



U.S. Department
of Transportation

National Highway
Traffic Safety
Administration

File Contains Data for
PostScript Printers Only

Research Note

January 1998

Crash Data and Rates for Age-Sex Groups of Drivers, 1996

Ezio C. Cerrelli

INTRODUCTION

The availability of crash and fatality data for 1996 and the latest available travel information from the National Personal Transportation Study (NPTS) provides an opportunity to update previously published crash rates of age-sex groups of drivers (See *Crash Data and Rates for Age-Sex Groups of Drivers, 1994*, NHTSA Research Note, October 1995 and *Crash Data and Rates for Age-Sex Groups of Drivers, 1990*, NHTSA Research Note, May 1992).

The results in this research note are based on 1996 data for fatal crashes, driver licenses, and estimates of total crashes based upon data obtained from the nationally representative sample of crashes gathered in the General Estimates System (GES). The average annual miles of travel estimates are from the 1995 NPTS survey. The four major sources of data for this research note are:

- a) 1996 driver licensing estimates provided by the Federal Highway Administration,
- b) NHTSA's 1996 Fatality Analysis Reporting System (FARS),
- c) NHTSA's 1996 General Estimates System (GES), and
- d) 1995 NPTS.

The use of the 1995 NPTS estimates assumes that no relative changes have occurred between 1995 and 1996 in the average annual miles of travel performed by the various groups of drivers. This assumption is necessary since no travel estimates are available for 1996. The estimates of travel and the rates per unit of travel, presented in this research note must therefore be interpreted as a relative rather than an absolute measure of safety performance. Drivers under 16 years of age were not found in the NPTS survey, therefore these drivers have been assigned the same average annual travel as the 16 year olds in this study.

The results are summarized in RESULTS and in Tables A, B, and C on the following pages. Figures 1 through 4 provide a graphical representation of the driver fatality and crash involvement rates for the various age-sex groups of drivers. The rates shown in Figures 1 and 3 are based on the number of licensed drivers and those shown in Figures 2 and 4 on vehicle miles traveled.

Both the NPTS and the GES are probability-based surveys and as such, their estimates are associated with both sampling and nonsampling errors. For a more detailed discussion of the GES, see *National Accident Sampling System General Estimates System Technical Note*, DOT-HS-807-796, December 1991. For more information on the NPTS, contact the Federal Highway Administration's Office of Highway Information Management.

For additional copies of this research note, please call (202) 366-4198 or toll free, 1-800-934-8517. Questions regarding this research note may be directed to Ezio Cerrelli at (202) 366-5358. This research note and other traffic safety information is available to Internet users at <http://www.nhtsa.dot.gov/people/nca>.

RESULTS

Driver Licenses: Female drivers accounted for 49.6% of all licensed drivers in 1996, while male drivers accounted for the remaining 50.4%. In actual numbers, there were 179,539,000 licensed drivers in 1996 of which 90,519,000 were males and 89,021,000 were females. (Tables A, B, and C)

Travel: Male drivers drove an estimated annual average of 14,560 miles in 1995. The annual average for female drivers was estimated at 8,769 miles. The highest average travel among males was found for drivers 20 to 60 years old, and 20 to 50 years old among females. Male drivers accounted for 62.8% of the total travel in 1996 and female drivers for the remaining 37.2%. (Tables A, B, and C)

Crashes: The General Estimates System shows that an estimated 12,173,000 drivers were involved in police-reported crashes in 1996. Male drivers constituted 60.8% of all drivers involved and females 39.2%. For drivers of both sexes, the number of crash involvements decreased steadily from the youngest to the oldest age group. (Tables A, B, and C)

Fatal Crashes: Of the 55,156 drivers involved in fatal crashes, male drivers accounted for 41,010 (74.4%) and females for 14,146 (25.6%). The number of fatal involvements decreased steadily, for female drivers, as the age of the driver increased. For male drivers, the number of fatal involvements remained at the highest values for drivers under 25, and decreased steadily for older age groups. Driver fatalities followed approximately the same pattern, with male drivers accounting for 73.8% of the driver fatalities vs. 26.2% accounted for by females. The total number of drivers killed in 1996 was 23,333. (Tables A, B, and C)

Crash Involvement Rates: Two types of involvement rates are shown in Figures 1 and 2, the first is based on the number of licensed drivers in each age-sex group while the second is based on the amount of travel estimated for each group.

