and Mental Health Services Administration [SAMHSA] Buprenorphine Treatment Locator tool), and the prevalence of select comorbidities among inpatient hospital stays (HCUP SID). We also examined several State-level policy variables, including law enforcement seizures of fentanyl (amfAR Opioid & Health Indicators Database), out-of-pocket

share of buprenorphine prescription payments (IQVIA Institute for Human Data Science Report: Use of Opioid Recovery Medications), pain management prescribing restrictions (National Alliance for Model State Drug Laws Pain Management and Prescribing Practices), prescription drug monitoring program policies (Prescription Drug Abuse Policy System), and naloxone availability policies (Prescription Drug Abuse Policy System).

**Audrey J. Weiss, Ph.D., Rachel Henke, Ph.D., Marguerite L. Barrett, M.S., Gary Pickens, Ph.D., Kimberly McDermott, Ph.D., Pamela L. Owens, Ph.D., Zeynal Karaca, Ph.D., and Kevin C. Heslin, Ph.D.**

### ***Effects of Medicaid Expansion Under the Affordable Care Act on Utilization of Inpatient and Emergency Department Care at Safety-Net and Non-Safety-Net Hospitals***

**Introduction:** Determining the extent to which insurance coverage expansion under the Affordable Care Act has shifted the mix of Medicaid, uninsured, and privately insured patients at safety-net hospitals (SNHs) can provide insight into how changes to the Affordable Care Act or future health care reforms might affect these hospitals. The purpose of this study was to examine whether inpatient and emergency department (ED) utilization by Medicaid, uninsured, and privately insured patients shifted between SNHs and non-SNHs in major metropolitan markets. **Methods:** This study included hospitals in large metropolitan areas of 22 States with Healthcare Cost and Utilization Project (HCUP) 2011–2016 State Inpatient Databases (SID). State Emergency Department Databases (SEDD) were available from 14 States. Difference-in-differences (DID) models compared pre- and postexpansion changes at SNHs and non-SNHs in Medicaid expansion versus nonexpansion States. Outcomes included volume of nonmaternal Medicaid, uninsured, and privately insured inpatient stays and treat-and-release ED visits for patients aged 19–64 years. **Results:** Medicaid expansion was associated with a greater relative increase in Medicaid stays at non-SNHs compared with SNHs. By 2016 (as compared with the pre-Affordable Care Act period), Medicaid expansion was associated with a smaller percentage increase in Medicaid stays at SNHs (25.5 percent) versus non-SNHs (54.0 percent) (triple DID –18.5 percent;  $p=0.009$ ). At the same time, Medicaid expansion was associated with increased concentration of uninsured ED visits at SNHs. By 2016 (as compared with the pre-Affordable Care Act period), Medicaid expansion was associated with a smaller percentage decrease in uninsured ED visits at SNHs (–17.2 percent) versus non-SNHs (–40.7 percent) (triple DID 39.7 percent;  $p=0.032$ ). Private stays were above trend for SNHs and non-SNHs in expansion and nonexpansion States, likely because of implementation of health insurance exchanges and individual mandates across States in the country. Finally, Medicaid expansion was associated with a disproportionate increase in total Medicaid, uninsured, and privately insured ED visits at SNHs. By 2016 (as compared with the pre-Affordable Care Act period), Medicaid expansion was associated with an increase in total utilization at SNHs (4.5 percent) versus a decrease at non-SNHs (–8.1 percent) (triple DID 13.6 percent;  $p=0.014$ ). A manuscript from this study currently is being prepared for submission to *Medical Care Research and Review*.

**Katie Fingar, Ph.D., M.P.H., Eli Cutler, Ph.D., Gary Pickens, Ph.D., H. Joanna Jiang, Ph.D., José J. Escarce, M.D., Ph.D., and Ioana Popescu, M.D., M.P.H.**

### ***Emergency Department Utilization After a Hurricane Varies by Age, Condition, and Proximity to the Hurricane***

**Introduction:** Hospital emergency departments (EDs) are important emergency service providers during hurricanes, when other treatment options may not be available. Understanding how ED demand changes during hurricane events will help State and local organizations plan for emergency response. **Methods:** In 2018, the Healthcare Cost and Utilization Project (HCUP) team examined the impact on ED utilization for nine States affected by seven U.S.

hurricanes between 2005–2016 using data from the HCUP State Emergency Department Databases (SEDD) and State Inpatient Databases (SID). The SID were limited to inpatient stays that originated in the ED. States were selected on the basis of availability of HCUP data and the designation by the Federal Emergency Management Agency (FEMA) that at least one county in the State was declared a disaster area. Data from the National Oceanic and Atmospheric Association (NOAA) were used to characterize the historical hurricanes studied and to track the hurricane trajectories using geographic information system (GIS) software. This resulted in the classification of FEMA-designated counties as being in the hurricane path, near the hurricane path, or remote from the hurricane path, as well as the assignment of State-specific “start dates” for each hurricane. Weekly ED encounter volumes derived from the SID and SEDD were based on the patient’s county of residence. Population-weighted rates of weekly ED encounters were calculated for the following: the 4 weeks preceding the hurricane, the week of the hurricane, and the 3 weeks following the hurricane. The four prior weekly rates were averaged to define a baseline rate. ED rates were stratified by age group (0–17, 18–64, and 65+ years) and principal diagnosis, which was defined broadly at the International Classification of Diseases chapter level. **Results:** Changes in weekly utilization after the hurricane depended critically on age and proximity of the patient residence to the hurricane path, with further critical interactions observed with age and principal diagnosis.

**Kevin Heslin, Ph.D., Zeynal Karaca, Ph.D., Pamela L. Owens, Ph.D., Carol Stocks, Ph.D., R.N., Gary Pickens, Ph.D., Marguerite L. Barrett, M.S., Molly Bailey, M.S., and Jeanne Ringel, Ph.D., M.A.**

### *Impact of Vertical Integration on Hospital Utilization*

**Introduction:** The continuing waves of mergers, acquisitions, and vertical integration between hospitals, physicians, and other providers, as well as integration among insurers, create concerns about the effects of changes in market competition on the consumer, payers, and health and health care utilization and outcomes. High levels of market concentration could limit competition, increase prices, and limit access to providers, with a potential effect on quality of care, costs, and outcomes. **Objective:** The objective of this study was to understand how vertical integration between hospital systems and physician practices affects hospital service utilization and outcomes. The Centers for Medicare & Medicaid Services (CMS) has implemented reforms such as accountable care organizations and bundled payment models that have led to vertical integration. Because the government can take actions that influence vertical integration, it is important to understand the ramifications of leaning on these policy levers. **Methods:** We conducted an observational study of hospital discharge data to evaluate the impact of vertical integration events on readmissions in 16 States and employed targeted maximum likelihood estimation (TMLE) to compare hospitals that did undergo integration events, becoming fully integrated, with those that did not. We linked data from the following sources with Healthcare Cost and Utilization Project (HCUP) data to measure area and hospital characteristics. The American Hospital Association’s Annual Survey and the new Survey of Care Systems and Payments were used to provide information on the level of integration, determine vertical integration events, and control for differences in hospital characteristics. The Health Resources and Services Administration (HRSA) Area Health Resources Files provided demographic characteristics at the county and State level and were linked to discharges. The Health Care Services Acquisition Report, created and maintained by Irving Levin Associates, provided additional information on integration events between hospitals and physician groups. All-payer inpatient cost-to-charge ratios provided by AHRQ in addition to implicit price deflators for Gross Domestic Product obtained from the U.S. Bureau of Economic Analysis were applied by hospital to control for differences in local costs of health care. **Analysis:** To compare the changes in hospitals that changed from nonintegrated to integrated status with hospitals that

remained nonintegrated, we employed TMLE. This method leverages machine learning techniques to model the outcome and treatment assignment mechanism while maintaining desirable statistical properties.

**Zeynal Karaca, Ph.D., Herbert S. Wong, Ph.D., Teresa B. Gibson, Ph.D., Rachel Henke, Ph.D., Eli Cutler, Ph.D., and Michael Head, M.S.**

### ***Neonatal Abstinence Syndrome***

**Introduction:** Neonatal abstinence syndrome (NAS) is characterized by withdrawal symptoms caused by abrupt cessation of illicit or prescription substances at birth. NAS is most commonly caused by maternal use of opioids, either illicitly or as part of pain management or substance use disorder treatment. NAS has increased seven-fold from 2000 to 2014 in parallel with increases in drug and opioid overdose deaths. No studies have used national data to compare factors distinguishing counties with high NAS rates from those with low rates. **Objective:** The objectives of this study were to describe characteristics of counties with high NAS rates compared with characteristics of counties with low NAS rates and analyze county-level factors associated with NAS rates in multivariate analyses. **Methods:** We used data from the 2016 Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID) to identify births with a diagnosis of NAS out of all birth hospitalizations. Rates of NAS per 1,000 birth hospitalizations were summarized at the county level and merged with 35 county- and State-level variables related to social context, access to health care, insurance coverage, and socio-demographics from various publicly available data sources. **Results:** Counties with high NAS rates (>80th percentile) were concentrated in Appalachia, throughout Maine and Vermont, around the Great Lakes, and in certain areas of Colorado, Montana, New Mexico, and Utah. Nationally, compared with counties with low NAS rates (<20th percentile), counties with high NAS rates had fewer primary care physicians (46.5 vs. 56.8 per 100,000 population), obstetrician-gynecologists (28.1 vs. 46.4), chiropractors/physical therapists (62.3 vs. 73.6), and mental health professionals (59.7 percent vs. 45.4 percent were whole shortage areas). The average opioid prescribing rate per 100 residents per year was higher in counties with high, compared with low, NAS rates (95.7 vs. 73.3). However, these factors were not associated with NAS rates in multivariate analyses. In the multivariate analyses, we found that more buprenorphine-waivered physicians, State policies requiring physicians to check prescription drug monitoring programs, and opioid-related funding were associated with higher NAS rates, as were higher rates of unemployment, poverty, and American Indian/Alaska Native residents ( $p<0.05$ ). In analyses stratified by region, the population rate of buprenorphine-waivered physicians was the only factor associated with higher NAS rates across all models. This manuscript currently is being prepared for submission to *JAMA Pediatrics*.

**Katie Fingar, Ph.D., Rachel Henke, Ph.D., Hal Skinner, Ph.D., Laura Faherty, M.D., M.P.H., M.S.H.P., Pamela L. Owens, Ph.D., and Carol Stocks, Ph.D., R.N.**

### ***Readmission Following Inpatient Treatment for Opioid-Related Conditions***

**Introduction:** Previous research suggests that relatively few hospitalized patients with opioid-related conditions receive substance use treatment during their inpatient stay. Without treatment, these individuals may be more likely to have subsequent hospitalizations for continued opioid use disorder and resulting physical health problems. **Objective:** To evaluate the relationship between inpatient drug detoxification and/or rehabilitation treatment and subsequent opioid-related readmission. **Methods:** We used hospital inpatient discharge and emergency department (ED) visit data from community hospitals in California, Florida, Hawaii, Massachusetts, New York, South Carolina, and Tennessee from the Healthcare Cost and Utilization Project (HCUP). We used encrypted patient linkage numbers to link hospitalization records from the 2010–2013 State Inpatient Databases (SID) and ED visit records from the

State Emergency Department Databases (SEDD) so that there was only one episode of care per person during the study period. To identify hospitals that had an alcohol or substance use detoxification unit, a psychiatric unit, or both, we used hospital-level data from the 2010–2013 American Hospital Association Annual Survey Databases. A multivariate analysis was conducted to examine the relationship between opioid-related readmission and the receipt of inpatient drug detoxification and/or rehabilitation during the index visit. **Results:** Our sample consisted of 329,037 patients from seven States with an opioid-related index hospitalization occurring between March 2010 and September 2013. A relatively small percentage (19.4 percent) of patients with identified opioid-related conditions received treatment for drug use during their hospital inpatient stay: 16.0 percent received drug detoxification services, 1.6 percent received drug rehabilitation services, and 1.8 percent received combined drug detoxification and rehabilitation services. Controlling for sociodemographic, clinical, and hospital factors, patients who received drug rehabilitation but not drug detoxification during an opioid-related index hospitalization had lower odds of an opioid-related readmission within 90 days of discharge (odds ratio=0.60; 95 percent confidence interval=0.54–0.67) compared with patients with no inpatient drug detoxification or rehabilitation treatment. **Conclusions:** Our findings indicate that receipt of drug rehabilitation services in acute care hospitals is associated with a lower 90-day readmission rate. Further research is needed to understand whether this result is due to the treatment per se or to the sociodemographic or clinical characteristics of patients who receive rehabilitation.

**Janice Blanchard, M.D., Ph.D., Audrey J. Weiss, Ph.D., Marguerite L. Barrett, M.S., Carol Stocks, Ph.D., R.N., Pamela L. Owens, Ph.D., Rosanna M. Coffey, Ph.D., and Kevin C. Heslin, Ph.D.**

### ***State Variations in Opioid Treatment Policies: Effects on Opioid-Related Hospital Readmissions***

**Introduction:** State policy approaches designed to provide opioid treatment options have received significant attention in addressing the opioid epidemic in the United States. In particular, expanded availability of naloxone to reverse overdose, Good Samaritan laws intended to protect individuals who attempt to provide or obtain emergency services for someone experiencing an opioid overdose, and expanded coverage of medication-assisted treatment (MAT) for individuals with opioid abuse or dependence may help curtail hospital readmissions from opioids. **Objectives:** The objective of this study was to evaluate the relationship between the presence of State opioid treatment policies—naloxone standing orders, Good Samaritan laws, and Medicaid MAT coverage—and opioid-related hospital readmissions. **Methods:** We examined the relationship between State opioid treatment policies and 90-day opioid-related readmissions after a stay involving an opioid diagnosis. We used inpatient discharge data from non-Federal community hospitals in Arkansas, California, Florida, Georgia, Iowa, Maryland, Massachusetts, Nebraska, Nevada, New York, Tennessee, Vermont, and Wisconsin from the Healthcare Cost and Utilization Project (HCUP). We used encrypted patient linkage numbers to link records from the 2013, 2014, and 2015 (quarters 1 through 3) HCUP State Inpatient Databases (SID) during the study period. We used several State-level data sources to obtain information about the status of Medicaid MAT policies (American Society of Addiction Medicine State [ASAM] reports, a 2016 article by Grogan and colleagues and personal communication with the article authors, Georgia and Florida Medicaid Preferred Drug Lists, contacts at State Medicaid agencies, and Kaiser Family Foundation State Health Facts) and implementation dates for naloxone standing orders and Good Samaritan Laws (Policy Surveillance Program: A Law Atlas Project). At the State level, we also examined the role of State Medicaid coverage of ASAM-recommended substance use disorder treatment levels (Grogan and colleagues, 2016); availability of providers newly certified to administer

buprenorphine/naloxone, substance abuse treatment facilities, and opioid treatment programs (Substance Abuse and Mental Health Services Administration [SAMHSA] Number of Drug Addiction Treatment Act [DATA]-Waived Practitioners Newly Certified per Year tracker, SAMHSA National Survey of Substance Abuse Treatment Services); and opioid overdose death rate (Kaiser Family Foundation State Health Facts). At the hospital level, we accounted for the presence of detoxification and psychiatry units (American Hospital Association Hospital Statistics). **Results:** Our sample included 383,334 opioid-related index hospitalizations. Patients treated in States with naloxone standing-order policies at the time of the index stay had higher adjusted odds of an opioid-related readmission than did those treated in States without such policies; however, this relationship was not present in States with Good Samaritan laws. Medicaid methadone coverage was associated with higher odds of readmission among all insurance groups except Medicaid. Medicaid MAT coverage generosity was associated with higher odds of readmission among the Medicaid group but lower odds of readmission among the Medicare and privately insured groups. More comprehensive Medicaid coverage of substance use disorder treatment and a greater number of opioid treatment programs were associated with lower odds of readmission. **Conclusion:** Differences in index hospitalization rates suggest that States with opioid treatment policies had a higher level of need for opioid-related intervention, which also may account for higher rates of readmission. More research is needed to understand how these policies can be most effective in influencing acute care use. **Janice Blanchard, M.D., Ph.D., Audrey J. Weiss, Ph.D., Marguerite L. Barrett, M.S., Kimberly W. McDermott, Ph.D., and Kevin C. Heslin, Ph.D.**

## Studies Using Nationwide Databases

### *Population-Based Trends in Pediatric Cardiac Surgery and Interventional Cardiology Procedures in the United States*

**Introduction:** The growing numbers of pediatric patients with heart disease and adult survivors of congenital heart disease highlight the need to track trends in volumes and outcomes of pediatric cardiac interventions. **Methods:** This was a retrospective cross-sectional/cohort study. Data for 1997–2012 came from querying HCUPnet, the online searchable version of the Kids' Inpatient Database (KID) of the Healthcare Cost and Utilization Project (HCUP). We generated nationwide estimates of procedure discharge volumes for children aged 0–17 years with International Classification of Diseases, Ninth Revision, Clinical Modification principal procedure codes for surgical or interventional cardiology procedures of the heart or great vessels. Rates were calculated using Bridged-Race Population Estimates obtained from the Centers for Disease Control and Prevention (CDC) Wonder Web site. Annual cost and charge estimates were converted to Calendar Year 2014 dollars using Producer Price Index figures obtained from the Bureau of Labor Statistics Web site. **Results:** Inpatient cardiac procedure volumes declined from 30,721 cases (43/100,000 children aged 0–17 years) in 1997 to 27,397 (37/100,000) in 2012. Unadjusted mortality fell from 4.6 to 2.3 percent. Mean length of stay (MLOS) rose from 12.8 to 22.4 days. Aggregate hospital charges (in 2014 US\$) rose from \$3.5 to \$8.6 billion. Corresponding costs rose from \$1.4 to \$2.5 billion. In 1997, cases with private insurance (57 percent) generated 53 percent of costs, and cases with Medicaid (33 percent) generated 38 percent of costs. In 2012, cases with private insurance (45 percent) generated 40 percent of costs, and cases with Medicaid (47 percent) generated 51 percent of costs. Uninsured patients fell from 3.1 percent of cases in 1997 to 1.9 percent in 2012. Mirroring data from prior years, 14,873 cases (377/100,000) in infants younger than 1 year were identified in the 2012 KID. Mortality, MLOS, and mean cost/case were 3.4 percent, 34.3 days, and \$128,266, respectively. For individuals aged 1–17 years, mortality was 0.8 percent in 12,521 cases (18/100,000). MLOS was 8.2 days, and mean costs/case were \$51,155. **Conclusions:** Procedure volumes and population-based rates for 1997–2012 fell by ~10 percent; unadjusted

mortality fell by 50 percent. As markers of resource use, MLOS and inflation-adjusted costs and charges roughly doubled. Medicaid's involvement increased. Relatively few treated patients were uninsured. Compared with individuals aged 1–17 years, infants had notably higher procedure rates, mortality, and resource use. Our findings merit further study using encounter-level data.

