National Safety Council

North America Fixed-Site Amusement Ride Safety Report, 2024 Update

Executive Public Summary

Prepared for

IAAPA, The Global Association for the Attractions Industry

IAAPA NORTH AMERICA

October 2025

TABLE OF FIGURES

TABLE OF TABLES

1. BACKGROUND AND SCOPE

This report presents the results of work done by the National Safety Council (NSC) under contract to IAAPA, the global association for the attractions industry. It includes estimates by NSC for calendar years 2003 through 2024.

Since 2003, NSC has produced the annual *North America Fixed-Site Amusement Ride Safety Report* for IAAPA, collecting and analyzing ridership, attendance, and patron injury data from facilities that operate fixed-site amusement rides. Beginning with the 2016 data year, Canadian facilities were included in the ride safety survey. The survey includes amusement and theme parks, tourist attractions, and family entertainment centers.

1.1 Ride Safety Project Design

A total of 485 contacts representing a sample of the 443 U.S. and Canadian fixed-site amusement facilities in North America were invited to participate in the 2024 survey of patron injuries. Contacts in the IAAPA North America database (both members and non-members) were emailed and invited to complete a structured questionnaire via an online link, or by downloading the questionnaire and returning it to NSC.

1.2 Definitions

The definitions (Appendix A) utilized in this research remain consistent with previous years. The North America Fixed-Site Amusement Ride Safety Report is based on a survey conducted among operators of Permanent Ride Facilities, commonly known as amusement parks, theme parks, family entertainment centers, and attractions. The study encompasses three types of fixed-site rides: Children's Rides, Family/Adult Rides, and Roller Coasters. Moreover, the study presents findings on two types of injuries, categorized by the severity of health consequences as outlined in Appendix A.

1.3 Ride Safety Survey Response

A total of 227 facilities responded to the survey. Of the responses:

- 222 provided some or all the data requested.
- 5 were unable to report either attendance or counts of rides taken.

This year's survey yielded attendance data from 192 facilities and ridership data from 164 facilities. Among these, the majority provided both types of data. Compared to 2023, participation decreased by 1% for attendance data and 2.4% for ridership data.

Table 1. Year-over-Year Percentage Change in Attendance and Ridership (2023–2024)

	Prior Year 2023	Project Year 2024	Change 2024–2023	Percent Change
Attendance	194	192	-2	-1%
Ridership	168	164	-4	-2.4%

Formula: (2024 - 2023) ÷ 2023 x 100

The facilities included in the 2024 analysis represent approximately 63% of the total estimated attendance and 65% of the total estimated ridership. With participation levels relatively stable compared to the prior year, the broad coverage of the dataset provides a strong representation of fixed-site amusement facilities in the North American region.

Table 2. Representation of Reported vs. Estimated Attendance and Ridership (%)

	Reported	Estimated Total	Percentage
Attendance (mil)	265.4	422.2	63%
Ridership (bill)	1.25	1.92	65%

Formula: (Reported ÷ Estimated) x 100

2. RIDE SAFETY REPORT RESULTS

Section 3 is based on the full North America Fixed-Site Amusement Ride Safety Report 2024 sample of responding 222 usable responses. Attendance based estimates reflect the 192 facilities providing attendance data, while the ridership estimates reflect 164 facilities providing ridership data. Sample results are weighted to reflect the estimated 443 operating facilities in North America.

2.1 Total Injuries

Separate attendance-based and ridership-based injury analyses were performed. Since not all facilities could report attendance and ridership data, there were variations in the selection of facilities utilized for each analysis.

As in past years, the estimated number of injuries using the two samples resulted in similar counts. In 2024, the estimates using the sample of facilities providing attendance data result in 1,484 injuries, while the ridership estimates show 1,495 injuries. Because ridership-based rates are a more appropriate measure of exposure to risk than attendance-based rates, this report will focus primarily on ridership-based estimates. Results based on the attendance-based analysis are clearly labeled.

Similar to past findings, the vast majority of injuries are in the reportable category, not serious. The prevalence of serious injuries reported in 2024 continues to be substantially lower than in previous years. In 2024 and 2023, 8% of injuries were serious compared to 19% in 2022, 11% in 2021, and 16% in 2020. As in past years, family/adult rides were associated with the largest number of injuries, followed by roller coasters.

The majority (69%) of injuries occur due to ride motion versus 31% while entering or exiting the ride.

Table 3. Total Injury Estimates Based on Facilities Providing Ridership Data (2021–2024)

	North America Estimate (Ridership Providing Sample)									
	2023-24 Average		2024		2023		2022		2021	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Facilities	443		443		443		437		431	
TOTAL INJURIES	1,478	100%	1,495	100%	1,461	100%	1,390	100%	1,224	100%
Serious	118	8%	118	8%	118	8%	259	19%	130	11%
Reportable	1,360	92%	1,377	92%	1,343	92%	1,131	81%	1,094	89%
Children's rides	135	9%	126	8%	144	10%	148	11%	201	16%
Family/adult rides	788	53%	717	48%	859	59%	739	53%	640	52%
Roller coasters	555	38%	652	44%	458	31%	503	36%	383	31%
Getting in/out	440	30%	457	31%	422	29%	457	33%	406	33%
Ride motion	1,038	70%	1,038	69%	1,039	71%	933	67%	818	67%

For reference to the ridership-based estimates (provided above), estimates using the attendance-based sample of parks are provided below.

