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A Nationwide Review of Pedestrian and Bicyclist Safety Education in Driver Education

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16. Abstract The Drivers' Education Demo to Reduce Pedestrian and Bicyclist Fatalities effort was designed to examine the current state of driver education and training and the post-licensing improvement courses available in the United States with respect to the level of emphasis on pedestrians, bicyclists, and other micro-mobility road users and the specific topics (e.g., maneuvers, contextual considerations) referenced in the course content. The results of examination were used to identify and prioritize gaps in the material and then to develop and test a demo set of training modules designed to increase motorists' knowledge, awareness, and skills related to the safety of these vulnerable road users.			
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Introduction

The mission of the National Highway Traffic Safety Administration is to save lives, prevent injuries, and reduce economic costs due to road traffic crashes, through education, research, safety standards, and enforcement. One way NHTSA furthers this mission is by providing guidance and assistance to the State and local officials who develop, implement, and evaluate road safety programs, including driver education courses and training. In recent years, changes to the transportation landscape—including the increased popularity of walking, bicycling, and other active forms of transportation—have created a need to reevaluate existing driver education curricula and content (McLeod, 2017; U.S. Census Bureau, 2016; McKenzie, 2016).

Pedestrians and bicyclists killed in traffic crashes totaled more than 8,000 deaths in 2022. And when compared to passenger vehicle occupants (decrease of 6.8% from 2021 to 2022), pedestrian (increase of 0.7% from 2021 to 2022) and bicyclist (increase of 13% from 2021 to 2022) fatalities continue to increase (NHTSA, 2024). Much of the existing safety guidance aimed at reducing pedestrian- and cyclist-involved crashes references factors within these vulnerable road users' control (e.g., increasing one's visibility, use of crosswalks, safe use of electronic devices) (CDC, 2024). However, when involved in fatal single-vehicle crashes, pedestrians and bicyclists are substantially more likely to be struck by the front of the vehicle than by the vehicle's side or rear, indicating that pedestrians and bicyclists cannot prevent the collision in many of the crashes resulting in fatalities among pedestrians and bicyclists (NCSA, 2023, 2024).

Although educating drivers on safe practices for sharing the road with bicyclists and pedestrians appears to be critical for helping to ensure the safety of these road users, pedestrian and bicyclist safety information provided in driver safety training curricula varies widely. Some courses include a wealth of information and learning activities that support the desired pedestrian and bicyclist safety learning outcomes, whereas the coverage of these topics by other courses is minimal.

As a first step to helping to address these gaps in driver education, a review of a variety of driver education and training material was conducted, with an emphasis on trainings that are widely used in the United States. The goal of this review was to determine the level of emphasis on pedestrians, bicyclists, and other micro-mobility road users in the trainings, as well as the specific content covered. This information may be useful for informing:

- the creation of educational and training material to address identified gaps;
- the assessment of existing trainings and educational material; and
- the development of traffic safety policies aimed at reducing the risk posed to vulnerable road users by vehicle drivers.

The target audiences for this report are traffic safety researchers and practitioners, department of motor vehicles officials, employees of departments of education, traffic safety school curriculum/instructional designers, and community leaders and policymakers.

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Methodology

To complete the examination of current pedestrian and bicyclist education content, a review of three broad types of driver education material was conducted. These were (a) State curriculum guidelines, (b) State driver manuals, and (c) specific training courses. Although the primary focus of this research was on identifying gaps in training courses, it was determined that the guidelines and manuals were nonetheless important to review for two reasons. First, the content found in this material would help to identify the findings of the review of the trainings with respect to (a) the guidance provided by States about what *should* be included in trainings and (b) the content that *is* provided by States in their own driver manuals. Second, the review of this material was used to iteratively develop a codebook for organizing the content of the trainings themselves. The final codebook had more than 85 codes (mentions pedestrians and bicyclist safety, driving in bike lanes/sharing lanes with bikes, stop arm laws, etc.; the entire list of codes is presented in the Results section).

The State driver education curriculum guidelines for 30 States (but two from Alabama to total 31 curriculum guidelines) were acquired. Some States did not make their guidelines available, either online upon request, whereas some States simply did not have guidelines. Overall, guidelines for 30 States were retrieved and reviewed. After a preliminary review of a subset of guidelines to develop the initial codebook, each curriculum guide was coded for the presence of content related to each code.

Publicly available State driver manuals for 49 States and the District of Columbia were then identified and collected through online searches. Only the driver manual from Mississippi was unavailable. Although these manuals may not necessarily reflect the content included in driver education courses, they are typically meant as a resource for novice drivers to learn the rules of the road and prepare for permit and license exams. Therefore, they were reviewed to provide a useful supplement to/contextualization of the other material included in the review. The codebook was further expanded based on additional topic areas covered in these manuals.

Finally, four subject matter experts were consulted, two from NHTSA and two external to NHTSA. Each possessed expertise in general driver education, and one possessed expertise in pedestrian and bicyclist safety. These experts helped determine any categories that might have been missed in the codebook and identify and collect the most widely used national model curricula and online driver education trainings. (Note that throughout this report both the national model curricula and online trainings are referred to as “trainings” for the sake of simplicity.) These trainings were provided by the following organizations.

1. American Safety Council (Online training; Teen; California)
2. American Safety Council (Online training; Adult; Texas)
3. DriversEd.com (Online training; Teen; Texas)
4. DriversEd.com (Online training; Adult; Illinois)
5. I Drive Safely (Online training; Teen; Georgia)
6. American Driver and Traffic Safety Education Association (ADTSEA; Model curricula; Teen; National)
7. Driver Ed in a Box (Model curricula; Teen; Texas) (Barrett, 2024)

8. The Oregon Playbook (Model curricula; Teen, Oregon—but widely used as a model in other States) (Western Oregon University Instructor Training Curriculum Team, 2016)
9. Drive Right (Student textbook; Model curricula; Teen; Virginia) (Johnson et al., 2007)¹
10. AAA, How to Drive (Student textbook; Model curricula; Teen; National) (AAA, 2024b).
11. AAA, How to Drive (Instructor manual, including accompanying PowerPoint deck; Model curricula; Teen; National) (AAA, 2024a).

Two data analysts independently reviewed and coded each training based on whether it covered over 85 topics related to safe driving practices related to bicyclists, pedestrians, and other micro-mobility users. Any discrepancies between the analysts were reconciled by a third analyst. In addition to content coding, analysts also sought out and recorded, where available, information on each training with respect to:

1. Aim and target population,
2. Adherence to national model traffic safety education standards,
3. Evidence of effectiveness,
4. Breadth of dissemination,
5. Explicitly stated training and learning objectives, and
6. The learning environment.

