

## STATISTICAL BRIEF #120

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### An Update on Hospitalizations for Eating Disorders, 1999 to 2009

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#### Introduction

Eating disorders have the highest mortality rate of any psychiatric disorder. In particular, anorexia nervosa has a higher mortality rate than any other cause of death among females between the ages of 15 and 24, according to the National Institute of Mental Health.<sup>1</sup> Eating disorders, such as anorexia nervosa and bulimia nervosa, are psychiatric disorders in which the patient becomes obsessed with food, weight, and body image. Anorexia nervosa is diagnosed when the patient is at least 15 percent underweight and refuses to gain weight, either by not eating enough food, over-exercising, vomiting, or by using laxatives.<sup>2</sup> This can lead to severe starvation and weakening of the heart muscles, causing cardiac arrhythmias.<sup>3</sup> In contrast, patients with bulimia nervosa are not necessarily underweight, but engage in binge eating followed by purging either by vomiting or by using laxatives. This can lead to severe dehydration and gastrointestinal problems. Thus, severe eating disorders can lead to inpatient hospitalizations. In a previous Statistical Brief we examined the rise in hospitalizations for eating disorders between 1999 and 2006.<sup>4</sup> However, little is known about very recent trends in eating disorder hospitalizations since 2006. In this Statistical Brief, we present an update on eating disorder hospitalizations up to 2009.

This Statistical Brief presents data from the Healthcare Cost and Utilization Project (HCUP) on national estimates of hospitalizations for eating disorders over the decade from 1999–2000 to 2008–2009. First, eating disorder-related hospital stays are analyzed by payer, age, and sex, and hospital costs are provided. Second, the national estimates of eating disorder-related hospital stays are provided for each specific eating disorder category. Third, we examine the serious secondary diagnoses for hospital stays principally for eating disorder inpatients and principal diagnoses are examined when

#### Highlights

- There were 29,533 eating disorder-related hospital stays in 2008–2009 with either a principal or secondary eating disorder diagnosis, an increase of 24 percent from 1999–2000. This increase was attributable to a 40 percent rise in secondary diagnoses for eating disorders, from 17,118 to 23,946, since principal diagnoses fell by 1.8 percent over the decade.
- Hospitalizations with a principal diagnosis of an eating disorder declined by 23 percent between 2007–2008 and 2008–2009.
- Hospitalizations declined for all classes of eating disorders between 2007–2008 and 2008–2009, except for pica, which increased 5 percent. Pica hospitalizations increased 93 percent over the decade, more than any other eating disorder.
- Thirty-one percent of child hospitalizations with pica in 2009 had autism spectrum disorders.
- Cardiac dysrhythmias among eating disorder patients declined by 39 percent between 2007–2008 and 2008–2009. Menstrual disorders declined by 46 percent.
- The share of hospitalizations for males with a principal diagnosis of an eating disorder increased from 6.5 percent to 10 percent over the decade.

<sup>1</sup> Making Sense of ED Mortality Statistics. National Association of Anorexia Nervosa and Associated Disorders, <http://www.anad.org/get-information/about-eating-disorders/making-sense-of-ed-mortality-statistics/>

<sup>2</sup> National Association of Anorexia Nervosa and Associated Disorders, <http://www.anad.org/get-information/about-eating-disorders/anorexia-nervosa>

<sup>3</sup> Evelyn Attia, M.D., and B. Timothy Walsh, M.D. 2009. Behavioral Management for Anorexia Nervosa. *New England Journal of Medicine* 360;5, pages 500–506.

<sup>4</sup> Zhao, Y., and Encinosa, W. *Hospitalizations for Eating Disorders from 1999 to 2006*. HCUP Statistical Brief #70. April 2009. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb70.pdf>

eating disorders are a secondary diagnosis. Although eating disorders may be under-reported in hospital discharge data, this information provides a baseline of information on these conditions. All tables include the years of our earlier Statistical Brief #70, 1999–2000 and 2005–2006, as well as the new estimates for 2007–2008 and 2008–2009. The statistical significance of all differences between estimates across years is indicated in all tables. To improve the accuracy, all annual estimates are two-year averages (e.g., the estimate for 1999–2000 is the average over 1999 and 2000).

