Injuries Associated with Strollers

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I. Executive Summary

In early 1999, the U.S. Consumer Product Safety Commission staff noted a growing number of consumer complaints regarding strollers. Many of the complaints involved combination strollers and multiple occupant strollers. To learn more about stroller-related injuries, staff conducted a special study, using injuries reported through the National Electronic Injury Surveillance System (NEISS) between May 1 and September 30, 1999. Highlights from the study are provided below:

• During the study period, there were an estimated 6,348 stroller-related injuries to children under 10 years old treated in U.S. hospital emergency rooms. During all of 1999, there were an estimated 13,842 stroller-related injuries to children under 10 years old.

• The predominant hazard pattern in the stroller study was falls, with an estimated 3,206 injuries, or 51% of the total estimate. The next most prevalent pattern was tipovers, with 1,628 injuries, or 26% of the total.

• Most (75%) of the injuries during the study period were to the head and face, with head injuries contributing 40%. Contusions, abrasions and lacerations were the most frequent diagnoses.

• Slightly more than 1,000 injuries (estimate has a large coefficient of variation) during the study period were associated with problems with restraints, such as the occupant slipping through the restraint and falling, the occupant defeating the restraint and falling, or the restraint coming loose and the occupant falling. The contribution of the restraint system to the injury was difficult to determine in many of the cases in the study.

• CPSC is aware of 20 stroller-related deaths between 1990 and 1999.[1] Twelve of these involved children slipping through or becoming entangled in leg-hole openings while sleeping. This hazard was addressed by CPSC and the industry through changes to the voluntary standard in the early 1990s.

• Data from the reported incident file suggested that stroller breakage was a factor in many stroller incidents. The NEISS special study identified some injuries associated with breakage or failure of the stroller; however, the estimate was fewer than 400 (estimate has a large coefficient of variation). In all of these special study cases, respondents noted the stroller was in excellent, very good or okay condition before the incident.

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[1] Death data for 1998 and 1999 are incomplete as of this writing.

II. Introduction

In May of 1999, the U.S. Consumer Product Safety Commission staff undertook a special study of strollers in response to a growing number of consumer complaints. Of chief interest was the pattern of injuries involving combination strollers and multiple occupant strollers. In addition, Commission staff sought to gain insight into the scenarios in which full-sized and umbrella strollers tip over or children fall out, and into scenarios in which stroller breakage or failure contributes to an injury.

III. Methodology

Data in this report come from four major sources: The National Electronic Injury Surveillance System (NEISS); the data collected through telephone investigations for the stroller special study, using injuries reported through NEISS; CPSC's Death Certificate database; and CPSC's Injury or Potential Injury database.

NEISS

The Commission operates the National Electronic Injury Surveillance System, a probability sample of 101 U.S. hospitals (at the time of this study) with 24-hour emergency rooms (ERs) and more than six beds. NEISS collects data from these hospitals on all consumer product-related injury victims seeking treatment in the hospitals' ERs. The data are coded in the hospital from the ER record and transmitted electronically to CPSC. Because NEISS is a probability sample, each case collected through NEISS represents a number of cases (the case's *weight*) of the total estimate of injuries in the U.S. Different hospitals carry different weights, based on stratification by annual number of emergency room visits.[2]

Special Study Data

Between May 1 and Sept. 30, 1999, every case collected NEISS involving a stroller and a victim under 10 years of age was included in the special study. A total of 233 cases was collected. A telephone investigation was initiated by contacting the parent or guardian of the victim. If a parent or guardian was unavailable, another adult in the household served as the respondent. CPSC was able to contact 155 respondents, and of these, 149 agreed to complete the questionnaire. Thus, the response rate for those that could be contacted was 96%. This represented 64% of the 233 cases.

The telephone questionnaire consisted of 39 questions developed by Commission staff. Staff pretested the questionnaire in the month preceding the collection of data using a variety of methods. The questionnaire was revised based on this pretesting. Administration of the survey took place over seven months, between May and December 1999. The final version of the questionnaire is included in Appendix B.

After administration of the telephone survey, each respondent's answers were coded by two different members of the CPSC staff. Coding was compared electronically, and discrepancies were resolved by reference to the hand-written questionnaire. The purpose of this dual coding was to insure not only accurate coding of closed-ended questions, but consistent interpretation of the respondents' open-ended descriptions of the incidents. Several variables were gleaned from this narrative, including variables describing the hazard pattern, the presence of an adult during the incident, and whether another child was pushing the stroller at the time of the incident. The narrative was also considered the most accurate account of the incident whenever other responses conflicted with each other or with the narrative itself.

