

## STATISTICAL BRIEF #258

May 2020

### Hospital Burden of Opioid-Related Inpatient Stays: Metropolitan and Rural Hospitals, 2016

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#### Introduction

Reflective of the national opioid crisis, the rate of opioid-related hospitalizations has increased substantially in the United States, from 164.2 per 100,000 population in 2006 to 296.9 per 100,000 population in 2016.<sup>1</sup> The escalation in opioid-related inpatient stays has been accompanied by a disproportionately large increase in the costs associated with these types of hospitalizations. One study estimated that charges for hospital stays involving opioid abuse or dependence nearly quadrupled between 2002 and 2012, reaching almost \$15 billion.<sup>2</sup>

The dramatic rise in hospitalizations related to taking opioids (defined as abuse, dependence, or use) and associated conditions place an increased burden on hospitals to be able to manage, treat, and potentially help minimize opioid-related problems for their patients. In October 2017, the American Hospital Association published a toolkit to assist hospitals in their efforts to address the opioid crisis, covering areas such as appropriate prescribing practices, identification and treatment of opioid use disorder, and nonopioid pain management.<sup>3</sup> In order to help better focus hospital resources, it is important to understand which hospitals are facing the most substantial burden of opioid-related cases.

This Healthcare Cost and Utilization Project (HCUP) Statistical Brief focuses on the hospital burden of opioid-related hospitalizations by hospital urban-rural location. The Statistical Brief presents hospital statistics on opioid-related inpatient stays using the 2016 State Inpatient Databases (SID) from 46 States and the District of Columbia. The hospital rate of opioid-related stays per 1,000 inpatient stays is examined for a total of 4,207 community hospitals (excluding rehabilitation and long-term acute care hospitals) classified based on the urban-rural location of the hospital: metropolitan (metro), rural and adjacent to a metropolitan area (rural-adjacent), and rural and not adjacent to a metropolitan area (rural-remote). The hospital rate of opioid-related stays is presented by hospital urban-rural location for each U.S. census division. The distribution of the rate is provided across all metropolitan and rural hospitals.

#### Highlights

- In 2016, hospitals located in metropolitan areas had a higher average rate of opioid-related inpatient stays than did hospitals located in rural areas adjacent to metropolitan areas (rural-adjacent) or rural-remote areas (30.8 vs. 20.1 and 16.2 per 1,000 stays, respectively).
- Metropolitan hospitals had higher average hospital rates of opioid-related inpatient stays than rural-adjacent and/or rural-remote hospitals in most divisions, but in New England rates were high regardless of hospital location.
- Rural-remote and rural-adjacent hospitals were more likely to have no opioid-related cases (19.3 and 11.6 percent, respectively) compared with metropolitan hospitals (4.3 percent).
- Based on hospital bed size and occupancy level, the lowest opioid burden was among small hospitals regardless of location (11.7 to 14.9 per 1,000 stays) and the highest opioid burden was among metro hospitals with high occupancy levels (33.5 to 34.6 per 1,000 stays).

<sup>1</sup> Healthcare Cost and Utilization Project. HCUP Fast Stats, Opioid-Related Hospital Use. [www.hcup-us.ahrq.gov/faststats/OpioidUseServlet?setting1=IP&location=US](http://www.hcup-us.ahrq.gov/faststats/OpioidUseServlet?setting1=IP&location=US). Accessed January 26, 2020.

<sup>2</sup> Ronan MV, Herzig SJ. Hospitalizations related to opioid abuse/dependence and associated serious infections increased sharply, 2002–12. *Health Affairs*. 2016;35(5):832–7.

<sup>3</sup> American Hospital Association. Stem the Tide: Addressing the Opioid Epidemic. 2017. Chicago: IL. [www.aha.org/opioidtoolkit](http://www.aha.org/opioidtoolkit). Accessed October 9, 2019.

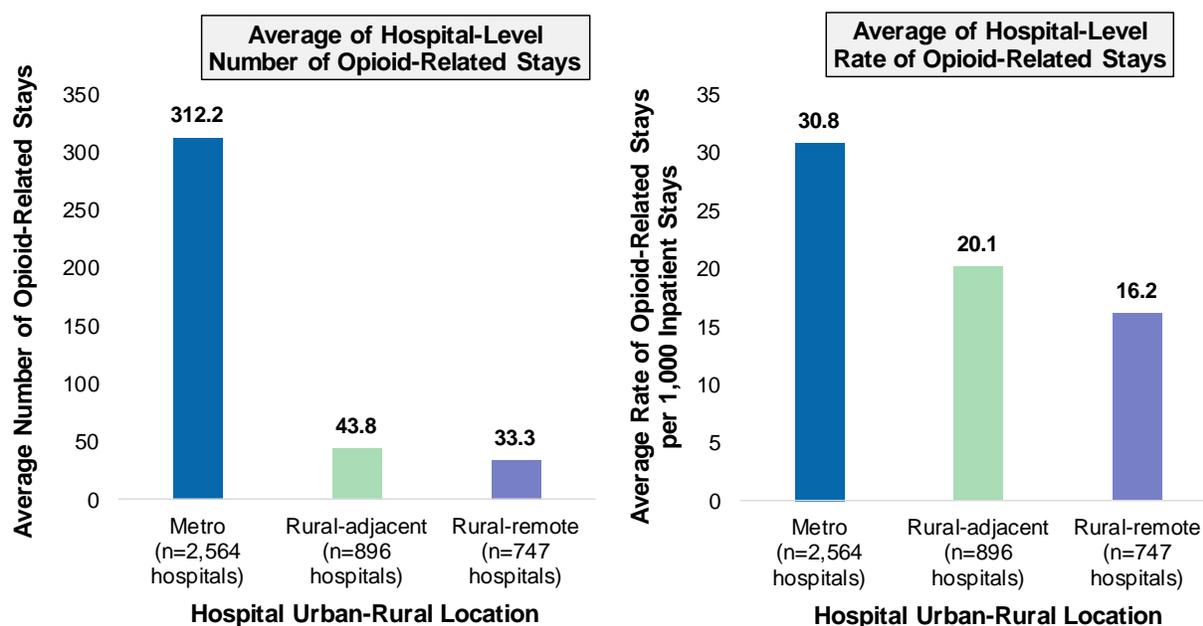
Finally, the rate is presented by hospital urban-rural location for hospitals with different bed sizes and occupancy levels. All differences between estimates noted in the text are statistically significant at the .05 level or better.