When based on the number of licensed drivers, the risk of being involved in a crash drops sharply from a rate of about 265 crash involvements per 1,000 licensed drivers in the 16 and under age group to a rate of less than 40 for drivers above the age of 60. The rates are about 52% higher for male drivers than for female drivers, and this is true for most age groups. (Figure 1)

The risk pattern is quite different when the rate is based on estimated annual travel. The risk is lowest for drivers 40 to 65 years old, while teenagers display much higher rates, about five times as great. The risk for 16 year old and younger drivers is about 10 times as high as the lowest rate. The risk increases for drivers 65 years and older, with drivers 85 and older having a rate 2.5 times as high as the average driver. Male and female drivers display the same rate for most age groups. (Figure 2)

Fatal Involvement Rates: The risk of being involved in a fatal crash is three times as high for male drivers, when based on the number of licensed drivers. Both sexes display a similar pattern in the change of the fatal involvement rate by the age of the driver, with the highest rates among the younger groups and rising rates for drivers over 75.

When based on estimated travel, the differences among the various age groups (Table C) become more pronounced. The rate of about 17 fatal involvements per 100,000,000 miles of travel for 16 and under drivers declines to about 2 for drivers 35 to 70 years old. For drivers over 75 the rate climbs steeply and reaches a value of over 10 for drivers in the 85 and over group. Male drivers have higher rates than female drivers, the differences being more pronounced in the younger age groups. (Tables A and B)

Driver Fatality Rates: The pattern for the driver fatality rate, when based on the number of licensed drivers, is essentially the same as the pattern for fatal involvement rates, with one major difference. Drivers in the oldest group are more likely to be killed, once involved in a fatal crash, than are younger drivers. The fatality rate per licensed driver has almost the same value for both the youngest and oldest age groups. This holds true for both male and female drivers. (Figure 3)

When the driver fatality rate is calculated based on the estimated annual travel, the highest rates are found among the youngest and oldest drivers. When compared to the fatality rate for drivers 25 to 70 years old, teenage drivers display a rate about four times as great, while the rate for drivers in the oldest group display a rate 9 times as great. Female drivers under 50 display a lower rate than their male counterparts, on a per mile driven basis, while the rate is essentially the same for both male and female drivers over 50 years of age, with the exception of the oldest group. (Figure 4)