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

The response weights of the 155 questionnaires for which respondents could be contacted were adjusted by strata (based on the NEISS sample design) to total the 6,348 NEISS injury estimate. Thus, the NEISS data and special study data were linked to provide national estimates and associated sampling errors. The data were used to estimate the number of stroller-related injuries associated with assorted variables from the questionnaire. Estimates could not be provided for every variable due to small sample sizes and large variability.

Estimates obtained using NEISS and special study data have sampling variation associated with them. One method of expressing the uncertainty associated with a particular estimate is to provide 95% confidence intervals. Alternatively, one can present a statistic called the coefficient of variation (C.V.), which is the ratio of the standard error of the estimate (i.e. variability) over the estimate itself. This is generally expressed as a percent. A C.V. of 10% means the standard error of the estimate equals 0.1 times the estimate. Large C.V.'s alert the reader that the estimate has considerable variability.[3] For purposes of this study, large variability was defined as a coefficient of variation greater than 35%.

Death Certificates

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-9 system) are purchased. These are then examined for product involvement before they are entered into CPSC's death certificate database. The result is neither a statistical sample nor a complete count of product-related deaths. The database provides only counts of product-related deaths from a subset of E-codes. For this reason, these counts tend to be underestimates. At this writing, collection of death certificate data for 1998 and 1999 is incomplete.

Reported Incident Data

CPSC's Injury or Potential Injury Incident file (IPII) is a 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 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.

[3] *For a more detailed discussion of measures of variation associated with NEISS and special study estimates, see* Kessler, Eileen and Schroeder, Tom. *The NEISS Sample (Design and Implementation).* U.S. Consumer Product Safety Commission. October 1999. Pages 70-72.

IV. Results

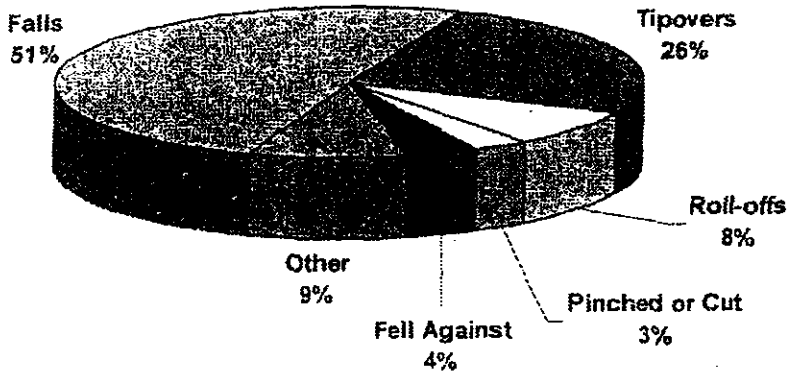
During the study period, there were an estimated 6,348 stroller-related injuries to children under 10 years treated in U.S. hospital emergency rooms, based on 233 cases collected in NEISS.[4] During all of 1999, there were an estimated 13,842 stroller-related injuries to children under 10.[5]

Of the estimated 6,348 victims of stroller-related injuries during the study period, 6,320 (or 98%) were treated and released.[6] In the remaining cases, the victim was hospitalized or the victim's disposition was unknown.

Nearly one-third (2,064[7]) of the injuries associated with strollers were contusions and abrasions. This was followed by lacerations (1,712 injuries,[8] or 27%) and internal organ injuries (1,242 injuries,[9] or 20%). These internal organ injuries were overwhelmingly injuries to the head. In fact, the head and face accounted for a large portion of all stroller injuries, with 4,746 injuries,[10] or 75% of the total. Head injuries alone made up 2,517 injuries,[11] or 40% of the total.

Investigations were assigned for the 233 cases collected in NEISS during the study period. Respondents were successfully contacted for 155 of these cases. Six major hazard patterns were identified from the surveys. The chart below shows the percentages of the injuries associated with each of these patterns.[12]

Distribution of Emergency Room Treated Injuries by Hazard Pattern
Special Study of Stroller-Related Injuries, 5/1/99 - 9/30/99



[4] The C.V. for this estimate is .1722.
[5] C.V. = .1405
[6] C.V. = .1754
[7] C.V. = .2127
[8] C.V. = .2020
[9] C.V. = .2904
[10] C.V. = .1829
[11] C.V. = .2045
[12] The definitions used for the various hazard patterns illustrated in the chart above are presented in Appendix A. Totals do not add to 100% because of rounding.

There were differences in hazard pattern by type of stroller. Respondents were asked to identify the type of stroller involved in the incident based on eight categories provided. Results were compiled, with some categories being combined for analysis. The resulting stroller types and the definitions used are presented in Appendix A.

