Trends in Emergency Department Visits, 2006–2011

Halcyon G. Skinner Ph.D., M.P.H., Janice Blanchard M.D., Ph.D., and Anne Elixhauser, Ph.D.

Introduction

There has been an overall increase in emergency department (ED) visits over the past two decades. However, ED visits for specific conditions have shown varying patterns, and visits for some conditions have decreased in recent years.

There are a number of factors that may affect both positive and negative trends in growth for condition-specific ED visits. Some of those factors are personal, such as an individual’s specific health condition. Other factors are related to the community where the individual lives—for example, the availability of health care options.

Changes in health care are reflected in ED use. For example, with improved care coordination some conditions may now be more effectively managed in the outpatient setting, which reduces the need for the acute care provided by EDs. Updated information about trends in ED use over time reveals the changing needs of individuals in the community and emerging transformations in health care policies.

This HCUP Statistical Brief presents data on changes in overall ED visits from 2006 through 2011. ED visit rates are reported by patient demographic characteristics and tracked by patient age. Changes in ED visit rates for the most common conditions and the conditions with the greatest changes also are provided. Changes in rates are considered statistically significant if the p-value is 0.05 or less.

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Findings

Changes in ED visit rates between 2006 and 2011
Table 1 presents ED visit rates in 2006 and 2011 by patient characteristics, along with the percent change over that time period.

Table 1. Changes in ED visit rates (per 100,000 population) by patient characteristics, 2006 and 2011

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Rate per 100,000 population</th>
<th>Percent change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2006</td>
<td>2011</td>
</tr>
<tr>
<td>Total rate for all ED visits</td>
<td>40,200</td>
<td>42,100</td>
</tr>
<tr>
<td>Age group, years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;1</td>
<td>88,900</td>
<td>81,600</td>
</tr>
<tr>
<td>1–17</td>
<td>32,700</td>
<td>33,800</td>
</tr>
<tr>
<td>18–44</td>
<td>43,300</td>
<td>45,400</td>
</tr>
<tr>
<td>45–64</td>
<td>33,000</td>
<td>35,800</td>
</tr>
<tr>
<td>65–84</td>
<td>48,900</td>
<td>49,500</td>
</tr>
<tr>
<td>85+</td>
<td>90,900</td>
<td>93,500</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>37,300</td>
<td>38,200</td>
</tr>
<tr>
<td>Female</td>
<td>43,000</td>
<td>45,800</td>
</tr>
<tr>
<td>Median income for ZIP Code</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>49,400</td>
<td>51,900</td>
</tr>
<tr>
<td>Not low</td>
<td>36,100</td>
<td>37,700</td>
</tr>
<tr>
<td>Patient residence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large central metro</td>
<td>31,900</td>
<td>39,000</td>
</tr>
<tr>
<td>Large fringe metro (suburbs)</td>
<td>40,600</td>
<td>38,400</td>
</tr>
<tr>
<td>Medium and small metro</td>
<td>43,600</td>
<td>43,400</td>
</tr>
<tr>
<td>Micropolitan and noncore (rural)</td>
<td>47,300</td>
<td>50,200</td>
</tr>
<tr>
<td>Region</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>43,200</td>
<td>45,300</td>
</tr>
<tr>
<td>Midwest</td>
<td>42,200</td>
<td>46,000</td>
</tr>
<tr>
<td>South</td>
<td>43,000</td>
<td>44,400</td>
</tr>
<tr>
<td>West</td>
<td>31,600</td>
<td>32,100</td>
</tr>
</tbody>
</table>

All rates were rounded to the nearest 100. Percent change is reported based on nonrounded rates.

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Emergency Department Sample (NIS), 2006 and 2011

- The rate of emergency department visits increased for individuals aged 45–64 years.

  The rate of ED visits for individuals aged 45–64 years increased from 33,000 per 100,000 population in 2006 to 35,800 per 100,000 population in 2011. This was an 8 percent increase over the 5-year time period.
The rate of emergency department visits increased for women.

The rate of ED visits increased from 43,000 per 100,000 women in 2006 to 45,800 per 100,000 women in 2011, which represented a 6 percent increase over 5 years.