Table 4. Total Injury Estimates Based on Facilities Providing Attendance Data (2021-2024)

			North America Estimate (Attendance Providing Sample)							
	2023-24 Average		2024		2023		2022		2021	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Facilities	443		443		443		437		431	
TOTAL INJURIES	1,430	100%	1,484	100%	1,376	100%	1,349	100%	1,281	100%
Serious	106	7%	110	7%	101	7%	192	14%	170	13%
Reportable	1,324	93%	1,374	93%	1,275	93%	1,157	86%	1,111	87%
Children's rides	118	7%	104	7%	133	10%	106	8%	150	12%
Family/adult rides	823	55%	813	55%	833	60%	793	59%	692	54%
Roller coasters	489	38%	567	38%	410	30%	450	33%	438	34%
Getting in/out	457	33%	488	33%	426	31%	449	33%	410	32%
Ride motion	973	67%	996	67%	950	69%	900	67%	871	68%

2.2 Distribution of Injuries

The following tree diagram, based on the 2024 ridership sample, summarizes the distribution of injuries by severity, ride type, and injury location. (Note: Some numbers or percentages may not total exactly 100% due to rounding.)"

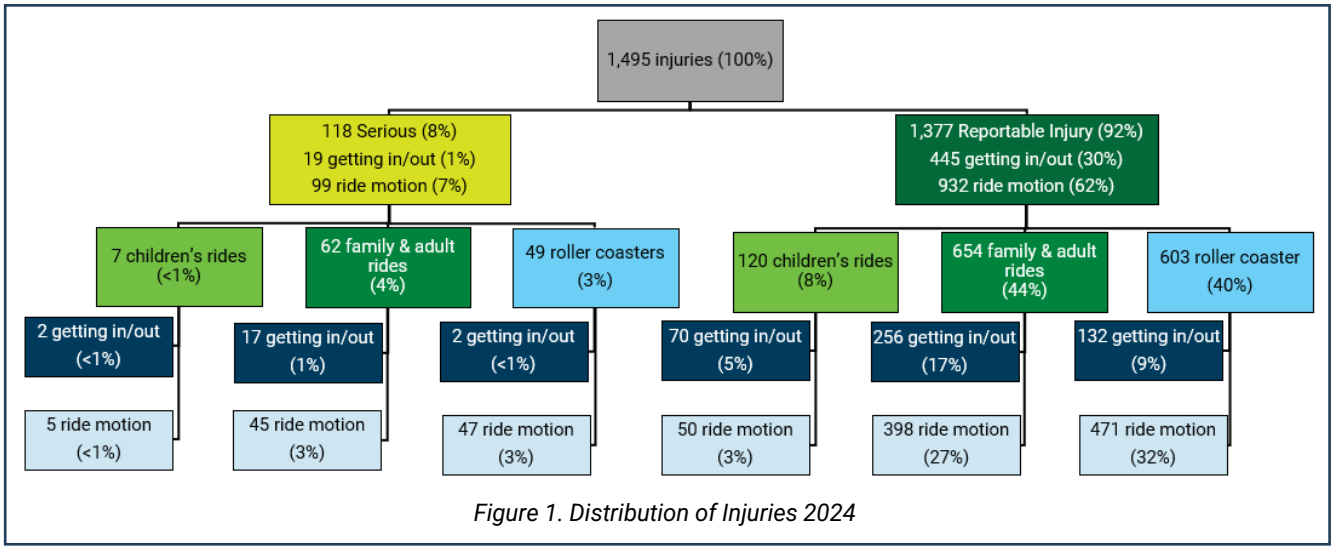

Figure 1. Distribution of Injuries 2024

Figure 2 presents trends in the distribution of injuries using the 2024 ridership sample, compared with the previous year and multi-year averages, followed by the insights below:

- 8% of injuries in 2024 were classified as serious, unchanged from 2023 but lower than the 10-year average of 10%.
- Over the past ten project years, the average share of injuries has been 10% serious and 90% reportable.

