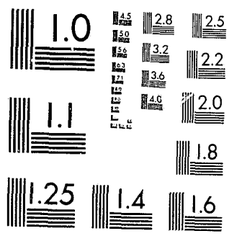

STATE OF NEW YORK

ANALYSIS/DISCUSSION

ACCIDENT TRENDS SINCE INITIATION OF THE SPECIAL TRAFFIC OPTIONS PROGRAM FOR DRIVING WHILE INTOXICATED (STOP-DWI) IN NEW YORK STATE

PREPARED BY

THE OFFICE OF
ALCOHOL AND HIGHWAY SAFETY

NEW YORK STATE
DEPARTMENT OF MOTOR VEHICLES

APRIL 1983

PREPARED UNDER SECTION 402
HIGHWAY SAFETY PROJECT GRANT AL 83-010
GOVERNOR'S TRAFFIC SAFETY

STATE OF NEW YORK
DEPARTMENT OF MOTOR VEHICLES

JOHN A. PASSIDOMO, Commissioner

JAMES F. McGUIRK, Deputy Commissioner for Operations

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by
JERRY FRIEDMAN

OFFICE OF ALCOHOL
AND
HIGHWAY SAFETY

CLARENCE W. MOSHER, Director

APRIL 1983

EXECUTIVE SUMMARY

New York State enacted the Special Traffic Options Program for Driving While Intoxicated (STOP-DWI) in late 1981. The empowering legislation requires that the program be evaluated by March, 1985. This preliminary analysis is the first of a series of interim evaluation studies.

There has been a significant reduction in traffic fatalities in New York in 1982 over previous years. This analysis evaluates various hypotheses as to why this reduction may have occurred. Hypotheses discussed are: severe weather; the economy; restraint usage; vehicle mix; reduced speed; and emergency medical care. After reviewing each of these factors, a tentative conclusion is presented that the Special Traffic Options Program for Driving While Intoxicated law appears to have had some impact on the reduction in traffic fatalities. It is expected that in the future, additional data will be analyzed in a similar fashion, to support the formal assessment of the impact of the STOP-DWI Program.

The basic findings made by the staff of the Office of Alcohol and Highway Safety (OAHS) were that fatal accidents statewide showed a significant decrease last year and that specific time frames, such as late night hours and holidays, showed the most visible reduction. While the overall accident and injury occurrence remain unchanged, the late night period again shows significant reduction.

ENCLOSED CHARTS

As part of the initial STOP-DWI Administrative Evaluation, a detailed analysis of the Statewide accident reporting system and historical comparisons was undertaken by staff of the Office of Alcohol and Highway Safety (OAHS) in the Department of Motor Vehicles (DMV).

The accident reporting system maintained by the Department of Motor Vehicles (DMV) depends totally on the accuracy and detail of reports which, by law and as a matter of procedure, must be completed by police officers at the scene of the accident. Historically, alcohol as a contributing factor in accidents has been greatly under reported. For that reason, accurate analysis of its true impact and contribution to the accidents occurring in New York State is problematic. Several surrogate measures of alcohol's true impact in highway accidents have been utilized in the past, but each is somewhat lacking. In the analysis prepared by this office, a new measure was utilized. A seven-hour period of time (10:00 p.m. to 5:00 a.m.) was segregated for analysis and utilized as a measure of alcohol and driving. Analysis on all criteria was performed comparing the average of the three years directly preceding the initiation of STOP-DWI with the accidents occurring in the first year of the program.

Our initial findings indicate that New York State experienced a decrease in severity of motor vehicle accidents in 1982 as compared to the previous three-year average (see Chart I). Vehicle occupants account for 87% of the total injured and killed in any one year. Non-vehicle occupants were excluded from the analysis, because the nature and severity of the injury of bicyclists and pedestrians may be highly variable.

The total of 207,159 vehicle occupants killed or injured in 1982 represents a one-half of one percent increase as compared to the 1979 through 1981 average. This overall increase is due primarily to a substantial increase (4.8%) of individuals classified as having received a "C" injury. The DMV

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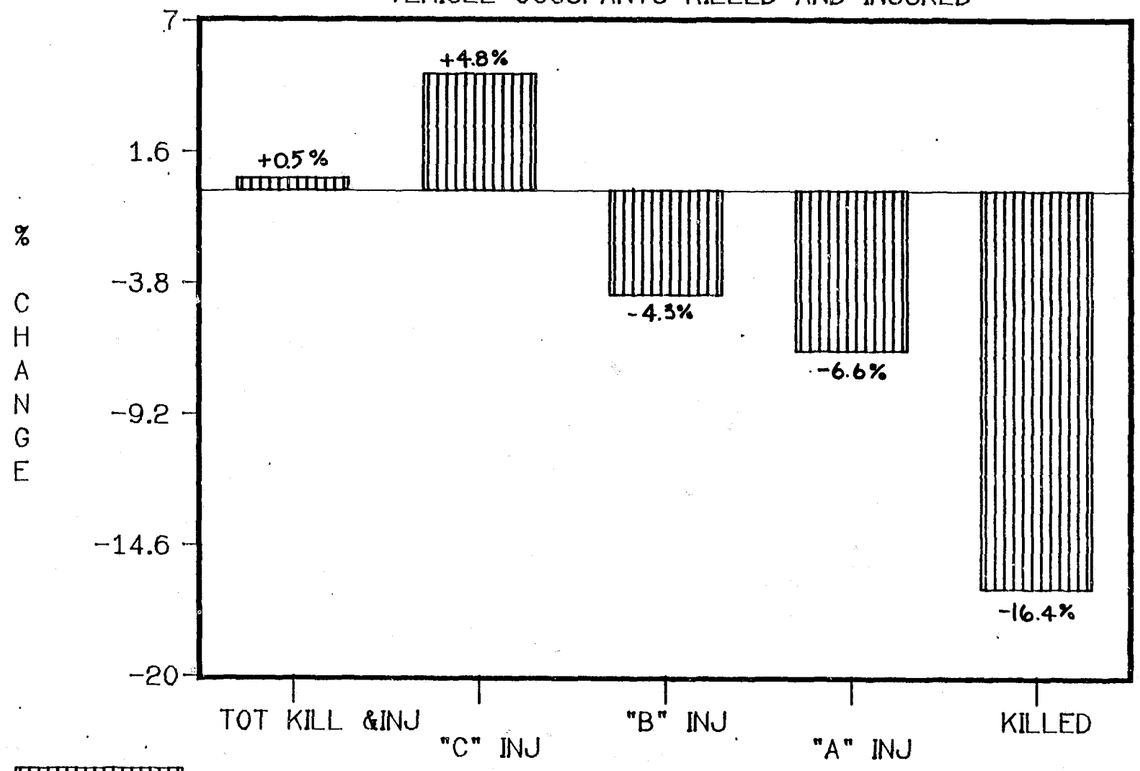
VEHICLE OCCUPANTS KILLED AND INJURED



