

## STATISTICAL BRIEF #144

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### Overview of Hospital Stays in the United States, 2010

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#### Introduction

Inpatient hospital care is a significant component of the health care system, accounting for nearly one-third of health care expenditures in the United States in 2009.<sup>1</sup> The demand for hospital care is expected to increase simply based on an overall increase in population. Demographic changes in the population also may have an impact on inpatient admissions. For example, the aging baby boom generation may increase the demand for hospital care, since older individuals require hospitalization more frequently.<sup>2</sup> Additionally, the health condition of Americans has been deteriorating, with nearly one-third of U.S. adults being obese and nearly half of adults having a chronic illness, including heart disease and diabetes.<sup>3</sup> However, increased use of chronic disease management programs, a shift to outpatient procedures, and efforts to reduce unnecessary hospitalizations may offset other factors driving the demand for inpatient hospital care.

This Statistical Brief presents data from the Healthcare Cost and Utilization Project (HCUP) on characteristics of stays in community hospitals in the United States in 2010. The number and distribution of stays in 2010 are stratified by primary payer and patient discharge status. Changes between 1997 and 2010 are also presented. All differences between estimates noted in the text are statistically significant at the .001 level or better.

<sup>1</sup> Kashihara, D and Carper, K. *National Health Care Expenses in the U.S. Civilian Noninstitutionalized Population, 2009*. Statistical Brief #355. January 2012. Agency for Healthcare Research and Quality, Rockville, MD. [http://www.meps.ahrq.gov/mepsweb/data\\_files/publications/st355/stat355.pdf](http://www.meps.ahrq.gov/mepsweb/data_files/publications/st355/stat355.pdf) (Accessed August 16, 2012).

<sup>2</sup> Wier LM (Thomson Reuters), Pfuntner A (Thomson Reuters), Maeda J (Thomson Reuters), Stranges E (Thomson Reuters), Ryan K (Thomson Reuters), Jagadish P (AHRQ), Collins Sharp B (AHRQ), Elixhauser A (AHRQ). *HCUP Facts and Figures: Statistics on Hospital-Based Care in the United States, 2009*. Rockville, MD: Agency for Healthcare Research and Quality, 2011 (<http://www.hcup-us.ahrq.gov/reports.jsp>). (Accessed August 16, 2012).

<sup>3</sup> Spotlight on Prevention: Why strategies that make us healthier are key to health reform. Online. Robert Wood Johnson Foundation. Available at <http://www.rwjf.org/healthpolicy/publichealth/product.jsp?id=45408>. (Accessed August 16, 2012).

#### Highlights

- The total number of hospital stays in the United States increased 12 percent between 1997 and 2010, but the rate of hospitalization remained stable at about 1,260–1,270 stays per 10,000 population.
- The average length of stay decreased 5 percent from 4.9 days in 1997 to 4.7 days in 2010.
- Aggregate inflation-adjusted hospital costs were \$375.9 billion in 2010—a 62 percent increase since 1997. Average costs per stay increased 45 percent to \$9,700 in 2010.
- In 2010, more than half of hospital stays were billed to Medicare and Medicaid.
- Private insurance was the second most common primary payer in 2010 at 32 percent of hospital stays, a decrease from 39 percent in 1997.
- The number of hospital stays covered by Medicaid grew at nearly four times the rate of all stays between 1997 and 2010, and the number of uninsured hospital stays increased at more than three times the rate of all stays.
- The majority of hospital discharges in 2010 were routine (71 percent).
- Discharge against medical advice represented only 1 percent of all hospital stays, but increased 47 percent between 1997 and 2010.
- Discharge to home health care represented 11 percent of all stays, but increased 79 percent during this time period.
- Medicaid and uninsured hospital stays accounted for over half of discharges against medical advice, but only about one-quarter of stays with other types of discharge.

