



Early Estimate of Motor Vehicle Traffic Fatalities in 2020

Summary

A statistical projection of traffic fatalities for 2020 shows that an estimated 38,680 people died in motor vehicle traffic crashes. This represents an estimated increase of about 7.2 percent as compared to the 36,096 fatalities reported in 2019, as shown in Table 1. Preliminary data from the Federal Highway Administration (FHWA) shows vehicle miles traveled (VMT) in 2020 decreased by about 430.2 billion miles, or about a 13.2-percent decrease. Also, shown in Table 1 are the fatality rates per 100 million VMT, by quarter. The fatality rate for 2020 was 1.37 fatalities per 100 million VMT, up from 1.11 fatalities per 100 million VMT in 2019. The projected fatality rate for 2020 would be the greatest since 2007. For the third and fourth quarters of

2020, fatalities are projected to be greater than the corresponding quarters in 2019. Also, the fatality rate per 100 million VMT in all four quarters of 2020 is much greater than the corresponding quarters of 2019. All 10 NHTSA Regions are estimated to have increases in fatalities and the fatality rate per 100 million VMT in 2020 as compared to 2019. The fatality counts for 2019 and 2020 and the ensuing percentage change from 2019 to 2020 will be further revised as the final file for 2019 and the annual reporting file for 2020 are available later this year. These estimates may be further refined when the projections for the first quarter of 2021 are released in late spring of 2021.

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

Quarter	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 From the Prior Year					
2008	8,459 [-9.6%]	9,435 [-11.1%]	9,947 [-10.0%]	9,582 [-6.4%]	37,423 [-9.3%]
2009	7,552 [-10.7%]	8,975 [-4.9%]	9,104 [-8.5%]	8,252 [-13.9%]	33,883 [-9.5%]
2010	6,755 [-10.6%]	8,522 [-5.0%]	9,226 [+1.3%]	8,496 [+3.0%]	32,999 [-2.6%]
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	7,816 [-4.7%]	9,172 [-1.6%]	9,953 [+0.2%]	9,155 [-2.3%]	36,096 [-2.0%]
2020 ¹	7,900 [+1.1%]	9,120 [-0.6%]	11,305 [+13.6%]	10,355 [+13.1%]	38,680 [+7.2%]
Fatality Rate per 100 Million Vehicle Miles Traveled (VMT)					
2008	1.22	1.25	1.33	1.32	1.26
2009	1.09	1.16	1.17	1.12	1.15
2010	0.98	1.09	1.18	1.14	1.11
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	1.08	1.17	1.12	1.11
2020 ¹	1.12	1.46	1.49	1.40	1.37

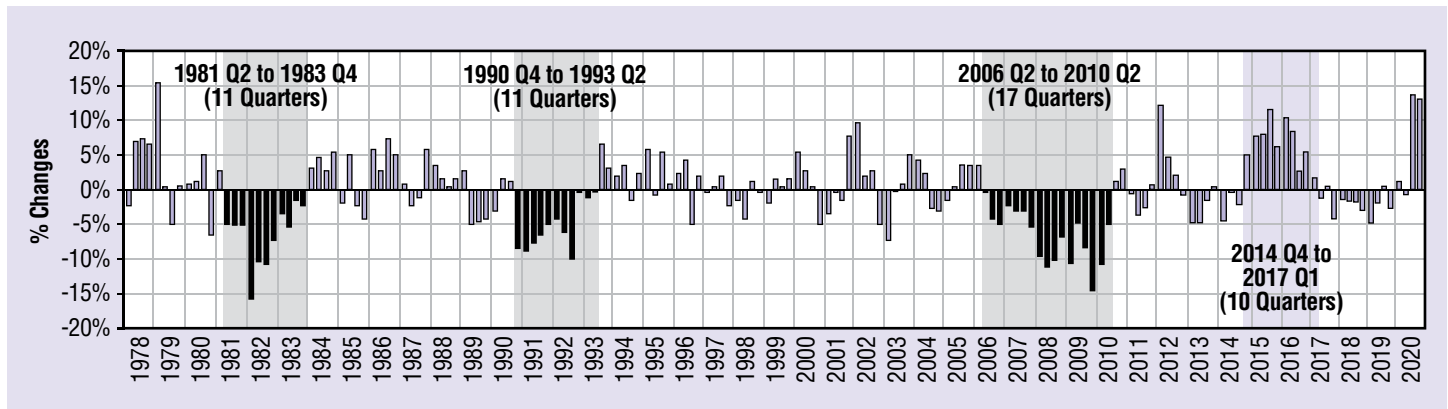
Sources: Fatalities: 2008–2018 FARS Final File, 2019 FARS Annual Report File; VMT: FHWA December 2020 Traffic Volume Trends for 2019 and 2020

