Strategic Highway Safety Plan for Alabama

PREPARED WITH COOPERATION AND ASSISTANCE OF REPRESENTATIVES OF THE FOLLOWING AGENCIES AND ORGANIZATIONS

AGENCIES: Alabama Legislature, Alabama Department of Transportation, Administrative Office of Courts, Alabama Beverage Control Board, Alabama Department of Economic and Community Affairs, Alabama Department of Public Health, Alabama Department of Public Safety, Alabama Department of Senior Services, Federal Highway Administration-Alabama Division, Federal Motor Carrier Safety Administration-Alabama Division, National Highway Traffic Safety Administration-Southeast Regional Office, Choctaw county Emergency Medical Services, City of Alabaster Police Department, City of Birmingham Police Department, City of Birmingham Regional Council, City of Dothan Police Department, City of Huntsville Safety Office, City of Huntsville Traffic Engineer, City of Hoover City Engineer, City of Montgomery Department of Transportation, City of Montgomery Police Department, City of Montgomery Traffic Safety, City of Montgomery Transportation Planning, City of Tuscaloosa Department of Transportation, City of Tuscaloosa Police Department, Choctaw County Emergency Medical Services, Clark County Engineer, Crenshaw County Engineer, Dale County Engineer; Elmore County Engineer, Houston County Engineer; Mobile County Traffic Safety, Montgomery Area Transit System; Montgomery County Human Resources Department, Montgomery County Sheriffs Office, NE Alabama Highway Safety Office, North Alabama Highway Safety Office, Office of Prosecution Services, Regional Planning Commission of Greater Birmingham, State Safety Coordinating Committee, and Sumter County Engineer.

ORGANIZATIONS: AARP, Alabama Optometric Association, Alabama Safe Kids, Alabama Section of the Institute of Transportation Engineers, Alabama Traffic Safety Center, Alabama Trucking Association, ALFA Insurance, Auburn University, Bellsouth, Children's Hospital, Earth Tech, Inc; Eye Clinic of Prattville, Fountain City Eye care; Jeff State JC Highway Safety Office, KBR, Inc., Moss Enterprises, Inc, MADD - Alabama Chapter, Operation Lifesaver, Quick Kurb, Inc, Skipper Consulting, Southeast Alabama Medical Center, University of Alabama-CRDL, University of Alabama-UTCA, University of Alabama at Birmingham-Emergency Medicine, University of Alabama at Birmingham- Injury Control Research Center, University of Alabama in Huntsville-Civil Engineering, University of South Alabama College of Medicine, Voices for Alabama Children and Vulcan, Inc.

UTCA

University Transportation Center for Alabama

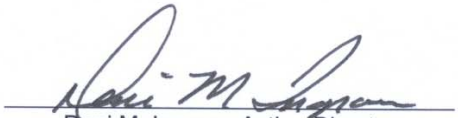
The University of Alabama, The University of Alabama in Birmingham,
And The University of Alabama at Huntsville

UTCA Report 04608
September 30, 2006

Strategic Highway Safety Plan for Alabama

Bob Riley, Governor

Drayton Nabers, Jr.
Chief Justice
Alabama Supreme Court



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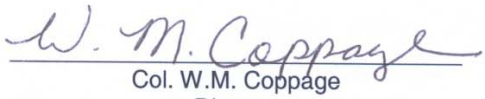

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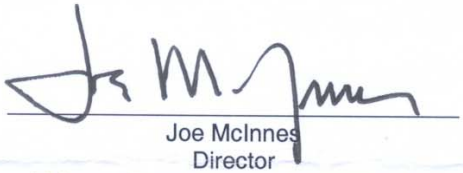

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16. Abstract

In the United States, more than 40,000 motorists die annually and more than three million are injured. In Alabama, over 1,000 individuals die and 45,000 more are injured in 140,000 vehicular crashes each year. To address this carnage, the American Association of State Highway and Transportation Officials developed a thorough safety plan to save 7,000-8,000 lives annually. The plan is being implemented is a stepwise manner, with different states taking the lead for various plan components. The Alabama Department of Transportation (ALDOT) is a lead state in implementing AASHTO concepts for off-road crashes and safety planning. The Strategic Highway Safety Plan (SHSP) prepared in this project meets all of the requirements for such plans, as found in SAFETEA-LU, the 2005 Act that reauthorized national surface transportation programs.

This report describes the development and initial implementation of the SHSP, which used the expertise of state, federal and local traffic and safety professionals. Almost 100 individuals from 31 agencies and organizations helped identify problems and prepare elements of the plan. Fatal crash data was used to identify five primary emphasis areas. Teams analyzed each topic, developed recommendations for specific counter measures and for more detailed study of some situations, and developed a framework for implementation. The assembled Strategic Highway Safety Plan includes components for each of the emphasis areas: (1) Emergency Medical Services, (2) Older/Restricted Drivers, (3) Safety Legislation, (4) Risky Driving, and (5) Run-Off-Road crashes.

The five individual plan components are being implemented by more than 80 volunteers serving on five multi-agency, multidisciplinary action teams over several years. For that purpose, each plan component includes background information and statistics on fatal crashes pertinent to that component, a series of recommended action items, and recommendations for organizing the action team. In all cases, the components call for prioritization of funding so that resources will do the maximum amount of good for the citizens of Alabama.

17. Key Words	18. Distribution Statement
strategic highway safety plan, integrated highway safety plan, risky driving, emergency medical services, older drivers, restricted drivers, run-off road crashes, traffic safety legislation	

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Executive Summary

In the United States, more than 40,000 motorists die annually and more than three million are injured. In Alabama, over 1,000 individuals die and 45,000 more are injured in 140,000 vehicular crashes each year. To address this carnage, the American Association of State Highway and Transportation Officials developed a thorough safety plan to save 7,000-8,000 lives annually. The plan is being implemented is a stepwise manner, with different states departments of transportation taking the lead for various plan components. The Alabama Department of Transportation (ALDOT) is a lead state in implementing AASHTO plan components for off-road crashes and safety planning. The Strategic Highway Safety Plan (SHSP) prepared in this project meets all of the requirements for such plans, as found in SAFETEA-LU, the 2005 Act that reauthorized national surface transportation programs.

This report documents the development and implementation of the SHSP, which used the expertise of state, federal and local traffic and safety professionals. Almost 100 individuals from 31 agencies and organizations helped identify problems and prepare elements of the plan to address these problems. These individuals worked in teams for the duration of the project, so that their particular expertise could be applied to individual problems.

Fatal crash data was used to identify five primary emphasis areas. Teams analyzed each topic, developed recommendations for specific counter measures and for more detailed study of some situations, and developed a framework for implementation. The assembled Strategic Highway Safety Plan includes components for each of the emphasis areas:

- Emergency Medical Services
- Older/Restricted Drivers
- Safety Legislation
- Risky Driving, and
- Run-Off-Road crashes.

The five individual plan components are being implemented almost a year after the plan was developed, using more than 80 volunteers working in five teams to design multi-agency, multidisciplinary actions over several years. For that purpose, each plan component includes background information and statistics on fatal crashes pertinent to that component, a series of recommended action items, and recommendations for organizing the action team. In all cases, the components call for prioritization of funding to utilize the resources to accomplish the maximum safety improvements for citizens of Alabama.

The 100 volunteers who contributed to crash analyses and the development of five SHSP plan components, along with the 80 team members who are participating in the implementation, are justifiably proud of their efforts. The product of their efforts represents a significant opportunity to substantially reduce the tragic number of deaths and serious traffic crashes in this state.

CHAPTER 1
INTRODUCTION

In the United States, 40,000 motorists die annually and more than three million are injured in traffic crashes. These are horrible numbers, but they have existed at this level or greater since 1940. The United States Department of Transportation (USDOT) and the American Association of State Highway and Transportation Officials (AASHTO) are determined to improve safety on the nation's highways. USDOT made safety its top priority and adopted aggressive goals for reducing fatalities and injuries from traffic crashes. AASHTO studied the crash situation and adopted an aggressive safety plan to mitigate the number of deaths and to reduce the death rate on the nation's highways.

The AASHTO Safety Plan

The AASHTO Strategic Highway Safety Plan is thorough and all encompassing. It contains 22 emphasis areas and 92 separate safety strategies that are intended to save 7,000-8,000 lives per year. National experts carefully crafted the plan, using national crash data, comprehensive literature reviews, and input from practitioners and government officials.

The National Cooperative Highway Research Program (NCHRP) prepared guidance materials in NCHRP Project 17-18(3) to help implement the AASHTO plan. NCHRP has already published several reports that address this topic, and more are under development. Examples include NCHRP Report 501, *Integrated Management Process to Reduce Highway Injuries and Fatalities Statewide*, and the first 13 volumes of NCHRP Report 500, *Guidance for Implementation of the AASHTO Strategic Highway Safety Plan*. Two volumes of Report 500 were pertinent to this project: *Volume 4: A Guide for Addressing Head-On Collisions*, and *Volume 6: A Guide for Addressing Run-Off-Road Collisions*. There are many additional pertinent volumes in this series.

