



INSURANCE INSTITUTE
FOR HIGHWAY SAFETY

HIGHWAY LOSS
DATA INSTITUTE

www.iihs.org

Attitudes Towards Technologies for Increasing Seat Belt Use

Lifesavers Conference
Denver, CO • April 15, 2013

David G. Kidd

MAP-21 opens up new opportunities to use in-vehicle technology to increase belt use



- Can allow automakers to use interlocks to comply with a safety regulation
- Can require reminder chime for more than 8 seconds
- Rulemaking for rear seat belt reminders

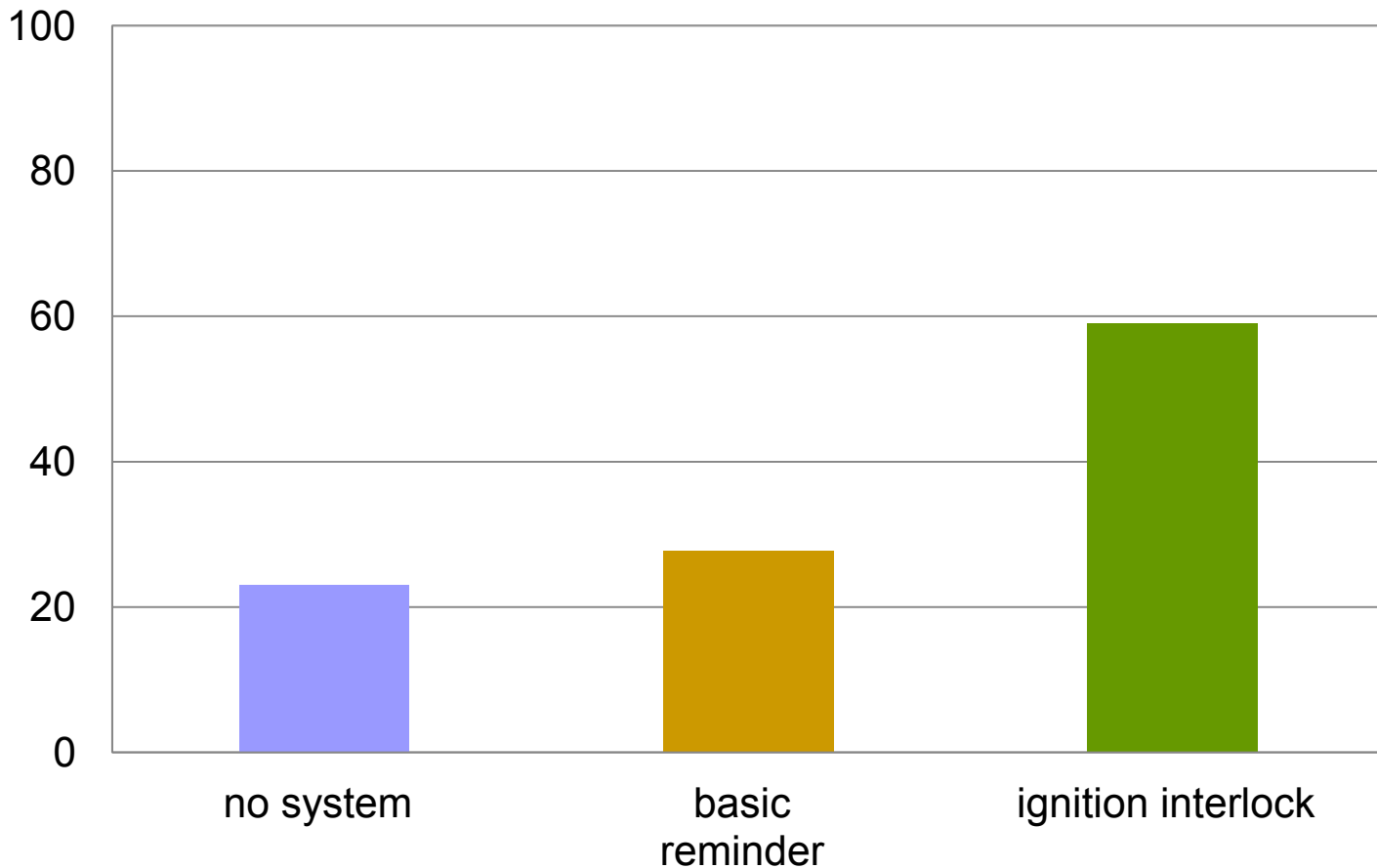
MAP-21 opens up new opportunities to use in-vehicle technology to increase belt use



- Can allow automakers to use interlocks to comply with a safety regulation
- Can require reminder chime for more than 8 seconds
- Rulemaking for rear seat belt reminders

Percent belt use observed in 1972-74 model vehicles with belt reminders or interlocks

Robertson, 1975



Belt interlocks are unpopular

- Focus groups of part-time belt users
 - Too invasive
 - Concerns about emergency situations
 - Believe belt use is a personal choice
- 2003 telephone survey of part-time users indicated radio/entertainment interlock was most effective and least acceptable
- Situations to consider:
 - Warming up the car
 - Emergency situations
 - Moving at low speeds in parking lot or driveway
 - Only effective if people want to use that particular function

