

Saferparks Accident Data

This document describes the accident and injury data collected by Saferparks and posted online for public use.

Disclaimer: The data has been provided by Saferparks as a public service to aid safety efforts. It does not represent a complete record of ride-related accidents and cannot ethically be used to compare or contrast the safety of different rides, parks, carnivals, or states.

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Limitations

Users Should Remain Aware of the Limitations Inherent in this Data

The Saferparks Database is a collection of safety-related information from various sources and perspectives compiled into a centralized database. The aggregate data from the Saferparks Database provides insight into the causes and patterns of ride-related injury, but it does not represent a complete or consistent record of ride-related accidents and cannot be ethically used to compare or contrast the safety of different industry sectors, rides/devices, parks, carnivals, or states.



Saferparks accident data varies widely in content and consistency

Only half of U.S. states have provided accident data in response to Saferparks' FOIA requests and the quantity and quality of data records varies widely across jurisdictions. The types of devices covered under reporting laws and the types of incidents required to be publicly reported change from state to state, and sometimes year to year within the same state when laws, rules, or interpretations change.

The number of accident reports in a category depend on many variables unrelated to rider safety

These include: popularity of the ride type, regulatory inclusions/exclusions, local government record retention and public disclosure policies, and individual corporate record keeping policies.

States with stronger government oversight tend to log more accidents

States that carefully monitor a broad range of safety incidents, have efficient data management systems, and provide a transparency to the public will, by definition, produce a higher number of public accident reports. This is, paradoxically, an indicator of more attention to safety, not less.

- For example, states like California, Pennsylvania, and New Jersey have a lot of amusement parks, provide full records on request, and have the most inclusive public accident reporting requirements in the nation. This produces an effective government accident prevention program and, as by-product, a high number of public accident records. The vast majority of those records describe minor incidents. Cumulatively, they can be used to spot and correct conditions that, if ignored, might lead to serious problems down the road.
- By contrast, parks in unregulated states have completely clean public records, but there's no reliable way for consumers to know how safe riders really are. Privatizing critical safety information also eliminates the opportunity to use lessons learned for the improvement of safety across all all rides in all parks in all states.

Given the grossly uneven nature of public accountability for this industry in the U.S., a count of reported accidents cannot and should not be correlated to the level of risk at a particular park or in a particular state.

The Saferparks' accident data set may not reliably predict nation-wide or industry-wide patterns

The relative frequencies of certain types of accidents on certain types of equipment may not accurately reflect the aggregate safety records of all amusement devices in the United States.

For example:

- State laws require that go-kart accidents be reported in Florida, but not in California.
- Thrill ride accidents at major theme parks must be reported in California, but not in Florida.
- Therefore, records from the Florida Dept. of Agriculture will tend to show a higher percentage of go-kart accidents and a lower percentage of roller coaster accidents than is accurate for that state.
- California's records are skewed in the opposite direction.

Frequency doesn't necessarily correlate to importance

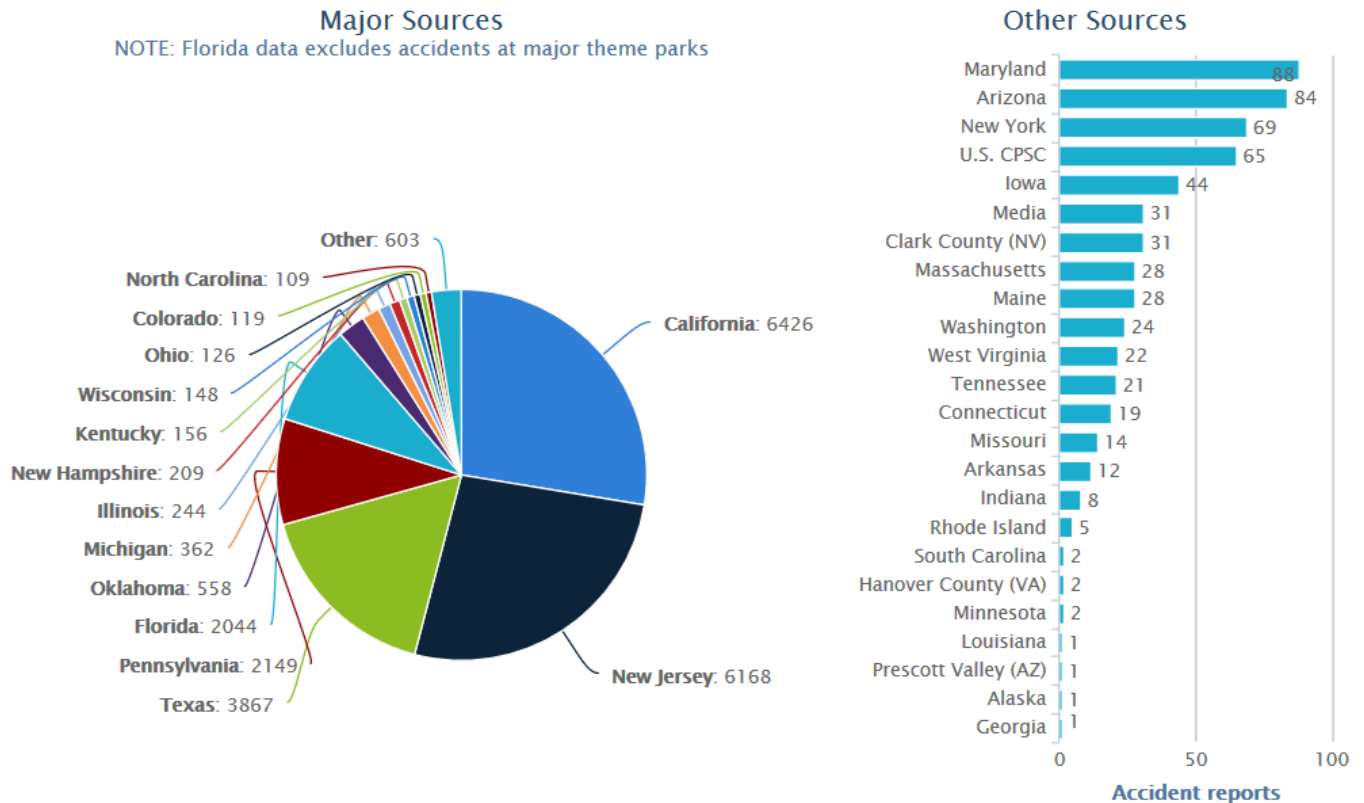
The tables and graphs provided tend to highlight safety issues that occur most frequently, but there are failure categories that deserve more urgent attention in terms of prevention.

