

# The costs of adolescent firearm injuries

Catherine Gallagher PhD, Ajima Olaghere MA ABD, Joel Censer BA, Yang Xu MS



THE COCHRANE COLLABORATION  
COLLEGE FOR POLICY  
AT GEORGE MASON UNIVERSITY

We examine the high costs and the relative stability of firearm injuries and deaths for 13-19 year-olds. In 2005, US hospitals charged \$108.4 million to care for about 10,000 victims of firearm injuries. This is \$38 million more than the total budget for the Office of Juvenile Justice and Delinquency Prevention. The federal investment is three times less than that of our hospital systems.

Also notable is an unexpected stability in firearm injuries and deaths, contrary to current crime declines. All have implications for our investment in prevention. Data derived from CDC WISQARS among others.

Figure 1: Number of firearm injuries per year, 13-19 year olds, 2001-2010 95% CI

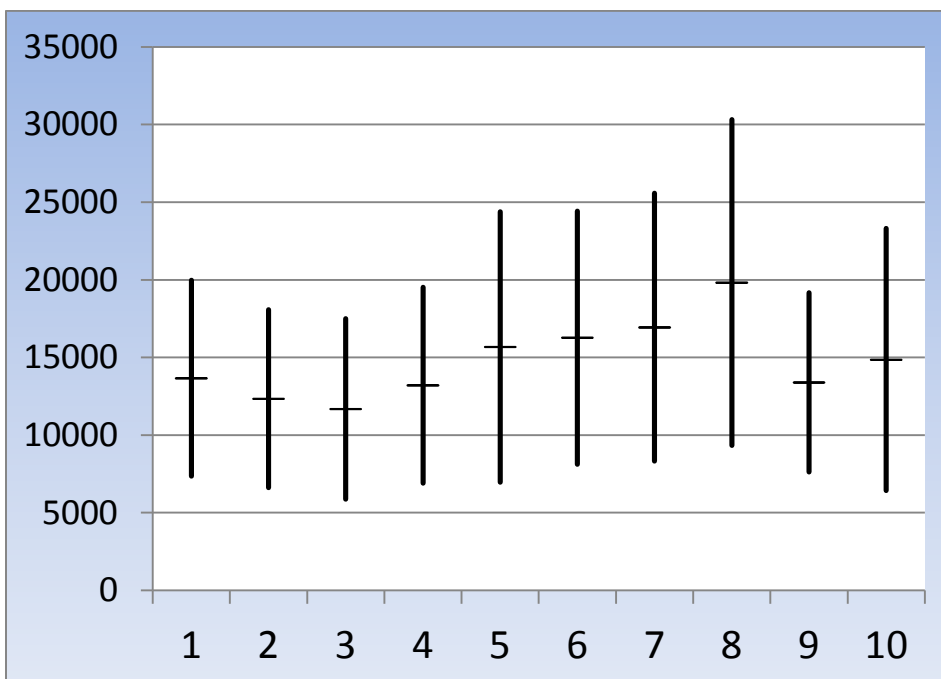


Figure 2: Rate of firearm injury hospital dispositions, 13-19 year olds, 2001-2010

	Treated and released	Transferred	Transferred/hospitalized	Hospitalized	Observed/unknown	Died
2001	26	3.47	21.33	17.86	0.41	9.48
2002	21.96	2.53	20.51	17.98	0.16	9.23
2003	20.49	2.34	19.05	16.71	0.22	9.1
2004	21.35	2.23	22.82	20.6	0.07	9.1
2005	25.65	1.08	26.12	25.04	0.23	9.5
2006	27.67	3.33	24.43	21.1	1.46	10.1
2007	26.46	3.99	27.85	23.85	1.2	9.5
2008	32.03	2.81	31.05	28.24	1.69	
2009	22.31	2.49	20.51	18.02	1.03	
2010	26.36	2.16	21.51	19.34	1.17	

## Medical care numbers

Costs of hospital-based medical care for **13-19 year olds** in the United States:

### Non-fatal firearm injuries

**\$92 million** for medical care  
7,784 young people hospitalized  
Average cost per injury **\$11,763**

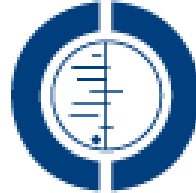
**\$77 million** of these costs were for violence-related firearm injuries

### Fatal firearm injuries

**\$16.4 million** for medical care  
2,818 young people died  
Average cost per death **\$5,871**

## The rates of firearm deaths and injuries

Year	death rate	injury rate
1999	11.21	
2000	9.98	
2001	9.48	47.75
2002	9.23	42.63
2003	9.1	39.75
2004	9.08	44.24
2005	9.5	51.99
2006	10.07	53.56
2007	9.52	55.5
2008		64.78
2009		43.85
2010		49.03



THE COCHRANE COLLABORATION  
COLLEGE FOR POLICY  
AT GEORGE MASON UNIVERSITY

# The costs of adolescent firearm injuries

Catherine Gallagher PhD, Ajima Olaghere MA ABD, Joel Censer BA, Yang Xu MS  
The Cochrane Collaboration College for Policy at George Mason University

# Overview

## Focus

- 13-19 year-olds (30 million on average year)
- Fatal and non-fatal firearm injuries
- Nationally representative data sources:
  - Complete accounting of deaths (vital records)
  - Weighted large scale surveillance systems (injuries)