¹2020 statistical projections and rates based on these projections.

Figure 1 shows the historical trend of the percentage change every quarter from the same quarter in the previous year, going back to 1978 (NHTSA has fatality data since 1975). The shading in the chart shows the years with significant numbers of consecutive quarters with increases/declines compared to corresponding quarters of 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 increase in fatalities occurred over 10 consecutive quarters ending after the first quarter of 2017. The third and fourth quarter of 2020 showed the significant increase in fatalities compared to corresponding quarters of 2019.

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



To examine the effect of the COVID-19 pandemic, the quarterly projections of fatalities, fatality rates, and VMT are further split into the respective monthly estimates for 2019 and 2020. The stay-at-home orders started in mid-March 2020, followed by the first full month of stay-at-home measures that were in effect during April. In May some States began to reopen in some way while almost all States partially reopened by June. After June,

each State continued to adapt their local and statewide COVID-19 guidelines and assess specific reopening and potential reclosing efforts accordingly. Table 2 shows that fatalities are projected to have decreased in March, April, and May, but increased from June to December. The fatality rate per 100 million VMT shows a significant increase during March to December 2020 as compared to the corresponding months in 2019.

Table 2: Fatalities, VMT, Fatality Rate by Month or Quarter in 2020, and the Percentage Change in Fatalities and VMT From The Corresponding Month or Quarter in 2019

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 2020 and Percentage Change in Fatalities for the Corresponding Month and Quarter From the 2019																
2019	2,664	2,388	2,764	7,816	2,817	3,166	3,189	9,172	3,294	3,351	3,308	9,953	3,197	3,050	2,908	9,155
2020†	2,665 +0.0%	2,675 12.0%	2,560 -7.4%	7,900 1.1%	2,310 -18.0%	3,095 -2.2%	3,715 16.5%	9,120 -0.6%	3,770 14.5%	3,820 14.0%	3,715 12.3%	11,305 13.6%	3,795 18.7%	3,430 12.5%	3,130 7.6%	10,355 13.1%
Fatality Rate per 100 Million Vehicle Miles Traveled (VMT)/VMT (in Billion) and Percentage Change in VMT																
2019	1.08 246.5	1.04 229.3	1.01 272.5	1.05 748.3	1.02 277.0	1.11 285.5	1.12 284.1	1.08 846.6	1.13 292.7	1.17 286.4	1.23 268.8	1.17 847.9	1.13 283.0	1.17 261.7	1.07 272.2	1.12 816.9
2020†	1.06 251.7 2.1%	1.14 233.9 2.0%	1.16 221.1 -18.9%	1.12 706.7 -5.6%	1.39 165.9 -40.1%	1.46 212.7 -25.5%	1.50 247.7 -12.9%	1.45 626.0 -26.1%	1.45 260.1 -11.1%	1.51 252.7 -11.8%	1.50 247.2 -8.0%	1.49 760.0 -10.4%	1.46 259.2 -8.4%	1.47 233.8 -10.7%	1.28 244.1 -10.3%	1.40 737.1 -9.8%

Sources: Fatalities: 2019 FARS Annual Report File; VMT: FHWA December 2020 Traffic Volume Trends for 2019 and 2020

† 2020 Statistical projections and rates based on these projections.