1982 VS 1979-1981

PREPARED ON APRIL 18, 1983

CHART I

defines a "C" injury on its accident reports as "injuries including momentary unconsciousness, limping, nausea, hysteria, and/or complaints of pain with no visible injury." Discussions with several insurance companies indicated that reported increases in these least severe injuries may occur during more depressed economic periods. Reporting of these types of injuries has an inverse relationship with the economy. "B" injuries, defined as a "lump on the head, abrasions, and/or minor lacerations," showed a decrease of 4.3% in 1982. "A" injuries, defined as "several lacerations, broken or distorted limbs, skull fractures, crushed chest, internal injuries, unconsciousness when taken from the accident scene, and/or unable to leave the accident scene without assistance," decreased 6.6%. "Vehicle occupants killed" declined 16.4%.

The primary hypothesis explored for these changes in the accident picture was that the Special Traffic Options Program for Driving While Intoxicated (STOP-DWI) effort has had some effect on the driving patterns and resultant accidents of individuals utilizing the roads of New York State. The other new significant drinking driver law raised the purchase age of alcoholic beverages to 19. Because that law did not come into effect until the last month of the year, its impact was not considered significant and will be analyzed in later studies.

Several alternative hypotheses for the change in the accident picture were explored and our findings on these are as follows:

Severe Weather: In the initial stages of the program, much discussion centered on the effects of winter driving, particularly in January, February, and April, 1982, all of which reflected greater than anticipated drops in fatalities

and fatal accidents (see Chart II). However, there were significant decreases in fatalities experienced in months when weather was not a factor. Therefore, weather contributed somewhat to the general trend. However, this was not sustained through the entire year and does not account for the overall reductions.

Economy: The National Highway Traffic Safety Administration (NHTSA) attributed primary causality to economic variables reflected nationwide in the 10% reduction in fatalities as reported in its Fatal Accident Reporting System (FARS). However, while NHTSA has established some relationship between the Gross National Product and accidents, and is studying an apparent inverse relationship when comparing fatal accidents with the unemployment percentage in specific states, these relationships are not perfect and have yet to be validated. In New York State, the Institute for Traffic Safety Management and Research (ITSMR) is studying correlations between unemployment and highway fatalities. Nationwide, the areas of greatest unemployment are not necessarily those with the greatest decrease in fatalities. Additionally, if one accepts a fatality as a random event, a better measure of economic contribution may be in injuries or overall accidents which last year remained relatively unchanged (see Charts III and IV). The State of Michigan experienced a substantial decrease in fatalities (11%)

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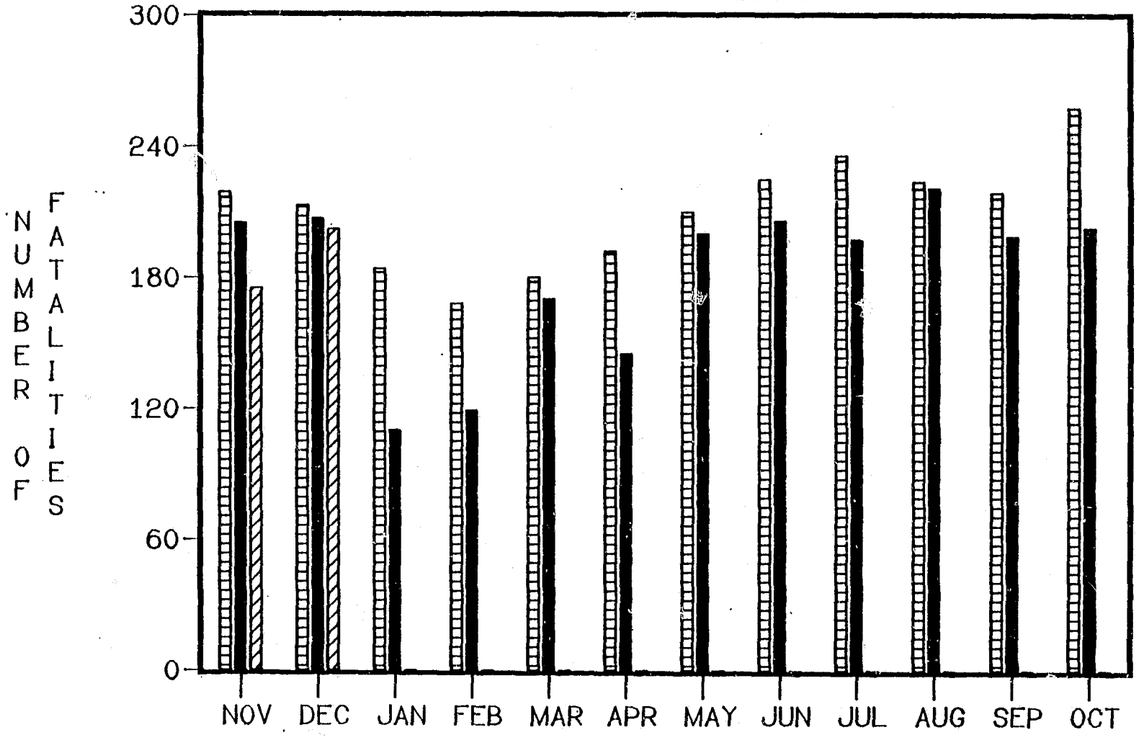
MONTHLY FATALITIES



