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Research Note

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Trends in Daily Traffic Fatalities, 1975 - 1995

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Scope

The Fatal Accident Reporting System (FARS), established in 1975, collects detailed information on all fatal crashes occurring in the U.S. each year. Presently, twenty-one (21) years of data from the period 1975 through 1995 are available for analysis. This Research Note presents the findings from a study of the fatality trends by the day of week on which the crash occurred. The study also examined the changes in the day of week fatality trends for each day of the week over the 21 year period.

Results

The following three figures summarize the results of a time series analysis of the monthly counts of total fatalities and fatalities by day of week for the period 1975-1995. The figures display the trend line representing the best time series fit to the daily counts after seasonal and other adjustments have been made. Figure 1 focuses on total monthly fatality counts for all days of the week. Figure 2 presents the average daily fatality count for Saturday, and the resulting fatality trend line. Finally, Figure 3 presents the trend lines for each of the days of the week, including Saturday. This figure provides an indication of how the daily count varies depending on the day of the week and shows detectable differences in their historical patterns.

FIGURE 1

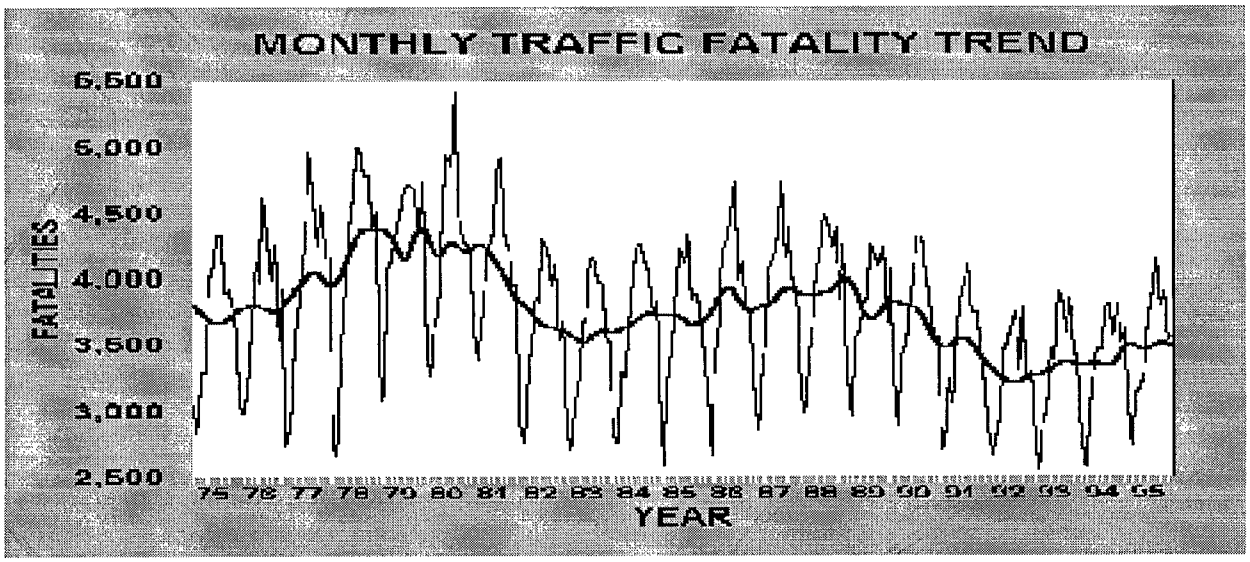


Figure 1 shows that the monthly fatality count varies considerably during the year, and that the yearly total follows what appears to be an eight to nine year cycle, with an overall declining cyclical pattern of highs and lows. As can be seen from Figure 1, total fatalities increased during the period 1975 - 1979, then declined during the early 1980's, with slight increases occurring during the late 1980's. Large decreases in total fatalities occurred in both 1982 and 1992. For the period 1992 - 1995, total fatalities have been slightly increasing each year.

