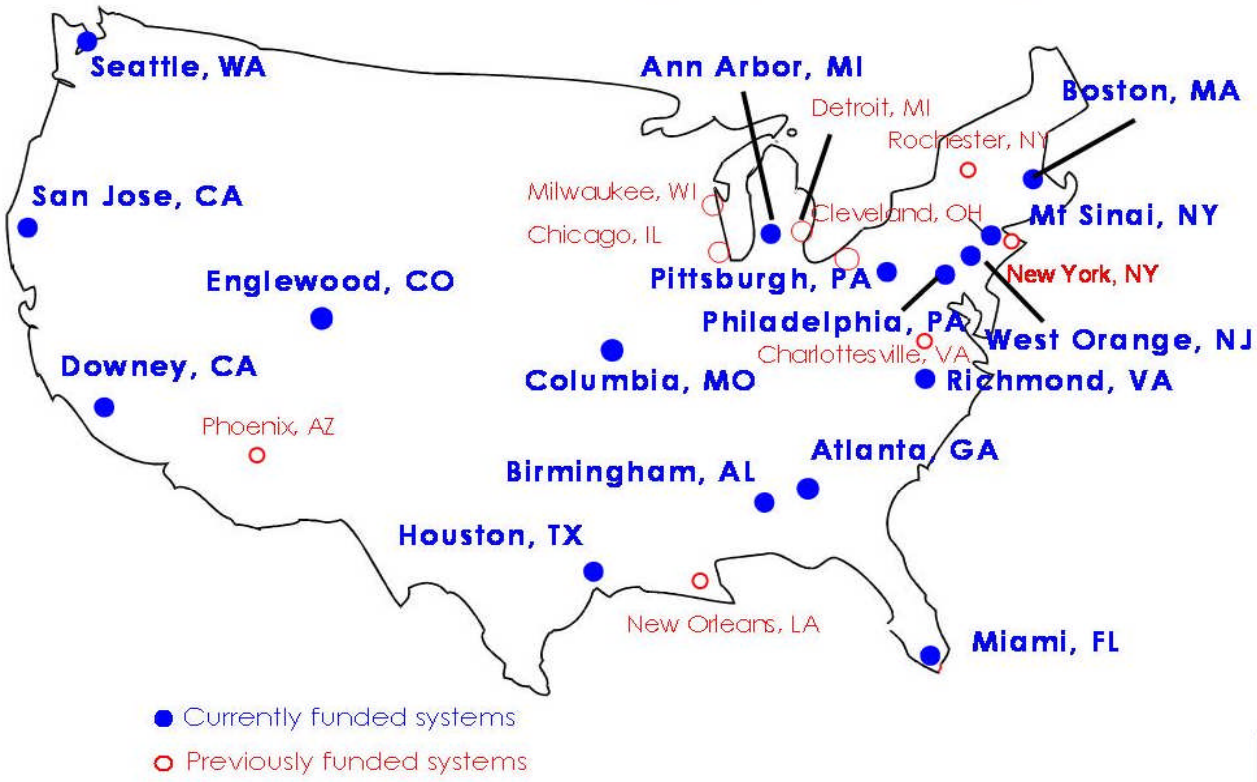
NSCISC 2006

Annual Report for the Model Spinal Cord Injury Care Systems



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THE 2006 ANNUAL STATISTICAL REPORT

for the

MODEL SPINAL CORD INJURY CARE SYSTEMS

The National Spinal Cord Injury Statistical Center publishes scheduled statistical reports on the national database. These complete reports are available only to the currently participating Model Systems. To the general public there is limited availability of statistics from these reports, i.e. some pages are omitted in this version.

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The National SCI Database

All data submitted to the NSCISC by April 2005 are included in this report. As of 1 June 2005, the National SCI Database contained information on 23,683 patients with 109,277 Form II follow-up records. The combined total of Registry, Form I and Form II records in the National SCI Database is 142,153 records.

National SCI Statistical Center

In 1983, the University of Alabama at Birmingham's Department of Rehabilitation Medicine received federal grant funds to establish a national SCI data center. The UAB operation succeeded the National Spinal Cord Injury Data Research Center that served the Model SCI Care Systems Project between 1973 and 1981. Today, UAB's National Spinal Cord Injury Statistical Center (NSCISC) supervises and directs the collection, management and analysis of the world's largest spinal cord injury database. Organizationally, UAB's SCI Statistical Center is at the hub of a network of 16 federally-sponsored regional Model Spinal Cord Injury Care Systems located at major medical centers throughout the United States. In each of these settings, SCI Care System personnel collect and submit acute, rehabilitation and follow-up (viz. annual, long-term post-discharge) data on SCI patients who received care in the "System" following injury.

To assure comparability of data acquired by personnel in various centers, rigid scientific criteria have been established for the collection, management and analysis of information entered into the database. Moreover, NSCISC staff have developed quality control procedures that further enhance the reliability and validity of the database.

The16 Model SCI Systems funded for the 2000-2005 Project Period are:

Alabama
University of Alabama at Birmingham SCI Care System -- UAB Spain Rehabilitation Center
Birmingham, AL

California
Regional SCI Care System of Southern California -- Rancho Los Amigos Med Center
Downey, CA

Northern California SCI System - Santa Clara Valley Medical Center
San Jose, CA

Colorado
Rocky Mountain Regional SCI System -- Craig Hospital
Englewood, CO

Florida
South Florida SCI System -- University of Miami School of Medicine
Miami, FL

Georgia
Georgia Regional SCI System - Shepherd Center
Atlanta, GA

Massachusetts
New England Regional SCI Center -- Boston University Medical Center
Boston, MA

Michigan
University of Michigan Model SCI System -- University of Michigan Medical Center
Ann Arbor, MI

Missouri
Missouri Model SCI System -- Univ Missouri-Columbia, Dept PM&R
Columbia, MO

New Jersey
Northern New Jersey SCI System -- Kessler Institute for Rehabilitation
West Orange, NJ

New York
Mount Sinai SCI Model System -- Mt. Sinai Medical Center
New York, NY

Pennsylvania
Regional SCI System of Delaware Valley -- Thomas Jefferson University Hospital
Philadelphia, PA

University of Pittsburgh Model Center on Spinal Cord Injury - University of Pittsburgh
Pittsburgh, PA

Texas
Texas Regional SCI System -- The Institute for Rehabilitation & Research
Houston, TX

Virginia
VCU/MCV SCI Model System -- Medical College of Virginia
Richmond, VA

Washington
Northwest Regional SCI System -- University of Washington
Seattle, WA

Data from currently non-participating SCI systems (Chicago, Illinois; Columbus, Ohio; Detroit, Michigan; Milwaukee, Wisconsin; NYU, New York; Rochester, New York; Phoenix, Arizona; New Orleans, Louisiana; and Fishersville, Virginia) have been included.

For more information:
National Spinal Cord Injury Statistical Center
www.uab.edu/NSCISC

Spinal Cord Injury Information Network
www.spinalcord.uab.edu

National Institute on Disability and Rehabilitation Research
www.ed.gov/about/offices/list/osers/nidrr

CAUSE OF DEATH

All survival analyses in this report use the Collaborative SCI Survival Study database maintained at the NSCISC. This database contains considerably more patients than the National SCI Database and much longer follow-up on individual patients through use of the Social Security Administration and Equifax. It includes Form I and Registry patients as well as other patients treated at Model Systems who are not in the National SCI Database. This is also the database that was used to produce the chapter on long-term survival and causes of death that was included in the book Spinal Cord Injury: Clinical Outcomes from the Model Systems. Therefore, these data represent an update of the 1992 estimates provided in that book chapter as well as an update of the 2005 Annual Report.

Primary cause of death for the 7,579 deceased patients in the Collaborative SCI Survival Study appears in Table 8 (page 40). Only persons injured since 1973 and treated at a Model System within 1 year of injury were included in this analysis. The number of deaths with unknown causes is high because many deaths identified through Equifax computer search and the Social Security Death Index have not been followed-up by acquisition of death certificates. Therefore, 3,863 persons whose primary cause of death was unknown were not included in the calculation of any percentages. The assumption is that unknown causes of death will be distributed the same way as known causes. These deaths of unknown causes are almost always persons who died after discharge. Therefore, causes of death that are more likely to occur after discharge, such as diseases of the genitourinary system, neoplasms, and accidents, suicides and homicides may be somewhat underestimated proportionately.

Diseases of the respiratory system were the leading cause of death (71.7% of these were cases of pneumonia). Other heart disease ranked second; however, these were often unexplained heart attacks (53.6%, ICD9CM code 427.5), that usually do not represent a true underlying cause of death. Rather, they reflect the relatively poor quality of cause of death data and reporting practices on many death certificates of SCI patients. Hence, mortality from other heart disease is probably overestimated.

The third leading cause of death was infective and parasitic diseases. These were virtually always cases of septicemia (93.2%) and were usually associated with decubitus ulcers, urinary tract or respiratory infections.

Hypertensive and ischemic heart disease was the fourth leading cause of death followed by neoplasms. Specific locations of neoplasms included the lung (77 cases, 28.6%); colon/rectum (19 cases, 7.1%); bladder (18 cases, 6.7%); prostate (16 cases, 5.9%); breast (12 cases, 4.5%); brain, digestive system, and leukemia (11 cases each, 4.1%); liver (10 cases, 3.7%); esophagus (8 cases, 3.0%); kidney and other lymphoma (7 cases each, 2.6 %); testis, pancreas, head/neck/face (6 cases each, 2.2%); multiple myeloma (5 cases, 1.9 %); endocrine gland and melanoma (3 cases each, 1.1%); ovary and peritoneum (2 cases each, 0.7%); and one case each of uterus, spinal cord, bone, and thymus (0.4%). Twenty-five neoplasms were reported to have developed at an unspecified location (9.3%).

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Unintentional injuries were the sixth leading cause of death followed by diseases of pulmonary circulation (97.2% of which were cases of pulmonary emboli). These deaths usually occurred prior to first definitive discharge.

Disease of the digestive system were the eighth leading cause of death, followed by symptoms and ill-defined conditions and suicides. It should be noted that the categories of unintentional injuries, suicides, and homicides do not include any persons dying from multiple injuries sustained during the original accident. However, they do include persons involved in fatal events following discharge. If the 118 cases of subsequent trauma of uncertain nature were divided proportionately between unintentional injuries, suicides, and homicides, then an additional 63 unintentional injuries, 44 suicides, and 11 homicides took place, which would still make unintentional injuries the sixth leading cause of death but make suicide the seventh leading cause of death.

The eleventh leading cause of death was cerebrovascular disease followed by genitourinary system diseases. The dramatic reduction in deaths due to genitourinary system diseases such as renal failure (the leading cause of death in the past), is undoubtedly due to close monitoring of the urinary tract as well as advances in its medical management over the past two decades.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

ICD9CM Codes	Primary Cause of Death	n	%
460-519	Diseases of the respiratory system	817	22.0
420-429	Other heart disease	455	12.2
000-139	Infective and parasitic diseases	368	9.9
400-414	Hypertensive and ischemic heart disease	292	7.9
140-239	Neoplasms	269	7.2
E800-E949	Unintentional injuries	202	5.4
415-417	Disease of pulmonary circulation	183	4.9
520-579	Diseases of the digestive system	174	4.7
780-799	Symptoms and ill-defined conditions	168	4.5
E950-E959	Suicides	138	3.7
430-438	Cerebrovascular disease	136	3.7
580-629	Diseases of the genitourinary system	134	3.6
E980-E989	Subsequent trauma of uncertain nature (unintentional/suicide/homicide)	122	3.3
320-389	Diseases of the nervous system and sense organs	59	1.6
240-279	Endocrine, nutritional, metabolic and immunity disorders (includes AIDS)	59	1.6
440-448	Diseases of the arteries, arterioles, and capillaries	58	1.6
E960-E969	Homicides	36	1.0
290-319	Mental disorders	11	0.3
451-459	Diseases of veins, lymphatics, and other diseases of the circulatory system	11	0.3
710-739	Diseases of the musculoskeletal system and connective tissue	9	0.2
740-759	Congenital anomalies	5	0.1
Residual	All others	4	0.1
280-289	Diseases of blood and blood-forming organs	4	0.1
E970-E979	Legal intervention	2	0.1
	Total known causes of death	3,716	
	Total unknown causes of death	3,863	
	Total deaths	7,579	

Table 8. Primary cause of death.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

LONG TERM SURVIVAL

Table 9 (page 42) presents cumulative survival for the entire National SCI Database.

Patients were considered Withdrawn Alive if a follow-up form (Form II) for 2004 or later was submitted indicating the patient was known to be alive, if the patient's follow-up was discontinued due to neurologic recovery or transfer to another SCI Care System, or if Social Security Death Index searches performed in 2006 did not indicate a reported death. The proportion of patients dying in each post-injury year ranged from 4.48 percent in year one to 1.30 percent in year 10. Annual death rates for those who survived the first post-injury year average 1.96 percent and increase over time as the population ages.

The cumulative 20-year survival rate for patients with spinal cord injury was 69.89 percent. However, because of the high proportion of losses to follow-up, as well as the known underreporting of spinal cord injury fatalities occurring shortly after injury, this information should be interpreted with caution. It is likely some patients were lost to follow-up because they died. Therefore, these annual mortality rates may be underestimated.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Years Post Injury	(1) Patients Entered	(2) Withdrawn Alive	(3) Lost	(4) Dead	(5) Effective Number Exposed	(6) Proportion Dead	(7) Proportion Surviving	(8) Cumulative Survival at End of Interval
0 - 1	37,702	1,592	4,938	1,544	34437.0	0.0448	0.9552	0.9552
1 - 2	29,628	882	1,340	602	28,17.0	0.0211	0.9789	0.9350
2 - 3	26,804	438	657	413	26256.5	0.0157	0.9843	0.9203
3 - 4	25,296	416	380	395	24898.0	0.0159	0.9841	0.9057
4 - 5	24,105	327	489	353	23697.0	0.0149	0.9851	0.8922
5 - 6	22,936	498	710	303	22332.0	0.0136	0.9864	0.8801
6 - 7	21,425	496	300	325	21027.0	0.0155	0.9845	0.8665
7 - 8	20,304	565	277	310	19883.0	0.0156	0.9844	0.8530
8 - 9	19,152	620	213	263	18735.5	0.0140	0.9860	0.8410
9 - 10	18,056	610	243	229	17629.5	0.0130	0.9870	0.8301
10 - 11	16,974	752	338	259	1,429.0	0.0158	0.9842	0.8170
11 - 12	15,625	776	153	209	15160.5	0.0138	0.9862	0.8057
12 - 13	14,487	763	107	219	14052.0	0.0156	0.9844	0.7932
13 - 14	13,398	711	44	210	13020.5	0.0161	0.9839	0.7804
14 - 15	12,433	708	70	205	12044.0	0.0170	0.9830	0.7671
15 - 16	11,450	704	133	173	11031.5	0.0157	0.9843	0.7551
16 - 17	10,440	633	18	190	10114.5	0.0188	0.9812	0.7409
17 - 18	9,599	595	9	173	9297.0	0.0186	0.9814	0.7271
18 - 19	8,822	612	9	166	8511.5	0.0195	0.9805	0.7129
19 - 20	8,035	567	26	152	7738.5	0.0196	0.9804	0.6989
20 - 21	7,290	619	104	122	6928.5	0.0176	0.9824	0.6866
21 -22	6,445	630	7	125	6126.5	0.0204	0.9796	0.6726
22 - 23	5,683	595	6	132	5382.5	0.0245	0.9755	0.6561
23 - 24	4,950	478	1	116	4710.5	0.0246	0.9754	0.6400
24 - 25	4,355	495	15	94	4100.0	0.0229	0.9771	0.6253
25 - 26	3,751	744	78	84	3340.0	0.0251	0.9749	0.6096
26 - 27	2,845	518	5	67	2583.5	0.0259	0.9741	0.5937
27 – 28	2,255	445	0	52	2032.5	0.0256	0.9744	0.5786
28 – 29	1,758	469	0	38	1523.5	0.0249	0.9751	0.5641
29 - 30	1,251	407	2	33	1046.5	0.0315	0.9685	0.5463
30 - 31	809	346	3	15	634.5	0.0236	0.9764	0.5334
31 - 32	445	245	0	7	322.5	0.0217	0.9783	0.5218
32 - 33	193	192	0	1	97.0	0.0103	0.9897	0.5165
Total	37,702	19,448	10,675	7,579				

Table 9. Cumulative survival - National.

(1) Number of individuals alive at start of interval.
(2) Number of individuals alive at start of interval ineligible for further follow-up due to study termination.
(3) Number of individuals lost to follow-up (survival status was unknown) during the interval.
(4) Number of individuals dying during the interval.
(5) Number of individuals exposed to risk of dying in interval [patients entered - 0.5 * (withdrawn alive + lost)].
(6) Conditional probability of death during the interval (dead / effective number exposed).
(7) Conditional probability of surviving the interval (1 - proportion dead).
(8) Cumulative survival rate (previous cumulative survival * proportion surviving present interval).

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

LIFE EXPECTANCY

Life expectancies for SCI patients by age at injury (in 5-year intervals) and neurologic level and extent of lesion appear in Table 10. All persons who survived at least 24 hours after injury and who were included in the collaborative SCI survival study database were included in this analysis. Comparable figures for persons who survive the first post-injury year, by current age, appear in Table 11 (page 57). For each neurologic category the observed number of deaths was compared to an expected number of deaths based on observed length of follow-up and 1993 age-sex-specific mortality rates for the general U.S. population using methods outlined in detail by Smart and Sanders [1]. The year 1993 was chosen because it was roughly the mid-year of follow-up for the SCI population. All follow-up data through 2006 were used.

Age At Injury	Life Expectancy (Years) No SCI	Not Ventilator Dependent				Ventilator Dependent
		Motor Functional Any Level	Paraplegia	Tetraplegia C5-C8	Tetraplegia C1-C4	Any Level
10 years	68.2	62.4	55.0	49.8	45.0	23.6
15 years	63.2	57.5	50.2	45.0	40.2	19.3
20 years	58.4	52.8	45.6	40.6	36.1	16.6
25 years	53.7	48.2	41.2	36.4	32.1	14.6
30 years	48.9	43.5	36.8	32.1	28.1	12.1
35 years	44.2	38.9	32.3	27.9	24.0	9.4
40 years	39.5	34.3	28.0	23.8	20.2	7.1
45 years	35.0	29.9	23.9	20.0	16.6	5.2
50 years	30.6	25.7	20.1	16.4	13.4	3.7
55 years	26.3	21.7	16.4	13.2	10.5	2.5
60 years	22.2	17.9	13.1	10.2	7.9	1.4
65 years	18.4	14.4	10.2	7.7	5.8	0.7
70 years	14.9	11.3	7.6	5.5	4.0	0.1
75 years	11.8	8.5	5.4	3.8	2.5	<0.1
80 years	9.0	6.2	3.7	2.3	1.4	<0.1

Table 10. Life expectancy for SCI persons surviving at least 24 hours post-injury. [Values for persons with no SCI are from the 2003 U.S. Life Tables for the general population.]

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Current Age	Life Expectancy (Years)					
	No SCI	Not Ventilator Dependent				Ventilator Dependent
		Motor Functional Any Level	Paraplegia	Tetraplegia		Any Level
				C5-C8	C1-C4	
10 years	68.2	63.0	55.7	51.1	47.0	31.1
15 years	63.2	58.1	50.9	46.2	42.2	26.7
20 years	58.4	53.3	46.3	41.7	37.9	23.3
25 years	53.7	48.7	41.9	37.5	33.9	20.4
30 years	48.9	44.0	37.4	33.2	29.8	17.3
35 years	44.2	39.4	32.9	28.9	25.6	14.0
40 years	39.5	34.8	28.6	24.7	21.6	11.1
45 years	35.0	30.4	24.5	20.8	18.0	8.5
50 years	30.6	26.2	20.6	17.2	14.6	6.4
55 years	26.3	22.1	16.9	13.9	11.6	4.6
60 years	22.2	18.3	13.5	10.8	8.8	3.1
65 years	18.4	14.8	10.5	8.2	6.5	1.9
70 years	14.9	11.6	7.9	6.0	4.6	1.0
75 years	11.8	8.8	5.7	4.1	3.0	0.4
80 years	9.0	6.4	3.9	2.6	1.8	<0.1

Table 11. Life expectancy for SCI persons surviving at least 1 year post-injury.
[Values for persons with no SCI are from the 2003 U.S. Life Tables for the general population.]

The purpose of reporting these life expectancies is to document continuing progress attributable in large part to the Model System program. These figures are slightly decreased from those contained in our last annual report. SMR values increased slightly due to a shift in the reference year for calculating expected deaths from 1988 to 1993. The latter is a more accurate estimate of the mid-year of follow-up for this study population. Life expectancies remain substantially below normal, particularly for persons with tetraplegia and ventilator-dependency.

Figures in these tables are generally not appropriate for use in assessing life expectancy of individual persons because they are not specific enough for that task. At minimum, important prognostic factors that should be considered in determining an individual life expectancy include age, exact neurologic level of injury (particularly among persons with tetraplegia), ASIA impairment scale, length of survival that has already occurred post-injury, and to a lesser extent, etiology of injury, gender and race[2]. Significant co-morbidities (cancer, heart disease, diabetes, etc.) should also be considered when present[3].

Methods for estimating life expectancy that are used by the NSCISC are detailed in two recent articles by Strauss et al. and DeVivo[3, 4].

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Part III

Statistical Analysis of the National SCI Database

Introduction

The tables and figures presented in this report are based on a statistical analysis of most of the variables in the National SCI Database. The narrative accompanying the tables and figures is restricted to analysis of national aggregate data and intersystem variability within the database.

Lost and Unknown Categories

Since differential losses to follow-up may mask time trends within the data, patients who are lost are not included in the tables and figures depicting post-discharge data. The underlying assumption is made that patients who are lost to follow-up will be distributed proportionately across categories in the same way as successfully followed patients.

Data classified as unknown represent those patients who are being followed but for whom that specific information is unavailable. Therefore, a high proportion of unknowns indicates information reflecting unusual data collection difficulties.

Data from the Extended Data Submission Years

Since 1995 revised Form II reporting procedures require submission of Form IIs for all patients only in post-injury years 1, 2, 5, 10, 15, 20, 25 and 30. For this reason, there has been a significant decrease in the numbers of records in all the other post-injury years. Therefore, beginning with this report, several Form II analyses have been restricted only to the extended data years.

Statistical Measures

The measure of central tendency used was the mean, or arithmetic average, which is simply the sum of the individual values for each patient divided by the number of patients. The standard deviation (S.D.) is a measure of dispersion about the population mean (i.e., how closely individual patient values cluster around the mean). If data are normally distributed, 95 percent of all observed values will fall within 1.96 standard deviations of the mean.

Because most of the continuous variables in the National SCI Database are not normally distributed, appropriate transformations were made before these data were analyzed. The square root transformation was determined to be the most appropriate (i.e., it led to the most nearly normal distribution based on convergence of the mean, median and mode as well as skewness and kurtosis coefficients approaching zero). The transformation involves taking the square root of the original raw data, then calculating the mean and standard deviation and finally, squaring the resulting mean for reporting purposes. However, it is not appropriate to square the resulting standard deviation. Therefore, we have chosen to report the 95 percent confidence limits, which are calculated from the mean and standard deviation (in square root terms) as follows:

$$\text{Lower 95 percent confidence bound} = [\text{mean} - 1.96\ (\text{S.D.})]^2$$
$$\text{Upper 95 percent confidence bound} = [\text{mean} + 1.96\ (\text{S.D.})]^2$$

Because of the transformation, the confidence interval is not symmetric about the mean. Nonetheless, the implication is that 95 percent of the data should be between the reported upper and lower bound.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

AGE AT INJURY

The occurrence of spinal cord injury is highest among persons in the 16-30 age group. In fact, more injuries occurred in this age group than in all other age groups combined. Some descriptive statistics for the age at injury distribution are shown in Table 14 Mean age for all patients was 33 years (S.D. = 15.9). Mean age for all patients in the database ranged from a low of 29.0 to a high of 44.9.

