Hazard Screening Report

Team Sports
(Product codes 1205, 1211, 1215, 1266, 1267, 1279, 1295, 3234, 3235, 3236, 3245, 3272, 5032, 5034, 5041)

This report and all others in this series are general overviews, which use data taken directly from the data systems for the purpose of comparison among the products. No recoding or adjusting of the data are performed. For this reason, estimates of injuries provided in this report will differ from other documents produced by Epidemiology staff working in specific program areas.

July 2004

Alberta Mills, B.A.
George Rutherford, M.S.
Natalie Marcy, B.S.

THIS ANALYSIS WAS PREPARED BY THE CPSC STAFF, HAS NOT BEEN REVIEWED OR APPROVED BY, AND MAY NOT NECESSARILY REFLECT THE VIEWS OF, THE COMMISSION.

The Hazard Screening Project

As an aid in setting priorities, Consumer Product Safety Commission (CPSC) staff is preparing this series of Hazard Screening Reports. Each report covers a group of related products, such as nursery equipment, house wares, etc.

These reports follow a common format that allows readers to compare the risk for different types of products within a given category. Significantly, CPSC staff has also developed a measurement tool that allows comparisons of risks from products in different categories. This feature, called "Maximum Addressable Cost Estimates," is explained more fully below. CPSC managers plan to use this information to set priorities for efficient use of resources.

Each Hazard Screening Report contains information on the estimated number of injuries and deaths associated with the type of products covered in that report. A graph shows the frequency of emergency-room treated injuries over time. This is followed by a pie chart showing the distribution of injuries by the source of the hazard, such as mechanical, fire, electrical, chemical and other. CPSC staff also estimates the total "cost" to society of each type of product. This includes the cost of injuries, deaths and property damage associated with the products.

To facilitate comparisons of risk between different types of products, CPSC staff has developed Maximum Addressable Cost Estimates. These build on the concept of "addressable" cost. Simply put, the "addressable" cost is the portion of the total cost that could possibly be reduced by some action that CPSC could take. Many of consumer injuries are not addressable. For example, if a boy trips over a rake in the driveway, any injury he suffers could be associated with the category of Yard and Garden Equipment. But it is very unlikely that such injuries could be prevented by changing the design of rakes. By eliminating these unaddressable costs from consideration, we are able to focus on what's left -- the costs that we might be able to do something about. The name "Maximum Addressable Cost Estimates" is intended to emphasize that these estimates are upper limits of the cost that might be successfully addressed. It should also be stressed that the term does not necessarily mean that there is any existing method or technology for reducing the costs. For a more detailed explanation of this subject, please refer to the individual Hazard Screening Reports.

CPSC staff plans to complete 20 reports in 2005. As each report is completed there will be an active link to it on the CPSC website. All reports are in Portable Document Format (PDF). The 20 reports that will comprise the complete set are:

Home Workshop Apparatus, Tools and Attachments
Yard and Garden Equipment
Toys
Nursery Products
Children's Outdoor Activities and Equipment
Major Team Sports
Injuries to Persons 65 and Older

House wares and Kitchen Appliances
Recreational Cooking and Camping Products
Home Communication, Entertainment and Hobby Products
General Household Appliances
Home Furnishings and Fixtures & Home Alarm,
Escape and Protection Devices
Sports (minus major team sports)
Personal Use Items
Heating, Cooling and Ventilating Equipment
Packaging and Containers for Household Products
Miscellaneous Products
Home Structures and Construction Materials
Home and Family Maintenance Products – Household Chemicals
Drugs

These reports will be useful to individuals and organizations who are seeking reliable information about estimated deaths, injuries, and costs associated with consumer products and to CPSC's staff and Commissioners, who need objective data to identify candidates for future activities to reduce deaths and injuries.

CAVEAT!

The report addresses the question of addressability of injuries by attempting to identify those injuries which are incidental and not addressable by mandatory or voluntary standards or by other action which the CPSC could take. Those injuries which remain are referred to as maximum addressable.

To know the actual addressability of the hazards associated with a product usually requires a detailed study of the problem, and the product. This level of study is not feasible for this type of overview report. What we do instead is try to eliminate those injuries and deaths which involve the product only marginally or incidentally. The remaining injuries are then run through the Injury Cost Model, to produce an estimate of *maximum* addressable costs.

