September 20, 2024 HIR-24/06

Pickup Collision with a Group of Bicyclists

Goodyear, Arizona
February 25, 2023

On February 25, 2023, about 7:55 a.m. mountain standard time, a group of bicyclists was struck by a 2019 Ford F-250 pickup truck (pickup) while traveling south over the Cotton Lane Bridge (6500 block of South Cotton Lane) near Goodyear, Arizona.[1] The pickup, which was also traveling south, departed the left lane and crossed the right southbound lane and shoulder before striking the southbound bridge barrier. Following the impact, the pickup veered left, struck the bicyclists, crossed over both southbound travel lanes, and stopped in the center median of the roadway. As a result of the crash, 2 bicyclists were fatally injured, 14 received injuries ranging from serious to minor, and 2 were not injured. The driver was wearing a lap/shoulder belt and was also uninjured.

Figure 1. View of the southbound lanes of Cotton Lane Bridge, showing the final rest positions of the pickup and some of the involved bicycles. (Source: Goodyear Police Department; annotations by NTSB)

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[1] (a) In this report, all times are mountain standard time. (b) Visit ntsb.gov to find additional information in the public docket for this NTSB investigation (case no. HWY23FH008). Use the CAROL Query to search safety recommendations and investigations.

Location	Cotton Lane Bridge (6500 block of South Cotton Lane), Goodyear, Arizona
Date	February 25, 2023
Time	7:55 a.m. mountain standard time
Involved vehicles	Ford F-250 pickup truck, 18 bicycles
Involved people	19
Injuries	2 fatal, 9 serious, 5 minor, 3 uninjured
Weather	Dry, clear, and daylight
Roadway information	The roadway was straight, with concrete pavement. The two northbound and two southbound travel lanes were separated by a 40-foot-wide paved median. Adjacent to the outer travel lanes, shoulders were delineated by a solid white line and concrete barrier. Pedestrian walkways were located outside the concrete barriers. The speed limit was 45 mph.

Figure 2. Map showing the location of the crash and the planned bicycle route. (Source: Google Maps; annotated by NTSB)

1. Factual Information

1.1 Event Sequence

On Saturday, February 25, 2023, about 75–85 bicyclists were engaged in an informally organized weekly ride. The riders departed from a local bicycle store about 7:30 a.m. in the city of Goodyear, Maricopa County, Arizona (for a map of the route, refer to figure 2). As a group of 18 bicyclists headed south over the Cotton Lane Bridge (6500 block of South Cotton Lane), they were approached from behind by a 2019 Ford F-250 Super Duty rear-wheel-drive pickup truck.

On the morning of the crash, the weather was clear and dry, and visibility was unlimited. At this location, the Cotton Lane Bridge carried traffic over the Gila River. The roadway was straight with two northbound and two southbound travel lanes (each 11.4 feet wide) separated by a 40.8-foot-wide paved median, and right and left shoulders (each about 5.5 feet wide). The speed limit was 45 mph and the pavement markings were visible. A map of the designated bicycle lanes in the Phoenix area classified the Cotton Lane Bridge as both a bike lane and a paved shoulder, although the road signage did not correspond with the map: the closest sign on the southbound lanes was just before MC-85 and was marked Bike Lane Ends.[2] No other signs were observed on South Cotton Lane until after the bridge, just before the Estrella Parkway roundabout, which was marked with another Bike Lane Ends sign.

The bicyclists were riding in a group formation, primarily on the southbound shoulder. All riders were wearing bicycle helmets and had rearward-facing lights and/or reflectors. The biking order was estimated from NTSB and police interviews and shown in figure 3. Three of the riders' positions were unknown. Although the exact formations (single file or two abreast) are unknown, the figure shows a two-abreast configuration with a slight offset to depict the biking order while maintaining readability and spacing.

[2] (a) See the Maricopa Association of Governments 2022 Bikeways Map for more information. (b) A *bike lane* is a portion of the roadway designated by striping, signage, and pavement markings for bicyclists' preferential or exclusive use. (c) American Association of State Highway and Transportation Officials (AASHTO) provides guidance for the development of on-road and off-road bicycle facilities (AASHTO 2018). When paved shoulders are used by bicycles on roadways, AASHTO recommends that the shoulders be at least 4 feet wide and located on both sides of the roadway.