After completing all coding, the percentage of curriculum guides and driver manuals that presented information were calculated on each category that was coded for. An in-depth thematic analysis was then calculated of the content of the trainings.

¹ [Editor's note: The original *Drive Right* curriculum as written by Johnson et al. (11th edition) and published by Pearson Learning, a division of Prentice Hall, is referenced as the source for the Virginia curriculum.

Results

Curriculum Guidelines

General/Shared Bicyclist and Pedestrian Safety Topics

Most of the curriculum guides that were reviewed included at least some mention of general pedestrian and bicyclist safety topics (28 curriculum guides, 90.3%). Although most guides emphasized general awareness of and responsibility to the vulnerability of pedestrians and bicyclists (28 guides, 90.3%), only a small percentage of guides touched upon more specific shared pedestrian and bicycle safety topics. Of these, yielding the right of way received the most emphasis, with six guides emphasizing yielding the right of way to pedestrians (19.4%) and four emphasizing yielding the right of way to bicyclists (12.9%). Three guides emphasized pedestrians and bicyclists who are children (9.7%). The remainder of the shared bicyclist and pedestrian topics were emphasized in fewer than three guides (<7%; see Table 1 for a full list of results).

Table 1. Number and percentage of State curriculum guides that included an emphasis on each general/shared bicyclist and pedestrian safety topic area

Topic	Number	Percentage
General		
Mentioned pedestrian and bicyclist safety	28	90.3%
General awareness of/responsibility to/vulnerability of pedestrians/bicyclists/other micro-mobility users	28	90.3%
Child bicyclists/pedestrians	3	9.7%
Maneuvers		
Changing lanes/merging		
Pedestrians	0	0%
Bicyclists	0	0%
Crossing sidewalks/entering/exiting alleys/driveways		
Pedestrians	1	3.2%
Bicyclists	0	0%
Backing up		
Pedestrians	0	0%
Bicyclists	0	0%
Reducing speed		
Pedestrians	1	3.2%
Bicyclists	2	6.5%

Topic	Number	Percentage
Give extra space		
Pedestrians	1	3.2%
Bicyclists	1	3.2%
Turning (general)		
Pedestrians	1	3.2%
Bicyclists	2	6.5%
Left turns		
Pedestrians	1	3.2%
Bicyclists	1	3.2%
Right turns		
Pedestrians	2	6.5%
Bicyclists	2	6.5%
Right on red		
Pedestrians	0	0%
Bicyclists	0	0%
Yielding right-of-way		
Pedestrians	6	19.4%
Bicyclists	4	12.9%
Yield signs		
Pedestrians	0	0%
Bicyclists	0	0%
Roundabouts and yielding		
Pedestrians	0	0%
Bicyclists	0	0%
Contextual considerations		
Particular areas or conditions where bicyclists/pedestrians are likely to be (residential areas/urban/work areas)	2	6.5%
Poor visibility conditions		
Pedestrians	0	0%
Bicyclists	1	3.2%

Topic	Number	Percentage
Other safety considerations and procedures		
Visual search		
Pedestrians	1	3.2%
Bicyclists	0	0%
Communicating with bicyclists/pedestrians	0	0%
When to and/or to not use the horn		
Pedestrians	1	3.2%
Bicyclists	1	3.2%

Bicycle-Specific Safety Topics

Most of the curriculum guides that were reviewed did not include bicycle-specific safety topics. Indeed, passing bicycles received the most emphasis in the guides but was only mentioned in four (or 12.9%). Among these, three emphasized giving bicyclists at least 3 feet of space while passing (9.7% out of all the guides). Two guides provided guidance on anticipating bicyclists’ movement and the contextual factors that affect them (6.5%). The remainder of the bicycle-specific topics were covered by one or none of the guides (<3.2%; see Table 2 for full results).

Table 2. Number and percentage of State curriculum guides that included an emphasis on each bicycle-specific topic area

Topic	Number	Percentage
Maneuvers		
Driving in bike lanes/sharing lanes with bikes		
When you can/cannot drive in the bike lane	1	3.2%
Share the lane signs/pavement markings	0	0%
When to/not to share the lane with bikes	1	3.2%
Bike box	0	0%
Green pavement	0	0%
Passing	4	12.9%
What (3-4 ft)	3	9.7%
Why (wind speeds)	0	0%
When (not when there are oncoming vehicles/when the road is too narrow)	0	0%
Do not turn immediately after passing	0	0%
Contextual considerations		
Explaining/anticipating bicyclists' movements and contextual factors that affect them	2	6.5%
When it is hard for a bike to slow/brake	0	0%
Bicyclists riding the wrong way	0	0%
Other safety considerations and procedures		
Dimming lights for bikes	1	3.2%
Opening the door of a parked car	1	3.2%
Hearing-impaired bicyclists	1	3.2%

Pedestrian-Specific Safety Topics

Most of the curriculum guides also did not touch upon pedestrian-specific safety topics. Yielding to pedestrians in crosswalks received the most emphasis but was still only mentioned in five (or 16.1%) of the guides. Four guides emphasized stopping for school buses (12.9%), one emphasized guidelines around *remaining* stopped for school buses (3.2%), three emphasized situations in which one does versus does not have to stop for a school bus (i.e., based on the number of lanes and whether the highway is divided or not; 9.7%), and two emphasized stop-arm laws (6.5%). Three trainings emphasized not passing cars that are stopped for a pedestrian (9.7%) and three emphasized safe driving around blind pedestrians (9.7%). The remaining topics were covered by fewer than three trainings (<7%; see Table 3 for full results).

Table 3. Number and percentage of State curriculum guides that included an emphasis on each pedestrian-specific topic area

Topic	Number	Percentage
Maneuvers		
Yield, regardless of right-of-way	0	0%
Check mirror before exiting	0	0%
Crosswalks		
Yielding to pedestrians in crosswalks	5	16.1%
Do not block a crosswalk	2	6.5%
Not passing a car stopped for a pedestrian	3	9.7%
Interpreting pedestrian crosswalk lights	0	0%
Pedestrian signs/pavement markings	0	0%
School zones		
School crossing signs/pavement markings	0	0%
School/children crossings	0	0%
Yielding to school safety patrols	1	3.2%
School bus stop ahead sign	0	0%
Complete stop at school crosswalk	0	0%
"Death zone" (school buses)	1	3.2%
Stop-arm laws	2	6.5%
Number of lanes/divided versus not	3	9.7%
Stopping	4	12.9%
Remaining stopped	1	3.2%
Special groups of pedestrians		
Disabled pedestrians	2	6.5%
Distracted pedestrians	0	0%
Blind pedestrians	3	9.7%
Older pedestrians	1	3.2%
Additional pedestrian safety topics		
Parking/parking lots/parked cars	1	3.2%
Safety zones/traffic islands for pedestrians	1	3.2%
HAWK signal/pedestrian hybrid beacon	0	0%
Rectangular rapid flashing Beacon	0	0%

In addition to the topics listed above, one curriculum guide (3.2%) mentioned scooter awareness.

