



MEETING LOG

SUBJECT: Golf Cart Safety

DATE OF MEETING: 7/28/2026

LOCATION OF MEETING: Virtual

CPSC STAFF FILING MEETING LOG: Mark Kumagai

FILING DATE: 7/30/2026

CPSC ATTENDEE(S): Caroleene Paul, Han Lim, Suad Wanna-Nakamura, Ashley Johnson, Rana Balci-Sinha, Hope Nesteruk

NON-CPSC ATTENDEE(S): Gary Drake, Nathan Bryson

Summary of Meeting: Mr. Gary Drake requested this meeting to discuss his golf cart injury and his findings. Attached is his presentation.

Next Steps: CPSC staff will review Mr. Drake's findings and conduct an internal data search.

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Safety Solutions for Golf Cart Roof Systems Eliminating Preventable Head & Brain Injuries



**Presented to the Consumer Product Safety Commission
Golf Cart Safety Meeting
July 28, 2026**

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Notes:

- Golf cart roofs are also called canopies or tops, and golf carts may be classified as Personal Transport Vehicles.
- The term golf cart also includes maintenance, transport, utility, food and beverage, and recreation vehicles

Background: Why Focus on Golf Cart Roofs?

I am a healthy person taking no daily medications who bumped my head on the side of a golf cart roof while getting into the cart (using the golf cart for its intended purpose). While there were no immediate consequences, I had sustained a Traumatic Brain Injury (TBI) that required life saving brain surgery.

March 8, 2025: Bumped left side of head on golf cart roof getting into golf cart (a common occurrence)

- **No immediate consequences** of head impact
 - Wasn't knocked out; No headache; No dizziness; Did not go to Emergency Room
 - Played 18 holes of golf that day and next day

Approx. April 1st – Started experiencing significant dizzy spells

- Primary Care doctor visit; Referred to ENT and began series of vertigo treatments but they are ineffective

April 24th: Vertigo Doctor called and told me that this is not vertigo and instructed me to go to the emergency room

April 25th: Emergency Room CT Scan revealed a traumatic brain injury (brain bleed) caused by golf cart roof impact to left hand side of my head

- Brain bleed had caused a 15 millimeter midline shift in my brain (which is extreme); Admitted to Neurology ICU

April 26th: Life saving brain surgery; Drainage tube in skull; 30 staple incision; Began daily anti-seizure medication

Post Surgery:

- **Significant restrictions** (e.g., no lifting, no bending, no raising my arms)/Lost contract consulting role/Missed graduation
- Forced to sleep in a recliner chair for several months to avoid spinal fluid leaking from incision
- **Readmitted to hospital twice for possible seizures**; Increased daily dosage of anti-seizure medication
- Incision became infected requiring plastic surgeon treatment plus continued complications

Current State:

- **Ongoing neurologist care and testing; Ongoing balance issues**

Essentially everyone I spoke to about my Traumatic Brain Injury related their own experience bumping their head on a hard, rigid golf cart roof or related components when entering or exiting the golf cart. I began ordering golf cart roofs (which my wife had to lift) and crafting solutions.

Two Person Golf Cart Roof Head Impact Contributing Factors

There are numerous fixed obstacles within a two-person golf cart that require occupants to continually keep their heads tucked when entering or exiting and contort their bodies to avoid dangerous head impact with the hard, rigid golf cart roof, grab handles, and mounting brackets.

Edge of Roofline

Hard, Rigid Edge Extends Outward to Protect Occupants from Sun and Rain but Requires Occupants to Constantly Keep Their Heads Tucked Down to Avoid Head Contact