**Darryl Gray, M.D., Sc.D., Kamal Pourmoghadam, M.D., Alan Hsu, M.D., Vivian Dicks, Ph.D., Jasmin Patel, M.P.H., Tri Le, M.P.H., Tameika McLean, M.S., Chinagozi Ugwu, M.P.H., Jeffrey Jacobs, M.D., Claudia A. Steiner, M.D., M.P.H., and Marshall Jacobs, M.D.**

## Studies Using Both Nationwide and State Databases

### *Intriguing Trends in Perforated Appendicitis Rates in U.S. 1–17-Year-Olds*

**Introduction:** Appendiceal perforation is generally avoidable with timely recognition and appropriate treatment of acute appendicitis. We tracked perforated appendicitis rates in U.S. children as a potential indicator of health care access and quality. **Methods:** Data for this sequential, cross-sectional, study came from the State Inpatient Databases (SID) of the Agency for Healthcare Research and Quality Healthcare Cost and Utilization Project (HCUP). The SID capture administrative data on non-Federal hospital discharges from States whose residents now make up more than 95 percent of the U.S. population. Perforated appendicitis rates came from HCUP's intramural Disparities Analytic File (DAF), a weighted sample of SID discharges from States (and hospitals within them) meeting specific criteria for coding of race and ethnicity. Using established criteria, we included discharges of 1–17-year-olds (excluding obstetric cases and in-bound transfers) with International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) principal or secondary discharge diagnosis codes of 540.0 (acute appendicitis with peritonitis), 540.1 (abscess of appendix), 540.9 (acute appendicitis not otherwise specified [NOS]), and 541 (appendicitis NOS). Cases coded as 540.0–540.1 were classified as perforations. DAF data included cases discharged 1/1/2001–9/30/2015 (when use of ICD-9-CM coding ended). Using the same ICD-9-CM codes, we estimated nationwide volumes of perforated and nonperforated appendicitis discharges (1/1/2000–12/31/2014) through online queries (<https://hcupnet.ahrq.gov>) of data from the HCUP National Inpatient Sample (NIS) and Kids' Inpatient Database (KID). The annual NIS captures 20 percent weighted samples of all SID discharges. The triennial KID captures 80 percent weighted samples of SID pediatric care discharges. **Results:** DAF overall perforated appendicitis rates rose from 317.5 perforations/1,000 pediatric appendicitis cases in 2001 to 457.7/1,000 in 2015, with consistent age-group-specific rate gradients. Rates did not differ by sex (data not shown=DNS). Differences across other sociodemographic groups narrowed while all rates increased. For example, the large 2001 difference between rates for Black patients (357.0/1,000) and White patients (294.4/1,000) ( $p<0.01$ ) fell to 476.7/1,000 versus 457.7/1,000 in 2015 ( $p=0.33$ ). Rates were generally highest among Medicaid and uninsured/self-pay/no charge patients. In 2001–2009/2010, rates were generally highest among patients and hospitals from/in large central metro areas, with less consistent patterns seen thereafter. NIS data mirrored KID data, estimating annual volumes of pediatric perforation cases at ~25,000 discharges/year. Most notably, numbers of *nonperforated* appendicitis cases declined after 2009–2010. This decline generated increased rates of perforation (expressed as proportions of all appendicitis cases) that mirrored DAF findings. **Conclusions:** Perforation rate age gradients presumably reflect age-specific differences in clinical presentation. Intra-year variation across sociodemographic subgroups may reflect differential access to prompt and appropriate care. However, perforation rate trends must be interpreted in light of observed decreasing volumes of nonperforated appendicitis cases. Rising perforation rates as described above may essentially reflect increasingly accurate exclusion of nonappendicitis cases from perforation rate

denominators. Population-based tracking of perforations per 100,000 1–17-year-olds (32.1/100,000 in 2000 vs. 34.4/100,000 in 2014 per NIS; DNS) avoids the consequences of variation in diagnosing nonperforations. However, stratifying denominators (e.g., by insurance status) for this approach may be challenging. In any case, further investigations using encounter-level administrative and clinical data are needed to better interpret the trends we observed and to identify potential quality improvement targets.

**Darryl T. Gray, M.D., Sc.D., and Trina Mizrahi, M.P.H.**

## Ongoing Studies

### *National Healthcare Quality and Disparities Report (QDR)*

Since 2003, the Agency for Healthcare Research and Quality (AHRQ) has produced congressionally mandated reports each year on health care quality and disparities for vulnerable populations in the United States. The *National Healthcare Quality and Disparities Report (QDR)* includes information from the Healthcare Cost and Utilization Project (HCUP) and from numerous other organizations, including the Centers for Disease Control and Prevention (CDC), the National Center for Health Statistics (NCHS), and the Centers for Medicare & Medicaid Services (CMS).

The QDR provides a comprehensive overview of the quality of health care received by the general population and disparities in care experienced by different racial, ethnic, and socioeconomic groups. More detailed information is available through chartbooks on specific topics, such as access to care, patient safety, and healthy living, which are updated each year when funding is available.

The QDR and chartbooks are organized around the concept of access to care, quality of care, disparities in care, and six priority areas, including patient safety, person-centered care, care coordination, effective treatment, healthy living, and care affordability. With a focus on priority populations, the QDR summarizes quality of and disparities in care for populations at elevated risk for receiving poor health care. This aspect of the QDR includes HCUP-based measures related to racial, ethnic, and socioeconomic factors for priority populations as well as changes over time and across the urban-rural continuum.

The 2018 QDR (to be released in 2019) will include national estimates of the AHRQ Quality Indicators™ (QIs) version 7.0.1 for data year 2016. Rates prior to 2016 are not reported because of the transition to the International Classification of Diseases, Tenth Revision, Clinical Modification/Procedure Coding System. Because risk adjustment was unavailable in the AHRQ QI version 7.0.1 software during the report development, the QDR will include observed (unadjusted) national QI rates, and will not include State-specific QI rates.

For generating national QI estimates for the 2018 QDR, a nationally weighted analysis file was created by combining the HCUP State Inpatient Databases (SID) for data year 2016 that met the following inclusion criteria: (1) less than 10 percent of discharges failed edit checks on indicators of diagnoses being present on admission (POA), (2) the SID included information on day of principal and secondary procedure days, and (3) the SID included good reporting of race/ethnicity data. After hospitals and discharges that failed POA and race/ethnicity edits were excluded, the remaining discharges were weighted to the universe of community hospitals in the United States, excluding rehabilitation and long-term acute care facilities. For data year 2016, the nationally weighted analysis file includes data from 34 SID and more than 30.2 million discharges.

AHRQ disseminates the QDR and related products through the AHRQ Web site at [www.ahrq.gov/research/findings/nhqrdr/index.html](http://www.ahrq.gov/research/findings/nhqrdr/index.html). There also is an integrated Web site at [www.nhqrnet.ahrq.gov](http://www.nhqrnet.ahrq.gov) that provides a single access point to the QDR reports, chartbooks, and QDR data, including State-specific information (i.e., the State Snapshots and a query tool for accessing the underlying data).

**Marguerite L. Barrett, M.S., Kevin C. Heslin, Ph.D., and Karen Chaves, M.H.S.**

## **NEW STUDIES PLANNED FOR 2019**

### **Studies Using State Databases**

- Association between Neonatal Abstinence Syndrome (NAS), Infant Characteristics, and Birth Defects (SID)
- Evaluation of the impact of new adult PCV13 recommendation on community-acquired pneumonia hospitalizations in the United States (SID)
- Factors Influencing the County-Level Burden of Opioid-Related Hospitalizations (SID)
- Hospital Delivery and Postpartum Visits Associated with Severe Maternal Morbidity (SID, SEDD)
- Hospital Readmissions and Preventable Hospitalizations for Nonelderly Adults Following National Insurance Expansions (SID)
- State-Level Trends and Variation in Neonatal Abstinence Syndrome and Maternal Opiate Use – 2010 to 2017 (SID)
- Surveillance for NAS and Maternal Opiate Use: Impact of International Classification of Diseases Coding Transition (SID)
- Transitioning from ICD-9-CM to ICD-10-CM/PCS in Estimating Injuries (SID, SEDD)
- Travel Time to Hospitals (SID)

### **Studies Using State Databases**

Descriptions for these studies are provided below. The databases used in these studies are shown in parentheses above.

#### ***Association Between Neonatal Abstinence Syndrome, Infant Characteristics, and Birth Defects***

This project examines the relationship between neonatal abstinence syndrome and associated birth defects and complications, including neonatal seizures, orofacial clefts, gastroschisis, feeding difficulties, respiratory symptoms, and low birth weight. The 2016 State Inpatient Databases (SID) will be used.

**Pamela L. Owens, Ph.D.**

#### ***Evaluation of the Impact of New Adult PCV13 Recommendation on Community-Acquired Pneumonia Hospitalizations in the United States***

Following the introduction of the 7 valent-pneumococcal conjugate vaccine (PCV7) into the routine childhood immunization schedule in 2000, declines in pneumonia hospitalization rates were seen among children under the age of 2 years as well as among older age groups because of indirect vaccine effects. In 2010, PCV7 was replaced by PCV13, which includes 6 additional serotypes. An initial study from the first 2 years post-PCV13 introduction suggested that there was a further decline in pneumonia hospitalizations among children <2 years of age. However, despite this decline in pneumonia hospitalization rates, *Streptococcus pneumoniae* (pneumococcus) remains an important cause of community-acquired pneumonia in adults. Based on a U.S. multicenter pneumonia etiology study conducted a decade after PCV7

introduction and several years after PCV13 introduction in children, pneumococcus was the leading cause of community-acquired bacterial pneumonia among adults. The goal of this study is to evaluate the effect of the 2014 PCV13 recommendation for adults on community-acquired pneumonia hospitalizations, pneumococcal pneumonia, and invasive pneumococcal disease among adults >65 years of age and to assess cost-effectiveness of the 2014 PCV13 recommendation for adults. The outcomes of interest for this project will be all-cause community-acquired pneumonia hospitalizations, pneumococcal pneumonia hospitalizations without invasive disease, and invasive pneumococcal disease.

**Fernanda Lessa, M.D., Cynthia Whitney, M.D., Michael Spiller, Ph.D., Carol Stocks, Ph.D., and Zeynal Karaca, Ph.D.**

### ***Factors Influencing the County-Level Burden of Opioid-Related Hospitalizations***

**Introduction:** Opioid-related outcomes vary across States and within States across urban and rural areas and counties. Limited research exists that examines the relationship between community-level factors and opioid-related outcomes. **Objective:** To explore community characteristics that may influence relative changes in opioid-related hospitalization rates. **Methods:** We will use hospital inpatient discharge data from community hospitals for two time periods (e.g., 2012–2013 vs. 2016–2017) for approximately 40 States from the Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID). Community-level factors will be selected from a range of data sources and may include, for example, State-level opioid-related policy factors, county-level population demographic characteristics, and county-level economic and employment characteristics (such as poverty level and percentage of manual labor industry employment). A longitudinal analysis will be conducted to examine the role of community-level characteristics in distinguishing those counties that experience relative improvement in their opioid-related hospitalization rates versus those counties that do not experience improvement.

**Kevin C. Heslin, Ph.D., Pamela L. Owens, Ph.D., Audrey J. Weiss, Ph.D., Rachel M. Henke, Ph.D., and Marguerite L. Barrett, M.S.**

### ***Hospital Delivery and Postpartum Visits Associated With Severe Maternal Morbidity***

Severe maternal morbidity (SMM)—inclusive of such conditions at delivery as stroke, sepsis, and pulmonary embolism—is an important indicator of the quality of women’s health care. Considered a “near miss” for maternal mortality, in many cases, SMM otherwise would have led to death without prompt identification and treatment. Although recent research suggests women who experience SMM during delivery are at an increased risk of readmission, further research is needed to describe the total burden of SMM at delivery and postpartum in both inpatient and emergency department (ED) settings. Additional information on factors associated with revisits among women with SMM at delivery may aid efforts to reduce postpartum readmissions. Our primary objective is to examine hospital delivery and postpartum revisits associated with SMM. Revisits will include both inpatient readmissions and ED revisits. Specifically, this study will (1) quantify and compare rates of 7-day, 30-day, and 42-day postpartum revisits overall, and those involving in-hospital mortality, following deliveries with and without SMM and (2) examine factors associated with postpartum revisits following SMM deliveries. **External data sources:** We will combine Healthcare Cost and Utilization Project (HCUP) data with other county-level data sources (e.g., the Area Health Resources Files) to describe characteristics of the patient’s location of residence.

**Pamela L. Owens, Ph.D., Lawrence Reid, Ph.D., MPH, Quyen Ngo-Metzger, M.D., MPH, Katie Fingar, Ph.D., MPH, and Marguerite Barrett, M.S.**

### ***Hospital Readmissions and Preventable Hospitalizations for Nonelderly Adults Following National Insurance Expansions***

**Introduction:** The Affordable Care Act sought to increase insurance coverage through the introduction of Marketplace coverage and, in some States, expanded eligibility for Medicaid. Improved insurance coverage may serve to reduce hospital readmission rates by providing access to health care outside of the hospital. Although this anticipated effect was not found following 2006 insurance expansions in Massachusetts, this possibility has not been investigated following the Affordable Care Act's national insurance expansions in 2014. **Objective:** This study proposes to help fill that gap by analyzing data on a universe of hospital discharges for two States that expanded Medicaid (New York and Washington) and three States that as of 2019 did not (Florida, Nebraska, and Utah). **Methods:** The analyses will rely on data from the Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID) for 2011 through the third quarter of 2015. We will test for discontinuous changes in readmission rates in 2014 for expansion relative to nonexpansion States. In estimating probabilities of readmission, we will include controls for national trends in readmissions, patient characteristics (age, sex, case mix), and area-level characteristics, including the unemployment rate and the number of physicians per capita by county and year (using data from the Area Health Resources Files). State and hospital fixed effects will alternatively be included in all analyses. We also will consider any discontinuous change in the probability of readmission for patients from ZIP Codes with high rates of uninsurance prior to 2014 compared with others. Rates of insurance coverage in 2009–2013 will be merged into the SID data by patient ZIP Code of residence using data from the American Community Survey from 2009–2013. The effect of the Affordable Care Act on Prevention Quality Indicators also will be examined.

**Sandra L. Decker, Ph.D.**

### ***State-Level Trends and Variation in Neonatal Abstinence Syndrome and Maternal Opiate Use – 2010 to 2017***

This project examines State trends and variation in neonatal abstinence syndrome (NAS) birth hospitalizations and maternal opioid use disorder. The objectives of this project are (1) to examine recent State-level trends in NAS and maternal opiate use (2010–2015) and (2) to examine current variation in NAS and maternal opiate use by State and sociodemographic characteristics (race/ethnicity, expected primary payer, community-level income, rural/urban residence) to characterize burden and inform preventive efforts. The 2010–2017 State Inpatient Databases (SID) will be used.

**Pamela L. Owens, Ph.D., Carol Stocks, Ph.D., R.N., Ashley Hirai, Ph.D., and Jean Ko, Ph.D.**

### ***Surveillance for NAS and Maternal Opiate Use: Impact of International Classification of Diseases Coding Transition***

This project examines the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) to International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) coding transition for neonatal abstinence syndrome (NAS) birth hospitalizations and maternal opioid use disorder. The objectives of this project are (1) to establish ICD-10 coding for NAS and maternal opiate use in birth and delivery hospitalizations and (2) to examine comparability with ICD-9 coding and the impact on trend analyses. The 2014–2017 State Inpatient Databases (SID) will be used.

**Pamela L. Owens, Ph.D., Carol Stocks, Ph.D., R.N.**

### ***Transitioning from ICD-9-CM to ICD-10-CM/PCS in Estimating Injuries***

This project examines how estimates of injuries and external causes of injury were impacted by the transition from ICD-9-CM to ICD-10-CM/PCS. The project uses data from HCUP 2014 and 2016 State Inpatient Databases and State Emergency Department Databases.

**Renee Johnson, Ph.D., Holly Hedegaard, Ph.D., and Pamela L. Owens, Ph.D.**

### ***Travel Time to Hospitals***

This study will compute travel time and distance from patient ZIP Code to hospital ZIP Code for every hospital in the patient's referral region (HRR). Travel time will be used later in various policy projects. **Data:** Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID), 2014–2016. **External data:** Census tract data.

**William Encinosa, Ph.D.**

### **Studies Using Nationwide Databases**

- Utilization of Robotic Technology in Frequently Performed Outpatient Surgeries: An Overview From the Nationwide Ambulatory Surgery Sample

### **Studies Using Nationwide Databases**

Descriptions for these studies are provided below. The databases used in these studies are shown in parentheses above.

