

# The Hospital Costs of Firearm Assaults



Embry M. Howell  
Peter Abraham

September 2013



# The Hospital Costs of Firearm Assaults

Embry M. Howell  
Peter Abraham

September 2013



Copyright © September 2013. The Urban Institute. All rights reserved. Except for short quotes, no part of this report may be reproduced or used in any form or by any means, electronic or mechanical, including photocopying, recording, or by information storage or retrieval system, without written permission from the Urban Institute.

The authors thank the James A. Baker III at the Institute for Public Policy of Rice University for supporting Peter Abraham's internship at the Urban Institute. The authors appreciate the data and editorial support of other Urban Institute staff.

The Urban Institute is a nonprofit, nonpartisan policy research and educational organization that examines the social, economic, and governance problems facing the nation. The views expressed are those of the authors and should not be attributed to the Urban Institute, its trustees, or its funders.

## Contents

Methods	1
Use of Hospital Services	1
Hospital Costs	4
Conclusions and Future Research	8
Notes	9
References	9
About the Authors	10

## The Hospital Costs of Firearm Assaults

In the wake of recent high profile incidents of gun violence, there is renewed national attention on the prevalence and cost of firearm assaults in the United States. To make informed policy decisions, lawmakers are calling for current and accurate data on the costs of these assaults. This brief examines the costs of emergency department (ED) visits and hospital admissions for firearm assault victims in the United States in 2010. These costs are further examined according to patient gender, age, median household income, and insurance status.

### Methods

The 2010 Nationwide Emergency Department Sample (NEDS)<sup>1</sup> and the 2010 Nationwide Inpatient Sample (NIS)<sup>2</sup> are used to identify firearm assault injuries. These data contain information on the diagnosis precipitating a hospital emergency department visit or stay as well as the cause of the injury (for example, firearm assault).<sup>3</sup> This brief measures the rate of ED visits and hospitalizations per 100,000 persons and the cost of ED visits and hospitalizations. The NEDS and NIS contain the charges for care in the ED and inpatient hospital stays, and are weighted to produce national estimates. Hospital costs are estimated using the hospital cost-to-charge ratio provided in the NIS. Charges are missing for 18 percent of ED visits; those visits are excluded when calculating average visit costs and assumed at zero when calculating total costs. Thus, total ED costs are underestimated to an unknown degree.

Data from the 2010 US Census, the 2010 American Community Survey,<sup>4</sup> and the University of Michigan's 2006–2010 Median Household Income Chart<sup>5</sup> are used to create the population denominators needed for constructing utilization rates (Howden and Meyer 2011).