## Findings

### *Estimates of eating disorders hospital stays by payer, age, and sex*

Table 1 provides national estimates for eating disorders hospital stays by payer, age, and sex in 1999–2000, 2005–2006, 2007–2008, and 2008–2009. This report primarily focuses on 1999–2000 and 2008–2009 which are two-year averages. The total hospital costs for eating disorders and the average hospital cost per hospital stay for eating disorders, as well as the inpatient death rate and the average hospital length of stay, are presented in table 1.

**Table 1. National estimates of eating disorder hospitalizations**

	<b>1999–2000</b> <i>Average over 1999 and 2000</i>	<b>2005–2006</b> <i>Average over 2005 and 2006</i>	<b>2007–2008</b> <i>Average over 2007 and 2008</i>	<b>2008–2009</b> <i>Average over 2008 and 2009</i>	<b>Percentage change from 1999–2000 to 2008–2009</b>
Eating disorder discharges with a principal or a secondary diagnosis	23,807	28,155	30,754	29,533	24%***
Eating disorder as a principal diagnosis	5,689 (24%)	6,012 (21%)	7,290 (24%)	5,587 (19%)	-1.8%***
Eating disorder as only a secondary diagnosis	17,118	22,103	23,464	23,946	40%***
<i>Total hospital costs (millions)</i>	\$165	\$269	\$296	\$277	68%***
<i>Mean cost per discharge</i>	\$7,300	\$9,600	\$9,600	\$9,400	29%***
<i>Average length of stay (days)</i>	8.1	8.4	8.7	8.1	0%
<i>Inpatient death rate</i>	0.7%	0.6%	0.7%	0.7%	0%
<b>By payer</b>					
Medicare	4,501 (19%)	5,375 (19%)	6,150 (20%)	6,014 (20%)	34%***
Medicaid	4,505 (19%)	5,512 (20%)	5,531 (18%)	5,661 (19%)	26%
Private insurance	12,442 (52%)	14,587 (52%)	15,867 (52%)	14,644 (50%)	18%***
Self-pay	1,432 (6%)	1,540 (5%)	1,695 (6%)	1,712 (6%)	20%

**Table 1. National estimates of eating disorder hospitalizations (continued)**

	<u>1999–2000</u> Average over 1999 and 2000	<u>2005–2006</u> Average over 2005 and 2006	<u>2007–2008</u> Average over 2007 and 2008	<u>2008–2009</u> Average over 2008 and 2009	Percentage change from 1999–2000 to 2008–2009
<b>By age</b>					
Under 12	522 (2%)	1,139 (4%)	863 (3%)	896 (3%)	72%***
12–19	5,435 (23%)	6,435 (23%)	6,004 (20%)	5,749 (19%)	6%***
19–30	6,389 (27%)	7,626 (27%)	9,131 (30%)	8,319 (28%)	30%**
30–45	7,274 (31%)	7,057 (25%)	7,835 (25%)	7,393 (25%)	2%***
45–65	2,755 (12%)	4,083 (15%)	5,044 (16%)	5,185 (18%)	88%***
>=65	1,429 (6%)	1,779 (6%)	1,859 (6%)	1,976 (7%)	38%**
<b>By sex</b>					
Male	2,267 (10%)	3,100 (11%)	3,228 (11%)	3,462 (12%)	53%***
Female	21,535 (90%)	25,002 (89%)	27,497 (89%)	26,034 (88%)	21%***
<p><b>Note:</b> Costs are in 2009 dollars. Percentages in parentheses are the within-group distribution. ***Statistically different from zero at the 99 percent level. **Statistically different from zero at the 95 percent level. *Statistically different from zero at 90 percent level.  <b>Source:</b> AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 1999, 2000, 2005, 2006, 2007, 2008, and 2009</p>					

As shown in table 1, there were 29,533 eating disorder-related hospital stays in 2008–2009 with either a principal or secondary eating disorder diagnosis, an increase of 24 percent from 1999–2000. This increase was attributable to a 40 percent rise in secondary diagnoses for eating disorders, from 17,118 to 23,946, since principal diagnoses fell by 1.8 percent over the decade. Hospitalizations with a principal diagnosis of an eating disorder increased 28 percent from 1999–2000 to their peak in 2007–2008. However, they declined by 23 percent in 2008–2009. The percentage of all eating disorder stays with a principal diagnosis for an eating disorder declined from 24 percent to 19 percent between 2007–2008 and 2008–2009.

