HEALTHCARE COST AND UTILIZATION PROJECT

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Emergency Department Visits for Adults in Community Hospitals, 2008

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Highlights

- In 2008, there were about 124.9 million visits to the ED. More than three-quarters of these visits—over 98.5 million—were for adults ages 18 years and older.
- Rates of ED visits were 26 percent higher for women than men, 24 to 60 percent higher for adults 65 years and older than for younger adults, 90 percent higher for those from the lowest income areas than for those from the highest, and 39 percent higher for those from rural areas than for those from urban areas.
- ED visits for adults were billed most frequently to private payers (33.1 percent) followed by Medicare (25.9 percent), uninsured (19.6 percent), and Medicaid (16.1 percent).
- Injuries were related to nearly one-quarter of all ED visits for adults (22.7 percent).
- Over 9 in 10 ED visits were related to acute conditions. Half of these visits also involved chronic conditions. Injuries and abdominal pain were among the most frequent acute conditions seen in the ED, while cardiac conditions and diabetes were among the most frequent chronic conditions seen in the ED.

Introduction

Between 1997 and 2007, the annual number of emergency department (ED) visits increased by 23 percent[1]. As visits to the ED rise, policymakers are increasingly concerned about the potential cost, quality, and long-term health and health care system consequences of ED overcrowding, overuse, and inappropriate use.

This Statistical Brief presents nationally representative data from the Healthcare Cost and Utilization Project (HCUP) on ED visits for adults, ages 18 years and older. The information focuses on the reasons why people visited the ED in 2008. Variations in ED visits based on demographic characteristics, discharge status, and expected payer are also discussed. All differences between estimates noted in the text are statistically significant at the 0.05 level or better.

Findings

General findings

In 2008, there were over 98.5 million ED visits for adults ages 18 and older (table 1). This represents more than three-quarters (78.8 percent) of the 124.9 million ED visits in the US. Four out of five ED visits for adults were "treat-and-release" in which the patient was released from the ED rather than being admitted to that hospital for further care. However, a substantial portion of ED visits (18.5 percent) resulted in hospital admission.

Rates of ED visits varied by demographic characteristics with rates highest among women, individuals 65 years and older, those from the lowest income areas, and rural areas (figures 1 and 2). Overall ED utilization rates were 26 percent higher for women than men (476.5 visits per 1,000 women versus 377.6 visits per 1,000 men); 24 and 60 percent higher for adults 65 years and older than those 18–44 years and 45–64 years, respectively (550.0 visits per 1,000 65+ year olds versus 444.3 per 1,000 18–44 year olds and 344.8 per 1,000 45–64 year olds); 90 percent higher for adults from the lowest income areas than those from the highest income areas (543.9 per 1,000 adults

[1] Niska R, Bhuiya F, Xu J. *National Hospital Ambulatory Medical Care Survey: 2007 Emergency Department Summary*. National Health Statistics Reports: No. 26. Hyattsville, MD: National Center for Health Statistics. 2010.

versus 286.8 per 1,000 adults, respectively); and 39 percent higher for adults from rural areas than for those from urban areas (514.8 per 1,000 adults versus 371.5 per 1,000 adults, respectively). Many of these differences were still evident when treat-and-release ED visits and ED visits resulting in admission were examined separately.

In terms of primary expected payer (table 1), about one-third of ED visits were billed to private insurance (33.1 percent) followed by Medicare (25.9 percent), uninsured (19.6 percent) and Medicaid (16.1 percent). Among treat-and-release ED visits, 35.3 percent were billed to private insurance followed by uninsured (22.3 percent), Medicare (19.8 percent) and Medicaid (16.9 percent). For ED visits resulting in hospital admission, more than half were billed to Medicare (52.9 percent), nearly a quarter to private insurance (23.7 percent), over a tenth to Medicaid (12.7 percent) and only 7.6 percent were billed as uninsured.

Most common all-listed reasons for ED visits among adults
Figure 3 shows the reasons for ED visits, organized by body system, based on all-listed diagnoses. Injuries were the most common reason for all ED visits, comprising 22.7 percent of all ED visits. Respiratory and circulatory disorders were the next most common category of conditions: 12.9 percent and 12.7 percent of all ED visits, respectively. Ill-defined signs and symptoms, digestive disorders, and nervous system disorders each comprised roughly 10 percent of all ED visits.

