Bicycle Helmets save Medical Costs for Children

Annually, 196 children younger than age 15 die from bicycle-related injuries. Approximately 8,900 additional children were hospitalized for bicycle-related injuries, and another 344,000 were treated and released in emergency departments. Bicycle helmets prevent 52 to 60 percent of bike-related head injury deaths (for all ages), as well as an estimated 68 to 85 percent of nonfatal head and scalp injuries, and 65 percent of upper and middle face injuries, even when misuse is considered. Thus, bicycle helmets significantly reduce the total medical costs for bike-related head injuries.

A. Costs Saved

- Every $10 bike helmet generates $570 in benefits to society.[1]
- These savings include $50 in medical costs, $140 in future earnings and other tangible resources, and $380 in quality of life costs.
- For each child bicycle helmet law that is passed, it costs $11 per new user and generates $570 in benefits to society.

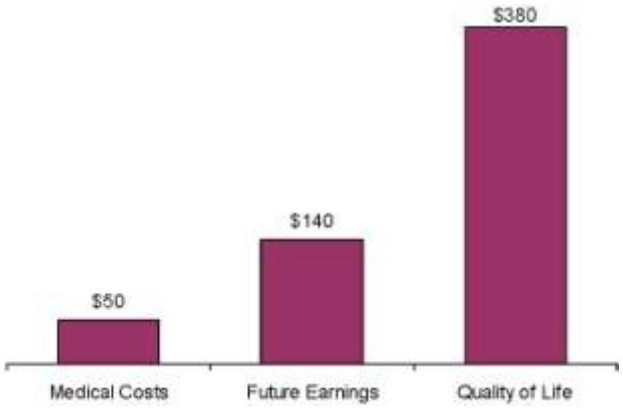

Figure 1. Every $100 Bike Helmet for Kids Saves $570[1]

- If 85 percent of all child cyclists wore helmets in 1 year, the lifetime medical cost savings would total $197 to $256 million.
- It is very expensive to treat a child with a bike-related head injury. These medical costs may sometimes last the child's lifetime. For example, in 1991, bicycle crashes to children ages 4 to 15 caused 52,000 nonfatal head injuries and 93,000 nonfatal face scalp injuries. Lifetime medical payments for these injuries will approach $394 million.
- 2,200 of the children who sustain these head injuries will suffer permanent disabilities that will affect their ability to work. Universal bicycle helmet use by children aged 4 to 15 would prevent 1,200 to 1,700 of these permanently disabling injuries.
- Every bicycle helmet saves health insurers $57 and auto insurers $17.

[1] Although the retail cost of bicycle helmets typically range from $10 to $70, nonprofit organizations can buy them in bulk for as little as $7 and distribute them nearly at cost.

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Figure 2. Insurers' Benefits per Bike Helmet

- These cost savings estimates may be conservative, as they ignore other significant benefits. For example:

  — Parents will spend less time and money caring for injured children.
  — Lawyers will file fewer lawsuits seeking compensation for child cyclists' injuries.

B. Lives Saved and Injuries Prevented

- Universal bike helmet use by children aged 0 to 14 would prevent 212 to 294 deaths annually.
- Universal bike helmet use by children aged 0 to 14 would prevent 382,000 to 529,000 bicycle-related injuries annually.

C. Bicycle Helmet Use

- Helmet use among children aged 14 and younger is approximately 15 percent nationwide.
- Parents report that 85 percent of children who own bicycle helmets wear them. The usage rate does not vary by income.

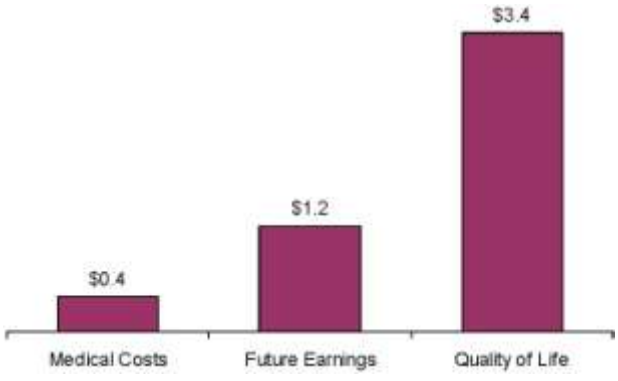

Figure 3. Costs of Child Bicycle-related Head Injuries: $5 Billion per Year (2004 dollars)

(Note: All costs are in 2004 dollars and were computed using the methodology outlined by Miller, Romano, and Spicer [2000]. Numbers may not correspond to totals due to rounding.)

