

STATISTICAL BRIEF #238

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Trends in Hospital Emergency Department Visits by Age and Payer, 2006–2015

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Introduction

The emergency department (ED) provides services to all who seek ED care, regardless of ability to pay,¹ and the ED has become an important source of admissions for hospitals.² Since the 1990s, the number of ED visits has been steadily increasing^{3,4} and has varied across age groups and payers. Prior studies have shown that patients aged 18–44 years and 45–64 years accounted for the greatest increase in ED visits from 1997 to 2007, and the population ED visit rate increased significantly among adults with Medicaid.⁵ In 2011, one in five people reported visiting the ED at least once during the past year, and those with Medicaid coverage were more likely to visit the ED than those without insurance or those with private insurance.⁶ More recent studies have shown that policies that aim to reduce the number of patients without insurance can shift payer mix in the ED.^{7,8}

This Healthcare Cost and Utilization Project (HCUP) Statistical Brief presents trends in hospital-affiliated ED utilization by examining the population rate of ED visits and the number of ED visits across primary payers by age groups. The Nationwide Emergency Department Sample (NEDS) from 2006 to 2015 was used to

¹ Fields WW, Asplin BR, Larkin GL, Marco CA, Johnson LA, Yeh C, et al. The Emergency Medical Treatment and Labor Act as a federal health care safety net program. *Academic Emergency Medicine*. 2001;8(11):1064–9.

² Morganti KG, Bauhoff S, Blanchard JC, Abir M, Iyer N, Smith AC, et al. The evolving role of emergency departments in the United States. *Rand Health Quarterly*. 2013;3(2):3.

³ Burt CW, McCaig LF. Trends in hospital emergency department utilization: United States, 1992–99. *Vital and Health Statistics*. 2001;13(150):1–34.

⁴ Bernstein AB, Hing E, Moss AJ, Allen KF, Siller AB, Tiggler RB. Health care in America: Trends in utilization. Hyattsville, MD: National Center for Health Statistics. 2003. www.cdc.gov/nchs/data/misc/healthcare.pdf. Accessed January 30, 2018.

⁵ Tang N, Stein J, Hsia RY, Maselli JH, Gonzales R. Trends and characteristics of US emergency department visits, 1997–2007. *JAMA*. 2010;304(6):664–70.

⁶ Centers for Disease Control and Prevention, National Center for Health Statistics. Health, United States, 2012: With Special Feature on Emergency Care. Hyattsville, MD: National Center for Health Statistics; 2013.

⁷ Pines JM, Zocchi M, Moghtaderi A, Black B, Farmer S, Hufstetler G, et al. Medicaid Expansion in 2014 did not increase emergency department use but did change insurance payer mix. *Health Affairs*. 2016;35(8):1480–6.

⁸ Sabik LM, Cunningham PJ, Tehrani AB. Changes in emergency department utilization after early Medicaid expansion in California. *Medical Care*. 2017;55(6):576–82.

Highlights

- The rate of ED visits per 100,000 population reached a 10-year high in 2015 for all age groups and increased the most for patients aged 45–64 years (20 percent, from 2006).
- The proportion of ED visits that resulted in hospital admission decreased for all age groups from 2006 to 2015.
- For patients aged under 18 years, the share of ED visits with Medicaid as the primary payer rose from 45 percent in 2006 to 62 percent in 2015.
- The share of Medicaid among ED visits for those aged 18–44 and 45–64 years rose with average annual increase of 11 and 14 percent, respectively, from 2013 to 2015, compared with 4 percent increase for both age groups from 2006 to 2013.
- The share of uninsured ED visits for those aged 18–44 and 45–64 years dropped with average annual decrease of 17 and 21 percent, respectively, from 2013 to 2015, compared with 0 and 2 percent increase, respectively, from 2006 to 2013.
- For patients under the age of 65 years, the share of ED visits covered by private insurance decreased from 2006 to 2015 and changed the most for patients under age 18 years (average annual decrease of 4 percent).
- For those aged 65 years and older, Medicare and private insurance accounted for 95 to 96 percent of all ED visits.