The distribution of injuries by hazard pattern and type of stroller is presented in Table 1. For all stroller types, falls were the most frequently reported pattern. Tipovers were the second most frequent.

Table 1. Distribution of Estimated Emergency Room Treated Injuries by Type of Stroller and Major Hazard Patterns May 1 – Sept. 30, 1999 n = 155

Type of Stroller	Patterns			
	Total	Falls	Tipovers	All Other
Total	6,348[13] (100%)	3,206[14] (51%)	1,628[15] (26%)	1,514[16] (24%)
Full-Sized	3,312[17] (100%)	1,334[18] (40%)	1,268[19] (38%)	*
Umbrella	1,221[20] (100%)	*	*	*
Combination	*	*	*	*
Multi-seat	*	*	*	*
Other/Unknown	750[21] (100%)	*	*	*

*Estimate not provided because of large coefficient of variation
Source: U.S. Consumer Product Safety Commission; Directorate for Epidemiology
National Electronic Injury Surveillance System (NEISS); Stroller Special Study

A note on stroller types: More than half of the total estimated injuries occurred in full-sized strollers. About a fifth occurred in umbrella strollers. Despite the fact that reported incident data suggested a large portion of incidents involved combination and multiple occupant strollers, there were small sample sizes associated with these stroller types in the special study data and staff was not able to provide estimates for these stroller types.

Falls – This category includes cases in which the victim was reported to have fallen out of the stroller for one of several different reasons. These included: falls involving restraint problems; falls while climbing into the stroller; falls while the stroller or a

[13] C.V. = .1754
[14] C.V. = .2469
[15] C.V. = .2328
[16] C.V. = .2445
[17] C.V. = .2079
[18] C.V. = .2888
[19] C.V. = .2491
[20] C.V. = .2275
[21] C.V. = .3318

component was being lifted or carried; falls while in the process of being strapped into the stroller; falls occurring after the occupant stood up; and falls not otherwise specified.

Of the 6,348 stroller-related injuries in the study, 3,206 (51%) were the result of falls from the stroller,[22] and 1,334 occurred in full-sized strollers.[23] Estimates for other types of strollers are not presented because of large coefficients of variation.

Tipover - Cases in which the stroller tipped over with the child seated in it, or in which the child stood up and caused the stroller to tip over represented 1,628 (26%) of the estimated injuries during the study period.[24] Surprisingly, these were not overwhelmingly the result of children standing up; an estimated 1,002 injuries occurred while the occupant was seated.[25] Most of these (an estimated 810 injuries or 81%) involved full-sized strollers.[26] Many of the estimated 626 standing tipovers[27] also involved full-sized strollers.

Roll-off – These were injuries resulting from a stroller, with a child in it, rolling down steps or off of a surface, such as a porch or a deck. Fewer than 500 injuries were estimated to have occurred in this manner during the study period, and the associated coefficient of variation was large.

Pinched or Cut – There were a few cases reported in which the child was pinched in the mechanisms of a stroller or was cut on an edge or point on the stroller. This was not a frequent source of injury, accounting for fewer than 200 injuries. Again, the associated coefficient of variation was large.

Fell Against – Fewer than 300 children were injured by falling against a stroller while outside of the stroller. The coefficient of variation was large for this estimate.

Other – CPSC estimated that there were approximately 600 additional injuries, representing about 10% of the total, but the coefficient of variation for this estimate was large as well. These injuries were distributed over many different scenarios. Some examples of these injuries are:

- A 19-month-old female was in a rental stroller provided by a shopping mall for mall patrons. Her brother was in a similar stroller. Each stroller had a 4-foot high metal pole attached to it with the name of the mall at the top. The strollers did not have restraints. The child's grandmother's purse was in a bag (part of the stroller itself) on the back of the brother's stroller. The brother climbed out of his stroller

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[22] C.V. = .2469
[23] C.V. = .2888
[24] C.V. = .2328
[25] C.V. = .2781
[26] C.V. = .3079
[27] C.V. = .3385

and the stroller tipped over backwards. The metal pole of the brother's stroller struck the female. She received a scalp laceration.

• A 3-year-old male and his parents were at an airport returning from vacation. As his father unloaded the child's umbrella stroller, he unintentionally struck the child's right eye with the stroller handle. The child suffered a corneal abrasion.

Other variables associated with stroller-related injuries

Several other variables were investigated during the study in an attempt to learn the extent of their effect on stroller-related injuries. These variables are discussed below.

