



## Hazard Screening Report

### Sports Activities and Equipment (Excluding Major Team Sports)

(1200, 1206-1208, 1212, 1213, 1217, 1235, 1237, 1239, 1246, 1257, 1258, 1260, 1261, 1264, 1269-1278, 1282, 1284, 1290, 1294, 1299, 1936, 3200, 3202, 3203, 3221-3223, 3247, 3251, 3254, 3256, 3257, 3259-3262, 3265, 3274, 3276-3278, 3282-3291, 3293, 3295, 3296, 3299, 5030, 5031)

*This report and all others in this series are general overviews, which use data taken directly from the CPSC data files for the purpose of comparison among the products. No recoding or adjusting of the data is performed. For this reason, estimates of injuries provided in this report will differ from estimates presented in other documents produced by Epidemiology staff working in specific program areas. The figures presented here are not intended to compare to other reports outside this series of hazard screening reports.*

*The views expressed in this report are those of CPSC staff, have not been reviewed or approved by, and may not reflect the views of, the Commissioners.*

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## **The Hazard Screening Project**

As an aid in setting priorities, CPSC staff is preparing this series of Hazard Screening Reports. Each report covers a group of related products, such as nursery equipment, housewares, 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. Lots 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. 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
- Housewares 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 death, 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!**

This 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 U.S. Consumer Product Safety Commission (CPSC) could take. Those injuries that 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 CPSC's 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.**

For example: If a person is hit by a falling television, but we have no information about whether the subject accidentally knocked the television over, or if the television fell because the stand it was on suddenly collapsed, we would count that injury as in the maximum addressable category. It may not be addressable. We just don't have enough information to rule it out.

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

In addition, addressability definitions are based on review by Epidemiology staff using information available at the time each report is prepared. These determinations should be considered general estimates for agency planning purposes, not definitive staff evaluations of whether a specific type of hazard might be prevented. The fact that a given hazard associated with a product was not considered addressable in one of these reports should not be construed as indicating that that hazard should never be reconsidered or addressed.

## **Introduction**

This report provides overall injury and death figures associated with the category of Sports Activities and Equipment Not Including Major 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 (figure 1) is presented which shows the frequency of estimated emergency room-treated injuries since 1997. This is followed by a chart (figure 2) showing the distribution of the injuries for this class of products by energy source of the hazard, i.e., mechanical, fire, electrical, chemical, or other. There is also a summary table, which shows the injuries, deaths, and costs associated with each product group. This report is one of a series of hazard screening reports. Each report provides information in a similar format to allow product and hazard comparison, both within and among the reports.

## **Title**

### **Individual Product Categories**

- All-terrain vehicles
- Exercise activity and equipment
- Swimming activities
- Snow sports
- Other sports
- Gymnastics/Cheering, etc.
- Other off-road vehicles
- Fighting sports
- Golf
- Water sports
- Racquet/Volleying sports
- Miscellaneous sports activities
- Low impact sports
- Shooting sports
- Indoor activities