Large central cities had the largest increase in the rate of ED visits.

Between 2006 and 2011, large central metropolitan areas experienced a 22 percent increase in the rate of ED visits over 5 years, from 31,900 to 39,000 visits per 100,000 population.
Changes in ED visits rates by patient age, 2006–2011

Figure 1 presents the trend in ED visit rates (per 100,000 population) by patient age group from 2006 through 2011.

Figure 1. Trends in ED visit rates by patient age, 2006–2011

- The ED visit rate was consistently highest among the oldest patients.

The rate of ED visits was consistently highest among the individuals aged 85 years and older, with rates essentially unchanged between 2006 and 2011.

- The rate of ED visits declined among infants.

In 2006, the rate of ED visits for infants younger than 1 year was approximately as high as the rate for adults aged 85 years and older (89,000 visits per 100,000 population for infants versus 90,900 per 100,000 population for adults aged 85 years and older). However, the ED visit rate for infants declined by 11 percent for the 5-year period from 2006 to 2011. By 2011, the ED visit rate for infants was significantly lower than the rate for adults aged 85 years and older (81,600 versus 93,500 per 100,000 population).

- The rate of ED visits increased gradually for individuals aged 45–64 years.

The rate of ED visits increased consistently between 1 and 3 percent per year for individuals aged 45–64 years from 2006 to 2011. The net change over the 5-year period was an 8 percent increase for individuals in this age group.

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Emergency Department Sample (NEDS), 2006–2011
Most frequent conditions seen in the ED and changes in ED visits rates, 2006 through 2011

Figure 2 presents the conditions that were most commonly seen in the ED in 2006 and examines the changes in ED visit rates for those conditions in 2011.

Figure 2. Changes in ED visit rates from 2006 to 2011 for the 20 most common conditions seen in the ED in 2006 and the ED visit rates (per 100,000 population) in 2011

<table>
<thead>
<tr>
<th>Clinical Condition</th>
<th>(ED Visit Rate per 100,000 Population)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sprains and strains (1933)</td>
<td>-9</td>
</tr>
<tr>
<td>Superficial injury, contusion (1832)</td>
<td>-11</td>
</tr>
<tr>
<td>Abdominal pain (1788)</td>
<td></td>
</tr>
<tr>
<td>Nonspecific chest pain (1413)</td>
<td></td>
</tr>
<tr>
<td>Open wounds of extremities (1011)</td>
<td>-18</td>
</tr>
<tr>
<td>Intervertebral disc disorders, other back problems (1197)</td>
<td></td>
</tr>
<tr>
<td>Skin and subcutaneous tissue infections (1102)</td>
<td></td>
</tr>
<tr>
<td>Headache, including migraine (674)</td>
<td></td>
</tr>
<tr>
<td>Open wounds of head, neck, and trunk (794)</td>
<td>-13</td>
</tr>
<tr>
<td>Urinary tract infections (1018)</td>
<td>-13</td>
</tr>
<tr>
<td>Otitis media and related conditions (626)</td>
<td>-10</td>
</tr>
<tr>
<td>Fracture of upper limb (593)</td>
<td>-11</td>
</tr>
<tr>
<td>Asthma (621)</td>
<td></td>
</tr>
<tr>
<td>Pneumonia (569)</td>
<td></td>
</tr>
<tr>
<td>COPD and bronchiectasis (636)</td>
<td></td>
</tr>
<tr>
<td>Disorders of teeth and jaw (627)</td>
<td></td>
</tr>
<tr>
<td>Noninfectious gastroenteritis (371)</td>
<td>-30</td>
</tr>
<tr>
<td>Allergic reactions (542)</td>
<td></td>
</tr>
<tr>
<td>Viral infections (441)</td>
<td>-11</td>
</tr>
<tr>
<td>Nausea and vomiting (569)</td>
<td>18</td>
</tr>
</tbody>
</table>

Note: Conditions were identified using AHRQ’s Clinical Classifications Software (CCS) based on first-listed diagnosis. The 20 most common conditions were those identified in 2006. Only conditions with at least 100,000 ED visits in 2006 were included. The most common conditions in 2011 are listed first. Rates are for 2011 and rounded to the nearest whole number. Percent differences were computed based on nonrounded rates. All differences were statistically significant at p<0.05.