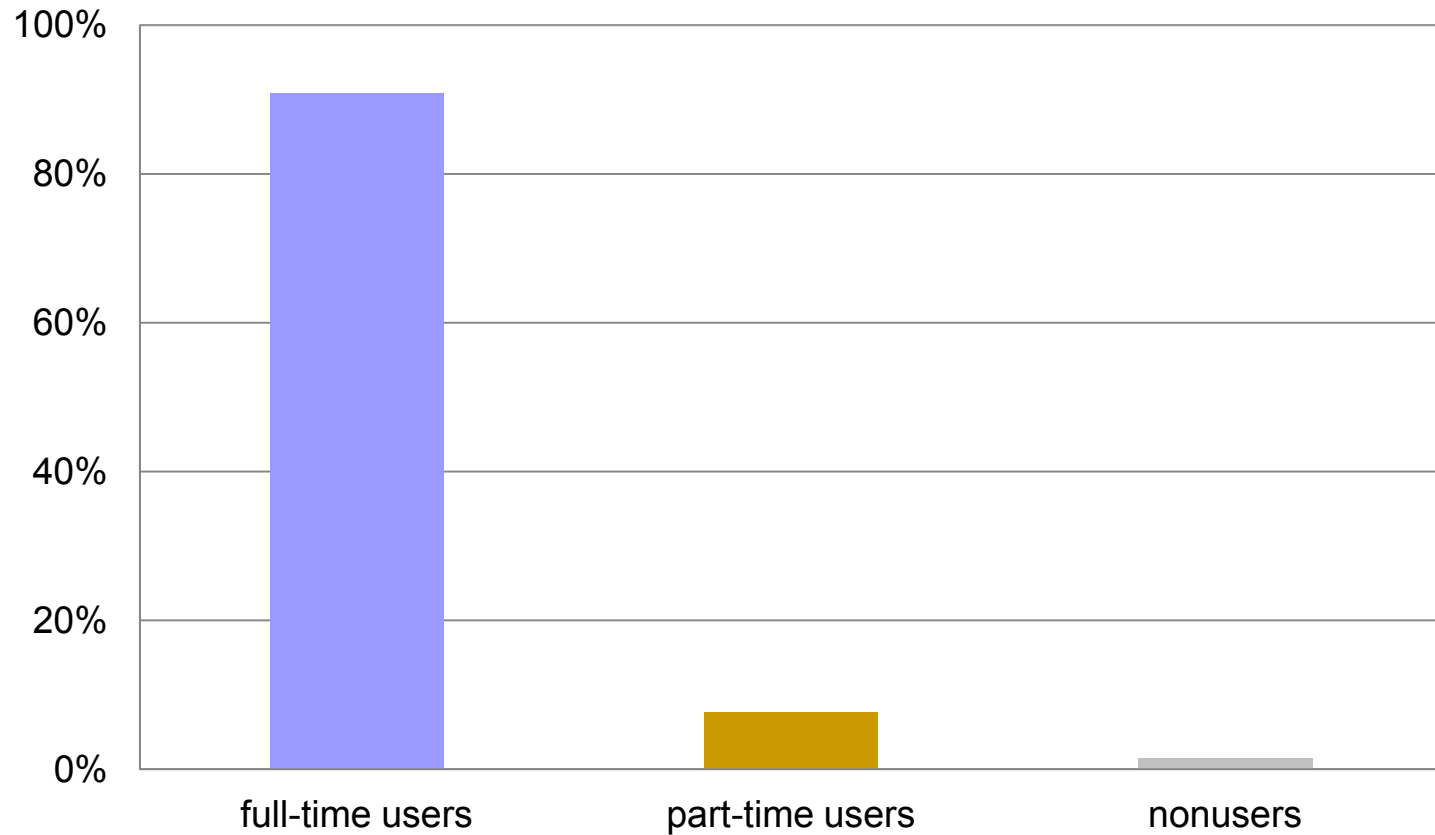
Can we take advantage of MAP-21 changes?

IIHS Survey, 2012

- National survey of 1,218 drivers and passengers on self-reported belt use
- Respondents classified as full-time, part-time or nonusers
- Part-time and nonusers asked
 - Reasons for not buckling up
 - Opinions about effectiveness and acceptance of technologies