The maximum addressable cost estimate does not necessarily represent the injury and death costs that the CPSC might actually be able to prevent each year through some type of action. It represents only a target population from which any successful prevention will have to come.

Therefore, while the report states that the maximum addressable percentage of costs is about 12%, it would be incorrect to say that 12% of the injuries or 12% of the costs are addressable.

For example: If a baseball player injured his leg, foot, or ankle while sliding into base, but we do not have any information indicating whether the base plate broke apart, we would count that injury as in the maximum addressable category. It may not be addressable. We just don't have sufficient information to rule it out.

Maximum addressable injury estimates include every case that we could not clearly rule out as incidental. <u>They do not represent the number or percent of injuries that could actually be prevented.</u>

Introduction

The group of product codes included in this report consists of team sports activities and equipment. The report provides several pieces of information that will allow the reader to compare activities within this report as well as compare the activities and equipment in this report with products and activities in other reports in this series.

This report shows an index of overall injuries and deaths associated with a group of 15 team sports. The first information presented is a summary of the injury, death and cost data for the entire class of products. A trend graphic is presented which shows the frequency of emergency room-treated injuries since 1997. This is followed by a pie chart showing the distribution of the injuries by energy source of the hazard, i.e., mechanical, fire, electrical, chemical, other. There is also a summary table, which shows the injuries, deaths and costs associated with each activity.

The report also considers the addressability of the injuries, by identifying those injuries that appear to be incidental and not addressable by mandatory or voluntary standards or by other action which the CPSC could take.

Team Sports Activities and Equipment

Individual Product Categories

Basketball

Football (Includes both touch and tackle football)

Baseball

Softball

Lacrosse

Volleyball

Soccer

Ice Hockey

Field Hockey

Rugby

Hockey, Not Specified

Roller Hockey

Street Hockey

Other Ball Sports

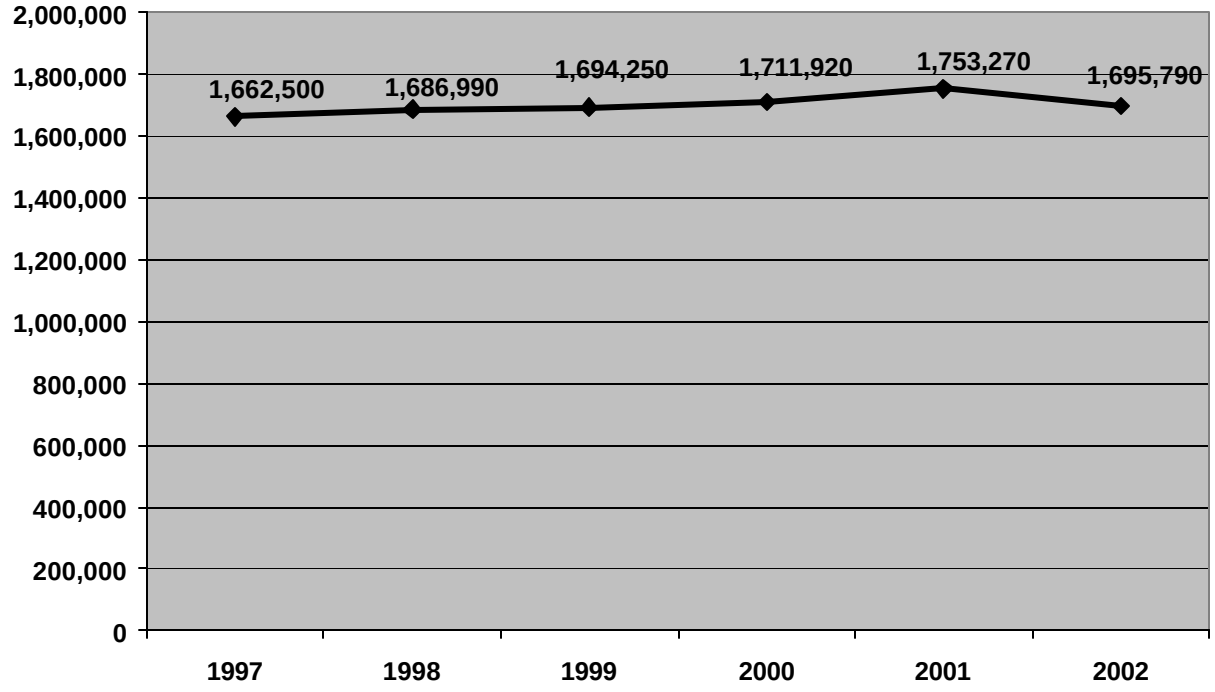
Ball Sports, Not Specified

Team Sports
(Product codes 1205, 1211, 1215, 1266, 1267,
1279, 1295, 3234, 3235, 3236, 3245, 3272,
5032, 5034, 5041)