Alabama Support of the AASHTO Safety Effort

The AASHTO safety plan provides a good framework for planning state and local programs. With a comprehensive plan prepared by experts and good guidance documents, there is only one major step remaining – implementation. USDOT and AASHTO requested that highway agencies install and test various emphasis area strategies. AASHTO requested that each state highway agency adopt a statewide comprehensive safety plan and serve as a "lead state" in one of the primary traffic safety emphasis areas. On August 11, 2003, Mr. D. J. McInnes, Transportation Director for the Alabama Department of Transportation (ALDOT) responded to AASHTO President James C. Cordell, III indicating that ALDOT would support the AASHTO safety initiative by preparing a comprehensive safety plan (later called the Strategic Highway Safety Plan, SHSP) and by becoming a lead state in the analysis of roadway departure crashes.

ALDOT engaged the University Transportation Center for Alabama (UTCA) of the University of Alabama to organize the project, provide technical support, work with managers from the ALDOT Modal Programs and the Alabama Division of the Federal Highway Administration

(FHWA), and facilitate the many stakeholder activities necessary for such a comprehensive effort. The first step was a meeting of representatives of UTCA, ALDOT and FHWA to develop an outline for the twin efforts of the project (develop safety plan and analyze off-road crashes). This group was the "steering team" that constantly provided direction, resources and incentives to the volunteer members to manage the project's momentum.

Overview of the Project

Background information on Alabama Traffic Crashes

In many ways, Alabama is an average state. It has an average population, land mass, number of miles of roadway, and number of bridges. But in traffic crashes and mileage fatality rate, it is above average. The ten-year crash trends are shown in Table 1-1.

Table 1-1: 10 year trends for Alabama crash statistics[1]

Year	Crashes	Injuries	Fatalities	[2]Fatality Rate	[2,3]National Fatality Rate
1996	136,698	48,200	1,142	2.22	1.69
1997	139,606	49,300	1,190	2.23	1.64
1998	138,400	47,300	1,071	1.94	1.58
1999	137,723	47,100	1,148	2.03	1.55
2000	132,626	43,500	986	1.74	1.53
2001	133,739	42,917	998	1.76	1.51
2002	140,436	44,452	1,038	1.80	1.51
2003	141,067	44,845	1,001	1.71	1.48
2004	146,359	45,391	1,154	1.96	1.45
2005	143,994	44,158	1,134	1.90	1.47
Totals	1,390,648	457,163	10,862	---	---

[1]Data reported on a July 1- June 30 basis
[2]Fatalities per 100,000,000 miles of travel
[3]Natonal Center for Statistics and Analysis, US Department of Transportation

During the 10-year period shown in the table, vehicle crashes increased about five percent, injury crashes declined 8 percent, and fatal crashes declined very slightly. While this was occurring, the number of miles driven in the state increased about 16 percent. On the surface this paints a good picture – severe crashes decreased in spite of increased miles driven and increased crashes.

But the simple and quick analysis in the previous paragraph ignores an overwhelming fact. The size of the crash problem is mind numbing. Over the past decade, there have been 1.39 million vehicle crashes, 457 thousand injuries in these crashes, and 10,862 crash fatalities. As a measure of the magnitude of these numbers, the fatality total is about the same as the current population of Leeds, Alabama. If the City of Leeds disappeared today, there would be an uproar and the citizens of Alabama would not sleep until the cause had been found and fixed. Yet these huge numbers of crashes continue to occur. And they certainly point to the need for action.

Additional conclusions can be drawn from Table 1-1. For example, the Alabama fatality rate declined in the first part of the table, hit a plateau in 2000-2003, and climbed since them. Since 1979 it has declined from 3.76 to its current rate of 1.90. This dramatic drop of 52 percent in 30

years is shown in Figure 1-1. However, further analysis of the table or figure, shows that Alabama's death rate has been as much as 36 percent above the national average during this period, and has averaged 25 percent above the national picture for the past five years. This is important, and again it points to the need for action.

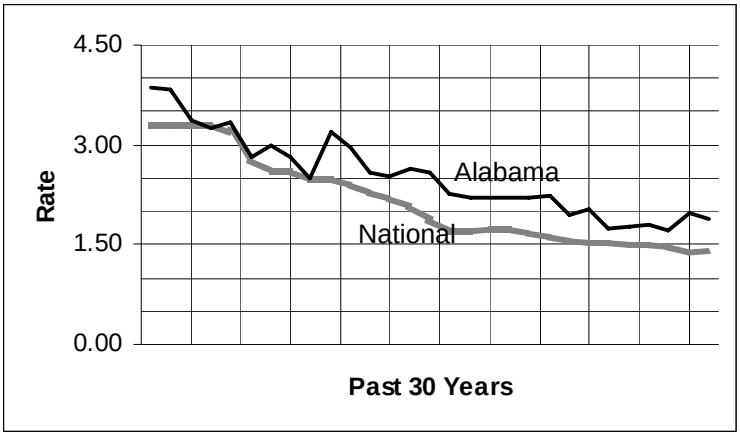

Figure 1-1: National and Alabama fatality rates (per 100,000,000 miles driven)

A more complete picture of crashes and travel characteristics is shown by Figure 1-2 and Table 1-2, which trace mobility and crash indicators since 1975. Three different trends are evident:

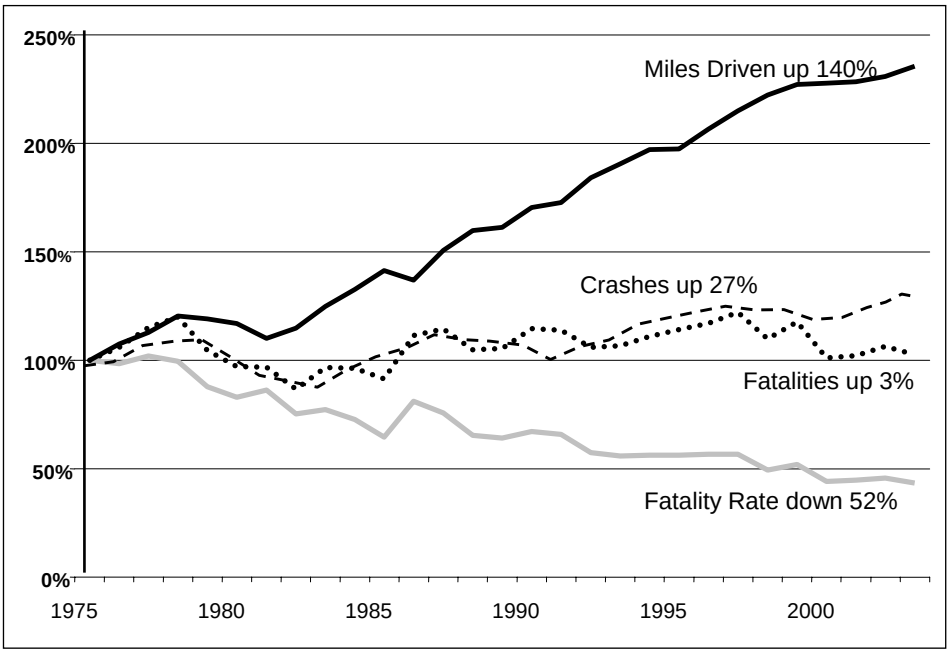

Figure 1-2: Alabama travel and crash changes since 1975.

- Rapidly Increasing Trend – One indicator has increased at a strong and consistent rate – miles driven. It is one of the strongest measures of mobility in Alabama. Amazingly, miles driven have more than doubled in the past 20 years. Alabamians are highly mobile, and other indicators show that this state is often in the top five in the nation in mobility (Bureau of Transportation Statistics, 2003).

Table 1-2: Changes in travel and crashes in Alabama since 1975

Indicator	1975	2005	Change
Miles Driven (Billions of Miles)	24.84	59.6	140%
Injuries (Thousands of Injuries)	27.9	44.2	58%
Fatalities	975	1134	3%
Fatality Rate	3.93	1.9	-48%

- Relatively Stable Trend – Crashes and fatalities belong in this category. Both have fluctuated over time and have slowly risen. The slow increase is not a good trend, but it could have been much worse, given the rapid increase in travel over the 30 years. Undoubtedly due to the creation of highway safety programs, vehicle safety improvements, stronger legislation, the work of so many safety advocates, and other factors kept the number of fatalities from soaring. If these programs had not been in place, the number of crashes and fatalities would have grown at the same rate as travel and would have been much higher in 2005.

- Declining Trend – The best trend in Figure 1-2 and Table 1-2 is that the fatality rate is much lower than 30 years ago; however, it has increased in the past two years. The recent trend bears watching due its severe impact. Overall, the 30 trend is complimentary of the good safety programs are now in operation.

In summary, Alabamians drove more than twice as many miles in 2005 than they did two decades ago. This increase in mileage driven should have resulted in large increases in injuries and fatalities – but it did not. Preventing highway deaths from doubling in this time period is a tribute to all safety advocates. But at the same time, the sheer number of crashes and fatalities demand that those advocates work harder and do more to improve highway safety.

Project Planning and Organization

The broad study required for this project was open ended, so the steering team developed several guidelines for it. The first major decision was to use SMART (the Safety Management, Action and Resources Task Force) to guide the project. SMART is a volunteer group with more than 75 members from 25 stakeholder organizations and agencies. SMART meets four times per year at the call of the FHWA Alabama Division Administrator. Using the SMART group for this project ensured a comprehensive, multi-agency approach, with interdisciplinary expertise of true safety experts to provide resources during the development of the plan.