Figure 1

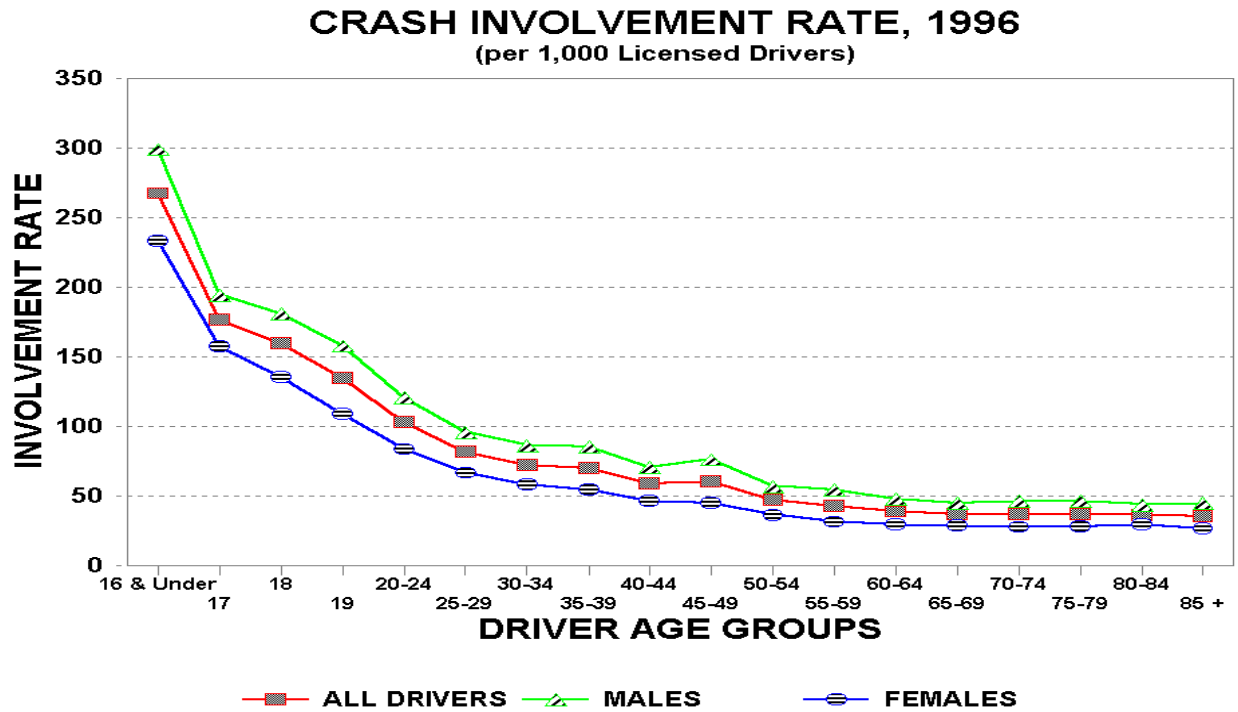


Figure 2

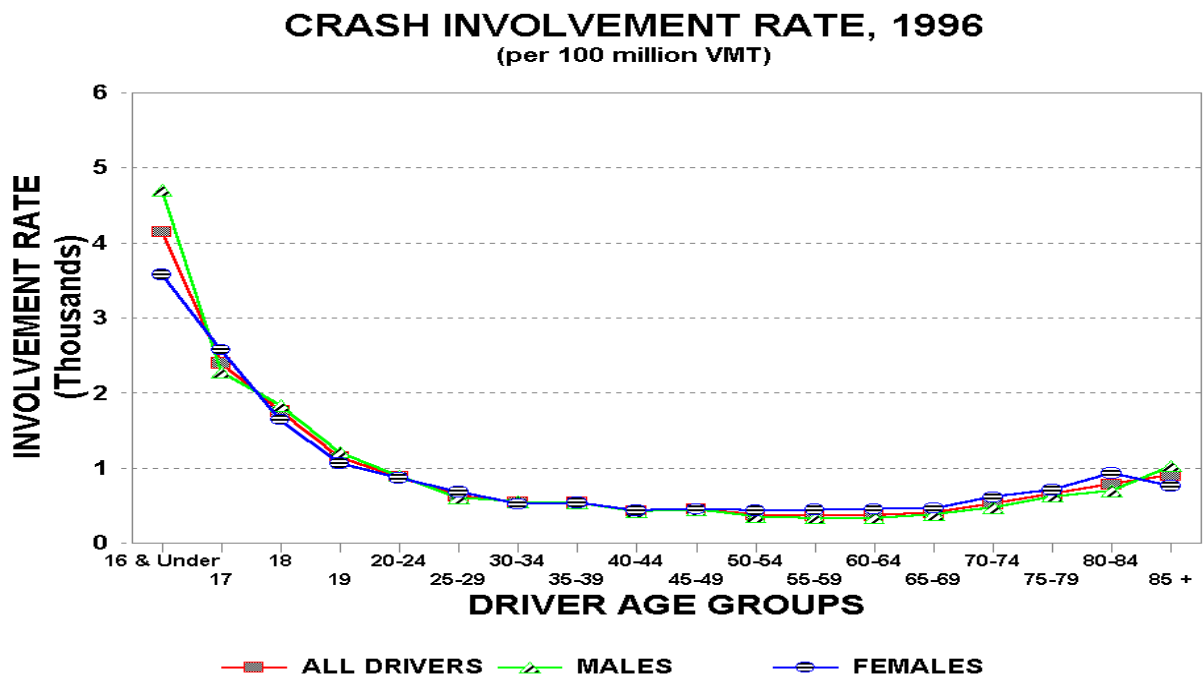


Figure 3

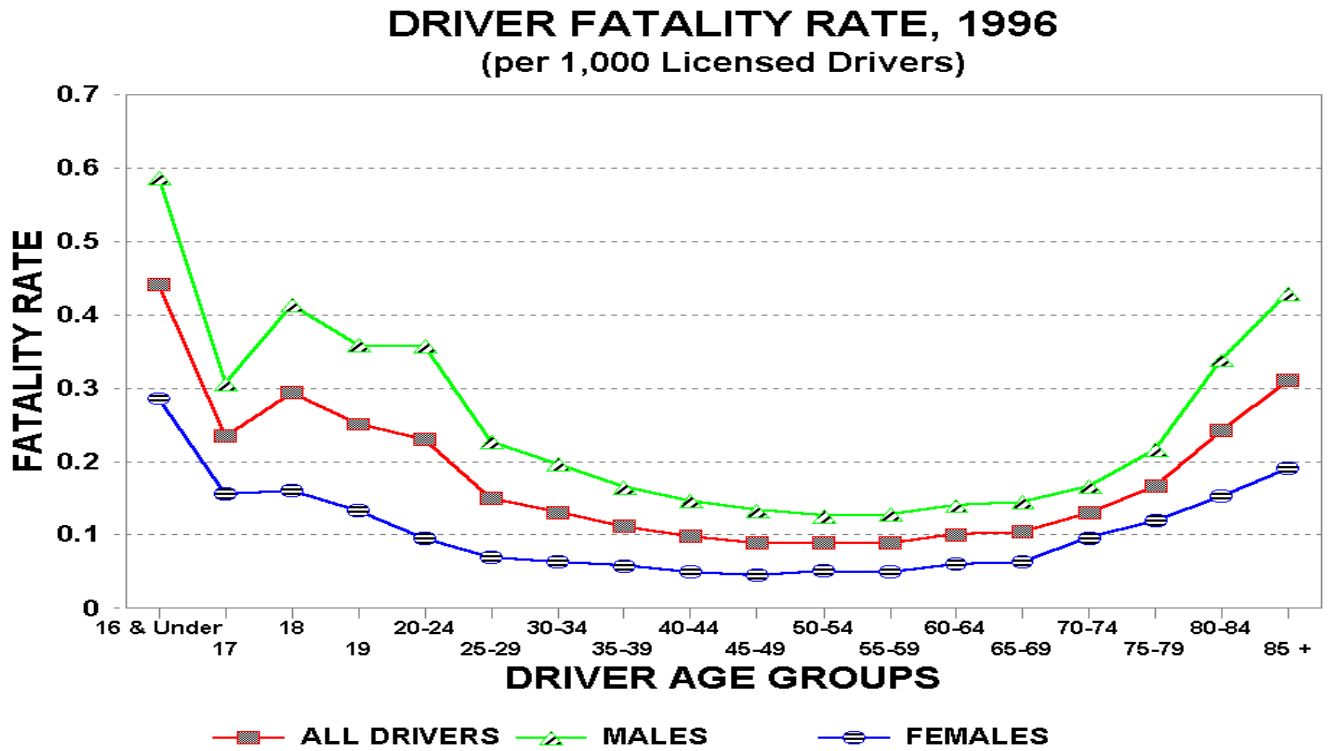


Figure 4

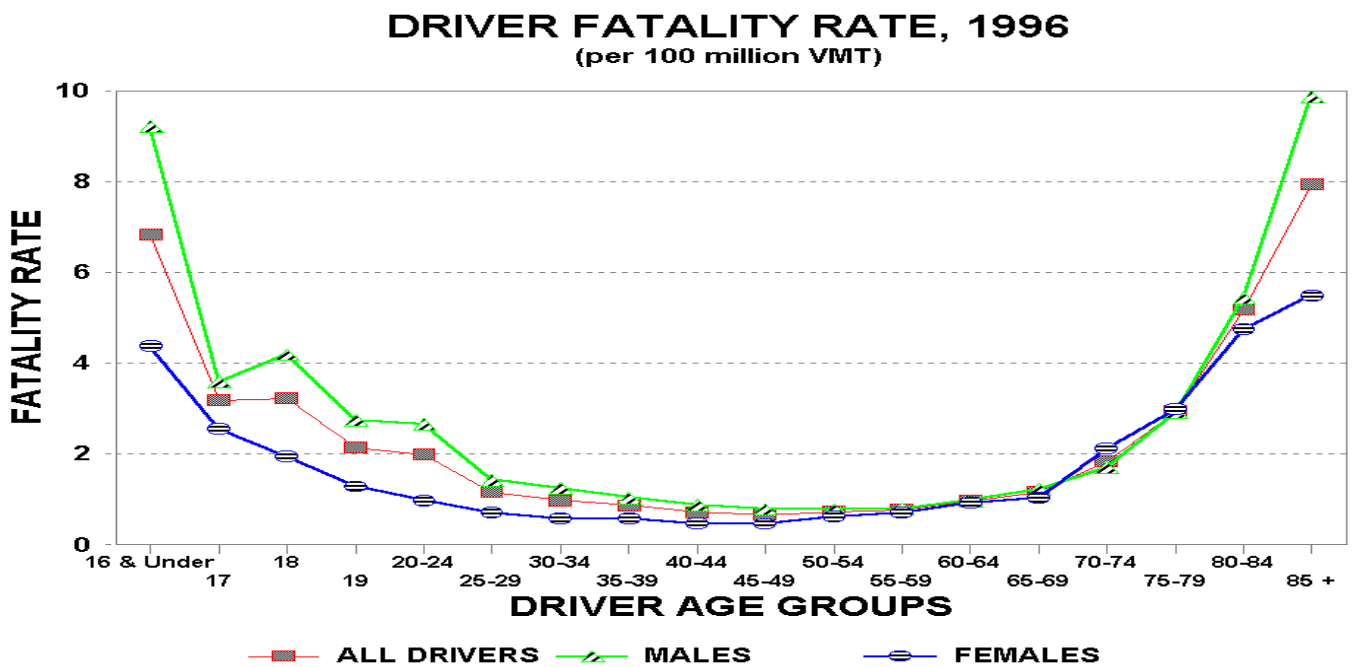


TABLE - A

1996 CRASH AND FATALITY DATA - MALE DRIVERS												
DRIVER AGE GROUP	LICENSED DRIVERS (thousands)	AVERAGE ANNUAL TRAVEL	TOTAL MILES OF TRAVEL (millions)	DRIVERS IN ALL CRASHES (thousands)	DRIVERS IN FATAL CRASHES	DRIVER FATALITIES	CRASH INV. RATE (*) (per VMT)	FAT.INV. RATE (*) (per VMT)	FATALITY RATE (*) (per VMT)	CRASH INV. RATE (*) (per LIC.)	FAT.INV. RATE (*) (per LIC.)	FATALITY RATE (*) (per LIC.)
16 -	816	6,363	5,190	244	1,106	478	4,699	21.31	9.2	299	1.36	0.59
17	1,198	8,534	10,225	233	1,013	367	2,278	9.91	3.6	194	0.85	0.31
18	1,342	9,856	13,231	243	1,271	555	1,836	9.61	4.2	181	0.95	0.41
19	1,454	13,046	18,970	229	1,214	522	1,209	6.40	2.8	158	0.83	0.36