Basketball, Football, Baseball, Softball, Lacrosse, Volleyball, Soccer, Ice Hockey, Field Hockey, Rugby, Hockey, N.S., Roller Hockey, Street Hockey, Other Ball Sports, Ball Sports, N.S.

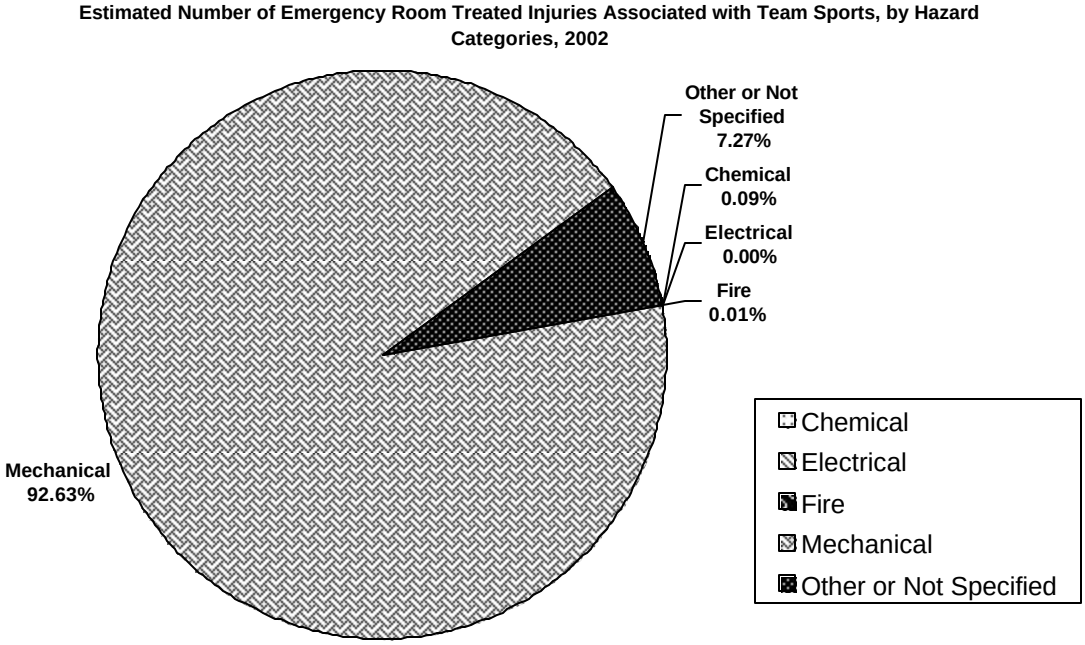
ER Treated Injuries 2002	1,695,790	Number of Participants	Not Available
Medically Treated Injuries 2002	4,477,950	Number of Products in Use	Not Available
Percent of ER Treated Hospitalized	1.49%	Estimated Useful Life	Not Available
Deaths 2000	28	Estimated Retail Price Range	Not Available
Number of Incident Reports 2002	131	Death Costs (Millions)	$140.0
Cost of Medically Treated Injuries (Millions)	$69,504.0	Total Known Costs (Millions)	$69,644.0

Figure 1. Estimated Number of Emergency Room Treated Injuries Associated with 15 Team Sports, by Year, 1997-2002



Change from 1997 to 2002 is 33,290. This is not a statistically significant change. (P = .6883)

Figure 2. Distribution of Emergency Room-Treated Injuries by Energy Source of the Hazard for Team Sports, 2002



Deaths

There were 28 deaths associated with these team sports in 2000, with softball related deaths being the most frequently reported at eight deaths. Two of these deaths resulted from victims being struck in the head with softballs. In the remaining deaths, three involved collisions with other players, one was due to a pre-existing condition (heart disease) and two were due to unknown injuries that occurred during softball games.

There were seven football related deaths. Two of these deaths resulted from victims being struck in the chest area and three deaths resulted from unknown causes during football games. One victim died after suffering "helmet to helmet" contact with another player and the last victim ran into a football goal post.

