U.S. Department of Transportation
National Highway Traffic Safety Administration
NHTSA

Traffic Safety Facts
CRASH•STATS

DOT HS 813 661 | A Brief Statistical Summary | November 2024

Early Estimates of Motor Vehicle Traffic Fatalities and Fatality Rate by Sub-Categories Through June 2024

Introduction and Summary

NHTSA has recently issued a projection report of traffic fatalities and the fatality rate per 100 million vehicle miles traveled (VMT) for the first half of 2024 (*Early Estimate of Motor Vehicle Traffic Fatalities the First Half (Jan–Jun) of 2024*, Report No. DOT HS 813 633). That report shows an estimated 18,720 people died in motor vehicle traffic crashes during the first half of 2024, a decrease of about 3.2 percent as compared to 19,330 fatalities projected to have occurred in the first half of 2023. The estimated fatality rate for the first half of 2024 is 1.17 fatalities per 100 million VMT, down from the projected rate of 1.21 fatalities per 100 million VMT in the first half of 2023.

This NHTSA report is being issued after conducting a special analysis of the fatalities and the fatality rates per 100 million VMT by key sub-categories in the first half of 2024. The analysis is based on ratio-adjusted estimates of the first half of 2024 fatal crash data coded thus far into NHTSA's Fatality Analysis Reporting System (FARS), as described in the Data and Methodology section.

There are decreases across almost all sub-categories. The trends of traffic fatalities in the first half of 2024 as compared to the first half of 2023 in the key sub-categories are summarized as follows.

- on rural interstates (up 0%), urban interstates (down 8%), rural or urban collectors/local roads (down 5%)
- at night (down 4%)
- during weekends (down 4%)
- during out-of-State travel (down 12%)
- in newer (vehicle age < 10 years) passenger vehicles (down 7%)
- in passenger vehicle rollover crashes (down 6%)
- ejected (down 9%)
- in single-vehicle crashes (down 2%)
- in roadway departure crashes (down 5%)
- in speeding-related crashes (down 6%)
- in the 65-and-older age group (up 1%)
- males (down 3%) and females (down 2%)
- unrestrained passenger vehicle occupants (down 7%)
- drivers (down 3%) and passengers (down 7%)
- passenger vehicle occupants (down 6%)
- motorcyclists (up 1%)
- pedestrians (down 3%)
- pedalcyclists (down 1%)
- in crashes involving at least one large truck (down 1%)

Additionally, the trend of the total fatality rate per 100 million VMT in the first half of 2024, as we have already seen in recent years, was strongly driven by the trends in the fatality rates per 100 million VMT on rural arterials, rural local/collector/street roadways, and urban arterials.

Data and Methodology

NHTSA uses the Early Notification (EN) data and Monthly Fatality Counts (MFC) data for the early estimate of motor vehicle traffic fatalities every month. However, EN data and MFCs do not include detailed crash characteristics and information necessary to compute fatality counts and fatality rates by sub-categories. NHTSA's FARS data includes such detailed information but is incomplete at this point since not every case has been entered into FARS. This analysis adjusts fatal crash cases currently coded for 2024 into NHTSA's FARS and scales it up to the most recent estimates of fatality counts in 2024 (see cited 2024 early estimates report above, DOT HS 813 633).

The estimates of fatalities by sub-categories are carried out in two steps. The first step is to inflate current 2024 total cases coded into NHTSA's FARS data (FARS_24) to the estimated total fatalities (F_Est_24) that are from the early estimated fatalities based on latest EN and MFC data. In general, the inflation rate (IR) is calculated by the formula here.

$$IR = \frac{F\_Est\_24}{FARS\_24}$$

Inflation rates are computed for each month (m) and region (r) for a total of 60 inflation rates (6 months × 10 regions).

$$IR_{mr} = \frac{F\_Est\_24_{mr}}{FARS\_24_{mr}}$$

Generally, the earlier the crash month the smaller the inflation rate as the data has relatively stabilized. In the second step, the inflation rate (IR_{mr}) is then used as the *weight* in the frequency calculation for the estimate of fatalities by each sub-category variable. For instance, to compute the estimated male fatalities in month m and region r, the count of male fatalities in FARS, $FARS\_24\ (Sex_{male})_{mr}$, is weighted by the inflation rate IR_{mr} as follows, $F\_Est\_24\ (Sex_{male})_{mr} = FARS\_24\ (Sex_{male})_{mr} \times IR_{mr}$. For a different interpretation, the estimated number of male fatalities in month m and region r can also be seen as the estimated fatalities in month m and region r multiplied by the fraction of male fatalities in FARS data ($FARS\_24$) for month m and region r.

