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

TRAFFIC SAFETY FACTS
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NHTSA

DOT HS 813 428 | A Brief Statistical Summary | April 2023

Early Estimate of Motor Vehicle Traffic Fatalities in 2022

Summary

A statistical projection of traffic fatalities for 2022 shows that an estimated 42,795 people died in motor vehicle traffic crashes. This represents a marginal decrease of about 0.3 percent as compared to 42,939 fatalities reported to have occurred in 2021, as shown in Table 1. The fourth quarter of 2022 represents the third straight quarterly decline in fatalities after 7 consecutive quarters of year-to-year increases in fatalities, beginning with the third quarter of 2020. Preliminary data reported by the Federal Highway Administration (FHWA) show that vehicle miles traveled (VMT) in 2022 increased by about 29.3 billion miles, or about a 0.9-percent increase. Also shown in Table 1 are the fatality rates per 100 million VMT, by quarter. The fatality rate for 2022 decreased to 1.35 fatalities per 100 million VMT, down from the reported rate of 1.37 fatalities per 100 million VMT in 2021. For the NHTSA Regional differences, 5 of 10 Regions are estimated to have increases in fatalities, and 5 of the 10 Regions are estimated to have increases in fatality rate per 100 million VMT in 2022 as compared to 2021. Also, 27 States, the District of Columbia and Puerto Rico are projected to have had decreases in fatalities. The fatality counts for 2021 and 2022 and the ensuing percentage change from 2021 to 2022 will be further revised as the FARS final file for 2021 and the annual report file for 2022 are available later this year.

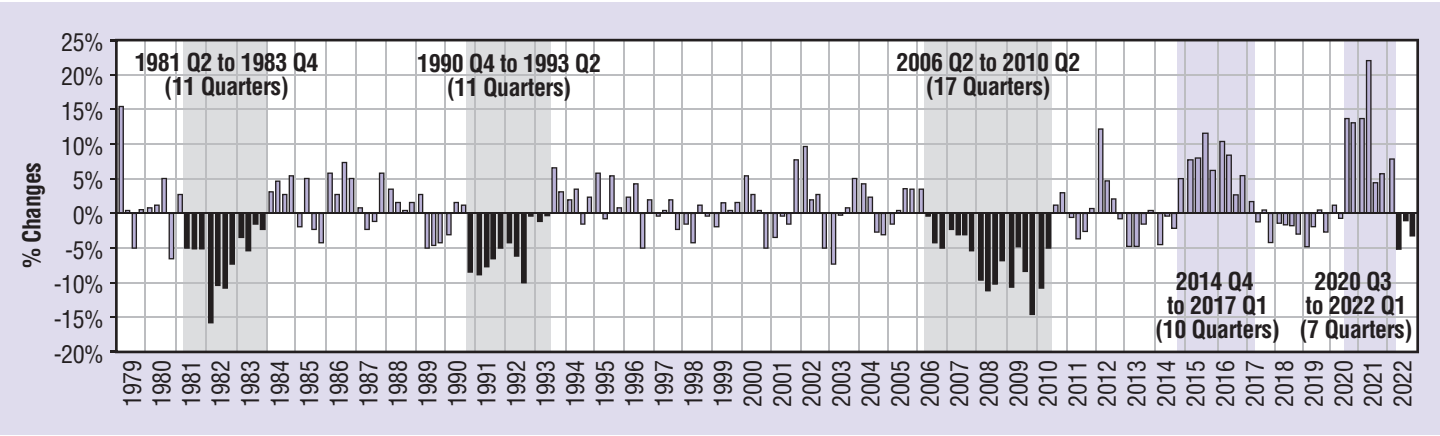
Table 1: Fatalities and Fatality Rate by Quarter, Full Year, and the Percentage Change From the Corresponding Quarter or Full Year in the Previous Year

