Reducing Mortality from Motor Vehicle Crashes for Children 0 through 14 Years of Age:

Success in New York and North Dakota

A Report for the
Maternal and Child Health Bureau

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EXECUTIVE SUMMARY

Background and Purpose: Unintentional injuries are a leading cause of death for children 0 through 14 years of age. Traffic related deaths of motor vehicle occupants, pedestrians, bicyclists, motorcyclists, and others represent one-third (32%) of all injury deaths of these children and 41 percent of all unintentional injury deaths. Reduction of motor vehicle crash (MVC) mortality for children 0 through 14 years is a goal of the Federal Maternal and Child Health Bureau (MCHB) and the states they fund through the Title V Program. Routine reporting to the Bureau indicates that New York and North Dakota were among the best performing states in regard to this measure of child health. This project was funded to review the evidence regarding effective interventions to reduce MVC mortality among children and to explore what was and is happening in New York and North Dakota that contributes to their success.

Trends in MVC deaths: Overall motor vehicle crash mortality rates for US children 0-14 years decreased over the last decade. In the 1990s, mortality decreased for males, for White and for Hispanic children. Rates for other groups were relatively stable (females) or varied (Blacks, American Indians/Alaskan Natives, and Asian/Pacific Islanders). Males were more likely to die in an MVC than were females. Black children and American Indian/Alaskan Native children were more likely to die in MVCs than were White, Asian/Pacific Islander, or Hispanic children. These differences have persisted since 1991. Risk of MVC mortality increases with child age and is highest for motor vehicle occupants.

Summary of the Literature Review: Interventions to reduce injury and death from MVCs can focus on 3 factors: the host, i.e., make the child safer; the agent, i.e., make the car safer; and the environment, i.e., make the roadways safer. Effective regulatory and legislative interventions to prevent MVC mortality among children and others include child restraint laws with primary enforcement, graduated driver licensing, bicycle helmet laws, and laws prohibiting driving while intoxicated among others. Education programs are important and may be most effective when combined with other approaches. Interventions should be multifocal and may involve multiple agencies. Interventions that most closely match the needs and capabilities of the community are important. Continued evaluation serves to enhance knowledge of effective, efficient, and economical approaches.

Success in New York: For the past decade, in every demographic category (gender, race/ethnicity, and age group), New York children under age 15 have been less likely to die in a motor vehicle crash compared to all children in the United States. In 2001, 1.9 New York children under 15 per 100,000 population were victims of an MVC compared to 3.7 children per 100,000 in the US. In addition, New York MVC mortality rates for children 0-14 years have consistently been among the lowest of the urban states in the comparison group. Over the years examined, New York's motor vehicle crash mortality rates have decreased for male and female children and for white and black children. Substantial gains have been made in reducing deaths of young adolescents (10-14 years). Their 2001 mortality rate of 2.0 per 100,000 population is now only slightly higher than that of younger children (1.8).

Many factors in New York contribute to their traffic safety success. Not the least is a long-term commitment to passenger safety. The Governor's Traffic Safety Committee has been in existence for 37 years and includes representatives from multiple organizations. Stringent traffic safety laws, active enforcement, comprehensive and ongoing education, modification of traffic

environment and local empowerment also contribute to New York's success. The following highlighted activities were identified as important to New York's exemplary performance.

- **Car Seat Laws and Promotion**: New York was one of the first states to require car seats and supported this legislation with primary enforcement. They have helped parents comply with the law with car seat distribution and efforts to ensure proper installation.
- **Seat Belt Laws**: New York was the first state to pass a seat belt law and included provision for primary enforcement from the beginning.
- **Financial Support for Local Initiatives**: New York encourages counties to assess their own needs to reduce injuries and develop appropriate plans to address them. NHTSA funds are available to implement local programs.
- **Innovative DWI Prevention**: The STOP-DWI program appears to be a valuable approach to reducing alcohol and other substance related motor vehicle deaths and is an example of local empowerment.
- **Recognition of the Need for Continual and Innovative Public Education**: New York has a long history of educating the public regarding prevention of child motor vehicle deaths including providing information to parents that is multilingual and written for low literacy.
- **Enforcement of Laws**: New York officials indicate a strong belief that New Yorkers know their laws will be enforced and modify their behavior to comply.
- **Good Roads:** A factor identified by state officials is the good condition of highways.

Success in North Dakota: From 1991 through 1998 and from 1999 through 2001, North Dakota children fared better than children in the US as a group, with a motor vehicle crash mortality rate of 3.0 per 100,000 children compared to the US rate of 4.8 in the earlier period and 3.7 compared to 3.9 for the most recent time period. Of the 48 children aged 0-14 years who died in MVCs in North Dakota from 1991 through 2001, more than half (54%) were 10-14 years of age. Almost three-quarters (73%) were motor vehicle occupants. In the aggregate periods examined (1991-98 and 1999-2001), North Dakota had the lowest MVC mortality rate among the rural states examined, averaging 4.4 deaths per year. In the earlier period, the MVC mortality rate for Whites was comparable to that of Native Americans. In the most recent three years (after implementation of a new coding system), the rate for all groups but particularly for Native Americans is noticeably higher. The rate instability due to small numbers must be kept in mind

North Dakota has a well-established program to prevent MVC injuries of children. Immediately apparent is the "small town feel" of this large and rural state. The population is relatively homogeneous and there is good inter-agency cooperation including the Departments of Health and Transportation, and the State Highway Patrol. Important contributors to North Dakota's success include:

- **Longevity of the Traffic Safety Program:** The Injury Prevention Program of the Division of Maternal and Children Health is led by Carol Meidinger who has served in the Injury Prevention Program for over twenty years and brings that experience to national boards and committees on which she also serves.
- **Multiagency Collaboration**: The collaboration and collegiality of agency officials from multiple and diverse agencies contributes to North Dakota's success. Those interviewed for this report exhibited a collegiality that comes from years of working together.
- **Child Restraint Laws:** North Dakota passed its first child passenger safety law over 20 years ago and has expanded the scope of the law in the intervening period to cover all children under 18 years of age. There is primary enforcement of the restraint/seat belt laws.

- **Ongoing Education and Technical Support for Passenger Safety:** There is a coordinated statewide effort to provide car seats to needy families and to train car seat technicians to ensure that seats are properly installed and children properly restrained. Over the 20 years of the program, multiple public education efforts have been launched. Important to North Dakota's efforts is the continual evaluation of the program with the discontinuance of campaigns that do not accomplish the goals of the program.
- **Inclusive Child Fatality Review**: North Dakota's inclusive Child Fatality Review process puts a "face" with the death of every child in North Dakota. Inclusion of all unexpected deaths puts a priority on preventing injury deaths be they intentional or unintentional. The report of this Panel was cited by state officials as important in their work with the state legislature.

In summary: The value of a long-term coordinated effort cannot be overemphasized. Many states have implemented regulatory and educational programs to prevent motor vehicle crash mortality but with less success. The extent to which states can maintain long-term, coordinated traffic safety efforts that are consistently brought to the public's attention through traffic laws with stringent enforcement, public education, and community-based activities, they are more likely to achieve improved rates of indicators of motor vehicle safety.

BACKGROUND

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The Federal Maternal and Child Health Bureau (MCHB) administers the Title V program, a federal program devoted to improving the health of children and mothers. Each state receives funds from MCHB annually to support activities to meet the goals of Title V. Through the block grant application process by which funds are allocated, each state describes its program structure and specific activities to accomplish the Title V goals.

Since the mid-1990s block grant applications must also include indicators of how well states are accomplishing their goals to improve the health of mothers and children. MCHB requires that all states report on a core set of performance and outcome measures. In addition, individual states select state performance and outcome measures by which to assess their progress in areas of particular concern to that state. States are given instructions regarding measurement of each performance or outcome measure. There is some latitude, however, in the reporting of these data in order to avoid costly and/or time-consuming efforts to produce reports that replicate to a great extent others being prepared by the state for other purposes. Each state completes a specific indicator form (Form 11) that defines each indicator to be reported in its block grant application.

The Title V Information System (TVIS) was developed by MCHB to compile, among other data, the states' reports for the national performance and outcome indicators as well as state-negotiated indicators. These data are available on the world wide web (https://performance.hrsa.gov/mchb/mchreports/index.asp) and allow examination of individual state performance and comparison of performance across states. Data are available for 1998 through 2001 for most states and indicators while some states report data from as early as 1996 and/or as recently as 2002.

As multiple years of data become available, they provide a valuable tool by which individual states can judge their progress in improving health. In addition, states can be compared to identify those states with particularly good performance. The goal of this project was to determine what was and is happening in states with notable performance for specific indicators and how that experience could benefit other states that are still working to meet their goals. MCHB recently looked at the accumulated data and identified an indicator to examine further:

- Performance Measure #10 – The rate of deaths of children aged 14 years and younger caused by motor vehicle crashes per 100,000 children.

Examination of the data for this indicator found that New York and North Dakota performed well compared to large urban (New York) or rural (North Dakota) states in regard to reducing motor vehicle crash deaths for children 14 years of age and under. The "urban" states chosen by MCHB for comparison were the nine most populous states, which also happen to have large cities. The comparison "rural" states were chosen based on their low population density.

The Child Health Program at the Cecil G. Sheps Center for Health Services Research at the University of North Carolina at Chapel Hill was asked to look more closely at the experience of New York and North Dakota in regard to their programs to reduce child mortality from motor vehicle crashes. Staff at the Sheps Center used multiple methods to collect information for the study including a literature search to discover interventions that have been implemented and

evaluated for their effectiveness, a more detailed analysis of secondary data for the indicator, and visits to each state to interview key informants.

In this report, the importance of motor vehicle crashes as a cause of death for children is discussed and the evidence regarding effective interventions to reduce injury and mortality is reviewed. In the second and third parts of the report, the rates of motor vehicle crash mortality among children 14 years and younger in New York and North Dakota are compared to rates in other urban or rural states and the efforts of the highlighted state to reduce this threat to children are described.

CONTRIBUTION OF MOTOR VEHICLE CRASHES TO CHILD MORTALITY

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Trends in Overall Mortality for US Children 0-14 Years of Age

Unintentional injuries, which include motor vehicle crash injuries, have been the leading cause of death for children 1 through 14 years of age since at least 1981, the first year for which data are available on the CDC's WISQARS website described below (CDC, 3-1-04). In the most recent year for which data are available (2001), motor vehicle traffic deaths represented 46.4% of all unintentional injury deaths to this group of children.

For children less than one year of age, unintentional injuries have been since 1981 among the ten leading causes of death following congenital anomalies, SIDS and causes related to gestation and perinatal or intrapartum events (CDC, 3-1-04).

Injury Mortality Data

Cause of death is routinely reported on death certificates and is part of state vital record systems that are combined to provide national statistics. Data from the National Center for Health Statistics (NCHS) Vital Statistics System are used by the National Center for Injury Prevention (NCIP) at the Centers for Disease Control and Prevention (CDC) to calculate injury death rates in their Web-based Injury Statistics Query and Reporting System or WISQARS. This web-based query system allows the calculation of injury mortality rates by year, state, gender, race, age, and specific cause of death. In addition, the contribution of injury related mortality is presented in the context of all-cause mortality. Data from 1981 through 2001 are available on WISQARS.

It is important to note, however, that the system used to classify all deaths (International Classification of Disease or ICD) was updated in the late 1990s and specific changes were made regarding the classification of injury deaths in the new version (ICD-10.)[1] ICD-10 codes have been used since 1999. Because the changes made to the ICD system from version 9 to version 10 involved changes in the way injury deaths are classified, there is NOT total agreement between data reported during 1991-98 and 1999-2001. A systematic review of the comparability of mortality rates using ICD-9 and ICD-10 was conducted by the National Center for Health Statistics (Anderson, et al. 2001.) After adjusting for an assumption that deaths occurring on a highway or road without mention of a motor vehicle were likely to have involved a motor vehicle, the comparability ratio for ICD-9 rates compared to ICD-10 rates for MVCs was 0.9754, that is to say that under the new system MVC deaths were 3.2% lower. The authors also note that all states may not be making the same assumption in the reporting of state data. Given the possibility for changes in rates due to definition, when rates have been aggregated in this report, it is only for those years when ICD codes were consistent.

As noted above, vital records data systems are well-established sources of information in all states and may be used by public health program officials including the Title V agencies to examine mortality in their state. It is important, however, to be consistent in definition when comparing mortality rates across years, states, or demographic groups and for this reason, CDC's

[1] ICD-9 codes for all MVC deaths include E810-E825, E958.5, and E988.5. ICD-10 codes include V02-V04, V09.0, V09.2, V12-V14, V19.0-V19.2, V19.4-V19.6, V20-V79, V80.3-V80.5, V81.0-V81.1, V82.0-V82.1, V83-V86, V87.0-V87.8, V88.0-V88.8, V89.0, V89.2.

web-based injury statistics query system (WISQARS) has been used to obtain injury rates for this report, except as noted, in order to reduce bias associated with differences in definition used by individual states. MVC mortality rates reported here were obtained from WISQARS by specifying data on **unintentional** injuries caused by **motor vehicle traffic**[2]. Within the motor vehicle traffic category, rates were obtained based on the activity of the victim in the crash, i.e., motor vehicle occupant, pedestrian, pedal cyclist, etc. By specifying motor vehicle traffic and not motor vehicle overall, these analyses are limited to only those deaths that involved motorized vehicles presumed to be traveling on public roads. This particular classification of motor vehicle deaths was developed specifically to allow comparison of vital statistics mortality data with the National Highway Traffic Safety Administration's (NHTSA) Fatality and Analysis Reporting System (FARS) data (CDC, 1997). Deaths occurring off-road or not in traffic are not included nor are MVC deaths believed to have been intentional (suicide or homicide).

Contribution of MVC Deaths to All Injury Mortality for US Children 14 Years and Younger

Data from 2001 shown in Table 1 illustrate the impact of MVC mortality on overall injury mortality for children in the United States, using the most recent WISQARS mortality data. Rates presented are per 100,000 population and have not been age-adjusted. Shaded cells indicate rates based on fewer than 20 deaths, which are considered unstable. Traffic related deaths to motor vehicle occupants, pedestrians, bicyclists, motorcyclists, and those whose relationship to the vehicle was not specified represent almost one-third (32%) of all injury deaths of children 0 through 14 years of age and 41 percent of all unintentional injury deaths. The proportion of unintentional childhood injury deaths due to motor vehicle traffic increases with child age. Traffic-related deaths comprised 26 percent of unintentional injury deaths of 0-4 year olds and 57 percent of unintentional injury deaths of 10-14 year olds.

Table 1
Motor Vehicle Crash Mortality Rates* and Number of Deaths
for Children 0-14 Years of Age
United States, 2001

Type of Injury	0 to 4 years		5 to 9 years		10 to 14 years	
	Deaths	Rate*	Deaths	Rate*	Deaths	Rate*
All injuries	3564	18.4	1444	7.2	2048	9.8
Unintentional injuries	2690	13.9	1283	6.4	1553	7.4
MV Traffic, all	697	3.6	660	3.3	884	4.2
MV occupant	300	1.6	261	1.3	391	1.9
Pedestrian	176	0.9	152	0.8	193	0.9
Pedal cyclist	1	<0.0	42	0.2	61	0.3
Motorcyclist	1	<0.0	7	<0.0	26	0.1
Unspecified	219	1.1	198	1.0	212	1.0

**per 100,000 population, shaded cells indicate rates based on ≤20 deaths* *Data downloaded from WISQARS on 7-12-04.*

[2] ICD-9 codes for unintentional MV traffic deaths include E810-E819, E958.5, and E988.5. ICD-10 codes include V30-V39 (.4-.9), V40-V49 (.4-.9), V50-V59 (.4-.9), V60-V69 (.4-.9), V70-V79 (.4-.9), V81.1, V82.1, V83-V86 (.0-.3), V20-V28 (.3-.9), V29 (.4-.9), V12-V14 (.3-.9), V19 (.4-.6), V02-V04 (.1, .9), V09.2, V80 (.3-.5), V87 (.0-.8), and V89.2

Motor vehicle crash mortality rates for U.S. children 0-14 years of age decreased over the last decade (Table 2). Over the earlier period (1991-98) for which there are more years to compare, mortality decreased for males, for White children and for Hispanic children. Rates for other groups were relatively stable (females) or varied throughout the decade (Blacks, American Indians/Alaskan Natives, and Asian/Pacific Islanders.) Males were more likely to die in an MVC than were females. Black children and American Indian/Alaskan Native children were more likely to die in crashes than were White, Asian/Pacific Islander, or Hispanic children. These differences have persisted since 1991.

Table 2
Motor Vehicle Crash Mortality Rates* for 0-14 Year Olds
by Sex, Race, and Hispanic Origin
United States, 1991-2001

Year	Total	Males	Females	White	Black	American Indian/AK Native	Asian / Pacific Islander	Hispanic
1991	5.2	6.1	4.1	5.0	6.5	6.5	3.5	5.8
1992	4.8	5.7	3.8	4.6	6.1	7.3	3.2	4.9
1993	5.0	5.7	4.2	4.6	6.7	7.6	3.5	4.8
1994	5.1	5.9	4.2	4.7	6.9	7.6	3.3	4.9
1995	4.9	5.6	4.1	4.7	6.0	6.9	3.4	4.6
1996	4.7	5.3	4.1	4.6	5.7	8.5	2.4	4.5
1997	4.5	5.0	4.1	4.3	5.9	7.0	2.8	3.9
1998	4.3	4.9	3.7	4.0	5.9	6.1	2.6	4.1
Overall 1991-98	4.8	5.5	4.0	4.6	6.2	7.2	3.1	4.6
1999	4.0	4.5	3.5	3.8	5.3	4.8	2.1	3.8
2000	3.9	4.4	3.5	3.8	4.6	7.1	2.3	3.9
2001	3.7	4.2	3.2	3.5	4.6	7.9	2.1	3.6
Overall 1999-2001	3.9	4.4	3.4	3.7	4.8	6.6	2.2	3.8

**per 100,000 population* *Data downloaded from WISQARS on 3-3-04.*

As was noted earlier, risk for different types of MVC injuries changes with age. Longitudinal MVC mortality data for the United States are shown by standard five-year age groups in Table 3. Mortality rates are noticeably higher for children 10-14 years than for younger children. Rates decreased for all age groups, however, from 1991-1998.

Table 3
Motor Vehicle Crash Mortality Rates* for 0-14 Year Olds
by Age Group
United States, 1991-2001

Year	Total	0–4 Years	5–9 Years	10-14 Years
1991	5.2	4.8	4.9	5.9
1992	4.8	4.5	4.7	5.2
1993	5.0	4.8	4.5	5.6
1994	5.1	5.0	4.5	5.8
1995	4.9	4.5	4.4	5.8
1996	4.7	4.6	4.2	5.4
1997	4.5	4.3	4.0	5.4
1998	4.3	4.1	3.9	5.0
Overall 1991-98	4.8	4.6	4.4	5.5
1999	4.0	3.9	3.6	4.5
2000	3.9	3.8	3.6	4.5
2001	3.7	3.6	3.3	4.2
Overall 1999-2001	3.9	3.8	3.5	4.4

**per 100,000 population* *Data downloaded from WISQARS on 3-3-04.*

PREVENTING CHILD MOTOR VEHICLE CRASH DEATHS: EVIDENCE FROM THE LITERATURE

PREVENTING CHILD MOTOR VEHICLE CRASH DEATHS

Injury Prevention as a Multifaceted Challenge

Prevention of motor vehicle crash deaths focused on changing driver behavior until the 1960s when William Haddon changed the way we look at preventing injury (Haddon, 1980). He used the public health infectious disease prevention model that triangulates prevention efforts to consider three factors that contribute to injury: host, agent, and environment. Instead of focusing on only the host or driver of the vehicle, injury prevention strategies were designed to address the agent (e.g., addition of seat belts to automobiles) and the environment (e.g., improvements in guardrail design for highways). In addition, there is a temporal aspect to Haddon's view of injury prevention, dividing prevention efforts into before, during, and after the motor vehicle crash. This multifaceted approach to injury prevention continues to guide the efforts of those working in this area.