Driver Manuals

General/Shared Bicyclist and Pedestrian Safety Topics

Overall, the driver manuals touched upon a much broader range of pedestrian and bicyclist safety topics and included more specific and detailed recommendations than did the curriculum guides. All the driver manuals that were reviewed included at least some mention of bicyclist and pedestrian safety. Five shared bicyclist and pedestrian safety topics were discussed in over 80% of the manuals, including general awareness of and responsibility to the vulnerability of pedestrians and bicyclists (46 manuals, 92%), pedestrians and bicyclists who are children (41 manuals, 82%), yielding the right-of-way to pedestrians (48 manuals, 96%), pedestrian safety while turning (43 manuals, 86%), and pedestrian safety while turning right on red (42 manuals, 84%). Other topics that were frequently discussed in the manuals included yielding to pedestrians in roundabouts (40 manuals, 80%), yielding the right-of-way to bicyclists (36 manuals, 72%), particular areas or situations where bicyclists and pedestrians are likely to be present (35 manuals, 70%), checking for pedestrians while crossing sidewalks (34 manuals, 68%), checking for pedestrians while turning left (34 manuals, 68%), and giving extra space to bicyclists (31 manuals, 62%). Among the least frequently discussed topics were checking for bicyclists when crossing sidewalks (14 manuals, 28%), conducting a visual search for bicyclists (13 manuals, 26%), checking for bicyclists before turning right on red (nine manuals, 18%), checking for bicyclists at yield signs (five manuals, 10%), and checking for bicyclists when backing up (0 manuals; see Table 4 for full results).

Table 4. Number and percentage of drivers manuals that included an emphasis on each general/shared bicyclist and pedestrian safety topic area

Topic	Number	Percentage
General		
Mentions pedestrian and bicyclist safety	50	100.0%
General awareness of/responsibility to/vulnerability of pedestrians/bicyclists/other micro-mobility users	46	92.0%
Child bicyclists/pedestrians	41	82.0%
Maneuvers		
Changing lanes/merging		
Pedestrians	30	60.0%
Bicyclists	16	32.0%
Crossing sidewalks/entering/exiting alleys/driveways		
Pedestrians	34	68.0%
Bicyclists	14	28.0%
Backing up		
Pedestrians	30	60.0%
Bicyclists	0	0%

Topic	Number	Percentage
Reducing speed		
Pedestrians	20	40.0%
Bicyclists	22	44.0%
Give extra space		
Pedestrians	19	38.0%
Bicyclists	31	62.0%
Turning (general)		
Pedestrians	43	86.0%
Bicyclists	27	54.0%
Left turns		
Pedestrians	34	68.0%
Bicyclists	25	50.0%
Right turns		
Pedestrians	27	54.0%
Bicyclists	27	54.0%
Right on red		
Pedestrians	42	84.0%
Bicyclists	9	18.0%
Yielding right-of-way		
Pedestrians	48	96.0%
Bicyclists	36	72.0%
Yield signs		
Pedestrians	23	46.0%
Bicyclists	5	10.0%
Roundabouts and yielding		
Pedestrians	40	80.0%
Bicyclists	27	54.0%
Contextual considerations		
Particular areas or conditions where bicyclists/pedestrians are likely to be (residential areas/urban/work areas)	35	70.0%
Poor visibility conditions		
Pedestrians	26	52.0%

Topic	Number	Percentage
Bicyclists	17	34.0%
Other safety considerations and procedures		
Visual search		
Pedestrians	24	48.0%
Bicyclists	13	26.0%
Communicating with bicyclists/pedestrians	16	32.0%
When to and/or not to use the horn		
Pedestrians	26	52.0%
Bicyclists	25	50.0%

Bicycle-Specific Safety Topics

Among bicycle-specific safety topics included in the manuals, passing bicycles was discussed the most frequently, with 41 manuals including at least some content related to passing (82%). Many manuals also provided specific advice related to passing bicyclists. Thirty-seven manuals discussed when it is and is not safe to pass bicycles (74%) and 32 manuals (64%) provided specific guidance about how much space to leave when passing bicyclists (i.e., 3 to 4 feet, depending on the State). Sixteen manuals noted that drivers should not turn immediately after passing a bicyclist (32%) and nine manuals explained why it is important to provide ample space to bicyclists while passing (18%). Other frequently discussed bicycle-specific topics included explaining bike movements and contextual factors that affect them (35 manuals, 70%), when drivers can and cannot drive in bike lanes (33 manuals, 66%), checking for bicyclists before opening the door of a parked car (32 manuals, 64%), and share-the-lane signs/pavement markings (26 manuals, 52%). Only four manuals discussed “bike boxes” (8%) or green pavement (8%). Only three manuals discussed hearing-impaired bicyclists (6%) or advisory bike lanes (6%; See Table 5 for full results).

Table 5. Number and percentage of drivers manuals that included an emphasis on each bicycle-specific topic area

Topics	Number	Percentage
Maneuvers		
Driving in bike lanes/sharing lanes with bikes		
When you can/cannot drive in a bike lane	33	66.0%
Share the lane signs/pavement markings	26	52.0%
When to/not to share the lane with bikes	7	14.0%
Bike box	4	8.0%
Green pavement	4	8.0%
Advisory bike lanes	3	6.0%
Passing		
What (3-4 ft)	32	64.0%
Why (wind speeds)	9	18.0%
When (not when there are oncoming vehicles/when the road is too narrow)	37	74.0%
Don't turn immediately after passing	16	32.0%
Contextual considerations		
Explaining/anticipating bicyclists' movements and contextual factors that affect them	35	70.0%
When it is hard for a bike to slow/brake	7	14.0%
Bicyclists riding the wrong way	7	14.0%
Other safety considerations and procedures		
Dimming lights for bikes	12	24.0%
Opening the door of a parked car	32	64.0%
Hearing-impaired bicyclists	3	6.0%

Pedestrian-Specific Safety Topics

The most frequently discussed pedestrian-specific topics were yielding to pedestrians in crosswalks (48 manuals, 96%), stopping for school buses (47 manuals, 94%), blind pedestrians (45 manuals, 90%), when drivers are/are not required to stop at school buses (43 manuals, 86%), and pedestrian signs and pavement markings (41 manuals, 82%). Other frequently mentioned topics included school crossing signs and pavement markings (40 manuals, 80%), school/children crossings (37 manuals, 74%), and yielding regardless of the right-of-way (35 manuals, 70%). The least frequently discussed topics were rectangular rapid flashing beacons

(three manuals, 6%), checking one’s mirror for pedestrians before exiting (two manuals, 4%), and “death zones” around school buses (two manuals, 4%; See Table 6 for full results).