## Findings

### *Overall characteristics of stays in U.S. hospitals, 1997–2010*

Table 1 shows characteristics of stays in U.S. community hospitals in 1997 and 2010. The total number of hospital stays increased 12 percent, from 34.7 million in 1997 to 39 million in 2010, but the rate of hospitalization remained stable at roughly 1,260–1,270 stays per 10,000 population. The average length of stay decreased 5 percent from 4.9 days in 1997 to 4.7 days in 2010.

The national distribution of discharges by hospital location (metropolitan versus non-metropolitan) and hospital ownership remained unchanged between 1997 and 2010. Most stays (87 percent; not significantly different from the 1997 value) occurred in metropolitan hospitals and nearly three-quarters of stays occurred in private not-for-profit hospitals. Nearly half of stays (48 percent) occurred in teaching hospitals in 2010, an increase from 41 percent in 1997.

Aggregate hospital costs—the actual expenses incurred for producing services—were \$375.9 billion in 2010; this was a 62 percent increase since 1997. Costs per stay increased 45 percent to \$9,700 in 2010. Charges per stay—what hospitals bill patients for their rooms, nursing care, diagnostic tests, procedures, and other services—more than doubled between 1997 and 2010 to \$33,100. All costs and charges are adjusted for inflation.

**Table 1. Characteristics of U.S. community hospitals, 1997 and 2010**

Utilization, charges, and costs	1997	2010
Stays		
Total stays in millions	34.7	39.0
Number of stays per 10,000 population	1,272	1,261
Total days of care in millions	169.4	181.7
Average length of stay in days	4.9	4.7
Percentage of discharges from:		
Metropolitan hospitals	84%	87%
Teaching hospitals	41%	48%
Hospital ownership		
Non-Federal government hospitals	14%	14%
Private not-for-profit hospitals	73%	72%
Private for-profit hospitals	13%	13%
Charges and costs*		
Average charges per stay	\$14,800	\$33,100
Average costs per stay	\$6,700	\$9,700
Total aggregate costs in billions	\$232.3	\$375.9

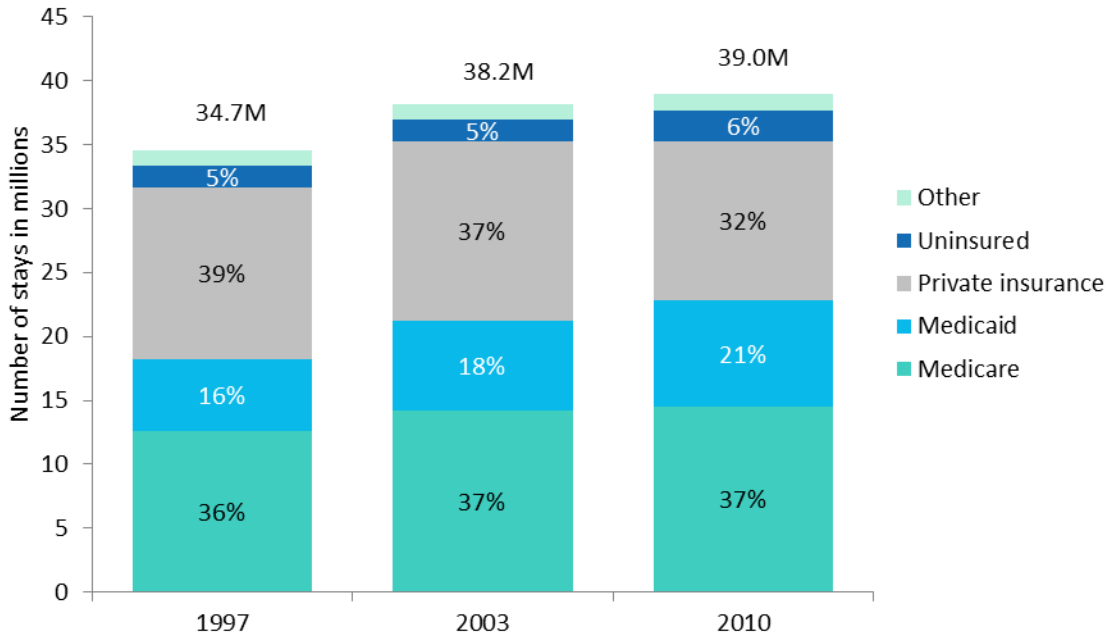
\* Charges per stay, costs per stay, and aggregate costs in 1997 are inflation-adjusted to 2010 dollars.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 1997 and 2010