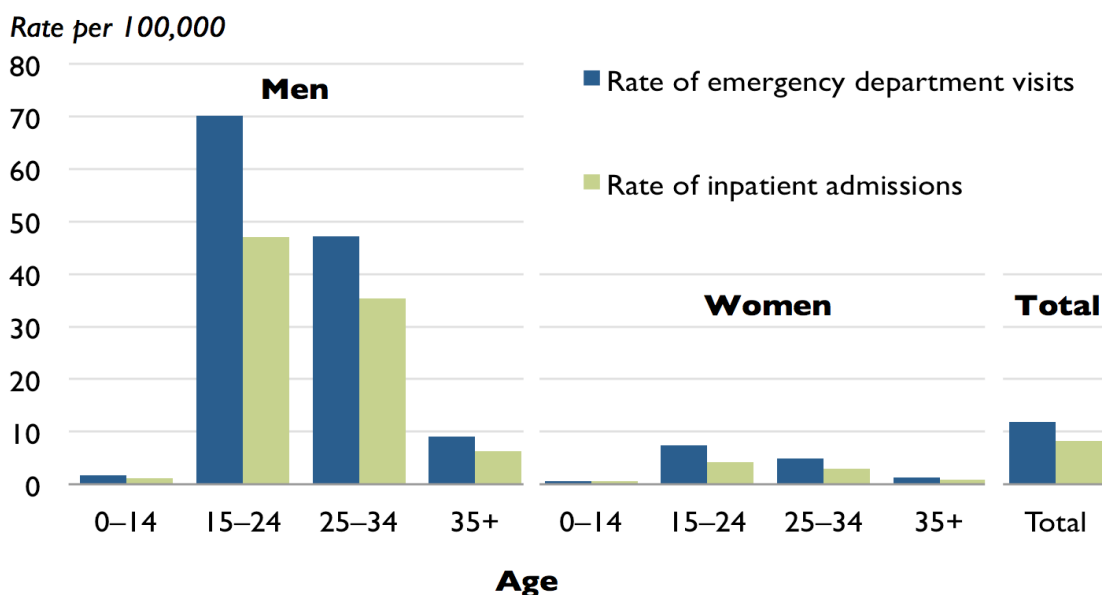
### Use of Hospital Services

In 2010, there were 36,341 ED visits (11.8 visits per 100,000 people) and 25,024 hospitalizations (8.1 visits per 100,000 people) due to firearm assault injuries. These rates vary according to the person's age, income, insurance status, and geographic residence (figures 1–4).

- Young males (age 15–24) are the most common firearm assault victims, visiting the ED almost seven times more than the national average (figure 1).

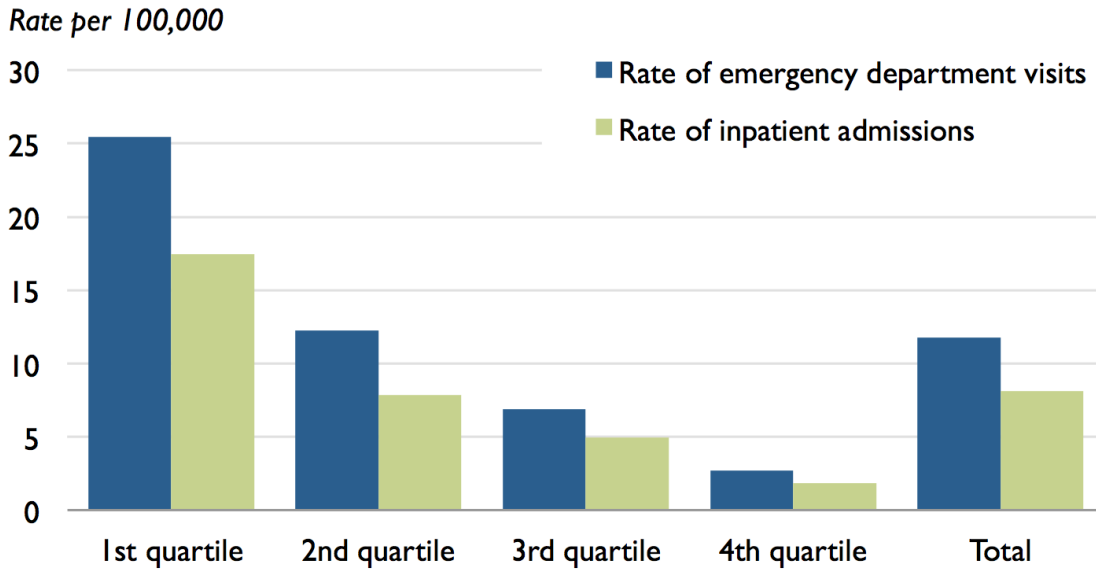
- People who reside in the lowest income zip codes are about twice as likely to have an ED visit or be admitted to the hospital for firearm assault injuries (figure 2).
- Victims of firearm assault are disproportionately more likely to be uninsured. ED visits for these uninsured victims are nearly three times the national average. Their hospital admission rate is more than two times the national average (figure 3).
- As figure 3 illustrates, uninsured patients are less likely to be admitted to the hospital than insured patients. This discrepancy could be due to a hospital’s reluctance to admit a patient without insurance coverage, a higher ED mortality rate for uninsured firearm assault victims, an effort by the hospital to obtain insurance for a patient once he or she is admitted, or differences in the severity of injury between the insured and uninsured.
- ED usage rates for firearm assault injuries also vary by US census region (figure 4). These regional differences correspond to higher reported household gun ownership in the South (35 percent) and Midwest (38 percent) compared with the West (27 percent) and Northeast (22 percent) according to the 2010 General Social Survey.<sup>6</sup>