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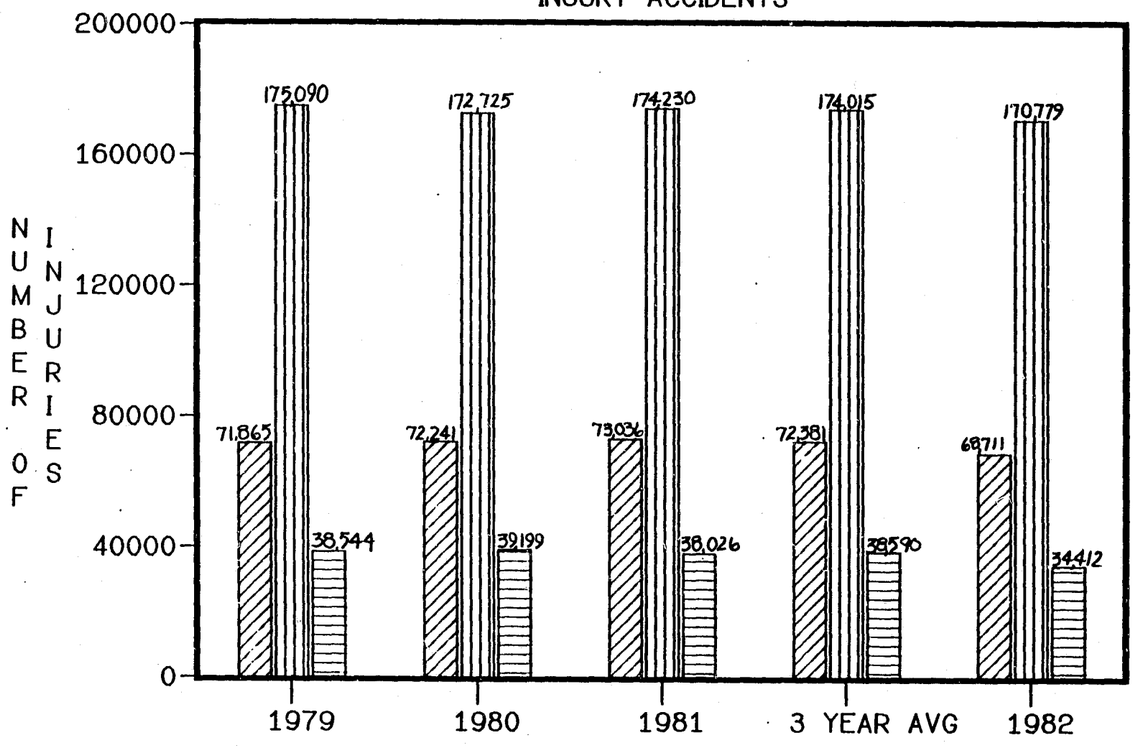
NYS DMV OFFICE OF ALCOHOL AND HIGHWAY SAFETY

INJURY ACCIDENTS



YEAR

PREPARED ON APRIL 4, 1983

STATEWIDE

1982 VS 3YR AVG

INJURY ACCIDENTS
6PM-6AM -5.1%

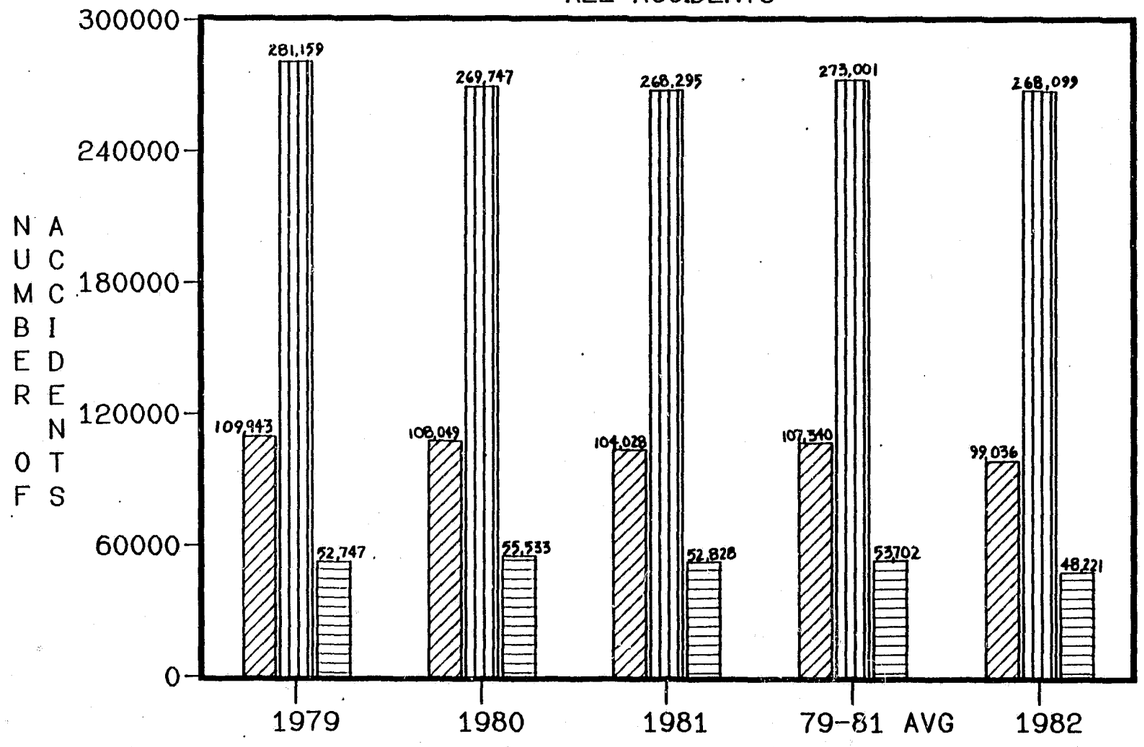
ALL INJURY ACCIDENTS
-1.9%

INJURY ACCIDENTS
10PM-5AM -10.8%

CHART III

NYS DMV OFFICE OF ALCOHOL AND HIGHWAY SAFETY

ALL ACCIDENTS



YEAR

PREPARED ON APRIL 4, 1983

STATEWIDE

1982 VS 3YR AVG

ACCIDENTS
6PM-6AM -7.7%

ALL ACCIDENTS
-1.8%

ACCIDENTS
10PM-5AM -10.2%

CHART IV

in 1982 as compared to 1981. They attributed primary causality to the economic variable, specifically citing decreases in miles driven. However, according to the New York State Department of Transportation, miles driven in New York increased last year. It is our opinion that while the economy, and most notably the percentage of unemployment, may be a contributing factor to occurrence of fatal accidents in New York State, the total impact of this variable is as yet undetermined and may be more of a factor in specific regions of the State rather than the state as a whole.