The proportion of visits related to each condition varied by the type of ED visit. For example, circulatory disorders were seen in only 7.5 percent of treat-and-release ED visits, while among those ED visits resulting in hospital admission, 35.6 percent were for circulatory disorders. The most common conditions for treat-and-release ED visits included injuries (24.1 percent), ill-defined signs and symptoms (11.3 percent), and respiratory conditions (11.0 percent). The most common conditions for ED visits resulting in hospital admission included circulatory disorders (35.6 percent), digestive disorders (22.1 percent), respiratory disorders (21.5 percent), genitourinary disorders (16.3 percent), injuries (16.2 percent) and mental health and substance abuse conditions (13.0 percent).

Most common specific conditions
Figure 4 shows that the majority of ED visits were for patients with acute conditions (93.3 percent—44.7 percent involved only acute conditions and 48.6 percent involved both acute and chronic conditions). Although the majority of treat-and-release ED visits and those resulting in hospital admission involved acute conditions, the distribution of visits associated with acute and chronic conditions varied by type of visit. Both acute and chronic conditions were seen in only 39.4 percent of treat-and-release ED visits, while 89.2 percent of ED visits resulting in hospital admission were related to both types of conditions. Only 6 percent of ED visits resulting in hospital admission were related solely to acute conditions. A remarkably small proportion of all ED visits—6.7 percent—were related solely to exacerbations of chronic conditions, which are potentially preventable with appropriate outpatient care.

Table 2 provides details on the most frequent reasons for ED visits. These conditions accounted for approximately 52 percent of all ED visits, 53 percent of all treat-and-release ED visits, and 82 percent of ED visits resulting in hospital admission. Essential hypertension, a chronic condition, was the top most common condition for ED visits, being related to nearly 20 million (19.8 percent) ED visits. This was followed by several other chronic conditions including coronary atherosclerosis (11.9 percent), diabetes mellitus without complications (9.3 percent), and hyperlipidemia (8.0 percent). Top 10 specific reasons for ED visits also included acute conditions such as fluid and electolyte disorders (8.8 percent), superficial injury (8.7 percent), abdominal pain (7.4 percent), and sprains and strains (7.2 percent). Dominated by acute conditions, the top 3 common conditions for treat-and-release ED visits were essential hypertension (14.9 percent), superficial injury (10.0 percent), and sprains and strains (8.7 percent). The top 3 common conditions for ED visits resulting in hospital admission included two chronic conditions—coronary atherosclerosis (42.6 percent) and essential hypertension (41.1 percent) followed by an acute condition—fluid and electrolyte disorders (35.4 percent).

Data Source

The estimates in this Statistical Brief are based upon data from the HCUP 2008 Nationwide Emergency Department Sample (NEDS). Population estimates were obtained from the US Census Bureau, Population Division, Table 2. Annual Estimates of the Resident Population by Sex and Selected Age Groups for the United States: April 1, 2000 to July 1, 2009 (NC-EST2009-02) as well as Claritas

Population Estimates, 2008. Many of the statistics can also be 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.

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 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 ED visits are included if they are from community hospitals.

Unit of analysis

The unit of analysis is the ED visit, not a person or patient. This means that a person who visits the ED multiple times in one year will be counted each time as a separate ED visit.

Treat-and-release ED visits

Treat-and-release ED visits were those ED visits in which patients are treated and released from that ED (i.e., they are not admitted to that specific hospital). While the majority of treat-and-release patients (93.7%) were discharged home, some were transferred to another acute care facility (1.7%), left against medical advice (1.7%), went to another type of long-term or intermediate care facility (nursing home or psychiatric treatment facility) (1.6%), referred to home health care (0.2%) or died (0.2%), or discharged alive but the destination is unknown (0.9%).

ED visits resulting in hospital admission

ED visits resulting in a hospital stay included those patients initially seen in the ED and then admitted to the same hospital.