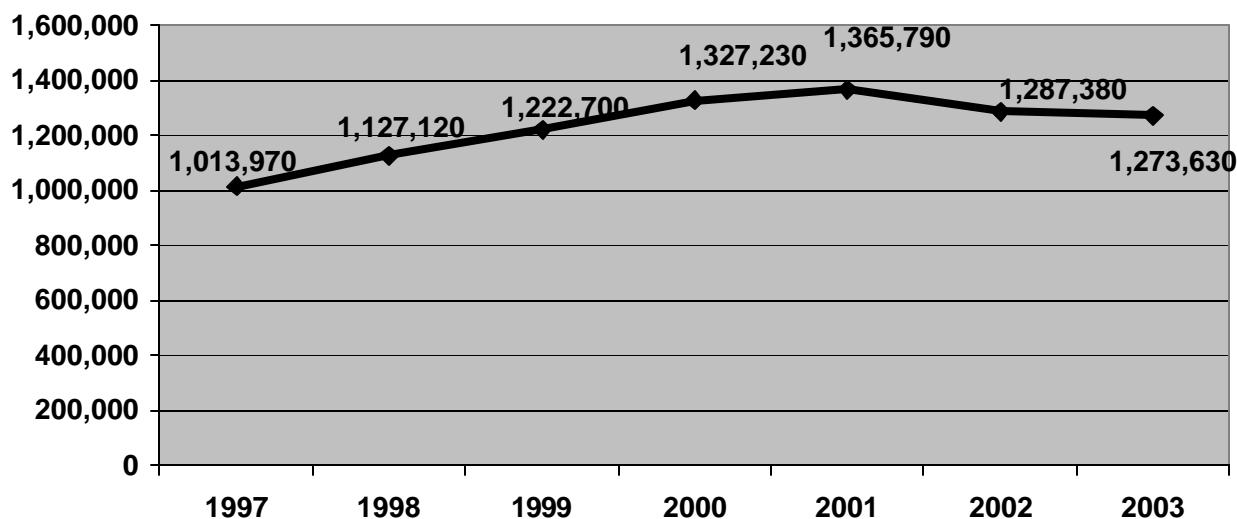
## Overview: Sports Activities and Equipment Not Including Major Team Sports

(1200, 1206-1208, 1212, 1213, 1217, 1235, 1237, 1239, 1246, 1257, 1258, 1260, 1261, 1264, 1269-1278, 1282, 1284, 1290, 1294, 1299, 1936, 3200, 3202, 3203, 3221-3223, 3247, 3251, 3254, 3256, 3257, 3259-3262, 3265, 3274, 3276-3278, 3282-3291, 3293, 3295, 3296, 3299, 5030, 5031)

ER Treated Injuries 2003	1,273,630	Percent of Households	n/a
Medically Treated Injuries 2003	3,454,800	Number of Participants	n/a
Percent of ER Treated Hospitalized	4.81%	Estimated Useful Life	n/a
Deaths 2000	3,326	Estimated Retail Price Range	n/a
Number of Incident Reports 2003	2,581	Death Costs (Millions)	\$16,630
Cost of Medically Treated Injuries (Millions)	\$73,132.3	Total Known Costs (Millions) <sup>1</sup>	\$89,762.3

n/a: not applicable

**Figure 1: Estimated Emergency Room Treated Injuries Associated with Sports Activities and Equipment Not Including Major Team Sports, 1997 - 2003**

