

Statistical Analysis of the Traffic Fatalities in the United States

Introduction and Objectives

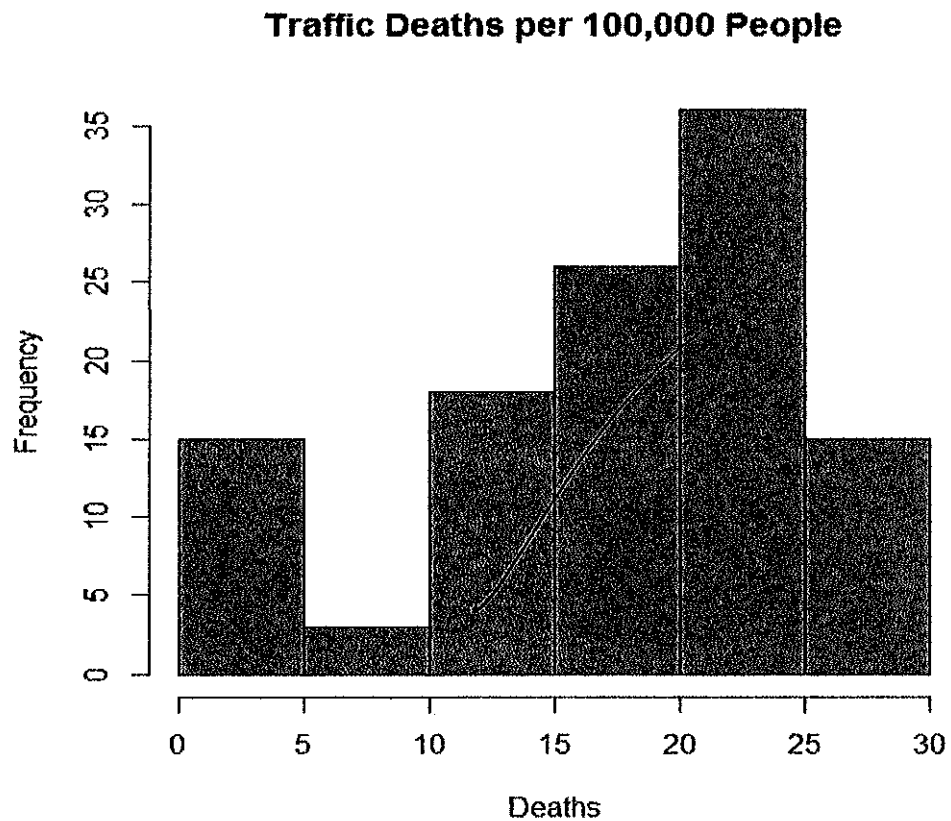
Every year, many Americans are killed in automobile accidents. One the most valuable American luxuries is a large source of American death. Many statistical studies are conducted to analyze the numbers of the deaths as they consume a large portion of the lives in America. In this report, a time analysis is included which describes a basic summary of statistical data. The main objective of this report is as previously described, to provide a summary of statistical data which describes the number of deaths in American caused by automobile accidents. More specifically, a graphical representation of the data is included as well as calculations such as the mean, median, standard deviation, variance, minimum, maximum, and range. Through this analysis, trends can be found.