Year	1st Quarter (Jan–Mar)	2nd Quarter (Apr–Jun)	3rd Quarter (Jul–Sep)	4th Quarter (Oct–Dec)	Total (Full Year)
Fatalities and Percentage Change in Fatalities for the Corresponding Quarter and Total From the Previous Year					
2011	6,726 [-0.4%]	8,227 [-3.5%]	8,984 [-2.6%]	8,542 [+0.5%]	32,479 [-1.6%]
2012	7,521 [+11.8%]	8,612 [+4.7%]	9,171 [+2.1%]	8,478 [-0.7%]	33,782 [+4.0%]
2013	7,166 [-4.7%]	8,207 [-4.7%]	9,024 [-1.6%]	8,496 [+0.2%]	32,893 [-2.6%]
2014	6,856 [-4.3%]	8,179 [-0.3%]	8,799 [-2.5%]	8,910 [+4.9%]	32,744 [-0.5%]
2015	7,370 [+7.5%]	8,823 [+7.9%]	9,805 [+11.4%]	9,486 [+6.5%]	35,484 [+8.4%]
2016	8,154 [+10.6%]	9,563 [+8.4%]	10,078 [+2.8%]	10,011 [+5.5%]	37,806 [+6.5%]
2017	8,301 [+1.8%]	9,460 [-1.1%]	10,081 [+0.0%]	9,631 [-3.8%]	37,473 [-0.9%]
2018	8,203 [-1.2%]	9,323 [-1.4%]	9,934 [-1.5%]	9,375 [-2.7%]	36,835 [-1.7%]
2019	7,832 [-4.5%]	9,193 [-1.4%]	9,994 [+0.6%]	9,336 [-0.4%]	36,355 [-1.3%]
2020	7,901 [+0.9%]	9,164 [-0.3%]	11,358 [+13.6%]	10,584 [+13.4%]	39,007 [+7.3%]
2021†	8,874 [+12.3%]	11,114 [+21.3%]	11,753 [+3.5%]	11,198 [+5.8%]	42,939 [+10.1%]
2022†	9,645 [+8.7%]	10,545 [-5.1%]	11,690 [-0.5%]	10,915 [-2.5%]	42,795 [-0.3%]
Fatality Rate per 100 Million Vehicle Miles Traveled (VMT)					
2011	0.98	1.09	1.18	1.17	1.10
2012	1.08	1.12	1.21	1.16	1.14
2013	1.04	1.07	1.17	1.16	1.10
2014	0.99	1.03	1.11	1.17	1.08
2015	1.03	1.08	1.20	1.21	1.15
2016	1.11	1.16	1.23	1.27	1.19
2017	1.12	1.13	1.21	1.20	1.17
2018	1.10	1.11	1.18	1.15	1.14
2019	1.05	1.09	1.18	1.14	1.11
2020	1.08	1.43	1.44	1.42	1.34
2021†	1.28	1.38	1.40	1.40	1.37
2022†	1.32	1.30	1.40	1.38	1.35

†2022 statistical projections and rates based on these projections.
Sources: Fatalities: 2011–2020 FARS Final File, 2021 FARS Annual Report File.
VMT: FHWA December 2022 Traffic Volume Trends for 2021 and 2022 VMT.

Figure 1 shows the historical trend of the percentage change every quarter from the same quarter in the previous year, going back to 1979 (NHTSA has fatality data since 1975). The shading in the chart shows the years when there were significant numbers of consecutive quarters with increases/declines as compared to the corresponding quarters of the previous years. The declines during the early 1980s and 1990s lasted 11 consecutive quarters, while the most recent decline occurred over 17 consecutive quarters, ending in the second quarter of 2010. More recently, the significant increases in fatalities occurred over 10 consecutive quarters, ending after the first quarter of 2017. In addition, fatalities increased 7 consecutive quarters beginning with the third quarter of 2020, until the 5.3-percent decline seen in the second quarter of 2022. The third and fourth quarter of 2020 and the first and especially the second quarter of 2021 showed significant increases in fatalities as compared to the corresponding quarters of 2019 and 2020. The percentage increase in the second quarter of 2021 is actually the highest quarterly percentage increase in FARS data recorded history.

Figure 1: Percentage Change in Fatalities in Every Quarter as Compared to the Fatalities in the Same Quarter During the Previous Year



Sources: 1979–2020 FARS Final File, 2021 FARS Annual Report File. 2022 statistical projections.

The quarterly projections of fatalities, fatality rates, and VMT are further split into monthly estimates for 2021 and 2022, as shown in Table 2. In 2022, February and April have the greatest increase (18.3%) and decrease (-9.6%) in fatalities respectively. The fatality rate per 100 million VMT shows an increase in February-March, July, and September but a decrease in April-June, August, October, and November, as compared to the corresponding month in 2021.