For example:

- Equipment failure and serious passenger containment failure (i.e., ejection/falls or hands/feet outside during ride cycle) occurs far less frequently than whiplash or slide-and-bang injuries, but the potential consequences of structural collapse or a child falling out of a moving amusement ride can be catastrophic.

Industry-Regulatory Reports

Reporting Agencies

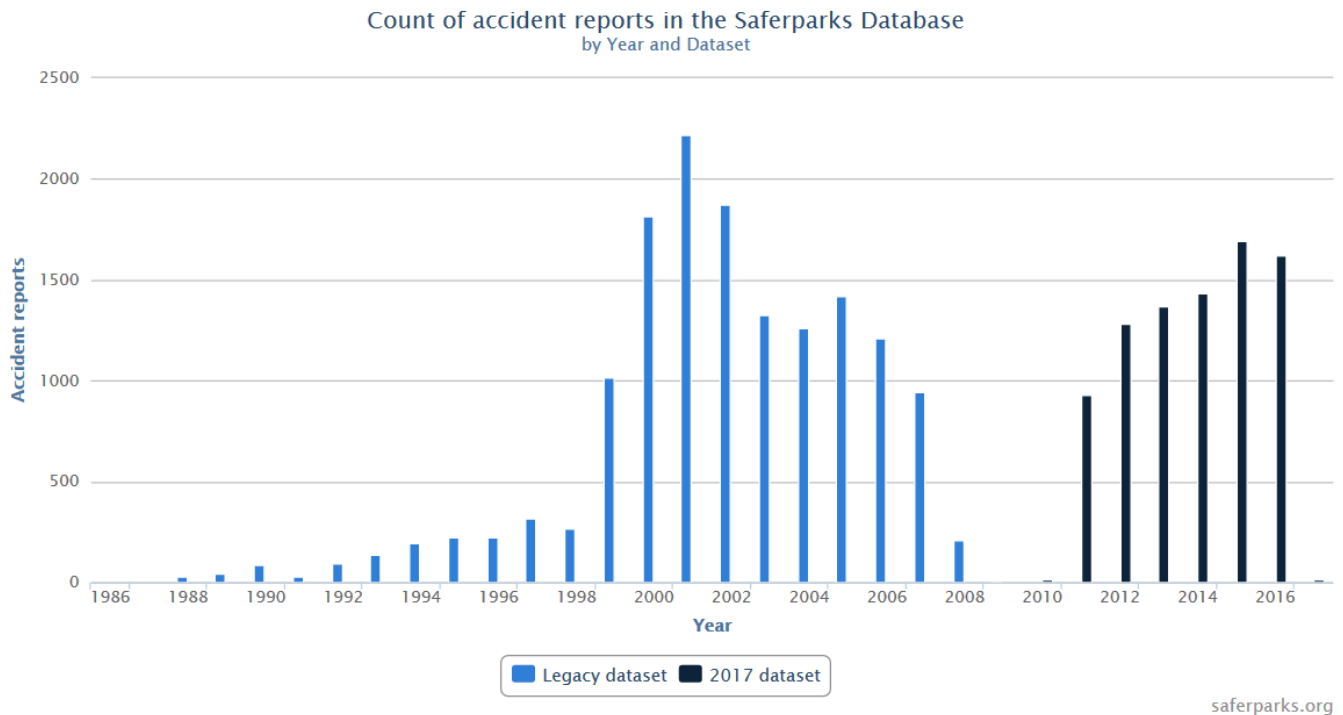


The 2017 dataset covers accidents that occurred primarily in 2011-2016, with a few outliers in 2010 and 2017. In a few cases, media reports have been included because they showed up in a web search while researching government records. The Legacy dataset includes reports of accidents that occurred prior to 2010.