$$\text{F\_Est\_24 (Sex}_{\text{male}})_{\text{mr}} = F\_Est\_24_{mr} \times \left(\frac{FARS\_24(Sex_{male})_{mr}}{FARS\_24_{mr}}\right)$$

The two metrics NHTSA mainly examined are the relative proportion of fatalities in each level of the sub-category variables (i.e., the *percentage distribution* of fatalities) or the *percentage* of the total fatalities, and the estimated fatality counts (fatalities) and the *percentage change* in fatalities from the first half of 2023 (2023 H1) to the first half of 2024 (2024 H1) for each level of the sub-category variables.

Estimated fatalities by sub-categories may vary due to the continuous updating of 2024 FARS data ($FARS\_24_{mr}$), especially for several sub-category variables (e.g., speeding, roadway departure, and rollover, etc.[1]) that may take extra time to report and code (see "Limitations" section). However, since the results (the percentage distribution of fatalities or the percentage of the total fatalities) have been nearly identical in each of the 3 months prior to publication, the estimates are relatively stable.

[1] Further adjustments of these three factors, and pedestrian fatalities and the large-truck-related crash fatalities have been made in this report.

Results

This report examines the same major factors that NHTSA previously reviewed and investigated in 2023, and the results were published in *Early Estimates of Motor Vehicle Traffic Fatalities and Fatality Rate by Sub-Categories in 2023* (DOT HS 813 581). These key factors may be linked to changes in driving behaviors, travel patterns, and transportation options owing to COVID-19 emergency measures.

The study results of projected fatalities for the first half of 2024 compared with the projected fatalities during the first half of 2023 are presented below. The data results for the first half of 2023 are from the sub-categories analysis report in 2023 (see above report, DOT HS 813 581). Similar to previous studies on this topic, the unknown/missing values are proportionally imputed based on the distribution of observed counts (univariate imputation) in this report.

Note that beginning in 2020 NHTSA changed to vPIC-based[2] vehicle classifications for data extractions, analysis, projections, and reporting. Also, prior to 2022 motorized bicycles were collected as motor vehicles in FARS and their operators and passengers were captured as motorists. Beginning in 2022 FARS is no longer collecting motorized bicycles as motor vehicles. Consequently, operators and passengers of motorized bicycles will be captured as pedalcyclists when involved in motor vehicle traffic crashes. Single-vehicle crashes involving motorized bicycles will no longer be captured.

Fatalities

The findings for the trends of sub-category variables are based on the comparison of two metrics.

1. The *percentage distribution* of fatalities or the *percentage* of total fatalities, between the same month of 2023 and 2024[3] (labeled by [23] and [24] in the comparison of 2-year results).
2. The estimated fatality counts (fatalities) and the *percentage change* in fatalities from 2023 H1 to 2024 H1 for each sub-category variable.

They are summarized as follows (see Tables 1 and 2 and Figure 1 for details).

Roadway and Environmental Factors

- The proportion of estimated fatalities in *rural* areas increased in May (43% [24] versus 41% [23]) (Figure 1). Total estimated fatalities decreased by 3 percent in both *rural* and *urban* areas, from 2023 H1 to 2024 H1.

  Specifically, as shown in Table 1, the total estimated fatalities on *urban interstate*, *rural* and *urban collector/local* roads decreased by 8 percent, 5 percent and 5 percent, respectively, from 2023 H1 to 2024 H1.
- The proportion of estimated fatalities during nighttime (6 p.m. to 5:59 a.m.) increased in January (56% [24] *versus* 54% [23]) and March (55% [24] *versus* 53% [23]) (Figure 1). Total estimated fatalities during *nighttime* decreased by 4 percent from 2023 H1 to 2024 H1. Note that the total estimated fatalities during *daytime* decreased by 2 percent from 2023 H1 to 2024 H1.
- As displayed in Figure 1, the proportion of estimated fatalities that occurred during *weekends* (6 p.m. Friday to 5:59 a.m. Monday) greatly increased in March (46% [24] versus 38% [23]). Total estimated fatalities decreased by 3 and 4 percent during the *weekdays* and the *weekends*, respectively, from 2023 H1 to 2024 H1.
- The proportion of estimated passenger vehicle (PV) occupant fatalities that occurred during *out-of-State* travel largely decreased from January to March (Q1), indicating that a smaller proportion of people traveled long distances by car during these months of 2024, compared to the same months of 2023. Total estimated passenger vehicle occupant fatalities that occurred during *out-of-State* travel decreased by 12 percent from 2023 H1 to 2024 H1.