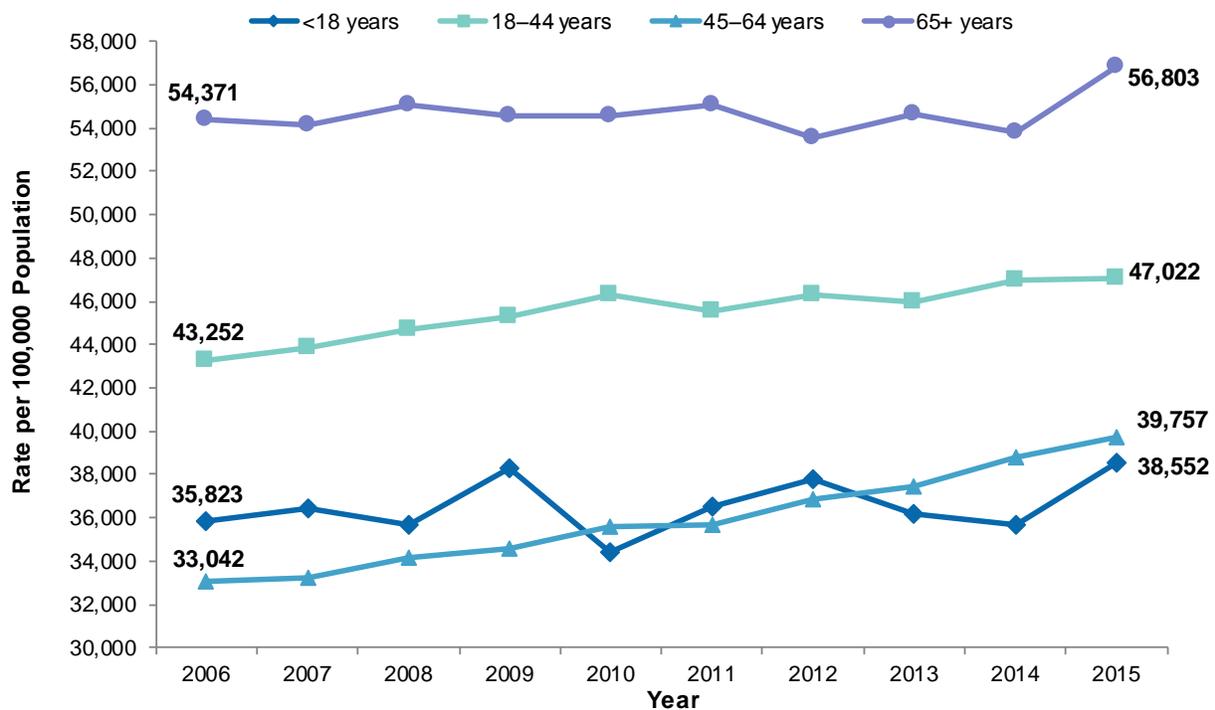
generate national estimates of ED visits and patient characteristics. Trends of hospital-affiliated ED visits are presented by age group, first overall and by expected primary payer.

Findings

National rates of ED visits overall and those resulting in hospital admission, 2006–2015

Figure 1 presents the national rate of hospital-affiliated ED visits, per 100,000 population by age group, from 2006 to 2015. Information presented here includes all types of ED visits.

Figure 1. Rate of ED visits, per 100,000 population by age group, 2006–2015



Abbreviation: ED, emergency department

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), 2006–2015

- **ED visit rates reached a 10-year high for all age groups in 2015, with patients aged 45–64 years having the largest percentage increase from 2006 to 2015.**

For patients aged 65 years and older, the ED visit rate per 100,000 population was higher than that for the other age groups each year. The rate fluctuated between 53,537 and 55,092 from 2006 to 2014, and in 2015, the rate reached 56,803.