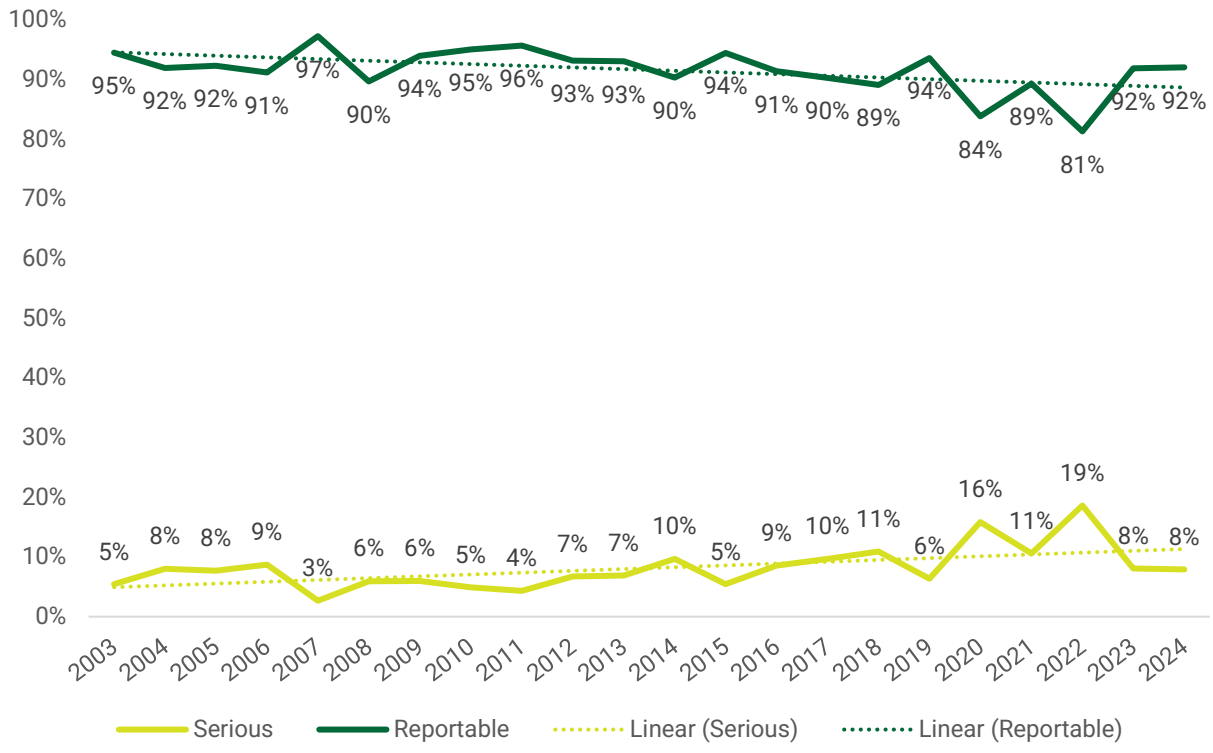

Figure 2. Serious vs. Reportable Ride Injuries Share

An analysis of injury trends by ride type, using 2024 ridership-based data relative to the prior year and multi-year averages, is presented in Figure 3 and summarized in the following insights:

- Over the past ten years, family ride-related injuries have consistently accounted for the largest share of reported injuries, though their proportion decreased to 48% in 2024 from 59% in 2023.
- In 2024, roller coaster ride-related injuries increased to 44%, marking the highest share ever recorded.
- Children's ride-related injuries declined to 8% in 2024, following a gradual long-term decrease since 2021.
- The long-term trend indicates that family ride injuries remain predominant overall, while roller coaster-related injuries are on the rise, narrowing the gap between the two categories.

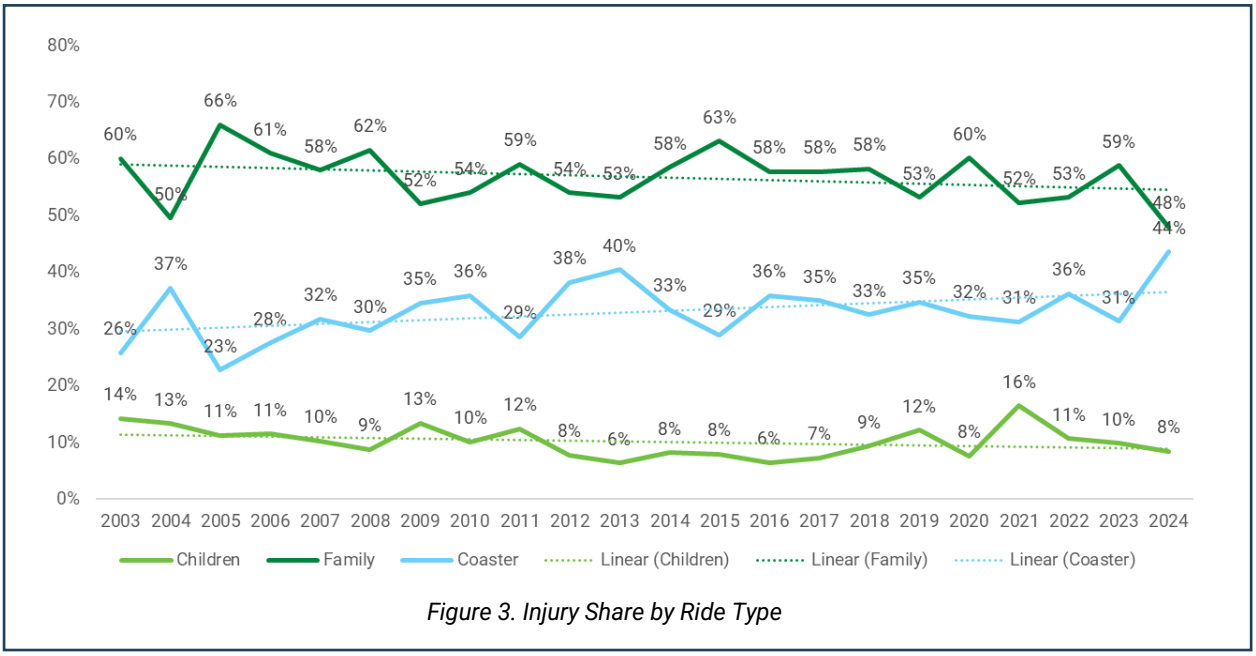

Figure 3. Injury Share by Ride Type

2.3 Incidence of Injuries

In addition to the absolute number of injuries and their distribution, it is helpful to consider the injury rate trends over time.