Brand Shown:
E-Z-GO

Rigid Roof Mounting Brackets/Bolts

Require Occupants to Constantly Keep Their Heads Tucked Down to Avoid Contact



Brand Shown: Yamaha

Fixed Steering Wheel

Creates a Fixed, Rigid Barrier to Entry/Exit

Confined Entry/Exit Space

Forces Repeated Body Contortions and Balance

Low Roof Height

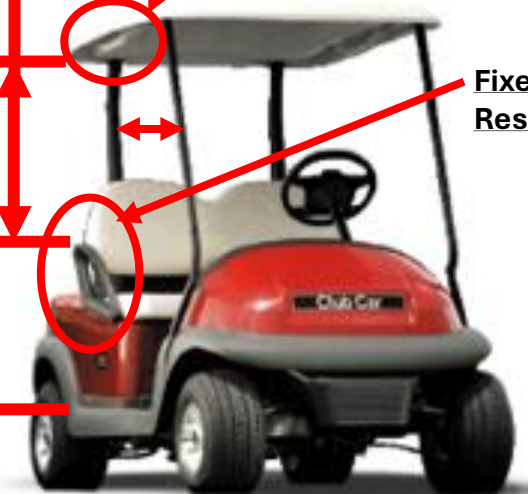
Undermount or Integrated Grab Handles Require the Roof to be Within Reach of Occupants While Seated Creating a Hard, Fixed Head Impact Risk; Requires Head to Remain Tucked During Entry and Exit

Step Up Height

Requires Coordination and Balancing on One Foot to Enter/Exit the Cart While Also Avoiding Hip Restraints and Tucking Head to Avoid Roof and Grab Handles

Integrated Grab Handles

Fixed Hip Restraint



Brand Shown: Club Car

Fixed Hip Restraints

Force Occupants to Contort Their Bodies When Entering or Exiting

Four Person and Larger Golf Cart Roof Head Impact Contributing Factors

Four person and larger carts have all of the hard, fixed obstacles of two-person golf carts plus thick metal roof structural reinforcements, rigid mounting brackets/bolts, rear facing seats, an elevated floor height, and additional constraints requiring continuous body contortions and a tucked head position when entering or exiting to avoid dangerous head impact.

Extended Edge of Roofline

Requires Occupants to Constantly Keep Their Heads Tucked to Avoid Head Impact

Rigid Roof Mounting Brackets/ Bolts

Require Tucked Heads and Cause Head Impact Injuries

Exposed Metal Roof Reinforcements

Attached Inside Roof or Covering Outside and Inside Edge Creates Significant Head Impact and Injury Risk

Extended Edge of Roofline

Requires Occupants to Constantly Keep Their Heads Tucked to Avoid Head Impact

Confined Entry/ Exit Space

Forces repeated body contortions and balance

Fixed Rear Hip Restraints

Require Extensive Body Contortions for Entry/Exit

Rear Seat Grab Bar

Brand Shown: Club Car

Rear Seat Step Up Height and Rear Facing Seats

Requires Standing on Cart and Spinning Bodies Backward While Tucking Heads to Avoid Roof Impact for Entry/Exit

Rear Seat Grab Bar

Requires Entry/Exit From Corner of Step While Keeping Head Tucked

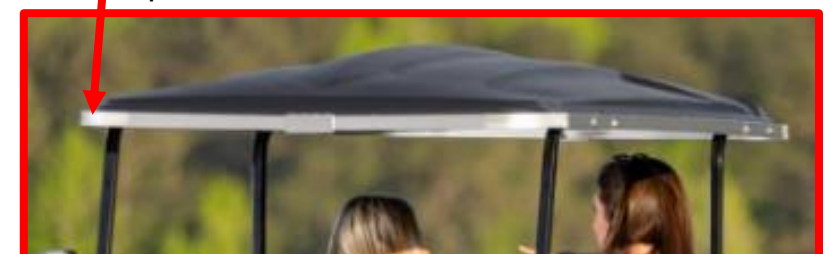
Brand Shown: Yamaha

Confined Entry/Exit

Rigid, Metal Edge of Roof

Four person and larger carts have a large, rigid, metal structural reinforcement around the inside, bottom, and outside edges of the roof creating a dangerous head impact obstacle.

Given the difficult entry/exit process, children are typically in the rear facing seats which poses significant injury risks.



Additional Golf Cart Roof Head Impact Contributing Factors

Head impact with a golf cart roof is a frequent and common occurrence. In addition to the fixed obstacles previously noted, the following are also contributing factors.

