

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 today and who have SCI has been estimated to be between 721 and 906 per million population. This corresponds to between 183,000 and 230,000 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, 24 federally funded Model SCI Care Systems have contributed data to the National SCI Database. As of May 2001 the database contained information on 20,527 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. Fifty-five percent of SCIs occur among persons in the 16 to 30 year age group, and the average age at injury is 32.1 years. Since 1973 there has been an increase in the mean age at time of injury. Those who were injured before 1979 had a mean age of 28.6 while those injured after 1990 had a mean age of 35.3 years. Another trend is an increase in the proportion of those who were at least 61 years of age at injury. In the 1970's persons older than 60 years of age at injury comprised 4.7% of the database. Since 1990 this has increased to 10%. This trend is not surprising since the median age of the general population has increased from 27.9 years to 35.3 years during the same time period.

Gender: Overall, 81.6% of all persons in the national database are male. Although this four-to-one male to female ratio has varied little throughout the 28 years of Model Systems data collection, since 1990, the percentage of males has decreased to 80.5% (from 81.8% in the 1970's).

Ethnic groups: A significant trend over time has been observed in the racial distribution of persons in the Model System database. Among persons injured between 1973 and 1978, 77.5% of persons in the database were Caucasian, 13.5% were African-American, 5.7% were Hispanic, 2% were American Indian and 0.8% were Asian. However, among those injured since 1990 only 59.1% were Caucasian, while 27.6% were African-American, 7.7% were Hispanic, 0.4% were American Indian and 2.1% were Asian (0.5% were unknown and 2.5% were unclassified).

Etiology: Since 1990, motor vehicle crashes account for 38.5% of the SCI cases reported. The next largest contributor is acts of violence (primarily gunshot wounds), followed by falls and recreational sporting activities.

Interesting trends in the database show the proportions of injuries due to motor vehicle crashes and sporting activities have declined while the proportions of injuries from acts of violence and falls have increased steadily since 1973.

Neurologic level and extent of lesion: Persons with tetraplegia (51.6%) have sustained injuries to one of the eight cervical segments of the spinal cord; those with paraplegia (46.3%) have lesions in the thoracic, lumbar, or sacral regions of the spinal cord. For the remaining persons, 0.7% recover prior to discharge and 1.4% are persons for whom this information is not available.

Since 1990 the most frequent neurologic category is incomplete tetraplegia (29.6%), followed by complete paraplegia (27.3%), incomplete paraplegia (20.6%), and complete tetraplegia (18.6%). Trends over time indicate an increasing proportion of persons with incomplete paraplegia and a decreasing proportion of persons with complete tetraplegia.

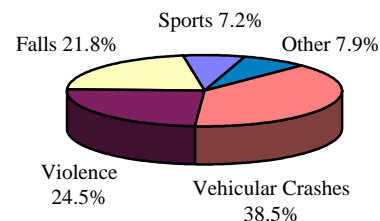
Occupational status: More than half (56.9%) of those persons with SCI admitted to a Model System reported being employed at the time of their injury. The post-injury employment picture is better among persons with paraplegia than among their tetraplegic counterparts. By post-injury year 10, 31.9% of persons with paraplegia are employed, while 24.4% of those with tetraplegia are employed during the same year.

Residence: Today 88.7% 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 4.8% 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 (53.4%) 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 26 days in 1974 to 16 days in 1999. Similar downward trends are noted for days in the rehab unit (from 115 to 44 days). Overall, mean days hospitalized (during acute care and rehab) were greater for persons with neurologically complete injuries.

Etiology of SCI Since 1990



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 2000 dollars)		Estimated Lifetime Costs by Age At Injury (discounted at 2%)	
	First Year	Each Subsequent Year	25 years old	50 years old
High Tetraplegia (C1-C4)	\$572,178	\$102,491	\$2,185,667	\$1,286,714
Low Tetraplegia (C5-C8)	\$369,488	\$41,983	\$1,235,841	\$782,628
Paraplegia	\$209,074	\$21,274	\$730,277	\$498,095
Incomplete Motor Functional at Any Level	\$168,627	\$11,817	\$487,150	\$353,047

These figures do not include any indirect costs such as losses in wages, fringe benefits and productivity which average \$49,312 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
20	57.2	51.6	45.2	39.4	33.8	16.2	52.5	46.2	41.2	37.1	26.8
40	38.4	33.5	27.8	23.0	18.7	7.2	34.3	28.7	24.5	21.2	13.7
60	21.2	17.5	13.0	9.6	6.8	1.2	18.1	13.7	10.6	8.4	4.0

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 27 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).

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) 295-9896, ext. 10
Rocky Mountain Regional SCI System Englewood, CO (303) 789-8220	South Florida SCI System Miami, FL (305) 243-7107	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		

This is a publication of the National Spinal Cord Injury Statistical Center, Birmingham, Alabama, which is funded under grant number H133N50009 from the National Institute on Disability and Rehabilitation Research, Office of Special Education and Rehabilitative Services, U.S. Department of Education, Washington, DC. The opinions contained in this publication are those of the grantee and do not necessarily reflect those of the U.S. Department of Education. ©2001, Board of Trustees, University of Alabama

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