Urban-rural location of patient residence

Urban-rural location is one of six categories as defined by the National Center for Health Statistics:

- Large Central Metropolitan: Central counties of metropolitan areas with a population of 1 million or greater
- Large Fringe Metropolitan: Fringe counties of counties of metropolitan areas with a population of 1 million or greater
- Medium Metropolitan: Counties in metro area of 250,000–999,999 population
- Small Metropolitan: Counties in metro areas of 50,000–249,999 population
- Micropolitan: Micropolitan counties, i.e. a non-metropolitan county with an area of 10,000 or more population
- Non-core: Non-metropolitan and non-micropolitan counties

These six categories are aggregated into four groups, including urban (large central metropolitan), suburban (large fringe metropolitan), medium and small metropolitan and rural (micropolitan and non-core areas).

Median community-level income

Median community-level income is the median household income of the patient's ZIP Code of residence. The cut-offs for the quartile designation are determined using ZIP Code demographic data obtained from Claritas. The income quartile is missing for homeless and foreign patients.

Payer

Payer is the primary expected payer for the ED visit. 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 is a Health Insurance Program for people age 65 or older, some disabled people under age 65 (social security disability insurance), and people of all ages with End-Stage Renal Disease (permanent kidney failure treated with dialysis or a transplant).
- Medicaid includes fee-for-service and managed care Medicaid patients.
- Private insurance includes Blue Cross, commercial carriers, and private HMOs and PPOs.
- Other includes Workers' 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.

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. All-listed diagnoses include the principal diagnosis plus these additional secondary conditions.

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 and procedures into clinically meaningful categories.[2] This "clinical grouper" makes it easier to quickly understand patterns of diagnoses and procedures.

Chronic Condition

A chronic condition is defined as a condition that lasts 12 months or longer and meets one or both of the following tests: (a) it places limitations on self-care, independent living, and social interactions; (b) it results in the need for ongoing intervention with medical products, services, and special equipment. The identification of chronic conditions is based on all 5-digit ICD-9-CM codes. E Codes, or external cause of injury codes, are not classified because all injuries are assumed to be acute. Additional information on the Chronic Condition Indicator (CCI) HCUP tool can be found at http://www.hcup-us.ahrq.gov/toolssoftware/chronic/chronic.jsp.

ED visits were further classified as having only chronic conditions listed, only acute conditions listed or both chronic and acute conditions listed on the record.

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.

[2] 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/toolssoftware/ccs/ccs.jsp

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
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 NEDS

The HCUP Nationwide Emergency Department Sample (NEDS) is a nationwide database of hospital-based ED visits. The NEDS is nationally representative of all community hospital-based emergency departments (i.e., short-term, non-Federal, non-rehabilitation hospital-based emergency departments). The NEDS is a 20% stratified sample of hospital-based EDs and includes records on all patients, regardless of payer. The NEDS contains information on 26 million records (unweighted) on ED visits at over 950 hospitals. The vast size of the NEDS allows the study of topics at both the national and regional levels for specific subgroups of patients. The NEDS is produced annually, beginning with the 2006 data year.

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, allowing for tables and graphs to be generated on national and regional statistics, as well as trends for community hospitals in the U.S. 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 www.hcup-us.ahrq.gov.

For additional HCUP statistics, visit HCUPnet, our interactive query system, at www.hcup.ahrq.gov.

For information on 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 NEDS, and methods to calculate estimates, please refer to the following publications:

Steiner, C., Elixhauser, A., Schnaier, J. The Healthcare Cost and Utilization Project: An Overview. *Effective Clinical Practice* 2002;5(3):143–51.

Introduction to the HCUP Nationwide Emergency Department Sample, 2008. Online. January, 2010. U.S. Agency for Healthcare Research and Quality. http://www.hcup-us.ahrq.gov/db/nation/neds/NEDS2008Introductionv3.pdf

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. http://www.hcup-us.ahrq.gov/reports/CalculatingNISVariances200106092005.pdf