Restraint Usage: DMV accident reports indicate that there was a significant increase in restraint usage in 1981 versus 1982, from 10.6% to 12.4% for all drivers and passengers in New York. However, child restraint usage significantly increased as a direct result of the enactment of the Child Restraint Law in April. The number of restrained children more than doubled. Vehicle occupants using lap belts, harnesses, or lap belt and harness showed a slight increase. It is possible that better reporting could be a factor, as the percentage listed on accident reports as "Unspecified" showed a decrease. However, where "No Restraint Used" was listed on the report, the decrease observed was minimal. It is likely, therefore, that while increased restraint usage did contribute to the general decline in accident severity,

particularly among young children, the overall impact of this variable is minimal.

Vehicle Mix: According to federal estimates, there is a growing proportion of smaller cars on the roads competing for space with larger vehicles such as trucks. NHTSA studies found this situation is likely to produce more, rather than less severe accidents. In New York State, the type of vehicle involved in an accident remains relatively unchanged. Passenger vehicles continue to comprise approximately 80% of the accident-involved vehicles. However, vehicles in use are getting somewhat older, now averaging approximately 5 1/2 to 6 years and show a slight increase in vehicle defects (up approximately 2%) when compared to 1981. None of these indicies would support a decrease in severity.

Reduced Speed: While it is true that a sharp reduction in average speed would reduce accident severity, surveys by the New York State Police and the New York State Department of Transportation do not support that a reduction in speed is actually occurring. Federal estimates have

indicated the opposite to be true, and several states may face loss of 55 miles per hour highway funds, as they are no longer in compliance with Federal statutes.

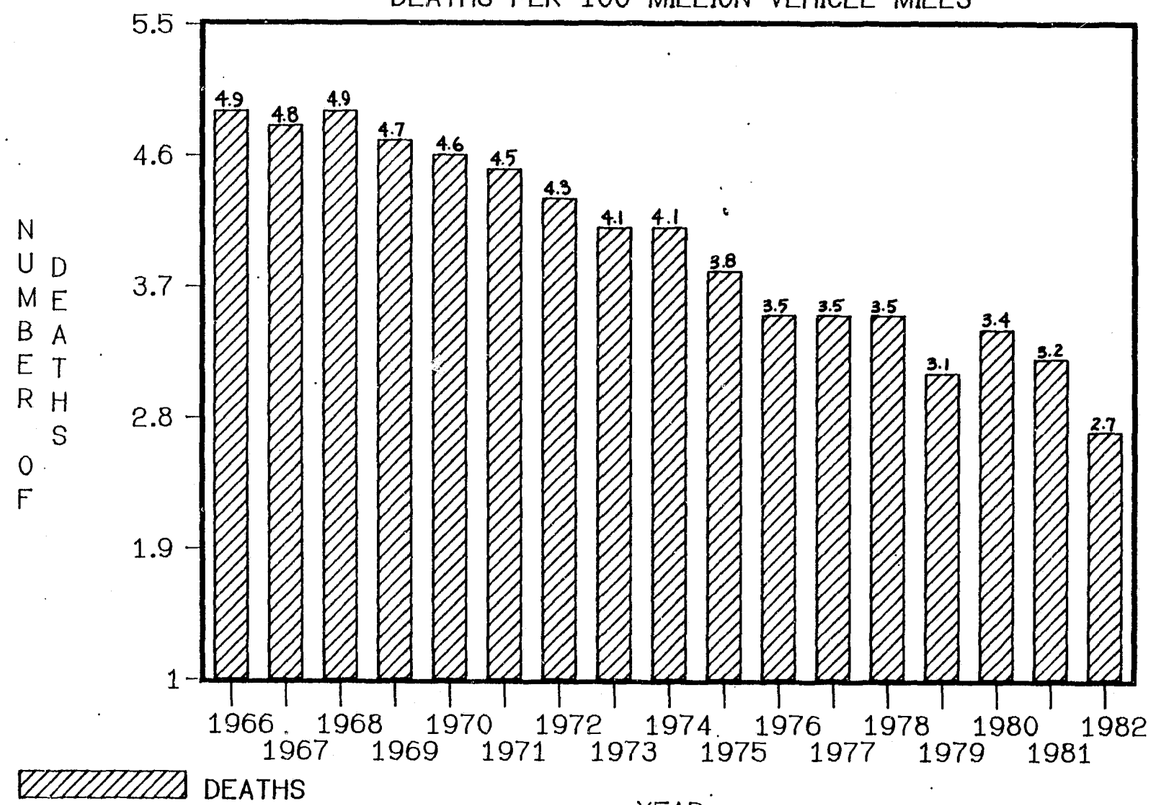
Improved Emergency Medical Response: Theoretically, if Emergency Medical Technicians are better trained, equipped, and respond more quickly, accident severity should decrease. The New York State Department of Health has been unable to furnish documentation to support this hypothesis as actually having occurred in New York.

We must return to our primary hypothesis and analyze alcohol as a contributing factor to ascertain its proportion of responsibility for the decrease.

The Federal Government has indicated that in 1982 we have had the fewest number of fatal accidents ever experienced in our country (3.0 per hundred million vehicle miles driven). In New York State, reports indicate 2.7 deaths per hundred million miles driven. This decrease continued and accelerated a trend which began in 1966 (see Chart V). The Department of Motor Vehicles Accident Reports for 1982 indicate a decrease in motor vehicle deaths of 14.39% in 1982 as compared to 1981. The 1,947 fatal accidents and the 2,147 fatalities occurring in 1982 were the fewest since 1960. In that year, there were 75% of the current licenses and 61% of the current registrations in effect, representing a significantly smaller population base. The rate of decrease in fatal accidents is the steepest since the World War II years of 1941 through 1943, when gasoline rationing and other driving limitations were imposed. Only at two other times were similar decreases noted. One was during the depression (1938) and the other during the gas crises of 1974-75 and 1979. Total motor vehicle deaths for 1982