	Mean	Standard Deviation	n	Minimum	Maximum
Total	33.0	15.9	24,331	<1	98

Table 14. Age at injury: descriptive statistics. [1 case had incomplete data.]

Table 15 reflects a consistent trend toward older age at time of injury. Mean age at injury has increased from 28.7 years between 1973 and 1979 to 38.0 years since 2000. This trend reflects in large part a similar trend in the average age of the United States population. However, underlying changes in age-specific spinal cord injury incidence rates, changing locations of model systems, and changing referral patterns to model systems may also be contributing to the trend toward older age at injury for persons in the NSCISC database.

Year of Injury	Mean	Standard Deviation	n	Minimum	Maximum
1973 – 1979	28.7	14.1	4,564	1	88
1980 – 1984	30.4	14.6	4,951	1	90
1985 – 1989	32.3	15.8	3,843	<1	92
1990 – 1994	33.6	15.9	3,296	1	97
1995 - 1999	36.4	16.9	3,626	<1	98
2000 - 2006	38.0	16.8	4,051	1	90

Table 15. Trend in age by year of injury. [1 case had incomplete data.]

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

The cumulative frequency distribution of age at injury is depicted in Table 16. Three patients were less than one year old while one was 98 years old. The most common age was 19 years; 29.6 percent of all injuries occurred between the ages of 17 and 23 years, and 52.2 percent of all injuries occurred between the ages of 16 and 30. Approximately 8.6 percent of all injuries occurred at age 60 or older.

Age	n	Frequency	Cumulative Frequency	Age	n	Frequency	Cumulative Frequency
<1	3	<0.1	0.0	49	227	0.9	83.7
1	12	<0.1	0.1	50	214	0.9	84.6
2	9	<0.1	0.1	51	188	0.8	85.4
3	16	0.1	0.2	52	210	0.9	86.2
4	21	0.1	0.3	53	195	0.8	87.0
5	14	0.1	0.3	54	192	0.8	87.8
6	19	0.1	0.4	55	180	0.7	88.6
7	16	0.1	0.5	56	190	0.8	89.3
8	18	0.1	0.5	57	179	0.7	90.1
9	18	0.1	0.6	58	164	0.7	90.7
10	29	0.1	0.7	59	152	0.6	91.4
11	16	0.1	0.8	60	150	0.6	92.0
12	33	0.1	0.9	61	157	0.6	92.6
13	95	0.4	1.3	62	132	0.5	93.2
14	196	0.8	2.1	63	124	0.5	93.7
15	366	1.5	3.6	64	119	0.5	94.2
16	700	2.9	6.5	65	103	0.4	94.6
17	975	4.0	10.5	66	121	0.5	95.1
18	1,145	4.7	15.2	67	125	0.5	95.6
19	1,176	4.8	20.0	68	99	0.4	96.0
20	1,040	4.3	24.3	69	88	0.4	96.4
21	1,032	4.2	28.6	70	72	0.3	96.7
22	958	3.9	32.5	71	79	0.3	97.0
23	895	3.7	36.2	72	67	0.3	97.3
24	838	3.4	39.6	73	78	0.3	97.6
25	782	3.2	42.8	74	64	0.3	97.9
26	699	2.9	45.7	75	72	0.3	98.2
27	656	2.7	48.4	76	64	0.3	98.4
28	632	2.6	51.0	77	64	0.3	98.7
29	628	2.6	53.6	78	42	0.2	98.8
30	557	2.3	55.9	79	51	0.2	99.1
31	542	2.2	58.1	80	38	0.2	99.2
32	538	2.2	60.3	81	31	0.1	99.3
33	445	1.8	62.1	82	28	0.1	99.5
34	378	1.6	63.7	83	28	0.1	99.6
35	442	1.8	65.5	84	18	0.1	99.6
36	427	1.8	67.3	85	21	0.1	99.7
37	378	1.6	68.8	86	17	0.1	99.8
38	396	1.6	70.4	87	11	<0.1	99.8
39	342	1.4	71.9	88	12	<0.1	99.9
40	343	1.4	73.3	89	8	<0.1	99.9
41	333	1.4	74.6	90	6	<0.1	100.0
42	302	1.2	75.9	91	4	<0.1	100.0
43	308	1.3	77.1	92	3	<0.1	100.0
44	294	1.2	78.3	94	1	<0.1	100.0
45	289	1.2	79.5	95	1	<0.1	100.0
46	255	1.0	80.6	97	1	<0.1	100.0
47	263	1.1	81.7	98	1	<0.1	100.0
48	271	1.1	82.8				

Table 16. Age at injury: frequency distribution. [1 case had incomplete data]

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

SEX

The number of spinal cord injury patients by gender is shown in Table 17. Overall, 81.0 percent of all reported spinal cord injuries occurred among males.

There was very little variability among systems with regard to the composition of the patient populations by gender. Among systems, the proportion of male patients ranged from a low of 76.5 percent to a high of 87.0 percent.

n %	Male	Female
Total	19,707	4,625
	81.0	19.0

Table 17. Sex of spinal cord injury patients.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

RACE

The number of spinal cord injury patients by race is shown in Table 18 (page 65). There was substantial variability among systems: the proportion of white patients ranges from 22.8 percent to 90.2 percent, while the proportion of African Americans ranged from 3.6 to 52.7 percent. The highest proportion of American Indians (2.6%) occurred in one system and the highest proportion of patients of Asian descent (5.8%) occurred in another.

A very significant trend over time was reported in the racial distribution of persons enrolled in the national database between 1973 and 1998[5]. During 1973 through 1979, 76.8% of persons enrolled in the database were white, 14.2% were African American, 1.9% were American Indian, and 0.9% were Asian. However, after 1994, only 66.3% persons enrolled in the database were white, while 25.4% were African American, 2.1% were Asian, 0.4% were American Indian, and 3.0% were classified as "other" races. This trend is due in very small part to trends in the United States general population. Periodic changes in the identities of participating Model Systems, changes in eligibility criteria for inclusion into the National SCI Database, and changes in referral patterns to Model Systems are also partly responsible for this racial trend. However, the trend is so large that changes in underlying race-specific SCI incidence rates are also likely.

It should not be inferred from these data that the incidence of spinal cord injury was higher among whites than non-whites. On the contrary, most patients were white because whites comprise by far the largest segment of the United States population. In fact, other studies have demonstrated conclusively that the spinal cord injury incidence rate was highest among non-whites[6].

High percentages of unknowns in this variable are due to a database conversion process that occurred in 1995. Details on this conversion are explained on page 66 of this report. All but 33, (2.0%) of the persons of unknown race are persons of Hispanic origin.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

	Race						Hispanic
n %	White	African American	American Indian	Asian	Other	Unknown	Origin with Race Unknown
Total	16,407	5,386	226	380	318	1,615	1,582
	67.4	22.1	0.9	1.6	1.3	6.6	

Table 18. Race of spinal cord injury patients.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

HISPANIC ORIGIN

Table 19 presents an analysis of the Hispanic Origin variable that was added to the database in November 1995. This variable was added to conform to the Bureau of the Census guidelines for reporting race and ethnicity.

When this variable was added, all persons coded Spanish in the race variable were converted to "Yes, Hispanic origin" in this variable and, their race was then changed to Unknown. For those who were not coded Spanish in the race variable, the "No" code was inserted in this variable and their original race code was retained. This data conversion process resulted in high percentages of records coded “unknown” in the race variable.

	Race						
Hispanic Origin n / %	White	African American	American Indian	Asian	Other	Unknown	Total
Not of Hispanic Origin	15,938	5,267	222	364	88	1	21,880
	97.1	97.8	98.2	95.8	27.7	0.1	89.9
Hispanic Origin	405	53	4	15	230	1,582	2,289
	2.5	1.0	1.8	3.9	72.3	98.0	9.4
Unknown	64	66	0	1	0	32	163
	0.4	1.2	0.0	0.3	0.0	2.0	0.7
Total	16,407	5,386	226	380	318	1,615	24,332
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 19. Hispanic origin by race.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

ETIOLOGY

Specific etiologic categories by sex are depicted in Table 20 (page 68). For males and females, the three leading causes of spinal cord injury were the same: auto accidents, falls, and gunshot wounds.

Among males, diving accidents ranked fourth followed by motorcycle accidents. However, for females, medical/surgical complications ranked fourth and diving accidents ranked fifth.

Significant gender differences are evident in five etiologies: auto accidents (30.7% for males, 50.8% for females); motorcycle accidents (6.8% males, 1.9% females); diving accidents (7.6% males, 2.8% females); hit by falling objects (3.7% males, 0.6% females) and medical/surgical complications (1.7% male, 4.3% females).

It should be noted that the ATV/ATC category was created in October 1986; before that time, injuries resulting from these vehicles were coded as either Motorcycle or Other Vehicle. While some systems have converted pre-1986 data where possible, this conversion was not mandatory. Therefore, the number of injuries resulting from ATV/ATC accidents is most probably underreported.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Rank	Etiology	Males		Females		Total	
		n	%	n	%	n	%
1	Auto accident	6,051	30.7	2,348	50.8	8,399	34.5
2	Fall	3,969	20.1	879	19.0	4,848	19.9
3	Gunshot	3,422	17.4	489	10.6	3,911	16.1
4	Diving	1,494	7.6	131	2.8	1,625	6.7
5	Motorcycle	1,340	6.8	86	1.9	1,426	5.9
6	Hit by falling object	722	3.7	29	0.6	751	3.1
7	Medical/surgical complications	337	1.7	199	4.3	536	2.2
8	Pedestrian	306	1.6	103	2.2	409	1.7
9	Bicycle	260	1.3	27	0.6	287	1.2
10	Personal contact	186	0.9	54	1.2	240	1.0
11	Other penetrating wound	177	0.9	47	1.0	224	0.9
12	Other Unknown	201	1.0	19	0.4	220	0.9
13	Other vehicular	133	0.7	16	0.3	149	0.6
14	Football	128	0.6	0	0.0	128	0.5
15	Snow skiing	108	0.5	13	0.3	121	0.5
16	ATV/ATC	101	0.5	18	0.4	119	0.5
17	Horseback riding	53	0.3	56	1.2	109	0.4
18	Winter sports	79	0.4	20	0.4	99	0.4
19	Fixed wing aircraft	57	0.3	26	0.6	83	0.3
20	Other sports	69	0.4	15	0.3	84	0.3
20	Surfing	82	0.4	2	<0.1	84	0.3
22	Wrestling	74	0.4	2	<0.1	76	0.3
23	Trampoline	50	0.3	8	0.2	58	0.2
24	Gymnastics	29	0.1	18	0.4	47	0.2
25	Field sports	37	0.2	1	<0.1	38	0.2
26	Snowmobile	31	0.2	5	0.1	36	0.1
27	Hang gliding	29	0.1	2	<0.1	31	0.1
28	Rotating wing aircraft	27	0.1	2	<0.1	29	0.1
28	Water skiing	27	0.1	1	<0.1	28	0.1
30	Boat	18	0.1	7	0.2	25	0.1
31	Air sports	21	0.1	0	0.0	21	0.1
32	Baseball	19	0.1	0	0.0	19	0.1
33	Rodeo	19	0.1	0	0.0	19	0.1
34	Explosion	13	0.1	1	<0.1	14	0.1
35	Basketball	10	0.1	0	0.0	10	<0.1
36	Track and field	5	<0.1	0	0.0	5	<0.1
37	Skateboard	4	<0.1	0	0.0	4	<0.1
	Unknown	19	0.1	1	<0.1	20	0.1
	Total	19,707	81.0	4,625	19.0	24,332	100.0

Table 20. Etiology of spinal cord injury, by sex.

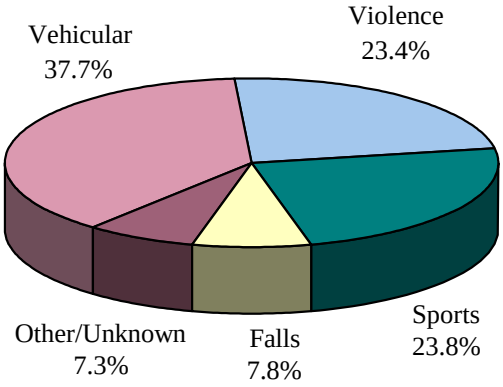
Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

The various etiologies were grouped into five categories, and the results are depicted in Figures 3, 4 and 5 and Tables 21 and 22. The Vehicular Accidents group consisted of auto, motorcycle, ATV/ATC and other vehicular accidents, boating mishaps, accidents involving fixed and rotating wing aircraft, snowmobile and bicycling accidents. The Violence category included gunshot and other wounds, personal contact injuries and explosions. The Other category included being hit by a falling object, pedestrian accidents, medical/surgical complications and unclassified others. The remaining etiologic categories were considered Sports Accidents.

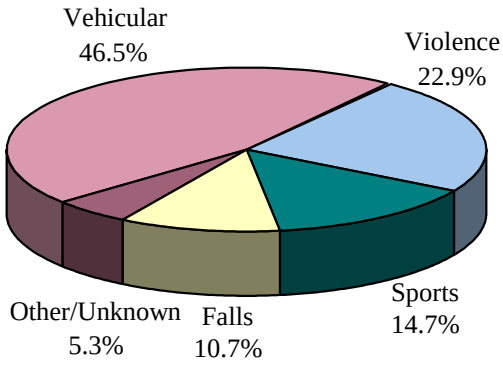
Grouped etiology by age at injury is depicted in Figure 3 (page 70). Vehicular Accidents were the leading cause of spinal cord injury up to 60 years of age. After age 60, Falls were the leading cause of SCI. Sports Accidents and Acts of Violence declined proportionately while Falls increased with advancing age.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

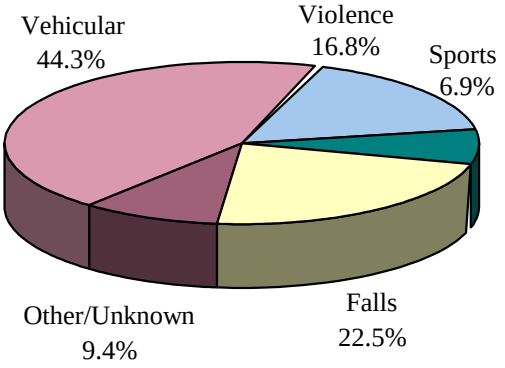
Figure 3. Grouped etiology by age at injury



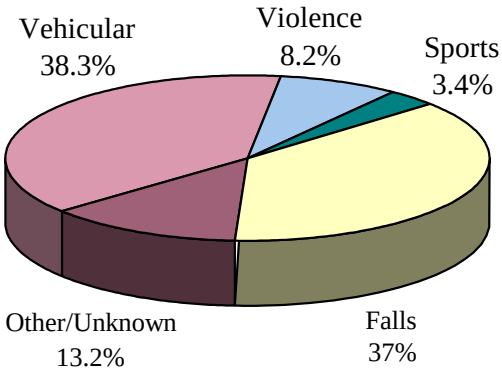
0 to 15 Years



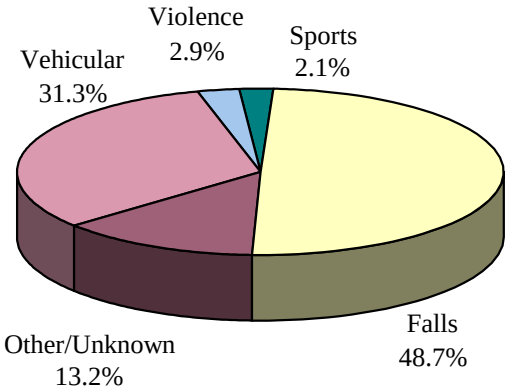
16 to 30 Years



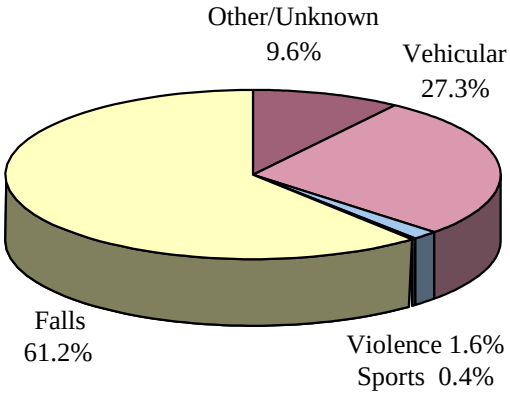
31 to 45 Years



46 to 60 Years



61 to 75 Years



76 to 98 Years

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Figure 4 depicts grouped etiology by gender. Overall, 81.0 percent of all spinal cord injuries were incurred by males. The Sports category differs the most from this overall distribution: 89.7 percent of sports-related injuries were incurred by males.

Figure 4. Grouped etiology by sex

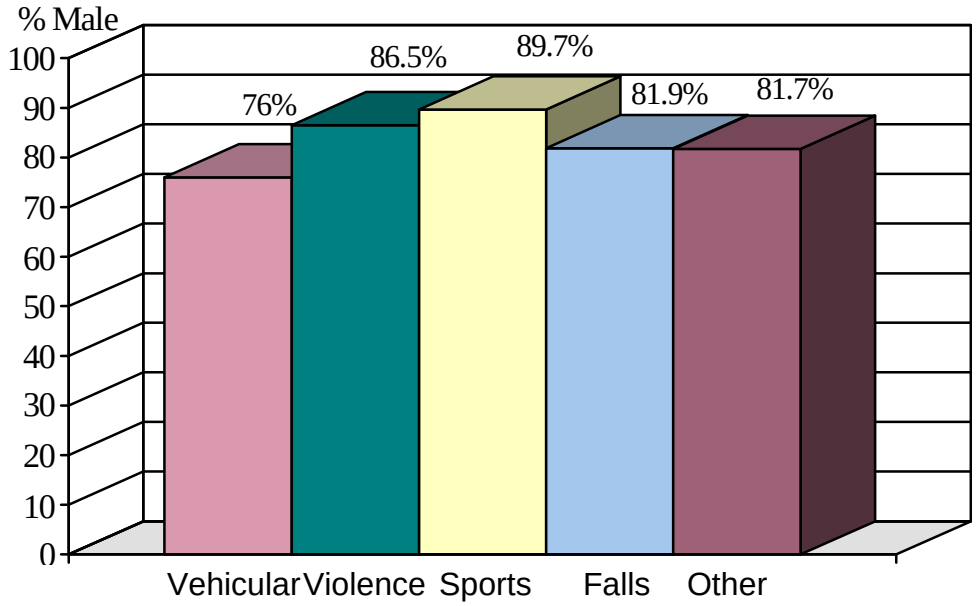
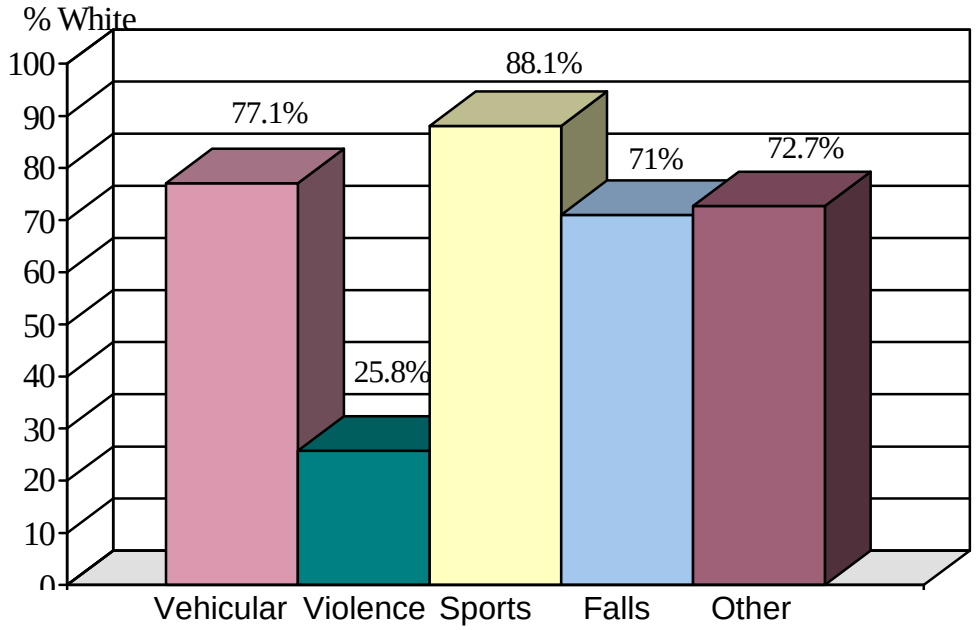


Figure 5 depicts grouped etiology by race. Overall, 67.4 percent of all spinal cord injuries were incurred by whites. The distribution that differs most dramatically from the overall trend is that of the Violence category, where less than one-third of the injuries were incurred by whites.

Figure 5. Grouped etiology by race



Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Grouped etiology by year of injury appears below in Table 21.

Etiology	n / %	Year of Injury 1973-1979	1980-1984	1985-1989	1990-1994	1995-1999	2000-2005	All Years
Vehicular Accidents		2,144	2,237	1,621	1,199	1,451	1,901	10,553
		47.0	45.2	42.2	36.4	40.0	46.9	43.4
Violence		605	792	723	952	764	553	4,389
		13.3	16.0	18.8	28.9	21.1	13.7	18.0
Sports		655	706	390	248	254	353	2,606
		14.3	14.3	10.1	7.5	7.0	8.7	10.7
Falls		752	836	796	659	846	959	4,848
		16.5	16.9	20.7	20.0	23.3	23.7	19.9
Other		406	377	311	235	306	281	1,916
		8.9	7.6	8.1	7.1	8.4	6.9	7.9
Unknown		3	3	2	3	5	4	20
		0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total		4,565	4,951	3,843	3,296	3,626	4,051	24,332
		100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 21. Grouped etiology by injury year.

Vehicular Accidents ranked as the leading cause of SCI through all time periods. Falls ranked second through all time periods except from 1990 to 1994 when Acts of Violence ranked second. There was a steady increase in the percentage of SCI due to Acts of Violence from 13.3 percent prior to 1980 to 28.9 percent from 1990 to 1994. A concomitant decrease in the percentage of SCI due to Sports-related activities from 14.3 to 7.5 occurred over this same time period. The percentage of SCI due to Vehicular Accidents also decreased from 47.0% to 36.4%. There has been a significant decline in SCI due to violence and an increase in injuries due to vehicular accidents and falls since 1994. These trends may be due in part to changing locations of model systems, changing referral patterns to model systems, changes in underlying incidence rates, or a combination of these factors.

Grouped etiology appears in Table 22 (page 73). Vehicular Accidents ranked first in the National SCI Database (43.4%) and first in all but one system where violence ranked first.

Falls ranked second nationally (19.9%) and second for all systems except five. Sports ranked second in one of those systems and Vehicular Accidents ranked second in another. Violence ranked second in the last three of those systems and third overall nationally (18.0%).