Presence of an adult – There was no specific questionnaire item on the presence of an adult during the incident. However, the staff reviewed narratives of incident scenarios to determine whether an adult was present and was able to make a determination of adult presence in 76% of the surveys for which respondents were contacted. An estimated 3,721 injuries occurred when an adult was present.[28]

There were several cases indicating that an injury occurred involving a stroller that had been left set up and accessible to the child. While the estimate associated with this scenario was too small to provide in this report, the cases do illustrate an important point: strollers are not designed to be used or played with by unsupervised children. A stroller may be stable and safe for its intended use, but be unstable if used for unsupervised climbing and playing. There may also be pinch points and other hazards that would not normally be accessible to a child.

Children pushing the stroller – There also was no specific questionnaire item on who was pushing the stroller at the time of the incident. Staff reviewed the narratives to identify cases that occurred when a child, rather than an adult, was the person pushing the stroller. Staff was able to make this determination in 87% of the surveys for which respondents were contacted. An estimated 1,102 occurred while the stroller was being pushed by a child.[29] The largest category of these injuries was tipovers, all of which occurred when the occupant was seated, but there were also cases of roll-off, falls out of and against the stroller, and restraint problems.

Product contributions to the hazard – Other product contributions to injuries were studied, including strollers breaking or otherwise failing and problems with stroller restraint systems. These categories often overlap, such as when the restraint strap breaks or fails to restrain a child who is subsequently injured. Breakage or failure cases were identified as those in which the respondent answered affirmatively to the question: "Did

[28] C.V. = .1844
[29] C.V. = .2555

any part of the stroller break or fail?" (All respondents were asked this question.) Cases involving restraint problems were identified by the staff from the respondent's description of the incident. A specific question on restraint problems as a hazard pattern was not asked. Survey questions about restraints addressed presence, use and ease of use of restraints.

Stroller breakage or failure

Ninety-one percent of those contacted supplied information about whether the stroller broke or failed just before or during the incident. The estimated number of injuries involving breakage or failure was less than 400 and had a large coefficient of variation. These injuries all occurred in full-sized, umbrella or combination strollers. Some examples include:

- A 9-month-old female was strapped into the car seat portion of her combination stroller, which was attached to the stroller portion. As her mother disengaged the car seat from the stroller seat area, the car seat flipped backward as the stroller seat tray collapsed. The car seat landed on the paved surface of the parking lot upside down with the child still strapped in. The victim sustained a contusion to the forehead.

- A 15-month-old female was strapped into her full-sized stroller. As her mother took the stroller down two brick steps outside, the child pushed on the detachable bar. The clip that holds the bar failed and the bar came off the stroller. Due to the weight imbalance and the downward momentum of the stroller, the stroller flipped over, landing on top of the child, who was still strapped in the stroller. The child sustained lacerations and contusions to her face, hands and knees and required stitches.

- A 5-month-old male was strapped into an umbrella stroller on the front porch of his home, with his mother present. Even though the stroller's brakes were locked, the stroller rolled off the porch as his mother turned briefly away. The stroller, with the child in it, rolled down 5 concrete steps and tipped over during its descent. The child sustained abrasions to his forehead and mouth.

Ninety percent of the respondents supplied information about the condition of the stroller. Respondents chose from among: excellent, like new; very good; ok, everything worked; poor; and really bad. In all of the cases of reported breakage or failure, the respondent said the stroller was in okay condition or better before the incident.

Problems with Restraint Systems

In reviewing narratives of investigation reports to establish hazard patterns, staff noted three patterns in which the restraint system had not adequately restrained the child. These incidents included cases in which the child defeated the restraint and fell out of the stroller, the child slipped through the restraint and fell out, or the restraint came loose and the child fell out. Whether or not the restraint was a factor could only be determined

from the most detailed incident descriptions. For some cases the contributions of the restraint system to the injury could not be determined.

Cases in which the restraint system was determined to contribute to the incident represented slightly more than 1,000 injuries, but the coefficient of variation associated with the estimate was large. Descriptions of incidents in the study included:

- A 10-month-old male had been strapped into his full-sized stroller by his mother. When his mother momentarily turned to help another child with a bicycle helmet, the child squirmed out of the stroller restraints and fell to the concrete, hitting his head. The child sustained lacerations and abrasions to the forehead.

- A 16-month-old female was strapped into an umbrella stroller and was being pushed by a parent. The child leaned forward and the restraint "separated." The child fell onto the sidewalk. She sustained forehead contusions.

- A 1-month-old male was strapped into a full-sized stroller. The mother attempted to maneuver the stroller down some concrete stairs. The restraint came unfastened and the child fell out of the seat onto the stairs. The child sustained a forehead abrasion.