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

Table 1: Overview of ED visits for adults 18 years and older in the U.S., 2008

Characteristic	All ED visits	Treat-and-release ED visits**	ED visits resulting in hospital admission
Number of ED visits	98,515,683	80,261,409	18,254,275
Percentage of all ED visits[1]	100.0%	81.5%	18.5%
Percentage of visits[2]			
Age			
18–44 years	51.1%	57.8%	21.7%
45–64 years	27.2%	26.6%	29.9%
65+ years	21.7%	15.6%	48.5%
Gender			
Female	57.1%	57.6%	54.4%
Male	42.9%	42.3%	45.5%
Median income of patient's ZIP Code			
First quartile (lowest income)	30.6%	31.3%	27.6%
Second quartile	29.1%	29.5%	27.1%
Third quartile	20.7%	20.5%	21.4%
Fourth quartile (highest income)	16.8%	16.0%	20.1%
Patient residence			
Urban	25.4%	24.6%	28.7%
Suburban	21.6%	20.8%	25.0%
Medium and small metropolitan	31.8%	32.3%	29.9%
Non-metropolitan (rural)	20.3%	21.4%	15.5%
Expected payer			
Medicare	25.9%	19.8%	52.9%
Medicaid	16.1%	16.9%	12.7%
Private insurance	33.1%	35.3%	23.7%
Other	5.2%	5.7%	3.1%
Uninsured	19.6%	22.3%	7.6%

Source: AHRQ, Center for Delivery, Organization and Markets, Healthcare Cost and Utilization Project, Nationwide Emergency Department Sample, 2008.

**Overall, with treat-and-release cases, the majority of patients (93.7%) were discharged home or to home health care (0.2%). Some were transferred to another acute care facility (1.7%), left against medical advice (1.7%)), went to another type of long-term or intermediate care facility (nursing home or psychiatric treatment facility (1.6%)) or died (0.2%).

[1]Row percentage

[2]Column percentage

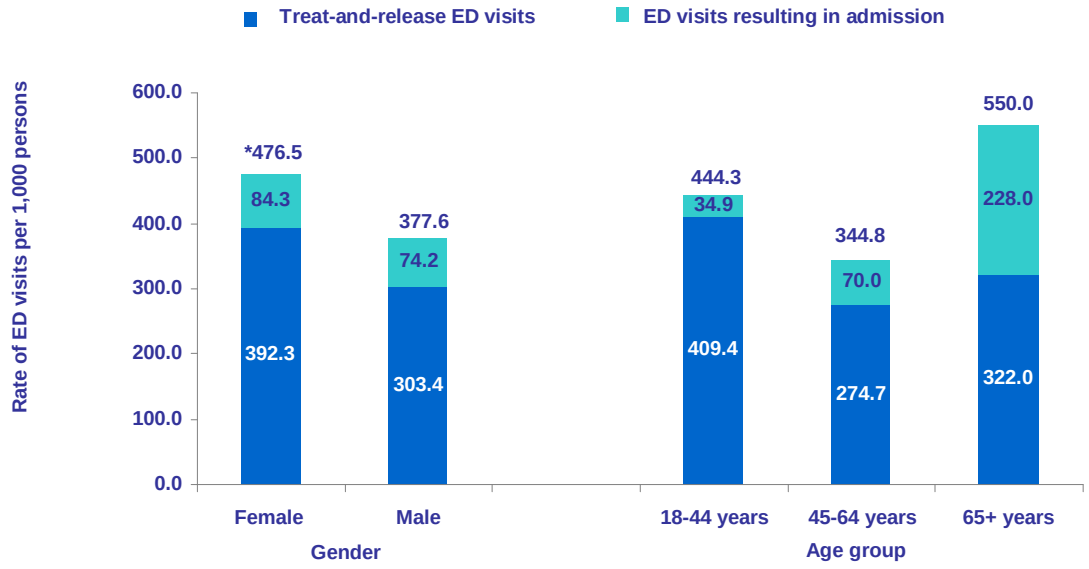
Table 2. Most frequent all-listed conditions for all ED visits for adults 18 years and older in the U.S., 2008