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

n %	Vehicular Accidents	Violence	Sports	Falls	Other	Unknown
Total	10,553	4,389	2,606	4,848	1,916	20
	43.4	18.0	10.7	19.9	7.9	0.1

Table 22. Grouped etiology.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

WORK RELATEDNESS

This variable was added to the database in 2000 and only records entered after that year are included in Table 23. Of the 4,065 available records, 10.3% did have a work related spinal cord injury.

n %	No	Yes	Unknown	Total
Total	3,349 82.4	418 10.3	298 7.3	4,065

Table 23. Work relatedness.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

MARITAL STATUS

Marital status at injury is depicted in Table 24 (page 75). It is not surprising, given the young age at which most injuries occur, that over half the patients in the database were single (never married). Substantial intersystem variability was noted. The percentage of patients who were single at time of injury ranged from 42.3 percent to 63.9 percent. The percentage of married patients ranged from 20.7 percent to 40.1 percent, while the percentage of divorced patients ranged from 4.4 percent to 16.3 percent.

Table 25 (page 75) is a cross-sectional analysis of post-injury marital status. Only the data from the follow-up years in which reporting is required for all patients are presented. Most patients remain in the single, never married category through post-injury year 15.

Percentages of patients who are married begin to increase after year 5 and continue to increase through year 30, whereas those who are divorced begin to increase after year 5 and continue to increase through year 30 with a small decline in year 25.

n %	Single	Married	Divorced	Separated	Widowed	Other	Unknown
Total	12,283	7,669	2,194	900	598	28	145
	51.6	32.2	9.2	3.8	2.5	0.1	0.6

Table 24. Marital status at time of spinal cord injury.

Marital Status n %	Discharge	Year Post-injury 1	2	5	10	15	20	25	30
Single	7,366	2,089	959	1,117	641	438	403	250	47
	53.3	47.8	49.5	43.9	41.0	36.2	34.0	29.9	25.0
Married	4,470	1,439	597	821	519	413	411	332	78
	32.3	33.0	30.8	32.3	33.2	34.2	34.7	39.7	41.5
Divorced	1,252	537	229	440	305	283	308	209	53
	9.1	12.3	11.8	17.3	19.5	23.4	26.0	25.0	28.2
Separated	461	157	88	80	49	34	36	10	2
	3.3	3.6	4.5	3.1	3.1	2.8	3.0	1.2	1.1
Widowed	266	136	59	82	47	41	27	35	8
	1.9	3.1	3.0	3.2	3.0	3.4	2.3	4.2	4.3
Other	16	8	5	5	3	0	1	0	0
	0.1	0.2	0.3	0.2	0.2	0.0	0.1	0.0	0.0
Total	13,831	4,366	1,937	2,545	1,564	1,209	1,186	836	188
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 25. Marital status by time post-injury. (cross-sectional analysis using the last record with known marital status for individuals who were at least 15 years of age at time of injury).

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

LEVEL OF EDUCATION

The highest level of formal education completed at time of injury appears in Table 26 (page 78). Slightly more than one-half (58.9%) of the patients were at least high school graduates at time of admission, whereas 84.8 percent were at least 19 years of age at injury and would normally be expected to have completed high school. Approximately one-tenth (9.8%) had an eighth grade education or less, whereas only 2.1 percent were less than 15 years of age at injury and would normally be expected to have an eighth grade education or more.

The proportion of patients with an eighth grade education or less ranged from 1.1 percent to 18.3 percent. Overall, the highest level of formal education completed at time of injury was reported as unknown for 6.3 percent of the patients, suggesting many systems are having substantial difficulty collecting this information.

n %	to 8th Grade	Grades 9-11	High School	Assoc.	Bachelor	Masters	Doctorate	Other	Unknown
Total	2,390	6,073	11,728	462	1,483	310	201	158	1,527
	9.8	25.0	48.2	1.9	6.1	1.3	0.8	0.6	6.3

Table 26. Highest level of formal education completed at time of injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 27 depicts the number of patients with a ninth to eleventh grade level of education at time of injury who obtained a high school diploma within five years post-injury. Only those patients whose education level was known at both admission and fifth annual exam were included in the analysis (n=2,308). The proportion of those patients who went on to obtain their high school diploma ranged from 4.9 percent to 76.9 percent.

	n	Obtained High School Diploma	
		n	%
Total	2,308	1,073	46.5

Table 27 Patients who obtained a high school diploma within five years of injury. [Includes only those with 9th to 11th grade level of education at admission.]

Similarly, Table 28 depicts the number of patients with a high school diploma at time of injury who obtained a higher degree within five years post-injury. Again, only those patients whose education level was known at both admission and fifth annual exam were included in the analysis (n=4,599). The proportion of those patients who went on to obtain higher degrees ranged from 0.9 percent to 28.9 percent. It should be noted that other than an Associate's Degree, any degree beyond high school usually takes four or more years to complete; thus, five years post-injury may be too short a time frame to indicate trends. It will be interesting to examine the changes in educational level as more follow-up data become available.

	n	Obtained Post-High School Degree	
		n	%
Total	4,599	624	13.6

Table 28. Patients with a high school diploma at injury who obtained a higher degree within five years of injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

OCCUPATIONAL STATUS

Cross-sectional analysis of occupational status by time post-injury is shown in Table 29 (page 83). Only the most recent record for subjects between ages 16 and 59 years of age was included in this analysis and, data are presented only for the extended data years (i.e., the years in which data submission is required for all patients).

At admission, almost two-thirds (64.2%) of the patients were reported as employed in the competitive labor market while 15% were students and 16.3% were unemployed at injury. However, the post-injury employment pattern was strikingly different: only 13.6 percent were employed one year post-injury. This gradually increased to 39.5 percent by year twenty-five and peaked in year thirty at 41.8 percent.

The proportion of patients who were homemakers remained relatively stable across all post-injury years. This was also true for the proportion of patients in sheltered workshops and on-the-job training, both of which accounted for less than one percent.

The percentage of patients who were students as compared to both those who were employed or unemployed is depicted by year post-injury in Figure 6 (page 84). For these purposes, unemployed includes all categories except employed in the competitive labor market and student. The percentage of employed individuals rose from 14.3 percent in year one to 42.3 percent in year thirty, while the proportion of those unemployed dropped from 71.9 percent in year one to 55.8 percent in year thirty. The percentage of students peaked in year two at about 17 percent, then steadily declined in subsequent years. After year five, the percentage of employed individuals rose as the proportion of students decreased, an indication that some former students became employed following the completion of their education.

The proportion of those employed in the competitive labor market by neurologic level of lesion through post-injury year thirty is depicted in Figure 7 (page 84). For persons with paraplegia, the proportion employed increased steadily over time: from 14.6 percent in the first post-injury year to 46.5 percent in year thirty. For persons with tetraplegia, the proportion employed increased from 13.7 percent in year one to 38.8 percent in year thirty.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Occupation	n / %	Time Post-injury								
		Admit	1	2	5	10	15	20	25	30
Working		8,443	550	246	550	405	390	395	298	66
		64.2	13.6	13.3	23.2	27.1	33.6	35.6	39.5	41.8
Homemaker		224	77	36	50	35	28	15	16	4
		1.7	1.9	2.0	2.1	2.3	2.4	1.4	2.1	2.5
On-the-job training		40	5	6	7	3	1	2	0	0
		0.3	0.1	0.3	0.3	0.2	0.1	0.2	0.0	0.0
Sheltered Workshop		9	0	2	2	0	0	0	1	0
		0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0
Retired		94	57	31	78	48	53	45	44	7
		0.7	1.4	1.7	3.3	3.2	4.6	4.1	5.8	4.4
Student		1,969	531	290	331	100	44	35	16	3
		15.0	13.1	15.7	14.0	6.7	3.8	3.2	2.1	1.9
Unemployed		2,141	2,351	1,044	1,149	740	547	516	319	57
		16.3	58.2	56.6	48.6	49.6	47.1	46.4	42.3	36.1
Other		131	279	70	115	101	62	82	49	19
		1.0	6.9	3.8	4.9	6.8	5.3	7.4	6.5	12.0
Unknown		102	191	121	84	60	36	21	11	2
		0.8	4.7	6.6	3.6	4.0	3.1	1.9	1.5	1.3
Total		13,153	4,041	1,846	2,366	1,492	1,161	1,111	754	158
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 29. Occupational status by time post-injury (cross-sectional analysis).

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Figure 6. Occupational status by year post-injury.

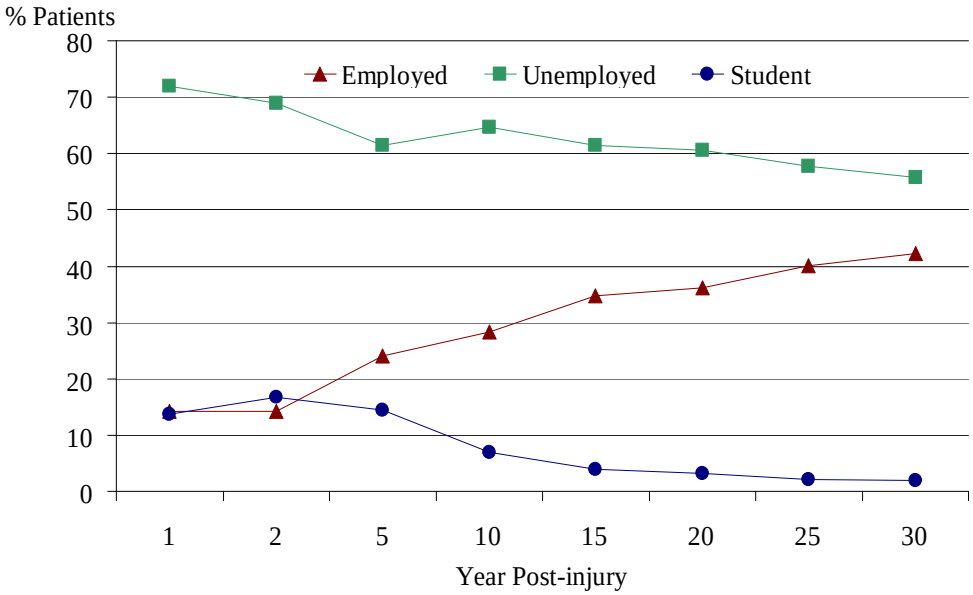
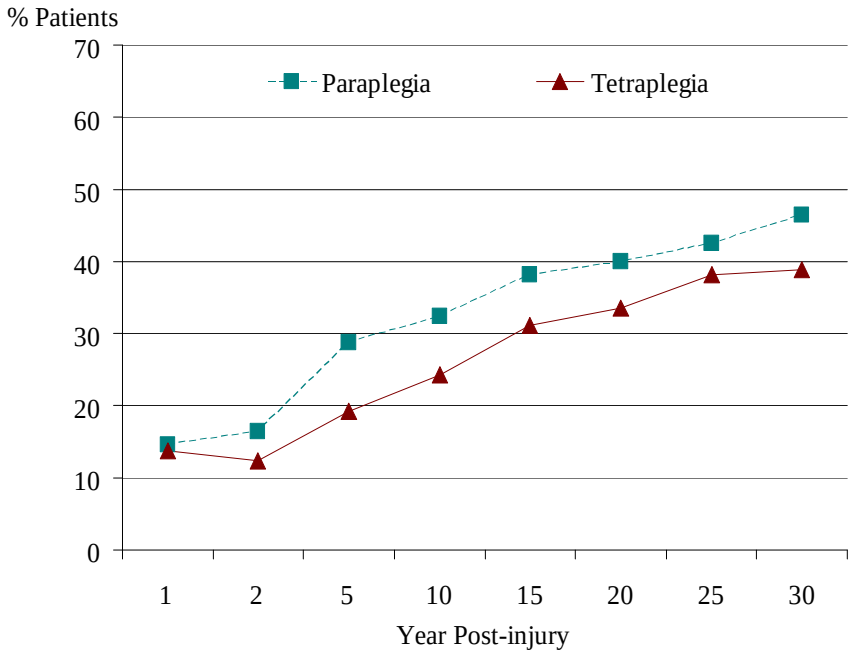


Figure 7. Percent employed by year post-injury



Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

JOB CENSUS CODE

Job census code at injury appears in Table 30. This variable specifies the major census occupational category for the patient's occupation at the time of injury and during follow-up. It was added to the database in 2000. Only those records entered into the database since 1999 (n=4,590) were used for this analysis. The following are the coding categories for this variable:

Code	Category
01	Executive, administrative, and managerial
02	Professional specialty
03	Technicians and related support
04	Sales
05	Administrative support including clerical
06	Private household
07	Protective service
08	Service, except protective and household
09	Farming, forestry, and fishing
10	Precision production, craft, and repair
11	Machine operators, assemblers, and inspectors
12	Transportation and material moving
13	Handlers, equipment cleaners, helpers, and laborers
14	Military occupations

A plurality of persons (10.2%) was employed in precision production, craft, and repair jobs followed by professional specialty jobs (6.3%) and handlers, equipment cleaners, helper and laborers jobs (5.4%). A high percentage of records were coded unknown (20.5%) indicating some data collection difficulties.

Job census codes at follow-up appear in Table 31 (page 87). All records entered into the database after 1999 are included in this analysis. More persons were employed in professional specialty jobs after injury than any other category, followed by executive, administrative, and managerial jobs. These are typically jobs that require higher education levels and are also more often within the physical capabilities of persons with SCI than other job categories. These results would seem to reinforce the value of higher education degrees in obtaining and sustaining post-injury employment. Most persons with SCI do not have these advanced degrees, thereby making it much more difficult to find suitable employment.

n / %	Code 01	02	03	04	05	06	07	08	09	10	11	12	13	14	Not Working	Unknown
Total	187	287	94	138	119	15	50	214	99	466	103	145	247	7	1,476	943
	4.1	6.3	2.0	3.0	2.6	0.3	1.1	4.7	2.2	10.2	2.2	3.2	5.4	0.2	32.2	20.5

Table 30. Job census code at injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Job Census Code	n / %	Year Post-injury 1	2	5	10	15	20	25	30
01	n	72	1	59	58	50	88	79	15
	%	2.3	0.2	3.2	4.6	4.6	7.3	8.2	7.7
02	n	96	5	93	97	97	127	115	31
	%	3.1	0.9	5.1	7.7	8.9	10.5	12.0	15.8
03	n	19	0	26	19	16	23	19	3
	%	0.6	0.0	1.4	1.5	1.5	1.9	2.0	1.5
04	n	36	3	41	30	18	13	13	2
	%	1.2	0.6	2.2	2.4	1.7	1.1	1.4	1.0
05	n	39	2	50	39	31	53	46	10
	%	1.3	0.4	2.7	3.1	2.8	4.4	4.8	5.1
06	n	0.1	0.0	0.0	0.2	0.0	0.1	0.0	0.0
	%	0.1	0.0	0.0	0.2	0.0	0.1	0.0	0.0
07	n	2	0	2	2	2	3	3	1
	%	0.1	0.0	0.1	0.2	0.2	0.2	0.3	0.5
08	n	17	0	21	12	8	8	1	0
	%	0.5	0.0	1.2	1.0	0.7	0.7	0.1	0.0
09	n	10	0	6	4	10	6	6	1
	%	0.3	0.0	0.3	0.3	0.9	0.5	0.6	0.5
10	n	35	3	19	9	19	19	14	4
	%	1.1	0.6	1.0	0.7	1.7	1.6	1.5	2.0
11	n	7	1	5	4	2	6	3	2
	%	0.2	0.2	0.3	0.3	0.2	0.5	0.3	1.0
12	n	6	0	4	2	1	3	2	1
	%	0.2	0.0	0.2	0.2	0.1	0.2	0.2	0.5
13	n	9	0	3	1	3	2	1	0
	%	0.3	0.0	0.2	0.1	0.3	0.2	0.1	0.0
14	n	0	0	1	0	0	0	1	0
	%	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
Not Working	n	2,574	436	1,381	877	701	764	593	124
	%	82.6	81.5	75.6	69.6	64.4	63.3	61.8	63.3
Unknown	n	194	84	115	103	131	91	63	2
	%	6.2	15.7	6.3	8.2	12.0	7.5	6.6	1.0
Total	n	3,118	535	1,826	1,260	1,089	1,207	959	196
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 31. Job census code by year post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

PLACE OF RESIDENCE

Place of residence at discharge is shown in Table 32 (page 88). Table 33 (page 88) depicts residence during the post-injury years using only each patient's most recent Form II record and presenting the data for the extended data years only.

Most patients (88.1%) were discharged to a private residence. Intersystem variability was not substantial: the proportion of patients discharged to a private residence ranged from 78.4 percent to 95.4 percent.

In every year post-injury, Private Residence ranked first as place of residence, as at discharge. The proportion of patients residing in nursing homes never rose above 4.4% during any extended data post-injury year.

n %	Private Residence	Hospital	Nursing Home	Group Living	Other	Deceased	Unknown
Total	21,439	362	1,302	382	143	639	65
	88.1	1.5	5.4	1.6	0.6	2.6	0.3

Table 32. Place of residence at discharge.

Place of Residence n %	Year Post-injury 1	2	5	10	15	20	25	30
Private Residence	4,094	1,789	2,467	1,542	1,218	1,192	849	188
	88.8	85.0	91.7	93.6	94.9	96.6	96.5	95.9
Hospital	23	19	6	3	0	0	1	0
	0.5	0.9	0.2	0.2	0.0	0.0	0.1	0.0
Nursing Home	197	92	92	47	30	22	15	6
	4.3	4.4	3.4	2.9	2.3	1.8	1.7	3.1
Group Living	49	37	24	9	3	2	1	0
	1.1	1.8	0.9	0.5	0.2	0.2	0.1	0.0
Other	35	14	10	3	1	2	1	0
	0.8	0.7	0.4	0.2	0.1	0.2	0.1	0.0
Unknown	210	153	91	44	31	16	13	2
	4.6	7.3	3.4	2.7	2.4	1.3	1.5	1.0
Total	4,608	2,104	2,690	1,648	1,283	1,234	880	196
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 33. Place of residence by year post-injury. [cross-sectional analysis]

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

MEAN DAYS FROM INJURY TO SCI CARE SYSTEM ADMISSION

Table 34 (page 91) depicts mean days from injury to system admission by year of injury. Mean days from injury to system admission reached a peak of 23 days in 1975 and 1976 and since that time, has declined steadily. A change in the eligibility criteria implemented in January 1987 has resulted in a further decrease in mean days from injury to system admission. The new eligibility criteria allowed only patients admitted to the system within 60 days of injury to be entered into the National SCI Database. Previously, patients were eligible for national data submission if they entered the system within one year following injury. In 2000, eligibility was again expanded to one year following injury and as a result, means days from injury to system admission increased to 8 days in years 2000, 2002, and 2005, 9 days in 2004, and 10 days in 2003.

	Year of Injury													
	1973		1974		1975		1976		1977		1978		1979	
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
Total	223	19	402	21	579	23	684	23	822	21	848	22	1007	22

Table 34. Mean days from injury to system admission by year of injury. [using square root transformation]

	Year of Injury													
	1980		1981		1982		1983		1984		1985		1986	
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
Total	1130	20	818	21	750	21	1155	15	1098	14	976	16	931	10

	Year of Injury													
	1987		1988		1989		1990		1991		1992		1993	
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
Total	663	6	628	6	645	6	597	5	705	6	651	5	654	5

	Year of Injury											
	1994		1995		1996		1997		1998		1999	
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
Total	689	6	638	6	736	5	755	6	729	6	768	6

	Year of Injury													
	2000		2001		2002		2003		2004		2005		2006	
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
Total	674	8	719	7	727	8	691	10	635	9	590	8	15	4

Table 34 (continued). Mean days from injury to system admission by year of injury. [using square root transformation]

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

The actual distribution of days from injury to system admission for the entire National SCI Database is depicted in Table 35.

Days	n	%	Cumulative %	Days	n	%	Cumulative %
1	10,673	43.9	43.9	32	195	0.8	80.2
2	385	1.6	45.4	33	171	0.7	80.9
3	323	1.3	46.8	34	157	0.6	81.5
4	341	1.4	48.2	35	120	0.5	82.0
5	328	1.3	49.5	36	145	0.6	82.6
6	340	1.4	50.9	37	160	0.7	83.3
7	297	1.2	52.1	38	159	0.7	83.9
8	338	1.4	53.5	39	149	0.6	84.6
9	386	1.6	55.1	40	112	0.5	85.0
10	370	1.5	56.6	41	108	0.4	85.5
11	357	1.5	58.1	42	105	0.4	85.9
12	360	1.5	59.6	43	102	0.4	86.3
13	314	1.3	60.9	44	111	0.5	86.8
14	259	1.1	61.9	45	107	0.4	87.2
15	279	1.1	63.1	46	126	0.5	87.7
16	332	1.4	64.5	47	118	0.5	88.2
17	334	1.4	65.8	48	91	0.4	88.6
18	323	1.3	67.2	49	75	0.3	88.9
19	298	1.2	68.4	50	86	0.4	89.2
20	248	1.0	69.4	51	86	0.4	89.6
21	236	1.0	70.4	52	77	0.3	89.9
22	255	1.0	71.4	53	98	0.4	90.3
23	258	1.1	72.5	54	96	0.4	90.7
24	241	1.0	73.5	55	74	0.3	91.0
25	233	1.0	74.4	56	56	0.2	91.2
26	241	1.0	75.4	57	73	0.3	91.5
27	169	0.7	76.1	58	85	0.3	91.9
28	178	0.7	76.8	59	65	0.3	92.2
29	175	0.7	77.6	60	80	0.3	92.5
30	249	1.0	78.6	>60	1,827	7.5	100.0
31	198	0.8	79.4				

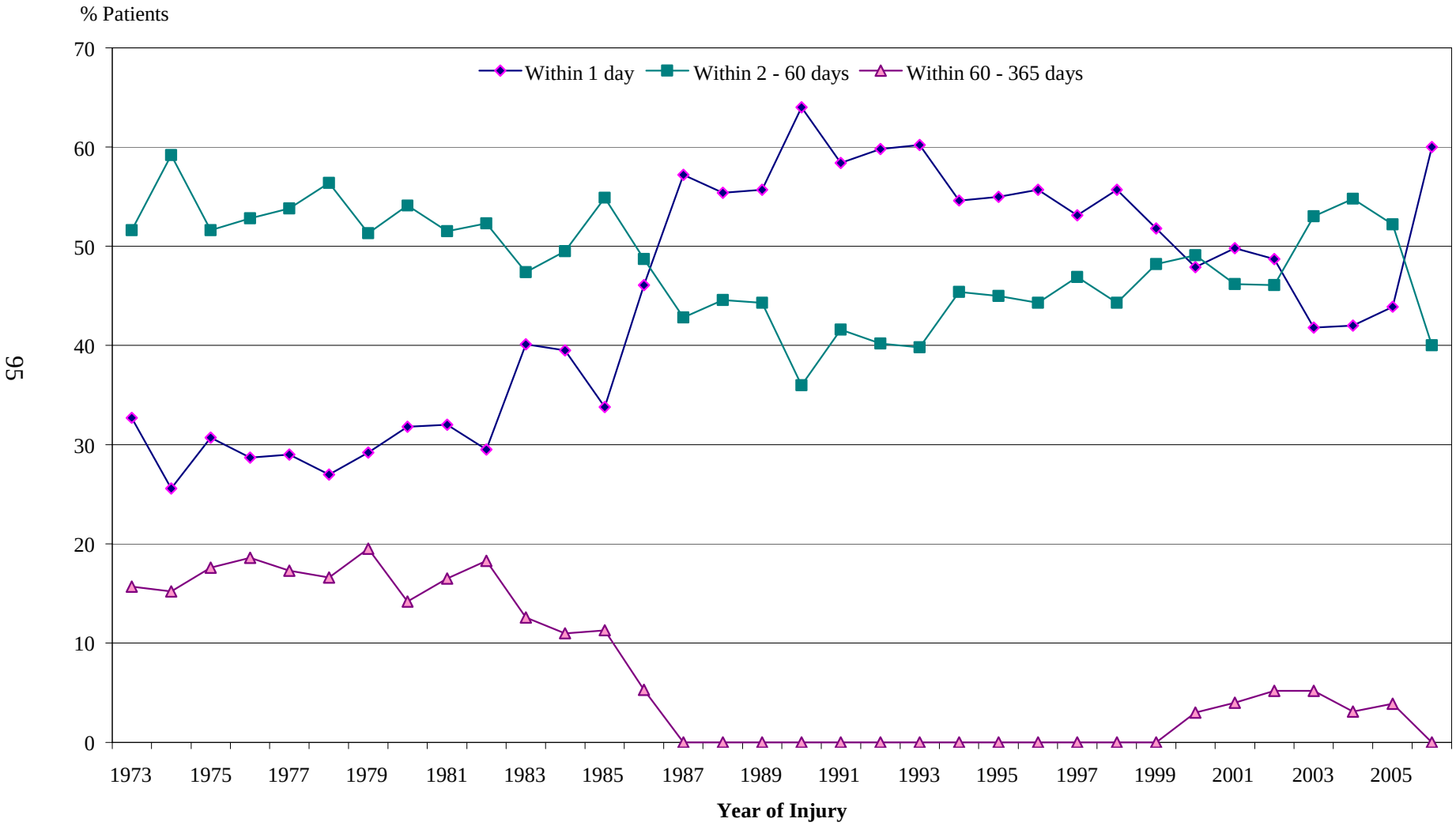
Table 35. Days from injury to system admission: frequency distribution.