Table 6. Number and percentage of drivers manuals that included an emphasis on each pedestrian-specific topic area

Topics	Number	Percentage
Maneuvers		
Yield regardless of right-of-way	35	70.0%
Check mirror before exiting	2	4.0%
Crosswalks		
Yielding to pedestrians in crosswalks	48	96.0%
Do not block a crosswalk	19	38.0%
Not passing a car stopped for a pedestrian	28	56.0%
Interpreting pedestrian crosswalk lights	24	48.0%
Pedestrian signs/pavement	41	82.0%
School zones		
School crossing signs/pavement	40	80.0%
School/children crossings	37	74.0%
Yielding to school safety patrols	23	46.0%
School bus stop ahead sign	6	12.0%
Complete stop at a school crosswalk	5	10.0%
"Death zone" (school buses)	2	4.0%
Stop-arm laws	37	74.0%
Number of lanes/divided versus not	43	86.0%
Stopping	47	94.0%
Remaining stopped	40	80.0%
Special groups of pedestrians		
Disabled pedestrians	12	24.0%
Distracted pedestrians	8	16.0%
Blind pedestrians	45	90.0%
Older pedestrians	12	24.0%
Additional pedestrian safety topics		
Parking/parking lots/parked cars	27	54.0%

Topics	Number	Percentage
Safety zones/traffic islands for pedestrians	12	24.0%
HAWK signal/pedestrian hybrid beacon	14	28.0%
Rectangular rapid flashing beacon	3	6.0%

In addition, 14 manuals discussed scooters (28%).

Trainings

The content of the 13 trainings that were reviewed are summarized below. The follow terms were used as follows: “a couple” of trainings to indicate 2 of the 13 trainings, “a few” trainings to indicate 3 or 4 out of the 13 trainings, “several trainings” to indicate 5 to 8 out of the 13 trainings, and “the majority of” or “most” trainings to indicate 9 or more out of the 13 trainings. Percentages were not reported out of concern that such values might be inferred to be indicative of the entirety of all trainings and the trainings examined comprised a non-probability, convenience sample. (Because driver’s manuals and curriculum guidelines are State-level resources, the entire universe of each type of resource was able to be examined or, at least, very close to it.).

Characteristics of the Trainings Examined

Eleven of the trainings examined were geared toward teen novice drivers, however, 2 adult trainings were also examined. It was determined to emphasize teen novice driver over adult driver education courses due to a greater degree of standardization and the fact that, given their considerably longer length, topics not well-covered in novice teen training courses would also not be expected to be well-covered in adult driver/driver improvement courses. Stated aims typically referenced teaching safe driving skills and behaviors and fulfilling DMV requirements. Three training programs adhere to national model traffic safety education standards. Roughly half of the training resources that were reviewed provided learning objectives.

The training courses were a mix of only-in-person, optional online, or online only. All teen courses—regardless of whether they were classroom-based or online—required a certain number of hours (typically six) to be spent behind the wheel. The relative breadth of the distribution of the trainings was difficult to assess. However, an online course that claims to be the “largest provider” has claimed to have trained over 13 million drivers. Reported training evaluation results were very limited. One training reported comparative statistics regarding its effectiveness, however, the study methodology was not reported in enough depth to evaluate its soundness. A handful of other trainings focused on awards received and customer reviews when touting their effectiveness.

General/Shared Bicyclist and Pedestrian Safety Topics

Awareness of the vulnerability of and drivers’ responsibility to pedestrians and bicyclists

Almost all trainings that were reviewed included at least some emphasis on the general vulnerability of pedestrians and bicyclists on the road, as well as drivers’ responsibility to protect them. For instance, several trainings mentioned that bicyclists and pedestrians do not have the same protections as drivers of vehicles, so they almost always “lose” in collisions with vehicles. Several trainings also highlighted statistics related to pedestrian and bicyclist fatalities in crashes

with vehicles. Several trainings emphasized that drivers have a responsibility to yield to bicyclists and pedestrians in all situations and to take every precaution to avoid collisions with them. Several trainings also emphasized that bicyclists have the same rights on the road as do vehicles. Finally, several trainings emphasized specific challenges associated with sharing the road with bicyclists and pedestrians, such as their smaller size and lack of visibility to drivers, the sometimes limited knowledge of bicyclists and pedestrians of traffic rules and regulations, and these road users' sometimes sudden and unpredictable movements.

Child pedestrians and bicyclists. Most of the trainings that were reviewed discussed a need for drivers to be particularly cautious around child pedestrians and bicyclists. Several trainings emphasized that children can be unpredictable when walking, playing, or riding bikes near the roadway and may dart or swerve into traffic. Several trainings also suggested specific strategies to mitigate the risks associated with driving around children, including reducing speed, checking for children behind and around the vehicle before backing up, searching for clues that children may be nearby (e.g., pets, toys, movement, or shadows around parked vehicles), and increasing general attentiveness and scanning when in the presence of children.

Maneuvers

Changing lanes and merging. Only several trainings discussed bicycle and pedestrian safety when changing lanes and merging. These trainings simply noted that checking and scanning for bicycles and pedestrians is particularly important before changing lanes and merging.

Crossing sidewalks, alleys, and driveways. Most of the trainings that were reviewed discussed bicyclist and pedestrian safety considerations when drivers cross sidewalks and enter or exit alleys and driveways. For instance, several trainings mentioned that, in these situations, drivers are required to yield to pedestrians and bicyclists who are using the sidewalk. Several trainings noted that drivers should stop before the sidewalk when exiting an alley or driveway so as not to block pedestrians' path of travel.

