



# Use of Top Tethers with Forward-Facing Child Restraints

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## Co-authors

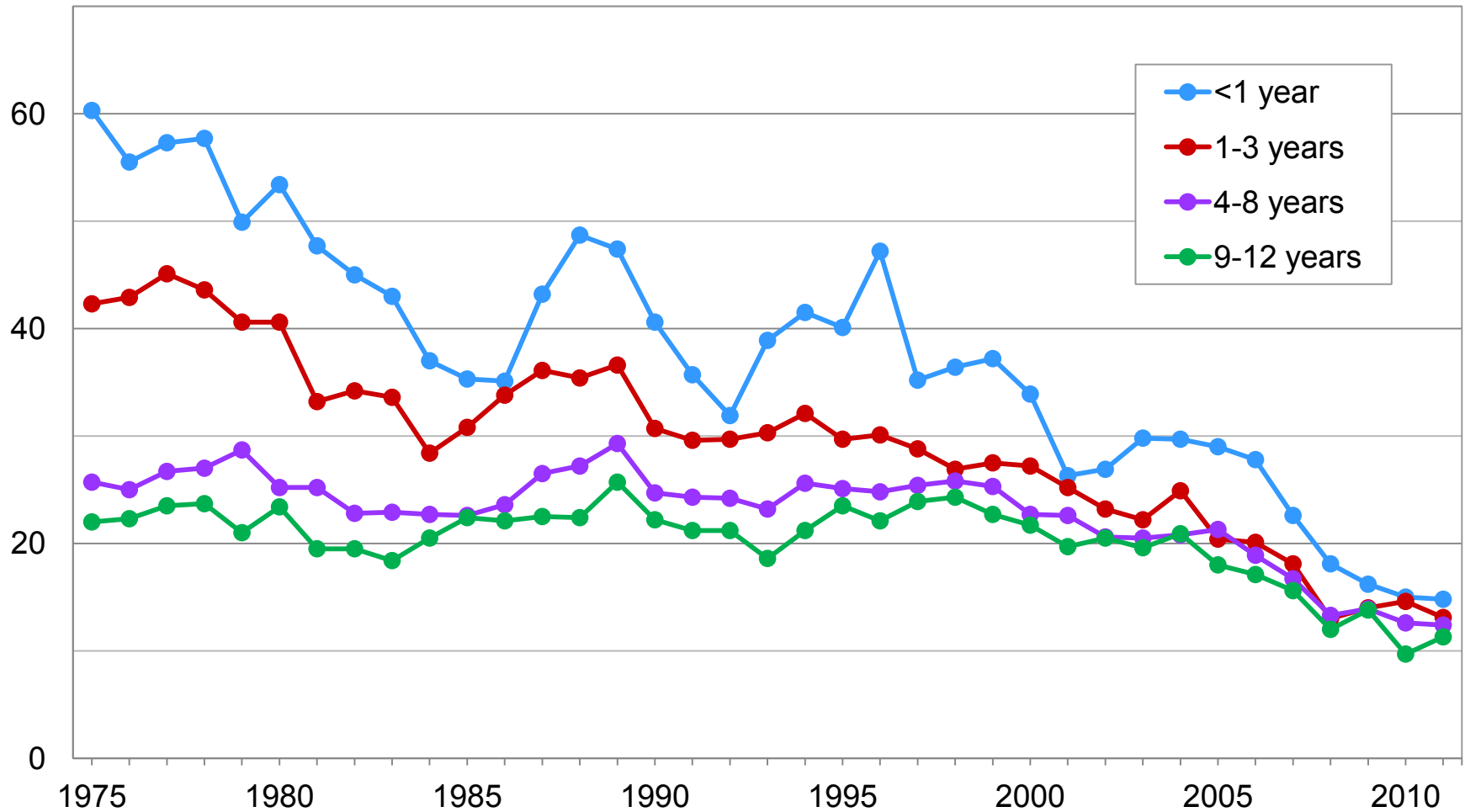
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# Child passenger vehicle occupant deaths

