
All-Terrain Vehicle (ATV) Deaths and Injuries in West Virginia:

A Summary of Surveillance and Data Sources

Prepared by

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&

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WV Division of Criminal Justice Services

The Division of Criminal Justice Services is the designated state criminal justice planning agency. The Division is responsible for fostering public safety in West Virginia by providing planning, system coordination, grant administration, training and technical assistance, monitoring, research, statistical services, and law enforcement training.

Criminal Justice Statistical Analysis Center

The Criminal Justice Statistical Analysis Center's mission is to generate statistical and analytical products concerning crime and the criminal justice system for the public and justice system professionals and policymakers, establishing a basis for sound policy and practical decisions for the criminal justice system in West Virginia.

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Introduction

All-terrain vehicles (ATVs) have been popular recreational vehicles since their introduction in the United States in the 1970s. They have experienced increased use worldwide since the early 1990s and newer models weigh as much as 1,000 pounds and can exceed speeds of 75 mph. In the U.S. alone, the U.S. Consumer Product Safety Commission (CPSC) estimates that nearly seven million four-wheeled ATVs were in use in 2004 with some 23 million riders (two-thirds adults and one-third children). An estimated 900,000 were sold in the U.S. in 2006 (85-90% made in U.S. and 10-15% imported), including 20,000 in West Virginia. While there is a requirement to register/title ATVs in the state, it is estimated that only about one-third of them are registered. The lack of definitive information on how many ATVs there are in the state and their location makes it difficult to establish ATV use profiles and to calculate exposure-based rates death and injury rates.

Since 1983, there have been about 130 scientific papers and technical reports written about ATV-related injuries and deaths, associated costs, effectiveness of laws, various prevention strategies, and identification of high-risk groups.

ATV Research Highlights

- WV ATV injuries and deaths have been well defined and documented and are comparable to national statistics.
- Nationally, approximately 130 scientific papers and technical reports have been written about ATV-related injuries and deaths, associated costs, effectiveness of laws, various prevention strategies, and identification of high-risk groups since 1983.
- Roughly 15% of the ATV literature in the U.S. has focused on the state of West Virginia.

Almost 90% of these papers were from the U.S. and reported results from individual trauma centers, case reports or regional summaries for selected groups of patients for varying lengths of time. There also has been a particular focus on young populations.

While several of the more comprehensive studies present national data, a number of studies have also examined ATV injuries and deaths in WV. Thus, the types of injuries, victim demographics and characteristics of WV ATV decedents have been well-defined and documented, and are comparable to national statistics. Roughly 15% of the ATV literature in the U.S. has focused on the state of WV. A list of pertinent U.S. and WV articles and reports is provided in the bibliography section of this report.

The purpose of this report is to summarize the research on ATV-related deaths and injuries in the U.S. and WV. Special attention is given to the results of research conducted on the WV population of residents and ATV users. This is in part due to the extensive use of ATVs among WV residents. In 2005, it was estimated that roughly 460,000 ATVs were in use in WV, with about 16,000 new ATVs being purchased each year. Such widespread use has resulted in WV having one of the highest fatality rates in the nation. Since 1990, WV has experienced the highest population-based death rates in both genders and in all age groups in the U.S.

In addition, this report provides an overview of the various risk factors associated with ATV-related deaths and injuries. Both national and state level research has consistently identified common risk factors associated with death and injury related to ATV crashes/accidents. Such risk factors as the use (or non-use) of a helmet, alcohol/drug use, and other ATV user characteristics and contextual factors are explored. This report concludes with a set of recommendations based upon this review of research. It is anticipated that key findings and recommendations offered in this report will help guide state policymakers as they seek to develop strategies to reduce deaths and injuries associated with ATVs.

Background

Research on ATV-related accidents at both the national and state level has generated information on the magnitude of deaths and injuries associated with ATV's. This research has produced estimates of fatality and injury rates as well as the costs associated with ATV-related injuries and hospitalizations. Such research has shown large percentage increases in the number of deaths and injuries associated with ATV's since the 1980's and the costs associated with hospitalizations as a result of ATV-related injuries. In response to the rise of deaths and injuries resulting from ATV accidents, many states have adopted some form of legislation designed to enhance ATV safety. The following discussion provides an overview of prior research on ATV deaths and injuries in the U.S. and WV. In addition, estimates of costs associated with ATV accidents are reviewed and an overview of ATV safety legislation is described.

U.S. and WV Fatalities and Death Rates, 2000-2004

From 2000-2004, the number and rate of ATV-related deaths increased about 30% nationally from 723 deaths in 2000 (0.25 deaths per 100,000 population) to 961 deaths in 2004 (0.34 deaths per 100,000 population). During the 5-year period, an average of 830 deaths occurred annually and 16 each week. Twenty-one percent of these deaths occurred in children under 16 years of age.

In West Virginia, ATV-related deaths have increased nearly 130% from 14 deaths in 2000 (0.8 deaths per 100,000 population) to 32 deaths in 2004 (1.9 deaths per 100,000). During the 5-year period, an average of 26 deaths occurred annually; one person every 2 weeks. Sixteen percent of the WV deaths occurred in children. WV accounted for about 3% of all U.S. ATV-related deaths during this period and only 0.7% of the U.S. population (see Table 1). For the past 18-years, WV has experienced the highest population-based death rates in both genders and most age groups compared to all other states. Since the enactment of the ATV safety law in May 2004, WV has averaged 45 deaths annually, nearly one person each week.

WV ATV Research Highlights

- In West Virginia, ATV-related deaths have increased nearly 130% from 14 deaths in 2000 (0.8 deaths per 100,000 population) to 32 deaths in 2004 (1.9 deaths per 100,000).
- An average of 26 deaths occurred annually in WV between 2000 and 2004, with 16% of deaths involving children.
- For the past 18-years, West Virginia has experienced the highest population-based death rates in both genders and most age groups compared to all other states.
- Since the enactment of the ATV safety law in May 2004, West Virginia has averaged 45 deaths annually, nearly one person each week.
- In West Virginia, the total lifetime economic burden associated with the 32 deaths in 2004 is estimated to be \$120 million (\$111 million for adults and \$9 million for children).

Over the 5-year period, the total economic burden associated with national ATV-related deaths increased nearly 50% from \$2,660 million in 2000 to \$3,968 million in 2004. The Quality of Life component accounted for 65% of the total economic costs with the Work Lost component accounting for 34% and the Medical component 1%. The estimated average lifetime economic loss for a youth death is \$4.5 million compared to \$3.7 million for an adult (see Table 2). In West Virginia, the total lifetime economic burden associated with the 32 deaths in 2004 is estimated to be \$120 million (\$111 million for adults and \$9 million for children).

Table 1. Trends in the Number of Reported ATV Deaths and the Rate of Death by Age Group and Location, 2000-2004

| Groups | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------------------------------------------|------|------|------|------|------|
| Children (15 years of age or younger) | | | | | |
| <u>U.S.</u> | | | | | |
| No. of deaths | 162 | 159 | 161 | 174 | 201 |
| Rate of death | 0.25 | 0.25 | 0.25 | 0.27 | 0.31 |
| <u>West Virginia</u> | | | | | |
| No. of deaths | 3 | 3 | 5 | 7 | 2 |
| Rate of death | 0.84 | 0.84 | 1.40 | 1.96 | 0.56 |
| Adults (16 years of age or older) | | | | | |
| <u>U.S.</u> | | | | | |
| No. of deaths | 561 | 602 | 621 | 743 | 760 |
| Rate of death | 0.26 | 0.28 | 0.29 | 0.34 | 0.35 |
| <u>West Virginia</u> | | | | | |
| No. of deaths | 11 | 17 | 22 | 28 | 30 |
| Rate of death | 0.79 | 1.23 | 1.59 | 2.03 | 2.17 |

Note: National Center for Health Statistics, Multiple Causes of Death public use file. Rates per 100,000 population; denominators obtained from 2000 Census. Adapted from Helmkamp and Lawrence, Pediatrics, (2007).

U.S. Hospitalizations for Non-fatal Injuries, 2000-2004

The estimated number of people sent to a hospital for an ATV-related injury increased 90% from 8,232 in 2000 to 15,630 in 2004. This translates to 43 persons per day that were treated in hospitals for ATV injuries in 2004. Males accounted for about 80% of the injuries and experienced significantly higher hospital admission rates compared to females (see Graph 1). Passengers accounted for at least 10% of all injuries. Patients below 18 years of age accounted for 30% of the injuries and had hospital admission rates higher than any other age group (see Graph 2 and Appendix A).

Collectively, hospital costs for these injuries increased 243% from \$109 million in 2000 to \$374 million in 2004. The

average charge per patient increased 82% from \$13,638 in 2000 to \$24,871 in 2004. The average length of stay in the hospital for treatment of injuries increased from 3.9 days in 2000 to 4.4 days in 2004. While private insurance and self-pay were the primary payers for nearly 72% of all hospital charges, public/government-financed insurance (i.e., Medicaid and Medicare) accounted for 20%. During the 5-year period, fracture of the lower limb was the most common type of injury accounting for 22% of all injuries. Other fractures accounted for 15%, intracranial injuries 14%, crushing and internal injuries 13% and fractures of the upper limb 12% (see Appendix B).

Table 2. Trends in the Economic Burden of ATV Deaths by Age Group, Causes and Cost Components, U.S. 2000-2004 (in \$M, Nominal dollars, at National Price Levels)

| Component | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------------------------------------------|-----------|-----------|-----------|-----------|-----------|
| Children (15 years of age or younger) | | | | | |
| Deaths | 162 | 159 | 161 | 174 | 201 |
| Quality of Life | \$456.4 | \$467.8 | \$487.5 | \$549.9 | \$657.2 |
| Work Loss | 215.3 | 222.5 | 232.7 | 257.8 | 314.1 |
| Medical | 1.3 | 1.2 | 1.8 | 2.1 | 2.2 |
| Total | 673.0 | 691.5 | 722.0 | 809.8 | 973.5 |
| Adults (16 years of age or older) | | | | | |
| Deaths | 561 | 602 | 621 | 743 | 760 |
| Quality of Life | \$1,242.6 | \$1,377.1 | \$1,422.6 | \$1,766.8 | \$1,882.8 |
| Work Loss | 740.6 | 825.8 | 832.6 | 1,042.3 | 1,102.3 |
| Medical | 4.0 | 5.6 | 6.9 | 9.4 | 9.5 |
| Total | 1,987.2 | 2,208.5 | 2,208.5 | 2,818.5 | 2,994.6 |

Note: Data from Healthcare Cost Utilization Project Nationwide Inpatient Sample. Extracted from Arabella Legacy Fund Report (2007)

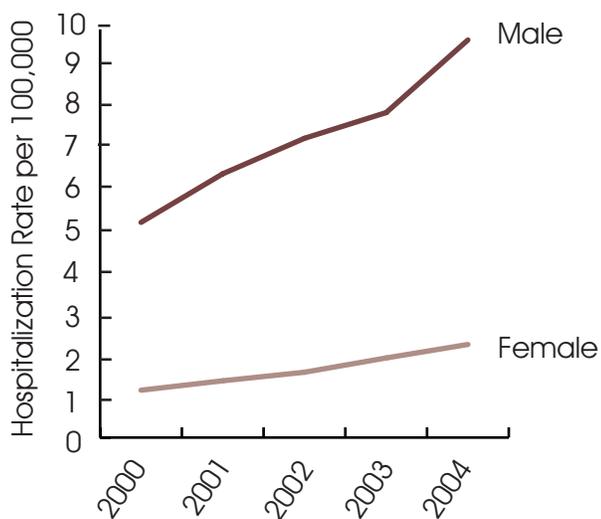
Regulation, Voluntary Standards, and Legislation

In response to the rise in deaths and injuries resulting from three-wheeled ATVs in the mid-1980s, a Consumer Product Safety Commission (CPSC)-brokered consent decree (1988-1998) between the U.S. Department of Justice and major ATV manufacturers/distributors prohibited the sale and distribution of new three-wheeled ATVs and the sale of adult sized ATVs to children under 16. The decree also required specific safety warnings (e.g., wear helmets, don't carry passengers, don't drive on paved surfaces) on ATVs and free training courses for purchasers and their families.

After the consent decree expired, CPSC announced voluntary agreements between major manufacturers, distributors, and the CPSC to continue many of the initiatives outlined in the decree.

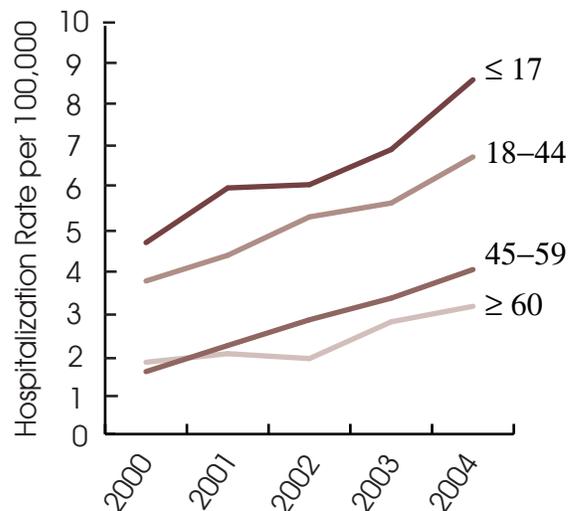
In August 2002, the Consumer Federation of America (CFA) petitioned the CPSC on behalf of scores of consumer advocacy groups, physicians, professional medical organizations, and researchers calling for federal regulation of the use of ATVs, especially banning the sale of adult-sized ATVs to children below 16 years of age. In response, the CPSC conducted three public hearings in 2003 (Morgantown,

Graph 1. Admission Rates per 100,000 Population by Gender and Year, 2000-2004



Note: Extracted from Helmkamp, et al. Am J Preventive Medicine, 2008

Graph 2. Admission Rates per 100,000 Population by Age and Year, 2000-2004



Note: Extracted from: Helmkamp, et al. Am J Preventive Medicine, 2008

WV, Albuquerque, NM, and Anchorage, AK) and released an ATV Safety Alert in the summer of 2003 reiterating many of the safety guidelines originally promulgated in the late 1980s. In February 2005, CPSC staff recommended that the commission deny the CFA petition because major ATV

distributors already banned the sale of adult-sized ATVs for use by children and enforcement would be problematic.

In an unexpected reversal in June 2005, the CPSC commissioner directed his staff to conduct a thorough review of all existing ATV safety standards, particularly as they related to children. An October 2005 Advance Notice of Proposed Rulemaking was followed by the May 2006 Notice of Proposed Rulemaking which recommended voluntary standards banning three-wheeled ATVs, mechanical specifications for both youth and adult ATVs, and development of a national web site devoted to ATV safety. In November 2007, a proposed U.S. Senate bill would make the voluntary standards permanent and apply them to all foreign and domestic made ATV models.

As of November 2006, all states except Alabama, Hawaii, Mississippi, and South Carolina had some level of ATV safety legislation in place (see Appendix C). The requirements differed from state-to-state in terms of registration, age limits, engine size, training, helmet use, and passengers. West Virginia passed its initial ATV safety legislation in 2004 after

National ATV Research Highlights

- Nationally, the estimated number of people sent to a hospital for an ATV-related injury increased 90% from 8,232 in 2000 to 15,630 in 2004.
- Patients below 18 years of age accounted for 30% of the injuries and had hospital admission rates higher than any other age group in the U.S.
- Between 2000 and 2004, hospital costs for ATV injuries increased 243% from \$109 million to \$374 million in the U.S.