## Findings

### *Burden of opioid-related stays in community hospitals by hospital urban-rural location, 2016*

Figure 1 provides the average number and average hospital rate of opioid-related stays per 1,000 inpatient stays by hospital urban-rural location (metro, rural-adjacent to metro, and rural-remote) in 2016.

**Figure 1. Average number and average hospital rate of opioid-related inpatient stays, by hospital urban-rural location, 2016**



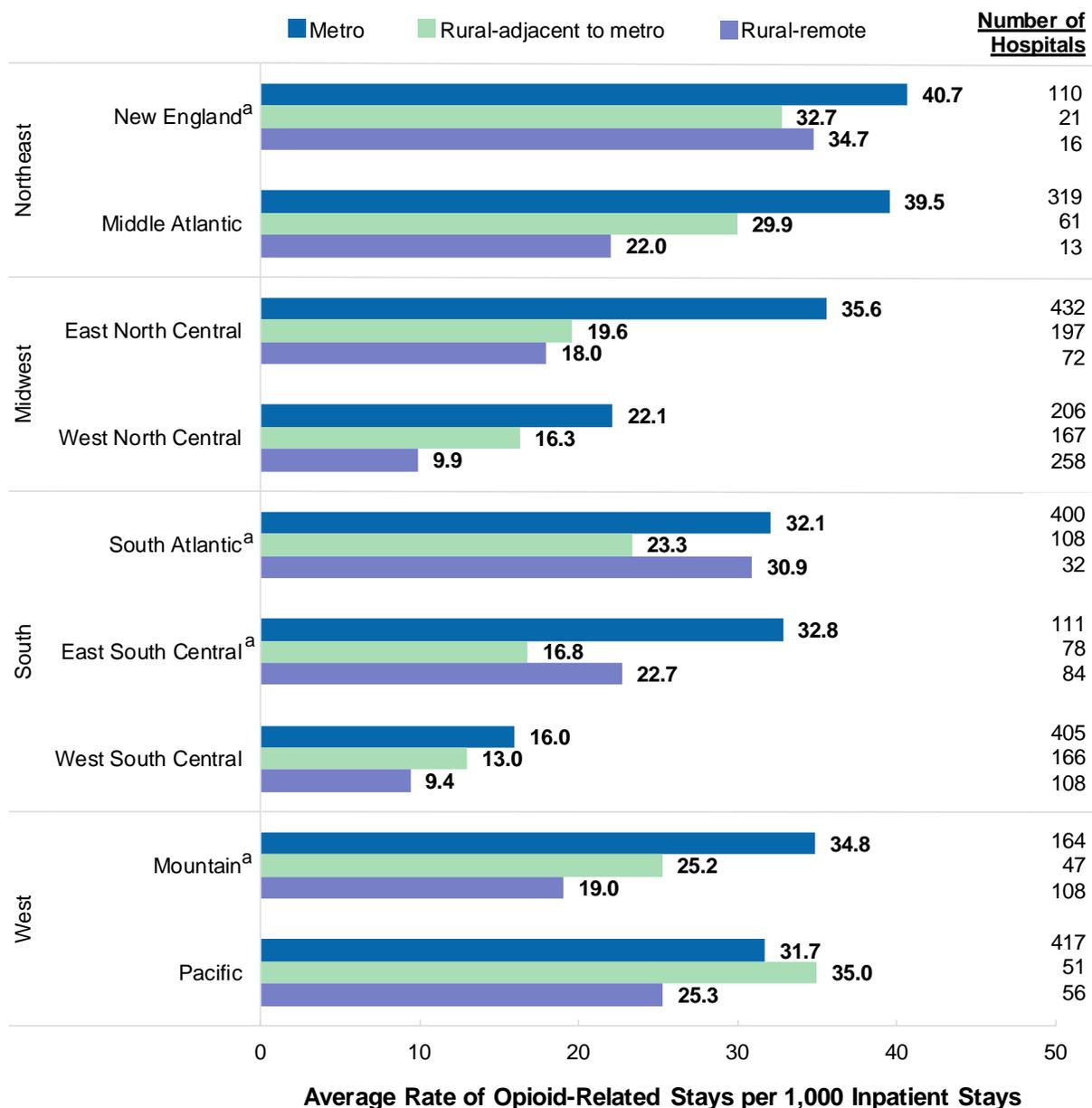
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) from 46 States and the District of Columbia (from all States except Alabama, Georgia, Idaho, and New Hampshire), 2016

- **Metropolitan hospitals had more opioid-related stays and had a higher average rate of opioid-related inpatient stays compared with rural hospitals.**

Of the 4,207 community hospitals examined, 60.9 percent (2,564 hospitals) were located in metropolitan areas, 21.3 percent (896 hospitals) were in rural-adjacent areas, and 17.8 percent (747 hospitals) were in rural-remote areas. In 2016, metropolitan hospitals treated 7 to 9 times as many opioid-related cases on average as did rural-adjacent or rural-remote hospitals (312.2 vs. 43.8 and 33.3, respectively). Moreover, the average hospital rate of opioid-related stays at metropolitan hospitals also was higher than the rate at rural-adjacent and rural-remote hospitals (30.8 per 1,000 stays vs. 20.1 and 16.2, respectively).

Figure 2 presents the average hospital rate of opioid-related stays per 1,000 inpatient stays by hospital urban-rural location and U.S. census division in 2016. The number of hospitals in each hospital urban-rural location in each census division category is provided to the right of the figure, for reference.

**Figure 2. Average hospital rate of opioid-related stays per 1,000 inpatient stays, by hospital urban-rural location and U.S. census division, 2016**



<sup>a</sup> Missing data from one State in the census division.

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) from 46 States and the District of Columbia (from all States except Alabama, Georgia, Idaho, and New Hampshire), 2016

- **The opioid burden based on hospital urban-rural location varied substantially across U.S. census divisions.**

Across U.S. census divisions, the average hospital rate of opioid-related inpatient stays ranged from 9.4 per 1,000 stays among rural-remote hospitals in the West South Central division to 40.7 per 1,000 stays among metropolitan hospitals in the New England division.