Per million children, by age, 1975-2011



# Lower Anchors and Tethers for Children (LATCH)



# IIHS sled test with/without tether



# Prior studies of tether use with forward-facing child restraints

- In 2003 IIHS parking lot survey in Washington, DC and Maryland, tethers were used 47% of the time
- In 2005 NHTSA study of more than 1,000 children in forward-facing child restraints, tethers were used 51% of the time
- In 2010 IIHS parking lot survey of more than 1,500 vehicles with forward-facing child restraints, tethers were used 43% of the time
- 28% of the more than 15,000 forward-facing child restraints at Safe Kids car seat checks were tethered upon arrival in 2009-10

# Parent installations of child restraints using different vehicle LATCH systems



- More likely to use lower anchors correctly with
  - More clearance around anchors
  - Less force needed to attach
  - Not as deep in seat bight
- Most parents did not use the top tether with forward-facing restraints

# Why aren't tethers being used?

- In a 2005 NHTSA survey of drivers who had vehicles with tether anchors, the most common reason for not using tethers was not knowing how to use them (36%)
- In a 2007 national telephone survey (NHTSA), the most common reason (51%) for not using the tether on every trip was not having a place to attach it in the vehicle
- Primary objective of new study was to gather detailed information about why drivers are not using tethers



# Method

- Interviews and observations conducted by TransAnalytics, LLC, in September-November 2012 using teams of CPS technicians
- Data collected at shopping centers, recreation facilities, child care centers, etc. in mostly suburban areas near Philadelphia, Seattle, Washington, DC, and Fredericksburg, VA
- Interviewed 479 drivers of passenger vehicles equipped with tether anchors and forward-facing child restraints
  - Asked drivers about their knowledge, opinions, and experiences with tethers, and why they do or don't use them
  - Observed whether tethers were being using correctly

# Forward-facing child restraint installations

Among 479 vehicles equipped with tether anchors

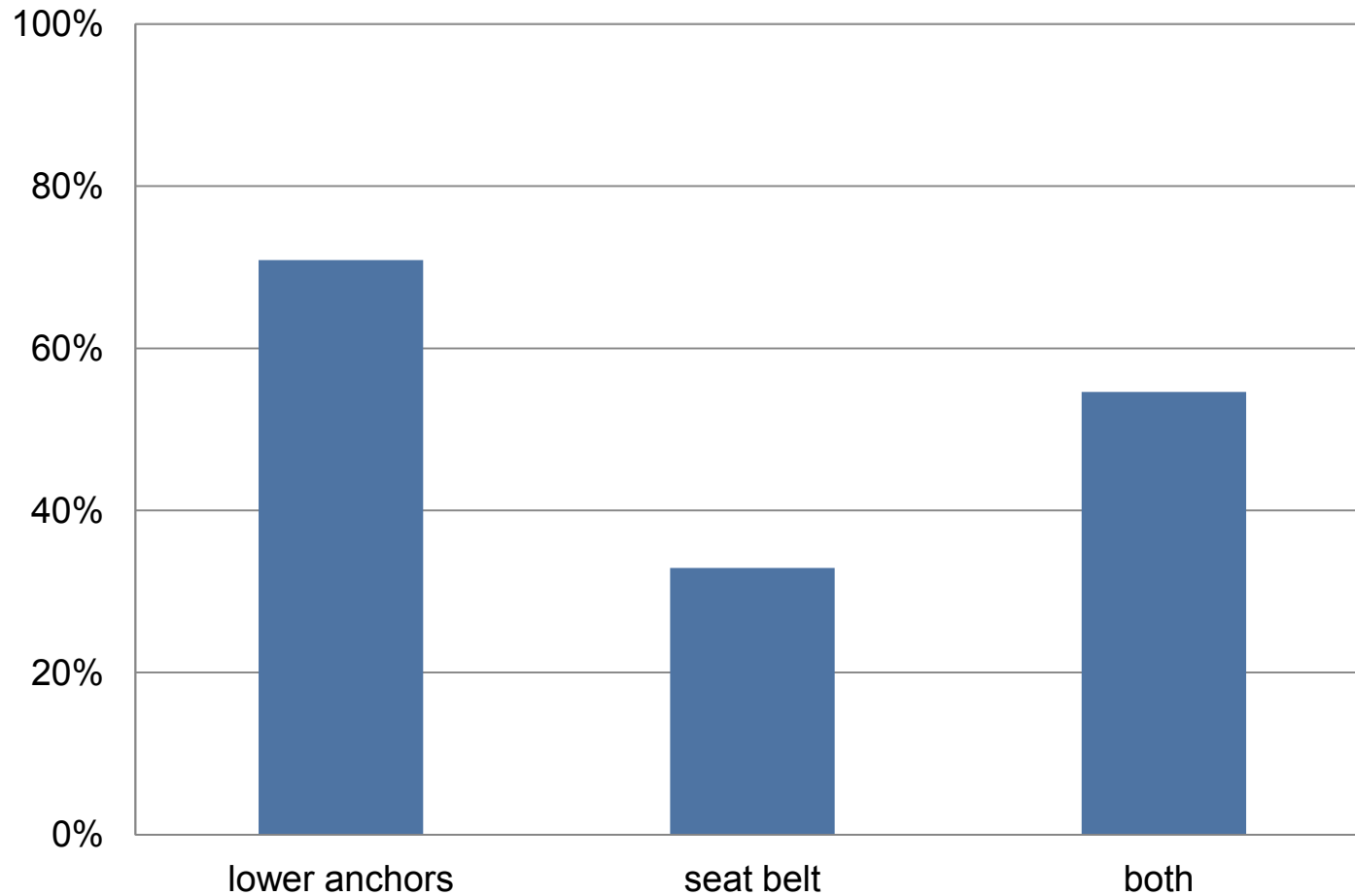
- 57% of child restraints were attached with LATCH lower anchors, 35% were attached with the seat belt, and 7% were attached with both
- 56% of child restraints were tethered
- 39% of child restraints were tethered correctly
- 72% of drivers said they had installed the child restraint