Preventing Childhood Mortality from Motor Vehicle Crashes

Multiple resources exist to inform public health policy and practice. The following were of particular value to the preparation of this report. The first is a David and Lucile Packard Foundation report on unintentional injuries of childhood, a publication in their *Future of Children* series (DLPF, 2000). A second was a review conducted by the US Task Force on Community Preventive Services (hereinafter referred to as the Task Force) as part of their preparation of a *Guide to Community Preventive Services*. Motor vehicle occupant injury prevention was one topic chosen for review by the Task Force and numerous articles resulting from their work were published in a supplemental issue of the *American Journal of Preventive Medicine* (Volume 21, Supplement 4, November 2001.) Other valuable sources of information for public health professionals and community advocates concerned with preventing motor vehicle injuries are the CDC's website on Motor Vehicle-Related Injuries (http://www.cdc.gov/health/motor.htm), the NHTSA website (http://www.nhtsa.dot.gov/), and the website of the Insurance Institute for Highway Safety (http://www.highwaysafety.org/). The reader is referred to these excellent resources for extensive literature reviews as well as fact sheets, product ratings, summaries of injury prevention legislation, safety tips, and other valuable information.

The following summary relies in large part on information from the two published comprehensive reviews of MVC injuries and the websites described above. Information relevant to injuries and injury prevention for children 14 years of age and younger is emphasized with reference to information for older children included as appropriate.

Injuries to Motor Vehicle Occupants

Risk factors for injury to motor vehicle occupants include: (Grossman, 2000)

- male gender (at greater risk in adolescence, but it is not clear the extent to which this risk applies to children ≤14 years);
- rural residence;
- residence in a state with low income;

- evening or night hours;
- African-American children less than 5 years of age (but not older African-American children);
- Native American children (highest risk); and
- deployment of air bags, for younger children, particularly those who are unrestrained.

Risk may be mitigated by three vehicle factors: (Grossman, 2000)

- integrity of the motor vehicle structure (e.g., safety glass, padded interiors);
- presence of safety restraints (e.g., infant car seats and booster seats, but this depends on proper installation and consistent use); and
- air bags (for older children only).

There are a number of **effective interventions** to prevent injuries to motor vehicle occupants in MVCs. *Regulatory or legislative interventions* specifically targeted to reducing injuries to children include laws requiring passenger restraints such as child safety seats and seat belts. The level of enforcement of these laws (primary or secondary) and penalties for violation are also important considerations.

- There are *child restraint laws* in all 50 states and the District of Columbia (IIHS, 2004a). Child restraints refer to both child safety seats (infant and booster) and seat belts. The laws vary by age and/or weight of the child who must be restrained, when child safety seats are required versus use of adult safety belts, and where and how a car seat must be positioned in a car, i.e., front or back seat, front or back facing. The first car seat law was passed in Tennessee in 1978. By 1985, all 50 states had car seat laws.

- Forty-seven (47) states and the District of Columbia have *primary child restraint laws* for all children covered whether the requirement is for a safety seat or for the use of adult seat belts (IIHS, 2004b). Primary laws allow law enforcement personnel to stop and cite a driver for failing to secure a child in a car seat or with seat belts. Secondary laws allow citation for a car seat or seat belt violation only if a motorist has been stopped for another violation.

The Task Force reviewed the evidence to support interventions to improve use of child safety seats (Zaza, et al., 2001). Outcomes of interest for all reviews in the Task Force component on motor vehicle occupant injury reduction were an increase in use of occupant restraints and a reduction in fatal and nonfatal injury. The nine studies reviewed included evaluation of laws in the 50 states that went into effect between 1978 and 1986, all of which had primary enforcement provisions. The laws varied in the age requirement for restraint, seating position (front or back) and penalties. The Task Force concluded that there is strong evidence for the effectiveness of child safety seat laws in increasing safety seat use and in reducing injury in MVCs. Insufficient data were reported to examine the effectiveness of safety seat laws for specific subpopulations, e.g., by age, race, or socioeconomic status.

The Task Force also reviewed the evidence for an effect of seat belt laws on seat belt usage and injury reduction (Dinh-Zarr, et al., 2001). All of the 33 qualifying studies of seat belt laws included results for adults but many fewer studies included results for children. These findings are most applicable to adolescents in the population of interest in this report. The Task Force

found strong evidence for the effectiveness of seat belt laws in increasing seat belt use and reducing injury. In addition, they found strong evidence in support of both primary enforcement and enhanced enforcement, e.g., additional activities such as safety-belt checkpoints, in increasing use and reducing injury. Other findings of this review of particular importance include four studies that found that parents who do not use seat belts are less likely to restrain the children they are transporting.

There are **other factors that impact the effectiveness of child restraint legislation.** Child restraint laws are most successful when two conditions are met. First, *child safety seats must be installed properly* to optimize protection in a crash. Second, but not less important, *parents and others must be aware* of the benefits of child restraints and the laws requiring restraint of children riding in motor vehicles.

Improper installation and use of child car seats has been reported for many years. A study in Kentucky found that 80 percent of children were restrained after legislation was passed but only 20 percent were restrained properly (CDC, 1998). An observational study in 4 states (MS, MO, PA and WA) found that the vast majority of infants (96.6%) were in car seats but many fewer (20.5%) of the car seats were properly used (Decina and Knoebel, 1997). Similar disparities were also noted for toddlers and pre-school children. There have been recent efforts to equip new cars with struts and tethers to lock seats in place (Scheiber et al., 2000).

Consumer education is important. In their review of the literature on effectiveness of consumer education on use of child safety seats, the Task Force divided studies of the impact of education on seat use and injury reduction into four categories, three of which combined education with another effort (Zaza et al., 2001). The categories included community-wide information and enhanced enforcement campaigns, distribution and education programs, incentive and education programs, and education-only programs.

- There was strong evidence to support the effectiveness of *distribution and education programs* on the use of safety seats (Zaza et al., 2001). Additional evidence supported a reduction in injury associated with this combined approach. The effectiveness of distribution and education programs was noted for urban, suburban, and rural populations and for poor clients as well as those with higher incomes.

- There was sufficient evidence to support the effectiveness of *community-wide education and enhanced enforcement campaigns* in increasing the use of child safety seats (Zaza et al., 2001). Similar results were noted for *incentive and education programs* but only in the short term.

- Finally, studies of *education alone* were insufficient to evaluate the effect of this single approach (Zaza et al., 2001). The authors noted that relatively few studies fell in this category as most interventions reviewed included education in combination with other approaches.

Klassen and colleagues (2000) summarized five studies of *community-based interventions* to promote motor vehicle restraint use. The interventions took place from 1985 to 1995; one was a randomized clinical trial (RCT), all were education campaigns, primarily school-based, and some

included coercive strategies. The outcome examined in most studies was an increase in seat belt use in the target group. Most studies demonstrated an increase in the use of motor vehicle restraints by the target group. The authors emphasized the need for multifocal strategies particularly to influence child acceptance of restraints.

Finally, DiGuiseppi and Roberts (2000) summarized 10 studies describing RCTs of *education in the clinical setting* to promote motor vehicle restraint use. The trials were conducted from 1977 to 1989, mostly before universal mandatory seat belt laws. The interventions varied and included pamphlets, displays, lecture/video, car seat demonstrations, etc. Short-term and long-term outcomes were assessed. In general, there was good short-term use by the intervention group, particularly with car seat provision and extended education. There was limited effect on long-term use.

Two other legislative/regulatory interventions that are not specifically targeted to children 0-14 merit discussion here because of their relevance to some children in the population of interest or their effect on motor vehicle safety in general. These include graduated driver licensing (GDL) and drunk driving laws.

This report focuses on deaths of children 0-14 years where the primary regulatory intervention is child restraints. However, nine states allow children to begin the driver licensing process before their 15th birthday (IIHS, 2004c.) Thus, MVC mortality of children 0-14 years may also occur among young drivers and their passengers. Graduated driver licensing is designed to improve driving by novice drivers by adding an additional stage between a learner's permit and an operator's license. This intermediate stage is designed to increase the driving experience of the new driver under supervised/limited conditions. The elements of driver licensing (age, permit status, restrictions on unsupervised driving, driving hours and passengers) vary from state to state. Currently 42 states and the District of Columbia have an intermediate stage in their licensing process for new drivers. The Insurance Institute for Highway Safety compared the driver licensing laws of each state and the District of Columbia against an optimal law. They rated the laws in 9 states as good, in 26 states as fair, in 12 states as marginal and in 4 states as poor. A review of the evidence indicates that GDL programs reduce the MVC rate among young and/or inexperienced drivers by both reducing the number of hours driven and extending the learner's driving experience under lower risk conditions (CDC, 7-23-04).

Finally, reducing alcohol-impaired driving is an important component of programs to reduce injury and death from MVCs. From 1997-2002, more than 9,000 US child passengers 14 years or younger died in MVCs (MMWR, 2004). Almost one-quarter of the deaths (24%) involved drinking drivers and of those children killed in crashes involving drinking drivers, 68% were riding in a car driven by an impaired driver. The likelihood of the child being restrained decreased with child age and the blood alcohol level of the driver.

The Task Force on Community Preventive Services also examined interventions designed to reduce alcohol-impaired driving (Shults et al., 2001). Based on their review of the evidence they strongly recommended 0.08% blood alcohol concentration (BAC) laws, maintaining the minimum legal drinking age at 21 years, and sobriety checkpoints as effective interventions for reducing alcohol-impaired driving. The evidence also supported the establishment of lower

BAC levels for young and inexperienced drivers as well as training programs for servers of alcoholic beverages (Task Force, 2001).

Injuries to Pedestrians

Almost one-fourth of traffic-related fatalities of US children 0 through 14 years of age in 2001 were deaths of pedestrians (Table 1). Pedestrian injuries were more severe than those of motor vehicle occupants with subsequent higher mortality (Grossman, 2000). There has been a steady decrease in these injuries in recent years which may be due, in part, to a decrease in exposure, i.e., less walking, in addition to other factors. Better information is needed on exposure to determine the effect of interventions.

Risk factors for pedestrian injury include: (Grossman, 2000)

- poor neighborhoods, usually with high volume of traffic, fewer playgrounds, walking as transportation;
- nonwhite race;
- driveway adjacent to play space, particularly for toddlers;
- midblock crossing by preschoolers;
- "darting" and improper supervision for school-aged children;
- after school hours and the summer; and
- male gender.

Several **community-based interventions** have been described in the literature. Klassen and colleagues (2000) summarized four community-based studies, two of which were RCTs. All interventions targeted preschool to young school-aged children. Education included road safety behavior such as crossing the street safely. The studies demonstrated limited benefit and the authors emphasized the need to also modify the environment to protect this age group. In a Connecticut study, Merrell and colleagues (2002) examined injuries at two time periods and looked at factors that could explain a change in the number and type of injuries over the 6-year interim. There was a 61 percent decrease in injuries among 0-16 year olds over the 6-year period. Factors identified as concurrent with the decrease in injuries included improved safety education in schools, increased bussing of school children, a public relations campaign for safe driving, decentralization of public housing, and increased ticketing for traffic violations. The authors suggest other interventions that could improve pedestrian safety including, but not limited to, crossing guards, signs to warn motorists of dangerous intersections/roadways, well-marked/self-flagging crosswalks, one way streets, playground separators, sidewalks, and banning the use of cell phones while driving. Durkin and colleagues (1999) examined injuries in two time periods before and after implementation of a program to decrease all traffic injuries to children in an urban area. The intervention included a traffic safety program, fenced playgrounds, bicycle fix-up days, bike safety program with helmet distribution and helmet legislation, and supervised activities for children. The biggest decreases in injury rates were among pedestrians.

Injuries to Bicyclists

As with pedestrian injuries, rates of bicycle injury deaths have declined but it is not possible to determine the contribution of decreased exposure to bicycle riding compared to reduction due to

other interventions. Highest rates of bicycle injury deaths have been and remain among 10-14 year olds. The vast majority of bicycle injury deaths in 1996 involved collision with a motor vehicle (Grossman, 2000).

Risk factors for bicycle injury include (Grossman, 2000):

- summer months,
- after school hours (3-8 pm),
- poor visibility of bicyclist, and
- early adolescence (10-14 years).

Protective factors include (Grossman, 2000):

- separation of bicycles from traffic and
- bicycle helmets (use could prevent 88% of serious brain injuries).

There is substantial evidence of the efficacy of bicycle helmets in reducing injury. There is less information regarding modification of the environment such as dedicated bicycle lanes (Grossman, 2000).

Most **interventions** to prevent deaths to bicyclists relate to bicycle helmet use. Seventeen states and the District of Columbia have statewide *laws requiring the use of bicycle helmets* (IIHS, 8-4-04). The age at which a helmet is required varies. The majority require helmet use for children under 16 years, one state requires helmets for children under 18, and six set the age at which a helmet is no longer required lower than 16 years, the lowest being 12 years. Australia led the way in bicycle helmet legislation. However, in Australia while bicycle helmet use increased there was an unintended consequence of decreased bicycling (Scheiber et al., 2000). Only one study of local enforcement in the United States was described. In Georgia, police confiscated the bicycles of children not wearing helmets but not the bicycles of adults (Gilchrist et al., 2000). Helmet use increased from 0% to 71% among children over the 5-month period after implementation of the enforcement program. The enforcement program did not apply to adults and helmet use among adults, which started at 0%, did not change. Less severe measures to promote helmet use include requiring helmets for children riding bicycles to school (Scheiber et al., 2000).

There are limited data to support the effectiveness of *education regarding bicycle helmets in the clinical setting*. DiGuiseppe and colleagues (2000) summarized three studies to increase bicycle helmet use that were conducted in that setting. Two studies implemented identical interventions in different clinical settings. In one study, children and parents were counseled regarding the use of bicycle helmets as part of their care in the Emergency Department following a bicycle injury (Cushman et al., 1991a). The second study provided counseling in the physician office during well child care (Cushman et al., 1991b). Neither program had a significant effect on helmet purchase. In a third study (Kim et al., 1997), participants were randomized to receive bicycle helmet education and a free helmet or education and a helmet for which they paid a co-pay. While helmet use was higher among the group that had a co-pay, there was not a statistically significant difference.

Klassen and colleagues (2000) summarized eleven *community-based bicycle helmet use interventions* (1991-97). Only two of the programs were RCTs and most outcomes were helmet

ownership not reduction in injury. The importance of peer pressure and adult modeling of helmet use was demonstrated. They concluded that bicycle helmet use can be increased but requires a multilevel approach including increasing parent awareness of risk and benefit, decreasing child resistance to use, legislation, and subsidization of helmet cost. In addition, studies showed respondents over-report helmet use.

Summary of the Literature Review

Motor vehicle injuries to motor vehicle occupants, pedestrians and bicyclists are a significant cause of childhood mortality. Injuries to motor vehicle drivers are a significant problem for children in the next age group (15-19 year olds), but safety education begins earlier.

Interventions to reduce injury and death from MVCs can focus on 3 aspects:

- Host: Make the child safer.
  Educate the child and parent about motor vehicle and traffic safety.
  Encourage safe behaviors such as using car seats and seat belts.
- Agent: Make the vehicle safer and more crashworthy, e.g. seat belts and air bags as standard equipment.
- Environment: Improve the environment in which injuries occur to reduce risk, e.g., improved barriers to prevent median crossing.

Effective regulatory and legislative interventions include:

- Child restraint laws including child car seats, booster seats appropriate for the child's age and weight, and seat belts for older children (Zaza, et al., 200l, Dinh-Zarr, et al., 2001).
- Primary enforcement of restraint and seat belt laws – these provisions emphasize the importance of restraint laws by allowing law enforcement to stop and ticket drivers for restraint infractions alone (Zaza, et al., 200l).
- Graduated driver licensing to increase driving experience under low-risk conditions for new drivers (CDC, 7-23-04).
- Blood alcohol concentration laws and other programs such as sobriety checkpoints to reduce drunk driving (Shults et al., 2001, Task Force, 2001).
- Bicycle helmet laws – helmets are known to protect children and adults from injury but more information is needed regarding the effectiveness of legislation (Grossman, 2000).

Effective education programs:

- Safety seat education programs are most effective when combined with other efforts such as distribution programs, enhanced enforcement of safety seat laws, or other programs of incentives for use (Zaza, et al., 200l).
- Education and inspection programs to ensure proper car seat installation are an ongoing need (Decina and Knoebel, 1997).
- Traffic safety programs for children are difficult to evaluate but send a positive message to establish safe behaviors early.

Other programs that may impact on MVC mortality for children:

- Modifications to the environment such as improved playgrounds with separation from traffic, crossing guards, improved crosswalks, one-way streets (Merrell et al., 2002, Durkin et al., 1999); and
- Economic subsidy for protective products such as bicycle helmets (Klassen, et al., 2000).

Interventions should be multifocal and may involve multiple agencies including health departments, injury prevention groups, school systems, pediatric and specialty (e.g., orthopedist) health care providers and their professional organizations, emergency medical services programs, law enforcement agencies, housing providers, and child advocacy groups. Interventions that most closely match the needs and capabilities of the community are important.

Continued evaluation is needed to enhance knowledge of the most effective, efficient, and economical approaches to reducing motor vehicle crashes and mortality.

SUCCESS IN NEW YORK

SUCCESS IN NEW YORK

New York was chosen by MCHB for further study because of its exemplary rates for MVC mortality as reported in the state's MCHB grant application (Table 4).

Table 4
Motor Vehicle Crash Mortality Rates* for Children 0-14 Years Old
New York and Selected Other Urban States, 1996-2001
from MCHB TVIS

State	MCHB DATA					
	1996	**1997**	**1998**	**1999**	**2000**	**2001**
New York	*2.6*	*2.7*	*0.9*	*0.4*	*0.7*	*0.8*
California	3.5	2.9	2.8	2.9	2.7	2.9
Florida	5.5	4.4	5.0	4.7	4.4	3.8
Illinois	4.7	3.2	3.4	2.6	3.0	2.9
Michigan	5.3	5.1	5.4	4.4	4.7	3.5
New Jersey	2.3	3.1	2.3	2.4	1.5	1.7
Ohio	4.2	4.2	4.7	3.0	3.9	2.8
Pennsylvania	3.9	4.2	3.4	3.2	2.5	2.6
Texas	6.5	5.8	5.7	6.1	5.9	5.3

**per 100,000 population*

1996-97 data obtained from MCHB as part of the RFP
1998-2001 data downloaded from MCHB TVIS on 7-23-04.

Particularly notable in the MCHB data was the substantial change in New York's rate in 1998. The drop in the rate reported for New York was discussed with Mike Medvesky, Director of New York's Public Health Information Group. In 1998, New York changed the definition of the MVC mortality rate it reports in order to be consistent with the definition of MVC mortality rates used by their Bureau of Injury Prevention. The Division of Family Health now includes deaths to motor vehicle occupants only, rather than occupants, pedestrians, pedal cyclists and others combined.