**Figure 1. Hospital Use Rates for Firearm Assault Injuries by Age and Sex, 2010**



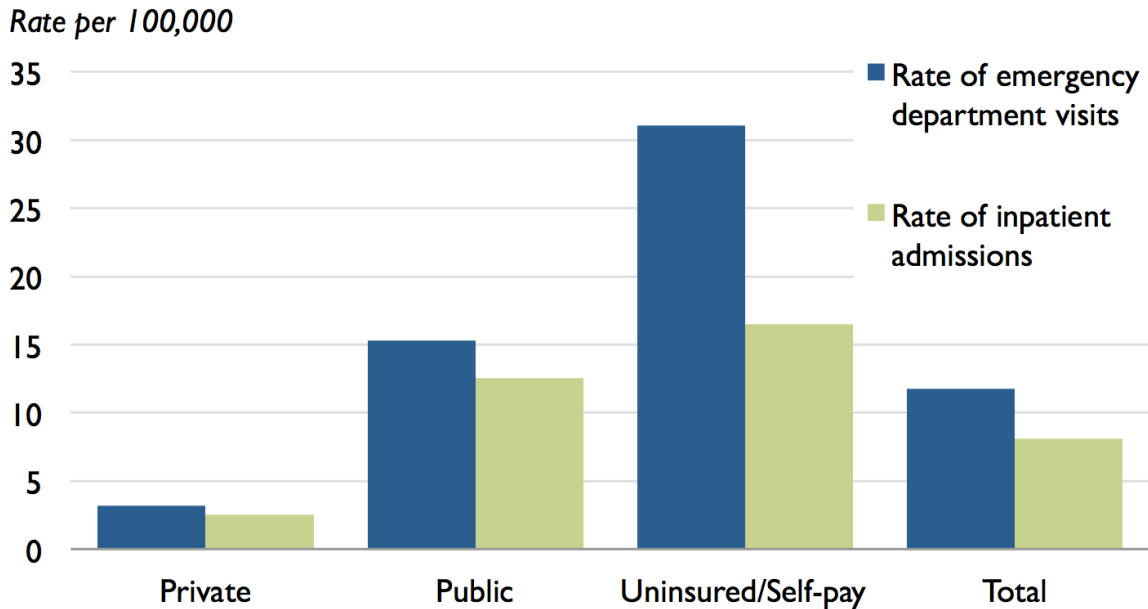
Sources: NIS; NEDS; and 2010 US Census.

**Figure 2. Hospital Use Rates for Firearm Assault Injuries by Zip Code Median Household Income, 2010**



Sources: NIS; NEDS; and University of Michigan, Population Studies Center, Institute for Social Research.

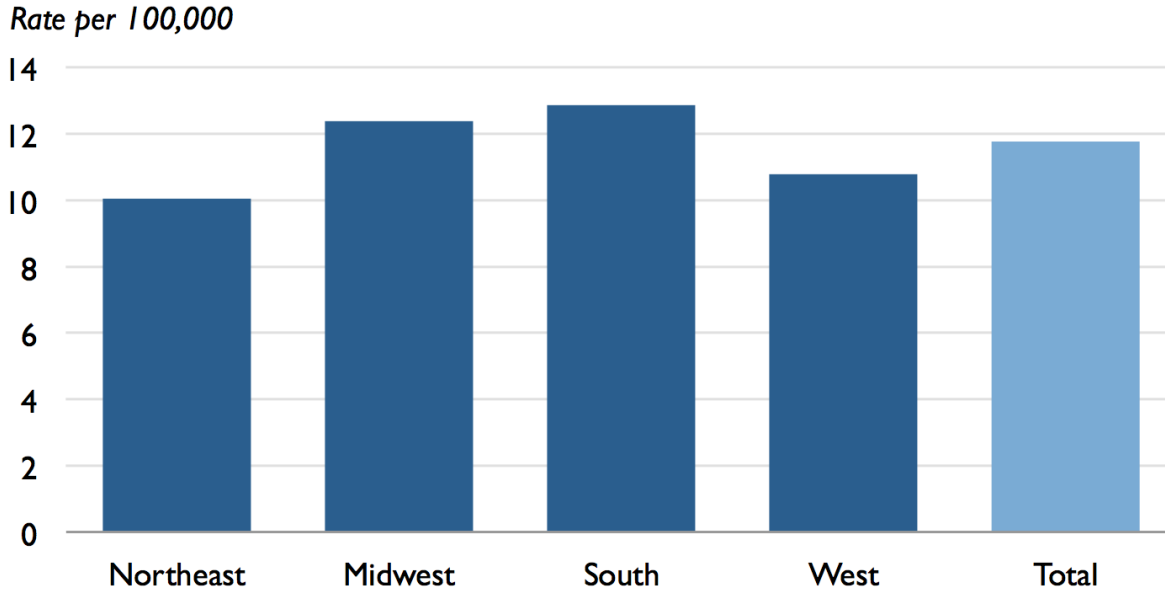
**Figure 3. Hospital Use Rates for Firearm Assault Injuries by Insurance Status, 2010**



