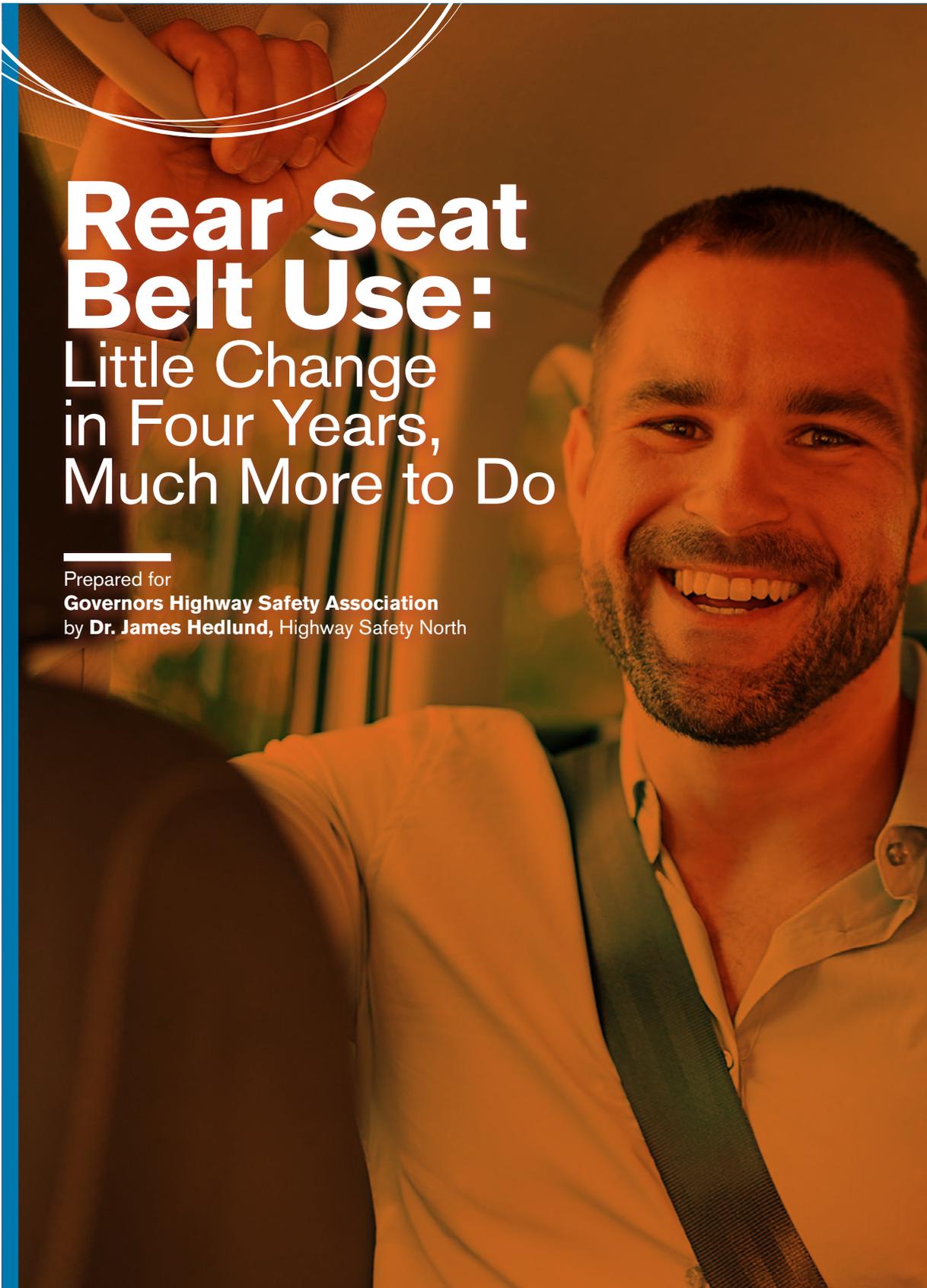


Spotlight on Highway Safety



Rear Seat Belt Use: Little Change in Four Years, Much More to Do

Prepared for
Governors Highway Safety Association
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◀ **Rear Seat Belt Use:** Little Change in Four Years, Much More to Do

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EXECUTIVE SUMMARY

Rear seat passenger vehicle occupants continue to die unnecessarily in traffic crashes because too many fail to buckle up. In 2018, there were 803 deaths of unbelted rear seat occupants age 8 and older. More than 400 would have survived had they been belted.

The Governors Highway Safety Association (GHSA) called attention to rear seat belt use in its November 2015 report, *Unbuckled in Back: An Overlooked Issue in Occupant Protection* (GHSA, 2015). The record since then is mixed. The good news is that unbelted rear seat fatalities dropped by 80, from 883 in 2013 to 803 in the 2018 FARS annual report file. However, rear seat belt use in passenger vehicles on the road dropped by 2 percentage points, from 78% in 2013 to 76% in 2018. Only two states enacted a rear seat belt use law since 2015, leaving 20 states without a law and 11 states with only a secondary enforcement law.

