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RESEARCH NOTE

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Nonmotorist Crashes in the 2024 Crash Investigation Sampling System

Introduction

In 2024 the National Highway Traffic Safety Administration began implementing provisions in the Infrastructure Investment and Jobs Act (IIJA) “to enhance the collection of crash data by upgrading the Crash Investigation Sampling System (CISS) to include – 1) additional data collection sites; 2) an expanded scope that includes all crash types; and 3) on-scene investigation protocols” (Pub. L. 117-58, § 24108, 2021). NHTSA increased the number of data collection sites from 32 to 40 in the 2024 CISS. NHTSA also expanded the scope to include nonmotorist crashes, defined as police-reported motor vehicle traffic crashes that each involve a nonmotorist who sustained a police-reported injury severity of killed, incapacitating injury, or non-incapacitating injury. The nonmotorist category includes:

- An occupant of a non-motor vehicle transport device (e.g., person riding in an animal-drawn conveyance);
- A pedestrian;
- A bicyclist including operator, passengers, and people being pulled by a bicycle (e.g., in a wagon);
- “Other Cyclist” (e.g., unicycle or tricycle); and
- “Person on Personal Conveyance.”¹

For the 2024 CISS, the crash scope is:

- Police-reported motor vehicle traffic crashes where at least one passenger vehicle (i.e., passenger car, light truck, or van² with a gross vehicle weight rating of less than 10,000 lb) was towed away from the scene of the crash, or
- Police-reported motor vehicle traffic crashes where at least one nonmotorist sustained a police-reported injury severity of killed, incapacitating injury, or non-incapacitating injury in the crash.³

¹ A personal conveyance is a device, other than a transport device, used by a pedestrian for personal mobility assistance or recreation. These devices can be motorized or human powered, but not propelled by pedaling, such as a scooter, skateboard, or wheelchair. This excludes golf carts, low-speed vehicles, go-carts, mini bikes, motor scooters, mopeds, and pocket motorcycles.

² “Light truck or van” includes pickups and SUVs.

³ The CISS does not include crashes involving nonmotorists with police-reported injury severity of “possible injury” or “injured, severity unknown”. However, in this note, the qualifying injury scope for nonmotorists is referred to as “police-reported injury or fatality.”

NHTSA plans to continue to implement the provisions of IIJA by increasing the number of data collection sites and expanding the crash scope to include motorcycle and large vehicle (greater than 10,000 lb) crashes in the coming years. This research note⁴ summarizes the nonmotorist crashes in the 2024 CISS.

Data and Limitations

In the 2024 CISS, NHTSA added 2 analysis domains for nonmotorist crashes to the 10 previous analysis domains for the towed passenger vehicle crashes. These domains are:

- Crashes each involving a towed passenger vehicle where at least one nonmotorist sustained a police-reported injury or fatality
- Crashes each involving any vehicle (excluding a towed passenger vehicle) where at least one nonmotorist sustained a police-reported injury or fatality

The 2024 CISS selected 6,132 police-reported crashes; of those, 5,290 crashes were investigated and included in the final analytic files for estimation. Among the 5,290 crashes, 383 crashes (7.2%) were nonmotorist crashes that involved 404 nonmotorists. Given the relatively small sample size for nonmotorist crashes, readers should be cautious about making extensive inferences from this research note. For reference, each table in the Results section includes the sample size (*n*), representing the number of investigated cases.

CISS selects nonmotorist crashes involving killed or injured nonmotorists based on the injury severity provided on the police crash reports. However, some nonmotorists were determined not to be injured based on medical record reviews conducted during the investigations. These crashes and nonmotorists were included in the final analytic file.

In most nonmotorist crashes, one vehicle struck a nonmotorist. However, there are some crashes where two or more vehicles struck a nonmotorist, one vehicle struck two or more nonmotorists, or one vehicle struck the same nonmotorist more than once.

Results

Overview

Table 1 shows the overall sample sizes and estimates. In 2024, CISS investigated 5,290 crashes where in each at least one passenger vehicle was towed from the scene or at least one nonmotorist sustained a police-reported injury or fatality. This represents an estimated 2,879,549 police-reported crashes and 5,075,756 motor vehicles. There were an estimated 2,796,576 towed passenger vehicle crashes and 5,061,896 occupants of towed in-transport passenger vehicles. An estimated 91,721 crashes involved 97,014 nonmotorists. Note that the total number of CISS crashes is less than the sum of towed passenger vehicle crashes and nonmotorist crashes because some crashes involve both a towed passenger vehicle and a nonmotorist who sustained a police-reported injury or fatality. In such cases, the crash is counted as both a towed passenger vehicle crash and a nonmotorist crash.