Backing up. Several trainings discussed the importance of checking for bicyclists and pedestrians when backing up one's vehicle. Several trainings recommended checking behind one's vehicle for pedestrians, pets, etc. before getting in one's vehicle to back up. Several trainings noted that checking the rearview mirror is not sufficient, as it does not show the driver if a pedestrian is approaching from the side. One training noted that drivers are required to use their turn signal when backing into traffic. Finally, several trainings provided statistics regarding the annual number of children killed by backing vehicles.

Reducing speed. Several trainings advised reducing speed around bicyclists and pedestrians. Several trainings noted a particular need to reduce one's speed when approaching or passing a bicyclist on the roadway. Several trainings recommended reducing speed specifically in areas with more pedestrian activity, such as residential areas, school zones, shopping centers, and near crosswalks and intersections.

Contextual considerations

Situations with higher numbers of pedestrians and bicyclists. Most of the trainings that were reviewed noted specific areas or situations in which drivers would be particularly likely to encounter pedestrians and bicyclists. These included:

- Residential areas (most trainings)
- Urban roadways (several trainings)
- Parking lots (a few trainings)
- Bus stops (a few trainings)
- School zones (a few trainings)
- Shopping centers/business districts (a few trainings)
- Playgrounds and recreational areas (e.g., parks, jogging paths) (several trainings)
- Construction zones (a few trainings)
- Intersections/near the edge of the roadway (several trainings)
- Driveways/sidewalks/alleys (a few trainings)
- Near public transportation stops (one training)
- Near fuel stations (one training)

Several trainings recommended being more attentive and engaging in additional scanning and a few recommended reducing speed in these areas and situations. One training recommended covering the brake in these situations.

Poor visibility conditions. Several trainings discussed the difficulty of identifying bicyclists and pedestrians in conditions of low visibility (e.g., at night, or when it is foggy, raining, snowing). Several trainings noted that bicyclists and pedestrians do not always take appropriate precautions in low visibility conditions, such as by wearing reflective clothing or riding their bike with a light. One training recommended increasing following distance, and one recommended using headlights in these situations to improve visibility. Finally, one training recommended keeping to the right of the lane when one is approached by a vehicle with one headlight, as this could indicate an oncoming bicyclist.

Other safety considerations and procedures

Visual search. Several trainings emphasized the importance of conducting a visual search for bicyclists and pedestrians, such as checking to the left, right, and rear of the vehicle, or the vehicle's blind spots. One training suggested saying out loud "clear left" and "clear right" after checking in each direction.

Communicating with pedestrians and bicyclists. Several trainings emphasized the importance of drivers communicating their intentions to bicyclists and pedestrians. Specific methods of communication highlighted included making eye contact with bicyclists and pedestrians, flashing headlights, giving the horn a friendly "tap," and using turn signals.

When to and to not use the horn. Most of the trainings discussed when and when not to use one's horn around bicyclists and pedestrians. Several trainings recommended only using the horn when necessary to avoid a collision or to warn/communicate something important to bicyclists and pedestrians. Several trainings recommended only giving the horn a light tap when necessary and avoiding "blaring" or "laying on" the horn. Finally, a few trainings advised against using the horn near bicyclists, as doing so can startle them and cause a collision.

Kinetic energy that is carried by cars. Several trainings discussed the kinetic energy that is carried by cars. For instance, these trainings noted that factors like a vehicle's weight and speed affect the cars' kinetic energy and explained how kinetic energy impacts a vehicle's rate of deceleration. However, these trainings did not explicitly connect these topics to pedestrian and bicyclist safety.

Bicycle-Specific Safety Topics

Maneuvers

Yielding the right-of-way. Several of the trainings that were reviewed discussed the importance of yielding the right-of-way to bicyclists. Specifically, a few trainings noted that bicycles are legally considered vehicles, and should therefore be yielded the right-of-way accordingly. Several trainings discussed the meaning of yielding the right-of-way, noting that yield means to give up the right-of-way by letting other road users, including bicyclists, proceed before you. Several trainings also noted the particular importance of yielding to bicyclists at intersections and when pulling away from a stop sign. Several trainings discussed the driver's responsibility to yield to bicyclists when crossing a bike path or bike lane that intersects with the road. Finally, several trainings discussed yielding to bicyclists specifically in roundabouts.

Turning. Almost all the trainings that were reviewed touched on bicycle safety when turning to at least some extent. Several trainings discussed the general need to check for bicyclists before turning. Several trainings cautioned against turning sharply in front of bicyclists, forcing a bike off the road, or cutting a bicyclist off while turning. In addition to general turning advice, many trainings also provided recommendations for specific types of turns, including left turns, right turns, turning right on red, and U-turns.

Left turns. Several trainings discussed the need for drivers to check for and yield to oncoming bicycle traffic when turning left. Two trainings noted that left turns can be particularly dangerous because it is often difficult for drivers to judge the speed and distance of oncoming bicycles. One training noted that one of the most common vehicle-bicyclist collisions is when a car turns left in front of or into a bike (a "left hook" crash).

Right turns. Several trainings also advised checking for and yielding to bicyclists before turning right. Several trainings recommended checking one's blind spot for bicyclists before turning right and a couple noted a need to check for and safely merge with bicyclists in bike lanes before turning right. One training recommended not crossing the bike lane until you are within 200 feet of the turn. Finally, several trainings recommended avoiding turning right quickly in front of the path of a bicyclist and suggested slowing down and letting the bicyclist pass before turning right.

Right on red. Only one training discussed bicycle safety while turning right on a red light—this training noted a need to first stop and yield the right-of-way to vehicles, bicycles, and pedestrians in one's path before proceeding.

U-turns. In addition, only one training discussed U-turns, noting a need to check for any bicycles, pedestrians, or other vehicles that would prevent such a maneuver.

Occupying bicycle lanes. Most of the trainings discussed when it is and is not acceptable to drive in bicycle lanes. Several of these trainings noted that drivers should not drive in bike lanes except in specific circumstances (i.e., when preparing to turn, when entering or leaving the roadway, or when parking in permitted parking areas). Several trainings recommended extreme caution when driving across or merging with a bike lane. Also, several trainings noted that parking in bike lanes is illegal.

Sharing a lane with bicycles. Several trainings provided recommendations about when and when not to share a non-bicycle lane with a bicyclist. Several trainings recommended allowing bicyclists to use the entire lane whenever possible. One training noted that although many States do not require motorists to give bicyclists the full traffic lane, this is often the safest option to avoid collisions.