Within U.S. census divisions, hospitals in the New England division had the smallest variation in the average hospital rate of opioid-related stays by hospital urban-rural location, ranging from 32.7 for rural-adjacent hospitals to 40.7 for metropolitan hospitals. Hospitals in the West North Central division had the largest variation, with the average hospital rate of opioid-related stays for metropolitan hospitals more than double the rate for rural-remote hospitals (22.1 vs. 9.9 per 1,000 stays).

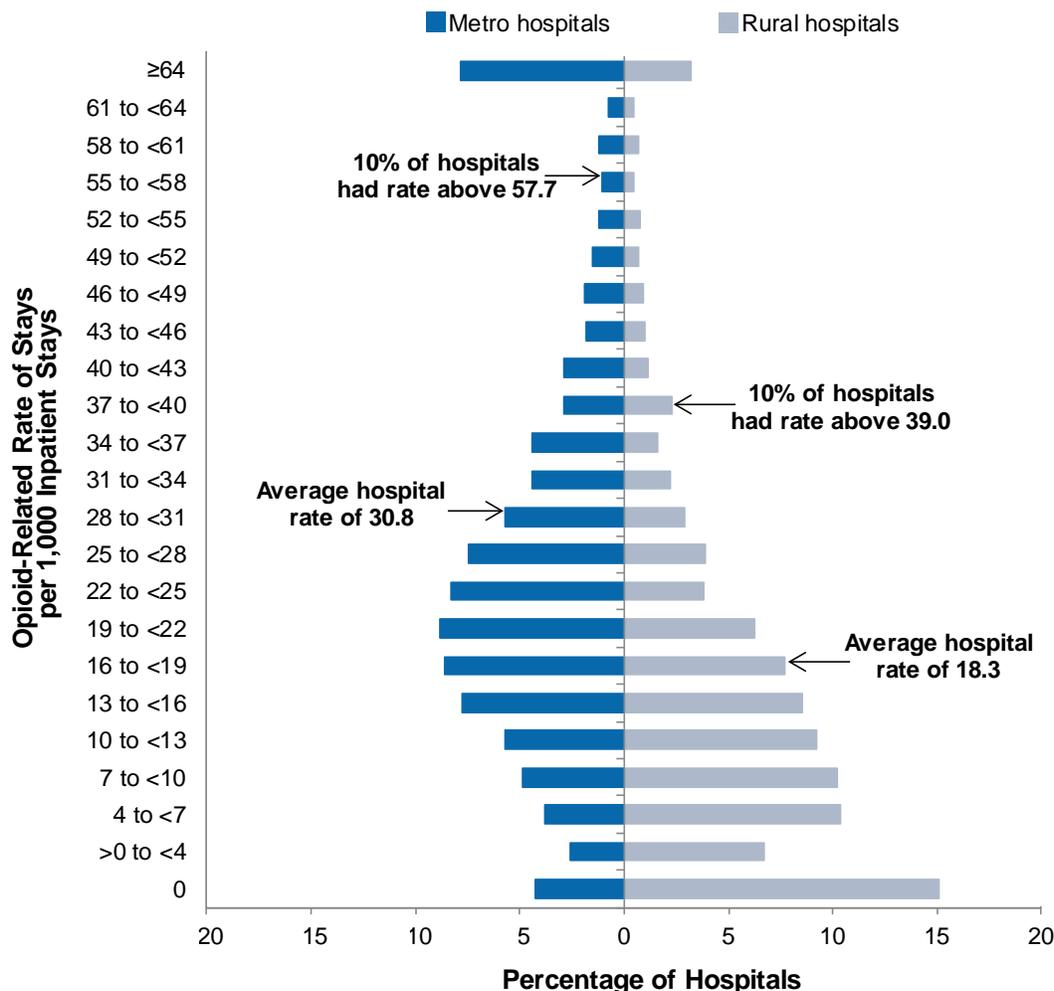
- **For most divisions, metropolitan hospitals had a larger opioid burden than did rural hospitals.**

For eight of the nine divisions, metropolitan hospitals had average hospital rates of opioid-related inpatient stays that were higher than the rates for rural-adjacent and/or rural-remote hospitals. Only in the New England division were the rates of opioid-related stays similar for all three urban-rural hospital locations.

*Distribution of hospital rates of opioid-related inpatient stays by hospital urban-rural location, 2016*

Figure 3 displays the distribution of hospital rates of opioid-related inpatient stays among metropolitan hospitals compared with rural hospitals (rural-adjacent and rural-remote hospitals were combined for this analysis). In addition to the average hospital rate, the rate threshold for the 10 percent of hospitals with the highest rates also is noted.

**Figure 3. Distribution of hospital rates of opioid-related stays per 1,000 inpatient stays across metropolitan and rural hospitals, 2016**



Note: Hospitals with rates of 64 per 1,000 inpatient stays or larger were grouped into one category because of the small number of rural hospitals that exist in narrower rate groupings above this level.

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) from 46 States and the District of Columbia (from all States except Alabama, Georgia, Idaho, and New Hampshire), 2016

■ **The hospital rate of opioid-related stays was higher on average among metropolitan than among rural hospitals.**