## Organization

Part I: Numbers and trends of firearm injuries and deaths

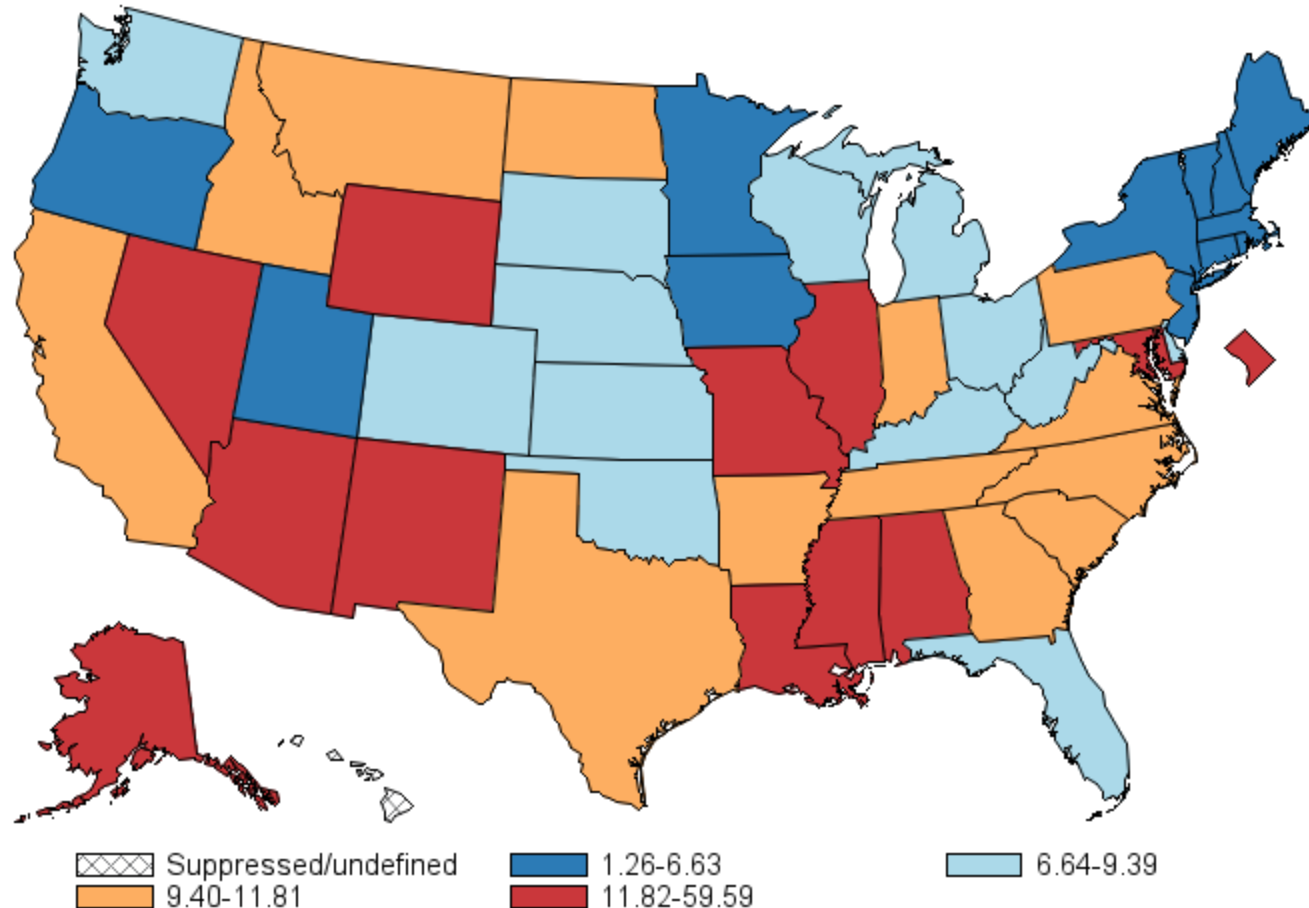
Part II: Medical care and related costs

Part III: Reference points on spending



# 2000-2006, United States Death Rates per 100,000 Population

Firearm, All Intents, All Races, All Ethnicities, Both Sexes, Ages 13-19 Years  
Annualized Crude Rate for United States: 9.49