[2] NHTSA's Product Information Catalog and Vehicle Listing (vPIC) is a consolidated platform that presents data collected within the manufacturer reported data from 49 CFR Parts 551 – 595 for use in a variety of modern tools.

[3] 2024 was a leap year (i.e., February 29, 2024, was a leap day).

Vehicle-Related Characteristics

- The estimated PV occupant fatalities decreased by 5 percent in *older vehicles* (vehicle age ≥ 10 years) from 2023 H1 to 2024 H1 (Figure 1). Note that the estimated PV occupant fatalities in *newer vehicles* (vehicle age < 10 years) decreased by 7 percent.
- The estimated PV occupant fatalities in *rollover* crashes decreased by 6 percent from 2023 H1 to 2024 H1 (Table 2).
- As displayed in Figure 1, the estimated fatally injured PV occupants *who were ejected*, as a proportion of all fatalities, largely increased in March (21% [24] versus 18% [23]). Total estimated fatalities for PV occupants *who were ejected* decreased by 9 percent from 2023 H1 to 2024 H1. This is highly correlated with a similar decrease (7 percent) in estimated *unrestrained* PV occupant fatalities, as described in the person-related characteristics section.
- As shown in Table 1, total estimated fatalities in *single-vehicle* crashes decreased by 2 percent from 2023 H1 to 2024 H1. Note that the estimated fatalities in *multi-vehicle* crashes decreased by 5 percent.
- Total estimated fatalities in *roadway departure/on roadway* crashes decreased by 5 and 1 percent, respectively, from 2023 H1 to 2024 H1, as shown in Table 1.
- The *speeding-related* fatalities decreased by 6 percent from 2023 H1 to 2024 H1 (Table 2).

Person-Related Characteristics

- As shown in Table 1, total estimated traffic fatalities among people *younger than 15*, *15 to 34 years old,* and *45 to 64 years old*, decreased from 2023 H1 to 2024 H1. However, total estimated fatalities increased by 1 percent for people *65 and older*, from 2023 H1 to 2024 H1.
- As displayed in Table 1, the total estimated *male* and *female* fatalities decreased by 3 and 2 percent, respectively, from 2023 H1 to 2024 H1.
- As shown in Figure 1, total estimated *unrestrained* PV occupant fatalities decreased by 7 percent from 2023 H1 to 2024 H1.

Fatalities by Person Type and in Crashes Involving Large Trucks[4]

As shown in Table 2, the following results for the percentage change of estimated fatalities from 2023 H1 to 2024 H1 are observed:

- Total estimated *driver* fatalities decreased by 3 percent.
- Total estimated *passenger* fatalities decreased by 7 percent.
- Total estimated *PV occupant* fatalities decreased by 6 percent.
- Total estimated *motorcyclist* fatalities increased by 1 percent.
- Total estimated *pedestrian* fatalities decreased by 3 percent.
- Total estimated *pedalcyclist* fatalities decreased by 1 percent.
- Total estimated fatalities in crashes *involving at least one large truck* decreased by 1 percent.

[4] A large truck is defined as any medium or heavy truck, excluding buses and motor homes, with a gross vehicle weight rating (GVWR) greater than 10,000 pounds. These large trucks include both commercial and non-commercial vehicles.