Sources: NIS; NEDS; and American Community Survey.



**Figure 4. Emergency Department Use for Firearm Assault Injuries by Region, 2010**



Sources: NIS; NEDS; and 2010 US Census.

## Hospital Costs

The total firearm assault injury cost for US hospitals in 2010 was just under \$630 million (table 1). This is more than the total cost of the Medicaid program in Wyoming in FY 2011 (\$534 million), according to the Henry J. Kaiser Family Foundation.<sup>7</sup> The cost of a stay for a firearm assault injury was nearly \$14,000 more than the average inpatient stay in 2010 (Pfundtner, Wier, and Steiner 2013).

**Table 1. Estimated Costs for Firearm Assault Injuries, 2010**

	Cost
Average ED visit	\$1,126
Average inpatient visit	\$23,497
Total: ED	\$40,929,939
Total: inpatient	\$587,998,283
Overall total	\$628,928,222

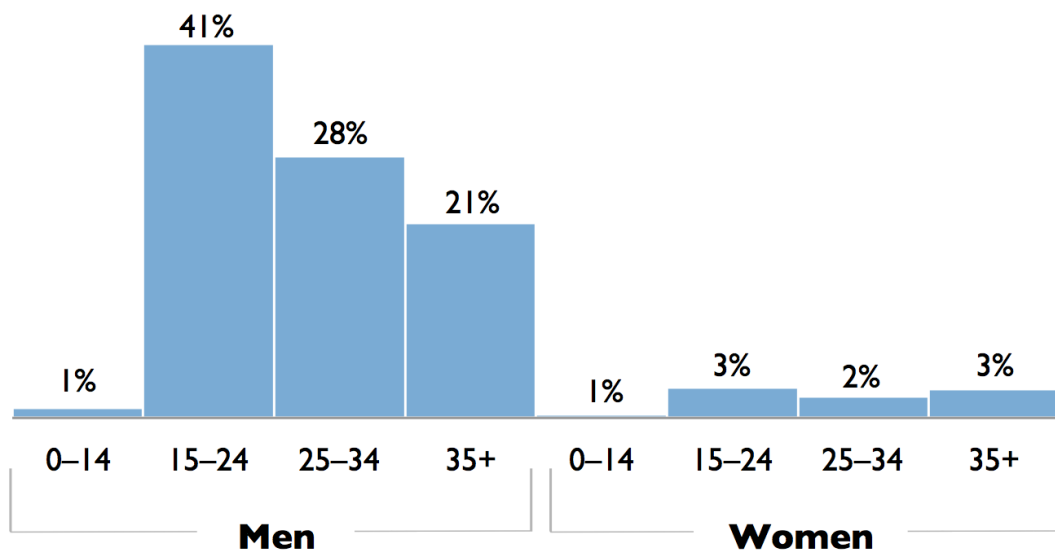
Sources: NIS and NEDS.

Figures 5–7 show how the cost of firearm assault injuries is distributed by age, gender, income quartile, and insurance status. Males account for 91 percent of total firearm assault injury costs. The large majority of costs occur for young males ages 15–24 and 25–34, as shown in figure 5.

Just over half of all costs for firearm assault injuries are incurred by patients living in zip codes that fall in the lowest income quartile, as shown in figure 6. Those living in the wealthiest zip code areas (the highest income quartile) account for only 7 percent of the total firearm assault injury costs.