Examination of Motor Vehicle Crash Mortality Rates Using Consistent Definitions

A major component of this project was to examine in more detail New York's rate compared to those of other urban states. Guidance for reporting on this measure requests MVC mortality rates for children 14 years of age and under and specifies inclusion of occupants, pedestrians and

pedal cyclists. Which specific ICD-9 or -10 codes grantees should use to calculate rates are not specified and review of the indicators and discussion with other MCH data contacts indicates that other variability exists in the reporting of this MCH performance indicator. An accurate comparison requires a consistent definition. In order to ensure that definitions are consistent and improve comparability among the state rates examined, WISQARS, the CDC's web-based injury query system described on page 13 of this report was used for the comparisons that follow. Using WISQARS data not only assures a consistent definition but these data are also recalculated when updated population data are received.

Table 5 compares MCHB data for the nine urban states to WISQARS data for the same years using the definition described earlier (unintentional motor vehicle traffic deaths) to calculate WISQARS rates. For most states, the WISQARS rates are lower than those reported on the MCH grant applications. It is important to note that using WISQARS, New York's rates remain among the best of the urban states.

Table 5
Comparison of MVC Mortality Rates* Using MCHB TVIS and WISQARS
New York and Other Urban States
Children 0-14 Years Old
1996-2001

State	MCHB** Data						CDC WISQARS*** Data					
	1996	1997	1998	1999	2000	2001	1996	1997	1998	1999	2000	2001
New York	***2.6***	***2.7***	***0.9***	***0.4***	***0.7***	***0.8***	***2.7***	***2.6***	***2.3***	***2.1***	***1.8***	***1.9***
California	3.5	2.9	2.8	2.9	2.7	2.9	3.6	3.2	3.2	3.1	3.2	2.7
Florida	5.5	4.4	5.0	4.7	4.4	3.8	5.4	4.3	5.0	5.0	4.6	3.9
Illinois	4.7	3.2	3.4	2.6	3.0	2.9	4.0	2.9	3.1	2.4	2.8	2.8
Michigan	5.3	5.1	5.4	4.4	4.7	3.5	4.9	4.7	4.6	3.9	4.1	3.1
New Jersey	2.3	3.1	2.3	2.4	1.5	1.7	2.2	3.0	2.3	2.2	1.4	1.8
Ohio	4.2	4.2	4.7	3.0	3.9	2.8	3.4	3.7	3.7	2.7	3.5	2.8
Pennsylvania	3.9	4.2	3.4	3.2	2.5	2.6	3.8	3.9	3.2	3.0	2.4	2.5
Texas	6.5	5.8	5.7	6.1	5.9	5.3	6.0	5.5	5.3	5.6	5.2	5.0
United States							4.7	4.5	4.3	4.0	3.9	3.7

**per 100,000 population*
***1996-97 data obtained from MCHB as part of the RFP;1998-2001 data downloaded from MCHB TVIS on 7-23-04.*
****WISQARS data downloaded on 3-4-04 by specifying unintentional motor vehicle traffic deaths for children 0-14 years by year and by state.*

Table 6 includes the number of MVC deaths and the mortality rates for New York for the same categories examined for the U.S. in Table 2.

Table 6
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for New York
Overall and by Sex, Race, and Hispanic Origin
Children 0-14 Years Old

Year	Overall US / NY	Male	Female	White	Black	American Indian/AK Native	Asian / Pacific Islander	Hispanic
1991	5.2 / 3.7	4.7 (89)	2.7 (48)	4.1 (110)	3.0 (24)	0.0 (0)	1.9 (3)	3.0 (18)
1992	4.8 / 3.1	4.2 (81)	1.9 (35)	3.3 (90)	2.4 (20)	0.0 (0)	3.6 (6)	1.9 (12)
1993	5.0 / 3.3	4.0 (78)	2.6 (49)	3.4 (96)	3.5 (29)	0.0 (0)	1.1 (2)	2.2 (14)
1994	5.1 / 2.5	2.8 (55)	2.2 (41)	2.7 (77)	1.9 (16)	4.1 (1)	1.1 (2)	1.8 (12)
1995	4.9 / 2.5	3.0 (61)	1.9 (36)	2.3 (66)	3.0 (26)	0.0 (0)	2.6 (5)	1.0 (7)
1996	4.7 / 2.7	3.2 (65)	2.0 (39)	2.6 (74)	3.1 (27)	0.0 (0)	1.5 (3)	1.6 (11)
1997	4.5 / 2.6	3.2 (64)	2.0 (39)	2.9 (82)	2.3 (20)	0.0 (0)	0.5 (1)	1.0 (7)
1998	4.3 / 2.3	2.5 (49)	2.1 (40)	2.0 (56)	3.9 (25)	10.0 (3)	2.3 (5)	1.2 (9)
Overall 1991-98	4.8 / 2.8	3.5 (542)	2.2 (327)	2.9 (651)	2.8 (187)	2.0 (4)	1.8 (27)	1.7 (90)
1999	4.0 / 2.1	2.6 (51)	1.7 (32)	2.1 (59)	2.7 (24)	0.0 (0)	0.0 (0)	1.9 (14)
2000	3.9 / 1.8	2.1 (43)	1.4 (27)	1.9 (53)	1.6 (14)	0.0 (0)	1.3 (3)	0.5 (4)
2001	3.7 / 1.9	2.5 (49)	1.3 (24)	2.0 (55)	1.8 (16)	0.0 (0)	0.9 (2)	1.3 (10)
Overall 1999-2001	3.9 / 1.9	2.5 (94)	1.5 (83)	2.0 (167)	2.1 (54)	0.0 (0)	0.7 (5)	1.2 (28)

**per 100,000 population, shaded cells indicate rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

In every demographic category, New York children have fared better than children in the United States as a whole. As was seen for the U.S. (p. 15), New York boys are at higher risk than girls. There are few differences in rates for White children compared to Black children but rates for Black children for some years are based on a small number of deaths leading to instability in the rate. The lower rates for Hispanics must also be viewed with a degree of caution due to changes in the last several years in reporting by Hispanic ethnicity and due also to the small numbers. Small numbers also limit evaluation of rates for other minority groups. For most groups the rates decreased overall over the first 8 years of the 1990s.

Data for New York are examined in more detail in Table 7.

Table 7
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for New York
Overall, by Age Group, and by Activity of the Deceased
Children 0-14 Years Old

Year	Overall US / NY	All MV Traffic 0-4 only	All MV Traffic 5-9 only	All MV Traffic 10-14 only	MV Occupant Only 0-14	Pedestrian Only 0-14	Pedal Cyclist Only 0-14
1991	5.2 / 3.7	2.2 (30)	3.9 (47)	5.2 (60)	1.2 (43)	1.4 (50)	0.6 (22)
1992	4.8 / 3.1	1.8 (25)	3.5 (42)	4.1 (49)	1.2 (44)	1.1 (43)	0.4 (15)
1993	5.0 / 3.3	2.8 (39)	2.9 (36)	4.2 (52)	1.3 (49)	1.4 (53)	0.3 (11)
1994	5.1 / 2.5	1.9 (26)	2.3 (29)	3.4 (41)	0.9 (33)	1.0 (38)	0.3 (13)
1995	4.9 / 2.5	1.2 (17)	2.5 (32)	3.9 (48)	0.6 (25)	1.2 (47)	0.3 (12)
1996	4.7 / 2.7	2.6 (35)	2.3 (31)	3.1 (38)	1.0 (40)	1.2 (47)	0.2 (8)
1997	4.5 / 2.6	2.2 (28)	2.3 (31)	3.5 (44)	1.2 (47)	0.7 (28)	0.3 (12)
1998	4.3 / 2.3	1.7 (21)	2.6 (36)	2.5 (32)	1.0 (37)	0.9 (33)	0.3 (10)
Overall 1991-98	4.8 / 2.8	2.1 (221)	2.8 (284)	3.7 (364)	1.0 (318)	1.1 (339)	0.3 (103)
% Decrease 1991-98	17% / 38%	23%	33%	52%	17%	36%	50%
1999	4.0 / 2.1	1.4 (18)	2.1 (28)	2.8 (37)	0.4 (17)	0.9 (34)	0.3 (11)
2000	3.9 / 1.8	1.7 (21)	1.9 (26)	1.7 (23)	0.4 (15)	0.9 (36)	0.1 (5)
2001	3.7 / 1.9	1.8 (22)	1.8 (24)	2.0 (27)	0.6 (24)	0.8 (31)	0.1 (5)
Overall 1999-2001	3.9 / 1.9	1.7 (61)	1.9 (78)	2.2 (87)	0.5 (56)	0.9 (101)	0.2 (21)

**per 100,000 population, shaded cells indicate rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

WISQARS data for New York show a decrease in mortality rates for all age categories and by activity of the deceased, i.e. motor vehicle occupant, pedestrian, or pedal cyclist (rates for deaths when activity of deceased was not specified are not included). A discussion of New York's rates compared to other urban states follows.

Motor Vehicle Crash Mortality Rates in Nine Urban States

WISQARS was used to calculate and compare MVC mortality rates in New York and eight other states with large populations and urban centers (California, Florida, Illinois, Michigan, New Jersey, Ohio, Pennsylvania, and Texas.) The rates were calculated for the overall population of interest (children 0-14 years of age) and for subsets of that population described earlier. In addition, rates were calculated for the total 0-14 year old population by the activity of the person killed in the MVC. Each table displays the mortality rate, i.e., the number of deaths per 100,000 population, with the number of deaths in parentheses. Rates based on 20 or fewer deaths vary considerably with the addition or subtraction of one death and changes in such rates should be interpreted with caution. The table cells with rates based on small numbers have been shaded. In the cases where many cells are shaded for a particular state, the overall 1991-98 and 1999-2001 rates are more reliable indicators of performance.

Overall Motor Vehicle Crash Mortality Rates for Urban States (Table 8)

- New York has steadily reduced its MVC mortality rate over the eleven years examined with a **decrease of 38% from 1991 to 1998 and 10% for the more recent years (1999-2001).**
- New York had the **lowest or second lowest MVC mortality rate for children 0-14 years** in all years examined.
- In many years New York's rate was second only to that of New Jersey, frequently by a small factor.

Table 8
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for New York and Comparative Urban States
All Children 0-14 Years Old

Year	US / NY	CA	FL	IL	MI	NJ	OH	PA	TX
1991	**5.2 / 3.7**	5.2 (371)	5.9 (152)	4.1 (104)	5.0 (105)	3.5 (55)	3.8 (89)	3.7 (89)	6.2 (262)
1992	**4.8 / 3.1**	4.7 (341)	5.6 (147)	3.0 (77)	6.1 (129)	3.7 (59)	3.3 (78)	3.5 (84)	5.3 (229)
1993	**5.0 / 3.3**	4.6 (339)	5.9 (162)	3.7 (96)	4.6 (97)	2.3 (37)	3.8 (92)	4.0 (98)	5.8 (256)
1994	**5.1 / 2.5**	4.9 (366)	6.2 (174)	4.6 (121)	5.4 (114)	2.4 (40)	3.6 (87)	4.1 (101)	5.6 (250)
1995	**4.9 / 2.5**	4.3 (325)	5.2 (148)	4.9 (129)	5.1 (109)	2.5 (42)	3.7 (88)	3.5 (86)	5.2 (237)
1996	**4.7 / 2.7**	3.6 (277)	5.4 (155)	4.0 (107)	4.9 (105)	2.2 (37)	3.4 (80)	3.8 (93)	6.0 (276)
1997	**4.5 / 2.6**	3.2 (245)	4.3 (125)	2.9 (79)	4.7 (101)	3.0 (51)	3.7 (88)	3.9 (95)	5.5 (260)
1998	**4.3 / 2.3**	3.2 (246)	5.0 (149)	3.1 (82)	4.6 (98)	2.3 (39)	3.7 (88)	3.2 (77)	5.3 (255)
Overall 1991-98	**4.8 / 2.8**	4.2 (2,510)	5.4 (1,212)	3.8 (795)	5.0 (858)	2.7 (360)	3.6 (690)	3.7 (723)	5.6 (2,025)
1999	**4.0 / 2.1**	3.1 (242)	5.0 (149)	2.4 (64)	3.9 (84)	2.2 (39)	2.7 (65)	3.0 (72)	5.6 (270)
2000	**3.9 / 1.8**	3.2 (247)	4.6 (139)	2.8 (75)	4.1 (88)	1.4 (25)	3.5 (83)	2.4 (58)	5.2 (253)
2001	**3.7 / 1.9**	2.7 (214)	3.9 (122)	2.8 (77)	3.1 (66)	1.8 (32)	2.8 (66)	2.5 (60)	5.0 (250)
Overall 1999-2001	**3.9 / 1.9**	3.0 (703)	4.5 (410)	2.7 (216)	3.7 (238)	1.8 (96)	3.0 (214)	2.6 (190)	5.2 (773)

**per 100,000 population* *Data downloaded from WISQARS on 3-4-04.*

Motor Vehicle Crash Mortality Rates for Urban States by Gender (Tables 9-10)

- New York had the **lowest or second lowest MVC mortality rate in all years but one for male children and for female children 0-14 years**.
- An **overall decline** in the MVC mortality rate is noted **for male children** particularly in the earlier time period (44% from 1991-98 and 4% for 1999-2001). The decline in the mortality rate for **female children** was consistent in each time period (22% from 1991-98 and 24% for 1999-2001).
- On average, New York's MVC mortality **rate for female children was two-thirds the rate for male children**.
- New York's rate for male and female children was second to New Jersey's by a small factor in some years. New Jersey's rate for females for most years should be noted with caution due to the small numbers of deaths.

Table 9
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for New York and Comparative Urban States
MALE Children 0-14 Years Old

Year	US / NY	CA	FL	IL	MI	NJ	OH	PA	TX
1991	**6.1 / 4.7**	5.8 (211)	7.3 (97)	4.9 (63)	6.1 (65)	5.0 (40)	5.5 (67)	4.3 (52)	7.6 (165)
1992	**5.7 / 4.2**	5.6 (206)	7.2 (97)	3.7 (49)	7.7 (83)	4.4 (36)	4.3 (52)	4.3 (53)	6.7 (147)
1993	**5.7 / 4.0**	5.6 (211)	7.6 (106)	4.8 (63)	4.4 (48)	3.2 (27)	4.4 (54)	5.1 (64)	7.1 (160)
1994	**5.9 / 2.8**	6.0 (230)	7.5 (108)	5.4 (72)	6.2 (68)	3.2 (27)	4.0 (49)	5.4 (68)	7.0 (161)
1995	**5.6 / 3.0**	4.9 (193)	6.3 (92)	6.2 (84)	5.5 (60)	3.5 (30)	3.9 (48)	3.7 (47)	5.9 (138)
1996	**5.3 / 3.2**	4.2 (168)	5.5 (81)	4.4 (60)	5.6 (61)	2.8 (24)	3.6 (44)	4.6 (57)	6.2 (147)
1997	**5.0 / 3.2**	3.5 (139)	5.1 (77)	3.2 (44)	5.8 (64)	3.5 (31)	4.5 (55)	4.4 (55)	6.5 (156)
1998	**4.9 / 2.5**	3.8 (149)	5.3 (80)	4.0 (55)	6.2 (68)	2.0 (18)	3.4 (42)	4.0 (50)	6.3 (154)
Overall 1991-98	**5.5 / 3.4**	4.9 (1,507)	6.4 (738)	4.6 (490)	5.9 (517)	3.4 (233)	4.2 (411)	4.5 (446)	6.6 (1,228)
1999	**4.5 / 2.6**	3.7 (148)	5.5 (85)	2.0 (28)	4.3 (48)	2.5 (22)	3.3 (40)	3.1 (38)	6.2 (154)
2000	**4.4 / 2.1**	3.7 (146)	5.0 (78)	3.3 (46)	4.4 (49)	2.0 (18)	3.6 (44)	2.7 (34)	5.7 (143)
2001	**4.2 / 2.5**	3.0 (121)	5.0 (80)	3.4 (47)	3.3 (36)	2.7 (24)	3.6 (44)	2.9 (35)	5.1 (132)
Overall 1999-2001	**4.4 / 2.4**	3.5 (415)	5.2 (243)	2.9 (121)	4.0 (133)	2.4 (64)	3.5 (128)	2.9 (107)	5.7 (429)

per 100,000 population, shaded cells indicate **state rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

Table 10
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for New York and Comparative Urban States
FEMALE Children 0-14 Years Old

Year	US / NY	CA	FL	IL	MI	NJ	OH	PA	TX
1991	**4.1 / 2.7**	4.6 (160)	4.4 (55)	3.3 (41)	3.9 (40)	2.0 (15)	1.9 (22)	3.2 (37)	4.7 (97)
1992	**3.8 / 1.9**	3.8 (135)	3.9 (50)	2.2 (28)	4.5 (46)	3.0 (23)	2.2 (26)	2.6 (31)	3.9 (82)
1993	**4.2 / 2.6**	3.5 (128)	4.2 (56)	2.6 (33)	4.7 (49)	1.3 (10)	3.3 (38)	2.9 (34)	4.5 (96)
1994	**4.2 / 2.2**	3.7 (136)	4.8 (66)	3.8 (49)	4.4 (46)	1.6 (13)	3.2 (38)	2.8 (33)	4.1 (89)
1995	**4.1 / 1.9**	3.6 (132)	4.0 (56)	3.5 (45)	4.7 (49)	1.5 (12)	3.4 (40)	3.3 (39)	4.5 (99)
1996	**4.1 / 2.0**	2.9 (109)	5.3 (74)	3.6 (47)	4.2 (44)	1.6 (13)	3.1 (36)	3.0 (36)	5.7 (129)
1997	**4.1 / 2.0**	2.8 (106)	3.4 (48)	2.7 (35)	3.5 (37)	2.4 (20)	2.8 (33)	3.4 (40)	4.5 (104)
1998	**3.7 / 2.1**	2.6 (97)	4.8 (69)	2.1 (27)	2.9 (30)	2.5 (21)	3.9 (46)	2.3 (27)	4.3 (101)
Overall 1991-98	**4.0 / 2.2**	3.4 (1,003)	4.3 (474)	3.0 (305)	4.1 (341)	2.0 (127)	3.0 (279)	2.9 (277)	4.5 (797)
1999	**3.5 / 1.7**	2.5 (94)	4.4 (64)	2.7 (36)	3.4 (36)	2.0 (17)	2.1 (25)	2.9 (34)	4.9 (116)
2000	**3.5 / 1.4**	2.7 (101)	4.1 (61)	2.2 (29)	3.7 (39)	0.8 (7)	3.3 (39)	2.0 (24)	4.6 (110)
2001	**3.2 / 1.3**	2.4 (93)	2.7 (42)	2.3 (30)	2.9 (30)	0.9 (8)	1.9 (22)	2.2 (25)	4.8 (118)
Overall 1999-2001	**3.4 / 1.5**	2.5 (288)	3.7 (167)	2.4 (95)	3.3 (105)	1.2 (32)	2.5 (86)	2.4 (83)	4.8 (344)

per 100,000 population, shaded cells indicate **state rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

Motor Vehicle Crash Mortality Rates for Urban States by Race/Ethnicity (Tables 11-12)

- New York had the **second lowest MVC mortality rate for White children 0-14 years** in all but four of the years examined and the **lowest or second lowest MVC mortality rate for Black children 0-14 years** in ten of the eleven years examined. New York and Ohio were the only states with virtually no disparity between black and white rates in either aggregate period.
- An **overall decline** in the MVC mortality rate over the eleven years is noted for White children (51%) during the 1990's and for black children (33%) in more recent years.
- New York's rate for white children was second to New Jersey's most years and equaled New Jersey in 1995. New Jersey, Ohio, and Pennsylvania posted lower rates for Black children in some years but comparisons of Black MVC mortality rates should be made with caution due to small numbers.
- An overall decline in the MVC mortality rate over the eleven years is noted for New York's **Hispanic children** with a rate **decrease of 60% from 1991 to 1999 (Table 6**). MVC deaths of Hispanic children have decreased from an average of eleven per year during the 1991-98 period to nine per year in more recent years. Comparison of Hispanic rates across the selected urban states is not included because of the small numbers of events in most states and the likelihood of change in the numerator as reporting by race and ethnicity has changed.