NYS DMV OFFICE OF ALCOHOL AND HIGHWAY SAFETY

DEATHS PER 100 MILLION VEHICLE MILES



PREPARED ON APRIL 18, 1983

CHART V

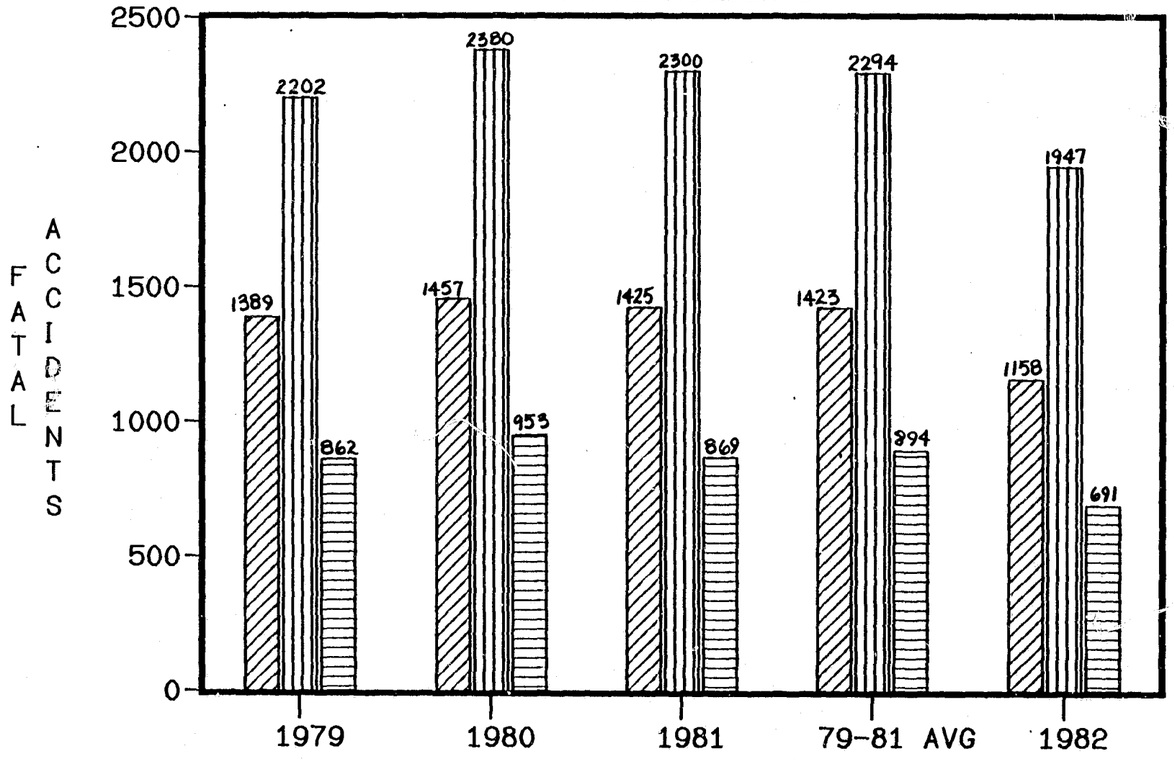
are down 354 versus the previous three-year average. Available data indicates that this downward trend has been consistent during the 14 months since the inception of the STOP-DWI program.

The analysis of accidents was broken down into three distinct categories. Aside from the overall trends, staff analyzed two "evening hour" time frames: (1) the standard DMV 6:00 p.m. to 6:00 a.m. nighttime, and (2) a new standard which was designated "Bar Hours." The "Bar Hours" period of 10:00 p.m. to 5:00 a.m. were chosen, as they comprise the hours of greatest discretionary driving with highest presumed alcohol involvement. It would be less likely that individuals would be on the road for work, commuting, touring or going to or from meals during this period. Additionally, 20 counties of the state which account for 75% of the population and 72% of the licensed drivers, have bar closings uniformly at 4:00 a.m. The final consideration for this time selection was the known reported alcohol activity during these hours. Overall in 1982, 43% of all fatal accidents were reported as alcohol-related. During the 6:00 p.m. to 6:00 a.m. period, 60% were alcohol-related. During the 10:00 p.m. to 5:00 a.m. time frame, better than 71% of all reported fatal accidents indicated alcohol involvement.

As was previously indicated, the totals for injury accidents and all accidents (Charts III and IV) show very modest declines between the previous three-year average and 1982. However, the 6:00 p.m. to 6:00 a.m. portion outlined in Charts III and IV shows substantial decreases in both injury accidents (-5.1%) and all accidents (-7.7%). The "Bar Hours" segment shows an even larger decline of over 10% in both cases. The decrease was consistent throughout the year and suggests a substantial change in the overall driving pattern. When fatal accidents (Chart VI) are examined, an even sharper decline is noted. While all fatal accidents (-15.1%) and nighttime fatal accidents

NYS DMV OFFICE OF ALCOHOL AND HIGHWAY SAFETY

FATAL ACCIDENTS



PREPARED ON APRIL 4, 1983

1982 VS 3YR AVG

FATAL ACCIDENTS
6PM - 6AM -18.7%

ALL FATAL ACCIDENTS
-15.1%

FATAL ACCIDENTS
10 PM - 5AM -22.8%

CHART VI

(-18.7%) show substantial decreases, it is the "Bar Hours" which show the most dramatic drop (-22.8%). Again, this general trend has been continuous since the STOP-DWI program was initiated.

Additionally, holidays and weekends were analyzed. This analysis began as a result of United Press International (UPI) reports of eight deaths during the New Year's Holiday Weekend. The Department of Motor Vehicles Division of Research and Development provided fatal accident statistics for the last 13 years. The number of fatal accidents was normalized to reflect the average number of fatal accidents per hour, as the time periods for the holidays vary. The six holidays analyzed by DMV on an annual basis are: New Years, Memorial Day, Independence Day, Labor Day, Thanksgiving and Christmas. For the 76 holidays prior to initiation of the law, there was one fatal accident every three hours and 43 minutes. In the nine holidays since the STOP-DWI law, there was one fatal accident every five hours and 23 minutes. A difference of means test was performed with a resultant Z score of +5.16. The results are statistically significant at the 99.9% confidence level which indicates that the change did not occur as a result of chance. Additionally, weekends since the enactment of STOP-DWI show a 15.8% decrease in fatalities.

The Department's Division of Research and Development reports on accident activity in three overall areas of New York State: (1) The five boroughs of New York City; (2) Rural areas, which are comprised of the State's towns; and (3) Urban areas, which are comprised of cities, most villages, and six urban towns including Tonawanda and Niskayuna.

