

Roller-coaster risk is rampant

By *Lisa Gubernick*

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Laura Craft trembled with excitement as she climbed aboard Texas Tornado, the new roller coaster at Six Flags Astro World in Houston. The 50-year-old lawyer wasn't about to miss an amusement billed as "one of the steepest coasters on earth."

THE INITIAL 112-FOOT CLIMB went fine. But on the way down -- a hair-raising 70-degree drop -- Ms. Craft's body slammed into her seat, and she felt a sudden twist in her back. And that led to yet another scary ride: an ambulance trip to a nearby emergency room.

"I felt like my back was going to snap," says Ms. Craft, who wound up doing several months of physical therapy after the accident. "I screamed 'goodbye' and 'I love you' to my daughters."

Attention, thrill-seekers: Injuries at amusement parks are on the rise. Facing growing competition for leisure dollars, park owners are building rides to be faster, twistier and scarier. But the embellishments have come at a cost. An estimated 9,200 people were treated in emergency rooms last year for injuries linked to carnival rides and theme-park attractions, according to the U.S. Consumer Product Safety Commission. That is a 24% spike in injuries since 1994 -- twice as big a jump as the rise in theme-park attendance at state and county fairs, where most carnival rides are located.

While rare catastrophes such as an accident that killed a woman at Coney Island last month grab headlines, experts say the biggest problem is a jump in mundane but painful motion-related injuries, from bad bruises and sprained muscles to herniated disks. A key reason is a combination of rougher rides and aging riders who underestimate the impact on their bodies. The Volcano super-coaster at Paramount's Kings Dominion park in Richmond, Va., for example, generates a pull almost five times the force of gravity -- a sensation more often associated with Cape Canaveral than an amusement park.

"What hurts is when you are whipped up and down or left or right very rapidly," says William Avery, head of an Orlando ride-safety consulting firm, Avery Safety Consulting. "It has to do with the transition of forces that some people simply cannot handle."

Aggravating the problem is the fact baby boomers, having grown up on carnival rides and roller coasters, seem almost pathologically reluctant to adjust their behavior with age. People between the ages of 25 and 64 accounted for about one-third of all injuries related to amusement attractions in 1997, compared with 27% a decade earlier. Although

most parks post detailed warning notices next to physically taxing rides, people often assume the signs are meant for everybody but them.

"We're getting a lot more claims from people who probably shouldn't be on those rides," says Lowell Gratny, a senior vice president at American Specialty Insurance Services, which represents 150 amusement parks. Mr. Gratny cites a recent claim from a 5-foot-3-inch woman weighing 280 pounds who got injured on a waterslide in New Jersey. "The signage was there that overweight people shouldn't go on, but she didn't consider herself overweight," Mr. Gratny says.

The industry says it can't be blamed for the injuries of patrons who act irresponsibly and that, with 300 million people visiting theme parks annually and millions more attending fairs and carnivals, the risks are extremely low. "Unfortunately some minor incidents do occur, but you have to look at them proportionately," says Richard J. Coulter, a safety consultant and spokesman for Six Flags parks, who blames the increase in injuries on the fact that "there are more coasters, and more people riding them."

Not all accidents are minor, of course. In a well-publicized incident at Disneyland last Christmas Eve, a man was killed and his wife and another person injured after a cleat from the Sailing Ship Columbia struck them during the docking of the ship.

And almost everyone agrees that today's signature attractions take patrons on a wilder ride than ever, especially the roller coasters. Amusement parks are building a slew of them: a total of 60 in 1999 and 38 last year. Even wooden roller coasters, the dowagers of the industry, are pumping up the thrills: Next year, Paramount's Kings Island in Ohio will unveil Son of Beast, the world's second-longest wooden coaster at 7,038 feet. (Its predecessor, Beast, also at King's Island, holds the current title.)