Table 11
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for New York and Comparative Urban States
WHITE Children 0-14 Years Old

Year	US / NY	CA	FL	IL	MI	NJ	OH	PA	TX
1991	**5.0 / 4.1**	5.2 (287)	5.0 (99)	3.6 (71)	5.1 (86)	3.3 (40)	3.9 (79)	3.9 (79)	6.2 (219)
1992	**4.6 / 3.3**	4.7 (268)	4.8 (97)	2.6 (52)	5.6 (95)	3.0 (37)	3.3 (67)	3.3 (68)	5.4 (194)
1993	**4.6 / 3.4**	4.4 (258)	5.4 (112)	2.9 (58)	4.4 (74)	1.4 (17)	3.9 (78)	3.5 (72)	5.5 (200)
1994	**4.7 / 2.7**	4.7 (279)	6.3 (133)	4.4 (88)	4.7 (79)	1.7 (22)	3.7 (74)	3.9 (82)	5.5 (204)
1995	**4.7 / 2.3**	4.3 (254)	4.5 (97)	4.3 (87)	5.3 (89)	2.3 (29)	3.5 (70)	3.4 (71)	5.1 (191)
1996	**4.6 / 2.6**	3.5 (213)	4.9 (107)	3.8 (77)	5.0 (84)	2.1 (27)	3.4 (68)	3.9 (81)	6.0 (229)
1997	**4.3 / 2.9**	3.2 (193)	4.0 (87)	2.6 (54)	3.6 (61)	2.8 (36)	3.8 (75)	3.9 (79)	5.6 (217)
1998	**4.0 / 2.0**	3.2 (194)	4.1 (90)	2.8 (57)	3.8 (64)	1.8 (23)	3.7 (73)	3.2 (65)	4.9 (196)
Overall 1991-98	**4.6 / 2.9**	4.1 (1,946)	4.9 (822)	3.4 (544)	4.7 (632)	2.3 (231)	3.6 (584)	3.6 (597)	5.5 (1,650)
1999	**3.8 / 2.1**	3.0 (184)	4.8 (107)	2.0 (41)	3.3 (55)	1.8 (24)	2.7 (53)	3.0 (61)	5.5 (221)
2000	**3.8 / 1.9**	3.3 (198)	4.2 (94)	2.8 (57)	3.9 (66)	1.2 (16)	3.3 (66)	2.2 (45)	5.2 (213)
2001	**3.5 / 2.0**	2.7 (165)	3.6 (85)	2.6 (54)	3.0 (50)	1.4 (19)	2.9 (56)	2.2 (43)	4.9 (206)
Overall 1999-2001	**3.7 / 2.0**	3.0 (547)	4.2 (286)	2.5 (152)	3.4 (171)	1.5 (59)	3.0 (175)	2.5 (149)	5.2 (640)

per 100,000 population, shaded cells indicate **state rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

Table 12
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for New York and Comparative Urban States
BLACK Children 0-14 Years Old

Year	US / NY	CA	FL	IL	MI	NJ	OH	PA	TX
1991	**6.5 / 3.0**	6.6 (43)	9.2 (52)	6.0 (29)	4.7 (17)	5.4 (15)	2.8 (9)	3.4 (10)	6.8 (40)
1992	**6.1 / 2.4**	7.1 (47)	8.4 (49)	4.5 (22)	8.9 (33)	7.7 (22)	3.3 (11)	5.0 (15)	4.8 (29)
1993	**6.7 / 3.5**	6.5 (44)	7.9 (48)	7.1 (36)	5.5 (21)	6.1 (18)	4.1 (14)	7.7 (24)	7.9 (49)
1994	**6.9 / 1.9**	8.0 (55)	6.4 (40)	6.0 (31)	8.3 (32)	5.7 (17)	3.7 (13)	5.0 (16)	6.5 (41)
1995	**6.0 / 3.0**	6.8 (47)	7.7 (49)	7.3 (38)	4.6 (18)	3.6 (11)	5.0 (18)	4.3 (14)	6.6 (42)
1996	**5.7 / 3.1**	4.6 (32)	7.2 (47)	5.5 (29)	4.8 (19)	2.6 (8)	3.0 (11)	3.3 (11)	6.5 (42)
1997	**5.9 / 2.3**	3.6 (25)	5.3 (35)	3.8 (20)	9.5 (38)	4.9 (15)	3.5 (13)	4.2 (14)	6.3 (41)
1998	**5.9 / 2.9**	4.5 (31)	8.6 (58)	4.1 (22)	7.4 (30)	4.8 (15)	4.0 (15)	2.6 (9)	8.3 (55)
Overall 1991-98	**6.2 / 2.8**	5.9 (324)	7.6 (378)	5.5 (227)	6.7 (208)	5.1 (121)	3.7 (104)	4.4 (113)	6.7 (339)
1999	**5.3 / 2.7**	4.8 (33)	5.9 (40)	4.1 (22)	7.0 (29)	4.7 (15)	2.6 (10)	2.9 (10)	6.5 (43)
2000	**4.6 / 1.6**	4.1 (28)	6.5 (45)	3.3 (18)	4.6 (19)	2.5 (8)	3.7 (14)	3.7 (13)	4.8 (32)
2001	**4.6 / 1.8**	4.2 (29)	5.2 (37)	3.5 (19)	3.6 (15)	2.8 (9)	2.6 (10)	4.6 (16)	5.8 (39)
Overall 1999-2001	**4.8 / 2.1**	4.3 (90)	5.8 (122)	3.7 (59)	5.1 (63)	3.3 (32)	3.0 (34)	3.7 (39)	5.7 (114)

per 100,000 population, shaded cells indicate **state rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

Motor Vehicle Crash Mortality Rates for Urban States by 5-Year Age Groups (Tables 13-15)

- New York had the **lowest or second lowest MVC mortality rate for children 0-4 years** in all years examined **and for children 5-9 years** in all years except two. New York had the **lowest or second lowest MVC mortality rate for children 10-14 years** in the most recent years examined. In the early 1990's New York's rate for the older age group was higher than that of 4 or 5 other urban states.
- An **overall decline in the MVC mortality rate** in New York over the eleven years is noted **for each age group.** In the earlier period (1991-99) the mortality rate decreased by 23% for children 0-4 years, 33% for children 5-9 years, and 52% for children 10-14 years. Continued improvement is noted in the later time period for the two older age groups. It will be important to monitor the rate for the youngest children to see if the current modest upward trend continues.
- The **older the age group, the larger the decline** in mortality over the eleven years examined. In 1991 New York's MVC mortality rate for the oldest subgroup (10-14 years) was higher than the rates for the younger subgroups. For the most recent year (2001), the mortality rate did not differ appreciably among the 3 age subgroups (1.8 v. 1.8 v. 2.0.)
- In many years (in the most recent years only for children 10-14 years) New York's rate was second only to that of New Jersey, frequently by a small factor, although New Jersey's rates are calculated on small numbers of events.

Table 13
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for New York and Comparative Urban States
All Children 0-4 YEARS OLD

Year	US / NY	CA	FL	IL	MI	NJ	OH	PA	TX
1991	**4.8 / 2.2**	4.9 (130)	5.6 (52)	4.0 (35)	4.3 (31)	3.2 (18)	2.5 (20)	3.0 (24)	6.9 (101)
1992	**4.5 / 1.8**	4.7 (128)	5.1 (48)	2.7 (24)	4.9 (35)	4.0 (23)	2.9 (23)	2.9 (24)	6.2 (92)
1993	**4.8 / 2.8**	4.2 (119)	4.7 (45)	3.4 (31)	3.1 (22)	2.0 (12)	4.3 (34)	4.0 (33)	5.5 (84)
1994	**5.0 / 1.9**	4.8 (136)	5.5 (53)	3.4 (31)	5.4 (38)	2.0 (12)	3.0 (24)	4.4 (36)	6.3 (97)
1995	**4.5 / 1.2**	4.1 (115)	4.0 (38)	4.9 (45)	4.4 (31)	2.2 (13)	3.3 (26)	3.7 (29)	4.7 (74)
1996	**4.6 / 2.6**	3.4 (94)	4.4 (41)	3.6 (33)	6.0 (41)	1.6 (9)	3.0 (23)	3.1 (24)	5.9 (93)
1997	**4.3 / 2.2**	3.1 (81)	3.2 (30)	2.3 (21)	3.8 (26)	4.0 (23)	3.3 (25)	3.8 (29)	6.0 (95)
1998	**4.1 / 1.7**	3.0 (77)	5.1 (48)	2.9 (26)	3.7 (25)	2.0 (11)	2.6 (20)	1.3 (10)	5.3 (84)
Overall 1991-98	**4.6 / 2.1**	4.0 (880)	4.7 (355)	3.4 (246)	4.4 (249)	2.6 (121)	3.1 (195)	3.3 (209)	5.8 (720)
1999	**3.9 / 1.4**	3.3 (83)	4.6 (43)	2.8 (25)	4.3 (29)	1.6 (9)	2.1 (16)	2.2 (16)	6.2 (100)
2000	**3.8 / 1.7**	3.1 (77)	3.6 (34)	3.2 (28)	2.5 (17)	1.2 (7)	2.5 (19)	2.5 (18)	5.6 (91)
2001	**3.6 / 1.8**	2.2 (54)	2.7 (27)	2.7 (24)	2.0 (13)	1.6 (9)	2.9 (22)	2.5 (18)	5.9 (99)
Overall 1999-2001	**3.8 / 1.7**	2.9 (214)	3.6 (104)	2.9 (77)	2.9 (59)	1.5 (25)	2.5 (57)	2.4 (52)	5.9 (290)

per 100,000 population, shaded cells indicate **state rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

Table 14
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for New York and Comparative Urban States
All Children 5-9 YEARS OLD

Year	US / NY	CA	FL	IL	MI	NJ	OH	PA	TX
1991	**4.9 / 3.9**	5.0 (115)	6.4 (55)	4.5 (37)	4.5 (31)	2.4 (12)	3.7 (29)	3.3 (26)	4.8 (68)
1992	**4.7 / 3.5**	4.6 (106)	5.4 (47)	3.5 (29)	6.3 (44)	3.3 (17)	3.6 (28)	3.4 (27)	4.9 (69)
1993	**4.5 / 2.9**	4.3 (102)	5.2 (47)	4.0 (33)	5.3 (37)	2.4 (13)	3.2 (25)	4.3 (35)	5.1 (73)
1994	**4.5 / 2.3**	4.8 (116)	5.3 (49)	3.8 (32)	4.2 (30)	2.5 (14)	3.3 (26)	3.6 (30)	5.7 (83)
1995	**4.4 / 2.5**	4.4 (109)	5.3 (51)	3.7 (32)	5.7 (42)	1.9 (11)	3.6 (29)	3.0 (25)	4.7 (70)
1996	**4.2 / 2.3**	2.9 (76)	4.6 (46)	4.0 (35)	3.8 (28)	2.6 (15)	4.2 (34)	3.6 (30)	5.8 (88)
1997	**4.0 / 2.3**	3.1 (84)	2.5 (25)	2.3 (21)	4.9 (37)	1.7 (10)	4.2 (34)	3.7 (31)	4.8 (75)
1998	**3.9 / 2.6**	2.8 (77)	4.2 (43)	2.7 (25)	4.0 (30)	2.3 (14)	4.1 (34)	3.3 (28)	4.2 (68)
Overall 1991-98	**4.4 / 2.8**	3.9 (785)	4.8 (363)	3.5 (244)	4.8 (279)	2.4 (106)	3.7 (239)	3.5 (232)	5.0 (594)
1999	**3.6 / 2.1**	2.7 (75)	3.8 (39)	1.9 (18)	3.3 (25)	2.3 (14)	2.8 (23)	3.3 (28)	5.0 (82)
2000	**3.6 / 1.9**	3.2 (87)	3.9 (40)	2.5 (23)	3.1 (23)	1.5 (9)	3.7 (30)	2.4 (20)	4.7 (77)
2001	**3.3 / 1.8**	2.6 (70)	4.1 (43)	1.7 (16)	3.6 (26)	2.2 (13)	2.5 (20)	2.8 (22)	3.6 (60)
Overall 1999-2001	**3.5 / 1.9**	2.8 (232)	3.9 (122)	2.1 (57)	3.3 (74)	2.0 (36)	3.0 (73)	2.8 (70)	4.4 (219)

per 100,000 population, shaded cells indicate **state rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

Table 15
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for New York and Comparative Urban States
All Children 10-14 YEARS OLD

Year	US / NY	CA	FL	IL	MI	NJ	OH	PA	TX
1991	**5.9 / 5.2**	6.0 (126)	5.6 (45)	3.9 (32)	6.3 (43)	5.1 (25)	5.1 (40)	5.0 (39)	6.8 (93)
1992	**5.2 / 4.1**	4.9 (107)	6.2 (52)	2.9 (24)	7.2 (50)	3.8 (19)	3.4 (27)	4.2 (33)	4.8 (68)
1993	**5.6 / 4.3**	5.3 (118)	8.0 (70)	3.8 (32)	5.4 (38)	2.3 (12)	4.1 (33)	3.7 (30)	6.8 (99)
1994	**5.8 / 3.4**	5.0 (114)	8.0 (72)	6.8 (58)	6.5 (46)	2.7 (14)	4.6 (37)	4.3 (35)	4.7 (70)
1995	**5.8 / 3.9**	4.3 (101)	6.4 (59)	6.0 (52)	5.1 (36)	3.4 (18)	4.1 (33)	3.9 (32)	6.2 (93)
1996	**5.4 / 3.1**	4.5 (107)	7.1 (68)	4.5 (39)	5.1 (36)	2.4 (13)	2.8 (23)	4.7 (39)	6.2 (95)
1997	**5.4 / 3.5**	3.3 (80)	7.2 (70)	4.2 (37)	5.3 (38)	3.3 (18)	3.6 (29)	4.2 (35)	5.8 (90)
1998	**5.0 / 2.5**	3.8 (92)	5.8 (58)	3.5 (31)	5.9 (43)	2.5 (14)	4.2 (34)	4.6 (39)	6.5 (103)
Overall 1991-98	**5.5 / 3.7**	4.6 (845)	6.8 (494)	4.5 (305)	5.9 (330)	3.2 (133)	4.0 (256)	4.3 (282)	6.0 (711)
1999	**4.5 / 2.8**	3.4 (84)	6.5 (67)	2.4 (21)	4.1 (30)	2.8 (16)	3.2 (26)	3.3 (28)	5.5 (88)
2000	**4.5 / 1.7**	3.2 (83)	6.2 (65)	2.7 (24)	6.4 (48)	1.5 (9)	4.1 (34)	2.3 (20)	5.2 (85)
2001	**4.2 / 2.0**	3.4 (90)	4.7 (52)	4.0 (37)	3.6 (27)	1.6 (10)	2.9 (24)	2.3 (20)	5.4 (91)
Overall 1999-2001	**4.4 / 2.2**	3.3 (257)	5.8 (184)	3.0 (82)	4.7 (105)	2.0 (35)	3.4 (84)	2.6 (68)	5.4 (264)

per 100,000 population, shaded cells indicate **state rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

Motor Vehicle Crash Mortality Rates for Urban States by Activity of Deceased (Tables 16-18)

- New York had the **lowest or second lowest mortality rate for motor vehicle occupants 0-14 years old** in many years examined and rates that were among the lowest for deaths of pedestrians and pedal cyclists.
- An **overall decline in MVC mortality** rate in New York over the eleven years is noted for each activity. From 1991-99, the rate of occupant deaths decreased by 17%, the rate pedestrian deaths by 36%, and the rate of pedal cyclists deaths by 50%. The small upturn in the MV occupant rate in recent years must be viewed with caution due to small numbers in two of the three years.
- Illinois, New Jersey, Ohio, and Pennsylvania posted lower rates of mortality for motor vehicle occupants in some years but many of the lowest rates are based on small numbers of events and are, therefore, unstable.
- In recent years, all eleven urban states have posted pedestrian and pedal cyclist mortality rates near or less than 1 per 100,000 children.