The second major decision was to use crash data as the basis for important decisions. Alabama is fortunate to have ready access to the CARE (Critical Analysis Reporting Environment) software developed by Dr. David Brown of the University of Alabama. CARE was initially created to process and report safety data, but has been expanded into a premier data-mining tool. It is used by 10 state highway agencies and countless smaller agencies. In this project, Dr. Brown used CARE to conduct real-time data analyses for SMART and its subgroups to guide decisions.

The third major decision was to create special interdisciplinary teams to investigate special topics during the project. The team members came principally from the SMART membership, supplemented by recruited "volunteers" with special expertise in unique topics.

Initial Meeting

The first general meeting of project participants was a SMART meeting on February 12, 2004, at the main office complex of ALDOT in Montgomery, Alabama. The meeting was attended by 46 individuals from 19 agencies and organizations. The objectives of the meeting were to provide an overview of traffic crashes in Alabama, to introduce participants to the AASHTO safety plan, and to call for volunteers to participate in the Alabama implementation efforts. The Strategic Highway Safety Plan (SHSP) was discussed in depth (it was initially called the "comprehensive" plan, but the name was later changed to "strategic"), and the steps for implementation were introduced. At that point, SMART members adopted a specific goal for the SHSP:

> *The goal of this plan is to decrease the fatal mileage rate in Alabama from **1.8** to **1.5** per 100 million vehicle miles traveled by 2008.*

The Lead State initiative was addressed next. Typical Run-Off-Road (ROR) data was reviewed and strategies for diminishing these crashes were discussed. The following goal was introduced and unanimously approved by SMART members:

> *The goals for the Lead State initiative are to reduce run-off-road fatalities from **416** to **357** and run-off-road injuries from **8230** to **7068** by 2008.*

Prior to adjourning, SMART members committed to staffing the volunteer teams, and to meeting on a general schedule of once per month. Activities would be carried out through phone, fax and email between meetings. Finally, all participants agreed that SMART would meet periodically to review progress and to offer suggestions for improvements and new directions, as needed, to the plan preparation process.

Second Meeting

Following the initial meeting, the steering team established a general structure that encouraged volunteer participation, while making it easy to communicate both horizontally and vertically. High-ranking managers were involved to obtain their early commitment and to keep them aware of the study. For each team of volunteers, one member of the steering team served as the facilitator and resource person. The general arrangement is shown in Table 1-3.

The second project meeting was conducted in March 2004 in the central office complex of ALDOT in Montgomery. The meeting started with an overview of the AASHTO Strategic Highway Safety Plan, a brief review of progress on the Alabama implementation effort, a discussion of remaining work, and a review of immediate objectives. Then meeting participants split into the two primary work teams (SHSP and ROR) for the remainder of the meeting.

The ROR team reviewed crash data to define the scope of the problem in Alabama so that they could begin identifying emphasis areas within the ROR topic. UTCA researchers overviewed NCHRP Report 500, Volume 6 *A Guide for Addressing Run-Off-Road Collisions*, concentrating on the roadside clear zone concept and countermeasures for off-road crashes.

The SHSP team spent a lengthy period studying crash data and crash trends. The crash information presented earlier in this report is illustrative of the materials that they analyzed. Dr. Brown developed much of this information in real time during the session, using the CARE software. Table 1-4 is an example. In effect, it summarizes the factors that contributed to fatal crashes in 2003. The CARE IMPACT module used data mining techniques to evaluate particular factors in the table, tracing their causes and effects. With this type of analysis, it was possible for team members to select the emphasis areas for the SHSP. The team concluded that four of the first six factors in the table (restraint not used, speeding, alcohol/drug use, and young drivers) were related because they symbolized risk taking, and concluded that "Risky Driving" was an obvious choice for the first emphasis area.

Table 1-3: [1]Initial project organization and staffing plan

Operations Manager – Waymon Benifield, ALDOT Multimodal Bureau, Safety Section
Facilitators/Resource persons – Dan Turner and David Brown, University of Alabama

Executive Team
Mr. Joe Wilkerson, Division Administrator FHWA
Mr. Joe McInnes, Transportation Secretary, ALDOT
Col. W.M. Coppage, Commander, Alabama Department of Public Safety (DPS)
Mr. John D. Harrison, Director, Alabama Department of Economic & Community Affairs (ADECA)

Project Steering Team
ALDOT: Waymon Benifield and Wes Elrod
FHWA: Linda Guin
UTCA: David Brown, Dan Turner, Brett Wood and Kerri Keith

Management Team – SMART Task Force

SHSP TEAM **(Waymon Benifield as Point Person)**
ALDOT Transportation Planning Bureau
ALDOT Design Bureau
ALDOT Maintenance Bureau
ALDOT Division Engineer
ADECA – Law Enforcement /Traffic Safety Section
DPS
Federal Motor Carrier Safety Administration
Administrative Office of Courts
Department of Public Health (DPH), EMS Unit
Metropolitan Planning Agencies
Children's Hospital
National Highway Traffic Safety Administration
Auburn University, LTAP program

ROR TEAM **(David Brown as Point Person)**
ALDOT County Roads Bureau
ALDOT Design Bureau
ALDOT Maintenance Bureau
ALDOT Multimodal Bureau (Safety)
ALDOT Construction Bureau
ALDOT Public Relations Bureau
ADECA – LETS
DPH
DPS
County Engineer
City Engineer
Sheriff
Alfa Insurance
University of Montevallo, Traffic Safety Center

Additional Resource Persons
Alabama Beverage Control Board
Alabama Department of Education
Emergency Management Administration
Alabama Trucking Association
Mothers Against Drunk Driving
Operation Lifesaver
State Safety Coordinating Committee

[1]As the project evolved, additional teams were added to address the five specific emphasis areas of the SHSP. Chapters 2-6 of this report deal with the work and listings of those teams.

Based upon similar analyses of crash data, the team identified additional emphasis areas and produced the following list:

- Emergency Medical Services (the third factor shown in Table 1-4)
- Older/Restricted Drivers (factor eight from Table 1-4)
- Legislation
- Risky Driving (factors one, two, four, and seven from Table 1-4)
- Run-Off-Road (based upon a very high number of fatalities for this type of crash, about 40 percent of the statewide total)

Table 1-4: Summary of crash severity by top 20 crash types – 2003[1] Alabama data

	Fatal Crashes	Fatal %	Injury Crashes	Injury %	PDO Crashes	PDO %	Total Crashes
1. Restraint not used	449	3.1%	5,685	39.2%	8,376	57.7%	14,510
2. Speeding	276	3.7%	3,164	42.7%	3,971	53.6%	7,411
3. EMS: ambulance > 20 minutes	223	3.3%	5,046	79.2%	1,196	17.5%	6,825
4. Alcohol/drug	192	2.6%	2,984	39.6%	4,366	57.9%	7,542
5. Obstacle removal	155	1.9%	2,905	35.8%	5,052	62.3%	8,112
6. Youth: age 16-20	152	0.5%	6,842	23.7%	21,889	75.8%	28,883
7. License status deficient	98	1.7%	1,846	32.2%	3,792	66.1%	5,736
8. Mature: age > 64	78	0.7%	2,824	23.4%	9,173	7.8%	12,075
9. Ped, bike, school bus	75	5.5%	863	63.2%	428	70.9%	1,366
10. Pedestrian	68	9.9%	563	82.3%	53	31.2%	684
11. Fail to conform: stop/yield sign	56	0.7%	2,420	28.5%	6,023	81.5%	8,499
12. Motorcycle	46	4.0%	748	64.8%	360	63.7%	1,154
13. Non-pickup truck involved	41	0.7%	1,011	17.7%	4,648	81.4%	5,700
14. Utility pole	30	1.3%	834	35.0%	1,518	63.7%	2,382
15. Roadway defects – all	28	0.8%	939	25.8%	2,675	75.4%	3,642
16. Vehicle defects – all	26	0.8%	738	22.9%	2,466	76.4%	3,230
17. Fail to conform: signal	24	0.3%	3,023	31.5%	6,545	68.2%	9,592
18. Construction zone	20	0.7%	650	21.2%	2,398	78.2%	3,068
19. Vision obscured: environment	15	0.8%	529	27.4%	1,389	71.9%	1,933
20. Child not restrained	12	0.9%	767	54.1%	638	45.0%	1,417

This table was developed using 2003 data to guide the selection of emphasis areas (elements for the SHSP). More recent data (2004 and 2005) showed little change among rankings for the different crash types.

Subsequent Developments

Following the second meeting, the steering team identified SMART members and other subject matter experts to staff four of the Emphasis Area teams. The fifth team, ROR, had already been staffed because it was one of the two major thrusts of the ALDOT project.

Each team conducted its own meetings over the next five months. The general process was to review crash data, analyze it, establish emphasis area goals (where applicable), and establish a plan that would diminish the overall contribution of the emphasis area to crash fatalities in Alabama. This would help the state reach its primary goal of decreasing the fatal mileage rate in Alabama 1.5 per 100 million vehicle miles traveled by 2008.

The following chapters in this report outline the research steps to develop the individual components of the highway safety plans for the five emphasis areas. After completion of work by the individual emphasis area teams and approval by SMART, the individual components were merged into the Comprehensive Highway Safety Plan for Alabama.