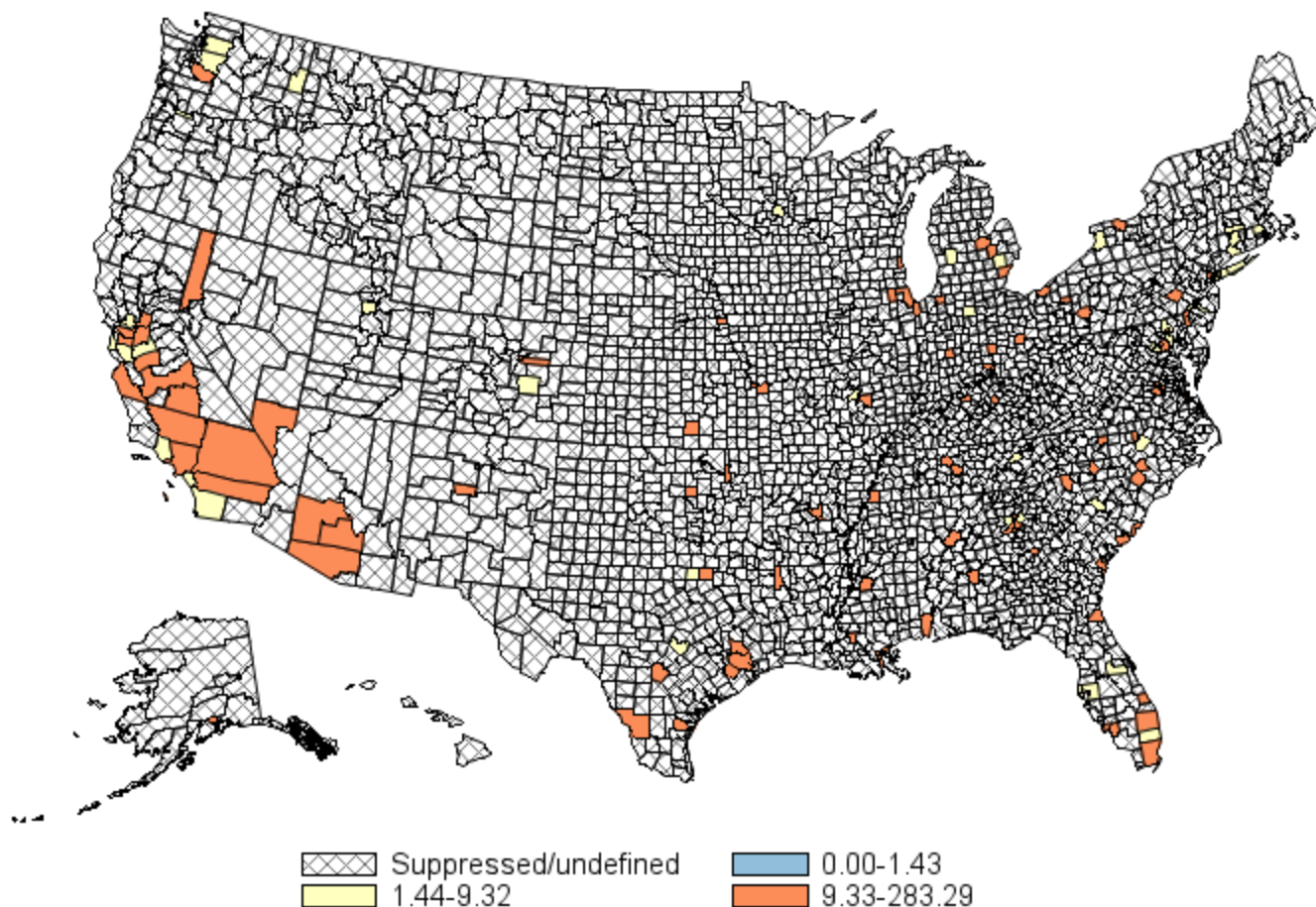


Reports for All Ages include those of unknown age.

\* Rates based on 20 or fewer deaths may be unstable. States with these rates are cross-hatched in the map (see legend above). Such rates have an asterisk.

# 2000-2006, United States Death Rates per 100,000 Population

Firearm, All Intents, All Races, All Ethnicities, Both Sexes, Ages 13-19 Years  
Annualized Crude Rate for United States: 9.49



Reports for All Ages include those of unknown age.

\* Rates based on 20 or fewer deaths may be unstable. These rates are suppressed for counties (see legend above); such rates in the title have an asterisk.

Produced by: Office of Statistics & Programming, National Center for Injury Prevention & Control, CDC

Data Sources: NCHS National Vital Statistics System for numbers of deaths; US Census Bureau for population estimates.

## Bulk of all firearm injuries resulting from violence

YEAR	Violent firearm	Self-harm firearm	Total	Percent violence-related
2001	9221	185	9406	<b>98.0</b>
2002	8718	365	9083	<b>95.9</b>
2003	8235	60	8295	<b>99.3</b>
2004	9649	495	10144	<b>95.1</b>
2005	12,407	46	12,453	<b>99.6</b>
2006	13820	277	14097	<b>98.0</b>
2007	12942	494	13436	<b>96.3</b>
2008	16267	411	16678	<b>97.5</b>
2009	10091	165	10256	<b>98.4</b>
2010	12,054	480	12,534	<b>96.2</b>