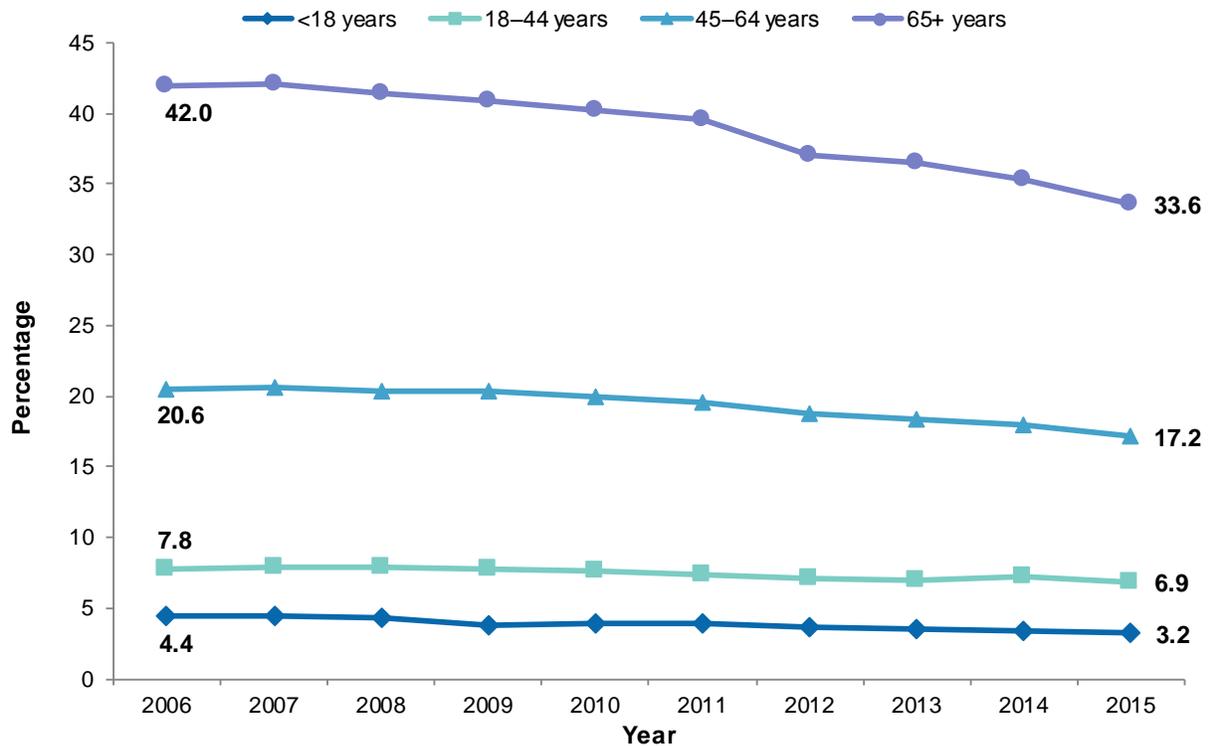
For patients aged 18–44 years, the ED visit rate per 100,000 population was the second highest of all age groups each year. It increased by 9 percent, from 43,252 in 2006 to 47,022 in 2015.

The ED visit rate per 100,000 population for patients aged 45–64 years was 33,042 in 2006, the lowest among all age groups. The ED visit rate increased over time and in 2015, it reached 39,757 per 100,000, a 10-year high and an increase of 20 percent from 2006.

For patients under 18 years of age, the rate of ED visits per 100,000 population fluctuated between approximately 34,400 and 38,600 and reached its highest level of 38,552 in 2015.

Among patients who visit EDs, some may be admitted to the same hospital. Figure 2 presents the percentage of ED visits that resulted in hospital admission, by age group from 2006 to 2015. Information presented here excludes patients who visited the ED and then were discharged without hospital admission.

Figure 2. Percentage of ED visits that resulted in hospital admission by age group, 2006–2015



Abbreviation: ED, emergency department

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), 2006–2015

■ **From 2006 to 2015, the percentage of ED visits that resulted in hospital admission dropped for all age groups.**

In 2006, 42.0 percent of ED visits resulted in hospital admission among those aged 65 years and older. By 2015, this number had dropped to 33.6 percent, a decrease of 20 percent from 2006.

Among patients aged 45–64 years, the percentage of ED visits resulting in hospital admission decreased from 20.6 in 2006 to 17.2 in 2015, for a decrease of 17 percent.