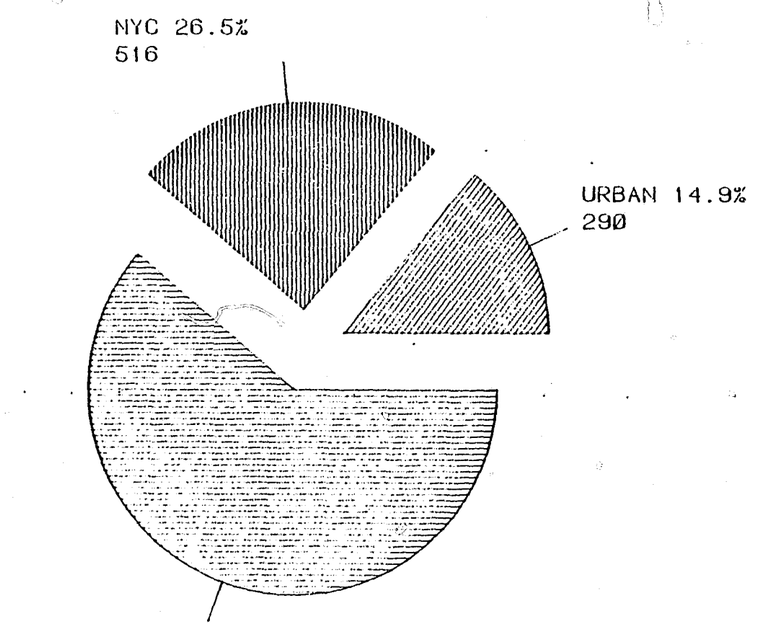
The largest percentage of roadway jurisdiction over 60% is in areas classified as rural. Urban roads account for better than 20%, and New York City approximately 15% of the lined roadway. In New York State, the distribution of fatal accidents on these roads has remained relatively unchanged for

the past few years. That is, rural areas account for nearly 60% of all fatal accidents, New York City approximately 25%, and urban areas approximately 15%. The 1982 figures, while continuing that trend (see Chart VII), do reflect a difference in the general rates of decline. In fact, overall urban areas showed an increase in fatal accidents in 1982 versus the previous three-year average (see Chart VIII). New York City showed a substantial decrease, and rural areas had the largest rate of decrease.

In urban areas, we found that while overall there was a 3.1% increase in urban fatal accidents (Chart IX), the time period of 10:00 p.m. to 5:00 a.m. showed a decrease of 18.5%. All reported accidents in the urban area showed a similar trend with an overall increase and a sharp drop (-8.4%) during the late night bar hours. Additionally, pedestrian fatalities in areas classified as urban showed a dramatic increase last year. Pedestrian fatal accidents went from a three-year average of just over 97 to 120, a 23.3% increase. This mirrors the total daylight hours (6:00 a.m. to 6:00 p.m.) fatal accident experience which rose just over 23%. In this connection, the reports of Blood Alcohol Content (BAC) filed by county coroners indicates a minor negative shift among drivers; that is, the average BAC of drivers in 1981 was .155, while the first nine months of BAC results in 1982 showed an average BAC of .143. At the same time, the average BAC of pedestrians rose. While this difference is not presumed to be significant, it may relate to two phenomena we have recently experienced. One is the repeal of public intoxication laws in New York State. The other is the purported loss of revenue by tavern owners. The bar patron in the urban environment having access to alternative modes of transportation may elect to walk rather than drive. In the City of Albany, for example, this alternative was actively promoted by some downtown tavern owners. Rural areas have no easy access to alternative modes of transportation. The tavern owners