Approximately forty-four percent were admitted to a spinal cord injury care system on the first day post-injury. The substantial number of outliers and skewness of the distribution are also reflected.

The percent of patients admitted to the systems within 1 day, 2 to 60 days and 61 to 365 days by year of injury is depicted in Figure 8 (page 95). As mentioned, the revised eligibility criteria have restricted database submissions to those patients admitted within 60 days, thus eliminating the "61-365" days line from 1987 to 2000. Since this change, more than half of all patients have been admitted within one day of injury. Most recently, with the change back to the 365 day eligibility criteria, the percentage of day 1 admissions has decreased slightly but still is almost 50 percent.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Figure 8. Number of days from injury to system admission by year of injury.



DAYS HOSPITALIZED IN THE SYSTEM'S ACUTE CARE AND REHAB UNITS

The National SCI Database contains information on 10,650 patients admitted to the SCI Care System within one day of injury. These were the only patients used in analyzing the number of days hospitalized in the SCI Care System. Therefore, the resulting statistics (Tables 36-39 and Figures 9 and 10) reflect lengths of stay for patients treated entirely within the respective SCI Care Systems. Once again, the square root transformation was used to obtain a more normal distribution.

Database revisions in November 1995 resulted in the separation of the single length of stay variable into acute and rehab lengths of stay. Length of stay data in records present at that time were separated based on formulas involving days from injury to rehabilitation and total days hospitalized, with all short-term discharge days applied to rehabilitation.

Tables 36 and 37 (pages 96 to 99) depict mean days in the system's acute care unit and rehab unit, respectively, by year of injury and system. Data for all years are shown. The data for 2005 and 2006 are incomplete and should be interpreted cautiously because more severely injured patients with longer lengths of stay are usually the last to be entered into the National SCI Database. Nonetheless, mean acute care length of stay has declined from 28 days in 1973 to 13 days in 1997 but has since increased slightly to 19 days in 2003 and 2004. Mean rehabilitation length of stay has declined from 115 days in 1974 to only 39 days in 2004.

	Year of Injury													
	1973		1974		1975		1976		1977		1978		1979	
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
Total	73	28	103	25	178	26	196	24	237	20	228	20	293	23

Table 36. Mean days hospitalized in the system's acute care unit by year of injury. [day-1 admissions, using square root transformation]

	Year of Injury													
	1980		1981		1982		1983		1984		1985		1986	
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
Total	358	26	258	23	218	29	459	24	433	21	329	23	429	22

	Year of Injury													
	1987		1988		1989		1990		1991		1992		1993	
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
Total	379	20	347	19	359	18	382	18	412	18	389	18	394	17

	Year of Injury											
	1994		1995		1996		1997		1998		1999	
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
Total	376	16	351	15	410	15	401	13	406	15	398	16

	Year of Injury													
	2000		2001		2002		2003		2004		2005		2006	
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
Total	322	18	356	17	353	15	289	18	266	18	259	15	9	11

Table 36 (continued). Mean days hospitalized in the system's acute care unit by year of injury.[day-1 admissions, using square root transformation]

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

	Year of Injury													
	1973		1974		1975		1976		1977		1978		1979	
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
Total	64	96	97	115	161	113	182	102	219	99	203	91	257	94

Table 37. Mean days hospitalized in the system's rehab unit by year of injury.
[day-1 admissions, using square root transformation]

	Year of Injury													
	1980		1981		1982		1983		1984		1985		1986	
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
Total	333	99	249	87	198	88	435	86	421	82	310	75	401	74

	Year of Injury													
	1987		1988		1989		1990		1991		1992		1993	
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
Total	356	80	329	76	344	68	372	65	387	67	360	63	368	55

	Year of Injury											
	1994		1995		1996		1997		1998		1999	
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
Total	352	49	334	49	394	45	388	45	388	45	391	45

	Year of Injury													
	2000		2001		2002		2003		2004		2005		2006	
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
Total	308	46	307	44	323	41	267	44	252	39	249	36	9	26

Table 37 (continued). Mean days hospitalized in the system's rehab unit by year of injury.[day-1 admissions, using square root transformation]

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 38 (page 103) depicts mean days hospitalized in the SCI Care System's acute care unit by year of injury and neurologic level and extent of lesion. Table 39 (page 104) presents the same analysis for length of stay in the system's rehab unit, and includes only patients who actually spent time in rehabilitation.

Syllabus changes in October 1987 separated patients with minimal deficits from patients who were neurologically normal. These categories (Paraplegia/Minimal and Tetraplegia/Minimal) normally have few patients; however, the numbers are even smaller due to the fact that it was not mandatory for systems to convert pre-1987 data.

Mean days hospitalized in the SCI Care Systems' acute and rehab units were greater for persons with tetraplegia than those with paraplegia. The only exceptions are acute lengths of stay during 1977, 1987, 1993 and 2002. In most years, the difference in acute care length of stay between persons with tetraplegia and paraplegia is relatively small, whereas differences in rehabilitation length of stay are substantial.

Mean days hospitalized in the acute care unit were usually greater for patients with neurologically complete cervical injuries than for patients with neurologically incomplete cervical injuries. Excluding 2006 data, mean days hospitalized in the system's acute care unit for persons with neurologically complete tetraplegia ranged from 46 in 1982 to 16 in 1997, while for those with neurologically incomplete paraplegia, the comparable range was from 29 days in 1973 and 1982 to 11 days in 1999 and 2005.

Mean days hospitalized in the rehab unit were greatest for patients with neurologically complete injuries. Excluding 2006 data, mean days hospitalized in the system's rehab unit for persons with neurologically complete tetraplegia ranged from 165 in 1976 to 50 in 2005 while for those with neurologically incomplete paraplegia, the comparable range was from 89 days in 1975 to 28 days in 2005.

The overall trends observed for persons with paraplegia and those with tetraplegia are depicted in Figures 9 and 10 (pages 105 and 106, respectively).

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Year of Injury	Level and Extent of Injury																	
	Paraplegia								Tetraplegia								Total	
	Incomplete		Complete		Minimal		Total		Incomplete		Complete		Minimal		Total			
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
1973	12	29	20	26	-	-	32	27	16	27	24	29	-	-	40	28	72	28
1974	18	26	29	23	-	-	47	24	23	19	33	32	-	-	56	27	103	25
1975	28	24	51	21	-	-	79	22	51	31	48	27	2	24	99	29	178	26
1976	31	26	55	21	-	-	86	23	54	20	47	31	-	-	101	25	187	24
1977	39	20	74	20	-	-	113	20	56	16	60	23	-	-	118	19	231	20
1978	35	18	52	17	-	-	87	17	66	23	65	22	-	-	131	23	218	20
1979	62	23	72	23	-	-	134	23	83	26	61	22	1	18	145	24	279	24
1980	70	27	90	25	-	-	160	26	108	27	80	27	1	13	189	27	349	27
1981	55	20	62	21	1	14	118	20	76	23	56	29	-	-	132	25	250	23
1982	37	29	41	19	1	24	79	23	66	21	66	46	-	-	132	33	211	29
1983	80	22	120	21	2	9	202	22	147	23	103	31	2	11	252	26	454	24
1984	93	20	115	19	3	20	211	19	140	22	77	24	2	8	219	22	430	21
1985	72	21	71	21	5	15	148	21	108	22	65	30	3	11	176	25	324	23
1986	97	19	114	21	3	16	214	20	136	20	69	31	2	13	207	24	421	22
1987	76	19	88	22	6	16	170	20	120	19	71	21	11	15	202	19	372	20
1988	59	17	76	19	12	10	147	17	110	18	71	24	11	16	192	20	339	19
1989	95	15	89	17	4	19	188	16	93	20	59	23	16	9	168	20	356	18
1990	78	15	107	15	14	11	199	15	104	20	66	27	9	11	179	22	378	18
1991	78	15	111	16	22	14	211	15	106	17	76	28	19	9	201	20	412	18
1992	74	16	113	18	16	8	203	16	94	19	67	27	17	8	178	21	381	18
1993	75	16	111	21	7	8	193	18	96	17	71	18	22	7	189	16	382	17
1994	84	15	94	16	16	10	194	15	93	16	66	22	16	9	175	17	369	16
1995	67	12	83	16	13	16	163	14	110	14	64	22	10	12	184	16	347	15
1996	83	15	101	14	7	16	191	15	114	13	66	23	16	8	196	15	387	15
1997	63	12	106	14	3	17	172	13	120	11	71	16	12	9	203	13	375	13
1998	87	14	107	14	8	12	202	14	109	13	64	21	10	4	183	15	385	14
1999	73	11	99	15	10	10	182	13	106	14	73	25	11	8	190	17	372	15
2000	61	14	69	17	5	10	135	15	81	15	60	33	11	10	152	21	287	18
2001	57	14	86	16	1	24	144	15	110	14	57	33	7	9	174	19	318	17
2002	57	14	80	16	8	15	145	16	115	11	53	28	11	8	179	15	324	15
2003	48	13	58	20	8	14	114	16	96	15	59	27	4	11	159	19	273	18
2004	52	14	60	18	2	9	114	16	80	15	34	29	6	13	120	18	234	17
2005	60	11	65	16	5	13	130	13	75	13	37	28	3	8	115	17	245	15
2006	1	13	-	-	-	-	1	13	2	10	-	-	-	-	2	10	3	11

Table 38. Mean days hospitalized in the system's acute care unit by year of injury and neurological level and extent of injury. [day-1 admissions, using square-root transformation]

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Year of Injury	Level and Extent of Injury																Total	
	Paraplegia								Tetraplegia									
	Incomplete		Complete		Minimal		Total		Incomplete		Complete		Minimal		Total			
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
1973	11	76	16	88	-	-	27	83	16	66	21	144	-	-	37	107	64	96
1974	18	69	29	109	-	-	47	92	21	112	29	161	-	-	50	139	97	115
1975	26	89	48	94	-	-	74	92	47	107	40	164	-	-	87	132	161	113
1976	31	78	54	80	-	-	85	79	52	96	43	165	-	-	95	125	180	102
1977	38	68	74	91	-	-	112	83	54	102	52	136	-	-	106	118	218	99
1978	33	52	52	75	-	-	85	66	64	101	52	130	-	-	116	114	201	92
1979	58	61	69	80	-	-	127	71	78	106	51	143	-	-	129	120	256	94
1980	66	72	84	91	-	-	150	83	106	105	72	131	1	14	179	114	329	99
1981	54	71	62	68	1	6	117	69	75	83	54	145	-	-	129	107	246	88
1982	34	57	42	72	1	11	77	64	61	97	58	118	-	-	119	107	196	89
1983	73	66	118	71	2	29	193	69	142	90	95	124	2	59	239	103	432	87
1984	92	55	114	73	3	43	209	64	139	92	69	129	2	31	210	103	419	83
1985	70	54	68	73	5	25	143	61	103	90	58	91	3	48	164	90	307	76
1986	94	58	111	63	3	21	208	60	131	81	59	117	2	37	192	91	400	74
1987	75	72	87	66	5	32	167	67	116	79	62	131	10	38	188	92	355	80
1988	60	64	75	66	12	29	147	62	106	80	63	121	10	25	179	90	326	76
1989	95	49	88	68	3	59	186	58	90	79	51	113	16	22	157	82	343	68
1990	78	54	105	63	12	35	195	57	102	71	63	93	8	26	173	76	368	66
1991	74	47	111	62	21	28	206	52	97	83	66	107	18	42	181	86	387	67
1992	73	46	107	60	13	23	193	52	89	77	60	96	16	39	165	79	358	64
1993	74	42	109	48	7	37	190	45	92	68	59	91	22	27	173	69	363	56
1994	81	39	91	44	14	22	186	40	87	51	60	96	14	22	161	63	347	50
1995	64	35	82	43	13	18	159	37	104	58	59	78	10	22	173	62	332	49
1996	80	35	99	44	7	37	186	40	111	44	65	74	16	20	192	51	378	45
1997	60	33	104	43	3	15	167	39	116	49	71	68	12	30	199	54	366	47
1998	85	31	107	43	8	16	200	37	105	50	61	76	10	14	176	55	376	45
1999	73	35	98	36	10	24	181	35	105	50	70	74	11	14	186	56	367	45
2000	61	32	69	44	4	19	134	37	81	45	58	71	11	32	150	53	284	45
2001	57	30	81	38	1	24	139	35	104	51	48	64	6	17	158	53	297	44
2002	54	33	79	42	7	13	140	37	115	41	49	63	8	16	172	45	312	41
2003	48	30	52	46	7	36	107	38	93	42	56	68	2	25	151	51	258	45
2004	52	34	56	44	2	22	110	39	79	39	32	57	4	23	115	43	225	41
2005	60	28	65	39	5	11	130	33	74	36	35	50	2	20	111	40	241	36
2006	1	37	-	-	-	-	1	37	2	23	-	-	-	-	2	23	3	27

Table 39. Mean days hospitalized in the system's rehab unit by year of injury and neurological level and extent of injury. [day-1 admissions, using square-root transformation]

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Figure 9. Mean days hospitalized in the system's acute care unit by year of injury and neurologic level.

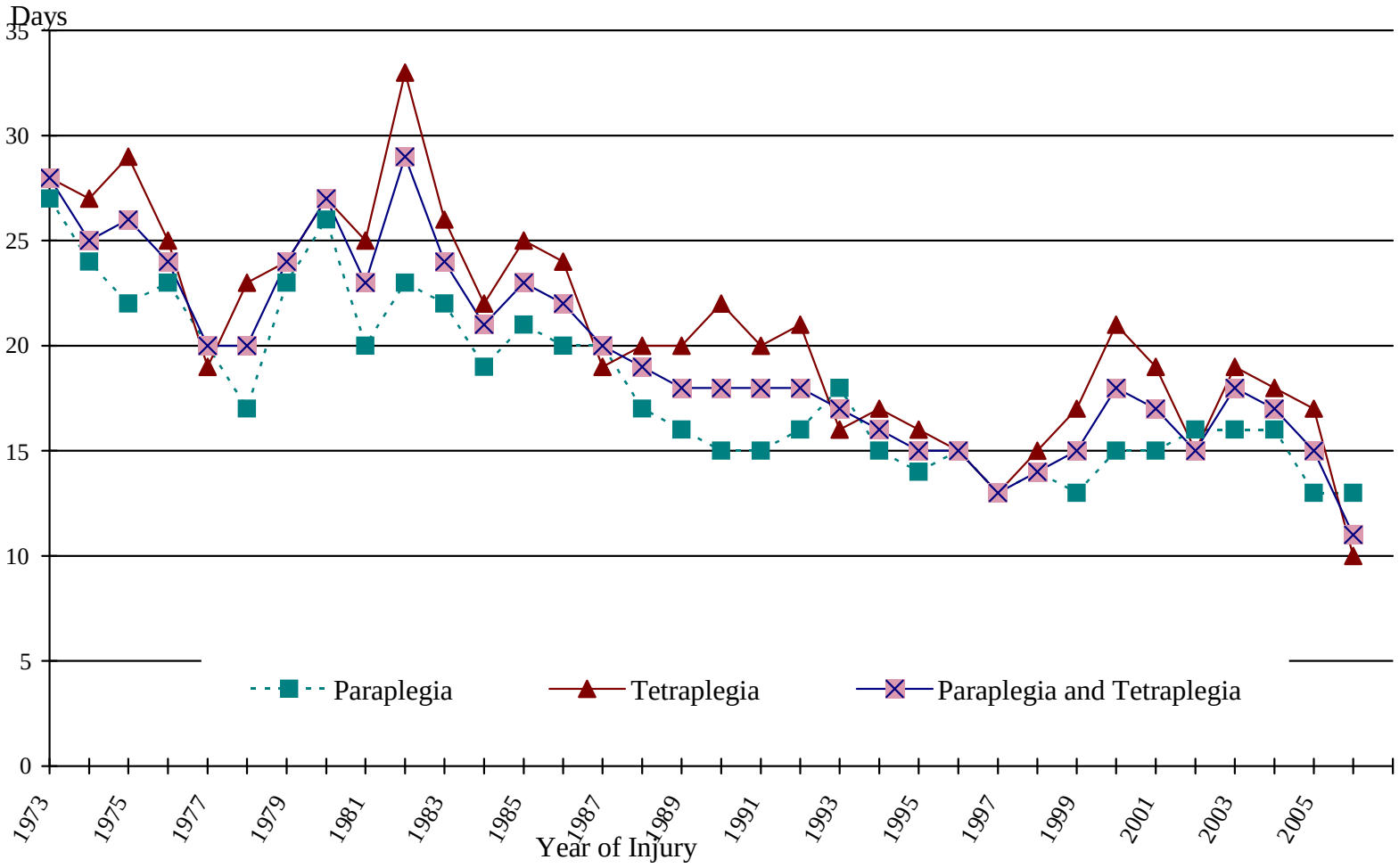
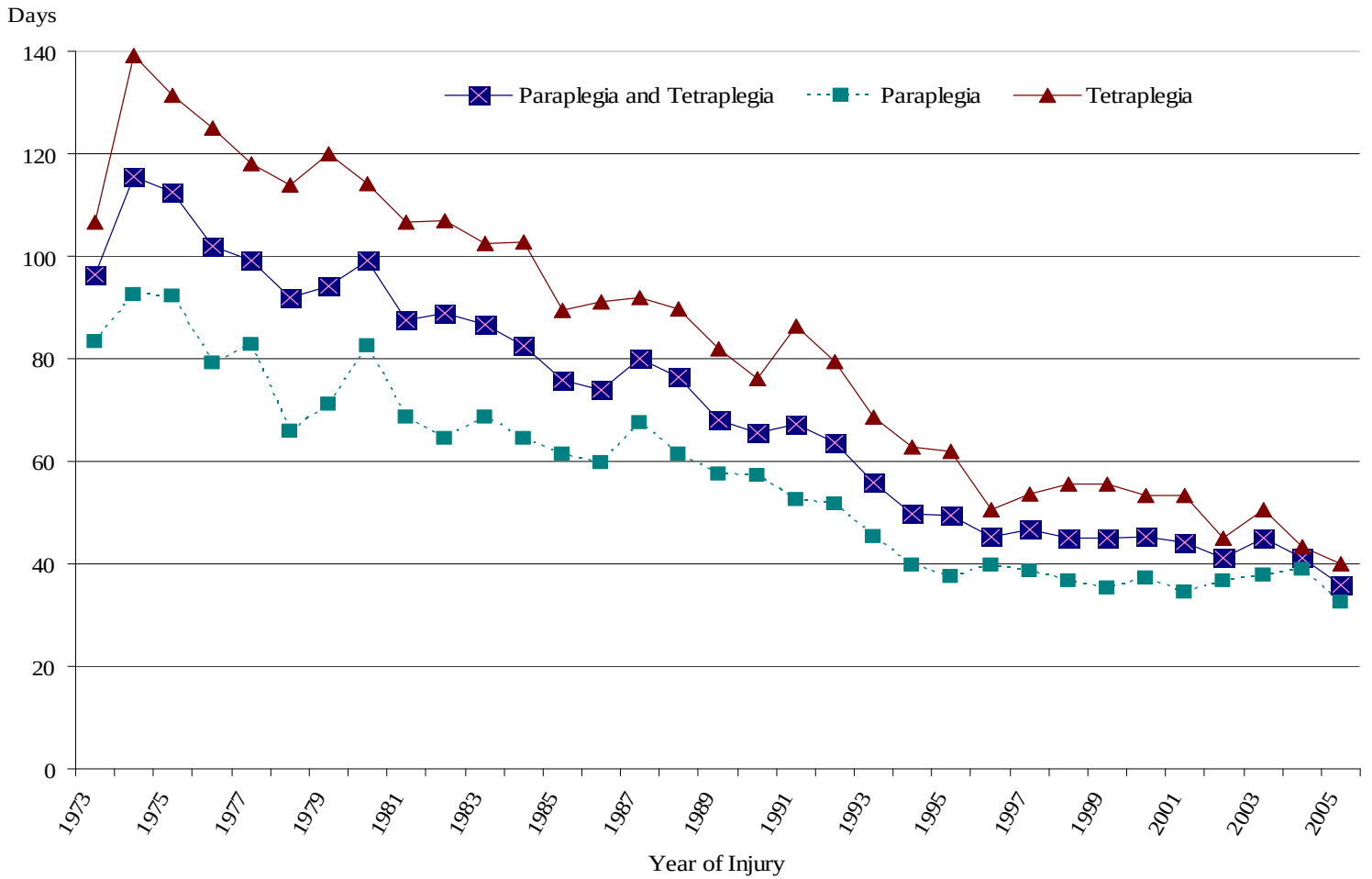


Figure 10. Mean days hospitalized in the system's rehab unit by year of injury and neurologic level.



TOTAL SCI CARE SYSTEM HOSPITAL CHARGES

Table 40 (page 107) shows mean total system hospital charges by year of injury.

Only patients admitted to a system within one day of injury were used in this analysis. Therefore, Table 40 and Figure 11 (page 108) reflect hospital charges for patients treated entirely within each respective SCI Care System. Only patients with actual or estimated charges (that do and do not include physicians' fees) are included. Since there were very few patients with estimated charges, it is not likely that their inclusion will alter the results appreciably. In addition, all system charges have been adjusted for inflation to 2005 dollars using the Medical Care Component of the Consumer Price Index. The distribution of system hospital charges, like that of days hospitalized, is not normal and therefore, the square root transformation was used in this analysis as well.