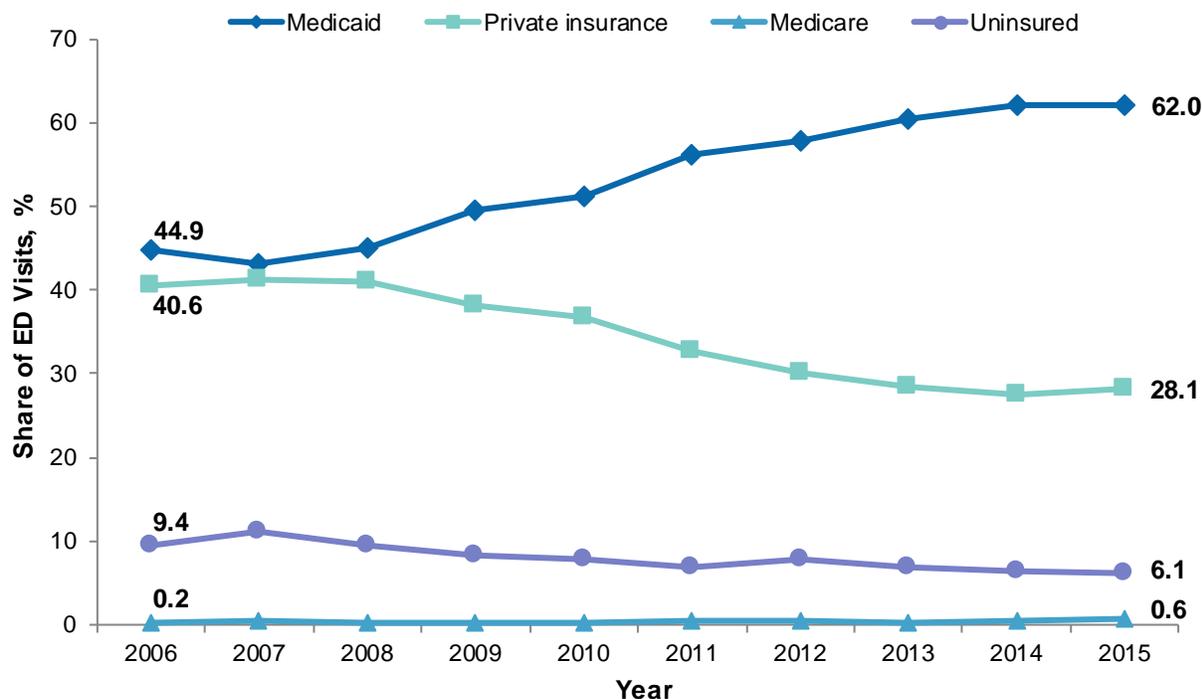
Among patients aged 18–44 years, the percentage of ED visits resulting in hospital admission decreased from 7.8 in 2006 to 6.9 in 2015, for a decrease of 12 percent.

Among patients aged under 18 years, the percentage of ED visits followed by hospital admission decreased from 4.4 in 2006 to 3.2 in 2015, for a decrease of 27 percent.

Payer trends among ED visits by age group, 2006–2015

In this section, changes in ED visits within each age group are examined. Specifically, Figures 3 to 6 present trends in primary payer for each age group from 2006 to 2015.

Figure 3. Trends in primary payer among all ED visits for patients under age 18 years, 2006–2015



Abbreviation: ED, emergency department

Note: Shares of “Missing” and “Other” payers are not presented.