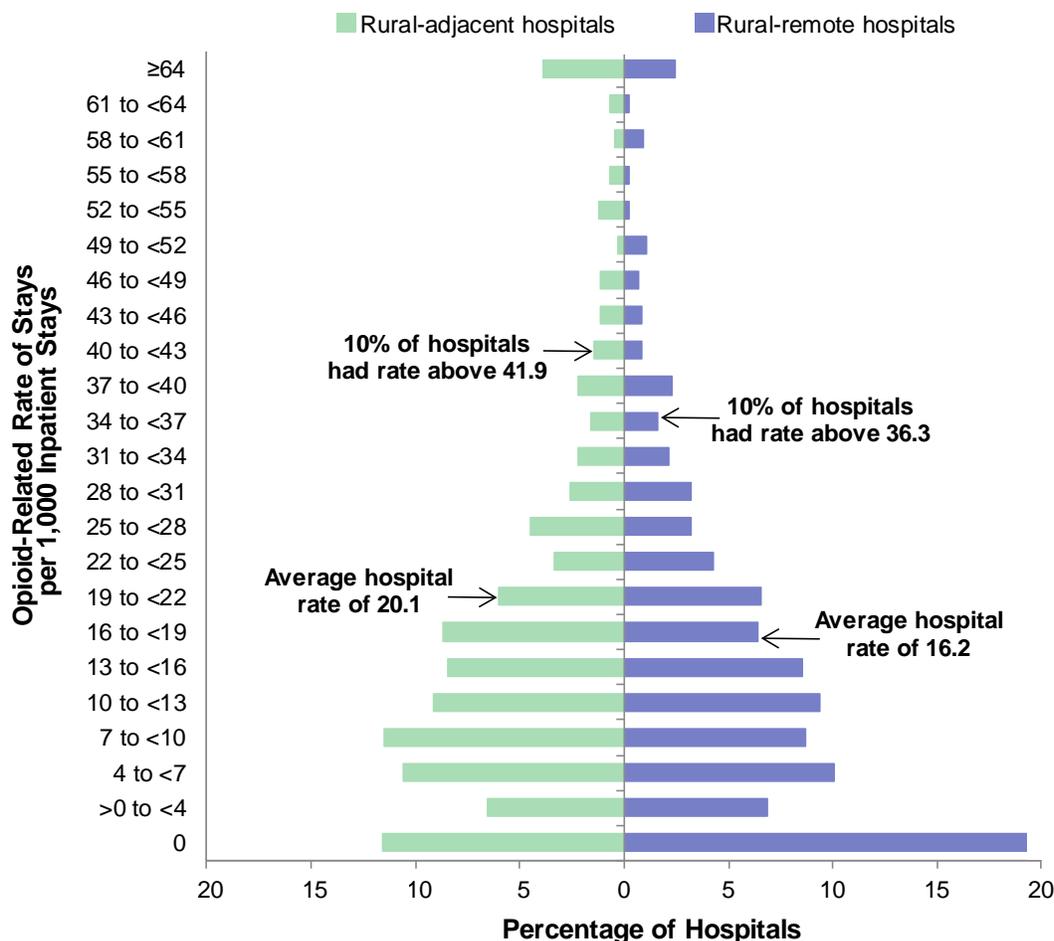
In 2016, the average hospital rate of opioid-related stays among metropolitan hospitals was 30.8 per 1,000 inpatient stays, and 10 percent of metropolitan hospitals had a rate above 57.7. The average hospital rate of opioid-related stays was lower among rural hospitals—18.3 per 1,000 inpatient stays—and 10 percent of rural hospitals had a rate above 39.0.

A larger percentage of metropolitan hospitals than rural hospitals had the highest rates of opioid-related inpatient stays (defined as 64 per 1,000 stays or higher): 7.9 percent or 202 metropolitan hospitals versus 3.2 percent or 53 rural hospitals, respectively.

A smaller percentage of metropolitan hospitals than rural hospitals had no opioid-related stays (rate of zero) during the year: 4.3 percent or 109 metropolitan hospitals versus 15.1 percent or 248 rural hospitals, respectively.

Figure 4 displays the distribution in hospital rates of opioid-related inpatient stays among rural hospitals adjacent to metropolitan areas compared with rural hospitals in remote areas. In addition to the average hospital rate, the rate threshold for the 10 percent of hospitals with the highest rates also is noted.

**Figure 4. Distribution of hospital rates of opioid-related stays per 1,000 inpatient stays across two types of rural hospitals, 2016**



Note: Hospitals with rates of 64 per 1,000 inpatient stays or larger were grouped into one category because of the small number of rural hospitals that exist in narrower rate groupings above this level.

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) from 46 States and the District of Columbia (from all States except Alabama, Georgia, Idaho, and New Hampshire), 2016

- **The hospital rate of opioid-related stays was slightly higher on average among rural-adjacent than among rural-remote hospitals.**

In 2016, the average hospital rate of opioid-related stays among rural-adjacent hospitals was 20.1 per 1,000 inpatient stays, and 10 percent of these hospitals had a rate above 41.9. The average hospital rate of opioid-related stays was slightly lower among rural-remote hospitals—16.2 per 1,000 inpatient stays—and 10 percent of rural-remote hospitals had a rate above 36.3.

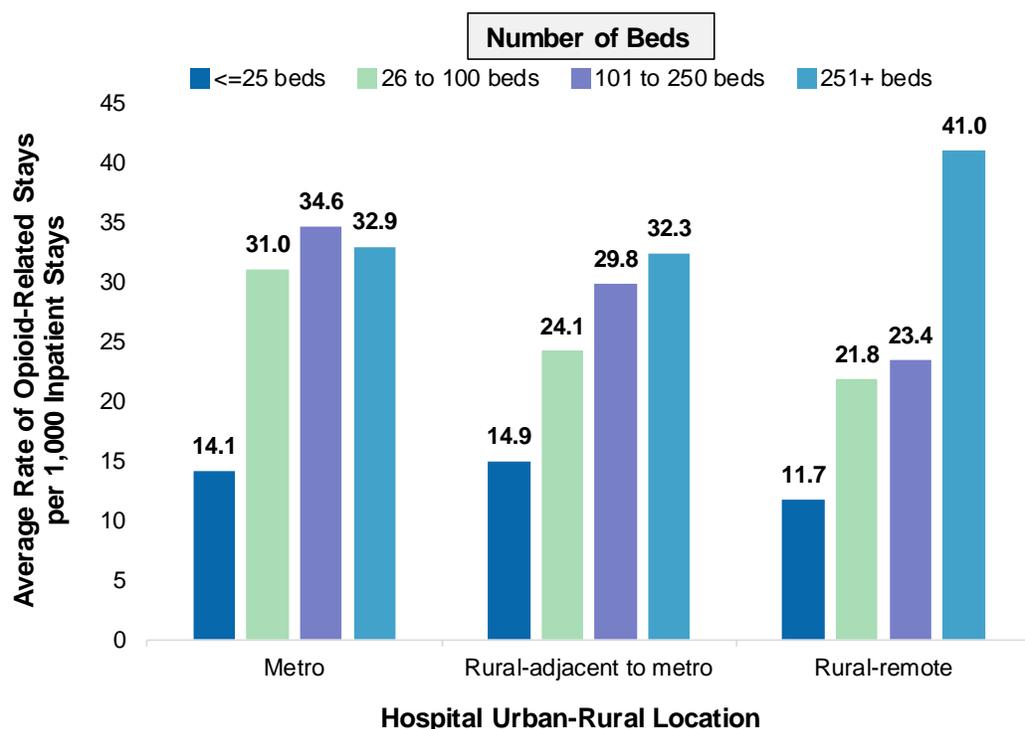
Compared with rural-remote hospitals, a slightly larger percentage of rural-adjacent hospitals had the highest rates of opioid-related inpatient stays (defined as 64 per 1,000 stays or higher): 3.9 percent or 35 rural-adjacent hospitals versus 2.4 percent or 18 rural-remote hospitals, respectively.