NYS DMV OFFICE OF ALCOHOL AND HIGHWAY SAFETY

FATAL ACCIDENTS

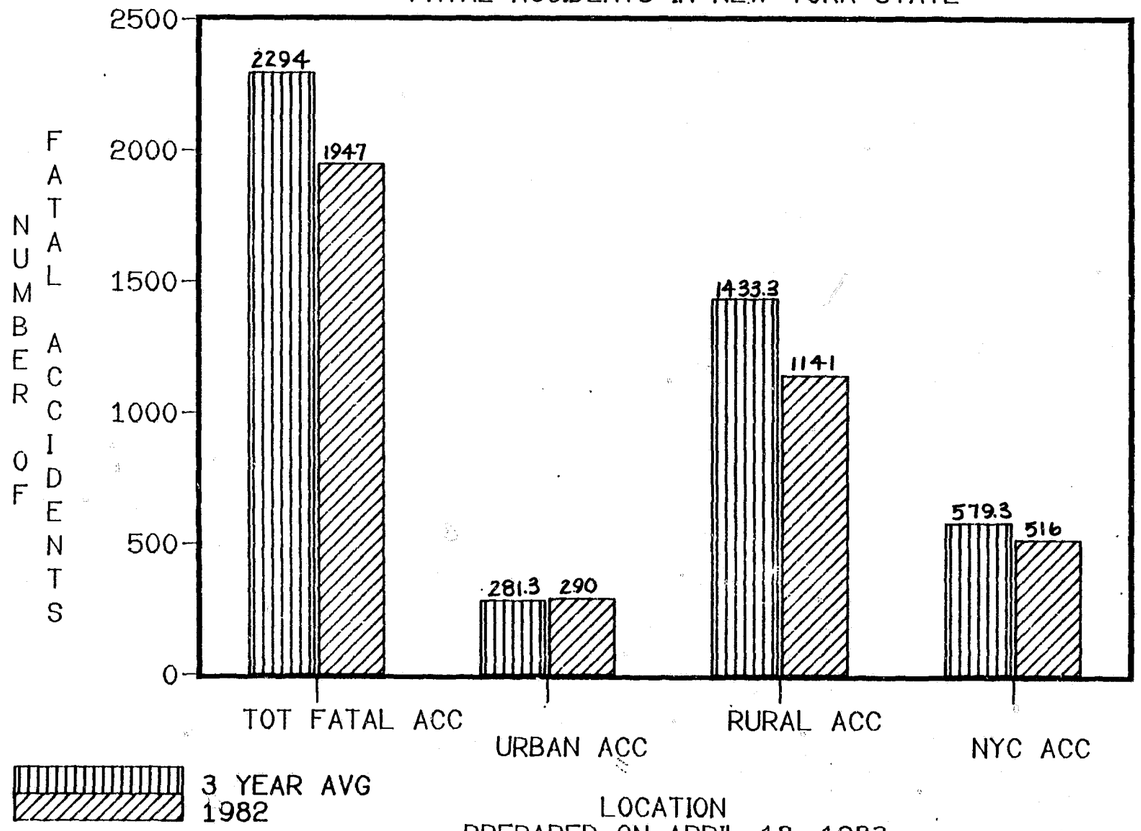


1982
PREPARED ON APRIL 4, 1983

CHART VII

NYS DMV OFFICE OF ALCOHOL AND HIGHWAY SAFETY

FATAL ACCIDENTS IN NEW YORK STATE



LOCATION

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1982 VS 3YR AVG

STATEWIDE FATAL ACCIDENTS
-15.1%

URBAN FATAL ACCIDENTS
+3.1%

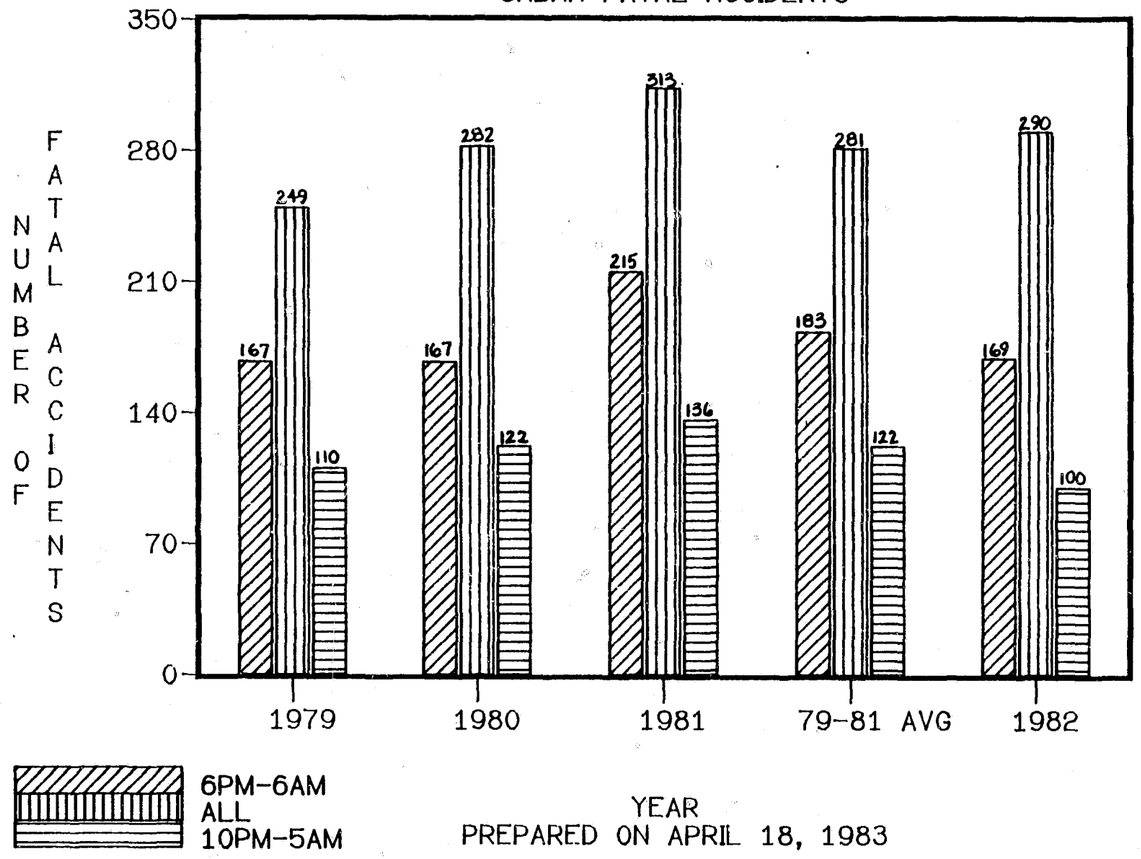
RURAL FATAL ACCIDENTS
-20.4%

NEW YORK CITY FATAL ACCIDENT
-10.9%

CHART VIII

NYS DMV OFFICE OF ALCOHOL AND HIGHWAY SAFETY

URBAN FATAL ACCIDENTS



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URBAN AREAS
1982 VS 3YR AVG
FATAL ACCIDENTS
6PM-6AM -7.7%
ALL FATAL ACCIDENTS
+3.1%
FATAL ACCIDENTS
10PM-5PM -18.5%

CHART IX

in these areas have been particularly vocal in their opposition to legislation which they say has affected their business. But, an examination of the fatal accident experience in rural areas reveals a consistent 20% or greater decline across all time frames (see Chart X).

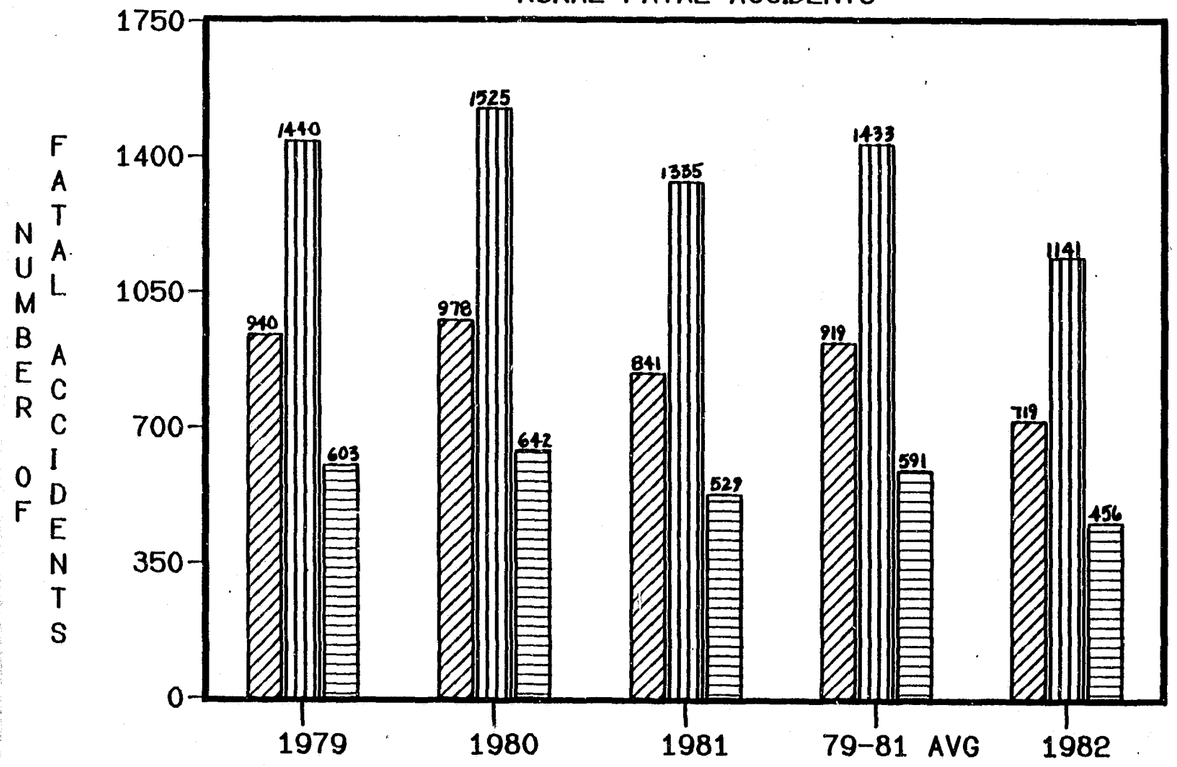
The accident analysis of New York City reinforces the dramatic effects of the late night hour decline. New York City experienced better than a 25% reduction in "Bar Hour" fatal accidents (see Chart XI), while daylight hours experienced less than a 4% reduction in fatal accidents.