The strategies to increase rear seat belt use are straightforward but require persistence and commitment. States should:

- Enact primary enforcement rear seat belt use laws; upgrade secondary laws to primary.
- Enforce seat belt use laws for all seating positions.
- Publicize the benefits of buckling up, in every seat on every trip.
- Increase belt use in the front seat, because higher front seat use leads to higher rear seat use.

Others should do their part:

- For-hire vehicle companies and drivers – taxis, limousines, Lyft and Uber – should actively promote belt use to their passengers.
- Vehicle manufacturers should install rear seat belt reminders in their vehicles, as a few now do.
- The National Highway Traffic Safety Administration (NHTSA) is conducting research and developing traffic safety programs to increase rear seat belt use. NHTSA has asked for public comment on a requirement for rear seat belt reminders.

The goal is clear: All occupants should buckle up, all the time, on every trip.

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INTRODUCTION

In November 2015, the Governors Highway Safety Association (GHSA) released the report *Unbuckled in Back: An Overlooked Issue in Occupant Protection*. The report noted that, in vehicles on the road, only 78% of rear seat passenger vehicle occupants age 8 and older were buckled up, compared to 87% of front seat occupants. In vehicles involved in fatal crashes, only 60% were belted. It reported the consequences: 883 unbuckled fatalities among these occupants, at least 400 of whom would have survived had they worn their belts. To prevent these unnecessary fatalities, it called on states to enact and enforce rear seat belt use laws and to promote belt use in both rear and front seats.

Four years later, there's been little change in belt use and there's much more to do.

Little change in four years.

For passenger vehicle occupants age 8 and older, rear seat belt use on the road dropped to 76% in 2018, a decrease of 2 percentage points from 2013, though the change was not statistically significant. In vehicles involved in fatal crashes in 2018, 64% were belted, an increase of 4 percentage points from 2013. There were 803 unbelted fatalities in 2018, a decrease of 80 from 2013.

In November 2015, 18 states and the District of Columbia had a primary enforcement rear seat belt law, in which any unbelted occupant may be ticketed at any time, and 10 states had a secondary enforcement law, in which unbelted occupants may be ticketed only if police have another reason to stop the vehicle. In the intervening four years, Mississippi enacted a primary law and Alabama enacted a secondary law. As of November 2019, 19 states and the District of Columbia have primary laws and 11 states have secondary laws.

Much more to do.

There still are more than 400 preventable fatalities annually of unbelted rear seat passenger vehicle occupants. There still are 20 states with no rear seat belt law and an additional 11 states with only a secondary law. Belt use observed on the road is 14 percentage points lower in rear seats than in the front seat. Rear seat belt use is lower in for-hire vehicles – taxis, Lyft, Uber – than in private vehicles, and trips in for-hire vehicles are increasing.

This report summarizes basic information on rear seat belts: their effectiveness in preventing injuries and fatalities, the rate at which they are used and characteristics of passengers who do not use rear seat belts regularly. It documents state rear seat belt laws and recent progress in enacting and upgrading these laws. It reports on activities to increase rear seat belt use in the states and in for-hire vehicles. It concludes with recommendations to increase rear seat belt use.

In this report, a passenger vehicle is a car, light truck, or van. A rear seat is any designated seating position behind the front seat, including third rows for vans and SUVs. The report addresses only passengers age 8 and older. All fatality data come from NHTSA's new Fatality Analysis Reporting System (FARS) Query System (FARS, 2019) unless otherwise noted.

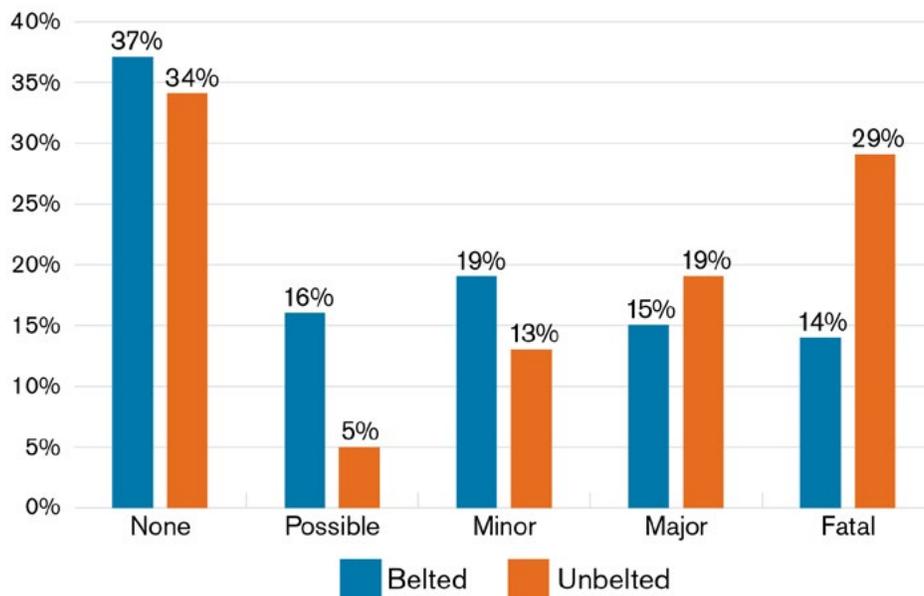
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WHY WEAR BELTS IN REAR SEATS?