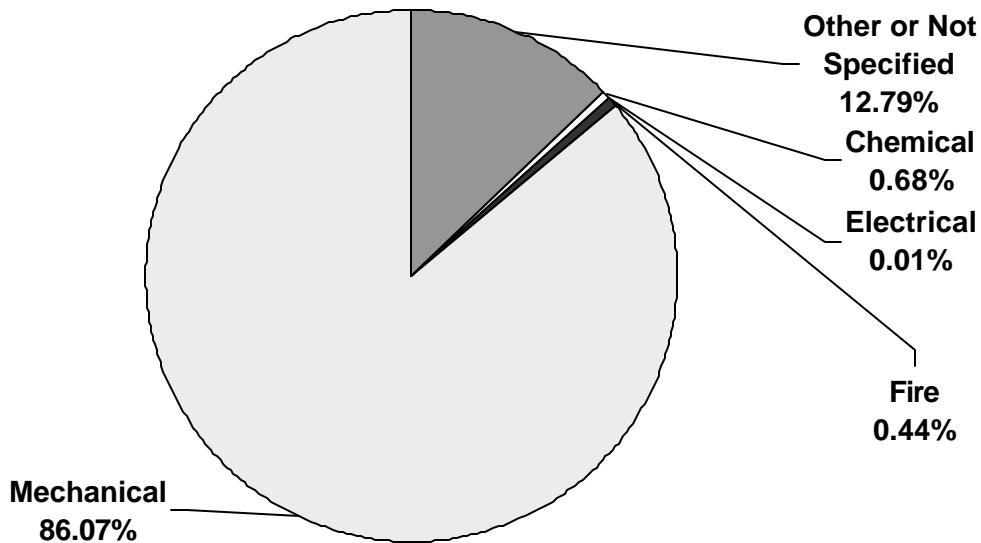


Source: National Electronic Injury Surveillance System (NEISS), 1997 – 2003

From 1997 to 2003, the estimated number of emergency room-treated injuries increased by 259,660. This is a statistically significant change ( $P = 0.0102$ ).

<sup>1</sup> This total represents an index rather than an actual single year estimate of costs, because injury costs are based on 2003 and death costs are based on 2000. These are the most recent years for which each of these cost items was available.

**Figure 2. Distribution of Emergency Room-Treated Injuries by Energy Source of the Hazard for Sports Activities and Equipment Not Including Major Team Sports, 2003**



Source: National Electronic Injury Surveillance System (NEISS), 2003

## Deaths

For 2000, CPSC has reports of 3,326 deaths associated with these products, not including ATVs. ATVs were excluded to avoid introducing a count of ATV death reports which differs from those generated in other more comprehensive agency analyses. Six hundred ninety one of the deaths were included in the maximum addressable category (see page 7 for description of this category). Six hundred thirty three of the deaths included in this category were drownings, 29 were from head injuries, 20 were from falling out of vehicles (excluding head injuries), three were electrocutions, five involved sports or exercise equipment, and one was from choking. See Table 2 for the number of deaths in each product category included in the maximum addressable category.

## Overview

The increase of 259,660 emergency room-treated injuries over the seven-year period, 1997 – 2003, was a statistically significant increase ( $P = 0.0102$ ).

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-treated injuries that resulted in admission to the hospital, the number of incident reports received, the number of deaths reported, the number of participants for each activity, 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 the associated social cost might actually be addressed through some action. Many of the injuries treated in emergency rooms that were related to sports activities and equipment may not be addressable because the injury had only incidental product involvement. To know the actual addressability of the hazards associated with a product usually requires detailed study of the problem and the product. This level of study is not feasible for this type of overview report. What we have done is to identify through case by case review that portion of the injury and death costs that is not addressable. Maximum addressable costs were then generated by CPSC's Injury Cost Model<sup>2</sup> using the remaining injuries.

**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.

For instance, exercise ranks first on total costs but fourth in maximum addressable costs. Most of the injuries associated with exercise were muscle strains from working out too hard. There is very little action CPSC could take to reduce these types of injuries, so they are not included in the maximum addressable category.

The staff reviewed the narratives included in National Electronic Injury Surveillance System (NEISS) injury reports, and reviewed the death reports.<sup>2</sup> Because the NEISS narratives are brief and often do not provide much detail, cases were categorized as “not addressable” only if it was clear that the injury was incidental or not related to the product. If, for example, a subject was hit by a falling table tennis table, but we have no information about whether the subject accidentally knocked the table over, or if the table suddenly collapsed, we would count that injury as in the maximum addressable category. The death reports often had more information,

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<sup>2</sup> See Methodology Section for a description of these databases.

allowing for better determination of addressability. Because this report deals with sports-related injuries, there is often no product involvement whatsoever. In addition, there is a higher level of assumed risk associated with playing sports, than is associated with most consumer products. Sports related injuries for which it is either not known or not reasonable to believe that some equipment or product was involved were counted as not addressable.