- **Injuries can occur** when an **occupant loses their balance, gets distracted or hurried, trips over uneven terrain, misjudges the step height, fails to contort their bodies** as required, **falls out of the cart, jumps from the cart, or gets ejected from the cart** causing them to **strike their head on the hard, rigid golf cart roof, structural reinforcements, grab handles, or mounting brackets**
- Occupants **frequently enter or exit on uneven or elevated ground – standing on an elevated tee box curb, sloping or contoured fairways, etc.**
- Occupants **standing outside of a cart and reaching in to access items in the center console or to adjust the golf GPS screen or music selection must step up and contort their bodies for entry and exit, extend their heads and arms, while also constantly keeping their heads in a tucked position**
- Unoccupied carts can begin moving when brake fails to engage resulting in **panicked entry and contortions**
- **Older occupants can have flexibility or balance issues and can be on medications such as blood thinners** making them particularly vulnerable to serious injury. I would likely have died from my injuries if I were on blood thinners.
- **Occupants are frequently consuming alcoholic beverages or marijuana** which can impact balance and body control
- **Cart paths can get extremely slippery in the rain** which can cause the driver to lose control and **potentially result in ejections**
- Golf carts are increasingly delivered with **lifted ride heights which raises the cart floor impacting entering and exiting**
- **Children are frequent passengers in golf carts requiring them to stand up on the golf cart floor and keep their heads tucked for entry/exit** which can lead to roof impact and head trauma
- **Children and seniors are more likely to be ejected from a golf cart causing head trauma from golf cart roof impact**
- **Electric golf carts' quiet, instant acceleration can cause ejections, especially from rear-facing seats or during left turns**

Golf Cart Market Overview – A Large and Growing Industry

US golf cart sales totaled approximately \$1.7 billion in 2024 and are expected to grow to \$3.2 billion in 2034*, with sales dominated by the three US based manufacturers. In addition to new cart sales, there are approximately 2.3 million existing golf carts in operation in the US.**

Annual US Golf Cart Sales*

Year	Total US Golf Cart Sales (\$ Billions)	Golf Course Cart Sales (\$ Billions)	Other Applications (\$ Billions)
2024	1.70	0.90	0.80
2023	1.60	0.85	0.75
2022	1.50	0.79	0.71
2021	1.41	0.75	0.66
2020	1.33	0.70	0.62

“Other Applications” include residential (golf cart communities), utility, commercial, etc.

The Primary US-Based Golf Cart Manufacturers

Golf Cart Manufacturer	Corporate Office	Ownership	Products
Club Car	Evans, Georgia	Owned by Platinum Equity – Acquired in 2021 for \$1.68 Billion	Club Car Golf Carts, Small Utility Vehicles
Textron Specialized Vehicles	Augusta, Georgia	Textron Inc. (NYSE: TXT)	E-Z-GO and Cushman Golf Carts, Utility Vehicles and Personal Transportation Vehicles
Yamaha Golf-Car	Kennesaw, Georgia	Subsidiary of the Yamaha Motor Corporation	Yamaha Golf Cars and Utility Vehicles

Sources
* Global Market Insights Inc.
**Google AI

Golf Cart Market Overview – A Protected Industry

Club Car and Textron Specialized Vehicles (manufacturer of E-Z-GO and Cushman golf carts) formed the American Personal Transportation Vehicle Manufacturers Coalition who filed a petition with the US Dept of Commerce alleging that Chinese imported golf carts and related vehicles were being dumped and subsidized. A final ruling was approved in August 2025:

Financial Benefit to US Golf Cart Manufacturers:

This ruling imposes antidumping duties ranging from 119% to 478% and countervailing duties, **resulting in total duties that can exceed 600% on certain Chinese imports.**

Duration:

The trade orders will remain in effect for a minimum of five years.

Source: Google AI

US consumers should be able to trust that companies benefiting from U.S. tariff protections make products that are safe when used as intended—not dangerous or potentially fatal.

US golf cart manufacturers should differentiate themselves with a focus on occupant safety.