Types of belt users

Drivers and adult passengers



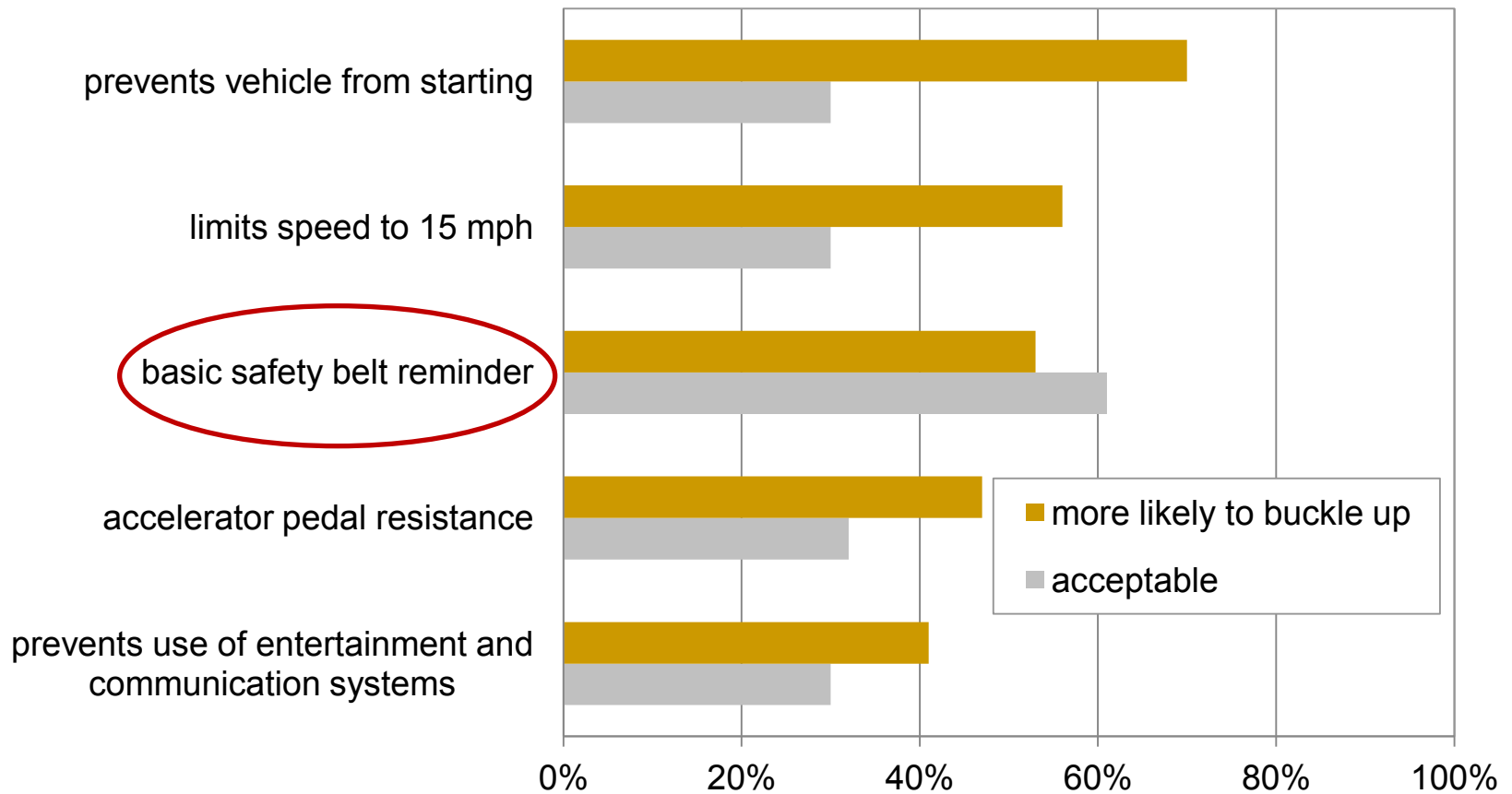
Top 3 reasons for not using seat belt

By belt user type

part-time users	nonusers
short trip 67%	comfort 77%
forget 60%	don't need belt 54%
comfort 47%	don't like being told what to do 50%

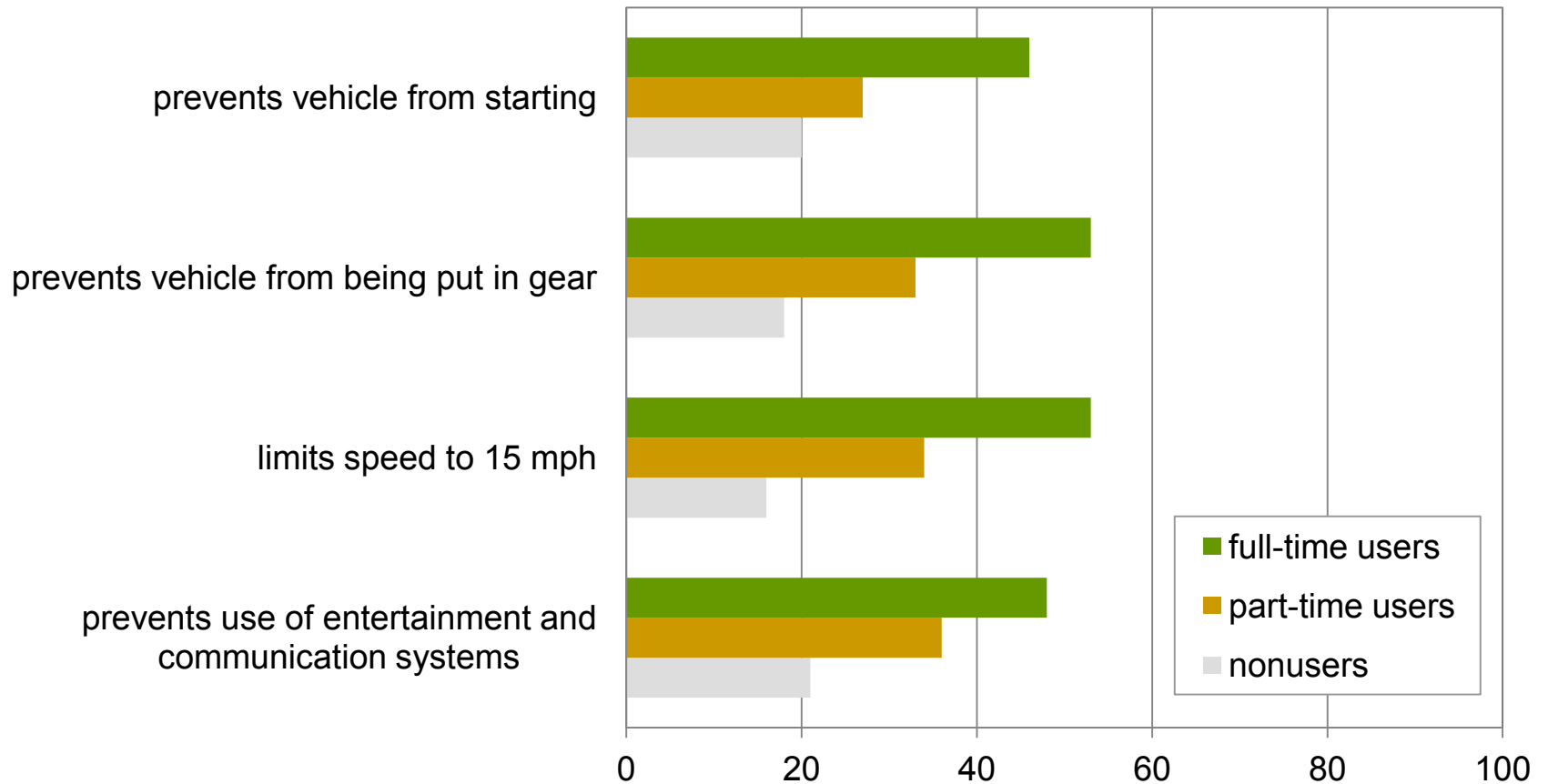
Part-time users' opinions about belt use interlocks and reminders