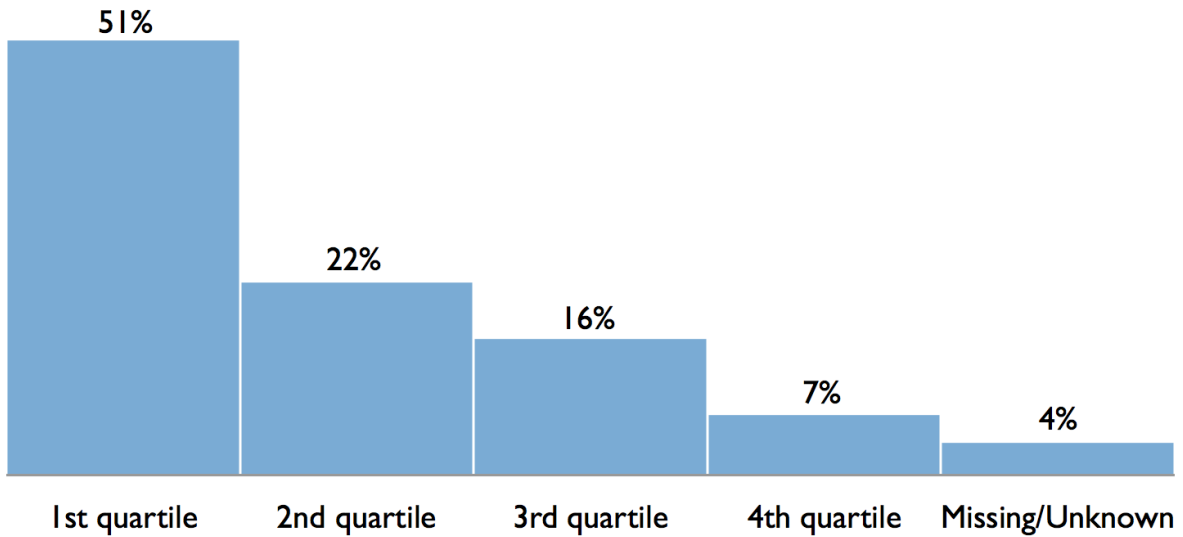
Figure 7 shows total costs for firearm assault injuries by insurance status. Just over half (52 percent) of costs are for those with public insurance (primarily Medicaid), followed by 28 percent for the uninsured. The costs for the uninsured are borne either by taxpayers through uncompensated care, by cost-shifting to other payers, or by the uninsured patients themselves.

**Figure 5. Share of Total Firearm Assault Injury Cost by Age and Sex, 2010**



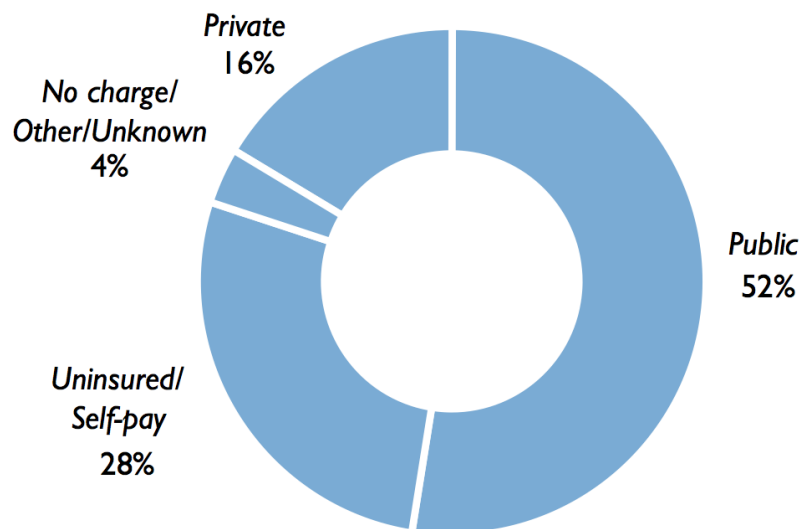
Sources: NIS and NEDS.

**Figure 6. Share of Total Firearm Assault Injury Cost by Zip Code Median Household Income, 2010**



Sources: NIS and NEDS.

