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Childbirth-Related Hospitalizations among Adolescent Girls, 2004

Amanda Mummert, Mika Nagamine, Ph.D., and Megan Myers, M.S.W.

Introduction

Although the birth rate among adolescent girls has been steadily declining over the last decade, the United States continues to have the highest teen pregnancy and birth rates in the industrialized world.[1] In 2004, childbearing among adolescent girls in the U.S. cost taxpayers an estimated $9.1 billion.[2] Teen pregnancy and childbearing are also associated with inadequate prenatal care, preterm deliveries, and low infant birth weight.[3]

This Statistical Brief presents data from the Healthcare Cost and Utilization Project (HCUP) on the general characteristics of childbirth-related hospitalizations among adolescent girls in 2004. The brief describes the patterns of hospitalization, including delivery method and mean length of stay, for adolescent girls less than 18 years of age compared with women 18 years and older. Regional and payer differences are also examined. Unless otherwise noted, all differences between estimates noted in the text are statistically significant at the 0.05 level or better.

Findings

In 2004, there were 41.5 stays related to childbirth per 10,000 adolescent girls (or 148,400 stays nationally)—a 25 percent decrease from the 1997 rate of 55.4 childbirth-related stays per 10,000 girls under 18 (figure 1). In contrast, childbirth-related stays for women remained fairly stable from the 1997 rate of 351.3 per 10,000 women to the 2004 rate of 358.5 per 10,000 women (figure 2).

General characteristics of childbirth-related hospitalizations among adolescent girls

Table 1 describes the general characteristics of childbirth-related hospitalizations for adolescent girls compared with women. Of the four million childbirth-related hospitalizations that occurred in 2004, about 148,400 were for girls under 18 years of age. This accounted

Highlights

- In 2004, adolescent girls under 18 years of age accounted for 3.5 percent of all childbirth-related hospital stays in U.S. community hospitals, or 148,400 hospitalizations.
- Between 1997 and 2004, the rate of childbirth-related hospital stays decreased from 55.4 stays to 41.5 stays per 10,000 girls under age 18—a 25 percent reduction.
- Delivery method differed between adolescent girls and women, with 19.2 percent of girls having Cesarean sections compared with 30.5 percent of women.
- Medicaid was billed for the majority of childbirth-related hospitalizations among adolescent girls in 2004, with 73.8 percent of total charges for teen births billed to this government program. Private insurance was billed for 21.1 percent of the charges, while a small portion was billed to other insurers or uninsured patients.
- The lowest rate of childbirth-related hospitalizations for adolescent girls occurred in the Northeast, with 27.0 hospital stays per 10,000 girls under age 18 in the region. The rate was nearly twice as high in the South, with 51.6 hospitalizations per 10,000 girls under age 18.

[1] Singh, S. and Darroch, J. E. (2000). Adolescent pregnancy and childbearing: levels and trends in developed countries. *Family Planning Perspectives,* 32(1), 14–23.

[2] Hoffman, S. (2006). *By the Numbers: The Public Costs of Teen Childbearing.* National Campaign to Prevent Teen Pregnancy, Washington, D.C.

[3] Chen, X. K., Wen S. W., Fleming, N., Demissie, K., Rhoads G. G., Walker M. (2007). Teenage pregnancy and adverse birth outcomes: a large population based retrospective cohort study. *International Journal of Epidemiology* [electronic publication ahead of print].

for 3.5 percent of all childbirth-related hospital stays. These childbirth-related hospital stays for girls under 18 years of age resulted in nearly $465 million in aggregate hospital costs, which is approximately 3.4 percent of aggregate hospital costs for childbirth.

Delivery method varied between the age groups, with Cesarean sections (C-sections) comprising 19.2 percent of childbirths among adolescent girls compared with 30.5 percent of childbirths among women. The mean length of stay and costs for each mode of delivery did not vary significantly between the two age groups. As expected, for C-sections, hospital stays were just under four days for both age groups, while for vaginal deliveries the average stay was slightly more than two days for both groups. Similarly, the mean cost of childbirth-related hospitalizations was more than $3,000 per delivery for both age groups. C-sections cost more on average than vaginal deliveries for both teenagers and adults (about $5,000 versus about $2,700).