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Emergency Department Sample (NEDS), 2006 and 2011

The rates of ED visits decreased for the two most common minor trauma conditions.

The rate of ED visits for the two most common conditions (sprains and strains; superficial injury and contusion) decreased substantially between 2006 and 2011. In 2006, there were about 6.4 million ED visits for sprains and strains (a rate of 2,133 visits per 100,000 population). In 2011, the rate of visits for sprains and strains declined by 9 percent to 1,933 per 100,000 population, based on over 6.0 million ED visits for this condition. Similarly, the rate of ED visits for superficial injury and contusion declined 11 percent from 2006 to 2011. In 2006 there were 6.1 million visits for superficial injury and contusion, compared with 5.7 million visits in 2011 (2,056 versus 1,832 visits per 100,000 population, respectively).
The rates of ED visits increased for some common nonspecific conditions.

The rates of ED visits for abdominal pain and nonspecific chest pain—the third and fourth most common reasons for ED visits overall—increased substantially between 2006 and 2011. Nonspecific diagnoses suggest that no underlying cause was found for these symptoms during the ED visit.

The rate of ED visits for abdominal pain increased by 18 percent, from 1,513 per 100,000 population in 2006 to 1,788 per 100,000 population in 2011, with 5.6 million visits in 2011. ED visits for nonspecific chest pain increased 13 percent, with rates of 1,252 visits per 100,000 population in 2006 and 1,413 visits per 100,000 population in 2011 (4.4 million visits in 2011). ED visits for nausea and vomiting increased by 18 percent.
Conditions with the most rapidly increasing ED visit rates, 2006–2011

Figure 3 presents the conditions that had the largest increase in the rates of ED visits from 2006 to 2011 among those conditions with at least 100,000 ED visits in 2006.

**Figure 3. Conditions with the largest increases in ED visit rates from 2006 to 2011 and the ED visit rates (per 100,000 population) in 2011**

Note: Conditions were identified using AHRQ’s Clinical Classifications Software (CCS) based on first-listed diagnosis. Only conditions with at least 100,000 ED visits in 2006 were included. The most common conditions in 2011 are listed first. Rates are for 2011 and rounded to the nearest whole number. Percent differences are computed based on nonrounded rates. All differences were statistically significant at p<0.05.

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Emergency Department Sample (NEDS), 2006 and 2011

- **ED visits for two infection-related diagnoses increased substantially between 2006 and 2011.**

  The rate of ED visits for septicemia increased 74 percent from 2006 to 2011. There were about 538,000 ED visits for septicemia in 2006 (180 visits per 100,000 population) and 980,000 ED visits in 2011 (315 visits per 100,000 population). The rate of ED visits for influenza increased by 48 percent during this time period, from 75 visits per 100,000 population in 2006 to 111 visits per 100,000 population in 2011. (Influenza infection rates are known to vary considerably from year to year.  

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Visits to the ED for substance-related disorders (not including alcohol) and for alcohol-related disorders increased.

Between 2006 and 2011, the rate of ED visits for substance-related disorders not including alcohol increased 48 percent (from 136 to 201 visits per 100,000 population). Over the same time period, visits for alcohol-related disorders increased 34 percent from 277 to 371 visits per 100,000 population.

ED visits for acute and unspecified renal failure increased by 39 percent from 2006 to 2011.

In 2006, there were approximately 313,000 ED visits for acute and unspecified renal failure—a rate of 105 per 100,000 population. In 2011, there were 453,000 visits for this diagnostic category—a rate of 145 per 100,000 population, which represents a 39 percent increase from 2006.

ED visits for several common chronic conditions increased significantly from 2006 to 2011.

Diabetes mellitus visits increased 33 percent, pulmonary heart disease visits increased 29 percent, and visits for essential hypertension increased 25 percent.

