

This is a publication of the National Spinal Cord Injury Statistical Center, Birmingham, Alabama.

**Incidence:** It is estimated that the annual incidence of spinal cord injury (SCI), not including those who die at the scene of the accident, is approximately 40 cases per million population in the U. S. or approximately 11,000 new cases each year. Since there have not been any overall incidence studies of SCI in the U.S. since the 1970's it is not known if incidence has changed in recent years.

**Prevalence:** The number of people in the United States who are alive in July 2004 who have SCI has been estimated to be approximately 247,000 persons, with a range of 222,000 to 285,000 persons. Note: Incidence and prevalence statistics are estimates obtained from several studies. These statistics are not derived from the National SCI Database.

**The National Spinal Cord Injury Database** has been in existence since 1973 and captures data from an estimated 13% of new SCI cases in the U.S. Since its inception, 25 federally funded Model SCI Care Systems have contributed data to the National SCI Database. As of July 2004 the database contained information on 22,992 persons who sustained traumatic spinal cord injuries. All the remaining statistics on this sheet are derived from this database or from collaborative studies conducted by the Model Systems. Detailed discussions of all topics on this sheet may be found in a special issue of the journal *Archives of Physical Medicine and Rehabilitation* published in November 1999.

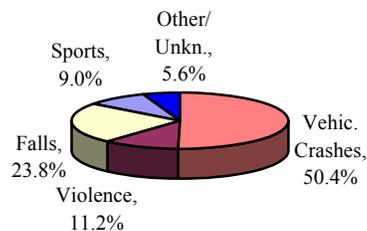
**Age at injury:** SCI primarily affects young adults. From 1973 to 1979, the average age at injury was 28.6 years, and most injuries occurred between the ages of 16 and 30. However, as the median age of the general population of the United States has increased by approximately 8 years since the mid-1970's, the average age at injury has also steadily increased over time. Since 2000, the average age at injury is 38.0 years. Moreover, the percentage of persons older than 60 years of age at injury has increased from 4.7% prior to 1980 to 10.9% among injuries occurring since 2000. Other possible reasons for the observed trend toward older age at injury might include changes in either referral patterns to model systems, the locations of model systems, survival rates of older persons at the scene of the accident, or age-specific incidence rates.

**Gender:** Since 2000, 78.2% of spinal cord injuries reported to the national database have occurred among males. Over the history of the database, there has been a slight trend toward a decreasing percentage of males. Prior to 1980, 81.8% of new spinal cord injuries occurred among males.

**Ethnic groups:** A significant trend over time has been observed in the racial distribution of persons in the database. Among persons injured between 1973 and 1979, 76.9% were Caucasian, 14.1% were African American, 6% were Hispanic, and 3% were from other racial/ethnic groups. However, among those injured since 2000, 67.5% are Caucasian, 19% are African American, 10.4% are Hispanic, and 3.1% are from other racial/ethnic groups. It is unknown whether changing locations of model systems, referral patterns to model systems, or race-specific incidence rates may be responsible for this trend.

**Etiology:** Since 2000, motor vehicle crashes account for 50.4% of reported SCI cases. The next most common cause of SCI is falls, followed by acts of violence (primarily gunshot wounds),

**Etiology of SCI Since 2000**



and recreational sporting activities. The proportion of injuries that are due to sports has decreased over time while the proportion of injuries due to falls has increased. Acts of violence caused 13.3% of spinal cord injuries prior to 1980, and peaked between 1990 and 1999 at 21.8% before declining to only 11.2% since 2000.

**Neurologic level and extent of lesion:** Persons with tetraplegia have sustained injuries to one of the eight cervical segments of the spinal cord; those with paraplegia have lesions in the thoracic, lumbar, or sacral regions of the spinal cord. Since 2000, the most frequent neurologic category at discharge of persons reported to the database is incomplete tetraplegia (34.3%), followed by complete paraplegia (25.1%), complete tetraplegia (22.1%), and incomplete paraplegia (17.5%). One percent of persons experienced complete neurologic recovery by hospital discharge. Over time, the percentage of persons with incomplete tetraplegia has increased slightly while both complete paraplegia and complete tetraplegia have decreased slightly.

**Occupational status:** More than half (63.0%) of those persons with SCI admitted to a Model System reported being employed at the time of their injury. The post-injury employment picture is better among persons with paraplegia than among their tetraplegic counterparts. By post-injury year 10, 31.7% of persons with paraplegia are employed, while 26.4% of those with tetraplegia are employed during the same year.

**Residence:** Today 88.3% of all persons with SCI who are discharged alive from the system are sent to a private, noninstitutional residence (in most cases their homes before injury.) Only 5.1% are discharged to nursing homes. The remaining are discharged to hospitals, group living situations or other destinations.