In constant 2005 dollars, mean total system charges increased from $163,225 during 1973 and 1974 to $256,881 in 1991 and 1992. This increase most likely reflects the trend toward improved survival of more severely injured persons at the scene of the injury who subsequently require greater intensity of service (such as mechanical ventilation) despite declining rehabilitation lengths of stay. Since 1992, mean total system charges decreased to only $224,386 in 2002, but increased again to $299,604 in 2004.

	Year of Injury									
	1973-1974		1975-1976		1977-1978		1979-1980		1981-1982	
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
Total	137	163,225	319	193,610	400	190,387	520	212,532	365	231,835

Table 40. Total system hospital charges (2005 dollars) by year of injury.
[day-1 admissions with actual or estimated charges only, square root transformation]

	Year of Injury									
	1983-1984		1985-1986		1987-1988		1989-1990		1991-1992	
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
Total	651	235,494	527	205,957	507	219,083	581	234,114	537	256,881

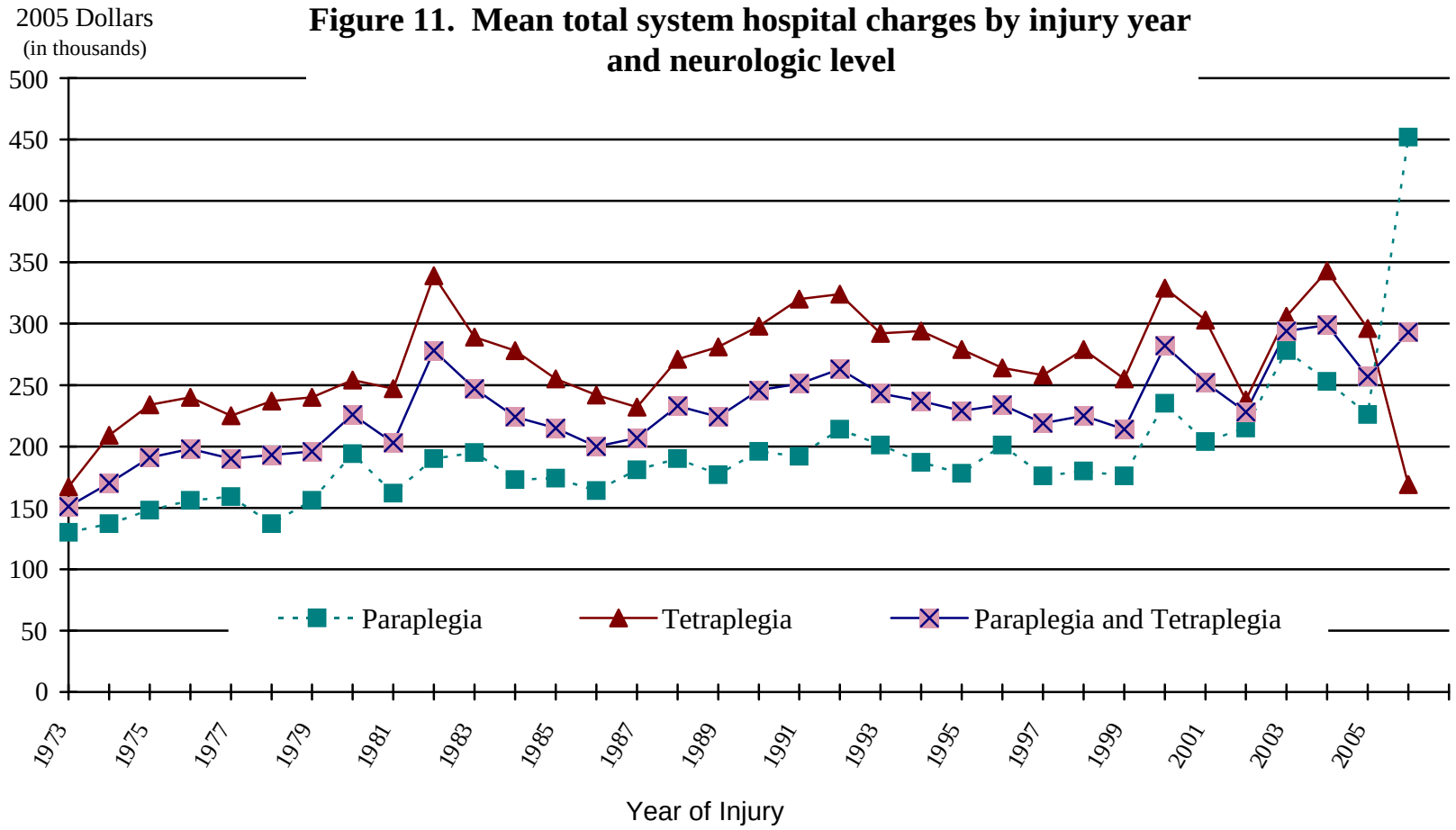
	Year of Injury									
	1993-1994		1995-1996		1997-1998		1999-2000		2001	
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
Total	553	238,281	568	230,750	639	220,077	500	242,243	254	248,665

	Year of Injury									
	2002		2003		2004		2005		2006	
	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean
Total	287	224,386	228	295,670	206	299,604	174	255,644	4	708,446

Table 40 (continued). Total system hospital charges (2005 dollars) by year of injury.
[day-1 admissions with actual or estimated charges only, square root transformation]

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Figure 11. Mean total system hospital charges by injury year and neurologic level



[Day-1 admissions with actual or estimated charges only; using square root transformation]

SPONSORS OF CARE

Sponsors of care at admission and at post-injury years (extended data years only) for the National SCI Database appear in Table 41 (page 112). Because many patients had more than one source of support, the percentages provided in these tables do not sum to 100.

Private Insurance ranked first during the period of initial hospitalization, providing at least partial support for slightly less than half of the patients. Medicaid provided at least partial support for about one-fourth of the patients during this same period.

Private Insurance ranked first during the first and second post-injury years. The proportion receiving Medicare benefits also increased substantially (from just 5.4 percent in year 1 to 38.3 percent by year 30). The proportion receiving Medicaid support decreased steadily through all years post-injury.

Three relatively new sponsors of care categories have been established in recent years. These include the Indigent, Other Private Funds and Prepaid Health Plans categories. In past years, these sponsors were included in the Other category.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Sponsor	n / %	Initial Hospitalization	Year Post-injury 1	2	5	10	15	20	25	30
Private Insurance		11,256	7,846	5,418	3,367	1,629	955	686	363	85
		46.3	37.6	36.1	29.5	28.3	28.4	27.3	24.3	29.3
DVR		2,018	2,223	1,775	632	130	49	14	4	0
		8.3	10.7	11.8	5.5	2.3	1.5	0.6	0.3	0.0
Medicaid		7,019	6,664	4,596	3,116	1,398	695	431	203	35
		28.8	31.9	30.6	27.3	34.2	20.7	17.1	13.6	12.1
Workers' Compensation		2,292	1,808	1,316	855	437	272	193	101	19
		9.4	8.7	8.8	7.5	7.6	8.1	7.7	6.8	6.6
Medicare		1,518	1,119	1,040	3,446	2,051	1,278	977	513	111
		6.2	5.4	6.9	30.2	35.6	38.0	38.8	34.4	38.3
County Medical		124	98	71	33	18	8	16	1	0
		0.5	0.5	71	0.3	0.3	0.2	0.6	0.1	0.0
Self-pay		278	283	312	184	92	65	48	38	7
		1.1	1.4	2.1	1.6	1.6	1.9	1.9	2.5	2.4
Veterans' Administration		47	152	129	121	49	28	41	44	10
		0.2	0.7	0.9	1.1	0.8	0.8	1.6	2.9	3.4
Public Health Service		93	111	120	83	48	28	9	7	0
		0.4	0.5	0.8	0.7	0.8	0.8	0.4	0.5	0.0
Crippled Childrens'		491	301	184	40	4	2	0	0	0
		2.0	1.4	1.2	0.3	0.1	0.1	0.0	0.0	0.0
Indigent		617	142	59	23	9	6	10	1	0
		2.5	0.7	0.4	0.2	0.2	0.2	0.4	0.1	0.0
Other Insurance		618	462	337	166	55	23	16	11	1
		2.5	2.2	2.2	1.5	1.0	0.7	0.6	0.7	0.3
Other Funds		26	27	14	19	14	10	10	8	0
		0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.0
Prepaid Plans		1,676	970	387	401	246	239	235	128	20
		6.9	4.6	2.6	3.5	4.3	7.1	9.3	8.6	6.9
Other		196	146	120	82	46	32	18	2	2
		0.8	0.7	0.8	0.7	0.8	1.0	0.7	0.1	0.7

Table 41. Sponsors of care by time post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

TYPE OF REIMBURSEMENT

The Type of Reimbursement variable is another item added to substantiate the economic reasons (i.e., medical insurance/coverage) for shorter lengths of stay. Only records entered after 1995 have been used in this analysis.

On Form I (Table 42, page 113) 8.0% of the new cases are coded unknown, 26.0% of the patients had limited per-diem coverage, 22.4% had fee for services coverage and 13.4% had unlimited per-diem coverage. Unknown responses ranged from 0.5% to 13.3%.

Data collection for this variable during follow-up was discontinued starting in 2000.

n %	Indigent	Charges	Fee for Service	Per Diem		Negotiated Fee	Capitated	Other	Unknown
				Unlimited	Limited				
Total	411	694	1,572	1,030	2,003	842	350	174	614
	5.3	9.0	20.4	13.4	26.0	10.9	4.6	2.3	8.0

Table 42. Type of reimubursement during the initial hospitalization period.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

MEDICAL CASE MANAGER

Tables 43 and 44 document whether or not a medical case manager was assigned by the primary sponsor of care during the initial inpatient hospitalization/rehabilitation phase and during follow-up. This information was added to the database in 1995.

During the initial hospitalization period (Table 43, page 115), 8.5% of the new records were coded unknown, 41.1% of the patients did not have a case manager and 7.4% of the records were coded "not applicable" (for the indigent patients). Unknown responses ranged from 0.8% to 15.2%

During follow-up (table 44, page 115) most of the patients did not have a medical case manager through all the post-injury years.

n %	No	Yes	Not Applicable	Unknown	Total
Total	3,159	3,313	567	651	7,690
	41.1	43.1	7.4	8.5	

Table 43. Medical case manager during the initial inpatient hospitalization/ rehabilitation period.

Medical Case Manager? n %	Year Post-injury 1	2	5	10	15	20	25	30
No	2,763	1,267	1,935	1,326	1,355	1,320	741	142
	51.8	54.1	60.9	61.5	67.4	72.0	72.6	72.4
Yes	1,599	518	655	415	420	355	186	42
	30.0	22.1	20.6	19.3	20.9	19.4	18.2	21.4
Not applicable	229	108	90	54	53	60	45	7
	4.3	4.6	2.8	2.5	2.6	3.3	4.4	3.6
Unknown	743	451	498	360	181	98	49	5
	13.9	19.2	15.7	16.7	9.0	5.3	4.8	2.6
Total	5,334	2,344	3,178	2,155	2,009	1,833	1,021	196
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 44. Medical case manager during follow-up.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

COMPLICATIONS

Data on Complications have only been collected in the present form since October 1986. Database revisions in 1995 deleted several complication variables and limited the documentation of complications during acute care to individuals who were admitted to the system within 24 hours of injury. Additionally, renal function is now documented only during the rehab phase for all patients.

The percentage of individuals developing each secondary medical complication during acute care or rehabilitation by neurologic impairment category appears in Table 45 (page 119). Only the records for the day-1 admissions have been used in this analysis. Overall, pneumonia and pressure ulcers were the most frequently cited secondary medical complications, occurring in approximately 34 percent of individuals. Deep vein thrombosis was next in rank (15.0%) followed by pulmonary embolism (3.6%) and post-op wound infections (2.6%). Only 20.5 percent of the individuals had none of the currently documented secondary medical complications.

Persons with neurologically complete tetraplegia were at highest risk for all secondary medical complications except deep vein thrombosis and post-op wound infections. In fact, among persons with neurologically complete tetraplegia, 59.8% developed pneumonia; 53.4% developed pressure ulcers, 16.6% developed deep vein thrombosis, 5.3% developed a pulmonary embolism and 2.3% developed a post-op wound infection.

The percentage of persons developing secondary medical complications during each post-injury year appears in Table 46 (page 119). Since the pressure ulcer complication during follow-up is collected at the time of the annual evaluation examination, only patients who had such an exam (in an extended-data year) were used in this analysis (n=16,906).

The most frequent complication was pressure ulcers observed during the annual evaluation examination, beginning at 14.7 percent in the first post-injury year and steadily increasing thereafter. The next most common complication was pneumonia which ranged from 2.7 percent to 4.1 percent over time.

Because of the bias introduced by losses to follow-up that occur disproportionately among healthier persons, the occurrence of the complications shown in Table 46 is probably slightly overestimated. Therefore, caution is warranted when interpreting these data.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Complication	n / %	Paraplegia		Tetraplegia		Total
		Incomplete	Complete	Incomplete	Complete	
Pneumonia	n	308	605	648	751	2,312
	%	19.6	33.5	28.3	59.8	33.4
Pressure ulcers	n	289	704	657	671	2,321
	%	18.3	39.0	28.7	53.4	33.5
Deep vein thrombosis	n	218	352	259	208	1,037
	%	13.8	19.5	11.3	16.6	15.0
Pulmonary Embolism	n	42	71	67	66	246
	%	2.7	3.9	2.9	5.3	3.6
Post-op Wound Infection	n	55	59	36	29	179
	%	3.5	3.3	1.6	2.3	2.6

Table 45. Number of patients developing secondary medical complications during system by neurologic impairment for persons admitted to the system within 24 hours of injury. [n = 6,928; 20.5% had none of the listed medical complications]

Complication	n / %	Post-injury Year							
		1	2	5	10	15	20	25	30
Pressure ulcers*	n	1,048	685	526	347	183	90	43	9
	%	14.7	17.1	18.7	22.3	21.4	24.3	24.4	30.0
Pneumonia	n	416	270	202	104	72	69	40	8
	%	3.9	3.9	3.2	2.7	2.7	3.6	3.9	4.1
Deep vein thrombosis	n	298	84	59	38	15	12	7	1
	%	2.8	1.2	1.0	1.0	0.6	0.6	0.7	0.5
Pulmonary Embolism	n	78	17	16	13	5	7	1	0
	%	0.7	0.2	0.3	0.4	0.2	0.4	0.1	0.0

Table 46. Percentage of patients developing secondary medical complications during the post-injury years. [* among those who had annual examinations]

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

PRESSURE ULCERS DURING REHAB

Table 47 (page 121) presents an analysis of the grade and anatomical location of pressure ulcers developed during the rehabilitation phase of the initial hospitalization period. This analysis used the records of patients whose Form I was entered into the database on or after 2/1/96, and/or who were admitted directly to a system's rehab unit and who developed a pressure ulcer during rehab (n= 2,536). Overall, 3,815 pressure ulcers were reported.

Almost half of all reported ulcers were grade one; severe ulcers (grades three and four) accounted for only 9.4 percent. Uknown grade of pressure ulcers accounted for 11.4 percent of all pressure ulcers, suggesting that there are some data collection difficulties. The most common pressure ulcer location was the sacrum, the site of one-third of all reported ulcers.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Anatomic Location	n / %	Grade 1	2	3	4	Unknown	Total
Occiput		28	52	12	2	13	107
		26.2	48.6	11.2	1.9	12.1	2.8
Scapula		54	70	20	6	16	166
		32.5	42.2	12	3.6	9.6	4.4
Elbows		53	33	5	0	10	101
		52.5	32.7	5	0	9.9	2.6
Ribs		21	7	2	4	4	38
		55.3	18.4	5.3	10.5	10.5	1.0
Spinous process		24	28	7	3	5	67
		35.8	41.8	10.4	4.5	7.5	1.8
Iliac crest		24	22	5	0	8	59
		40.7	37.3	8.5	0	13.6	1.5
Sacrum		479	511	108	65	109	1,272
		37.7	40.2	8.5	5.1	8.6	33.3
Ischium		255	129	10	12	52	458
		55.7	28.2	2.2	2.6	11.4	12.0
Trochanter		64	26	5	3	19	117
		54.7	22.2	4.3	2.6	16.2	3.1
Genital		111	31	4	1	39	186
		59.7	16.7	2.2	0.5	21	4.9
Knee		35	18	6	1	5	65
		53.8	27.7	9.2	1.5	7.7	1.7
Malleolus		43	42	8	0	10	103
		41.7	40.8	7.8	0	9.7	2.7
Heel		335	210	42	7	68	662
		50.6	31.7	6.3	1.1	10.3	17.4
Feet		90	50	10	2	16	168
		53.6	29.8	6	1.2	9.5	4.4
Unclassified		95	80	5	4	62	246
		38.6	32.5	2	1.6	25.2	6.4
Total		1,711	1,309	249	110	436	3,815
		44.8	34.3	6.5	2.9	11.4	100.0

Table 47. Frequency of pressure ulcers developing during rehab by grade and anatomic location. [patients whose Form I was entered into the database on or after 2/1/96, and/or who were admitted directly to a system's rehab unit and had pressure ulcers during rehab (n = 2,536)]

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

OPERATIVE PROCEDURES

Once again, the listing and definitions for operative procedures were revised in October 1986. In November 1995 procedures that are performed almost exclusively during follow-up were deleted from Form I. All of the remaining procedures on Form I are now collected only on patients who are admitted to the system within 24 hours of injury. Operative procedures performed during system hospitalization appear in Table 48 (page 123) and, only the records on the day-1 admissions were used.

Slightly more than half of the patients underwent a spinal fusion and almost half had an internal fixation during system hospitalization. Other operations performed on more than fifteen percent of the patients include traction, halo, spinal decompression, and laminectomy, while laparotomies were performed on approximately 10 percent of the patients. Less than 2 percent of the patients had any of the other currently documented operative procedures.

The percentage of operative procedures performed during each extended-data post-injury year appears in Table 49 (page 123). During each year most records indicate none of the selected operative procedures were performed. Closure of pressure ulcer was the procedure most often performed in all years except year 25 when calculus removal ranked first. For all follow-up years except year 25, the second most common procedure was calculus removal.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Operative Procedure	Yes	
	n	%
Spinal fusion*	3981	54.9
Internal fixation*	3544	48.8
Spinal decompression*	2238	30.8
Halo	2191	30.2
Traction	1830	25.2
Laminectomy*	1202	16.6
Laparotomy	721	9.9
Closure of pressure ulcer	120	1.7
Surgical repair of internal fixation*	97	1.3
Surgical repair of failed spinal fusion*	67	0.9

Table 48. Frequency of selected operative procedures performed during system hospitalization. [n = 7,255 (34% had no OR visits for spinal surgeries*]

Operative Procedure	n / %	Year Post-injury							
		1	2	5	10	15	20	25	30
Bladder neck resection	n	22	19	18	10	8	5	2	0
	%	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.0
Calculus removal	n	231	211	137	114	75	44	37	8
	%	2.2	3.1	2.2	2.9	2.8	2.3	3.6	4.1
Closure of pressure ulcer	n	295	252	239	182	130	87	32	9
	%	2.8	3.7	3.8	4.7	4.8	4.5	3.1	4.6
Sphincter dilatation/ opening procedures	n	39	80	47	24	5	15	7	2
	%	0.4	1.2	0.7	0.6	0.2	0.8	0.7	1.0

Table 49. Frequency of operative procedures performed during follow-up.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

NEUROLOGIC LEVEL AND EXTENT OF LESION

Figure 12 (page 125) depicts the percentage of patients by neurologic level of lesion at discharge for the entire National SCI Database. Overall, 51.0 percent of patients had cervical lesions at discharge, 34.4 percent had thoracic lesions, and 10.8 percent had lumbo-sacral lesions. Approximately forty percent of the patients in the database were discharged with lesions at C4 (13.6%), C5 (14.9%) or C6 (10.8%). The next most common level of lesion at discharge was T12 (6.7%). Neurologic level of lesion at discharge is presented in Table 50 (pages 126 to 126).

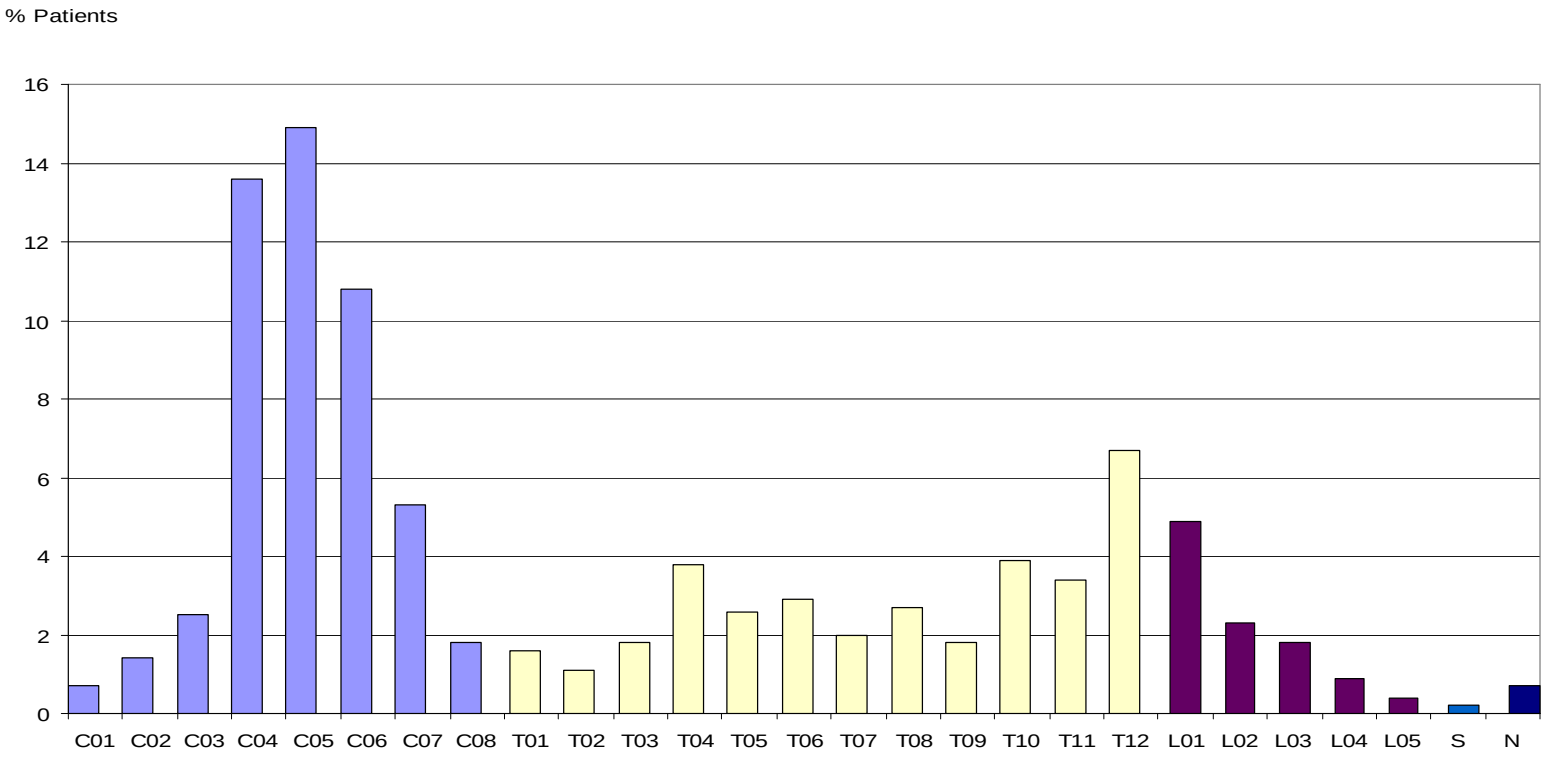
The neurologic impairment category (level and extent of lesion) at discharge is reflected in Table 51 (page 126). Neurologically incomplete tetraplegia ranked first at time of discharge (29.9%), followed by neurologically complete paraplegia (27.5%), neurologically incomplete paraplegia (20.5%), and neurologically complete tetraplegia (17.5%).