To control for the possibility that there may be a difference between costs associated with addressable injuries and costs associated with non-addressable injuries, the addressable injuries were run through the Injury Cost Model. This provides both maximum addressable cost estimates for emergency room-treated injuries and medically attended injuries. Deaths were also reviewed and determined to be in either the not-addressable or maximum addressable category, and were valued at \$5 million each. This value of \$5 million for each death is consistent with current economic literature which usually expresses the value as ranging from \$3 million to \$7 million. For ease of tabulation, we have used the midpoint of this range. 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 medically attended 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 sports activities and equipment excluding major team sports, we find that the total maximum addressable injury and death cost is \$20.5 billion dollars, out of a total cost associated with these products of \$89.8 billion dollars, which is about 22.8%<sup>3</sup> maximum addressable. Note that the percentage of addressable injuries is different than the percentage of addressable costs. The cost estimates are derived from a number of variables associated with each injury<sup>4</sup>, so two cases may have the same weight but different cost estimates. Thus, the cost estimates do not have a one-to-one relationship with the injury estimates.

Figure 3 shows the index<sup>5</sup> of estimated injury and death costs for each of the product categories and the estimated maximum addressability of those costs.

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<sup>3</sup> Based on the more precise totals provided in Table 3, and excludes categories for which maximum addressability analysis was not done.

<sup>4</sup> See Methodology Section for more description of how the cost estimates are computed.

<sup>5</sup> This total represents an index rather than an actual single year estimate of costs, because injury costs are based on 2003 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 2003	All Medically Treated Injuries 2003	Hosp.% 2003	Incident Reports 2003	Deaths 2000	Participation <sup>6</sup> (millions)	Death Costs (millions)	Med. Trt d. Injury Costs (millions \$)	Total Known Costs (millions)
All-terrain vehicles	3285, 3286, 3287, 3296	113,900 <sup>6</sup>	N/A	N/A	1,136	446	5.6	\$2,230	N/A	N/A
Swimming activities	1246, 1277, 1278, 1284, 3221, 3251, 3262, 3274, 3276, 3293, 3295	166,740	408,020	3.3%	831	3,007	48.1	\$15,035	\$7,376.3	\$22,411.3
Exercise activity and equipment	3277, 3299, 3265, 5030	273,970	828,530	2.9%	152	22	133.4	\$110	\$14,340.7	\$14,450.7
Snow sports	1217, 1273, 1274, 1299, 3247, 3283, 5031	149,630	399,510	5.0%	61	20	15	\$100	\$10,296.7	\$10,396.7
Other sports	1239, 1258, 3223	141,740	366,140	7.5%	23	17	65.5	\$85	\$9,230.8	9,315.8
Gymnastics/Cheering, etc.	1271, 1272, 3254, 3278	95,350	269,870	2.2%	6	1	8.4	\$5	\$4,383.8	\$4,388.8
Other off-road vehicles	3259, 3288, 1290	33,520	85,470	12.7%	260	204	3.4	\$1,020	2,554.7	\$3,574.7
Fighting sports	1207, 3257, 3260, 1270	68,020	182,760	2.0%	1	3	11.1	\$15	\$3,396.4	\$3,411.4
Golf	1212, 1213	50,160	140,810	3.9%	19	19	25.7	\$95	\$3,010.3	\$3,105.3
Water sports	1261, 1264, 1275, 3200	34,120	89,930	2.2%	43	21	11.1	\$105	\$1,877.6	\$1,982.6
Racquet/Volleying sports	1282, 3284, 3222, 3256	36,360	111,360	1.2%	3	4	21	\$20	\$1,770.3	\$1,790.3
Miscellaneous Sports Activities	1200, 1294, 3202, 3290, 3291	32,920	84,570	3.0%	16	6	n/a	\$30	\$1,508.4	\$1,538.4
Low impact sports	1206, 1208, 1257, 1276, 3261, 3282	26,270	78,420	2.2%	3	1	57.4	\$5	\$1,324.3	\$1,329.3
Shooting sports	1235, 1237, 1936, 3256	25,420	58,230	6.7%	30	3	20.8	\$15	\$646.4	\$661.4
Indoor activities	1260, 1269, 3289	6,290	16,680	3.8%	3	0	59.5	\$0	\$281.8	\$281.8
<b>Total<sup>7</sup></b>		<b>1,273,630</b>	<b>3,454,800</b>	<b>4.81%</b>	<b>2,581</b>	<b>3,326</b>	<b>n/a</b>	<b>\$16,630</b>	<b>\$73,132.3</b>	<b>\$89,762.3</b>

N/A – Not available, n/a- not applicable, there is no actual product to estimate number in use or product life

Descriptions of how these estimates were derived can be found in the Methodology Section. Costs are in 2002 dollars.