Seat belts protect rear seat occupants. NHTSA estimates that lap-shoulder belts are 44% effective in preventing fatalities in outboard rear seat positions in passenger cars and 73% effective in light trucks and vans (Kahane, 2015). Center seat lap belts are equally effective (Padmanaban & Mortazave, 2006). Of the 803 unbelted rear seat passenger vehicle fatalities in 2018, 426 were in passenger cars and 377 in light trucks and vans. If all had been belted, about 187 of the passenger car fatalities and 275 of the light truck and van fatalities would have survived, about 462 in all.

The two figures below illustrate vividly the effect of rear seat belts. The data are from the 2018 FARS: rear seat passenger vehicle occupants, age 8 and older, in fatal crashes, with known belt use. Figure 1 shows how both the belted and unbelted occupants are distributed across the injury levels, from no injury to fatality. Of the belted occupants, 37% were uninjured and 14% died. Of the unbelted occupants, 34% were uninjured but 29% died.

Figure 1. Injuries of belted and unbelted rear seat occupants in fatal crashes 2018

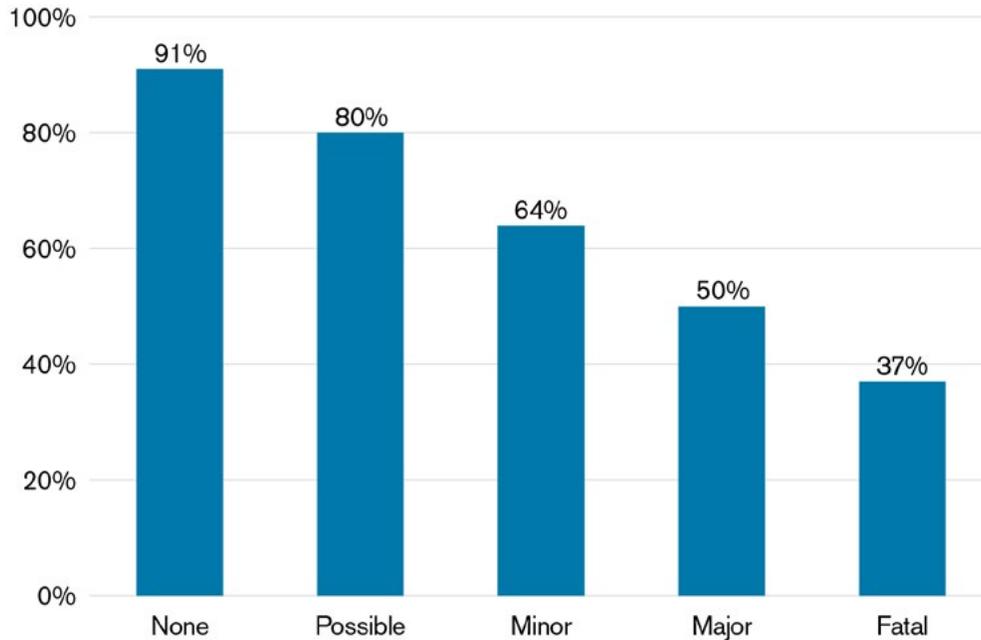


Source: FARS

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Figure 2 shows the same data in a different way: the proportion of belted occupants at each injury level. 91% of the uninjured occupants were belted, compared to 37% of the fatally injured.

Figure 2. Proportion belted for each injury level, rear seat occupants in fatal crashes 2018



Source: FARS

Occupant protection improvements in the front seat in recent model year cars have changed the relative safety of the front and rear seats. Bilston et al. (2010) found that, in vehicles from model year 1997 on, the front seat is safer than the rear seat for occupants age 15 and older. More recently, Durbin et al. (2015) found that, in model year 2007 and newer vehicles, the risk of fatality for belted rear seat occupants was significantly higher than for front seat occupants. Mitchell et al. (2015) found that, in Australia, rear seat passengers sustain higher severity injuries than front seat passengers in the same vehicle. See Jensen (2019) for a summary of the relative safety of front and rear seats in recent model year vehicles. “It’s safer in the rear seat so I don’t need a seat belt” is no longer a valid excuse for not buckling up.

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REAR SEAT BELT USE RATES

Rear seat belt use can be estimated from three sources: observations of vehicles on the road, police crash reports and surveys of passengers. In each, rear seat belt use is lower than front seat belt use.

Observations of vehicles on the road: NOPUS 2018.