Percent that agree



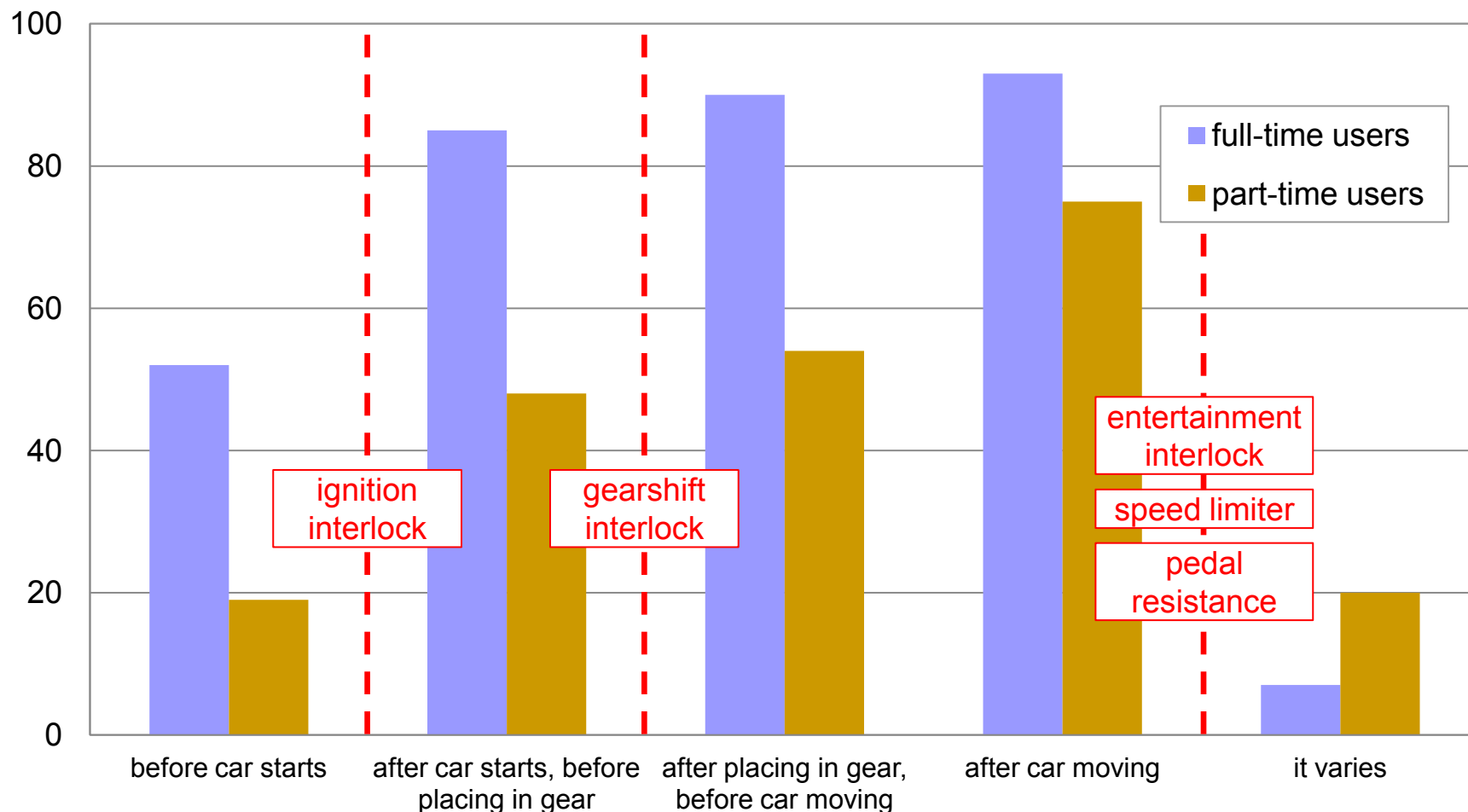
Percent of belt users that would support different belt interlocks