	All ED visits			Treat-and-release ED visits			ED visits resulting in admission		
All-Listed Condition (CCS code)	Rank	N	Percentage	Rank	N	Percentage	Rank	N	Percentage
Essential hypertension (98)	1	19,488,974	19.8%	1	11,994,165	14.9%	2	7,494,809	41.1%
Coronary atherosclerosis (101)	2	11,697,463	11.9%				1	7,784,801	42.6%
Diabetes mellitus without complications (49)	3	9,142,200	9.3%	6	5,545,055	6.9%	8	3,597,145	19.7%
Fluid and electrolyte disorders (55)	4	8,696,243	8.8%				3	6,468,723	35.4%
Superficial injury, contusion (239)	5	8,595,906	8.7%	2	8,041,275	10.0%			
Spondylosis, intervertebral disc (205)	6	8,090,946	8.2%	5	6,681,252	8.3%			
Hyperlipidemia (53)	7	7,873,956	8.0%				4	4,917,653	26.9%
Abdominal pain (251)	8	7,321,599	7.4%	4	6,891,735	8.6%			
Sprains and strains (232)	9	7,048,283	7.2%	3	6,952,372	8.7%			
Cardiac dysrhthmias (106)	10	7,012,136	7.1%				5	4,371,218	23.9%
Other lower respiratory disease (133)				7	4,594,735	5.7%			
Nonspecific chest pain (102)				8	4,547,271	5.7%			
Other connective tissue disease (e.g., limb pain, swelling in limb) (211)				9	4,529,287	5.6%			
Headache, including migraine (84)				10	4,414,780	5.5%			
Congestive heart failure (108)							6	4,037,396	22.1%
Anemia (59)							7	3,860,365	21.1%
Other nutritional, endocrine and metabolic disorders (58)							9	3,288,107	18.0%
Chronic obstructive pulmonary disease (127)							10	3,134,901	17.2%
Total ED visits with at least one top 10 condition		**50,979,032**	**51.7%**		**42,834,350**	**53.4%**		**15,013,925**	**82.2%**

Note: The number and percentage of visits are based on all-listed conditions; an ED visit may involve more than one type of condition.

Source: AHRQ, Center for Delivery, Organization and Markets, Healthcare Cost and Utilization Project, Nationwide Emergency Department Sample, 2008

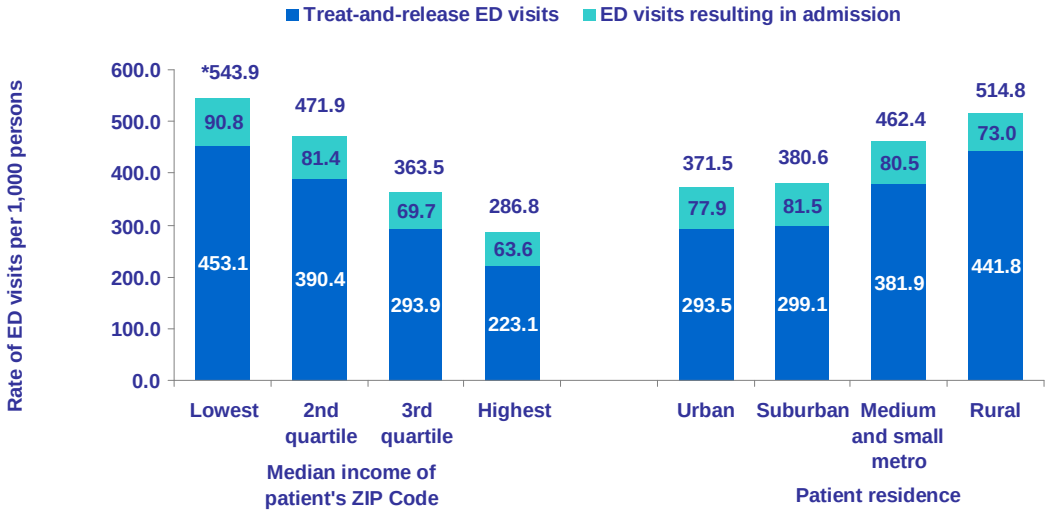
Figure 1. Rates of ED visits in the U.S., by gender and age



*Note: Overall ED visit rate

Source: AHRQ, Center for Delivery, Organization and Markets, Healthcare Cost and Utilization Project, Nationwide Emergency Department Sample, 2008