The only injury that appeared on the top 20 list of rapidly increasing conditions from 2006 to 2011 was intracranial injury.

Intracranial injury visit rates increased 19 percent, from 192 per 100,000 population in 2006 to 229 per 100,000 population in 2011.
Conditions with the most rapidly decreasing ED visit rates, 2006–2011
Figure 4 presents the conditions with at least 100,000 ED visits in 2006 with the largest decreases in ED visit rates from 2006 to 2011.

Figure 4. Conditions with the largest decreases in ED visit rates from 2006 to 2011 and the ED visit rates (per 100,000 population) in 2011

Note: Conditions were identified using AHRQ’s Clinical Classifications Software (CCS). Only first-listed diagnoses were included. Only conditions with at least 100,000 ED visits in 2011 were included. Rates are for 2011 and rounded to the nearest whole number. Percent differences were computed based on nonrounded rates. All differences were statistically significant at p<0.05.

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Emergency Department Sample (NEDS), 2006 and 2011

- ED visits for noninfectious gastroenteritis decreased from 2006 to 2011.

Noninfectious gastroenteritis had the largest decrease in the rate of ED visits from 2006 to 2011—a 30 percent decline over the 5-year period. In 2006, there were about 1.6 million visits for noninfectious gastroenteritis, representing a rate of 531 visits per 100,000 population. In 2011, there were 1.2 million visits for noninfectious gastroenteritis, representing a rate of 371 visits per 100,000 population.
ED visits related to coma, stupor, and brain damage decreased.

Between 2006 and 2011, ED visits for coma, stupor, and brain damage decreased 27 percent, from a rate of 40 to 29 visits per 100,000 population, respectively.

Many injuries appear on the top 20 list of conditions with the greatest decreases in rates.

Injuries with significant declines in the rate of ED visits included poisoning by nonmedicinal substances (19 percent); open wounds of the extremities (18 percent); open wounds of the head, neck, and trunk (13 percent); burns (13 percent); poisoning by medicines and drugs (12 percent); fracture of the upper limb (11 percent); superficial injury (11 percent); crushing injury (9 percent); sprain or strain (9 percent); and fracture of lower limb (9 percent).

ED visits related to coronary atherosclerosis decreased.

ED visits for coronary atherosclerosis decreased 24 percent from 2006 to 2011. In 2006, there were 594,300 ED visits for coronary atherosclerosis, representing a rate of 199 visits per 100,000 population. The rate declined to 152 visits per 100,000 population in 2011, based on 474,400 visits for this condition.

A number of infections appear on the top 20 list of conditions with the greatest decreases in rates.

There were significant decreases in the number of ED visits related to three types of infections: tonsillitis (11 percent), viral infections (11 percent), and eye infections (7 percent).
Data Source
The estimates in this Statistical Brief are based upon data from the Healthcare Cost and Utilization Project (HCUP) Nationwide Emergency Department Sample (NEDS), 2006 through 2011. The statistics were generated from HCUPnet, a free, online query system that provides users with immediate access to the largest set of publicly available, all-payer national, regional, and State-level hospital care databases from HCUP. Supplemental sources included population denominator data for use with HCUP databases. P-values were computed using a two-sample z-test. Results were considered nominally significant if the value was 0.05 or less.

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 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 approximately 14,000 ICD-9-CM diagnosis codes.

CCS categorizes ICD-9-CM diagnoses into a manageable number of clinically meaningful categories. This “clinical grouper” makes it easier to quickly understand patterns of diagnoses. CCS categories identified as “Other” typically are not reported; these categories include miscellaneous, otherwise unclassifiable diagnoses that may be difficult to interpret as a group.

Types of hospitals included in HCUP
HCUP is based on 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). 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. Community hospitals included in the Nationwide Emergency Department Sample (NEDS) have hospital-based emergency departments and no more than 90 percent of their ED visits resulting in admission.

Unit of analysis
The unit of analysis is the emergency department (ED) encounter, not a person or patient. This means that a person who is seen in the ED multiple times in one year will be counted each time as a separate “encounter” in the ED.