A smaller percentage of rural-adjacent hospitals than rural-remote hospitals had no opioid-related stays (rate of zero) during the year: 11.6 percent or 104 rural-adjacent hospitals versus 19.3 percent or 144 rural-remote hospitals, respectively.

Differences in the average hospital rates of opioid-related inpatient stays by hospital urban-rural location, bed size, and occupancy level, 2016

Figure 5 presents the average hospital rate of opioid-related inpatient stays by hospital urban-rural location and bed size in 2016. The number of hospitals by urban-rural location and bed size is provided below the figure, for reference.

**Figure 5. Average hospital rate of opioid-related stays per 1,000 inpatient stays, by hospital urban-rural location and bed size, 2016**



Bed size	Number of hospitals by hospital urban-rural location		
	Metro	Rural-adjacent to metro	Rural-remote
<=25 beds	323	463	451
26 to 100 beds	479	317	209
101 to 250 beds	872	107	74
251+ beds	890	9	13

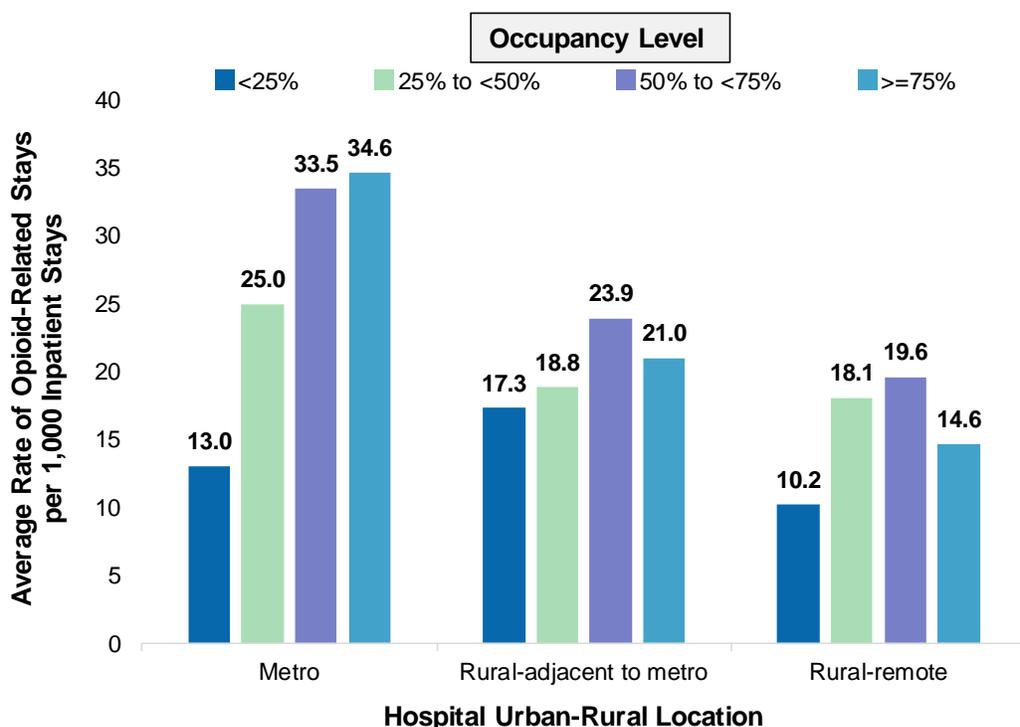
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) from 46 States and the District of Columbia (from all States except Alabama, Georgia, Idaho, and New Hampshire), 2016

- **Small hospitals had the lowest opioid burden across all hospital bed sizes and locations.**

Regardless of urban-rural location of the hospital, the average hospital rate of opioid-related stays was lowest among the smallest hospitals, those with 25 or fewer beds (range: 11.7 per 1,000 stays for rural-remote hospitals to 14.9 per 1,000 stays for rural-adjacent hospitals), compared with larger hospitals in each location.

Figure 6 presents the average hospital rate of opioid-related inpatient stays by hospital urban-rural location and occupancy level in 2016. The number of hospitals by urban-rural location and occupancy level is provided below the figure, for reference.

**Figure 6. Average hospital rate of opioid-related stays per 1,000 inpatient stays, by hospital urban-rural location and occupancy level, 2016**



Occupancy level	Number of hospitals by hospital urban-rural location		
	Metro	Rural-adjacent to metro	Rural-remote
<25%	174	229	206
25% to <50%	451	335	235
50% to <75%	1,512	282	250
>=75%	427	50	56

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) from 46 States and the District of Columbia (from all States except Alabama, Georgia, Idaho, and New Hampshire), 2016

- **Metropolitan hospitals with high occupancy levels had the greatest opioid burden across all hospital urban-rural locations and occupancy levels.**

Overall, metropolitan hospitals with 75 percent or greater occupancy and those between 50 and 75 percent occupancy had the highest average hospital rates of opioid-related inpatient stays (34.6 and 33.5 per 1,000 stays, respectively).

## About Statistical Briefs

Healthcare Cost and Utilization Project (HCUP) Statistical Briefs provide basic descriptive statistics on a variety of topics using HCUP administrative healthcare data. Topics include hospital inpatient, ambulatory surgery, and emergency department use and costs, quality of care, access to care, medical conditions, procedures, and patient populations, among other topics. The reports are intended to generate hypotheses that can be further explored in other research; the reports are not designed to answer in-depth research questions using multivariate methods.

## Data Source

The estimates in this Statistical Brief are based upon data from the HCUP 2016 State Inpatient Databases (SID) from 46 States and the District of Columbia: Alaska, Arkansas, Arizona, California, Connecticut, Colorado, Delaware, District of Columbia, Florida, Hawaii, Iowa, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maryland, Maine, Massachusetts, Michigan, Minnesota, Missouri, Mississippi, Montana, North Carolina, North Dakota, Nebraska, Nevada, New Jersey, New Mexico, New York, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, West Virginia, and Wyoming.