- Years covered, equipment types included, reporting criteria, and level of detail provided vary widely by jurisdiction, type of device, corporate policies, and other factors.
- Not all areas of the country have public reporting laws.
- Some jurisdictions exempt certain business sectors from public accident reporting requirements.
- Not all jurisdictions that collect safety data on amusement rides provide it to Saferparks.
- States like California and Pennsylvania provide more reports because they have: (1) strong consumer laws that require public reporting of all medically-treated injuries; (2) a lot of amusement parks and carnivals; and (3) good government practices that make public safety records available on request.

In aggregate, the regulatory records provide some insight into the ways in which patrons are hurt using amusement rides and attractions, but the data set cannot be used to estimate injury rates or compare states, parks, rides, or years.

Reports by Year



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Accident Data Coding

Saferparks adds additional coding to accident records

Some attributes, such as device type and accident category, are added to allow for logical categorization. Other attributes, such as tradename/generic and venue type, are added to mask specific ride identities in the data obtained from regulatory agencies. The intent was to extract the maximum amount of information about potential hazard patterns while reducing the potential for negative backlash against those parks and carnivals that provide the bulk of the data due to stricter local reporting laws.

Note: Coding is sometimes subjective and some degree of error is likely. Limitations and inconsistencies in the input data complicate this task. Not all records provide sufficient information to determine values for all Saferparks attributes.

Describing the Amusement Equipment

- **Device Type** identifies the type of ride or device involved in the report. Each Device Type includes two additional attributes used for grouping:
 - **Industry Sector** is used to group devices according to the general category within the amusement business (e.g., 'amusement ride', 'water park', 'recreation')
 - **Device Category** is used to group devices in Industry Sectors that cover a wide range. For example, amusement rides use this to group devices into coasters, spinning rides, etc.
- **Tradename or Generic** identifies the particular make/model, where known, or indicates the generic type of ride or device (e.g., kiddie plane, giant gondola wheel).

Describing the Owner/Operator

- **Venue Type** indicates the type of business (e.g., amusement park, family entertainment center, portable operator, zoo/museum).

Describing the Incident

- **Accident Category** is drawn from the narrative portion of the report, where enough detail is provided to indicate what happened to cause the injury or accident. Some of the categories are quite broad (e.g., body pain from normal motion). Others are quite narrow (e.g., electrical shock). In many cases, the accident narrative could fit into multiple categories, yet one is chosen. Each Accident Category includes an additional attribute:
- **Part of Cycle** helps to separate accidents that happen during the active part of the ride cycle from those that happen during load/unload or illnesses that may have delayed onset. A few accident categories, such as entrapment, can occur during either load/unload or the active part of the cycle and are tagged as "either".

Device types

This page lists the possible values for Device Type as defined by Saferparks and applied to the accident report records. Click on the device type name for more information.

| Industry sector: amusement ride | | |
|---------------------------------|-------------------------|---|
| Device category | Device type | Description |
| coaster | Coaster - family/kiddie | Coasters intended for use by young children. In general, small children may ride without adult supervision on kiddie coasters, but should ride with a responsible adult on family coasters. See posted rules and restrictions on each ride. |
| coaster | Coaster - steel | Steel coaster larger than kiddie coaster |
| coaster | Coaster - wooden | A roller coaster with laminated steel running rails overlaid upon a wooden track. |
| coaster | Coaster - unidentified | Ride identified only as a roller coaster without name or description |
| spinning | Carousel | A carousel or merry-go-round is an amusement ride consisting of a rotating platform with seats for passengers. The seats are traditionally in the form of wooden horses or animals, which are often moved mechanically up and down to simulate galloping, to the accompaniment of looped circus music. |
| spinning | Claw-type | A group of rides that look something like a giant claw with seats. The claw is attached to an arm that elevates and turns the claw. The rides are highly dynamic and intended for adults and older children. |
| spinning | Enterprise | Up to two people sit in one of 20 gondolas arranged in a circle, one in front of the other. The ride moves counter clockwise, dispelling a slight amount of centrifugal force. A hydraulically-powered arm underneath the ride then raises and tilts the frame so that the ride is rotating at 87 degrees from the horizontal, transforming the ride from a horizontal experience to a vertical one. |
| spinning | Ferris/gondola wheel | A Ferris wheel (also known as an observation wheel or big wheel) consists of an upright wheel with passenger gondolas attached to the rim. |
| spinning | Flipping platform | Top Spin and similar rides consist of a passenger platform suspended between two counterweighted arms. The arms are turned by motors, while the platform generally only has brakes that are engaged and disengaged at various points of the ride cycle. A typical top spin program runs the main arm motors while engaging and disengaging the platform brakes so that it will rotate in exciting ways. |
| spinning | Hanglider ride | Circular amusement ride that simulates a hang-gliding experience. Riders lie flat on their stomachs in harnesses suspended from a circular boom. The ride starts off by the boom lifting a few feet of the ground. The boom then will start to spin and lift the boom holding gondolas, sending passengers on a swaying fly through the air. |