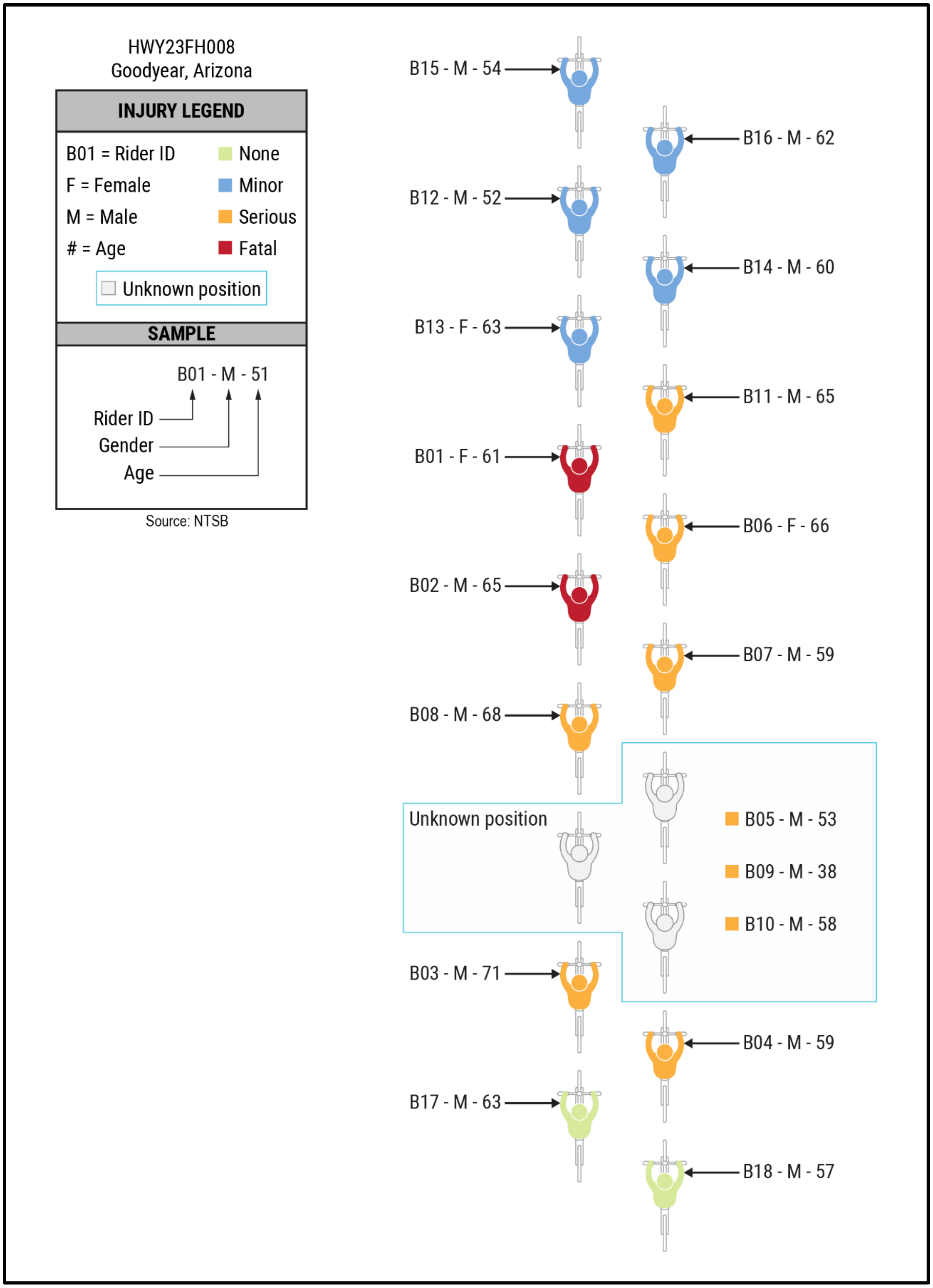

Figure 3. Estimated biking order and injury summary.