Table 2: Fatalities, VMT, Fatality Rate by Month or Quarter in 2022, and the Percentage Change in Fatalities and VMT From The Corresponding Month or Quarter in 2021

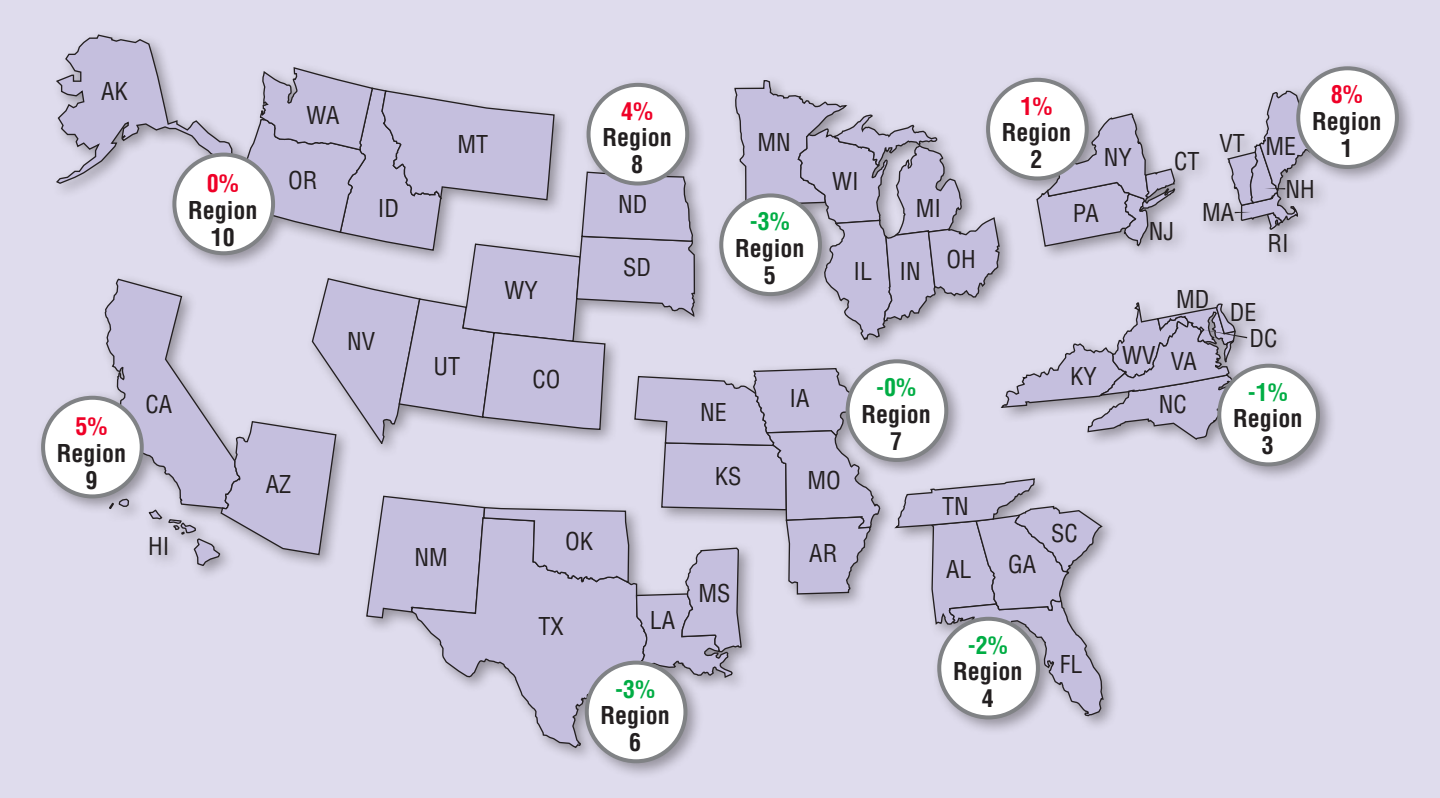
Year	1st Quarter				2nd Quarter				3rd Quarter				4th Quarter			
	Jan	Feb	Mar	Total	Apr	May	Jun	Total	Jul	Aug	Sep	Total	Oct	Nov	Dec	Total
Fatalities in 2022 and Percentage Change in Fatalities for the Corresponding Month and Quarter From 2021																
2021†	3,099	2,561	3,214	8,874	3,557	3,768	3,789	11,114	3,879	4,013	3,861	11,753	4,101	3,599	3,498	11,198
2022†	3,230 4.2%	3,045 18.9%	3,370 4.9%	9,645 8.7%	3,230 -9.2%	3,680 -2.3%	3,635 -4.1%	10,545 -5.1%	3,860 -0.5%	3,900 -2.8%	3,930 1.8%	11,690 -0.5%	4,015 -2.1%	3,450 -4.1%	3,450 -1.4%	10,915 -2.5%
Fatality Rate per 100 Million Vehicle Miles Traveled (VMT)/VMT (in Billion) and Percentage Change in VMT																
2021†	1.38 225.0	1.24 207.2	1.23 262.1	1.28 694.3	1.41 252.2	1.36 276.6	1.36 279.6	1.38 808.0	1.35 288.4	1.44 279.6	1.43 270.5	1.40 838.5	1.48 277.9	1.38 260.4	1.34 261.0	1.40 799.3
2022†	1.38 234.1 4.0%	1.33 229.2 10.6%	1.25 269.5 2.8%	1.32 732.8 5.5%	1.26 256.0 1.5%	1.31 280.3 1.3%	1.32 274.9 -1.5%	1.30 811.2 0.4%	1.38 279.3 -3.2%	1.38 281.7 0.8%	1.44 273.1 1.0%	1.40 834.1 -0.5%	1.44 277.9 0.0%	1.34 257.0 -1.3%	1.35 256.4 -1.8%	1.38 791.3 -1.0%