- In 2024, injuries per million attendees increased slightly to 2.86, up from 2.56 in 2023.
- Injuries per million rides also rose modestly to 0.78 in 2024 from 0.71 in 2023, above the 10-year average of 0.75.
- Despite this year's increases, the long-term trend continues to show that injuries per million attendees are gradually declining.
- The 2024 rate per million attendees remains well below the 1990's averages, reflecting sustained safety improvements over time.
- The long-term trend for injuries per million rides has remained relatively stable, with minor year-to-year fluctuations and no consistent upward pattern.

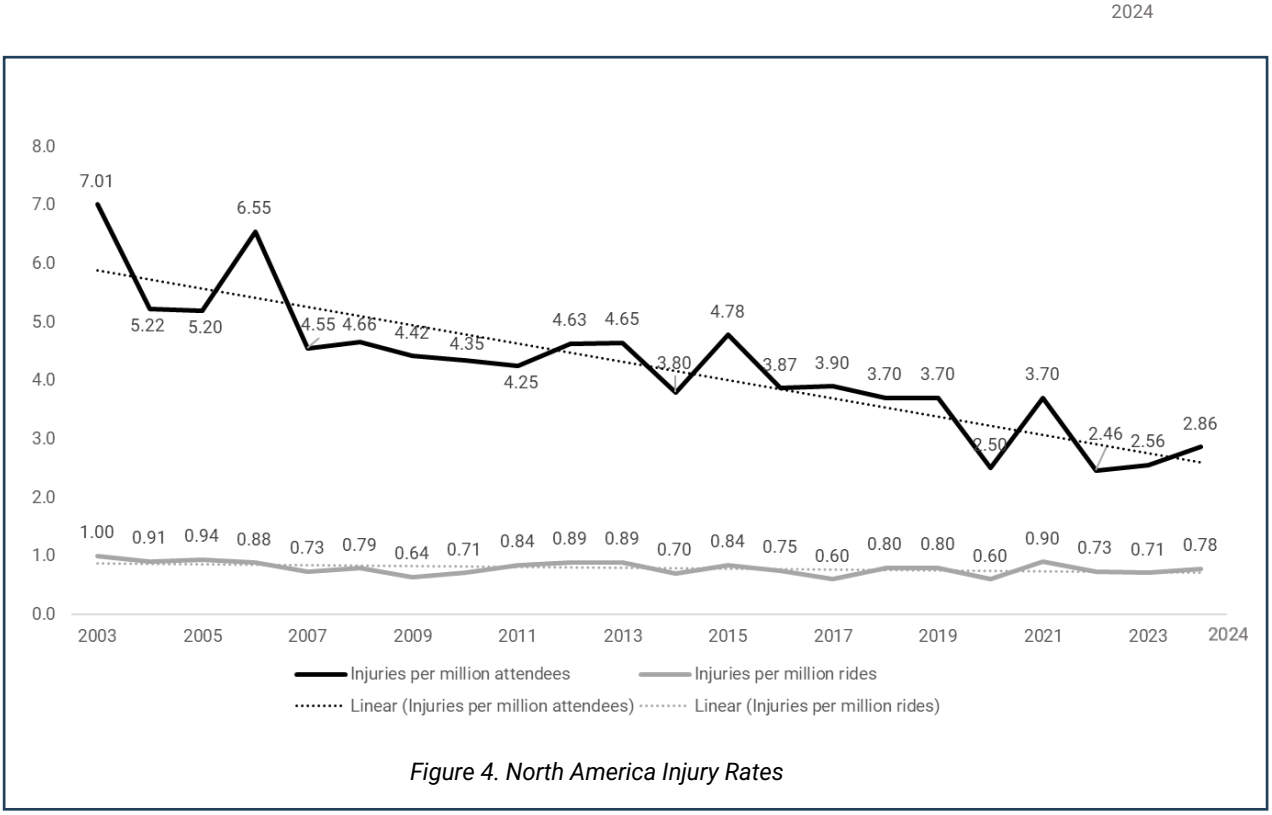

Figure 4. North America Injury Rates

Table 5. North America Injury Rates (2015-2024)

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Injuries per million attendees	4.78	3.87	3.90	3.70	3.70	2.50	3.70	2.46	2.56	2.86
Injuries per million rides taken	0.84	0.75	0.60	0.80	0.80	0.60	0.90	0.73	0.71	0.78

2.4 Injuries on Children's Rides

CHILDREN'S RIDE

An amusement ride designed primarily for use by children up to 12 years of age.

Trends in children's ride injury rates are illustrated in Figure 5, with historical data from previous years.

- Injury rates for children's rides show noticeable year-to-year variation, with several isolated increases followed by steady declines.
- After reaching a recent peak of 1.00 in 2020, rates have continued to decrease for four consecutive years, reaching 0.46 in 2024, the lowest level in nearly a decade.
- Despite short-term fluctuations, the long-term trend remains downward, indicating overall improvement in children's ride safety over time.