About 7:55 a.m., the pickup was traveling south on Cotton Lane Bridge when it departed the left lane and crossed the right southbound lane and the shoulder before striking the southbound bridge barrier, leaving a 33-foot-long tire friction mark on the concrete barrier. The pickup then struck a bicyclist about 3 feet after the last tire mark on the barrier. The pickup veered left, struck additional bicyclists, crossed over both southbound travel lanes, and stopped in the median of the roadway. Two bicyclists were not struck and were uninjured. Two additional tire-friction marks—about 99 and 110 feet long—terminated at the right front and left front of the pickup. Bicycle component debris coupled with surface scrapes and narrow rubber smears were found between the tire mark on the concrete barrier and the final rest position of the pickup—a distance of about 597 feet (see figure 4). After the tire marks on the barrier, no tire marks or evidence of skidding were found on-scene until the onset of the tire friction marks leading up to the final rest position of the pickup.

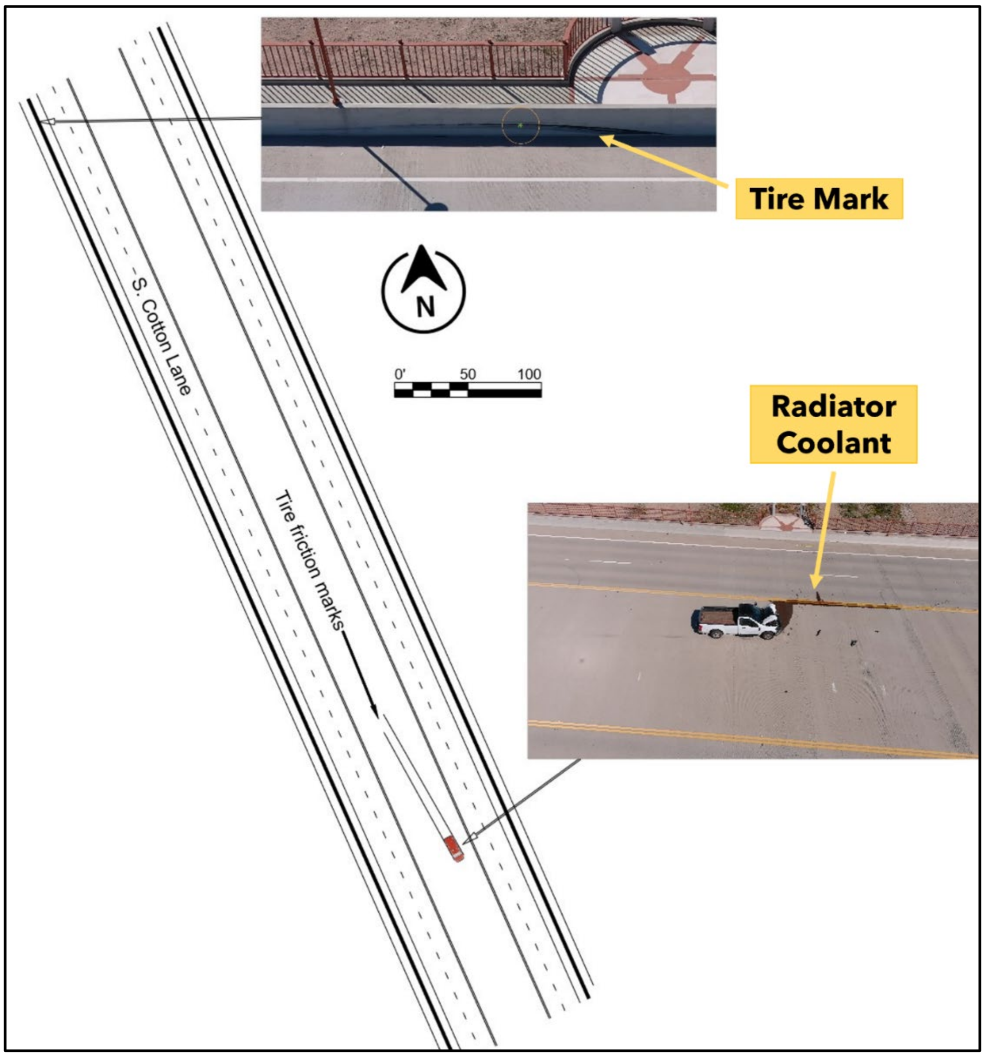

Figure 4. Scaled diagram of crash scene. (Source: Goodyear Police Department; annotated by NTSB)

The pickup driver was a 26-year-old male with a valid Arizona Class D (non-commercial) license. He was a self-employed building contractor on his way to work at the time of the crash. After the crash, the pickup driver was interviewed, and drug and sobriety assessments were performed. The driver told the Goodyear Police Department (GPD) that he had seen a group of bicyclists at an intersection about 1 mile from the crash site.[3] He stated he was driving at 45 mph in the left lane on the bridge when the steering wheel "got hard," and the pickup started drifting to the right. He stated that he had both hands on the steering wheel but could not overcome the drifting force to steer it back. The pickup driver did not consent to an NTSB interview.