Childbirth-related hospitalizations among adolescent girls, by payer type
Figure 3 illustrates the differences in payer categories for childbirth-related hospitalizations for adolescent girls and women. Among adolescent girls, Medicaid bore the largest burden of hospital expenses, being billed for 73.8 percent of childbirth-related hospitalizations. Private insurers were billed for 21.1 percent of births, and 1.8 percent of hospital stays were financed by other insurance plans. The remaining 3.3 percent of childbirth-related hospitalizations among adolescent girls were uninsured. There were no stays billed to Medicare. In contrast, among women hospitalized for childbirth, private insurance was the most common payer, accounting for 53.7 percent of all childbirth-related hospital stays. Medicaid was billed approximately 40.9 percent, and Medicare accounted for 0.4 percent of these stays. Other insurance was billed slightly more often in this age group (2.2 percent), and fewer women (2.8 percent) were uninsured. Other payers primarily include TRICARE/CHAMPUS, Title V, and other government programs.

Table 2 details the number of hospital stays, mean length of stay, mean cost, and aggregate cost for childbirth-related hospitalizations among adolescent girls by payer type. The length of stay and cost for treatment was similar across most payer types. The mean cost of hospitalization for childbirth among teenagers covered by other payers, however, was about $500 less than costs for Medicaid-covered teenagers ($2,700 versus $3,200).

Childbirth-related hospitalization rates among adolescent girls, by region, 2004
Figures 4 and 5 illustrate the regional differences for childbirth-related hospitalization rates among adolescent girls and women in 2004. The Northeast had the lowest rate of childbirth-related hospitalizations among teenagers in 2004, with 27.0 stays per 10,000 female teens in the region. The rate in the South was nearly double, with 51.6 hospital stays per 10,000 female teens. In the Midwest and West, the childbirth-related hospitalization rates were 35.7 and 42.1, respectively, per 10,000 female teens. In contrast, among women over 18 years of age, the childbirth-related hospitalization rate was the highest in the West, with 424.4 stays per 10,000 females followed by the South at 354.6 stays. In the Midwest and Northeast, the rates were 326.2 and 328.0, respectively, per 10,000 females.

Data Source

The estimates in this Statistical Brief are based on data from the HCUP 2004 Nationwide Inpatient Sample (NIS). Historical data were drawn from the 1997–2003 NIS. Supplemental sources included data on age group population estimates from Table 2: Annual Estimates of the Population by Selected Age Groups and Sex for the United States: April 1, 2000 to July 1, 2005 (NST-EST2005-02), State Estimates by Demographic Characteristics (SC-EST2005-AGESEX_RES), and the archives from the Population Division, U.S. Census Bureau (http://www.census.gov/popest/estimates.php).

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 discharges are included if they are from community hospitals.

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.

Region
Region is one of the four regions defined by the U.S. Census Bureau:
– Northeast: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania
– 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
– West: Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, Alaska, and Hawaii

Costs and charges
Total hospital charges were converted to costs using HCUP cost-to-charge ratios based on hospital accounting reports from the Centers for Medicare and Medicaid Services (CMS).[4] Costs will tend to reflect the actual costs of production, while charges represent what the hospital billed for the case. For each hospital, a hospital-wide cost-to-charge ratio is used because detailed charges are not available across all HCUP States. Hospital charges reflect the amount the hospital charged for the entire hospital stay and does not include professional (physician) fees. For the purposes of this Statistical Brief, costs are reported to the nearest hundreds.

Payer
Up to two payers can be coded for a hospital stay in HCUP data. When this occurs, the following hierarchy is used:
– If either payer is listed as Medicaid, the payer is “Medicaid.”
– For non-Medicaid stays, if either payer is listed as Medicare, the payer is “Medicare.”
– For stays that are neither Medicaid nor Medicare, if either payer is listed as private insurance, the payer is “private insurance.”
– For stays that are not Medicaid, Medicare or private insurance, if either payer is some other third-party payer, the payer is “other,” which consists of Worker’s Compensation, TRICARE/CHAMPUS, CHAMPVA, Title V, and other government programs.
– For stays that have no third-party payer and the payer is listed as “self-pay” or “no charge,” the payer is “uninsured.”

Diagnosis-Related Groups (DRGs)
DRGs comprise a patient classification system that categorizes patients into groups that are clinically coherent and homogeneous with respect to resource use. DRGs group patients according to diagnosis, type of treatment (procedures), age, and other relevant criteria. Each hospital stay has one DRG assigned to it.

The following DRGs were used to identify childbirth-related hospitalizations and specific delivery methods:
– 370: Cesarean section w CC
– 371: Cesarean section w/o CC
– 372: Vaginal delivery w complicating diagnoses
– 373: Vaginal delivery w/o complicating diagnoses
– 374: Vaginal delivery w sterilization &/or D&C
– 375: Vaginal delivery w/o sterilization &/or D&C.

