Testimony before the Senate Committee on Commerce, Science, and Transportation

“If I could turn back time: Should we lock the clock?”

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Chairman Cruz, Ranking Member Cantwell, and Members of the Committee—thank you for the opportunity to share my organization's research on the road safety implications of daylight saving time.

The Insurance Institute for Highway Safety (IIHS) is an independent, nonprofit scientific and educational organization dedicated to reducing deaths, injuries and property damage from motor vehicle crashes through research and evaluation and through education of consumers, policymakers, and safety professionals. Our work is wholly supported by U.S. and Canadian auto insurers.

When discussing any topic on road safety in the United States, it is important to set the stage. Simply put, we are in the middle of a road safety emergency. Crash deaths have risen nearly 30% since 2014, from below 33,000 to more than 42,000 in 2022. Pedestrian deaths, in particular, have reached crisis levels, climbing 83% from their low point in 2009.

Changing the clocks twice a year is relevant to road safety first and foremost because it affects the amount of ambient light during peak times for travel. We know that darkness is associated with increased risk of fatal crashes. According to data from the National Highway Traffic Safety Administration and the Federal Highway Administration, less than a quarter of trips begin during nighttime hours, but nearly half of motor vehicle occupant deaths and 77% of pedestrian deaths occur in the dark. Obviously, adjusting the clock cannot increase the number of daylight hours, but can only shift how they align with work and school schedules. Since people travel at all times of day and the risk created by darkness varies by road user type, the effects of these time changes on crashes are complex.

IIHS sought to tease out some of this complexity in a recent study.[1] When we looked at morning and evening crash patterns in the weeks surrounding the time changes, we found that the current policy results in a net annual decrease of 26 crashes with pedestrian or bicyclist fatalities per year but a net annual increase of 29 crashes with vehicle occupant fatalities. Safety improves for pedestrians after "springing ahead," while vehicle occupants fare better after "falling back." Further investigation showed that the fluctuation in pedestrian crash deaths is clearly tied to the amount of ambient light, but there is no clear connection for vehicle occupant fatalities.

If you are looking for concrete guidance on whether to keep the current twice-yearly time changes, to make daylight saving time permanent, or to abolish it completely, you may find this study unsatisfying, as the evidence does not point definitively one way or another. What our study does reinforce is that pedestrians and bicyclists are at greater risk in low light and dark conditions. Thus, whatever you decide to do about the clock, I hope you will also consider actions to keep pedestrians and bicyclists safe, especially after sundown.

IIHS study of daylight saving time

The aim of our recent study was to examine the effect of changes in light conditions associated with the beginning and end of daylight saving time, rather than the short-term sleep disruption associated with changing the clock. IIHS researchers looked at data from the U.S. Department of Transportation's Fatality Analysis Reporting System for the 5 weeks before and after each time change from 2010 through 2019. Only crashes between 4 a.m. and 10 a.m. and between 3 p.m. and 9 p.m. were considered. Ambient light conditions were calculated using the sunrise and sunset times corresponding to the geographic coordinates of each crash.

Crashes resulting in vehicle occupant deaths fell 7% in the 5 weeks after the time change in the fall and increased 12% in the 5 weeks after the time change in the spring. The opposite was true for crashes resulting in pedestrian or bicyclist deaths. Those crashes rose 13% in the fall and declined 24% in the spring.

As mentioned, the net effect was 26 fewer morning and evening crashes with pedestrian or bicyclist fatalities per year and 29 additional morning and evening crashes with vehicle occupant fatalities.

When we looked at the time of day when the crashes occurred and the associated light conditions, we found that all of the decrease in pedestrian fatalities could be attributed to an increase in the amount of light, while only two of the additional crashes resulting in vehicle occupant deaths were due to less light.

It's unclear why the effect of the time change on vehicle occupant fatalities was opposite of the effect on pedestrians. The results suggest that unlike the effect on pedestrians, the vehicle occupant effect was largely unrelated to light conditions. It's possible that factors including driver drowsiness or behavioral changes in response to the time changes played a role, but our study did not examine those things.

It is important to emphasize that our study does not point to a preference for standard time or daylight saving time based on road safety alone. In addition to the diverging results for different road user groups, we should keep in mind that an extra hour of light on one end of the workday is counterbalanced by an extra hour of darkness on the other end.

The clearest takeaway from this research is that there is a strong relationship between increased darkness and fatal crashes, particularly for pedestrians and bicyclists. This is consistent with previous studies, including our own work from 30 years ago examining the effects of daylight saving time.[2]

Improving safety after dark

While the clock may not hold the answer to our road safety crisis, there are known solutions for protecting pedestrians after dark and for reducing the crash toll overall.

First of all, we should commit to infrastructure and vehicle improvements that have been shown to improve safety for pedestrians and bicyclists on different types of roadways in urban, suburban, and rural areas. Our research has shown that crosswalk lighting, rectangular rapid flashing beacons, and pedestrian hybrid beacons all make drivers more likely to yield to pedestrians.[3,4] Improved headlights are also key, allowing drivers to detect pedestrians further down the roadway. Vehicles with good marks for visibility in IIHS headlight evaluations have 23% fewer nighttime pedestrian crashes than vehicles with poor-visibility headlights.[5]

Our work on passenger-vehicle automatic emergency braking that can detect and respond to pedestrians shows that this technology cuts pedestrian crash rates 27%.[6] In the last few years, automakers have been improving the performance of these systems at night in response to IIHS tests. Making these systems work better at night is key to addressing the three-quarters of pedestrian fatalities that occur in dark and low-light conditions.

Efforts are also needed to address speed on our roadways. Higher vehicle speeds make crashes of all types more likely and more deadly. The speed effect on crash severity is more pronounced for pedestrians and bicyclists, who don't have a vehicle's structure to protect them. In one study of U.S. pedestrian crashes, the average risk of severe injury to a pedestrian increased from 10% at an impact speed of 17 mph to 25% at 25 mph, 50% at 33 mph, 75% at 41 mph, and 90% at 48 mph.[7]

Reducing speed limits, especially in areas with high pedestrian traffic, is an obvious solution. Enforcement must also play a role, and traditional methods can be supplemented by the wider use of speed safety cameras. Engineering measures such as curb bulb-outs, multiway stop signs, left-turn hardening devices, and roundabouts could be more widely deployed to slow vehicles at intersections. Broader adoption of intelligent speed assistance in vehicles could change drivers' behavior and even their mindset.[8]

Addressing the larger road safety crisis

Such a multipronged strategy to improve pedestrian and bicyclist safety at night exemplifies the Safe System approach, which the U.S. Department of Transportation has adopted as the "guiding paradigm" of the National Roadway Safety Strategy.[9] While the Department should be commended for committing to this principle, little progress has been made to translate it into action and reverse the nation's fatality trend.

We at IIHS are alarmed by the rising toll of crashes on our nation's roads and dismayed by an apparent lack of urgency to fix the problem. For this reason, we recently launched an initiative we are calling 30x30—a goal to reduce U.S. fatalities 30% by 2030.[10] Achieving this reduction will require a concerted effort by all stakeholders. For our part, IIHS has laid out a series of concrete research, testing, and education actions that we are undertaking as part of our 5-year strategic plan. We will increase our efforts to address risky behaviors, seek opportunities to improve safety for everyone inside and outside the vehicle, and explore ways to make the country's heavy and light commercial vehicle fleets safer. We ask everybody who cares about the needless loss of life on our roads—including this Committee—to think about what they can contribute to achieving the 30x30 goal.

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