The GPD downloaded the data from the pickup's airbag control module, but no events had been recorded.[4] Therefore, the pickup's speed was estimated at 1-second intervals using the longitude, latitude, and timestamp information from a forensic examination of the driver's cell phone. In the minute before the crash, the pickup was traveling between 50 and 70 mph. At impact, its speed was about 56 mph.[5]

After the crash, the GPD received multiple 911 calls. The first GPD units arrived on the scene about 8:03 a.m. Three officers began rendering aid to bicyclists until emergency medical services (EMS) arrived. Multiple EMS agencies, along with private ambulance companies, responded to the scene; the first EMS unit arrived within 10 minutes of the crash. Patient triage was conducted and identified patients requiring transport. The first transport victim left the scene at 8:16 a.m. and the last transport left by 8:48 a.m. Injured bicyclists were transported to three area hospitals: Abrazo West Campus (Level 1 Trauma Center), Banner Estrella Medical Center (Level 4 Trauma Center), and Banner – University Medical Center Phoenix (Level 1 Trauma Center).

As a result of the crash, 2 bicyclists were fatally injured, 9 were seriously injured, 5 sustained minor injuries, and 2 were not injured. The two uninjured riders were not struck by the pickup. The pickup driver was not injured.

[3] The larger group of 75–85 bicyclists had split into smaller subgroups based on average speed. The bicyclists seen by the driver about a mile before the crash were in a different subgroup than those involved in the crash.

[4] The threshold for the subject airbag control module to record an event was a cumulative change in velocity of 5 mph or greater within a 150-millisecond time interval.

[5] (a) Uncertainty associated with the GPS-based speed calculation was about ± 7 mph. Uncertainty was estimated using the horizontal accuracy of the cell phone position data—approximately 15 feet—and assuming the maximum displacement error to be twice the horizontal accuracy. (b) The tire marks leading to the pickup's final rest were also used to calculate a minimum speed of 41 mph at the onset of the marks.

1.2 Additional Information

1.2.1 Driver Factors

During the GPD interview on the day of the crash, the driver stated that he was not sure when he went to bed the previous night, but that it was before 11:00 p.m. He said he woke up without an alarm about 5:15 a.m. and left his house for work at 5:30 a.m. He thought he slept between 6 and 7 hours and did not feel tired. The NTSB obtained the pickup driver's cell phone records for the 72 hours prior to the crash. In addition, the GPD conducted a forensic examination of the cell phone, covering about 19 hours prior to the crash. Based on the cell phone data, the driver had sleep opportunities of about 6.5, 8, 6.5, and 6 hours in the 4 days before the crash.[6]

The GPD downloaded several videos taken on the driver's cell phone the day before the crash, which showed his activities on the evening before the crash.

- 2:37 p.m.: Video showed several cannabis products.
- 8:53 p.m.: Video showed the driver at a local restaurant/bar.
- 9:50 p.m.: Video depicted a waitress delivering shots to the driver's table.
- 9:55 p.m.: Video at the restaurant showed him drinking a shot.
- 10:59 p.m.: Video showed him driving and smoking a cigar-shaped object consistent with the cannabis product shown in the earlier video. He shared it with a female passenger.

A GPD drug recognition expert (DRE) arrived on scene at 9:14 a.m. and conducted an initial field sobriety test on the pickup driver. An alcohol breath test was then conducted at 10:42 a.m.; no alcohol was detected. The DRE collected a blood specimen from the driver at 12:48 p.m. Toxicological testing of the blood specimen detected delta-9-tetrahydrocannabinol (delta-9-THC) at a concentration of about 7.8 ng/mL.[7] A non-psychoactive metabolite of delta-9-THC was also detected. Beginning

[6] *Sleep opportunities* were identified as time periods with no cell phone activity. It should be noted that sleep opportunity periods are not necessarily time *used* for rest. For the evening before the crash, the forensic cell phone data showed the last activity was at 11:20 p.m.; for the morning of the crash, the first activity was at 5:11 a.m.