| Year | Deaths | Population | Fatalities per 100,000 Population | % Change |
|------|--------|-------------|-----------------------------------|----------|
| 1900 | 36 | 76,094,000 | 0.05 | NA |
| 1901 | 54 | 77,584,000 | 0.07 | 47.12% |
| 1902 | 79 | 79,163,000 | 0.10 | 43.38% |
| 1903 | 117 | 80,632,000 | 0.15 | 45.40% |
| 1904 | 172 | 82,166,000 | 0.21 | 44.26% |
| 1905 | 252 | 83,822,000 | 0.30 | 43.62% |
| 1906 | 338 | 85,450,000 | 0.40 | 31.57% |
| 1907 | 581 | 87,008,000 | 0.67 | 68.82% |
| 1908 | 751 | 88,710,000 | 0.85 | 26.78% |
| 1909 | 1,174 | 90,490,000 | 1.30 | 53.25% |
| 1910 | 1,599 | 92,407,000 | 1.73 | 33.38% |
| 1911 | 2,043 | 93,863,000 | 2.18 | 25.79% |
| 1912 | 2,968 | 95,335,000 | 3.11 | 43.03% |
| 1913 | 4,079 | 97,225,000 | 4.20 | 34.76% |
| 1914 | 4,468 | 99,111,000 | 4.51 | 7.45% |
| 1915 | 6,779 | 100,546,000 | 6.74 | 49.56% |
| 1916 | 7,766 | 101,961,000 | 7.62 | 12.97% |
| 1917 | 9,630 | 103,268,000 | 9.33 | 22.43% |
| 1918 | 10,390 | 103,208,000 | 10.07 | 7.95% |
| 1919 | 10,896 | 104,514,000 | 10.43 | 3.56% |
| 1920 | 12,155 | 106,461,000 | 11.42 | 9.51% |
| 1921 | 13,253 | 108,538,000 | 12.21 | 6.95% |
| 1922 | 14,859 | 110,049,000 | 13.50 | 10.58% |
| 1923 | 17,870 | 111,947,000 | 15.96 | 18.22% |
| 1924 | 18,400 | 114,109,000 | 16.13 | 1.01% |
| 1925 | 20,771 | 115,829,000 | 17.93 | 11.21% |
| 1926 | 22,194 | 117,397,000 | 18.91 | 5.42% |
| 1927 | 24,470 | 119,035,000 | 20.56 | 8.74% |
| 1928 | 26,557 | 120,509,000 | 22.04 | 7.20% |
| 1929 | 29,592 | 121,767,000 | 24.30 | 10.28% |
| 1930 | 31,204 | 123,076,741 | 25.35 | 4.33% |
| 1931 | 31,963 | 124,039,648 | 25.77 | 1.64% |
| 1932 | 27,979 | 124,840,471 | 22.41 | -13.03% |
| 1933 | 29,746 | 125,578,763 | 23.69 | 5.69% |
| 1934 | 34,240 | 126,373,773 | 27.09 | 14.38% |
| 1935 | 34,494 | 127,250,232 | 27.11 | 0.05% |
| 1936 | 36,126 | 128,053,180 | 28.21 | 4.07% |
| 1937 | 37,819 | 128,824,829 | 29.36 | 4.06% |
| 1938 | 31,083 | 129,824,939 | 23.94 | -18.44% |
| 1939 | 30,895 | 130,879,718 | 23.61 | -1.41% |
| 1940 | 32,914 | 132,122,446 | 24.91 | 5.53% |
| 1941 | 38,142 | 133,402,471 | 28.59 | 14.77% |
| 1942 | 27,007 | 134,859,553 | 20.03 | -29.96% |
| 1943 | 22,727 | 136,739,353 | 16.62 | -17.00% |
| 1944 | 23,165 | 138,397,345 | 16.74 | 0.71% |
| 1945 | 26,785 | 139,928,165 | 19.14 | 14.36% |
| 1946 | 31,874 | 141,388,566 | 22.54 | 17.77% |
| 1947 | 31,193 | 144,126,071 | 21.64 | -4.00% |
| 1948 | 30,775 | 146,631,302 | 20.99 | -3.03% |
| 1949 | 30,246 | 149,188,130 | 20.27 | -3.40% |
| 1950 | 33,186 | 152,271,417 | 21.79 | 7.50% |