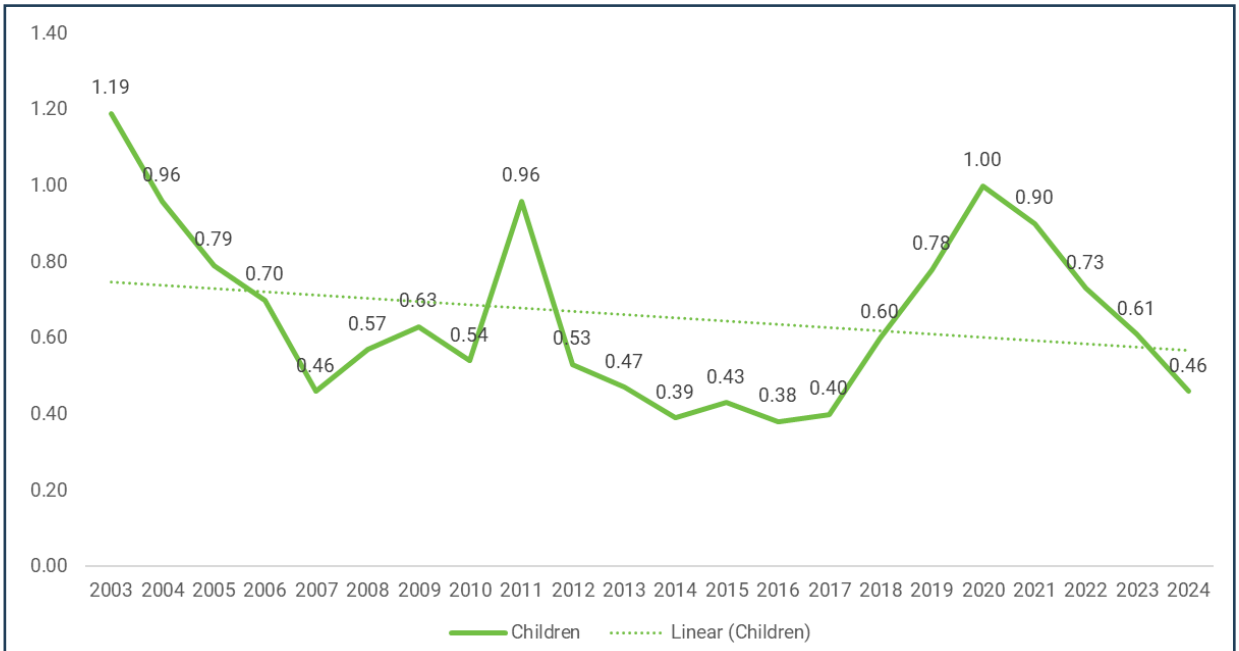

Figure 5. Injuries per Million Children's Rides: 10-Year Project Average

2.5 Injuries on Family/Adult Rides

FAMILY/ADULT RIDE

Any amusement ride that is not a 'Children's Ride' or 'Roller Coaster.'

Trends in family/adult ride injury rates are illustrated in Figure 14, with historical data from previous years.

- Injury rates for family/adult rides show year-to-year variability but have remained relatively stable over the last three years.
- The long-term trend continues downward, with 2024 (0.59) among the lowest rates observed across the project period.

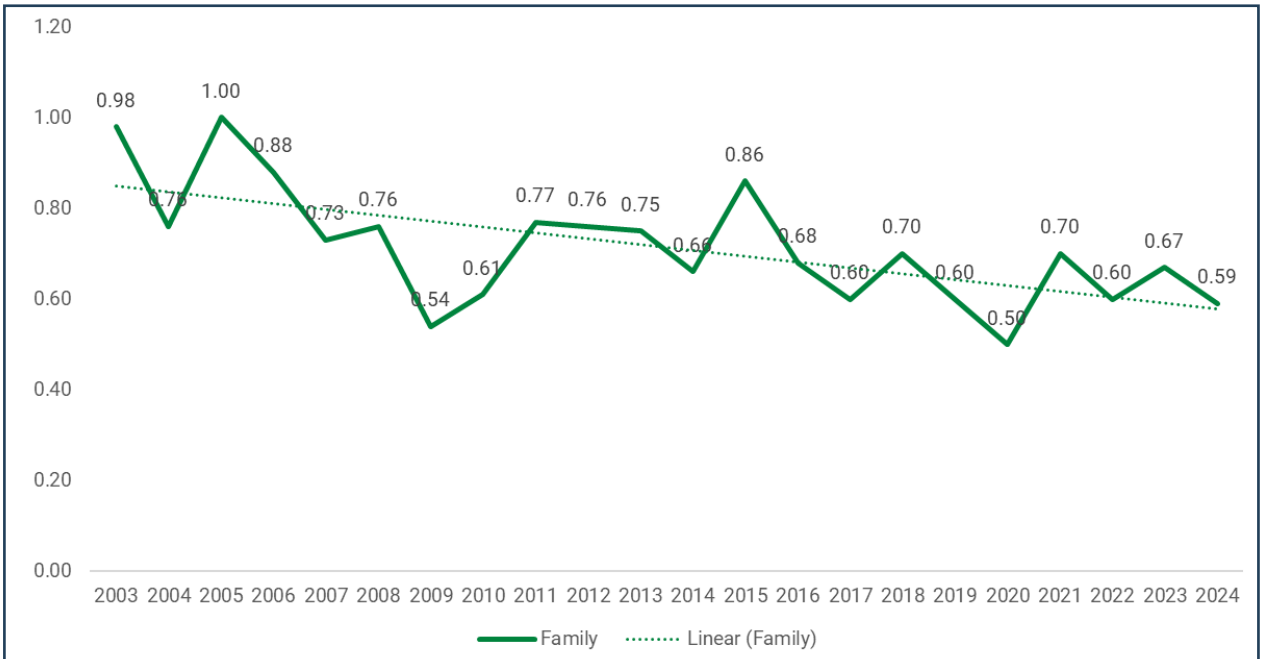

Figure6. Injuries per Million Adult's Rides: 10-Year Project Average

2.6 Injuries on Roller Coasters

ROLLER COASTER

An amusement ride whose motion is constrained by an elevated, fixed railway where the ride is based on gravity and momentum derived from an initial drop, acceleration, or launch.