#### ***Utilization of Robotic Technology in Frequently Performed Outpatient Surgeries: An Overview From the Nationwide Ambulatory Surgery Sample***

Since the 1980s, the frequency of inpatient surgeries has decreased, while the volume of outpatient procedures steadily increased at a faster pace. Robot-assisted surgery was introduced in the early 1990s; however, data for the study of this phenomenon, particularly in outpatient settings, has been limited, and the existing national estimates show gaps in key pieces of information. A cross-sectional design using the 2016 Nationwide Ambulatory Surgery Sample (NASS) will be used to examine discharge-level variation in adoption of robotic technology. Outcomes of interest will be the frequency and types of outpatient surgical procedures for adults, and possibly children, with and without the use of robotic technology.

**Carol Stocks, Ph.D., RN, Gary Pickens, Ph.D., Teresa Gibson, Ph.D., Katie Fingar, Ph.D., MPH**

### **USING HCUP DATA IN CONJUNCTION WITH OTHER DATA SOURCES**

To enhance the value of the Healthcare Cost and Utilization Project (HCUP) data as a research tool, AHRQ supplements the HCUP databases with information about hospital and community characteristics obtained from Partner-approved and other external sources. AHRQ conducts this data augmentation for three reasons: (1) to supplement information available to AHRQ intramural researchers and their contractors on specific, approved research projects; (2) to create derivative data elements for the externally released State and Nationwide Databases; and (3) to add supplementary data elements for the externally released State and Nationwide Databases. These types of linkages leverage other data sources, thus increasing the value of HCUP data for research.

The following descriptions provide a sample of the protocols used to link HCUP data to other data files.

### American Community Survey

The U.S. Census Bureau's American Community Survey is linked to HCUP data by ZIP code information to obtain population estimates in a given ZIP code by insurance status and federal poverty level.

### American Hospital Association

Annual linkage of the AHA Annual Survey of Hospitals Database to HCUP data is necessary for the creation of the HCUP databases. HCUP uses the AHA data for three principal purposes: (1) to obtain characteristics of the hospitals for intramural research; (2) to add hospital characteristics to restricted-access, public release data; and (3) to sample and weight hospital discharges for the NIS, NEDS, NRD, and KID.

1. HCUP develops a separate AHA file for intramural research that contains basic institutional characteristics such as size, ownership, teaching status, location, utilization, finance, and personnel. A "crosswalk" file is developed to link the State's hospital identifier to the AHA identifier, which also links the HCUP and AHA data sets. This linkage of supplemental hospital characteristics to HCUP databases greatly enriches the discharge data for intramural research at AHRQ.
2. HCUP adds hospital information from the AHA Annual Survey Database to the NIS, NEDS, NRD, and KID. Hospital identifiers have never been included in the NEDS or NRD, but prior to 2012 data when permitted by the data organizations, the NIS and KID included the AHA hospital identifier, hospital name, and address. Beginning with 2012 data, hospital identifiers, name, and address are no longer included in the NIS or KID. AHA hospital identifiers are included on the Central Distributor State Databases when permitted by the data organizations. Use of the data for approved research purposes is permitted, such as linking to other institutional information from non-HCUP data sets for analysis and aggregate statistical reporting. However, users of any HCUP data are prohibited from identifying individual facilities directly or by inference in disseminated material. This restriction is listed in all HCUP Data Use Agreements (DUAs). In addition, users of the data must not contact establishments directly concerning data in the HCUP databases.
3. HCUP creates the NIS, KID, and NRD sampling frames from all community, nonrehabilitation hospitals in the SID. The NEDS sampling frame includes hospital-owned EDs for which both SEDD and SID data are available. Information on hospital characteristics was provided in the AHA Annual Survey Database. To obtain national estimates, HCUP develops discharge weights using information from the AHA Annual Survey of Hospitals Database. Beginning with 2012 data, the NIS contains a sample of approximately 20 percent of inpatient discharges from all community, nonrehabilitation hospitals participating in HCUP. The NEDS contains all emergency department (ED) visits from a stratified sample representing 20 percent of hospital-owned EDs in U.S. community, nonrehabilitation hospitals. The NRD contains a sample of discharges for patients treated at community nonrehabilitation hospitals in States where verified patient linkage numbers are available.

The AHA's Hospital Information Technology Database is a supplement to the American Hospital Association (AHA) Annual Survey of Hospitals. The AHA Annual Survey IT Database, formerly

called the Hospital Electronic Health Record (EHR) Adoption Database, contains current information on healthcare technology adoption and indicators in response to the HITECH Act in terms of clinical documentation, lab reports and test results, computerized provider order entry, and decision support and bar coding. The database also pinpoints where in the hospital these functions are implemented. These data can be linked to the HCUP databases by the AHA hospital identifier. The results help users understand the capabilities of the hospitals' EHR systems, and they reveal the major and minor barriers to implementation. The databases include only those hospitals that respond to the supplemental information technology survey.

The American Hospital Association (AHA) Survey of Care Systems and Payment is a supplement to the American Hospital Association (AHA) Annual Survey of Hospitals Database. All U.S. community hospitals are invited to participate in the Survey. In addition, responses are gathered from non-hospital organizations, such as payers. This database allows hospitals and researchers to track and monitor the evolution of new systems of care, including Accountable Care Organizations (ACO), Patient-Centered Medical Homes, clinically integrated networks, and other systems innovations. These data can be linked to the HCUP databases by the AHA hospital identifier. Databases enhanced with this information facilitates research on a variety of policy-relevant issues such as: identifying which types of hospitals are engaged in new care models; ascertaining current and expected payment structures; understanding current care coordination models; and recognizing risk arrangements, governance, and physician arrangements.

#### [Association of Statisticians of American Religious Bodies U.S. Religion Census \(ASARB\)](#)

The U.S. Religion Census reports the number of congregations in every U.S. county equivalent for each of 236 faith groups. Each participating religious body supplies the number of churches, full members, adherents, and attendees for each county. U.S. Religion Census collects data on the number of congregations, members, adherents, and attendees. Not all groups collect or report all items. We examined a variety of county-level factors, including affiliation with a religious congregation.

#### [Bureau of Economic Analysis \(BEA\)](#)

Bureau of Economic Analysis (BEA) Gross Domestic Product (GDP) deflator data is used to adjust HCUP cost data for inflation. The GDP deflator is a measure of the level of prices of all new, domestically produced, final goods and services in an economy. GDP is the total value of all final goods and services produced within that economy during a specified period.

#### [Bureau of Labor Statistics \(BLS\)](#)

The Bureau of Labor Statistics (BLS) of the U.S. Department of Labor is the principal federal agency responsible for measuring labor market activity, working conditions, and price changes in the economy. The BLS is used in conjunction with HCUP data to determine unemployment rates for a given area and to convert annual cost and charge estimates from earlier years.

#### [Centers for Disease Control and Prevention \(CDC\)](#)

[CDC WONDER Web site](#). Bridged-Race Population Estimates are produced by the U.S. Census Bureau in collaboration with the National Center for Health Statistics (NCHS) and released by NCHS. The WONDER data bridges 31 race categories accounted for in the 2000 Census down to the four race categories in the 1977 Census. These population estimates are used to calculate rates with HCUP NIS race variables.

*The CDC U.S. Prescribing Rate and Overdose Maps.* These maps were used to examine county-level retail opioid prescriptions dispensed per 100 persons. These maps and a variety of other variables from the CDC WONDER Multiple Cause of Death, Local Health Department (LHD) such as substance abuse treatment services, increased tobacco, alcohol or other drug prevention, and population-based primary prevention activities related to substance abuse or mental illness were used at the county level.

*CDC Diabetes County Data Indicators.* The County Data application allows views of data and trends of diagnosed diabetes, obesity, and leisure-time physical inactivity at the national, state, and county levels. Access includes: 1) state and county-level data in the United States, 2) data on how counties compare with each other, and 3) maps and motion charts to examine how changes in diabetes coincide with changes in obesity over time and by location.

*CDC Grant Funding Profiles.* This Web site provides interactive data and summaries of CDC cooperative agreement and grant funding to recipients in U.S. states and territories, and the District of Columbia, starting with fiscal year (FY) 2010. The data allows users to view, sort, and analyze funding data by funding opportunity announcement, funding source (CDC funding category and sub-category), geography, and recipient name and type.

### [Census Bureau](#)

*Census Bureau's American Community Survey (ACS) Tables.* The ACS is a nationwide survey designed to provide communities a look at how they are changing. It is a critical element in the Census Bureau's decennial census program. The ACS provides single-year and multi-year estimates on several important factors, such as age, sex, race, insurance status, and households. Information is available at several geographic levels, including national, regional, State, county, and census tract.

*Census County Business Patterns (CBP).* CBP is an annual series that provides subnational economic data by industry. Statistics are available on business establishments at the U.S. level and by State, County, Metropolitan area, ZIP Code, and Congressional District Levels. Data for Puerto Rico and the Island Areas are available at the State and county equivalent levels. Data for establishments are presented by geographic area, 6-digit North American Industry Classification System (NAICS) industry, legal form of organization (U.S. and state only), and employment size class. The data may be linked to HCUP data at the state, county, metropolitan area, or ZIP Code level.

*Small Area Health Insurance Estimates for Counties and States.* Census Bureau Small Area Health Insurance Estimates (SAHIE) produces and disseminates model-based estimates of health insurance coverage for counties and states. SAHIE data are included in the study of the relationship between Medicare Advantage enrollment rates and overall utilization (e.g., hospital admission and readmission rates, types of hospitalizations, and associated costs).

### [Housing and Urban Development \(HUD\) Comprehensive Housing Affordability Strategy \(CHAS\) Data](#)

The Department of Housing and Urban Development (HUD) receives custom tabulations of American Community Survey (ACS) data from the U.S. Census Bureau, which is based on five-year averages. These data, known as the CHAS data set provide information on the extent of housing problems and housing needs, particularly for low income households. Information is available at the State, county, census tract, and smaller sub-division levels.

The HUD Annual Homeless Assessment Report to Congress (AHAR) provides Point-in-Time (PIT) estimates, offering a snapshot of homelessness—both sheltered and unsheltered—on a single night. The one-night counts are conducted in late January of each year. The PIT counts also provide an estimate of the number of people experiencing homelessness within particular populations, such as people with chronic patterns of homelessness, veterans experiencing homelessness, and people under the age of 25 who are experiencing homelessness on their own, not in company of their parent or guardian. In addition, the AHAR includes demographic characteristics for all people experiencing homelessness, people experiencing homelessness in households without children, people in families with children, and veterans experiencing homelessness. National estimates, state estimates, and estimates for “Continuums of Care” with the highest and lowest rates of homelessness are provided.

### [KIDS COUNT Child Well-Being Index](#)

KIDS COUNT is a project of the Annie E. Casey Foundation and a source of data on children and families. Each year, the KIDS COUNT Data Book assesses child well-being in the United States. A variety of county-level factors, including pharmacy density were examined.

### [Centers for Medicare & Medicaid Services](#)

Hospital Cost Reports. Using hospital identifiers, AHRQ links the cost information obtained from the Centers for Medicare & Medicaid Services (CMS) Hospital Cost Report data files, which are collected by CMS, to the intramural HCUP data to create the annual HCUP Cost-to-Charge Ratio Files (CCR Files). The HCUP CCR Files are hospital-level files that enable the conversion of charges into costs for nearly every hospital in the corresponding NIS, SID, NRD, or KID.

Hospital Compare. The CMS Hospital Compare tool provides information about the quality of care for over 4,000 Medicare-certified hospitals in the United States. Using the tool, AHRQ examines the role of various hospital factors, such as nurse-to-patient ratio and surgical quality, on racial and ethnic disparities in in-hospital postsurgical complications identified in HCUP data.

County-level and Hospital-level Information. For certain research projects, AHRQ links county-level and hospital-level information obtained from CMS to the HCUP data. County-level databases contain such information as the number of beneficiaries in the county, the number of beneficiaries by type of plan coverage, and the area wage index. These data are linked to the discharge files using the patient’s or hospital’s county. Hospital-level files maintained by CMS include the Medicare Cost Reports, area wage index, and case-mix index. These data are linked using the hospital identifier. The State’s hospital identifier is crosswalked to the identifier on the AHA Annual Survey of Hospitals Database, which contains the Medicare hospital identifier.

Hospital Service Area File. The CMS Medicare Hospital Service Area File (HSAF) is used for the community-level statistics initiative to estimate the impact of missing hospitals on HCUP community-level statistics. The HSAF identifies counties with incomplete data. It provides the universe of Medicare discharges in the United States and contains the patient’s residential ZIP Code, Medicare provider identification number (ID), and a sum of patient discharges, days, and charges for all Medicare patients. Capture rates computed from the HSAF and SID allowed HCUP to examine several thresholds for suppression of county information that is due to missing hospitals in the SID.

*The CMS Denominator File.* CMS County to Core Based Statistical Area (CBSA) Crosswalk, CMS Medicare Provider Analysis and Review (MedPAR) Hospital File, and the CMS National Physician Fee Schedule Relative Value File data sources are used in HCUP studies.

*CMS Medicare Opioid Prescribing Map Tool.* This Interactive tool that shows geographic comparisons, at the state, county, and ZIP code levels, of de-identified Medicare Part D opioid prescription claims – prescriptions written and then submitted to be filled – within the United States. The mapping tool presents Medicare Part D opioid prescribing rates for 2015 as well as the change in opioid prescribing rates from 2013 to 2015.

*Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) Survey.* HCAHPS patient survey responses at U.S. hospitals are aggregated for each hospital and reported publicly by the Centers for Medicare and Medicaid Services (CMS) on their Hospital Compare Web site starting March 2008. AHRQ links these data with hospital-level characteristics to control for patients' perceptions of the quality of hospitals. In these studies, AHRQ typically "controls" for the percent of patients that replied in a certain way to a particular question or group of questions by entering hospital percentages as they vary across time and hospitals in a regression model.

#### [Children's Hospital Association \(formerly National Association of Children's Hospitals and Related Institutions\)](#)

During the construction of the KID, the AHA hospital identifier is used to link this database to a list of children's hospitals provided to AHRQ by the Children's Hospital Association. The Children's Hospital Association data are used to help identify children's hospitals and to determine the teaching status of these facilities.

#### [Council for Community and Economic Research Cost of Living Index](#)

The Cost of Living Index (COLI) is the most reliable source of city-to-city comparisons of key consumer costs available since 1968. The Council for Community and Economic Research (C2ER) collects and compares COLI data on more than 300 U.S. cities in order to publish COLI on a quarterly basis. Both data and methodology are reviewed by an Advisory Board composed of academic researchers and government.

#### [County-Health Rankings Health Status Determinants](#)

The annual County Health Rankings measure vital health factors, including high school graduation rates, obesity, smoking, unemployment, access to healthy foods, the quality of air and water, income inequality, and teen births in nearly every county in America. The annual Rankings provide a snapshot of how health is influenced by where individuals live, learn, work and play.

#### [Dartmouth Atlas of Care – Hospital Market Definitions \(Hospital Service Area\)](#)

AHRQ uses the Hospital Market Definitions (Hospital Service Area) from Dartmouth Atlas of Health Care to compare hospital markets. This information helps map geographic areas to hospital markets to determine which ZIP variables are most appropriate to use when using the HCUP data.

### [Decision Resources Group \(DRG\) Managed Market Surveyor \(formerly HealthLeaders–Interstudy Managed Market Surveyor County Database\)](#)

The Managed Market Surveyor Database, contains State, county-level, and Metropolitan Statistical Area (MSA) enrollment in managed care plans, including health maintenance organization (HMO) and preferred provider organization (PPO) penetration. For specific projects, AHRQ links this database to HCUP data at the county level on the basis of the hospital's location.

### [Environmental Files](#)

AHRQ links county-level data to HCUP county-level hospitalization and emergency department data using two external data sets: (1) weather station data maintained by the National Oceanic and Atmospheric Administration (NOAA); (2) modeled data covering the entire county from the North American Land Data Assimilation System (NLDAS), which is obtained from the National Aeronautics and Space Administration (NASA); (3) disaster declaration information from the Federal Emergency Management Agency (FEMA).

The Aerometric Information Retrieval System (AIRS) is the largest database documenting air pollutant concentrations across the country. This database is maintained by the United States Environmental Protection Agency (EPA). For some research projects, AHRQ links nationwide air pollutant data from the AIRS to HCUP nationwide hospitalization data using admission data and patient ZIP code.

### [HCUP Supplemental Files](#)

AHRQ releases two hospital-level HCUP Supplemental Files based on external data that are designed to augment the data elements in the National Inpatient Sample (NIS), Kids' Inpatient Database (KID), Nationwide Readmissions Database (NRD), and State Inpatient Databases (SID).

The HCUP Cost-to-Charge Ratio Files (CCR Files) provide a conversion between the total charge information (representing the amount hospitals billed for services) and the cost for hospital services. CCR File measures, which are developed using Centers for Medicare & Medicaid Services (CMS) Hospital Cost Report data, are available at the hospital level.

The HCUP Hospital Market Structure Files (HMS Files) contain various measures of hospital market competition. These measures are available at the hospital level and are developed using data from the American Hospital Association (AHA) Annual Survey of Hospitals Database, Area Health Resource File (AHRF), linkage to urban/rural indicators, and ZIP-Code data based on longitude and latitude for calculations of distance and travel times. Data for a State's hospitals are included in the CCR and HMS Files at the discretion of the participating data organization. Beginning with 2012 data, the HMS Files are no longer linkable to the national inpatient databases – the NIS and KID files. HMS Files are not available for the NRD.

### [Healthcare Information and Management Systems Society \(HIMSS\) Analytics® Database](#)

The HIMSS Analytics® Database provides information on health IT adoption. HIMSS Analytics, a subsidiary of the Healthcare Information and Management Systems Society, annually surveys a sample of U.S. non-Federal hospitals affiliated with integrated health care delivery systems (IHDSs). The HIMSS data include information about the extent of electronic medical records functionality, which is reflected in a score from 0 to 7. This database was used with the HCUP

SID and SEDD to track Health Information Exchanges and other information technology variables.