Table 1. Overview of 2024 CISS Estimates

	Sample Size	Estimate	Standard Error
Crashes	5,290	2,879,549	170,980
Towed Passenger Vehicle Crashes*	5,094	2,796,576	165,357
Nonmotorist Crashes	383	91,721	9,936
All Vehicles Involved	9,212	5,075,756	289,335
Occupants of Towed In-Transport Passenger Vehicles	10,237	5,061,896	374,703
Nonmotorists	404	97,014	11,489

Source: 2024 CISS

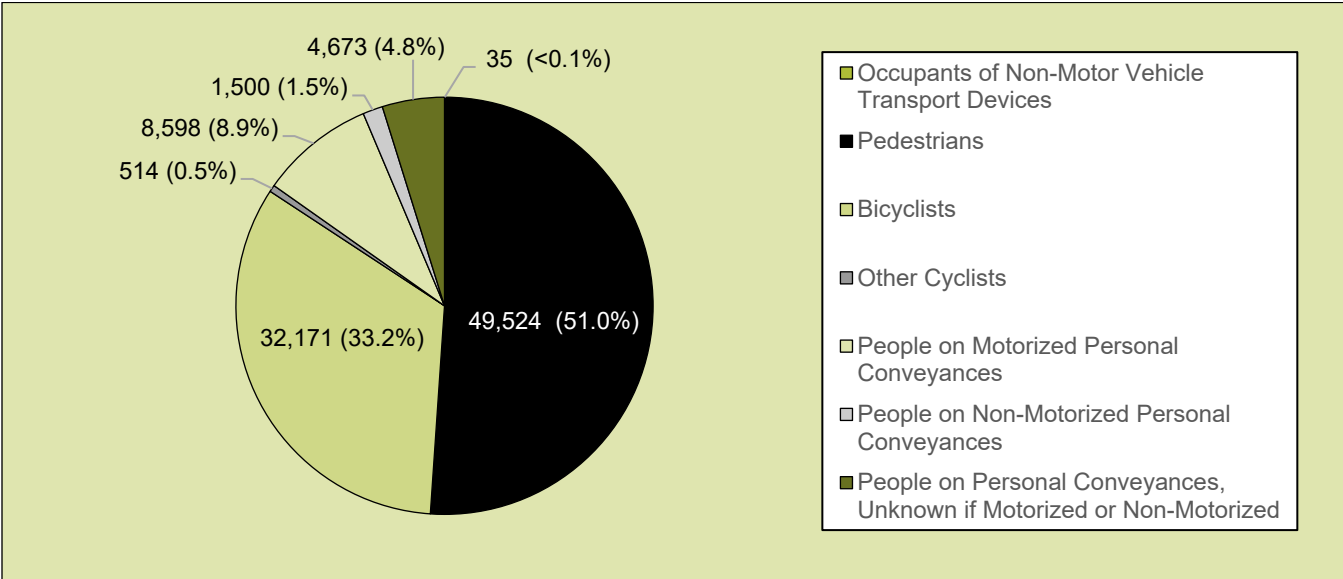
*The estimated number of towed passenger vehicle crashes represents the same target population as 2017-2023 CISS.

⁴ For more information about the 2024 CISS, refer to this reference: National Center for Statistics and Analysis. (2025b, December). *Overview of the 2024 Crash Investigation Sampling System* (Traffic Safety Facts Research Note. Report No. DOT HS 813 769). National Highway Traffic Safety Administration. <https://doi.org/10.21949/c9nf-dc47>

Nonmotorists Involved

Of the estimated 97,014 nonmotorists involved in CISS crashes, 51 percent were pedestrians as shown in Figure 1. About 33 percent of the nonmotorists were bicyclists and about 9 percent were people on a motorized personal conveyance.

Figure 1. Nonmotorists Involved in 2024 CISS Crashes by Person Type



Source: 2024 CISS

Table 2 shows the top five (among 75 possible) pedestrian crash scenarios.⁵ This accounts for almost 50 percent of all pedestrians involved in CISS crashes. The top crash scenario for pedestrians was the striking vehicle was going straight and the motorist failed to yield (13.4%) followed by the crash scenario in which the striking vehicle was going straight and the pedestrian failed to yield (12.5%). Table 3 shows the top five (among 62 possible) cyclist crash scenarios. This accounts for 44 percent of all cyclists involved in CISS crashes. The top crash scenario for cyclists was the striking vehicle was turning right and motorist turned right in front of the cyclist traveling in the same direction (13.6%). Readers should note that the sample size is small for each crash scenario, especially for cyclists. If two pedestrians or cyclists were struck by the same vehicle, each nonmotorist is counted separately in the tables.