NHTSA's annual National Occupant Protection Use Survey (NOPUS) is a nationally representative survey of seat belt use. It has two components. The Moving Traffic survey observes passenger vehicles in traffic and records driver and right front passenger lap-shoulder belt use. The Controlled Intersection survey observes passenger vehicles stopped at a stop sign or traffic signal and records lap-shoulder belt use for outboard passengers in the front and second row of seats. Both were conducted during daylight hours in June 2018. The Moving Traffic survey observed 128,934 occupants in 104,889 vehicles at 1,966 sites, and the Controlled Intersection survey observed 70,919 occupants in 51,414 vehicles at 1,612 sites (Enriquez, 2019; NHTSA, 2019). Belt use was 76.1% for rear seat occupants age 8 and older, compared to 89.6% for front seat occupants.

Vehicles in fatal crashes: FARS 2018.

FARS records belt use for all occupants in all seating positions of vehicles involved in fatal crashes. In 2018, belt use was 64.0% for the 5,964 rear seat occupants age 8 and older with known belt use in passenger vehicles, compared to 75.3% for front seat occupants.

Self-reported belt use: MVOSS 2016.

NHTSA's Motor Vehicle Occupant Safety Survey (MVOSS) is a nationally representative telephone survey of adults age 18 and older that provides self-reported information on attitudes, knowledge and behavior regarding occupant protection. In 2016, of the 5,292 respondents who sometimes rode in the rear seat, 63% said they always used their seat belt, 26% said they were part-time users, and 11% said they never buckled up, while 88% said they always buckled up in the front seat (Taylor & Daily, 2019).

Self-reported belt use: Opinion America 2016.

Opinion America conducted a telephone survey of adults age 18 and older in summer 2016. Of the 1,163 respondents who had ridden in the rear seat of a passenger vehicle in the previous six months, 72.1% said they always used their belt in the rear seat, compared to 91.4% who always buckled up in the front seat (Jermakian & Weast, 2018).

Self-reported belt use: ConsumerStyles 2012

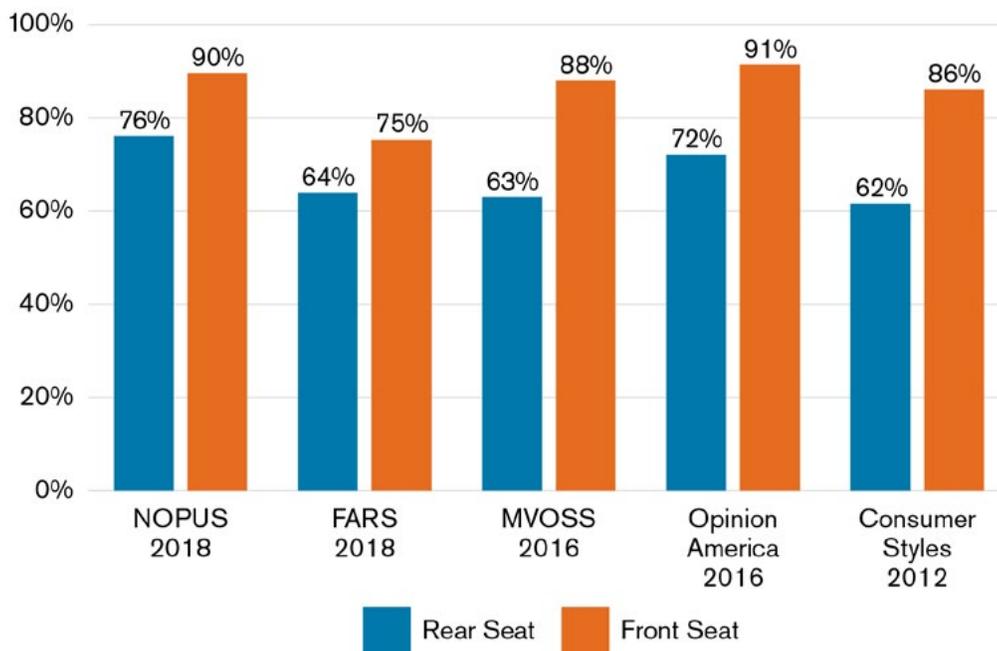
Porter Novelli conducted the ConsumerSyles telephone survey of adults age 18 and older in 2012. Of the 3,953 respondents who sometimes rode in the rear seat of a passenger vehicle, 61.6% reported that they always wore their belt in the rear seat, compared to 86.1% who said they always wore their belt in the front seat. (Bhat et al, 2015; Beck et al., 2019). While this is

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only one survey of self-reported belt use, it suggests that rear seat use may have increased somewhat since 2012.

Each of these sources has limitations. The NOPUS surveys are conducted during daylight hours, while belt use likely is lower at night. FARS data come from vehicles involved in fatal crashes, where belt use likely is lower than in all vehicles on the road. MVOSS, Opinion America, and ConsumerStyles data are self-reported, so they may overstate belt use. Regardless, these results taken together show that belt use is lower in the rear than in the front seat, probably by 10 to 15 percentage points, and that rear seat belt use is below 80%. Figure 3 illustrates these conclusions.