[7] Fundamentally, a person's instantaneous blood concentration of delta-9-THC does not directly predict that person's impairment (Couper and Logan 2014; Compton 2017). Although an occasional cannabis smoker's blood delta-9-THC concentration typically will decline below 5 ng/mL within a few hours of smoking, a frequent cannabis user's blood delta-9-THC concentration may remain elevated above 5 ng/mL for longer periods of abstinence, beyond the period of acute impairing effects, and sometimes as long as days (Karshner and others 2009; Odell and others 2015).

at 1:06 p.m., the DRE performed a systematic evaluation checking for drug influence. The DRE's opinion was that the driver was not under the influence of any drug in a way that could be articulated from the evaluation results. According to DRE records, the driver stated that his last use of cannabis before the crash had been smoking part of a blunt before 9:00 p.m. the previous night. The driver also reported that he had smoked cannabis for 9 years, and he normally smoked when he got home after work in the afternoon.

Finally, examination of cell phone records showed that the driver was not using his cell phone at the time of the crash.

1.2.2 Vehicle Factors

The pickup sustained damage to the front above the bumper and into the radiator and right-front headlamp, as shown in figure 5. The undercarriage showed no significant frame damage. Evidence found on the muffler, bottom of the gas tank, right-rear shock, and the spare tire mounted to the rear undercarriage was consistent with transfer from one or more victims as they contacted the bottom of the pickup's chassis. Also, light scrapes were noted along the front of the right-side step bar and scuff marks on the outer wall of the right-front tire.

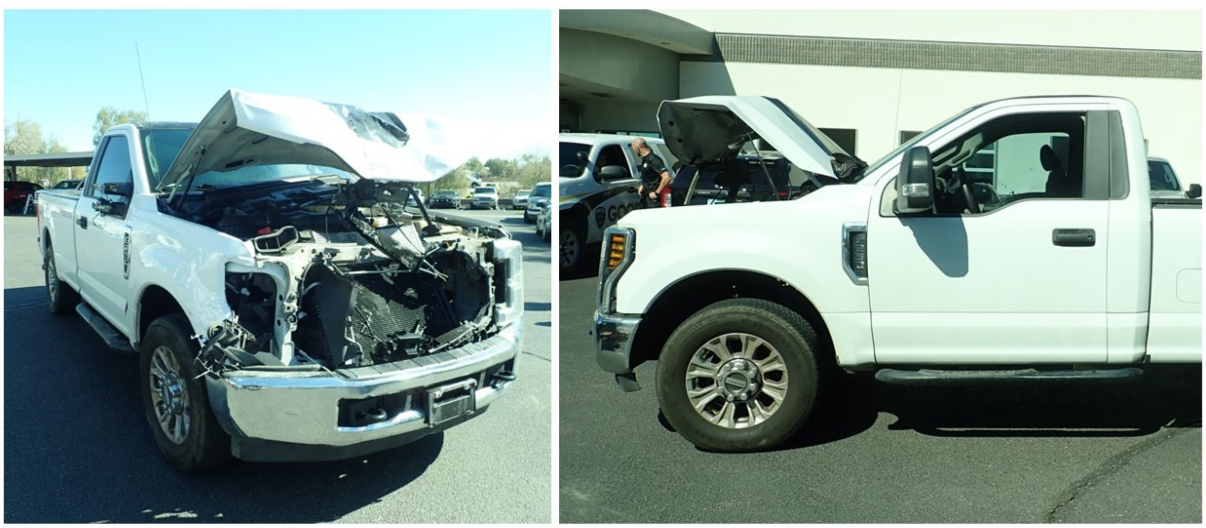

Figure 5. Damage to the front of the Ford F-250.

The vehicle was inspected by a certified dealer mechanic who performed the inspection at the request of the GPD and witnessed by the NTSB. The steering system was intact and functional. Brakes, tires, and wheels were examined and found to be functional and undamaged. NTSB investigators observed the mechanic drive the pickup from the parking lot into the service bay; no issues were noted with steering the pickup and operating its brakes. A second inspection was conducted by the Arizona

Department of Public Safety at the GPD's request.[8] Results of this inspection also indicated that the pickup was safe to drive on the road prior to the crash, and no evidence indicated that the vehicle lost steering or braking control.