Table 2. Top 5 Crash Scenarios for Pedestrians in 2024 CISS

Ranking	Pre-Event Movement of Striking Vehicle	Crash Type	Sample Size	Estimate (Standard Error)	Percent
1	Going straight	Motorist Failed to Yield	15	6,635 (2,801)	13.4%
2	Going straight	Pedestrian Failed to Yield	43	6,195 (2,776)	12.5%
3	Turning left	Motorist Left Turn - Parallel Paths	25	5,191 (2,193)	10.5%
4	Going straight	Walking/Running Along Roadway With Traffic - From Behind	9	3,192 (2,131)	6.4%
5	Going straight	Dash – Run, No Visual Obstruction Noted	23	3,114 (1,330)	6.3%

Source: 2024 CISS

⁵ For more information on pedestrian and cyclist crash scenarios, refer to this reference: National Highway Traffic Safety Administration. (2025a, December). *NHTSA field crash investigation 2024 non-motorist coding and editing manual* (Report No. DOT HS 813 745). National Highway Traffic Safety Administration. <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813745>

Table 3. Top 5 Crash Scenarios for Cyclists in 2024 CISS

Ranking	Pre-Event Movement of Striking Vehicle	Crash Type	Sample Size	Estimate (Standard Error)	Percent
1	Turning right	Motorist Right Turn - Same Direction	12	4,461 (3,108)	13.6%
2	Turning left	Motorist Left Turn - Same Direction	3	2,886 (2,378)	8.8%
3	Going straight	Bicyclist Ride Through - Signalized Intersection	7	2,507 (1,253)	7.7%
4	Stopped in road	Parallel Paths - Other / Unknown	1	2,483 (2,459)	7.6%
5	Going straight	Bicyclist Ride Through - Sign-Controlled Intersection	6	1,884 (1,301)	5.8%

Source: 2024 CISS

Table 4 shows the nonmotorists involved in 2024 CISS crashes by striking vehicle type. If a vehicle struck two nonmotorists, this vehicle was counted twice. Of the estimated 97,014 nonmotorists involved in CISS nonmotorist crashes, an estimated 52,796 nonmotorists were struck by light trucks, vans, or multi-purpose vehicles, an estimated 31,913 nonmotorists were struck by passenger cars, and an estimated 6,334 nonmotorists were struck by non-passenger vehicles.

Table 4. Nonmotorists Involved in 2024 CISS Crashes by Striking Vehicle Type

Vehicle Type	Sample Size	Estimate (Standard Error)	Percentage
Passenger Vehicles	385	89,176 (11,298)	91.9%
Passenger Cars	160	31,913 (6,419)	32.9%
Light Trucks, Vans, or Multi-Purpose Vehicles	215	52,796 (6,400)	54.4%
Light Utility Vehicles	142	30,698 (6,746)	31.6%
Light Pickups/Trucks	58	17,040 (4,109)	17.6%
Light Vans	14	4,944 (2,974)	5.1%
Light Truck - Other	1	113 (115)	0.1%
Unknown Light Vehicle Type	10	4,467 (2,912)	4.6%
Non-Passenger Vehicles	13	6,334 (2,951)	6.5%
Large Vehicles	8	2,499 (1,142)	2.6%
Buses	1	264 (253)	0.3%
Other or Unknown Non-Passenger Vehicle	4	3,571 (2,466)	3.7%
Multi-vehicle Crashes*	6	1,504 (1,134)	1.6%
Total Vehicles	404	97,014 (11,489)	100.0%

Source: 2024 CISS

*Multi-vehicle crashes are crashes where more than one vehicle struck a nonmotorist.

Pedestrian Automatic Emergency Braking (PAEB) is a type of crash avoidance technology used to mitigate crashes involving pedestrians. Table 5 shows the estimated number of nonmotorists involved in CISS crashes by the availability of PAEB equipment in the striking vehicle. In CISS, the availability of crash avoidance equipment like PAEB is collected only for in-transport passenger vehicles whose model year is 2010 or newer. Note that this table does not inform whether the PAEB technology was activated or not. If a vehicle struck two nonmotorists, this vehicle was counted twice. An estimated 8,447 nonmotorists involved in CISS crashes were struck by a vehicle equipped with PAEB, and an estimated 21,869 nonmotorists were struck by a vehicle not equipped with PAEB.