Figure 3. Rear seat belt use estimates



MVOSS, Opinion America, and ConsumerStyles: "always use my belt"

FARS is the only source of state-level data. Table 1 gives each state's law type in 2018 and the number of rear seat passengers in fatal crashes. Belt use rates are given for 2017 and 2018 combined, to smooth out somewhat the year-to-year variations in states with small numbers of rear passengers. These rates can be compared with use rates for 2012 and 2013 combined. Over these four years, use rates increased in 40 states and decreased in 10 states and the District of Columbia.

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WHO USES REAR SEAT BELTS?

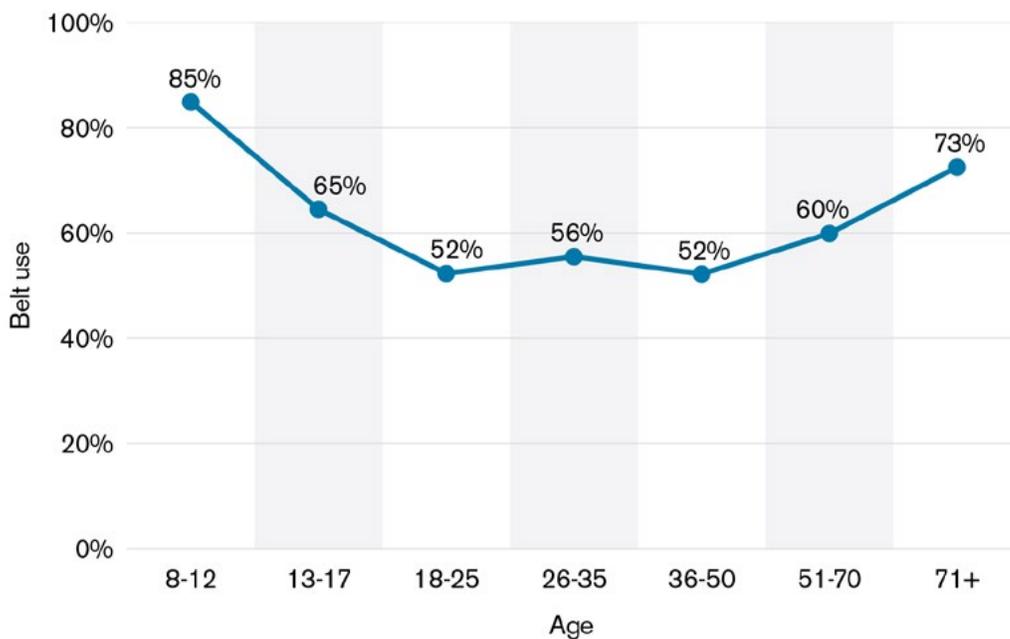
Personal characteristics: age and sex.

Use rates in the rear seat are somewhat higher for females than for males: 67% for females and 61% for males in FARS, 77% for females and 75% for males in NOPUS, 63% always use for females and 64% for males in MVOSS, and 75% always use for females and 68% for males in Opinion America. The differences by age are greater, with middle-age adults buckling up less frequently than the youngest and oldest.

- 86% use for ages 8-15, 72% for age 16-24, and 86% for 70 and older, compared to 68% for 25-69 in NOPUS.
- 66% always use for age 18-24, 59% for 25-34, and 67% for 50 and older, compared to 56% for 35-49 in MVOSS.
- 74% always use for age 18-34, 76% for age 55 and older, compared to 67% for 35-54 in Opinion America.

Figure 4 shows the use rates by age in FARS.

Figure 4. Belt use by age, rear seat occupants in fatal crashes 2018



Source: FARS

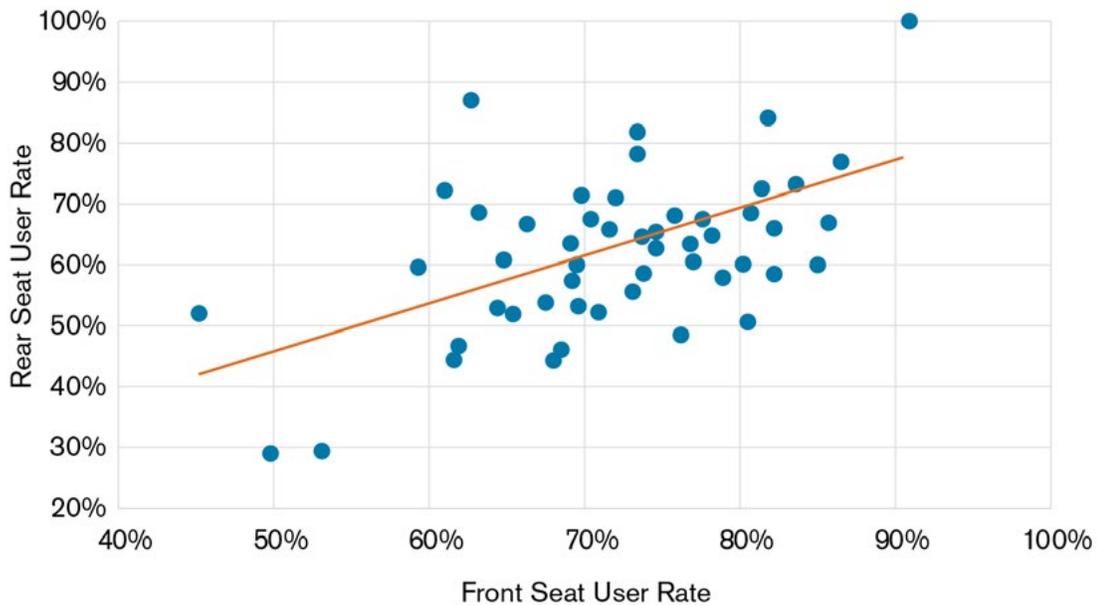
Personal characteristics: front seat belt use influence on rear seat belt use.