| 1951 | 35,309 | 154,877,889 | 22.80 | 4.61% |
| 1952 | 36,088 | 157,552,740 | 22.91 | 0.47% |
| 1953 | 36,190 | 160,184,192 | 22.59 | -1.36% |
| 1954 | 33,890 | 163,025,854 | 20.79 | -7.99% |
| 1955 | 36,688 | 165,931,202 | 22.11 | 6.36% |
| 1956 | 37,965 | 168,903,031 | 22.48 | 1.66% |
| 1957 | 36,932 | 171,984,130 | 21.47 | -4.46% |
| 1958 | 35,331 | 174,881,904 | 20.20 | -5.92% |

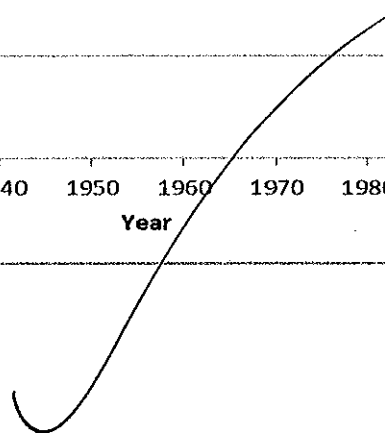
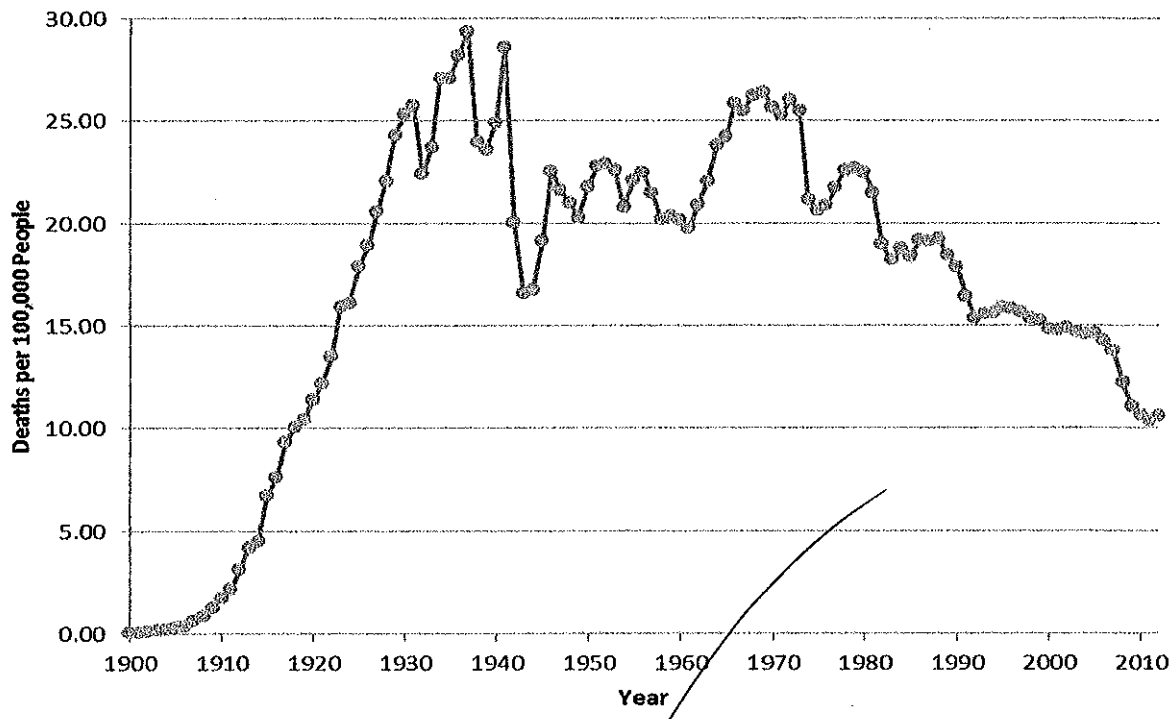
| Year | Deaths | Population | Fatalities per 100,000 Population | % Change |
|------|--------|-------------|-----------------------------------|----------|
| 1959 | 36,223 | 177,829,628 | 20.37 | 0.83% |
| 1960 | 36,399 | 180,671,158 | 20.15 | -1.09% |
| 1961 | 36,285 | 183,691,481 | 19.75 | -1.95% |
| 1962 | 38,980 | 186,537,737 | 20.90 | 5.79% |
| 1963 | 41,723 | 189,241,798 | 22.05 | 5.51% |
| 1964 | 45,645 | 191,888,791 | 23.79 | 7.89% |
| 1965 | 47,089 | 194,302,963 | 24.24 | 1.88% |
| 1966 | 50,894 | 196,560,338 | 25.89 | 6.84% |
| 1967 | 50,724 | 198,712,056 | 25.53 | -1.41% |
| 1968 | 52,725 | 200,706,052 | 26.27 | 2.91% |
| 1969 | 53,543 | 202,676,946 | 26.42 | 0.56% |
| 1970 | 52,627 | 205,052,174 | 25.67 | -2.85% |
| 1971 | 52,542 | 207,660,677 | 25.30 | -1.42% |
| 1972 | 54,589 | 209,896,021 | 26.01 | 2.79% |
| 1973 | 54,052 | 211,908,788 | 25.51 | -1.92% |
| 1974 | 45,196 | 213,853,928 | 21.13 | -17.14% |
| 1975 | 44,525 | 215,973,199 | 20.62 | -2.45% |
| 1976 | 45,523 | 218,035,164 | 20.88 | 1.27% |
| 1977 | 47,878 | 220,239,425 | 21.74 | 4.12% |
| 1978 | 50,331 | 222,584,545 | 22.61 | 4.02% |
| 1979 | 51,093 | 225,055,487 | 22.70 | 0.40% |
| 1980 | 51,091 | 227,224,681 | 22.49 | -0.96% |
| 1981 | 49,301 | 229,465,714 | 21.49 | -4.45% |
| 1982 | 43,945 | 231,664,458 | 18.97 | -11.71% |
| 1983 | 42,589 | 233,791,994 | 18.22 | -3.97% |
| 1984 | 44,257 | 235,824,902 | 18.77 | 3.02% |
| 1985 | 43,825 | 237,923,795 | 18.42 | -1.85% |
| 1986 | 46,087 | 240,132,887 | 19.19 | 4.19% |
| 1987 | 46,390 | 242,288,918 | 19.15 | -0.24% |
| 1988 | 47,087 | 244,498,982 | 19.26 | 0.58% |
| 1989 | 45,582 | 246,819,230 | 18.47 | -4.11% |
| 1990 | 44,599 | 249,464,396 | 17.88 | -3.19% |
| 1991 | 41,508 | 252,153,092 | 16.46 | -7.92% |
| 1992 | 39,250 | 255,029,699 | 15.39 | -6.51% |
| 1993 | 40,150 | 257,782,608 | 15.58 | 1.20% |
| 1994 | 40,716 | 260,327,021 | 15.64 | 0.42% |
| 1995 | 41,817 | 262,803,276 | 15.91 | 1.74% |
| 1996 | 42,065 | 265,228,572 | 15.86 | -0.33% |
| 1997 | 42,013 | 267,783,607 | 15.69 | -1.08% |