Table 5. Nonmotorists Involved in 2024 CISS Crashes, by PAEB Availability

PAEB Availability for Striking Vehicle	Sample Size	Estimate (Standard Error)	Percentage
Vehicle was not equipped with PAEB	134	21,869 (4,320)	22.5%
Vehicle was equipped with PAEB	45	8,447 (3,014)	8.7%
Unknown if vehicle was equipped with PAEB	4	268 (160)	0.3%
Vehicle did not meet data collection criteria*	215	64,926 (11,192)	66.9%
Multi-vehicle crashes**	6	1,504 (1,134)	1.6%
Total (n=404)	404	97,014 (11,489)	100.0%

Source: 2024 CISS

*CISS investigators collect PAEB availability information only for in-transport passenger vehicles whose model year is 2010 or newer.

**Multi-vehicle crashes are crashes where more than one vehicle struck a nonmotorist.

Table 6 shows the Maximum Abbreviated Injury Scale⁶ (MAIS) severity for the nonmotorist involved in CISS crashes. CISS selects nonmotorist crashes involving killed or injured nonmotorists based on the injury severity provided on the police crash reports. However, some nonmotorists were determined not to be injured (MAIS-0) based on medical record reviews conducted during the investigations. These crashes and nonmotorists were included in the final analytic file. Of the estimated 97,014 nonmotorists, 38,263 had minor injury, 19,556 had moderate injury, 8,940 had serious injury, 5,256 had severe injury, 908 had critical injury, and 3,627 had maximal injury. These injuries resulted in an estimated 8,660 nonmotorist fatalities. The majority of fatalities are associated with MAIS-3 to MAIS-6 injuries. However, there are rare instances where only MAIS-1 or MAIS-2 injuries were documented for a fatality.

Table 6. Nonmotorists Involved in 2024 CISS Crashes, by Maximum AIS Severity

Maximum AIS Severity of the Nonmotorist	Sample Size	Estimate (Standard Error)	Percent of Total Nonmotorists
0 – Not Injured	13	6,112 (3,941)	6.3%
1-Minor	126	38,263 (6,010)	39.4%
2-Moderate	82	19,556 (3,821)	20.2%
Subtotal (MAIS-1 to MAIS-2)	208	57,818 (6,336)	59.6%
3-Serious	62	8,940 (2,817)	9.2%
4-Severe	24	5,256 (1,611)	5.4%
5-Critical	19	908 (364)	0.9%
6-Maximal	18	3,627 (2,213)	3.7%
Subtotal (MAIS-3 to MAIS-6)	123	18,732 (4,489)	19.3%
9-Injured, Unknown Severity	60	14,352 (4,948)	14.8%
Subtotal (MAIS-1 to MAIS-9)	391	90,902 (10,181)	93.7%
Total	404	97,014 (11,489)	100.0%

Source: CISS 2024

Table 7 shows the percentage of nonmotorists by age group and the maximum AIS severity. For nonmotorists under 16 years old, over 56 percent had maximum AIS-1 to AIS-2 injury and 15 percent had maximum AIS-3 to AIS-6 injury. Seventy percent of nonmotorists 16 to 24 years old had maximum AIS-1 to AIS-2 injury, and about 13 percent had maximum AIS-3 to AIS-6 injury. For nonmotorists 25 to 44 years old, around 48 percent had maximum AIS-1 to AIS-2 injury and almost 20 percent had maximum AIS-3 to AIS-6 injury. Sixty-four percent of nonmotorists 45 to 64 years old had maximum AIS-1 to AIS-2 injury and some 24 percent had maximum AIS-3 to AIS-6 injury. For nonmotorists over 65, about 54 percent had maximum AIS-1 to AIS-2 injury and almost 29 percent had maximum AIS-3 to AIS-6 injury.

⁶ For more information on AIS, see www.aaam.org/abbreviated-injury-scale-ais.