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Child Safety Seats: How Large are the Benefits and Who Should Pay?

In 2002, an average of 296 children aged 0 to 4 were killed while riding in motor vehicles, and 85,875 were injured.[2] The total cost of these injuries and deaths exceeded $5.3 billion, and the average cost per child was $13,800. In addition, more than 236,000 children are involved in towaway crashes annually. Using a child safety seat reduces a child's chances of being killed or injured in a motor vehicle crash by half. If child safety seats were used correctly (more than half are not), the risk of death and injury would be reduced by almost 58 percent. This fact sheet summarizes a study of total cost savings of child safety seats. It also outlines incentives for involving insurers in the distribution of child safety seats.

A. Costs Saved

Every $46 child safety seat saves this country $140 in medical expenses, $470 in future earnings and other resource costs, and $1,300 in quality of life costs.[3]

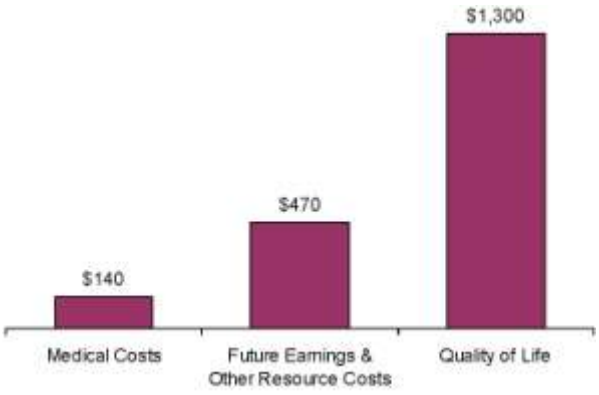

Figure 4. Every $46 Child Seat Saves $1,900

- Child safety seat use prevented nearly 500 deaths and nearly 118,600 injuries. This amounted to $1.6 billion in total cost savings.
- If all occupants aged 0 to 4 were restrained, another 300 deaths and 86,000 injuries could be prevented annually. This amounts to an additional savings of $1.2 billion in total costs.
- If misuse of child safety seats were eliminated, an additional 30 deaths and 24,000 injuries could be prevented annually.
- Child safety seat usage checks cost $80 per seat, mostly the value of donated time, but return 75 times that amount in terms of total costs saved.

[2] Fatal injury incidence estimates were based upon data from the National Center for Health Statistics (NCHS), Multiple Cause-of-Death File 1999-2002. Nonfatal injury incidence estimates for admitted cases were based upon 2000 Nationwide Inpatient Sample data produced by the Health Care Utilization Project (HCUP). Nonfatal injury incidence estimates for nonadmitted cases were based upon data from the National Ambulatory Medical Care Survey (NAMCS, 1995-1996), the National Hospital Ambulatory Medical Care Survey (NHAMCS, 1992-1996), and from the National Health Interview Survey (NHIS, 1987-1996). All three of these datasets were produced by NCHS.

[3] These costs are in 2004 dollars.

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- Averaged across all seats, child safety seat misuse reduction saves just over $500 per seat and costs only $6 per seat. [4]

Figure 5. Child Safety Seat Misuse Reduction Saves $500 per seat

- Passing a child safety seat law for children aged 0 to 4 costs $50 per new user and saves this country $1,900. [4]
- Child safety seat distribution interventions cost only $46 per seat and save $1,900. [4]

B. Benefits to Insurers that Promote Child Safety Seat Use

- Insurers (both public and private) pay $224 million in claims annually resulting from crashes in which children aged 0 to 4 were traveling unrestrained in motor vehicles.
- Governments could save money if the purchase of child safety seats were reimbursed through public assistance programs. The savings would include reduced Medicaid payments; police, fire and ambulance costs; and welfare payments for the permanently disabled. Income tax revenues also would rise if more children survived to enter the labor force.
- 70 percent of Medicaid moms lack child safety seats.
- Medicaid would save $81 per seat by supplying a $46 seat (including installation counseling) to every Medicaid mom. [4]
- By conducting education and outreach programs, private auto and health insurers could save money. Auto insurers have started working to reduce misuse. Health insurers will share the benefits of reducing misuse almost equally and should become partners in this effort.
- Every child safety seat saves society $330 in insurance and tax payments including $160 in auto insurance costs, $100 in health costs, and $70 in taxes.