Table 16
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for New York and Comparative Urban States
Motor Vehicle Occupants 0-14 Years Old

Year	US / NY	CA	FL	IL	MI	NJ	OH	PA	TX
1991	**2.5 / 1.2**	2.6 (187)	2.4 (63)	1.3 (33)	2.4 (50)	1.0 (16)	0.8 (20)	1.4 (32)	3.8 (160)
1992	**2.4 / 1.2**	2.5 (180)	2.2 (59)	1.4 (36)	3.0 (63)	1.9 (31)	1.2 (28)	1.4 (33)	2.9 (126)
1993	**2.3 / 1.3**	2.0 (149)	2.9 (78)	0.9 (24)	2.2 (46)	0.3 (5)	1.1 (26)	1.2 (29)	3.4 (150)
1994	**2.5 / 0.9**	2.6 (194)	3.5 (99)	2.0 (53)	1.9 (41)	0.9 (15)	1.3 (32)	1.2 (30)	3.3 (149)
1995	**2.4 / 0.6**	2.3 (177)	2.6 (75)	1.8 (48)	2.0 (43)	0.9 (15)	1.7 (41)	1.3 (31)	2.8 (125)
1996	**2.4 / 1.0**	2.0 (157)	3.3 (96)	1.2 (32)	1.5 (33)	0.8 (13)	1.2 (28)	1.4 (35)	3.6 (167)
1997	**2.4 / 1.2**	1.7 (130)	2.4 (71)	1.0 (26)	1.9 (40)	1.5 (26)	1.4 (34)	1.6 (39)	3.8 (181)
1998	**2.3 / 1.0**	2.0 (158)	2.8 (83)	0.7 (20)	1.2 (25)	0.9 (15)	1.5 (35)	1.2 (28)	3.4 (162)
Overall 1991-98	**2.4 / 1.0**	2.2 (1,332)	2.8 (624)	1.3 (272)	2.0 (341)	1.0 (136)	1.3 (244)	1.3 (257)	3.4 (1,220)
1999	**1.6 / 0.4**	1.1 (87)	1.5 (46)	1.0 (26)	1.3 (29)	0.7 (12)	0.8 (19)	0.8 (19)	2.0 (97)
2000	**1.6 / 0.4**	1.3 (98)	2.7 (82)	0.9 (24)	1.4 (30)	0.4 (7)	1.0 (24)	0.3 (7)	2.0 (99)
2001	**1.6 / 0.6**	1.0 (75)	2.0 (62)	1.1 (31)	0.9 (20)	0.3 (5)	0.6 (15)	0.5 (13)	2.8 (140)
Overall 1999-2001	**1.6 / 0.5**	1.1 (260)	2.1 (190)	1.0 (81)	1.2 (79)	0.5 (24)	0.8 (58)	0.5 (39)	2.3 (336)

per 100,000 population, shaded cells indicate **state rates based on ≤20 deaths Data downloaded from WISQARS on 3-5-04 (states) and 10/19/04 (US).*

Table 17
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for New York and Comparative Urban States
Pedestrians 0-14 Years Old

Year	US / NY	CA	FL	IL	MI	NJ	OH	PA	TX
1991	**1.6 / 1.4**	1.9 (136)	2.2 (56)	1.9 (47)	1.4 (30)	1.5 (24)	1.1 (26)	1.8 (43)	1.7 (71)
1992	**1.4 / 1.1**	1.6 (114)	2.0 (54)	1.1 (28)	1.7 (36)	1.2 (19)	1.1 (25)	1.5 (37)	1.6 (68)
1993	**1.5 / 1.4**	1.9 (142)	1.9 (51)	1.5 (38)	1.1 (23)	1.4 (23)	1.7 (41	1.6 (39)	1.5 (64)
1994	**1.5 / 1.0**	1.7 (131)	1.8 (51)	1.5 (38)	1.7 (36)	1.0 (16)	1.4 (34)	1.8 (43)	1.4 (63)
1995	**1.4 / 1.2**	1.5 (115)	1.5 (43)	1.6 (41)	1.4 (30)	1.1 (19)	1.2 (28)	1.3 (32)	1.4 (63)
1996	**1.2 / 1.2**	1.2 (89)	1.4 (39)	1.8 (47)	1.2 (25)	0.9 (15)	0.8 (18)	1.4 (33)	1.5 (71)
1997	**1.1 / 0.7**	1.1 (83)	1.2 (35)	0.9 (24)	1.2 (26)	1.0 (17)	1.0 (24)	1.3 (31)	1.0 (45)
1998	**1.0 / 0.9**	0.6 (49)	1.6 (46)	1.1 (29)	1.3 (28)	0.7 (12)	0.9 (22)	0.9 (23)	1.2 (58)
Overall 1991-98	**1.3 / 1.1**	1.4 (859)	1.7 (375)	1.4 (292)	1.4 (234)	1.1 (145)	1.1 (218)	1.4 (281)	1.4 (503)
1999	**0.9 / 0.9**	0.9 (72)	1.3 (39)	0.8 (21)	1.6 (34)	0.7 (13)	0.8 (20)	0.7 (18)	0.8 (41)
2000	**0.9 / 0.9**	0.8 (60)	1.1 (34)	1.0 (27)	1.2 (25)	0.7 (12)	0.8 (20)	0.9 (21)	0.9 (43)
2001	**0.9 / 0.8**	0.9 (72)	0.9 (28)	0.9 (24)	0.9 (19)	0.6 (11)	0.8 (19)	0.6 (15)	1.1 (54)
Overall 1999-2001	**0.9 / 0.9**	0.9 (204)	1.1 (101)	0.9 (72)	1.2 (78)	0.7 (36)	0.8 (59)	0.8 (54)	0.9 (138)

per 100,000 population, shaded cells indicate **state rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-5-04 (states) and 10/19/04 (US).*

Table 18
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for New York and Comparative Urban States
Pedal Cyclists 0-14 Years Old

Year	US / NY	CA	FL	IL	MI	NJ	OH	PA	TX
1991	**0.5 / 0.6**	0.3 (23)	0.9 (24)	0.2 (5)	0.8 (16)	0.6 (9)	0.3 (8)	0.2 (5)	0.5 (21)
1992	**0.4 / 0.4**	0.4 (31)	1.0 (26)	0.2 (5)	0.9 (20)	0.2 (3)	0.3 (6)	0.2 (4)	0.3 (13)
1993	**0.5 / 0.3**	0.4 (31)	1.0 (28)	0.4 (11)	0.7 (15)	0.1 (1)	0.3 (7)	0.6 (14)	0.5 (21)
1994	**0.4 / 0.3**	0.4 (28)	0.6 (18)	0.4 (11)	0.7 (15)	0.2 (4)	0.1 (3)	0.4 (9)	0.4 (20)
1995	**0.4 / 0.3**	0.3 (25)	0.9 (26)	0.3 (9)	0.5 (11)	0.2 (4)	0.2 (5)	0.3 (7)	0.4 (19)
1996	**0.3 / 0.2**	0.3 (22)	0.5 (14)	0.1 (2)	0.4 (9)	0.1 (2)	0.3 (6)	0.4 (10)	0.3 (15)
1997	**0.3 / 0.3**	0.2 (17)	0.6 (17)	0.3 (7)	0.3 (7)	0.2 (4)	0.3 (8)	0.2 (6)	0.3 (14)
1998	**0.3 / 0.3**	0.2 (13)	0.4 (12)	0.4 (10)	0.4 (8)	0.3 (5)	0.1 (3)	0.3 (8)	0.3 (16)
Overall 1991-98	**0.4 / 0.3**	0.3 (190)	0.7 (165)	0.3 (60)	0.6 (101)	0.2 (32)	0.2 (46)	0.3 (63)	0.4 (139)
1999	**0.2 / 0.3**	0.1 (11)	0.5 (15)	0.1 (3)	0.3 (7)	0.2 (4)	0.2 (4)	0.2 (4)	0.2 (9)
2000	**0.2 / 0.1**	0.2 (16)	0.3 (10)	0.1 (2)	0.6 (12)	0.1 (1)	0.3 (8)	<0.1 (1)	0.2 (8)
2001	**0.2 / 0.1**	0.1 (8)	0.3 (10)	0.0 (0)	0.3 (6)	0.2 (4)	<0.1 (1)	0.1 (3)	0.2 (9)
Overall 1999-2001	**0.2 / 0.2**	0.2 (35)	0.4 (35)	0.1 (5)	0.4 (25)	0.2 (9)	0.2 (13)	0.1 (8)	0.2 (26)

per 100,000 population, shaded cells indicate **state rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-5-04 (states) and 10/19/04 (US).*

Summary of Comparison of New York with Other Urban States

New York MVC mortality rates for children 0-14 years of age have consistently been among the lowest of the urban states in the comparison group. Over the two time periods (1991-98 and 1999-2001), New York's rates have:

- decreased for male children (44% for 1991-98 and 4% for 1999-2001) and female children (22% and 24%),
- decreased for white children (51% and 5%) and black children (3% and 33%), with fewer than 20 deaths of black children in 2000 and 2001,
- decreased by 17% for motor vehicle occupants from 1991-98 but remained stable in recent years with the number of occupant deaths dropping below 20 in 1999 and in 2000,
- decreased the most for children in the 10-14 year old subgroup (52% and 29%) with deaths in this age group representing 44% of all 0-14 year old MVC deaths in 1991 and 37% in 2001, and
- decreased significantly for pedal cyclists although this group represents only about 10% of all MVC deaths to children in the age group of interest.

Interviews with New York Officials

To further explore New York's program activities, project staff met with key informants in New York. Separate meetings were held with representatives from the New York Department of Health and with representatives from the Governor's Traffic Safety Committee (GTSC). The meetings were informal and allowed for free-flowing discussion. Participants at the site visit are listed in the Appendix A.

Agencies with Responsibility for Childhood Injury Prevention

The **Division of Family Health** within the Center for Community Health of the New York State Department of Health is the Title V agency in New York. The Division's mission includes "…a primary focus on the health needs of women and children, …promotion of healthy behaviors, assurance of quality and accessible health care and adherence to state of the art knowledge and best practices" (DFH/NYSHD, 2003). Four bureaus make up the Division: Bureau of Child and Adolescent Health, Bureau of Women's Health, Bureau of Dental Health, and the Early Intervention Program. There is no separate program for injury prevention within the Division of Family Health. The Bureau of Injury Prevention was part of the Division of Family Health until 1988. Today, injury prevention activities are included as part of the Division's overall efforts to improve the health of children and mothers and encompass such measures as child safety education programs for mothers and infants served by their maternal outreach program.

The **Bureau of Injury Prevention** is the New York Department of Health agency charged with reducing injury. The Bureau is part of the Division of Chronic Disease Prevention and Adult Health, which is also in the Center for Community Health. Originally part of the Division of Family Health, the Bureau was moved to the Division of Epidemiology and then to its current organizational location in 1996. This move reflects the current view of injuries as chronic conditions and that this public health issue is not limited to a single age group. Many activities

in the Bureau, however, are targeted at preventing injuries among children. Injury Prevention personnel include those involved with program implementation and evaluation, data analysis, and surveillance. This combination of skills within the Bureau is credited by the Director with giving the Bureau the ability for quick response to requests and improved work flow. The Bureau's director and secretary are funded by the Title V agency. Prevention activities are supported entirely by grant funding, primarily from the Centers for Disease Control and Prevention and the Governor's Traffic Safety Committee (GTSC), described more fully later in this report.

Surveillance is a major function of the Bureau of Injury Prevention. New York is one of 17 states that participate in the Crash Outcome Data Evaluation System (CODES) project. The CODES project compiles data regarding motor vehicle crashes from multiple sources including vital statistics, hospital discharge data, and police crash reports to examine the nature and frequency of MVC injuries. They will add emergency department (ED) data to allow them to examine crash injuries that are less severe, i.e., do not result in hospitalization or death. They have completed collecting ED data from Albany Medical Center for a pilot study and moved to statewide ED data collection in Fall 2003. In a separate project, the CDC has funded the Bureau for ten years as part of the Traumatic Brain Injury (TBI) surveillance program. This project uses hospital discharge and vital records data to produce state and county-level reports on TBI for policy makers and program planners. Last year New York was one of three states to receive supplemental funds to add spinal cord injuries (SCI) to their specific injury surveillance program. The Bureau recently received funding for a supplement to examine mild TBIs in emergency department cases.

Regional training has been a major focus of the Bureau of Injury Prevention as part of their GTSC-supported activities for the past 22 years. Early efforts focused on bicycle helmet training. Recent training focuses less on specific interventions and more on program support including training in the use of data for program development and evaluation, how to work with traffic safety and public health partners, design and implementation of community-based programs, and social marketing. When requested, they have provided training in specific skills such as how to do a community presentation. Last year they helped their trainees examine injury etiology among 0-9 year olds. This year the training focuses on 10-14 year olds.

Other Bureau of Injury Prevention activities are described in the Interventions section.

The **Governor's Traffic Safety Committee** (GTSC) is the primary agency responsible for reduction of motor vehicle mortality in New York. The Committee was established in 1967 and is chaired by the Commissioner of Motor Vehicles. As a designated highway traffic safety office, the GTSC receives funding from the National Highway Traffic Safety Administration (NHTSA) and the Federal Highway Administration (FHWA). The Committee is comprised of representatives from many agencies within State government including the Department of Health. The GTSC employs 18 persons in various activities to reduce motor vehicle crashes overall as well as reducing injuries and fatalities in crashes. Each county must have a Traffic Safety Board. The GTSC distributes NHTSA funds through a competitive process by which localities develop their own injury prevention plans and apply to the Committee for funding to implement those plans. A significant portion of funds distributed by the GTSC goes to localities.

A Highway Safety Strategic Plan (HSSP) is developed annually to guide the activities of the Committee (NYSGTSC, 2004). The most recent HSSP identifies as its top priorities "… increasing the use of motor vehicle occupant restraints; the reduction of unsafe driving behaviors, including speeding and impaired driving; and improving the safety of pedestrians and motorcyclists." The strategic plan includes short-term and long-term performance goals. Specific aspects of the plan address safety of children specifically while others are designed to protect all New Yorkers.

Interventions in New York

Interventions described below are presented by the categories in the literature review and focus primarily on regulatory interventions and education. Additional factors such as allocation of funds, local control, and highway construction are also briefly discussed.

Regulatory Interventions

Preventing MVC mortality, unlike many other MCH performance indicators, involves considerable regulation of individual behavior. State laws regarding driver behavior and passenger safety are significant components of all states' activities to prevent child deaths. Individual behavior is also influenced by education in regard to both the rationale behind the regulation, compliance with regulation, and other non-regulated action parents and others can take.

Reducing unsafe driving behaviors is a priority for New York with the potential of reducing motor vehicle injury for all citizens, not just children. There is very active traffic law enforcement in New York and local and state law enforcement agencies enforce speed limits, seat belt laws, DWI laws, red light compliance, and other laws designed to reduce unsafe behaviors such as rage driving. Law enforcement personnel receive training specific to new laws that are passed, for example, the role of bike helmets in protecting riders from traumatic brain injury. Injury prevention personnel believe training to be an important component in increasing enforcement. Two areas of activity to reduce unsafe driving behaviors, one regulatory and one primarily environmental, were discussed at length in New York.

Driving While Intoxicated (DWI) – Currently, New York prohibits driving if a person has a blood alcohol concentration (BAC) equal to or exceeding .08 percent. There is an automatic fine for first offenders for driving while intoxicated and plea-bargaining is not permitted.

The Special Traffic Options Program for Driving While Intoxicated (STOP-DWI) is unique to New York. Established in 1981, each county has the authority to establish a local STOP-DWI program and all fines collected in local areas from DWI offenses remain at the local level and are used to support alcohol-related programs. The minimum fine was recently raised to $350. All New York counties participate in the program and have a STOP-DWI coordinator who is responsible for developing the local program and coordinating local efforts. This local control is credited with increasing enforcement of DWI laws.

Drowsy Driving – A task force was convened in New York to address the problem of drowsy drivers. A multifaceted program was developed to reduce drowsy driving including installation

of rumble strips on highway breakdown lanes to alert drivers as their car veers off the road, coffee stops particularly on high volume holiday weekends, and improved patrol of and safety in rest areas to encourage drowsy drivers to stop for a break or a "power nap." In addition, education has been targeted to shift workers and adolescents who may be sleep deprived. The effectiveness of specific means to prevent drowsy driving varies by the individual making it difficult to determine which of the program components have been effective in reducing crashes involving drowsy driving. However, data from reports of fatal crashes and reports from survivors of nonfatal crashes indicate that these combined efforts to reduce drowsy driving have been successful. There has been a 90 percent reduction in crashes with some indication that the driver fell asleep, either by self-report or by the lack of skid marks to indicate braking.

Protecting motor vehicle occupants is a second area of emphasis that includes regulatory activity. New York was the first state to enact a safety belt law (1984) and that law included provision for primary enforcement. New York mandates use of passenger restraints including child safety seats. New York law requires that all motor vehicle occupants under 16 years, in the front or back seat, be restrained. Children 3 years of age and younger must be in a child safety seat. Children 4 through 15 years of age must be restrained but can be secured with an adult seat belt.

New York was among the first states to require car safety seats for young children. New York emphasizes its commitment to safety by providing for primary enforcement of the law unlike some states. Another indication of the seriousness with which New York regards its child passenger restraint laws is that the maximum first offense fine for failure to restrain a child under 16 is $100, twice the maximum first offense fine for failure to restrain an adult. In addition, points can be assessed against a driver's license for a child restraint violation. New York, however, does not require that children who are over 3 years but who are still smaller than recommended for an adult seat belt, be seated in an approved child booster seat. A booster seat promotion program does exist and is described later.

School buses in New York must be equipped with seat belts. New York has had for some time a stringent standard for school buses and requires that bus seats have high backs. According to the GTSC, studies have shown that seatbelts used in conjunction with high seat backs will reduce injury in school bus crashes.

Other New York laws protect children from injury in incidents involving motor vehicles. **Bicycle helmets** are known to protect riders from head injury in crashes. New York was the second state to require the use of bicycle helmets. Legislation was passed in 1996 to require children younger than 14 years to wear a bicycle helmet. Enforcement, however, is restricted to issuance of a ticket to a parent who is with a child who is bicycling without a helmet. The ticket can be forgiven if the parent buys a helmet. There is no mechanism by which a child not in the company of a parent can be cited for not wearing a helmet. Positive reinforcement for the use of helmets is used in some areas. For example, children noted to be wearing helmets while riding may be given certificates for ice cream or other inducements. Helmets have recently been required for inline skaters and riders of non-motorized scooters. A program to educate these users and distribute helmets has been started. Injury surveillance shows that there has been a decrease in traumatic brain injuries but it is not clear how much of this decrease can be attributed to helmet use as there has also been a concurrent decrease in bicycle riding.

Adoption of a **graduated process for licensing** of novice drivers has been a focus in many areas in the past decade. New York has had a nighttime restriction for new adolescent drivers since 1961. They currently have a graduated process with an intermediate stage that not only limits restricts nighttime driving for new drivers but has recently (September 2003) been amended to restrict the number of young passengers who can be in the car with a new adolescent driver. The Insurance Institute for Highway Safety (IIHS, 7-23-04c) has rated New York's graduated licensing requirements as fair.

A new **pedestrian safety law** took effect in January 2003. This new law requires that motorists stop for pedestrians who are anywhere in a crosswalk where there is no traffic signal. This law replaces an older one that required that motorists stop for only those pedestrians who were in the portion of the crosswalk where the motorist was driving. This is particularly important in New York's large urban centers.

Distribution of Highway Safety Funds for MV Injury Prevention

New York's approach to prevention of MVCs and MVC injuries is heavily based in local innovation and control. GTSC serves as a pass-through agency for significant funds that are distributed to counties based on an application process. There is an injury control person, a traffic safety board, and a STOP-DWI person in each county. Counties design injury prevention programs based on their assessment of the problem and promising interventions. Traffic Safety and the Health Department often work together.

Education and Promotion of Safety Measures

Public education and promotion of injury prevention behavior and programs is part of the strategies of all agencies involved in injury reduction.

Originally part of the Bureau of Injury Prevention activities**, distribution of car seats** is now a local program funded by the GTSC. In most areas it is a cooperative effort among agencies. Each county has funds to distribute car seats at hospital discharge of newborns. There is car seat distribution in the Native American communities as well. GTSC funds to local agencies can be used to purchase and distribute car seats, for supplies for Child Passenger Safety Technician (CPST) training, to establish car seat fitting stations and car seat checkpoints, or other activities as they see fit. New York officials cited data from the Pregnancy Risk Assessment Monitoring System (PRAMS) that indicate that more than 90% of New York's newborns leave the hospital in an infant car seat but this indicator is not sufficient to assess continued and proper use of the seats. There is increased emphasis now on making sure that car seats are installed properly as New York officials believe that as many as 90% of car seats may be improperly installed. New York has several hundred CPSTs (second in number after Illinois) who have completed the NHTSA course. Current gaps in the system identified by injury prevention staff include lack of fitting stations for seats for children with special health care needs and lack of stations serving the Spanish-speaking community in New York City.

There are **Child Passenger Safety Technicians** and periodic checkpoints in all counties. CPSTs provide this service as part of their regular jobs, i.e., there are no full-time paid CPSTs. All

training is free; the GTSC did 30 training sessions in 2002. A statewide task force on child passenger safety serves as a communication mechanism to keep technicians and others involved with child passenger safety up-to-date by means of a listserv and quarterly meetings. In conjunction with New Jersey and Connecticut, they have sponsored an annual conference on child passenger safety. By sponsoring the conference themselves, they are able to provide expert and up-to-date information for all those involved in passenger safety at less cost than sending representatives to national conferences. Limited financial support is available to cover the cost of attendees' hotel expenses. The most recent conference for which data were available was attended by 400 people. The 4th annual conference was held in October 2004 in New York.

The GTSC has a **public awareness campaign to encourage parents to place their children in the back seat of the car**. Although this is a recommendation only, many parents believe it is the law and the State has used crash reports to note an increase in the number of children involved in crashes who were seated in the back seat of the vehicle.

New York had the first **low literacy brochure** on car seats. They now produce the brochure in ten languages.