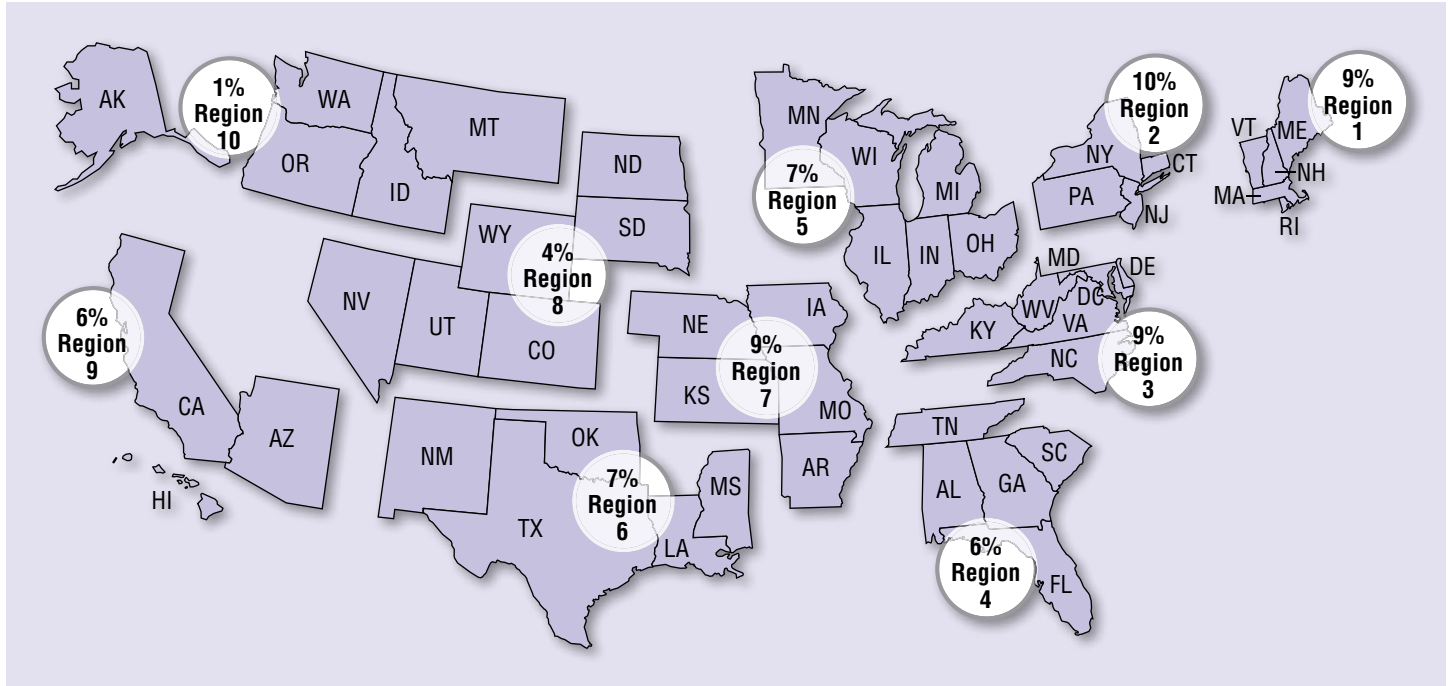
*February 29, 2020, was a leap day.

Regional Differences

The statistical procedures employed 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 2020 with the reported 2019 counts. Figure 2 shows the estimated percentage changes in fatalities by NHTSA Region. All 10 NHTSA Regions experienced increases during 2020 compared to reported totals during 2019.