[4] These costs are in 2004 dollars.

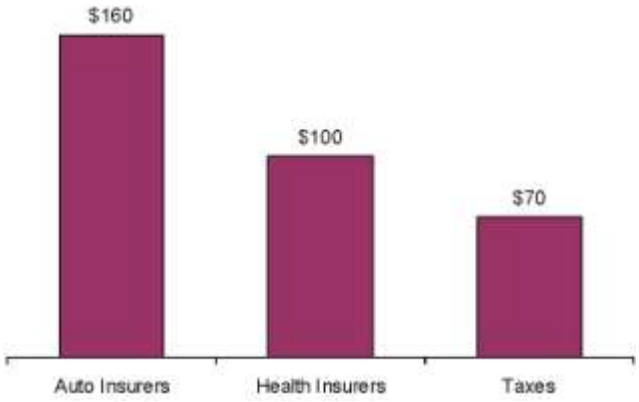

Figure 6. Child Safety Seats Save $330 in Insurance and Tax Payments

- Child safety seat misuse reduction savings include $27 per seat in insurance and taxes.

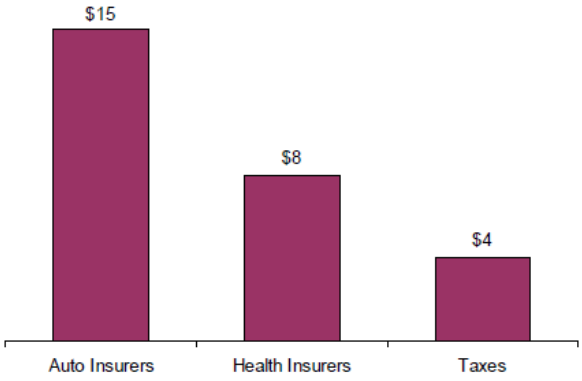

Figure 7. Child Safety Seat Misuse Reduction Saves $27 in Insurance and Taxes

C. Lives Saved and Injuries Prevented

- In 2002, child safety seats prevented 499 deaths and 118,589 injuries.

D. Child Safety Seat Use

- Nationally, child seat use averages 65 percent.
- Lack of access to affordable child safety seats results in far lower use by Medicaid recipients than other children. The limited studies available suggest that only 25 percent of children aged 0 to 4 covered by Medicaid travel in child safety seats. In contrast, almost 75 percent of other children aged 0 to 4 are in safety seats while riding in motor vehicles.
- 92 percent of low-income parents who own a child safety seat use it.

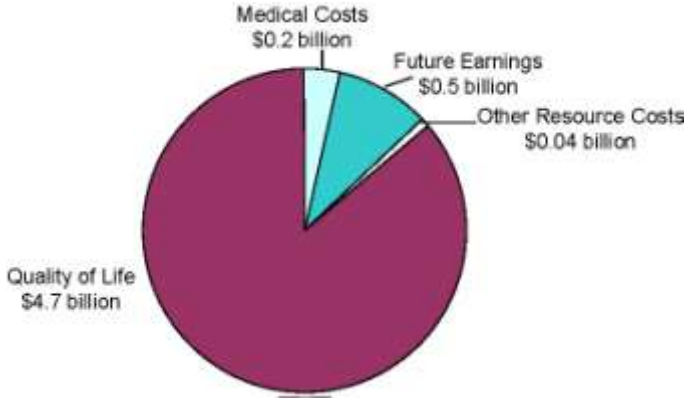

Figure 8. Costs of Injuries to Motor Vehicle Occupants Aged 0-4: $5.44 Billion per Year (Costs in 2004 Dollars)

The estimates in this figure use a bulk purchase and distribution price of $46 per child safety seat.

(Notes: All costs are in 2003 dollars, except those indicated with a footnote are in 2004 dollars. Both 2003 and 2004 costs were computed using the methodology outlined by Miller, Romano, and Spicer [2000]. Numbers may not correspond to totals due to rounding.)

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Rev. 10/05

Injury Prevention Counseling by Pediatricians Saves Money

Each year, approximately 5,600[5] children aged 14 and younger die from unintentional injuries. Some 124,000 children suffer injuries that result in hospitalization,[6] and more than 13.5 million sustain injuries that required less intensive medical treatment.[7]

Research has shown that injury prevention counseling by pediatricians is very effective. Pediatricians have clout with parents. In one study, broad injury prevention counseling by pediatricians reduced childhood injuries by 15 percent. Other studies have found that injury rates from falls, highway crashes, and burns decline following counseling.