Table 7. Nonmotorists Involved in 2024 CISS Crashes, by Age Group and Maximum AIS Severity

Maximum AIS Severity of the Nonmotorist	Age Group					
	Percent of Nonmotorists (Standard Error)					
	<16	16-24	25-44	45-64	65+	Total*
MAIS-1 to MAIS-2 (Minor or Moderate Injury) (n=208)	56.4% (13.4%)	70.1% (9.8%)	48.1% (9.7%)	64.0% (6.3%)	53.9% (11.2%)	59.6% (3.2%)
MAIS-3 to MAIS-6 (Serious Injury to Maximal Injury) (n=123)	15.0% (13.8%)	12.6% (6.0%)	19.7% (9.3%)	24.2% (8.3%)	28.8% (14.3%)	19.3% (4.4%)
MAIS-9 (Injured, Unknown Severity) (n=60)	6.6% (3.7%)	15.5% (10.9%)	27.4% (8.9%)	8.9% (3.7%)	17.2% (11.5%)	14.8% (4.6%)
Total (n=404)**	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: 2024 CISS

*Total includes unknown age.

**Total includes non-injured nonmotorists.

Highlighted cells indicate sample sizes of less than 10.

Among nonmotorists involved in CISS crashes, an estimated 67,952 were males (70.0%) and an estimated 28,865 were females (29.8%) as shown in Table 8. For males, an estimated 44,267 had maximum AIS-1 to AIS-2 injury and an estimated 13,256 had maximum AIS-3 to AIS-6 injury. For females, an estimated 13,551 had maximum AIS-1 to AIS-2 injury and an estimated 5,475 had maximum AIS-3 to AIS-6 injury.

Table 8. Nonmotorists Involved in 2024 CISS Crashes, By Sex and Maximum AIS Severity

Maximum AIS Severity of the Nonmotorist	Sex					
	Male		Female		Total*	
	Estimate (Standard Error)	Percent of Nonmotorists	Estimate (Standard Error)	Percent of Nonmotorists	Estimate (Standard Error)	Percent of Nonmotorists
MAIS-1 to MAIS-2 (Minor or Moderate Injury) (n=208)	44,267 (6,530)	65.1%	13,551 (3,395)	46.9%	57,818 (6,336)	59.6%
MAIS-3 to MAIS-6 (Serious Injury to Maximal Injury) (n=123)	13,256 (3,909)	19.5%	5,475 (2,107)	19.0%	18,732 (4,489)	19.3%
MAIS-9 (Injured, Unknown Severity) (n=60)	8,392 (2,866)	12.3%	5,763 (2,886)	20.0%	14,352 (4,948)	14.8%
Total (n=404)**	67,952 (9,326)	100.0%	28,865 (6,442)	100.0%	97,014 (11,489)	100.0%

Source: CISS 2024

*Total includes unknown sex.

**Total includes non-injured nonmotorists.

Table 9 shows the light condition of the crash for nonmotorists by maximum AIS severity. If a crash involves two nonmotorists, this crash was counted twice. Of the estimated 57,818 nonmotorists with maximum AIS-1 to AIS-2 injury, 37,290 nonmotorists (64.5%) were in crashes that occurred during the daylight. Of the estimated 18,732 nonmotorists with maximum AIS-3 to AIS-6 injury, 8,250 nonmotorists (44.0%) were in crashes that occurred during dark, but lighted conditions (i.e., after dusk and before dawn, and artificial light source is present).

Table 9. Nonmotorists Involved in 2024 CISS Crashes, by Light Condition and Maximum AIS Severity

Light Condition	Maximum AIS Severity of the Nonmotorist							
	MAIS-1 to MAIS-2 (Minor or Moderate Injury)		MAIS-3 to MAIS-6 (Serious Injury to Maximal Injury)		MAIS-9 (Injured, Unknown Severity)		Total*	
	Estimate (Standard Error)	Percent of Nonmotorists	Estimate (Standard Error)	Percent of Nonmotorists	Estimate (Standard Error)	Percent of Nonmotorists	Estimate (Standard Error)	Percent of Nonmotorists
Daylight (n=191)	37,290 (7,991)	64.5%	2,827 (944)	15.1%	9,488 (3,822)	66.1%	53,571 (10,560)	55.2%
Dark (n=70)	9,976 (3,799)	17.3%	7,473 (2,877)	39.9%	1,101 (557)	7.7%	18,550 (5,947)	19.1%
Dark, but lighted (n=128)	9,211 (3,694)	15.9%	8,250 (2,601)	44.0%	1,047 (429)	7.3%	20,654 (5,958)	21.3%
Dawn (n=6)	334 (313)	0.6%	48 (48)	0.3%	1,424 (1,336)	9.9%	1,805 (1,367)	1.9%
Dusk (n=8)	307 (193)	0.5%	133 (116)	0.7%	1,293 (1,002)	9.0%	1,733 (999)	1.8%
Total (n=404)	57,818 (6,336)	100.0%	18,732 (4,489)	100.0%	14,352 (4,948)	100.0%	97,014 (11,489)	100.0%

Source: 2024 CISS

*Total includes non-injured nonmotorists.