Table 1. Relative Proportion of Fatalities by Roadway Function Class, Age Group, Sex, and Crash Type for 2023–2024

Fatalities		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total (H1)	% change
2023		3,035	2,875	3,025	3,365	3,550	3,480	3,685	3,760	3,715	3,815	3,330	3,355	19,330	
2024		2,740	2,730	3,150	3,180	3,490	3,430							18,720	-3%
Roadway Function Class															
Rural Interstate	2023	4%	5%	4%	5%	4%	4%	5%	6%	4%	4%	4%	4%	851	
	2024	5%	4%	5%	5%	5%	4%							852	0%
Urban Interstate	2023	10%	8%	8%	9%	8%	8%	8%	8%	6%	9%	7%	6%	1,613	
	2024	9%	9%	8%	8%	7%	8%							1,485	-8%
Rural Arterial	2023	19%	17%	20%	18%	19%	19%	20%	19%	19%	19%	18%	20%	3,621	
	2024	18%	18%	19%	18%	19%	21%							3,534	-2%
Urban Arterial	2023	41%	41%	39%	38%	38%	37%	35%	37%	39%	38%	41%	42%	7,540	
	2024	42%	42%	40%	40%	38%	37%							7,427	-1%
Rural Collector/Local	2023	15%	16%	17%	18%	18%	21%	20%	20%	20%	18%	17%	15%	3,437	
	2024	15%	16%	16%	18%	19%	19%							3,262	-5%
Urban Collector/Local	2023	11%	13%	12%	11%	13%	11%	12%	11%	12%	12%	12%	13%	2,268	
	2024	12%	12%	12%	11%	11%	11%							2,160	-5%
Age Group															
<15	2023	2%	2%	3%	3%	3%	2%	3%	2%	2%	2%	2%	2%	502	
	2024	3%	3%	3%	3%	3%	2%							497	-1%
15–24	2023	17%	16%	16%	19%	17%	19%	17%	19%	16%	17%	16%	17%	3,356	
	2024	17%	17%	16%	17%	17%	19%							3,208	-4%
25–34	2023	19%	20%	19%	18%	19%	18%	19%	19%	18%	17%	18%	19%	3,607	
	2024	17%	18%	18%	19%	18%	18%							3,412	-5%
35–44	2023	16%	16%	15%	17%	16%	15%	16%	16%	17%	16%	15%	16%	3,025	
	2024	17%	16%	17%	16%	15%	16%							3,029	0%
45–54	2023	12%	13%	13%	13%	13%	14%	13%	13%	13%	13%	12%	12%	2,491	
	2024	13%	13%	13%	13%	13%	12%							2,420	-3%
55–64	2023	14%	13%	14%	14%	14%	15%	14%	14%	14%	15%	15%	12%	2,671	
	2024	14%	13%	13%	13%	13%	13%							2,447	-8%
65+	2023	20%	20%	21%	17%	19%	18%	18%	18%	19%	19%	22%	22%	3,678	
	2024	20%	21%	20%	19%	20%	19%							3,708	1%
Sex															
Male	2023	71%	72%	70%	72%	74%	75%	75%	75%	74%	72%	70%	71%	13,998	
	2024	71%	72%	73%	72%	72%	72%							13,512	-3%
Female	2023	29%	28%	30%	28%	26%	25%	25%	25%	26%	28%	30%	29%	5,332	
	2024	29%	28%	27%	28%	28%	28%							5,208	-2%
Crash Type 1: Single- Versus Multi-Vehicle															
Multi-Vehicle	2023	46%	46%	48%	48%	50%	47%	46%	47%	45%	45%	46%	46%	9,178	
	2024	44%	46%	45%	47%	50%	47%							8,727	-5%
Single-Vehicle	2023	54%	54%	52%	52%	50%	53%	54%	53%	55%	55%	54%	54%	10,152	
	2024	56%	54%	55%	53%	50%	53%							9,993	-2%

Fatalities		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total (H1)	% change
Crash Type 2: Roadway-Departure-Related															
Departure	2023	47%	46%	47%	47%	46%	48%	48%	47%	47%	47%	47%	47%	9,108	
	2024	47%	46%	46%	46%	46%	46%							8,644	-5%
On Roadway	2023	53%	54%	53%	53%	54%	52%	52%	53%	53%	53%	53%	53%	10,222	
	2024	53%	54%	54%	54%	54%	54%							10,076	-1%