2005 West Virginia ATV Survey Highlights

- Based on a 2005 statewide survey of 1,243 adult households, an estimated 460,000 ATVs are in use throughout West Virginia.
- Only 42% of households knew that there was an ATV safety law in the state.
- Roughly 7 out of every 10 ATV riders said that they carry passengers routinely and slightly over 50% reported that they wear helmets.
- Approximately 7% of riders admitted to using alcohol and drugs when operating their ATV.

respondents felt that ATVs should not be allowed on roads and 83% felt that legislation should emphasize riders below 18 years of age.

Seven out of every ten ATV riders reported that they carry passengers routinely and slightly over half said they wore helmets. Seven percent of riders admitted to using alcohol and drugs when operating their ATV. Seventeen percent of respondents admitted to being involved in an ATV crash. For more results from this survey, see Appendix E.

multiple House and Senate bills were submitted and debated from 1997 – 2003 (see Appendix D). Subsequent attempts to revise the 2004 law failed in 2005, 2006, and 2007. The main provisions of the WV law include:

- Helmets for riders under 18
- Safety awareness training for riders under 18
- Local and municipal regulations
- ATVs allowed on unlined roads
- Passenger allowed if ATV is designed to carry a passenger; if operator is over 18 or has a driver's license if under 18

Knowledge of the WV ATV Law and Self-Reported Characteristics of Riders

A statewide random digit dial survey of 1,243 adult households conducted in 2005 provided evidence that ATV riding is very popular in all regions of West Virginia. With a population of slightly less than two million, 30% of sampled households own an ATV, and an estimated 460,000 ATVs are in use throughout West Virginia. That is about 2 ATVs per household. Only 42% of households knew that there was an ATV safety law in the state. Seventy-seven percent of

ATV-Related Fatalities in WV

All-terrain vehicle crashes have been well defined and documented in WV, and are comparable to national statistics. Between 2000 and 2004, 26 citizens died annually in ATV crashes. This number increased to 45 per year for the period between 2005 and 2007. Such deaths result in a significant economic burden for the state. Based on 2004 estimates, the total economic burden associated with ATV deaths in WV was estimated at \$120 million.

Victim Profile

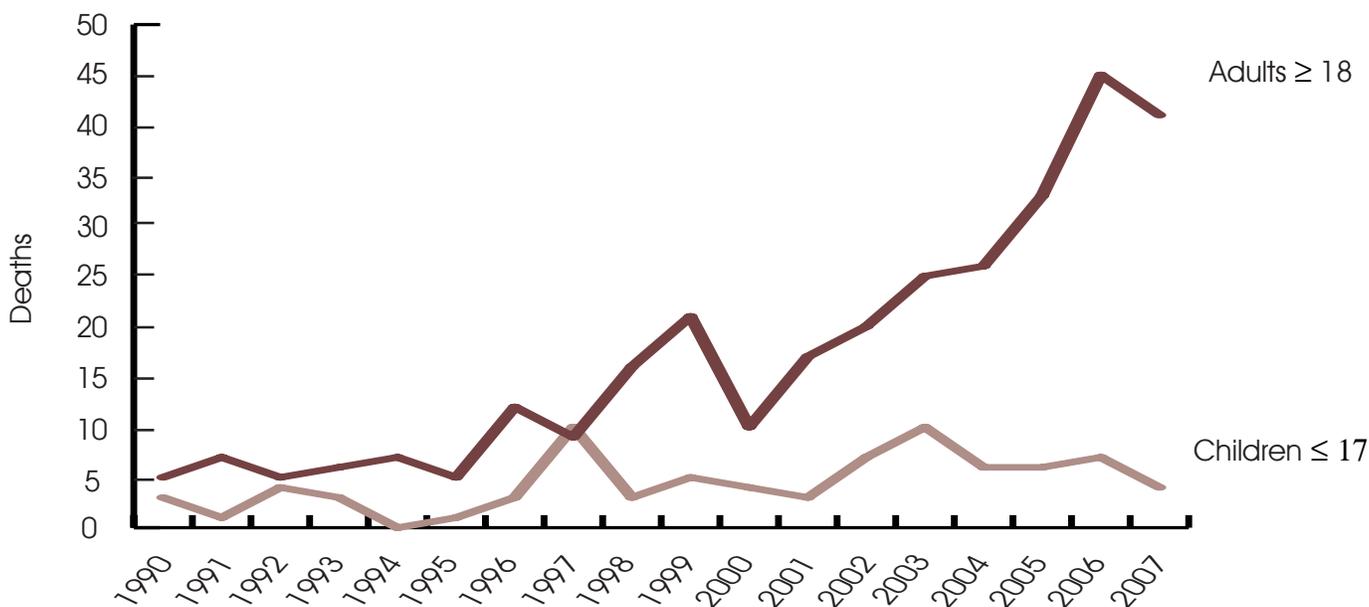
The 18-years of data depicted in Graph 3 below, indicate that an average of 22 West Virginian's were killed in ATV crashes annually, increasing about 14% each year. Since enactment of the state's first ATV law, that average has increased to at least 45 per year. Eighty-seven percent of the victims over the 18-year period were male, 98% were white, and 20% were less than 18 years of age (mean age

WV ATV Fatality Highlights

- Since enactment of the state's first ATV law in 2004, an average of 45 persons have been killed in ATV per year.
- Eighty-seven percent of the victims were male, 98% were white, and 20% were less than 18 years of age
- Based on 2004 estimates, the total economic burden associated with ATV deaths in WV was estimated at \$120 million.

35, median age 31). Forty-four percent were single or never married, 38% had less than a high school education while half had graduated from high school.

Graph 3. Fatal All-Terrain Vehicle (ATV) Incidents by Age Group in WV, 1990-2007



Risk Factors

Males had a fatality rate nearly 7 times greater than females and those under 18 had a rate double that of the adults. Two-thirds of the fatal incidents occurred between April and September. Thirty-eight percent of the decedents died at the scene and 13% died in route to the hospital. Medical Examiner (ME) Reports were completed on 112 victims who died in ATV crashes from 1999-2004: 7% were riding as passengers at the time of the fatal crash; 15% were wearing helmets with 35% of these victims sustaining a head injury; almost three-quarters of the victims were not wearing a helmet and 56% received head injuries. Blood alcohol levels were positive in nearly half of all decedents with about 73% of those aged 21 to 34 testing positive. About one-third of WV residents involved in fatal ATV crashes had their driver's license revoked, suspended, or surrendered.

Table 3. Circumstances of ATV Fatalities by Accident and Injury Type, 1999-2004

| Circumstances | Accident Location | |
|----------------------|-----------------------|----------------------------|
| | Public Road (N=59) | Private/Off-road (N=41) |
| <u>Accident Type</u> | | |
| Collision | 33 (56%) | 2 (5%) |
| Rollover | 7 (12%) | 28 (68%) |
| Ejection | 15 (15%) | 4 (10%) |
| <u>Injury Type</u> | | |
| Head injury | 36 (61%) | 11 (27%) |
| Compression | 2 (3%) | 19 (46%) |
| Blunt force trauma | 19 (32%) | 8 (20%) |

Note: Hall (2007), WV Public Health Association Annual Conference

County Distribution of the Location of Fatal Crashes, 2001-2007

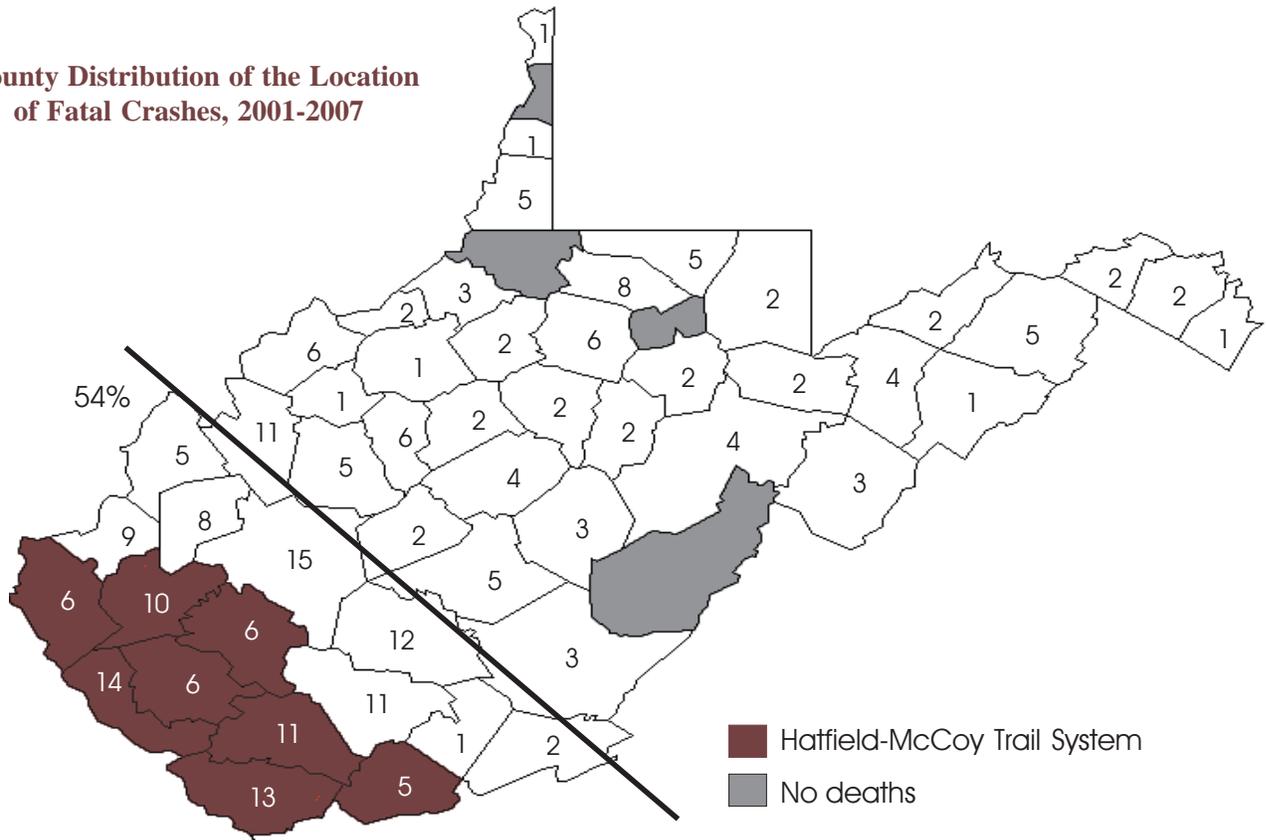


Table 4: Characteristics of 2007 ATV-related Fatalities

2007 Characteristics of ATV Fatalities

| Fatality No. | Helmet Used | | Paved Road | | Alcohol/Drugs Involved | | Speed Involved | | Passenger (2 = Non fatal) | | | | | | |
|--------------|-------------|----|------------|----|------------------------|---|----------------|----|---------------------------|----|----|----|---|----|---|
| | Y | N | Y | N | Y | N | Y | N | Y | N | | | | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 7 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 8 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 9 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 10 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 11 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 12 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 13 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | | | | | |
| 14 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 15 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 16 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 17 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | | | | | |
| 18 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 19 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 20 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 21 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | | | | | |
| 22 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 23 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 24 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 25 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 26 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 27 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 28 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 29 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 30 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 31 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 32 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 33 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | | | | | |
| 34 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 35 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 36 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | | | | | |
| 37 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 38 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 39 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 40 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 41 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 42 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 43 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 44 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 45 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| TOTALS | 4 | 40 | 1 | 27 | 17 | 1 | 17 | 21 | 7 | 16 | 16 | 13 | 9 | 36 | 0 |

Crash Circumstances

Review of the ME reports indicated that 53% of the fatal incidents occurred on public roads; 56% of the crashes resulted in collisions and 25% in ejections. Thirty-seven percent of the crash events occurred on private property or off-road trails and unpaved roads; 68% percent of the crashes in these locations resulted in rollover as noted below in the Table 3. This data was compiled from death certificates (see Appendix F), and ME Reports (see Appendix G).

Geographic Distribution

The map shows that ATV crashes have occurred in all but four of West Virginia's 55 counties during 2001-2007 (see Page 8). The 16 southernmost counties have accounted for 54% of all crashes. Although nearly 30% of the fatal crashes have occurred in the eight southernmost counties of West Virginia, where the Hatfield McCoy Trail system operates, only two deaths (both in Mingo County) have occurred on these trails.

WV ATV Fatality Highlights

- The fatality rate for males was nearly 7 times greater than for females.
- Persons below the age of 18 had a fatality rate double that of the adults.
- Nearly one-third of WV residents involved in fatal ATV crashes had, at the time of their crash, a revoked, suspended, or surrendered driver's license.
- Almost three-quarters of the victims were not wearing a helmet and 56% received head injuries.
- Review of the Medical Examiner (ME) reports from 1999 to 2004 showed that 53% of the fatal incidents occurred on public roads.
- The 16 southernmost counties of WV have accounted for 54% of all fatal crashes.

ATV Fatality Highlights: 2007

- A total of 27 or 60% of the fatal crashes occurred on paved roads, streets, and highways.
- Only 4 out of the 45 fatality victims were wearing a helmet at the time of the incident.
- Alcohol/drugs was known to be involved in one-third of the ATV-related deaths.

Selected Characteristics of ATV-Related Fatalities, 2007

Table 4 displays selected characteristics of ATV-related fatalities in 2007. In 2007, 45 ATV-related deaths were recorded. A total of 27 or 60% of the fatal crashes occurred on paved roads, streets, and highways. Only 4 out of the 45 fatality victims were wearing a helmet at the time of the incident. This translates to only 9% of the victims that were wearing a helmet. Of the 4 victims, two were children who are required by law to wear a helmet.

In addition, the results in Table 4 indicate that excessive speed and alcohol/drugs may have played a role in portion of the incidents. Alcohol/drugs was thought to be involved in at least one-third of the ATV-related deaths. Excessive speed was associated with one-half of all fatalities in which the speed was known. However, a passenger was involved in only 9 or 20% of ATV-related crashes resulting in a death. For characteristics of 2006 ATV-related fatalities, see Appendix H.

ATV-Related Injuries in WV

The injury information discussed in this report is derived from the West Virginia Trauma and Emergency Care System Level I, II, and III (1-2-3) Trauma Registry from January 1, 2006 through December 31, 2006. Under Legislative Rule 64CSR27, designated trauma centers in WV are required to provide information on trauma patients to the State Trauma and Emergency Care System. It is important to note, however, that these data are limited to only injured patients that met the specific trauma system criteria for entry into the system.

While these data do not capture all ATV-related injuries that occurred in WV during this time frame, this sample represents patients treated at the higher level trauma centers and, therefore, is likely to be representative of patients with significant injuries. Only patients injured in the state are examined. Patients treated for minor injuries at lower level centers or patients who died in the field or at lower level facilities are not included in this data set.

Characteristics of ATV Injuries in WV

There were a total of 778 patients who were treated for ATV injuries in 2006 that were recorded in the West Virginia 123 Trauma Registry. Of the 778 patients, 613 (78.8%) were male and 156 (21.2%) were female. Injured patients ranged

2006 ATV Injury Highlights

- Of the 778 patients in WV's 123 Trauma Registry in 2006, 79% (613) were male and 21% (156) were female.
- The highest percentage of ATV injuries occurred in the summer months with 25.6% (199) in May and June, and 27.5% (214) occurring in July and August.
- The 10-19 year old age group (188/24.2%) comprised the largest number of injured patients.