# Observed tether misuses

Among 269 child restraints installed with tethers

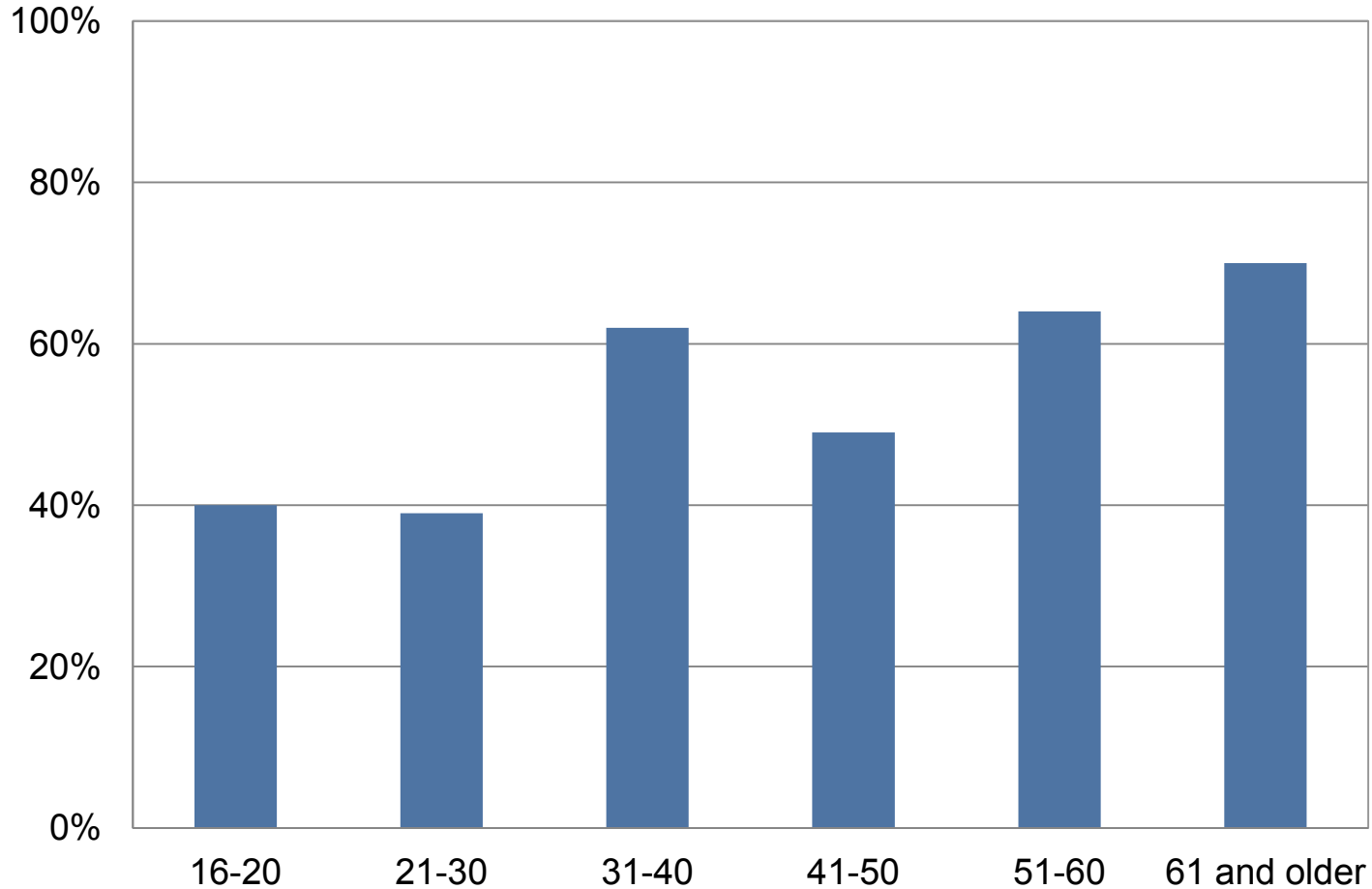
	percent
loose tether strap	18
tether strap incorrectly routed	14
twisted tether strap	11
tether connector in wrong direction	6
attached to cargo tie down, LATCH lower anchor, or seat belt	2
attached to tether anchor for different seating position	1

