Traffic-related Mortality in the United States, 1968-84: Epidemiologic Analysis with an Emphasis on Traffic Mode Mix

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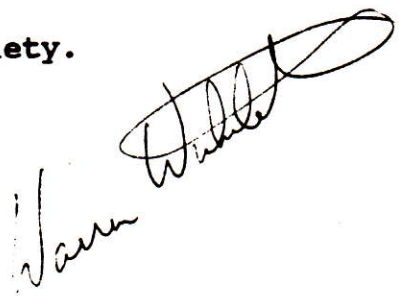
ABSTRACT

Motor vehicle (MV) injury is an underrecognized major public health problem in the United States and worldwide today. This study (i) briefly reviews research concepts, risk factors, and prevention of MV injuries, emphasizing the existence of transport mode alternatives, (ii) examines regional differences and historical trends of MV traffic mortality rates in states and counties of the United States during 1968-84, and (iii) attempts to evaluate usage of automobiles and of public transportation as potential predictors of these rates. Using mortality and population data from the SEEDIS database system, population-based sex-specific crude and age-adjusted annual MV traffic mortality rates among whites were calculated, together with 95% confidence intervals and rate ratios. Presentation of the results includes mapping. Significant geographic variation was found on state and county level for rates of both males and females, indicating a distinct geographic pattern, and an inverse relationship with population density. Temporal trends of MV mortality rates were examined for males only in all states and in selected counties. In many areas, rates were essentially constant over time, reconfirming the geographic pattern familiar from cross-sectional analyses. Trends of other areas,

however, revealed gradual or sudden changes of the rates, sometimes of considerable magnitude. - Public transit modes are known to be safer than automobiles compared by passenger distance traveled, but it is not a trivial question how transport mode mix translates into the MV mortality experience of a region. The impact of driving and public transit usage (for the journey-to-work) on MV mortality rates was evaluated by multiple regression analysis, controlling for population density, education, income, and other factors. Analyses were based on essentially all counties of the contiguous United States, subsequently on those counties with large populations only. The results can be interpreted to show that public transit is not a prerequisite but an effective way to achieve lower MV mortality rates. Since traffic mode mix contributes directly to the morbidity and mortality experience of a population, public health professionals should actively participate in the search for solutions to reconcile mobility needs and safety needs of society.



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List of Abbreviations

AIS	Abbreviated Injury Scale
AJPH	American Journal of Public Health
BAC	blood alcohol concentration
C.I.	confidence interval
CVD	cardiovascular diseases
CDC	Centers for Disease Control
DHEW	Department of Health, Education, and Welfare
DHHS	Department of Health and Human Services
DOT	Department of Transportation
F	females
FARS	Fatal Accident Reporting System
fig.	figure
ICD	International Classification of Diseases
ICD-E	external cause of death, ICD
ICD-N	"nature" of injury, ICD
JAMA	Journal of the American Medical Association
LL	lower limit
ln	natural logarithm
M	males
MMWR	Morbidity and Mortality Weekly Report
MV	motor vehicle
MVT	motor vehicle traffic
MVTM	motor vehicle traffic mortality
N	nonwhite population
NASS	National Accident Sampling System
NCHS	National Center for Health Statistics
NEJM	New England Journal of Medicine
NHIS	National Health Interview Survey
NHTSA	National Highway Traffic Safety Administration
P	probability
RD	rate difference
RR	rate ratio
S.E.	standard error
SEEDIS	Socio-Economic-Environmental Demographic Information System
UL	upper limit
vs.	versus
W,Wh	white population
WF	white females
WHO	World Health Organization
WM	white males
y	years of age
YPLL	years of potential life lost
#	number

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