#### [Health Care Services Acquisition Report](#)

The Health Care Services Acquisition Report, created and maintained by Irving Levin Associates, provided additional information on integration events between hospitals and physician groups. Levin analyzes key information such as price, revenue, target, acquirer, price per bed per unit, and income multiples when available.

#### [Health Resources and Services Administration Products](#)

The Area Health Resource File (AHRF) is a publicly available database developed by the Health Resources and Services Administration (HRSA) Bureau of Health Professions. The AHRF contains county-level statistics on health care professions, hospitals and health care facilities, and population and environmental classifications. The AHRF county-level data can be linked to the HCUP databases to provide additional information such as demographic data on the hospital's county or patient's county of residence. The AHRF is not part of the HCUP databases; researchers are required to obtain the AHRF separately.

The HRSA Data Warehouse (HDW) integrates data with various external sources, enabling researchers to collect relevant and meaningful information on health care programs and the associated populations they serve. For some research projects, AHRQ links primary care service area (PCSA) data from the HDW—which contains nationwide data on U.S. primary health care resources, populations, and utilizations—with patient PCSA-level data in the HCUP SID.

#### [Inter-University Consortium for Political and Social Research \(ICPSR\) Uniform Crime Reporting \(UCR\) Program Data](#)

Each year, participating law enforcement agencies contribute crime reports to the Federal Bureau of Investigation (FBI) either directly or through their State reporting programs. ICPSR archives the UCR data as five separate components: (1) summary data, (2) county-level data, (3) incident-level data (National Incident-Based Reporting System [NIBRS]), (4) hate crime data, and (5) various, mostly nonrecurring, data collections. Summary data are reported in four types of files: (a) Offenses Known and Clearances by Arrest, (b) Property Stolen and Recovered, (c) Supplementary Homicide Reports (SHR), and (d) Police Employee (LEOKA) Data (Law Enforcement Officers Killed or Assaulted). The county-level data provide counts of arrests and offenses aggregated to the county level. County populations are also reported. These data may be linked to HCUP data at the State or county level.

#### [IQVIA Institute for Human Data Science Report: Use of Opioid Recovery Medications](#)

The IQVIA Science Report delivers objective, relevant insights and research on analysis essential to sound decisionmaking and improved outcomes. Several State-level policy variables were examined including out of pocket share of buprenorphine prescription payments.

#### [Kaiser Family Foundation Web site](#)

The Kaiser Family Foundation (Web site) contains Medicaid program information by State and was used in conjunction with HCUP and other data sources to estimate changes in hospital inpatient and emergency department (ED) utilization rates, cost, and acuity by payer.

State Health Facts is a project of the Henry J. Kaiser Family Foundation and provides health data for all 50 states, the District of Columbia, and the United States. In some cases, data are available for counties, territories, and other geographies. State Health Facts is comprised of more than 800 health indicators and provides users with the ability to map, rank, trend, and download data. Data come from a variety of public and private sources, including Kaiser Family Foundation reports, public websites, government surveys and reports, and private organizations.

#### [Medicare Patient Safety Monitoring System](#)

For certain research projects, AHRQ enhances the analytical capabilities of HCUP by linking to the Medicare Patient Safety Monitoring System (MPSMS). MPSMS is a national surveillance project aimed at identifying the rates of specific adverse events that occur in the hospital for Medicare patients. MPSMS includes a subset of hospitals participating in the Medicare Hospital Payment Monitoring Program with chart abstraction of randomly selected, all-payer adult discharges. MPSMS is a de-identified, record-level database that includes information abstracted about the patient's stay in the hospital, including health care associated injury or harm. MPSMS hospital level information can be linked to the HCUP data to provide a more robust understanding of the frequency and epidemiology of health care associated injury or harm for the inpatient population. The MPSMS hospital identifier must first be linked to the CMS Provider of Services (POS) file, which then can be crosswalked to the identifier on the AHA Annual Survey Databases and then linked to HCUP. Individual records can be linked using a probabilistic approach; linking does not identify patients because both HCUP data and the MPSMS are de-identified databases.

#### [Merchant Medicine](#)

Merchant Medicine is a research and consulting firm specializing in the field of walk-in medicine, tracks the location of all retail clinics in the United States on an ongoing basis in an effort to inform businesses specializing in walk-in medicine. These data include the dates of opening and closing and geocoded addresses of all retail clinics in the United States. These data can be linked to HCUP databases at the ZIP Code level by calculating the percentage of emergency department (ED) catchment areas (ZIP Codes that accounted for three-quarters of all ED visits for low-acuity conditions in the pre-study period) that overlapped with the geographic area within a 10-minute drive from a retail clinic.

#### [National Association of County & City Health Officials \(NACCHO\) Local Health Department Profiles](#)

The National Association of County and City Health Officials (NACCHO) regularly conducts two surveys to assess local health department (LHD) infrastructure and activities over time. The National Profile of Local Health Departments (commonly referred to as "the Profile study") represents the largest, most reliable source of data on LHDs and collects information on LHD infrastructure, workforce, finance, governance, activities, and services. The Forces of Change surveys assess the impact of a variety of trends affecting change in LHDs, including health reform, economic factors, and accreditation.

#### [National Alliance for Model State Drug Laws \(NAMSDL\) Pain Management and Prescribing Practices](#)

NAMSDL provides an overview regarding State statutes, regulations, and guidelines related to the treatment of chronic pain and prescribing practices; information related to the regulation of

pain clinics and facilities with a focus on the treatment of pain. Several State-level policy variables including pain management prescribing restrictions were examined.

#### [National Cancer Institute State Cancer Profiles](#)

The National Institutes of Health, National Cancer Institute provides a table of incidence statistics for use in assessing the burden and risk for a major cancer site for the U.S. overall and for states with cancer registries whose data have met the criteria required for inclusion in the U.S. Cancer Statistics External Web Site Policy. The 95% confidence intervals for the rates provide a measure of how certain or uncertain the point estimate is and can be used to generally assess how different one rate is from another.

#### [Penn State Northeast Regional Center for Rural Development Social Capital Index](#)

Composite index of social capital based on total associations (i.e. religious organizations, civic and social associations, business associations, political organizations, professional organizations, labor organizations, bowling centers, sports and fitness centers, country clubs, sports teams) per 1,000 population in 2014, 2012 voter turnout, 2010 census response rate, and number of non-profit organizations without an international approach in 2014.

#### [Prescription Drug Abuse Policy System \(PDAPS\)](#)

PDAPS is developed by Legal Science, LLC, in collaboration with legal experts at Temple University's Center for Health Law, Policy and Practice. PDAPS has built on the work of staff and grantees at the Public Health Law Research Program of the Robert Wood Johnson Foundation, based at Temple Law School. Several State-level policy variables including prescription drug monitoring program policies and naloxone availability policies were examined.

#### [QuintilesIMS Outpatient Surgery Centers Profiling Solution](#)

For certain intramural research projects, AHRQ may link facility-level data from the Outpatient Surgery Centers Profiling Solution database (formerly called SDI Freestanding Outpatient Surgery Center (FOSC) database) to freestanding ambulatory surgery data in the HCUP SASD. The Outpatient Surgery Centers Profiling Solution, created by SDI (now QuintilesIMS), contains facility-level data on free-standing ambulatory care centers in the United States. Data include operational characteristics (e.g., number of operating rooms, number of physicians), surgical characteristics (e.g., types and number of surgeries performed), purchasing patterns, facility name and address, and personnel information.

#### [SK&A Data Products](#)

QuintilesIMS' SK&A Data Products provides the largest telephone-verified national dataset of 7 million profiles of health care providers and over 1 million profiles of health care organizations. The profiles include detail characteristics about individual providers and organizations, such as affiliations with health systems and Accountable Care Organizations. This supplemental database allows for analyses to understand how organizational structures and market forces influence the delivery, costs, and quality of health care.

#### [State Board of Medical Examiners Physician Data](#)

In order to understand physician practice styles for specific research, AHRQ links the HCUP SID to State-specific Board of Medical Examiners physician data in order to create files for analysis. AHRQ contacted and received permission from select State Partners to conduct this study.

### [Substance Abuse and Mental Health Services Administration \(SAMHSA\)](#)

The SAMHSA Buprenorphine Treatment Locator tool allows examination of a variety of county-level factors related to buprenorphine treatment provider availability. The Behavioral Health Treatment Services Locator is an online source of information for persons seeking treatment facilities in the United States or U.S. Territories for substance abuse/addiction and/or mental health problems.

### [Substance Use Files](#)

AHRQ used State-level data sources to obtain information about the status of Medicaid medication-assisted treatment (MAT) policies: (1) The American Society of Addiction Medicine article regarding access to addiction medications and implications for opioid addiction treatment; and (2) preferred drug lists from the Florida and Georgia Medicaid Comprehensive Preferred Drug Lists. Several State-level data sources from the LawAtlas Project were also used to obtain information about implementation dates for naloxone standing orders and Good Samaritan Laws.

### [amfAR Opioid & Health Indicators Database](#)

The database contains the total number of drug seizures that were tested by forensic laboratories and reported to contain fentanyl to the Drug Enforcement Agency's (DEA) National Forensic Laboratory Information System (NFLIS) in a calendar year. The NFLIS collects drug chemistry analysis results, as well as other related information, from cases analyzed by state, local and federal forensic laboratories. These laboratories analyze substances secured in law enforcement operations across the country. Several State-level policy variables including law enforcement seizures of fentanyl were examined.

### [Surescripts](#)

Surescripts®, an e-prescribing network, links to the HCUP data by geographical market, or Hospital Referral Region (HRR). Surescripts is an e-prescription network used by the majority of all community pharmacies in the U.S. routing prescriptions, excluding closed systems such as Kaiser Permanente. This includes chain, franchise, and independently owned pharmacies. Surescripts network data exclude controlled substances.

### [Trauma Information Exchange Program](#)

For certain intramural research projects, AHRQ may link hospital-level data from the Trauma Information Exchange Program (TIEP) to the HCUP SEDD and SID. The TIEP data are maintained by the American Trauma Society and the Johns Hopkins Center for Injury Research and Policy, which receive funding from the CDC. The database maintains a national inventory of trauma centers in the United States and designates the trauma level (I, II, III, IV, or V). Trauma-level data are also used for the NEDS as one of the sample selection criteria and for post-stratification for weighting.

### [Urban/Rural Indicators](#)

AHRQ also links files in the HCUP data that provide measures of the *urban character* or *rural character* of the patient's residence or hospital's location. This information includes the county-based Core-Based Statistical Area (CBSA), Urban Influence Code, and the Rural Urban Continuum Code. These codes are available through files maintained by the U.S. Department of Agriculture, the Census Bureau, and the Health Resources and Services Administration

(HRSA). Linkages to these files are made using the patient's county or hospital's county. Another urban/rural measure has been developed through linkage to the ZIP Code-based Rural Urban Commuting Area (RUCA) codes available from the Washington, Wyoming, Alaska, Montana, Idaho (WWAMI) Rural Health Research Center. This linkage is made using the patient's ZIP Code of residence or the hospital's ZIP Code.

HCUP creates a version of the urban/rural codes through linkage to National Center for Health Statistics (NCHS) data available from the CDC. The NCHS provides county-level classifications of urban/rural location, which includes gradations of metropolitan, micropolitan, and noncore counties by population size. Population counts from the ZIP Code-level The Claritas files are assigned to a county and then aggregated to the NCHS urban/rural designation. Both patient and hospital locations are reported by NCHS designation.

Any patient ZIP Code linkage would conform to Partner and Data Use Agreement (DUA) restrictions.

### ZIP Code-Based and County-Based Census Data

For database development and specific research, AHRQ links data from the U.S. Census to the HCUP intramural data to obtain additional characteristics of the patient's community, such as the demographics, the urban or rural character, and the longitude and latitude for calculations of distance and travel times. AHRQ frequently uses the population ZIP-Code-level counts from Demographic Update Files provided by Claritas (a vendor that compiles and adds values to the U.S. Bureau of Census data).

During construction of the HCUP State Databases, AHRQ uses the patient's ZIP Code to link to the ZIP Code-based Claritas data to create two derived data elements representing median income categories for the patient's ZIP Code. One data element is based on the distribution of the U.S. population; the other data element is based on the distribution of the population in the State. For each variable, the four median income categories are designed to be broad enough to protect patient confidentiality. Ultimately, no category contains fewer than two ZIP Codes in a State. The data element with the national income quartiles is included on the restricted-access, public release NIS, KID, NEDS, and NRD. ZIP-Code-based and county-based census data cannot be linked to the restricted-access public release NIS, KID, NEDS, and NRD because neither the ZIP Code or county of the patient or hospital are included in the databases (as of 2012 data).

The U.S. Census Bureau's ZIP Code Tabulation Area (ZCTA) is used with HCUP data for population counts of uninsured people for studies that require ZIP code information.

### Substance Use-Related Data Sources

- The CDC U.S. Prescribing Rate and Overdose Maps
- CMS Medicare Opioid Prescribing Map Tool
- IQVIA Institute for Human Data Science Report: Use of Opioid Recovery Medications
- National Alliance for Model State Drug Laws (NAMSDL) Pain Management and Prescribing Practices
- Prescription Drug Abuse Policy System (PDAPS)
- Substance Abuse and Mental Health Services Administration (SAMHSA)

- The American Society of Addiction Medicine
- Florida and Georgia Medicaid Comprehensive Preferred Drug Lists
- LawAtlas Project
- amfAR Opioid & Health Indicators Database

## HCUP STATISTICS PROVIDED TO AGENCIES

Federal and other agencies rely on AHRQ for statistics to fulfill some of their program data needs. These are usually recurring, annual requests. The table below lists the agencies to which AHRQ provided statistics in 2018, what they are used for and the statistics provided.

HCUP Statistics Routinely Provided to Federal Agencies		
Agency	Use	Description of HCUP Statistics Provided
Assistant Secretary for Planning and Evaluation (ASPE)/DHHS	Health and Human Services (HHS) Opioid Dashboard	<ul style="list-style-type: none"> <li>National estimates of hospital visits related to opioid overdoses (poisoning) and to NAS</li> </ul>
Assistant Secretary for Preparedness and Response (ASPR)/DHHS	Resource Planning for Hurricane Florence	<ul style="list-style-type: none"> <li>Expected change in hospital utilization in the Carolinas after Hurricane Florence</li> </ul>
Center for Medicare & Medicaid Innovation (CMMI)	Partnership for Patients (PfP)	<ul style="list-style-type: none"> <li>National benchmark for readmissions to U.S. community hospitals, so that clinicians and policy makers can accurately measure improvements in the rate of readmissions for patients as interventions are implemented under the PfP</li> <li>National estimate for readmissions of all conditions combined, as well as the rate of readmissions for specific conditions</li> <li>Several of the measures in support of the PfP healthcare associated condition initiative including the maternal safety indicator</li> </ul>
Centers for Disease Control and Prevention (CDC)	Million Hearts Initiative	<ul style="list-style-type: none"> <li>Age- and sex-adjusted hospitalization rates of five conditions: acute myocardial infarction (AMI), acute stroke, AMI or acute stroke, acute cerebrovascular disease (CVD), and broad screen for CVD</li> </ul>
Centers for Disease Control and Prevention (CDC), /National Center for Health Statistics (/NCHS)	To inform CDC's definition of injuries using ICD-10-CM codes.	<ul style="list-style-type: none"> <li>State-based estimates of hospitalizations for injuries, types of injuries and external cause of injuries.</li> </ul>
Centers for Disease Control and Prevention)/ National Center for Health Statistics (NCHS)	Health US	<ul style="list-style-type: none"> <li>Cost of hospital procedures for the "Health US" publication</li> <li>Annual statistics on the all-payer costs for common operating room surgeries using estimates from the NIS</li> </ul>

<b>HCUP Statistics Routinely Provided to Federal Agencies</b>		
<b>Agency</b>	<b>Use</b>	<b>Description of HCUP Statistics Provided</b>
Centers for Disease Control and Prevention (CDC)/ National Center for Health Statistics (NCHS)	Healthy People 2030	<ul style="list-style-type: none"> <li>Rate of hospitalization per 100,000 population for pressure ulcers, falls, selected Prevention Quality Indicators (PQIs), diabetes, and urinary tract infections for Healthy People 2030 monitoring</li> <li>The statistics are based on HCUP NIS and are provided by age, gender, urban/rural residence.</li> </ul>
Health Resources and Services Administration (HRSA)	Emergency Medical Services for Children (EMSC) program	<ul style="list-style-type: none"> <li>National estimates of trends in the number of severely injured children treated in acute care settings, where the treatments are occurring (e.g., Level I/II trauma centers, Level III trauma centers, non-trauma centers), and the associated outcomes</li> </ul>
Health Resources and Services Administration (HRSA) & Centers for Disease Control and Prevention (CDC)	Create benchmarks for performance measures for Maternal & Child Health (MCH) Title V block grants to States	<p>Estimates of national performance measures:</p> <ul style="list-style-type: none"> <li>Rates of hospital admission for injuries for children</li> <li>Rates of childbirth hospitalizations with an indication of severe maternal morbidity (e.g. heart or kidney failure, stroke, embolism, hemorrhage)</li> <li>Rates of newborn infants diagnosed with neonatal abstinence syndrome</li> </ul>
Office of the Assistant Secretary of Health (OASH)/Department of Health and Human Services (DHHS)	Trends in Neonatal Abstinence Syndrome (NAS) births in the United States	<ul style="list-style-type: none"> <li>Quarterly updated estimates of neonatal abstinence syndrome (NAS) births using the SID and quarterly inpatient files</li> </ul>
Office of the Assistant Secretary of Health, DHHS	Longitudinal evaluation of the DHHS Action Plan to prevent Healthcare-Associated Infections (HAIs)	<ul style="list-style-type: none"> <li>Estimates of Clostridium difficile infection in hospitals for the Phase four National Action Plan, to track its success in preventing Healthcare-Associated Infections (HAIs)</li> </ul>
Substance Abuse and Mental Health Services Administration (SAMHSA)/DHHS	SAMHSA Drug Abuse Warning Network (DAWN)	<ul style="list-style-type: none"> <li>County-level counts of emergency department visits for opioid, stimulants, and cocaine</li> </ul>

## TECHNICAL SUPPORT TO HCUP USERS

Users of HCUP data, software tools, and products include health services researchers, policymakers, consumers, providers, and other constituent groups.

