




## Low Speed Vehicles: High Risk Travel?



## Objectives

- Identify transportation modes that share the roads
- Identify the differences between golf carts and low speed vehicles
- Summarize the NHTSA definition of a low speed vehicle
- Discuss child passenger safety issues
- Discuss the role of the CPS Technician



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## Sharing the Road




Courtesy of Fair City News Springfield, MO




Courtesy CBS Atlanta

The law says people in wheelchairs can use the streets in certain cases, but where sidewalks are provided and are accessible. The key word is accessible.




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## What was that on the road?



- May operate in restricted areas
- When on the road, must observe bicycle rules




- Treated as a motorcycle



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## Terminology

- Golf cars: < 15mph
  - Does not require seatbelts be provided
  - Does require “a hand hold or combination hand hold/hip restraint”, anchored securely to the vehicle
- “Street legal” golf carts: < 20 mph
- Personal Transport Vehicles (PTVs): < 20mph



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## Terminology

- Low Speed Vehicles: 20-25 mph
  - Low Speed Golf Car
  - Neighborhood Electric Vehicle
- Advertised as “playing golf or cruising your neighborhood”





Photo courtesy of Wheego Whip Mfg.



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## Advertising

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## Why the concern?

13,000 golf car-related emergency room visits in the United States annually.

- 40% involve children < 16 years of age

SOURCE: McOwin, G., Zoghby, J., Griffin, R., and Rue, L., Incidence of Golf Cart-Related Injury in the United States. J Trauma, 64:1562-1566, 2008

Annual injury rates for golf cars increased 130% over 16 years ending in 2006

SOURCE: Watson, D., Mehan, T., Smith, G., McKenzie, L., Golf Cart-Related Injuries in the U.S. Am J Prev Med 2008; 35 (1):55-59, 2008.

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## Sport Injuries in Children

### Head Injuries in Children, n= 64 1996-2002 Mean Age: 7 yrs.

Sport	# of Children
Bicycle	17
Golf	15
Baseball	9
Gymnastics	7
Football	6
Scateboarding	2
Hockey	2
Bowling	2
Horseback Riding	2
Wrestling	1
Water Skiing	1

Source: Golf-Associated Head Injury in the Pediatric Population: A Common Sports Injury. Journal Neurosurgery(Pediatrics) 102 163-166, 2005

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## Causes of Golf Car Injuries

- Cart overturn
- Falling/ jumping from a moving golf cart
- Collision with another vehicle or stationary object
- Patient struck/run over by a cart
- Injury while getting into or out of a cart
- Injury to a protruding limb

Source: Watson, D., Mehan, T., Smith, G., McKenzie, L., Golf Cart-Related Injuries in the U.S. Am J Prev Med 2008; 35 (1):55-59, 2008.

Photo courtesy of Trend Hunter

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## Simulated Occupant Kinematics

Unbelted and not using a handhold

Graphics used with permission by K. Seluga and T. Long from Analysis and Prevention of Child Ejections from Golf Cars and Personal Transport Vehicles

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## Simulated Occupant Kinematics

Unbelted and gripping hip handhold

Belted

Graphics used with permission by K. Seluga and T. Long from Analysis and Prevention of Child Ejections from Golf Cars and Personal Transport Vehicles

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## Golf Cart Safety Requirements


- Minimum safety requirements
  - Carry 2-4 adult occupants
  - Efficient brakes
  - Reliable steering apparatus
  - Safe tires (appropriate PSI & tread), a rearview mirror
  - Red reflectorized warning devices front and rear.
  - Operate within contained community, Not permitted on street or highway unless county or municipality determines if prohibited because of safety concerns



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## NHTSA Definition of a LSV

- A LSV is a motor vehicle that has 4 wheels in contact with the ground in normal operation,
- Has a speed attainable in 1 mile of more 20 miles per hour and not more than 25 miles per hour on a paved level surface, and
- Has a gross vehicle weight rating 3,000 lbs.

TP-500-02  
April 19, 2006 NHTSA  
LABORATORY TEST PROCEDURE  
FMVSS 500, Low-Speed Vehicles




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## NHTSA Low-speed vehicle, 1998 FMVSS 500


- Safety requirements:
  - headlamps, stop lamps, turn signal lamps, tail lamps, reflex reflectors, parking brakes, rearview mirrors, windshields, seat belts, and vehicle identification numbers.

MANUFACTURED BY: USA LOW SPEED VEHICLES, INC. DATE OF MFD: 03/09 GVWR: 1260 KG (2778 LB)

FRONT GAWR	WITH TIRES	RIMS AT	COLD
630 KG (1389 LB)	20.5 X 8.0 - 10 B	10 X 6.5A	240 KPA (DS P58) SINGLE
REAR GAWR	WITH TIRES	RIMS AT	COLD
630 KG (1389 LB)	20.5 X 8.0 - 10 B	10 X 6.5A	240 KPA (DS P58) SINGLE

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

VIN: XXXXXXXXXXXXXXXX TYPE: LOW-SPEED VEHICLE

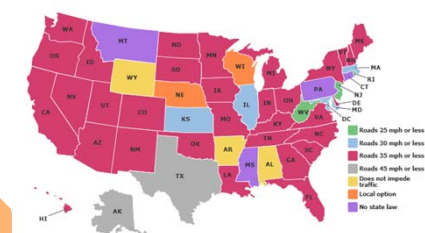

Source: NHTSA
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## IIHS report

INSURANCE INSTITUTE  
FOR HIGHWAY SAFETY


Source: <http://www.iihs.org/laws/low-speedvehicles.aspx>
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## IIHS Map of Roads LSVs




Source: <http://www.iihs.org/laws/mapwherepermittedsvs.aspx>
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## Low Speed Vehicles (LSV)



- A Low Speed Vehicle can only be operated upon a Local or County Road that has been designated by Local Government Entity for use
- Posted Speed Limit must be 35 MPH or lower
- Cannot Impede Traffic Flow
- Cannot be operated on State Road or Sidewalks


Photo courtesy of Copper River Ranch development in North Fresno, CA
Source: FL law: 316.212
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## Low Speed Vehicles (LSV)

Photo courtesy of Gene McElroy, Sun City Center, FL.