Baseball accounted for five of the reported deaths. Three of these deaths resulted from impact injury to the chest area and one resulted from injury to the throat area. The remaining death was due to an unspecified collision on the field.

There were three deaths associated with basketball. One victim was crushed to death when a basketball backboard and pole fell on him. In the remaining two deaths, one resulted from unspecified head injury and the other involved a player who attempted to retrieve a basketball from an escape ladder during a game and was struck in the head by the ladder causing death.

Soccer, lacrosse and ice hockey accounted for one death each; one victim received a head injury during a soccer game, one was struck in the chest with a lacrosse ball and one victim sustained head injury from a hockey puck. Two deaths resulted from unknown ball sports; one victim fell while playing a ball sport and the other collided with another ball player.

A total of nine deaths were determined to be potentially addressable; five involved football, two involved softball, one basketball and one ice hockey (see page 12 and 13 for more on the criteria for addressability).

Overview Summary

The change in injury frequency over the 6-year period, 1997 – 2002, was 33,290. This is not a statistically significant change at the 95% confidence level (p = .6883)

Table 1 provides a summary of all the product groups examined for this report. This table provides information on the number of emergency room-treated injuries, the number of medically-treated injuries, the percentage of the emergency room treatments that resulted in admission to the hospital, the number of incident reports received, the number of deaths reported, the number of participants, the costs associated with deaths and medically-treated injuries and the total of these two cost estimates.

Addressability

While it is useful to know the number of injuries, deaths, and related costs associated with a product, it is also important to have an estimate of how much of that social cost might actually be addressed through some action. Many of the injuries treated in emergency rooms that were related to this group of team sports may not be addressable. To know the actual addressability of the hazards associated with a product or an activity usually requires detailed study. This level of study is not feasible for this type of overview report. What we can do instead is try to identify that portion of the injury and death costs that is not addressable. The remaining injuries are then run through the Injury Cost Model, to produce an estimate of *maximum* addressable costs.

> **The maximum addressable cost estimate does not necessarily represent the injury and death costs that the CPSC might actually be able to prevent each year through some type of action. It represents only a target population from which any successful prevention will have to come.**

The reason for doing this kind of review is to identify situations such as the following example and allow us to focus on the areas where CPSC action could have some effect:

Example: Virtually all of the volleyball emergency room-treated injuries had only incidental product involvement. Most injuries occurred when players fell, were struck by the ball or twisted a leg/ankle during a game. None of these injuries were found to be addressable.

A description of the criteria for maximum addressability for each of the products in this report is contained on pages 12 and 13 of this section.

The staff determined the percentage of injuries identified as maximum addressable by reviewing a random sample of 300 cases from the emergency room injury report narratives for the full year 2002 for most of the activities examined. For some activities with smaller numbers of reports, all of the NEISS reports were reviewed, rather than a sample.

The cases identified as addressable from the sample and those identified as not addressable were then run through the Injury Cost Model, to determine the proportion of the costs which may be addressable. The percentages were then applied to the overall cost totals for the entire estimate for the product group to produce overall costs of injuries identified as maximum addressable.

Addressability for deaths was determined by reading the narrative of the death certificate or fatal incident report. Because the death reports often have more information than the NEISS reports addressability was easier to determine. The cost of deaths was determined by applying the value of $5 million dollars for each death. The value of a statistical life of $5 million is consistent with current economic literature. This cost is frequently expressed in the literature using a range of $3 million to $7 million. For the purpose of consistency and ease of comparison, we have used the midpoint of this range in this report. The maximum addressable cost estimate for medically-attended injuries is added to the maximum addressable cost estimate for the deaths to obtain the total maximum addressable cost estimate.

Table 2 shows the percentage of injuries included in the maximum addressable category for each product group. It also shows how many of the deaths reported were included in the maximum addressable category.

Overall, after applying this process of review of the data to the entire category of 15 team sports, we find that the total maximum addressable injury and death cost is $8.5 billion dollars, out of a total cost associated with these products of $69.6 billion dollars, about 12% maximum possibly addressable.

Figure 3 shows the index[1] of estimated injury and death costs for each of the product categories and the estimated maximum addressability of those costs.