- A 19-month-old female was strapped into the front seat of a double stroller (another child about the same age and size was strapped in the back seat). The child's mother pushed the stroller on a downhill incline at a park. The child unbuckled her restraint. The mother couldn't see that the child had unbuckled the restraint because her view was obstructed by the stroller's opaque canopy. The child began to climb out of the seat. The mother kept the stroller from tipping over, but the child fell to the ground and struck her head on the concrete sidewalk. She sustained lacerations to the forehead and knees.

- A 1-month old female was strapped into a combination car seat/baby carrier/stroller being pushed by her mother. The child slipped through the stroller seat onto an inside floor after the restraint failed. The child sustained a contusion to the rear of her head.

Because problems with stroller restraint systems were mentioned in many complaints reported to CPSC, questions about the presence and use of a restraint system were included in the study questionnaire. In an estimated 5,331 injuries, a restraint system was present.[30] Staff assumed that restraint presence indicated that a restraint system was provided by the manufacturer as part of the overall stroller design. Among those contacted, the response rate for the questionnaire item on restraint presence was 90%. Among the cases that reported that a restraint was present, 3,152 (59%) reported that the

[30] C.V. = .1904

system was in use at the time of the injury[31]; 2,070 (39%) reported that the restraint was not in use.[32] The remaining respondents did not know whether the restraint was in use at the time. The response rate for the questionnaire item on restraint use was 83%.

Restraint use was not necessarily relevant to the injury in all cases. Patterns such as pinches or cuts and falls against the stroller from outside would not involve the restraint. In cases where children were playing with or climbing on a stroller without an adult present, it is unlikely that a restraint was in use.

Although restraint use may be a sensitive subject for some respondents, the questionnaire was designed to eliminate as much error due to this sensitivity as possible. The response rate for the restraint items does not differ substantially from the response rate from other items, indicating that respondents were no more reluctant to respond to items about restraints than to other items. However, it should be noted that because it is a sensitive item, respondents may tend to respond in a socially desirable manner.[33] Hence, use of restraint systems may be overreported.

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[31] C.V. = .2629

[32] C.V. = .1887

[33] Sudman, Seymour and Bradburn, Norman M. *Asking Questions: A Practical Guide to Questionnaire Design.* Jossey-Bass, Inc. 1982. pp. 54-87.

V. Data from Other Databases

Reported Incident Data

Consumer complaints and other reported incidents during 1999 exhibited considerably different patterns than the special study data. Of the 275 reports that consumers made to CPSC during 1999, 111 (40%) involved a stroller collapsing or coming apart in some manner. The next most prominent complaint category involved wheels breaking or coming off, with 37 reports (13%). Table 2 gives a distribution of reported incidents.

One explanation of why the reported incident data differs substantially from the special study data may be that consumers are more likely to take action when an incident involves obvious product failure. They are less likely to associate an unrestrained fall from a stroller with a defect in the stroller itself.

Another possible explanation of the differences in patterns and other characteristics between reported incident data and the special study data is that the complaints often reported either a minor injury for which no medical treatment was sought, or no injury at all. While these injuries and potential injuries are not inconsequential, they do appear to be different patterns than the emergency-room-treated injuries in the study database.

Death Certificate Data

CPSC is aware of 20 stroller-related deaths to children under 10 years of age between 1990 and 1999. A large portion (12 deaths) of these were the result of infants slipping through leg hole openings and becoming entrapped in the opening. All of the deaths of this type happened to children between 3 and 9 months old, and in every case, the child was sleeping in the stroller. Often the child was unrestrained. Three of the 12 leg-hole cases occurred in tandem strollers. A wide variety of stroller brands was represented. This hazard was addressed by CPSC and industry through changes to the voluntary standard in the early 1990s.

Stroller-related deaths in this period also included:

- A death involving the tipover of a tandem stroller. A 9-month-old female was sleeping in a stroller when it tipped and she was entangled in the stroller's canopy.

- The death of a 1-month-old male, occurring when the child was asleep in the stroller while a parent attempted to carry the stroller up stairs. The unrestrained child fell out.

- The death of an 8-month-old male, occurring when his stroller, which was in poor repair, collapsed.

Table 2: Number of stroller-related complaints and incident reports
Jan. 1 - Dec. 31, 1999
By brand and hazard

Manufacturer	Total	Tipover	Collapse or came apart	Cut or pinch body part	Caught or bumped head	Wheel came off or broke	Restraint problems	Fell or nearly fell	Chewed on bar	Brake problems, rollaways	Other
Brand 1	56		19	8		4	11	11	1	1	1
Brand 2	48	4	24	2	9	6	2	1			
Brand 3	40	1	13	2	4	6	8	3	2		1
Brand 4	36	2	14	2	1	13	1	3			
Brand 5	14	1	6		1		2	1	3		
Brand 6	12		4	2	1	1	3	1			
Brand 7	9		2	3		3	1				
Brand 8	7	2	5								
Brand 9	5		4							1	
Brand 10	5		2	1		1	1				
Brand 11	4	1	3								
26 other brands	36	3	13	6	2	2	1	3	0	4	2
Unknown	3		2			1					
Total	275	14	111	26	18	37	30	23	6	6	4

Source: U.S. Consumer Product Safety Commission; Directorate for Epidemiology
Injury or Potential Injury Incident File

• A strangulation death of a 4-year-old. He died after getting tangled upside down in the restraint of his stroller while playing on it while his mother slept.