The pickup was equipped with driver- and passenger-side frontal airbags, seat-mounted side airbags, and curtain airbags, along with front seat belt pretensioners. None of the airbags or the seat belt pretensioners were deployed during the crash sequence. The vehicle also had traction, electronic, and roll stability control, and the antilock brake system had dynamic brake support, none of which activated. Advanced driver assistance systems such as lane departure warnings and lane-keeping assistance technology were not available on this vehicle.

The pickup's airbag control module could record electronic crash data leading up to a trigger event as well as diagnostic system status information for both non-deployment and deployment events; however, no events had been recorded. The pickup had no unrepaired recalls listed in the National Highway Traffic Safety Administration's (NHTSA) Safety Issues and Recalls database. NTSB investigators also searched data from NHTSA's Office of Defects Investigation to determine whether loss of steering was a known issue for this pickup model and found that complaints related to this specific type of vehicle were inconsistent with the driver's description of what happened.

2. Analysis

Weather was not a factor in this crash. The highway pavement markings were in excellent condition and the driver had a clear line of sight with no obstructions approaching the crash scene on South Cotton Lane. The paved shoulder adjacent to the travel lanes exceeded recommended American Association of State Highway and Transportation Officials (AASHTO) design criteria for bicycle use and was wide enough to adequately accommodate bicycle traffic.

The bicyclists on the day of the crash took several safety precautions as recommended by various organizations, including NHTSA.[9] They rode in large groups, and many had rear-facing lights. The riders would have been visible to drivers on Cotton Lane Bridge, and the sun was not directly in the pickup driver's line of sight. The riders rode in the bike lane/shoulder, and they all wore helmets.

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[8] The law enforcement officer who conducted the inspection had been a Ford senior master technician with master status in gasoline and diesel engines, drivetrains, and chassis.

[9] See the NHTSA page Bicycle Safety: Bike Safety Tips for Kids and Adults.

The pickup driver was not using his cell phone at the time of the crash. He underwent field sobriety tests after the crash and subsequently tested negative for alcohol. Although delta-9-THC was detected in the driver's blood after the crash, the delta-9-THC level could not be used to establish whether the driver was experiencing impairing effects of cannabis at the time of the crash. The DRE's initial and systematic evaluation of drug influence found no clear evidence that the driver was under the influence of any drug.

Although the pickup driver told police that something was wrong with the steering, investigators subsequently found no mechanical issues with the vehicle's steering, brakes, tires/wheels, or electrical systems. During the postcrash inspection, the vehicle was observed to drive straight. In addition, data from NHTSA's Office of Defects Investigation demonstrated that steering complaints associated with this pickup model were not consistent with the driver's description of what happened.

Finally, the emergency response was timely and adequate.

2.1 Fatigue

The cell phone position data showed that as the driver traveled south across the Cotton Lane Bridge, he drifted from the left lane, across the right lane, and into the shoulder and toward the barrier. The damage to the right side of the pickup—the right-front tire's sidewall exhibited scuff marks extending the entire circumference of the tire—coupled with the lack of damage to the front-right bumper, fender, and right-rear tire, indicated that the pickup struck the concrete barrier at a shallow angle. The driver struck multiple bicyclists and continued several hundred feet before coming to final rest in the median. No evidence indicated that the driver took evasive action such as braking; no tire marks or signs of skidding were present on-scene until the onset of the tire marks leading up to the pickup's final rest position.

Tire marks associated with the driver's braking action began about 487 feet after the first tire mark was documented on the barrier and the pickup traveled back across the two southbound lanes into the center median. At a speed of 56 mph, almost 6 seconds would have elapsed between the first impact with the barrier and when the driver initiated braking.[10]

The driver's poor lane maintenance, shallow lane-departure angle, and lack of reaction to the highly conspicuous group of bicyclists are consistent with being in a diminished state of alertness, such as from impairment or fatigue. Fatigued individuals are susceptible to lapses and performance errors such as slowed reaction time, impaired

[10] Based on the uncertainty range for the impact speed estimate, ±7 mph, the time between barrier impact and the tire marks was 5 to 7 seconds.

cognitive processing, reduced vigilance and lane-tracking ability, and inability to sustain attention (Dinges and Kribbs 1991). As an individual becomes increasingly sleep deprived, sleep propensity increases and the individual may experience microsleeps, as the brain uncontrollably enters a sleep state for a period typically lasting a few seconds. Driver performance deteriorates during microsleep episodes (Boyle and others 2008).