*Hospital stays by expected primary payer, 1997–2010*

In 2010, more than half of stays (58 percent) were billed to Medicare and Medicaid (figure 1). Although the percentage of stays billed to Medicare remained stable (36–37 percent) between 1997 and 2010, the percentage billed to Medicaid increased from 16 percent to 21 percent. Private insurance was the second most common primary payer but its share of stays fell from 39 percent in 1997 to 32 percent of stays in 2010. The share of uninsured stays and stays billed to other payers remained stable between 1997 and 2010.

**Figure 1. Number and distribution of hospital stays by expected primary payer, 1997–2010**

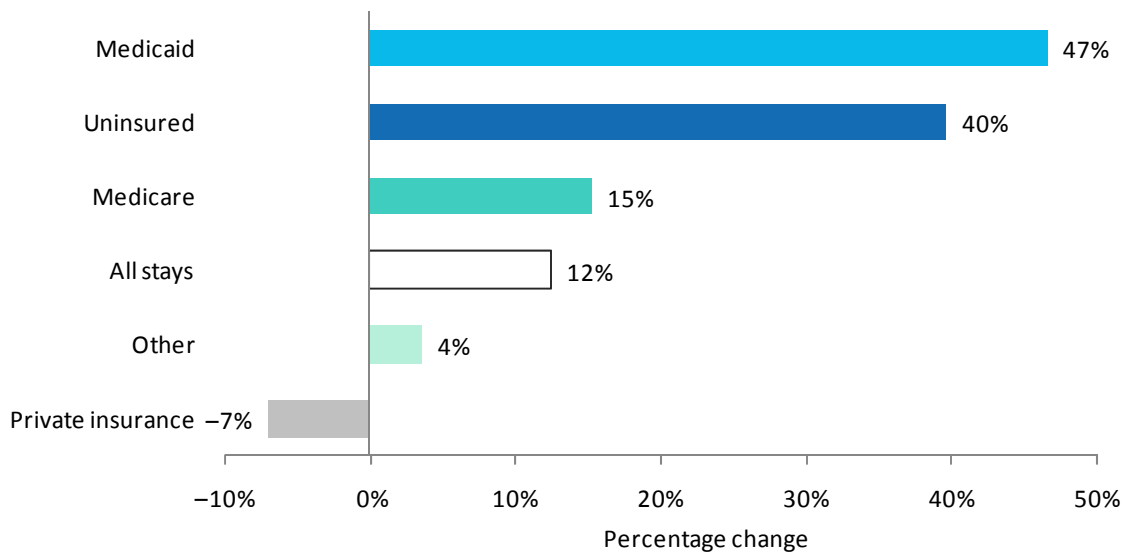


Note: Bar segments representing 4 percent or less are not labeled.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 1997, 2003, and 2010

The number of stays with Medicaid as the primary payer experienced the most rapid growth (47 percent) between 1997 and 2010—nearly four times the rate of all stays (figure 2). Although it accounted for a small and stable share of all stays between 1997 and 2010 (5–6 percent of stays), the number of uninsured stays increased 40 percent during this period, which was more than three times the rate of all stays. Medicare stays increased 15 percent since 1997; the number of stays billed to private insurance and other payers remained relatively stable.