• A drowning death of a 22-month-old male. He drowned when his stroller was unintentionally pushed into a pool while he was restrained in it.

• Three deaths of 1- and 2-month-olds in strollers involving soft bedding.

Of particular interest in this examination of deaths is the predominance of incidents that occurred while the child was asleep. In the tipover case, the child was sleeping overnight in the stroller because she didn't have a crib. Also noteworthy is the smaller range of ages involved in deaths than in non-fatal injuries. With two exceptions, all of the deaths occurred to children under 9 months old.

VI. Conclusions

The major findings of this study were:

Falls and tipovers constitute a large portion of stroller-related injuries to children under 10 years old treated in hospital emergency rooms. Issues involved in these injuries included stability of the stroller, and use and effectiveness of restraint systems. Seated tipovers are of special concern because parents do not expect strollers to tip over if the occupant remains seated. A seated tipover may indicate a stability problem.

More than half of the total estimated injuries occurred in full-sized strollers. About a fifth occurred in umbrella strollers. Despite the fact that reported incident data suggested a large portion of incidents involved combination and multiple occupant strollers, there were small sample sizes associated with these stroller types in the special study, and staff was not able to provide estimates for these stroller types.

Reported incident data suggested that stroller breakage may have contributed to many stroller incidents. While the study did not indicate that injuries associated with breakage or failure were as prevalent as the reported incident data suggests, the study confirmed that breakage or failure did contribute to some injuries. In all cases, the strollers involved in these injuries were reported as being in okay condition or better.

Restraint systems were a factor in some falls. In some cases, the child defeated the restraint and fell out, while in others the child slipped through the restraint or the restraint came loose before the child fell out. It is possible that increasing the effectiveness of stroller restraint systems will decrease the number of falls.

Most of the stroller-related deaths during the decade of the 1990s involved children becoming entrapped in leg hole openings of strollers. A wide variety of brands were involved in these deaths. The deaths usually occurred while the children, all under the age of 9 months, were sleeping. CPSC and the stroller industry addressed this hazard through changes to the voluntary standard in the early 1990s.

Some non-fatal injuries, as well as some of the deaths studied, occurred when parents weren't present. In some of the injuries, the stroller had been left set up and accessible to the child, who then climbed into or on it. One death occurred when a child played in the stroller while his mother was asleep.

Appendix A:

Definitions

Definitions of Hazard Patterns:

Falls: This category includes cases in which the victim fell out of the stroller, including falls while climbing in, falls out of the stroller after the occupant stood up, and falls while the stroller or a component of a combination stroller was being carried.

Tipovers: This category includes injuries resulting from the stroller tipping over while the child was seated and cases in which the child stood up and the stroller tipped over.

Rolloffs: This category includes injuries resulting when a child seated in a stroller rolled down steps or off of a surface such as a porch or a deck.

Pinched or cut: This category includes injuries occurring when the child was pinched in the mechanisms of the stroller or was cut on an edge or point on the stroller.

Fell against: This category includes cases in which the child was injured by falling against a stroller while outside the stroller.

Other: This category includes a wide variety of injury scenarios that did not fit into another category.

Definitions of Stroller Types:

Full-sized strollers: Strollers with four wheels designed to carry one seated child. The seat may or may not recline, and the stroller itself may fold for ease of carrying.

Umbrella strollers: Lighter-weight strollers with four wheels designed to carry one seated child. Umbrella stroller seats do not typically recline, though there is at least one manufactured exception to this. The stroller is easily folded and unfolded, usually with one hand.

Combination strollers: Products that can function as strollers and some other baby product such as a car seat or a baby carrier. Combination strollers have four wheels and the seat may recline.

Multi-seat (or multiple-occupant) strollers: Strollers designed to carry more than one child. The occupants may be seated in a variety of configurations, including one behind the other and facing forward, facing each other, or side by side. Regardless of configuration, any stroller carrying more than one seated or reclined child can be considered a multiple-occupant stroller. Multiple-occupant strollers may have seats that recline. A stroller may be both a multiple-occupant stroller and an umbrella stroller. For purposes of this study, such strollers were treated as multiple-occupant strollers.