In preparing these materials, the emphasis area teams based their decisions, to the extent feasible, on crash data and known history of countermeasure applications in Alabama. At the same time they recognized that NCHRP had many safety research projects underway, and remained open to new analysis procedures and new countermeasures. As a result, the five components in this plan are open ended and allowed the implementing groups to optimize the results during the selection of countermeasures.

The steering committee stressed that prioritization decisions should be made using the best information available. This started with knowledge of the current crash history of the particular crash type that addressed, and an estimate of how much the particular countermeasure project would affect this crash history. The cost of the countermeasure is also quite critical, since funds expended on one project could not be expended on alternative projects. For a complete discussion of methods for optimization, prioritization and evaluation, see Appendix B.

Impact of Federal Legislation

When this project was initiated in 2003, the SHSP was prepared with the full knowledge that national surface transportation reauthorization legislation would probably require that all states develop a SHSP. The project team (managers and volunteers) fully committed to this concept, and designed a versatile plan that could be easily modified to meet requirements of such legislation. When the SAFETEA-LU Act was adopted by Congress in 2005, the Alabama SHSP required very little modification to meet the spirit and requirements of the Act. The broad base of the SHSP, the use of data driven decisions, the incorporation and enthusiastic participation of a wide array of stakeholder groups, the consideration of other pertinent safety plans (such as commercial vehicles, the Highway Safety Office plan, and the plan for traffic data) and similar considerations, made it easy to qualify under SAFETEA-LU provisions.

Implementation

One unique feature of the SHSP is that it did not specify what actions must be taken to address any of the five emphasis areas. Instead it provided background information, suggested countermeasures, very general cost estimates, and initial estimates of which agency or agencies are appropriate for implementation. At the time that this report was published, implementation teams had been assembled and were developing the optimum treatments and actions for each of the five areas. One key to the success is that high level managers from involved agencies are helping to prepare the recommendations. This provides ownership of the topics, and will contribute to the coordination of funding and management of the implementation actions.

The fact that this report is signed by the Governor and the top administrative official of seven agencies important to highway safety in Alabama demonstrates the wide acceptance of the plan and the commitment to implement it.

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CHAPTER 2
EMS COMPONENT

Problem Statement

History

The concept of Emergency Medical Service (EMS) evolved after the Vietnam War, where survivability was greatly improved by decreasing the time between the onset of trauma and the delivery of military patients to treatment. Following the war individual states developed EMS programs, but in different styles and with varying rates of success. Consequently, there was not a uniform national pattern for EMS organizations, policies, responsibilities or funding sources.

The Trauma Care Systems Planning and Development Act of 1990 (Roberts, 2003) was a major improvement in the situation. The purpose of the Act was to create and manage a system to give patients access to the most appropriate trauma care. Even though funding provided by the Act amounted to only about $2.5 million per year nationwide, it was a good start. Since then, there has been a clear movement to improve trauma care on several fronts. Agencies and professional organizations have stepped forward to create national standards and "best practice" protocols. For example, "Resources for the Optimal Care of the Injured Patient," was published by the American College of Surgeons in 1998. (ACS, 1998) It provided national guidelines for trauma care, and earned the nickname of "the gold book." Another initiative was the creation of the "National Trauma Data Bank" by the ACS to collect data on each event that occurs from the trauma through the end of medical treatment. To date, there has been little research into pre-hospital treatment, but over time the Data Bank will allow very detailed studies and development of improved EMS processes, protocols and treatments.

Alabama Situation

The Alabama situation mirrors the national picture. There are currently 312 EMS provider services in Alabama. Of these, 194 provide transport capabilities utilizing 918 ambulances. National Registry Staff published an abstract from the Longitudinal EMT Attributes and Demograph Study that depicts that 51% of emergency medical technician (EMT) Basics are compensated non-volunteer and 81% of the Paramedics are compensated non-volunteer. Alabama currently has 11,508 licensed emergency medical technicians and ambulance drivers: 1,277 ambulance drivers, 5,937 EMT Basics, 718 EMT Intermediates, and 3,576 Paramedics. While the number of EMTs in Alabama has remained relatively consistent over the past several years, the demand has grown for "ground level" Paramedics.

The U.S. Department of Labor, Bureau of Labor Statistics projects employment opportunities for emergency medical technicians and paramedics to grow 27 percent or more by 2014. In comparison, the 2004 projection for 2010 was only 10 percent. Alabama's EMS provider services are currently reporting difficulties in recruiting and maintaining EMTs and Paramedics.

The numerous local EMS units vary widely in type and capability from location to location. Efforts are underway on multiple fronts to enhance them. For example, the Alabama Department of Public Health (ADPH) EMS Strategic Plan includes action items to reduce response times. ADPH has adopted its own protocols, developed by the State Emergency Medical Committee (ADHP, 2002). Example protocols related to EMS are shown in Table 2-1.

Table 2-1: Sample protocols for Alabama EMS

PURPOSE: The purpose of this protocol is to delineate the scene time limitations.

PROCEDURE:

1. If at any time an EMT cannot provide or protect a patient airway within 5 minutes after patient encounter and initiating emergency medical care, she/he is required to transport the patient immediately.
2. If, at any time an EMT predicts that she/he will be on the scene or has been on the scene for 30 minutes after patient encounter and initiating emergency medical care, he/she is required to contact the on-line medical direction hospital.
   - A. Communicate pertinent patient history.
   - B. Communicate treatment given.
   - C. Ask whether patient should be transported immediately or other care should be given.
   - D. Anticipate answering the question: "What further can be done?"
3. For cases involving significant trauma, time spent on the scene should be ten (10) minutes or less where extrication has been accomplished and the patient can be moved away from the site.

Source: Alabama ALS Protocols, 2002

The Special Situation of Rural EMS

The availability, quality of service, and timeliness of emergency response units have a major impact on the survival of citizens involved in motor vehicle crashes. The distances between major population centers in Alabama create extensive suburban and rural regions, which have distinctly different trauma response patterns for responding to vehicle crashes. In rural areas more time is spent locating, stabilizing, and transporting vehicle crash trauma victims, reducing their chances of survival. This pattern has been recognized by national experts, as shown by the following statements:

- Rural local road systems have a death rate three times greater than the Interstate System, and the care victims receive after a crash is one of the four major factors contributing to rural road fatalities. "Care of crash victims also contributes to rural fatalities because of the additional time needed to provide medical attention and the quality of rural trauma care. The nature of rural areas makes it difficult to provide adequate emergency medical care." (GAO, 2004)

- Responses to crashes in rural areas are likely to be slower, due to factors like remoteness, lesser quality roadways, and process complications in providing timely, quality health care. (Roberts, 2003)

- Only one-fourth of the geographical area of the U.S. is not served by trauma care systems. (Centers for Disease Control, 2002)

- Optimal acute trauma care could have saved up to 35 percent of vehicular trauma patient deaths. (Centers for Disease Control, 2000)

There are several steps between a rural crash and the eventual arrival of the patient at a hospital. The differences in urban and rural response times for each step are illustrated in Table 2-2. Even though the data in the table is several years old, the same general trends still hold. The rural times for individual steps averaged 35 to 90 percent longer than their urban counterparts, and the overall time from crash to hospital arrival averaged about 45 percent longer for rural crashes.

Table 2-2: Average 1998 EMS response times[1]

Time (minutes) between major events	Rural	Unknown	Urban	Unknown
Crash until EMS notification	6.77	37%	3.62	46%
EMS notification until EMS arrival at scene	11.36	3%	6.26	47%
EMS arrival at scene until hospital arrival	36.28	67%	26.63	72%
Crash until hospital arrival[2]	51.78	68%	35.46	71%

[1] NHTSA, 1999
[2] Not a total of the top three categories; separate records are kept for this category.

Of great interest is the relationship between the elapsed time between the crash and arrival of the EMS response team, and the time between the crash and arrival of the victim at a trauma center. Studies show that the passing of time contributes to mortality, and ACS has coined the phrase "golden hour" to emphasize the need to transport victims rapidly for treatment to a qualified trauma center. This is illustrated in Table 2-3, which shows the general trend of increasing mortality with extended EMS arrival times. Table 2-3 is an illustration based upon a specific situation (alcohol involved collisions); it is not the result of a controlled, statistical evaluation. But it does provide a good example of the importance of finding and treating trauma victims.

Table 2-3: Probability of crash being fatal vs. EMS arrival time

	1-10 Minutes	11-20 Minutes	21-45 Minutes	46-60 Minutes	61-90 Minutes	91-180 Minutes
Fatalities	793	846	594	56	43	32
% Fatal	6.3%	8.4%	8.9%	7.0%	8.1%	11.5%

Source: 1994-2003 Alabama alcohol related crashes

As a further investigation of the time vs. mortality situation, ALDOT compared the Alabama situation to the national picture by using EMS response data taken from Alabama Uniform Traffic Accident Reports for 2003 traffic crashes. This data indicated that 223 deaths occurred when EMS response units required more than 20 minutes to reach crash locations. EMS response times exceeding 20 minutes were reported in a total of 5,608 injury and fatality crashes statewide. Furthermore, 52% of theses crashes occurred in only twelve Alabama counties. These were some of the most populous counties of the State, implying that suburban settings may contribute to the problem more than initially suspected. The crash data used by ALDOT to review and analyze EMS arrival times was not sufficient to reconstruct the events from the initial notice to EMS until the time a crash victim was released from a health care unit. Other sources of data must be identified to obtain a more detailed understanding of the overall problem.