| Industry sector: amusement ride | | |
|---------------------------------|----------------------------|--|
| Device category | Device type | Description |
| spinning | Himalaya-type | The ride features a number of 3-passenger cars connected in a circle. These cars rotate on a track with alternating sloped and flat sections. Rotation is possible in both a backwards and forwards direction, as the ride is manually operated. The riders in each car are restrained by a single solid lap bar that is locked across the body of the car; making the ride unsuitable for young children or people of short stature. The bar must be manually locked or unlocked, and only locks in one position. Lights and music contribute heavily to the ride experience. |
| spinning | Looper | Tubs at the end of revolving arms can be spun in circles by patrons. |
| spinning | Orbiter/octopus-type | A circular ride where arms attached to a central axis spin and move up and down. In some designs, the cars at the end of each arm also rotate about a secondary axis. |
| spinning | Paratrooper-type | A circular ride where cars are suspended below a wheel which rotates at an oblique angle. The cars are free to rock sideways and swing out under centrifugal force as the wheel rotates. |
| spinning | Plane/jet/helicopter | Mini jet type ride, intended primarily for young children, with cars on arms that go up and down while the ride revolves in a circle. |
| spinning | Robotic ride | Human-carrying industrial robots spin riders in various ways. |
| spinning | Roll-o-plane/booster/speed | These rides consist of a long arm connected at its midpoint to a tower support. cars are mounted at the end of each arm. The arm rotates about the central axis, and the cars at the ends of the arms rotate about their axis. |
| spinning | Rotor/gravitron | These are circular rides with a single large carrier that rotates at high RPMs. Riders stand facing the center and are pressed against the wall as the rate of rotation increases. On some versions, the floor is retracted once the ride has attained full speed, leaving the riders stuck to the wall of the drum. The Gravitron is completely enclosed version on the same theme. |
| spinning | Roundabout | Flat circular kiddie ride where cars spin relatively slowly around a center hub. |
| spinning | Sizzler/scrambler | Riders are seated in small carriages clustered together and connected by beams at the top to a central point. The clustered vehicles are spun in one direction, while the ride as a whole spins in the opposite direction. Riders experience the illusion that they will crash into other suspended, spinning cars. |
| spinning | Spinning cups/tubs | Typically, each set of four teacup vehicles has a circular floor or a motor capable of turning 360 degrees. The circular floor or motor sits within a larger, turntable-like floor. When in operation, the ride spins each four-cup set of vehicles while the turntable spins the entire ride base. Additionally, riders generally are able to spin each cup individually with a centrally located wheel. Some kiddie versions have semi-enclosed cars. |
| spinning | Spinning ride - misc. | Rides that have a circular motion and either do not fall into one of the other categories, or are not described with enough detail to determine the type of spinning ride. |

| Industry sector: amusement ride | | |
|---------------------------------|------------------------|---|
| Device category | Device type | Description |
| spinning | Spinning tower ride | A tall, circular ride with arms extending vertically from a central tower. The arms rotate about the central tower while moving upward, then down. One or more cars are located on the end of each arm. Either the set of cars spin in the vertical plane or the single car can be spun by the rider. |
| spinning | Spinning track ride | Riders sit on a circular platform with outward-facing seats and rock back and forth while spinning. |
| spinning | Swing ride | Patrons sit in swings that are spun in a circle, bellling out as the speed increases. These rides range from kiddie/family versions to taller/larger/faster models. |
| spinning | Tilt-a-whirl/waltzer | A platform-type ride, consisting of freely-spinning cars that hold four riders each, which are attached at fixed pivot points on a rotating platform. As the platform revolves, parts of the platform are raised and lowered, and the resulting centrifugal and gravitational forces on the cars cause them to randomly spin in different directions and at variable speeds. The weight of passengers in these cars may intensify or dampen the spinning motion of the cars, adding to the random nature of the motion. |
| spinning | Tornado-type | Riders sit in cars that hang from a circular support. The center base spins all the cars and, additionally, each car can be spun by the riders. In some versions, the ride tilts at a 20 degree angle, moving the cars up and down. |
| spinning | Trabant | Flat rides that spin horizontally, and then start fluctuating in a wavelike manner. During the duration of the ride, the ride will change speeds. When the ride is fluctuating in its wavelike manner, the person will feel like the ride is not going that fast. However, when the ride is almost over, the person will feel forces on their body, and get pushed toward the outside of the cars. This happens when the ride starts lowering to the ground in a non-wavelike manner. |
| spinning | Wheel w/spinning cars | Rides that consist of a large circular or oblong wheel with carriers that travel around the perimeter. Each carrier can spin about its own axis as well (either pitch or yaw). Some of these wheels operate in a fixed vertical plane. Some are positioned horizontally or vertically during load/unload and then tilted at an angle during the ride cycle. |
| spinning | Whip | A flat ride with cars that travel on an oblong track. When the car reaches one of the turn-table platforms at the endpoints, the speed picks up forcing riders to one side as the car whips around the corner. The whip is commonly found at older, historic parks. A children's version was also built, dubbed the Roto-whip. |
| pendulum | Flying carpet ride | Amusement rides that have two small arms attached to a gondola where riders sit in rows. The ride will swing in constant motion to the right, and then later in the duration of the ride it will swing to the left. The gondola remains horizontal during the course of the ride. |
| pendulum | Giant swing | Riders, singly or in groups, are harnessed in, then sent swinging through an arc until brought to a rest. Towers can range from 100-300 feet in height. |
| pendulum | Kamikaze/inverter-type | Pendulum ride where riders sit in rows while the gondola swings back and forth like a pendulum, eventually completing the full circle. In some designs, the gondola also flips upside down. |