FIGURE 2

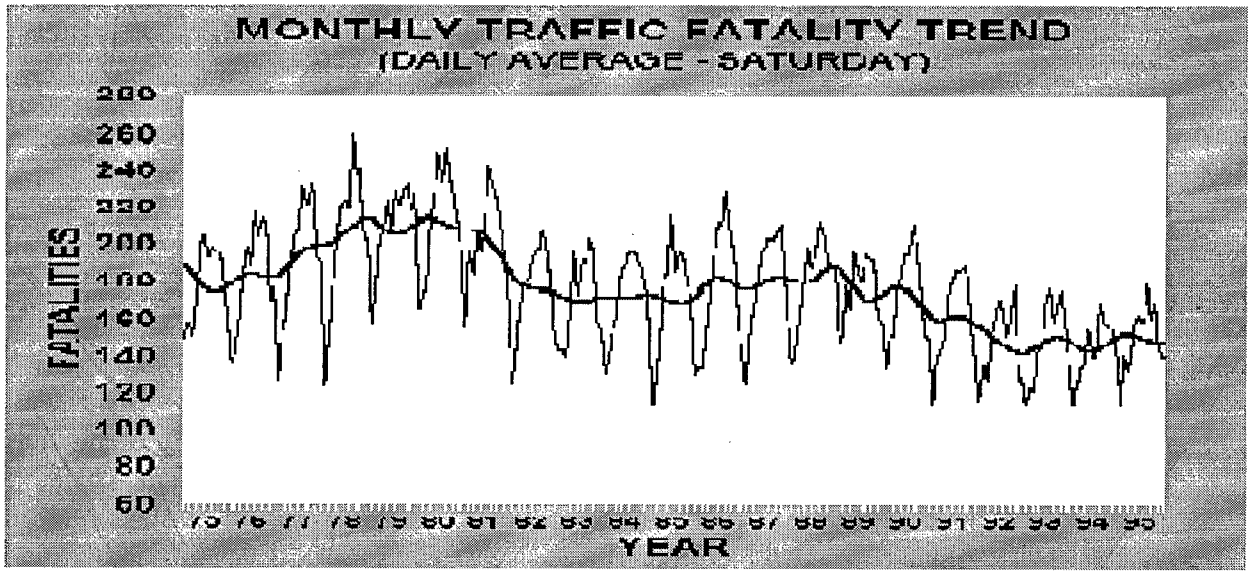
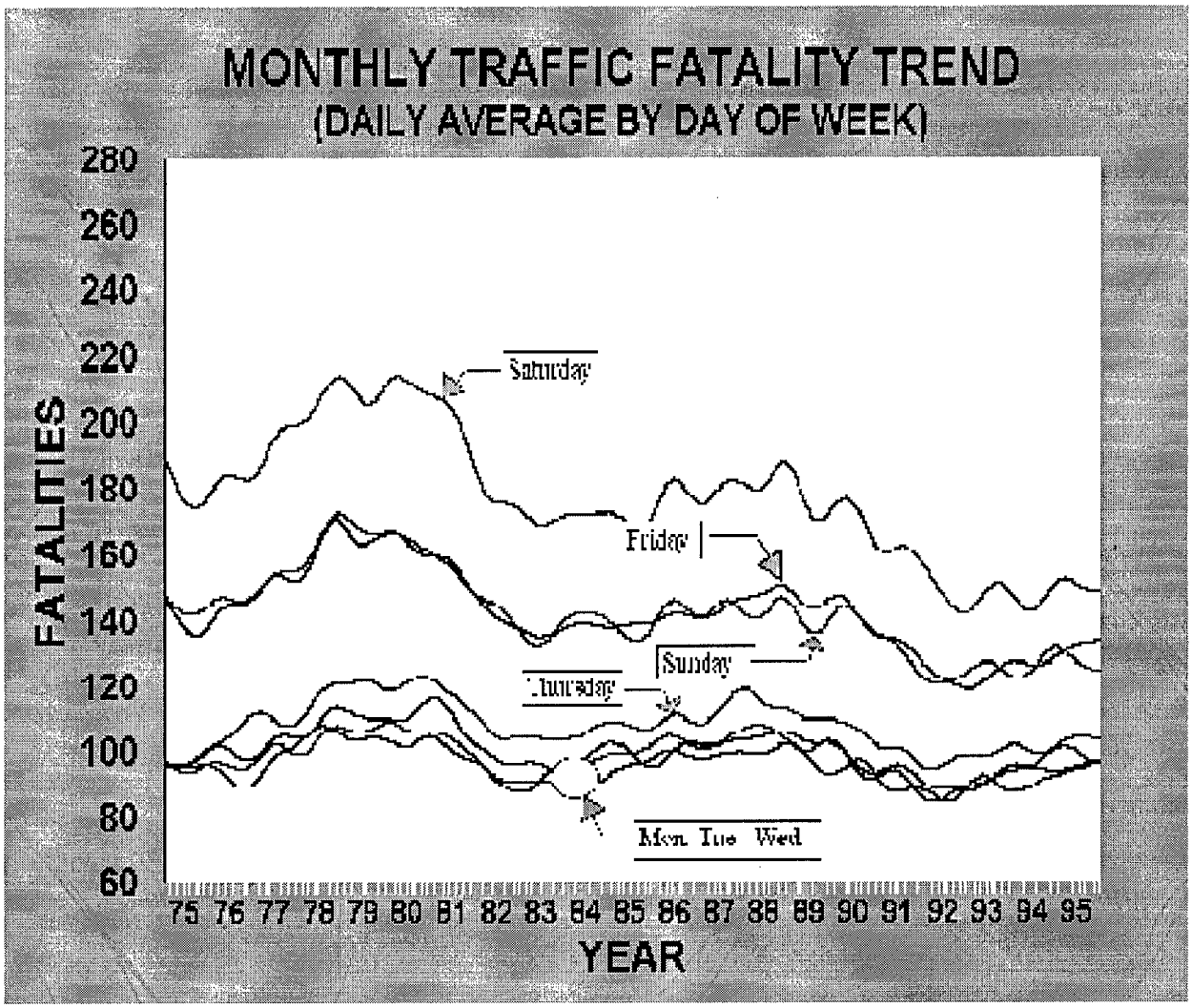