Table 1 presents a summary of the number of hospitals for which HCUP 2016 inpatient data were available for analysis by U.S. census region and division.

**Table 1. Hospitals with available HCUP inpatient data, 2016**

U.S. census region/division	Total number of U.S. hospitals (from AHA)	Number of hospitals with HCUP inpatient data	Hospitals with HCUP inpatient data, %
<b>United States</b>	<b>4,654</b>	<b>4,207</b>	<b>90.4</b>
Northeast	572	540	94.4
New England <sup>a</sup>	176	147	83.5
Middle Atlantic	396	393	99.2
Midwest	1,391	1,332	95.8
East North Central	715	701	98.0
West North Central	676	631	93.3
South	1,784	1,492	83.6
South Atlantic <sup>a</sup>	679	540	79.5
East South Central <sup>a</sup>	384	273	71.1
West South Central	721	679	94.2
West	907	843	92.9
Mountain <sup>a</sup>	378	319	84.4
Pacific	529	524	99.1

Abbreviation: AHA, American Hospital Association

Note: Hospitals were community hospitals, excluding rehabilitation and long-term acute care hospitals.

<sup>a</sup> Missing data from one State in the census division.

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) from 46 States and the District of Columbia (from all States except Alabama, Georgia, Idaho, and New Hampshire), 2016

## Definitions

### *Diagnoses and ICD-10-CM*

The *principal diagnosis* is that condition established after study to be chiefly responsible for the patient's admission to the hospital. *Secondary diagnoses* are concomitant conditions that coexist at the time of

admission or develop during the stay. *All-listed diagnoses* include the principal diagnosis plus these additional secondary conditions.

ICD-10-CM is the International Classification of Diseases, Tenth Revision, Clinical Modification. In October 2015, ICD-10-CM replaced the ICD-9-CM diagnosis with the ICD-10-CM diagnosis coding system for most inpatient and outpatient medical encounters. There are over 70,000 ICD-10-CM diagnosis codes.

*Case definition*

Opioid-related inpatient stays were defined using the all-listed ICD-10-CM diagnosis codes shown in Table 2.

**Table 2. ICD-10-CM diagnosis codes defining opioid-related inpatient stays**

<b>ICD-10-CM diagnosis code</b>	<b>Description</b>
F11.10	Opioid abuse, uncomplicated
F11.120	Opioid abuse with intoxication, uncomplicated
F11.121	Opioid abuse with intoxication, delirium
F11.122	Opioid abuse with intoxication, with perceptual disturbance
F11.129	Opioid abuse with intoxication, unspecified
F11.14	Opioid abuse with opioid-induced mood disorder
F11.150	Opioid abuse with opioid-induced psychotic disorder, with delusions
F11.151	Opioid abuse with opioid-induced psychotic disorder, with hallucinations
F11.159	Opioid abuse with opioid-induced psychotic disorder, unspecified
F11.181	Opioid abuse with opioid-induced sexual dysfunction
F11.182	Opioid abuse with opioid-induced sleep disorder
F11.188	Opioid abuse with other opioid-induced disorder
F11.19	Opioid abuse with unspecified opioid-induced disorder
F11.20	Opioid dependence, uncomplicated
F11.220	Opioid dependence with intoxication, uncomplicated
F11.221	Opioid dependence with intoxication, delirium
F11.222	Opioid dependence with intoxication, with perceptual disturbance
F11.229	Opioid dependence with intoxication, unspecified
F11.23	Opioid dependence with withdrawal
F11.24	Opioid dependence with opioid-induced mood disorder
F11.250	Opioid dependence with opioid-induced psychotic disorder, with delusions
F11.251	Opioid dependence with opioid-induced psychotic disorder, with hallucinations
F11.259	Opioid dependence with opioid-induced psychotic disorder, unspecified
F11.281	Opioid dependence with opioid-induced sexual dysfunction
F11.282	Opioid dependence with opioid-induced sleep disorder
F11.288	Opioid dependence with other opioid-induced disorder
F11.29	Opioid dependence with unspecified opioid-induced disorder
F11.90	Opioid use, unspecified, uncomplicated
F11.920	Opioid use, unspecified with intoxication, uncomplicated
F11.921	Opioid use, unspecified with intoxication delirium
F11.922	Opioid use, unspecified with intoxication, with perceptual disturbance
F11.929	Opioid use, unspecified with intoxication, unspecified
F11.93	Opioid use, unspecified, with withdrawal

<b>ICD-10-CM diagnosis code</b>	<b>Description</b>
F11.94	Opioid use, unspecified, with opioid-induced mood disorder
F11.950	Opioid use, unspecified with opioid-induced psychotic disorder, with delusions
F11.951	Opioid use, unspecified with opioid-induced psychotic disorder, with hallucinations
F11.959	Opioid use, unspecified with opioid-induced psychotic disorder, unspecified
F11.981	Opioid use, unspecified with opioid-induced sexual dysfunction
F11.982	Opioid use, unspecified with opioid-induced sleep disorder
F11.988	Opioid use, unspecified with other opioid-induced disorder
F11.99	Opioid use, unspecified, with unspecified opioid-induced disorder
T40.0X1A	Poisoning by opium, accidental (unintentional), initial encounter
T40.0X1D	Poisoning by opium, accidental (unintentional), subsequent encounter
T40.0X2A	Poisoning by opium, intentional self-harm, initial encounter
T40.0X2D	Poisoning by opium, intentional self-harm, subsequent encounter
T40.0X3A	Poisoning by opium, assault, initial encounter
T40.0X3D	Poisoning by opium, assault, subsequent encounter
T40.0X4A	Poisoning by opium, undetermined, initial encounter
T40.0X4D	Poisoning by opium, undetermined, subsequent encounter
T40.0X5A	Adverse effect of opium, initial encounter
T40.0X5D	Adverse effect of opium, subsequent encounter
T40.1X1A	Poisoning by heroin, accidental (unintentional), initial encounter
T40.1X1D	Poisoning by heroin, accidental (unintentional), subsequent encounter
T40.1X2A	Poisoning by heroin, intentional self-harm, initial encounter
T40.1X2D	Poisoning by heroin, intentional self-harm, subsequent encounter
T40.1X3A	Poisoning by heroin, assault, initial encounter
T40.1X3D	Poisoning by heroin, assault, subsequent encounter
T40.1X4A	Poisoning by heroin, undetermined, initial encounter
T40.1X4D	Poisoning by heroin, undetermined, subsequent encounter
T40.2X1A	Poisoning by other opioids, accidental (unintentional), initial encounter
T40.2X1D	Poisoning by other opioids, accidental (unintentional), subsequent encounter
T40.2X2A	Poisoning by other opioids, intentional self-harm, initial encounter
T40.2X2D	Poisoning by other opioids, intentional self-harm, subsequent encounter
T40.2X3A	Poisoning by other opioids, assault, initial encounter
T40.2X3D	Poisoning by other opioids, assault, subsequent encounter
T40.2X4A	Poisoning by other opioids, undetermined, initial encounter
T40.2X4D	Poisoning by other opioids, undetermined, subsequent encounter
T40.2X5A	Adverse effect of other opioids, initial encounter
T40.2X5D	Adverse effect of other opioids, subsequent encounter
T40.3X1A	Poisoning by methadone, accidental (unintentional), initial encounter
T40.3X1D	Poisoning by methadone, accidental (unintentional), subsequent encounter
T40.3X2A	Poisoning by methadone, intentional self-harm, initial encounter
T40.3X2D	Poisoning by methadone, intentional self-harm, subsequent encounter
T40.3X3A	Poisoning by methadone, assault, initial encounter
T40.3X3D	Poisoning by methadone, assault, subsequent encounter