20-24	7,866	13,435	105,677	951	6,148	2,814	900	5.82	2.7	121	0.78	0.36
25-29	9,356	15,808	147,903	899	5,073	2,126	608	3.43	1.4	96	0.54	0.23
30-34	10,121	15,694	158,835	875	4,834	1,986	551	3.04	1.3	86	0.48	0.20
35-39	10,521	15,875	167,019	901	4,414	1,743	539	2.64	1.0	86	0.42	0.17
40-44	9,776	16,851	164,732	692	3,563	1,437	420	2.16	0.9	71	0.36	0.15
45-49	8,754	17,005	148,863	667	2,935	1,169	448	1.97	0.8	76	0.34	0.13
50-54	6,840	16,062	109,860	390	2,164	859	355	1.97	0.8	57	0.32	0.13
55-59	5,341	16,082	85,899	290	1,655	684	338	1.93	0.8	54	0.31	0.13
60-64	4,565	14,282	65,198	218	1,398	637	334	2.14	1.0	48	0.31	0.14
65-69	4,234	11,852	50,186	191	1,154	614	381	2.30	1.2	45	0.27	0.15
70-74	3,604	9,737	35,095	167	1,055	598	475	3.01	1.7	46	0.29	0.17
75-79	2,563	7,411	18,995	118	894	554	623	4.71	2.9	46	0.35	0.22
80-84	1,400	6,234	8,730	61	684	474	701	7.83	5.4	44	0.49	0.34