[1] This total represents an index rather than an actual single year estimate of costs, because injury costs are based on 2002 and the death costs are based on 2000. These are the most recent years for which each of these cost items was available.

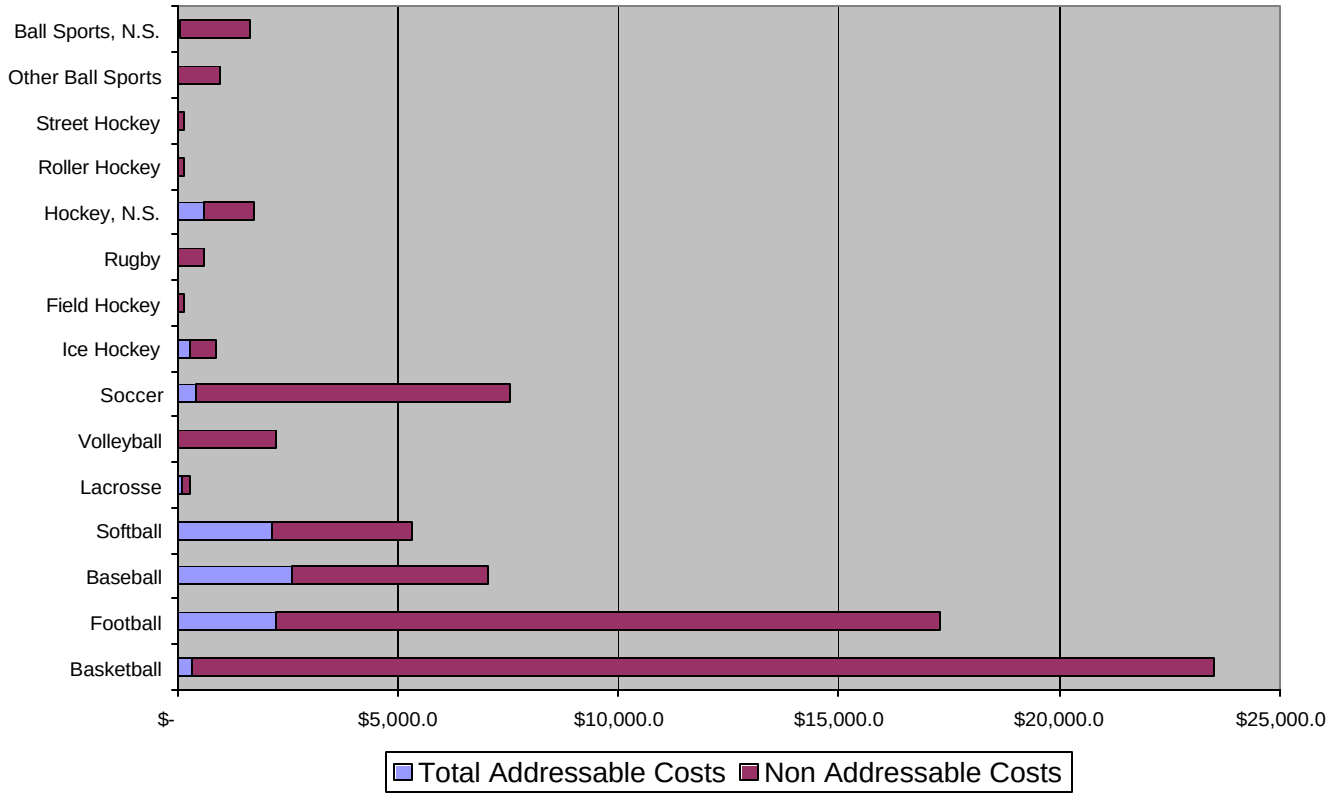
Table 1 – Product Summary Table – Injury, Death, and Cost Estimates