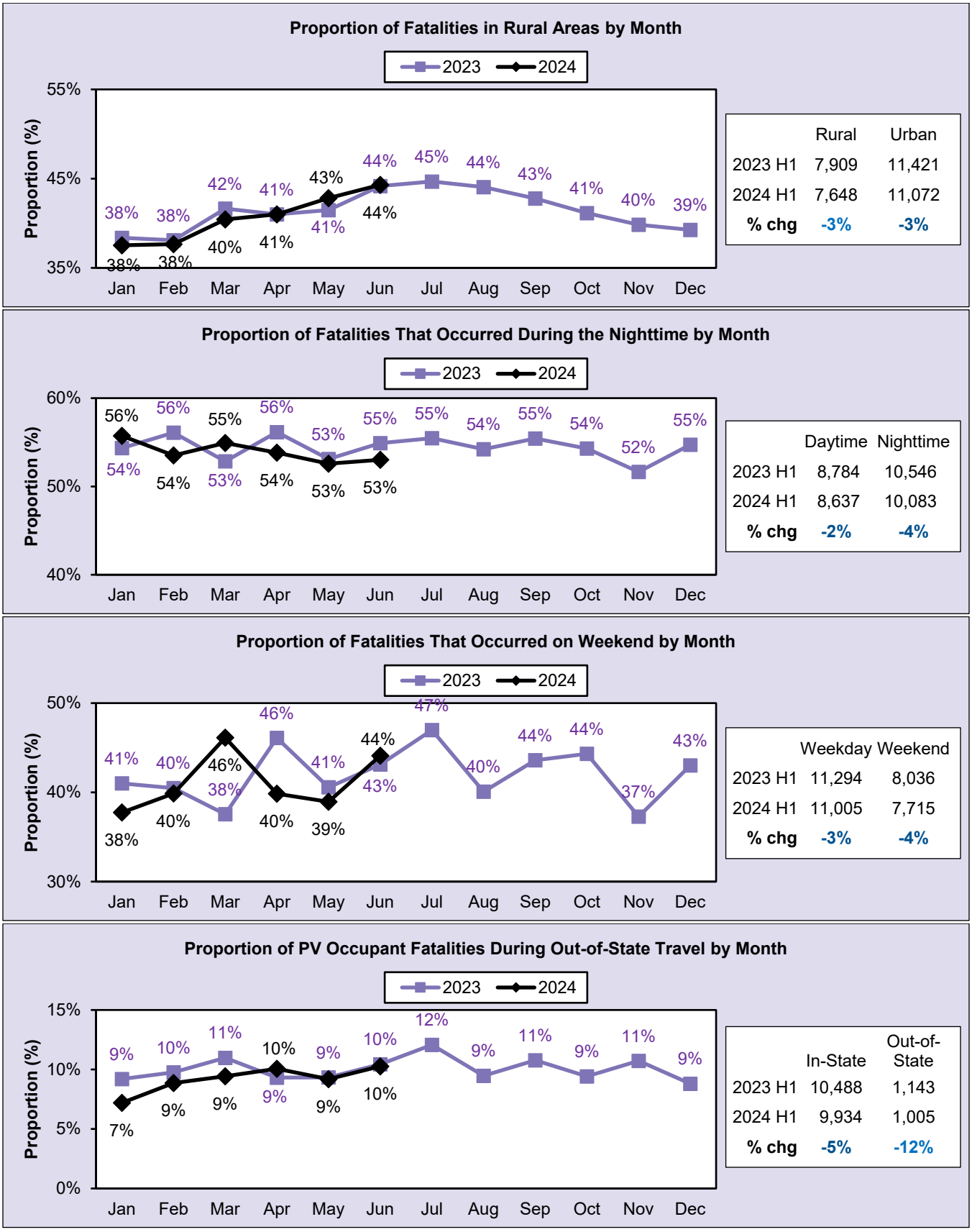
Notes: The last two columns contain fatalities and percentage change from 2023 H1 to 2024 H1. Unknown cases are proportionally imputed. Numbers in red/blue indicate the increase/decrease in the month (or the first half) of 2024 as compared to the same month (or the first half) of 2023 (in black).
Source: 2023 and 2024 statistical projections.