Table 5. Demographic Characteristics of West Virginia ATV Injuries, 2006

| Characteristic | Number | Percent |
|----------------|------------|-------------|
| Sex | | |
| Male | 613 | 78.8% |
| Female | 156 | 21.2% |
| Age | | |
| 0-9 | 27 | 3.5% |
| 10-19 | 188 | 24.2% |
| 20-29 | 160 | 20.5% |
| 30-39 | 151 | 19.4% |
| 40-49 | 123 | 15.8% |
| 50-59 | 79 | 10.1% |
| 60-69 | 30 | 3.9% |
| 70-79 | 13 | 1.7% |
| 80-89 | 7 | 0.9% |
| Month | | |
| Jan. - Feb. | 47 | 6.1% |
| Mar. - Apr. | 131 | 16.8% |
| May - June | 199 | 25.6% |
| July - Aug. | 214 | 27.5% |
| Sept. - Oct. | 113 | 14.5% |
| Nov. - Dec. | 74 | 9.5% |
| Day | | |
| Monday | 104 | 13.4% |
| Tuesday | 91 | 11.7% |
| Wednesday | 64 | 8.2% |
| Thursday | 70 | 9.0% |
| Friday | 99 | 12.7% |
| Saturday | 174 | 22.4% |
| Sunday | 176 | 22.6% |
| Total | 778 | 100% |

Note: These data only include injuries captured in the WV Level I, II, and III trauma registry.

in age from less than 1 year old to 87 years old. The highest numbers of injured patients were in the 10-19 year old age group (188/24.2%), followed by the 20-29 age group with 160

Table 6. West Virginia ATV Injuries by County, 2006

| <u>County of Injury</u> | <u>Number Injured</u> | <u>County of Injury</u> | <u>Number Injured</u> |
|-------------------------|-----------------------|-------------------------|-----------------------|
| Barbour | 3 | Mineral | 1 |
| Belmont (OH) | 1 | Mingo | 11 |
| Berkeley | 7 | Monongalia | 12 |
| Boone | 14 | Monroe | 1 |
| Braxton | 2 | Nicholas | 4 |
| Brooke | 2 | Ohio | 7 |
| Cabell | 16 | Pleasants | 9 |
| Calhoun | 2 | Pocahontas | 1 |
| Clay | 6 | Preston | 6 |
| Doddridge | 3 | Putnam | 13 |
| Fayette | 8 | Raleigh | 20 |
| Gilmer | 3 | Randolph | 7 |
| Greenbrier | 2 | Ritichie | 14 |
| Hancock | 1 | Roane | 5 |
| Hardy | 1 | Summers | 1 |
| Harrison | 12 | Taylor | 5 |
| Jackson | 10 | Tucker | 3 |
| Kanawha | 33 | Upshur | 4 |
| Lewis | 3 | Wayne | 21 |
| Lincoln | 13 | Webster | 2 |
| Logan | 10 | Wetzel | 5 |
| Marion | 20 | Wirt | 13 |
| Marshall | 16 | Wood | 46 |
| Mason | 13 | Wyoming | 16 |
| McDowell | 4 | Unknown | 345 |
| Mercer | 1 | Total | 778 |

Note: These data only include injuries captured in the WV Level I, II, and III trauma registry. One WV resident was treated in a WV trauma center though the injury occurred in Belmont County, OH.

(20.5%). The highest percentage of ATV injuries occurred in the summer months with 25.6% (199) in May and June, and 27.5% (214) occurring in July and August. The largest percentage of injuries occurs on weekends with 27.6% (176) occurring on Sunday and 22.4% (174) occurring on Saturday (See Table 5).

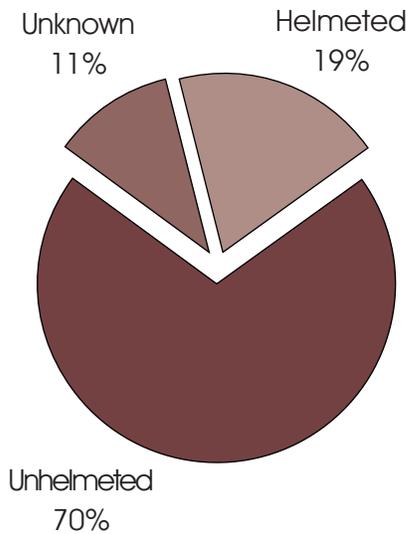
The number of injuries occurring in each county is shown in Table 6. The county in which the injury occurred was identified in 433 of the 778 patients. Wood County had the highest number of injured patients at 46, followed by Kanawha

County with 33, Wayne County with 21, and Raleigh and Marion Counties with 20 each. There were no serious injuries reported in Grant, Hampshire, Jefferson, Morgan, Pendleton, or Tyler Counties.

Risk Factors for ATV Injuries in WV

A review of the trauma data has identified a number of risk factors associated with ATV-injuries and death. Two primary risk factors related to ATV injuries include the use (or lack of use) of helmets and alcohol/drug consumption.

Graph 4. Helmet Usage, 2006 (N=778)



2006 ATV Injury Highlights

- 70% (544 of 778) of the injured patients reported to WV's 123 Trauma Registry in 2006 were *not* wearing a helmet at the time of their injury.
- Of the 681 injured patients 15 years or older, 200 or 29% had a positive blood alcohol test at the time of treatment for the injury.
- Of the 200 patients who tested positive for alcohol, 140 (70%) were legally intoxicated (BAL>80mg/dl) at the time of treatment for their injury.
- The risk of being severely injured is nearly twice as great if the patient is not wearing a helmet at the time of injury.
- Hospital length of stay doubles if the patient is *not* wearing a helmet.

Helmets. Wearing a helmet has been shown in multiple national studies to clearly decrease the risk of serious injuries from ATV crashes, yet during 2006 in West Virginia 70% (544) of the 778 injured patients were *not* wearing a helmet at the time of their injury (see Graph 4). Only 19% (151) of the 778 injured patients were wearing helmets at the time of their injury, and the helmet status of 11% (83) was unknown.

Alcohol Consumption. A total of 681 injured patients were 15 years of age or older. Of those 681 patients, 200 (29%) had a positive blood alcohol test at the time of treatment for the injury and 312 (46%) had a negative blood alcohol test at the time of treatment for the injury. Twenty-five percent (169) were not tested. Of the 200 patients who tested positive for alcohol, 140 (70%) were legally intoxicated (BAL>80mg/dl) at the time of treatment for their injury (see Graph 5).

Severity of Injuries

Analysis of the nature and types of injuries suffered by each patient within the trauma system allows for the calculation of the Injury Severity Score (ISS) for each patient. This numbered score is used internationally to provide a means to quantify how severely a patient is injured. A patient with an

injury severity score of greater than 15 is considered to be “severely” injured by the standard definitions.

As shown in Table 7, of the 151 injured patients who were wearing a helmet at the time of the crash, only 12.6% (19)

Graph 5. Alcohol Usage in Patients Age 15+, 2006 (N=681)

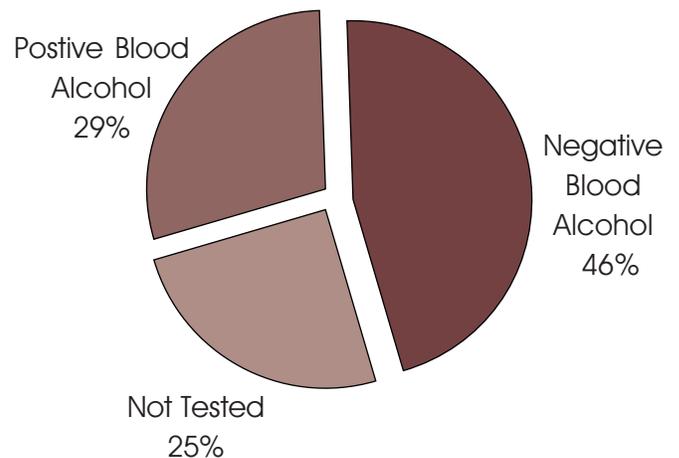


Table 7. Injury Severity in ATV Incidents, 2006 (N=778)

| | <u>Total Number Injured</u> | <u>Number Severely Injured</u> | <u>Percent Severely Injured</u> |
|----------------------------|-----------------------------|--------------------------------|---------------------------------|
| Helmeted ATV Patients | 151 | 19 | 12.6% |
| Unhelmeted ATV Patients | 544 | 124 | 22.8% |
| Unknown | 83 | 9 | 10.8% |

were seriously injured (ISS>15), whereas, of the 544 injured patients who were *not* wearing a helmet at the time of the crash, 22.8% (124) were seriously injured (ISS>15). The helmet status of 83 patients was unknown at the time of treatment and 10.8% (9) of those were severely injured.

Hospital Length of Stay (LOS)

Another less scientific indicator often used to help determine the severity of injury is the hospital length of stay (LOS) in days. As shown in Table 8, there were 148 injured patients who were wearing a helmet at the time of injury and required admission to the hospital. The average hospital LOS for those injured patients who were wearing a helmet at the time of injury was 2 days. There were 545 injured patients who were NOT wearing a helmet at the time of the injury and

required admission to the hospital. The average hospital LOS for those injured patients who were NOT wearing a helmet at the time of injury was 4 days. Of the helmeted patients, 25 required ICU care for an average of 3 days. Of the unhelmeted patients 145 required ICU care for an average of 4 days.

In summary, most injured patients are male with the highest risk age group falling between 10-19 years of age. A greater proportion of injuries occur on weekends and during the summer months compared to other times of the year. Not wearing a nearly doubles the risk of severe injury and doubles the length of hospital stay.

Table 8. ICU/Hospital Length of Stay for ATV Injuries, 2006

| | <u>Admitted to the Hospital</u> | <u>Average Hospital LOS in Days</u> | <u>Utilized ICU</u> | <u>Average ICU LOS in Days</u> |
|-----------|-------------------------------------|-----------------------------------------|-------------------------|------------------------------------|
| Helmetd | 148 | 2 | 25 | 3 |
| Unhelmetd | 545 | 4 | 145 | 4 |
| Total | 693 | | 170 | |

Note: Estimates for the Average Hospital LOS in Days and Average ICU LOS in Days was calculated by the Digital Innovation Collector and Software Program.

Key Findings and Recommendations

The findings described below have been derived from a variety of data sources in West Virginia including death certificates, medical examiner reports, traffic crash reports, and the state trauma registry. Each data source has inherent limitations in regards to ATV specificity. Such limitations make it difficult to integrate each data source into a single, consolidated master data system.

Key Findings on ATV Use, Death, and Injury in WV

The statistics and information highlighted in this section are the most significant and telling as they relate to the deaths and injuries resulting from ATV crashes in West Virginia. Each finding is supported by more detail in each of the previous sections.

ATV Use

- An estimated 450,000 ATVs were in use in WV in 2005 with about 16,000 new ATVs purchased each year. This translates to an average of 2 ATVs per WV household.

ATV Fatalities

- WV ATV deaths have been well defined and documented, and are comparable to national statistics.
- Since 1990, WV has experienced the highest population-based death rates in both genders and in all age groups as compared to other states.
- Between 2000 and 2004, 26 citizens died annually in ATV crashes. This number increased to 45 per year for 2005 – 2007. The state's first ATV law became effective in May 2004.
- About one-third of WV residents involved in fatal ATV crashes had, at the time of their crash, a revoked, suspended, or surrendered driver's license.

- Nearly two-thirds of fatal ATV crashes occurred on paved roads from 2005-2007.
- Over 60% of deaths resulting from ATV collisions on public roads are related to head injuries and almost half of the fatal rollovers on private property and off-road trails are related to compression type injuries.
- 15% of deaths are among children under 18 years of age.
- 80% of ATV-related deaths are males and about 10% are passengers.
- Since 2005, only 6% of adult fatalities and 29% of child fatalities were wearing a helmet.
- Over half of the ATV-related deaths occur in the lower 16 counties of the state.
- The total economic burden associated with West Virginia's ATV deaths in 2004 was estimated at \$120 million.

ATV Injuries

- Of the significantly injured ATV patients treated at Level I, II, and III trauma centers in WV in 2006, only 19% were reported to be wearing a helmet.
- In 2006, the average hospital length of stay is doubled if the victim was not wearing a helmet.
- In 2006, the average ICU length of stay is 33% greater in non-helmeted victims.
- Of the adults injured in ATV crashes in 2006 whose blood alcohol tested positive, 70% were legally intoxicated at the time of treatment.

Recommendations

The following recommendations have been developed after a comprehensive review and analysis of West Virginia ATV fatality and injury data in concert with comparison to pertinent national scientific data. We believe these recommendations, directed at key focus areas, will help reverse the continuing public health crisis and decrease preventable deaths and injuries resulting from ATV crashes. To be effective, these recommendations must be clear, understandable, and enforceable.

- *Promote efforts to further limit the operation of ATVs on paved roads.* This recommendation may have the greatest impact in reducing ATV-related deaths and serious injuries.
- *Mandate the use of helmets for all riders.* Research has shown that helmet use decreases the risk of death and/or injury in ATV crashes.
- *Require ATVs to be registered with the state DMV.* Registration would help to more clearly define high-risk groups and identify ATV-use patterns through data analysis as well as help direct education and prevention efforts.
- *Promote efforts to reduce alcohol/drug use while operating an ATV.* Clearly alcohol and drugs have been identified as a critical contributing factor in many ATV crashes, as it has in many other motor vehicle crashes as well. While prohibiting or legislating against alcohol or drug use is not feasible or reasonable, public awareness campaigns regarding their use while driving any motor vehicle is warranted.
- *Prohibit the use of ATVs as a substitute for licensed motor vehicles by persons with a suspended driver's license.* This recommendation may potentially reduce the number of crashes occurring on public roads.
- *Establish a central clearinghouse for information and educational resources.* Creation of a central depository for ATV data and information would improve the capacity for ATV data collection and analysis and the education of the public on ATV safety.

Data Sources

National

Fatalities

National Center for Health Statistics, Multiple Cause-of-Death public access file, 2000-2004.

Economic Burden (for deaths): Pacific Institute for Research and Evaluation, 2000-2004.

Hospitalizations

Agency for Healthcare Research and Quality's Healthcare Cost and Utilization Project (HCUP), Nationwide Inpatient Sample, 2000-2004.

West Virginia

Fatalities

Ongoing ATV fatality surveillance is conducted routinely by Mark Holmes, Program Coordinator for the Governor's Highway Safety Program, who is in charge of the state's ATV Safety Awareness Program and by Dr. Jim Helmkamp, the Director of the WVU Injury Control Research Center. Data is compiled and compared from three primary sources; the death certificate, the Uniform Traffic Crash Report, and news media accounts.

Certificate of Death, Form VS-002 (rev. 6/92). Guidance for filing a death certificate in West Virginia is described in the WV code §16-5-19 (see Appendix F).

Medical Examiner's Report, OCME-1 (rev. Jan 18, 2006). This report is generally of two types: 1) OCME-1 with a toxicological report completed by the County Medical Examiner and reviewed by the State Medical Examiner if there is significant toxicology; and 2) the OCME-1 and an autopsy, performed if the circumstances of the death are unclear (see Appendix G).

Uniform Traffic Crash Report, DMV 17-F (rev. Jan 2006) (see Appendix I).