Passing. Several trainings discussed safe driving practices when passing bicyclists. Several recommended giving bicyclists as much space as possible when passing them and giving bicyclists a specific amount of space when passing (i.e., 3 to 4 ft depending on State guidelines, or one half of a lane). Several trainings recommended waiting until there is no oncoming traffic to attempt to pass a bicyclist. One of these trainings further recommended slowing down and remaining behind the bicycle until it is safe to pass. Several trainings cautioned against turning, slowing down, or stopping quickly after passing a cyclist.

Pulling out of a parking space. Only several trainings touched upon the importance of checking for bicyclists when pulling out of a parking space.

Contextual considerations

Explaining/anticipating bicyclists' movements and contextual factors that affect them.

Several trainings discussed the movements of bicyclists and contextual factors that affect them. Several trainings mentioned that cyclists sometimes swerve or turn suddenly, particularly if they are unskilled or if they need to avoid hazards on the road such as potholes, puddles, or storm drains. Several trainings discussed situations in which it is difficult for bicyclists to slow down or brake. These included when there is sand or gravel on the roadway, on wet or icy roads, or when there are potholes or other roadway hazards. One training recommended giving bicyclists more space in these situations. One training explained that factors that reduce traction affect bicycles more than vehicles.

Several trainings noted that bicyclists do not always obey traffic laws (e.g., they may ride against instead of with the direction of traffic or fail to stop at stop signs). Finally, one training noted that bicyclists' age and body size in relation to their bicycle sizes; their location on the roadways, shoulders, or sidewalks; whether they are riding against or with traffic; and whether they are alone or among other riders can provide clues about their potential movements and actions.

Other safety considerations and procedures

Opening the door of a parked car. Several trainings discussed the dangers of "dooring," or opening the door of a parked car into the path of oncoming bicyclists. Among these, most suggested simply checking for cyclists before opening the door of a parked car. Only one

recommended the “Dutch reach” technique, in which the driver uses their right hand to open the door, forcing them to turn their head and look backward toward potential bicyclists approaching from the rear.

Sharrows. Only one training covered sharrows, noting that sharrows assist bicyclists with positioning on the roadway and alert motorists that bicyclists may occupy the lane. A shared lane marking, or “sharrow,” can be used for a number of purposes, including (1) assisting bicyclists with their positioning in a shared lane with on-street parallel parking; (2) assisting bicyclists with their positioning in lanes that are too narrow for a vehicle and bicycle to travel side by side, (3) alert road users to the location that bicyclists are likely to occupy within a shared lane, (4) encourage safe passage of bicyclists by motorists, and (5) reduce the incidence of wrong-way bicycling (FHWA, 2009, revised 2012).

Use of low-beam headlights. Only one training discussed the importance of using one’s low beams at night when bicyclists are nearby to avoid blinding them.

Pedestrian-Specific Safety Topics

Maneuvers

Yielding the right-of-way. Most of the trainings that were reviewed discussed yielding the right-of-way to pedestrians. Among these, a couple discussed the meaning of yielding the right-of-way. For instance, one training defined yielding the right-of-way as “the right of one vehicle or pedestrian to proceed in a lawful manner in preference to another vehicle or pedestrian approaching under such circumstances of direction, speed, and proximity as to give rise to danger of collision unless one grants precedence to the other. The law does not give anyone the right-of-way. It only specifies which road user must yield the right-of-way.” Several trainings noted a need to search for and yield the right-of-way to any pedestrians already in an intersection or crosswalk, even when a driver has a green light. Several trainings recommended allowing a pedestrian to completely clear the crosswalk or intersection before proceeding (three trainings). Several trainings also noted a need to yield to pedestrians when faced with a red traffic signal or stop sign and at one mentioned the need to yield to pedestrians at yield signs. One training discussed the need to yield to pedestrians at uncontrolled intersections and one advised drivers to yield to any pedestrian crossing the road within a crosswalk when traffic control signals are not in place or not working. Several trainings noted that drivers are required to yield to pedestrians in roundabouts.

In addition to the specific right-of-way guidance discussed above, most of the trainings that were reviewed also noted that drivers should yield to pedestrians in all circumstances, regardless of whether the pedestrian is following traffic rules. For instance, one training stated that “at any intersection, and anywhere, anytime, vehicle drivers must yield the right-of-way to pedestrians.” Several trainings noted that pedestrians may jaywalk or dart out into traffic without looking. One training stated that “a pedestrian is infinitely more vulnerable to a car than a car is to a pedestrian, so even if you believe you have the right-of-way, it is typically best to allow a pedestrian to pass.”

Turning. Almost all trainings reviewed included at least some type of content about pedestrian safety while turning. Several trainings recommended conducting a visual search for pedestrians when making turns. Several trainings noted that drivers are required to yield to pedestrians before turning. One training noted that, when turning at a traffic light, drivers are required to

wait until pedestrians have cleared their lane plus 6 feet of the next lane. This same training noted that in all other situations, drivers must wait until the pedestrian has cleared their lane and the entire next lane before proceeding. In addition to providing recommendations for turning in general, most trainings also provided guidance for specific types of turns, including right turns, left turns, turning right on red, and U-turns.

Left turns. Most of the trainings that were reviewed covered pedestrian safety while turning left. Specific advice provided in these trainings included checking and searching for pedestrians in one's path before turning (a few trainings), yielding the right-of-way to pedestrians in one's path before turning (a few trainings), and identifying safe "gaps" in oncoming traffic, pedestrians, and other roadway users before turning (several trainings). One training recommended avoiding getting "stuck" in an intersection by making sure there are no pedestrians in one's path before beginning a left turn. Finally, one training noted that collisions with pedestrians often occur while drivers are turning left because they are focused on traffic lights and the turning maneuver and fail to identify pedestrians in their path.

Right turns. Most of the trainings also discussed pedestrian safety while turning right. Several trainings advised checking and searching for pedestrians in one's path and several mentioned a need to yield to pedestrians before turning right. One training noted that when motorists are faced with a green light permitting a right turn, pedestrians also have a green signal allowing them to cross the roadway, thus drivers must always watch for and yield to pedestrians in these situations. One training noted that pedestrians are often hit by drivers who are turning right and are not expecting another road user to cross their path.

Right on red. Several trainings also discussed pedestrian safety while turning right on a red light. Several trainings noted a need to search for pedestrians approaching on the right while turning right on red. Several trainings noted that drivers are required to yield to pedestrians before proceeding. Finally, several trainings noted that drivers are permitted to turn left on red when turning onto a one-way street from another one-way street but only after yielding to pedestrians.