**Marital status:** Considering the youthful age of most persons with SCI, it is not surprising that most (53%) are single when injured. Among those who were married at the time of injury, as well as those who marry after injury, the likelihood of their marriage remaining intact is slightly lower when compared to the uninjured population. The likelihood of getting married after injury is also reduced.

**Length of stay:** Overall, average days hospitalized in the acute care unit for those who enter a Model System immediately following injury has declined from 25 days in 1974 to 15 days in 2002. Similar downward trends are noted for days in the rehab unit (from 115 to 40 days). Overall, mean days hospitalized (during acute care and rehab) were greater for persons with neurologically complete injuries.

**Lifetime costs:** The average yearly health care and living expenses and the estimated lifetime costs that are directly attributable to SCI vary greatly according to severity of injury.

Severity of Injury	Average Yearly Expenses (in May 2004 dollars)		Estimated Lifetime Costs by Age At Injury (discounted at 2%)	
	First Year	Each Subsequent Year	25 years old	50 years old
<b>High Tetraplegia (C1-C4)</b>	\$682,957	\$122,334	\$2,693,887	\$1,585,906
<b>Low Tetraplegia (C5-C8)</b>	\$441,025	\$50,110	\$1,523,204	\$964,608
<b>Paraplegia</b>	\$249,549	\$25,394	\$900,085	\$613,915
<b>Incomplete Motor Functional at Any Level</b>	\$201,273	\$14,106	\$600,424	\$435,139

These figures do not include any indirect costs such as losses in wages, fringe benefits and productivity which average \$56,964 per year but vary substantially based on education, severity of injury and pre-injury employment history.

**Life expectancy** is the average remaining years of life for an individual. Life expectancies for persons with SCI continue to increase, but are still somewhat below life expectancies for those with no spinal cord injury. Mortality rates are significantly higher during the first year after injury than during subsequent years, particularly for severely injured persons.

Life expectancy (years) for post-injury by severity of injury and age at injury											
		For persons who survive the first 24 hours					For persons surviving at least 1 year post-injury				
Age at Injury	No SCI	Motor Functional at Any Level	Para	Low Tetra (C5-C8)	High Tetra (C1-C4)	Ventilator Dependent at Any Level	Motor Functional at Any Level	Para	Low Tetra (C5-C8)	High Tetra (C1-C4)	Ventilator Dependent at Any Level
<b>20</b>	58.1	53.1	45.7	40.8	36.4	16.6	53.6	46.4	42.0	38.5	23.8
<b>40</b>	39.2	34.6	28.1	23.9	20.5	7.1	35.1	28.7	25.0	22.1	11.4
<b>60</b>	21.9	18.0	13.0	10.2	8.0	1.4	18.4	13.5	10.9	9.0	3.1

**Cause of death:** In years past, the leading cause of death among persons with SCI was renal failure. Today, however, significant advances in urologic management have resulted in dramatic shifts in the leading causes of death. Persons enrolled in the National SCI Database since its inception in 1973 have now been followed for 30 years after injury. During that time, the causes of death that appear to have the greatest impact on reduced life expectancy for this population are pneumonia, pulmonary emboli and septicemia.

Additional information is now available in the *Spinal Cord Injury Information Network* on the World Wide Web ([www.spinalcord.uab.edu](http://www.spinalcord.uab.edu)).

The Model Spinal Cord Injury System program was established in the early 1970s.

Presently there are 16 systems sponsored by the National Institute on Disability and Rehabilitation Research, Office of Special Education and Rehabilitative Services, U.S. Department of Education:

University of Alabama at Birmingham Birmingham, AL (205) 934-3330	Regional SCI Care System of Southern California Downey, CA (562) 401-7048	Northern California SCI System San Jose, CA (408) 793-6440
Rocky Mountain Regional SCI System Englewood, CO (303) 789-8220	South Florida SCI System Miami, FL (305) 585-1339	Georgia Regional SCI System Atlanta, GA (404) 352-2020
New England Regional SCI Center Boston, MA (617) 638-7895	University of Michigan Model SCI System Ann Arbor, MI (734) 763-0971	Missouri Model SCI System Columbia, MO (573) 882-6271
Northern New Jersey SCI System West Orange, NJ (973) 243-6805	Mt. Sinai SCI Model System New York, NY (212) 659-9369	U. of Pittsburgh Model SCI System Pittsburgh, PA (412) 648-6982
Regional SCI System of Delaware Valley Philadelphia, PA (215) 955-6579	Texas Regional SCI System Houston, TX (713) 799-5023	Virginia Commonwealth SCI System Richmond, VA (804) 828-0861
Northwest Regional SCI System Seattle, WA (206) 543-8171		

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