Product	Codes	ER Injuries 2002	All Medically Treated Injuries	Hosp. % of ER Treated 2002	Incident Reports 2002	DTHS 2000	# of Participants 2002 (thousands)	Death Costs *2000 ($ millions)	Med. Trtd. Injury Costs ($ millions)	Total Known Costs ($ millions)
Basketball	1205	615,550	1,695,320	1.0%	76	3	28,947	$15	$23,511.6	$23,526.6
Football	1211	387,950	1,032,610	2.0%	18	7	17,719	$35	$17,244.5	$17,279.5
Baseball	5041	178,670	454,880	1.7%	12	5	15,623	$25	$7,012.1	$7,037.1
Softball	5034	125,880	350,310	1.6%	7	8	13,630	$40	$5,309.5	$5,349.5
Lacrosse	1215	8,070	20,960	0.9%	0	1	Not Available	$5	$311.2	$316.2
Volleyball	1266	59,230	172,650	1.3%	0	0	11,450	$0	$2,241.6	$2,241.6
Soccer	1267	173,520	474,600	1.8%	7	1	14,543	$5	$7,559.1	$7,564.1
Ice Hockey	1279	16,440	40,820	2.5%	3	1	2,085	$5	$863.3	$868.3
Field Hockey	1295	4,620	12,420	0.0%	0	0	Not Available	$0	$149.1	$149.1
Rugby	3234	12,250	31,130	1.2%	1	0	Not Available	$0	$611.7	$611.7
Hockey, N.S.	3272	45,450	110,860	1.1%	0	0	Not Available	$0	$1,762.1	$1,762.1
Roller Hockey	5032	3,290	8,650	2.2%	1	0	Not Available	$0	$161.3	$161.3
Street Hockey	3245	3,160	8,130	2.6%	0	0	Not Available	$0	$154.1	$154.1
Other Ball Sports	3235	25,400	68,040	1.2%	6	0	Not Available	$0	$985.1	$985.1
Ball Sports, N.S.	3236	39,210	101,900	1.8%	0	2	Not Available	$10	$1627.6	$1637.6
Total		1,695,790[2]	4,583,280	1.49%	131	28		$140	$69,504.0	$69,644.0

Not Available – Product information was not available
Descriptions of how these estimates were derived can be found in the methodology section.

[2] Some cases appear in more than one category, thus numbers may not add to totals.

Figure 3. Estimated Cost Index in Millions of Dollars, 15 Team Sports, by Total Cost and Maximum Possible Addressable Cost



- The estimate of maximum addressable cost does not necessarily represent the costs that the CPSC might actually be able to prevent each year through some type of action. It represents only a target population from which any successful prevention will have to come.

- The data presented in this graphic are also contained in Table 3, under the headings "Total injury and death costs" and "Total maximum addressable cost."

Table 2 – Product Hazard Addressability

Activity	**Codes**	**Percentage of injuries included in Maximum Addressable**	**Maximum Number of Addressable Deaths/ Total Deaths Reported**
Basketball	1205	2.5%	1 of 3
Football	1211	10.4%	5 of 7
Baseball	5041	34.6%	1 of 5
Softball	5034	38.8%	1 of 8
Lacrosse	1215	30.6%	0 of 1
Volleyball	1266	0.0%	0 of 0
Soccer	1267	7.1%	0 of 1
Ice Hockey	1279	13.8%	1 of 1
Field Hockey	1295	22.0%	0 of 0
Rugby	3234	0.8%	0 of 0
Hockey, N.S.	3272	38.8%	0 of 0
Roller Hockey	5032	8.0%	0 of 0
Street Hockey	3245	19.9%	0 of 0
Other Ball Sports	3235	0.0%	0 of 0
Ball Sports, N.S.	3236	5.9%	0 of 2
Total		12.1%	9 of 28

The percentages presented in this table are the percents of injuries, not costs, included in the maximum addressable category. These percentages cannot be directly compared to maximum addressable costs because the costs, while deriving from these same cases, take into account a number of variables, not just case weight. For more information on how these cost estimates are derived, refer to the methodology section at the end of this report.

Maximum Addressability Definitions used for each class of products - Injuries.

Basketball-	protruding bolts, goal collapse, net entrapment, collision with basketball pole
Football-	head injuries, helmet to helmet collision, collision with goal post
Baseball-	sliding/base failure, bat breakage, ball to head contact
Softball-	sliding/base failure, ball to head contact, mask failure
Lacrosse -	ball and stick injuries to head/facial area
Volleyball-	none determined to be addressable
Soccer-	kicked in leg, pole/goal contact
Ice Hockey-	puck/stick injuries to head/facial area
Field Hockey-	puck/stick/ball injuries to head/facial area
Rugby-	equipment failure (helmet/head injuries)
Hockey, N.S.–	puck/stick/ball injuries to head/facial area
Roller Hockey–	puck/stick injuries to head/facial area
Street Hockey–	puck/stick injuries to head/facial area
Other Ball Sports-	None determined to be addressable
Ball Sports, N.S.-	sliding/base failure, pole contact, falling off ball, helmet breakage

Maximum Addressability Definitions used for each class of products - Deaths.