Golf Cart Head Injuries Treated in Emergency Departments – Also Growing

For 2025, total golf cart injuries treated in Emergency Departments remained at an alarming level while Head Injuries experienced a 14% increase from 2024 levels making Head Injuries 32% of the total golf cart related injuries treated in Emergency Departments.

YEAR	CHILDREN (0 – 17 Years)	ADULTS (18 - 64 Years)	SENIOR CITIZENS (65 Years +)	TOTAL	Head Injuries
2025	6,849	12,526	7,837	27,212	8,839
2024	7,819	14,259	7,085	29,163	7,762
2023	6,625	12,205	7,449	26,279	
2022	7,420	10,362	7,377	25,159	
2021	6,494	9,534	5,792	21,820	

Date Source: Consumer Product Safety Commission. National Electronic Injury Surveillance System 2006-2025 on NEISS Online Database, released April, 2026.

Of Note, The cause of my Traumatic Brain Injury was incorrectly classified by my neurosurgeon as “Trauma Caused by a Fall” so the data above is potentially understated.

Recent Golf Cart Related Head and Brain Injury Articles

Here are recent articles that highlight the frequency and severity of golf cart related head and brain injuries.

CrossFit Coach Has Emergency Surgery After Suffering Traumatic Brain Injury in Freak Golf Cart Accident



People May 12, 2026

Local father in coma in Costa Rican hospital after serious head injury



March 13, 2026

MIDLANDTODAY.ca

Recent Golf Cart Related Head and Brain Injury Articles (Continued)

This recent article provides additional details regarding the frequency, severity, and cause of golf cart related head and brain injuries, especially in children.

Golf Cart Injuries On The Rise Among Kids



September 29, 2025

“Golf cart injuries among children have steadily increased over the past three years, researchers reported Sunday at the American Academy of Pediatrics’ annual meeting in Denver.”

“Injuries to the head, face and neck were most common, occurring in 44% of cases, and were likely to be caused by falling from a cart, the study found.”

“Golf cars are prone to accidents while making sharp turns or sudden stops, as well as when people are entering and exiting the vehicles, researchers noted.”

Recent Golf Cart Related Head and Brain Injury Medical Journal Studies

Published medical journal studies have further uncovered the frequency, severity, and cause of golf cart related head and brain injuries, especially in children.

Golf cart-related neurosurgical injuries

Surgical Neurology International | June 28, 2024

“The most frequent head injury was a skull fracture in 80% of patients. Intracranial hemorrhage was present in 76% of patients, with brain contusions being the most common.”

“This study showed that children and adolescents are at high risk for golf cart-related neurosurgical injuries. This form of transportation can produce considerable neurological injuries, the primary mechanism of injury being ejection from the cart. Approximately three-quarters of the patients need hospital admission, with half requiring an ICU stay.”

Recent Golf Cart Related Head and Brain Injury Medical Journal Studies (Continued)

Published medical journal studies have further uncovered the frequency, severity, and cause of golf cart related head and brain injuries, especially in children.

Golf cart associated traumatic brain injury

National Library of Medicine | National Center for Biotechnology Information | July 23, 2019

“Although contact sport-related head injuries are frequently reported, **golf cart accidents may have significant consequences including severe traumatic brain injury (TBI) or head injury. As no standardized regulations exist, this mechanism may be underreported.**”

“The mean age was 36 years old with **the most common injury being skull fracture followed by acute subdural hematoma.** Most patients had good outcomes, **but like most forms of TBI, surgical interventions, intracranial pressure monitoring, post-traumatic seizures, hydrocephalus, and death did occur.**”

“**Head injuries sustained by golf cart accidents are not insignificant and may be underreported.**”

Recent Golf Cart Related Head and Brain Injury Medical Journal Studies (Continued)

Published medical journal studies have further uncovered the frequency, severity and cause of golf cart related head and brain injuries, especially in children.

Putting the golf cart before the horse: pediatric head trauma outpaces education and safety regulations

Trauma Surgery & Acute Care Open | May 20, 2024

“Notably, more than 60% of children injured in golf cart incidents suffered a traumatic brain injury (TBI; mild, moderate, or severe), including 34% with an intracranial injury”

“This alarming incidence of head trauma confirms the findings in large national database studies, including Miller *et al*,⁴ that found children are at significantly greater risk of golf cart ejection and subsequent head trauma than adults.”