[4]HCUP Cost-to-Charge Ratio Files (CCR). Healthcare Cost and Utilization Project (HCUP). 2001–2003. U.S. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/db/state/costtocharge.jsp

About the NIS

The HCUP Nationwide Inpatient Sample (NIS) is a nationwide database of hospital inpatient stays. The NIS is nationally representative of all community hospitals (i.e., short-term, non-Federal, non-rehabilitation hospitals). The NIS is a sample of hospitals and includes all patients from each hospital, regardless of payer. It is drawn from a sampling frame that contains hospitals comprising 90 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 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.

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

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 & Human Services
California Office of Statewide Health Planning & Development
Colorado Health & Hospital Association
Connecticut Integrated Health Information (Chime, Inc.)
Florida Agency for Health Care Administration
Georgia GHA: An Association of Hospitals & Health Systems
Hawaii Health Information Corporation
Illinois Health Care Cost Containment Council and Department of Public Health
Indiana Hospital&Health Association
Iowa Hospital Association
Kansas Hospital Association
Kentucky Cabinet for Health and Family Services
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
Nebraska Hospital Association
Nevada Division of Health Care Financing and Policy, Department of Human Resources
New Hampshire Department of Health & Human Services
New Jersey Department of Health & Senior Services
New York State Department of Health
North Carolina Department of Health and Human Services
Ohio Hospital Association
Oregon Office for Oregon Health Policy and Research and Oregon Association of Hospitals and Health Systems
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 & Family Services

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

For More Information

For a detailed description of HCUP and more information on the design of the NIS 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* 5(3):143–51, 2002.

Design of the HCUP Nationwide Inpatient Sample, 2004. Online. August 8, 2006. U.S. Agency for Healthcare Research and Quality. http://www.hcup-us.ahrq.gov/db/nation/nis/reports/NIS_2004_Design_Report.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

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

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. General characteristics of childbirth-related hospitalizations* among girls under 18 years and women, 2004

	Adolescent girls	Women	
Number of hospital stays for childbirth (percentage of all childbirth stays)	148,400 (3.5%)	4,064,100 (96.4%)	**
Vaginal delivery (percentage delivered vaginally)	119,900 (80.2%)	2,823,200 (69.5%)	**
C-Section (percentage delivered by C- section)	28,500 (19.2%)	1,240,900 (30.5%)	**
Mean length of stay, days	2.6	2.6	
Vaginal delivery	2.3	2.2	
C-Section	3.8	3.7	
Mean cost of hospitalization	$3,100	$3,300	
Vaginal delivery	$2,700	$2,600	
C-Section	$5,200	$4,800	
Aggregate costs for U.S.	$464.9 million	$13.4 billion	**
Vaginal delivery	$318.0 million	$7.4 billion	**
C-Section	$146.9 million	$6.0 billion	**

*Based on diagnosis-related groups 370-375.

**Differences between teenagers and adults statistically significant at p <0.05.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2004.

Table 2. Childbirth-related hospitalizations* among girls under 18 years, by payer, 2004

Payer	Hospital stays for childbirth	Mean length of stay, days†	Mean cost	Aggregate costs
Medicaid	109,300	2.6	$3,200	$348,346,500
Private insurance	31,300	2.6	$3,000	$93,521,700
Uninsured	4,900	2.5	$3,100	$14,897,200
Other**	2,700	2.5	$2,700†	$7,392,200

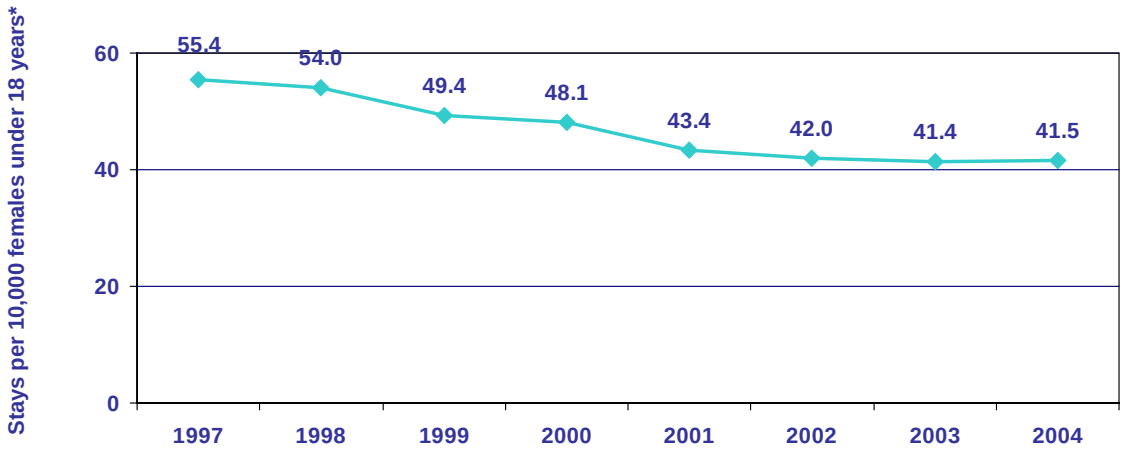
*Based on diagnosis-related groups 370-375.