| Industry sector: amusement ride | | |
|---------------------------------|-------------------|--|
| Device category | Device type | Description |
| pendulum | Pirate ship | Pendulum ride with boat-style gondola where riders sit in rows. The gondola swings back and forth like a pendulum, but does not invert. |
| pendulum | Reverse bungee | Amusement device that uses bungee cables or other technology to catapult patrons into the air and control their flight envelope. |
| pendulum | Spinning pendulum | A pendulum is suspended between two support frames. Attached to the base of this pendulum in a circular gondola where riders are seated. When the ride cycle starts, the gondola begins to rotate. In addition, the pendulum arm begins to swing through an arc. |
| vertical drop | Bungee jump | Attraction that uses bungee cords or similar equipment to arrest vertical motion. |
| vertical drop | Drop tower | Amusement rides based around a central structure or tower. With most drop towers, the gondola is lifted to the top of a large vertical structure, before being released and falling towards the ground. Brakes activate to slow the ride prior to reaching the ground. Some designs expand on this concept, with gondolas that rotate or 'bounce' riders several times before coming to a rest. |
| cars & track rides | Bumper car | This participatory ride consists of many small electric cars which draw power from the floor and/or ceiling, and which are turned off by the operator at the end of a session. The metal floor is usually set up as a rectangular or oval track. A rubber bumper surrounds each vehicle and drivers ram each other as they travel. The controls are usually an accelerator and a steering wheel. |
| cars & track rides | Car ride | Slow car rides where car or trucks travel on a track, generally with patron controlling the accelerator. |
| cars & track rides | Track ride | Ride travels on track; can be slow and meandering or fast, including 360-degree vertical loops. |
| cars & track rides | Train/tram | Trains and trams ranging from tiny kiddie trains to full-size monorails and railroad models used in theme parks. |
| water ride | Boat ride | Amusement rides that float on water and are not included in more specific water ride categories. They can range from tiny kiddie boat rides to themed dark boat rides to large sailing ships at theme parks. |
| water ride | Bumper boat | Inner tube-based watercraft that can be steered by the rider. Some are driven by electric motors, some by gasoline engines, and some require the rider to propel the craft by pedaling. Most are equipped with water guns for duels with other riders. |
| water ride | Flume ride | These rides consist of a water flume and artificial hollow logs or boats. Passengers sit in the watercraft, which are propelled along the flume by the flow of water. The ride usually culminates with a rapid descent and splashdown into a body of water, and often more than one (normally the largest drop being just before the end). |

| Industry sector: amusement ride | | |
|---------------------------------|------------------------|---|
| Device category | Device type | Description |
| water ride | Rafting ride | River rapids rides feature circular rafts comprised of two main components: the fiberglass body in which passengers are seated and the rubber ring upon which the body is secured. The rubber ring provides buoyancy as well as shock absorption for when rafts collide with an obstacle during the course of the ride. After leaving the station, the raft will enter relatively calm waters. After travelling a safe distance, the raft will enter more turbulent waters. |
| water ride | Shoot the chute | Similar to a log flume, but with steeper drop and larger boats. The chutes ride consists of a boat that slides down a long chute and splashes into a lake or large pool. Observers can get wet as the boat splashdown sends up a water plume. |
| other attraction | Non-motorized spinners | An amusement device that is designed to be spun without a motor, either by the operator's effort or the rider's effort. |
| other attraction | Simulator | Amusement devices that use computer-controlled movement and visual/auditory effects to simulate experiences such as space or airplane flight. |
| other attraction | Sky ride/ski lift | A type of aerial lift which consists of a continuously circulating steel cable loop strung between two end terminals and usually over intermediate towers, carrying a series of chairs. |
| other attraction | Walk-through | Carnival funhouses, walk-through haunted houses, and mazes. |
| Industry sector: water park | | |
| Device category | Device type | Description |
| water slide | Body slide | Riders slide directly on the surface of the waterslide without tubes or mats. |
| water slide | Bowl slide | Riders descend a steep drop into a round bowl, then circle the outer area of the bowl before exiting through the middle. |
| water slide | Family raft slide | 4-6 riders board a circular raft and travel down a long, twisted channel. |
| water slide | Funnel | Riders sit in a 2-6 seater round tube, then drop from inside a tunnel into a big sideways funnel and into a splash pool. |
| water slide | Gang slide | Short wide slide that can be used by multiple children at the same time. |
| water slide | Half pipe | Features a slide in which riders oscillate back and forth. |
| water slide | Mat slide | Riders slide on mats head-first down lanes in a slide with several dips. |
| water slide | Speed slide | Body slide where riders are sent down steep, free-fall plunges to the ground. |
| water slide | Tube slide | Riders sit on inner tubes as they descend the slide. |
| water slide | Water coaster | Water slide that mimics a roller coaster by providing ascents as well as descents. |