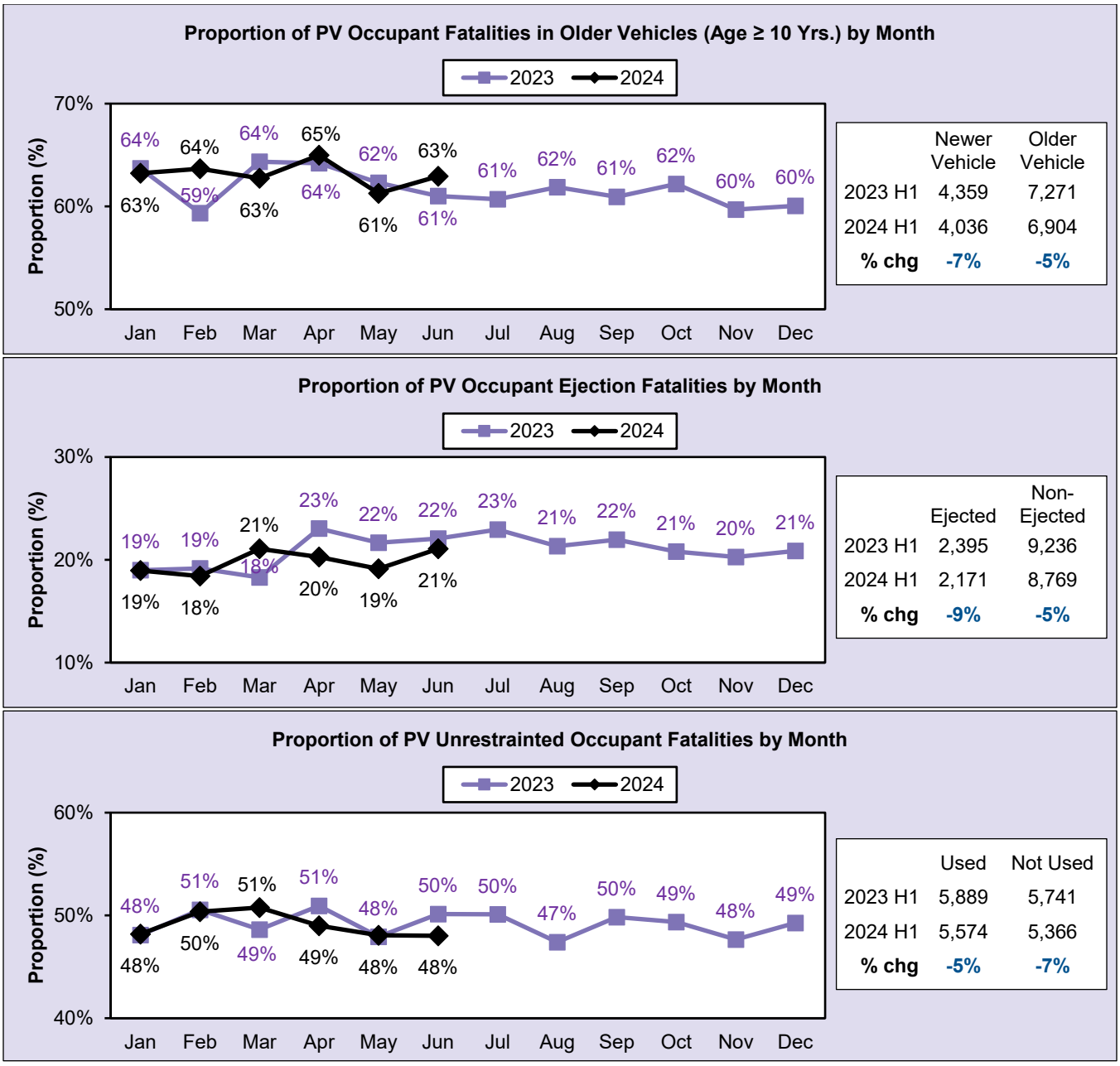
Table 2. Fatalities by Person Type, in Large-Truck-Related/Speeding-Related/PV Occupant in Rollover Crashes, as a Percentage of Total Fatalities for 2023–2024