| 1998 | 41,501 | 270,248,003 | 15.36 | -2.12% |
| 1999 | 41,717 | 272,690,813 | 15.30 | -0.38% |
| 2000 | 41,945 | 282,216,952 | 14.86 | -2.85% |
| 2001 | 42,196 | 285,226,284 | 14.79 | -0.46% |
| 2002 | 43,005 | 288,125,973 | 14.93 | 0.89% |
| 2003 | 42,643 | 290,796,023 | 14.66 | -1.75% |
| 2004 | 42,836 | 293,638,158 | 14.59 | -0.52% |
| 2005 | 43,443 | 296,507,061 | 14.65 | 0.44% |
| 2006 | 42,642 | 299,398,484 | 14.24 | -2.79% |
| 2007 | 41,059 | 301,139,947 | 13.78 | -3.85% |
| 2008 | 37,261 | 303,824,640 | 12.26 | -11.00% |
| 2009 | 33,808 | 306,700,000 | 11.07 | -9.70% |
| 2010 | 32,885 | 308,745,538 | 10.65 | -3.80% |
| 2011 | 34,367 | 311,671,917 | 10.39 | 9.50% |
| 2012 | 34,767 | 311,702,917 | 10.59 | 3.50% |

Graphical Display and Summary of Statistical Data

```
> mean(Deaths)
[1] 16.94354
> median(Deaths)
[1] 18.97
> sd(Deaths)
[1] 7.783007
> var(Deaths)
[1] 60.5752
> max(Deaths)
[1] 29.36
> min(Deaths)
[1] 0.05
> range(Deaths)
[1] 0.05 29.36
> hist(Deaths,main="Traffic Deaths per 100,000 People", xlab="Deaths", c=3)
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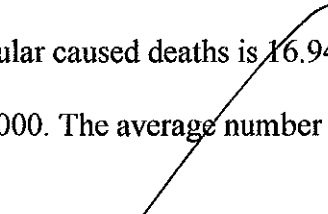


Traffic Deaths in the United States



Conclusions

After graphical analysis, a few trends can be detected. In the early 1900s, there is an obvious growth of deaths. It starts at near zero, which is probably because automobiles were brand new in this time period. As more vehicles hit the road, more people died from automobile accidents. In the 1930s, there is a spike which can be from the auto industry growing so quickly. In this decade, more people were driving which leads to more deaths. From 1942 to 1960, the amount is lower and steadies for some time. More safety advances were developed through the auto industry which reduced the amount of deaths in this time. The amount of deaths rose after 1960 as the muscle car era began. More people were driving faster, causing more accidents which led to more deaths. From 1982 on to present time, the amount of deaths has slowly been decreasing. Since 1980, automobiles became much safer and traffic laws became much more strictly enforced. The average number of vehicular caused deaths is 16.94354 per 100,000 people with a standard deviation of 7.783007 per 100,000. The average number of deaths is expected to continue lowering as time progresses.



References

"List of Motor Vehicle Deaths in U.S. by Year." *Wikipedia*. Wikimedia Foundation, 15 Mar.

2013. Web. 17 Mar. 2013.

"Fatality Analysis Reporting System (FARS)." *Home*. N.p., n.d. Web. 17 Mar. 2013.