- Can only cross a State Road, At designated crossing for “LSV”. Must Be Posted (Not at Pedestrian Crosswalk)

FL law: 316.212

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## Traffic Laws

- Must have a valid drivers license
- Must obey all state and local traffic laws
- Yes, you can be arrested for DUI on a golf cart or Low Speed Vehicle
- You cannot convert a Golf Cart to a Low Speed Vehicle
- You can receive a citation against your license on a Golf Cart or Low Speed Vehicle

Photo Courtesy of Belmar, NJ Environmental Commission

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## The Future

Courtesy of CT & T Mig

Photos Courtesy of Coulomb Technologies, Inc.

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### Understanding the Standard Features of Your Vehicle

**INFANTS AND CHILD RESTRAINTS**  
 Safety experts recommend that children ride rearward-facing in the vehicle until they are at least one year old and weigh at least 20 lbs (9 kg). Two types of child restraints can be used rearward-facing: infant carriers and “convertible” child seats.

The infant carrier is only used rearward-facing in the vehicle. It is recommended for children who weigh up to about 20 lbs (9 kg). “Convertible” child seats often have a higher weight limit in the rearward-facing direction than infant carriers do, so they can be used rearward-facing by children who weigh more than 20 lbs (9 kg) but are less than one year old. Both types of child restraints are held in the vehicle by the lap/shoulder belt. This vehicle is not equipped with a “latch” child restraint anchorage system. The lap/shoulder belt must be used to secure both types of child restraints into the vehicle.

**WARNING!**  
 Improper installation can lead to failure of an infant or child restraint. It could become loose in a collision. The child could be badly injured or killed. Follow the manufacturer’s directions exactly when installing an infant or child restraint.

GEM Owner’s Manual - Page 49  
 Source: GEM Owner’s Manual

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## Can a child restraint be used in a low-speed vehicle?

Photo courtesy of austipediacab.org

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## Manufacturers Alliance for Child Passenger Safety Statement for CPS Technicians/Instructors: CRs and LSVs

CRs are designed for the FMVSS 213 bench and motor vehicle seats meeting the federal motor vehicle safety standard definitions of “passenger car” and “multipurpose passenger vehicle.” In both these definitions, “low speed vehicle” is excluded. While low speed vehicles may meet some federal motor vehicle safety standards, they are not the same standards as passenger cars or multipurpose passenger vehicles, and therefore, CRs may not perform as designed when used in those vehicle types. It is not recommended to rely on CRs to protect children while traveling in low speed vehicles. Most CR manufacturers prohibit use of CRs in low speed vehicles. Refer to the individual CR manufacturers for more information.

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## Regal Lager Cybex Solution X

**Warnings to Parents and Caregivers**

**⚠ WARNING ⚠**  
**DEATH or SERIOUS INJURY can occur**


- DO NOT leave loose objects (e.g. books, bags, etc.) in a vehicle. In the event of a sudden stop, loose objects will keep moving, potentially causing serious injuries.
- DO NOT USE anything to raise this booster seat off the vehicle seat.
- NEVER USE the Booster Base without the Backrest attached.
- NEVER use this booster seat in the home, on aircraft, boats, low speed vehicles (LSV), all-terrain vehicles (ATV), golf carts, or any other non-certified applications.

Source: Cybex Solution X User Manual, page 7



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## Reasons why a CRS cannot be recommended

- A LSV is not considered a “passenger vehicle”
- CRS meant to be used with vehicles **primarily** for use on public roads
- Transportation in motor vehicles has some dependency on the “Occupant Compartment”
- CRS may not perform as necessary “installed” in those vehicle types / on those vehicle type seats


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## Tomberlin Anvil 2010 LSV



⚠ WARNING

- This vehicle is not designed to be used in conjunction with child safety seats
- Do not use or install child safety seat in any seat or position in the vehicle
- Always obey and follow laws and regulations regarding the transportation of children
- Children that require the use of a child safety seat in a regular type automobile should not be transported in this vehicle


**⚠ WARNING**

Do not use child safety seats in this vehicle


-Obey all laws regarding the transport of children in motor vehicles

-Children that require the use of a child safety seat in a regular type automobile should not be transported in this vehicle


Source: Tomberlin Anvil Operators Manual


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## Technicians Role



- Even though an LSV has seat belts, the primary use is for short trips and recreational purposes
- An LSV does not match the safety standards of a passenger car and CRS is not appropriate for use
- Consult car seat manufacturer for appropriate use
- Consult the Incompatible Vehicle Seat Belts in child restraint manuals
- Become familiar with state and local laws on use
- Consult operators manual for warnings and proper maintenance


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# Questions????

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