By belt use group



Interlocks and buckling routines

Percentage who have buckled up at each step during trip start



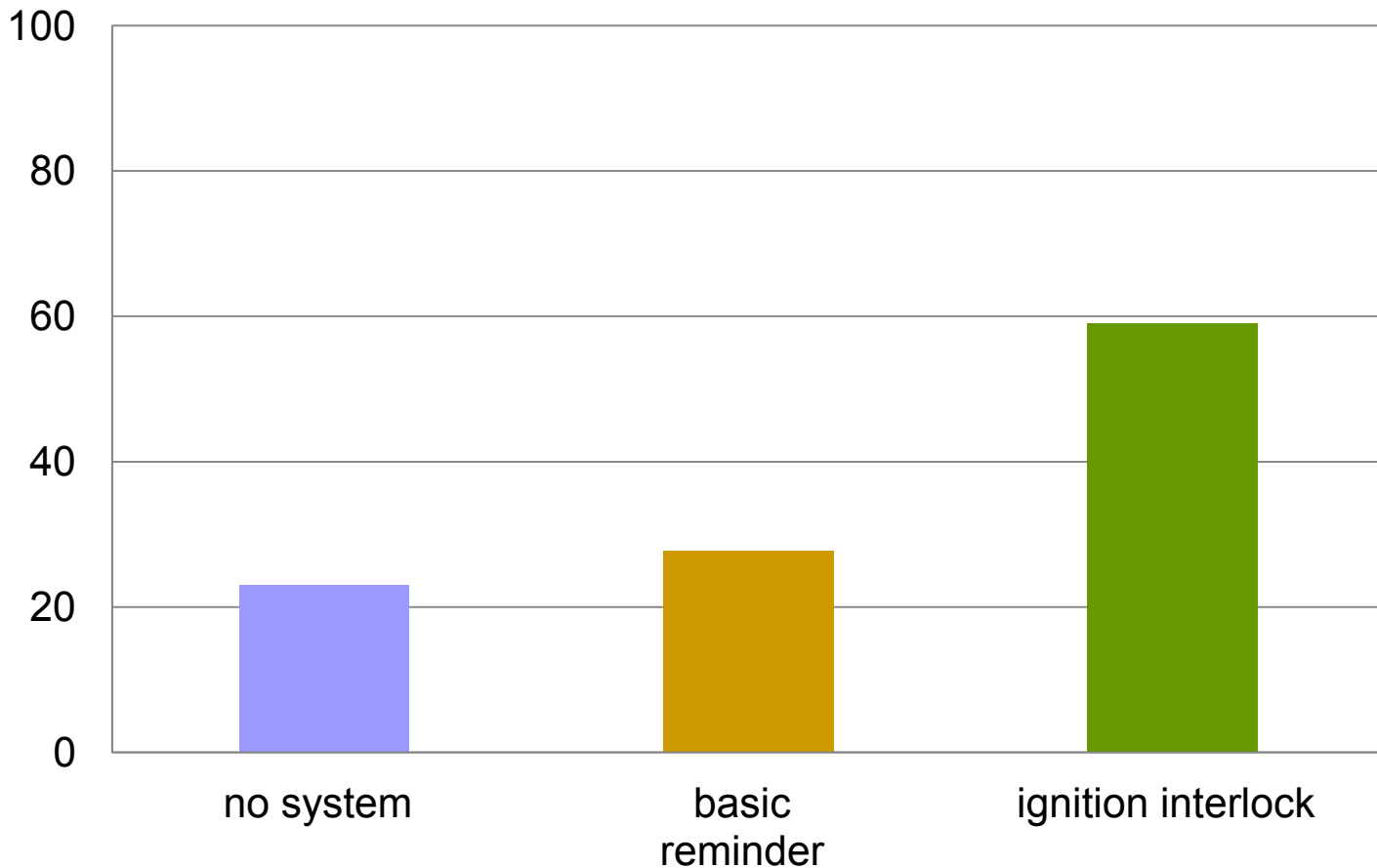
MAP-21 opens up new opportunities to use in-vehicle technology to increase belt use



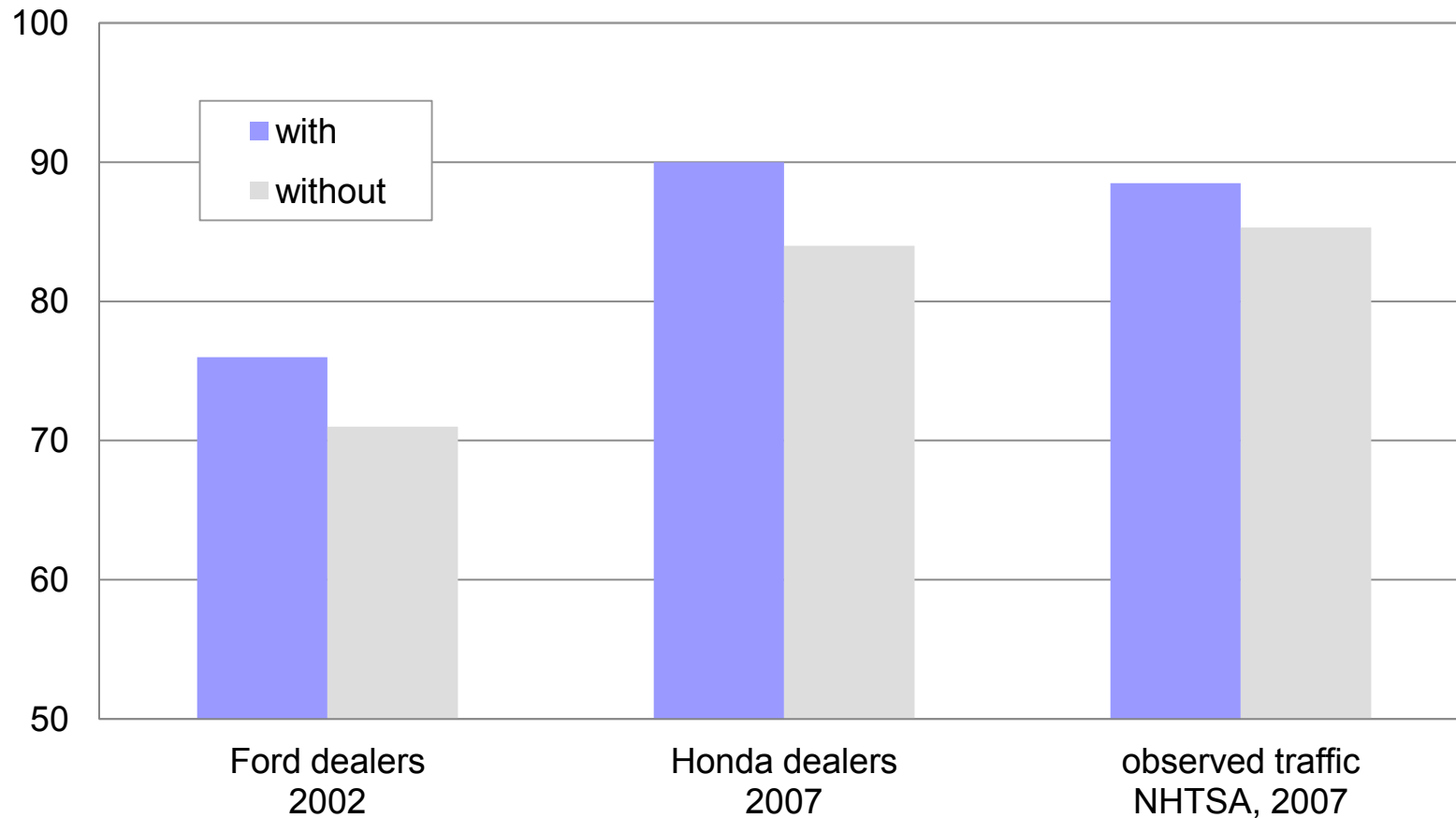
- Can allow automakers to use interlocks to comply with a safety regulation
- Can require reminder chime for more than 8 seconds
- Rulemaking for rear seat belt reminders