U-turns. Only a few of the trainings that were reviewed discussed pedestrian safety while making U-turns. Two of these trainings noted a need to check for pedestrians before making a U-turn, and one noted that drivers should never make a U-turn near pedestrians and children who are playing.

Providing extra space to pedestrians. Several trainings recommended giving extra space to pedestrians in the roadway. For instance, one training recommended allowing more time and space for pedestrians than one would for another vehicle on the road. One training recommended increasing the space between one's vehicle and the edge of the road when pedestrians are walking along the side of the road. Finally, one training recommended overtaking pedestrians with caution and passing them with proper passing procedures, just as one would for another vehicle.

Public transportation vehicles. Several trainings discussed pedestrian safety when approaching or passing public transportation vehicles such as buses, streetcars, and trolleys. Most of those trainings recommended using caution when passing public transportation vehicles and watching for any pedestrians who may enter one's path of travel. One training noted that it is legal to pass a commercial bus, however, drivers should be aware of the increased risk. Several trainings noted that in some locations, drivers are not legally permitted to pass public transportation vehicles at speeds higher than 10 miles per hour.

Crosswalks, signs, and pavement markings

Pedestrian signs and pavement markings. Several trainings discussed pedestrian signs and pavement markings. Several of these trainings simply noted the physical characteristics of pedestrian signs and pavement, such as their color, shape, and location in the roadway. Several of these trainings also noted the meanings of various pedestrian signs and pavement markings. One training recommended that drivers slow down and look for pedestrians when they see pedestrian signs and pavement markings.

Crosswalks. Most of the trainings reviewed discussed yielding to pedestrians in crosswalks. Several trainings touched on where drivers should stop when yielding to pedestrians at crosswalks (i.e., before the white stop line, or before the crosswalk if there is no stop line; three trainings). Several noted that drivers are required to yield to pedestrians who are already in the intersection, even when they have a green light. Several trainings recommended taking certain precautions when approaching crosswalks, such as reducing speed, covering the brake, and searching for pedestrians who may enter the roadway. A couple trainings noted that although most crosswalks are at intersections, drivers may also encounter mid-block crosswalks, which usually have a pedestrian crossing sign and require drivers to yield as they would at an intersection. Several trainings noted that drivers should never block or park in a crosswalk. Finally, several trainings noted that drivers should not pass vehicles stopped at crosswalks, as these vehicles may be stopped to allow a pedestrian to cross.

Crosswalk signals. Several trainings discussed the meaning of pedestrian crosswalk lights. These trainings noted that a white image of a pedestrian walking indicates that pedestrians are allowed to cross, whereas a steady “don’t walk” signal alerts pedestrians not to enter the street, and a flashing “don’t walk” signal indicates that pedestrians already in the crosswalk may proceed to the other side of the street. Several of these trainings also noted that many pedestrian crosswalk lights have countdown timers to let pedestrians know how much longer they have to cross the street and to let observant drivers know how long they have until the signal turns yellow. Only one training discussed HAWK (High-intensity Activated crossWalk) systems. This training noted that these signals let drivers know when a pedestrian is crossing or about to cross an intersection, and that drivers are required to stop whenever the signal displays a solid red light. Similarly, only one training discussed rectangular rapid flashing beacons, noting that these beacons are a type of pedestrian crossing sign that flashes lights in an alternating pattern when pedestrians are crossing, providing them with greater visibility to drivers.

Unmarked crosswalks. Several of the trainings that were reviewed noted that drivers are required to yield to pedestrians at both marked and unmarked crosswalks. One training noted that there are crosswalks at every intersection, even if they are not marked. One training noted that residential streets typically have unmarked crosswalks, and one noted that there are often unmarked crosswalks on streets with sidewalks but no painted crosswalks. Two trainings discussed where drivers should stop at unmarked crosswalks—one advised stopping before entering the intersection and one advised stopping before entering the unmarked crosswalk.

Pedestrians outside of crosswalks. Several trainings noted that drivers should also be aware of and yield to pedestrians outside of crosswalks. Several trainings recommended watching for pedestrians near the curb who may attempt to cross mid-block (two trainings, one adult). Two trainings recommend slowing down whenever pedestrians are near the roadway in case they attempt to cross unlawfully.

Schoolchildren

School zones. Several trainings discussed driving in school zones. Several of these trainings recommended reducing speed when driving in school zones and a few advised always being prepared to stop and yield the right-of-way when in school zones. One training recommended using “extreme caution” and “aggressively scanning the roadway” in school zones.

School crossing signs and pavement markings. Several trainings discussed school crossing signs and pavement markings, including both their physical characteristics and their meaning. Several trainings also noted that school zone signs sometimes have posted speed limits that drivers are required to observe when the yellow lights are flashing. Finally, one training noted that drivers should reduce their speed when they see signs for a school zone, regardless of whether the lights are flashing (one adult).

School safety patrols. Several trainings noted that drivers are required to stop and yield when signaled to do so by school safety patrols. One of these trainings noted that drivers should obey school safety patrols, even when they conflict with traffic signals. This training also noted that a hand that is held up signals that drivers should stop, whereas a hand that is waving signals that drivers should proceed.

Stop-arm laws. Several trainings touched on stop-arm laws and stopping for school buses. Several of these trainings noted that drivers are required by law to stop whenever a school bus is stopped, and its red lights are flashing or whenever a bus is stopped to drop off or pick up children. Several trainings also noted that drivers are required to remain stopped until the bus resumes motion, the lights are no longer flashing and/or the stop-arm is no longer extended, or they are signaled by the bus driver to proceed. One of these trainings further noted that, in these circumstances, drivers should only proceed if they are certain there are no pedestrians in their path. Several trainings also discussed situations in which drivers are not required to stop for school buses. Several trainings noted that drivers are not required to stop when a driver is on a divided highway and the bus is stopped on the other side of the roadway. Two trainings noted that drivers do not need to stop when they are on the other side of a highway with four or more lanes, regardless of whether the highway is divided). However, two trainings noted that some States require drivers to stop for buses in all circumstances. Finally, several trainings noted that failing to stop for a school bus can lead to the suspension of one’s driver’s license.

Other special groups of pedestrians

Many of the trainings also discussed specific groups of pedestrians, other than children, that drivers should pay particular attention to and be especially cautious around.

Pedestrians with disabilities. Several trainings advised drivers to be careful around pedestrians with disabilities. Several of these trainings noted that drivers should allow extra time and space when such pedestrians are crossing the roadway.