Neurologic categories at discharge by grouped etiology are depicted in Figure 13 (page 131). Neurologically incomplete tetraplegia ranked first for all etiologies except Acts of Violence. Neurologically complete paraplegia ranked first for spinal cord injuries resulting from Acts of Violence. Interestingly, 87.4 percent of all Sports Injuries resulted in tetraplegia, while 69.2 percent of all Acts of Violence resulted in paraplegia.

The percentage of patients with neurologically incomplete lesions at discharge by year of injury is depicted in Figure 14 (page 132). The proportion of patients with neurologically incomplete lesions increased from 45.9 percent for 1973-79 to 55.6 percent for 2000-2006. This trend can be attributed at least in part to improved emergency medical services at the scene of the injury. However, despite the recent advent of high dose methylprednisolone therapy, the percentage of persons with neurologically incomplete injuries at discharge decreased from 1991 to 1994, most likely due to the proportionate increase in SCIs that are secondary to gunshot wounds. SCIs due to gunshot wounds are usually neurologically complete. Since 1994, the percentage of incomplete injuries has once again increased as the percentage of injuries due to acts of violence has declined.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Figure 12. Percent of patients by neurologic level of lesion at discharge.



n %	Level of Lesion								
	C1	C2	C3	C4	C5	C6	C7	C8	Total Cervical Lesions
Total	162	338	609	3,308	3,610	2,621	1,286	444	12,378
	0.7	1.4	2.5	13.6	14.9	10.8	5.3	1.8	51.0

Table 50. Neurologic level of lesion at discharge – cervical lesions.

n %	Level of Lesion												
	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	Total Thoracic Lesions
Total	379	271	435	920	624	707	491	665	445	953	829	1,620	8,339
	1.6	1.1	1.8	3.8	2.6	2.9	2.0	2.7	1.8	3.9	3.4	6.7	34.4

Table 50 Neurologic level of lesion at discharge – thoracic lesions.

n %	Level of Lesion					
	L1	L2	L3	L4	L5	Total Lumbar Lesions
Total	1,201	556	444	218	103	2,522
	4.9	2.3	1.8	0.9	0.4	10.4

Table 50. Neurologic level of lesion at discharge– lumbar lesions.

n %	Level of Lesion								Total
	S1	S2	S3	S4	S5	Total Sacral	Normal	Unknown	All Lesions
Total	53	28	2	9	9	101	162	763	24,265
	0.2	0.1	0.0	0.0	0.0	0.4	0.7	3.1	100.0

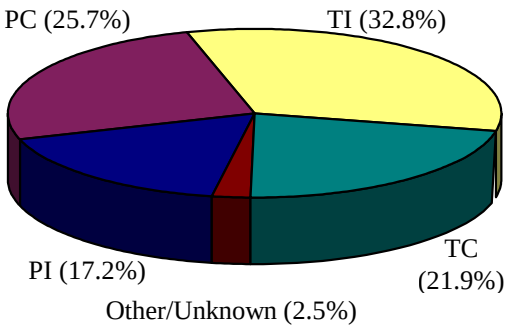
Table 50. Neurologic level of lesion at discharge– sacral lesions, normal neurologic and unknown.

n %	**Paraplegia**				**Tetraplegia**				**Normal**	**Unknown**	**Total**
	Incomplete	Complete	Minimal	Total	Incomplete	Complete	Minimal	Total			
Total	4,519	6,307	284	11,110	7,226	5,026	366	12,618	162	442	24,332
	18.6	25.9	1.2	45.7	29.7	20.7	1.5	51.9	0.7	1.8	100.0

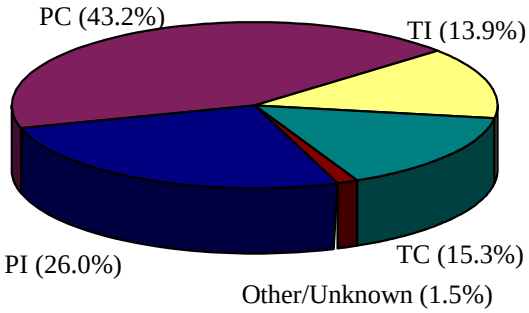
Table 51. Neurologic impairment category at discharge.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

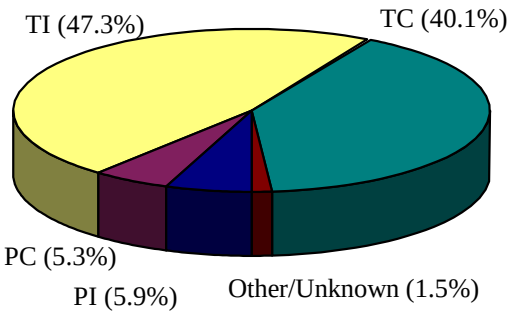
Figure 13. Neurologic category at discharge by grouped etiology.



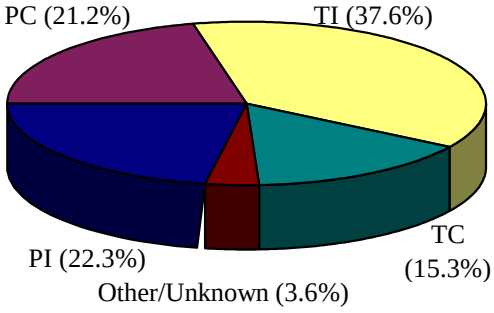
Vehicular Accidents



Acts of Violence



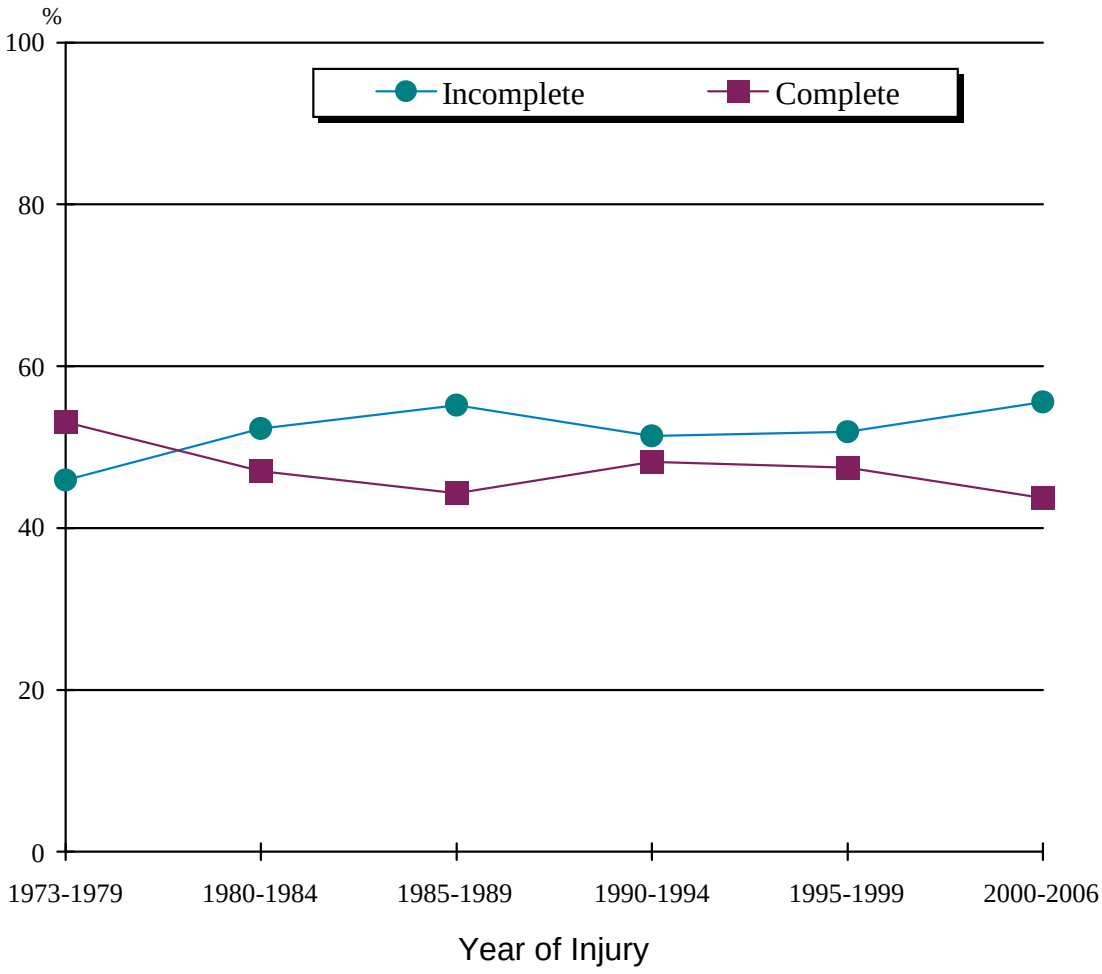
Sports Injuries



Falls

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Figure 14. Neurologic extent of lesion at discharge by injury year.



Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

ASIA IMPAIRMENT SCALE

ASIA Impairment Scale by neurologic level of lesion at discharge appears in Table 52. The ASIA Impairment Scale, formerly referred to as the Frankel Grade, attempts to quantify the degree of residual neurologic function. Among persons with high cervical (C1-C4), low cervical (C5-C8), low thoracic (T1-T6) and high thoracic (T7-T12) lesions, neurologically complete lesions ranked first. [It should be noted that those patients coded "C99", "T99", "L99" and "S99" (specific level unknown) are included as "Unknowns" since exact level is required in Table 52.]

The change in ASIA Impairment Scale between admission to and discharge from the system appears in Table 53 (page 134) for only day-1 admissions. Of those patients admitted with neurologically complete lesions, 86.7 percent remained neurologically complete at discharge, 11.3 percent improved neurologically; the remaining patients had unknown ASIA Impairment Scales at discharge. Of the 14.7 percent of patients who were admitted as Motor Nonfunctional, over half showed an improvement in neurologic function by discharge. Overall, 20.0 percent of patients in the database were discharged with a higher degree of preserved neurologic function than when admitted, while only 1.4 percent were discharged with a lower degree of function.

ASIA Impairment Scale (n / %)	Cervical		Thoracic		Lumbar	Sacral	Normal/ Minimal	Unknown	Total
	High	Low	High	Low					
Complete	1,895	3,069	2,528	3,265	447	5	0	105	11,314
	42.9	38.6	75.8	65.3	17.7	5.0	0.0	13.8	46.6
Sensory only	411	1,178	267	380	249	5	0	17	2,507
	9.3	14.8	8.0	7.6	9.9	5.0	0.0	2.2	10.3
Motor Nonfunctional	648	918	205	506	502	3	0	26	2,808
	14.7	11.5	6.1	10.1	19.9	3.0	0.0	3.4	11.6
Motor Functional	1,426	2,725	325	825	1,294	86	0	127	6,808
	32.3	34.2	9.7	16.5	51.3	85.1	0.0	16.6	28.1
Recovered	0	0	0	0	0	0	162	1	163
	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.1	0.7
Unknown	37	71	11	27	30	2	0	487	665
	0.8	0.9	0.3	0.5	1.2	2.0	0.0	63.8	2.7
Total	4,417	7,961	3,336	5,003	2,522	101	162	763	24,265
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 52. ASIA Impairment Scale by neurologic level of lesion at discharge.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

ASIA Impairment Scale	n / %	Admission to System	During System				Discharge from System
			Improved	No Change	Declined	Unknown	
Complete		5,121	581	4,438	0	102	4,716
		48.0	11.3	86.7	0.0	2.0	44.2
Sensory Only		1,398	637	656	63	42	1,037
		13.1	45.6	46.9	4.5	3.0	9.7
Motor Nonfunctional		1,570	828	658	47	37	1,228
		14.7	52.7	41.9	3.0	2.4	11.5
Motor Functional		1,919	93	1,729	41	56	3,181
		18.0	4.8	90.1	2.1	2.9	29.8
Recovered		1	0	0	1	0	116
		0.0	0.0	0.0	100.0	0.0	1.1
Unknown		664	0	0	0	664	395
		6.2	0.0	0.0	0.0	100.0	3.7
Total		10,673	2,139	7,481	152	901	10,673
		100.0	20.0	70.1	1.4	8.4	100.0

Table 53. Change in degree of preserved neurologic function (ASIA Impairment Scale) between admission to and discharge from the system. [day-1 admissions only]

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

ASIA MOTOR INDEX SCORE

The ASIA Motor Index Score is a measure of motor function ranging from 0 to 100 used to document neurologic recovery. Mean ASIA Motor Index Scores at initial system admission, admission to rehab and at first definitive system discharge appear in Table 54 (page 135). The ASIA Motor Index Score was added to the database in 1986 and data collection at admission to rehab was added in 1993. There are now 3,587 patients with known scores at system admission, admission to rehab and at discharge. The mean score increased from 42.1 at system admission to 44.9 at rehab admission and to 52.2 at discharge. A similar trend was observed at all systems.

		System Admission		Rehab Admission		Discharge	
	n	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Total	3,587	42.1	24.7	44.9	25.1	52.2	26.8

Table 54. Mean ASIA Motor Index Scores at system admission, rehab admission and discharge.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

FUNCTIONAL INDEPENDENCE MEASURE

Functional status of patients at system discharge and gain in function from rehabilitation admission to system discharge are important measures of the quality of care provided by Model Systems. The instrument chosen by the Model Systems to assess functional status is the Functional Independence Measure (FIM) introduced in 1986 by the Task Force to Develop a Uniform Data System (UDS) for Medical Rehabilitation. Although the complete FIM consists of 18 items, only the motor items are currently documented in the national SCI database. The total motor score is also documented with 13 units the lowest possible score and 91 units the highest possible score (representing the most independent level of motor function). Items include feeding, grooming, bathing, dressing upper and lower body, toileting, bladder and bowel control, transfer to bed or chair, toilet, tub or shower, locomotion and stair climbing

Prior to inclusion in the national data base, a pilot study of interrater reliability of Model System FIM data was conducted by Dr. Gale Whiteneck and co-workers at the Rocky Mountain Regional Spinal Cord Injury Care System. The results of the pilot study were presented to the Project Directors who determined that the reliability of the FIM was sufficient to warrant inclusion in the database.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

To date, complete FIM data at both rehabilitation admission and system discharge have been reported for 10,258 patients enrolled in the national SCI database. The analytic methods used for this report are identical to those employed by the UDS to facilitate comparison of UDS and Model System data. Because these analytic methods are controversial[7-13] the results in this report should be interpreted cautiously.

Mean total motor FIM scores at rehabilitation admission and system discharge, as well as mean total motor FIM score gains between rehabilitation admission and system discharge by neurologic level and extent of lesion appear in Table 55.

Mean rehabilitation lengths of stay and rehabilitation efficiency estimates (mean gain per day spent in rehabilitation) are also provided. Mean total motor FIM score at rehabilitation admission ranged from 36 units for persons with incomplete paraplegia to 15 units for those with complete tetraplegia. Mean total motor FIM scores at system discharge ranged from 73 units to 29 units for the same neurologic categories. Mean total motor FIM score gain was essentially the same for all persons (31-36 units) except for those with complete tetraplegia who experienced an average gain of only 15 units. Length of stay efficiency estimates ranged from .87 units per day for persons with incomplete paraplegia to .17 units per day for those with complete tetraplegia.

Level and Extent	n	Mean Motor FIM		Mean Motor FIM	Mean Rehab	Efficiency
		Rehab Admission	Rehab Discharge	Gain During Rehab	Length of Stay	(Mean gain per day in rehab)
Paraplegia, incomplete	2,164	36	73	36	42	0.87
Paraplegia, complete	2,782	31	67	36	52	0.69
Tetraplegia, incomplete	3,366	23	54	31	62	0.51
Tetraplegia, complete	1,946	15	29	15	87	0.17
Total	10,258	26	57	30	60	0.51

Table 55. Gain in the functional independence measure (FIM) motor score per day spent in rehabilitation by neurologic level and extent of injury at discharge.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

RESPIRATOR USE

Respirator use by level and extent of injury appears in Table 56 (page 138). In October 2000, data collection of respirator use during system hospitalization was deleted and the data are now collected at the time of System rehab admission and at the time of first definitive discharge. Beginning with this report, only patients who were admitted to System rehab are included in the Rehab Admit columns of Table 56 and in the analyses for Figure 15.

Of the patients who were admitted to the System rehab, slightly less than one-fifth of the persons with tetraplegia required the use of a mechanical respirator at the time of admission to rehab. About six percent of these patients, however, were discharged on a respirator.

Intersystem variability in the proportion of persons with tetraplegia who required the use of a respirator at system rehab admit was substantial, ranging from 1.0 percent in Pittsburgh to 37.6 percent in Ann Arbor. The proportion of those with tetraplegia who were discharged respirator dependent also varied considerably, ranging from 1.0 percent to 20.5 percent.

By comparison, 6.9 percent of persons with paraplegia required a respirator at the time of rehab admission and less than one percent were discharged on a respirator.

The proportion of persons with paraplegia who required a respirator at system rehab admission varied from 3.0 percent to 20.4 percent. By discharge however, there was less intersystem variability; fewer than four percent of persons with paraplegia were discharged respirator dependent at all systems.

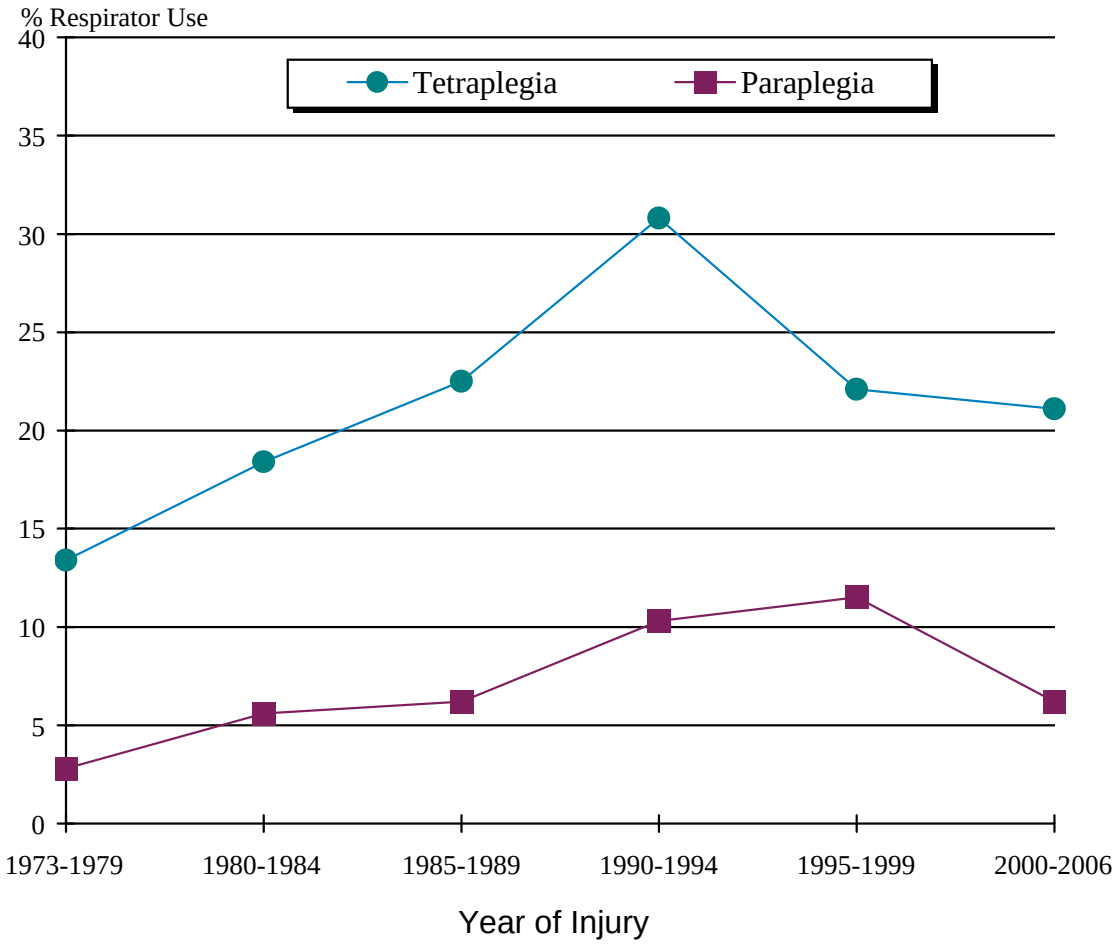
Figure 15 (page 140) shows the proportion of patients who required the use of a mechanical respirator at the time of admission to the System rehab unit by injury year and neurologic level of lesion. The proportion of persons with tetraplegia who required the use of a respirator increased from 13.4 percent prior to 1980 to 30.8 percent between 1990 and 1994. The proportion of persons with paraplegia who required the use of a respirator increased to 11.6 between 1995 and 1999.

n	Tetraplegia						Paraplegia					
	Rehab Admit			Discharge			Rehab Admit			Discharge		
%	n	Yes	Unknown	n	Yes	Unknown	n	Yes	Unknown	n	Yes	Unknown
Total	12,453	2,565	1,273	12,618	773	79	10,996	755	905	11,110	76	32
		20.6	10.2		6.1	0.6		6.9	8.2		0.7	0.3

Table 56. Respirator use at System rehab admission and at discharge for persons with tetraplegia and paraplegia.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Figure 15. Respirator use at System rehab admission by injury year and neurologic level of lesion



Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

BLADDER MANAGEMENT

Tables 57A and 57B (pages 142 and 143 respectively) present a cross-sectional analysis of method of bladder management for the entire National SCI Database, by gender. Only the most recent record for patients with known management was included in this analysis and the results are presented for discharge and the extended data years. Several new categories were added to this variable in 1996. Therefore, the absence of data in those categories is not surprising and as a result, the tables must be interpreted cautiously. The high percentage of unknowns at admission is attributed to another 1996 change.