Percent belt use observed in 1972-74 model vehicles with belt reminders or interlocks

Robertson, 1975



Percent driver belt use in vehicles with and without enhanced reminders



Enhanced seat belt reminders are common in U.S. fleet

- Many manufacturers voluntarily fit 2012 models with enhanced reminders
 - 91 percent driver
 - 77 percent front passenger
- Euro NCAP gives credit to driver and front passenger reminders that meet certain criteria
 - “Loud and clear” audiovisual signal lasting at least 90 seconds
 - Intermittent or continuous signal
 - Criteria for when the signal must start

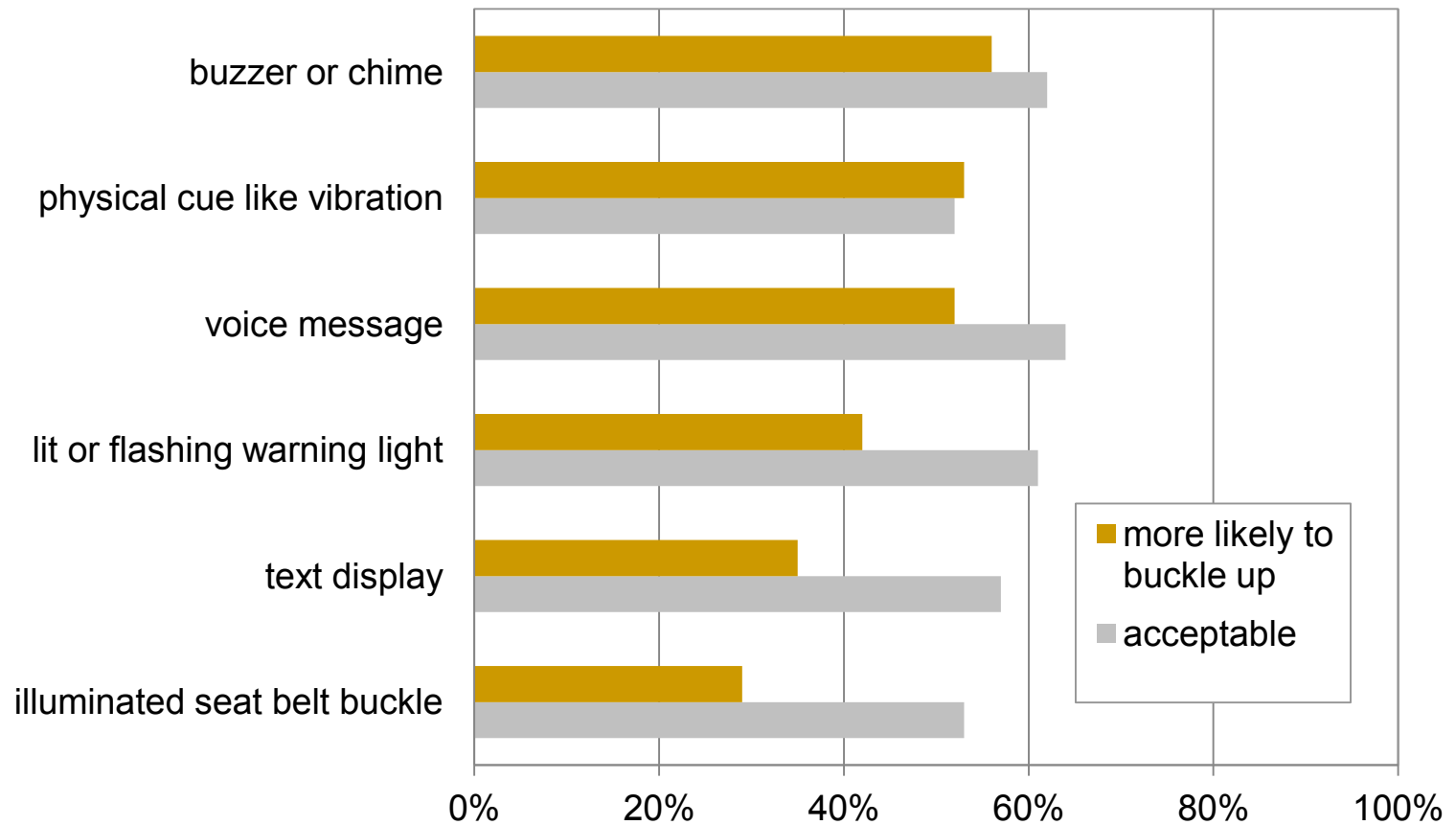
Real-world belt-reminder effectiveness

- U.S. driver belt use 3-6 percentage points higher in vehicles with enhanced reminders vs. vehicles without enhanced reminders
- Driver belt use in Europe 93-99% when fitted with enhanced belt reminders meeting EuroNCAP rating criteria
 - 12 percentage points higher than in cars without reminders
- U.S. driver fatality risk 2 percent lower for vehicles with enhanced reminders vs. vehicles without enhanced reminders