| Industry sector: water park | | |
|-----------------------------|----------------------------|---|
| Device category | Device type | Description |
| water slide | Water slide - undefined | Water slides without sufficient information to categorize further. |
| aquatic play | Aquatic play area | Interactive water play attractions not covered under water slides and wave pools, including small kiddie pools and cliff jumps. |
| float attraction | Lazy river | Slow meandering water attraction generally used with inner tubes. |
| water inflatable | Water inflatable | Captured air inflatables intended for use in bodies of water |
| wave device | Continuous wave | Machine generates a continuous wave and patrons use body boards to ride it. |
| wave device | Wave pool | Any kind of water attraction with a wave-generating machine. |
| Industry sector: recreation | | |
| Device category | Device type | Description |
| go-kart | Go-kart | Simple, small four-wheeled vehicles that are made available for the general public to drive and/or race on tracks. Go-karts may be gas-powered or electric. |
| inflatable | Inflatable bouncer | Amusement device designed to allow children to jump and bounce on air-inflated surfaces. |
| inflatable | Inflatable game | Any air-supported structure used as an amusement device that doesn't fit into one of the more specific categories. |
| inflatable | Inflatable obstacle course | Air-supported structure designed to be used as an obstacle course. |
| inflatable | Inflatable slide | Air-supported structure designed to be used as a giant slide. |
| inflatable | Air bag | Stunt bag-style inflatable impact attenuation system |
| trampoline | Bungee trampoline | Amusement device that incorporates bungee cords to assist and contain patron while jumping on a trampoline |
| trampoline | Trampoline court | Trampoline incorporated into an amusement venue |
| play equipment | gymnastics equipment | Gymnastics equipment used in amusement facility |
| play equipment | Play structure | Net climbs, soft play, and other play areas intended primarily for young children. |
| play equipment | Slide | Tall dry slide used in carnivals, etc. Patrons generally slide on a burlap sack or other material. |

| Industry sector: recreation | | |
|-----------------------------|-----------------------|--|
| Device category | Device type | Description |
| alpine activity | Alpine gravity course | Amusement attraction typically installed at an alpine resort |
| alpine activity | Snow tubing/toboggan | Winter recreation courses devoted solely to tubing or toboggans. Such courses often have slopes or barriers on the periphery to guide the tubes along a safe course. Motorized pulley towlines are often used to tow riders and their equipment back to the top of the course after riding to the bottom. |
| challenge activity | Adventure course | Zipline, Tough Mudder, Via Ferrata, etc. |
| challenge activity | Climbing wall | Solid or inflatable rock climbing walls. |
| challenge activity | Freefall | Patron is lifted up to high platform in a cage, then the patron freefalls into a net or airbag |
| challenge activity | Indoor skydiving | Indoor skydiving interactive amusement attraction. |
| challenge activity | Water ski tow | Concession water ski park with mechanized tows. |
| challenge activity | Human-powered ball | Large inflated ball where patron gets inside and moves/rolls ball |
| challenge activity | Mechanical bull-type | A machine-operated ride that replicates the sensation of riding a bull or a surfboard, where the patron is challenged to stay on the mechanized part of the device as long as possible before being thrown off. The mechanized device is surrounded by padding or inflatable surface in order to reduce injury to those thrown off it. |
| agricultural attraction | Hayride | Wagon pulled through a course with patrons riding inside. |
| laser tag | Laser tag | Game played with guns which fire infrared beams. Infrared-sensitive targets are commonly worn by each player and are sometimes integrated within the arena in which the game is played. |
| Industry sector: unknown | | |
| Device category | Device type | Description |
| unknown | Other | Ride was identified, but didn't fit into any category. |
| unknown | Unknown | Insufficient information provided; could not determine ride type. |

Accident categories

This page lists the Accident Categories defined by Saferparks and applied to the accident report records. Click on the accident category to learn more.

| Part of ride cycle: load/unload/queue | |
|--|--|
| Category | Description |
| Injured during evacuation | Person injured during an evacuation of the ride |
| Injured in queue or exit | Accidents that happened while waiting to ride or exiting the ride area. |
| Load/Unload: hit or pinched by restraint | Patron was hit by or pinched by restraint during load or unload. |
| Load/Unload: injured when vehicle moved | Movement of vehicle during load/unload resulted in patron injury. This may be due to operator dispatch error, patron error, or a consequence of the ride's design. |
| Load/Unload: scrape or stumble | Patron stumbled, tripped or scraped themselves getting into or out of the ride. |
| Part of ride cycle: during ride | |
| Category | Description |
| Abrupt stop/drop/lurch | Injuries associated with an abrupt stop, drop, or lurch not described in the report as an e-stop, power outage or equipment malfunction. |
| Awkward landing | Awkward landing resulting in ankle roll, twisted knee, etc. |
| Cart flipped | Go-kart flipped. |
| Choking, water inhalation, suffocation | Drowning, near-drowning, choking, smothering, etc. |
| Collision: go-kart crashed (no further description) | Accident described as crash without specifying whether the vehicle collided with another kart, hit a stationary object, or flipped. |
| Collision: go-kart or bumper car hit stationary object | Go-kart, bumper car, or other patron-controlled vehicle hit a wall, gate, or other part of the track. |
| Collision: operator-controlled vehicles | Accidents caused by collisions involving ride vehicles that are not patron-directed (i.e., this includes coasters, log flumes, etc., but not go karts, bumper cars, etc.). |
| Collision: patron-controlled vehicles | Accidents caused by patron-directed vehicles (go karts, bumper cars) colliding with other vehicles. |
| Collision: patrons collided (participatory) | Accidents caused when patrons collide with each other on an interactive attraction (slide, play area, etc.). |