**Figure 2. Change in the number of hospital stays by expected primary payer, 1997–2010**

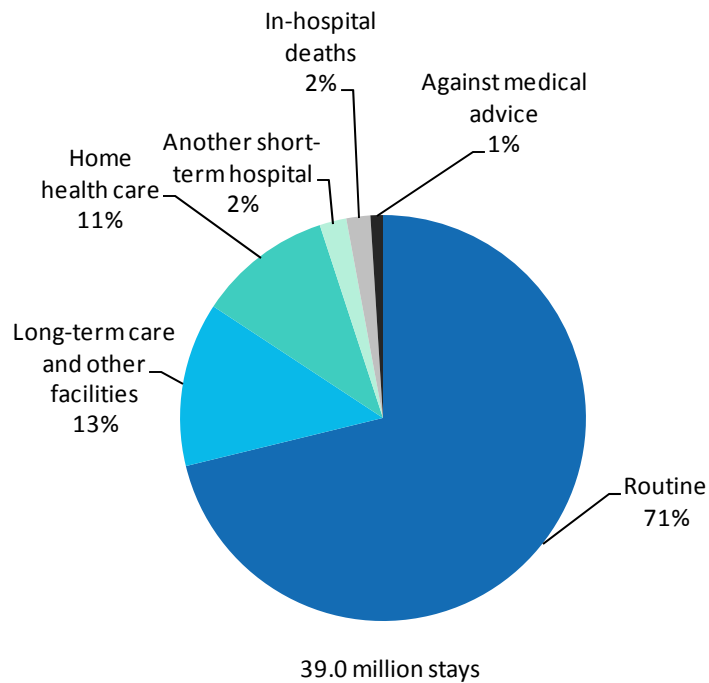


Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 1997 and 2010

*Hospital stays by discharge status, 1997–2010*

Nearly three-quarters of all hospital stays were routinely discharged in 2010 (figure 3). Discharge to follow-on care was also common: discharge to long-term care accounted for 13 percent of stays, and discharge to the home with home health care accounted for 11 percent of stays. The remaining circumstances—discharge to another short-term hospital; in-hospital deaths; and discharge against medical advice, which occurs when patients check themselves out of the hospital against the advice of their physician—each accounted for 2 percent or less of stays.

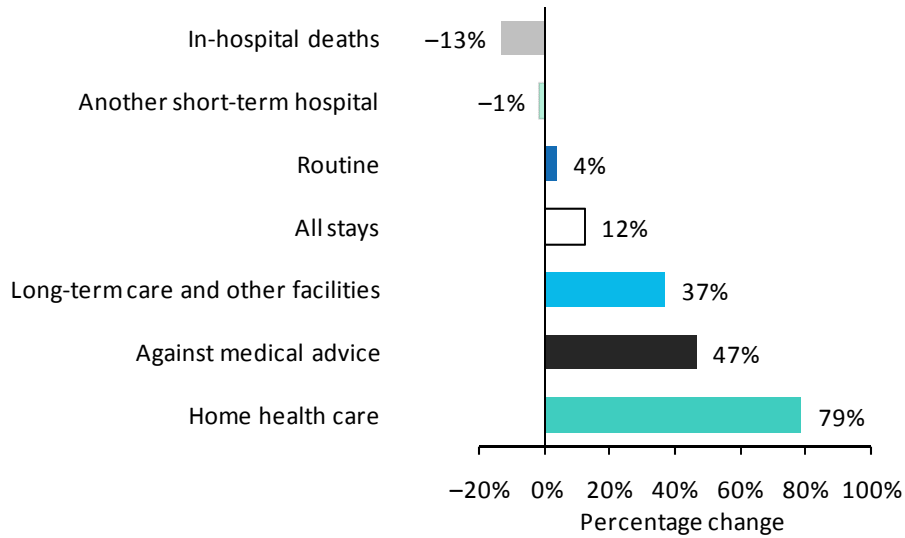
**Figure 3. Distribution of hospital stays by discharge status, 2010**



Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2010

The number of stays discharged to follow-on care increased between 1997 and 2010: discharge to home health care increased 79 percent and discharge to long-term care increased 37 percent (figure 4). Although discharges against medical advice accounted for only 1 percent of all stays, they increased 47 percent between 1997 and 2010. In-hospital deaths, which were also a small share of all stays (2 percent), decreased 13 percent during this period.