In the MVOSS survey, 68% of passengers who report always using their belt in the front seat said they always buckle up in the rear seat, compared to only 28% of those who don't always buckle up in the front seat.

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The FARS data support this conclusion: States with higher front seat belt use rates have higher rear seat rates. Figure 5 illustrates this by plotting each state's rear seat use rate in FARS against its front seat rate. The trend line shows that a front seat use rate of 60% is associated with a rear seat rate of about 53%, while a front seat use rate of 80% is associated with a rear seat rate of about 70%.

Figure 5. State front and rear seat belt use rates, occupants in fatal crashes 2018



Source: FARS

State characteristics: urbanization.

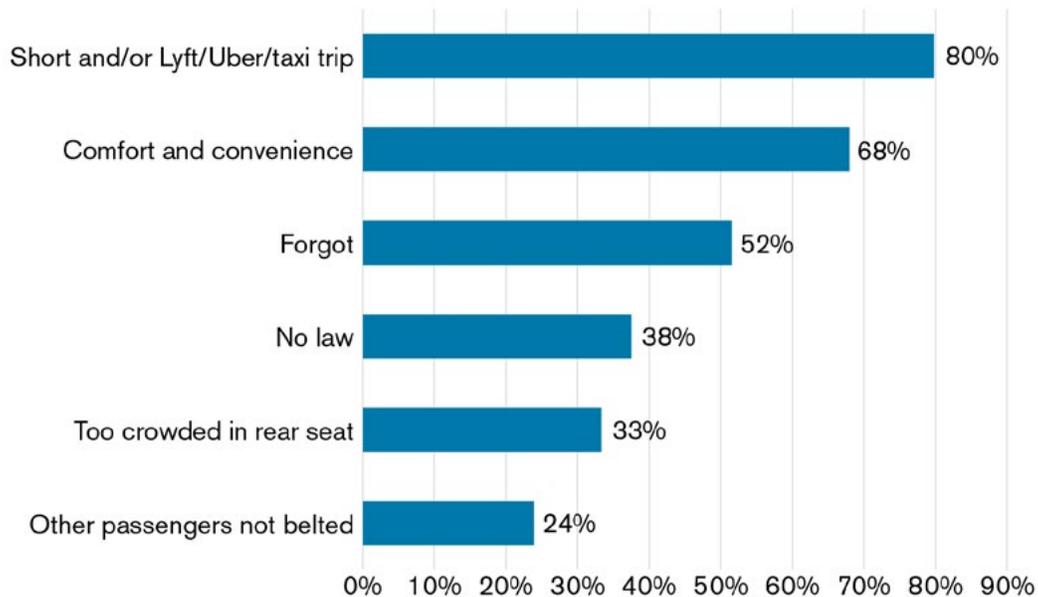
In general, rear seat belt use is somewhat higher in urban areas than rural areas. In the MVOSS survey, 64% of passengers in urban areas reported that they always use their belt in the rear seat, compared to 62% of those in rural areas.

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In the 2016 Opinion America survey, part-time belt users were asked if they agreed or disagreed with a series of statements: "Sometimes I do not wear my seatbelt in the back seat because ...". Their responses are as follows:

- 80% agreed with one or more reasons involving trip characteristics: a short distance, riding in a hired vehicle or a vanpool.
- 68% agreed with one or more comfort and convenience reasons: the belt is uncomfortable, the belt doesn't fit, it's too hard to buckle.
- 52% agreed with "I forgot."
- 38% agreed with "the law doesn't require it."
- 33% agreed with "there are too many people in the back seat."
- 24% agreed with "the people I'm with are not wearing their belts."

Figure 8. Proportion of part-time belt users who agreed with reasons for not buckling up



Source: Opinion America

Note that the top three reasons were the same in both surveys: short trips, forgetting, and comfort and convenience.

In the 2012 ConsumerStyles survey, rear seat passengers who thought belt use was very important were almost four times more likely to report that they always buckled up than passengers who did not think belt use was very important: 78% compared to 21% (Beck et al., 2019).