The driver's estimated average sleep opportunity in the 4 nights prior to the crash was 6 hours and 42 minutes (refer to footnote 6). The Centers for Disease Control and Prevention recommends 7 or more hours of sleep per night for adults 18–60 years old (Watson and others 2015). Sleeping less than 7 hours per night regularly is associated with adverse health outcomes and can impair performance, increase errors, and lead to greater risk of crashes. Although the driver's postcrash breath test was negative for alcohol, videos from the driver's phone showed him drinking alcohol the night before the crash. Acute alcohol consumption before sleep is known to affect sleep quality (Colrain and others 2014). Although alcohol initially acts as a sedative during the first hours after consumption, it later results in fragmented and disrupted sleep in the second half of the night. Cannabis use might also contribute to drowsiness in some individuals, through acute drug effects or interference with restful sleep; however, the relationship between cannabis and sleep is complex and incompletely understood (Gates and others 2014, Kaul and others 2021, Kolla and others 2022, Lavender and others 2022). Thus, the driver's limited sleep opportunity—which may have been affected by alcohol/drugs—combined with the shallow lane-departure angle from his travel lane, lack of reaction to the group of bicyclists, and delayed time to apply the brakes until almost 6 seconds after impact, are consistent with the driver likely being fatigued.

Drowsy driving is a significant safety problem. Although NHTSA estimates about 1.6% of fatalities involved drowsy driving (NHTSA 2024), this number may be significantly underreported. Using additional sources of data, the AAA Foundation estimated that about 17.6% of all fatal motor vehicle crashes involved drowsy driving (Tefft 2024). To raise awareness about drowsy driving, NHTSA provides tips for driving alert.[11] In addition, advanced vehicle technologies such as lane keeping assistance and driver monitoring systems may help mitigate similar crashes. NHTSA intends to propose performance standards for lane departure warning and lane-keeping assist systems installed in new vehicles but has not yet issued a proposed rulemaking.[12] Evaluation of lane-keeping technology is also proposed for the future upgrade of the US New Car

[11] See the NHTSA page Drowsy Driving: Avoid Falling Asleep Behind the Wheel.

[12] See the Spring 2024 Unified Agenda of Regulatory and Deregulatory Actions (RIN 2127-AM52), "Minimum Performance Standards for Lane Departure Warning and Lane-Keeping Assist Systems."

Assessment Program (NCAP).[13] Driver drowsiness and attention warning and advanced driver distraction warning systems are mandatory in new passenger vehicles in the European Union.[14]

2.2 Vulnerable Road Users

Highways are designed to move motor vehicles safely and efficiently, and they usually do not fully meet the needs of pedestrians, bicyclists, and motorcyclists—a group known as "vulnerable road users." Unlike motor vehicle users, vulnerable road users lack an external structure to protect them and are more likely to suffer serious injury or death when crashes occur. In addition, the discrepancies between automobiles and bicycles—such as mass, velocity, and active and passive safety structures and restraints for the automobile occupants—make crashes between the two inherently more dangerous for bicyclists. NHTSA data showed that in 2022, 1,105 bicyclists died in traffic crashes in the United States, an increase of 13 percent from 2021 (NHTSA 2024a).[15]

Damage to the front of the pickup—specifically the location and shape of the front grille and hood deformation—was consistent with impact with one or more of the bicyclists. Evidence found on the muffler, bottom of the gas tank, right rear shock, and the spare tire was consistent with transfer from one or more victims as they contacted the bottom of the pickup's chassis. Data from NHTSA showed that over 85% of bicyclist fatalities involving pickups were caused by impact from the front end (NHTSA 2024a). Compared with cars, pickup trucks and SUVs have a higher ride height, increased mass, and blunt front ends, making these vehicles particularly dangerous to pedestrians, bicyclists, and motorcyclists (Monfort and Mueller 2023). The front end of the crash-involved pickup had a blunt shape, as shown in figure 5, with a hood height of about 55 inches—higher than typical bicycle handlebars.