<b>ICD-10-CM diagnosis code</b>	<b>Description</b>
T40.3X4A	Poisoning by methadone, undetermined, initial encounter
T40.3X4D	Poisoning by methadone, undetermined, subsequent encounter
T40.3X5A	Adverse effect of methadone, initial encounter
T40.3X5D	Adverse effect of methadone, subsequent encounter
T40.4X1A	Poisoning by synthetic narcotics, accidental (unintentional), initial encounter
T40.4X1D	Poisoning by synthetic narcotics, accidental (unintentional), subsequent encounter
T40.4X2A	Poisoning by other synthetic narcotics, intentional self-harm, initial encounter
T40.4X2D	Poisoning by other synthetic narcotics, intentional self-harm, subsequent encounter
T40.4X3A	Poisoning by other synthetic narcotics, assault, initial encounter
T40.4X3D	Poisoning by other synthetic narcotics, assault, subsequent encounter
T40.4X4A	Poisoning by synthetic narcotics, undetermined, initial encounter
T40.4X4D	Poisoning by synthetic narcotics, undetermined, subsequent encounter
T40.4X5A	Adverse effect of synthetic narcotics, initial encounter
T40.4X5D	Adverse effect of synthetic narcotic, subsequent encounter
T40.601A	Poisoning by unspecified narcotics, accidental (unintentional), initial encounter
T40.601D	Poisoning by unspecified narcotics, accidental (unintentional), subsequent encounter
T40.602A	Poisoning by unspecified narcotics, intentional self-harm, initial encounter
T40.602D	Poisoning by unspecified narcotics, intentional self-harm, subsequent encounter
T40.603A	Poisoning by unspecified narcotics, assault, initial encounter
T40.603D	Poisoning by unspecified narcotics, assault, subsequent encounter
T40.604A	Poisoning by unspecified narcotics, undetermined, initial encounter
T40.604D	Poisoning by unspecified narcotics, undetermined, subsequent encounter
T40.605A	Adverse effect of unspecified narcotics, initial encounter
T40.605D	Adverse effect of unspecified narcotics, subsequent encounter
T40.691A	Poisoning by other narcotics, accidental (unintentional), initial encounter
T40.691D	Poisoning by other narcotics, accidental (unintentional), subsequent encounter
T40.692A	Poisoning by other narcotics, intentional self-harm, initial encounter
T40.692D	Poisoning by other narcotics, intentional self-harm, subsequent encounter
T40.693A	Poisoning by other narcotics, assault, initial encounter
T40.693D	Poisoning by other narcotics, assault, subsequent encounter
T40.694A	Poisoning by other narcotics, undetermined, initial encounter
T40.694D	Poisoning by other narcotics, undetermined, subsequent encounter
T40.695A	Adverse effect of other narcotics, initial encounter
T40.695D	Adverse effect of other narcotics, subsequent encounter

Abbreviation: ICD-10-CM, International Classification of Diseases, Tenth Revision, Clinical Modification

#### *Types of hospitals included in HCUP State Inpatient Databases*

This analysis used State Inpatient Databases (SID) limited to data from community hospitals, which are defined as short-term, non-Federal, general, and other hospitals, excluding hospital units of other institutions (e.g., prisons). Community hospitals include obstetrics and gynecology, otolaryngology, orthopedic, cancer, pediatric, public, and academic medical hospitals. Excluded for this analysis are long-term care facilities such as rehabilitation, psychiatric, and alcoholism and chemical dependency hospitals. However, if a patient received long-term care, rehabilitation, or treatment for a psychiatric or

chemical dependency condition in a community hospital, the discharge record for that stay was included in the analysis.

#### *Unit of analysis*

The unit of analysis in this Statistical Brief is the hospital. Hospital counts of opioid-related inpatient stays are based on the discharge (i.e., the hospital stay), not a person or patient. This means that a person who is admitted to the hospital multiple times in 1 year will be counted each time as a separate discharge from the hospital.

#### *Urban-rural location of hospital*

Hospital urban-rural location is based on the rural-urban continuum codes (RUCC) for U.S. counties developed by the United States Department of Agriculture (USDA).<sup>4</sup> For this Statistical Brief, we collapsed the RUCC codes into the following three categories:

Metropolitan (metro) area:

- Counties in metro areas of 1 million population or more
- Counties in metro areas of 250,000 to 1 million population
- Counties in metro areas of fewer than 250,000 population

Rural-adjacent to metro area:

- Urban population of 20,000 or more, adjacent to a metro area
- Urban population of 2,500 to 19,999, adjacent to a metro area
- Completely rural or less than 2,500 urban population, adjacent to a metro area

Rural-remote area:

- Urban population of 20,000 or more, not adjacent to a metro area
- Urban population of 2,500 to 19,999, not adjacent to a metro area
- Completely rural or less than 2,500 urban population, not adjacent to a metro area

#### *Region and division*

Region is one of the four regions defined by the U.S. Census Bureau. Division corresponds to the location of the hospital and is one of the nine divisions defined by the U.S. Census Bureau.