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), 2006–2015

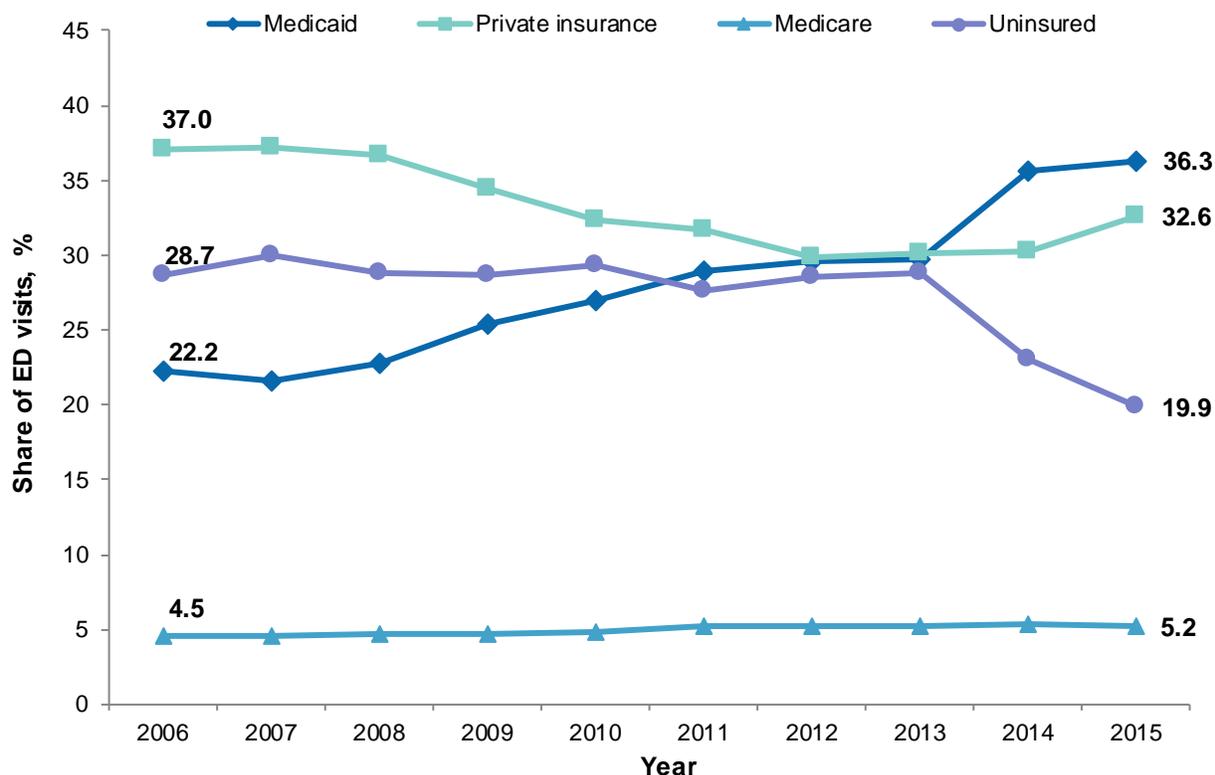
■ **For patients aged under 18 years, Medicaid was the most common payer type among all ED visits every year, and its share increased over time.**

The share of ED visits with Medicaid as the primary payer among patient aged under 18 years increased from 44.9 percent in 2006 to 62.0 percent in 2015, an average annual increase of 4 percent. Private insurance had the second largest share within this age group; its share dropped from 40.6 percent in 2006 to 27.6 percent in 2014 and increased slightly to 28.1 percent in 2015, an average annual decrease of 4 percent over the 10-year period.

The share of uninsured ED visits for patients under the age of 18 years was 9.4 percent in 2006, reached its highest point in 2007 (11.2 percent), and decreased in the following years. In 2015, the share of uninsured ED visits for this age group reached a 10-year low of 6.1 percent.

The share of Medicare ED visits was 0.6 percent or less from 2006 to 2015.

Figure 4. Trends in primary payer among all ED visits for patients aged 18–44 years, 2006–2015



Abbreviation: ED, emergency department

Note: Shares of “Missing” and “Other” payers are not presented.

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), 2006–2015

- **For patients aged 18–44 years, private insurance was the most common primary payer among all ED visits from 2006 to 2013.**

In 2006, private insurance was the most common primary payer among patients aged 18–44 years, covering 37.0 percent of the ED visits. At the same time, uninsured ED visits accounted for 28.7 percent and Medicaid accounted for 22.2 percent of ED visits in this age group. Over time, until 2013, the share of private insurance decreased, the share of Medicaid increased, and the share of uninsured visits remained the same (29 to 30 percent). By 2013, the percentage of ED visits among patients aged 18–44 years covered by the three payers was similar (28.9–30.1 percent).