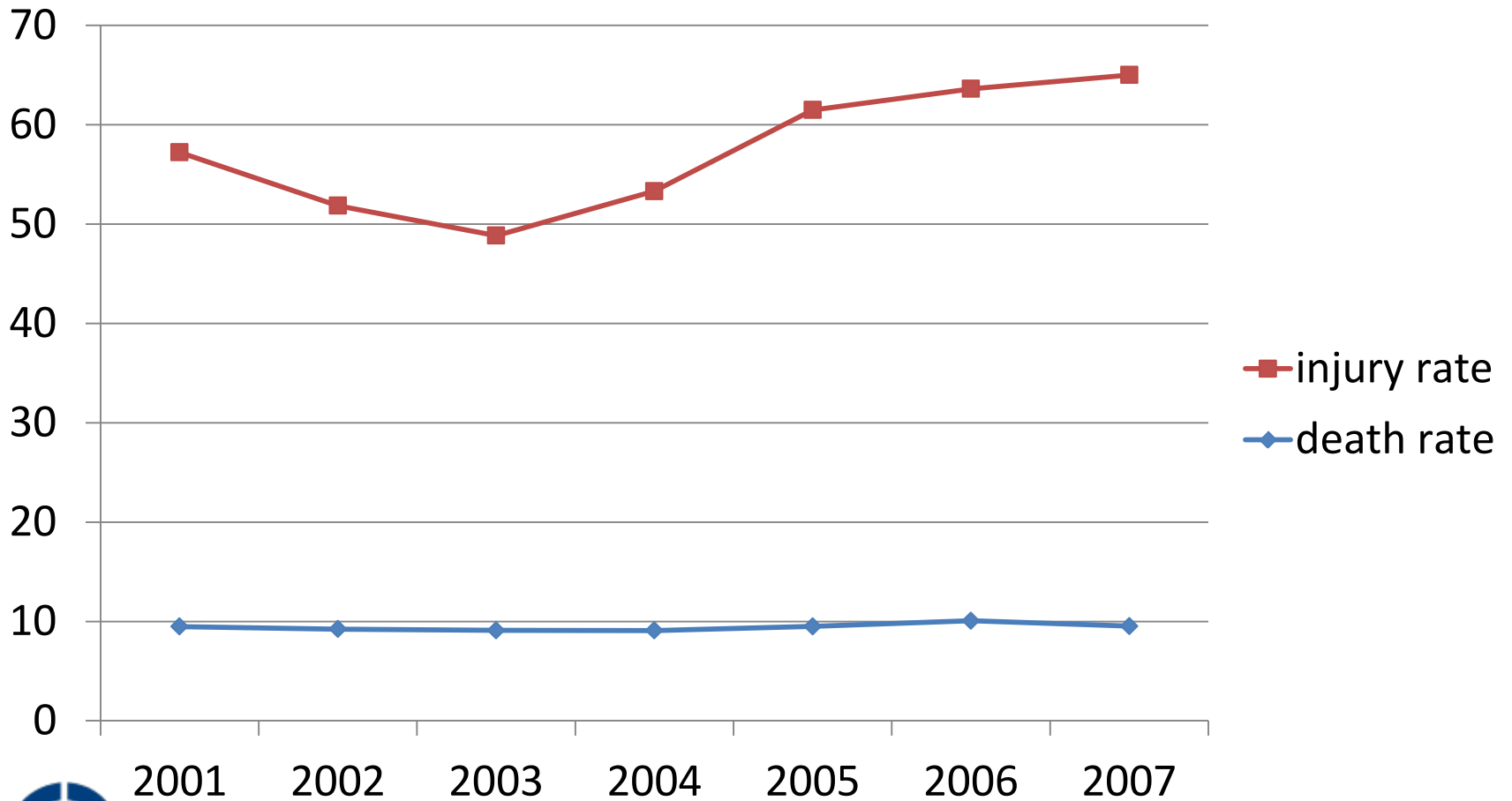


# Death and injury rate trends per 100,000 13-19 year olds

Year	death rate	injury rate
1999	11.21	
2000	9.98	
2001	9.48	47.75
2002	9.23	42.63
2003	9.1	39.75
2004	9.08	44.24
2005	9.5	51.99
2006	10.07	53.56
2007	9.52	55.5
2008		64.78
2009		43.85
2010		49.03