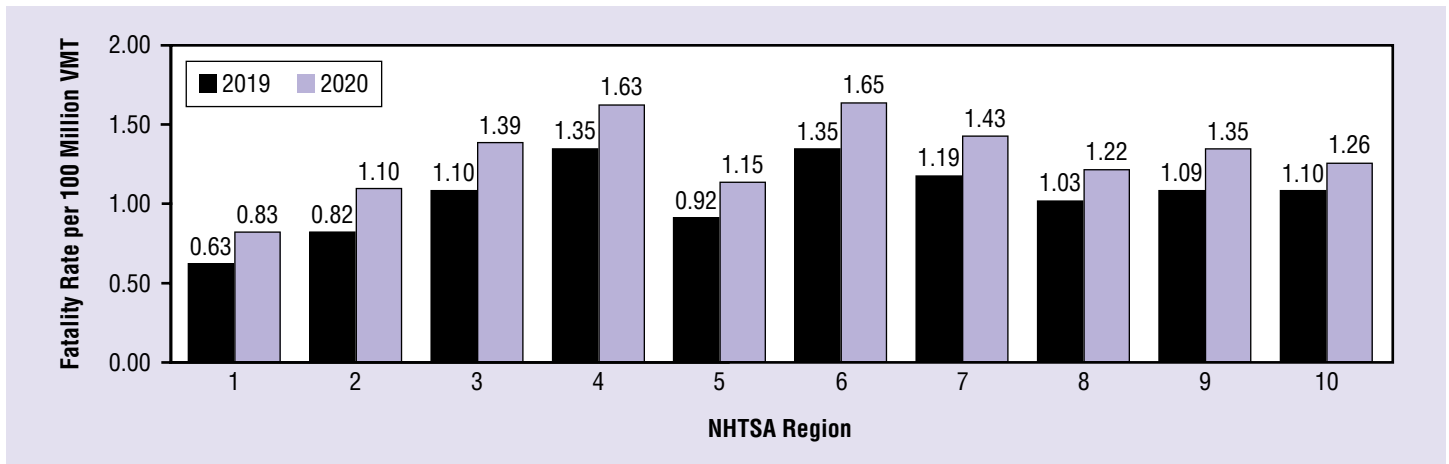
Figure 3 shows the comparison of estimated fatality rate per 100 million VMT in 2020 with reported 2019 fatality rate per 100 million VMT by NHTSA Region. All 10 NHTSA Regions also presented increases in fatality rate per 100 million VMT during 2020. These estimates by NHTSA Region shown in Figures 2 and 3 are subject to change as fatality counts for 2019 and 2020 are finalized.

Figure 2: Percentage Change in Estimated Fatalities in 2020 From Reported 2019 Fatality Counts, by NHTSA Region



Source: 2019 FARS Annual Report File, 2020 Statistical Projections

Figure 3: Comparison of Estimated Fatality Rate in 2020 with Reported 2019 Fatality Rate, by NHTSA Region



Source: 2019 FARS Annual Report File, 2020 Statistical Projections. FHWA December 2020 Traffic Volume Trends for 2019 & 2020 VMT

Discussion

Looking at the overall picture of the trends in traffic fatalities and the fatality rate per 100 million VMT by year in Table 1, there are marked increases in fatalities and the fatality rate in 2020. Due to the impact of the COVID-19 pandemic, the VMT in 2020 decreased by 13.2 percent compared to 2019. Increased fatalities (7.2%) combined with the decreased VMT resulted in a steep increase of the fatality rate per 100 million VMT (1.37) in 2020, as compared to the fatality rate of 1.11 in 2019. The last year with such a high fatality rate was 2007 (1.36).

The potential contributing factors influencing the changes in fatalities and the fatality rate per 100 million VMT in 2020 has been investigated in an accompanying report (*Early Estimates of Motor Vehicle Traffic Fatalities and Fatality Rate by Sub-Categories in 2020*, Report No. DOT HS 813 118). NHTSA is continuing to gather and finalize data on crash fatalities for 2019 and 2020 using information from police crash reports and other sources. The final file for 2019 as well as the annual report file for 2020 will be available in late fall of 2021 that usually results in the revision of fatality totals and the ensuing rates and percentage changes.

Data and Method

The data used in this analysis comes from several sources: NHTSA's Fatality Analysis Reporting System (FARS), Early Notification (EN) data, and Monthly Fatality Counts (MFC); 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 January 2003 to December 2018 and FARS Annual Report file in 2019 are used. 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 provides monthly fatality counts by State through sources that are independent from the EN or FARS systems. MFCs from January 2003 up to December 2020 are used. MFCs are reported mid-month for all prior months of the year. To estimate the traffic fatality counts for 2020, time series cross-section regression 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). The methodology used to generate the estimates for 2020 is the same as the one used by NHTSA to project the decrease in the fatalities for the whole of 2019 (*Early Estimates of Motor Vehicle Traffic Fatalities in 2019*, Report No. DOT HS 812 946).

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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/>



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