In 2008–2009, the aggregate costs for any hospital stay involving eating disorders were \$277 million, a 68 percent increase compared with \$165 million in 1999–2000 (in 2009 dollars). The average cost per hospital stay was \$9,400 in 2008–2009 and \$7,300 in 1999–2000.

The average length of a hospital stay was about 8 days in both 1999–2000 and 2008–2009. The inpatient death rate for eating disorder related hospitalizations was 0.7 percent in 2008–2009, unchanged since 1999–2000.

In 2008–2009, privately insured patients accounted for 50 percent of all eating disorder hospitalizations. Patients covered by Medicaid and Medicare accounted for 19 percent and 20 percent, respectively. Self-pay patients accounted for 6 percent of the cases. In 1999–2000, the payer distribution followed a similar pattern.

From 1999–2000 to 2008–2009, eating disorder hospitalizations increased in each payer group. Hospitalizations paid by Medicare increased the most, by 34 percent. Hospitalizations paid by Medicaid increased by 26 percent. Self-paid hospitalizations for eating disorder increased by 20 percent. Hospitalizations paid by private insurance increased 18 percent.

Across age groups, in 2008–2009, 3 percent of hospital stays involving eating disorders were for children under age 12. Young patients aged 12–19 accounted for 19 percent of stays. Patients aged 19–30 accounted for 28 percent, while patients aged 30–45 accounted for 25 percent of the cases. The remaining 18 percent and 7 percent were for patients aged 45–64, and the elderly (65 years or older), respectively.

From 1999–2000 to 2008–2009, hospitalizations involving eating disorders increased for all the age groups. Hospitalizations for patients aged 45–65 increased the most, by 88 percent, while patients aged 30–45 increased the least, by 2 percent. Hospitalizations for children under age 12 increased 72 percent. A 38 percent increase occurred for the elderly. A 30 percent increase occurred for patients aged 19–30. Patients aged 12–19, had a 6 percent increase.

The majority of eating disorder inpatients were female patients. In 2008–2009, 88 percent of the cases were female patients and 12 percent of the cases were male. Hospitalizations for eating disorders increased 53 percent from 1999–2000 to 2008–2009 for males and increased 21 percent for female patients. Hospital stays for males with a principal diagnosis of an eating disorder increased from 6.5 percent to 10 percent over the decade.

#### *Hospitalizations for specific eating disorder categories*

Table 2 provides the national estimates of hospital stays for specific types of eating disorders. They are: anorexia nervosa, bulimia nervosa, psychogenic vomiting, pica, and other eating disorders. Pica is the condition in which patients eat non-food substances, such as dirt, clay, hair, paper, coal.

**Table 2. Hospitalizations for specific types of eating disorder**

	<u>1999–2000</u> Average over 1999 and 2000	<u>2005–2006</u> Average over 2005 and 2006	<u>2007–2008</u> Average over 2007 and 2008	<u>2008–2009</u> Average over 2008 and 2009	<b>Percentage Change from 1999–2000 to 2008–2009</b>
Eating disorder discharges with a principal or a secondary diagnosis	23,807	28,155	30,754	29,533	24%***
<b><i>Specific types of eating disorders:</i></b>					
Anorexia nervosa	8,932 (38%)	10,413 (37%)	10,986 (36%)	10,108 (34%)	13%***
Bulimia nervosa	7,286 (31%)	6,770 (24%)	6,762 (22%)	6,257 (21%)	-14%***
Psychogenic vomiting	702 (3%)	707 (3%)	634 (2%)	576 (2%)	-18%***
Pica	964 (4%)	1,350 (5%)	1,777 (6%)	1,862 (6%)	93%***
Other/unspecified eating disorders	7,330 (31%)	10,338 (37%)	11,501 (37%)	11,406 (39%)	56%***
<b>Note:</b> Percentage changes are based on unrounded numbers. Percentages in parentheses are the within-group distribution. Note that the distribution percentages for specific categories may add up to more than 100 percent since a patient may have more than one type of eating disorder. ***Statistically different from zero at the 99 percent level. **Statistically different from zero at the 95 percent level. *Statistically different from zero at the 90 percent level.					
<b>Source:</b> AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 1999, 2000, 2005, 2006, 2007, 2008 and 2009					