- Northeast:
  - New England: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut
  - Middle Atlantic: New York, New Jersey, Pennsylvania
- Midwest:
  - East North Central: Ohio, Indiana, Illinois, Michigan, Wisconsin
  - West North Central: Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas
- South:
  - South Atlantic: Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida
  - East South Central: Kentucky, Tennessee, Alabama, Mississippi
  - West South Central: Arkansas, Louisiana, Oklahoma, Texas
- West:
  - Mountain: Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada
  - Pacific: Washington, Oregon, California, Alaska, Hawaii

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<sup>4</sup> United States Department of Agriculture. Rural-Urban Continuum Codes. [www.ers.usda.gov/data-products/rural-urban-continuum-codes/](http://www.ers.usda.gov/data-products/rural-urban-continuum-codes/). Accessed June 26, 2019.

## About HCUP

The Healthcare Cost and Utilization Project (HCUP, pronounced "H-Cup") is a family of healthcare databases and related software tools and products developed through a Federal-State-Industry partnership and sponsored by the Agency for Healthcare Research and Quality (AHRQ). HCUP databases bring together the data collection efforts of State data organizations, hospital associations, and private data organizations (HCUP Partners) and the Federal government to create a national information resource of encounter-level healthcare data. HCUP includes the largest collection of longitudinal hospital care data in the United States, with all-payer, encounter-level information 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 healthcare programs, and outcomes of treatments at the national, State, and local market levels.

HCUP would not be possible without the contributions of the following data collection Partners from across the United States:

**Alaska** Department of Health and Social Services  
**Alaska** State Hospital and Nursing Home Association  
**Arizona** Department of Health Services  
**Arkansas** Department of Health  
**California** Office of Statewide Health Planning and Development  
**Colorado** Hospital Association  
**Connecticut** Hospital Association  
**Delaware** Division of Public Health  
**District of Columbia** Hospital Association  
**Florida** Agency for Health Care Administration  
**Georgia** Hospital Association  
**Hawaii** Laulima Data Alliance, a subsidiary of the Healthcare Association of Hawaii  
**Illinois** Department of Public Health  
**Indiana** Hospital Association  
**Iowa** Hospital Association  
**Kansas** Hospital Association  
**Kentucky** Cabinet for Health and Family Services  
**Louisiana** Department of Health  
**Maine** Health Data Organization  
**Maryland** Health Services Cost Review Commission  
**Massachusetts** Center for Health Information and Analysis  
**Michigan** Health & Hospital Association  
**Minnesota** Hospital Association  
**Mississippi** State Department of Health  
**Missouri** Hospital Industry Data Institute  
**Montana** Hospital Association  
**Nebraska** Hospital Association  
**Nevada** Department of Health and Human Services  
**New Hampshire** Department of Health & Human Services  
**New Jersey** Department of Health  
**New Mexico** Department of Health  
**New York** State Department of Health  
**North Carolina** Department of Health and Human Services  
**North Dakota** (data provided by the Minnesota Hospital Association)  
**Ohio** Hospital Association  
**Oklahoma** State Department of Health  
**Oregon** Association of Hospitals and Health Systems  
**Oregon** Office of Health Analytics  
**Pennsylvania** Health Care Cost Containment Council  
**Rhode Island** Department of Health  
**South Carolina** Revenue and Fiscal Affairs Office

**South Dakota** Association of Healthcare Organizations  
**Tennessee** Hospital Association  
**Texas** Department of State Health Services  
**Utah** Department of Health  
**Vermont** Association of Hospitals and Health Systems  
**Virginia** Health Information  
**Washington** State Department of Health  
**West Virginia** Department of Health and Human Resources, West Virginia Health Care Authority  
**Wisconsin** Department of Health Services  
**Wyoming** Hospital Association

## About the SID

The HCUP State Inpatient Databases (SID) are hospital inpatient databases from data organizations participating in HCUP. The SID contain the universe of the inpatient discharge abstracts in the participating HCUP States, translated into a uniform format to facilitate multistate comparisons and analyses. Together, the SID encompass more than 95 percent of all U.S. community hospital discharges. The SID can be used to investigate questions unique to one State, to compare data from two or more States, to conduct market-area variation analyses, and to identify State-specific trends in inpatient care utilization, access, charges, and outcomes.

## For More Information

For other information on mental and substance use disorders, refer to the HCUP Statistical Briefs located at [www.hcup-us.ahrq.gov/reports/statbriefs/sb\\_mhsa.jsp](http://www.hcup-us.ahrq.gov/reports/statbriefs/sb_mhsa.jsp).

For additional HCUP statistics, visit:

- HCUP Fast Stats at [www.hcup-us.ahrq.gov/faststats/landing.jsp](http://www.hcup-us.ahrq.gov/faststats/landing.jsp) for easy access to the latest HCUP-based statistics for healthcare information topics
- HCUPnet, HCUP's interactive query system, at [www.hcupnet.ahrq.gov/](http://www.hcupnet.ahrq.gov/)

For more information about HCUP, visit [www.hcup-us.ahrq.gov/](http://www.hcup-us.ahrq.gov/).

For a detailed description of HCUP and more information on the design of the State Inpatient Databases (SID), please refer to the following database documentation:

Agency for Healthcare Research and Quality. Overview of the State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). Rockville, MD: Agency for Healthcare Research and Quality. Updated November 2019. [www.hcup-us.ahrq.gov/sidoverview.jsp](http://www.hcup-us.ahrq.gov/sidoverview.jsp). Accessed February 3, 2020.

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AHRQ welcomes questions and comments from readers of this publication who are interested in obtaining more information about access, cost, use, financing, and quality of healthcare in the United States. We also invite you to tell us how you are using this Statistical Brief and other HCUP data and

tools, and to share suggestions on how HCUP products might be enhanced to further meet your needs. Please e-mail us at [hcup@ahrq.gov](mailto:hcup@ahrq.gov) or send a letter to the address below:

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