RACING OUT OF THE GATE

Although many coasters now use high-tech launch mechanisms that send you racing out of the gate, speed alone isn't the issue. Some of the roughest attractions aren't much faster than the oldest coasters. What distinguishes them is that they rise to heights and go through contortions --corkscrew-shaped loops, boomerang turns and "camelback" bumps -- that would have been unthinkable 20 years ago. Adding to the stress, the directional changes often occur without notice because parts of the ride are hidden from view.

"It's all about 'mine is bigger than yours,'" says Robert Munch, the historian for American Coaster Enthusiasts, a hobbyists' group based in Mission, Kan.

Consider the Texas Tornado, where Ms. Craft of Houston hurt her back. Made from 3, 280 feet of twisted steel, it has four inverted loops and one nearly vertical drop. Last year, the Tornado accounted for half of AstoWorld's 16 reported injuries -- and nearly one-fifth of the total 42 injuries reported by the three Six Flags parks in Texas, according to data the parks provide quarterly to state regulators. (Ms. Craft blames her injury on a

loose-fitting harness and plans to submit her medical bills to Six Flags, which declined to comment on the incident.)

Mr. Munch of American Coaster Enthusiasts traces the beginning of the current craze to 1989 when Cedar Point, an amusement park in Sandusky, Ohio, opened the first 200-foot coaster, the Magnum XL-200. Four years later, the first coaster in which riders go sideways as well as right-side-up and upside-down was unveiled at Six Flags Great America in Gurnee, Ill. Now there are about two dozen super-coasters, at least one in virtually every big theme park in America. Mr. Freeze, which opened last year at Six Flags parks in Arlington, Texas, and St. Louis, winds around so much that Paul Ruben, an editor at the trade magazine Park World, dubs it a "paper clip on steroids."

The new rides are made possible by computers, which can simulate and test complex ride designs to determine whether the car and track can withstand the stress. "You can get a ride that puts you through all kinds of complex sensations, really messing with your sense of balance," says Richard Brown, a neurophysiologist, orthopedic researcher and safety consultant for theme parks.

A HISTORY OF RISKS

To be sure, the risks aren't nearly as great as they were in the early part of the century. In the late 1920's, Canada's Crystal Beach Cyclone, which periodically hurled passengers to the sides of their cars, actually kept a full-time nurse on the platform. Because many of the most serious accidents used to be caused by malfunctions, such as restraint failures or loose pins, they were often catastrophic. "When you get thrown out of a moving ride, odds are you are going to die," says Mr. Avery, the safety consultant.

Subsequent advances in technology have made major equipment failures a rarity. From 1989 to 1998, there were an average of 2.9 amusement-park fatalities a year, down from 5.1 in the previous decade. Meanwhile, restraints and padding have improved, helping prevent riders from bumping against metal.

Some parks also have adjusted rides that have encountered problems. In May, for example, near the end of Superman: Ride of Steel at Six Flags in Darien Center, N.Y., a 350-pound man tumbled out of his seat and dropped eight feet to the ground. Six Flags has since added seat belts to the ride, which already had a lap bar.

But even the best restraints can't eliminate the stress of being whirled, dropped and boomeranged at 80 miles per hour. While old-fashioned wooden coasters rarely generated a pull, or G-force, greater than three times the force of gravity, the new ones hit levels as high as 4-G or 5-G. By way of perspective, physicians and ride-safety experts say people can experience blackouts at forces 6-G and above.

"You need to be 18 and in good shape to ride some of these things," says Isadore Rommes, Florida's bureau chief of fair-ride inspection. "The stresses on the body are too much for older folks."

Because carnival rides are trucked from city to city, they generally can't be as large or powerful as today's supercoasters. About 2,100 of those 9,200 emergency-room visits last year were linked to carnival rides, so-called fixed-site rides accounted for 4,500 of the total. (The safety commission was unable to determine where the remaining ride-related injuries occurred.)

The industry has focused much of its thrill-enhancement on roller coasters. But some safety specialists say a similar phenomenon is playing out with water-park attractions, high-powered motion simulators and spider-shaped rides (known in the industry as "spin and pukes"). The number of injuries linked to public water slides more than doubled from 1994 to 1997 to a total of 3,141 according to the federal safety data. Over the same period, attendance grew 26% to 61 million visitors.