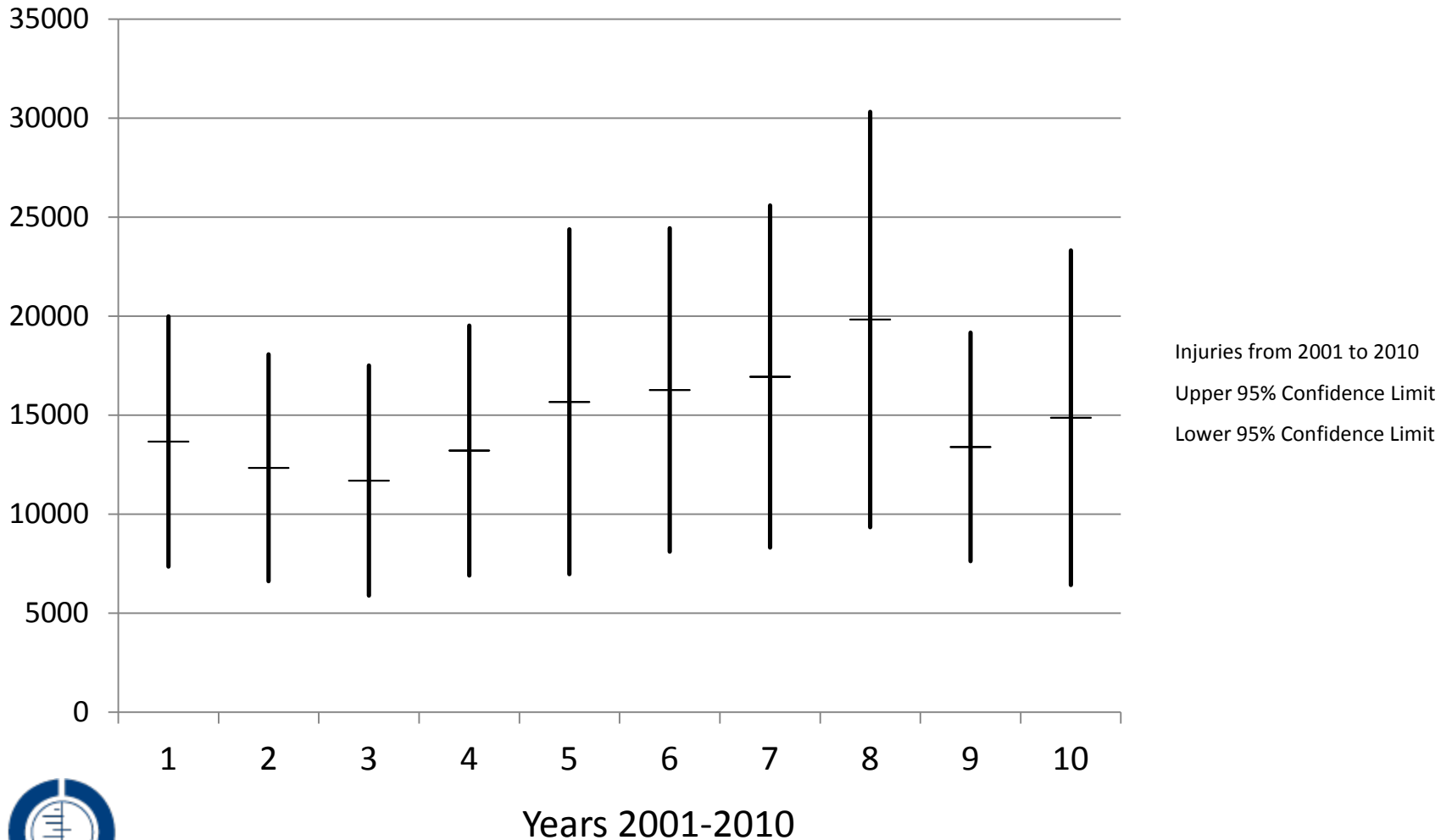


# Firearm injury and death rates, per 100,000 13-19 year olds, 2001-2007

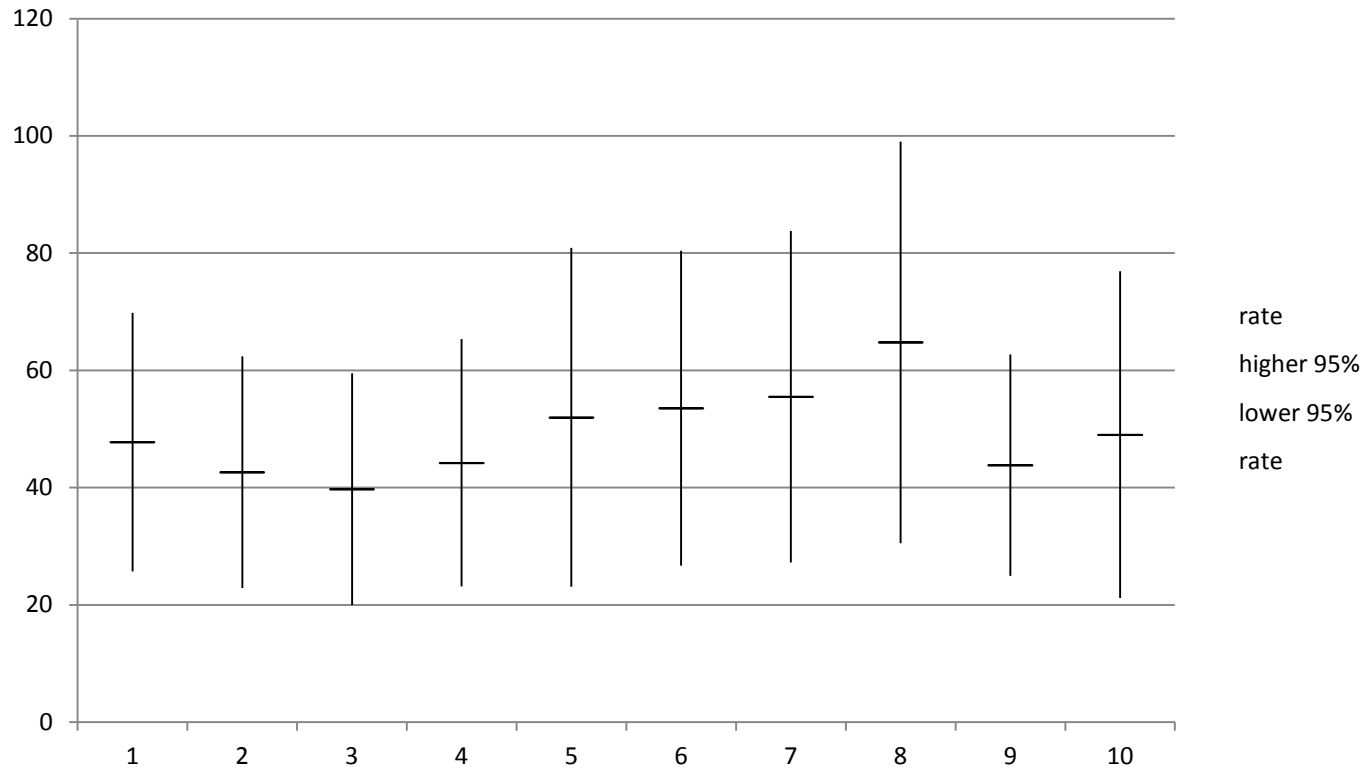




# Number of firearm injuries, 13-19 year olds, per year 2001-2002 (95% CI)

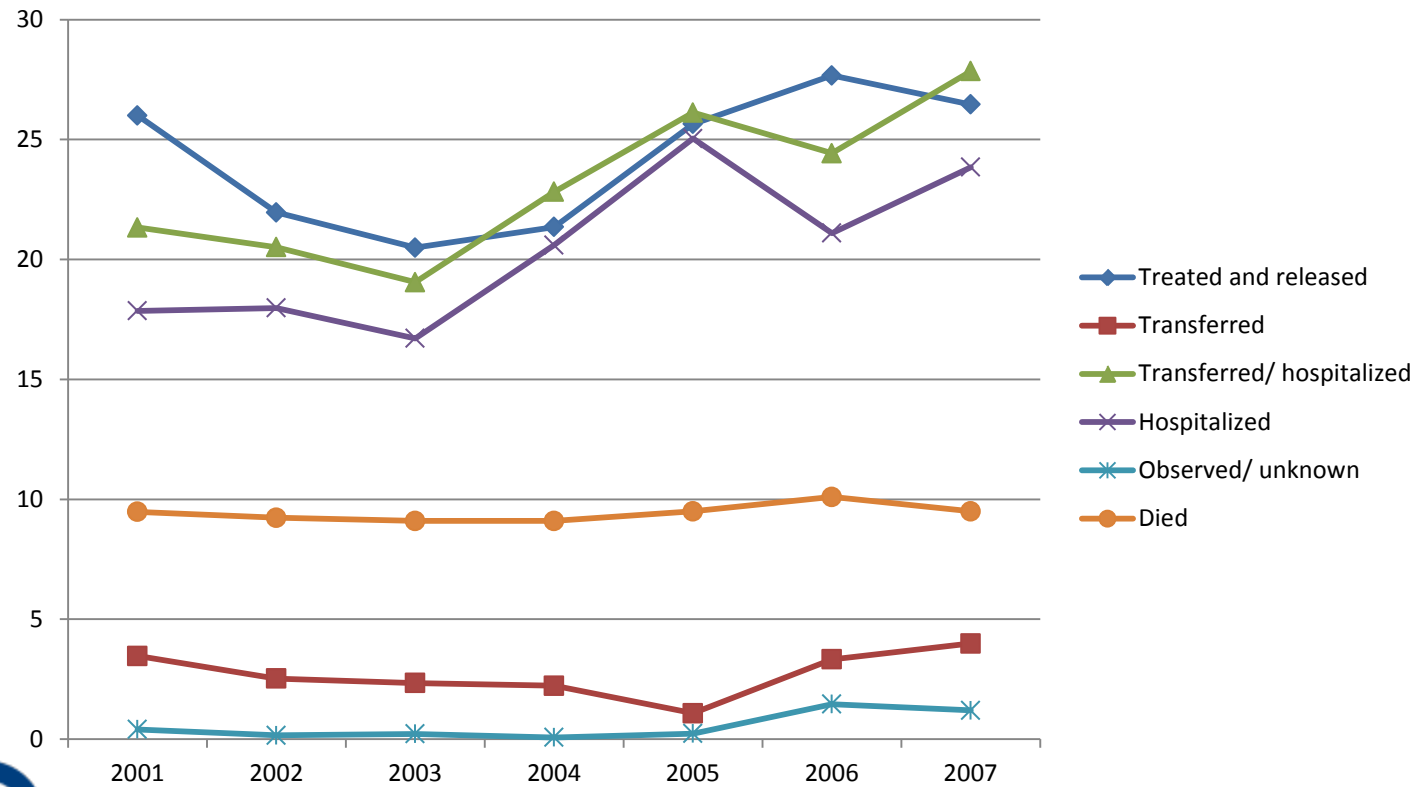


# Age-adjusted firearm injury rates, 13-19 year olds, per year 2001-2002 (95% CI) (note same pattern)

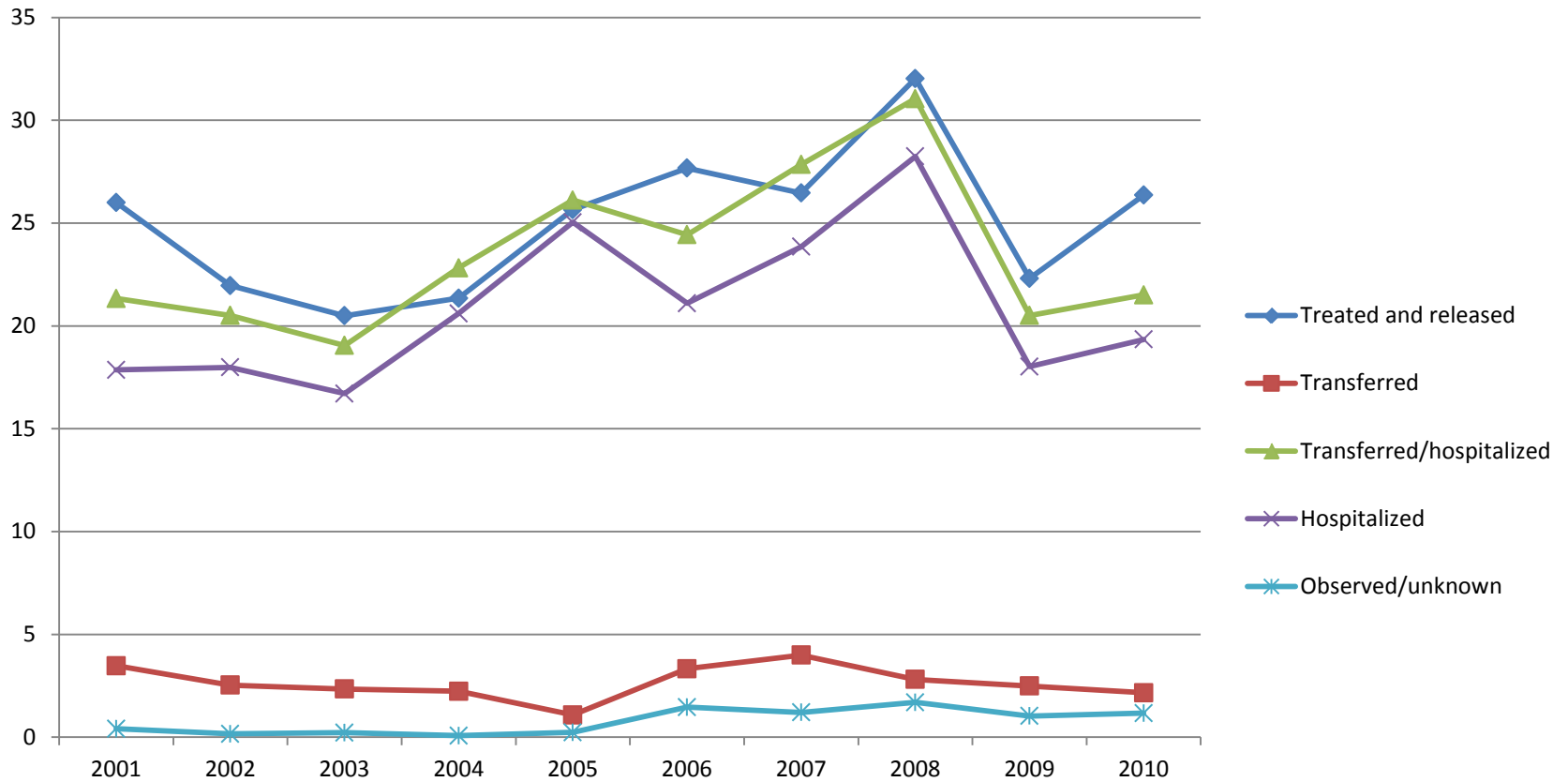


# Hospitalization Dispositions, 2001-2007

## Deaths superimposed



# Hospitalization Dispositions, 2001-2010



# Global costs for violent deaths

Average lifetime cost per firearm death = **\$932,254**

Cost Estimates and Number of Violent Deaths, by Intent and Mechanism, United States 2005							
	Deaths	LIFETIME COSTS (2005 dollars)					
		Medical Costs		Work Loss Costs		Combined Costs	
		Average	Total*	Average	Total*	Average	Total*