EMS Review Team

A committee was formed to examine EMS contributions to traffic safety in the state, particularly the relationship of EMS response time to the fatal and injury crash problem. Those participating

on this team had diverse backgrounds, and were very familiar with the traffic crash data system, EMS data, and EMS response processes. Among those participants were the following:

- EMS Division, Alabama Department of Public Health (DPH), two representatives
- Injury Prevention Division, DPH, two representatives
- Law Enforcement/Traffic Safety Section, Alabama Department of Economic and Community Affairs (LETS, ADECA)
- Southeast Alabama Medical Center
- Highway Patrol Unit, Alabama Department of Public Safety (DPS)
- Modal Programs, Safety Section, ALDOT, two representatives

Several meetings were held to discuss EMS programs and processes, to learn more about the traffic crash problem and the EMS data system, and to identify the relationship of the various components to highway safety. The committee discussed a wide variety of response issues and data, looking for ways to improve EMS response times and trying to answer difficult questions like the following:

- How much must the average response time be reduced to significantly affect survival of traffic crash victims?
- What level of coverage is needed to provide access to the desired level of trauma care?
- How many units are needed to adequately cover a particular geographical region?
- What types of response and transport vehicles are needed?
- Where should units be located to provide reasonable coverage?
- What level of training is appropriate? (Certified as Advanced Level providers are allowed to perform many procedures that Basic Level providers are not allowed to perform.)
- What is the total cost of providing the desired level of coverage?
- Where do funds come from for vehicles, equipment, supplies, operations, training, etc.?
- How can an adequate EMS workforce be recruited and maintained?

One of the compounding factors was the relative scarcity of research in pre-hospital EMS activities, which emphasized that data must be gathered and evaluated as the basis for the most cost effective expenditure of resources on EMS. After consideration, the team reached consensus on five important issues for further development and inclusion in a work plan. These topics could form the basis for priority decisions and continual improvement in EMS actions.

Work Plan

1. IDENTIFY AND ANALYZE PERFORMANCE DATA – There are several studies underway throughout the State to collect data for response, treatment and care of highway trauma crash victims. For example, studies are underway at ADPH for the Patient Care Report System, NHTSA funding is supporting a study at the Center for Rural Vehicular Trauma at the University of South Alabama, and FHWA funding is supporting a study related to crash notifications at the Center for Injury Sciences at UAB. These and similar studies offer great opportunities to collect and analyze EMS performance data for highway crash victims requiring trauma care.

Recommendations

1. Select a knowledgeable firm or health care group to review and evaluate the studies, data, etc., to develop a cost efficient statewide system to reduce the EMS response times and improve the quality of trauma care.
2. Develop a process for correlating the EMS data with the ALDOT crash data system to provide a mechanism to help identify projects for funding.

Funding

Use funds from ALDOT, ADECA, and any other available funding sources.

Agencies Involved

DPH should be the lead agency because of EMS data base availability. ADECA, DPS, and ALDOT should be support agencies in this effort.

2. FIRST RESPONDERS – Improve the ability of first responders, who are often law enforcement officials, to care for trauma victims at the crash site as a way to reduce EMS response times. Adequate training and equipment will be necessary for first responders and vehicles will be required to transport victims.

Recommendations

1. Provide training and equipment for law enforcement officers who respond to crash sites, so that they can perform basic trauma techniques.
2. Upgrade the training and equipment for Volunteer Fire and Rescue Squads, and provide the resources to enhance response to trauma needs at crash sites including the ability to transport victims.
3. Develop a "best practices" manual for use by EMS units operating in various locations (urban, suburban and rural).

Funding

Use any funds available through ALDOT, DPH, or DPS to implement these recommendations.

Agencies Involved

DPS and DPH should collaborate and initiate training for law enforcement officers.

ADPH should direct EMS educational programs and regional agencies to develop partnerships with volunteer Fire and Rescue Squads to provided standardized training and protocols.

3. IDENTIFY CRASH LOCATION – Using currently available technology, develop a plan to improve the ability to locate crash victims on the State's highway network. The Global Positioning System (GPS) has the potential to locate crash sites quickly and accurately that should reduce EMS response times. This technology is readily available and is currently being used for a number of public and private entities in Alabama.

Recommendations
Implement GPS statewide to increase the accuracy for pinpointing crash locations and to assist EMS responders by reducing response times. GIS Coordinates for identifying crash events will provide more accurate crash locations and will assist ALDOT, DPS, and DPH in their tasks to improve safety on the State's highways. This will be a major factor in the effort to improve safety in Alabama, by integrating better crash records with EMS databases, law enforcement records, etc. to enhance the data analysis systems.

Funding
GPS units should be made available to law enforcement units, EMS units, and others involved in providing emergency response services. Funding should be through ALDOT, ADECA, or other agencies as funds are available.

Agencies Involved
ALDOT could work with DPS, ADECA, DPH, and local governments to develop a systemic plan for utilizing GPS technology.

4. STATEWIDE ASSESSMENT AND PLAN – The number and type of EMS units and responders operating across the State are varied and diverse in their approach and ability to provide emergency response for crash victims requiring trauma care. The ability to respond and the quality of care may vary from area to area.

   Recommendations
   Review response times and trauma care of EMS units operating throughout the State. Emergency health care interests will work with various associations, State, counties and local agencies, insurance companies, and others to identify needs, reduce response times for EMS and establish metrics for quality of care for trauma crash victims. This type of effort will identify needs and support legislation to provide equity in all phases of the EMS response program on a state wide basis.

   Funding
   Consider funding through State agencies, rural municipalities, counties and private sources to reduce response times and improve the quality of trauma care for crash victims.

   Agencies Involved
   Oversight would be provided by DPH with assistance from other agencies as needed.

5. IMPROVE EMS RURAL ACCESS – There are a number of areas in the State that do not have reasonable access to EMS responders, particularly in rural areas. This increases the response time for emergency services to reach a crash site and provide trauma care. A program to reduce the access time in such locations could increase the survival rate among crash trauma victims.

Recommendations

1. Review the geographical distribution of EMS providers throughout the State and develop a strategic plan to improve statewide coverage and reduce EMS response times.
2. Develop maps, websites, and literature to increase the public awareness of EMS issues and needs. Partnerships with public and private resources should be included in this effort.
3. Coordinate training, protocols and best practices for 911 centers, E-911 centers and EMS dispatchers.

Funding
Consider funding through ADECA, ALDOT, and DPH to develop appropriate maps. Consider EMS scholarships for underserved areas.

Agencies Involved
DPH should be the lead agency because of its expertise and experience in these areas.

Implementation Plan

There is no guarantee at this time that funding will be available to accomplish the tasks in this work plan. However, funding opportunities were enhanced by SAFETEA-LU, which required that states develop a SHSP and that they consider resources/funding after an implementation plan is developed and priorities are established.

In the absence of specific funding information, the implementation plan will be developed in stages with priority given to those elements that appear to be reasonable to accomplish within the financial restraints and resources of the various agencies participating in the preparation of this plan. For initial purposes, the total effort has been categorized as (SR), median-range (MR), and long-range (LR) strategies and efforts. The short-range category should take one year or less, median-range one to two years and long-range three years or more. These may change as further information is developed. Suggested priorities and the lead agencies are listed in Table 2-4.

Table 2-4: Time frame for implementation of the EMS work plan

Work Plan Reference	Priority Short, median, long - range	Lead Agency
1.1	LR	ADECA, DPH, ALDOT
1.2	LR	ADECA, DPH, ALDOT
2.1	SR (or MR)	DPS, DPH, Private
2.2	MR	DPH, Private, etc.
2.3	SR	DPH, Private
3	LR	ALDOT, ADECA, DPH, others
4	SR	DPH, ADECA, others
5.1	LR	DPH
5.2	SR	DPH, ADECA, ALDOT

Evaluation

As each specific work plan item is implemented, a detailed evaluation plan will be developed by the EMS team and included as part of the SHSP.

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CHAPTER 3
LEGISLATIVE COMPONENT

Problem Statement

As part of Alabama's initiative to reduce the statewide fatality rate, many of the key actions of the SHSPlan will require legislative action. Legislation will be needed to provide funding for individual programs and permanent support for enforcement and other traffic safety related issues. In some instances, enabling legislation will be needed to permit actions to proceed. Other legislation will continue and enhance existing programs.

Currently there is not an active group or organization that provides comprehensive review and tracking of Alabama legislation across a broad front, and which keeps traffic safety individuals and agencies informed on how legislation affects highway safety. Efforts are splintered with various agencies or groups' independently submitting or monitoring legislation pertinent to their own interests. As a result legislative activity was designated as one of the five key action areas for the immediate future, and a work team was created to develop the Legislative component of the Alabama SHSP.