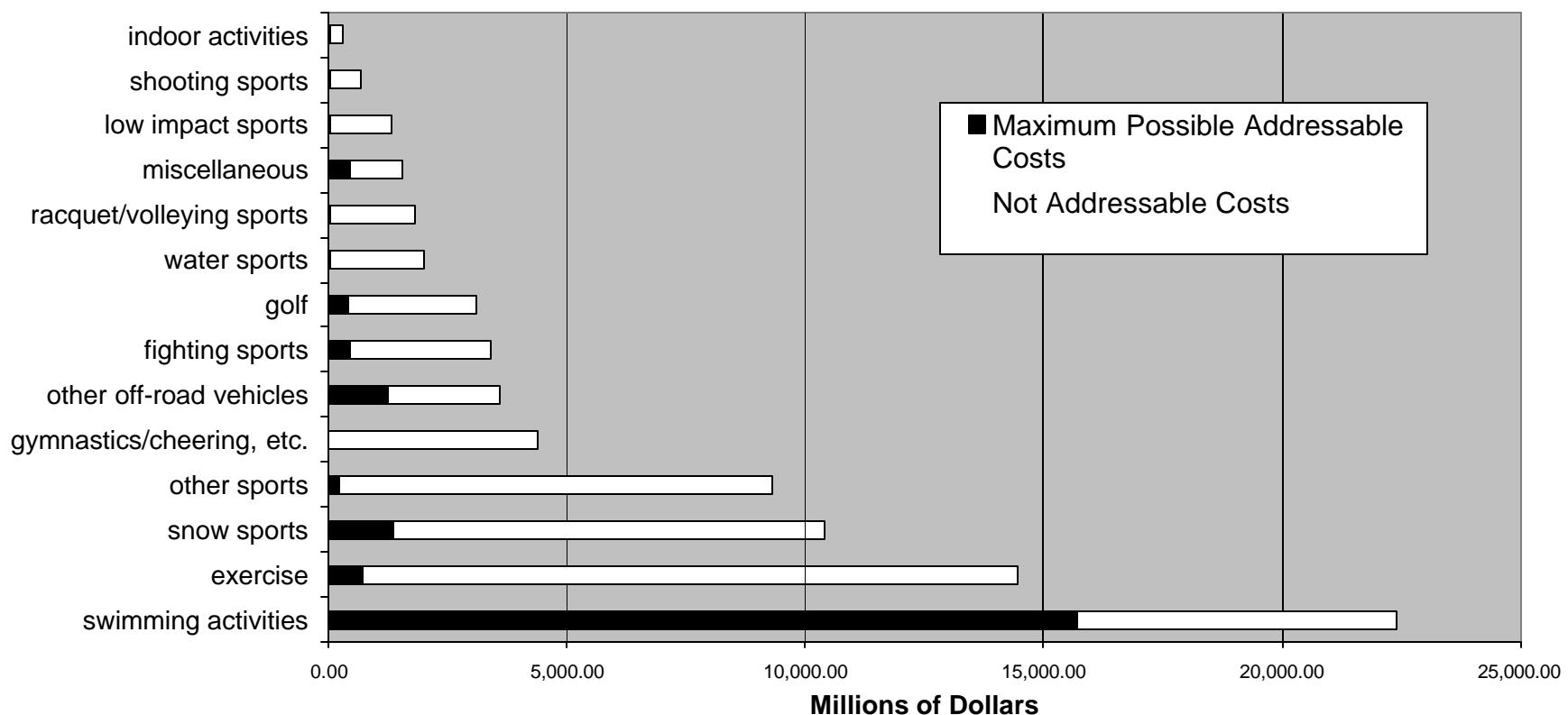
<sup>6</sup> Data is from the latest year available, which varies by product. Not all categories are complete.<sup>7</sup> Some cases appear in more than one category. Thus, numbers may not add to totals.