**Figure 7. Share of Total Firearm Assault Injury Cost by Insurance Status, 2010**

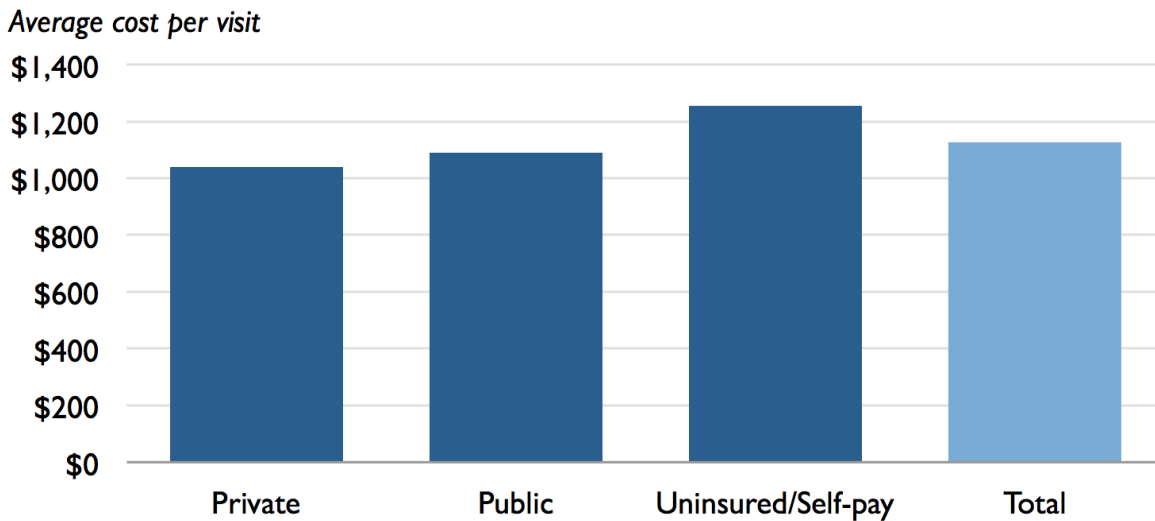


Sources: NIS and NEDS.

Figure 8 compares the average cost of an ED visit for patients by their insurance status. Visits for the uninsured are the most expensive on average, suggesting more intensive care in the ED for the uninsured. The differences in ED costs are slight for privately insured patients versus publicly insured.

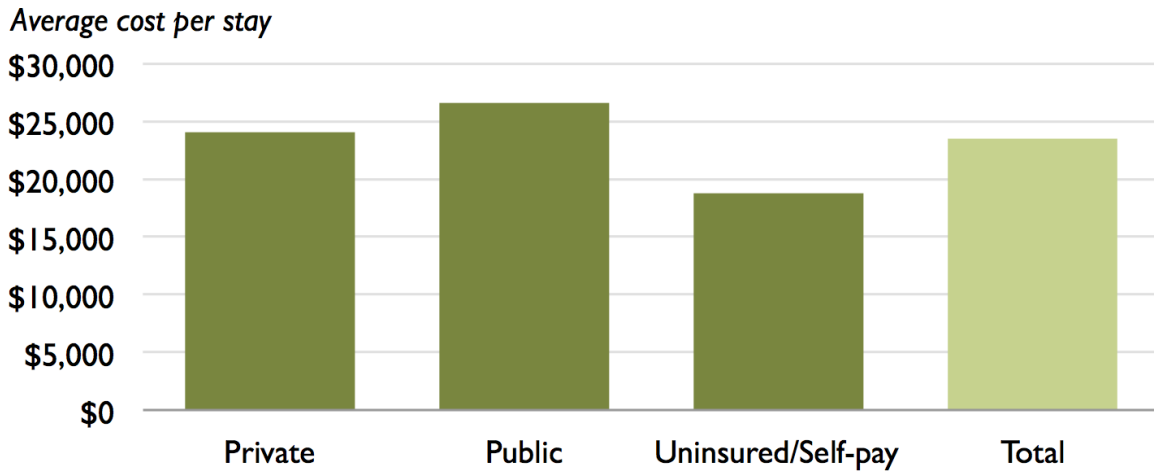
This pattern does not hold for inpatient costs, as shown in figure 9. The average inpatient cost for an uninsured patient is substantially less than the cost for a publicly insured patient or privately insured patient. This suggests that those who are uninsured are not receiving as costly a level of treatment as insured patients, or are not staying as long in the hospital. It is also possible that hospitals make special efforts to ensure that the patients who need expensive treatments are insured.