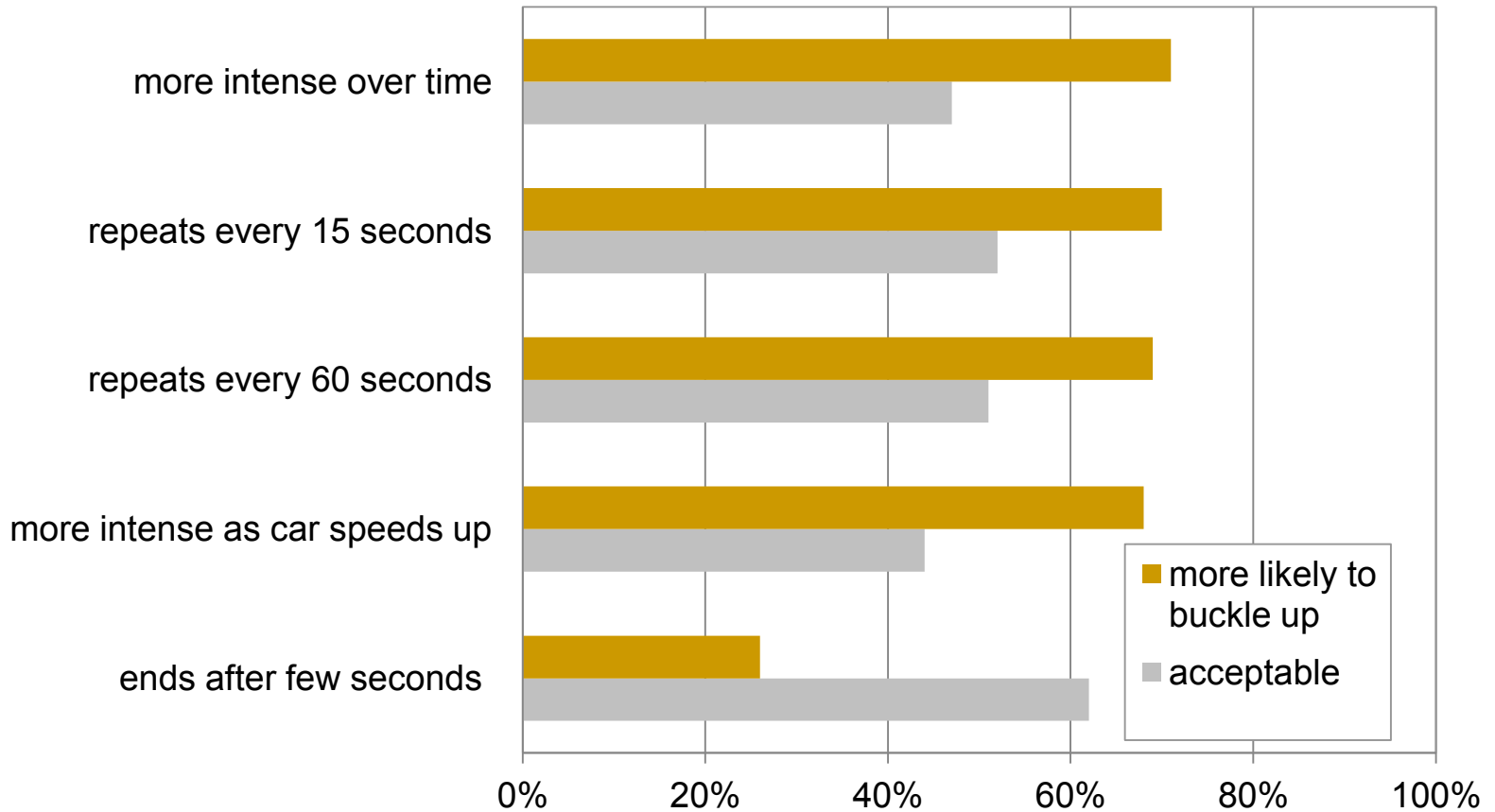
Part-time users' opinions about effectiveness and acceptability of different reminder features

Percent who agree



Part-time users' opinions about effectiveness and acceptability of different intensities of reminders