In 2008–2009, 34 percent of all eating disorder related hospital stays had a diagnosis of anorexia nervosa and 21 percent had a diagnosis of bulimia nervosa. There were 10,108 hospital stays involving anorexia nervosa in 2008–2009, which increased 13 percent from 8,932 in 1999–2000. However, hospital stays involving bulimia nervosa decreased by 14 percent from 7,286 in 1999–2000 to 6,257 in 2008–2009. In

2008–2009, 39 percent of hospitalizations for all eating disorders had a diagnosis of either “other eating disorders,” “unspecified eating disorders” (EDNOS), or “rumination disorders.” Hospital stays with these diagnoses increased 56 percent from 7,330 in 1999–2000 to 11,406 in 2008–2009. Under 5 percent of all eating disorder related hospital stays had a diagnosis of psychogenic vomiting and these hospitalizations decreased 18 percent from 1999–2000 to 2008–2009. Hospital stays with a diagnosis of pica had the largest increase, 93 percent from 964 in 1999–2000 to 1,862 in 2008–2009. Between 2007–2008 and 2008–2009, pica was the only eating disorder that increased.

*Serious secondary conditions for eating disorder inpatients*

Table 3 examines secondary diagnoses for patients with eating disorder as a principal diagnosis. In 2008–2009, among 5,587 hospital stays with a principal diagnosis of eating disorder, 32 percent involved fluid and electrolyte disorders. Twenty-four percent involved cardiac dysrhythmias, an increase of 103 percent from 1999–2000. Forty seven percent involved nutritional deficiencies or other nutritional, endocrine and metabolic disorders, an increase of 129 percent from 1999–2000. Thirteen percent of the hospital stays principally for eating disorders involved menstrual disorders, an increase of 62 percent since 1999–2000. Eleven percent involved anemia, a 66 percent increase since 1999–2000. Four percent involved acute renal or liver failure, an increase of 127 percent since 1999–2000. Three percent involved convulsions, a 55 percent increase since 1999–2000.

**Table 3. Serious secondary conditions for inpatients with eating disorder as a principal diagnosis**

	<u>1999–2000</u> <i>Average over 1999 and 2000</i>	<u>2005–2006</u> <i>Average over 2005 and 2006</i>	<u>2007–2008</u> <i>Average over 2007 and 2008</i>	<u>2008–2009</u> <i>Average over 2008 and 2009</i>	<b>Percentage change from 1999–2000 to 2008–2009</b>
Eating disorder discharges with a principal diagnosis	5,689	6,012	7,290	5,587	-1.8%***
<b><i>Serious secondary diagnoses</i></b>					
Fluid and electrolyte disorders	1,508 (27%)	1,769 (29%)	2,308 (32%)	1,776 (32%)	18%***
Cardiac dysrhythmias	650 (11%)	1,462 (24%)	2,095 (29%)	1,324 (24%)	103%***
Nutritional deficiencies/other nutritional, endocrine and metabolic disorders	1,143 (20%)	1,241 (21%)	2,984 (41%)	2,622 (47%)	129%***
Menstrual disorders	446 (8%)	664 (11%)	1,333 (18%)	724 (13%)	62%***
Deficiency and other anemia	377 (7%)	425 (7%)	857 (12%)	628 (11%)	66%***
Acute renal or liver failure	99 (2%)	216 (4%)	368 (5%)	224 (4%)	127%***
Convulsions/epilepsy	105 (2%)	142 (2%)	196 (3%)	162 (3%)	55%**
<p><b>Note:</b> Percentage changes are based on unrounded numbers. Percentages in parentheses are the within-group distribution. ***Statistically different from zero at the 99 percent level. **Statistically different from zero at the 95 percent level. *Statistically different from zero at the 90 percent level.</p> <p><b>Source:</b> AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 1999, 2000, 2005, 2006, 2007, 2008 and 2009</p>					

Cardiac dysrhythmias among eating disorder patients declined by 39 percent and menstrual disorders declined by 46 percent between 2007–2008 and 2008–2009. Thus, not only did hospitalizations with principal diagnoses for eating disorders drop between 2007–2008 and 2008–2009, but the severity of the patients hospitalized also seemed to decline.