HCUP technical support provides a bridge between the project and its users by facilitating and promoting the use of HCUP data, software tools, and products. This support is intended to increase awareness of the value of HCUP resources, educate individuals on appropriate uses of HCUP data, and showcase the myriad of potential research and policy analysis applications.

The HCUP-US Web site ([www.hcup-us.ahrq.gov](http://www.hcup-us.ahrq.gov)) is integral in providing technical support to HCUP users. Please refer to the HCUP Online Resources section of the HCUP Project Overview Binder for more detailed information about the Web site.

As part of technical support, the Technical Assistance team answers user questions about HCUP databases and the application of HCUP tools and products. Complex questions are answered by research personnel trained in epidemiology, health services research, statistics, economics, and medicine. Programming staff provide advice on technical issues related to HCUP data and HCUP-provided programs. The Technical Assistance team forwards specific user questions, such as media and interagency requests and high-profile inquiries, to AHRQ staff. The Technical Assistance staff may be reached through a dedicated toll-free telephone number and email address: 1-866-290-HCUP or [hcup@ahrq.gov](mailto:hcup@ahrq.gov).

## TECHNICAL SUPPORT FOR HCUP PARTNERS

HCUP is made possible through the voluntary participation of State data organizations, hospital associations, and private data organizations that have partnered with AHRQ.

In addition to the products and technical support that are available to all HCUP users, the Partners are afforded other benefits for their participation in the project. HCUP creates analytic tools, data products, and reports for Partners; provides subject-matter expertise on data issues to Partners; promotes communication and information exchange among Partners about inpatient and outpatient data collection and use; and returns complimentary copies of the HCUP databases to participating data organizations.

For more information on technical support for HCUP Partners, see the section on Benefits of Partnership provided with this Annual Activities Report.

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We hope you and your affiliates find this report helpful. AHRQ values the extensive contributions of each HCUP Partner and will continue to seek Partner guidance on the use and development of HCUP data in 2018. We value and welcome your feedback and suggestions. Please contact Carol Stocks or Bill Freeman at AHRQ to share your comments or pose questions about the project.

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**H·CUP**  
HEALTHCARE COST AND UTILIZATION PROJECT

# **HCUP SOFTWARE TOOLS AND DATA REPORTS**

**2019**



## HCUP SOFTWARE TOOLS AND DATA REPORTS

The Agency for Healthcare Research and Quality (AHRQ) disseminates software tools, supplemental files, and reports to improve the ease of use and value of the Healthcare Cost and Utilization (HCUP) databases. The tools are updated annually and are available for download, free of charge, and can be used with any hospital administrative data. HCUP supplemental files contain additional data elements or analytically useful information, however, these files are created exclusively for use with the HCUP databases. A tutorial for how to load the ICD-10-CM-PCS tools is also available free of charge. Information about publicly available software tools and supplemental files is available on the HCUP User Support Web site (HCUP-US) at [www.hcup-us.ahrq.gov/tools\\_software.jsp](http://www.hcup-us.ahrq.gov/tools_software.jsp). Information about publicly available reports is also available: [www.hcup-us.ahrq.gov/reports.jsp](http://www.hcup-us.ahrq.gov/reports.jsp).

AHRQ also creates various tools and reports for the exclusive use of HCUP Partners, including HCUP data quality reports and State-specific data tables and files. To access this Partner-specific information, contact HCUP User Support at [hcup@ahrq.gov](mailto:hcup@ahrq.gov) (or 1-866-290-HCUP) or Judy Parlato at [Judy.Parlato@us.ibm.com](mailto:Judy.Parlato@us.ibm.com).

Additionally, AHRQ produces several series reports based on HCUP data – the HCUP Methods Series, HCUP Statistical Briefs, HCUP Infographics, Nationwide and State Database Reports, and Topical Reports on priority populations. These reports are an important means of communicating and disseminating information from HCUP. The reports describe HCUP data and research, and present statistics, analyses, and findings. These publications are available on the Reports page of the HCUP-US Web site at [www.hcup-us.ahrq.gov/reports.jsp](http://www.hcup-us.ahrq.gov/reports.jsp).

The following section summarizes HCUP software tools and data products designed for the public, and additional tables, files, and activities developed exclusively for HCUP Partners.

### HCUP SOFTWARE TOOLS

#### AHRQ Quality Indicators (QIs)

On an annual basis, HCUP data are used to update and enhance the AHRQ Quality Indicators (QIs) and their supporting tools. The AHRQ QIs consist of four modules measuring various aspects of quality: Prevention Quality Indicators (PQIs), Inpatient Quality Indicators (IQIs), Patient Safety Indicators (PSIs), and Pediatric Quality Indicators (PDIs). The AHRQ QIs are measures of health care quality that make use of readily available hospital inpatient administrative data. The AHRQ QIs may be used with HCUP data to highlight potential quality concerns, identify areas that need further study and investigation, and to measure and track clinical performance and outcomes. Methods and software for the AHRQ QIs can be downloaded from the AHRQ Quality Indicators Web site at [www.qualityindicators.ahrq.gov/](http://www.qualityindicators.ahrq.gov/).

#### Chronic Condition Indicator (CCI)

The Chronic Condition Indicator (CCI) tools provide users with an easy way to categorize *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM) and a beta version of the *International Classification of Diseases, 10th Revision, Clinical Modification* (ICD-10-CM) diagnosis codes into one of two categories: Chronic or Not Chronic. The tools can also assign ICD-9-CM and ICD-10-CM diagnosis codes into body system categories. For more

information, and to download the CCI, please visit the Tools & Software section of the HCUP-US Web site at [www.hcup-us.ahrq.gov/tools\\_software.jsp](http://www.hcup-us.ahrq.gov/tools_software.jsp).

### **Clinical Classifications Software (CCS)**

Clinical Classifications Software (CCS) provides a method for classifying ICD-9-CM and the beta version of ICD-10-CM/PCS diagnoses and procedures into clinically meaningful categories, which can be used for a variety of aggregate statistical reporting. For more information about CCS and the downloadable software, please visit the Tools & Software section of the HCUP-US Web site at [www.hcup-us.ahrq.gov/tools\\_software.jsp](http://www.hcup-us.ahrq.gov/tools_software.jsp). HCUP is currently developing a revised version of the CCS for ICD-10-CM. This new tool is expected to be publicly available in the summer of 2019.

### **Clinical Classifications Software (CCS) for Services and Procedures**

The Clinical Classifications Software for Services and Procedures (CCS-Services and Procedures) provides a method for classifying Current Procedural Terminology (CPT®) codes and Healthcare Common Procedure Coding System (HCPCS) codes into clinically meaningful procedure categories. The CCS categories in the Services and Procedures tool are identical to the CCS for ICD-9-CM procedures and the beta CCS for ICD-10-PCS, with the addition of specific categories unique to professional service and supply codes in CPT/HCPCS. CPT is a proprietary coding system developed by the American Medical Association (AMA) for coding services provided by health care professionals. Users must agree to a license to use the CCS-Services and Procedures before accessing the software. For more information about the tool and instructions for downloading and completing the license agreement, please visit the HCUP-US Web site at [www.hcup-us.ahrq.gov/toolsoftware/ccs\\_svcsproc/ccssvcproc.jsp](http://www.hcup-us.ahrq.gov/toolsoftware/ccs_svcsproc/ccssvcproc.jsp).

### **Elixhauser Comorbidity Software**

The Elixhauser Comorbidity Software for ICD-9-CM and the beta version of the Elixhauser Comorbidity Software for ICD-10-CM assign variables that identify comorbidities in hospital discharge records using diagnoses reported within the ICD-9-CM or ICD-10-CM coding system. The software is useful in assessing and controlling for severity of illness. It defines indicators for the presence of co-existing conditions such as diabetes, hypertension, congestive heart failure, and chronic pulmonary disease. Secondary diagnoses are used to identify a condition, and then diagnosis-related groups (DRGs) are employed to determine if the condition is a comorbidity or if it is closely related to the reason for the hospital stay. In 2015, a team of HCUP researchers created two indices based on the Elixhauser Comorbidity Software for ICD-9-CM designed to predict in-hospital mortality and 30-day readmission in administrative data. The indices are currently only available for use with ICD-9-CM data. For more information, and to download the Elixhauser Comorbidity Software, please visit the Tools & Software section of the HCUP-US Web site at [www.hcup-us.ahrq.gov/tools\\_software.jsp](http://www.hcup-us.ahrq.gov/tools_software.jsp). HCUP is currently working on developing a revised version of the Elixhauser Comorbidity Software for ICD-10-CM. This new tool is expected to be publicly available late in 2019.

### **HCUPnet**

HCUPnet is a free, online query system that provides instant access to statistics from HCUP databases. Using HCUPnet's easy-to-use query system, users can generate tables and graphs on national, regional and State statistics and trends on hospital stays, emergency department (ED) visits, ambulatory surgeries and services, and county-level health care use in the United

States. County-level information includes annual population-based rates and useful display maps, AHRQ Prevention Quality Indicators (PQIs) and Pediatric Quality Indicators (PDIs), United States – Mexico border, and Alcohol and Other Drug statistics. HCUPnet also provides national estimates of 30-day readmissions from the Nationwide Readmissions Database (NRD).

HCUPnet generates statistics using data from HCUP's National Inpatient (Nationwide) Sample (NIS), Kids' Inpatient Database (KID), Nationwide Emergency Department Sample (NEDS), Nationwide Readmissions Database (NRD), State Inpatient Databases (SID), State Emergency Department Databases (SEDD), and State Ambulatory Surgery and Services Databases (SASD). For more information and to access the platform, visit [www.hcupnet.ahrq.gov](http://www.hcupnet.ahrq.gov).

## Procedure Classes

The Procedure Classes for ICD-9-CM and the beta version of Procedure Classes for ICD-10-PCS provide users an easy way to categorize procedure codes into one of four broad categories: Minor Diagnostic, Minor Therapeutic, Major Diagnostic, and Major Therapeutic.

Procedure codes for these tools are based on ICD-9-CM or ICD-10-PCS. Procedure Classes assign the approximately 3,900 ICD-9-CM procedure codes and 71,900 ICD-10-PCS procedure codes into one of four categories listed above. For more information about the Procedure Classes and related downloadable software, please visit the Tools & Software section HCUP-US Web site at [www.hcup-us.ahrq.gov/tools\\_software.jsp](http://www.hcup-us.ahrq.gov/tools_software.jsp).

## Utilization Flags

The Utilization Flag Software for ICD-9-CM and the beta version of the Utilization Flag Software for ICD-10-PCS create 30 data elements that reveal additional information about the use of health care services by combining information from Uniform Billing 04 (UB-04) revenue codes and ICD-9-CM or ICD-10-PCS procedure codes to create flags, or indicators, of utilization. Use of procedures and services such as intensive care unit (ICU), critical care unit (CCU), neonatal intensive care unit (NICU), and specific diagnostic tests and therapies can be assessed with these Utilization Flags. The software tool allows researchers to identify critical hospital services that influence resource use and services that can be identified using either ICD-9-CM or ICD-10-PCS codes or revenue codes (such as ICU, blood transfusions, magnetic resonance images (MRIs), and mental health and substance abuse services). By combining information from UB-04 revenue codes and ICD-9-CM or ICD-10-PCS procedure codes, it is possible to obtain a more complete picture of utilization of services rendered in health care settings, such as hospitals, emergency departments, and ambulatory surgery centers. For more information about the HCUP Utilization Flags, please visit the HCUP-US Web site at [www.hcup-us.ahrq.gov/tools\\_software.jsp](http://www.hcup-us.ahrq.gov/tools_software.jsp).

## Surgery Flags

The Surgery Flags software provides a method for identifying surgical procedures and encounters using ICD-9-CM and CPT-based inpatient and ambulatory surgery data. Approximately 2,600 ICD-9-CM surgical procedure codes and 4,700 CPT surgical procedure codes are classified in the Surgery Flags as a narrowly defined therapeutic invasive surgery or a more broadly defined surgery that includes diagnostic invasive procedures. For more information about the HCUP Surgery Flags, please visit the HCUP-US Web site at [www.hcup-us.ahrq.gov/toolssoftware/surgflags/surgeryflags.jsp](http://www.hcup-us.ahrq.gov/toolssoftware/surgflags/surgeryflags.jsp).

## HCUP SUPPLEMENTAL FILES

### American Hospital Association (AHA) Linkage Files

The AHA Linkage Files are hospital-level files that contain a small number of data elements that allow researchers to link hospital identifiers on select HCUP State Databases (SID, SASD, and SEDD) to the AHA Annual Survey Database™ (Health Forum, LLC © 2018). Linkage is only available for States where HCUP Partner organizations allow the release of hospital identifiers. For more information about the HCUP AHA Linkage Files, please visit the HCUP-US Web site at [www.hcup-us.ahrq.gov/db/state/ahalinkage/aha\\_linkage.jsp](http://www.hcup-us.ahrq.gov/db/state/ahalinkage/aha_linkage.jsp).

### Cost-to-Charge Ratio (CCR) Files

The HCUP Cost-to-Charge Ratio (CCR) Files are used to estimate the resource cost of inpatient care and its variation across hospitals and conditions. The files are designed to supplement the data elements in the HCUP inpatient databases which contain data on total charges for each hospital. The charge information represents the amount hospitals bill for services, but it does not reflect how much hospital services actually cost or the specific amounts that hospitals receive in payment. For some studies, users will prefer to convert charges to costs at each hospital and for each case.

The HCUP CCR Files enable this conversion. Each file contains hospital-specific cost-to-charge ratios based on all-payer inpatient costs for nearly every hospital in the corresponding NIS, NRD, KID, and SID. Cost information is obtained from the hospital accounting reports collected by the Centers for Medicare & Medicaid Services (CMS). Some imputations for missing values are necessary. For more information about the HCUP CCR Files, please visit the HCUP-US Web site at [www.hcup-us.ahrq.gov/db/state/costtocharge.jsp](http://www.hcup-us.ahrq.gov/db/state/costtocharge.jsp).

### Hospital Market Structure (HMS) Files

The HCUP Hospital Market Structure (HMS) Files broadly characterize the intensity of competition that an individual hospital may be facing under various definitions of market area. These files are designed to be used exclusively with the HCUP NIS, KID, or SID. Creation of the HMS Files was spurred by a need for better and more readily available measures of hospital markets. Hospital market definitions were based on hospital locations, and in some cases, patient ZIP Codes. The competition measures were created according to the four most common methods of defining hospital market areas (geopolitical boundaries, fixed radius, variable radius, and patient flow) and the two most frequently used methods of capturing the intensity of competition within a market area (the number of hospitals and the Herfindahl-Hirschman Index (HHI)). Researchers can link information on the HMS Files to the corresponding SID hospitals, and through the 2009 NIS and KID, to perform empirical analyses examining the effects of hospital competition on the cost, access, and quality of hospital services. For more information about the HMS Files, please visit the HCUP-US Web site at [www.hcup-us.ahrq.gov/toolssoftware/hms/hms.jsp](http://www.hcup-us.ahrq.gov/toolssoftware/hms/hms.jsp).

### Kids' Inpatient Database Trend Weights (KID Trend Weights) File

The KID Trend Weights File is a discharge-level file that provides KID data users with trend weights consistently defined between 1997 and later years. For more information about the HCUP KID-Trend Weight File, please visit the HCUP-US Web site at [www.hcup-us.ahrq.gov/db/nation/kid/kidtrends.jsp](http://www.hcup-us.ahrq.gov/db/nation/kid/kidtrends.jsp).

## **1993-2002 Nationwide Inpatient Sample (NIS) Supplemental Discharge-Level Files and 1993-2011 NIS Trend Weights Files**

The 1993-2002 NIS Supplemental Discharge-Level Files facilitate analysis using multiple years of NIS data. To adjust for changes to the NIS design and data elements prior to 2002, the 1993-2002 NIS Supplemental Discharge-Level Files provide data elements that are consistently defined across data years as well as across the Trend Weights Files. To adjust for changes in the 2012 NIS redesign, AHRQ developed new 1993-2011 NIS Trend Weights for analysis spanning 2012 and earlier NIS data. The new NIS Trend Weights replace the earlier 1988-1997 NIS Trend Weights, which adjusted for changes following the 1998 NIS redesign. For more information about the HCUP 1993-2002 NIS Supplemental Discharge-Level and 1993-2011 NIS Trend Weights Files, please visit the HCUP-US Web site at [www.hcup-us.ahrq.gov/db/nation/nis/nistrends.jsp](http://www.hcup-us.ahrq.gov/db/nation/nis/nistrends.jsp).

## **Nationwide Inpatient Sample (NIS) Hospital Ownership Files**

The NIS Hospital Ownership Files are hospital-level files designed to facilitate analysis of the NIS by hospital ownership categories. These HCUP supplemental files allow the user to identify the following three types of hospitals in the 1998-2007 NIS: government nonfederal; private non-profit; and private investor-owned. For more information about the HCUP NIS Hospital Ownership Files, please visit the HCUP-US Web site at [www.hcup-us.ahrq.gov/db/nation/nis/nisownership.jsp](http://www.hcup-us.ahrq.gov/db/nation/nis/nisownership.jsp).