# Tether use by type of installation



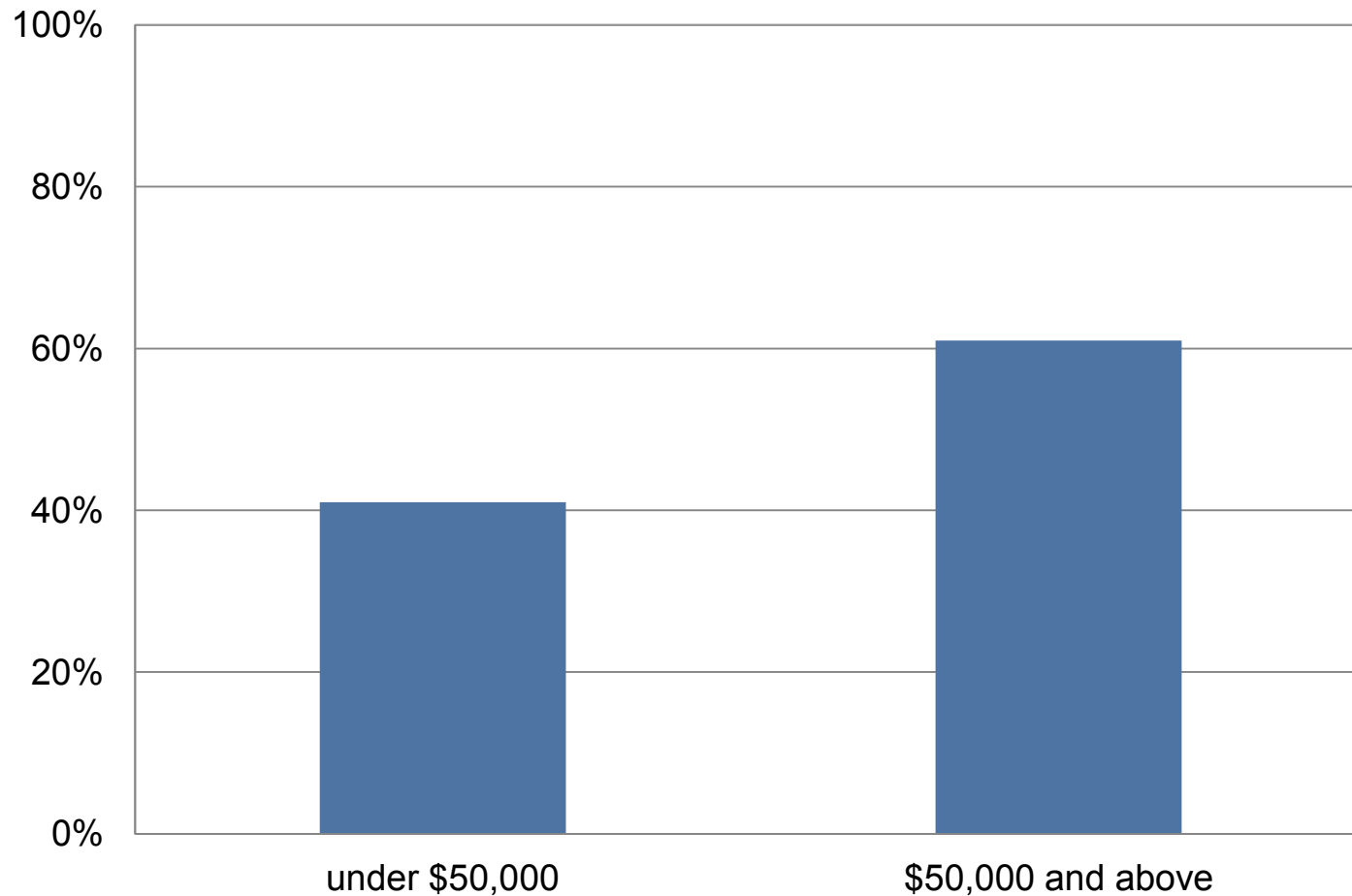
# Tether use by driver's age

Among drivers who installed child restraints



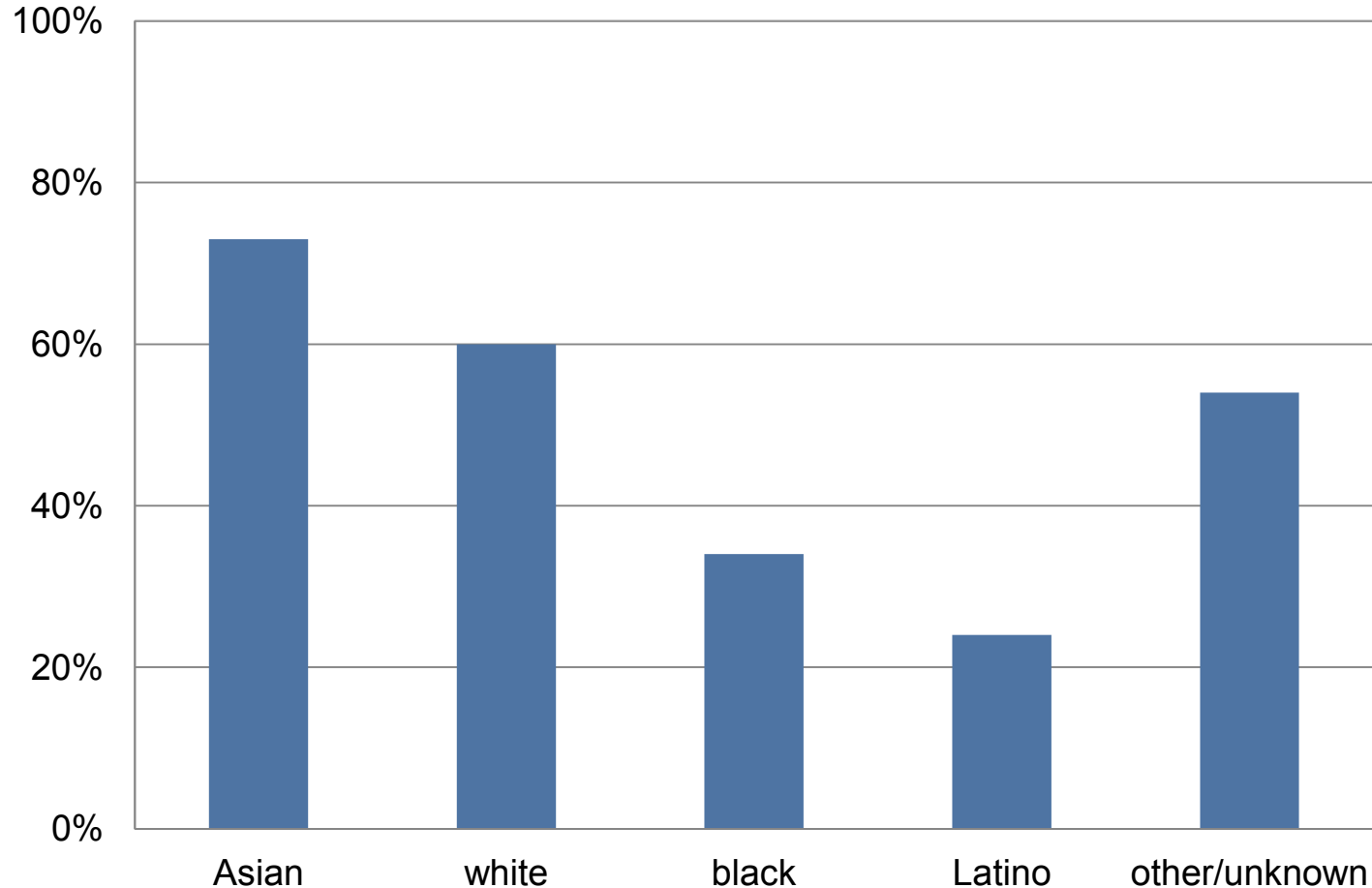
# Tether use by median household income

Among drivers who installed child restraints



# Tether use by driver's self-identified race/ethnicity

Among drivers who installed child restraints



# Knowledge of tethers

Among drivers who installed child restraint

	tether users	tether nonusers
percent who heard of term “top tethers”	81	45
percent who heard of tethers and correctly identified tether on child restraint	77	39
percent who correctly identified tether anchor	NA	49



# Reported use of child restraint in more than one vehicle

Among drivers who installed child restraint

percent of drivers who moved the child restraint...	tether users	tether nonusers
a few times a month or more often	12	32
about once a month	24	15
never	65	53

# Top reasons for not using tethers

Among drivers who installed child restraint

	percent
didn't know it was there	22
didn't know how to use	15