85 +	767	4,346	3,332	34	435	329	1,031	13.05	9.9	45	0.57	0.43
TOTAL	90,519	14,560	1,317,941	7,403	41,010	17,946	562	3.11	1.4	82	0.45	0.20

TABLE - B

1996 CRASH AND FATALITY DATA - FEMALE DRIVERS												
DRIVER AGE GROUP	LICENSED DRIVERS (thousands)	AVERAGE ANNUAL TRAVEL	TOTAL MILES OF TRAVEL (millions)	DRIVERS IN ALL CRASHES (thousands)	DRIVERS IN FATAL CRASHES	DRIVER FATALITIES	CRASH INV. RATE (*) (per VMT)	FAT.INV. RATE (*) (per VMT)	FATALITY RATE (*) (per VMT)	CRASH INV. RATE (*) (per LIC.)	FAT.INV. RATE (*) (per LIC.)	FATALITY RATE (*) (per DRV.)
16 -	764	6,533	4,990	178	557	218	3,572	11.16	4.4	233	0.73	0.29
17	1,115	6,110	6,812	175	414	174	2,575	6.08	2.6	157	0.37	0.16
18	1,212	8,256	10,004	164	469	194	1,641	4.69	1.9	135	0.39	0.16
19	1,333	10,310	13,747	145	412	176	1,058	3.00	1.3	109	0.31	0.13
20-24	7,394	9,670	71,496	618	1,747	699	865	2.44	1.0	84	0.24	0.09