Unfortunately, one study found that although 68 percent of parents reported that their children had faced injury-threatening incidents in the past, 60 percent of parents reported never receiving any injury prevention counseling from their primary care clinicians.

The following summarizes a study of the costs saved as a result of The Injury Prevention Program (TIPP) developed by the American Academy of Pediatrics. TIPP suggests age-appropriate topics for pediatricians to cover during 11 well-care visits of children aged 0 to 4. The study focused on TIPP counseling about child passenger injuries, burns, and falls. These injuries generate half of all injury costs for children aged 0 to 4.

A. Costs Saved

- For children aged 0 to 4, TIPP counseling costs $10 per child and saves approximately $86. These savings include $7 in medical costs; $16 in future earnings; and $63 in the prevention of pain, suffering, and lost quality of life. These savings equate to $946 per child over 11 TIPP counseling sessions.
- If the parents of all 19 million children aged 0 to 4 in the United States received TIPP counseling, annual injury costs would decline by more than $4.4 billion. These savings include $366 million in medical costs; $836 million in future earnings; and $3.3 billion in the prevention of pain, suffering, and lost quality of life.

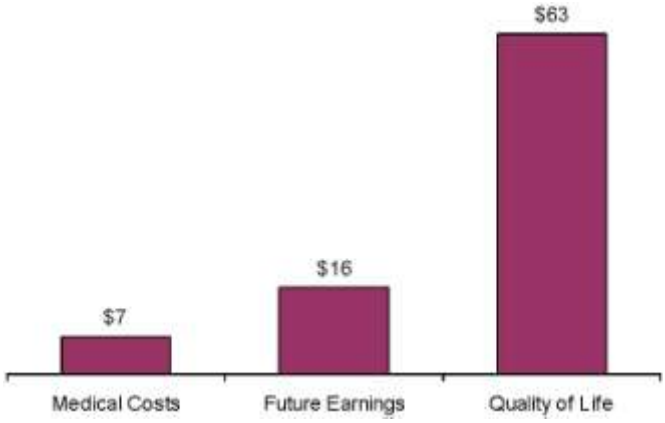

Figure 9. Every $10 spent on Parental American Academy of Pediatrics TIPP Sheet Counseling for Children Aged 0-4 Saves $86/per child (in 2004 dollars)

(Note: All costs are in 2004 dollars and were computed using the methodology outlined by Miller, Romano, and Spicer [2000]. Numbers may not correspond to totals due to rounding.)

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Rev. 6/05

[5] Fatal injury incidence estimates are based upon data from the National Center for Health Statistics (NCHS), Multiple Cause-of-Death File 1999-2002.

[6] Nonfatal injury incidence estimates for admitted cases were based upon 2000 Nationwide Inpatient Sample data produced by the Health Care Utilization Project (HCUP).

[7] Nonfatal injury incidence estimates for nonadmitted cases were based upon data from the National Ambulatory Medical Care Survey (NAMCS, 1995-1996), the National Hospital Ambulatory Medical Care Survey (NHAMCS; 1992-1996), and the National Health Interview Survey (NHIS, 1987-1996). All three of these datasets were produced by NCHS.

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Poison Control Centers save Money and Lives

Poisoning in the United States

Each year, approximately 14,134 people die from unintentional or undetermined intent poisonings,[8] and 68,970 more are hospital-admitted.[9] In addition, nearly 2.5 million unintentional poisoning patients are treated and released in emergency departments.[10] Unintentional poisonings are the 4th leading cause of all hospital-admitted unintentional injury and the 15th leading cause of emergency department visits for unintentional injury.

In 2002, 94 children aged 14 and younger died from unintentional poisoning. More than 1.4 million children younger than age 5 were poisoned. Of these children, more than a million (or 86 percent) were treated by poison control centers over the phone (American Association of Poison Control Centers, 2002). Thanks to the centers' quick response and high level of expertise, most of the children recovered fully. In addition, billions of dollars did not have to be spent on medical treatment.

Each year, more than 2.7 million Americans are poisoned. Almost half (52 percent) of these poisonings occur in children younger than age 5. The lifetime medical cost of all poisonings for this age group totaled $1.7 billion. The lifetime medical, future earnings and quality of life costs for children aged 5 and younger were $15.4 billion.