Highlighted cells indicate sample sizes of less than 10.

Table 10 shows nonmotorists by the maximum AIS severity and the maximum impact speed. NHTSA determined the speed of the vehicle at the time of impact with the nonmotorist based on police calculations, driver/witness/police estimates, electronic data recorder image, or the crash investigator's calculation. The crash investigator's calculated estimate was based on physical evidence of the crash such as point of impact, nonmotorist's final rest, kinematic trajectory, vehicle's final rest, vehicle braking, and nonmotorist contact points on the vehicle. If any of this information was not available, the crash investigator was unable to determine the impact speed. If two or more vehicles struck a nonmotorist, the highest impact speed was used for Table 10.

Among nonmotorists with maximum AIS-1 to AIS-2 injury, an estimated 40.5 percent were struck by a vehicle with an impact speed 0 to 10 mph. Among nonmotorist with maximum AIS-3 to AIS-6 injury, an estimated 47.5 percent were struck by a vehicle with an impact speed 40 mph or more. Around 25 percent of nonmotorists were struck by a vehicle with unknown impact speed.

Table 10. Nonmotorist Involved in 2024 CISS Crashes, by Maximum AIS Severity and Impact Speed of Striking Vehicle

Impact Speed	Maximum AIS Severity of the Nonmotorist							
	MAIS-1 to MAIS-2 (Minor or Moderate Injury)		MAIS-3 to MAIS-6 (Serious Injury to Maximal Injury)		MAIS-9 (Injured, Unknown Severity)		Total*	
	Estimate (Standard Error)	Percent of Nonmotorists	Estimate (Standard Error)	Percent of Nonmotorists	Estimate (Standard Error)	Percent of Nonmotorists	Estimate (Standard Error)	Percent of Nonmotorists
0-10 mph (n=77)	23,418 (6,464)	40.5%	928 (474)	5.0%	3,126 (1,317)	21.8%	33,355 (8,512)	34.4%
11-24 mph (n=49)	10,432 (1,484)	18.0%	2,650 (2,046)	14.1%	1,174 (764)	8.2%	14,295 (2,402)	14.7%
25-39 mph (n=82)	5,499 (1,890)	9.5%	4,071 (1,426)	21.7%	249 (166)	1.7%	9,820 (2,508)	10.1%
40+ mph (n=70)	5,061 (2,117)	8.8%	8,894 (4,710)	47.5%	901 (589)	6.3%	14,856 (4,794)	15.3%
Unknown (n=126)	13,409 (3,071)	23.2%	2,188 (895)	11.7%	8,901 (4,034)	62.0%	24,687 (6,180)	25.4%
Total (n=404)	57,818 (6,336)	100.0%	18,732 (4,489)	100.0%	14,352 (4,948)	100.0%	97,014 (11,489)	100.0%

Source: 2024 CISS

*Total includes non-injured nonmotorists.

Highlighted cells indicate sample sizes of less than 10.

Nonmotorist Injuries

Table 11 shows injuries of nonmotorists involved 2024 CISS crashes by the injured body region⁷ and AIS severity. A nonmotorist can sustain two or more injuries with varying AIS severities to the same or different body regions. Each injury was counted in this table. The body region with the most injuries was the lower extremities followed by the upper extremities, head, and face. AIS-1 to AIS-2 injuries sustained by nonmotorists occurred most frequently in the lower and upper extremities, while AIS 3+ injuries occurred most frequently in the head and thorax.

⁷ The body region is defined from the AIS. For example, in the AIS, the neck does not include the cervical spine.