†2021 FARS ARF and 2022 statistical projections and rates based on these projections.
Sources: VMT: FHWA December 2022 Traffic Volume Trends for 2021 and 2022 VMT.

Regional Differences

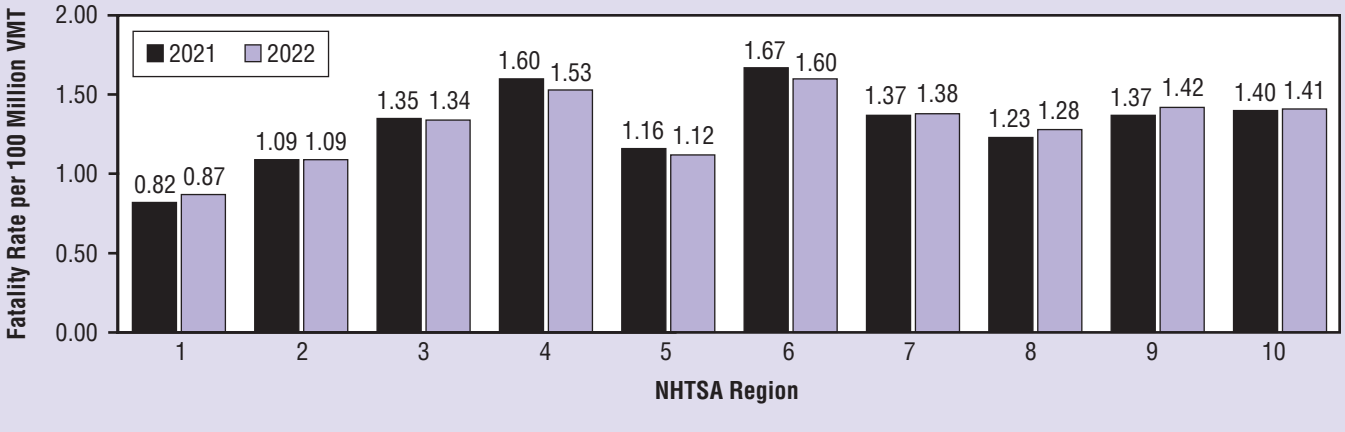
The statistical procedures used in these projections were generated for each NHTSA administrative Region and were collated to create the national estimate. This allows for the comparison of Regional estimates in 2022 with the reported 2021 counts. Figure 2 shows the percentage change in estimated fatalities in 2022 from the reported fatalities in 2021 by NHTSA Region; 5 of the 10 Regions experienced increases. Figure 3 shows the comparison of the estimated fatality rate per 100 million VMT in 2022 with the reported fatality rate per 100 million VMT in 2021, by NHTSA Region; 5 of the 10 Regions presented increases. These estimates by NHTSA Region shown in Figures 2 and 3 are subject to change as the FARS final file for 2021 and the annual report file for 2022 are available later this year.

Figure 2: Percentage Change in Estimated Fatalities in 2022 From Reported 2021 Fatality Counts, by NHTSA Region



Sources: 2021 FARS ARF and 2022 statistical projections. Puerto Rico is not included in Region 2.