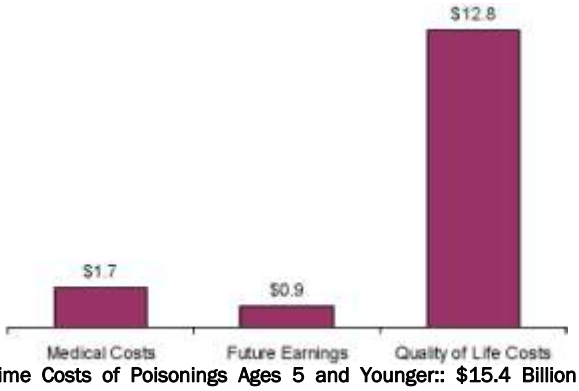

Figure 10. Lifetime Costs of Poisonings Ages 5 and Younger:: $15.4 Billion (2004 dollars)

Costs Saved

- The average call to a poison control center costs $43 and saves $290 in medical costs (Children's Safety Network Economics and Data Resource Center, 2005).
- Poison control centers are cost-efficient and economical because more than 70 percent of their cases are resolved over the telephone while the patient remains at home. This avoids unnecessary emergency room visits, ambulance use, hospital admissions, and treatment delays.
- If poison control centers were not available, 600,000 additional poisoning victims would receive medical treatment annually at a much higher cost.

The Need for Poison Control Centers

- Physicians, hospitals, public health departments, and the public depend on poison control centers to provide state-of-the-art emergency advice and treatment information 24-hours-a-day, 365 days of the

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year.

- Poison Control Centers provide essential services to help coordinate an effective response for victims in the event of a public health emergency regarding chemicals or toxic substances such as domestic terrorism.
- Poison Control Centers provide education and outreach efforts to address poisoning incidence.
- Poison Control Centers are the only facilities that have the expertise to monitor the hundreds of thousands of consumer products by which people are unintentionally poisoned every day and to provide the proper advice once a poisoning occurs.

Status of Poison Control Centers

- Only half of the families with children in the United States have a poison control center's telephone number available.
- As important, but generally non-revenue generating, public health resources poison control centers rely upon a variety of sources for operating funds: Federal grants, States (including State administered Federal grants), Counties, host institutions (e.g. hospitals and universities), and other sources (e.g. Children's Miracle Network, community service organizations, corporations, events, foundations, United Way, Health Insurers/HMOs, and individuals).
- Despite their clinical contributions and their recognized value as a source of cost savings to the medical system, many poison control centers remain financially unstable and at risk of closure. Approximately half of the 52 centers that meet national standards are in financial jeopardy and heavily dependent on Counties, States, Federal grants, host institutions, and other sources for essential operating funds.
- Most poison control centers are affiliated with a host institution. However, in recent years, poison control centers have experienced significant reductions or total elimination of funding from host institutions. For these centers the loss of host/institutional funding has been compounded by a reduction or loss of State and/or Country funds.
- Since 1999, Federal grant funds have been utilized to stabilize poison control centers and ensure their continued operation in the face of an uncertain economic environment and significant loss of funding from traditional funding sources.

(Note: All costs are in 2004 dollars and were computed using the methodology outlined by Miller, Romano, and Spicer [2000]. Numbers may not correspond to totals due to rounding.)

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[8] These fatal injury incidence estimates are based upon data from the National Center for Health Statistics (NCHS), Multiple Cause-of-Death File 1999-2002.

[9] Denotes that nonfatal injury incidence estimates for admitted cases were based upon 2000 Nationwide Inpatient Sample data produced by the Healthcare Cost and Utilization Project.

[10] Nonfatal injury incidence estimates for nonadmitted cases were based upon data from the National Ambulatory Medical Care Survey (NAMCS, 1995-1996), the National Hospital Ambulatory Medical Care Survey (NHAMCS, 1992-1996), and the National Health Interview Survey (NHIS, 1987-1996). All three of these datasets were produced by NCHS.