Legislative Work Team

Representatives of the following agencies and organizations were appointed to the work team. As word of the SHSP spread through the safety community, additional individuals volunteered for the team and were appointed. The following list indicates the wide appeal of the issue:

- Governor's Office, Deputy Legal Advisor
- Alabama Department of Economics and Community Affairs
- Alabama Department of Public Health
- Alabama Department of Public Safety
- Alabama Department of Transportation, Modal Programs (Safety Section)
- Alabama SAFE KIDS/Southeastern Child Safety Institute
- Alabama Section of the Institute of Transportation Engineers
- Alabama Trucking Association
- Children's Hospital
- State Safety Coordinating Committee
- Montgomery Highway Safety Office (2 representatives)
- West Alabama Highway Safety Office (2 representatives)
- VOICES for Alabama's Children, Coordinator of Policy and Programs/Kids Count Director

The primary goal of the team was to ensure that a permanent organization (committee, task force, team, etc.) identifies, reviews, monitors and proposes legislation pertinent to highway safety initiatives. This process should aid in the future reduction and severity of crashes on

Alabama's highways. It would develop strategies to inform policy makers and the general public of safety issues and seek the passage of legislation to remedy issues that have been identified. This will involve reactivating the SSCC, or creation of a new organization to perform this function.

A secondary goal of the team was to identify highway safety issues that could be addressed by the Alabama Legislature, either through new legislation or by providing resources, to reduce the number of annual traffic crashes, fatalities and injuries. Additionally, the team was to identify any legislation that restricted or negated federal cash flow into the state (i.e., incentive laws, or laws that limited or curtailed use of federal funding unless Alabama adopted specified legislation).

The Legislative Team met multiple times over six months, and continuously corresponded via email and telephone. Many of the team members who track legislation for their own organizations or agencies were very helpful in preparing this plan element. After a draft list of potential legislation had been prepared, the team reviewed and outlined a work plan.

Two sources of information that were very helpful during preparation of the plan are located at the end of this report. One was a listing of legislative recommendations prepared by the National Transportation Safety Board for Alabama. The second is found in Appendix C, a listing of the Alabama Code that created the SSCC. Any new safety legislation proposed should be effectively monitored and evaluated.

Legislation Work Plan

The work plan consists of two principle items. The first is creation of a designated group to identify, track, and otherwise facilitate adoption of safety legislation on a continuing basis. The second is a list of potential highway safety legislation that should be investigated for adoption in Alabama.

1. ESTABLISH A LEGISLATIVE GROUP – Alabama needs a focus group to identify, review, monitor and propose legislation pertinent to highway safety initiatives which should aid in the reduction and severity of crashes on Alabama's highways. This group will also develop strategies to inform policy makers and the general public about safety issues and seek the passage of legislation for remedial action.

1. Study how the original SSCC functioned, study how organizations in other states handle legislative activities, and develop a model that will work well in Alabama.
2. Create an Alabama highway safety group (called "task force" for the remainder of this discussion)
    a. This might be through reactivation of SSCC or creation of a new group.
    b. This task force should be adequately funded, with a Chairman assigned to lead and to ensure the success of the group at performing its task.
    c. This task force should be comprised of individuals and representatives of various groups and agencies that (1) have a working knowledge of traffic safety issues, (2) have authority to allocate funds for the implementation of safety initiatives,

and (3) have the knowledge and ability to pursue the enactment of laws designed to promote the improvement of traffic safety.

3. Develop a mechanism to create and empower this task force.
    a. Evaluate possible amendments to the legislation that created the SSCC (see Appendix C). Proposed changes should be identified.
    b. Consider creation of new legislation,
    c. Consider the recommendation of a Governor's Executive Order to address these issues.

2. PROPOSED TRAFFIC SAFETY LEGISLATION – The following proposals for new statutes, or modification of existing statutes, would strengthen traffic safety efforts in Alabama (the following list is not prioritized).

1. Strengthen the Graduated Drivers License (GDL) Law – Four changes are necessary to comply with NHTSA requirements for full funding:
    a. Provision 2: 30-50 hrs supervised driving in learner stage
    b. Provision 3: Nighttime restriction in intermediate stage
    c. Provision 4: Passenger restriction in intermediate stage
    d. Amend to add restriction for "older/restricted driver" (OLDER/RESTRICTED DRIVER TASK TEAM)

2. Booster Seat Law – Require that any child riding in a passenger motor vehicle who is under the age of 8 be secured in a child restraint meeting FMVS standards, unless the child is more than 65 pound of 4 feet 9 inches tall.

3. Statewide Red Light Camera Law – This law is needed to allow localities to operate red light running photo enforcement programs for safety purposes.

4. Child Restraint Law (No Gaps) – Ensure that there are no gaps in Alabama child restraint laws by having all occupants under the age of 16 covered by either a child restraint law or a safety belt law.

5. Unattended Children Law – Ensure that a person responsible for a child who is eight years of age or younger shall not leave that child in a motor vehicle without being supervised in the motor vehicle by a person who is at least 14 years of age.

6. Aggressive Driving - Prohibit acts of aggressive driving (including excessive speeding, tailgating, unsafe lane changes, failing to yield right of way, ignoring traffic control devices, etc)

7. Cell phones - Prohibit use of wireless communication devices while driving

8. Review Enforcement of Interstates by Municipalities - Since DPS staff is limited; allow the enforcement of Interstates highways by local law enforcement municipalities

9. Review Distribution of Funds on Citations Issued - Provide a portion of the proceeds of citations to local law enforcement agencies (i.e., Sheriffs).

10. School Bus Occupant Protection - Require that all vehicles carrying more than 10 passengers (buses) and transporting children to and from school related activities meet the school bus structural standards.

11. Primary Seatbelt Law for all Passengers - Require all passengers to wear safety restraints.

12. ATV - Restrict the use of all terrain vehicles by under-aged children.

13. Restrict Passengers in Rear of Pickup - Allow passengers to ride only in seating areas equipped with safety belts.

14. Increase the Damage Threshold Required for Reporting Crashes - Crashes with fatalities, injuries or property damage now in excess of $500 now require reporting. Increase that value to $1000 or $2000 to reflect the effects of inflation over time.

3. LEGISLATION RECOMMENDED BY OTHER TASK TEAMS

1. Max Alcohol Violations - Adopt ordinances which close businesses after three violations. (RISK TAKING TASK TEAM)

2. Underage Alcohol Violations – Adopt stronger penalties for any underage alcohol conviction (RISK TAKING TASK TEAM)

3. Discourage DUI – Require color coded vehicle tags for violators and those convicted of DUI. (RISK TAKING TASK TEAM)

4. Diminished Driving Skills – Require vision, cognitive, and physical testing for driver's license renewal. (OLDER/RESTRICTED DRIVER TASK TEAM)

5. Physician Reporting – Require physicians to report certain impairments for driver's license renewal. (OLDER/RESTRICTED DRIVER TASK TEAM)

6. Driver's License Restrictions – Mandate license restrictions for certain health conditions. (OLDER/RESTRICTED DRIVER TASK TEAM)

7. Age Related Driving Restrictions - Revise licensing renewal time frame (OLDER/RESTRICTED DRIVER TASK TEAM)

8. Older/Restricted Driver Designation – Use a universal symbol on vehicles to identify older/Restricted drivers (OLDER/RESTRICTED DRIVER TASK TEAM)

Implementation Plan

This plan element will require a concerted effort to define what is needed, to circulate the plan widely and build consensus, and to identify a method to have it adopted. It is not possible to identify a method at this point in the planning because of the inherent nature of politics and adoption of legislation. It is possible to develop a general list of actions that are needed for reactivation of SSCC or creation of a new safety oriented group, and for development of a long term plan to focus on recommendations for highway safety legislation:

- Identify legislators, lobbyists and special interest groups that are interested in traffic safety.
- Identify existing legislation to use as a model.
- Identify requirements that should be incorporated in the Alabama Code to prevent loss of federal funds and focus on adopting that legislation.
- Identify or develop procedures which have proven to be effective highway safety measures.
- Identify legislation which has the greatest probability of enactment.
- Identify legislation which has the greatest probability of diminishing the number of crashes, injuries and fatalities.
- Review proposed legislation to determine and evaluate the impact for reducing the number and severity of crashes.

Evaluation Plan

An assessment and evaluation of traffic crash data will be performed to analyze crashes and citations annually and to support legislation. The assessment will identify areas which could be addressed through modification of existing or new legislation. Additionally, legislative suggestions may be obtained through other states and professional organizations (see Appendix C). These will be reviewed for amendments to the Alabama Code.

Recognizing that only a limited number of safety bills will be passed during any session of the Legislature, potential legislation should be prioritized through (but not limited to) the following processes:

- Review by the SMART Committee.
- Review of the current political climate for passage.
- Review safety funding available through specific safety legislation.
- Identify sponsor(s) of legislation.
- Develop or strength coalitions to support desirable legislation.

In addition, the standing legislative work team created by execution of this plan element will recognize that political conditions will arise when unexpected bills come to the floor. The team should assess these bills and support appropriate actions (i.e., discourage those with questionable safety benefits and support those with strong benefits.

Finally, a before and after analysis can be conducted after new legislation has been in place long enough to develop a crash history analysis. This will be the most accurate way to evaluate the effectiveness of the Legislative Team's actions.