Other strollers: This category included jogging strollers and rental strollers. A jogging stroller usually has three wheels and is designed to carry one or more seated or reclined occupants. Rental strollers may be any of the types listed above, but typically are full-sized strollers of heavier construction.

Unknown: This category includes cases for which the type was unidentifiable.

Appendix B:

Stroller Study Questionnaire

Task Number: _____

Product/Study: **Stroller Study**

RECORD OF TELEPHONE CALLS FOR FOLLOW-BACK INTERVIEW

Inter-viewer	Day	Date	Time	Result*	Comments
			am/pm		
			am/pm		
			am/pm		
			am/pm		
			am/pm		
			am/pm		
			am/pm		
			am/pm		
			am/pm		
			am/pm		

*** RESULT OF CALL:**

Suggested call back time: Day:_____

C = Completed

CB = Call Back

Time:_____am/pm

LB = Line Busy
WN = Wrong Number
NWN = Non-working Number
NER = No Eligible Respondent
R = Refused
NA = No Answer

AM/N = Answering machine - no message left
AM/M = Answering machine - message left

PLEASE BE SURE TO ENTER THE TASK NUMBER AND THE PRODUCT OR STUDY NAME ON BOTH THIS AND THE NEXT PAGE.

Approved for use through 5/31/2000 OMB NO. 3041-0029

Task Number: _____

Product/Study: **Stroller Study**

QUESTIONNAIRE FOR NEISS TELEPHONE INTERVIEW

Review NEISS information.

Interviewer introduction:

The respondent should be an adult who was present at the time of injury if at all possible. In most cases this will be the parent or guardian of the victim.

If the injury occurred while the child was in the care of an adult other than a parent or guardian, such as a babysitter or day care employee, attempt to contact and interview that person. If that person can not be contacted, interview the parent.

When referring to the injured person use victim's name or say "the victim" or "the patient" or "the child".

In general, in the questionnaire, the bolded text contains interviewer instructions and should not be read to the respondent!

Hello. May I speak with_____?**(Ask for parent or guardian of victim.)**

(If the above person is available, continue with introduction below.) Otherwise, ask: When would be a good time to contact him/her? (Record on page 1 and when desired person is contacted, continue with introduction.)

Hello, I'm _____ from _____. We are working with the U.S. Consumer Product Safety Commission and some hospitals, to learn how children are injured with strollers, so we can help others avoid similar accidents. We would like to ask you a few questions about **(victim's name)** recent accident. This should take only a few minutes. Your answers will be kept completely confidential. The information is only for statistical totals and no names will be used. Will you help us?

Interviewer: Please check the correct response:

Respondent:

_____ agreed

_____ refused

_____ other (specify:)_____

1. I understand **(victim name)** was treated at _____ Hospital on _____ (date) for an injury that involved a stroller. Is that correct?

_____ yes

_____ no --> **STOP after obtaining correct product information.**_____

_____

_____ don't know --> **Ask if anyone else in the household knows more about the incident and can respond. If necessary, set up a time to call back. (Record on page 1.)**

INTERVIEWER: Determine respondent's relationship to victim and check the correct response:

Respondent is:

_____ parent of an injured child under 18

_____ other --> Specify: _____

Ask if the respondent witnessed the accident. Check the correct response.

Respondent:

_____ witnessed the accident

_____ did not witness the accident

2. Please describe how the accident happened. Please include what everyone involved was doing just before, during and just after the injury occurred.

(Interviewer enter full narrative)

Interviewer: **Ask the following questions.**

Suggestion for confirming information already given, say: Let me see, earlier you told me ..... Is that correct?

Say: Now I'd like to ask you some questions about the stroller.

3. Do you have the stroller?

_____ Yes

_____ No

4. What is the manufacturer, brand name and model name or number of the stroller? **(If respondent can not remember, and if they answered yes to question 3, ask if they are willing to go get the stroller to get this information.)**

_____

_____

Interviewer, please place a check next to the consumer's response.

5. What type of stroller was involved?
(Read the following list to the respondent.)

_____Full size stroller for one child **Skip to question 15**

_____Umbrella stroller (lightweight) **Skip to question 15**

_____Combination stroller e.g. stroller/carrier/car seat
Continue to question 6

_____Stroller for more than one child **Skip to question 8**

_____Jogging stroller **Skip to question 15**

_____Large loaner or rental stroller at shopping mall, store, or amusement park **Skip to question 15**

_____Other, Please describe_____
Skip to question 15

_____Unknown **Skip to question 15**

Combination Products

6. What were all of the uses/components of the product? - **(Check those that apply) If necessary to clarify, read the following list.**

_____ Stroller (Must be checked)

_____ Infant Carrier

_____ Car Seat

_____ High Chair

_____ Booster Seat

_____ Baby Carriage

_____ Baby Swing

_____ Cradle/Bassinet

_____ Some other use (Please specify)_____

7. Do you think that this injury was in any way related to the fact that this is a combination product with more than one use?