**Figure 4. Change in the number of hospital stays by discharge status, 1997–2010**

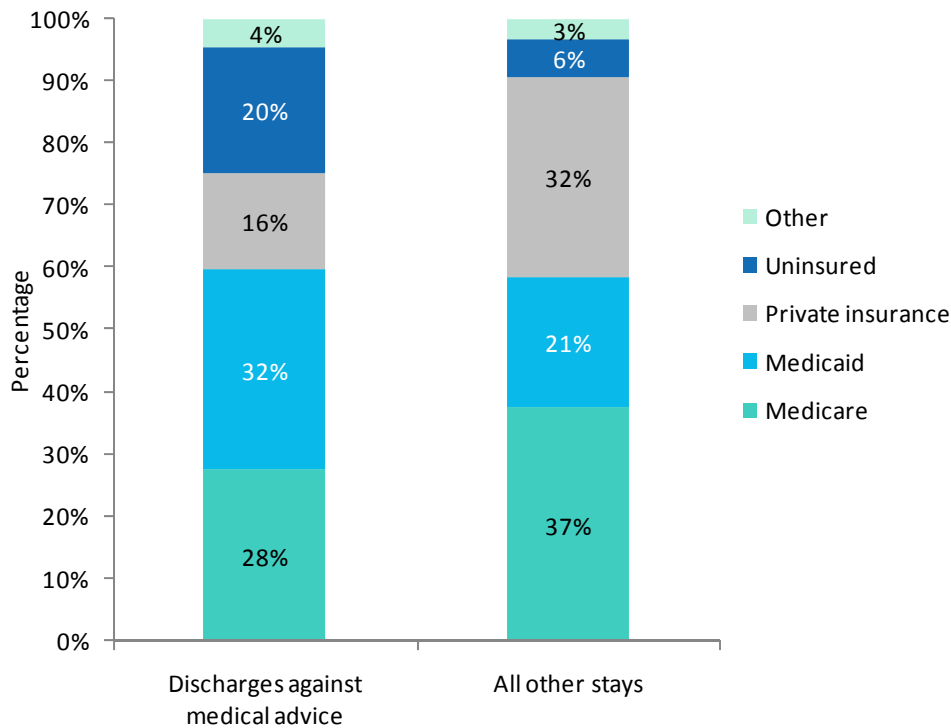


Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 1997 and 2010

In 2010, the most common payer for patients discharged against medical advice was Medicaid (32 percent of stays), but Medicaid was the third most common payer for all other stays (21 percent of stays) (figure 5). Uninsured stays accounted for 20 percent of discharges against medical advice, which was more than three times the uninsured share of all other stays (6 percent). Together, Medicaid and uninsured stays accounted for over half of discharges against medical advice (52 percent), but only about one-quarter of stays with other types of discharges (27 percent).

Medicare was the second most common primary payer for discharges against medical advice (28 percent of stays) but the most common primary payer for all other stays (37 percent of stays). Private insurance was the fourth most common payer for discharges against medical advice (16 percent of stays) but the second most common primary payer for all other stays (32 percent of stays).

**Figure 5. Distribution of discharges against medical advice and all other hospital stays by payer, 2010**



Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2010

## Data Source

The estimates in this Statistical Brief are based upon data from the HCUP 2010 NIS. Historical data were drawn from the 1997 NIS and the 2003 NIS. Supplemental sources included data on national population estimates from "Intercensal Estimates of the Resident Population by Single Year of Age, Sex, Race, and Hispanic Origin for the United States: April 1, 2000 to July 1, 2010," Population Division, U.S. Census Bureau, Release date: September 2011. (<http://www.census.gov/popest/data/intercensal/national/nat2010.html>).

Supplemental sources also included data on national population estimates from "Intercensal Estimates of the United States Resident Population by Age and Sex, 1990-2000: Selected Months," Population Division, U.S. Census Bureau, Release date: August 2004. (<http://www.census.gov/popest/data/intercensal/national/index.html>).

Many hypothesis tests were conducted for this Statistical Brief. Thus, to decrease the number of false-positive results, we reduced the significance level to .001 for individual tests.