in a hurry/not enough time	13
didn't know where to attach	10
not important or needed	9
didn't know they had tether anchor	8
no anchor for seating position	5

# Top reasons for using tethers

Among drivers who installed the child restraint

	percent
installation safer or more secure	42
reduces movement of child restraint or child's head	35
tighter installation	27
manual says to use it	20
CPS technician recommended it	12

# Sources of information about using child restraints

Among drivers who installed child restraint

	tether users	tether nonusers
percent who saw or heard information about how to use forward-facing child restraints in past 10 years	99	94
if yes, source of information		
car seat manual	49	41
CPS technician	27	14
health care professional	13	15
internet	24	12
labels on car seat	13	14
friend or relative	14	8
vehicle manual	7	2

# Difficulties using tethers (percent)

Among drivers who installed child restraint

	tether users	tether nonusers
thought tether use is hard	24	29
among those who thought tether use is hard, reasons why		
tether anchor hard to access	21	23
unsure where to attach tether	12	34
hard to tighten/loosen tether strap	33	17
tether connector hard to squeeze	12	11

# Summary

- Tether use slightly higher than in previous surveys, but substantial room for improvement
- Tether use particularly low with seat belt installations
- Parents not using tethers most often said they didn't know about tethers or didn't know how to use them
- Currently re-evaluating features of vehicle tether systems to identify designs that promote correct use
  - Repeating volunteer installations with specific instructions to use the tether

# Working with parents and caregivers

- Cannot assume that parents and caregivers understand terms such as LATCH, tethers, and lower anchors (even if we observe that they are already using the hardware)
- Public education for parents should focus specifically on tether use
  - Need to explain what tethers are and how to use them
  - Inform parents about safety benefits of tethers
- Use tethers with LATCH lower anchors and seat belt installations



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