## **HCUP Supplemental Variables for Revisit Analyses**

The HCUP revisit variables can be used to track sequential visits for a patient within a State, and across facilities and hospital settings (inpatient, emergency department, ambulatory surgery and services), while adhering to strict privacy guidelines. These HCUP variables contain the following: 1) synthetic person-level identifiers that have been verified against the patient's date of birth and gender (HCUP variable VisitLink) and examined for completeness and 2) a timing variable that can be used to determine the days between hospital events for an individual (HCUP variable DaystoEvent). Actual dates (admission, discharge, or birth) are not part of the variables and are not required for these analyses.

HCUP revisit variables are designed to be used exclusively with the HCUP State Databases (SID, SASD, and SEDD). These variables are unique within State and facilitate tracking across data years and settings. Starting in 2009, the revisit variables are available within the State Databases instead of a separate supplemental file. For more information, visit the HCUP-US Web site at [www.hcup-us.ahrq.gov/toolssoftware/revisit/revisit.jsp](http://www.hcup-us.ahrq.gov/toolssoftware/revisit/revisit.jsp).

## **HCUP FAST STATS**

HCUP Fast Stats is an interactive, online tool that provides easy access to the latest HCUP-based statistics for select State and national health information topics. HCUP Fast Stats uses side-by-side comparisons of visual statistical displays in stand-alone graphs, trend figures, or simple tables to convey complex information at a glance. Information is updated regularly (quarterly or annually, as newer data become available).

Topics currently available in HCUP Fast Stats include the State Trends in Hospital Use by Payer (inpatient and emergency department); National Hospital Utilization and Costs; and Opioid-

Related Hospital Use, National and State. For more information about HCUP Fast Stats, please visit the HCUP-US Web site at [www.hcup-us.ahrq.gov/faststats/landing.jsp](http://www.hcup-us.ahrq.gov/faststats/landing.jsp).

## **DATA INNOVATIONS**

### **Race and Ethnicity Data Improvement Toolkit**

The Race and Ethnicity Data Improvement Toolkit provides practical tools and guidance to those interested in improving the quality of their hospital patient race, ethnicity, and primary language data collection. The toolkit is based on materials developed by the experiences of three [AHRQ Enhanced State Data](#) grantees from California, New Mexico, and the Northwest region (Idaho, Oregon and Washington) that participated in race, ethnicity, and language data quality improvement projects. For more information, visit the HCUP-US Web site at [www.hcup-us.ahrq.gov/datainnovations/raceethnicitytoolkit/home\\_race.jsp](http://www.hcup-us.ahrq.gov/datainnovations/raceethnicitytoolkit/home_race.jsp).

### **Clinical Content Enhancement Toolkit**

The Clinical Content Enhancement Toolkit provides practical tools and guidance to those interested in broadening and supplementing their existing population-based data with hospital-based clinical laboratory data, electronic pharmacy data, pre-hospital emergency care data, and vital record birth and death certificates. The toolkit is based on materials developed the experiences of five [AHRQ Enhanced State Data](#) grantees from Florida, Hawaii, Minnesota, New Jersey, and New York. For more information, visit the HCUP-US Web site at [www.hcup-us.ahrq.gov/datainnovations/clinicalcontentenhancementtoolkit/home\\_toolkits.jsp](http://www.hcup-us.ahrq.gov/datainnovations/clinicalcontentenhancementtoolkit/home_toolkits.jsp).

### **Present on Admission (POA) Resources**

The Present on Admission (POA) toolkit outlines the benefits of adding the POA indicator to administrative data and provides materials to assist with the implementation of the POA indicator. AHRQ funded four HCUP Partner Pilot and Planning Projects to study the collection of the POA indicator. For additional information, visit the HCUP-US Web site at [www.hcup-us.ahrq.gov/datainnovations/clinicaldata/poatoolkit.jsp](http://www.hcup-us.ahrq.gov/datainnovations/clinicaldata/poatoolkit.jsp).

## **HCUP DATA REPORTS**

### **HCUP Statistical Briefs**

The HCUP Statistical Briefs are short, focused reports that use HCUP data to present simple, descriptive statistics on hospital inpatient stays, emergency department visits, and ambulatory surgeries and services for specific conditions and populations. The Statistical Briefs cover a variety of topics and generally use data readily available to the public on HCUPnet, thereby making them accessible and reproducible. Some Statistical Brief reports, however, include more in-depth analyses using the HCUP databases.

The Statistical Briefs are useful to a wide variety of audiences, including policy analysts, decisionmakers, media personnel, and others in need of summary facts and figures on current health care issues. AHRQ releases new and updated reports on important health services research topics on a regular basis. All reports are posted on the HCUP-US Web site at [www.hcup-us.ahrq.gov/reports/statbriefs/statbriefs.jsp](http://www.hcup-us.ahrq.gov/reports/statbriefs/statbriefs.jsp).

A total of 12 HCUP Statistical Briefs were published in 2018:

- #245 Geographic Variation in Substance-Related Inpatient Stays Across States and Counties in the United States, 2013-2015
- #244 Opioid-Related Inpatient Stays and Emergency Department Visits Among Patients Aged 65 Years and Older, 2010 and 2015
- #243 Trends and Disparities in Delivery Hospitalizations Involving Severe Maternal Morbidity, 2006-2015
- #242 Overview of Pediatric Emergency Department Visits, 2015
- #241 Coronary Artery Disease, Acute Myocardial Infarction, and Ischemic Stroke Rates Among Inpatient Stays, 2001-2014
- #240 Co-occurrence of Physical Health Conditions and Mental Health and Substance Use Conditions Among Adult Inpatient Stays, 2010 Versus 2014
- #239 Payers of Opioid-Related Inpatient Stays and Emergency Department Visits Nationally and by State, 2010 and 2015
- #238 Trends in Hospital Emergency Department Visits by Age and Payer, 2006-2015
- #237 Patient Safety and Adverse Events, 2011 and 2014
- #236 Inpatient Stays Involving Atrial Fibrillation, 1998-2014
- #235 Trends in Hospital Inpatient Stays by Age and Payer, 2000-2015
- #234 Adverse Drug Events in U.S. Hospitals, 2010 Versus 2014

## HCUP Infographics

HCUP Infographics present a visual representation of data found in HCUP Statistical Briefs. Infographics include topics such as Characteristics of Hospital Stays Involving Malnutrition, Neonatal and Maternal Hospital Stays Related to Substance Abuse, Inpatient Versus Outpatient Surgeries in U.S. Hospital, and more. HCUP Infographics can be accessed in the Reports section of the HCUP-US Web site at [www.hcup-us.ahrq.gov/reports/infographics.jsp](http://www.hcup-us.ahrq.gov/reports/infographics.jsp).

## HCUP Methods Series

Each year HCUP conducts a number of research projects and provides methodological information on the HCUP databases and software tools. Some of these studies are released as part of the HCUP Methods Series. In 2018, HCUP released the following reports in this series:

- Methods Applying AHRQ Quality Indicators to Healthcare Cost and Utilization Project (HCUP) Data for the 2017 National Healthcare Quality and Disparities Report (QDR)
- An Examination of CHIP and Medicaid Expected Payer Coding in HCUP Databases
- Population Denominator Data Sources and Data for Use with HCUP Databases (Updated with 2017 Population Data)

HCUP Methods Series Reports can be accessed in the Reports section of the HCUP-US Web site at [www.hcup-us.ahrq.gov/reports/methods.jsp](http://www.hcup-us.ahrq.gov/reports/methods.jsp).

## HCUP Research Spotlights

This Web-based feature showcases several recent articles selected from more than 6,100 peer-reviewed journal publications that use HCUP data, software tools, supplemental files, or other products. The articles are chosen because they contain research that has the capacity to impact

health care policy, practice, and future research. The Research Spotlights page is updated quarterly with new articles. The HCUP Research Spotlights is available in the Reports section of the HCUP-US Web site at [www.hcup-us.ahrq.gov/reports/spotlights.jsp](http://www.hcup-us.ahrq.gov/reports/spotlights.jsp).

## Nationwide and State Database Reports

These reports are specific to the content and design of the HCUP Nationwide and State Databases. The reports are available in the Reports section of the HCUP-US Web site at [www.hcup-us.ahrq.gov/reports.jsp](http://www.hcup-us.ahrq.gov/reports.jsp).

## Topical Reports

HCUP Topical Reports provide information on specific issues using HCUP databases. HCUP released reports in previous years that addressed utilization and spending for hospital-related treatment of mental illness and substance use disorders and information on approaches for reducing race/ethnicity disparities. Topical Reports can be accessed in the Reports section of the HCUP-US Web site at [www.hcup-us.ahrq.gov/reports.jsp](http://www.hcup-us.ahrq.gov/reports.jsp).

## Border Crossing Reports

The Border Crossing Reports provide information on the flow of patients into and out of HCUP States. *Border crossings* – defined as residents of one State who are hospitalized in another State – are of interest to many States. The current report is based on available 2016 State Inpatient Databases (SID) data from all HCUP Partners. To further safeguard privacy, cells representing 10 or fewer hospitalizations have been suppressed. The Border Crossing Report is exclusively available to HCUP Partners on the Partners section of HCUP-US at: [www.hcup-us.ahrq.gov/partner/tools.jsp](http://www.hcup-us.ahrq.gov/partner/tools.jsp).

## Clostridium Difficile Infection (CDI) Toolkit

This Clostridium Difficile Infection (CDI) toolkit contains resources, educational materials, and reports for Partners related to *Clostridium difficile* infection. CDI is a healthcare-associated infection that may develop during the process of a patient's treatment for medical or surgical conditions in health care settings, including hospitals, clinics, nursing homes, and other health facilities. CDI may also be acquired in the community. The toolkit aims to provide a comprehensive set of materials for data organizations and stakeholders ranging from national links and educational materials to national and State reports. These resources are available on the Partners section of HCUP-US at [www.hcup-us.ahrq.gov/partner/cdi\\_toolkit.jsp](http://www.hcup-us.ahrq.gov/partner/cdi_toolkit.jsp).

## HCUP Partners Meetings

The purpose of the HCUP Partners Meetings is to facilitate the continued sharing of information with Partners. The Webinar series allows AHRQ to hear first-hand from Partners about data activities going on in their organizations. In addition, AHRQ is provided the opportunity to share accomplishments and current challenges of HCUP. Resources for each meeting as well as slides and meeting notes from the Webinars are available on the Partners section of HCUP-US at [www.hcup-us.ahrq.gov/partner/partnersmeeting.jsp](http://www.hcup-us.ahrq.gov/partner/partnersmeeting.jsp).

## ICD-10-CM/PCS Resources

AHRQ provides resources for Partners related to the International Classification of Diseases, Tenth Revision, Clinical Modification/Procedure Coding System (ICD-10-CM/PCS) code sets. The [ICD-10-CM/PCS Resources page](#) contains information and educational materials that health care data organizations and researchers may find useful during the transition from ICD-9-CM to ICD-10-CM/PCS. The HCUP [ICD-10-CM/PCS Code Edits](#) (in ZIP format) tool is exclusively available to Partners and provides ICD-10-CM/PCS code edits files with SAS formats, programs, and documentation, including examples for how to use the SAS formats. For ICD-10-CM diagnosis codes, the format returns the CCS value along with flags for validity by discharge date, patient gender, maternal age/condition, and neonatal age/condition. For ICD-10-PCS procedure codes, the format returns the same values except for the neonatal and maternal flags. Additional information about ICD-10-CM/PCS implementation considerations is available on the Partners section of HCUP-US at [www.hcup-us.ahrq.gov/partner/workgroups.jsp](http://www.hcup-us.ahrq.gov/partner/workgroups.jsp).

## Present on Admission (POA) Data Quality Workgroup

AHRQ provided Workgroup slides regarding the quality of HCUP POA data. The POA indicator is used to define if a condition occurred before or during a hospital stay. This indicator improves the use of hospital data for identifying patient quality issues and measuring improvement. As a result, we evaluated POA use within the HCUP data. The workgroup slides on overall findings and quality issues are available from the November 2013 and June 2014 meetings on the Partners section of HCUP-US at <https://www.hcup-us.ahrq.gov/partner/workgroups.jsp>.

## Collection and Reporting of Payer Data (Partner Focus Groups)

In 2014, AHRQ held two small-group conference calls with Partners related to payer coding. The discussion is part of AHRQ's efforts to improve the quality and standardization of statewide hospital encounter data. The National Association of Health Data Organizations (NAHDO), subcontractor to IBM Watson Health on data standards, facilitated the meeting discussion, which focused on issues related to collection and reporting of payer data that impact HCUP data including changes related to the Accountable Care Act (i.e. Health Information Exchange (HIE) implementation or Medicaid expansion) and use of the Source of Payment Typology. Results from this work were presented to all Partners at the October 17, 2014 HCUP Partners Meeting. In 2015, AHRQ held a Webinar with Partners to gather feedback about their data organizations' activities related to payer coding. A detailed summary of the work, presentation slides, and meeting summaries are available on the Partners section of HCUP-US at [www.hcup-us.ahrq.gov/partner/workgroups.jsp](http://www.hcup-us.ahrq.gov/partner/workgroups.jsp).

## Challenges Faced by Partners

This discussion topic, Challenges Partners Face as Data Stewards, was initiated in 2016 in response to the increase in issues related to data quality in recent years. In October 2016, HCUP conducted a Partner survey to identify the priority areas facing HCUP data stewards. Partners identified three main areas for further discussion: outpatient data issues (data quality, bundled outpatient data types), data processing issues (incomplete and missing data values), and challenges with linking to other data sources (Vital Records, All-Payer Claims Data, Medicaid data). These areas were discussed in the Partner Challenges discussion conducted during the

December 1, 2016 Partner Meeting. Meeting summary and presentation slides are available on the Partners section of UCUP-US at [www.hcup-us.ahrq.gov/partner/workgroups.jsp](http://www.hcup-us.ahrq.gov/partner/workgroups.jsp).

### **Patient Identifiers and Medicare Access and CHIP Reauthorization Act (MACRA)**

This presentation topic was developed as a follow up to the 2016 Challenges Survey and the interest Partners had expressed in data linkage. It included an overview on changes to MACRA policies that may impact data linkage and some alternatives for patient identification using discharge records. A presentation from the Maryland Partner presented on their approach to patient identifiers and linkage during the May 16, 2017 Partner Meeting. For more information see [www.hcup-us.ahrq.gov/partner/workgroups.jsp](http://www.hcup-us.ahrq.gov/partner/workgroups.jsp).

### **Community-Level Statistics on HCUPnet**

Community-Level Statistics for participating Partners are available on HCUPnet. The site allows users to query various county-level metrics such as Total Discharges, Mean Length of Stay (LOS), and Mean Cost per Stay by CCS, DRG and MDC categories, which can be stratified by age, sex, and payer, as well as age-sex adjustment. County-level Prevention Quality Indicators (PQIs) and Pediatric Quality Indicators (PDIs) are also available for participating Partners. Users can also obtain regional statistics, three-year aggregate statistics, United States (U.S.) – Mexico border, and Alcohol and Other Drug statistics. For more information, visit the HCUP-US Web site at [www.hcup-us.ahrq.gov/partner/commstats.jsp](http://www.hcup-us.ahrq.gov/partner/commstats.jsp).

### **Revisit Database Workgroup**

Materials from the August 2012 Revisit Database Workgroup provide information on the value of person-link variables and on the HCUP revisit variable. The HCUP revisit data element (VisitLink) enables HCUP users to identify hospital readmissions and revisits, hospital admissions from an ambulatory surgery or emergency department (ED) visit, and revisits to the ED. Webinar materials and other resources are available on the Partners section of HCUP-US at [www.hcup-us.ahrq.gov/partner/revisit\\_readmission.jsp](http://www.hcup-us.ahrq.gov/partner/revisit_readmission.jsp).

### **Race and Ethnicity Data Resources**

AHRQ provides a series of resources presented in HCUP Partner Webinars on measuring and improving collection of race and ethnicity data in administrative data sets. These materials include useful information on racial and ethnic disparities in health care and related data, measurement issues, standards, and tools for collecting and reporting patient race and/or ethnicity. Links to resources developed during the workgroups, as well as HCUP topical reports and case studies, and informative Web references to assist HCUP Partners in the coding, collection, and analysis of race and ethnicity data are available on the Partners section of HCUP-US at [www.hcup-us.ahrq.gov/partner/race\\_ethnicity.jsp](http://www.hcup-us.ahrq.gov/partner/race_ethnicity.jsp).

### **Race Data Quality Tables**

The HCUP race-ethnicity data quality feedback files for 2013 are exclusively available to HCUP Partners. These tables include hospital-specific information on the reporting of patient race and/or ethnicity for inpatient and emergency department data, using five criteria for identifying hospitals with suspect race and/or ethnicity coding. These files are not available online; Partners may contact AHRQ via e-mail at [hcup@ahrq.gov](mailto:hcup@ahrq.gov) or by phone at 1-866-290-HCUP to acquire their State file.

For additional information about any of these tools or data products, please contact either of the following individuals:

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**H·CUP**  
HEALTHCARE COST AND UTILIZATION PROJECT

**PEER REVIEWED HCUP PUBLICATIONS  
JANUARY – DECEMBER 2018\***

\*This document contains HCUP articles appearing in peer reviewed publications in 2018, found through our publications search effort.



## PUBLICATIONS FROM THE HCUP DATABASES

### January – December 2018

**Authors:** Abdelaal H, Mohamed MA, Aly H.

**Title:** Racial Disparity, Depression, and Birth Outcomes Among Pregnant Teens.

**Publication:** Maternal and Child Health Journal. 2018 Oct;22(10):1400-1406.

**Authors:** Abdullah A, Eigbire G, Salama A, Wahab A, Awadalla M, Hoefen R, Alweis R.

**Title:** Impact of Delirium on Patients Hospitalized for Myocardial Infarction: A Propensity Score Analysis of the National Inpatient Sample.