Basketball-	goal collapse, net entrapment, collision with basketball pole
Football-	head/chest injuries, helmet to helmet collision
Baseball-	death of participant in organized game, death of player under 15 years old, struck by ball or bat
Softball-	death of participant in organized game, death of player under 15 years old, struck by ball or bat
Lacrosse -	struck by ball to chest area
Volleyball-	none reported
Soccer-	soccer goal tip-over
Ice Hockey-	puck to head
Field Hockey-	none reported
Rugby-	none reported
Hockey, N.S.–	none reported
Roller Hockey–	none reported
Street Hockey–	none reported
Other Ball Sports-	none reported
Ball Sports, N.S.-	head/chest injuries

Table 3 - Calculation of Indices[3] using cost estimates from Injury Cost Model, Death Certificates File, and Estimates of Number of Products in use.

Title	Medically Attended Injury Costs (millions)	Death Costs (millions)	**Total Injury and Death Costs (millions)**	**Total Maximum Addressable Costs (millions)**	Rank on Total Costs	Rank on Maximum Addressable Costs	Number of Participants (thousands)	Maximum Addressable Costs Per Participant	Rank on Maximum Addressable Costs per Participant
Basketball	$23,511.6	$15	**$23,526.6**	**$592.7**	1	5	28,947	$20	6
Football	$17,244.5	$35	**$17,279.5**	**$1,818.4**	2	3	17,719	$103	3
Baseball	$7,012.1	$25	**$7,037.1**	**$2,431.1**	4	1	15,623	$156	1
Softball	$5,309.5	$40	**$5,349.5**	**$2,065.0**	5	2	13,630	$152	2
Lacrosse	$311.2	$5	**$316.2**	**$95.2**	12	9	Not Available	Not Available	-
Volleyball	$2,241.6	$0	**$2,241.6**	**$0**	6	-	11,450	-	7
Soccer	$7,559.1	$5	**$7,564.1**	**$536.6**	3	6	14,543	$37	5
Ice Hockey	$863.3	$5	**$868.3**	**$124.1**	10	7	2,085	$60	4
Field Hockey	$149.1	$0	**$149.1**	**$32.8**	15	10	Not Available	Not Available	-
Rugby	$611.7	$0	**$611.7**	**$4.8**	11	13	Not Available	Not Available	-
Hockey, N.S.	$1,762.1	$0	**$1,762.1**	**$683.6**	7	4	Not Available	Not Available	-
Roller Hockey	$161.3	$0	**$161.3**	**$12.9**	13	12	Not Available	Not Available	-
Street Hockey	$154.1	$0	**$154.1**	**$30.6**	14	11	Not Available	Not Available	-
Other Ball Sports	$985.1	$0	**$985.1**	**$0**	9	-	Not Available	Not Available	-
Ball Sports, N.S.	$1,627.6	$10	**$1,637.6**	**$96.0**	8	8	Not Available	Not Available	-
Total	$69,503.9	$140	**$69,643.9**	**$8,525.0**					

[3] **These "total injury and death costs" estimates and "total maximum addressable cost" estimates are indices, not actual estimates of cost and expected injury cost reduction. This is because injury cost estimates and addressability estimates are based on 2002 emergency room-treated injury reports, and death cost estimates are based on deaths reported which occurred in 2000. Estimates of number of products in use are also imprecise estimates. These cost figures were developed, using the data available, to provide indices for the purpose of comparison. They do not represent an actual estimate of the costs associated with any of the product groups for a specific year**

Methodology

NEISS

The Commission operates the National Electronic Injury Surveillance System, a probability sample of 98 U.S. hospitals with 24-hour emergency rooms (ERs) and more than six beds. These hospitals provide CPSC with data on all consumer product-related injury victims seeking treatment in the hospitals' ERs. Injury and victim characteristics, along with a short description of the incident, are coded at the hospital and sent electronically to CPSC.

Because NEISS is a probability sample, each case collected represents a number of cases (the case's *weight*) in the total estimate of injuries in the U.S. The weight that a case from a particular hospital carries is associated with the number of hospitals in the U.S. of a similar size. NEISS hospitals are stratified by size based on the number of annual emergency-room visits. NEISS comprises small, medium, large and very large hospitals, and includes a special stratum for children's hospitals.[4]

This analysis uses NEISS data for the period 1/1/1997 through 12/31/2002.