**Figure 8. Average Firearm Assault Injury  
Emergency Department Cost by Insurance  
Type, 2010**



Source: NEDS.

**Figure 9. Average Firearm Assault Injury Inpatient Cost by Insurance Type, 2010**



Sources: NIS.

## Conclusions and Future Research

The cost of the use of hospitals for victims of firearm assaults in the United States is high. These costs are concentrated among young males and residents of low-income areas. Since a majority of costs are for publicly insured or the uninsured, most costs are borne by US taxpayers. While not definitive, the findings also highlight patterns that call for further research.

A higher rate of household gun ownership correlates with a higher rate of visits to the ED for firearm assault, at the regional level. This relationship should be studied further to determine whether a similar pattern holds at the state and local levels. The correlation may be related to specific state and local gun ownership policies or to socio-demographic differences.

Uninsured victims of firearm assaults appear to have different treatment when they arrive at the ED. Their ED visits are the most expensive, they are admitted for inpatient care less often, and their treatment, once admitted, appears to be less intensive. Again, while not definitive, the initial costs could be due in part to the Emergency Medical Treatment and Active Labor Act, which requires hospitals to treat individuals in the ED who have life-threatening conditions, regardless of insurance status. If doctors are able to stabilize a patient in the ED, they are not required to admit the individual for inpatient care. The numbers indicate that some hospitals may be making treatment decisions based on the insurance status of the patient rather than on the patient's condition.

With implementation of the Affordable Care Act, many of the low-income uninsured victims of firearm assaults, especially young males, will become eligible for Medicaid or other forms of insurance. As the nation turns to efforts to control the cost of health care through prevention strategies, the prevention of firearm assaults should receive increased attention as a high public health priority.

## Notes

1. Healthcare Cost Utilization Project (HCUP) NEDS databases, accessed July 2013, <http://www.hcup-us.ahrq.gov/nedsoverview.jsp>.
2. HCUP NIS databases, accessed July 2013, <http://www.hcup-us.ahrq.gov/nisoverview.jsp>.
3. Benchmarking to the Center for Disease Control and Prevention (CDC) Web-based Injury Statistics Query and Reporting System (WISQARS) dataset suggests that coding of firearm assaults is incomplete for ED visits, leading to underreporting of such events in the NEDS. According to CDC WISQARS, there were 53,738 firearm assault nonfatal injury cases in 2010 and 25,529 hospitalizations due to firearm assault nonfatal injuries (accessed July 2013, <http://www.cdc.gov/injury/wisqars/>).
4. American Community Survey, US Department of Commerce, accessed September 2013, <http://www.census.gov/acs/www/>.
5. “Zip Code Characteristics: Mean and Median Household Income,” University of Michigan, Population Studies Center, Institute for Social Research, accessed August 19, 2013, <http://www.psc.isr.umich.edu/dis/census/Features/tract2zip/index.html>.
6. General Social Survey, accessed August 16, 2013, <http://www3.norc.umd.edu/GSS+Website>.
7. Total Medicaid Spending FY 2010, accessed August 19, 2013, <http://kff.org/medicaid/state-indicator/total-medicaid-spending-fy2010/>.

## References

- Howden, L. M., and J. A Meyer. 2011. “Age and Sex Composition: 2010.” *2010 Census Briefs* no. C2010BR-03, United States Census Bureau, <http://www.census.gov/prod/cen2010/briefs/c2010br-03.pdf>.
- Pfuntner, Anne, Lauren M. Wier, and Claudia Steiner. 2013. “Costs for Hospital Stays in the United States, 2010.” Statistical Brief no. 146, Agency for Healthcare Research and Quality.

## About the Authors

**Embry M. Howell** is a senior fellow with the Urban Institute's Health Policy Center. Dr. Howell's research interests include maternal and child health policy, Medicaid, the health care safety net, and the role of community-based nonprofits.

**Peter Abraham** is a senior at Rice University, where he is preparing for medical school. At the time this brief was prepared, he was an intern with the Health Policy Center.



**URBAN  
INSTITUTE**

2100 M Street NW  
Washington, DC 20037

Phone: 202.833.7200  
Fax: 202.467.5775  
[www.urban.org](http://www.urban.org)