It is not surprising that the method most used during initial hospitalization for both males and females was intermittent catheterization. Because of increasingly short rehabilitation lengths of stay, many males have not yet completed the intermittent catheterization program and graduated to the use of condom catheter drainage. This trend is reflected by the decline in intermittent catheterization at first annual with concomitant increase in condom usage. The gradual decrease in normal micturition over time results from these individuals being increasingly less likely to return for follow-up. The high percentages of individuals with suprapubic cystostomies after year 15 is the result of the presence of a high proportion of records from one system in which this is a very common method of management.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Method of Bladder Management	n / %	Discharge	Year Post-injury 1	2	5	10	15	20	25	30
None	n	201	110	35	54	30	20	17	5	0
	%	1.8	3.2	2.3	2.7	2.3	2.0	1.7	0.8	0.0
Indwelling catheter alone	n	1,201	326	159	210	153	97	98	53	15
	%	10.8	9.5	10.3	10.5	12.0	9.8	9.6	8.0	9.6
Indwelling catheter after augmentation	n	4	6	1	8	17	14	18	5	0
	%	<0.1	0.2	0.1	0.4	1.3	1.4	1.8	0.8	0.0
Catheter free with external collector; no sphincterotomy	n	96	83	36	96	103	108	126	93	14
	%	0.9	2.4	2.3	4.8	8.1	10.9	12.4	14.0	8.9
Catheter free with external collector; with sphincterotomy	n	7	4	4	17	28	52	42	51	16
	%	0.1	0.1	0.3	0.8	2.2	5.3	4.1	7.7	10.2
Catheter free with external collector; sphincterotomy unknown	n	1,354	311	280	226	140	62	19	10	3
	%	12.2	9.1	18.2	11.3	11.0	6.3	1.9	1.5	1.9
Catheter free no external collector	n	261	94	30	49	23	11	19	11	5
	%	2.4	2.7	1.9	2.4	1.8	1.1	1.9	1.7	3.2
ICP only	n	2,057	769	235	518	302	213	155	88	9
	%	18.6	22.5	15.3	25.8	23.6	21.5	15.3	13.2	5.7
ICP with external collector	n	113	133	20	60	37	39	38	23	6
	%	1.0	3.9	1.3	3.0	2.9	3.9	3.7	3.5	3.8
ICP after augmentation or continent diversion	n	1	6	3	5	13	16	7	2	2
	%	<0.1	0.2	0.2	0.2	1.0	1.6	0.7	0.3	1.3
ICP unknown	n	3172	286	190	99	57	26	11	0	1
	%	28.6	8.4	12.3	4.9	4.5	2.6	1.1	0.0	0.6
Conduit	n	6	3	3	9	14	6	8	19	6
	%	0.1	0.1	0.2	0.4	1.1	0.6	0.8	2.9	3.8
Suprapubic Cystostomy	n	958	162	87	206	144	179	316	203	60
	%	8.6	4.7	5.6	10.3	11.3	18.1	31.1	30.5	38.2
Normal	n	1,602	1,123	446	435	202	139	132	88	13
	%	14.5	32.8	29.0	21.7	15.8	14.1	13.0	13.2	8.3
Other	n	44	8	11	16	15	7	10	14	7
	%	0.4	0.2	0.7	0.8	1.2	0.7	1.0	2.1	4.5
Total	n	11,077	3,424	1,540	2,008	1,278	989	1016	665	157
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 57A. Method of bladder management by time post-injury - **males**. [cross-sectional analysis]

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Method of Bladder Management	n / %	Discharge	Year Post-injury 1	2	5	10	15	20	25	30
None	n	87	47	17	23	11	7	1	6	0
	%	3.2	5.3	4.9	4.3	3.7	2.9	0.5	3.1	0.0
Indwelling catheter alone	n	759	160	97	119	72	62	52	59	12
	%	27.8	17.9	27.9	22.4	23.9	25.8	26.9	30.4	35.3
Indwelling catheter after augmentation	n	1	3	0	4	3	7	0	1	1
	%	<0.1	0.3	0.0	0.8	1.0	2.9	0.0	0.5	2.9
Catheter free with external collector;no sphincterotomy	n	0	0	0	0	0	0	0	0	0
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Catheter free with external collector;with sphincterotomy	n	0	0	0	0	0	0	0	0	0
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Catheter free with external collector; sphincterotomy unknown	n	1	0	0	0	0	0	0	0	0
	%	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Catheter free no external collector	n	89	23	6	22	8	2	6	3	3
	%	3.3	2.6	1.7	4.1	2.7	0.8	3.1	1.5	8.8
ICP only	n	504	209	40	131	94	71	58	61	6
	%	18.4	23.4	11.5	24.7	31.2	29.6	30.1	31.4	17.6
ICP with external collector	n	0	0	0	0	0	0	0	0	0
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ICP after augmentation or continent diversion	n	0	1	1	10	5	7	5	1	1
	%	0.0	0.1	0.3	1.9	1.7	2.9	2.6	0.5	2.9
ICP unknown	n	698	68	53	27	19	9	5	0	1
	%	25.5	7.6	15.2	5.1	6.3	3.7	2.6	0.0	2.9
Conduit	n	2	2	0	6	8	5	9	3	1
	%	0.1	0.2	0.0	1.1	2.7	2.1	4.7	1.5	2.9
Suprapubic Cystostomy	n	81	47	12	37	17	32	19	27	1
	%	3.0	5.3	3.4	7.0	5.6	13.3	9.8	13.9	2.9
Normal	n	509	328	119	148	61	33	37	30	3
	%	18.6	36.8	34.2	27.9	20.3	13.8	19.2	15.5	8.8
Other	n	2	4	3	4	3	5	1	3	5
	%	0.1	0.4	0.9	0.8	1.0	2.1	0.5	1.5	14.7
Total	n	2,733	892	348	531	301	240	193	194	34
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 57B. Method of bladder management by time post-injury - **females**. [cross-sectional analysis]

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

DAYS AND REASONS REHOSPITALIZED POST-DISCHARGE

Mean days rehospitalized during the extended data years for the entire National SCI Database and for individual systems appear in Table 58 (page 145). Only those patients who were rehospitalized in the selected post-injury years are included in the "n's"; the percentages are calculated using the total number of patients followed in each given post-injury year.

For those patients rehospitalized, the average length of stay was relatively constant over time (26 days in the first post-injury year and 20 days in the 25th year). More complete studies of rehospitalization frequency and risk factors may be found in the publications titled Predicting Unplanned Hospitalizations in Persons with Spinal Cord Injury, Archives of Physical Medicine and Rehabilitation, Vol. 75, November 1994, pages 1182-1188 and Etiology and Incidence of Rehospitalization After Traumatic Spinal Cord Injury: A Multicenter Analysis, Archives of Physical Medicine and Rehabilitation, Vol. 85, November 2004, pages 1757-1773.

Table 59 (page 146) reflects reasons for rehospitalizations. This is a new variable that was added to the NSCISC database in 2000. Percentages do not add to 100 because some patients had more than 1 rehospitalization reason. All Form IIs for the required data submission years, entered since 2000, for those who were hospitalized, were used in this analysis (n=2,311).

Diseases of the genitourinary system were the leading cause of rehospitalization during all post-injury years except for year 30 where diseases of the skin was the most common cause of rehospitalization. Circulatory, respiratory, digestive, and musculoskeletal diseases and conditions were also relatively common causes of rehospitalization.

Relatively high percentages of “other unclassified” causes suggest that additional categories may need to be identified for this variable. Although there is a relatively high percentage of unknowns, 75% of the records coded unknown were entered in 2000. Percentages of unknowns have decreased significantly (to 10% or less of the records entered after 2000).

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

	Year 01			Year 02			Year 05			Year 10		
	n	%	Mean	n	%	Mean	n	%	Mean	n	%	Mean
Total	5536	31	26	4216	33	27	2254	24	23	1004	22	23

	Year 15			Year 20			Year 25			Year 30		
	n	%	Mean	n	%	Mean	n	%	Mean	n	%	Mean
Total	556	21	22	419	22	23	227	22	21	53	27	15

Table 58. Percentages of patients rehospitalized and mean total days rehospitalized by year post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Reason	n / %	Year Post-Injury 1	2	5	10	15	20	25	30
Infectious Diseases		26	0	15	10	9	7	7	1
		3.3	0.0	3.6	3.2	4.3	2.6	3.3	1.8
Cancer		4	0	1	2	1	4	4	1
		0.5	0.0	0.2	0.6	0.5	1.5	1.9	1.8
Endocrine Diseases		9	0	6	2	1	1	4	1
		1.1	0.0	1.4	0.6	0.5	0.4	1.9	1.8
Blood Diseases		14	0	10	5	4	4	6	2
		1.8	0.0	2.4	1.6	1.9	1.5	2.8	3.6
Mental Disorders		19	0	4	3	6	2	3	1
		2.4	0.0	1.0	1.0	2.9	0.8	1.4	1.8
Disease of the Nervous System		21	0	8	7	1	5	6	0
		2.6	0.0	1.9	2.3	0.5	1.9	2.8	0.0
Diseases of the Circulatory System		67	5	32	17	19	14	12	0
		8.4	10.4	7.6	5.5	9.2	5.3	5.6	0.0
Diseases of the Respiratory System		91	7	34	33	9	25	31	7
		11.5	14.6	8.1	10.7	4.3	9.4	14.5	12.7
Disease of the Digestive System		50	9	50	43	14	29	23	6
		6.3	18.8	11.9	14.0	6.8	10.9	10.7	10.9
Diseases of the Genitourinary System		235	14	106	78	67	80	68	13
		29.6	29.2	25.3	25.3	32.4	30.1	31.8	23.6
Childbirth/ Pregnancy		3	0	6	5	3	2	1	0
		0.4	0.0	1.4	1.6	1.4	0.8	0.5	0.0
Diseases of the skin		107	4	78	72	52	69	44	15
		13.5	8.3	18.6	23.4	25.1	25.9	20.6	27.3
Diseases of the Musculoskeletal System		78	0	35	22	19	16	20	5
		9.8	0.0	8.4	7.1	9.2	6.0	9.3	9.1
Congenital anomalies		2	0	0	0	0	1	4	0
		0.3	0.0	0.0	0.0	0.0	0.4	1.9	0.0
Symptoms and Ill-defined Conditions		21	0	6	3	3	3	0	1
		2.6	0.0	1.4	1.0	1.4	1.1	0.0	1.8
Injuries and Poisoning		37	0	19	13	12	16	11	3
		4.7	0.0	4.5	4.2	5.8	6.0	5.1	5.5
Inpatient Rehab Services Only		50	3	13	3	0	4	4	0
		6.3	6.2	3.1	1.0	0.0	1.5	1.9	0.0
Other unclassified		116	15	54	40	40	32	11	4
		14.6	31.3	12.9	13.0	19.3	12.0	5.1	7.3
Unknown		49	3	24	10	7	10	10	1
		6.2	6.2	5.7	3.2	3.4	3.8	4.7	1.8
Total persons rehospitalized		999	60	501	368	267	324	269	61

Table 59. Frequency and percentage of each cause of rehospitalization, by year post-injury. (Form IIs entered since 2000)

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

NUMBER OF HOURS OF OUTPATIENT PHYSICAL AND/OR OCCUPATIONAL THERAPY, OUTPATIENT PSYCHOLOGICAL AND/OR VOCATIONAL COUNSELING

Tables 60 and 61 present analyses of variables that were added to the database in November 1995. Only records of patients who were admitted to the system after December 1995 (n=8,771) were used in the analyses.

The trend in shorter lengths of stay during the inpatient rehabilitation phase has necessitated the addition of 2 new variables (Post-discharge Physical and/or Occupational Therapy and Post-discharge Psychological and/or Vocational Counseling). Combined with the acute and inpatient rehabilitation lengths of stay, these variables will more accurately document the total amount of time for the initial rehabilitation phase.

Table 60 (page 148) presents the number of hours of outpatient physical and/or occupational therapy post-discharge to the first anniversary of injury. Nationally, 14.1% of the records were coded unknown. Unknowns ranged from 0% to 26.8%. Overall, 60.2% of patients were reported to have had outpatient physical and/or occupational therapy between discharge and first anniversary of injury.

Similar results exist for the number of hours of outpatient psychological and/or vocational counseling received post-discharge to the first anniversary of injury (Table 61, page 148). Nationally, 13.6% of the records were coded unknown. Unknowns ranged from 0% to 20.0%.

Overall, only 18.4% of patients were reported to have had outpatient psychological and/or vocational counseling between discharge and first anniversary of injury.

There has been a considerable decrease in the percentages of unknowns in these variables since the 1999 report. The data collectors have been reminded that these are items to be updated on Form I at the time the patient's year 1 Form II is entered.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

n %	No	Yes		Unknown	Total
		# hours known	# hours unknown		
Total	1,336	2,577	545	732	5,190
	25.7	49.7	10.5	14.1	

Table 60. Number of hours of outpatient physical and/or occupational therapy post-discharge to the first anniversary of injury.

n %	No	Yes		Unknown	Total
		# hours known	# hours unknown		
Total	3,530	718	238	704	5,190
	68.0	13.8	4.6	13.6	

Table 61. Number of hours of outpatient psychological and/or vocational counseling post-discharge to the first anniversary of injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

INTERVIEW INFORMATION

The majority of the new variables added to the database in late 1995 and again in late 2000 were "interview" variables. Of those items added in 1995, the FIM, Satisfaction with Life Scale, Self-perceived Health Status and the CHART are still a part of the database. Pain Interfering with Work and the question “Compared To 1 Year Ago, How Would You Rate Your Health In General Now?” were added in 1998. New items added in 2000 were the CHIEF (short form), the Patient Health Questionnaire (brief version), Drug and Alcohol Use, the CAGE, Severity of Pain and the Date of the Interview. How the interview was conducted has been in the database since 1996.

Table 62 (page 150) presents a system analysis of how interviews were conducted. Nationally, 11.6% of all interviews are conducted in person and system percentages ranged from 1.1% to 92.0%. Of the 17,614 records in which interviews were conducted, 69.0% were done by phone with system percentages ranging from 5.7% to 91.6% Just over eight percent of the interviews were done by mail with system percentages ranging from 0% at to 30.5%. Nationally, 6.8% of all interviews used a combination of the methods (i.e., in-person, by phone and/or by mail) with system percentages ranging from 0.2% to 28.1%. The interview method was unknown for 3.8% for all the interviews conducted.

n %	In Person	By Phone	By Mail	Combination	Unknown	Total
Total	2,051	12,161	1,526	1,199	677	17,614
	11.6	69.0	8.7	6.8	3.8	

Table 62. How the interview was conducted.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

SELF-PERCEIVED HEALTH STATUS

This SF12 question was added to the national database in October 1995. This analysis excludes records in which code "9" (unknown or subject is too young) is used. All other SF12 items except the pain question were deleted from the database in October 2000.

n / %	Year Post-injury 1	2	5	10	15	20	25	30	Total
Excellent	559	252	458	268	310	270	149	26	2,292
	13.0	14.0	16.7	14.4	17.2	15.9	15.3	13.5	14.9
Very good	1,005	374	737	505	461	485	288	67	3,922
	23.4	20.7	26.8	27.2	25.5	28.5	29.5	34.9	25.5
Good	1,583	709	969	701	711	639	383	62	5,757
	36.9	39.3	35.3	37.8	39.3	37.5	39.2	32.3	37.4
Fair	813	373	447	294	259	242	129	32	2,589
	19.0	20.7	16.3	15.8	14.3	14.2	13.2	16.7	16.8
Poor	264	95	106	65	42	54	21	5	652
	6.2	5.3	3.9	3.5	2.3	3.2	2.1	2.6	4.2
Don't know	13	0	10	3	0	0	1	0	27
	0.3	0.0	0.4	0.2	0.0	0.0	0.1	0.0	0.2
Refuses	53	2	21	20	24	13	6	0	139
	1.2	0.1	0.8	1.1	1.3	0.8	0.6	0.0	0.9
Total	4,290	1,805	2,748	1,856	1,807	1,703	977	192	15,378
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 63. Self-perceived health status by year post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

HOW WOULD YOU RATE YOUR HEALTH

Compared to 1 year ago, how would you rate your health in general now? is a related SF12 variable that was added to the database with the SF12 items in May 1998.

n / %	Year Post-injury 1	2	5	10	15	20	25	30	Total
Much better	1,366	257	276	123	129	116	98	24	2,389
	41.0	24.9	13.6	8.8	9.4	8.3	10.1	12.5	20.4
Somewhat better	823	307	394	201	155	159	112	20	2,171
	24.7	29.7	19.4	14.5	11.3	11.4	11.5	10.4	18.5
About the same	600	350	1,089	842	861	856	595	116	5,309
	18.0	33.8	53.6	60.6	62.7	61.5	61.1	60.4	45.3
Somewhat worse	283	96	201	162	175	204	143	27	1,291
	8.5	9.3	9.9	11.7	12.7	14.7	14.7	14.1	11.0
Much worse	192	19	48	39	28	38	18	5	387
	5.8	1.8	2.4	2.8	2.0	2.7	1.8	2.6	3.3
Don't know	6	1	5	2	2	1	0	0	17
	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.1
Refuses	59	4	20	21	24	18	8	0	154
	1.8	0.4	1.0	1.5	1.7	1.3	0.8	0.0	1.3
Total	3,329	1,034	2,033	1,390	1,374	1,392	974	192	11,718
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 64. Compared to one year ago, how would you rate your health in general now?

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

SATISFACTION WITH LIFE SCALE TOTAL SCORE

In 1995 several new variables were added during the extended data follow-up years to document psycho/social outcomes. Table 65 (page **Error! Bookmark not defined.**) is an analysis of the Total Score for the Satisfaction with Life Scale. Only records newly entered into the database after 1995, for patients whose current age was 18 or older, were used in this analysis. Of the 19,230 records available for this analysis, the total score is known for 77% of all records. Overall, mean life satisfaction total score ranged from 18 at post-injury years 1 and 2 to 23 at post-injury years 25 and 30.

	Year Post-injury							
	Year 01		Year 02		Year 05		Year 10	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	4,148	18	1,754	18	2,647	20	1,807	21

	Year Post-injury							
	Year 15		Year 20		Year 25		Year 30	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	1,747	22	1,644	22	967	23	188	23

Table 65. Satisfaction with life - total score by year post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

THE CHART

The CHART (Craig Handicap Assessment and Reporting Technique) was added to the national database in 1996. It is administered in the extended data follow-up years (currently years 1, 5, 10, 15, 20, 25, and 30) to individuals whose current age is 18 years or older. From 1996 to October 2000, the version of the CHART that was used in the database consisted of 26 questions and 5 subscales (physical independence, mobility, occupational status, social integration, and economic self-sufficiency). In 2000, the version of the CHART that is included in the database was changed to the short form of the CHART that consists of only 20 questions and includes a sixth subscale (cognitive independence). The CHART data collected from 1996 through 2000 were converted to the short form of the CHART by the NSCISC so that all CHART data in the database are currently in the same format. Each subscale score is capped at 100, and scores of less than 100 imply the presence of a handicap. For the economic subscale, scores of 100 imply the individual is living at twice the poverty level, while a score of 50 would imply the individual is living at the poverty level.

Table 66 (page 156) depicts the mean CHART physical independence score by year post-injury for each model system. The mean physical independence score increases over time from 70 in the first post-injury year to 85 in post-injury years 20, 25, and 30. However, there is considerable intersystem variability in physical independence scores. For example, in the first post-injury year, mean physical independence scores range from 51 to 89. This intersystem variability will require further investigation as it is unlikely to result simply from differences in patient populations being served by each model system.

	Year Post-injury							
	Year 01		Year 02		Year 05		Year 10	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	4,386	70	1,900	72	2,790	77	1,888	77

	Year Post-injury							
	Year 15		Year 20		Year 25		Year 30	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	1,829	82	1,715	85	981	85	192	85

Table 66. CHART – physical independence subscale score by year post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 67 depicts the mean CHART cognitive independence subscale score by year post-injury for each model system. The mean cognitive independence score increases over time from 83 in the first post-injury year to 96 in post-injury year 30. Once again, there is considerable intersystem variability in these scores. In the first post-injury year, mean cognitive independence scores range from 56 to 97. Therefore, further investigation of this variability will be undertaken.

	Year Post-injury							
	Year 01		Year 02		Year 05		Year 10	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	2,314	83	135	84	1,395	88	975	90

	Year Post-injury							
	Year 15		Year 20		Year 25		Year 30	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	767	93	974	94	817	95	192	96

Table 67. CHART – cognitive independence subscale score by year post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 68 depicts the mean CHART mobility subscale score by year post-injury for each model system. The mean mobility score increases over time from 74 in the first post-injury year to 81 in year 25. There is less intersystem variability in mean mobility scores than physical and cognitive independence scores. In the first post-injury year, mean mobility scores range from 63 to 79.

	Year Post-injury							
	Year 01		Year 02		Year 05		Year 10	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	4,378	74	1,903	76	2,780	79	1,877	81

	Year Post-injury							
	Year 15		Year 20		Year 25		Year 30	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	1,823	82	1,712	81	969	81	192	79

Table 68. CHART mobility subscale score by year post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 69 depicts the mean CHART occupational status subscale score by post-injury year for each model system. The mean occupational status score increases from 48 in the first post-injury year to 70 in post-injury year 25. Although the occupational status subscale includes other activities besides competitive employment, the trend over time in this subscale score is consistent with many previous studies of return to work after spinal cord injury that have shown a gradual increase in the employment rate over time. Mean occupational status subscale scores in the first post-injury year range from 32 to 62.

	Year Post-injury							
	Year 01		Year 02		Year 05		Year 10	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	4,293	48	1,864	50	2,729	59	1,865	61

	Year Post-injury							
	Year 15		Year 20		Year 25		Year 30	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	1,792	64	1,697	67	964	70	190	65

Table 69. CHART occupational status subscale score by year post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 70 depicts the mean CHART social integration subscale score by post-injury year for each model system. Overall, the mean social integration score increases only very slightly over time from 87 in the first post-injury year to 89 by post-injury year 20. Mean social integration scores in the first post-injury year range from 75 to 92.

	Year Post-injury							
	Year 01		Year 02		Year 05		Year 10	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	4,237	87	1,824	85	2,695	86	1,862	87

	Year Post-injury							
	Year 15		Year 20		Year 25		Year 30	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	1,803	88	1,690	89	956	89	191	89

Table 70. CHART social integration subscale score by year post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 71 depicts the mean CHART economic self-sufficiency subscale score by post-injury year for each model system. Once again, the mean economic self-sufficiency score increases over time, ranging from 67 in post-injury year 2 to 80 in post-injury year 25. Intersystem variability in mean economic self-sufficiency scores at the first anniversary of injury is substantial, ranging from a mean score of 54 to 79. Although this variability may genuinely reflect differences in the patient populations served at each model system, further investigation seems warranted.

	Year Post-injury							
	Year 01		Year 02		Year 05		Year 10	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	2,675	68	1,050	67	1,825	68	1,384	73

	Year Post-injury							
	Year 15		Year 20		Year 25		Year 30	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	1,421	77	1,384	77	827	80	160	78

Table 71. CHART economic self-sufficiency subscale score by year post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 72 (page **Error! Bookmark not defined.**) depicts the total CHART score for persons with complete data on all 20 CHART questions. Sample sizes of persons with complete data are relatively low primarily because of missing data in the economic self-sufficiency questions and the delayed entry of the cognitive subscale into the database. The maximum total CHART score that can be achieved is 600. Overall, mean total CHART score increases from 436 in post-injury year 2 to 508 in post-injury year 25. Mean total CHART scores in the first post-injury year range from 388 in Pittsburgh to 501 in Colorado.

Increases in mean CHART scores over time must be interpreted cautiously. This is a cross-sectional analysis and the patients in post-injury year 30 are not the same as those in the first post-injury year.

Part of the increase in scores over time is likely due to differential survival of persons with higher initial CHART scores (for example, those who require less attendant care). Moreover, the model system with the highest overall mean total CHART scores contributes a much higher share of the data in post-injury years 20 through 30 than in the first post-injury year. A truly accurate assessment of changes in CHART scores over time will require a multivariate analysis with repeated measures of CHART on the same individuals.