CHAPTER 4
OLDER/RESTRICTED DRIVER COMPONENT

Problem Statement

The American driving population is becoming older, and many members of this group experience some form of limitation that could affect driving skills. "Mature driver" was the eighth most prevalent factor associated with Alabama fatal traffic crashes in 2003 (Table 1-4). The reason why older drivers are getting more attention from transportation professionals is illustrated in Figure 4-1. They are the fastest growing segment of the American population, and will expand by about 50 percent in the next 15 years and will double in the next 25 years. The sheer speed at which this age group is increasing is enough reason to include it in this strategic highway safety plan; however, there is a second, even more persuasive reason.

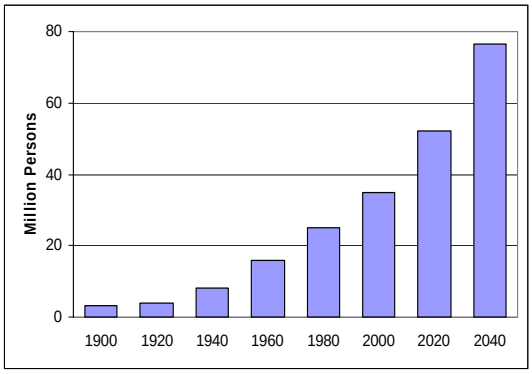

Figure 4-1: Projected growth in US population over age 65

Mature drivers become more likely to be involved in a fatal crash once they reach age 65 (see Figure 4-2). Once they reach the age of 75 their odds of being involved in a fatal crash increase at an alarming rate. The combination of rapid age-group expansion plus increasing crash tendency implies that there will be many, many more severe crashes among mature drivers unless some action is taken to address this issue.

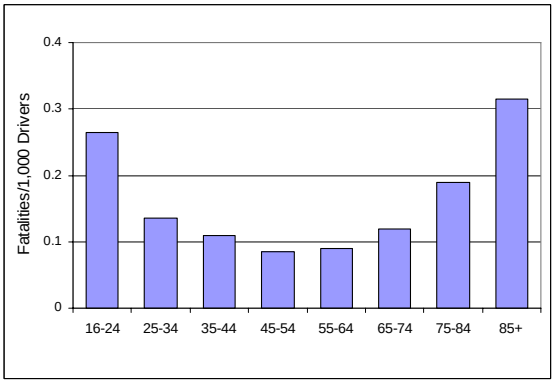

Figure 4-2: Driver age vs. fatalities per thousand drivers
(Based on Corelli, 1998)

Some insight into the causes of the increased crash rate may be found in Table 4-1, which shows that angle collisions are highly overrepresented in fatal crashes among older drivers. This implies that older drivers have trouble seeing vehicles approaching from the side or from slightly behind them. Examples of common physical factors involved in these crashes are: (1) a limitation in neck movement that prevents older drivers from turning their heads far enough to see vehicles approaching from the side, and (2) deteriorating peripheral vision that prevents older drivers from seeing vehicles approaching from the side). In addition to these two examples, slower reflexes and many other factors contribute to the increase in age-related crashes identified in Table 4-1.

Table 4-1: Angle collision fatalities by age[1]

Age Range	Percent
16 – 24	24
25 – 34	27
35 – 44	27
45 – 54	28
55 – 64	31
65 – 74	38
75 – 84	49
85+	56

[1] NHTSA, 1997

A deeper examination of the factors associated with physical restrictions like those discussed in the previous paragraph leads to two important conclusions. First, the limitations are not solely a function of age. Second, Alabama has not embraced or addressed the issue of drivers with deteriorating skills, or the effect that this issue has on traffic safety, as outlined in the next several paragraphs.

The current state licensing renewal requirements do not include physical, cognitive, or visual screening, or testing. This is important because standard traffic control devices are not designed to adequately accommodate older/restricted drivers.

In addition, law enforcement officials are not trained to identify casual drivers as cognitively, physically, or visually impaired. The driver condition block on the current Alabama Uniform Traffic Accident Report does not include an option to identify a driver as cognitively, physically, or visually impaired. Without the ability to identify or track these drivers, it is currently not possible to quantify the impact they have on fatalities and injuries in Alabama. Likewise, physicians and optometrists are not trained or strongly encouraged to identify patients as visually impaired for drivers licensing purposes. Neither doctors are trained or strongly encouraged to identify patients as cognitively or physically impaired for drivers licensing purposes.

Older/Restricted Driver Definition

For this report, “older/restricted” driver means a motor vehicle operator who is cognitively, physically, or visually impaired and whose ability to drive as safely as the average driver is subsequently reduced. These issues are not always age dependent. As drivers become older, their visual, cognitive, and physical capabilities degrade, but this happens at a different rate for

each individual. A younger driver may have an illness or disability accident which causes loss of ability as well. Even though mature drivers are more prone to these impairments than younger drivers, this report uses the term "older/restricted driver" to cover all individuals regardless of age for which the following impairments significantly diminish their driving skills:

- A cognitive impairment that would affect a driver's ability to judge speed and distance, such as making a left-turn maneuver in front of oncoming traffic.

- A physical impairment that would affect a driver's ability to physically operate a vehicle, such as a neck injury that might prevent a complete range of movement, preventing a driver from looking back over the left shoulder at an acute intersection, or a severe diabetic who might be at risk of having blackouts.

- A visual impairment that would affect a driver's ability to see well enough to make good decisions regarding the driving environment, such as stopping at a red traffic signal or stop sign, keeping the vehicle between the lane lines, reading signs, or simply avoiding other vehicles or a pedestrian in a crosswalk.

Older/Restricted Driver Team

A team was formed from SMART representatives and additional experts in the older/restricted driver issue. The membership was intended to represent the different perspectives within Alabama regarding drivers who have or may develop physical, cognitive, or visual impairments. The agencies and organizations represented include the following:

- Alabama Department of Public Safety
- Alabama Department of Economic and Community Affairs
- ALDOT, Modal Programs, Safety Section
- ALDOT, Maintenance Bureau, State Traffic Engineer
- Alabama Department of Senior Services
- Alabama Optometric Association
- City of Montgomery, Traffic Engineer
- Eye Clinic of Prattville
- Federal Highway Administration, Alabama Division
- Montgomery County Department of Human Resources

The team met several times to discuss the "Older Driver" issue in general and to develop a draft work plan. One of the first tasks the committee tackled was examination of the "Older Driver" definition and problem statement. The topic name was problematic, because age is not the sole criterion for impairment. The term "Older Driver" could easily be replaced by "Functionally Impaired Driver" or "Restricted Driver." In the end, the team recognized that the transportation community has come to use the term "Older driver" to represent all drivers whose physical, cognitive, or visual skills have eroded. Much research devoted to "Older Drivers" safety applies to all functionally impaired drivers. In light of all these discussions, the term "Older/Restricted Driver" was adopted for this report.

The team also concluded Older/Restricted Driver issues and countermeasures fall into three broad categories: roadway, driver, and legislation. The team focused on developing specific recommendations within these broad categories.

Work Plan

1. ROADWAY COUNTERMEASURES – Standard traffic control devices, such as signing, marking, and traffic signals provide positive guidance to all motor vehicle operators. Enhanced traffic control devices may mitigate some of the problems Older/Restricted Drivers must overcome. ALDOT and some local agencies have implemented many of these enhanced traffic control device measures already.

   Recommendations:
   Develop an educational program for ALDOT and city and county engineers so they will recognize the benefits of enhanced traffic control device and incorporate them into their standard practices. Suggested measures for consideration include are listed below, but the program should not be restricted to traffic control devices.

   a. Enhanced Signing – ALDOT and Local Agencies Lead
      1) Advance street/highway name signs
      2) LED street/highway signs
      3) Oversized signs and legends for all signs

   b. Signal Head Modifications – ALDOT and Local Agencies lead
      1) Back plates on signal heads
      2) LED signal heads

   c. Markings and Delineation – ALDOT and Local Agencies lead
      1) Rumble striping – centerline and shoulder
      2) 6” striping
      3) Rumble strips – center line and shoulder

2. DRIVER COUNTERMEASURES – Motor vehicle operators with visual, physical, or cognitive impairments may take measures to compensate for their impairment if they are made aware of it. Optometrists and medical doctors could play a major role in making impaired drivers aware of their driving limitations, and recommending potential options to mitigate their impairment.

   Recommendations:
   a. Public Education – Evaluate the benefits and costs of an educational program to address the Older/Restricted Driver issue. Suggested measures to evaluate are listed below, but the program should not be restricted to evaluation to these activities. One task for this study is to identify funding sources and lead agencies/organizations. Private organizations should be considered for funding and leading.

(1) Public service announcements to educate citizens regarding what defines an older driver, and to publicize the availability of help for Older/Restricted Drivers.
(2) Appearances by medical or traffic safety experts on "At Your Service" and other PBS shows to educate the public regarding Older/Restricted Drivers.
(3) Educational mail-outs by automobile insurance companies/probate courts, others.
(4) Awareness classes tied to lower auto insurance rates.
(5) Modification of the Alabama Drivers Manual to explain physical, cognitive and visual impairments.

b. Doctor Intervention - Develop an educational program for doctors so they will recognize symptoms of Older/Restricted Drivers and understand how to report their findings. Suggested measures to evaluate are listed below, but the program should not be restricted to these activities. One task for this study is to identify funding sources and lead agencies/organizations that would direct this effort. Private organizations should be considered for funding and leading this effort.