Trends in roller coaster ride injury rates are illustrated in Figure 7, alongside comparisons with previous years.

- Injury rates for roller coasters show substantial year-to-year variability, with several sharp increases and declines throughout the project period.
- The overall trend remains slightly upward, with 2024 (1.27) marking an increase from 2023 (0.88) and among the higher rates observed in recent years.

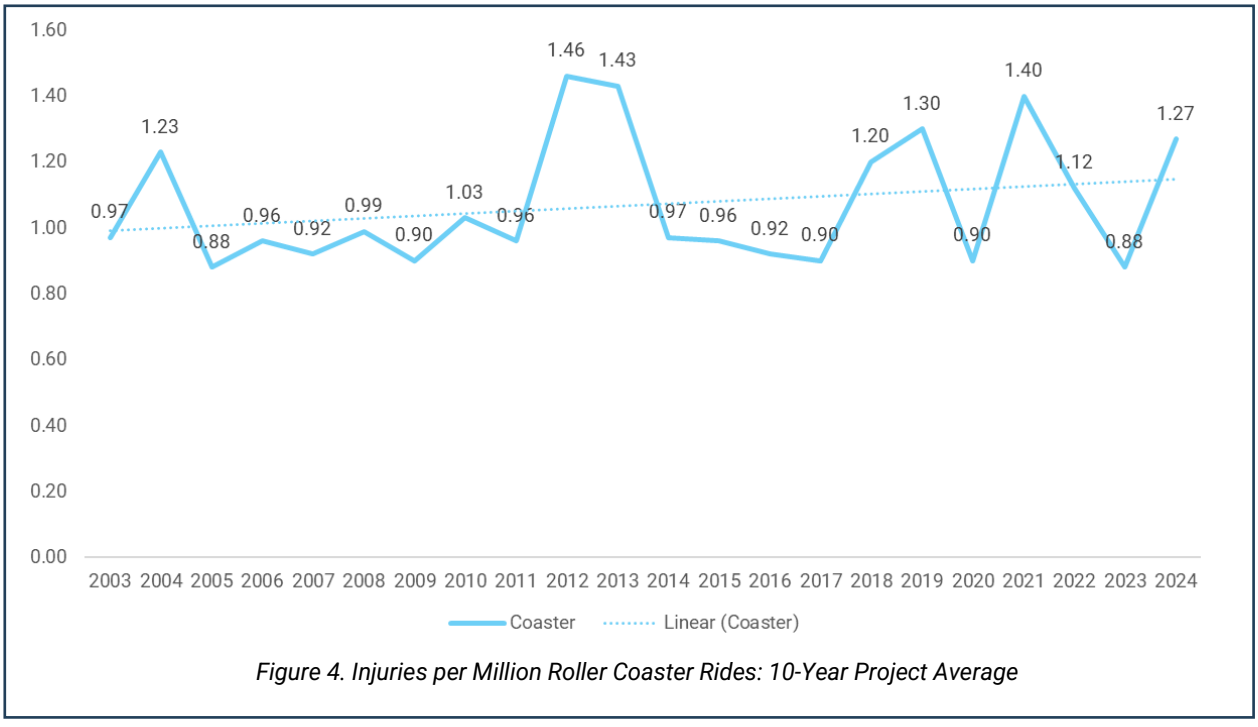

Figure 4. Injuries per Million Roller Coaster Rides: 10-Year Project Average

2.7 Perceived Cause of Injuries

CAUSE OF INJURY

Multiple factors typically play a role in contributing to a guest injury incident. These factors can be classified as technical, operational, or guest behavior, defined as:

TECHNICAL: A mechanical, structural, electrical, or software fault with the ride.

OPERATIONAL: A member of staff operates the equipment in a way that does not conform to standard safe operating procedures, or a member of staff conforms to standard procedures that are later found to be unsafe or inadequate.

GUEST RELATED: Includes injuries related to a guest's behavior that does not conform to safety rules or a known or unknown preexisting medical condition.

- **GUEST BEHAVIOR:** A guest behaves in a way that does not conform to the rules set for safe guest behavior.
- **GUEST MEDICAL CONDITION:** Contrary to posted direction or other safety communications, a guest with a known or unknown preexisting medical condition participates on a ride resulting in an injury associated with the medical condition.

The 2024 survey includes a set of items designed to assess causal factors associated with guest injuries. This optional set of items aims to gather information on the prevalence of technical, operational, and guest-related factors that may have contributed to the injury event. The collection of this information is intended to help identify industry best practices to mitigate these causal factors in the future.

Fifty-four respondents representing 160 facilities provided at least some feedback regarding the perceived causes of guest injuries occurring at their facilities over the past year.