**Publication:** Clinical Cardiology. 2018 Jul;41(7):910-915.

**Authors:** Abdullah A, Eigbire G, Salama A, Wahab A, Nadkarni N, Alweis R.

**Title:** Relation of Obstructive Sleep Apnea to Risk of Hospitalization in Patients with Heart Failure and Preserved Ejection Fraction from the National Inpatient Sample.

**Publication:** The American Journal of Cardiology. 2018 Aug 15;122(4):612-615.

**Authors:** Aboagye JK, Hayanga JWA, Lau BD, Bush EL, Shaffer DL, Hobson DB, Kraus PS, Streiff MB, Haut ER, D'Cuhna J.

**Title:** Venous Thromboembolism in Patients Hospitalized for Lung Transplantation.

**Publication:** The Annals of Thoracic Surgery. 2018 Apr;105(4):1071-1076.

**Authors:** Abougergi MS, Peluso H, Saltzman JR.

**Title:** Thirty-Day Readmission Among Patients with Non-Variceal Upper Gastrointestinal Hemorrhage and Effects on Outcomes.

**Publication:** Gastroenterology. 2018 Jul;155(1):38-46.e1.

**Authors:** Abraham P, Brandel MG, DalleOre CL, Reid CM, Kpaduwa CS, Lance S, Meltzer HS, Gosman AA.

**Title:** Predictors of Postoperative Complications of Craniosynostosis Repair in the National Inpatient Sample.

**Publication:** Annals of Plastic Surgery. 2018 May;80(5S Suppl 5):S261-s266.

**Authors:** Abraham R, Kelly JJ, Newman JM, Naziri Q, Sodhi N, Khlopas A, George J, Shah NV, Sultan AA, Chughtai M, Barrington JW, Paulino CB, Mont MA.

**Title:** Have the Annual Trends of Total Knee Arthroplasty in Ankylosing Spondylitis Patients Decreased?

**Publication:** Annals of Translational Medicine. 2017 Dec;5(Suppl 3):S29.

**Authors:** Abu-El-Haija M, El-Dika S, Hinton A, Conwell DL.

**Title:** Acute Pancreatitis Admission Trends: A National Estimate Through the Kids' Inpatient Database.

**Publication:** The Journal of Pediatrics. 2018 Mar;194:147-151.e1.

**Authors:** Abubakar H, Yassin AS, Akintoye E, Bakhit K, Pahuja M, Shokr M, Lieberman R, Afonso L.

**Title:** Financial Implications and Impact of Pre-Existing Atrial Fibrillation on In-Hospital Outcomes in Patients Who Underwent Transcatheter Aortic Valve Implantation (from the National Inpatient Database).

**Publication:** The American Journal of Cardiology. 2018 Jun 15;121(12):1587-1592.

**Authors:** Adegbala O, Adejumo AC, Olakanmi O, Akinjero A, Akintoye E, Alliu S, Edo-Osagie E, Chatterjee A.

**Title:** Relation of Cannabis Use and Atrial Fibrillation Among Patients Hospitalized for Heart Failure.

**Publication:** The American Journal of Cardiology. 2018 Jul 1;122(1):129-134.

**Authors:** Adegbala O, Olagoke O, Adejumo A, Akintoye E, Oluwole A, Alebna P, Williams K, Lieberman R, Afonso L.

**Title:** Incidence and Outcomes of Cardiac Tamponade in Patients Undergoing Cardiac Resynchronization Therapy.

**Publication:** International Journal of Cardiology. 2018 Dec 1;272:137-141.

**Authors:** Adejumo AC, Adegbala OM, Adejumo KL, Bukong TN.

**Title:** Reduced Incidence and Better Liver Disease Outcomes Among Chronic Hcv Infected Patients Who Consume Cannabis.

**Publication:** Canadian Journal of Gastroenterology & Hepatology. 2018 Sep;2018:9430953.

**Authors:** Adejumo AC, Ajayi TO, Adegbala OM, Adejumo KL, Alliu S, Akinjero AM, Onyeakusi NE, Ojelabi O, Bukong TN.

**Title:** Cannabis Use is Associated with Reduced Prevalence of Progressive Stages of Alcoholic Liver Disease.

**Publication:** Liver International: Official Journal of the International Association for the Study of the Liver. 2018 Aug;38(8):1475-1486.

**Authors:** Adelani MA, Keller MR, Barrack RL, Olsen MA.

**Title:** The Impact of Hospital Volume on Racial Differences in Complications, Readmissions, and Emergency Department Visits Following Total Joint Arthroplasty.

**Publication:** The Journal of Arthroplasty. 2018 Feb;33(2):309-315.e20.

**Authors:** Admon LK, Winkelman TNA, Heisler M, Dalton VK.

**Title:** Obstetric Outcomes and Delivery-Related Health Care Utilization and Costs Among Pregnant Women with Multiple Chronic Conditions.

**Publication:** Preventing Chronic Disease. 2018 Feb 8;15:E21.

**Authors:** Agarwal M, Agrawal S, Garg L, Reed GL, Khouzam RN, Ibebuogu UN.

**Title:** Impact of Smoking in Patients Undergoing Transcatheter Aortic Valve Replacement.

**Publication:** Annals of Translational Medicine. 2018 Jan;6(1):2.

**Authors:** Agarwal MA, Garg L, Lavie CJ, Reed GL, Khouzam RN.

**Title:** Impact of Family History of Coronary Artery Disease on In-Hospital Clinical Outcomes in St-Segment Myocardial Infarction.

**Publication:** Annals of Translational Medicine. 2018 Jan;6(1):3.

**Authors:** Agimi Y, Albert SM, Youk AO, Documet PI, Steiner CA.

**Title:** Dementia and Motor Vehicle Crash Hospitalizations: Role of Physician Reporting Laws.

**Publication:** Neurology. 2018 Feb 27;90(9):e808-e813.

**Authors:** Agimi Y, Albert SM, Youk AO, Documet PI, Steiner CA.

**Title:** Mandatory Physician Reporting of At-Risk Drivers: The Older Driver Example.

**Publication:** The Gerontologist. 2018 May 8;58(3):578-587.

**Authors:** Agnihotri K, Pothineni NV, Charilaou P, Vaidya VR, Thakkar B, Goyal V, Kadavath S, Patel N, Badheka A, Noseworthy P, Kapa S, Friedman P, Gersh B, Paydak H, Deshmukh A.

**Title:** Impact of Atrial Fibrillation on Outcomes with Motor Vehicle Accidents.

**Publication:** International Journal of Cardiology. 2018 Jan 1;250:128-132.

**Authors:** Agrawal S, Garg L, Shah M, Agarwal M, Patel B, Singh A, Garg A, Jorde UP, Kapur NK.

**Title:** Thirty-Day Readmissions after Left Ventricular Assist Device Implantation in the United States: Insights from the Nationwide Readmissions Database.

**Publication:** Circulation. Heart Failure. 2018 Mar;11(3):e004628.

**Authors:** Aguayo E, Sanaiha Y, Seo YJ, Mardock A, Bailey K, Dobarra V, Benharash P.

**Title:** Heparin-Induced Thrombocytopenia in Cardiac Surgery: Incidence, Costs, and Duration of Stay.

**Publication:** Surgery. 2018 Dec;164(6):1377-1381.

**Authors:** Ahmad S, Munir MB, Sharbaugh MS, Althouse AD, Pasupula DK, Saba S.

**Title:** Causes and Predictors of 30-Day Readmission after Cardiovascular Implantable Electronic Devices Implantation: Insights from Nationwide Readmissions Database.

**Publication:** Journal of Cardiovascular Electrophysiology. 2018 Mar;29(3):456-462.

**Authors:** Ahmed MM, Rahman M, Neal D, Aranda JM Jr, Klodell CT.  
**Title:** Ventricular Assist Device Patients Have Different Clinical Outcomes and Altered Patterns of Bleeding with Intracranial Hemorrhage.  
**Publication:** Asaio Journal (American Society for Artificial Internal Organs: 1992). 2018 Jul/Aug;64(4):e55-e60.

**Authors:** Akanbi O, Adejumo AC, Saleem N, Francisque F, Soliman M, Ogunbayo GO.  
**Title:** Sick Cell Disease is Associated with Higher Mortality Among Patients Hospitalized with Ischemic Bowel Disease.  
**Publication:** European Journal of Gastroenterology & Hepatology. 2018 Sep;30(9):1027-1032.

**Authors:** Akande M, Minneci PC, Deans KJ, Xiang H, Chisolm DJ, Cooper JN.  
**Title:** Effects of Medicaid Expansion on Disparities in Trauma Care and Outcomes in Young Adults.  
**Publication:** The Journal of Surgical Research. 2018 Aug;228:42-53.

**Authors:** Akande M, Minneci PC, Deans KJ, Xiang H, Cooper JN.  
**Title:** Association of Medicaid Expansion Under the Affordable Care Act with Outcomes and Access to Rehabilitation in Young Adult Trauma Patients.  
**Publication:** JAMA Surgery. 2018 Aug 1;153(8):e181630.

**Authors:** Akhtar OS, Lakhter V, Zack CJ, Hussain H, Aggarwal V, Oliveros E, Brailovsky Y, Zhao H, Dhanisetty R, Charalel RA, Zhao M, Bashir R.  
**Title:** Contemporary Trends and Comparative Outcomes with Adjunctive Inferior Vena Cava Filter Placement in Patients Undergoing Catheter-Directed Thrombolysis for Deep Vein Thrombosis in the United States: Insights from the National Inpatient Sample.  
**Publication:** Jacc. Cardiovascular Interventions. 2018 Jul 23;11(14):1390-1397.

**Authors:** Akinseye OA, Shahreyar M, Nwagbara CC, Nayyar M, Salem SA, Morsy M, Khouzam RN, Ibebuogu UN.  
**Title:** Modifiable Predictors of In-Hospital Mortality in Patients Undergoing Transcatheter Aortic Valve Replacement.  
**Publication:** The American Journal of the Medical Sciences. 2018 Aug;356(2):135-140.

**Authors:** Akinyemiju T, Sakhuja S, Vin-Raviv N.  
**Title:** In-Hospital Mortality and Post-Surgical Complications Among Cancer Patients with Metabolic Syndrome.  
**Publication:** Obesity Surgery. 2018 Mar;28(3):683-692.

**Authors:** Akinyemiju TF, Naik G, Ogunsina K, Dibaba DT, Vin-Raviv N.  
**Title:** Demographic, Presentation, and Treatment Factors and Racial Disparities in Ovarian Cancer Hospitalization Outcomes.  
**Publication:** Cancer Causes & Control: Ccc. 2018 Mar;29(3):333-342.

**Authors:** AlTurk AA, Estiverne C, Agrawal PR, Michaud JM.  
**Title:** Trends and Outcomes of the Use of Percutaneous Native Kidney Biopsy in the United States: 5-Year Data Analysis of the Nationwide Inpatient Sample.  
**Publication:** Clinical Kidney Journal. 2018 Jun;11(3):330-336.

**Authors:** Al-Azzawi Y, Al-Abboodi Y, Fasullo M, Najuib T.  
**Title:** The Morbidity and Mortality of Laparoscopic Appendectomy in Patients with Cirrhosis.  
**Publication:** Clinical Medicine Insights. Gastroenterology. 2018 Apr;11:1179552217746645.

**Authors:** Al-Khadra Y, Darmoch F, Baibars M, Kaki A, Fanari Z, Alraies MC.  
**Title:** The Impact of Mitral Stenosis on Outcomes of Aortic Valve Stenosis Patient Undergoing Surgical Aortic Valve Replacement or Transcatheter Aortic Valve Replacement.  
**Publication:** Journal of Interventional Cardiology. 2018 Oct;31(5):655-660.

**Authors:** Al-Qurayshi Z, Baker SM, Garstka M, Ducoin C, Killackey M, Nichols RL, Kandil E.

**Title:** Post-Operative Infections: Trends in Distribution, Risk Factors, and Clinical and Economic Burdens.

**Publication:** Surgical Infections. 2018 Oct;19(7):717-722.

**Authors:** Al-Qurayshi Z, Srivastav S, Wang A, Boh E, Hamner J, Hassan M, Kandil E.

**Title:** Disparities in the Presentation and Management of Cutaneous Melanoma That Required Admission.

**Publication:** Oncology. 2018 Aug;95(2):69-80.

**Authors:** AlSulaim HA, Haring RS, Asemota AO, Smart BJ, Canner JK, Ejaz A, Efron DT, Velopulos CG, Haut ER, Schneider EB.

**Title:** Conscious Status is Associated with the Likelihood of Trauma Centre Care and Mortality in Patients with Moderate-To-Severe Traumatic Brain Injury.

**Publication:** Brain Injury. 2018 Mar;32(6):784-793.

**Authors:** Albaeni A, Chandra-Strobos N, Eid SM.

**Title:** Palliative Care Utilization Following Out-Of-Hospital Cardiac Arrest in the United States.

**Publication:** Resuscitation. 2018 Mar;124:112-117.

**Authors:** Alban RF, Nuno M, Ko A, Barmparas G, Lewis AV, Margulies DR.

**Title:** Weaker Gun State Laws are Associated with Higher Rates of Suicide Secondary to Firearms.

**Publication:** The Journal of Surgical Research. 2018 Jan;221:135-142.

**Authors:** Alkhalil A, Golbari S, Song D, Lamba H, Fares A, Alaiti A, Deo S, Attizzani GF, Ibrahim H, Ruiz CE.

**Title:** In-Hospital Outcomes of Transcatheter Versus Surgical Aortic Valve Replacement in End Stage Renal Disease.

**Publication:** Catheterization and Cardiovascular Interventions: Official Journal of the Society for Cardiac Angiography & Interventions. 2018 Oct 1;92(4):757-765.

**Authors:** Alkhouli M, Alqahtani F, Aljohani S, Alvi M, Holmes DR.

**Title:** Burden of Atrial Fibrillation-Associated Ischemic Stroke in the United States.

**Publication:** Jacc. Clinical Electrophysiology. 2018 May;4(5):618-625.

**Authors:** Alkhouli M, Berzingi C, Kowatli A, Alqahtani F, Badhwar V.

**Title:** Comparative Early Outcomes of Tricuspid Valve Repair Versus Replacement for Secondary Tricuspid Regurgitation.

**Publication:** Open Heart. 2018 June;5(2):e000878.

**Authors:** Alqahtani F, Aljohani S, Almustafa A, Alhijji M, Ali O, Holmes DR, Alkhouli M.

**Title:** Comparative Outcomes of Transcatheter Aortic Valve Replacement in African American and Caucasian Patients with Severe Aortic Stenosis.

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**Authors:** Alqahtani F, Almustafa A, Shah K, Akram Y, Abbasi D, Rattan R, Subrayappa N, Alkhouli M, Munir MB.

**Title:** Sudden Cardiac Arrest in End-Stage Renal Disease Patients on Dialysis: A Nationwide Study.

**Publication:** Pacing and Clinical Electrophysiology: Pace. 2018 Nov;41(11):1467-1475.

**Authors:** Alshaikh HN, Katz NM, Gani F, Nagarajan N, Canner JK, Kacker S, Najjar PA, Higgins RS, Schneider EB.

**Title:** Financial Impact of Acute Kidney Injury after Cardiac Operations in the United States.

**Publication:** The Annals of Thoracic Surgery. 2018 Feb;105(2):469-475.

**Authors:** Altieri MS, Yang J, Zhu C, Sbayi S, Spaniolas K, Talamini M, Pryor A.

**Title:** What Happens to Biliary Colic Patients in New York State? 10-Year Follow-Up from Emergency Department Visits.

**Publication:** Surgical Endoscopy. 2018 Apr;32(4):2058-2066.

**Authors:** Ambrose SE, Ongkasuwan J, Dedhia K, Diercks GR, Anne S, Shashidharan S, Raol N.  
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**Publication:** JAMA Otolaryngology-- Head & Neck Surgery. 2018 May 1;144(5):406-412.

**Authors:** Amin AN, Ortendahl JD, Harmon AL, Kamat SA, Stellhorn RA, Chase SL, Sundar SV.  
**Title:** Utilization and Budget Impact of Tolvaptan in the Inpatient Setting Among Patients with Heart Failure and Hyponatremia.  
**Publication:** Current Medical Research and Opinion. 2018 Mar;34(3):559-566.

**Authors:** Ammori JB, Navale S, Schiltz N, Koroukian SM.  
**Title:** Predictors of 30-Day Readmissions after Gastrectomy for Malignancy.  
**Publication:** The Journal of Surgical Research. 2018 Apr;224:176-184.

**Authors:** Amoda O, Ravat V, Datta S, Saroha B, Patel RS.  
**Title:** Trends in Demographics, Hospitalization Outcomes, Comorbidities, and Mortality Risk Among Systemic Sclerosis Patients.  
**Publication:** Cureus. 2018 May 14;10(5):e2628.

**Authors:** Anand V, Benditt DG, Adkisson WO, Garg S, George SA, Adabag S.  
**Title:** Trends of Hospitalizations for Syncope/Collapse in the United States from 2004 to 2013-an Analysis of National Inpatient Sample.  
**Publication:** Journal of Cardiovascular Electrophysiology. 2018 Jun;29(6):916-922.

**Authors:** Anderson KL Jr, Thomas SM, Adam MA, Pontius LN, Stang MT, Scheri RP, Roman SA, Sosa JA.  
**Title:** Each Procedure Matters: Threshold for Surgeon Volume to Minimize Complications and Decrease Cost Associated with Adrenalectomy.  
**Publication:** Surgery. 2018 Jan;163(1):157-164.