Location of patients’ residence
Place of residence is based on the urban-rural classification scheme for U.S. counties developed by the National Center for Health Statistics (NCHS).

Urban:
- Large Central Metropolitan: includes metropolitan areas with 1 million or more residents
- Large Fringe Metropolitan: includes counties of metropolitan areas with 1 million or more residents
- Medium and Small Metropolitan: includes areas with 50,000 to 999,999 residents

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Rural:
- Micropolitan and Noncore: includes nonmetropolitan counties (i.e., counties with no town greater than 50,000 residents).

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 general groups:
- Medicare: includes patients covered by fee-for-service and managed care Medicare
- Medicaid: includes patients covered by fee-for-service and managed care Medicaid
- Private Insurance: includes Blue Cross, commercial carriers, and private health maintenance organizations (HMOs) and preferred provider organizations (PPOs)
- Uninsured: includes an insurance status of "self-pay" and "no charge"
- Other: includes Worker’s Compensation, TRICARE/CHAMPUS, CHAMPVA, Title V, and other government programs

Hospital stays billed to the State Children’s Health Insurance Program (SCHIP) may be classified as Medicaid, Private Insurance, or Other, depending on the structure of the State program. Because most State data do not identify SCHIP patients specifically, it is not possible to present this information separately.

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

Region
Region is one of the four regions defined by the U.S. Census Bureau:
- Midwest: Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas
- South: Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, and Texas

About HCUP
The Healthcare Cost and Utilization Project (HCUP, pronounced "H-Cup") is a family of health care 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, private data organizations, and the Federal government to create a national information resource of encounter-level health care data (HCUP Partners). 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 health care 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 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
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 Health Policy and Research
Pennsylvania Health Care Cost Containment Council
Rhode Island Department of Health
South Carolina Revenue and Fiscal Affairs Office
South Dakota Association of Healthcare Organizations
Tennessee Hospital Association
Texas Department of State Health Services
Utah Department of Health
Vermont Association of Hospitals and Health Systems
Virginia Health Information
Washington State Department of Health
West Virginia Health Care Authority
Wisconsin Department of Health Services
Wyoming Hospital Association

About Statistical Briefs

HCUP Statistical Briefs are descriptive summary reports presenting statistics on hospital inpatient and emergency department use and costs, quality of care, access to care, medical conditions, procedures, patient populations, and other topics. The reports use HCUP administrative health care data.

About the NEDS

The HCUP Nationwide Emergency Department Database (NEDS) is a unique and powerful database that yields national estimates of emergency department (ED) visits. The NEDS was constructed using records from both the HCUP State Emergency Department Databases (SEDD) and the State Inpatient Databases (SID). The SEDD capture information on ED visits that do not result in an admission (i.e., treat-and-release visits and transfers to another hospital); the SID contain information on patients initially seen in the emergency room and then admitted to the same hospital. The NEDS was created to enable analyses of ED utilization patterns and support public health professionals, administrators, policymakers, and
clinicians in their decision-making regarding this critical source of care. The NEDS is produced annually beginning in 2006.

About HCUPnet

HCUPnet is an online query system that offers instant access to the largest set of all-payer health care databases that are publicly available. HCUPnet has an easy step-by-step query system that creates tables and graphs of national and regional statistics as well as data 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, refer to the following HCUP Statistical Briefs located at http://www.hcup-us.ahrq.gov/reports/statbriefs/statbriefs.jsp:

- Statistical Brief #166, Overview of Hospital Stays in the United States, 2011
- Statistical Brief #168, Costs for Hospital Stays in the United States, 2011
- Statistical Brief #162, Most Frequent Conditions in U.S. Hospitals, 2011
- Statistical Brief #165, Most Frequent Procedures Performed in U.S. Hospitals, 2011

For a detailed description of HCUP, more information on the design of the Nationwide Emergency Department Sample (NEDS), and methods to calculate estimates, please refer to the following publications:


Suggested Citation


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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 or send a letter to the address below:

Irene Fraser, Ph.D., Director
Center for Delivery, Organization, and Markets
Agency for Healthcare Research and Quality
540 Gaither Road
Rockville, MD 20850