Figure 3: Comparison of Estimated Fatality Rate in 2022 With Reported Fatality Rate in 2021, by NHTSA Region



Source: FHWA December 2022 Traffic Volume Trends for 2021 and 2022 VMT. Puerto Rico is not included in Region 2.

State Differences

Given the significant interest in the traffic safety community in estimated changes at the State level to assess emerging trends, NHTSA has developed a methodology in the third quarter of 2021 to generate such State-level estimates based on the most recent distribution of the fatalities by State in a NHTSA Region and the month (see *"Data and Methodology"* section for more details). Table 3 shows the comparison of each State's estimate in 2022 with the reported fatality counts in 2021 and the percentage change in 2022 from 2021; 23 States are projected to have experienced increases in fatalities in 2022 as compared to 2021, while 27 States, the District of Columbia and Puerto Rico are projected to have had decreases in fatalities. Also, the estimates of the fatality rate per 100 million VMT by State in 2021 and 2022 are presented in Table 3 of this report. These estimates by State shown in Table 3 are subject to change as the FARS final file for 2021 and the annual report file for 2022 are reported, and as FHWA finalizes the State VMT estimates for 2021 and 2022.

Table 3: Estimated Fatalities in 2022, and the Percentage Change in Estimated Fatalities From the Reported Fatalities in 2021, by State. The State's Estimates of the Fatality Rate per 100 VMT in 2021 and 2022 Are Also Presented

State	Fatalities			Fatality Rate		State	Fatalities			Fatality Rate	
	2021	2022	Percent Change	2021	2022		2021	2022	Percent Change	2021	2022
Alabama	983	989	0.6%	1.35	1.39	Nebraska	221	250	13.1%	1.06	1.23
Alaska	67	81	20.9%	1.19	1.45	Nevada	385	396	2.9%	1.39	1.42
Arizona	1,180	1,311	11.1%	1.63	1.76	New Hampshire	118	148	25.4%	0.91	1.12
Arkansas	693	643	-7.2%	1.90	1.80	New Jersey	699	701	0.3%	0.95	0.93
California	4,285	4,407	2.8%	1.32	1.35	New Mexico	481	466	-3.1%	1.82	1.77
Colorado	691	757	9.6%	1.31	1.44	New York	1,157	1,148	-0.8%	1.06	1.04
Connecticut	298	384	28.9%	0.92	1.18	North Carolina	1,663	1,667	0.2%	1.46	1.47
Delaware	136	164	20.6%	1.46	1.76	North Dakota	101	97	-4.0%	1.09	1.08
D.C.	41	32	-22.0%	1.25	1.00	Ohio	1,354	1,278	-5.6%	1.22	1.16
Florida	3,738	3,652	-2.3%	1.64	1.53	Oklahoma**	762	730	-4.2%	1.71	1.65
Georgia	1,797	1,786	-0.6%	1.44	1.41	Oregon	599	605	1.0%	1.71	1.74
Hawaii	94	116	23.4%	0.95	1.12	Pennsylvania	1,230	1,191	-3.2%	1.28	1.24
Idaho	271	219	-19.2%	1.43	1.16	Rhode Island	63	54	-14.3%	0.84	0.69
Illinois	1,334	1,280	-4.0%	1.33	1.26	South Carolina	1,198	1,085	-9.4%	2.07	1.84
Indiana	932	955	2.5%	1.13	1.17	South Dakota	148	128	-13.5%	1.38	1.25
Iowa	356	339	-4.8%	1.11	1.06	Tennessee	1,327	1,330	0.2%	1.64	1.63
Kansas	424	415	-2.1%	1.43	1.41	Texas	4,498	4,496	-0.0%	1.59	1.55
Kentucky	806	749	-7.1%	1.62	1.50	Utah	328	321	-2.1%	0.99	0.96
Louisiana	972	883	-9.2%	1.86	1.67	Vermont	74	77	4.1%	1.12	1.13
Maine	153	183	19.6%	1.07	1.27	Virginia	973	996	2.4%	1.18	1.20
Maryland	561	557	-0.7%	1.02	1.00	Washington	670	740	10.4%	1.13	1.26
Massachusetts	417	433	3.8%	0.70	0.71	West Virginia	280	268	-4.3%	1.65	1.61
Michigan	1,136	1,133	-0.3%	1.20	1.18	Wisconsin	620	602	-2.9%	0.99	0.96
Minnesota	488	458	-6.1%	0.87	0.82	Wyoming	110	134	21.8%	1.05	1.31
Mississippi	772	697	-9.7%	1.85	1.71	**U.S. Total***	**42,939**	**42,795**	**-0.3%**	**1.37**	**1.35**
Missouri	1,016	1,058	4.1%	1.29	1.35	Puerto Rico	337	271	-19.6%	–	–
Montana	239	206	-13.8%	1.81	1.58						