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Sobriety Checkpoints Save Money and Lives

In 2000, 16,792 people died and 513,000 people were injured in alcohol-involved (but not necessarily legally intoxicated) highway crashes (BAC ≥ .01). The economic costs of these injuries were $50.9 billion.[11] Alcohol-involved crashes accounted for 10 percent of property damage costs and approximately 46 percent of fatal injury crash costs. The death and injury tolls for highway crashes involving a legally intoxicated driver (BAC ≥ .10) were 13,277 and more than 360,000, respectively. These fatalities and injuries cost nearly $40 billion[10] annually and represent nearly 80 percent of all alcohol-related fatalities. People other than the drinking drivers pay a substantial portion of the alcohol-related crash bill.

Not all crashes involving alcohol are caused by alcohol consumption; some would have occurred even if the drivers were sober. However, one study estimates that 94 percent of crashes involving intoxicated drivers are attributable to alcohol. Further, drunk driving is not just an adult problem. It is involved in one-fifth of the motor-vehicle-related child fatalities and serious injuries.

Sobriety checkpoints can reduce this drunk-driving toll. General drunk-driving deterrence is achieved with frequent, highly visible checkpoint programs. Sobriety checkpoints apprehend approximately 87 percent of drunk drivers who otherwise go undetected. Administrative license suspension of these drivers further reduces drunk-driving crashes.

This fact sheet summarizes a study of a hypothetical sobriety checkpoint program aimed at reducing alcohol-attributable crashes in a typical community with 100,000 licensed drivers.

Costs and Cost Savings

- The total cost to a community of running a sobriety checkpoint one weekday and each Friday and Saturday night for 1 year is $1,600,000. This includes $1,260,000 in overtime wages and fringe benefits for police officers, $23,000 for checkpoint equipment, $69,000 in travel delay costs from stopping sober drivers, and $248,000 for trying and punishing violators.
- With a 15 percent reduction in alcohol-attributable crashes, annual savings (benefits) from an intensive sobriety checkpoint program could total $11,373,000. This estimate includes $4,463,000 for averted fatalities, $6,478,000 for averted nonfatal injuries, and $432,000 in averted property damage.
- When a community runs an intensive sobriety checkpoint program each checkpoint costs about $9,600 and saves $73,000. These costs include $5,000 in medical costs, $20,000 in future earnings, and $48,000 in quality of life costs.

Benefits to Insurers That Promote Sobriety Checkpoints

- Savings to the community's insurers could total $2,138,000, which exceeds total program costs.
- Auto insurers could save approximately $1,569,000 from a checkpoint program.
- Health insurers could save $517,000.
- Life insurers' benefits could exceed $52,000.

[11] This cost and the costs of alcohol-related fatalities and injuries are in 2000 dollars.

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Lives Saved and Injuries Prevented

- Intensive sobriety checkpoint use in a community of 100,000 licensed drivers could prevent 1 death and more than 60 nonfatal injuries per year.
- Intensive sobriety checkpoint use in a community of 100,000 licensed drivers could prevent 200 property-damage-only crashes per year.

Sobriety Checkpoint Use

- Public polls show 70 to 80 percent of people favor the use of more checkpoints to combat impaired driving.
- Eleven States continue to prohibit the use of sobriety checkpoints (Alabama, Idaho, Louisiana, Michigan, Minnesota, Oregon, Rhode Island, Texas, Washington, Wisconsin, and Wyoming).

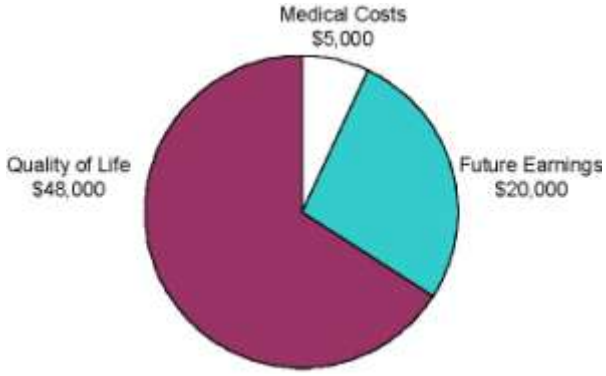

Figure 11. A Sobriety Checkpoint Costs $9,600 and Saves Society $73,000

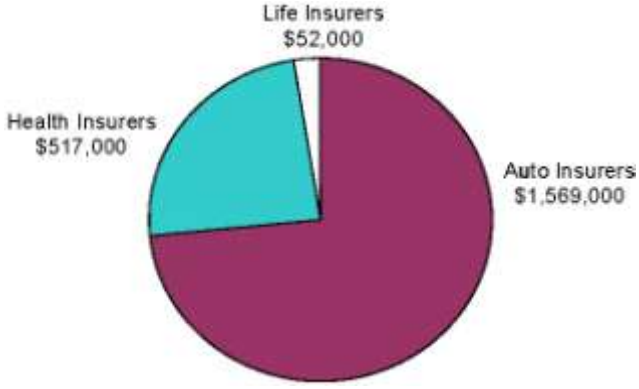

Figure 12. A Sobriety Checkpoint Could Save Community Insurers Almost $2,138,000

(

Note: Costs are in 2004 dollars and were computed using the methodology outlined by Miller, Romano, and Spicer [2000]. Numbers may not correspond to totals due to rounding.)