Table 3 lists the product groups ranked in descending order by the Total Injury and Death Costs Index. This table also shows the total maximum addressable cost for each product group. For those product groups where there was an estimate of number of participants, the maximum addressable cost per unit was calculated by dividing the maximum addressable cost estimate by the number of participants. Rankings of the product groups on total costs, maximum addressable costs, and maximum addressable cost per unit are also provided.

There are a few sports and activities which have hazard patterns for which agency activity may be appropriate. Most notable among these were:

- **Go-carts and Snowmobiles:** Both of these vehicle types are related to a sizable number of incidents where the vehicle tipped over or a rider fell out or was ejected from the vehicle. Staff recommends collecting additional information on these hazards.
- **Golf carts:** These vehicles are also related to a sizable number of incidents where the vehicle tipped over or a rider fell out or was ejected from the vehicle. Staff recommends collecting additional information on these hazards.
- **Fighting sports:** Despite the use of protective headgear in most of these sports, head injuries are still prevalent among maximum addressable injuries. Staff recommends examining the head protection issues for these sports.
- **Swimming pool drowning, children under 5:** Project is currently ongoing (FY 2005). Possible further agency action to be determined by project team.

**Figure 3. Estimated Cost Index, in Millions of Dollars, Sports Activities (Excluding Major Team Sports), by Total Costs**



Source: National Electronic Injury Surveillance System (NEISS), 2003, Death Certificate database (DCRT), 2000

NOTE: This estimate of maximum addressability does not necessarily represent the number of injuries or deaths or 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 costs”

**Table 2: Product Hazard Addressability**

<b>Product</b>	<b>Codes</b>	<b>Percentage of injuries included in Maximum Addressable</b>	<b>Maximum Number of Addressable Deaths/ Total Deaths Reported<sup>8</sup></b>
All-terrain vehicles	3285, 3286, 3287, 3296	N/A	NA/446 <sup>9</sup>
Exercise activity and equipment	3277, 3299, 3265, 5030	8.5%	2/22
Swimming activities	1246, 1277, 1278, 1284, 3221, 3251, 3262, 3274, 3276, 3293, 3295	10.4%	633/3,007 <sup>10</sup>
Snow sports	1217, 1273, 1274, 1299, 3247, 3283, 5031	6.7%	6/20
Other sports	1239, 1258, 3223	8.5%	5/17
Gymnastics/ Cheering, etc.	1271, 1272, 3254, 3278	0.00%	0/1
Other off-road vehicles	3259, 3288, 1290	45.9%	30/204
Fighting sports	1207, 3257, 3260, 1270	6.5%	2/3
Golf	1212, 1213	10.9%	9/19
Water sports	1261, 1264, 1275, 3200	< 1%	2/21
Racquet/Volleying sports	1282, 3284, 3222, 3256	3.5%	0/4
Miscellaneous Sports Activities	1200, 1294, 3202, 3290, 3291	28.9%	3/6
Low impact sports	1206, 1208, 1257, 1276, 3261, 3282	5.1%	0/1
Shooting sports	1235, 1237, 1936, 3256	10.9%	0/3
Indoor activities	1260, 1269, 3289	7.9%	0/0
<b>Total (excl. ATVs)</b>		<b>8.4%<sup>11</sup></b>	<b>691/3,326</b>

The percentages presented in this table are the percents of injuries, not costs, included in the maximum addressable category, excluding all-terrain vehicles. These percentages cannot be directly compared to maximum addressable costs because the costs, while deriving from the 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.

