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.

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]

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.

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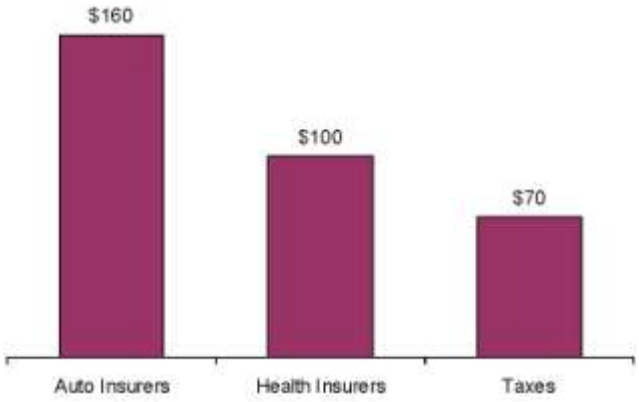

Figure 6. Child Safety Seats Save $330 in Insurance and Tax Payments

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

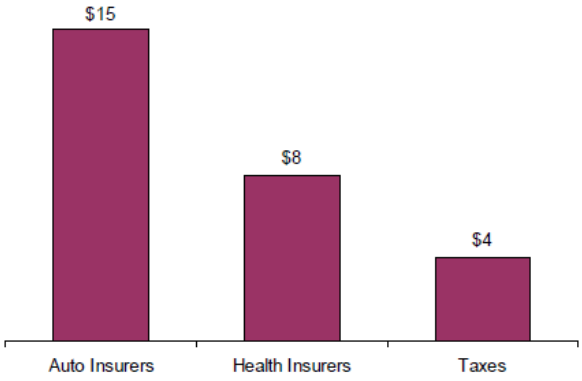

Figure 7. Child Safety Seat Misuse Reduction Saves $27 in Insurance and Taxes

LIVES SAVED AND INJURIES PREVENTED

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

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.

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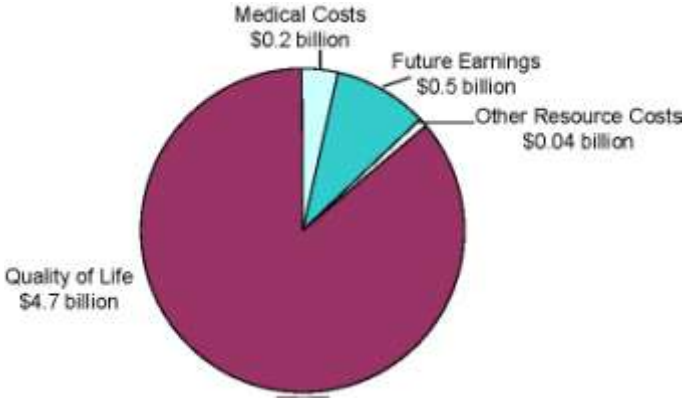

Figure 8. Costs of Injuries to Motor Vehicle Occupants Aged 0-4: $5.44 Billion per Year (Costs in 2004 Dollars)

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

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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

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services costs. Fact sheets that do not explicitly show other resource costs include paramedic, ambulance, and helicopter transport costs in medical costs.

- **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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