**Other includes Worker's Compensation, TRICARE/CHAMPUS, CHAMPVA, Title V, and other government programs.

†Significantly different from Medicaid (p<.05). No other differences are statistically significant.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2004.

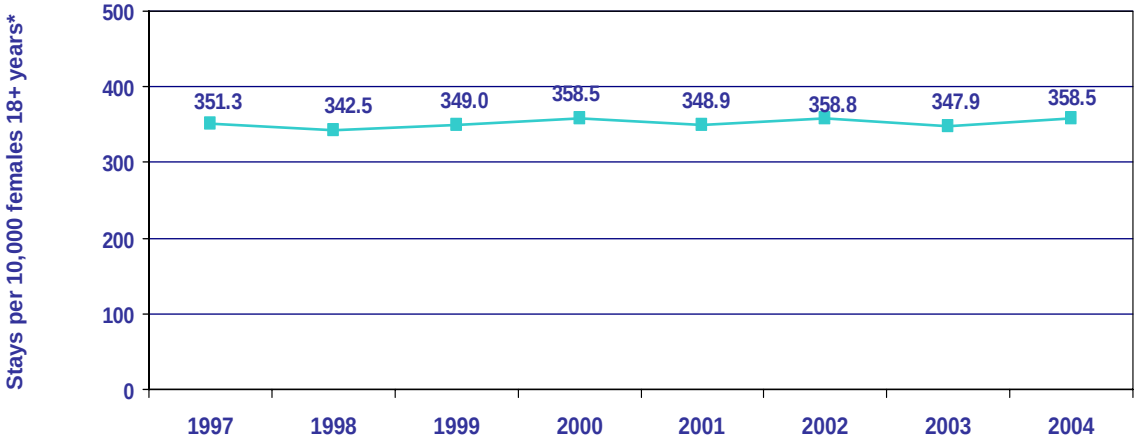
Figure 1. Childbirth-related hospitalizations among girls under 18 years of age, 1997–2004



*The denominator population is based on the total number of female persons under 18 years. U.S. Census Bureau, Population Division, Census 1997–2004.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 1997–2004.

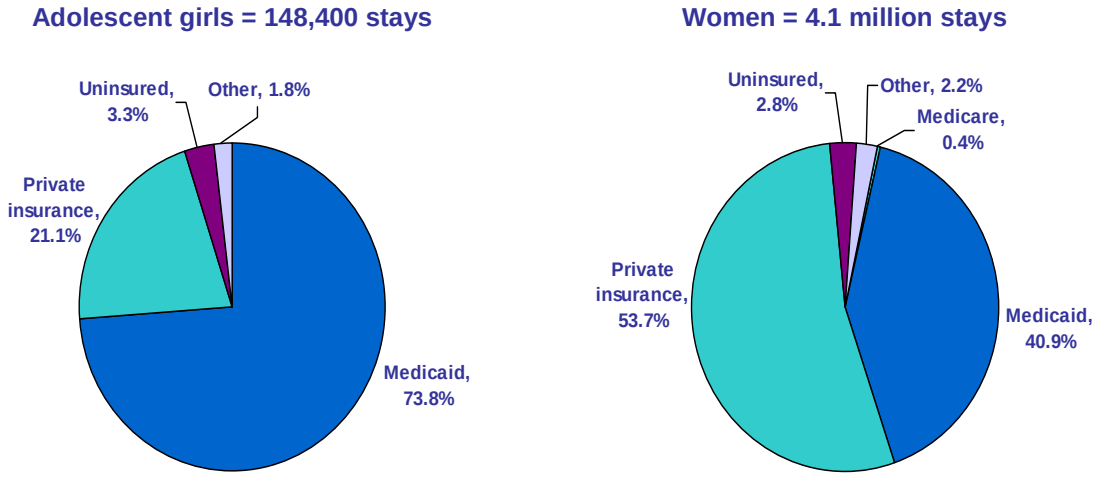
Figure 2. Childbirth-related hospitalizations among women 18+ years of age, 1997-2004



*The denominator population is based on the total number of female persons 18 years and older. U.S. Census Bureau, Population Division, Census 1997–2004.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 1997–2004.