Figure 2 presents the average traffic fatality count for Saturday for the period 1975 - 1995. The Saturday fatality trend, shown here, appears to have strong similarities with the total fatality trend shown in Figure 1.

Figure 3 presents the average daily count for each day of the week, including Saturday, and shows that large differences are present in the pattern of traffic fatalities for the individual days of the week. The major differences are: large variations in the average daily counts, the annual range of the counts, and the change over time of the trend values in daily fatalities.

The daily fatality trends for Monday, Tuesday, and Wednesday appear to be quite similar. The average daily count is approximately 100 fatalities. The seasonal range, about plus or minus 30 fatalities from the trend value, has declined to approximately plus or minus 20 fatalities from the trend value. The trends for each of these three days display a 9-year cycle with an increase in value between 1992 and 1995. The pattern for the Thursday fatality trend is similar to that of the Monday, Tuesday, and Wednesday fatality trends; however, the average daily count for Thursday is approximately 10 fatalities greater than for the first three days of the week.

FIGURE 3



The fatality trends for Friday and Sunday, shown in Figure 3, have strong similarities. Both days had an average daily count of almost 150 fatalities in 1975, increased to approximately 170 by 1979, and decreased to approximately 140 by 1982. The daily average for Friday and Sunday remained almost flat until 1990 and dropped to less than 130 by 1992. The daily average fatality count for Sunday, however, exhibits larger seasonal variation than the count for Friday. The only difference between the two days is the larger seasonal variation in the fatality count for Sunday.

The pattern for Saturday fatality trend is similar to the Friday and Sunday fatality trends, however, at a much higher value of the average daily count. On the average, the Saturday fatality count has been 40 fatalities greater than either the Friday or Sunday fatality count from 1975 to 1990. This difference has gradually decreased to approximately 20 fatalities in 1995.

Discussion

The trend in daily traffic fatalities varies significantly, depending on the particular day of the week. The lowest counts in average daily traffic fatalities occur on Monday, Tuesday, and Wednesday, with the Thursday average daily traffic fatality count at a slightly higher level. An almost identical number of traffic fatalities have occurred on Friday and Sunday during the period 1975 through 1995. The daily fatality count for Sunday, however, exhibits more pronounced seasonal variation. Of the days of the week, the daily traffic fatality count for Saturday is the greatest.

During the period 1975 - 1995, the changes in the average daily count have not been uniform for the individual days of the week. The average daily fatality counts for Monday through Thursday, while at a much lower level than that for other days of the week, have not shown significant changes since 1975. The average daily fatality counts for Sunday and Friday have declined in level, however, the decline is not as large as that for Saturday. The average daily fatality count for Saturday has shown the largest decline during this period, particularly when compared to the high level of fatalities which occurred in 1979 and 1980.

It appears that the overall reduction in traffic fatalities, from the highest level of approximately 51,000 in 1980 to the level of approximately 41,000 in 1994, occurs predominately from the decrease in the average daily traffic fatality count for Friday and Sunday, and to an even greater extent, Saturday. The decrease in the average daily fatality count for Saturday is very likely related to the decrease in alcohol-related fatalities that occurred during this period. Recent increases in total fatalities for the period 1994-1995 have shown a reverse in this pattern, however, with increases occurring on both weekends and weekdays.