## Definitions

### *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 obstetrics and gynecology, otolaryngology, orthopedic, cancer, pediatric, public, and academic medical hospitals. Excluded are long-term care, rehabilitation, psychiatric, and alcoholism and chemical dependency hospitals. However, if a patient received long-term care, rehabilitation, or treatment for psychiatric or chemical dependency conditions in a community hospital, the discharge record for that stay will be included in the NIS.

### *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 & Medicaid Services (CMS).<sup>4</sup> *Costs* will reflect the actual expenses incurred in the production of hospital services, such as wages, supplies, and utility costs; *charges* represent the amount a hospital billed for the case. For each hospital, a hospital-wide cost-to-charge ratio is used. Hospital charges reflect the amount the hospital billed for the entire hospital stay and do not include professional (physician) fees. For the purposes of this Statistical Brief, costs are reported to the nearest hundred.

### *Hospital location*

The classification of whether a hospital is in a metropolitan area ("urban") or nonmetropolitan area ("rural") is defined from the American Hospital Association (AHA) Annual Survey, using the 1993 U.S. Office of Management and Budget definition.

### *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.

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<sup>4</sup> HCUP Cost-to-Charge Ratio Files (CCR). Healthcare Cost and Utilization Project (HCUP). 2001–2009. U.S. Agency for Healthcare Research and Quality, Rockville, MD. Available at <http://www.hcup-us.ahrq.gov/db/state/costtocharge.jsp>. Updated August 2011. (Accessed August 16, 2012).



- 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.

#### *Discharge status*

Discharge status indicates the disposition of the patient at discharge from the hospital and includes the following six categories: routine (to home); transfer to another short-term hospital; other transfers (including skilled nursing facility, intermediate care, and another type of facility such as a nursing home); home health care; against medical advice (AMA); or died in the hospital.

#### **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:

**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  
**Florida** Agency for Health Care Administration  
**Georgia** Hospital Association  
**Hawaii** Health Information Corporation  
**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 and Hospitals  
**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** Department of Health  
**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  
**New Mexico** Department of Health  
**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  
**Oregon** Health Policy and Research  
**Pennsylvania** Health Care Cost Containment Council  
**Rhode Island** Department of Health  
**South Carolina** 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, nonrehabilitation 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 more than 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.

### About HCUPnet

HCUPnet is an online query system that offers instant access to the largest set of all-payer health care databases publicly available. HCUPnet has an easy step-by-step query system, allowing for tables and graphs to be generated on national and regional statistics, as well as trends for community hospitals in the United States. HCUPnet generates statistics using data from HCUP's Nationwide Inpatient Sample (NIS), the Kids' Inpatient Database (KID), the Nationwide Emergency Department Sample (NEDS), the State Inpatient Databases (SID), and the State Emergency Department Databases (SEDD).

### For More Information

For more information about HCUP, visit <http://www.hcup-us.ahrq.gov/>.

For additional HCUP statistics, visit HCUPnet, our interactive query system, at <http://hcupnet.ahrq.gov/>.

For information on other hospitalizations in the United States, download *HCUP Facts and Figures: Statistics on Hospital-Based Care in the United States in 2009*, 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, 2010*. Online. May 2012. U.S. Agency for Healthcare Research and Quality. Available at <http://www.hcup-us.ahrq.gov/db/nation/nis/NISIntroduction2010.pdf>. (Accessed September 5, 2012).

Houchens R, Elixhauser A. *Final Report on Calculating Nationwide Inpatient Sample (NIS) Variances, 2001*. HCUP Methods Series Report #2003-2. Online. June 2005 (revised June 6, 2005). U.S. Agency for Healthcare Research and Quality. Available at <http://www.hcup-us.ahrq.gov/reports/CalculatingNISVariances200106092005.pdf>. (Accessed September 5, 2012).

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. Available at [http://www.hcup-us.ahrq.gov/reports/methods/2006\\_05\\_NISTrendsReport\\_1988-2004.pdf](http://www.hcup-us.ahrq.gov/reports/methods/2006_05_NISTrendsReport_1988-2004.pdf). (Accessed September 5, 2012).

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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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