In the two pages that follow, the maximum addressable definitions for each product category are presented. While reading the injury/death narratives to determine addressability, hazard patterns were also coded. The hazard patterns determined to be not addressable were identified and those that remained make up the maximum addressable definitions.

<sup>8</sup> Some cases appear in more than one category. Thus, numbers may not add up to the total.

<sup>9</sup> ATVs are covered extensively in other CPSC reports, so they were not analyzed for this report. For more information see the All-terrain Vehicle 2001 Injury and Exposure Studies and the Annual Report of ATV-Related Deaths and Injuries for the Year 2003.

<sup>10</sup> Based on National Center for Health Statistics data.

<sup>11</sup> This percentage does not include ATVs, as addressability analysis was not done for those products.

## **Maximum Addressability Definitions Used for Each Class of Products - Injuries**

Exercise activity and equipment: caught in exercise machinery, other exercise machine related injuries, mat burn, insufficient mat coverage, pull up bar related head injuries, sharp edges, preventable spotter failures, falls from treadmills.

Swimming activities: slips and falls on ladders or stairs in pools, collisions with lane markers, injuries from drain suction, submersion injuries, sharp edges.

Snow sports: head injuries, binding release failures.

Other sports: head injuries, sharp edges.

Gymnastics/Cheering, etc.: No addressable injuries identified.

Other off-road vehicles: tire blow outs, brake failures, falling out of the vehicle, vehicles flipping or rolling, head injuries.

Fighting sports: concussions, other head injuries, collisions with walls.

Golf: falling out of a golf cart, golf carts tipping over.

Water sports: dizziness, numbness, and other injuries that should have been prevented by scuba gear.

Racquet/Volleying sports: ball injuries to the eyes or face, accidental self inflicted racquet injuries.

Miscellaneous Sports Activities: falls from bleachers, entrapment in bleachers, head injuries, injuries related to equipment, self standing products falling over, sharp edges.

Low impact sports: hit by bowling ball, tripped on boundary marker, finger stuck in bowling ball, gutter related injuries, caught between bowling balls, cuts from horseshoe stakes.

Shooting sports: paintball injuries to the eyes, firing after a jam, firing after impact, shots during repair or cleaning, shots while the safety was on, sharp edges, injuries from springs, shots from apparently unloaded weapons.

Indoor activities: table collapse, sharp edges, splinters.

**NOTE: Injuries related to sports activities for which the record does not indicate any equipment or product involvement were counted as not addressable.**

## **Maximum Addressability Definitions Used for Each Class of Products – Deaths**

Exercise activity and equipment: strangled on exercise machine.

Swimming activities: submersions.

Snow sports: head injuries, deaths related to sports equipment.

Other sports: head injuries, electrocutions from worm stimulators.

Other off-road vehicles: some head injuries, ejections from vehicle.

Fighting sports: head injuries.

Golf: falling out of a moving golf cart, choking hazards.

Water sports: head injuries, pressure related scuba injuries.

Miscellaneous sports activities and equipment: head injuries, deaths related to sports equipment.

**NOTE: Deaths related to sports activities for which the record does not indicate any equipment or product involvement were counted as not addressable.**