Based on accident cost estimates provided by the Division of Alcoholism and Alcohol Abuse (DAAA), it is reasonable to assume that nearly a quarter of a billion dollars has been saved due to the reduction in alcohol-related accidents.

While it is true that a direct causal relationship has yet to be established, the initial evidence cannot be ignored. The fatal accident decline commenced coincidentally with the enactment of the STOP-DWI program; and historically, all other steep declines have been associated with specific "social events" such as the Depression, the War Years, and the oil embargo and gas shortage years. Each month since the program began, the number of deaths was lower than the same month's total for the previous year. The hours of presumed greatest proportion of drinking drivers being on the road show the greatest decrease in fatal accidents. Holiday periods, when drinking has become a part of the celebration, show a statistically significant decrease in fatal accidents. Rural areas, where tavern owners themselves cite loss of revenue, show the greatest and most consistent fatal accident decrease. While all accidents and injury accidents in general show no decrease, the "Bar Hour" segment is down more than 10%. Alternative hypotheses, such as weather and economy to the primary role of STOP-DWI, do provide some explanation of a portion of the decline, but fail to account for the totality and the entire scope of this phenomenon.

NYS DMV OFFICE OF ALCOHOL AND HIGHWAY SAFETY

RURAL FATAL ACCIDENTS



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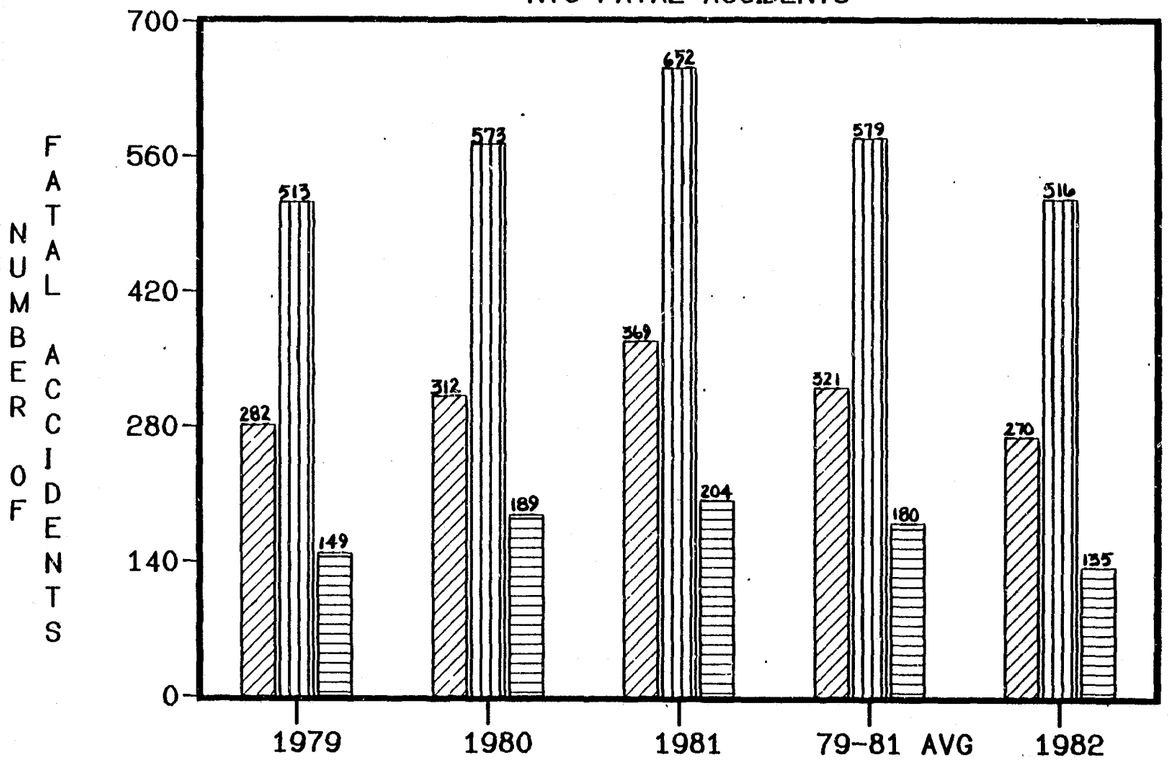
RURAL AREAS
1982 VS 3YR AVG
FATAL ACCIDENTS
6PM-6AM -21.8%
ALL FATAL ACCIDENTS
-20.4%
FATAL ACCIDENTS
10PM-5AM -22.9%

CHART X

NYS DMV OFFICE OF ALCOHOL AND HIGHWAY SAFETY

NYC FATAL ACCIDENTS



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NEW YORK CITY
1982 VS 3YR AVG
FATAL ACCIDENTS
6PM-6AM -15.9%
ALL FATAL ACCIDENTS
-10.9%
FATAL ACCIDENTS
10PM-5AM -25.3%

CHART XI

END