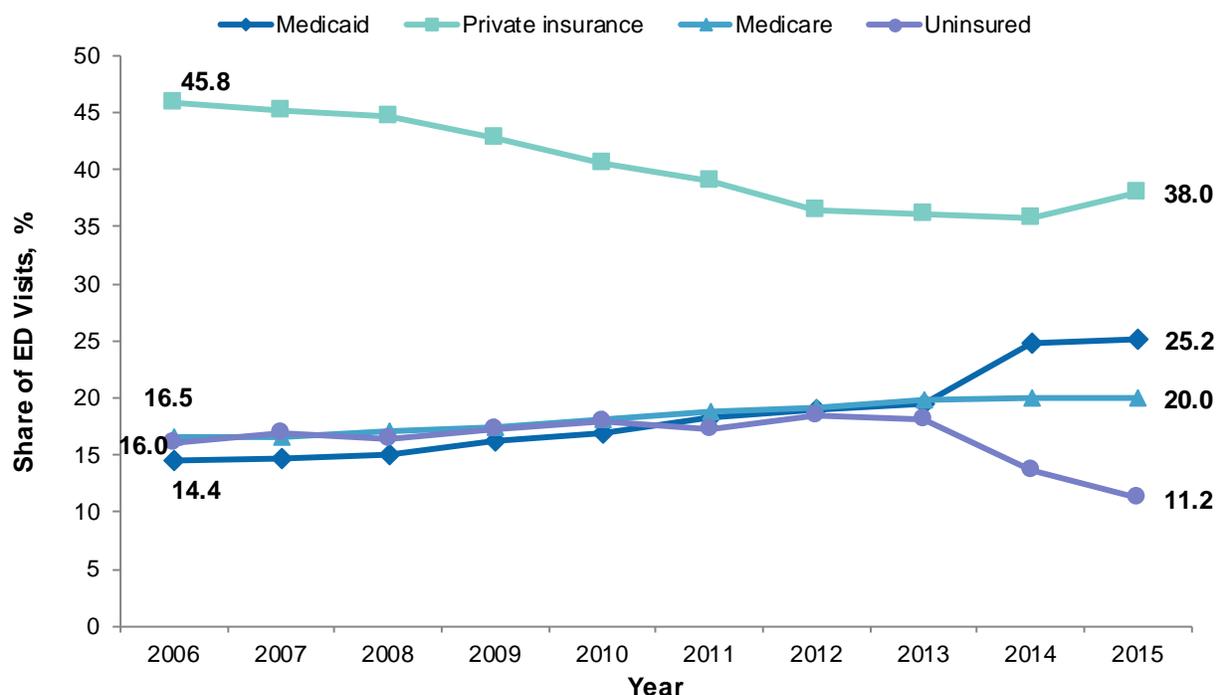
- **For patients aged 18–44 years, from 2013 to 2015 the share of ED visits with Medicaid as the primary payer increased by 22 percent and the share of uninsured ED visits decreased by 31 percent.**

From 2013 to 2015, the share of ED visits with Medicaid as the primary payer increased from 29.7 to 36.3 percent—an average annual increase of 11 percent, compared with average annual increase of 4 percent from 2006 to 2013.

The share of uninsured ED visits dropped to its lowest level of 19.9 percent in 2015, an average annual decrease of 17 percent from 2013 (it stayed relatively constant from 2006 to 2013).

The share of ED visits covered by private insurance reached 32.6 percent in 2015, with an average annual decrease of 1 percent over the 10-year period. The share of ED visits covered by Medicare rose from 4.5 percent in 2006 to 5.2 percent in 2015, an average annual increase of 2 percent.

Figure 5. Trends in primary payer among all ED visits for patients aged 45–64 years, 2006–2015



Abbreviation: ED, emergency department

Note: Shares of “Missing” and “Other” payers are not presented.

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), 2006–2015

- **For patients aged 45–64 years, private insurance was the most common primary payer among all ED visits every year; however, its share decreased from 2006 to 2014.**

In 2006, private insurance was the primary payer for 45.8 percent of ED visits among patients aged 45–64 years. This number decreased to 35.8 percent in 2014 and increased slightly to 38.0 percent in 2015—an average annual decrease of 2 percent from 2006.