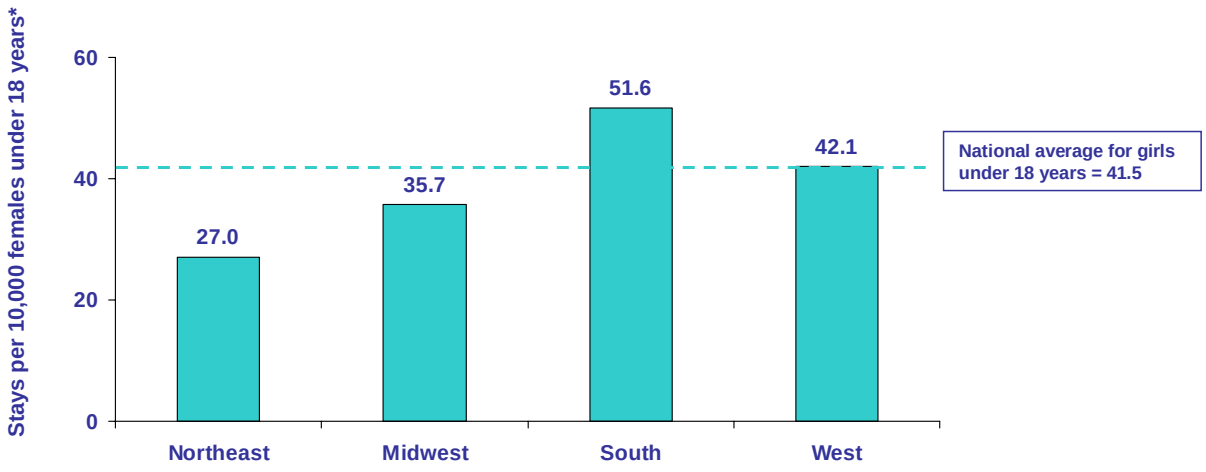
Figure 3. Childbirth-related hospitalizations among girls under 18 years and women 18+ years, by payer, 2004



Note: Other includes TRICARE/CHAMPUS, Title V, and other government programs.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2004.

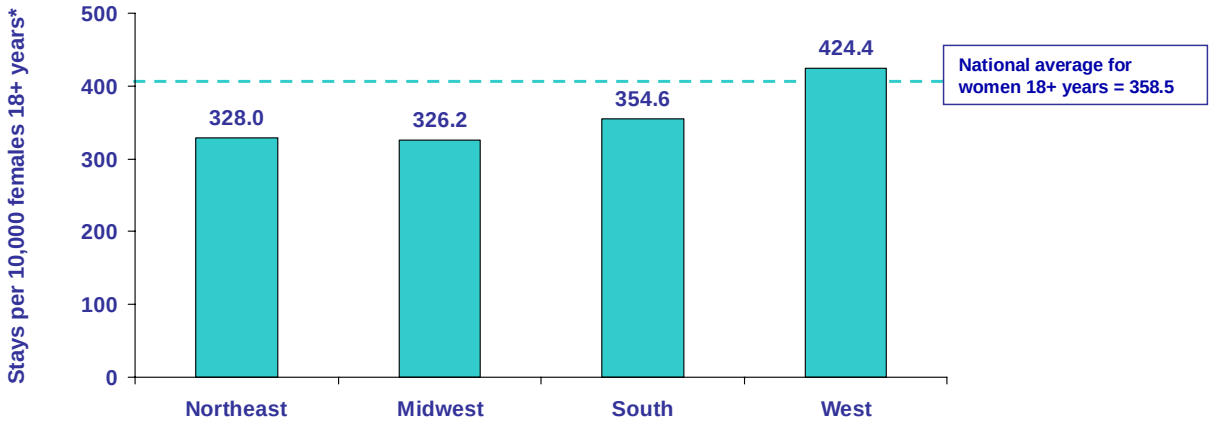
Figure 4. Childbirth-related hospitalizations among girls under 18 years, by region, 2004



*The denominator population is based on the total number of female persons under 18 years. U.S. Census Bureau, Population Division, Census 1997–2004.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2004.

Figure 5. Childbirth-related hospitalizations among women 18+ years, by region, 2004



*The denominator population is based on the total number of female persons 18 years and older. U.S. Census Bureau, Population Division, Census 1997–2004.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2004.