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Current Speed Limits Save Time, Money, and Lives

In 1995, the U.S. Congress repealed Federal caps on highway speed limits. Consequently, many States have either raised speed limits or are considering this step.

- In 2000, speed-related crashes caused a total of 12,350 fatalities, which comprised 29.5 percent of all motor vehicle deaths and 29 percent of all motor vehicle crashes.
- The costs of crashes that involved excessive speed were $40.4 billion.[12]
- Raising the speed limit on a road by 10 miles per hour typically increases deaths and serious injuries on that road by 15 percent.
- Crash injuries reduce the functional lifespan of disabled survivors. Crashes cause traffic jams and delays.
- For every 1 hour of travel time lost by maintaining current highway speed limits, society saves 73 minutes of life and functioning. The savings include 51 minutes of increased lifespan, 20 minutes of increased physical functioning and 2 minutes in reduced crash-related travel delay.
- A 55-mile-per-hour speed limit costs $7.10 per added travel hour and saves society $29. These savings include $1.39 in medical costs, $12 in future earnings and $16 in quality of life costs.
- For every 1 hour of travel time lost by maintaining current highway speed limits, society also saves $2.72 in medical care and emergency services costs.
- For every 1 hour of travel time lost by maintaining current highway speed limits, insurers save $5.10 in payments.
- An increased speed limit increases imported fuel consumption and harms the U.S. economy.

[12] This cost is in 2000 dollars.

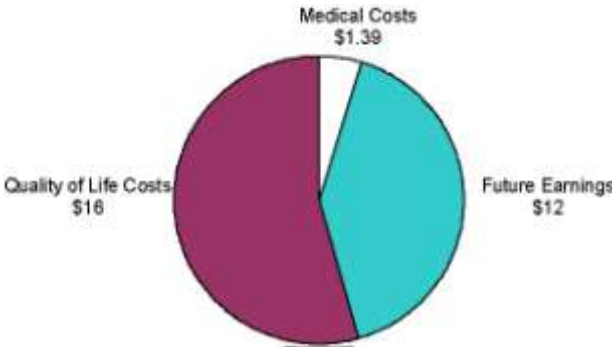

Figure 13. For Every 1 Hour os Travel Time Lost by Retaining Current Highway Speed Limits, Society Saves 73 minutes of Life and Functionging

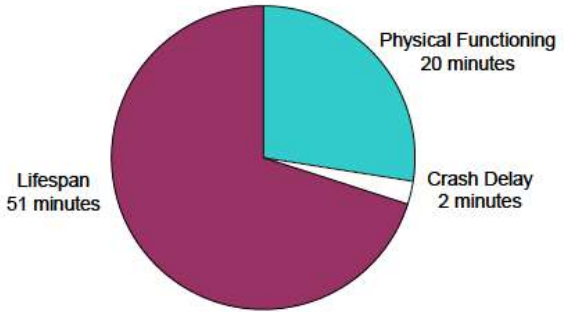

Figure 14. A 55-mile-per-hour Speed Limit Costs $7.10 per Added Travel Hour and Saves Society $29

(Costs are in 2004 dollars. Numbers may not correspond to totals due to rounding.)

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Definitions

A. Data Types

- **Fatal:** Mortality data by multiple causes of death include all deaths occurring within the United States. Deaths of U.S. citizens and deaths of members of the Armed Forces occurring outside the United States are not included. Data are obtained from certificates filed for deaths occurring in each State.

- **Admitted:** Hospital patient discharges from short-stay noninstitutional hospitals and general and children's general hospitals regardless of length of stay located within the 50 States and the District of Columbia. Military and U.S. Department of Veteran Affairs hospitals are not included.