| Part of ride cycle: during ride | |
|--|---|
| Category | Description |
| Collision: patrons collided within vehicle | Patrons in same vehicle accidentally knocked into each other during ride. |
| Derailment | Roller coaster, train, or other ride derailed from track. |
| Device tipped over, blew away, or collapsed | Amusement device (inflatable or portable ride) blew away, tipped over, etc. |
| Double bounce | Trampoline court injury caused by two or more patrons jumping next to each other |
| Fall: ejection/fall from ride | Accidents caused by patron being forcefully ejected or falling out of the vehicle during the ride cycle. This does not include falls during load/unload. |
| Fall: in climb or play area | Accidents involving a fall in an interactive play area (slide, climbing structure, wet play area, etc.). |
| Fall: patron fell from device (participatory) | Fell out of the amusement device (e.g., inflatable) |
| Fall: patron fell from seat, but not carrier | Patron fell out of the seat, but did not fall completely out of the carrier, either because the ride has enclosed carriers or the patron fell onto the floor of the carrier and the ride's motion did not further dislodge him/her. |
| Fall: patron fell off inner tube, mat or board | Water attraction injury caused by patron falling out of the inner tube, raft, or mat used to transport the rider down the slide. |
| Flip gone wrong | Patron was injured while attempted a flip (allowed in trampoline courts) |
| Hyperextension or dislocation | Patron's joint hyperextended or dislocated during ride cycle. |
| Impact with pad, divider or edge | Patron hit or tripped on parts of the equipment surrounding trampoline or pit |
| Impact: extremity hit something outside carrier | Injuries resulting from patron's hands, feet, arms, legs, or head impacting something or becoming pinched/entrapped outside the carrier during the active part of the ride cycle. This includes entrapment while the vehicle is docking, but does not include entrapment while patron is entering or exiting the vehicle (i.e., misstepping into the gap between the vehicle and platform). |
| Impact: hit something in participatory attraction | Injuries resulting from patron's body impacting or scraping against part of a participatory amusement device, such as a slide or inflatable, due to the normal motion of the amusement experience. This category does not include patrons colliding with other patrons on these devices. |
| Impact: hit something within ride vehicle | Patron was injured during the active portion of the ride cycle due to impact with restraint, seatback, or some other part of the vehicle containment system. |
| Impact: hit wall or barrier at end of slide runout | Patron fell from a waterslide or other patron participation attraction where ride dynamics may cause riders to overshoot the catch pool or landing area. |

| Part of ride cycle: during ride | |
|---|--|
| Category | Description |
| Impact: vaginal or rectal injury | Patron complained of vaginal or rectal injury (e.g., after sliding down waterslide). |
| Injury to leg, nonspecific cause | Injury commonly associated with jumping (knee buckled, ankle rolled) |
| Restraint too tight | Patron suffered pain or injury due to pressure of restraint during ride. |
| Seatbelt abrasion or bruising | Seatbelt caused abrasion, bruising, or laceration to patron during the ride. |
| Unscheduled stop | Atypical ride stop due to e-stop, equipment failure, power failure, or other unusual event. May or may not result in evacuation. |
| Part of ride cycle: either | |
| Category | Description |
| Burn (includes friction burn) | Patron injuries caused by thermal burn, friction burn (most commonly from slides), chemical burn or other. |
| Electrical shock | Victim suffered electrical shock. |
| Employee injured | Park or carnival employee injured or killed while working on ride |
| Entrapment or pinch-point | Accidents, other than restraint pinching during load/unload or extremity caught outside carrier during ride, where patron's body part became caught in or against part of the equipment. This includes such things as hair or clothing entrapment, fingers caught in exit gate or moving parts in a funhouse, misstepping into gap between vehicle and platform during load/unload, and foot/hand entangled in climbing nets. |
| Environmental issue | Accident resulting from unusual event external to ride or operator (e.g., weather event, tree falling on track). |
| Equipment failure | Any accident where equipment failure contributed significantly to the injury and the event did not fit into any other category. Note: Equipment problems may also cause or contribute to accidents in other categories. If the regulatory report indicates that equipment problems occurred, a flag will be set for the accident, independent of the category. For example, an accident may be categorized as an Unscheduled Stop and also have the Equipment Failure flag set. |
| Impact: hit by loose piece of attraction | Person hit by piece that came loose from a ride |
| Impact: overcome by attraction water splash | Person injured after water splash attraction feature |
| Impact: person hit by ride | Accidents caused by collision between person and ride vehicle. |