_____ Yes (Please Describe)_____

_____ No

_____ Don't know

Go to question #15

Multiple Occupant Strollers

8. How many children was the stroller designed to hold? That is, how many seats does it have?

_____ Two

_____ Three

_____ More than three

9. Are the seats in a line, or side by side?

_____ Seats are in line **(Continue to question 10)**

_____ Seats are side by side **(Skip to question 11)**

10. You said the seats were in a line. Did they face each other or face in the same direction?

_____ Seats face each other

_____ Seats face in the same direction.

11. How many children were in the stroller at the time of the incident? **Enter Number** _____

12. Were there any instructions or labels either on or packaged with the stroller, about the order in which children should be placed into each of the seats?

_____ Yes **(Continue to question 13)**

_____ No **(Skip to question 14)**

_____ Don't Know **(Skip to question 14)**

13. What did those instructions or labels say?

_____

14. Were there any weight restrictions for any of the seats?

_____ Yes (Please state which seat)_____

_____ No

_____ Don't know

15. Were there any weight restrictions for the whole stroller indicated on the stroller itself, on a label, on the packaging, or in the instructions?

_____ Yes

_____ No

_____ Don't know

16. Did any part of the stroller break or fail?

_____Yes **(Continue to question 17)**

_____No **(Skip to question 18)**

17. What part was it? Please describe. _____

_____

18. Was the stroller purchased new or used?

_____New

_____Used **(Skip to question 20)**

19. How long ago was the stroller purchased?

_____ Less than 3 months

_____ 3 - 6 months

_____ 7 - 9 months

_____ 10 - 11 months

_____ 1 - 2 years

_____ More than 2 years

_____ Don't know

20. How would you describe the condition of the stroller before the incident? Would you say it was...

_____ In excellent condition, like new

_____ In very good condition

_____ In ok condition, everything worked

_____ In poor condition

_____ In really bad condition

21. To your knowledge, had there been any previous problems or accidents with this stroller?

_____ Yes **(Continue to question 22)**

_____ No **(Skip to question 23)**

22. What happened on those occasions?_____

_____

_____

Say: Just a few more questions.

23. Please describe the conditions of the surface the stroller was on at the time of the incident? For example, was it a smooth dry paved surface, a rough or broken paved surface, a smooth indoor surface, a carpeted surface, or something else?

_____

_____

_____

24. Was anything else being carried or hanging on the stroller at the time? (for example: a shopping bag)

_____ Yes (Please Specify what was being carried and how it was being carried.)_____

_____

_____

_____ No

25. Is/was the stroller equipped with a restraint system to keep the child in the seat?

_____ Yes (Please describe it)_____

(Continue to question 26)

_____ No **(Skip to question 29)**

26. Was this restraint system in use at the time of the incident?

_____ Yes

_____ No

_____ Don't know

27. Would you say that this restraint system is

_____ Easy to use **(Skip to question 29)**

_____ Difficult to use **(Continue to question 28)**

28. In what way was it difficult?

_____

Characteristics of the Child

Say: Now I'd like to ask you a few questions about the child/children involved in the incident.

29. What is the height of the injured child,in inches or in feet and inches _____

30. What is the weight of the injured child in pounds?

_____

31. Would you say that (child's name) is:

_____ Big for his/her age

_____ About average

_____ Small for his/her age

32. Does (child's name) have any medical or health problems which could have contributed to the incident?

_____ Yes

_____ No

INTERVIEWER: If the respondent has reported in the narrative section or in questions about a multiple occupant stroller that another child or children were involved, ask questions 33 and 34. Otherwise, skip to question #35.

33. What is the height in inches or feet and inches of the other child/children involved in the incident?

_____

34. What is the weight in pounds of the other child/children involved in the incident?

_____

35. Is there anything else about this incident or about the stroller involved that you would like me to know?

_____ yes **Enter here** _____

_____

_____

_____ no

Read the following closing

Thank you very much for your help. As I said before, this information will be used only for statistical purposes to help prevent future injuries involving strollers. I believe I've got everything you told me, however, if I have missed something or if we need additional information, may we contact you again?

_____ yes

_____ no

Finally, just let me tell you that if you would like to know more about the U.S. Consumer Product Safety Commission, you can visit the internet site at: www.cpsc.gov.