- **Nonadmitted:** Information on the health of the civilian, noninstitutionalized population of the United States compiled through the National Health Interview Survey that was designed to obtain accurate and current statistical information on the amount, distribution, and effects of illness and disability and the services rendered for or because of such conditions. Persons who did NOT report going to the hospital for their condition were included; counts related to poisonings were obtained from Toxic Exposure Surveillance System data maintained by the American Association of Poison Control Centers.

B. Incidence-Based versus Prevalence-Based Costs

- **Incidence-based costs** are the present value of the lifetime costs that may result from injuries that occur during a single year. For example, the incidence-based cost of head injuries in 2001 estimates total lifetime costs associated with all head injuries that occurred in 2001. Incidence-based costs measure the savings that prevention can yield.

- **Prevalence-based costs** measure all injury-related expenses during 1 year, regardless of when the injury occurred. For example, the prevalence-based cost of head injuries in 2001 measures the total health care spending on head injuries during 2001, including spending on victims injured many years earlier. Prevalence-based cost data are needed to project health care spending and evaluate cost controls.

C. Resource Versus Productivity Costs

Resource costs are broken down into **medical costs** and **other resource costs**. **Productivity costs** include immediate and future work losses due to a childhood injury.

- **Medical costs** include emergency medical services, physician, hospital, rehabilitation, prescription drugs, and related treatment costs, as well as ancillary costs (i.e., crutches, physical therapy, etc.), funeral/coroner expenses for fatalities, and the administrative costs of processing medical payments to providers. For violence, this category also includes mental health treatment costs.
- **Other resource costs** include police and fire department costs, plus the travel delay for noninjured travelers resulting from transportation crashes and the injuries caused by the crashes. For violence, this category also includes social services and victim assistance costs. It excludes mental health services costs. Fact sheets that do not explicitly show other resource costs include paramedic, ambulance, and helicopter transport costs in medical costs.

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- **Future earnings** include victims' lost wages and the value of lost household work, fringe benefits, and the administrative costs of processing compensation for lost earnings through litigation, insurance, or public welfare programs such as food stamps and Supplemental Security Income. Work losses by family and friends who care for injured children also are included. For violence, this category also includes earnings lost by family and friends caring for the injured and the value of school missed when children are temporarily disabled.
- **Quality of Life** places a dollar value on the pain, suffering, and lost quality of life those children and their families experience due to an injury.

Calculation Methods

To value **quality of life lost to fatal injuries**, we start by estimating the value people place on survival. We measure the value of survival from the amounts people spend (in dollars or time) for safety. Fifty technically sound "willingness to pay" studies have estimated this value (Miller, 1990). They examine such things as markets for auto safety features and smoke detectors, extra wages paid to get workers to take risky jobs, and speed choice when driving.

The value of survival is essentially the combined value of future earnings and quality of life. By subtracting the lost future earnings, we get the quality of life costs per death.[131]

To value **quality of life lost to nonfatal injury,** we use two methods. In the first, physicians rate the typical effects of different injuries on six dimensions of functioning: mobility, cognitive, bending and grasping, pain, sensory, and cosmetic. We also collect data about a seventh dimension: the ability to work. Using surveys about the value people place on different dimensions of functioning, we combine the data to obtain a percentage of the value of survival lost to each injury.

Again, we subtract lost future earnings to get the quality of life costs per injury.

The second method uses jury verdicts to value victims' pain and suffering. This method is used in valuing the quality of life lost to violent crime and to drunk-driving crashes without physical injury. It provides our only estimate of the losses due to rape and to fear.

Estimates from the two methods of valuing quality of life lost to nonfatal injury differ by less than 10 percent.

Since 1989, the U.S. Office of Management and Budget has required all Federal regulatory benefit-cost analyses to include quality of life costs if they place a dollar value on saving lives.

[13] Estimating quality-adjusted life years (QALYs) is one way to value the good health lost to an individual who suffers a health problem, is disabled, or dies prematurely. A QALY is a measure based on individual preferences for states of health that assigns a value of "1" to a year of perfect health and "0" to death. QALY losses are affected by the duration and severity of a health problem. To estimate QALY losses, years of potential life lost to a fatal injury are added to the number of years spent with an injury-related disability multiplied by a "weighting factor" that represents the severity of the disability. Such weighting factors can be estimated by using rating scales or by using tradeoff methods that elicit individual preferences between death and various health states.

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Questions about methods and data in this Fact Sheet Series should be referred to:
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