CPSC's Death Certificate Database

CPSC purchases death certificates from all 50 states, New York City, the District of Columbia and some territories. Only those certificates in certain E-codes (based on the World Health Organization's International Classification of Diseases ICD-10 system) are purchased. These are then examined for product involvement before being entered into CPSC's death certificate database. The result is neither a statistical sample nor a complete count of product-related deaths, nor does it constitute a national estimate. The database provides only counts of product-related deaths from a subset of E-codes. For this reason, these counts tend to be underestimates of the actual numbers of product-related deaths.

Death certificate collection from the states takes time. Data for 2001 and 2002 were not complete at the time that this report was prepared.

[4] Kessler, Eileen and Schroeder, Tom. The NEISS Sample (Design and Implementation). U.S. Consumer Product Safety Commission. October 1999.

CPSC's Injury or Potential Injury Incident File (IPII)

IPII is a CPSC database containing reports of injuries or potential injuries made to the Commission. These reports come from news clips, consumer complaints received by mail or through CPSC's telephone hotline or web site, Medical Examiners and Coroners Alert Program (MECAP) reports, letters from lawyers, and similar sources. While the IPII database does not constitute a statistical sample, it can provide CPSC staff with guidance or direction in investigating potential hazards.

CPSC's Injury Cost Model

The Injury Cost Model (ICM) is a computerized analytical tool designed to measure the direct and indirect costs associated with consumer product-related injuries. In addition to providing a descriptive measure of injury hazards in monetary terms, the ICM is also used to estimate the benefits of regulatory actions designed to reduce consumer product injuries and to assist the Commission in planning, budgeting, and evaluating projects.

The ICM is structured to measure the four basic categories of injury costs: medical costs, work losses, pain and suffering, and product liability and legal costs. Medical costs include doctor and hospital-related costs as well as diagnostic procedures, prescription drugs, equipment, supplies, emergency transportation, follow-up care, and administrative costs. Both the initial treatment costs and the costs of long term care are included.

Work-related losses represent the value of lost productivity, the time spent away from normal work activities as the result of an injury. Work-related losses include both the short-term losses resulting from being absent from work and the long-term losses resulting from permanent partial or total disability and its impact on lifetime earnings. They also include the value of work lost as a result of caring for injured children, the value of housework lost due to an injury, and the loss to the employer resulting from the disruption of the workplace.

Pain and suffering represents the intangible costs of injury, and is based on jury verdicts for consumer product-related injuries. Product liability and legal costs represent the resources expended in product liability litigation. These costs include the costs of administering the product liability insurance system (including the plaintiff's legal costs and the costs of defending the insured manufacturer or seller), the costs of claims investigation and payment, and general underwriting and administrative expenses; however, medical, work loss, and pain and suffering compensation paid to injury victims and their families is excluded, thus avoiding double counting.

The ICM estimates the costs of injuries reported through the National Electronic Injury Surveillance System (NEISS), a national probability sample of hospital emergency departments. The injury cost estimates depend on a number of factors, and vary by the age and sex of the injured person, the type of injury suffered, the body part affected, and whether or not the victim is hospitalized or treated and released. The ICM also uses empirically derived relationships between emergency department injuries and those treated in other settings (e.g. doctor's offices, clinics) to estimate the number of injuries treated outside hospital emergency departments and the costs of those injuries.

A number of databases are used to calculate the four cost categories. National discharge data and discharge data from six states are used to estimate the costs of hospitalized injuries. Data from the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) (which includes medical records from almost two million retirees and civilian dependents of military personnel) and several National Center for Health Statistics surveys dealing with costs of treatment in different medical settings are used to calculate medical costs for injuries where the victim is treated and released from the emergency department or treated in a clinic or doctor's office. Other major data sources include the Annual Survey of Occupational Illnesses and Injuries and the Detailed Claims Information (DCI) database for work loss estimates; and the Jury Verdicts Research data for pain and suffering estimates. Product liability and legal costs are derived analytically from insurance industry information and several studies of product liability.

To determine the maximum addressable cost estimate, the injury narratives were read to determine which would not be addressable. The remaining injuries were then run through the Injury Cost Model, producing the estimate of maximum addressable costs.