Respondents who reported that a guest-related factor contributed to an injury in 2024 could further break down their response into two additional categories: guest behavior and guest medical condition.

Overwhelmingly, respondents reported that guest behavior contributed to 66% of the injuries over the past year. Only 9% of the injuries, on average, were attributed to operational factors and 15% to technical factors. See Figure 8 with current report data compared to last year's report.

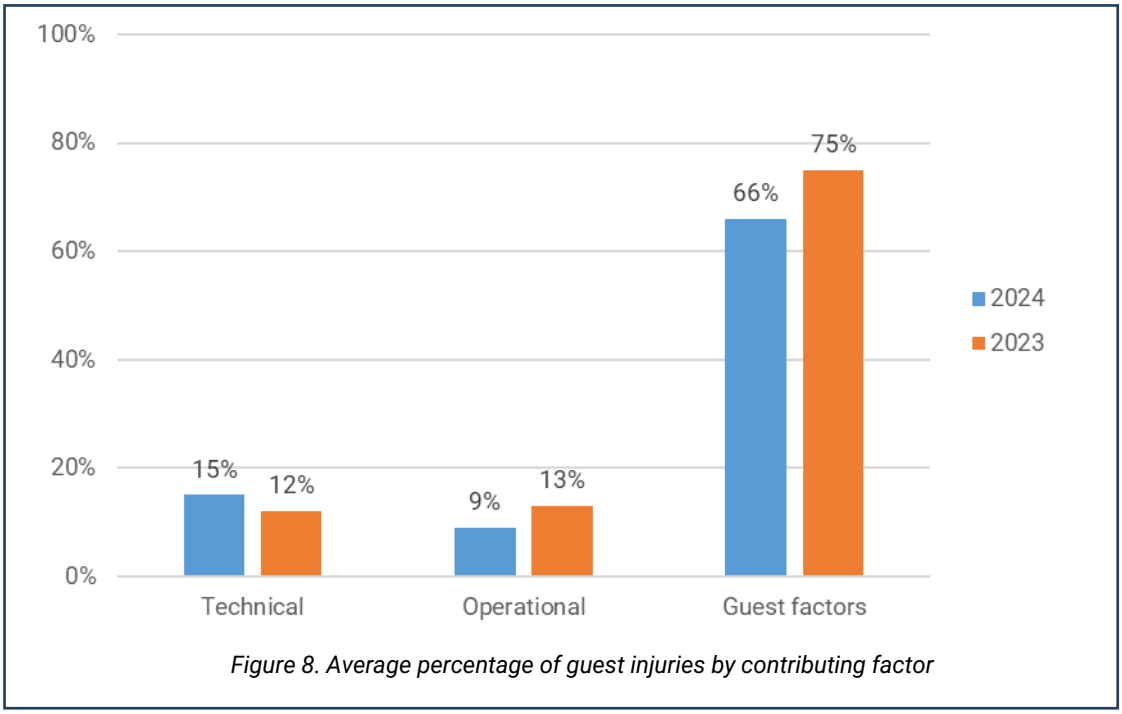

Figure 8. Average percentage of guest injuries by contributing factor

Most guest-related factors involved guest behaviors, see Figure 9. Of the injuries attributed to guest-related factors, 76% were related specifically to guest behaviors, while 31% were linked to guest medical conditions. The sum of guest behavior and guest medical conditions is greater than 100% because some respondents reported both causes.