25-29	8,946	9,748	87,206	595	1,558	617	682	1.79	0.7	67	0.17	0.07
30-34	9,871	11,041	108,987	571	1,561	627	524	1.43	0.6	58	0.16	0.06
35-39	10,439	9,979	104,173	566	1,503	604	543	1.44	0.6	54	0.14	0.06
40-44	9,752	10,683	104,180	455	1,180	485	437	1.13	0.5	47	0.12	0.05
45-49	8,710	9,825	85,579	390	957	391	456	1.12	0.5	45	0.11	0.04
50-54	6,763	8,323	56,290	247	752	347	438	1.34	0.6	36	0.11	0.05
55-59	5,258	7,011	36,866	165	522	260	448	1.42	0.7	31	0.10	0.05
60-64	4,486	6,493	29,127	133	498	270	456	1.71	0.9	30	0.11	0.06
65-69	4,231	6,140	25,977	121	491	268	465	1.89	1.0	29	0.12	0.06
70-74	3,749	4,510	16,909	104	550	358	615	3.25	2.1	28	0.15	0.10
75-79	2,716	3,983	10,820	77	485	323	709	4.48	3.0	28	0.18	0.12
80-84	1,516	3,197	4,845	45	314	230	930	6.48	4.7	30	0.21	0.15
85 +	767	3,469	2,660	20	176	146	762	6.62	5.5	26	0.23	0.19
TOTAL	89,021	8,769	780,666	4,771	14,146	6,387	611	1.81	0.8	54	0.16	0.07