	Year Post-injury							
	Year 01		Year 02		Year 05		Year 10	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	1,531	445	86	436	984	473	711	483

	Year Post-injury							
	Year 15		Year 20		Year 25		Year 30	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	606	496	768	502	660	508	158	503

Table 72. CHART total score by year post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

THE CHIEF

The CHIEF (Craig Hospital Inventory of Environmental Factors) was added to the national database in October 2000. It is administered in the extended data follow-up years (currently years 1, 5, 10, 15, 20, 25, and 30) to individuals whose current age is 18 years or older. The CHIEF consists of 12 questions and 5 subscales (policies, physical/structural independence, work/school, attitudes/support, and services/assistance) as well as a total score. Each question contains two parts, one that reflects the frequency of a problem, and the other that reflects the magnitude of the problem when it occurs. Lower scores imply patients are encountering fewer environmental barriers.

Table 73 depicts the mean CHIEF policies subscale score by post-injury year and model system. Overall, the mean policies score is relatively constant over time, ranging from 0.6 in post-injury years 20 and 30 to 0.9 in post-injury year 2. During the first post-injury year, mean policies score ranges from 0.4 in two systems to 1.3 in another.

	Year Post-injury							
	Year 01		Year 02		Year 05		Year 10	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	2,221	0.8	116	0.9	1,356	0.7	933	0.7

	Year Post-injury							
	Year 15		Year 20		Year 25		Year 30	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	750	0.7	944	0.6	805	0.7	188	0.6

Table 73. CHIEF policies subscale score by year post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 74 depicts the mean CHIEF physical/structural independence subscale score by post-injury year and model system. Overall, the mean physical/structural independence score decreases over time from 1.7 in post-injury year 2 to 0.9 in post-injury years 20. During the first post-injury year, mean physical/structural independence score ranges from 0.6 to 2.1.

	Year Post-injury							
	Year 01		Year 02		Year 05		Year 10	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	2,233	1.4	117	1.7	1,356	1.2	945	1.2

	Year Post-injury							
	Year 15		Year 20		Year 25		Year 30	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	748	1.1	947	0.9	803	1.0	189	1.0

Table 74. CHIEF physical/structural subscale score by year post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 75 depicts the mean CHIEF work/school subscale score by post-injury year and model system. These scores are typically quite low in all follow-up years, ranging from 0.2 to 0.6. Intersystem variability on this subscale is minimal. Sample sizes for this subscale are lower than for other CHIEF subscales because only persons who are in school or who are employed are asked to respond to these questions.

	Year Post-injury							
	Year 01		Year 02		Year 05		Year 10	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	600	0.3	36	0.6	506	0.3	356	0.4

	Year Post-injury							
	Year 15		Year 20		Year 25		Year 30	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	288	0.3	384	0.2	319	0.3	71	0.3

Table 75. CHIEF work/school subscale score by year post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 76 depicts the mean CHIEF attitudes/support subscale score by post-injury year and model system. These scores range from 0.3 in post-injury year 30 to 0.9 in post-injury year 2. There does not appear to be substantial intersystem variability for this CHIEF subscale.

	Year Post-injury							
	Year 01		Year 02		Year 05		Year 10	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	2,224	0.6	117	0.9	1,360	0.6	938	0.6

	Year Post-injury							
	Year 15		Year 20		Year 25		Year 30	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	753	0.5	950	0.4	805	0.4	188	0.3

Table 76. CHIEF attitudes/support subscale score by year post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 77 depicts the mean CHIEF services/assistance subscale score by post-injury year and model system. Overall, the mean services/assistance score decreases over time from 1.2 in the second post-injury year to 0.6 in post-injury years 15, 20, 25 and 30. Moderate intersystem variability exists for this subscale, with first post-injury year mean scores ranging from 0.6 to 1.5.

	Year Post-injury							
	Year 01		Year 02		Year 05		Year 10	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	2,212	1.0	116	1.2	1,351	0.8	938	0.8

	Year Post-injury							
	Year 15		Year 20		Year 25		Year 30	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	748	0.6	942	0.6	796	0.6	186	0.6

Table 77. CHIEF services/assistance subscale score by year post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 78 depicts the mean total CHIEF score by post-injury year and model system. The total CHIEF score is calculated as the mean score for each of the 12 questions that comprise the CHIEF. If the person is not employed or in school, then the total CHIEF score is calculated as the mean of the remaining 10 questions included in the CHIEF. Overall, the mean total CHIEF score decreases slightly over time from 1.1 in post-injury year 2 to 0.6 in post-injury years 20, 25, and 30. The mean total CHIEF score in the first post-injury year ranges from 0.5 to 1.5. Once again, any trends in CHIEF scores over time must be interpreted carefully because of the same biases and limitations of cross-sectional analyses that were described previously concerning the analyses of CHART scores over time (page 163).

	Year Post-injury							
	Year 01		Year 02		Year 05		Year 10	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	2,169	0.9	112	1.1	1,329	0.8	910	0.8

	Year Post-injury							
	Year 15		Year 20		Year 25		Year 30	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	733	0.7	925	0.6	778	0.6	183	0.6

Table 78. CHIEF total score by year post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

PATIENT HEALTH QUESTIONNAIRE

The section on depression of the brief version of the Patient Health Questionnaire (PHQ) was added to the NSCISC database in October 2000. The PHQ consists of 9 questions reflecting the frequency of problems associated with possible depression of persons plus a tenth question reflecting the overall level of difficulty caused by these problems. Each of the nine questions is scored from 0 (no problem) to 3 (nearly every day). Major depressive syndrome is defined as scoring a 2 or 3 on at least one of the first two questions and scoring at least a 2 on a total of at least 5 of the nine questions. Other depressive syndrome is defined as scoring a 2 or 3 on at least one of the first two questions and scoring a 2 or 3 on between two and four of the nine questions. Also a severity of depression score is calculated as the sum of the scores from the nine PHQ questions.

Table 79 depicts the frequency and percentage of persons with major and other depressive syndrome by post-injury year. The percentage of persons with major depressive syndrome ranges from 14.7 in post-injury year 2 to 5.4 in post-injury year 20. The percentage of persons with other depressive syndrome ranges from 12.9 in post-injury year 2 to 7.2 in post-injury year 15. The percentage of persons with no depressive syndrome ranges from 72.4 in post-injury year 2 to 86.8 in post-injury year 20.

n %	Year Post-injury 1	2	5	10	15	20	25	30
No	1,697	84	1,104	787	638	818	696	163
	76.8	72.4	81.7	83.5	85.6	86.8	86.0	85.8
Yes, major	259	17	125	83	53	51	50	11
	11.7	14.7	9.2	8.8	7.1	5.4	6.2	5.8
Yes, other	253	15	123	72	54	73	63	16
	11.5	12.9	9.1	7.6	7.2	7.7	7.8	8.4
Total	2,209	116	1,352	942	745	942	809	190
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 79. Major depressive syndrome during follow-up.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 80 depicts the mean depression severity score by time post-injury. This year's analysis excludes records in which the score is zero. Overall, mean depression severity scores decreased slightly over time, ranging from 7.5 in post-injury year 2 to 5.5 in post-injury year 20. Once again, this trend must be interpreted cautiously because of the limitations of cross-sectional analyses and biases discussed previously (page 163).

	Year Post-injury							
	Year 01		Year 02		Year 05		Year 10	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	1,642	7.2	90	7.5	953	6.5	641	6.2

	Year Post-injury							
	Year 15		Year 20		Year 25		Year 30	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	474	5.9	594	5.5	517	5.7	126	6.0

Table 80. Severity of depression score by year post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

ILLEGAL DRUG USE

Frequency of the use of illegal drugs or the use of prescribed medications for nonmedical reasons by post-injury year is depicted in Table 81. This variable was added to the NSCISC database in October 2000. In this table, a person will be counted for each drug that he/she reports using during the follow-up period. Therefore, the same person may be counted multiple times. Overall, reported drug use was relatively infrequent, and was greatest for marijuana, followed by cocaine. However, this is a self-report variable, and some persons may be hesitant to admit use of illegal drugs.

n / %	Year Post-injury 1	2	5	10	15	20	25	30
Cocaine	34	1	24	16	10	11	6	1
	1.5	0.8	1.8	1.7	1.3	1.1	0.7	0.5
Pot/	157	12	132	100	65	89	83	15
Marijuana	6.9	9.8	9.7	10.5	8.6	9.3	10.3	7.9
Hallucinogens	1	0	2	3	3	1	1	0
	0.0	0.0	0.1	0.3	0.4	0.1	0.1	0.0
Heroin/opiates	3	0	3	4	0	2	2	0
	0.1	0.0	0.2	0.4	0.0	0.2	0.2	0.0
Speed/	3	0	3	6	3	2	5	0
Stimulants	0.1	0.0	0.2	0.6	0.4	0.2	0.6	0.0
Medications	12	3	18	10	7	11	12	0
(your own)	0.5	2.4	1.3	1.1	0.9	1.1	1.5	0.0
Medications	10	0	6	4	4	1	2	0
(not your own)	0.4	0.0	0.4	0.4	0.5	0.1	0.2	0.0
Undisclosed	6	1	3	5	7	9	2	0
Type	0.3	0.8	0.2	0.5	0.9	0.9	0.2	0.0

Table 81. Drug use by year post-injury

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

ALCOHOL USE

Alcohol use during the follow-up period is depicted in Tables 82 through 86 (pages 177 to 179). Once again, these variables were added to the NSCISC database in October 2000. The percentage of persons who reported drinking any alcoholic beverage either currently or in the past ranges from 48.8 in post-injury year 2 to 77.9 in post-injury year 30 (Table 82). Most persons who were drinkers reported alcohol use only one or two days per week throughout all follow-up years (Table 83).

Alcohol Use	n / %	Year Post-injury 1	2	5	10	15	20	25	30
No		1,102	63	551	384	282	265	215	42
		48.4	51.2	40.2	40.0	37.1	27.5	26.4	22.1
Yes		1,176	60	820	576	479	697	600	148
		51.6	48.8	59.8	60.0	62.9	72.5	73.6	77.9
Total		2,278	123	1,371	960	761	962	815	190
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 82. Alcohol use during follow-up: *Do you drink any alcoholic beverages?*

Number of Days	n / %	Year Post-injury 1	2	5	10	15	20	25	30
None		378	18	264	176	137	301	277	84
		32.3	30.0	32.4	30.9	28.8	43.6	46.2	57.1
One		330	22	211	156	113	134	83	15
		28.2	36.7	25.9	27.4	23.8	19.4	13.9	10.2
Two		186	10	145	88	83	102	85	12
		15.9	16.7	17.8	15.5	17.5	14.8	14.2	8.2
Three		78	2	68	39	51	48	49	9
		6.7	3.3	8.4	6.9	10.7	6.9	8.2	6.1
Four		47	1	27	27	28	20	18	6
		4.0	1.7	3.3	4.7	5.9	2.9	3.0	4.1
Five		36	1	36	12	11	20	21	9
		3.1	1.7	4.4	2.1	2.3	2.9	3.5	6.1
Six		21	2	12	8	4	8	15	1
		1.8	3.3	1.5	1.4	0.8	1.2	2.5	0.7
Seven		41	2	30	34	30	52	44	11
		3.5	3.3	3.7	6.0	6.3	7.5	7.3	7.5
Unknown		53	2	21	29	18	6	7	0
		4.5	3.3	2.6	5.1	3.8	0.9	1.2	0.0
Total		1,170	60	814	569	475	691	599	147
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 83. Alcohol use: *During the past month, how many days per week did you drink any alcoholic beverages?*

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 84 reflects the cumulative frequency distribution for the number of days during the past month that an individual reports having had a drink (among those who reported alcohol use). Most persons indicated either that they had not had any drinks during the past month (but had been drinkers previously) or had only one or two drinks per day on the days that they did drink alcohol. A few persons reported consuming very large quantities of alcohol on those occasions when they drank.

Number of Drinks	n	%	Cumulative %
0	1,249	27.6	27.6
1	1,006	22.2	49.9
2	981	21.7	71.5
3	490	10.8	82.4
4	253	5.6	88.0
5	121	2.7	90.6
6	164	3.6	94.3
7	29	0.6	94.9
8	33	0.7	95.6
9	9	0.2	95.8
10	28	0.6	96.5
11	2	<0.1	96.5
12	33	0.7	97.2
15	4	0.1	97.3
16	1	<0.1	97.3
18	2	<0.1	97.4
20	4	0.1	97.5
24	1	<0.1	97.5
30	1	<0.1	97.5
40	1	<0.1	97.5
Number unknown	111	2.5	100.0

Table 84. Alcohol use: *On the days you drank (during the past month), about how may drinks did you drink?*

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 85 reflects the cumulative frequency distribution of how many times during the past month the person had 5 or more drinks on an occasion. Approximately three quarters of persons did not report any occasion of having at least 5 drinks. However, approximately 5 percent reported having more than 5 drinks on 8 or more occasions during the past month.

Number of Occasions	n	%	Cumulative %
0	3,470	76.7	76.7
1	316	7.0	83.7
2	176	3.9	87.6
3	93	2.1	89.6
4	136	3.0	92.6
5	53	1.2	93.8
6	20	0.4	94.3
7	9	0.2	94.5
8	37	0.8	95.3
9	5	0.1	95.4
10	23	0.5	95.9
11	1	<0.1	95.9
12	19	0.4	96.3
13	3	0.1	96.4
14	2	<0.1	96.4
15	5	0.1	96.6
16	10	0.2	96.8
20	15	0.3	97.1
24	3	0.1	97.2
25	1	<0.1	97.2
28	2	<0.1	97.2
30	18	0.4	97.6
31	12	0.3	97.9
Number unknown	95	2.1	100.0

Table 85. Alcohol use: *How many times during the past month did you have 5 or more drinks?*

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 86 depicts mean total CAGE score by post-injury year and model system. No trend over time was observed, with mean total CAGE score ranging from 0.4 at post-injury year 5 to 0.8 at post-injury year 2. Although sample sizes were small (because nondrinkers are not asked to respond to the CAGE), slight intersystem variability was reported, with mean total CAGE score during the first post-injury year ranging from <0.1 to 1.9.

	Year Post-injury							
	Year 01		Year 02		Year 05		Year 10	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	1,169	0.5	60	0.8	814	0.4	569	0.6

	Year Post-injury							
	Year 15		Year 20		Year 25		Year 30	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	477	0.5	694	0.5	599	0.5	148	0.4

Table 86. CAGE total score by time post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

PAIN

The severity of pain score is measured on a 0 to 10 scale. Table 87 depicts the mean pain score by post-injury year and model system for those who had a score from 1 to 10. This variable was added to the NSCISC database in October 2000. Mean pain severity score did not vary meaningfully over time, ranging from 4.9 in post-injury year 20 to 5.4 in post injury year 2. There was also not much intersystem variability in the reporting of pain severity scores.

	Year Post-injury							
	Year 01		Year 02		Year 05		Year 10	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	1,866	5.1	95	5.4	1,113	5.3	761	5.3

	Year Post-injury							
	Year 15		Year 20		Year 25		Year 30	
	n	Mean	n	Mean	n	Mean	n	Mean
Total	616	5.0	784	4.9	658	5.0	156	5.2

Table 87. Severity of pain score by time post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 88 reflects responses to the question of the degree to which pain interfered with work outside the home or housework. This is a variable from the SF-12 that was added to the NSCISC database in May 1998. It was retained in the NSCISC database along with the self-reported rating of overall health when the remainder of the SF-12 was dropped from the database in September 2000.

Overall, most persons who reported that they had pain also reported that the pain either did not interfere with work or that it interfered only a little bit. However, a significant percentage of persons reported moderate or more pain interference with work during all post-injury years. The trend over time from post-injury year 1 to post-injury year 25 is toward slightly less pain interference with work.

n	Year Post-injury							
%	1	2	5	10	15	20	25	30
Not at all	804	323	544	411	488	503	347	57
	27.9	32.2	30.9	35.1	40.1	41.6	42.1	36.5
A little bit	766	222	451	288	272	279	173	36
	26.6	22.1	25.6	24.6	22.3	23.1	21.0	23.1
Moderately	492	183	306	173	195	195	135	32
	17.1	18.2	17.4	14.8	16.0	16.1	16.4	20.5
Quite a bit	493	174	260	182	165	145	112	23
	17.1	17.3	14.8	15.6	13.5	12.0	13.6	14.7
Extremely	272	96	178	95	75	69	53	8
	9.4	9.6	10.1	8.1	6.2	5.7	6.4	5.1
Don’t know	9	2	3	2	0	3	0	0
	0.3	0.2	0.2	0.2	0.0	0.2	0.0	0.0
Refused	48	4	18	19	23	14	5	0
	1.7	0.4	1.0	1.6	1.9	1.2	0.6	0.0
Total	2,884	1,004	1,760	1,170	1,218	1,208	825	156
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 88. Pain interfering with work by year post-injury.

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

ASSISTIVE TECHNOLOGY VARIABLES

Tables 89 through 97 (pages 182 to 193) present information from the new technology section of the database. For these analyses, only records reflecting interviews that were conducted since April 2004 when the technology variables were added to Form II are included. As a result, all tables are based on a total sample size of 3,224 annual evaluations. Due to limited sample sizes, all follow-up years were combined. The focus of these analyses is on the quality of the data collected to date, including percentages of unknown and other responses, individual category frequencies, and intersystem variability of responses.

Table 89 (page 182) reflects ambulation ability by model system. Overall, 67.3% of patients cannot walk 150 feet at home, with an additional 8.9% of responses being coded as unknown. The percentage of unknown responses varied from 27.8% to zero, while the percentage of negative responses varied from 77.5% to 49.8%. The pattern of responses was similar for the questions of walking one street block outside the home, and up one flight of stairs, with 9.3% unknown responses for each.

n	*for 150 feet in your home?*				*for 1 street block outside?*				*up 1 flight of stairs?*			
%	No	Yes	Unk	Total	No	Yes	Unk	Total	No	Yes	Unk	Total
Total	2,169	768	287	3,224	2,262	661	301	3,224	2,245	679	300	3,224
	67.3	23.8	8.9		70.2	20.5	9.3		69.6	21.1	9.3	

Table 89. Ambulation ability: *Are you able to walk (with or without a mobility aid)…*

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 90 (page 184) reflects the types of mobility aids most often used by patients by model system. Overall, 66.3% of responses were coded as not applicable, while 9.0% were coded as unknown. No mobility aid was reported by 9.2% of patients, while a straight cane was the most commonly used aid, being reported by 6.6% of patients. Only 0.4% of patients reported use of an "other" aid, suggesting that the categories already established for this variable are adequate. The pattern of unknown responses across model systems is similar to that of Table 89.

n %	None	Straight Cane	Quad Cane	Walker	Crutches	AFO Brace	KAFO Brace	Other	Not Applicable	Unknown	Total
Total	295	213	24	128	71	30	24	14	2,136	289	3,224
	9.2	6.6	0.7	4.0	2.2	0.9	0.7	0.4	66.3	9.0	

Table 90. Type of Mobility Aid: *Tell me which of the following mobility aids you use most often.*

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 91 reflects wheelchair or scooter use by model system. Overall, 69.2% of patients use either a wheelchair or scooter, 21.9% do not use a wheelchair or scooter, and 8.8% of responses are unknown. The percentage of unknown responses ranged from 27.8% to zero.

n %	No	Yes	Unknown	Total
Total	707	2,232	285	3,224
	21.9	69.2	8.8	

Table 91 Wheelchair or scooter use: *Do you use a wheelchair or scooter more than 40 hours per week?*

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 92 (page 187) reflects the type of wheelchair or scooter used most often by patients by model system. Overall, 42.2% of patients use a manual wheelchair, 25.6% use a power wheelchair, 0.8% use a power assist wheelchair, and 0.3% use a scooter. This question was not applicable for 22.0% of patients, and 9.1% of responses are unknown. There was only one reported case of an "other" type of wheelchair or scooter suggesting that the categories already established for this variable are adequate. The pattern of unknown responses across model systems is similar to that of Table 91.

n %	Manual	Power	Power Assist	Scooter	Other	Not Applicable	Unknown	Total
Total	1,356	823	25	11	1	708	292	3,216
	42.2	25.6	0.8	0.3	0.0	22.0	9.1	

Table 92. Type of Wheelchair or Scooter used most often: *What type of wheelchair (or scooter) do you use most often?* (8 cases not counted)

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 93 reflects computer use by patients. Overall, 41.9% use a computer only at home, 3.8% only use a computer outside the home, 17.1% use a computer both at home and away, and 27.9% do not use a computer. There are 9.2% of responses coded unknown, ranging from 28.5% to zero.

n %	No	Home Only	Outside Home Only	Both	Unknown	Total
Total	900	1,352	123	551	298	3,224
	27.9	41.9	3.8	17.1	9.2	

Table 93. Computer use: *Do you use a computer?*

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 94 reflects internet or email usage by patients. Overall, 43.1% use internet or email daily, 10.8% use them weekly, and 5.2% use them monthly. Owning a computer without using internet or email was infrequent (3.7%), while 28.0% of responses are not applicable and 9.3% of responses are unknown. The pattern of unknown responses across model systems is similar to that of Table 93.

n %	Owns Computer Only	Daily	Weekly	Monthly	Not Applicable	Unknown	Total
Total	118	1,388	349	167	902	300	3,224
	3.7	43.1	10.8	5.2	28.0	9.3	

Table 94. Internet or email usage: *How often do you access the Internet or Email?*

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 95 reflects the type of modified vehicle owned by patients and their families by model system. Overall, 42.8% do not own a modified vehicle, 28.4% own a van, 13.3% own a car, 5.7% own another type of vehicle, 0.4% own a combination of modified vehicles, and 9.4% of responses are unknown. The pattern of unknown responses across model systems is similar to that of Table 93. The frequency of other types of vehicles is highest at 9.8%, suggesting that further categorization might be worthwhile if the other types of vehicles could be identified.

n %	Does not own	Car	Van	Other	Combination	Unknown	Total
Total	1,380	428	916	185	12	303	3,224
	42.8	13.3	28.4	5.7	0.4	9.4	

Table 95. Type of Modified Vehicle: *What type of modified vehicle does you or your family own?*

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 96 reflects whether the patient drives their modified vehicle. Overall, 24.3% drive their vehicle but not from a wheelchair, 8.4% drive their vehicle from a wheelchair, 14.9% do not drive their modified vehicle, 42.8% of responses are not applicable, and 9.5% of responses are unknown. The pattern of unknown responses across model systems is similar to that of Table 93.

n %	No	Yes, from wheelchair	Yes, not from wheelchair	Not Applicable	Unknown	Total
Total	480	271	785	1,381	307	3,224
	14.9	8.4	24.3	42.8	9.5	

Table 96. Driving the Modified Vehicle: *Do you drive the modified vehicle?*

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

Table 97 reflects cell phone ownership by patients by model system. Overall, 60.9% of patients own a cell phone while 29.6% do not own a cell phone, and 9.5% of responses are unknown. The pattern of unknown responses across model systems is similar to that of Table 93.

n %	No	Yes	Unknown	Total
Total	955	1,963	306	3,224
	29.6	60.9	9.5	

Table 97. Other Technology-Cell Phone: *Do you own a cell phone?*

Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006

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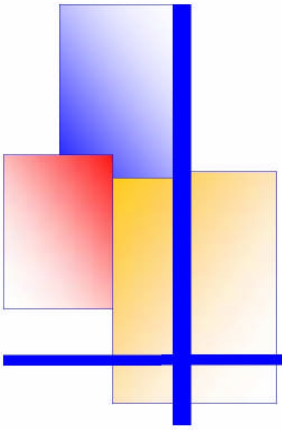
Source: National Spinal Cord Injury Statistical Center, University of Alabama at Birmingham, 2006 Annual Statistical Report, July, 2006



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