The NTSB has previously recommended that NHTSA incorporate tests into NCAP to evaluate a vehicle's ability to avoid crashes with bicycles.[16] Although NHTSA has proposed an evaluation of advanced driver assistance technologies for its latest update to the NCAP, the proposed vulnerable road user test program assesses only the ability of

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[13] See the *Federal Register* notice for NHTSA's New Car Assessment Program, published March 9, 2022 (87 *Federal Register* 13452, docket no. NHTSA-2021-0002).

[14] See the European Union Regulation 2019/2144 | EUR-Lex, accessed August 6, 2024.

[15] Note that starting in 2022, NHTSA's crash data includes persons on motorized bicycles ("e-bikes") in the bicyclist category.

[16] See Safety Recommendation H-19-36.

a vehicle's automatic emergency braking system to detect pedestrians.[17] In contrast, the European Union New Car Assessment Programme has a series of tests that address bicyclist safety in addition to pedestrians.[18] The NTSB has also previously recommended that NHTSA collaborate with the Intelligent Transportation Systems Joint Program Office and the Federal Highway Administration to expand vehicle-to-pedestrian research efforts to ensure that bicyclists and other vulnerable road users will be incorporated into the safe deployment of connected vehicle systems.[19]

Finally, higher vehicle speed is known to be a significant risk factor for injuries and fatalities to vulnerable road users, including bicyclists (Kim and others 2007). In the Goodyear crash, the posted speed limit was 45 mph on the Cotton Lane Bridge, but data from the driver's cell phone estimated the pickup speed to be around 56 mph at impact. Even a small decrease in vehicle speed, from 56 mph to 45 mph, can substantially reduce fatality risk for vulnerable road users (Rosén and Sander 2009). Reduced speed would also increase the time available for a driver to react to an impending crash.

Speeding is one of the most common factors associated with fatal crashes in the United States (NHTSA 2024b), and one that the NTSB frequently encounters in our investigations. We have advocated for comprehensive strategies to reduce speeding. In a recent crash investigation—North Las Vegas, Nevada—the NTSB issued new safety recommendations to NHTSA and passenger vehicle manufacturers to implement intelligent speed assistance (ISA) systems as standard in all new vehicles (NTSB 2023).[20] ISA can (a) alert a driver who is exceeding the speed limit, (b) implement an overridable/easily counteracted deceleration mechanism, or (c) completely prevent a driver from driving above the speed limit. In the Goodyear crash, an ISA system would have helped the driver maintain a slower speed, even while fatigued, which likely would have reduced the severity of the crash.

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[17] See the NTSB response to NHTSA's request for comments on its New Car Assessment Program.

[18] See the European New Car Assessment Programme webpage on automatic emergency braking to prevent vehicle crashes with bicyclists.

[19] See Safety Recommendations H-19-35, H-19-37, and H-19-43.

[20] See NTSB 2023, as well as Safety Recommendations H-23-14 and H-23-20.

3. Conclusions

3.1 Probable Cause

The National Transportation Safety Board determines that the probable cause of the Goodyear, Arizona, crash between a pickup and a group of bicyclists was the pickup driver's diminished state of alertness, likely due to fatigue. Contributing to the severity of the bicyclists' injuries was the pickup driver's speed and lack of response once the crash sequence began.

3.2 Lessons Learned

The Goodyear, Arizona, crash serves as a reminder to drivers to get the right amount and quality of sleep to stay alert behind the wheel. Drivers should be aware that substances such as alcohol and other drugs can affect sleep quality and that fatigue can lead to driver performance errors such as slowed reaction time and impaired lane-tracking ability. In addition, speeding is one of the most common factors associated with fatal crashes in the United States and is particularly hazardous for pedestrians, bicyclists, and motorcyclists. Vehicle technologies, including intelligent speed assistance, can help drivers maintain safer speeds, even while fatigued, thus mitigating injuries when crashes occur.

The NTSB advocates for comprehensive strategies to protect vulnerable road users. Safety is a shared responsibility, and efforts by federal agencies including NHTSA and the FHWA to prevent and mitigate crashes must address bicyclists and other road users.

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NTSB investigators worked with the **Goodyear Police Department** throughout this investigation.

The NTSB is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in the other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties … and are not conducted for the purpose of determining the rights or liabilities of any person" (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)).

For more detailed background information on this report, visit the NTSB Case Analysis and Reporting Online (CAROL) website and search for NTSB accident ID HWY23FH008. Recent publications are available in their entirety on the NTSB website. Other information about available publications also may be obtained from the website or by contacting –

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