*Principal diagnoses for patients with a secondary diagnosis of eating disorder*

Since table 1 reported that the number of hospitalizations with an eating disorder principal diagnosis declined 1.8 percent, while those with only a secondary diagnosis increased 40 percent between 1999 and 2009, in table 4 we examine the principal diagnoses for those hospitalizations with only a secondary diagnosis of an eating disorder. Table 4 reports the top ten principal diagnoses in 1999 and 2009 for patients with a secondary diagnosis of an eating disorder. Overall, the ranking of the principal diagnoses did not change much over the decade. The top five in both 1999 and 2009 were mood disorders, fluid and electrolyte disorders, schizophrenia and other psychotic disorders, alcohol-related disorders, and poisoning by other medications and drugs. The only shift was a small decline in diabetes complications and a rise in anemia problems between 1999 and 2009. Thus, the stability in the trends in table 4 indicates that the overall decline in the number of principal diagnosis eating disorder hospitalizations in table 1 was not accompanied by a commensurate, offsetting rise in more severe principal diagnoses consisting of eating disorder complications, such as heart problems.

**Table 4. The top 10 principal diagnoses for patients with eating disorder as a secondary diagnosis**

1999			2009		
	Principal Diagnoses	Frequency (%)		Principal Diagnoses	Frequency (%)
1	Mood disorders	6,501 (36%)	1	Mood disorders	8,218 (35%)
2	Fluid and electrolyte disorders	1,652 (9.1%)	2	Fluid and electrolyte disorders	1,593 (6.7%)
3	Schizophrenia and other psychotic disorders	929 (5.1%)	3	Schizophrenia and other psychotic disorders	1,133 (4.8%)
4	Alcohol-related disorders	648 (3.6%)	4	Alcohol-related disorders	889 (3.8%)
5	Poisoning by other medications and drugs	548 (3.0%)	5	Poisoning by other medications and drugs	496 (2.1%)
6	Diabetes mellitus with complications	479 (2.6%)	6	Substance-related disorders	454 (1.92%)
7	Substance-related disorders	396 (2.2%)	7	Poisoning by psychotropic agents	441 (1.86%)
8	Anxiety disorders	382 (2.1%)	8	Deficiency and other anemia	428 (1.81%)
9	Poisoning by psychotropic agents	311 (1.7%)	9	Diabetes mellitus with complications	415 (1.75%)
10	Nutritional deficiencies	277 (1.5%)	10	Anxiety disorders	362 (1.53%)

**Source:** AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 1999 and 2009

*Clinical Classifications Software (CCS) categories*

Overall, the results of this Statistical Brief indicate that the quality of outpatient care for eating disorders may have improved significantly between 1999 and 2009, particularly between 2007 and 2009, in such a way as to reduce principal diagnosis eating disorder hospitalizations. It is doubtful that this is an artifact of the 2009 recession, since secondary diagnosis eating disorder hospitalizations did not decline during the recession.

## Data Source

The estimates in this Statistical Brief are based upon data from the HCUP 1999, 2000, 2005, 2006, 2007, 2008, and 2009 Nationwide Inpatient Sample (NIS).

Supplemental sources included the HCUP Cost-to-Charge Ratio files in 1999, 2000, 2005, 2006, 2007, 2008, 2009, and data from the Labor Statistics of Consumer Price Index Tables, from the U.S. Census Bureau.

## Definitions

### *Diagnoses, ICD-9-CM, and Clinical Classifications Software (CCS)*

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 that develop during the stay.

ICD-9-CM is the International Classification of Diseases, Ninth Revision, Clinical Modification, which assigns numeric codes to diagnoses. There are about 13,600 ICD-9-CM diagnosis codes.