Department of Transportation, DMV, ATV Safety Awareness Program data files (see Appendix H).

Media-based newspapers, radio, TV.

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Appendices

Appendix A: Patient Characteristics for ATV-Related Hospitalizations in the U.S., 2000-2004

Appendix B: Hospital Charges and Length of Stay of ATV-Related Injuries in the U.S., 2000-2004

Appendix C: SVIA State ATV Requirements

Appendix D: WV ATV Law (HB 4022)

Appendix E: WVU 2005 ATV Knowledge Survey

Appendix F: WV Death Certificate

Appendix G: Medical Examiner's Report

Appendix H: Characteristics of 2006 ATV-Related Fatalities

Appendix I: WV Uniform Traffic Crash Report

Appendix A

Patient characteristics and disposition of ATV-related injury hospitalizations,* 2000-2004

| Characteristic | 2000 | | 2001 | | 2002 | | 2003 | | 2004 | |
|------------------------------------------------------------------------|-------|------------------|--------|------------------|--------|------------------|--------|------------------|--------|------------------|
| | No. | % (95% CI) | No. | % (95% CI) | No. | % (95% CI) | No. | % (95% CI) | No. | % (95% CI) |
| Total estimated cases | 8,232 | — | 10,074 | -- | 11,438 | — | 12,880 | -- | 15,630 | -- |
| Gender | | | | | | | | | | |
| Male | 6,711 | 81.5 (78.8-84.0) | 8,241 | 81.8 (79.9-83.6) | 9,337 | 81.6 (79.8-83.3) | 10,144 | 78.8 (76.9-80.5) | 12,415 | 79.4 (77.7-81.0) |
| Female | 1,521 | 18.5 (16.0-21.1) | 1,829 | 18.2 (16.4-20.1) | 2,101 | 18.4 (16.7-20.2) | 2,563 | 19.9 (18.2-21.7) | 2,989 | 19.1 (17.6-20.7) |
| Unknown | — | — | 4 | NC | — | — | 173 | 1.3 (0.7-2.6) | 226 | 1.5 (0.8-2.7) |
| Age group (Years) | | | | | | | | | | |
| ≤17 | 2,492 | 30.2 (27.6-33.2) | 3,209 | 31.8 (28.0-36.0) | 3,251 | 28.4 (26.0-31.0) | 3,656 | 28.4 (25.2-31.8) | 4,617 | 29.6 (26.4-32.8) |
| 18-44 | 4,217 | 51.2 (48.6-53.8) | 4,923 | 48.8 (45.6-52.2) | 5,974 | 52.2 (49.8-54.8) | 6,362 | 49.4 (46.6-52.2) | 7,632 | 48.8 (46.0-51.6) |
| 45-59 | 790 | 9.6 (8.2-11.2) | 1,121 | 11.2 (9.6-13.0) | 1,442 | 12.6 (11.0-14.4) | 1,718 | 13.4 (12.0-14.8) | 2,078 | 13.2 (12.0-14.6) |
| ≥60 | 733 | 9.0 (7.0-11.2) | 821 | 8.2 (7.0-9.6) | 771 | 6.8 (5.6-8.2) | 1,144 | 8.8 (7.6-10.2) | 1,303 | 8.4 (7.4-9.4) |
| Unknown | — | — | — | — | — | — | — | — | — | — |
| Rider position | | | | | | | | | | |
| Driver (E821.0) | 6,416 | 78.0 (74.8-80.2) | 7,905 | 78.5 (75.8-80.9) | 9,165 | 80.1 (78.0-82.1) | 10,085 | 78.3 (76.4-80.1) | 12,321 | 78.8 (76.9-80.6) |
| Passenger (E821.1) | 694 | 8.4 (7.0-10.2) | 921 | 9.1 (7.7-10.8) | 1,058 | 9.3 (8.1-10.6) | 1,250 | 9.7 (8.6-10.9) | 1,472 | 9.4 (8.4-10.5) |
| Other/unspecified/unk (E821.8, E821.9) | 1,122 | 13.6 (11.1-16.6) | 1,248 | 12.4 (10.4-14.6) | 1,215 | 10.6 (9.1-12.4) | 1,545 | 12.0 (10.5-13.7) | 1,837 | 11.8 (10.3-13.5) |
| Hospital location/ teaching status | | | | | | | | | | |
| Rural | 2,475 | 30.1 (26.0-35.0) | 2,536 | 25.2 (21.8-28.8) | 2,867 | 25.0 (20.2-30.6) | 2,865 | 22.2 (18.8-26.2) | 2,797 | 17.8 (14.6-21.8) |
| Urban non-teaching | 2,939 | 35.7 (31.2-40.9) | 3,375 | 33.4 (29.0-38.4) | 3,408 | 29.8 (24.8-35.2) | 3,861 | 30.0 (25.2-35.4) | 4,084 | 26.2 (22.0-30.6) |
| Urban teaching | 2,764 | 33.6 (28.7-39.5) | 4,163 | 41.4 (35.2-47.8) | 5,163 | 45.2 (37.4-53.2) | 6,154 | 47.8 (41.0-54.6) | 8,749 | 56.0 (50.0-61.8) |
| Unknown | 54 | 0.6 (0.1-1.1) | — | — | — | — | — | — | — | — |
| Primary payer | | | | | | | | | | |
| Medicare/Medicaid | 1,514 | 18.4 (15.2-22.4) | 1,936 | 19.4 (16.3-22.7) | 2,062 | 18.0 (14.6-22.1) | 2,242 | 17.4 (14.4-20.6) | 3,146 | 20.1 (17.2-23.4) |
| Private insurance | 5,174 | 62.9 (59.6-67.2) | 6,464 | 64.2 (61.5-67.1) | 7,072 | 61.8 (58.1-65.9) | 8,246 | 64.0 (61.3-66.9) | 9,275 | 59.3 (57.0-62.1) |
| Self-pay | 1,082 | 13.1 (11.4-15.2) | 1,105 | 11.0 (9.2-13.2) | 1,300 | 11.4 (9.8-13.8) | 1,504 | 11.7 (10.0-13.6) | 1,960 | 12.5 (10.8-14.6) |
| Other/unknown | 462 | 5.6 (4.1-7.2) | 549 | 5.4 (3.9-7.2) | 1,004 | 8.8 (6.2-10.8) | 888 | 6.9 (5.6-8.6) | 1,249 | 8.1 (6.1-9.8) |
| Disposition of patient | | | | | | | | | | |
| Treated/released | 7,194 | 87.4 (85.4-89.2) | 8,687 | 86.2 (84.4-88.0) | 9,760 | 85.3 (83.4-87.2) | 11,084 | 85.7 (83.9-87.6) | 13,103 | 85.8 (82.0-89.6) |
| Hospitalization (short and long-term, rehab) AMA/Home healthcare | 645 | 7.8 (6.0-10.7) | 774 | 7.7 (6.2-9.6) | 1,020 | 8.9 (7.2-11.2) | 1,020 | 7.9 (6.5-9.4) | 1,349 | 8.6 (7.0-10.6) |
| Died | 362 | 4.4 (3.2-6.0) | 520 | 5.2 (4.0-6.8) | 545 | 4.8 (3.8-6.2) | 661 | 5.1 (4.2-6.6) | 964 | 6.2 (5.0-7.6) |
| Unknown | 31 | 0.4 (0.2-0.8) | 87 | 0.9 (0.6-1.4) | 99 | 0.9 (0.6-1.4) | 112 | 0.9 (0.6-1.5) | 210 | 1.4 (1.0-1.8) |
| Unknown | — | — | 6 | NC | 14 | 0.1 (0.0-0.6) | 53 | 0.4 (0.1-0.9) | 4 | NC |

* Data from Healthcare Cost Utilization Project Nationwide Inpatient Sample. NC not calculated

Extracted from Helmkamp, et al., *Am J Preventive Medicine* 2008, 34(1):39-45.

Appendix B

Hospital charges and length of stay for ATV-related injury hospitalizations,* 2000-2004

| Characteristic | 2000 | | | 2001 | | | 2002 | | | 2003 | | | 2004 | | |
|---------------------------------|------------------|--------------|-------------|----------------|--------------|----------|----------------|--------------|----------|----------------|--------------|----------|----------------|--------------|----------|
| | Hospital Total** | Charges Mean | LOS*** Mean | Hospital Total | Charges Mean | LOS Mean | Hospital Total | Charges Mean | LOS Mean | Hospital Total | Charges Mean | LOS Mean | Hospital Total | Charges Mean | LOS Mean |
| Total | 108.61 | 13,638 | 3.9 | 155.83 | 15,710 | 4.0 | 203.80 | 18,311 | 4.0 | 268.12 | 21,637 | 4.1 | 373.56 | 24,871 | 4.4 |
| Principal diagnoses | | | | | | | | | | | | | | | |
| Fracture of lower limb | 28.17 | 14,249 | 3.5 | 38.21 | 15,624 | 3.7 | 42.68 | 17,118 | 3.4 | 56.90 | 22,477 | 3.8 | 72.55 | 24,081 | 3.7 |
| Intracranial injury | 17.34 | 19,617 | 5.7 | 20.79 | 20,213 | 5.2 | 36.99 | 25,832 | 5.8 | 46.84 | 25,672 | 4.8 | 84.23 | 33,822 | 6.0 |
| Crushing/internal injury | 14.40 | 15,245 | 5.4 | 21.93 | 17,401 | 5.3 | 28.61 | 20,182 | 5.2 | 39.13 | 25,283 | 5.5 | 46.22 | 22,742 | 5.4 |
| Other fractures | 11.03 | 10,376 | 3.8 | 22.34 | 16,120 | 4.4 | 28.06 | 16,661 | 3.9 | 43.67 | 21,540 | 4.2 | 51.96 | 24,038 | 4.4 |
| Fracture of upper limb | 9.52 | 10,509 | 2.5 | 12.96 | 10,523 | 2.1 | 17.88 | 13,585 | 2.1 | 24.76 | 16,478 | 2.5 | 34.48 | 18,678 | 2.6 |
| Skull or facial fracture | 5.99 | 16,722 | 2.7 | 12.05 | 22,810 | 4.3 | 13.94 | 20,677 | 3.2 | 14.28 | 20,397 | 3.1 | 23.46 | 25,708 | 3.3 |
| Open wounds of extremities | 3.54 | 11,218 | 3.1 | 3.46 | 13,093 | 3.7 | 5.47 | 15,455 | 3.4 | 6.74 | 17,221 | 3.6 | 8.53 | 18,539 | 3.7 |
| Open wound of head, neck, trunk | 2.98 | 19,034 | 2.3 | 1.77 | 9,897 | 1.9 | 3.22 | 15,493 | 2.5 | 3.71 | 15,108 | 2.2 | 5.34 | 18,252 | 2.6 |
| Fracture of hip | 1.86 | 10,117 | 4.9 | 5.59 | 19,608 | 4.7 | 5.74 | 22,122 | 4.6 | 6.60 | 26,424 | 4.7 | 11.23 | 31,950 | 4.6 |
| Other injuries and conditions | 1.33 | 7,519 | 2.3 | 2.37 | 9,744 | 2.2 | 3.37 | 10,668 | 2.3 | 4.56 | 16,193 | 2.5 | 5.76 | 19,191 | 3.0 |
| All others | 12.45 | 12,466 | 4.2 | 14.36 | 13,444 | 3.9 | 17.84 | 18,294 | 5.1 | 20.93 | 19,209 | 5.0 | 29.80 | 25,686 | 5.6 |

* Data from Healthcare Cost Utilization Project Nationwide Inpatient Sample.

** Reported in \$Millions

*** LOS reported as days

Extracted from Helmkamp, et al., *Am J Preventive Medicine*, 2008, 34(1):39-45.

Appendix C



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STATE ALL-TERRAIN VEHICLE REQUIREMENTS

NOVEMBER 2006

| State | REGISTRATION | TITLE | MV OPERATOR'S LICENSE | MINIMUM AGE | SAFETY EDUCATION CERTIFICATE | EQUIPMENT REQUIREMENTS | | | | PASSENGER PROHIBITION | ON-ROAD USE | CLASSIFIED AS | WEIGHT/WIDTH LIMITS |
|----------------|--------------|------------|-----------------------|-----------------------|------------------------------|------------------------|---------|----------------|-----------------------|-----------------------|-------------|---------------|---------------------|
| | | | | | | LIGHTING | MUFFLER | SPARK ARRESTER | HELMET/ETC PROTECTION | | | | |
| Alabama | | | | 14DS | | | | | | | | OHV | <300lbs/<50" |
| Alaska | | * | | | | | | | | | | OHV/ATV | <300lbs/<75" |
| Arizona | | | | | | | | | | | | OHV | <300lbs/<50" |
| Arkansas | +A | * | | 12D | +Bn | +G | +C | +KE | +LE | Z | Z | OHV/ATV | <300lbs/<50" |
| California | +A | | | 14EM, 15En or a | +Bn | +G | +C | +KE | +LE | Z | Z | OHV/ATV | <300lbs/<50" |
| Colorado | +BCE | | | | +Bn | +G | +C | +KE | +LE | Z | Z | OHV/ATV | <300lbs/<50" |
| Connecticut | +A | | +F | 12E, 15Ea & n | +E | +G | +C | | +O | Z | Z | ATV | <500lbs/<50" |
| Delaware | +AC | | | 12D | | +G | +C | | | J | J | OHV | <500lbs/<50" |
| Dist. of Col. | | | | | | | | | | | | | |
| Florida | | | | | | | | +d | +OV | J | J | ORV/ATV | <300lbs/<50" |
| Georgia | | | | | | | | | | | | ORV/ATV | <1000lbs/<50" |
| Hawaii | | | | | | | | | | | | | |
| Idaho | +B | * | | | | | +i | +C | +OE | | | ATV | <350lbs/<48" |
| Illinois | | | | | | | | | | | | ATV/CHV | <300lbs/<50" |
| Indiana | +BC | +F | +F | 14D | | +G | +i | | | Z | Z | OHV | <300lbs/<50" |
| Iowa | +SE | | | 12E, 15a | +E | +G | +i | | +L | Z (re) | Z | ATV | <350lbs/none |
| Kansas | | | | | | | | | | | | ATV | <1000lbs/<48" |
| Kentucky | | | | 12R, 15u & D | | | | | +Kd, (E) | | | ATV | |
| Louisiana | +A | | | | | | | | | | | | |
| Maine | +AC | | +PS | 10, 18D & a | +C | +G | +C | +C | | Z | Z | ATV | |
| Maryland | +BS | | | 12S | | +GS | +B | | | | | ORV | |
| Massachusetts | +B | | | 10, 12S, 14D, 15MP | | +G | +C | +C | +K | Z | Z | RV | |
| Michigan | +B | | | 12i, 18i & D & a | +d | +G | +C | +C | +L | Z | Z | ORV/ATV | |
| Minnesota | +B | | | 10E, 12uE, 15Ea & D | +E | +G | +C | +C | +W | Z | Z | ATV | <300lbs/none |
| Mississippi | | | | | | | | | | | | | |
| Missouri | +A | | | 18D | | +C | +C | +C | +L, r | X | Z | ATV | <1000lbs/<50" |
| Montana | +A | +E | | | | | | +B | | Z | Z | OHV | |
| Nebraska | | +Y | | | | +F & G | | +C | +L | Z (re) | Z | ATV | <300lbs/<50" |
| Nevada | | | | | | | | | | | | CHV | |
| New Hampshire | +Sk | | +Fa | 14D & a | +q | +G | +C | +C | +i | Z | Z | OHV/ATV | <1000lbs/<50" |
| New Jersey | +ACE | | | s, 14E, 15uE | +ICE | +C | +C | +C | +K | Z | Z | ATV | <1000lbs/<50" |
| New Mexico | +A | | | 10D & b, 15D(W) | +i | +G | +C | +C | +i | Z | Z | ATV/CHV | <1000lbs/<50" |
| New York | +AC | | | 10D, 15D or a | +d | +GC | +C | +C | +K | Z | Z | ATV | <1000lbs/<70" |
| North Carolina | +ACE | +a | | 5, 12R, 15u & D, p, h | +B | +G | +C | +C | +L | Z | Z | ATV | |
| North Dakota | +A | +E | | 12, 15D or a | +B | +G | +C | +C | +L | X | X | Class II OHV | none/<50" |
| Ohio | +A | | | 15D, 12S | +G | +G | +C | +C | +L, S | Z | Z | ATV | |
| Oklahoma | +AY | +F | | | +G | +G | +C | +C | +K | X | Z | ORV | |
| Oregon | +BS | | | 12FD | +D or m | +G | +C | +C | +K | Z | Z | ATV | <300lbs/<50" |
| Pennsylvania | +B | +E, a or D | | 8E, 10RE, 15a | +o | +G | +C | +C | +K | Z | Z | ATV | <300lbs/<50" |
| Rhode Island | +B | +T | | 12S, 15SD & F, w | | +F & G | +C | | +K | Z | Z | RV/ATV | |
| South Carolina | | | | | | | | | | | | | |
| South Dakota | | | | | | | | | | N | N | ATV/ORV | |
| Tennessee | | | | | | | | | | | | | |
| Texas | +AE | | | 14D | +E | +G | +C | +C | +K | Z | Z | OHV/CHV | |
| Utah | +SE | +E | | 8E, 15a | +E | +G | +C | +C | +K | Z | Z | ATV | <300lbs/<50" |
| Vermont | +AE | | | 12D, 15FD, 15a | +i | +G | +C | +C | +K | Z | Z | ATV | |
| Virginia | | +YU | | 12R, 15u | | +G | +C | +C | +K | Z | Z | ATV | |
| Washington | +Ar | | | 13P & zD | | +G | +C | +C | +K | Z | Z | OHV | |
| West Virginia | | | | 15a | +i | +G | +C | +C | +K | Z | Z | ATV | <300lbs/<50" |
| Wisconsin | +BC | | | 12r & D(W) | +y | +F & G | +C | +C | +K | Z | Z | ATV | <300lbs/<48" |
| Wyoming | +BS | | | | | +F & G | +C | +C | +K | Z | Z | ORV | <300lbs/<50" |