**Authors:** Anderson TS, Thombley R, Dudley RA, Lin GA.  
**Title:** Trends in Hospitalization, Readmission, and Diagnostic Testing of Patients Presenting to the Emergency Department with Syncope.  
**Publication:** Annals of Emergency Medicine. 2018 Nov;72(5):523-532.

**Authors:** Ando T, Adegba O, Akintoye E, Ashraf S, Pahuja M, Briasoulis A, Takagi H, Grines CL, Afonso L, Schreiber T.  
**Title:** Is Transcatheter Aortic Valve Replacement Better Than Surgical Aortic Valve Replacement in Patients with Chronic Obstructive Pulmonary Disease? a Nationwide Inpatient Sample Analysis.  
**Publication:** Journal of the American Heart Association. 2018 Apr 1;7(7):1-10.

**Authors:** Ando T, Adegba O, Villablanca PA, Shokr M, Akintoye E, Briasoulis A, Takagi H, Schreiber T, Grines CL, Afonso L.  
**Title:** Failure to Rescue, Hospital Volume, and In-Hospital Mortality after Transcatheter Aortic Valve Implantation.  
**Publication:** The American Journal of Cardiology. 2018 Sep 1;122(5):828-832.

**Authors:** Ando T, Akintoye E, Holmes AA, Briasoulis A, Pahuja M, Takagi H, Schreiber T, Grines CL, Afonso L.  
**Title:** Clinical End Points of Transcatheter Aortic Valve Implantation Compared with Surgical Aortic Valve Replacement in Patients <65 Years of Age (from the National Inpatient Sample Database).  
**Publication:** The American Journal of Cardiology. 2018 Jul 15;122(2):279-283.

**Authors:** Ando T, Akintoye E, Telila T, Briasoulis A, Takagi H, Schreiber T, Afonso L, Grines CL.  
**Title:** Hospital Outcomes of Transcatheter Versus Surgical Aortic Valve Replacement in Female in the United States.  
**Publication:** Catheterization and Cardiovascular Interventions: Official Journal of the Society for Cardiac Angiography & Interventions. 2018 Mar 1;91(4):813-819.

**Authors:** Angraal S, Khera R, Zhou S, Wang Y, Lin Z, Dharmarajan K, Desai NR, Bernheim SM, Drye EE, Nasir K, Horwitz LI, Krumholz HM.

**Title:** Trends in 30-Day Readmission Rates for Medicare and Non-Medicare Patients in the Era of the Affordable Care Act.

**Publication:** The American Journal of Medicine. 2018 Nov;131(11):1324-1331.e14.

**Authors:** Antoon JW, Goldman JL, Lee B, Schwartz A.

**Title:** Incidence, Outcomes, and Resource Use in Children with Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis.

**Publication:** Pediatric Dermatology. 2018 Mar;35(2):182-187.

**Authors:** Apostolova MH, Seaman CD, Comer DM, Yabes JG, Ragni MV.

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**H·CUP**  
HEALTHCARE COST AND UTILIZATION PROJECT

**FREQUENTLY ASKED QUESTIONS  
ABOUT HCUP AND PARTNER  
ORGANIZATIONS**

**2019**

## **FREQUENTLY ASKED QUESTIONS: HCUP AND PARTNER ORGANIZATIONS**

### **I. PROJECT BACKGROUND**

#### **A. What is the Healthcare Cost and Utilization Project (HCUP)?**

HCUP is a Federally-funded project that builds on the efforts of State data organizations, hospital associations, and private data organizations (known as “HCUP Partners”) to create a national resource of hospital and outpatient discharge data and related software tools and products. HCUP includes the largest collection of longitudinal hospital care data in the United States (U.S.), enabling research on a broad range of health policy issues, including cost and quality of health services, medical practice patterns, access to health care programs, and outcomes of treatments at the national, State, and local market levels.

#### **B. Who sponsors and funds HCUP?**

HCUP is sponsored and funded by the Agency for Healthcare Research and Quality (AHRQ), an Agency of the U.S. Department of Health and Human Services (HHS). Researchers at AHRQ’s Center for Financing, Access, and Cost Trends (CFACT) provide technical guidance for HCUP. HCUP would not be possible without the voluntary cooperation of participating HCUP Partners.

#### **C. What databases does HCUP produce?**

HCUP develops and maintains a family of databases, including the National (Nationwide) Inpatient Sample (NIS), the Kids’ Inpatient Database (KID), the Nationwide Emergency Department Sample (NEDS), the Nationwide Readmissions Database (NRD), the State Inpatient Databases (SID), the State Ambulatory Surgery and Services Databases (SASD), and the State Emergency Department Databases (SEDD). AHRQ plans to release the Nationwide Ambulatory Surgery Sample (NASS) in 2019.

#### **D. Who has access to the data?**

All data provided to HCUP are intended for intramural use and are available only to authorized AHRQ staff, their contractors, and guest researchers. These intramural databases are utilized for AHRQ research efforts, software tools, and reports. The HCUP data that are made available to the public are known as restricted-access public release files. All restricted-access public release files are derived from the intramural databases, with additional restrictions on content to meet the public release requirements of both AHRQ and each participating HCUP Partner. The restricted-access public release NIS, KID, NASS, NEDS, NRD, SID, SASD, and SEDD are purchased by researchers outside of AHRQ through the [HCUP Central Distributor](#), with Partner approval. Not all Partners make their data available through the HCUP Central Distributor, and not all data elements are available from every Partner. Researchers order the data online through the HCUP Central Distributor and must take an online training course and sign an HCUP Data Use Agreement (DUA).

**E. How many States participate in HCUP?**

As of March 2019, 49 data organizations participate in HCUP, representing 48 States and the District of Columbia.

**F. How can a data organization become a part of HCUP?**

Each year, AHRQ attempts to expand the HCUP partnership by inviting additional State data organizations, hospital associations, and private data organizations to join the project. Through its recruitment and data development contractor, Watson Health, AHRQ explores the interest and ability of data organizations to participate in the project. Inclusion of new organizations in HCUP is aimed at improving the geographic representation of HCUP databases, expansion of outpatient data, and representation of important population groups. Candidates for joining HCUP must be able to meet basic participation requirements described in [Section II.A.](#), below. Participation in HCUP is based on a cooperative, detailed agreement made between AHRQ and each HCUP Partner organization. Organizations that would like more information about becoming a part of HCUP should contact Carol Stocks, HCUP Project Manager, or Jon Busch, HCUP Technical Project Manager (Refer to [Section V](#) for contact information).

**G. Is participation mandatory or voluntary?**

Participation in HCUP is entirely voluntary.

**H. Which States have data organizations contributing health care data to HCUP?**

The following 49 HCUP Partners contribute **inpatient** data to HCUP:

Alaska	Indiana	Montana	Pennsylvania
Arizona	Iowa	Nebraska	Rhode Island
Arkansas	Kansas	Nevada	South Carolina
California	Kentucky	New Hampshire	South Dakota
Colorado	Louisiana	New Mexico	Tennessee
Connecticut	Maine	New Jersey	Texas
Delaware	Maryland	New York	Utah
District of Columbia	Massachusetts	North Carolina	Vermont
Florida	Michigan	North Dakota	Virginia
Georgia	Minnesota	Ohio	Washington
Hawaii	Mississippi	Oklahoma	West Virginia
Illinois	Missouri	Oregon	Wisconsin
			Wyoming

The following 35 HCUP Partners contribute **ambulatory surgery and services** data to HCUP:

California	Iowa	Nevada	Pennsylvania
Colorado	Kansas	New Hampshire	South Carolina
Connecticut	Kentucky	New Jersey	South Dakota
District of Columbia	Maine	New York	Tennessee
Florida	Maryland	North Carolina	Texas
Georgia	Michigan	North Dakota	Utah
Hawaii	Minnesota	Ohio	Vermont
Illinois	Missouri	Oklahoma	Wisconsin
Indiana	Nebraska	Oregon	

The following 39 HCUP Partners contribute **emergency department** data to HCUP:

Arkansas	Indiana	Montana	Rhode Island
Arizona	Iowa	Nebraska	South Carolina
California	Kansas	Nevada	South Dakota
Colorado	Kentucky	New Hampshire	Tennessee
Connecticut	Maine	New Jersey	Texas
District of Columbia	Maryland	New York	Utah
Florida	Massachusetts	North Carolina	Vermont
Georgia	Minnesota	North Dakota	Wisconsin
Hawaii	Mississippi	Ohio	Wyoming
Illinois	Missouri	Oregon	

## II. PARTICIPATION REQUIREMENTS AND BENEFITS

### A. What are the basic participation requirements?

To participate in HCUP as a Partner, an organization must:

1. Be able to contribute statewide, all-payer inpatient discharge data from all, or nearly all, acute care non-Federal hospitals in the State
2. Agree to make its inpatient data available for sampling in the NIS
3. Permit data to be linked to the American Hospital Association (AHA) Annual Survey Database for internal project purposes
4. Supply the full range of discharge data required for participation (e.g., hospital identification numbers, total charges, diagnoses, procedures, payment source, and patient demographics)
5. Supply data to HCUP on an annual or more frequent basis
6. Have established pricing structures for the purchase of its data.

## How do data organizations formalize their participation in HCUP?

Participation in the project is formalized through a Memorandum of Agreement (MOA) with AHRQ. If a Partner organization requires its own agreements, these documents may be executed in addition to the HCUP MOA.

### B. When are Partners asked to submit their data?

Partners are asked to submit their inpatient data for a specific data year within one month of its release and no later than December 31, following the data year.

### C. What benefits are available to participating data organizations?

HCUP Partners benefit in many ways, including the following:

- By contributing to a national database project, Partners increase the visibility of their data and further demonstrate outside of their organizations the value of the data they collect.
- Contributing data to HCUP helps to support a broad base of scientific research, and strengthens a common Federal-State mission of improving health care for all Americans.
- Partners are invited to partnership-oriented Webinars that provide opportunities to hear from other Partners, discuss data enhancements and other technical issues of mutual interest, and participate in a Federal-State dialogue about HCUP and health care data.
- AHRQ provides complimentary copies of all nationwide databases (NIS, NASS, NEDS, NRD, and KID) to HCUP Partners upon receipt of a signed DUA.
- AHRQ sends copies of its uniformly formatted State databases (SID, SASD, and SEDD) back to the contributing HCUP Partners. These databases may be used as appropriate to fulfill the needs of the Partners to the extent to which they are consistent with the HCUP DUA. If Partners release these databases to others, DUAs must be required.
- Partners may use the convenient HCUP Central Distributor free of charge to disseminate their data. The money from sales of each State's data is forwarded to the Partner data organization and participating Partners set the price of their data.
- Partners may release their State- and community-level statistics through [HCUPnet](#), a widely used online query system based on HCUP data that provides information on hospital inpatient, ambulatory surgery and services, and emergency department utilization at the national, State, and community levels.
- Partners may release their State-level statistics through [HCUP Fast Stats](#), a tool that provides easy access to the latest HCUP-based statistics for health information topics. The *State Trends in Hospital Use by Payer* topic provides State-level hospital inpatient and emergency department (ED) utilization trends for all adults for different hospitalization types, by payer. The *Opioid-Related Hospital Use* topic provides trends in opioid-related inpatient stays and ED visits at the national and State level. The *National Hospital Utilization and Costs* topic provides trends in inpatient stays,

the most common diagnoses for inpatient stays, and most common operations during inpatient stays across a variety of patient characteristics.

- Partners may use HCUP data to support State transparency initiatives by visiting the [National Healthcare Quality and Disparities Reports \(QDR\) Web site](#). This Web site provides comparative estimates (national and regional norms, and best performing States' outcomes) for State health care quality metrics, some of which are based on HCUP data, using data from the AHRQ QDR.
- Partners receive annual AHRQ Quality Indicator (QI) reports and ad hoc feedback on their State's data.
- Partners have access to consultation with AHRQ researchers.
- Partners receive technical support in the form of:
  - Analytic software tools
  - Data products and reports
  - Subject matter expertise
  - A Partner-specific section on the HCUP User Support (HCUP-US) Web site.
- Partners may participate in ongoing workgroups on various topics.

### **III. PRIVACY PROTECTIONS**

#### **A. What privacy protections has HCUP established for its databases?**

The HCUP MOA between AHRQ and the Partner organizations contains a detailed Data Security Plan with extensive policies and procedures to protect privacy and confidentiality. It is important to note that HCUP does not request that Partners submit any direct patient identifiers to the project, such as patient name, Social Security Number (SSN), unencrypted medical record number, or patient identification number.

AHRQ also protects physical and electronic access to data. Physical media such as external hard drives, CDs/DVDs, or other storage devices, reports, lists, or any other material containing potentially identifying information are kept in locked files, locked offices, or controlled-access storage rooms at the end of each working day, whenever not in immediate use, and supervised by authorized project staff. Contractors have different levels of access to HCUP data, and all data access is limited to the level required to accomplish AHRQ-specified work. The HCUP Information Technology (IT) systems are in conformance with the standards set forth by the Federal Information Security Management Act (FISMA) and National Institute of Standards and Technology (NIST) Special Publication (SP) 800-37, Guide for Applying the Risk Management Framework to Federal Information Systems. HCUP IT systems has received security authorizations to operate from the Federal Government and is compliant with all Public Law (PL)-107-347, Office of Management and Budget (OMB) mandates, Federal Information Processing Standards (FIPS), and additional applicable NIST guidance.

**B. Are HCUP's privacy protections consistent with the Health Insurance Portability and Accountability Act (HIPAA)?**

Yes. Although AHRQ (and the vast majority of HCUP Partners) are not considered covered entities, HCUP has established policies and procedures that are consistent with HIPAA. The HCUP databases are consistent with the definition of "limited data sets" under the HIPAA Privacy Rule and contain no direct patient identifiers. HCUP DUA training and a signed DUA are required by all users of the HCUP databases.

**IV. ONLINE RESOURCES**

**A. Is information about HCUP available online?**

Yes. The HCUP-US Web site – [www.hcup-us.ahrq.gov](http://www.hcup-us.ahrq.gov) – provides detailed information on HCUP databases, including: the online purchase of HCUP databases; free tools and software; HCUP reports; and access to technical support. The HCUP Online Tutorial Series provide hands-on information about the intricacies of the data. In addition to this document, a frequently asked questions page provides answers to common questions about HCUP databases, software tools, supplemental files, and other products.

**B. Does the public have access to all of the same resources as Partners on the HCUP-US Web site?**

No. The main HCUP-US Web site is publicly accessible, but HCUP Partners also have access to a password-protected Partner section (a dedicated section of HCUP-US). This part of the HCUP-US Web site contains information and documents of specific interest to participating data organizations. It provides a user-friendly platform for Partners to stay informed of current activities involving HCUP, easy access to HCUP information and documents, and links to request a copy of the current HCUP MOA or Partner-specific data element lists. A username and password are required to access the secure HCUP-US Partners section. Partners go to [www.hcup-us.ahrq.gov/login.jsp](http://www.hcup-us.ahrq.gov/login.jsp) to log-in.

**C. Does AHRQ provide access to any statistics from HCUP databases free of charge?**

Yes. HCUPnet – available at [www.hcupnet.ahrq.gov/](http://www.hcupnet.ahrq.gov/) – is a free, online query system that provides instant access to statistics from HCUP. Using HCUPnet's easy, step-by-step query system, users can generate tables and graphs on national and regional statistics and trends for community hospitals in the United States. HCUPnet also provides statistics based on 30-day readmissions from the NRD. In addition, State- and community-level data are available for those Partners that have agreed to participate.

Also, HCUP Fast Stats – available at [www.hcup-us.ahrq.gov/faststats/landing.jsp](http://www.hcup-us.ahrq.gov/faststats/landing.jsp) – provides easy access to the latest HCUP-based statistics for health information topics. Fast Stats will be updated regularly (quarterly or annually, as newer data become available) for timely, topic-specific national and State-level statistics.

#### **D. What user information is available for the AHRQ Quality Indicators (QIs)?**

Software and user guides for all four QI modules – Prevention Quality Indicators (PQIs), Inpatient Quality Indicators (IQIs), Patient Safety Indicators (PSIs), and Pediatric Quality Indicators (PDIs) – are available for download from the AHRQ Web site at [www.qualityindicators.ahrq.gov](http://www.qualityindicators.ahrq.gov). The AHRQ QIs may be used with HCUP data to highlight potential quality concerns, identify areas that need further study and investigation, and track changes over time. HCUP Partners receive a courtesy copy of State-level QI rates based on the current data year for the National Healthcare Quality and Disparities Report (QDR), with accompanying national rates based on HCUP data. These blinded tables are available for use solely within the organization, and support is provided for Partners who wish to use their State information for external reporting.

#### **V. CONTACT INFORMATION**

For more information about HCUP, please contact either of the following individuals:

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# **HCUP CONTACTS**

**2019**



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Bill Freeman, DrPH, MPH Project Coordinator	(301) 427-1320	<a href="mailto:William.Freeman@ahrq.hhs.gov">William.Freeman@ahrq.hhs.gov</a>	<ul style="list-style-type: none"> <li>• HCUP Contract</li> <li>• Community Level Statistics</li> <li>• HCUPnet</li> <li>• Technical Support to Partners</li> <li>• IT Security</li> </ul>
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Zeynal Karaca, Ph.D.	(301) 427-1598	<a href="mailto:Zeynal.Karaca@ahrq.hhs.gov">Zeynal.Karaca@ahrq.hhs.gov</a>	<ul style="list-style-type: none"> <li>• Cost-to-Charge Ratios</li> <li>• Price-to-Charge Ratios</li> <li>• Hospital Competition Measures</li> <li>• Research and Analytics</li> <li>• Inpatient Processing</li> <li>• State Ambulatory Surgery &amp; Services Database (SASD)</li> <li>• Nationwide Emergency Department Sample (NEDS)</li> <li>• Nationwide Ambulatory Surgery and Services Sample (NASS)</li> </ul>