CCS categorizes ICD-9-CM diagnoses into a manageable number of clinically meaningful categories.<sup>5</sup> This "clinical grouper" makes it easier to quickly understand patterns of diagnoses and procedures.

### *Case definition*

The ICD-9-CM codes defining eating disorders include diagnosis codes in the following (CCS category 5.15.2 eating disorders):

- 307.1 Anorexia nervosa
- 307.50 Eating disorder, unspecified
- 307.51 Bulimia nervosa
- 307.52 Pica
- 307.53 Rumination disorder
- 307.54 Psychogenic vomiting
- 307.59 Other

The CCS categories defining serious conditions for eating disorder inpatients include the following codes:

- 52: Nutritional deficiencies
- 55: Fluid and electrolyte disorders
- 58: Other nutritional; endocrine; and metabolic disorders
- 59: Deficiency and other anemia
- 83: Epilepsy; convulsions
- 106: Cardiac dysrhythmias
- 151: Other liver diseases
- 157: Acute and unspecified renal failure
- 171: Menstrual disorders

Autism spectrum disorders are based on ICD-9 codes 299.00, 299.80, and 299.90.

### *Types of hospitals included in HCUP*

HCUP is based on data from community hospitals, defined as short-term, non-Federal, general and other hospitals, excluding hospital units of other institutions (e.g., prisons). HCUP data include OB-GYN, ENT, orthopedic, cancer, pediatric, public, and academic medical hospitals. They exclude long-term care, rehabilitation, psychiatric, and alcoholism and chemical dependency hospitals, but these types of discharges are included if they are from community hospitals.

<sup>5</sup>HCUP CCS. Healthcare Cost and Utilization Project (HCUP). December 2009. U.S. Agency for Healthcare Research and Quality, Rockville, MD. [www.hcup-us.ahrq.gov/toolsoftware/ccs/ccs.jsp](http://www.hcup-us.ahrq.gov/toolsoftware/ccs/ccs.jsp).

### *Unit of analysis*

The unit of analysis is the hospital 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 one year will be counted each time as a separate "discharge" from the hospital.

### *Costs and charges*

Total hospital charges were converted to costs using HCUP Cost-to-Charge Ratios based on hospital accounting reports from the Centers for Medicare and Medicaid Services (CMS).<sup>6</sup> Costs will tend to reflect the actual costs of production, while charges represent what the hospital billed for the case. For each hospital, a hospital-wide cost-to-charge ratio is used because detailed charges are not available across all HCUP States. Hospital charges reflect the amount the hospital charged for the entire hospital stay and does not include professional (physician) fees. For the purposes of this Statistical Brief, costs are reported to the nearest hundred.

### *Payer*

Payer is the expected primary payer for the hospital stay. To make coding uniform across all HCUP data sources, payer combines detailed categories into more general groups:

- Medicare includes fee-for-service and managed care Medicare patients.
- Medicaid includes fee-for-service and managed care Medicaid patients. Patients covered by the State Children's Health Insurance Program (SCHIP) may be included here. Because most state data do not identify SCHIP patients specifically, it is not possible to present this information separately.
- Private insurance includes Blue Cross, commercial carriers, and private HMOs and PPOs.
- Other includes Worker's Compensation, TRICARE/CHAMPUS, CHAMPVA, Title V, and other government programs.
- Uninsured includes an insurance status of "self-pay" and "no charge."

When more than one payer is listed for a hospital discharge, the first-listed payer is used.

### **About HCUP**

HCUP is a family of powerful health care databases, software tools, and products for advancing research. Sponsored by the Agency for Healthcare Research and Quality (AHRQ), HCUP includes the largest all-payer encounter-level collection of longitudinal health care data (inpatient, ambulatory surgery, and emergency department) in the United States, beginning in 1988. HCUP is a Federal-State-Industry Partnership that brings together the data collection efforts of many organizations—such as State data organizations, hospital associations, private data organizations, and the Federal government—to create a national information resource.