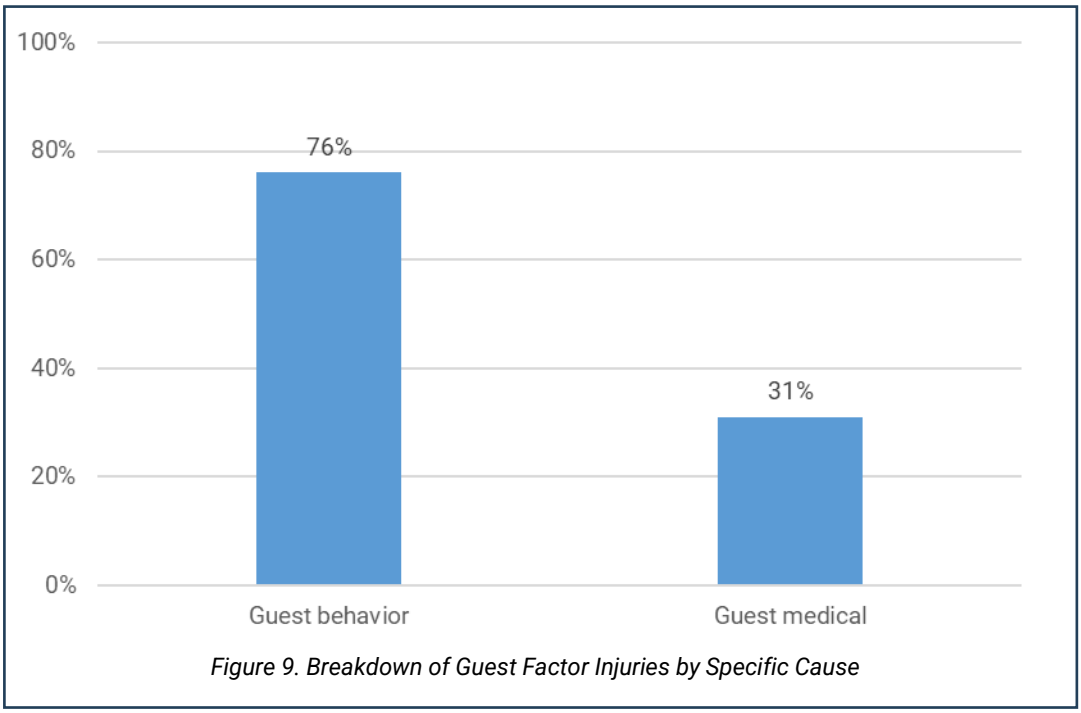

Figure 9. Breakdown of Guest Factor Injuries by Specific Cause

APPENDIX A: DEFINITIONS

This report is based on a survey of operators of permanent ride facilities:

PARK DEFINITIONS
PERMANENT RIDE FACILITIES A park operating at a permanent location with at least one fixed-site ride. • Not water parks. • Not traveling fairgrounds that set up their rides for a limited time at each unique location.
LARGE PARK A permanent ride facility with one million or higher annual attendance.
SMALL PARK A permanent ride facility with less than one million annual attendance.
FAMILY ENTERTAINMENT CENTER A small permanent ride facility marketed toward families with small children to teenagers, often entirely indoors.

The study covers three types of fixed-site rides:

RIDE DEFINITIONS
FIXED-SITE RIDES Not air-supported structures (inflatables, bouncy castles), concession go-karts, fun houses (walk through), playgrounds and slides, theatrical shows/attractions, mazes and mirror mazes, arcades and coin-operated machinery, ride queue lines, platforms, and exit ramps, midway and other park walkways.
CHILDREN'S RIDE An amusement ride designed primarily for use by children up to 12 years of age. While adults may also be able to ride, the seating will normally be tight for the 95th percentile adult male. Note: A ride should be classified as "children's ride" even if it fits other ride classifications. (Examples: small circular rides for children, miniature roller coaster, miniature swings, and children's carousels.)
ROLLER COASTER An amusement ride whose motion is constrained by an elevated, fixed railway where the ride is based on gravity and momentum derived from an initial drop, acceleration, or launch.
FAMILY/ADULT RIDE All amusement rides as defined by ASTM F747-97 that are not "Children's Rides" or "Roller Coasters" as defined by IAAPA ride classifications.

The study reports upon two types of injuries that are defined by the severity of the health consequences as set out in the questionnaire.

INJURY DEFINITIONS
SERIOUS INJURIES Injuries to a patron that occur on a ride and result in immediate admission and hospitalization in excess of 24 hours, for purposes other than medical observation, or result in fatality.
REPORTABLE/OTHER INJURIES All other incidents that occur on rides and result in an injury to a patron that requires medical treatment other than ordinary first aid.

In addition to these continuing descriptions, definitions of injury causes were developed to address a new question introduced in the 2022 survey:

INJURY CAUSES
TECHNICAL A mechanical, structural, electrical or software fault with the ride.
OPERATIONAL A member of staff operates the equipment in a way that does not conform to standard safe operating procedures, or a member of staff conforms to standard procedures that are later found to be unsafe or inadequate.
GUEST RELATED: Includes injuries related to a guest's behavior that does not conform to safety rules (Guest Behavior) or a known or unknown preexisting medical condition (Guest Medical Condition). • **GUEST BEHAVIOR:** A guest behaves in a way that does not conform to the rules set for safe guest behavior. • **GUEST MEDICAL CONDITION:** Contrary to posted direction or other safety communications, a guest with a known or unknown preexisting medical condition participates on a ride resulting in an injury associated with the medical condition.

APPENDIX D: NATIONAL SAFETY COUNCIL

The National Safety Council (NSC), America's leading nonprofit safety advocate for more than one hundred years, focuses on areas where it can make the greatest impact: workplace and roadway.

NSC starts in the workplace, giving companies resources workers can actually use around risks they are actually facing. NSC helps employers create a culture of safety that will make people safer -- from the workplace to anyplace. NSC embarked on its next chapter of safety leadership with the acquisition of ORC HSE Strategies in 2020. Employers benefit from both organizations' world-class thought leadership, dynamic on-the-ground workplace safety consulting services, and membership in NSC Networks.

Consulting

Each of NSC's Consulting Centers of Excellence were conceived, organized, and coordinated by subject matter experts, and the best consultants and service providers in the industry have been hand-picked to be on the ground with your team when needed. NSC Consulting is custom tailored to meet your individual needs.

Tools and Resources

NSC taps the expertise, talent, and passion of members and partners to develop ready-to-use tools to help companies tackle important issues affecting their workers. Every one of NSC's employees, member organizations, and strategic partners have one thing in common: a commitment to enable people to live their fullest lives.

Research

NSC uses research and data to drive better, smarter, more personal safety programs. From perception surveys and assessments to tracking the trends, NSC uses insight to create experiential education, training, and tools to mitigate risk. NSC also engages government nationally and locally to drive polices that create a culture of safety.

Safety is Personal

As a 501c3 nonprofit, chartered by Congress, with local Chapters, global networks and more than 50,000 members, NSC relies on philanthropic funds to advance the mission to keep people safe from the workplace to anyplace.