(*) Rates are per 100,000,000 Vehicle Miles of Travel and per 1,000 Licensed Drivers

TABLE - C

1996 DRIVER CRASH AND FATALITY DATA - ALL DRIVERS												
DRIVER AGE GROUP	LICENSED DRIVERS (thousands)	AVERAGE ANNUAL TRAVEL	TOTAL MILES OF TRAVEL (millions)	DRIVERS IN ALL CRASHES (thousands)	DRIVERS IN FATAL CRASHES	DRIVER FATALITIES	CRASH INV. RATE (*) (per VMT)	FAT. INV. RATE (*) (per VMT)	FATALITY RATE (*) (per VMT)	CRASH INV. RATE (*) (per LIC.)	FAT. INV. RATE (per LIC.)	FATALITY RATE (*) (per LIC.)
16 -	1,579	6,445	10,180	422	1,663	696	4,146	16.34	6.8	267	1.05	0.44
17	2,313	7,366	17,037	408	1,427	541	2,396	8.38	3.2	177	0.62	0.23
18	2,554	9,097	23,235	407	1,740	749	1,752	7.49	3.2	159	0.68	0.29
19	2,787	11,737	32,717	375	1,626	698	1,145	4.97	2.1	134	0.58	0.25
20-24	15,259	11,611	177,172	1,569	7,895	3,513	886	4.46	2.0	103	0.52	0.23
25-29	18,302	12,846	235,110	1,494	6,631	2,743	635	2.82	1.2	82	0.36	0.15
30-34	19,992	13,397	267,822	1,446	6,395	2,613	540	2.39	1.0	72	0.32	0.13
35-39	20,960	12,939	271,192	1,467	5,917	2,347	541	2.18	0.9	70	0.28	0.11
40-44	19,528	13,771	268,912	1,147	4,743	1,922	427	1.76	0.7	59	0.24	0.10
45-49	17,464	13,424	234,442	1,057	3,892	1,560	451	1.66	0.7	61	0.22	0.09
50-54	13,603	12,214	166,150	637	2,916	1,206	383	1.76	0.7	47	0.21	0.09
55-59	10,599	11,582	122,765	456	2,177	944	371	1.77	0.8	43	0.21	0.09
60-64	9,051	10,422	94,325	351	1,896	907	372	2.01	1.0	39	0.21	0.10
65-69	8,465	8,997	76,163	312	1,645	882	410	2.16	1.2	37	0.19	0.10
70-74	7,354	7,072	52,005	271	1,605	956	521	3.09	1.8	37	0.22	0.13
75-79	5,279	5,647	29,815	195	1,379	877	654	4.63	2.9	37	0.26	0.17
80-84	2,916	4,655	13,575	106	998	704	782	7.35	5.2	36	0.34	0.24
85 +	1,533	3,907	5,992	55	611	475	912	10.20	7.9	36	0.40	0.31
TOTAL	179,539	11,689	2,098,607	12,173	55,156	24,333	580	2.63	1.2	68	0.31	0.14

(*) Rates are per 100,000,000 Vehicle Miles of Travel and per 1,000 Licensed Drivers