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

Title	Medically Attended Injury Costs (Millions)	Total Death Costs (Millions)	Total Injury and Death Costs (Millions)	Total Maximum Addressable Costs (Millions)	Rank on Total Costs	Rank on Maximum Addressable Costs	Participation (Millions)	Maximum Addressable Costs per Participant	Rank on Maximum Addressable Costs per Participant
Swimming activities	\$7,376.3	\$15,035.0	\$22,411.3	\$15,687.6	1	1	48.1	\$100.75	2
Exercise activity and equipment	\$14,340.7	\$110.0	\$14,450.7	\$691.4	2	4	133.4	\$5.18	6
Snow sports	\$10,296.7	\$100.0	\$10,396.7	\$1,358.2	3	2	15	\$90.55	3
Other sports	\$9,230.8	\$85.0	\$9,315.8	\$203.5	4	8	65.5	\$3.11	7
Gymnastics/Cheering, etc.	\$4,383.8	\$5.0	\$4,388.8	\$0	5	14	8.4	\$0	13
Other off-road vehicles	\$2,554.7	\$1,020.0	\$3,574.7	\$1,241.8	6	3	3.4	\$365.24	1
Fighting sports	\$3,396.4	\$15.0	\$3,411.4	\$446.2	7	5	11.1	\$40.20	4
Golf	\$3,010.3	\$95.0	\$3,105.3	\$409.1	8	7	25.7	\$15.92	5
Water sports	\$1,877.6	\$105.0	\$1,982.6	\$16.1	9	12	11.1	\$1.45	9
Racquet/Volleying sports	\$1,770.3	\$20.0	\$1,790.3	\$21.3	10	11	31	\$0.69	10
Miscellaneous Sports Activities	\$1,508.4	\$30.0	\$1,538.4	\$442.2	11	6	n/a	n/a	N/A
Low impact sports	\$1,324.2	\$5.0	\$1,329.2	\$39.1	12	10	57.4	\$0.68	11
Shooting sports	\$646.4	\$15.0	\$661.4	\$44.9	13	9	20.8	\$2.16	8
Indoor activities	\$281.8	\$0	\$281.8	\$12.3	14	13	59.5	\$0.21	12
All-terrain vehicles	n/a	\$2,230	n/a	n/a	N/A	N/A	5.6	n/a	N/A
Total (excl. ATVs)	\$73,132.3	\$16,630	\$89,762.3	\$20,458.8					

These “total injury and death costs” estimates and “total maximum addressable costs” 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 2003 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. Costs are in 2002 dollars.

## Methodology

### NEISS

The Commission operates the National Electronic Injury Surveillance System (NEISS), a probability sample of 98 U.S. hospitals with 24-hour emergency rooms (ERs) with 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*) of 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.<sup>12</sup>

### 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. This is not a statistical sample and therefore cannot be used to estimate the number of deaths in the U.S. associated with each product. The number of deaths for each product is at least a minimum count. To obtain a count of fatalities associated with each product category, the death certificate data was combined with the deaths found in the IPII database (discussed below). The cases were then reviewed to eliminate duplicates and determine addressability.

Death certificate collection from the states takes time. Data for years after 2000 were not complete when this report was prepared.

### 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. Since cases in this database may come from a variety of sources, some cases may be listed multiple times. To obtain a more accurate count of the number of reported incidents associated with each product, they were reviewed to eliminate duplicates.

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<sup>12</sup> Kessler, Eileen and Schroeder, Tom. The NEISS Sample (Design and Implementation). U.S. Consumer Product Safety Commission. October 1999.

## NSGA Data

The National Sporting Goods Association (NSGA) is a sports industry trade organization that annually publishes participation data on sports activities. NSGA's survey starts with a mail panel of 300,000 pre-selected households in the continental U.S., balanced on a number of key indicators of purchasing behavior. Using this mail panel, NSGA sent self-administered questionnaires to 10,000 households in January 2004. The questionnaire asked the heads of the household and up to two other household members at least seven years of age about the sports activities in which they participated in 2003. The response rate for the survey was 68.2%.

NSGA defines a participant in sport as someone seven years of age or older who participates in that sport at least once during the year. NSGA also provides statistical information on the mean number of days of participation in 2003.<sup>13</sup>

## 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 costs for 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 in the medically-treated injury costs.

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 their 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.

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<sup>13</sup> The NPD Group, Inc. *Sports Participation in 2003: Series I*. National Sporting Goods Association. 2004

The ICM estimates the costs of injuries reported through the 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 was hospitalized, held for observation, transferred, 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<sup>14</sup>. Maximum addressable costs were then generated by the Injury Cost Model using the remaining injuries.

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<sup>14</sup> See page 9, the discussion on addressability for more information on this process.