“In the cohort assembled by the authors, 21% of golf cart accident victims were younger than 6 years.”

Golf Cart Roof Impact Significantly Increases Severe Head Injuries

When compared to ground only impact, roof/canopy contact significantly increases the occurrence of serious and potentially fatal head injuries.

Roof/Canopy Head Impact vs Ground Only Impact

<u>Outcome</u>	<u>Roof/Canopy Contact</u>
Intracranial hemorrhage	+20-40%
Skull fracture	+20-35%
ICU admission	+15-30%
Neurosurgical consult	+20-40%

Note: The cause of my Traumatic Brain Injury was incorrectly classified by my neurosurgeon as “Trauma Caused by a Fall” so the data above is potentially understated.

Single-System Trauma Registry Data Sources

- Trauma registry [American College of Surgeons (ACS)-Trauma Quality Improvement Program (TQIP) or state registry]
- Supplement with ED notes, EMS run sheets, trauma History & Physical (H&P), radiology reports

Head Impact with Golf Cart Roofs, Reinforcements, and Brackets Frequently Causes Traumatic Brain Injuries (TBIs)

Approximately 22–30% of all golf cart–related TBIs involve contact with a roof/canopy, roof/canopy reinforcement or roof/canopy mounting bracket. Pediatric trauma cases show 28–38%, while adults show 18–26%.

Contact Breakdown

<u>Roof Contact Subtype</u>	<u>% of Golf Cart TBIs</u>
Undersurface of roof/canopy	6–10%
Side or top edge of roof/canopy	5–9%
Roof/canopy reinforcements	6–8%
Roof/canopy brackets	<u>3–5%</u>
Any roof/canopy component (Total)	22–30%

Single-System Trauma Registry Data Sources

- Trauma registry [American College of Surgeons (ACS)-Trauma Quality Improvement Program (TQIP) or state registry]
- Supplement with ED notes, EMS run sheets, trauma History & Physical (H&P), radiology reports

Without immediate action, impact with golf cart roofs and their components will continue to cause severe head and brain injuries - especially in children and seniors.

Golf Cart Roof Safety Implementation Request

My undetected traumatic brain injury was caused by a minor impact with a hard, rigid golf cart roof. My injury, the consequences, brain surgery, and ongoing recovery have been incredibly difficult on me and my family. Similar head and brain injuries are happening at an alarming rate to others, especially children and seniors, with catastrophic and potentially fatal consequences - and they are preventable. I do not want what happened to me to happen to you, your families, or anyone else and I need your help.

Request

- I am asking for CPSC support to push this issue as a preventable hazard pattern has been established

Additional Background & Considerations

- I have repeatedly tried to meet with representatives from the US based golf cart manufacturers to discuss this catastrophic issue as well as cost effective and technologically feasible solutions but have been ignored
- I recently engaged my intellectual property attorney to craft and send a letter and emails to each of the US golf cart manufacturer's intellectual property attorney. Only the Textron IP attorney responded, I signed their Review Agreement and provided essentially this presentation, but they elected not to move forward with any communication.
- I have met with my Michigan State Senator and continue to meet with him and his staff on potential solutions. I have also met with staff members from my US Senator for Michigan to get his support and advice.
- I have attempted to meet with a significant number of US Senators, Governors, Attorney's General, etc. – primarily in southern states where golf cart communities are prevalent and growing - but have not been successful as I am not a constituent
- Voluntary standards do exist for Golf Cars (used on golf courses) and Personal Transport Vehicles (all other golf carts) and are published by American National Standards Institute, Inc. (ANSI) and the Outdoor Power Equipment Institute (OPEI)
 - The last voluntary standards for Golf Cars and for Personal Transport Vehicles were published in 2020
 - Per the OPEI representative, revised or updated voluntary standards for Golf Cars and Personal Transport Vehicles could be published as late as 2030