Percent who agree



Increasing benefit of front passenger belt reminders

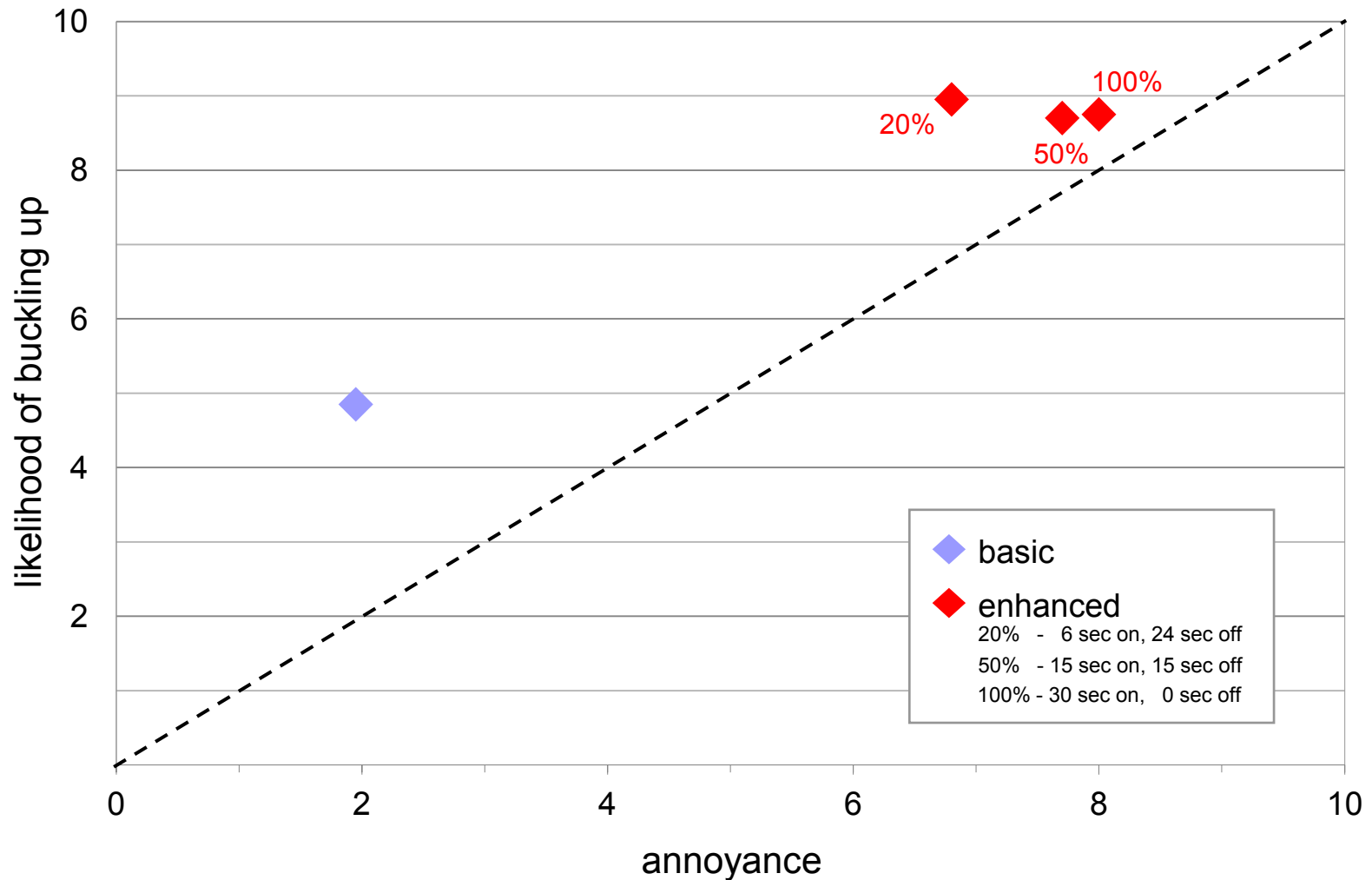
- Reminders meeting Euro NCAP's design requirements increase driver and front passenger belt use
- System designs can vary widely
 - Intermittent or continuous 90-second audiovisual signal
 - Allow for gaps in signal up to 25 seconds
 - Proportion of time chime sound can vary
 - Overall duration of chime can vary

What features of enhanced belt reminders are most effective?

Sample reminder



Ratings of effectiveness and annoyance by belt reminder type



MAP-21 opens up new opportunities to use in-vehicle technology to increase belt use



- Can allow automakers to use interlocks to comply with a safety regulation
- Can require reminder chime for more than 8 seconds
- Rulemaking for rear seat belt reminders

Encouraging fitment of rear reminders



- Euro NCAP gives credit for rear reminders
 - Visual display lasting at least 30 seconds after start of trip
 - Audible tone when a rear belt is unbuckled
- 2007 petition to NHTSA to mandate rear reminders
- 3 percent of 2012 U.S. vehicle models have rear seat belt reminder systems

IIHS 2012 national survey of 254 drivers with 8-15 year-olds riding in back seat

- Only 3 percent said their child does not always buckle up in back seat
- Reasons why child does not buckle up
 - 84 percent do not like belt
 - 77 percent never fasten belt
 - 55 percent take belt off during trip

Reminder features parents want

- 82 percent of parents want to know when child is unbuckled
- Desired reminder information
 - Diagram of seating positions and belt use (87%)
 - Flashing or illuminated light or text display (85%)
 - Chime or buzzer (79%)
- Desired reminder duration
 - Until children buckle up (63%)
 - Several miles into trip (17%)
 - Brief, ending shortly after vehicle starts (19%)

Conclusions

- MAP-21 offers new opportunities to increase front and rear occupant belt use
- Survey suggests belt reminders would be most acceptable technology to encourage belt use and are reasonably effective
 - Audible reminders and reminders that are persistent are most effective
- Strengthening reminder requirements similar to Euro NCAP is a promising way to increase belt use
 - Estimate about one-third of the enhanced seat belt reminders in the U.S. currently meet Euro NCAP requirements
- Reducing duty cycle is one way to reduce annoyance of European-style enhanced reminders
- Most parents want rear seat reminders with information on belt use status



INSURANCE INSTITUTE
FOR HIGHWAY SAFETY

HIGHWAY LOSS
DATA INSTITUTE

www.iihs.org

Dedicated to reducing deaths, injuries,
and property damage on the highway