- Required by law or regulation
- A. By motor vehicle registration agency
- B. By recreation management agency
- C. Except in authorized events
- D. Unless supervised
- E. Applies only on public lands
- F. To cross highway
- G. For night operation only
- H. More than 1 passenger prohibited & passenger under age 18 unless operator has specified driver's license or is at least age 15 prohibited
- I. Decibel limit specified
- J. Prohibited
- K. Approved helmet
- L. Except if designed to carry passenger
- M. Unless supervised by parent or his designee and either has safety certificate or is supervised by adult with certificate
- N. Prohibited except to cross highway & by registered ATVs with 4 or more wheels & 200 cc or more
- O. ATV definition specifies single rider
- P. Must have license or learner's permit, or be accompanied by licensee or by parent
- Q. Allowed as specified in law
- R. For ATV over 70cc
- S. Applies only on specified public lands
- T. For ages 15-18 to cross highway
- U. For ATV over 50cc

- V. Two-wheeler ATV separately defined
- W. Additional provisions apply, law too complex to summarize completely
- X. Prohibited with specified exceptions
- Y. For ATVs purchased after date specified in law
- Z. Prohibited except to cross highway
 - a. Unless safety certificate is possessed
 - b. Unless on age-appropriate sized ATV
 - c. For ages 10-15
 - d. Under age 15
 - e. During daylight hours only
 - f. If issued to persons age 12-15, not valid for ATVs > 90cc unless training course completed on ATV > 90cc & able to reach handlebars & footpegs
 - g. Prohibited on specified highways
 - h. cc restrictions not applicable to persons born by 5/15/97 with parent or guardian who owned ATV prior to 5/15/05
 - i. For persons under age 15
 - j. For persons age 15 & over
 - k. Not required in certain cases for ATVs < 55cc
 - m. Unless motor vehicle operator's license possessed
 - n. Unless supervised by adult with safety certificate
 - o. For ages 8-15

- p. Sale for use by person under age 5 prohibited; sales restrictions based on age/cc size
- q. Under age 14
- r. Except if engaged in agricultural activities
- s. For persons born on/after 1/1/00, effective 10/1/06
- t. For 3-wheel ATVs
- u. For ATVs over 90cc
- v. For all ages, under age 15 must complete safety course
- w. Sale to under age 16 prohibited
- x. Sale of ATV over 90cc for use under age 16 prohibited
- y. For persons born after date specified in law
- z. On specified lands
 - + Separate limits for Class II ATVs
 - # Provisions exclude ATVs engaged in farming, hunting or trapping

- CLASSIFICATION ABBREVIATIONS**
- APV - All-purpose vehicle
 - ATV - All-terrain vehicle
 - NHV - Non-highway vehicle
 - OHV - Off-highway vehicle
 - OHMV - Off-highway motor vehicle
 - ORHV - Off-highway recreation vehicle
 - ORV - Off-road vehicle
 - ORRV - Off-road recreational vehicle
 - RV - Recreation vehicle

This chart is compiled by SVIA's Government Relations Office. Please contact SVIA for additional information concerning ATVs. Although this chart represents information from the most authoritative sources available, SVIA is not responsible for accuracy or completeness. Many of the provisions summarized herein have exceptions and may require further explanation. It is necessary to refer to the actual laws and regulations for specific details.

Appendix D

West Virginia Code

§17F-1-1. Acts prohibited by operator; penalties for violations.

(a) No all-terrain vehicle may be operated in this state:

(1) On any interstate highway except by public safety personnel responding to emergencies;

(2) On any road or highway with a center line or more than two lanes except for the purpose of crossing the road, street or highway, if:

(A) The crossing is made at an angle of approximately ninety degrees to the direction of the highway and at a place where no obstruction prevents a quick and safe crossing;

(B) The vehicle is brought to a complete stop before crossing the shoulder or main traveled way of the highway;

(C) The operator yields his or her right-of-way to all oncoming traffic that constitutes an immediate potential hazard; and

(D) Both the headlight and taillight are illuminated when the crossing is made if the vehicle is so equipped;

(3) With more than one passenger unless more passengers are allowed under manufacturers' recommendations;

(4) With a passenger under the age of eighteen, unless the operator has at a minimum a level two intermediate driver's license or its equivalent or is eighteen years of age or older;

(5) Unless riders under the age of eighteen are wearing size appropriate protective helmets that meet the current performance specifications established by the American national standards institute standard, z 90.1, the United States department of transportation federal motor vehicle safety standard no. 218 or Snell safety standards for protective headgear for vehicle users;

(6) Anytime from sunset to sunrise without an illuminated headlight or lights and taillights;

(7) Without a manufacturer-installed or equivalent spark arrester and a manufacturer-installed or equivalent muffler in proper working order and properly connected to the vehicle's exhaust system; or

(8) Unless operating in compliance with the provisions of section two of this article.

(b) An all-terrain vehicle may, for the sole purpose of getting from one trail, field or area of operation to another, be operated upon the shoulder of any road, street or highway referred to in subdivision (2), subsection (a) of this section, other than an interstate highway, for a distance not to exceed ten miles, if:

(1) The vehicle is operated at speeds of twenty-five miles per hour or less; and

(2) The vehicle is operated at any time from sunset to sunrise, the all-terrain vehicle must be equipped with headlights and taillights which must be illuminated.

(c) Operation of an all-terrain vehicle in accordance with subsection (b) shall not constitute operation of a motor vehicle on a road or highway of this state as contemplated by the provisions of section seven of this article.

(d) Notwithstanding any provision of this chapter to the contrary, a municipality, county or other political subdivision of the state may authorize the operation of all-terrain vehicles on certain specified roads, streets or highways which are marked with centerline

contemplated by the provisions of section seven of this article.

(d) Notwithstanding any provision of this chapter to the contrary, a municipality, county or other political subdivision of the state may authorize the operation of all-terrain vehicles on certain specified roads, streets or highways which are marked with centerline pavement markings, other than interstate highways, to allow participation in parades, exhibitions and other special events, in emergencies or for specified purposes.

§17F-1-2. Safety awareness courses.

(a) On and after the first day of September, two thousand four, the commissioner of motor vehicles shall offer a free all-terrain vehicle rider safety awareness course, and may approve other all-terrain vehicle rider safety awareness courses, to meet the reasonably anticipated needs of the public. The commissioner shall offer free safety awareness course materials to authorized dealers of all-terrain vehicles for use by purchasers and potential purchasers free of charge.

(b) The commissioner shall issue certificates of completion to persons who satisfactorily complete the requirements of an approved course. The commissioner may authorize a dealer of all-terrain vehicles and other approved providers to issue the certificates of completion.

(c) On and after the first day of January, two thousand five, no person under the age of eighteen may operate an all-terrain vehicle without a certificate of completion of a vehicle rider awareness course as offered or approved by the commissioner.

(d) The provisions of subsection (c) of this section do not apply to the operation of an all-terrain vehicle on any private or public recreational trail or area or affiliated trail or area operated by a person or entity which has in place a safety program.

§17F-1-3. Local government authority to regulate.

Notwithstanding any provision of this article to the contrary:

(1) The governing body of a municipality may regulate in any manner or prohibit, by lawfully enacted ordinance, the operation of all-terrain vehicles upon any street, road or avenue within the municipal corporate limits.

(2) Homeowner associations may petition the county commission of the county in which the area regulated by the homeowner association is located for an ordinance to regulate or prohibit the operation of all-terrain vehicles upon any street, road or avenue within the area regulated by the homeowner association. County commissions are hereby authorized, upon receipt of a petition authorized by the provisions of this section, to enact an ordinance regulating or prohibiting the operation of all-terrain vehicles.

(3) The county commission of any county which has in effect and is operating under a countywide comprehensive plan may by lawfully enacted ordinance regulate or prohibit the operation of all-terrain vehicles on any road in the county, except interstate highways: *Provided*, That any county which enacts any such ordinance shall notify the West Virginia state police and all law-enforcement

agencies in the county of its action in writing, together with a copy of the ordinance.

§17F-1-4. All-terrain vehicle rental dealers required to provide safety equipment.

Any person or entity renting or leasing all-terrain vehicles for recreational purposes must provide protective helmets as defined by the provisions of subdivision (5), subsection (a), section one of this article, to all persons using such vehicles who are under the age of eighteen and offer protective helmets to all persons eighteen and older using the rented or leased vehicles: *Provided*, That for the provisions of this section to be applicable, the age and identity of the users of the all-terrain vehicle must be disclosed to the person or entity providing the rented or leased vehicle.

§17F-1-5. Private property exemption.

Except as provided by the provisions of subdivisions (3), (4) and (5), subsection (a), section one of this article, and except as provided by the provisions of section two of this article, the provisions of this article do not apply if the all-terrain vehicle is operated exclusively on lands owned or leased by the vehicle owner or on private lands of others with the owner's permission.

§17F-1-6. Exemption for farm, commercial use; current regulations.

(a) Except as provided by the provisions of subdivisions (4) and (5), subsection (a), section one, nothing in this article may be construed to preclude or limit the use or operation of all-terrain vehicles for lawful nonrecreational commercial purposes, including, but not limited to, farm use, oil and gas operations, timbering, surveying and public utilities access.

(b) Nothing in this chapter may be construed to supersede or contravene the provisions of any agreement between the state of West Virginia and any private or governmental entity entered into prior to the effective date of this chapter, or any lawfully promulgated legislative rule, including any emergency legislative rule, regulating the operation of all-terrain vehicles.

§17F-1-7. Applicability of rules of operation.

(a) Every person operating an all-terrain vehicle upon a public road or highway of this state shall be subject to all of the duties applicable to the driver of a vehicle by the provisions of chapter seventeen-c of this code except where inconsistent with the provisions of this article and except as to those provisions of chapter seventeen-c of this code which by their nature can have no application.

(b) Notwithstanding the provisions of subsection (a) of this section, a motor vehicle operator's license is not required of an operator of an all-terrain vehicle when he or she is operating said vehicle in conformity with the provisions of subdivision (2), subsection (a) or subsection (b), section one of this chapter except when the operator is under the age of eighteen and is transporting a passenger under the age of eighteen.

§17F-1-8. Criminal penalties.

(a) Except as provided in the provisions of subsection (b) of this section and in addition to any other legal remedy for violation of civil or criminal provisions of this code, any person who violates the provisions of this article or municipal or county ordinance enacted pursuant to the provisions of section three of this article or who owns or has control over an all-terrain vehicle and knowingly permits it to be used in violation of the provisions of this article is guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one hundred dollars.

(b) Any parent, legal guardian or person who has actual responsibility for a child under eighteen years of age who knows or should have known the child is operating or is a passenger on an all-terrain vehicle without a helmet as required by the provisions of section one of this article is guilty of a misdemeanor and shall, upon conviction, be subject to the following penalties:

- (1) For a first offense, a fine of not less than fifty dollars nor more than one hundred dollars or not more than ten hours of community service, or both;
- (2) For a second offense, a fine of not less than one hundred dollars nor more than two hundred dollars or not more than twenty hours of community service, or both;
- (3) For a third or subsequent offense, a fine of not less than two hundred dollars nor more than five hundred dollars or not more than one hundred hours of community service, or both.

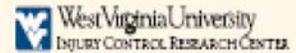
§17F-1-9. Definition of all-terrain vehicle.

As used in this chapter, "all-terrain vehicle" or "ATV" shall mean any motor vehicle, fifty-two inches or less in width, having an unladen weight of eight hundred pounds or less, traveling on three or more low pressure tires with a seat designed to be straddled by the rider, designed for or capable of travel over unimproved terrain.

Appendix E

The Public's Knowledge and Opinion about West Virginia's 2004 All-terrain Vehicle Safety Law

Ron Althouse, PhD, Jeri Kirby MA, and Jim Helmkamp, PhD,
West Virginia University Injury Control Research Center, Morgantown WV



ABSTRACT

Since the year 2000, West Virginia has had over 200 deaths and thousands of nonfatal injuries resulting from All Terrain Vehicle (ATV) crashes. During this time, West Virginia had the highest population-based fatality rate of any state and significantly higher rates in all age and gender categories. Through May 2006, West Virginia has already had 22 ATV-related fatalities.

WEST VIRGINIA ATV LAW

After seven years of delay, the state finally passed its first ATV law in March 2004. Key features of this law are as follows:



- No ATV may be operated on any road or highway with a centerline unless they are crossing the road, or traveling on the side or the road for the purpose of moving from one trail to another.
- No ATV may be operated in this state with a passenger unless the manufacturer recommends it, or the operator has a driver's license or is 18 years of age.
- No ATV may be operated in this state unless all riders under the age of 18 are wearing an approved helmet, without certified awareness training.
- The ATV must have an illuminated headlight or lights and taillights, a rear mirror and a manufacturer-installed or equivalent mirror.