Table 11. Injuries of Nonmotorists Involved in 2024 CISS Crashes, by Body Region and AIS Severity

Body Region	AIS Severity of the Nonmotorist							
	AIS-1 to AIS-2 (Minor or Moderate Injury)		AIS-3 to AIS-6 (Serious Injury to Maximal Injury)		AIS-9 (Injured, Unknown Severity)		Total	
	Estimate (Standard Error)	Percent Of Nonmotorist Injuries	Estimate (Standard Error)	Percent Of Nonmotorist Injuries	Estimate (Standard Error)	Percent Of Nonmotorist Injuries	Estimate (Standard Error)	Percent Of Nonmotorist Injuries
Head (n=565)	52,712 (8,559)	9.1%	27,364 (10,966)	43.3%	3,910 (2,538)	59.0%	83,986 (17,871)	12.9%
Face (n=473)	81,703 (21,608)	14.1%	198 (146)	0.3%	40 (40)	0.6%	81,941 (21,637)	12.6%
Neck (n=45)	4,755 (1,617)	0.8%	2,252 (1,943)	3.6%	287 (220)	4.3%	7,294 (3,473)	1.1%
Thorax (n=375)	41,913 (10,743)	7.2%	18,716 (5,912)	29.6%	197 (130)	3.0%	60,825 (14,843)	9.4%
Abdomen (n=232)	30,335 (8,627)	5.2%	2,862 (1,775)	4.5%	229 (226)	3.4%	33,426 (9,791)	5.1%
Spine (n=178)	28,624 (4,859)	4.9%	1,823 (878)	2.9%	1,440 (1,386)	21.7%	31,887 (4,825)	4.9%
Upper Extremity (n=740)	152,272 (31,723)	26.3%	349 (122)	0.6%	23 (23)	0.3%	152,644 (31,698)	23.5%
Lower Extremity (n=1,144)	185,855 (34,772)	32.1%	9,624 (3,356)	15.2%	37 (36)	0.6%	195,516 (37,789)	30.1%
Total* (n=3,766)	579,848 (105,735)	100.0%	63,189 (18,827)	100.0%	6,632 (2,833)	100.0%	649,669 (123,620)	100.0%

Source: 2024 CISS

* Total includes other trauma and unspecified body region.

Highlighted cells indicate sample sizes of less than 10.

In CISS, highly qualified injury coders develop injury causation scenarios (ICS) for each injury based on case materials and physical evidence. As part of the ICS, injury experts determine the involved physical component (IPC) that was contacted to produce an injury. Table 12 shows the estimated 649,669 injuries sustained by nonmotorists in CISS crashes by the primary⁸ IPC and AIS severity. For AIS-1 to AIS-2 injuries, the primary injury producing component was the vehicle for an estimated 198,868 injuries (34.3%), the ground for 152,365 injuries (26.3%), and caused by another injury or unknown for 200,225 injuries (34.5%). For AIS-3 to AIS-6 injuries, the vehicle was the primary injury producing component for an estimated 40,135 injuries (63.5%), while the ground accounted for 3,949 injuries (6.2%).

⁸ For some injuries, an alternate IPC was determined if the injury coder was not certain of the ICS. For this table, we only published the primary IPC.

Table 12. Nonmotorist Involved in 2024 CISS Crashes, by Primary Involved Physical Component And AIS Severity

Primary IPC	AIS Severity of the Nonmotorist							
	AIS-1 to AIS-2 (Minor or Moderate Injury)		AIS-3 to AIS-6 (Serious Injury to Maximal Injury)		AIS-9 (Injured, Unknown Severity)		Total	
	Estimate (Standard Error)	Percent Of Nonmotorist Injuries	Estimate (Standard Error)	Percent Of Nonmotorist Injuries	Estimate (Standard Error)	Percent Of Nonmotorist Injuries	Estimate (Standard Error)	Percent Of Nonmotorist Injuries
Vehicle (n=1,750)	198,868 (41,834)	34.3%	40,135 (14,268)	63.5%	2,643 (1,176)	39.9%	241,646 (55,860)	37.2%
Ground (n=1,069)	152,365 (33,560)	26.3%	3,949 (1,862)	6.2%	2,798 (2,475)	42.2%	159,112 (35,778)	24.5%
Other Exterior Object (e.g., tree, pole, wall, etc.) (n=63)	25,290 (20,772)	4.4%	2,519 (2,004)	4.0%	-	-	27,810 (22,748)	4.3%
Vehicle Accessory (n=8)	2,114 (2,028)	0.4%	-	-	-	-	2,114 (2,028)	0.3%
Caused by Other Injury or Unknown IPC (n=822)	200,225 (50,033)	34.5%	15,317 (8,489)	24.2%	1,191 (476)	18.0%	216,733 (57,062)	33.4%
Multiple Injury Producing Component Areas (n=54)	985 (453)	0.2%	1,268 (680)	2.0%	-	-	2,253 (1,092)	0.3%
Total (n=3,766)	579,848 (105,735)	100.0%	63,189 (18,827)	100.0%	6,632 (2,833)	100.0%	649,669 (123,620)	100.0%

Source: 2024 CISS

Highlighted cells indicate sample sizes of less than 10.