| Part of ride cycle: either | |
|----------------------------------|---|
| Category | Description |
| Injured by foreign object | Patron injured by foreign object (e.g., something flew in the patron's eye, dropped on the patron during the ride, etc.). |
| Other | Accidents caused by something that does not fit into any of the other categories. |
| Unknown (not enough info) | The regulatory record did not include a description of the accident, or the description did not provide enough detail to allow the accident to be categorized. |
| Part of ride cycle: pain/illness | |
| Category | Description |
| Body pain (normal motion) | Pain reported by the patron to have occurred during a normal ride cycle. This includes complaints of pain starting at a specific point on the ride, or onset of pain shortly thereafter which the patron believes to be caused by the ride. Nonspecific reports, such as jostled by the ride may also logged under this category. |
| Illness or neurological symptoms | Incidents that appear to be related to illness or neurological trauma (e.g., dizziness, nausea/vomiting, headache, numbness, vision or hearing disturbances, asthma, heart attack). Seizures and loss of consciousness are not included here; they have their own category. |
| Illness: Seizure or LOC | Patron suffered seizure or lost consciousness, either on ride or shortly after riding. |

Hospital Data from CPSC

NEISS Data Set

Saferparks retrieved NEISS hospital data for 2013-2017 from the [CPSC website](#) and performed a quick-look analysis for product codes: 1293 (amusement devices), 3295 (water slides, public), and 3259 (go-karts). Records were sorted into categories based on narrative and location fields.

- Amusement rides (from code 1293)
- Inflatables (from code 1293)
- Water park rides (from code 3295)
- Go-karts (from code 3259)
- Device not identified or unrelated

Saferparks' Research Goals

- **Unpack NEISS injury estimates for Amusement Devices** - Injury estimates for product code 1293 are often cited by the media as annual estimates of U.S. amusement ride accidents. That statistic can be misleading since product code 1293 includes a wide variety of devices in addition to mechanical amusement park and carnival rides: inflatable amusement devices, mechanical bulls, arcade games, coin-op rides, haunted houses, etc. Extracting records likely to be related to amusement rides and inflatables is an imprecise process, but the resulting data set can provide more nuanced insight into the NEISS amusement device injury data.
- **Learn more about medical outcomes of accidents and injuries related to use of amusement devices.** - Data provided by state regulatory officials is more reliable at identifying the device involved in the incident, but injury data tends to be sparse and/or unreliable due to medical privacy laws and the perspective of the person making the report (i.e., the owner/operator rather than the injured patron).
- **Understand injuries from the patron's perspective** - NEISS narratives tend to include the patient's description of how the injury occurred. In general, state data is based on the owner/operator and/or the state inspector's perspective.

Note that NEISS product categorization is approximate. Injury estimates are likely to be lower than actual since a significant number of records failed to reveal the device type associated with the injury. According to CPSC, additional records for water park rides and inflatable waterslides may be found under product codes 3293 and 3294.

Data Source Pros and Cons

The differences between the public records gathered by state ride safety offices and the public records gathered by the Consumer Product Safety Commission are summarized below.

| | Federal Government (CPSC) | State Safety Agencies |
|-----------------------------------|---|---|
| Data Source | (1) NEISS data - Sampling of medical records from 100 hospital emergency rooms across the country. (2) Detailed investigation reports on major accidents involving portable rides (fixed-site rides are exempt from CPSC jurisdiction). | Accident reports submitted by ride owners to state safety officials and/or accident investigation reports compiled by state safety officials. |
| Types of Equipment Covered | NEISS category "Amusement Attractions" includes amusement rides (e.g. coasters, Ferris wheels, etc.) and other amusement devices, such as inflatables, coin-op rides and mechanical bulls. Injuries related to go-karts and public water slides are tracked under separate NEISS product codes. | Varies from state to state. |
| Information Provided | Patient's age, gender, body part affected, incident description from patient, preliminary diagnosis, etc. | Typically identifies the type of ride or device, number and age of injured patrons, and some type of short narrative. Information value varies widely by state and company making the report. |
| Benefits of Data | (1) NEISS data is uniform, provides insight into age and gender, diagnosis, commonly-affected body parts, etc. Allows long-term tracking of injury trends, within the limitations of the sampling and categorization system. (2) In-depth investigation reports for portable ride accidents have a high level of technical detail and analysis. | Can provide insight into the common causes of ride-related injuries. Some agencies send accident investigation reports, which offer detailed insight into causes of some serious accidents. Other agencies send a log of accident reports provided by the owner/operator of the ride, which can be used in aggregate to identify patterns. |
| Limitations of Data | NEISS data is strong on medical information, but generally weak in identifying the specific ride or device and conditions under which it was operated. | The lack of uniformity in types of devices regulated, accident reporting criteria, public access to safety records, and format of state records creates a hodge-podge of data that limits reliable statistical analysis. The records are best used as a collective source of information about ride-related injuries with focus on spotting trends. |