METHODS

To determine the public's knowledge and opinions about this law, a statewide random digital (RDD) telephone survey of adult households was conducted in 2004-2005. Respondents in not have been 18 or older. Data has been weighted so that is representative of all 33 West Virginia counties. The cooperation rate for this survey was 29% (completed surveys [1265] relative to eligible households [4402]).



RESULTS

Household Characteristics: survey sample (N=2245).

| | |
|--------------------------------------------------------------------|---------|
| Average household size in West Virginia: | 2.3 |
| Average number of ATVs per household in West Virginia: | 2.4 |
| Ratio and number of ATVs in West Virginia: | 480,000 |
| Percent of sampled population that are riders in West Virginia: | 39% |
| Percent of sampled population that are riders under the age of 18: | 16% |
| Percent of sampled population that plan to purchase an ATV: | 19% |

Awareness of 2004 West Virginia ATV law (N=2245).

| | |
|-----------------------------------------------------------------------------------------------|-----|
| Percent of sampled households that know the ATV law was passed: | 42% |
| Percent of sampled that feel ATVs should be allowed to travel on roads: | 23% |
| Percent of population that feel ATVs should be titled the same as a motorcycle: | 33% |
| The percent of sampled that feel there should be legislation for ATV riders <18 years of age: | 83% |

Characteristics of West Virginia ATV riders (N=1165).

| | |
|-------------------------------------------------------------------------|-----|
| Type of training obtained, on average, among West Virginia ATV riders: | |
| Solo-taught | 47% |
| Thought by friend or family member | 23% |
| Percent of ATV riders that do carry a passenger: | 74% |
| Percent of ATV riders that do wear a helmet: | 36% |
| Percent of ATV riders that admit to having an ATV accident: | 17% |
| Percent that admitted to using drugs or alcohol while operating an ATV: | 7% |



Survey Findings—attitudes and "recreational lifestyle".

Survey results show that at least 3 of every 10 households own an ATV. The data also shows that if an ATV is available, on average there is 2 operators or passengers and on average there is more than 1 ATV in that household. Researcher report the risk (odds) attached to household ownership for ATVs is below:

Table 1. Opinion comparisons between household ATV owners vs. non-owners

| Odds of agreeing with statement that: | Odds Ratio | Interpretation |
|--------------------------------------------------|------------|--------------------------------------|
| ATVs are safe to operate on public roads | 3.04 | ATV owners 204% more likely to agree |
| ATVs are safe for kids <18 to operate | 0.44 | ATV owners 56% more likely to agree |
| Riders <18 should wear a helmet at all times | 0.16 | ATV owners 74% less likely to agree |
| All ATV riders should wear a helmet at all times | 0.36 | ATV owners 64% less likely to agree |

Attention to the awareness of risk and attitudes towards ATV legislation shows that respondents who reported experience operating ATVs versus non-riders reflected a distinctive willingness to downplay the risks of exposure and a need for personal or public health accountability regarding to dealings with ATV riding in general, and for a particular responsibility to use of ATVs by children. Data reflect that a "recreational lifestyle" dealing with personal risk and harm may be experienced more often among ATV operators.

Table 2. Opinion comparisons between experienced riders vs. non-riders

| Odds of agreeing with statement that: | Odds Ratio | Interpretation |
|----------------------------------------------------------------------------------------------------|------------|----------------------------------------------|
| ATVs are safe to operate on public roads | 2.83 | Experienced riders 183% more likely to agree |
| ATVs should be allowed to cross road lanes | 2.73 | Experienced riders 173% more likely to agree |
| ATV riders <18 should have training before riding | 0.36 | Experienced riders 64% less likely to agree |
| ATVs are safe for kids <18 to operate | 0.40 | Experienced riders 60% less likely to agree |
| Riders <18 should wear a helmet at all times | 0.21 | Experienced riders 79% less likely to agree |
| All ATV riders should wear a helmet at all times | 0.23 | Experienced riders 73% less likely to agree |
| Parents of children <18 should be held responsible for the child's actions | 0.70 | Experienced riders 30% less likely to agree |
| Law does not allow for passengers on ATVs not designed for them | 0.24 | Experienced riders 76% less likely to agree |
| Law provides penalties for violations that increase by the number of violations from \$30 to \$300 | 0.33 | Experienced riders 67% less likely to agree |
| Law does not permit riding on paved roads without a center line except when crossing | 0.64 | Experienced riders 36% less likely to agree |
| Law requires anyone <18 to complete BMV rider awareness training | 0.36 | Experienced riders 64% less likely to agree |

CONCLUSIONS

- There is a high level of exposure in WV to hazards of riding because at least 39% of households own 1 ATV's.
- Indications are that a recreational lifestyle that is focused on use of ATVs is strong in WV; within this lifestyle there are two different types of ATV riders: (1) Those who obey the law and show a strong concern for public safety; (2) Those who disobey the law and continuously practice risky behavior.
- If children are present in households with ATVs they typically are riders.
- Findings suggest that when recognizing the need to forge new legislation or to improve current laws affecting operation and riding of ATVs, researchers may choose that legislation should be directed towards households and especially those who are (as general guides) for successful in plan reduction of very multiple recreational riding in the state.
- Regardless of laws, safe riding (whether recreational or work-related) can be down to personal responsibility and personal guidance.



ACKNOWLEDGEMENT: Grant #29 C1000545-01 from the National Center for Injury Prevention and Control, CDC

Appendix G

STATE OF WEST VIRGINIA
 OFFICE OF THE CHIEF MEDICAL EXAMINER
 619 Virginia Street, West
 Charleston, WV 25302
 (304) 558-6920 – FAX (304) 558-9039

Security Seal No.: _____

FOR OCME USE ONLY:

CASE #: _____ DR.: _____

- DEATH INVESTIGATION REPORT & T.O.D. EXAMINATION
- EXTERNAL EXAMINATION REPORT
- COMPLETION OF DEATH CERTIFICATE (Copy Attached)

County of Death: _____ Date: _____

County ME/C: _____ Notified by/Date/Time: _____

| | |
|--------------------|----------------------------------------|
| DECEDENT: _____ | Occupation: _____ (Do not use retired) |
| ADDRESS: _____ | SSN: _____ |
| _____ | DOB: _____ |
| | AGE: SEX: RACE: |
| Next of Kin: _____ | Relationship: _____ Phone: _____ |

Date of Death: _____ @ _____ m. Witness: _____

Last Known Alive: _____ @ _____ m. By: _____

Found Dead: _____ @ _____ m. By: _____

Pronounced: _____ @ _____ m. By: _____

PLACE OF DEATH: _____

City/Town _____

[] DOA [] ER [] OR/RR [] Nursing Home [] At Home [] Other _____ [] Found (died elsewhere)

Complete this block if any Suspected Incident is checked below

| Suspected Incident(s): (check all that apply) | DATE OF INJURY: | TIME OF INJURY: | WITNESSED? (yes or no) By: _____ | PLACE OF INJURY (home, etc.) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------|------------------------------|
| <input type="checkbox"/> Electrocution <input type="checkbox"/> Fall <input type="checkbox"/> Firearm <input type="checkbox"/> Assault <input type="checkbox"/> Fire <input type="checkbox"/> Neglect <input type="checkbox"/> Tox/OD <input type="checkbox"/> Exposure <input type="checkbox"/> Drowning <input type="checkbox"/> Hanging <input type="checkbox"/> Suffocation <input type="checkbox"/> MVA <input type="checkbox"/> Positional asphyxia <input type="checkbox"/> Compression asphyxia <input type="checkbox"/> Other _____ | INJURY LOCATION ADDRESS: [] Same as place of death | | | |
| | <input type="checkbox"/> <u>IF MVA</u> : Restrained [] Yes [] No Airbag [] Yes [] No Helmet [] Yes [] No Ped [] Yes [] No | | | |
| | Work-related: <input type="checkbox"/> yes <input type="checkbox"/> no If yes, describe: _____ | | | |

Investigation by: _____ Agency: _____ Phone: _____

_____ Agency: _____ Phone: _____

OCME Consult: _____ Date/Time: _____

OCME 1
 REVISED 01-18-06

NAME: _____

LOCATION OF DECEDENT AT SCENE: (Describe specific location of body and immediate surroundings at scene)

Position found: supine prone on right/left side other: _____

Describe surface under body: _____

HISTORY:

Primary Physician: _____ Office Phone: _____

Other Physician: _____ Office Phone: _____

Surgeries/Hospitalizations: _____

Illnesses/Allergies: _____

Psych: _____

Family/Social: _____

Other: _____

MEDICAL RECORDS: Requested/Received Yes No Reviewed Yes No Copy Attached Yes No

Records available from: _____ Phone: _____

Records available from: _____ Phone: _____

IF RECORDS SENT: Please attach copy of OCME-19a.

MEDICATION/DRUGS – PLEASE LIST ON PAGE 4

NAME: _____

TIME OF DEATH EXAMINATION

EXAMINATION:

Location: _____ Time Started: _____ Completed at: _____

Witness: _____ Witness: _____

IDENTIFICATION: Confirmed: Yes No

Method:

 Visual I.D. by whom: _____ Photo I.D. WVDL Other Photo I.D.: explain _____

Please submit I.D. document used

LIVIDITY: Appropriate for position Yes No (explain) _____ Absent Reduced Ill-Defined Patterned _____

Location: _____ Color: _____

Blanches: Readily Sluggishly Fixed Shifting Color: _____RIGIDITY: Body posture appropriate for body position Yes No (explain) _____Jaw None Slight Moderate Full Marked/MuscularArms None Slight Moderate Full Marked/MuscularLegs None Slight Moderate Full Marked/MuscularFingers None Slight Moderate Full Marked/Muscular Developing Receding Factors Affecting: _____

If rigor has been broken explain: _____

TEMPERATURES: indoor scene outdoor sceneTorso temp: Cold (ambient) Cool Warm Hot Time: _____

Rectal temp: _____ Time: _____ Ambient temp: _____ Time: _____

Ground temp, if applicable: _____ Time: _____ Water temp, if applicable: _____ Time: _____

If outdoor scene: Weather Rainy Sunny Cloudy Windy

NAME: _____

EXTERNAL EXAMINATION**(This Block Should Not be Completed If Case Sent for Autopsy)**Development: Normal Other _____ Adult Adolescent Child Infant

BUILD: _____ NUTRITIONAL STATUS: _____ HT _____ WT _____ SEX _____

RACE: _____ AGE: _____ Appears stated age? _____

DOCUMENT ALL PHYSICAL EXAM FINDINGS ON BODY DIAGRAMS PROVIDED

(Scars/Marks/Tattoos/Therapy/Injury/Etc.)

DIAGRAMS SUBMITTED: No findings/No diagram submitted Full Body A/P
 Head diagram; A/P Full Body, lateral
 Head diagram, lateral and vertex Hand R & L
 Neck, inferior view

TOXICOLOGY: Specimens Obtained: Subclavian/Femoral Blood Urine Vitreous
 Time Collected: _____ Date Collected: _____ Admission/Hospital Blood (# tubes _____)

PHOTOS: Yes No TYPE: 35 POLAROID APS PHOTO # _____EVIDENCE COLLECTED FROM BODY: None List _____

Collected by: _____ Agency: _____ Date/Time: _____

Submitted to: _____ Agency: _____ Date/Time: _____

CAUSE OF DEATH: _____ PENDING AUTOPSY

Other Significant Conditions: _____

MANNER OF DEATH: Natural Accident Homicide Pending Autopsy**FOR BILLING PURPOSES – I attest that I performed the procedures indicated below:**

- Death Scene Visit/External exam of body/review of pertinent records/completed death certificate
 Death Scene Visit/Partial exam of body/body submitted for autopsy
 External exam of body/review of pertinent records/completed death certificate

Medical Examiner/Coroner

NAME: _____

CLOTHING AND VALUABLES

EXTERNAL CLOTHING: (List number and clothing color)

| | | |
|------------------------|------------------------|---------------------------|
| ___ Nude _____ | # ___ Hose _____ | # ___ Belt _____ |
| # ___ Slacks _____ | # ___ Panties _____ | # ___ Hat _____ |
| # ___ Shirt _____ | # ___ Slip _____ | # ___ Gloves _____ |
| # ___ Socks _____ | # ___ Housecoat _____ | # ___ Scarf _____ |
| # ___ Undershirt _____ | # ___ Day Shorts _____ | # ___ Coat _____ |
| # ___ Underwear _____ | # ___ Sweatpants _____ | # ___ Dentures _____ |
| # ___ Tie _____ | # ___ Sweatshirt _____ | # ___ Eyeglasses _____ |
| # ___ Sweater _____ | # ___ Pajamas _____ | # ___ Hearing aid _____ |
| # ___ Dress _____ | # ___ Nightgown _____ | # ___ Other _____ |
| # ___ Blouse _____ | # ___ Robe _____ | # ___ Hospital gown _____ |
| # ___ Bra _____ | # ___ Shoes _____ | _____ |

CURRENCY: \$ _____ COINS: \$ _____ TOTAL: \$ _____

PERSONAL EFFECTS AND VALUABLES: _____ Yes (If yes, list below) _____ No

DISPOSITION OF CLOTHING:

[] LEFT ON BODY [] GIVEN TO FUNERAL HOME [] SEE EVIDENCE, PG. 6

[] GIVEN TO _____

DISPOSITION OF VALUABLES:

[] LEFT ON BODY [] GIVEN TO FUNERAL HOME [] SEE EVIDENCE, PG. 6

[] GIVEN TO _____

Person accepting custody of clothing / valuables: _____

Signature: _____ Agency: _____ Date: _____

WITNESS: _____ Date: _____

Appendix H

2006 FATALITY BREAKDOWN

| Fatality No. | Helmet Used | | Paved Road | | Alcohol/Drugs Involved | | Speed Involved | | Passenger (2 = Non fatal) | | | | | | |
|--------------|-------------|----|------------|----|------------------------|---|----------------|----|---------------------------|----|----|----|----|----|---|
| | Y | N | Y | N | Y | N | Y | N | Y | N | | | | | |
| 1 | | | | | | | | | | | | | | | |
| 2 | 1 | | | | 1 | | | | | | | | | | |
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| 9 | 1 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | |
| 12 | 1 | | | | | | | | | | | | | | |
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| 47 | | | | | | | | | | | | | | | |
| 48 | 1 | | | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | |
| 51 | 1 | | | | | | | | | | | | | | |
| 52 | | | | | | | | | | | | | | | |
| 53 | | | | | | | | | | | | | | | |
| 54 | | | | | | | | | | | | | | | |
| TOTALS | 6 | 47 | 1 | 30 | 22 | 2 | 15 | 15 | 24 | 23 | 18 | 13 | 11 | 39 | 4 |

Appendix I

State of West Virginia Uniform Traffic Crash Report

DOH Form: 17-c
Revised: 02/2007

Crash Data

Crash Record Number: Reporting Agency's Record Number: Page of

of Vehicles Involved: # of Non-Motorists Involved: # of Fatal Injuries: # of A, B or C Injuries:

Date / Time of Crash: / Date / Time Crash Reported: / Time of Arrival:

County: Municipality or Place of Crash: GPS Coordinates:
Latitude Longitude

Highway Class: Interstate US WV
 County/HARP City Street State Park / Forest Road
 Private Road Private Property/Off-Roadway Other

Supplemental Designation: Not Applicable Spur North East Truck Route Other
 Alternate Ramp South West Toll

Route: / Milepost: Ramp: Street:

Other Description of Location: Intersecting Street:

Relation to Junction / Junction Type:

Non-Junction Junction, Non-Interchange Area Junction, Interchange Area

Intersection
 Intersection-Related
 Interstate to Interstate
 Railroad Grade Crossing #:
 Median Crossover-Related
 Business or Residential Driveway/Alley Access
 Other Non-Interchange

Thru Roadway
 Merge/Diverge Area
 Intersection
 Intersection-Related
 Entrance / Exit Ramp
 Other Part of Interchange

Intersection Type:

4-Way Intersection
 T Intersection
 Y Intersection
 Intersection as Part of Interchange
 Traffic Circle / Roundabout
 5-Point or More

Manner of Collision:

Single Vehicle Crash
 Rear End
 Head-On
 Sideswipe, Same Direction
 Sideswipe, Opposite Direction
 Rear-to-Side
 Rear-to-Rear

Angle (Front to Side) Same Direction Right Angle

Angle (Front to Side) Opp. Direction Angle - Direction Not Specified

Environmental Contributing Circumstances (Select Up to 3):

None
 Weather Conditions
 Physical Obstruction(s)
 Glare
 Animal(s) in Roadway
Type:
 Other:

Weather (Select Up to 2):

Clear Rain Blowing Snow Other
 Cloudy Sleet, Hail, or Freezing Rain Severe Crosswinds
 Fog, Smog, Smoke Snow Blowing Sand, Soil, Dirt

Lighting:

Daylight Dawn
 Dark - Lighted Dark
 Dark - Not Lighted Other

Roadway Surface Condition:

Dry Slush Mud, Dirt, Gravel, Sand
 Wet Ice / Frost
 Snow Water (Standing / Moving)

Location of First Harmful Event:

On Roadway Roadside In Parking Lane or Zone Outside of Right-of-Way
 Shoulder Curb Off Roadway, Location Unknown
 Median Separator Unknown

Roadway Surface Type: Asphalt Concrete Gravel Dirt Brick Other:

First Harmful Event:

Overturn / Rollover
 Fire / Explosion
 Immersion
 Jackknife
 Cargo / Equipment Lost or Shift
 Fall / Jumped from Motor Veh
 Thrown or Falling Object
 Other Non-Collision

COLLISION WITH:

Pedestrian
 Pedalcycle
 Railway Vehicle
 Animal
 Motor Vehicle in Transport
 Parked Motor Vehicle
 Work Zone / Maintenance Equip
 Other Non-Fixed Object
 Impact Attenuator / Crash Cushion

Bridge Overhead Structure
 Bridge Pier or Support
 Bridge Rail
 Culvert
 Curb
 Ditch
 Embankment
 Guardrail Face
 Guardrail End
 Cable Median Barrier

Concrete Traffic Barrier
 Other Traffic Barrier
 Tree (Standing)
 Utility Pole/Light Support
 Traffic Sign Support
 Traffic Signal Support
 Other Post, Pole, or Support
 Fence
 Mailbox
 Other Fixed Object



State of West Virginia Uniform Traffic Crash Report Vehicle Data

Crash Record Number: _____ Vehicle Number: _____ Reporting Agency's Record Number: _____ Page _____ of _____

Vehicle Type: Motor Veh in Transport Parked Motor Veh / Trailer Working Veh / Equipment Driver Presence at Time of Crash: Driver Operated Vehicle Driverless Vehicle

Owner's Name(s): _____

Address: _____ City: _____ State: _____ Zip Code: _____ Home Phone: _____ Other Phone: _____

Make: _____ Model Year: _____ Model: _____ Body Type: _____ Color: _____

Registration Status: _____ Ins. Co.: _____

Proof of Liability Insurance: Yes No Not Req

Policy No.: _____ Exp. Date: _____

License Plate Number: _____ State: _____ Reg. Year: _____

Used as an Emergency Vehicle: Public School Bus Tour Bus Commercial Bus Shuttle Bus Church Bus Private School Bus Modified for Personal/Private Use Scheduled Service Bus

Vehicle Impact Role: Striking Struck Single Vehicle Both

Direction of Travel Before Crash: Northbound Eastbound Not on Road Southbound Westbound Unknown

Applicable Speed Limit (MPH): _____

Roadway Description: Two-Way, Not Divided Two-Way, Divided, Unprotected Median Two-Way, Divided, with Median Barrier One-Way Roadway

Traffic Control Device Type: None Yield Sign Flashing Overhead Signal School Zone Sign Stop Sign Traffic Control Signal Warning Sign Railroad Crossing Device Other

Traffic Control Functioning Properly: Yes No

Horizontal Alignment: Straight Curve Right Level Uphill Sag (Bottom) Curve Left Hillcrest Downhill

Vertical Alignment: Level Uphill Sag (Bottom) Hillcrest Downhill

Vehicle Maneuver / Action: Essentially Straight Ahead Making U-Turn Braking Slowing Changing Lanes Stopped in Traffic Overtaking / Passing Leaving Traffic Lane Parked Entering Traffic Lane Turning Right Negotiating a Curve Turning Left Other

Crash Avoidance Maneuver: None Evident or Reported Braking - Skidmarks Evident Wipers Lights (Head, Signal, Tail, etc.) Steering Windows Power Train Truck Coupling/Trailer Hitch Safety Chain Mirrors Suspension Other

Contributing Circumstances, Motor Vehicle (Select up to 2): None Tires Brakes Wheels Lights (Head, Signal, Tail, etc.) Steering Windows Power Train Truck Coupling/Trailer Hitch Safety Chain Mirrors Suspension Other

Vehicle in Primarily Used to Transport Goods, Property, or People for Commerce: No Yes

Modified Vehicle: No Yes

Occurrence of Fire: No Fire Yes, Vehicle Caught Fire Yes

Displaying Hazardous Material Placard: No Yes

Manner, in which Vehicle was Removed from Scene: Driven Towed Due to Damage Towed Due to Driver Condition Left at Scene

Towed to: _____ Towed by: _____

Excess of Damage: No Damage Minor Damage Functional Damage Disabling Damage

CVWR or GCWR: Less Than or Equal To 10,000 lbs 10,001 - 20,000 lbs More Than 20,000 lbs

Number of Axles: _____ Total / Max Occupants of Veh: _____ / _____

- Crash Events:**
- 01 Overturn / Rollover
 - 02 Fire / Explosion
 - 03 Immersion
 - 04 Inebriate
 - 05 Cargo Equipment Loss or Shift
 - 06 Equipment Failure
 - 07 Separation of Unit
 - 08 Run Off Road Right
 - 09 Run Off Road Left
 - 10 Cross Median / Centerline
 - 11 Downhill Runaway
 - 12 Fall / Jumped from Motor Vehicle
 - 13 Thrown or Falling Object
 - 14 Other Non-Collision
 - COLLISION WITH:
 - 20 Motor Vehicle in Transport
 - 21 Struck by Falling / Striking Cargo or Anything Set in Motion by Veh
 - 22 Work Zones / Maintenance Equip
 - 23 Other Non-Fixed Object
 - 24 Impact Attenuator / Crash Cushion
 - 25 Bridge Overhead Structure
 - 26 Bridge Pier or Support
 - 27 Bridge Rail
 - 28 Culvert
 - 29 Curb
 - 30 Ditch
 - 31 Embankment
 - 32 Guardrail Face
 - 33 Guardrail End
 - 34 Cable Median Barrier
 - 35 Concrete Barrier
 - 36 Other Traffic Barrier
 - 37 Tree (Standing)
 - 38 Utility Pole / Light Support
 - 39 Traffic Sign Support
 - 40 Traffic Signal Support
 - 41 Other Post, Pole, or Support
 - 42 Fence
 - 43 Mailbox
 - 44 Other Fixed Object
- Sequence of Events: _____
- Most Hazardous Event: _____

Select the COVE Diagram that best matches the involved vehicle and identify damaged areas:

Single Unit Vehicle

13 Top 14 Undercarriage

Motorcycle

13 Top 14 Undercarriage

ATV

13 Top 14 Undercarriage

Van, Van, Towing Unit

13 Top 14 Undercarriage

Bus

13 Top 14 Undercarriage

Tractor Trailer

13 Top 14 Undercarriage

Using the Numbers from the Diagram Above, Identify the Following: Area of Initial Impact: _____ Most Damaged Area: _____

Number of Trailing Units: _____

Trailing Unit #1: Same as Power Unit Carrier / Owner's Name: _____ Address: _____ Phone: _____

Trailing Unit #2: Same as Power Unit Carrier / Owner's Name: _____ Address: _____ Phone: _____

Trailing Unit #3: Same as Power Unit Carrier / Owner's Name: _____ Address: _____ Phone: _____

- Property Damaged Other Than Vehicle:
- None
 - Work Zones / Maintenance Equipment
 - Impact Attenuator / Crash Cushion
 - Bridge / Tunnel
 - Culvert
 - Guardrail
 - Concrete Barrier
 - Cable Median Barrier
 - Other Traffic Barrier
 - Utility Pole / Light Support
 - Traffic Sign Support
 - Traffic Signal Support
 - Other Post, Pole or Support
 - Fence
 - Mailbox
 - Other Fixed Object
- Damaged Property Owner(s): _____
- WYDOH Private
 - City Utility Company
 - Other: _____
- Damaged Property Location:
- On Freeway
 - Right Side of Road
 - Left Side of Road

| Trailing Unit # | Same as Power Unit | Carrier / Owner's Name | Address | Phone |
|-----------------|--------------------------|------------------------|---------|-------|
| 1 | <input type="checkbox"/> | _____ | _____ | _____ |
| 2 | <input type="checkbox"/> | _____ | _____ | _____ |
| 3 | <input type="checkbox"/> | _____ | _____ | _____ |

| Trailing Unit # | Same as Power Unit | Carrier / Owner's Name | Address | Phone |
|-----------------|--------------------------|------------------------|---------|-------|
| 1 | <input type="checkbox"/> | _____ | _____ | _____ |
| 2 | <input type="checkbox"/> | _____ | _____ | _____ |
| 3 | <input type="checkbox"/> | _____ | _____ | _____ |

| Trailing Unit # | Same as Power Unit | Carrier / Owner's Name | Address | Phone |
|-----------------|--------------------------|------------------------|---------|-------|
| 1 | <input type="checkbox"/> | _____ | _____ | _____ |
| 2 | <input type="checkbox"/> | _____ | _____ | _____ |
| 3 | <input type="checkbox"/> | _____ | _____ | _____ |



State of West Virginia Uniform Traffic Crash Report

Driver Data

DOH Form: 17-drv
Revised: 02/2007

Crash Record Number: Vehicle Number (from Vehicle Data Page) Page of

Reporting Agency's Record Number:

Driver's Name: _____
Last
First
Middle
Suffix

Address: Same as Veh Owner _____
City
State
Zip Code

Home Phone: _____ Other Phone: _____

Driving License:

| | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>License Type:</p> <p> <input type="radio"/> Not Licensed <input type="radio"/> GDL Level 1 <input type="radio"/> CDL Instruction Permit <input type="radio"/> CDL Class: <input type="text"/> </p> <p> <input type="radio"/> Driving License <input type="radio"/> GDL Level 2 <input type="radio"/> Motorcycle Instruction Permit <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C </p> <p> <input type="radio"/> Instruction Permit <input type="radio"/> GDL Level 3 <input type="radio"/> Motorcycle Only </p> | <p>Issuing State: _____</p> <p>Lic. Number: _____</p> <p>Date of Birth: _____</p> |
| <p>License Restrictions: (Select All that Apply)</p> <p> <input type="checkbox"/> None <input type="checkbox"/> Limited - Other <input type="checkbox"/> Corrective Lenses <input type="checkbox"/> CDL Intrastate Only <input type="checkbox"/> Mechanical Devices <input type="checkbox"/> Motor Vehicles w/o Air Brakes <input type="checkbox"/> Prosthetic Aid <input type="checkbox"/> Military Vehicles Only <input type="checkbox"/> Automatic Transmission <input type="checkbox"/> Except Class A Bus <input type="checkbox"/> Outside Mirror <input type="checkbox"/> Except Class A and Class B Bus <input type="checkbox"/> Limit to Daylight Only <input type="checkbox"/> Except Tractor - Trailer <input type="checkbox"/> Limit to Employment <input type="checkbox"/> Farm Waiver <input type="checkbox"/> Must Be Accompanied by Adult <input type="checkbox"/> Other: <input type="text"/> </p> | <p>Endorsements: (Select Up to 5)</p> <p> <input type="checkbox"/> None <input type="checkbox"/> T - Double/Triple Trailers <input type="checkbox"/> P - Passenger Vehicle <input type="checkbox"/> S - School Bus <input type="checkbox"/> N - Tank Vehicle <input type="checkbox"/> H - Hazardous Materials <input type="checkbox"/> X - Combined Tank / Haz. Material <input type="checkbox"/> F - Motorcycle (WV Only) <input type="checkbox"/> Other - Non-WV License Only </p> |
| <p>Status:</p> <p> <input type="radio"/> Valid <input type="radio"/> Expired <input type="radio"/> Suspended <input type="radio"/> Revoked <input type="radio"/> Probation <input type="radio"/> Surrendered <input type="radio"/> Valid/Interlock <input type="radio"/> Fraudulent </p> | |

| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Driver Condition at Time of Crash:</p> <p> <input type="radio"/> Apparently Normal <input type="radio"/> Emotional <input type="radio"/> Ill <input type="radio"/> Fell Asleep, Fainted, Fatigued <input type="radio"/> Under the Influence of Medication/Alcohol/Drugs <input type="radio"/> Other: <input type="text"/> </p> | <p>Action(s) of Driver that Contributed to the Crash: (Select Up to 4)</p> <p> <input type="checkbox"/> None <input type="checkbox"/> Improper Turn <input type="checkbox"/> Operated Veh in Aggressive Manner <input type="checkbox"/> Ran Off Road <input type="checkbox"/> Improper Backing <input type="checkbox"/> Swerved or Avoided <input type="checkbox"/> Failed to Yield Right of Way <input type="checkbox"/> Improper Passing <input type="checkbox"/> Over Correcting / Over Steering <input type="checkbox"/> Disregarded Traffic Signs <input type="checkbox"/> Wrong Side or Wrong Way <input type="checkbox"/> Other Improper Action <input type="checkbox"/> Ran Red Light <input type="checkbox"/> Followed Too Closely <input type="checkbox"/> Disregarded Other Road Markings <input type="checkbox"/> Failed to Keep in Proper Lane <input type="checkbox"/> Exceeded Posted Speed Limit <input type="checkbox"/> Operated Veh in Erratic, Reckless, or Careless Manner <input type="checkbox"/> Drove Too Fast For Conditions </p> |
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Driver Use of Alcohol Suspected:

| | | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Alcohol Use Suspected:</p> <p> <input type="radio"/> No <input type="radio"/> Yes <input type="radio"/> Unknown </p> | <p>Alcohol Test Given:</p> <p> <input type="radio"/> Test Given <input type="radio"/> None Given <input type="radio"/> Test Refused </p> | <p>Type of Alcohol Test Given (Select Up to 2):</p> <p> <input type="checkbox"/> Blood <input type="checkbox"/> Breath <input type="checkbox"/> Urine <input type="checkbox"/> Serum <input type="checkbox"/> Field <input type="checkbox"/> Other: <input type="text"/> </p> | <p>PBT Results:</p> <p> <input type="radio"/> Pass <input type="radio"/> Fail </p> | <p>BAC Results:</p> <p> <input type="radio"/> _____ <input type="radio"/> Pending <input type="radio"/> Unknown </p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|