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

**Arizona** Department of Health Services  
**Arkansas** Department of Health  
**California** Office of Statewide Health Planning and Development  
**Colorado** Hospital Association  
**Connecticut** Hospital Association  
**Florida** Agency for Health Care Administration  
**Georgia** Hospital Association  
**Hawaii** Health Information Corporation  
**Illinois** Department of Public Health  
**Indiana** Hospital Association

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<sup>6</sup> HCUP Cost-to-Charge Ratio Files (CCR). Healthcare Cost and Utilization Project (HCUP). 2001–2008. U.S. Agency for Healthcare Research and Quality, Rockville, MD. [www.hcup-us.ahrq.gov/db/state/costtocharge.jsp](http://www.hcup-us.ahrq.gov/db/state/costtocharge.jsp).



**Iowa** Hospital Association  
**Kansas** Hospital Association  
**Kentucky** Cabinet for Health and Family Services  
**Louisiana** Department of Health and Hospitals  
**Maine** Health Data Organization  
**Maryland** Health Services Cost Review Commission  
**Massachusetts** Division of Health Care Finance and Policy  
**Michigan** Health & Hospital Association  
**Minnesota** Hospital Association  
**Missouri** Hospital Industry Data Institute  
**Montana** MHA – An Association of Montana Health Care Providers  
**Nebraska** Hospital Association  
**Nevada** Department of Health and Human Services  
**New Hampshire** Department of Health & Human Services  
**New Jersey** Department of Health and Senior Services  
**New Mexico** Health Policy Commission  
**New York** State Department of Health  
**North Carolina** Department of Health and Human Services  
**Ohio** Hospital Association  
**Oklahoma** State Department of Health  
**Oregon** Association of Hospitals and Health Systems  
**Pennsylvania** Health Care Cost Containment Council  
**Rhode Island** Department of Health  
**South Carolina** State Budget & Control Board  
**South Dakota** Association of Healthcare Organizations  
**Tennessee** Hospital Association  
**Texas** Department of State Health Services  
**Utah** Department of Health  
**Vermont** Association of Hospitals and Health Systems  
**Virginia** Health Information  
**Washington** State Department of Health  
**West Virginia** Health Care Authority  
**Wisconsin** Department of Health Services  
**Wyoming** Hospital Association

### About the NIS

The HCUP Nationwide Inpatient Sample (NIS) is a nationwide database of hospital inpatient stays. The NIS is nationally representative of all community hospitals (i.e., short-term, non-Federal, non-rehabilitation hospitals). The NIS is a sample of hospitals and includes all patients from each hospital, regardless of payer. It is drawn from a sampling frame that contains hospitals comprising about 95 percent of all discharges in the United States. The vast size of the NIS allows the study of topics at both the national and regional levels for specific subgroups of patients. In addition, NIS data are standardized across years to facilitate ease of use.

### For More Information

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

For additional HCUP statistics, visit HCUPnet, our interactive query system, at [www.hcup.ahrq.gov](http://www.hcup.ahrq.gov).

For information on other hospitalizations in the U.S., download *HCUP Facts and Figures: Statistics on Hospital-Based Care in the United States in 2008*, located at <http://www.hcup-us.ahrq.gov/reports.jsp>.

For a detailed description of HCUP, more information on the design of the NIS, and methods to calculate estimates, please refer to the following publications:

*Introduction to the HCUP Nationwide Inpatient Sample, 2008.* Online. May 2010. U.S. Agency for Healthcare Research and Quality. [http://hcup-us.ahrq.gov/db/nation/nis/NIS\\_2008\\_INTRODUCTION.pdf](http://hcup-us.ahrq.gov/db/nation/nis/NIS_2008_INTRODUCTION.pdf)

Houchens RL, Elixhauser A. *Using the HCUP Nationwide Inpatient Sample to Estimate Trends. (Updated for 1988–2004).* HCUP Methods Series Report #2006-05 Online. August 18, 2006. U.S. Agency for Healthcare Research and Quality. [http://www.hcup-us.ahrq.gov/reports/2006\\_05\\_NISTrendsReport\\_1988-2004.pdf](http://www.hcup-us.ahrq.gov/reports/2006_05_NISTrendsReport_1988-2004.pdf)

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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 health care 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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