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STATE ACTIVITIES TO ENCOURAGE REAR SEAT BELT USE

States with rear seat belt laws typically enforce them along with their front seat laws, though tinted rear windows can make enforcement difficult. Many officers and agencies enforce belt use laws enthusiastically, but some do not. In states without rear seat laws, officers often encourage rear seat belt use as they are enforcing front seat laws (GHSA, 2019b).

Many states promote belt use in all seats, all the time. States have not used messages directed specifically to rear seating positions (GHSA, 2019c).

A few states, including Illinois and New Jersey, observe rear seat belt use along with front seat belt use in their annual surveys. Other states, including North Dakota and Pennsylvania, use crash data to estimate rear seat belt use. Michigan included a question on rear seat belt use in telephone surveys conducted before and after its 2019 Click It or Ticket campaign (ibid.).

REAR SEAT BELT USE IN FOR-HIRE VEHICLES: LYFT, UBER, TAXIS

Available evidence strongly suggests that rear seat belt use is lower in for-hire than in private vehicles. In the 2016 Opinion America survey, 39% of part-time belt users agreed with the statement that “Sometimes I do not wear my seatbelt in the back seat because I’m being driven in a taxi,” while 28% agreed with “because I’m being driven in an Uber, Lyft or other passenger vehicle rideshare” (Jermakian & Weast, 2018). In the same survey, 57% of the respondents said they always wore their belt when riding in a hired vehicle, compared to 74% who said they always wore their belt in a personal vehicle. An observational study in two cities, both with rear seat belt laws, found rear seat passengers wore seat belts more in private vehicles than in taxis (Nemire, 2017). In a 2012-2013 voluntary survey of taxi riders in New York City, only 38% reported they were belted (NYTLC, 2014). Also, trips in for-hire vehicles tend to be short, which is another reason part-time users in the MVOSS and Opinion America surveys gave for not wearing their belts (Taylor & Daily, 2019; Jermakian & Weast, 2018).

Drivers and passengers of Lyft, Uber, and taxis must obey the seat belt laws of their state. In some states, drivers are ticketed if there’s a rear seat law violation; in other states they are not (CarInsurance.com, 2009).

Both Lyft and Uber corporate policies urge but do not require their drivers to encourage all passengers to buckle up (Lyft, 2019; Kunkle, 2018). Individual driver practices vary. Some drivers require their passengers to buckle up, especially in states with a rear seat law in which the driver can be ticketed for a violation. Uber drivers themselves describe rider interactions in an online forum (UberPeople, 2019):

“Sir, you have a choice. You can either fasten your seat belt RIGHT NOW, and leave it fastened until we reach our destination, or get out and walk. It’s a \$50 fine for the driver if I get stopped for you not wearing a seat belt. If that belt comes unbuckled again, there will be no choice. You will get out.”

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“I enforce the law in the state I’m in or I stop driving till they comply. Not going to get a ticket because of someone else.”

Other drivers let passengers do what they wish:

“I never ask paxs to put on seatbelts. I drove a family from [XXX] to [YYY] with their 7 yr old jumping around the car. Kicking out paxs will result in retaliatory complaints.”

Some drivers have belt messages in their vehicles. The placard in Figure 12 was observed in an Uber in Southern California.

Figure 12. Belt use message in a for-hire vehicle



In spring 2018, Uber and GHSA launched a “Make it Click: Every seat. Every ride.” national effort to encourage ride-share customers, and all rear-seat vehicle passengers, to always buckle up. The campaign provided State Highway Safety Offices (SHSOs) with materials to encourage passengers and drivers to buckle up on every trip, in every seating position. New materials, in cooperation with Volvo, were released in spring 2019 (Figure 13). Uber conducted local activities in collaboration with some states and promoted the campaign through its blog and other digital channels. Additional materials will be released soon.

Figure 13. Uber/GHSA/Volvo Spring 2019 Make It Click campaign



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REAR SEAT BELT REMINDERS

Federal safety standards require passenger vehicles to have a short visual and audible reminder for front seat occupants to buckle up. Most recent model-year vehicles have reminders that persist until all front seat occupants are belted. These are highly effective (IIHS, 2019b).

Belt reminders are not required for the rear seats. Volvo was the first manufacturer in the United States market to install rear seat belt reminders. A few other manufacturers have rear seat belt reminders in some of their models, but most vehicles sold in the United States do not (ibid.)

In the Opinion America survey, 62% of respondents said that an audible belt reminder would make them more likely to buckle up, and 50% said a visual reminder would have the same effect (Jermakian & Weast, 2018).

In 2012, Congress instructed NHTSA to begin rulemaking to require rear seat belt reminders. NHTSA began this rulemaking in 2013. In September 2019, NHTSA released a Notice of Proposed Rulemaking (NPRM) seeking public comment on a rear seat belt warning system (Federal Register, 2019). In addition, the Senate in its 2020 appropriations bill urged NHTSA to continue research on potential technology to increase belt use, including enhanced belt use reminders (US Senate, 2019). The European Union agreed to require seatbelt reminder systems in all front and rear seats on new cars starting in September 2019 (ETSC, 2019).