The New York law to protect the safety of motor vehicle occupants over the age of three requires only that children be secured by an adult seat belt. The Injury Prevention Bureau has a CDC-funded three-year grant to do a case-control study in three counties to evaluate efforts to increase the use of booster seats. They can also **monitor use of child booster seats** by means of a question on the Behavioral Risk Factor Surveillance System (BRFSS) survey. As was noted with the recommendation that children be seated in the back seat of the car, some New York parents believe there is a law requiring the use of booster seats, based in part on the fact that NJ has such a law. It is also likely that some parents believe that these two recommendations are law given New York's history of strong support for and enforcement of other passenger safety laws.

There was a major statewide multimedia program to **promote the use of bicycle helmets** using public service announcements, flyers, and brochures. Popular figures (Teenage Mutant Ninja Turtles) and sports celebrities (NY Mets) were used. Educational materials are provided to physician offices and helmets have been distributed in 72 areas including New York City and Native American communities. A "Saved by the Helmet" club recognizes children who were spared injury by virtue of wearing a helmet. Promotion efforts in a three county area are being evaluated under a grant from the CDC. New York evaluates change in the use of bicycle helmets by periodic observational studies in six counties.

Major **efforts to prevent pedestrian injuries** in New York have been based in New York City where there is a Safety City program in each borough and on Long Island. All third graders complete the Safety City program that includes overall safety education and traffic safety. The first conference on pedestrian safety was held in 2001. Numerous articles describe the work of Barbara Barlow and colleagues who have implemented a comprehensive program in Harlem to reduce childhood injury not just traffic-related injury.

New York participates in the national **SafeKids Program**, with 12 coalitions in New York. The Bureau of Injury Prevention supports these coalitions with data but is no longer the lead agency

for the SafeKids coalition. They encourage local coalitions to use local data to design their programs.

Child Fatality Review Panels were established in most areas as a mechanism to examine intentional deaths of children although some areas (Syracuse and Rochester) are moving toward review of all child deaths. Current concerns regarding confidentiality and informed consent limit implementation of these reviews. Although not a comprehensive review, the upcoming Bureau of Injury Prevention focus on examination of injury etiology will accomplish some of the same goals as a comprehensive fatality review.

In addition, within the Title V agency, Community Health Workers include safety education as part of their work with at risk mothers and infants. This includes work in the Native American communities for whom the State provides indigent primary care. The GTSC has also given the NY State Broadcaster's Association a grant to produce injury prevention materials. The member organizations donate unsold airtime for public service announcements.

Other Factors

New York officials interviewed feel that the **excellent condition of New York's highways** is contributing to their low MVC mortality rates. New York highways are well marked and have wide shoulders (no drop-off), guardrails, and rumble strips.

New York also participates in the **Emergency Medical Services for Children (EMS-C) Program**. The Bureau of Injury Prevention is represented on the EMS-C Advisory Group. The EMS-C Program has a grant to train EMTs to work on appropriate care for injured children including pediatric equipment and working with parents. They do limited work on injury prevention and traffic safety.

New York Summary

Many factors in New York contribute to their traffic safety success. Not the least of these is a long-term commitment to passenger safety. The Governor's Traffic Safety Committee has been in existence for 37 years and includes representatives from multiple organizations. Stringent traffic safety laws with active enforcement are an important component of New York's efforts to decrease MVCs. Comprehensive and ongoing education, modification of traffic environment with safe roads, and local empowerment with supporting funds also contribute to New York's success. The following highlighted activities were identified as crucial to New York's exemplary performance.

- **Car Seat Laws and Promotion**: New York was one of the first states to require use of car seats and supported this legislation with primary enforcement. They have helped parents comply with the law with car seat distribution and more recently with continued efforts to ensure proper installation of car seats.
- **Seat Belt Laws**: New York was the first state to pass a seat belt law and included provision for primary enforcement from the beginning.

- **Financial Support for Local Initiatives**: NY encourages counties to assess their own needs to reduce injury mortality and develop appropriate plans to address them. The complete participation by all counties is also critical. NHTSA funds are available to implement local programs.
- **Innovative DWI Prevention**: New York officials cite the STOP-DWI program as a valuable approach to reducing alcohol and other substance related motor vehicle deaths. An example of the local empowerment cited above, this program is credited with reducing injuries due to drunk driving.
- **Recognition of the Need for Continual and Innovative Public Education**: Safety education is not a one-time event. New York has a long history of educating the public regarding prevention of child motor vehicle crash deaths including providing information to parents that is multilingual and inclusion of injury prevention components in the parent education work of the health department.
- **Enforcement of Laws**: Although not examined in detail, New York officials indicate a strong belief that New Yorkers know their laws will be enforced and modify their behavior to comply.
- **Good Roads:** The condition of New York's roadways was a factor identified by New York officials who cited wide shoulders, rumble strips, and excellent maintenance as examples of positive contributors to reducing traffic injuries.

New York's success can be attributed to multiple interventions including strict traffic laws and on-going education programs to increase passenger, pedestrian and bicyclist safety. New York has been a leader in regulatory interventions to improve traffic safety and the longevity and historic perspective of their traffic safety efforts no doubt contribute to their success. The value of a long-term coordinated effort cannot be overemphasized. Many states have implemented regulatory and educational programs to prevent motor vehicle crash mortality but with less success. The extent to which states can maintain long-term, coordinated traffic safety efforts that are consistently brought to the public's attention through traffic laws with stringent enforcement, public education, and community-based activities, they are more likely to achieve improved rates of indicators of motor vehicle safety.

SUCCESS IN NORTH DAKOTA

SUCCESS IN NORTH DAKOTA

North Dakota was chosen by MCHB for further study as an example of a rural state with exemplary rates for MVC mortality as reported in the state's MCHB grant application (Table 19.)

Table 19
Motor Vehicle Crash Mortality Rates* for Children 0-14 Years Old
North Dakota and Selected Other Rural States, 1996-2001
from MCHB TVIS

State	MCHB DATA					
	1996	**1997**	**1998**	**1999**	**2000**	**2001**
North Dakota	***4.8***	***4.3***	***4.5***	***4.0***	***4.7***	***3.0***
Arizona	8.7	8.4	6.5	5.8	5.8	5.5
Colorado	6.3	5.8	4.9	4.6	4.0	4.9
Montana	7.5	7.1	5.0	4.5	9.1	5.9
Nebraska	6.5	5.9	6.5	4.7	4.9	5.5
South Dakota	10.1	7.5	9.5	8.3	9.6	10.2
Utah	7.1	7.7	8.4	4.3	4.2	4.4

**per 100,000 population*

1996-97 data obtained from MCHB as part of the RFP
1998-2001 data downloaded from MCHB TVIS on 7-23-04.

It has already been noted that there is variability in the way states report their MVC mortality rates. Terry Bohn, North Dakota State Systems Development Initiative Program Director, indicated that North Dakota reports 3-year aggregate rates, that is rates which add all deaths over 3 years and divide them by the population over 3 years. He also noted that North Dakota's rates were calculated for children 1-14 years of age rather than children 0-14 years. It is assumed that since North Dakota interprets "children under 14" not to include infants, other states may make the same assumption. A mortality rate for children 1-14 years may be higher than that for children 0-14 years because infants experience lower MVC mortality than older children particularly in areas where child safety seats are routinely used. Despite guidance regarding calculating rates based on small numbers, it is also not obvious which states use aggregate data and which do not. In the notes of explanation for Indicator #10 only 9 of 50 states indicate that their data have been aggregated because of a small number of events. Others with small numbers did not note using this approach.

Examination of Motor Vehicle Crash Mortality Rates Using Consistent Definitions

Because it is not clear which states aggregate and what definition of MVC or which age group states use, data from North Dakota and other rural state MCHB indicators were also compared to single year WISQARS data to assess differences in these approaches and to allow comparison among states using a consistent definition (Table 20). Numerators for the WISQARS data were known allowing cells based on ≤20 deaths to be shaded.

Table 20
Comparison of MVC Mortality Rates* Using MCHB TVIS and WISQARS
North Dakota and Other Rural States
Children 0-14 Years Old
1996-2001

State	MCHB** Data						CDC WISQARS*** Data					
	1996	1997	1998	1999	2000	2001	1996	1997	1998	1999	2000	2001
North Dakota	***4.8***	***4.3***	***4.5***	***4.0***	***4.7***	***3.0***	***4.3***	***1.5***	***4.5***	***3.8***	***5.4***	***1.6***
Arizona	8.7	8.4	6.5	5.8	5.8	5.5	7.4	6.5	5.0	4.9	6.1	5.7
Colorado	6.3	5.8	4.9	4.6	4.0	4.9	5.2	4.4	4.1	4.0	4.5	4.9
Montana	7.5	7.1	5.0	4.5	9.1	5.9	5.7	6.4	4.3	4.8	8.6	6.8
Nebraska	6.5	5.9	6.5	4.7	4.9	5.5	6.3	5.1	6.2	4.1	4.6	5.2
South Dakota	10.1	7.5	9.5	8.3	9.6	10.2	8.9	7.8	9.6	5.4	8.5	9.3
Utah	7.1	7.7	8.4	4.3	4.2	4.4	7.2	6.2	7.2	3.9	4.0	4.0
United States							4.7	4.5	4.3	4.0	3.9	3.7

**per 100,000 population*
***1996-97 data obtained from MCHB as part of the RFP;1998-2001 data downloaded from MCHB TVIS on 7-23-04.*
****WISQARS data downloaded on 3-4-04 by specifying unintentional motor vehicle traffic deaths for children 0-14 years by year and by state, shaded cells indicate rates calculated for ≤20 deaths.*

As was noted for the urban states reviewed, WISQARS rates are generally lower than the rates reported by states in their MCHB indicators. For states with larger populations and a greater number of deaths (AZ, CO, UT) this difference is likely due in part to variation in definition. For less populated states the differences may be explained by the use of aggregate data in MCHB reports. In any event, regardless of which data are used for comparison, North Dakota exhibits rates lower than the annual national rate most years.

Table 21 includes the number of MVC deaths and the mortality rates for North Dakota for categories examined for the U.S. in Table 2. Aggregate rates (1991-98 and 1999-2001) are more stable indicators of progress in this table and in all tables that follow in the rural state comparison. Individual year data are reported, however, to give a sense of the number of deaths reported, the impact a change of one or two deaths has on rates, and the challenge remaining for these states.

Table 21
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
For North Dakota
Overall and by Sex, Race, and Hispanic Origin
Children 0-14 Years Old

Year	Total	Male	Female	White	Black	American Indian/AK Native	Asian / Pacific Islander	Hispanic
1991	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)
1992	3.5 (5)	4.0 (3)	2.8 (2)	3.0 (4)	0.0 (0)	9.7 (1)	0.0 (0)	0.0 (0)
1993	2.8 (4)	0.0 (0)	5.7 (4)	3.1 (4)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)
1994	4.9 (7)	6.8 (5)	2.9 (2)	5.4 (7)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)
1995	2.8 (4)	5.5 (4)	0.0 (0)	3.1 (4)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)
1996	4.3 (6)	7.0 (5)	1.5 (1)	3.2 (4)	0.0 (0)	18.4 (2)	0.0 (0)	0.0 (0)
1997	1.5 (2)	1.4 (1)	1.5 (1)	1.6 (2)	0.0 (0)	0.0 (0)	0.0 (0)	45.4 (1)
1998	4.5 (6)	4.4 (3)	4.6 (3)	5.0 (6)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)
Overall 1991-98	3.0 (34)	3.6 (21)	2.4 (13)	3.0 (31)	0.0 (0)	3.5 (3)	0.0 (0)	6.6 (1)
1999	3.8 (5)	3.0 (2)	4.7 (3)	2.5 (3)	0.0 (0)	17.9 (2)	0.0 (0)	0.0 (0)
2000	5.4 (7)	6.0 (4)	4.7 (3)	5.2 (6)	0.0 (0)	8.7 (1)	0.0 (0)	0.0 (0)
2001	1.6 (2)	3.2 (2)	0.0 (0)	0.9 (1)	0.0 (0)	9.3 (1)	0.0 (0)	0.0 (0)
Overall 1999-2001	3.7 (14)	4.1 (8)	3.2 (6)	2.9 (10)	0.0 (0)	12.0 (4)	0.0 (0)	0.0 (0)

**per 100,000 population, shaded cells indicate rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

In virtually every demographic category, North Dakota children have fared better than children in the United States as a whole. As was seen for the U.S., North Dakota boys are at higher risk than girls. Most children killed in MVCs in North Dakota are White children although a single death of a Native American child can cause a dramatic change in MVC mortality rates for that population.

Data for North Dakota are examined in more detail by age group and activity of the child in the MVC in Table 22.

Table 22
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
For North Dakota
Overall, by Age Group, and by Activity of Deceased
Children 0-14 Years Old

Year	All MV Traffic 0-14	All MV Traffic 0-4 only	All MV Traffic 5-9 only	All MV Traffic 10-14 only	MV Occupant Only 0-14	Pedestrian Only 0-14	Pedal Cyclist Only 0-14
1991	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)
1992	3.5 (5)	0.0 (0)	6.1 (3)	4.0 (2)	2.1 (3)	1.4 (2)	0.0 (0)
1993	2.8 (4)	0.0 (0)	4.1 (2)	3.9 (2)	1.4 (2)	0.7 (1)	0.0 (0)
1994	4.9 (7)	2.3 (1)	0.0 (0)	11.5 (6)	4.2 (6)	0.7 (1)	0.0 (0)
1995	2.8 (4)	2.4 (1)	2.1 (1)	3.9 (2)	1.4 (2)	0.0 (0)	0.7 (1)
1996	4.3 (6)	2.4 (1)	4.4 (2)	5.9 (3)	2.2 (3)	1.4 (2)	0.0 (0)
1997	1.5 (2)	2.4 (1)	0.0 (0)	2.0 (1)	0.7 (1)	0.0 (0)	0.0 (0)
1998	4.5 (6)	4.9 (2)	2.3 (1)	6.1 (3)	4.5 (6)	0.0 (0)	0.0 (0)
Overall 1991-98	3.0 (34)	1.8 (6)	2.4 (9)	4.7 (19)	2.1 (23)	0.5 (6)	0.1 (1)
1999	3.8 (5)	7.5 (3)	0.0 (0)	4.2 (2)	3.0 (4)	0.0 (0)	0.0 (0)
2000	5.4 (7)	0.0 (0)	4.7 (2)	10.5 (5)	5.4 (7)	0.0 (0)	0.0 (0)
2001	1.6 (2)	2.7 (1)	2.5 (1)	0.0 (0)	0.8 (1)	0.8 (1)	0.0 (0)
Overall 1999-2001	3.7 (14)	3.4 (4)	2.4 (3)	5.0 (7)	3.1 (12)	0.3 (1)	0.0 (0)

**per 100,000 population, shaded cells indicate rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

Of the 48 children who died in MVCs in North Dakota from 1991 through 2001, more than half (54%) were 10-14 years of age. One-quarter were 5-9 years and 21% were 0-4 years. Almost three-quarters (73%) of the children killed were motor vehicle occupants.

Motor Vehicle Crash Mortality Rates in Seven Rural States

WISQARS was also used to calculate and compare motor vehicle crash mortality rates in North Dakota and six other rural states (Arizona, Colorado, Montana, Nebraska, South Dakota, and Utah.) Each table displays the mortality rate, i.e., the number of deaths per 100,000 population, with the number of deaths in parentheses. Rates that are based on 20 or fewer deaths vary considerably with the addition or subtraction of one death and changes in such rates should be interpreted with caution. The table cells with rates based on small numbers have been shaded. For these rural states, the overall 1991-98 and 1999-2001 rates are more reliable indicators of performance. Yearly data are included to illustrate the magnitude of the problem for each state.

Overall Motor Vehicle Crash Mortality Rates for Rural States (Table 23)

- Using more stable **aggregate rates** (1991-98 and 1999-2001), **North Dakota's MVC mortality rate is lowest** among the rural states examined.
- North Dakota averaged 4.4 MVC deaths of children 0-14 years of age each year over the eleven years examined.
- North Dakota's MVC mortality rate for children 0-14 years was among the lowest in most single years examined.

Table 23
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for North Dakota and Comparative Rural States
All Children 0-14 Years

Year	ND	AZ	CO	MT	NE	SD	UT
1991	**0.0 (0)**	7.0 (61)	4.6 (35)	3.7 (7)	4.9 (18)	8.8 (15)	5.0 (27)
1992	**3.5 (5)**	7.1 (64)	5.6 (44)	5.2 (10)	5.7 (21)	4.0 (7)	5.2 (28)
1993	**2.8 (4)**	6.1 (57)	5.8 (47)	0.5 (1)	7.1 (26)	5.2 (9)	7.3 (40)
1994	**4.9 (7)**	5.5 (52)	5.3 (43)	7.1 (14)	4.6 (17)	7.5 (13)	6.7 (37)
1995	**2.8 (4)**	8.4 (83)	6.8 (56)	6.7 (13)	4.3 (16)	4.1 (7)	6.3 (35)
1996	**4.3 (6)**	7.4 (76)	5.2 (44)	5.7 (11)	6.3 (23)	8.9 (15)	7.2 (40)
1997	**1.5 (2)**	6.5 (67)	4.4 (38)	6.4 (12)	5.1 (19)	7.8 (13)	6.2 (35)
1998	**4.5 (6)**	5.0 (54)	4.1 (36)	4.3 (8)	6.2 (23)	9.6 (16)	7.2 (42)
Overall 1991-98	**3.0 (34)**	6.6 (514)	5.2 (343)	4.9 (76)	5.5 (163)	7.0 (95)	6.4 (284)
1999	**3.8 (5)**	4.9 (55)	4.0 (36)	4.8 (9)	4.1 (15)	5.4 (9)	3.9 (23)
2000	**5.4 (7)**	6.1 (70)	4.5 (41)	8.6 (16)	4.6 (17)	8.5 (14)	4.0 (24)
2001	**1.6 (2)**	5.7 (69)	4.9 (46)	6.8 (12)	5.2 (19)	9.3 (15)	4.0 (24)
Overall 1999-2001	**3.7 (14)**	5.6 (194)	4.4 (123)	6.7 (37)	4.6 (51)	7.7 (38)	4.0 (71)

**per 100,000 population, shaded cells indicate rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

Motor Vehicle Crash Mortality Rates for Rural States by Gender (Tables 24-25)

- Using more stable **aggregate rates** (1991-98 and 1999-2001), **North Dakota's MVC mortality rate for female children 0-14 years is lowest** among the rural states examined. North Dakota's rate for **male children was lowest** for the earliest years **and second to Utah** in more recent years.
- MVC **deaths of male children exceeded deaths of female children** by an average of 1.5 to 1.