Fatalities		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total (H1)	% change
2023		3,035	2,875	3,025	3,365	3,550	3,480	3,685	3,760	3,715	3,815	3,330	3,355	19,330	
2024		2,740	2,730	3,150	3,180	3,490	3,430							18,720	-3%
Driver	2023	52%	50%	51%	48%	47%	48%	44%	46%	45%	47%	50%	52%	9,506	
	2024	53%	51%	49%	49%	47%	47%							9,202	-3%
Passenger	2023	16%	15%	16%	16%	16%	15%	16%	14%	13%	14%	13%	14%	3,019	
	2024	14%	15%	15%	14%	16%	16%							2,821	-7%
PV Occupant	2023	64%	62%	62%	60%	57%	57%	54%	53%	52%	55%	58%	59%	11,631	
	2024	64%	62%	59%	57%	56%	54%							10,940	-6%
PV Occupant Rollover	2023	17%	18%	15%	17%	16%	17%	16%	16%	16%	16%	16%	16%	3,159	
	2024	15%	16%	17%	16%	16%	16%							2,955	-6%
Motorcyclist	2023	7%	11%	12%	16%	20%	20%	21%	21%	20%	16%	11%	8%	2,831	
	2024	7%	10%	15%	17%	19%	21%							2,857	1%
Pedestrian	2023	22%	21%	19%	16%	14%	14%	14%	16%	17%	19%	22%	23%	3,362	
	2024	23%	20%	18%	17%	15%	14%							3,267	-3%
Pedalcyclist	2023	3%	2%	3%	2%	2%	2%	4%	3%	4%	3%	3%	3%	467	
	2024	2%	3%	2%	2%	2%	4%							462	-1%
Involving Large Trucks	2023	14%	13%	14%	12%	13%	13%	12%	14%	13%	14%	13%	14%	2,561	
	2024	15%	14%	13%	13%	13%	13%							2,523	-1%
Speeding Related	2023	28%	28%	28%	29%	30%	28%	30%	28%	28%	28%	28%	28%	5,532	
	2024	28%	27%	28%	28%	28%	28%							5,212	-6%

Notes: The last two columns contain fatalities and percentage change from 2023 H1 to 2024 H1. Unknown cases are proportionally imputed. Numbers in red/blue indicate the increase/decrease in the month (or the first half) of 2024 as compared to the same month (or the first half) of 2023 (in black).
Source: 2023 and 2024 statistical projections.

Figure 1. Relative Proportion of Total Fatalities by Rural/Urban, Time of Day, Day of the Week, and PV Occupant Fatalities by Vehicle Travel Pattern, Vehicle Age, Ejection Status, and Restraint Use for 2023–2024