<b>All deaths:</b>	51,173	\$4,203	\$215,100,000	\$917,869	\$46,970,133,000	\$922,073	\$47,185,234,000
<b>Intent:</b>							
Suicide†	32,635	\$3,056	\$99,727,000	\$815,963	\$26,628,942,000	\$819,019	\$26,728,669,000
Homicide	18,124	\$6,265	\$113,552,000	\$1,097,354	\$19,888,450,000	\$1,103,620	\$20,002,002,000
Legal Intervention‡	414	\$4,398	\$1,821,000	\$1,093,579	\$452,742,000	\$1,097,977	\$454,562,000
<b>Mechanism:</b>							
Firearm	29,684	\$3,580	\$106,270,000	\$928,674	\$27,566,762,000	\$932,254	\$27,673,032,000
Suffocation	7,879	\$2,445	\$19,263,000	\$989,852	\$7,799,044,000	\$992,297	\$7,818,308,000
Poisoning	5,833	\$4,024	\$23,470,000	\$787,748	\$4,594,934,000	\$791,772	\$4,618,404,000
Cut/Pierce	2,687	\$6,556	\$17,615,000	\$959,008	\$2,576,856,000	\$965,564	\$2,594,471,000
Unspecified	1,882	\$9,724	\$18,300,000	\$860,306	\$1,619,096,000	\$870,030	\$1,637,397,000