Table 24
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for North Dakota and Comparative Rural States
MALE Children 0-14 Years

Year	ND	AZ	CO	MT	NE	SD	UT
1991	**0.0 (0)**	6.9 (31)	5.6 (22)	3.1 (3)	4.2 (8)	10.3 (9)	4.3 (12)
1992	**4.0 (3)**	8.1 (37)	7.7 (31)	5.0 (5)	6.4 (12)	4.5 (4)	5.0 (14)
1993	**0.0 (0)**	6.7 (32)	6.3 (26)	1.0 (1)	7.9 (15)	5.6 (5)	8.5 (24)
1994	**6.8 (5)**	6.8 (33)	5.7 (24)	8.9 (9)	4.2 (8)	6.8 (6)	7.8 (22)
1995	**5.5 (4)**	8.5 (43)	8.0 (34)	10.0 (10)	4.8 (9)	4.6 (4)	7.0 (20)
1996	**7.0 (5)**	8.8 (46)	5.3 (23)	7.1 (7)	5.8 (11)	10.4 (9)	8.4 (24)
1997	**1.4 (1)**	7.2 (38)	3.0 (13)	5.2 (5)	6.4 (12)	5.8 (5)	6.5 (19)
1998	**4.4 (3)**	5.3 (29)	5.1 (23)	5.2 (5)	10.0 (19)	11.7 (10)	7.4 (22)
Overall 1991-98	**3.6 (21)**	7.3 (289)	5.8 (196)	5.7 (45)	6.2 (94)	7.4 (52)	6.9 (157)
1999	**3.0 (2)**	7.0 (40)	4.5 (21)	6.2 (6)	3.7 (7)	1.2 (1)	4.3 (13)
2000	**6.0 (4)**	6.6 (39)	3.6 (17)	12.5 (12)	3.7 (7)	10.6 (9)	3.3 (10)
2001	**3.2 (2)**	7.3 (45)	5.2 (25)	5.5 (5)	4.8 (9)	8.5 (7)	3.6 (11)
Overall 1999-2001	**4.1 (8)**	7.0 (124)	4.4 (63)	8.1 (23)	4.1 (23)	6.7 (17)	3.7 (34)

**per 100,000 population, shaded cells indicate rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

Table 25
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for North Dakota and Comparative Rural States
FEMALE Children 0-14 Years

Year	ND	AZ	CO	MT	NE	SD	UT
1991	**0.0 (0)**	7.0 (30)	3.5 (13)	4.3 (4)	5.6 (10)	7.2 (6)	5.7 (15)
1992	**2.8 (2)**	6.2 (27)	3.4 (13)	5.3 (5)	5.0 (9)	3.5 (3)	5.3 (14)
1993	**5.7 (4)**	5.5 (25)	5.4 (21)	0.0 (0)	6.1 (11)	4.7 (4)	6.0 (16)
1994	**2.9 (2)**	4.1 (19)	4.8 (19)	5.2 (5)	5.0 (9)	8.3 (7)	5.6 (15)
1995	**0.0 (0)**	8.3 (40)	5.5 (22)	3.2 (3)	3.9 (7)	3.6 (3)	5.6 (15)
1996	**1.5 (1)**	6.0 (30)	5.1 (21)	4.3 (4)	6.7 (12)	7.3 (6)	5.9 (16)
1997	**1.5 (1)**	5.7 (29)	6.0 (25)	7.6 (7)	3.9 (7)	9.8 (8)	5.8 (16)
1998	**4.6 (3)**	4.8 (25)	3.0 (13)	3.3 (3)	2.2 (4)	7.4 (6)	7.1 (20)
Overall 1991-98	**2.4 (13)**	5.9 (225)	4.6 (147)	4.2 (31)	4.8 (69)	6.5 (43)	5.9 (127)
1999	**4.7 (3)**	2.7 (15)	3.4 (15)	3.3 (3)	4.4 (8)	9.9 (8)	3.5 (10)
2000	**4.7 (3)**	5.5 (31)	5.4 (24)	4.4 (4)	5.5 (10)	6.2 (5)	4.8 (14)
2001	**0.0 (0)**	4.1 (24)	4.6 (21)	8.1 (7)	5.6 (10)	10.2 (8)	4.5 (13)
Overall 1999-2001	**3.2 (6)**	4.1 (70)	4.5 (60)	5.2 (14)	5.2 (28)	8.8 (21)	4.3 (37)

**per 100,000 population, shaded cells indicate rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

Motor Vehicle Crash Mortality Rates for Rural States by Race/Ethnicity (Tables 26-27)

- Using more stable **aggregate rates** (1991-98 and 1999-2001), **North Dakota's MVC mortality rate for white children is lowest** among the rural states examined.
- The most valid comparisons for MVC mortality among Native American children is among the 4 states with sizable Native American populations (AZ, ND, SD and UT.) **North Dakota's MVC mortality rate for Native American children 0-14 years was lowest** during the 1990's and second lowest in recent years. It should be noted that even aggregate data are often based on small numbers.
- Comparison of rates for other race/ethnicity groups are not included because the portion of the population of North Dakota represented by other groups is very small.

Table 26
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for North Dakota and Comparative Rural States
WHITE Children 0-14 Years

Year	ND	AZ	CO	MT	NE	SD	UT
1991	**0.0 (0)**	6.7 (50)	4.7 (33)	3.5 (6)	5.3 (18)	8.1 (12)	5.1 (26)
1992	**3.0 (4)**	6.2 (47)	5.9 (42)	4.6 (8)	5.9 (20)	3.3 (5)	4.8 (25)
1993	**3.1 (4)**	5.1 (40)	5.6 (41)	0.6 (1)	7.4 (25)	4.7 (7)	7.7 (40)
1994	**5.4 (7)**	4.6 (37)	5.0 (37)	6.3 (11)	4.7 (16)	6.7 (10)	6.5 (34)
1995	**3.1 (4)**	8.1 (68)	6.8 (51)	6.4 (11)	4.1 (14)	3.4 (5)	6.1 (32)
1996	**3.2 (4)**	5.7 (49)	5.5 (42)	5.9 (10)	5.9 (20)	7.0 (10)	7.6 (40)
1997	**1.6 (2)**	6.1 (53)	4.0 (31)	4.8 (8)	5.6 (19)	6.4 (9)	5.6 (30)
1998	**5.0 (6)**	4.7 (43)	4.3 (34)	3.6 (6)	6.5 (22)	7.1 (10)	6.9 (38)
Overall 1991-98	**3.0 (31)**	5.9 (387)	5.2 (311)	4.5 (61)	5.7 (154)	5.8 (68)	6.3 (265)
1999	**2.5 (3)**	4.1 (39)	4.2 (34)	3.6 (6)	4.2 (14)	5.8 (8)	3.8 (21)
2000	**5.2 (6)**	5.3 (52)	4.3 (35)	8.6 (14)	4.5 (15)	6.6 (9)	3.9 (22)
2001	**0.9 (1)**	4.4 (45)	4.7 (40)	6.5 (10)	5.2 (17)	7.5 (10)	3.9 (22)
Overall 1999-2001	**2.9 (10)**	4.6 (136)	4.4 (109)	6.2 (30)	4.6 (46)	6.6 (27)	3.9 (65)

**per 100,000 population, shaded cells indicate rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

Table 27
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for North Dakota and Comparative Rural States
NATIVE AMERICAN / ALASKAN NATIVE Children 0-14 Years

Year	ND	AZ	CO	MT	NE	SD	UT
1991	**0.0 (0)**	11.1 (9)	10.9 (1)	5.6 (1)	0.0 (0)	14.2 (3)	10.2 (1)
1992	**9.7 (1)**	15.6 (13)	0.0 (0)	10.9 (2)	0.0 (0)	9.1 (2)	30.3 (3)
1993	**0.0 (0)**	18.6 (16)	9.7 (1)	0.0 (0)	20.9 (1)	8.9 (2)	0.0 (0)
1994	**0.0 (0)**	11.5 (10)	0.0 (0)	15.7 (3)	0.0 (0)	8.9 (2)	18.8 (2)
1995	**0.0 (0)**	8.9 (8)	17.8 (2)	10.4 (2)	19.9 (1)	8.9 (2)	18.8 (2)
1996	**18.4 (2)**	29.8 (27)	8.4 (1)	5.3 (1)	0.0 (0)	21.7 (5)	0.0 (0)
1997	**0.0 (0)**	10.0 (9)	0.0 (0)	20.8 (4)	0.0 (0)	17.0 (4)	0.0 (0)
1998	**0.0 (0)**	7.7 (7)	15.0 (2)	10.3 (2)	0.0 (0)	25.3 (6)	0.0 (0)
Overall 1991-98	**3.5 (3)**	14.2 (99)	7.9 (7)	10.0 (15)	5.1 (2)	14.4 (26)	9.6 (8)
1999	**17.9 (2)**	13.1 (12)	0.0 (0)	10.2 (2)	0.0 (0)	4.1 (1)	8.9 (1)
2000	**8.7 (1)**	11.9 (11)	6.5 (1)	10.1 (2)	17.2 (1)	20.4 (5)	17.6 (2)
2001	**9.3 (1)**	20.1 (19)	13.1 (2)	10.6 (2)	17.7 (1)	20.9 (5)	8.9 (1)
Overall 1999-2001	**12.0 (4)**	15.1 (42)	6.7 (3)	10.3 (6)	11.9 (2)	15.1 (11)	11.8 (4)

**per 100,000 population, shaded cells indicate rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

Motor Vehicle Crash Mortality Rates for Rural States by 5-Year Age Groups (Tables 28-29)

- Using more stable **aggregate rates** (1991-98 and 1999-2001), **North Dakota's MVC mortality rate for children 0-4 years was lowest during the 1990's** and third lowest in recent years.
- **North Dakota's MVC mortality rate for children 5-9 years is lowest** among the rural states examined.
- North Dakota averages two MVC deaths of children 0-9 years old each year.
- **North Dakota's MVC mortality rate for 10-14 year olds was lowest** among the rural states during the 1990's but was **higher than 2 states** (NE and UT) **in recent years.**
- North Dakota's annual MVC mortality rate young adolescents fluctuates widely. Over one-half of their MVC deaths of children 0-14 years of age occur in this young adolescent subgroup.

Table 28
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for North Dakota and Comparative Rural States
All Children 0 – 4 YEARS OLD

Year	ND	AZ	CO	MT	NE	SD	UT
1991	**0.0 (0)**	8.0 (25)	2.7 (7)	8.5 (5)	1.7 (2)	3.7 (2)	5.2 (9)
1992	**0.0 (0)**	9.0 (29)	5.3 (14)	3.4 (2)	5.1 (6)	5.5 (3)	4.6 (8)
1993	**0.0 (0)**	7.2 (24)	7.1 (19)	0.0 (0)	4.3 (5)	7.4 (4)	2.8 (5)
1994	**2.3 (1)**	6.3 (21)	6.0 (16)	12.0 (7)	6.9 (8)	3.8 (2)	7.8 (14)
1995	**2.4 (1)**	10.1 (35)	7.1 (19)	5.3 (3)	4.4 (5)	1.9 (1)	6.0 (11)
1996	**2.4 (1)**	7.4 (26)	6.3 (17)	8.9 (5)	5.3 (6)	3.9 (2)	8.5 (16)
1997	**2.4 (1)**	5.9 (21)	3.3 (9)	11.0 (6)	5.2 (6)	7.9 (4)	4.6 (9)
1998	**4.9 (2)**	7.1 (26)	3.9 (11)	5.5 (3)	4.3 (5)	11.9 (6)	7.5 (15)
Overall 1991-98	**1.8 (6)**	7.6 (207)	5.2 (112)	6.8 (31)	4.6 (43)	5.7 (24)	5.9 (87)
1999	**7.5 (3)**	5.8 (22)	2.7 (8)	3.7 (2)	1.7 (2)	2.0 (1)	2.9 (6)
2000	**0.0 (0)**	6.8 (26)	4.4 (13)	5.5 (3)	5.1 (6)	5.9 (3)	2.4 (5)
2001	**2.7 (1)**	6.6 (27)	5.1 (16)	3.8 (2)	1.7 (2)	4.0 (2)	3.7 (8)
Overall 1999-2001	**3.4 (4)**	6.4 (75)	4.1 (37)	4.3 (7)	2.9 (10)	3.9 (6)	3.0 (19)

**per 100,000 population, shaded cells indicate rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

Table 29
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for North Dakota and Comparative Rural States
All Children 5 – 9 YEARS OLD

Year	ND	AZ	CO	MT	NE	SD	UT
1991	**0.0 (0)**	6.2 (18)	4.2 (11)	1.5 (1)	6.4 (8)	13.7 (8)	3.9 (7)
1992	**6.1 (3)**	5.8 (17)	6.4 (17)	3.0 (2)	4.0 (5)	3.4 (2)	5.2 (9)
1993	**4.1 (2)**	4.3 (13)	5.2 (14)	0.0 (0)	5.7 (7)	0.0 (0)	8.1 (14)
1994	**0.0 (0)**	3.6 (11)	3.6 (10)	1.5 (1)	3.2 (4)	10.4 (6)	2.9 (5)
1995	**2.1 (1)**	5.5 (18)	3.6 (10)	7.7 (5)	4.0 (5)	3.5 (2)	6.8 (12)
1996	**4.4 (2)**	5.6 (19)	2.5 (7)	3.1 (2)	4.0 (5)	5.3 (3)	6.1 (11)
1997	**0.0 (0)**	5.4 (19)	3.1 (9)	4.7 (3)	4.8 (6)	3.6 (2)	6.5 (12)
1998	**2.3 (1)**	4.6 (17)	3.7 (11)	1.6 (1)	7.2 (9)	1.8 (1)	4.8 (9)
Overall 1991-98	**2.4 (9)**	5.1 (132)	4.0 (89)	2.9 (15)	4.9 (49)	5.3 (24)	5.5 (79)
1999	**0.0 (0)**	3.7 (14)	3.9 (12)	8.0 (5)	6.4 (8)	7.2 (4)	4.7 (9)
2000	**4.7 (2)**	4.4 (17)	3.2 (10)	9.7 (6)	6.5 (8)	5.5 (3)	4.7 (9)
2001	**2.5 (1)**	4.7 (19)	3.2 (10)	6.9 (4)	6.7 (8)	9.5 (5)	3.1 (6)
Overall 1999-2001	**2.4 (3)**	4.3 (50)	3.5 (32)	8.2 (15)	6.5 (24)	7.4 (12)	4.2 (24)

**per 100,000 population, shaded cells indicate rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

Table 30
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for North Dakota and Comparative Rural States
All Children 10 – 14 YEARS OLD

Year	ND	AZ	CO	MT	NE	SD	UT
1991	**0.0 (0)**	6.6 (18)	7.0 (17)	1.5 (1)	6.5 (8)	8.6 (5)	5.8 (11)
1992	**4.0 (2)**	6.3 (18)	5.1 (13)	8.8 (6)	8.0 (10)	3.3 (2)	5.7 (11)
1993	**3.9 (2)**	6.7 (20)	5.3 (14)	1.4 (1)	10.9 (14)	8.1 (5)	10.6 (21)
1994	**11.5 (6)**	6.6 (20)	6.2 (17)	8.4 (6)	3.8 (5)	8.0 (5)	9.1 (18)
1995	**3.9 (2)**	9.4 (30)	9.6 (27)	7.0 (5)	4.6 (6)	6.4 (4)	6.2 (12)
1996	**5.9 (3)**	9.4 (31)	7.0 (20)	5.6 (4)	9.2 (12)	16.4 (10)	6.8 (13)
1997	**2.0 (1)**	8.1 (27)	6.8 (20)	4.3 (3)	5.4 (7)	11.5 (7)	7.3 (14)
1998	**6.1 (3)**	3.2 (11)	4.7 (14)	5.7 (4)	6.9 (9)	15.0 (9)	9.4 (18)
Overall 1991-98	**4.7 (19)**	7.0 (175)	6.5 (142)	5.4 (30)	6.9 (71)	9.7 (47)	7.6 (118)
1999	**4.2 (2)**	5.2 (19)	5.2 (16)	2.9 (2)	3.9 (5)	6.7 (4)	4.2 (8)
2000	**10.5 (5)**	7.1 (27)	5.8 (18)	10.1 (7)	2.3 (3)	13.5 (8)	5.2 (10)
2001	**0.0 (0)**	5.7 (23)	6.2 (20)	9.0 (6)	7.1 (9)	13.9 (8)	5.2 (10)
Overall 1999-2001	**5.0 (7)**	6.0 (69)	5.7 (54)	7.3 (15)	4.4 (17)	11.3 (20)	4.9 (28)

**per 100,000 population, shaded cells indicate rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

Motor Vehicle Crash Mortality Rates for Rural States by Activity of Deceased (Tables 31-33)

- Using more stable **aggregate rates** (1991-98 and 1999-2001), **North Dakota's MVC mortality rate for motor vehicle occupants 0-14 year olds was lowest** among the rural states during the 1990's but was **higher than 3 states** (AZ, CO, and UT) **in recent years**.
- Deaths of motor vehicle occupants comprise 73% of all MVC deaths for 0-14 year old children in North Dakota.
- The pedestrian aggregate mortality rate was lowest in North Dakota for both time periods but pedestrian and pedal cyclist rates should be interpreted with caution due to small numbers.

Table 31
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for North Dakota and Comparative Rural States
MOTOR VEHICLE OCCUPANTS 0 – 14 Years of Age

Year	ND	AZ	CO	MT	NE	SD	UT
1991	**0.0 (0)**	2.3 (20)	2.6 (20)	2.1 (4)	3.5 (13)	5.9 (10)	2.8 (15)
1992	**2.1 (3)**	2.2 (20)	3.6 (28)	3.6 (7)	4.1 (15)	2.3 (4)	1.8 (10)
1993	**1.4 (2)**	2.1 (20)	2.1 (17)	0.0 (0)	4.9 (18)	3.4 (6)	3.8 (21)
1994	**4.2 (6)**	2.0 (19)	1.8 (15)	4.6 (9)	3.8 (14)	5.2 (9)	2.9 (16)
1995	**1.4 (2)**	3.5 (35)	1.9 (16)	5.2 (10)	1.9 (7)	2.9 (5)	3.6 (20)
1996	**2.2 (3)**	2.5 (26)	2.0 (17)	5.2 (10)	3.3 (12	8.3 (14)	2.9 (16)
1997	**0.7 (1)**	3.6 (37)	1.6 (14)	5.3 (10)	4.3 (16)	6.6 (11)	4.2 (24)
1998	**4.5 (6)**	2.7 (29)	2.4 (21)	4.3 (8)	4.1 (15)	9.0 (15)	4.0 (23)
Overall 1991-98	**2.1 (23)**	2.7 (206)	2.3 (148)	3.8 (58)	3.7 (110)	5.4 (74)	3.3 (145)
1999	**3.0 (4)**	0.6 (7)	1.1 (10)	1.1 (2)	3.2 (12)	3.0 (5)	0.5 (3)
2000	**5.4 (7)**	1.2 (14)	1.1 (10)	5.9 (11)	3.5 (13)	4.8 (8)	1.3 (8)
2001	**0.8 (1)**	1.2 (14)	1.4 (13)	6.2 (11)	3.3 (12)	8.1 (13)	0.8 (5)
Overall 1999-2001	**3.1 (12)**	1.0 (35)	1.2 (33)	4.4 (24)	3.4 (37)	5.3 (26)	0.9 (16)

**per 100,000 population, shaded cells indicate rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

Table 32
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for North Dakota and Comparative Rural States
PEDESTRIANS 0 – 14 Years of Age