*Unrounded States' Fatalities Estimate Summation (Puerto Rico is not included).
**Oklahoma is transitioning to a new crash data collection system and crash database. The fatality estimate is based on best available data at the time of this publishing.
Sources: 2021 FARS ARF and 2022 statistical projections.
VMT: FHWA December 2022 Traffic Volume Trends for 2021 and 2022 VMT. Traffic Volume Trends for Puerto Rico is not available.

Discussion

During the COVID-19 pandemic there were marked increases in fatalities and the fatality rate per 100 million VMT in 2020. The increased trend of fatalities in 2020 have continued into 2021 and the first quarter of 2022. The second, the third, and the fourth quarters of 2022 have experienced the decline in fatalities after 7 consecutive quarters of year-to-year increases in fatalities, since the third quarter of 2020. The increased trend of the fatality rate per 100 million VMT in 2020 have continued into the first quarter of 2021, decreased in the second, third, and fourth quarters of 2021, and increased again in the first quarter, but decreased in the second and the fourth quarters of 2022. NHTSA is continuing to gather and finalize data on crash fatalities for 2021 and 2022 using information from police crash reports and other sources. The final file for 2021 as well as the annual report file for 2022 will be available later this year that usually results in the revision of fatality totals and the ensuing fatality rates and percentage changes.

Data and Methodology

The data used in this analysis come from several sources: NHTSA's FARS, Early Notification (EN) data, and Monthly Fatality Counts (MFC) (the EN and MFC data are not available to the public); and from FHWA's VMT estimates. FARS is a census of fatal traffic crashes in the 50 States, the District of Columbia, and Puerto Rico. To be included in FARS, a crash must involve a motor vehicle traveling on a trafficway and must result in the death of at least one person (occupant of a vehicle or a nonoccupant) within 30 days of the crash. FARS final files from 2003 to 2020 and the FARS annual report file in 2021 are used to obtain the monthly fatality counts. The EN program is designed as an Early Fatality Notification System to capture fatality counts from States more rapidly and provide near-real-time notification of fatality counts from all jurisdictions reporting to FARS. The MFC data provide monthly fatality counts by State through sources that are independent from the EN or FARS systems. MFCs from January 2003 up to December 2022 are used. MFCs are reported midmonth for all prior months of the year. To estimate the traffic fatality counts for 2022, the time series cross-section regression (TSCSR) procedure was applied to analyze the data with both cross-sectional values (by NHTSA Region) and time series (by month), to model the relationship among FARS, MFC, and EN, the details of which are available in a Research Note (*Statistical Methodology to Make Early Estimates of Motor Vehicle Traffic Fatalities,* Report No. DOT HS 811 123). Furthermore, after the projected fatality counts for NHTSA Region r and the month m (F_Est_{mr}) are obtained, the estimated fatality counts for a State st in Region r and the month m ($F\_Est_{st|mr}$) are calculated. Each State receives a proportion of the projected fatality counts for the Region using the most recent relative proportion of fatalities in each State st for Region r and month m found in the Early Notification data. This can be expressed as $F\_Est_{st|mr} = (F_{st|mr} / \sum_{all\ States\ in\ r} F_{st|mr}) \times F\_Est_{mr}$, where $F_{st|mr}$ is the latest fatal count in the Early Notification data for State st in Region r and month m. That is, the inflation rate for all States within a region is assumed to be the same as the inflation rate of that region. For example, the estimated motor vehicle traffic fatalities for Arizona in Region 9 (AZ, CA, HI) and the month m is: $F\_Est_{AZ|m9} = (F_{AZ|m9} / (F_{AZ|m9} + F_{CA|m9} + F_{HI|m9})) \times F\_Est_{m9}$.

The methodology used to generate the national, regional, and State-level estimates for 2022 is the same as the one used by NHTSA to project the motor vehicle traffic fatalities for the first nine months of 2022 (*Early Estimates of Motor Vehicle Traffic Fatalities for the First Nine Months [January–September] of 2022,* Report No. DOT HS 813 406).

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