Several trainings also discussed driving near pedestrians who are blind, specifically. Each of these trainings noted that drivers must always be prepared to yield to pedestrians with a white cane or a service animal. Two trainings noted that drivers are required to yield to blind pedestrians wherever they are in the roadway and two trainings advised treating blind pedestrians with courtesy and not honking one’s horn or shouting at them while waiting for them to cross.

Older adults. In addition, several trainings advised being careful around older adults. Several trainings advised giving more time to allow older pedestrians to cross the street, as some may walk more slowly than the typical adult pedestrian. And a few trainings noted that older adults may not know traffic laws and signals and may therefore take more risks around the roadway than other pedestrians.

Distracted pedestrians. Finally, several trainings recommended watching out for distracted pedestrians, including pedestrians who are on their mobile phones, wearing headphones or earbuds, fumbling with packages or keys, or talking to another pedestrian. One training noted that the rates of pedestrians who have been injured because they were distracted have quadrupled in the past seven years. One training recommended slowing down and giving distracted pedestrians more space.

Additional pedestrian safety topics

Parking and parking lots. Many of the trainings that were reviewed discussed a need for an increased awareness of pedestrians when parking or driving through parking lots. For example, a few trainings advised drivers to slow down in parking lots or near parked cars because pedestrians might appear suddenly in the driver's path, and several warned that pedestrians, including children, may step out from between parked cars, specifically. Several trainings discussed the dangers of distracted pedestrians in parking lots—such as those leaving events, fumbling with keys, or running to get out of the rain. Trainings also discussed specific behaviors or actions that drivers could take to remain safe in these situations. Several trainings advised drivers to slow down and yield the right-of-way to pedestrians. Several trainings gave explicit advice about parking, including backing into parking spaces to make exiting the parking lot easier and safer and reminding drivers to check carefully for pedestrians when using a pull-through parking space. Finally, one training advised drivers to check behind their vehicle for anything they might hit before getting into their car.

Search, identify, predict, decide, execute (SIPDE). Several trainings discussed how the SIPDE process can help drivers better identify and predict pedestrians' actions and therefore avoid collisions. For example, these trainings noted that this process allows a driver to predict the worst-case scenario, such as if a child were to dart in front of their vehicle and execute the appropriate avoidance maneuvers.

Pedestrian safety zones. Two trainings discussed safety zones for pedestrians, noting that drivers should never block a safety zone and that there are pedestrian safety zones at every intersection.

Roadside emergency responders. Two trainings noted that drivers are required to move over and proceed with caution to help protect roadside emergency responders.

Unavoidable collisions. One training recommended attempting to collide with something other than a pedestrian if a crash is unavoidable.

Scooters and Other Vulnerable Road Users

In addition to bicyclists and pedestrians, several trainings discussed scooters. Among these, only two trainings provided specific content and recommendations for sharing the road with scooters. One noted their small size and limited visibility to drivers, and one recommended giving scooters the whole lane when passing them.

In addition to scooters, one training discussed other vulnerable road users that drivers should be alert for, including people in electric carts, people on skates or skateboards, and people on horseback. This training recommended adjusting driving as needed to accommodate these road users. Finally, one training noted that drivers should reduce their speed, provide extra space, and avoid using the horn or revving the engine when sharing the road with horseback riders, specifically.

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Discussion

The originally intended focus of this examination document was purely on trainings. However, after discussions both within the research team and with external SMEs, it was determined that there was value in reviewing three types of driver education material—State curriculum guidelines, State driver manuals, and driver education trainings—while retaining a primary emphasis on reviewing the trainings. This decision was made for two reasons: there was value in (1) understanding what content States recommend covering in trainings, for States where curricula exist; and (2) reviewing the curriculum standards and driver manuals before reviewing the trainings themselves, as this helped to build a comprehensive codebook with which to catalog training content. It should be noted, however, that although a review of these trainings was attempted that would provide a representative sample, many teen novice drivers likely receive their driver education training from courses provided by local providers.

Unsurprisingly, due to their intended purpose, curriculum guidelines tended to provide the least coverage of pedestrian and bicyclist safety considerations—particularly in terms of specificity of content. Rather, curriculum guidelines were mostly general and did not provide specific advice, recommendations, or topic areas to be discussed. Curriculum guidelines that were longer were more likely to go beyond a simple mention of driver awareness of bicyclists and pedestrians than were shorter curricula, although this was not always the case. Thirty-one curriculum guides were reviewed. It is possible that for some States whose guidelines could not be found online that the appropriate office/personnel was unable to be identified that could have provided the guides; however, many States that were contacted stated that they simply did not have a curriculum guide to share. Reasons provided included the State being small, driver education being “handled by the schools,” or relatively lax driver education requirements (e.g., a large proportion of novice drivers being taught by their parents).

The 49 driver manuals reviewed covered a broad range of topics and often included recent developments in bicyclist and pedestrian safety—such as bike boxes, green pavement, and opening doors of parked cars. However, they tended to focus more on rules and regulations than on guidance and recommendations regarding safe driving best practices. Nevertheless, driver manuals were the most comprehensive type of resource reviewed.

Compared to the driver manuals, the 13 trainings that were reviewed provided greater guidance and more recommendations regarding safe driving best practices (e.g., covering the brake near pedestrians); however, many trainings did not include content concerning more recent developments in pedestrian and bicyclist safety (e.g., bike boxes). Virtually every training included some emphasis on driver responsibility for helping to ensure the safety of pedestrians and bicyclists on the road—especially children. Yielding the right-of-way and turning were also widely covered with respect to pedestrians and bicyclists. Conducting a visual search and taking extra precautions when crossing sideways, alleys, and driveways, or when backing up, also received attention in all or most trainings. Regarding pedestrians, specifically, crosswalks were covered to some extent in all trainings, although the level of detail and number of sub-topics discussed varied. Special types of pedestrians to be particularly aware of (e.g., blind pedestrians) were also covered in most trainings. Finally, school zones and stop-arm laws were also touched on in most trainings.

Regarding bicyclists, specifically, when to use or not use a bicycle lane was discussed in most trainings, as were protocols for sharing versus not sharing standard travel lanes with a bicyclist.

Safe driving practices when passing a bicyclist were also discussed in most trainings, whereas checking behind your car when opening the door of a parked car was mentioned in just under half (and the “Dutch reach” technique specified in only one).

Overall, the findings of the research reported in this examination document were critical to informing the development of prototype content to be included in future driver education training. The documents reviewed helped to not only better understand what is presently covered but also what is not. Therefore, this research served an important purpose in confirming/supplementing the understanding of where driver education trainings lack pedestrian and bicyclist safety content.

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