Year	ND	AZ	CO	MT	NE	SD	UT
1991	**0.0 (0)**	2.2 (19)	0.9 (7)	0.5 (1)	0.8 (3)	1.2 (2)	1.7 (9)
1992	**1.4 (2)**	2.5 (22)	1.0 (8)	0.5 (1)	1.1 (4)	1.1 (2)	2.4 (13)
1993	**0.7 (1)**	1.8 (17)	1.7 (14)	0.5 (1)	1.9 (7)	1.1 (2)	2.4 (13)
1994	**0.7 (1)**	1.7 (16)	1.5 (12)	2.5 (5)	0.5 (2)	2.3 (4)	2.4 (13)
1995	**0.0 (0)**	3.0 (30)	1.2 (10)	1.5 (3)	1.4 (5)	1.2 (2)	2.2 (12)
1996	**1.4 (2)**	1.9 (19)	1.3 (11)	0.5 (1)	2.2 (8)	0.0 (0)	2.1 (12)
1997	**0.0 (0)**	1.7 (18)	1.2 (10)	0.5 (1)	0.5 (2)	0.6 (1)	1.4 (8)
1998	**0.0 (0)**	1.4 (15)	0.8 (7)	0.0 (0)	0.8 (3)	0.6 (1)	1.6 (9)
Overall 1991-98	**0.5 (6)**	2.0 (156)	1.2 (79)	0.8 (13)	1.2 (34)	1.0 (14)	2.0 (89)
1999	**0.0 (0)**	1.2 (13)	1.0 (9)	1.1 (2)	0.3 (1)	1.8 (3)	1.4 (8)
2000	**0.0 (0)**	1.2 (14)	1.3 (12)	1.1 (2)	1.1 (4)	1.8 (3)	1.2 (7)
2001	**0.8 (1)**	1.2 (15)	0.6 (6)	0.6 (1)	0.6 (2)	0.6 (1)	1.0 (6)
Overall 1999-2001	**0.3 (1)**	1.2 (42)	1.0 (27)	0.9 (5)	0.6 (7)	1.4 (7)	1.2 (21)

**per 100,000 population, shaded cells indicate rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

Table 33
Motor Vehicle Crash Mortality Rates* and (Number of Deaths)
for North Dakota and Comparative Rural States
PEDAL CYCLISTS 0 – 14 Years of Age

Year	ND	AZ	CO	MT	NE	SD	UT
1991	**0.0 (0)**	1.3 (11)	0.5 (4)	0.0 (0)	0.5 (2)	1.8 (3)	0.4 (2)
1992	**0.0 (0)**	0.4 (4)	0.8 (6)	1.0 (2)	0.3 (1)	0.6 (1)	0.2 (1)
1993	**0.0 (0)**	0.4 (4)	0.5 (4)	0.0 (0)	0.3 (1)	0.0 (0)	0.7 (4)
1994	**0.0 (0)**	0.7 (7)	0.5 (4)	0.0 (0)	0.0 (0)	0.0 (0)	1.1 (6)
1995	**0.7 (1)**	0.8 (8)	0.6 (5)	0.0 (0)	0.8 (3)	0.0 (0)	0.4 (2)
1996	**0.0 (0)**	0.7 (7)	0.4 (3)	0.0 (0)	0.5 (2)	0.6 (1)	0.4 (2)
1997	**0.0 (0)**	0.3 (3)	0.5 (4)	0.0 (0)	0.3 (1)	0.6 (1)	0.4 (2)
1998	**0.0 (0)**	0.2 (2)	0.1 (1)	0.0 (0)	0.8 (3)	0.0 (0)	0.7 (4)
Overall 1991-98	**0.1 (1)**	0.6 (46)	0.5 (31)	0.1 (2)	0.4 (13)	0.4 (6)	0.5 (23)
1999	**0.0 (0)**	0.3 (3)	0.1 (1)	1.1 (2)	0.3 (1)	0.0 (0)	0.3 (2)
2000	**0.0 (0)**	0.1 (1)	0.0 (0)	1.1 (2)	0.0 (0)	0.6 (1)	0.2 (1)
2001	**0.0 (0)**	0.3 (4)	0.3 (3)	0.0 (0)	0.8 (3)	0.6 (1)	0.2 (1)
Overall 1999-2001	**0.0 (0)**	0.2 (8)	0.1 (4)	0.7 (4)	0.4 (4)	0.4 (2)	0.2 (4)

**per 100,000 population, shaded cells indicate rates based on ≤20 deaths* *Data downloaded from WISQARS on 3-4-04.*

Summary of Comparison of North Dakota with Other Rural States

- In both aggregate periods (1991-98 and 1999-2001), North Dakota had the lowest MVC mortality rate among the rural states examined with a rate of 3.0 deaths per 100,000 population in the earlier period and 3.7 deaths per 100,000 in more recent years.
- North Dakota's MVC mortality was lower for girls compared to boys.
- In the earlier period, the MVC mortality rate for Whites was comparable to that of Native Americans. In the three years since the institution of the new ICD coding system, the rate for all groups but particularly for Native Americans is noticeably higher but the instability of the rates due to small numbers must be kept in mind. It will be important, however, to monitor these rates over time using aggregate rates for stability.
- When examined by 5-year age groups, the positive correlation between risk and increasing age is seen in North Dakota in the 8-year aggregate rates. More than half the deaths in the total 11 year period were to young adolescents (10-14 years.)
- MVC mortality rates were also higher for motor vehicle occupants than for pedestrians.

Interviews with North Dakota Officials

To further explore North Dakota's program activities, project staff met with key informants in North Dakota. The site visit took place on April 2-3, 2003 in the Department of Health offices at the North Dakota State Capitol in Bismarck. On April 2 an introductory meeting with officials of the Department of Health explored three issues: 1) the role of the Division of Maternal and Child Health's Injury Prevention program in "reducing the number of severity and injuries to North Dakotans, with special emphasis on injuries to children" (NDSN, 2002); 2) how the Maternal and Child Health Division receives and reports data to MCHB; and 3) the importance of the Child Fatality Review Panel in identifying patterns, trends and strategies to prevent childhood deaths. On April 3, participants from a number of agencies assembled for an informal discussion of their respective programs and the collaborations that exist between agencies in the furtherance of the common goal of reducing childhood motor vehicle fatalities. Participants at the site visit are listed in Appendix B.

Agencies with Responsibility for Childhood Injury Prevention

The **Division of Maternal and Child Health** within the Community Health Section of the North Dakota Department of Health is the Title V Agency in North Dakota. Injury Prevention is one of seven programs in the division. Its mission is "to reduce the number and severity of injuries to North Dakotans, with special emphasis on injuries to children." (NDSN, 2002) The full-time director and part-time health educator provide information to the public and train law enforcement candidates and officers about the state laws concerning child passenger safety. Among the means of community outreach are billboards, news releases, a newsletter to child-care and child health-care providers and a weekly radio program that reaches 75 percent of the state. Further activities include car safety seat check-ups and Safety Town presentations to children at locations throughout the state. The Injury Prevention Program is also active in

promoting issues of child safety to the state legislature. They write policy statements, draft bills and sponsor legislation on child passenger seat use.

The Safety and Education Office of the **North Dakota State Patrol** coordinates activities of State Patrol officers that encourage safe driving practices, community education on state laws and local ordinances as well as passenger safety. The office also collaborates with law enforcement officials on the tribal, county and local levels in their efforts to increase motor vehicle safety. While enforcement of the laws is primary among the tasks of the State Patrol, the safety and education office supports the mission of the State Patrol to serve and protect the citizens and visitors to the state.

The Driver's License and Traffic Safety Division of the **Department of Transportation (DOT)** publishes an annual *North Dakota Vehicle Crash Facts* report that provides a wealth of detail concerning the motor vehicle crashes in the state. It includes data on injuries and death by age group, restraint usage, alcohol involvement, vehicle and non-vehicle involvement, and environmental factors. The purpose of the collection of these statistics is to learn the causes of crashes and find solutions through the introduction of laws, implementation of safety programs, increased enforcement, and highway improvements. Its target audience is "news media, legislators, researchers, law enforcement agencies, judicial personnel, insurance companies, businesses, students, and all drivers." (NDDOT, 2001) The division also provides direct education to high school students on the personal and social toll that motor vehicle crashes can take.

Surveillance

Surveillance is a major function of the North Dakota Department of Transportation, which provides in-depth analysis of a number of environmental factors in its annual *North Dakota Vehicle Crash Facts*. It reports on temporal situation of crashes: time of day, day of the week, month, and major holidays. It further reports on light, weather and road surface conditions and type of road; type of vehicle and speed; alcohol involvement; use of restraints and ejection from the vehicle. The information is used by legislators drafting bills, community groups providing local education on safety topics and the media in reporting on safety trends. In addition, the *Child Fatality Reviews Annual Report*, published by the North Dakota Department of Human Services, Division of Children and Family Services, is used for surveillance.

The **Child Fatality Review Panel** is charged with reviewing the deaths of all North Dakota children under 18 years of age. Panel members feel that one of its greatest values is to personalize every child death in North Dakota. The original purpose of Child Fatality Review Panels as a movement was the examination of childhood deaths due to abuse and/or neglect. North Dakota has expanded the scope of their panel to include all child deaths. They classify these deaths into two groups, the first including sudden, unexpected and/or unexplained deaths (Status A) and the second including deaths that were not unexpected, i.e., deaths due to natural causes or long-term illness. (Status B). Deaths in the Status A category are examined in detail making the review of a death from a motor vehicle crash as an important as the death of a child from abuse. The panel focuses on the cause of children's deaths, circumstances that contribute to those deaths, and recommendation of changes in policy, practices and law in order to prevent children's deaths.

The Child Fatality Review Panel has collected data by calendar year beginning in 1996 and issues an annual report. Data are reported by calendar year and combined years since the number of child deaths in any one-year is relatively low. The panel not only reports on child fatalities in detail, it also makes policy recommendations in clear and forceful language.

Interventions in North Dakota

As with New York, interventions described below are presented by the categories in the literature review and focus primarily on regulatory interventions and education. Medical, environmental, and mechanical factors are also discussed briefly.

Regulatory Interventions

The North Dakota State Legislature passed a **child passenger safety law** in 1983 that was implemented in 1984. In the intervening years amendments to the law have broadened its scope. In 1987, the exemption of responsibility for drivers other than parents or guardians to buckle children into safety seats was eliminated. In 1991, children five to ten years of age were included in the requirement for safety belts and in 1999 children 11 to 17 were included. Prior to 1999, children 11 to 17 were covered under the adult law. The State Highway Patrol also issues citations for infractions of the seat belt law, which has a primary enforcement provision for children under 18.

Children may obtain driver's permits at age 14 and after completing driver's education and passing the state licensure examination, may earn a restricted driver's license at age 14 years and six months. This **two-tiered driver's licensing sequence** was mandated by the legislature in 1999 in order to ensure that young drivers have both education and experience before being licensed. North Dakota does not have an intermediate stage that restricts unsupervised driving and/or how many passengers may ride with the newly licensed driver. Minor drivers are subject to stricter penalties when found guilty of infractions leading to suspension of their driver privileges. They must complete further classroom and behind-the-wheel drivers' education and pass the written and driving examinations before being re-licensed. The Insurance Institute for Highway Safety (IIHS, 7-23-04c) has rated North Dakota's graduated licensing requirements as marginal.

The 2003 legislative session enacted a permissible **blood alcohol concentration (BAC) limit** of .08 percent for drivers over 21 and .02 percent for drivers younger than 21 and increased the penalties for drivers with greater than .16 percent BAC. The penalty for a driver over age 20 convicted of driving while impaired is increased if the driver was at the time of citation transporting a child in the vehicle. The highway patrol conducts frequent sobriety checkpoint stops and participates in saturation patrols with local law enforcement agencies. They receive positive news coverage of these events and report substantial citizen support.

There are limited ordinances mandating helmet usage. There is no bicycle helmet requirement for riders of any age. Motorcycle operators and riders under eighteen years old are required to wear a helmet, but adult motorcyclists are not.

Since North Dakota has not enacted a number of legislative proposals that encourage motor vehicle safety (e.g., motorcycle helmets for adults, bicycle helmets for riders of any age, riding in the back of pick-up trucks), has legislated higher speed limits on Interstate highways, and rescinded the lower night time limit on paved two lane state and county roads, the use of primary enforcement allows officers to emphasize the importance of existing highway safety laws to non-compliant drivers.

In the absence of comprehensive legislation supporting motor vehicle safety, the efforts of the various agencies and communities to educate and instill habits of safety for motor vehicle drivers, passengers and pedestrians becomes all the more critical. The following sections outline these interventions.

Education and Promotion of Safety Measures

The various agencies involved in injury prevention provide the general public as well as specific groups with education and programs designed to enhance the safety of children riding in motor vehicles.

Law enforcement officers and cadets on state, local and tribal levels are trained at the Law Enforcement Training Center in the provisions of the latest laws and ordinances including the primary enforcement of child passenger restraint usage. The Injury Prevention Program provides each officer with a **wallet-sized card summarizing the current law** so that each officer can use such enforcement traffic stops both to enforce the law and to educate the driver about the protection from injury or death to a child afforded by the appropriate use of a car seat, booster seat or seat belt.

The Injury Prevention Program offers a four-day (32 hour) class three times a year leading to **National Certification for Child Passenger Safety Technicians**. Current certification lasts one year, but will soon be valid for two years. A one-day refresher course is also offered to the technicians to assist in recertification. Technicians come from a variety of employment backgrounds including public health nurses, emergency medical technicians (EMTs), law enforcement officers, and car dealership employees.

A number of agencies collaborate on a program of **distribution of car seats at low or no cost** to parents and guardians through hospitals and health departments, most of which have certified child passenger safety technicians on staff. Car seats are often provided at pre-delivery hospital visits so that the equipment is in place and correctly installed before the arrival of the baby.

Car seat check-ups are held monthly in several cities. These events are arranged by the Injury Prevention Program and the Safe Kids Coalitions and use local certified car seat technicians to conduct the check-ups. The purpose is to ensure that car seats meet current standards and are properly installed. The Injury Prevention Program also provides medical practitioners with a **pocket calendar** listing the dates and locations of these events so that they can share the information with parents who bring in children for well-baby check-ups or treatments.

In an effort to remove from circulation car or booster seats that are worn or no longer meet current standards, **car seat round-ups** were held throughout the state. In exchange for an old car

seat, parents were given a gift donated by local merchants. This intervention was discontinued when it was realized that the seats that were surrendered came from attics and storage but were not used in cars to restrain children.

The **"Boost Then Buckle Campaign"** is designed to educate parents about the appropriate types of restraint to use as children grow from infancy through childhood. Medical practitioners wear buttons inviting parents to "Ask me…" and medical offices display a **life-size pasteboard cut out of a 4'9" child** to demonstrate the size of a child who should sit in a booster seat.

Child Passenger Safety Week is an annual event in North Dakota. Law enforcement officers, teachers and public health and school nurses present programs, conduct activities, lead games and distribute incentives to teach children the importance of using passenger safety restraints. The Injury Prevention Program develops the materials and incentives that are used.

Safety Town, a child-size village complete with buildings, sidewalks, signed intersections, streets, marked crosswalks, and railroad crossings, is a preschool safety education program that teaches children home, pedestrian, bike, fire, and other safety topics with the aid of an instructor. The Injury Prevention Program also assists with Safety Town Projects across the State.

As part of its general education initiatives, the sponsoring bodies invite **local media coverage** of safety promotion events. One event that is covered routinely is the **"Saved by the Belt"** awards given by the State Patrol to individuals who survive motor vehicle crashes because they were wearing seatbelts.

Other Factors

Although the **State Emergency Medical Services for Children** (EMSC) project is focusing its injury prevention efforts on adolescent suicide, it has other activities designed to reduce injury and fatalities from motor vehicle crashes. The EMSC has trained more than 900 EMTs, developed life saving equipment lists, conducted a survey of hospital emergency departments, and has begun to analyze ambulance report data.

Interventions for Native Americans

Native Americans account for 4.9 percent of the state's overall population, but are 8.5 percent of the state's child population. In the four-year period from 1996 to 1999 23.4 percent (n = 51) of all of North Dakota's child fatalities were Native American. Of these, 17 deaths were caused by unintentional injures, 11 of which were due to motor vehicle crashes. In the period 1996-1999, 15.9 percent of motor vehicle child fatalities were Native American children (NDDHS, 1999).

The state agencies are aware of the ethnic disparity in child fatalities and work with the Native American community to reduce injuries and fatalities. There seems to be cooperation between tribal and state law enforcement bodies and various state agencies that work with the four tribes and one service area in North Dakota to provide safety education and materials with varying degrees of success.

A strong voice for Injury Prevention in the Native American community is the Chair of the Injury Prevention Department at United Tribes Technical College (UTTC) in Bismarck, Dennis Renville. Mr. Renville discussed the importance of culturally appropriate injury prevention education and of involvement of Native Americans as injury prevention officers on the reservations and in the non-reservation service area.

In addition, the Native American tribes in North Dakota formed a consortium, the **Native American Injury Prevention Coalition**, to "direct and support the development, implementation and evaluation of injury prevention programs for Native Americans" (Renville, no date). The goals of the coalition focus on identifying impaired driving and other traffic safety issues. For example, the coalition has been responsible for training alcohol servers to recognize and refuse service to intoxicated persons at the four Native American-run casinos in North Dakota that serve alcoholic beverages. (The casino at Spirit Lake is alcohol-free.)

North Dakota Summary

North Dakota has a well-established program to prevent MVC injuries to children. Immediately apparent at the meeting with State officials was the "small town feel" of this large and rural state. The population is relatively homogeneous and there is good inter-agency cooperation including the Department of Health, the Department of Transportation, and the State Highway Patrol. Important contributors to North Dakota's success include:

- **Longevity of the Traffic Safety Program**: Ms. Meidinger has served in the Injury Prevention Program for over twenty years and brings that experience to national boards and committees on which she also serves. She is acknowledged nationally as an expert on child transportation safety issues. She also conducts a local weekly radio spot on injury prevention. There is a well-established network of individuals in various agencies that maintains an institutional memory that minimizes the re-invention of programs that are successful and repetition of those that are not.

- **Multiagency Collaboration**: The collaboration and collegiality of agency officials from multiple and diverse agencies was obvious at the site visit and no doubt contributes to North Dakota's success. More than a convening of appropriate officials for our visit to North Dakota, those present exhibited a collegiality that comes from years of working together. Agencies represented included the Maternal and Child Health Division of the ND Department of Health, Division of Emergency Health Services, ND State Patrol, Child Fatality Review Panel, ND Department of Human Services, local hospitals, ND Department of Transportation and the United Tribes Technical College.

- **Child Restraint Laws:** North Dakota passed its first child passenger safety law over 20 years ago and has expanded the scope of the law in the intervening period to cover all children under 18 years of age. There is primary enforcement of the restraint/seat belt laws.

- **Ongoing Education and Technical Support for Passenger Safety:** There is a coordinated statewide effort to provide car seats to needy families and to train car seat technicians to ensure that seats are properly installed and children properly restrained.

Over the 20 years of the program, multiple public education efforts have been launched. Important to North Dakota's efforts is the continual evaluation of the program with the discontinuance of campaigns that do not accomplish the goals of the program. The discontinuance of the car seat round-up described above is an example of the ongoing evaluation of the program

- **Inclusive Child Fatality Review**: North Dakota's inclusive Child Fatality Review process puts a "face" with the death of every child in North Dakota. Inclusion of all unexpected deaths puts a priority on preventing injury deaths be they intentional or unintentional. The report of this Panel was cited by state officials as important in their work with the state legislature.

Substantial efforts are expended in reducing child fatalities from motor vehicle crashes in North Dakota. Since the injury profile in North Dakota is not as complex as it may be in other states – for example, there are few intentional injuries to children – resources are available to devote to child passenger safety and there is considerable experience and expertise at hand. Like New York, North Dakota's motor vehicle injury prevention program is a long-term program with strong and consistent leadership. A comparison state with higher mortality rates, while implementing many of the same programs to reduce mortality, has had less success in maintaining a coordinated and consistent program to reduce motor vehicle crash mortality among children. It bears repeating, as was noted for New York, that the extent to which states can maintain long-term, coordinated traffic safety efforts that are consistently brought to the public's attention through traffic laws with stringent enforcement, public education, and community-based activities, they are more likely to achieve improved rates of indicators of motor vehicle safety.

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