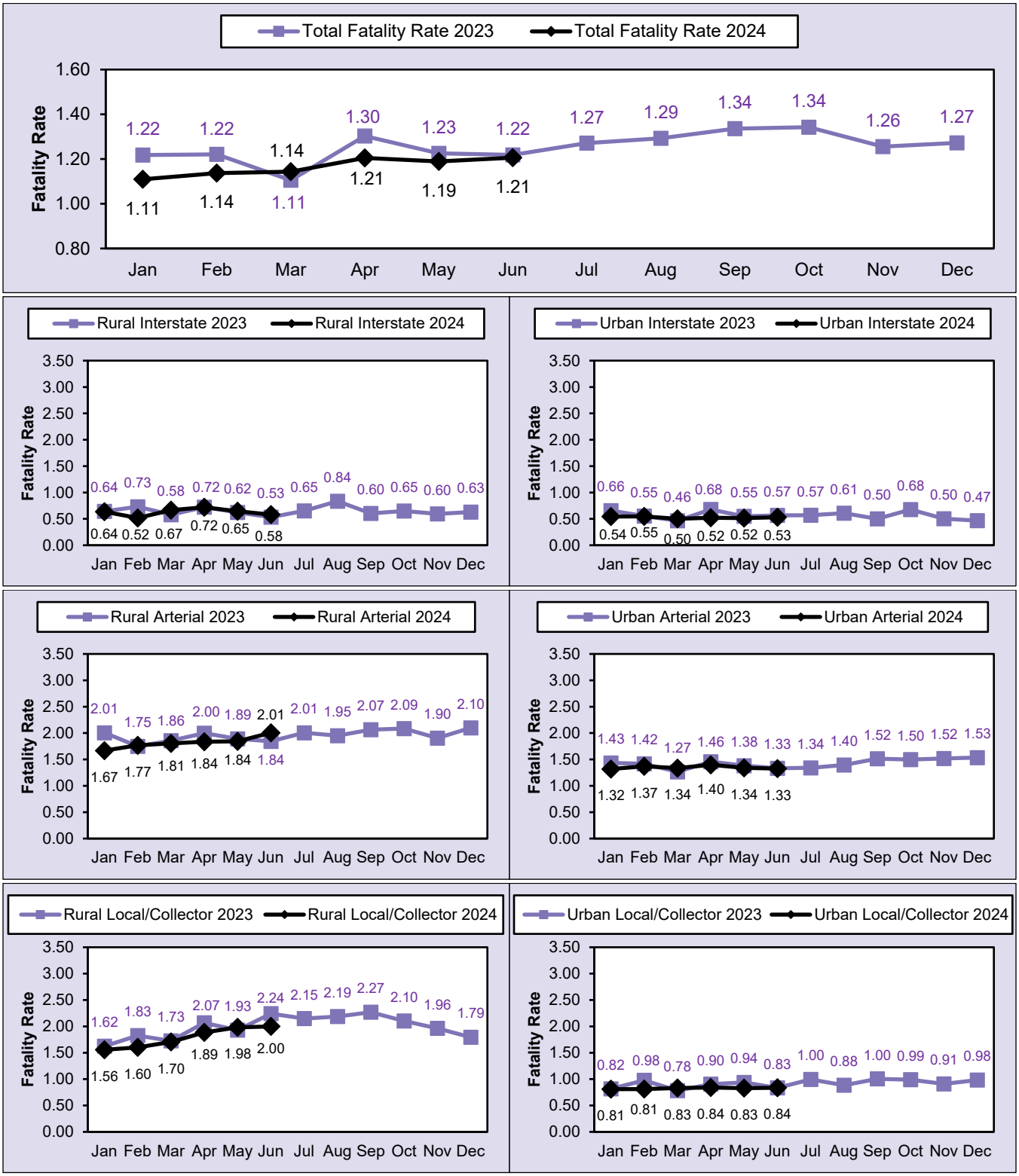


Notes: The text box in the chart contains fatality counts and the percentage change from 2023 H1 to 2024 H1. Unknown cases are proportionally imputed.
Source: 2023 and 2024 statistical projections.

Fatality Rate

The total fatality rate per 100 million VMT is broken down by roadway function class: rural versus urban interstates, arterials, local/collector/streets. The results shown in Figure 2 indicate that the trend of the total fatality rate per 100 million VMT from January to June 2024, as we have already seen in recent years, is mainly driven by the fatality rate per 100 million VMT on *rural arterials, rural local/collector/street roadways*, and *urban arterials*, based on the magnitude of the fatality rate by roadway function class. Overall, the estimated fatality rate for the first half of 2024 was 1.17 fatalities per 100 million VMT, down from the projected 1.21 fatalities per 100 million VMT during the first half of 2023.

Figure 2. Total Fatality Rate per 100 Million VMT and the Fatality Rate per 100 Million VMT by Roadway Function Class for 2023–2024



Note: Unknown cases are proportionally imputed.
Source: 2023 and 2024 statistical projections. FHWA June 2024 TVT for 2023 & 2024 VMT.

Limitations

In this study, the fatal crashes currently coded for 2024 into NHTSA's FARS are used as a basis for constructing the gross estimates of traffic fatalities by sub-categories. The results from this analysis can be affected by two factors. First, any post-COVID-19 pandemic-related lag to fatal crash investigation and reporting are unknown and not captured in these projections. Second, the traditional FARS identification and reporting lag issue could also affect these estimates (e.g., the speeding-related, the roadway departure, and rollover crashes reporting and coding). The estimates for the month and the sub-categories for regions with higher inflation rate (IR_{mr}) are more likely to affect the sensitivity of the overall projections. Also, these calculations assume that the cases not yet coded into 2024 FARS are similar in the sub-categories to those that are already in the 2024 FARS. In short, the estimated results are subject to small changes as more information gets coded into these cases as well as when more cases are entered into 2024 FARS ($FARS\_24_{mr}$). These results may also change slightly as the FARS Annual Report File and Final File for 2024 (then replace $F\_Est\_24_{mr}$) are available within the next two years.

Suggested APA format citation for this document:

National Center for Statistics and Analysis. (2024, November). *Early estimates of motor vehicle traffic fatalities and fatality rate by sub-categories through June 2024* (Crash•Stats Brief Statistical Summary. Report No. DOT HS 813 661). National Highway Traffic Safety Administration.

U.S. Department of Transportation

National Highway Traffic Safety Administration

For questions regarding the information presented in this report, please contact NCSARequests@dot.gov. This Crash•Stats and other general information on traffic safety can be found at https://crashstats.nhtsa.dot.gov/.