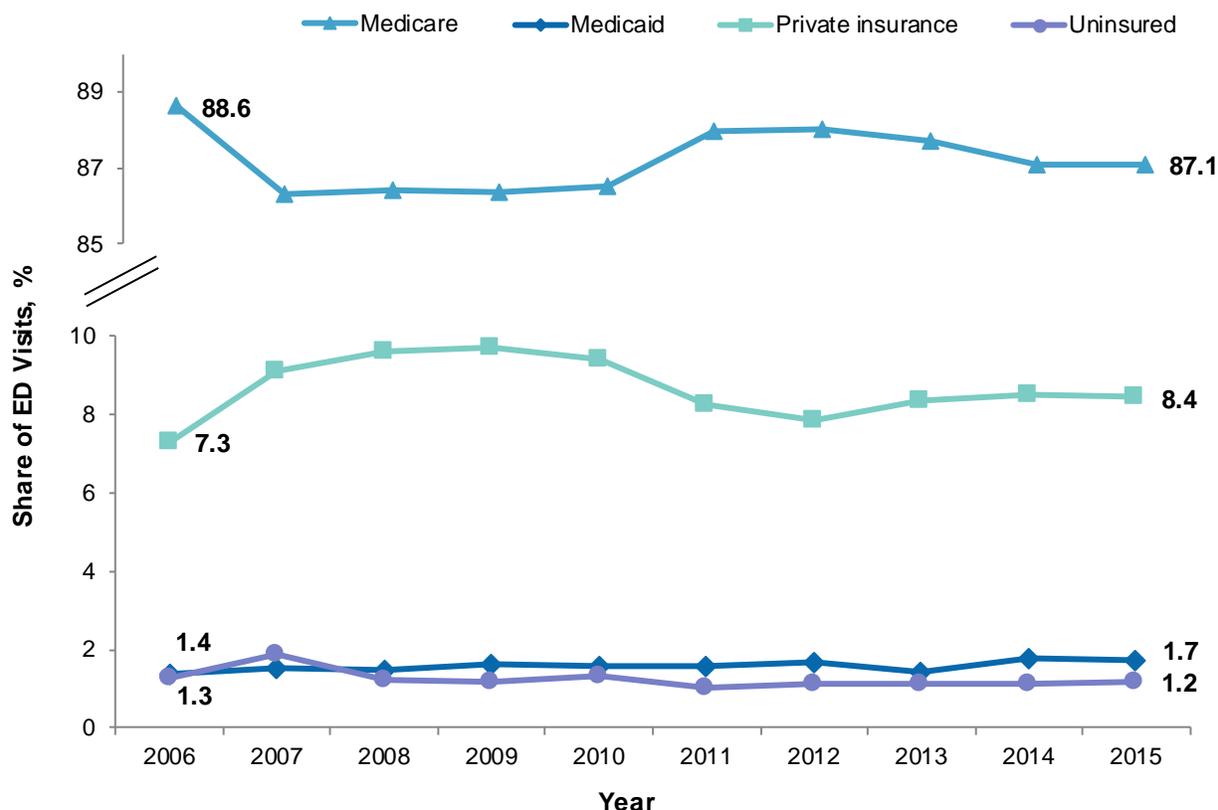
- **For patients aged 45–64 years, from 2013 to 2015 the share of ED visits with Medicaid as the primary payer increased by 29 percent and the share of uninsured ED visits decreased by 38 percent.**

In 2006, Medicaid had the lowest share among all four payers within this age group (14.4 percent). Its share increased to 19.4 percent in 2013 and further increased to 25.2 percent in 2015—an average annual increase of 14 percent from 2013 to 2015 (compared with average annual increase of 4 percent from 2006 to 2013).

The share of uninsured ED visits increased from 16.0 percent in 2006 to 18.1 percent in 2013, and then dropped to a 10-year low (11.2 percent) in 2015—an average annual decrease of 21 percent from 2013 (compared with average annual 2 percent increase from 2006 to 2013). The share of uninsured ED visits was the lowest among all payers from 2011 to 2015.

The share of ED visits with Medicare as the primary payer within this age group rose from 16.5 percent in 2006 to 20.0 percent in 2015, a 10-year average annual increase of 2 percent.