REAR SEAT BELT USE RESEARCH

NHTSA is conducting several research projects directed specifically to increasing rear seat belt use. In particular, one is evaluating the effect of a rear seat belt law on belt use. Another focuses on persons who use belts in the front seat but not in the back, to learn their reasons and to develop strategies to convince them to buckle up in back. To increase belt use overall, NHTSA is conducting demonstration projects to increase belt use of older children and to increase belt use and belt use law enforcement in rural areas (R. Ritter, personal communication, Sept. 19, 2019).

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CONCLUSIONS

Rear seat belt use has changed little in the past five years. It's still 10 to 15 percentage points lower than front seat belt use. More than 400 rear seat passengers continue to die unnecessarily each year because they fail to buckle up.

Rear seat belt use is lower for middle-aged adults than for younger or older adults. It's lower for adults in rural than in urban areas. These observations suggest two targets for efforts to raise belt use.

The reasons adults give for not buckling up are consistent across several surveys: They don't think belts are necessary, perhaps because they are only on a short trip; they forgot; they're riding in a for-hire vehicle so they may feel that the driver is a professional and is responsible for their safety; they believe that there's no law requiring rear seat belt use; they find the belts uncomfortable. All but the last of these reasons can be addressed by states through education, belt law enforcement and enactment of primary enforcement rear seat belt use laws in the states that lack them. NHTSA's research should help states target their education and should support the benefits of rear seat belt use laws.

RECOMMENDATIONS

States should:

- Enact primary enforcement rear seat belt use laws; upgrade secondary laws to primary.
- Enforce seat belt use laws for all seating positions.
- Publicize the benefits of buckling up, on every seat on every trip.
- Increase belt use in the front seat, because higher front seat use leads to higher rear seat use.

Others should do their part:

- For-hire vehicle companies and drivers – taxis, limousines, Lyft and Uber – should actively promote belt use to their passengers.
- Vehicle manufacturers should install rear seat belt reminders in their vehicles, as a few now do.
- NHTSA should continue developing traffic safety programs to increase rear seat belt use. NHTSA also should continue rulemaking to require rear seat belt reminders.

These actions are straightforward; they require only persistence and commitment.

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Table 1. Rear seat belt use, passenger vehicle occupants age 8 and older in fatal crashes

State	2017	2012-13	2017-18	2017-18
	Rear Law Type	Rear % Belted	Rear Passengers	Rear % Belted
Alabama	X	43.0%	232	52.3%
Alaska	P	50.0%	27	70.8%
Arizona	X	55.9%	350	68.2%
Arkansas	X	66.3%	154	57.9%
California	P	73.9%	1,390	76.5%
Colorado	X	52.2%	239	47.4%
Connecticut	X	55.7%	101	60.6%
Delaware	P	57.7%	44	53.7%
District of Columbia	P	87.5%	7	60.0%
Florida	X	61.9%	1,066	66.6%
Georgia	X	58.3%	525	66.7%
Hawaii	P	80.6%	38	51.6%
Idaho	S	41.4%	106	51.6%
Illinois	P	54.8%	381	63.9%
Indiana	P	47.5%	250	69.7%
Iowa	X	40.0%	71	47.5%
Kansas	S	41.2%	135	52.8%
Kentucky	P	58.8%	213	60.7%
Louisiana	P	54.1%	250	69.2%
Maine	P	51.0%	49	63.3%
Maryland	S	64.5%	206	72.2%
Massachusetts	S	49.3%	83	66.2%
Michigan	X	52.9%	331	71.4%
Minnesota	P	67.8%	117	67.0%
Mississippi	P	44.5%	227	53.3%
Missouri	X	52.6%	363	58.9%
Montana	S	36.5%	76	43.5%
Nebraska	X	34.8%	59	46.8%
Nevada	S	63.8%	128	64.7%
New Hampshire	X	56.7%	30	30.0%
New Jersey	S	57.9%	194	57.5%
New Mexico	P	52.4%	173	72.0%
New York	X	54.0%	333	54.8%
North Carolina	S	58.2%	506	62.2%
North Dakota	X	34.6%	35	46.9%
Ohio	X	54.1%	397	54.7%
Oklahoma	X	52.4%	219	57.1%
Oregon	P	74.5%	134	80.7%
Pennsylvania	X	55.1%	345	65.9%
Rhode Island	P	53.3%	16	66.7%
South Carolina	P	63.6%	344	73.3%
South Dakota	X	39.7%	40	55.6%
Tennessee	X	54.5%	353	65.7%
Texas	P	63.6%	1,350	66.3%
Utah	P	59.1%	125	65.8%
Vermont	S	63.2%	19	56.3%
Virginia	X	43.7%	190	52.1%
Washington	P	70.5%	161	66.0%
West Virginia	X	56.4%	64	60.4%
Wisconsin	P	63.6%	166	59.6%
Wyoming	S	37.0%	40	60.5%
United States		58.3%	12,452	64.4%

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