Driver Use of Drugs Suspected:

| | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Drug Use Suspected:</p> <p> <input type="radio"/> No <input type="radio"/> Yes <input type="radio"/> Unknown </p> | <p>Drug Test Given:</p> <p> <input type="radio"/> Test Given <input type="radio"/> None Given <input type="radio"/> Test Refused <input type="radio"/> Unknown if Tested </p> | <p>Type of Drug Test Given:</p> <p> <input type="radio"/> Blood <input type="radio"/> DRE <input type="radio"/> Serum <input type="radio"/> Urine <input type="radio"/> Other: <input type="text"/> </p> | <p>Drug Test Results (Check All that Apply):</p> <p> <input type="checkbox"/> None <input type="checkbox"/> Amphetamine <input type="checkbox"/> Pending <input type="checkbox"/> Marijuana <input type="checkbox"/> PCP <input type="checkbox"/> Cocaine <input type="checkbox"/> Other Controlled Substance <input type="checkbox"/> Opiate <input type="checkbox"/> Other Drug </p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Driver Distracted By:

Not Distracted
 Electronic Communication Device
 Other Electronic Device
 Other Inside Vehicle
 Other Outside Vehicle



State of West Virginia Uniform Traffic Crash Report Driver and Vehicle Passenger Data

Crash Record Number: Reporting Agency's Record Number: Page of

| Intr # | Name | | Middle In. Initials | Veh # | Occupant Type | Social Security # | Birthdate | Age | Gender | Injury | Seating Position | | | Occupant Protection | |
|--------|------|-------|---------------------|-------|---------------|-------------------|-----------|-----|--------|--------|------------------|------|-------|---------------------|------------|
| | Last | First | | | | | | | | | Row | Seat | Other | Type Used | Proper Use |
| | | | | | | | | | | | | | | | |
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Occupant Type Codes:
 01 Driver
 02 Passenger
 03 Occupant of Motor Veh Not in Transport
 04 Unknown Vehicle Passenger

Injury Status Codes:
 A Incapacitating Injury
 B Non-Incapacitating Injury
 C Possible Injury
 M Medical Condition
 Non-Crash Related Death or Injury

Seating Position Codes:
 ROW SEAT OTHER
 1 Front 1 Left 1 Sleeper Section of Cab
 2 Second 1 Middle 2 Other Enclosed Cargo Area
 3 Third 3 Right 3 Unenclosed Cargo Area
 4 Fourth 4 Other 4 Trailing Unit
 5 Other Row 5 Unknown 5 Riding on Motor Vehicle Exterior
 6 Unknown 6 Unknown

Type of Occupant Protection System Used Codes:
 01 None Used
 02 Shoulder and Lap Belt Used
 03 Shoulder Belt Only Used
 04 Lap Belt Only Used
 05 Child Restraint System - Forward Facing
 06 Child Restraint System - Rear Facing
 07 Booster Seat
 08 Helmet Used
 09 Restraint Used - Type Unknown
 10 Other
 11 Unable to Determine - Due to Vehicle Damage

Gender:
 M Male
 F Female

Medical Responding

| Intr # | Air-bag Above | Trapped / Extricated | Ejected | Ejection Path | EMS Agency ID # | EMS Response Run Number | Rescuing Facility Name | Notified Time | Scene Time | Hospital Time | Date of Death | Time of Death | Place of Death |
|--------|---------------|----------------------|---------|---------------|-----------------|-------------------------|------------------------|---------------|------------|---------------|---------------|---------------|----------------|
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Proper Use of Occupant Protection:
 01 Used Properly
 02 Used Improperly
 03 Unknown

DOT Approved Helmet:
 01 Yes
 02 No
 03 Unknown

Airbag Deployed Codes:
 DEPLOYED (This Seat):
 01 Front
 02 Side
 03 Other
 04 Multiple Directions (Front and Side)
 10 Unable to Determine - Due to Vehicle Damage

NOT DEPLOYED (This Seat):
 05 Available, Didn't Deploy
 06 Available, Turned Off
 07 None Installed
 08 Previously Deployed - Not Replaced
 09 Disabled or Removed

Trapped / Extricated Codes:
 01 Not Trapped / Extricated
 02 Trapped / Extricated
 03 Unknown

Ejection Codes:
 01 Not Ejected
 02 Ejected, Partially
 03 Ejected, Totally
 04 Unknown

Ejection Path:
 01 Thru Side Door Opening
 02 Thru Side Window
 03 Thru Windshield
 04 Thru Back Window
 05 Thru Back Door / Tailgate Opening
 06 Thru Roof Opening
 07 Thru Convertible (Top Up) Roof
 08 Other Path
 09 Unknown Path

Medically Transported By:
 01 Not Transported
 02 EMS
 03 Law Enforcement
 04 Refused
 05 Other
 06 Unknown

Places of Victim's Death:
 01 At Scene
 02 En Route
 03 At Medical Facility
 04 Home
 05 Other



State of West Virginia Uniform Traffic Crash Report Non-Motorist Data

Crash Record Number: _____ Reporting Agency's Record Number: _____ Page _____ of _____

| Injur. # | Name | | DOB | SSN | Type | Age | Gender | Injury | Veh Number of Motor Veh Striking | Action PRIOR to Crash | Location PRIOR to Crash | Contributing Action #1 | Location at Time of Crash #2 |
|----------|------|-------|-----|-----|------|-----|--------|--------|----------------------------------|-----------------------|-------------------------|------------------------|------------------------------|
| | Last | First | | | | | | | | | | | |
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Person Type Codes:

05 Pedestrian
06 Other Pedestrian (Wheelchair, Stroller, etc.)
07 Bicyclist

Other Cyclist
08 Occupant of Non-Motor Veh Transportation Device
09 Unknown Type of Non-Motorist

Gender:
M Male
F Female

Injury Status Codes:
K Killed
O No Injury
A Incapacitating Injury
B Non-Incapacitating Injury
C Potentially Injury
M Medical Conditions Non-Crash Related Death or Injury

Non-Motorist Action PRIOR to Crash:

01 Walking Adjacent to Roadway
02 Entering or Crossing Roadway
03 Recreational Pursuit
04 Walking To/From School

05 Approaching or Leaving Veh
06 Parking Motor Vehicle
07 Cycling
08 Working

09 Playing
10 Standing
11 Working on Vehicle
12 Other

Non-Motorist Location PRIOR to Crash:

01 In Roadway
02 Other Adjacent to Roadway

Non-Motorist Location at Time of Crash:

01 Marked Crosswalk at Intersection
02 At Intersection, but No Crosswalk
03 Non-Intersection Crosswalk

04 Driveway Access Crosswalk
05 In Roadway (Not in Crosswalk or Intersection)
06 Median

Action of Non-Motorist that Contributed to the Crash (Select Up to 2):

01 Noses
02 Improper Crossing
03 Dartsing / Running
04 In Roadway (Stand, Sit)

05 Failure to Yield Right of Way
06 Not Visible
07 Inattentive
08 Failure to Obey Traffic Signs, Signals, or Officer

| Injur. # | Use of Safety Equipment #1 | Use of Safety Equipment #2 | Traffic Control Device #1 | Traffic Control Device #2 | Receiving Facility Name | Notified Time | Scene Time | Hospital Time | Date of Death | Time of Death | Place of Death |
|----------|----------------------------|----------------------------|---------------------------|---------------------------|-------------------------|---------------|------------|---------------|---------------|---------------|----------------|
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Non-Motorist's Traffic Control Devices (Select Up to 2):

01 Marked Crosswalk
02 Traffic Signal with Pedestrian Signals
03 Traffic Signal with NO Pedestrian Signals
04 Crossing Guard

05 None

Medically Transported By:

01 Not Transported
02 EMS
03 Law Enforcement
04 Unknown

Places of Victim's Death:

01 At Scene
02 In Scene
03 At Medical Facility
04 Home
05 Other

| Injur. # | Use of Safety Equipment #1 | Use of Safety Equipment #2 | Traffic Control Device #1 | Traffic Control Device #2 | Receiving Facility Name | Notified Time | Scene Time | Hospital Time | Date of Death | Time of Death | Place of Death |
|----------|----------------------------|----------------------------|---------------------------|---------------------------|-------------------------|---------------|------------|---------------|---------------|---------------|----------------|
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Non-Motorist's Traffic Control Devices (Select Up to 2):

01 Marked Crosswalk
02 Traffic Signal with Pedestrian Signals
03 Traffic Signal with NO Pedestrian Signals
04 Crossing Guard

05 None

Medically Transported By:

01 Not Transported
02 EMS
03 Law Enforcement
04 Unknown

Places of Victim's Death:

01 At Scene
02 In Scene
03 At Medical Facility
04 Home
05 Other

| Intr # from Front | Name Last | Name First | Condition at Time of Crash | Alcohol Related | | | Drug Related | | | | | | | | |
|-------------------|-----------|------------|----------------------------|-----------------|------------|--------------|--------------|---------------|------------|--------------|----------------------|--|--|--|--|
| | | | | Suspected Y/N | Test Given | Type of Test | BAC Result | Suspected Y/N | Test Given | Type of Test | Test Results 1 2 3 4 | | | | |
| | | | | | | | | | | | | | | | |
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Non-Motorist Condition at Time of Crash:

| Alcohol Test Given: | Type of Alcohol Test Given: |
|---------------------|-----------------------------|
| 01 Test Given | 01 Blood |
| 02 None Given | 02 Serum |
| 03 Test Refused | 03 Breath |
| 04 Field | 04 Other |
| 05 Urine | |
| 06 Other | |

BAC Results:

| Result | Code |
|-----------------------------|------|
| None BAC Level if Available | |
| F Pending | |
| U Unknown | |

| Intr # from Above | Violations Suspected or Committed by Non-Motorist | #1 | #2 | #3 | #4 | Charge | Municipal Ordinance | Citation Number | Warning | Citation(s) Issued to Non-Motorist |
|-------------------|---------------------------------------------------|----|----|----|----|--------|---------------------|-----------------|---------|------------------------------------|
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- Violations Suspected or Committed by Non-Motorist
- 01 No Violation
 - Rules of the Road - Traffic Signs and Signals
 - 08 Failure to Stop for Red Signal
 - 09 Failure to Stop for Flashing Red Signal
 - 10 Violation of Turn on Red
 - 11 Failure to Obey Flashing Signal (Yellow or Red)
 - 12 Failure to Obey Signal, Generally
 - 13 Violation of RR Grade Crossing Device or Regulation
 - 14 Failure to Obey Stop Sign
 - 15 Failure to Obey Yield Sign
 - 16 Failure to Obey Traffic Control Device
 - Rules of the Road - Lane Usage
 - 17 Unsafe or Prohibited Lane Change
 - 18 Improper Use of Lane
 - 19 Lane Violation, Generally
 - Rules of the Road - Turning, Yielding, Signaling
 - 20 Turn in Violation of Traffic Control
 - 21 Failure to Signal for Turn or Stop
 - 22 Failure to Yield to Emergency Vehicle
 - 23 Failure to Yield, Generally
 - Equipment
 - 24 Bicycle Helmet Violation
 - 25 Equipment Violation, Generally
 - 26 Jaywalking
 - 27 Driving Where Prohibited
 - 28 Other Moving Violation
 - Impairment Offense
 - 05 Illegal Intoxication of Alcohol or Drug
 - 06 Refusal to Submit to Chemical Test
 - 07 Public Intoxication



State of West Virginia Uniform Traffic Crash Report

Commercial Motor Vehicle (CMV) Data

DOH Form: 17-cmv
Revised: 02/2007

Crash Record Number: Vehicle Number (from Vehicle Data Page) Page of

Reporting Agency's Record Number:

Carrier Name:

Carrier Address:
City State Zip Code

US DOT Number: State ID Number:

Lessee / Lessor Name:

Address:
City State Zip Code

| | | |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| US DOT Number: <input type="text"/> | Carrier Classification <input type="radio"/> Interstate <input type="radio"/> Intrastate <input type="radio"/> Government Veh - Not in Commerce <input type="radio"/> Other Veh - Not in Commerce | Carrier Information Source: <input type="radio"/> Shipping Papers <input type="radio"/> Log Book <input type="radio"/> Lease <input type="radio"/> Driver <input type="radio"/> Vehicle Reg <input type="radio"/> Vehicle Side <input type="radio"/> Other: <input type="text"/> |
| State ID Number: <input type="text"/> | | |

| | | | |
|----------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Haz Mat Placard Number: <input type="text"/> | | Haz Mat Released from Cargo Compartment: <input type="radio"/> No <input type="radio"/> Yes <input type="radio"/> Unknown | Did Crash Occur on a Coal Resource Transportation System (CRTS) Route? <input type="radio"/> No <input type="radio"/> Yes <input type="radio"/> Unknown |
|----------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|

Commercial Vehicle Configuration

- Passenger Veh w/ Haz Mat Placard
- Light Truck w/ Haz Mat Placard
- Bus/Large Van (Seats 9-15, Including Driver)



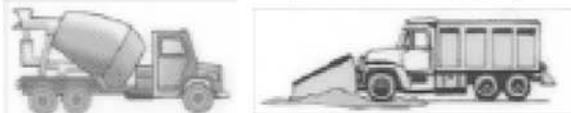
- Bus (Seats More Than 15, Including Driver)



- Single Unit Truck (2 Axles, 6 Tires)



- Single Unit Truck (3 or More Axles)



- Piggy Back



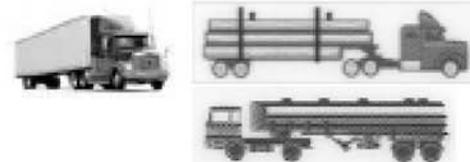
- Single Unit Truck Pulling a Trailer



- Truck Tractor (Bobtail)



- Truck Tractor w/ Semi-Trailer



- Truck Tractor w/ Double



- Truck Tractor w/ Triple



- Truck - Can't Classify

Crash Record Number:

Vehicle Number (from Vehicle Data Page)

Page of

Reporting Agency's Record Number:

Commercial Cargo Body Type:

- Not Applicable
- Bus (Seats for 9-15, Including Driver)



- Bus (Seats for More Than 15, Including Driver)



- Van / Enclosed Box



- Cargo Tank



- Flatbed



- Dump



- Concrete Mixer



- Auto Transporter



- Garbage / Refuse



- Grain, Chips, Gravel



- Pole



- Log



- Intermodal Chassis



- Vehicle Towing Motor Vehicle



- No Cargo Body



- Other

Gross Vehicle Weight Rating (GVWR) of Power Unit:

Gross Combination Weight Rating (GCWR) - All Units:

Last Known Commodity:

Cargo Compartment Empty or Full at Time of Crash: Empty Full

of Passengers in CMV:

Passengers Traveling with Written Permission of Carrier: Yes No

CMV Self Insured: No Yes

Proof of Self Insurance: Yes No



State of West Virginia Uniform Traffic Crash Report

Diagram

DOH Form: 17-dgram
Revised: 02/2007

Crash Record Number

Page of

Reporting Agency's Record Number:

CRASH DIAGRAM:

(Draw Crash Scene - Including Roadway Layout, Vehicles, Individuals or Objects Struck, Traffic Controls, etc.)

IMPORTANT: Number Vehicles According to the Numbers Assigned on this Form.

Draw Arrow Pointing
North in Box