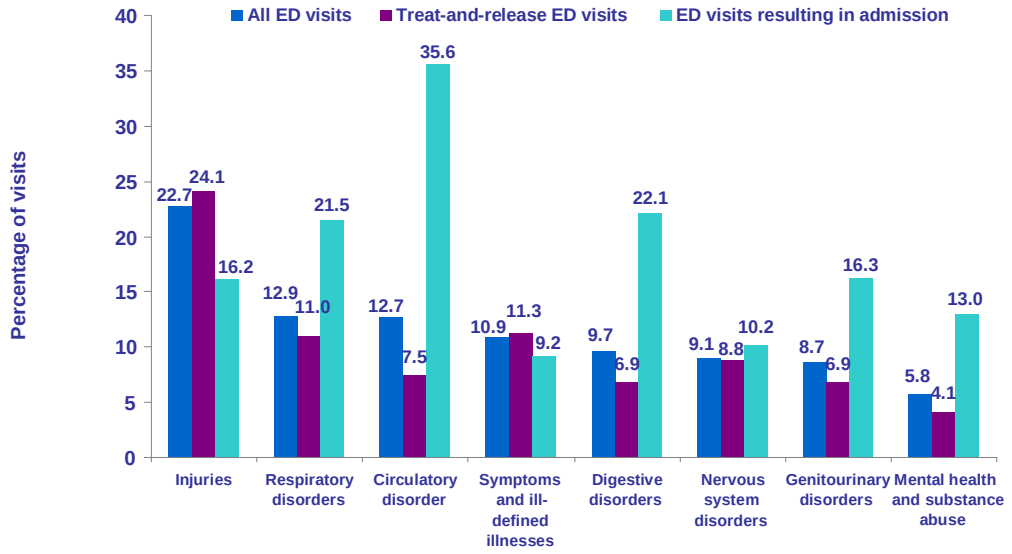
Figure 2. Rates of ED visits in the U.S., by median income of patient's ZIP Code and residence



*Note: Overall ED visit rate

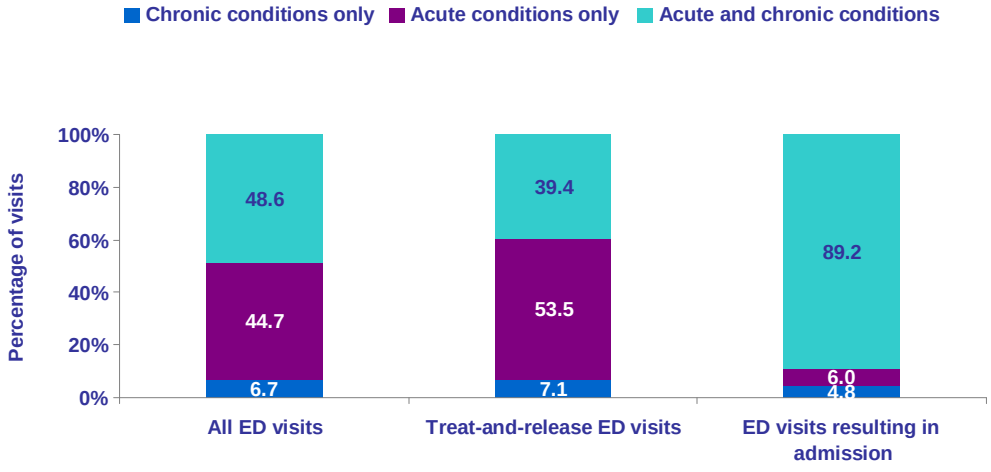
Source: AHRQ, Center for Delivery, Organization and Markets, Healthcare Cost and Utilization Project, Nationwide Emergency Department Sample, 2008

Figure 3. Reasons for ED visits in the U.S., by body system, based on all-listed diagnoses, 2008



Note: Conditions represented on the graph represent at least 10.0% of ED visits. Other conditions such as endocrine disorders, infections, neoplasms, blood disorders, skin disorders, complications of pregnancy, congenital problems and perinatal disorders are not presented. Percentage of ED visits are based on all-listed diagnoses; an ED visit may involve more than one type of condition.
Source: AHRQ, Center for Delivery, Organization and Markets, Healthcare Cost and Utilization Project, Nationwide Emergency Department Sample, 2008

Figure 4. Percentage of ED visits in the U.S. for acute and/or chronic conditions



Source: AHRQ, Center for Delivery, Organization and Markets, Healthcare Cost and Utilization Project, Nationwide Emergency Department Sample, 2008