Other Specified /Not Elsewhere Classified	803	\$12,852	\$10,320,000	\$859,692	\$690,332,000	\$872,544	\$700,653,000
Fall	701	\$4,321	\$3,029,000	\$880,316	\$617,102,000	\$884,637	\$620,130,000
Other Specified & Classifiable	602	\$7,162	\$4,311,000	\$934,990	\$562,864,000	\$942,152	\$567,175,000
Drowning	424	\$2,079	\$881,000	\$795,240	\$337,182,000	\$797,318	\$338,063,000
Fire/Burn	317	\$24,629	\$7,808,000	\$889,919	\$282,104,000	\$914,548	\$289,912,000
Struck By/Against	210	\$13,857	\$2,910,000	\$838,176	\$176,017,000	\$852,032	\$178,927,000
Transport, Other Land	151	\$6,107	\$922,000	\$979,081	\$147,841,000	\$985,187	\$148,763,000

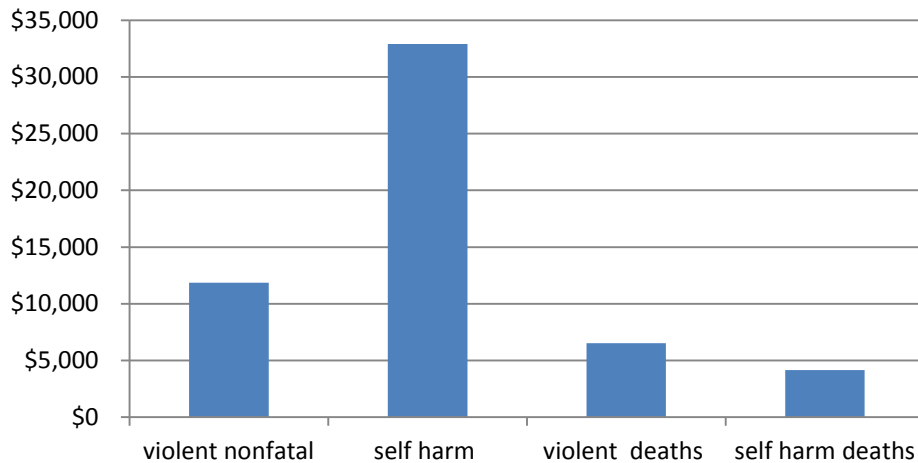
## Costs of hospital-based medical care for firearm injuries and deaths for **13-19 year olds** in the United States, 2005

Costs of hospital-based medical care for **13-19 year olds** in the United States:

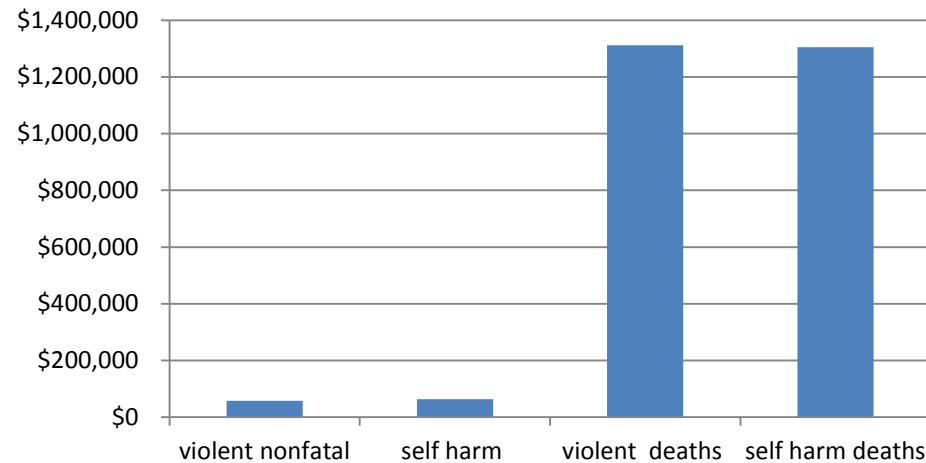
<i>Type of injury</i>	<i>Total in millions</i>	<i>Average cost</i>	<i>Total cases</i>
<b>Non-fatal firearm injuries</b>	<b>\$92</b>	<b>\$11,763</b>	<b>7,874</b>
	<b>\$77 (violence-related )</b>		
<b>Fatal firearm injuries</b>	<b>\$16.4</b>	<b>\$5871</b>	<b>2,818 died</b>
	<b>\$108.4</b>		
<b>Non-fatal fall</b>	<b>\$328</b>	<b>\$18,936</b>	<b>17,326</b>
<b>Fatal falls</b>	<b>\$1.58</b>	<b>\$17,707</b>	<b>88 died</b>

# Breakdown of hospitalization and injury-related work loss costs, 13-19 year olds, 2005

## Average hospitalization costs



## Average lost work costs



Total costs for all:

Violent firearm injuries and deaths, 13-19 years old, 2005: **\$454.4million**

Self-harm firearm injuries and deaths, 13-19 years old, 2005: **\$1.060 billion**

# Some comparison points

OJJDP fiscal year 2012 core budget:

40 State Formula (JJDP core requirements)  
0 JJDP Title V Prevention Grants  
0 Title V Incentive Grants  
30 Juvenile Accountability Block Grants  
70 million total OJJDP core funds

Federal tax payer costs per day per adolescent :

In general population	\$0.02
Arrested	\$0.35
Court-processed	\$0.59
In Juvenile system	\$1.02

Hospital costs for firearm injuries per day per adolescent in the general population

**\$3.84**

Compared to:

\$108.4 million on hospital bills in 2005

\$7.5 billion in 2012 for federal Head Start funding

\$4.2 billion in 1999 state juvenile justice costs





Spending is very much a state cost

Greatest loss is in lost wages

More spent on medical care alone for firearm injuries than full federal budget

Not enjoying the same drop in crime

Biggest drop felt for homicide victims appears in early 2000's

Per day, we spend three times as much for each adolescent in hospital bills for firearm injuries than the Federal Government pays for prevention, treatment, and accountability combined

# Contact



George Mason University  
4400 University Drive  
Nguyen Engineering Building  
Suite 1852, MSN 6E10  
Fairfax, Virginia 22030 USA

phone +1 (703) 993-5313

fax +1 (703) 993-5375

e-mail [cgallag4@gmu.edu](mailto:cgallag4@gmu.edu)

# Data sources

## **WISQARS**

Web-based Injury Statistics  
Query and Reporting System

- \*\*\*\* Cost of injury data are based on medical and work loss costs in 2005, the most recent year of cost data available at the time the module was developed. Cost estimates for more recent years will be available in the future. Fatal data are from NVSS. Nonfatal data are from NEISS-AIP. Estimated unit lifetime medical and lifetime work loss costs were developed by the Pacific Institute for Research and Evaluation (PIRE).

# WISQARS non-fatal

- The nonfatal injury data reported on NCIPC web pages come from the National Electronic Injury Surveillance System All Injury Program (NEISS-AIP). NEISS-AIP began on July 1, 2000, and will continue indefinitely. Currently, annualized national estimates for 2000 are based on data from July 1 through December 31, 2000. Annualized estimates for 2001 and later years are based on data from January 1 through December 31 of that year. We plan to update Nonfatal injury data each September/October with national estimates from the prior calendar year data. After that, data will be updated annually about 10-11 months after the end of each calendar year.

# National Estimates of the 10 Leading Causes Treated in Hospital Emergency Departments,

Rank	Age Groups						
	<1	1-4	5-9	10-14	15-24	25-34	35-44
1	Unintentional Fall 147,280	Unintentional Fall 955,381	Unintentional Fall 631,381	Unintentional Fall 615,145	Unintentional Struck By/Against 1,027,646	Unintentional Fall 791,629	Unintentional Fall 794,906
2	Unintentional Struck By/Against 31,360	Unintentional Struck By/Against 372,402	Unintentional Struck By/Against 406,045	Unintentional Struck By/Against 574,267	Unintentional Fall 917,167	Unintentional Overexertion 654,125	Unintentional Overexertion 564,548
3	Unintentional Other Bite/Sting 10,922	Unintentional Other Bite/Sting 137,352	Unintentional Cut/Pierce 104,940	Unintentional Overexertion 276,076	Unintentional MV-Occupant 741,159	Unintentional Struck By/Against 643,495	Unintentional Struck By/Against 495,060
4	Unintentional Foreign Body 8,860	Unintentional Foreign Body 126,060	Unintentional Other Bite/Sting 92,885	Unintentional Cut/Pierce 118,440	Unintentional Overexertion 703,809	Unintentional MV-Occupant 553,680	Unintentional MV-Occupant 419,564
5	Unintentional Fire/Burn 7,846	Unintentional Cut/Pierce 84,095	Unintentional Pedal Cyclist 84,590	Unintentional Pedal Cyclist 118,095	Other Assault* Struck By/Against 451,123	Unintentional Cut/Pierce 382,187	Unintentional Cut/Pierce 308,801
	Unintentional	Unintentional	Unintentional	Unintentional	Unintentional	Other Assault*	Other Assault*