These rides don't necessarily have high G-forces. But many parks have added new attractions that put riders in inner tubes propelled by water jets and send them up and down chutes as high as 70 feet. And because many water rides aren't on tracks, the risk of collision is greater. "The addition of a water slide with a high, fast drop can really screw up a park's safety numbers," says Jonathan Carrick, an engineer and safety consultant based in Strasburg, Colo.

Even raft rides, which are more controlled than slides, can cause problems. Joan Dobbins of Sicklerville, N.J., learned this the hard way. She was on the Congo Rapids ride at Six Flags Great Adventure in Victor, N.J., last summer when her raft turned on its side. Eight passengers wound up with injuries ranging from stomach aches to bruised backs. One of Ms. Dobbins's daughters was pushed underwater. Ms. Dobbins was thrown up against one of the ride's walls, hitting her shoulder, hip and back.

"I'm still going to the doctors," Ms. Dobbins says. A similar ride overturned at Six Flags Over Texas in March; 11 people were injured and one woman drowned.

The World Water Park Association, a trade group in Overland Park, Kan., disputes the federal safety data, saying the commission is underfunded and unable to adequately investigate accident reports. The association also says water rides aren't in a race for speed and height but are instead focusing on safer family-oriented attractions where several people can ride at once. Six Flags declined to comment.

Disneyland's celebrated Indiana Jones ride, a hybrid motion-simulator/roller coaster that is one of the park's roughest attractions, has also had its share of troubles. As a result of a lawsuit, Walt Disney Co. was forced to turn over records about the ride, which takes a twisty trip through the mock ruins of an ancient temple. It turned out there were hundreds of complaints, including about a dozen letters from patrons who claimed they were taken aback by the ride's intensity.

"When the Humvee made the sudden 90-degree turn to the right, I felt a sudden pain in my lower back," complained Donald McLelland, a 79-year-old man from Midvale, Utah, adding that he ended up on crutches for more than three months and was unable to

drive. "I had no idea that this ride was that abusive, rocky and rough on people," wrote another rider.

CLEAR WARNINGS

Disney says it clearly states the physical requirements for getting on Indiana Jones, noting that six warning signs explain the need to be in good health and free from heart, back, neck and other problems. The lawsuit, filed by a 42-year-old woman who claimed she developed a brain hemorrhage during the ride, recently settled for an undisclosed sum.

Louis Carlson, 52, a funeral director from Santa Ana, Calif., saw the warning signs when he went on the Indiana Jones ride a few years ago, but says he figured they didn't apply to him. Shortly after the start, the ride lurched forward, stopped and lurched backward in order to avoid hitting a fake boulder. It was right about then that Mr. Carlson felt a pop in his neck.

The next day, he says, his shoulder began to ache. A week later, the pain had radiated down his arms, and an MRI revealed a ruptured disk in his vertebrae. Today, nearly four years later, Mr. Carlson says he continues to have some restricted motion in his head. Mr. Carlson sent a letter complaining about the incident to Disney, which in turn sent him two complimentary tickets to get back into the park. Disney declined to comment on the incident.

Most states (with California being a notable exception) conduct safety inspections to ensure the mechanical integrity of amusement-park rides. But no one regulates their intensity. In fact, about a dozen states have officially put at least some of the burden on patrons by enacting laws which require riders to behave responsibly and obey warning signs. In some cases, the laws actually allow prosecution of patrons who exercise poor judgment, although that part of the law is rarely if ever been enforced.

But even the toughest regulations won't quell the inner child of some riders. Earlier this summer, after finally recuperating from muscle strains sustained on the Texas Tornado, Ms. Craft of Houston went to Six Flags Fiesta in San Antonio to check out two of its newest coasters, the 185-foot-high Boomerang and the 2,705-foot-long Poltergeist.

By then, "all the back problems I had had gone away," says Ms. Craft. "I tell you what, if I couldn't ride a coaster now, I'd really be screaming."

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