Table 13 shows AIS 2+ injuries of nonmotorists involved in CISS crashes by the conflict plane and injured body region. The conflict plane is defined by each plane of the vehicle's geometry and the environment that were contacted by the nonmotorist during the crash sequence. A nonmotorist may interact with two or more conflict planes. Examples of components included in each conflict plane are:

- Front – Front bumper, headlight, front grille
- Left – Left door surface, front fender left side surface, left side mirror
- Right – Right door surface, front fender right side surface, right side mirror
- Back – Rear bumper, tailgate
- Top – Hood surface, rear trunk lid, antenna
- Greenhouse – Windshield glazing, roof surface, sun/moon roof glazing
- Undercarriage – Tire/wheel, muffler, transmission
- Other Object – Tree, ground, curb

For the 2024 CISS, the front of the vehicle was associated with the most AIS 2+ injuries. The front was associated with an estimated 22,470 lower extremity injuries. The top was associated with an estimated 8,763 thorax injuries and an estimated 8,107 head injuries. The greenhouse was associated with an estimated 10,454 head injuries.

Table 13. AIS 2+ Injuries for Nonmotorists Involved in 2024 CISS Crashes, by Body Region and Conflict Plane

Body Region	Conflict Plane								
	Estimate (Standard Error)								
	Front	Left	Right	Back	Top	Greenhouse	Undercarriage	Other Object	Total
Head (n=296)	601 (330)	403 (281)	12,826 (12,632)	-	8,107 (3,281)	10,454 (5,531)	-	5,731 (2,446)	38,121 (8,781)
Face (n=53)	382 (233)	188 (188)	7,970 (7,588)	-	751 (493)	717 (351)	-	302 (165)	10,310 (7,468)
Neck (n=12)	61 (61)	-	-	-	41 (42)	437 (274)	31 (32)	1,947 (1,970)	2,517 (1,744)
Thorax (n=180)	4,909 (2,042)	1,113 (590)	2,150 (1,982)	127 (127)	8,763 (4,611)	465 (172)	320 (216)	286 (197)	18,133 (5,341)
Abdomen (n=68)	1,322 (433)	571 (447)	47 (47)	-	1,613 (1,126)	74 (51)	93 (93)	5,983 (4,138)	9,703 (4,199)
Spine (n=79)	427 (198)	288 (243)	2,071 (1,974)	-	2,840 (1,306)	1,246 (382)	-	1,868 (1,260)	8,741 (1,910)
Upper Extremity (n=103)	304 (204)	-	4,704 (4,501)	3,113 (3,159)	3,429 (1,235)	1,841 (1,202)	93 (93)	2,679 (1,050)	16,162 (3,615)
Lower Extremity (n=268)	22,470 (7,048)	615 (494)	337 (132)	63 (64)	529 (225)	37 (36)	1,312 (672)	3,885 (3,041)	29,248 (9,686)
Total (n=1,059)	30,476 (7,619)	3,178 (1,533)	30,106 (28,664)	3,303 (3,171)	26,074 (9,405)	15,270 (7,225)	1,849 (825)	22,681 (6,850)	132,935 (31,557)

Source: 2024 CISS

Note: A nonmotorist may interact with two or more conflict planes.

Highlighted cells indicate sample sizes of less than 10.

Downloading and Analyzing 2024 CISS Data

The 2024 CISS data⁹ can be downloaded from www.nhtsa.gov/file-downloads?p=nhtsa/downloads/CISS/2024.

The analytic user's manual can be found at <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813771>.

The CISS coding and editing manual can be found at <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813744>.

The CISS nonmotorist coding and editing manual can be found at <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813745>.

The CISS crash viewer can be found at <https://crashviewer.nhtsa.dot.gov/CISS/SearchIndex>.

Crash Investigation Sampling System: Design Overview, Analytic Guidance, and FAQs can be found at Zhang et al. (2019b).

Crash Investigation Sampling System: Sample Design and Weighting can be found at Zhang et al. (2019a).

The DataBook application provides weighted and unweighted univariate distributions of the variables in CISS. It can be found at <https://cdan.dot.gov/DataBook/DataBook.htm>.

⁹ Prior CISS data can be downloaded from www.nhtsa.gov/file-downloads?p=nhtsa/downloads/CISS.

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This research note and other general information
on highway traffic safety may be found at:
<https://crashstats.nhtsa.dot.gov>.