Figure 6. Trends in primary payer among all ED visits for patients aged 65 years and above, 2006–2015



Abbreviation: ED, emergency department

Notes: Shares of “Missing” and “Other” payers are not presented. Medicare, Medicaid, or private insurance cover the majority of Americans aged 65 years and older. Those who do not have any coverage may not potentially be U.S. citizens or permanent residents.

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), 2006–2015

■ **For patients aged 65 years and older, Medicare and private insurance accounted for 95 to 96 percent of all ED visits.**

The share of ED visits with primary payer of Medicare among patients aged 65 years and older fluctuated between 86.3 to 88.6 percent. The share of privately insured ED visits fluctuated between 7.3 and 9.7 percent. Together Medicare and private insurance accounted for 95 to 96 percent of all ED visits within this age group.

The share of ED visits Medicaid fluctuated between 1.4 and 1.8 percent, and the share of uninsured visits remained under 2 percent during the 10-year time period.

To summarize across age groups, for patients aged 64 years or younger, the share of all ED visits with private insurance as the expected primary payer decreased from 2006 to 2014 and increased from 2014 to 2015. The share of ED visits with primary payer of Medicaid increased for these age groups, and the share of uninsured ED visits dropped to its 10-year low in 2015. For patients aged 18–64 years, the share of ED visits with Medicare as the primary payer increased during the 10-year period.

About Statistical Briefs

HCUP Statistical Briefs provide basic descriptive statistics on a variety of topics using HCUP administrative health care 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 Healthcare Cost and Utilization Project (HCUP) 2006–2015 Nationwide Emergency Department Sample (NEDS). Supplemental sources included population denominator data for use with HCUP databases, derived from information available from the Bureau of the Census.⁹

Definitions

Types of hospitals included in the HCUP Nationwide Emergency Department Sample

The Nationwide Emergency Department Sample (NEDS) 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). The NEDS includes specialty, pediatric, public, and academic medical hospitals. Excluded are long-term care facilities such as rehabilitation, psychiatric, and alcoholism and chemical dependency hospitals. Hospitals included in the NEDS have hospital-owned 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 1 year will be counted each time as a separate encounter in the ED.

Average annual percentage change

Average annual percentage change was calculated using the following formula:

$$\text{Average annual percentage change} = \left[\left(\frac{\text{End value}}{\text{Beginning value}} \right)^{\frac{1}{\text{change in years}}} - 1 \right] \times 100$$

Payer

Payer is the expected 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 Workers' Compensation, TRICARE/CHAMPUS, CHAMPVA, Title V, and other government programs

⁹ Barrett M, Coffey R, Levit K. Population Denominator Data for Use With the HCUP Databases (Updated With 2016 Population Data) HCUP Methods Series Report # 2017-04 ONLINE. October 17, 2017. U.S. Agency for Healthcare Research and Quality. www.hcup-us.ahrq.gov/reports/methods/2017-04.pdf. Accessed November 22, 2017.

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 patients in SCHIP specifically, it is not possible to present this information separately.

For this Statistical Brief, when more than one payer is listed for an ED visit, the first-listed payer is used.

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, and private data organizations (HCUP Partners) and the Federal government to create a national information resource of encounter-level health care 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 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 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
District of Columbia 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
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 NEDS

The HCUP Nationwide Emergency Department Sample (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., patients who were treated in the ED and then released from the ED, or patients who were transferred to another hospital); the SID contain information on patients initially seen in the ED 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. Over time, the sampling frame for the NEDS has changed; thus, the number of States contributing to the NEDS varies from year to year. The NEDS is intended for national estimates only; no State-level estimates can be produced.

For More Information

For other information on ED visits in the United States, refer to the HCUP Statistical Briefs located at www.hcup-us.ahrq.gov/reports/statbriefs/sb_ed.jsp.

For additional HCUP statistics, visit:

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

For more information about HCUP, visit www.hcup-us.ahrq.gov/.

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

Agency for Healthcare Research and Quality. Overview of the Nationwide Emergency Department Sample (NEDS). Healthcare Cost and Utilization Project (HCUP). Rockville, MD: Agency for Healthcare Research and Quality. Updated December 2016. www.hcup-us.ahrq.gov/nedsoverview.jsp. Accessed January 31, 2017.

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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:

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