(1) Sponsor a workshop or develop literature to educate doctors regarding identification and reporting methods for physical, cognitive, and visual impairment.
(2) Develop a form for doctors to give to patients for their auto insurance companies that would provide a discount on insurance costs proving that they have no visual, cognitive, or physical impairments.
(3) Develop an evaluation and reporting system for doctors, optometrists and other appropriate caregivers, to provide feedback to older drivers. Alabama Department of Public Safety and local enforcement agencies should be consulted and involved.

c. Provide alternative transportation modes– Loss of mobility or fear of that loss is a significant factor related to this issue. A successful Older/Restricted Driver program should address this concern by providing an adequate, but not necessarily equal substitute. This becomes a real problem in rural areas. Study transit programs within Alabama, as well as other systems in the U.S. Also, study the demand for alternative transportation that would be generated by implementing an older/restricted driver program. Use the findings of this study to develop a program to accommodate older/restricted drivers, using the existing transit system as a cornerstone. Suggested components of the study are listed below, but the program should not be restricted to evaluation to these activities. A task in this study would be to identify funding sources and lead agencies/organizations. Private organizations should be considered for funding and leading.

(1) Expand rural transportation system and/or supplement transportation costs.
(2) Evaluate existing transit systems (ALDOT) to determine the degree to which they support older/restricted driver mentality.
(3) Educate potential riders about the availability of rural transportation.
(4) Older/Restricted Driver "sticker" – develop a voluntary program that allows an older driver to apply a sticker to their vehicle identifying them as an older driver, with the hope other drivers would be more patient around them and perhaps give them a wider berth than without the sticker. Work with insurance companies to translate the use of the sticker into savings on auto insurance for the older/restricted driver.

3. Legislation – Alabama does not require any type of visual, physical or cognitive screening or testing for driver licensing renewal.

   Recommendations:
   Incorporate visual, physical, and cognitive elements into Alabama's driver's license renewal process. Research existing documentation regarding requirements for renewed drivers licensing in the U.S. and abroad. Use this research to develop recommendations for modifying renewal drivers licensing in Alabama. Based on information from the publication *Older Americans Report*, July 16, 2004 edition, Maryland has a very progressive older driver program that may provide excellent guidance for the Older/Restricted Driver program Alabama proposes. The National Highway Traffic Safety Administration (NHTSA) studied the Maryland effort and subsequently published a three volume guide titled the *Model Driver Screening and Evaluation Program*, which recommends restricting licenses rather than revoking them in many instances. These could be valuable resources that should be used in the Alabama effort.

   Suggested Evaluation Milestones
   a. Visual – each license renewal
   b. Physical – to be determined
   c. Cognitive – to be determined
   d. Behavior – require retesting if a citation is received during the license period

Implementation Plan

Implementation of this program is dependent upon funding the recommendations. Private funding might be necessary to underwrite the recommended actions. ALDOT, ADECA and DPH are the primary State agencies that might be able to fund portions of these types of programs. The value of implementing older/restricted driver programs must be evaluated in terms of fatalities and injuries prevented in order for ALDOT and ADECA to determine how best to spend their limited funds.

References

"A Guide for Reducing Collisions Involving Older Drivers," NCHRP Report 500, Volume 9, Transportation Research Board, Washington, D.C., 2004

Cerrrelli, E.C., "Crash Data and Rates for Age-Groups of Drivers, 1996," Research Note, NHTSA, Washington, D.C., January 1998.

Model Driver Screening and Evaluation Program: Volume I, Project Summary and Model Program Recommendations, DOT HS 809 582, May 2003; Volume II, Maryland Pilot Older Driver Study, DOT HS 809 583, May 2003; and Guidelines for Motor Vehicle Administration, National Highway Traffic Safety Administration, DOT HS 809 581, May 2003

"Fatal Accident Reporting System 1997," National Highway Traffic Safety Administration, www-fars.nhtsa.dot.gov

"Older Americans Report," Volume 28, No. 27, Business Publishers, Inc., Silver Spring MD, pages 211-213, July 16, 2004

"Travel Better, Travel Longer, A Pocket Guide to Improve Traffic Control and Mobility for Our Older Population," Federal Highway Administration, FHWA-OP-03-098, August 2004

CHAPTER 5
RISKY DRIVING ISSUES COMPONENT

Problem Statement

Several analyses were performed to focus on the most pressing issues facing the traffic safety community. For example, the subjects of DUI, speeding and other violations, failure to use restraints, and several other issues were analyzed. The findings showed a strong correlation in demographics between these various issues. That is, there was no single cause that could be isolated. The same individuals who were driving while intoxicated were also generally speeding, not wearing restraints and committing other violations. In addition, they demonstrated risky behavior through actions like driving late at night on weekends, in bad weather and at high speed on county roads. They tended to be young males, and the demographic characteristics of individuals who engaged in one risky behavior were found to also apply to most, if not all, of the other risky driving behaviors.

This characteristic has been noted by several NHTSA studies and has been recognized for some time. For example, "The primary safety issues related to drivers between the ages of 15 and 24 are inexperience, immaturity, and risk taking." (NHTSA, 1993). For this reason the SHSP Team decided to consolidate all of these issues into a single category that could be dealt with simultaneously by a number of countermeasures. This was termed the "Risky Driving" category. Risky behavior is in fact a byproduct of inexperience and immaturity, so these two driver characteristics are included in the Risky Driving category of this plan.

Table 5-1 defines *risky driving* more specifically using police officers' opinions of "Primary Contributing Circumstance" on the crash report form. Table 5-1 lists this information for calendar year 2003 (CY2003), ordered by frequency of occurrence. To prepare the table, all "primary contributing circumstances" variables (from the crash report form) were evaluated, and those that were clearly related to risky driving were listed in the table. This is a conservative list because some of the excluded contributing circumstances could certainly involve some level of risk on the part of the driver, and also because pedestrian crashes were excluded. Even so, the categories that were clearly indicative of risky driving contributed over 60% of the total crashes and almost 72% of the fatal crashes. In other words, risky driving was a major contributor to serious crashes in Alabama in 2003, and those characteristics have shown little change from year to year.

Risky Driving Work Team

A "Risky Driving Team" was formed as a subcommittee of SMART. Care was taken to ensure that group participants represented a wide range of expertise and interests. Many interested individuals served on this team, representing the following agencies and groups:

- ADECA/Law Enforcement Traffic Safety Division
- University of Montevallo Traffic Safety Center,

- Alabama Department of Transportation,
- Community Traffic Safety Programs (CTSPs),
- Federal Highway Administration,
- Mothers Against Drunk Driving
- Alabama Beverage Control Board
- Alabama Department of Public Safety
- ALFA Insurance, and
- The University of Alabama (UTCA).

Table 5-1: Risky driving by circumstances contributing to crashes for 2003

Primary Contributing Circumstance	CY 2003 Frequency Of Crashes	Percent of Alabama Crashes	Percent Crashes Related to Risky Driving	Percent Fatal Crashes Related to Risky Driving
Fail To Yield Row	22,192	15.73	15.73	11.35
Driver Not In Control	18,676	13.24	13.24	13.35
Following Too Close	13,763	9.76	9.76	0.11
Fail To Heed Sign Or Signal	7,003	4.96	4.96	4.56
Improper Lane Change Or Use	4,840	3.43	3.43	1.00
Improper Driving For Environment	4,786	3.39	3.39	3.45
DUI	4,339	3.08	3.08	12.46
Over Speed Limit	3,300	2.34	2.34	15.57
Improper Turn - U-Turn	2,289	1.62	1.62	0.33
Wrong Side Of Road	1,850	1.31	1.31	6.90
Improper Passing	1705	1.21	1.21	2.45
Improper Turn - No Signal	89	0.06	0.06	0.00
Non-Risky Behavior Categories	56,235	39.87	0.00	0.00
Totals =	141,067	100	60.13	71.53

The initial organizational meeting was held on May 20, 2004. It consisted of a review of Alabama crash statistics and trends, followed by discussions and analyses of how to significantly reduce the fatal crash rate. A brainstorming session was conducted to define and quantify key risky driving issues, and to suggest countermeasures. All of the suggested countermeasures were tabulated and distributed in the minutes to that meeting. The relevant portions of the ADECA Highway Safety Plan were also distributed to provide a baseline for future planning efforts. This led to a second meeting of the team, which was conducted via a phone conference on June 23, 2004, where additional countermeasure action items were suggested. This produced a re-organization and consolidation of the list of countermeasures that led to a draft of the current report. This draft was circulated several times to get all team member's input before it was presented to the team in another meeting and finalized in its present form.

Work Plan

The Risky Driving team selected four issues as the most important actions to reduce risky driving in Alabama:

- Alcohol/Drugs
- Occupant Protection

- Police Traffic Services
- Youth-Targeted Programs

Note that the first of these is a root cause of crashes, while the second two are countermeasure-oriented. The last of these is an appropriate target, since youth have been clearly demonstrated to be most heavily involved in risky driving behavior.

The following sections of the plan include brief summaries of each issue and countermeasures recommended to address each issue. Additional discussions and more detailed recommendations are given in Appendix E.

Planned Actions for Each Risky Driving Issue

Alcohol/Drugs Action Items

No other single causal entity can be tied to as many fatalities as the use of alcohol/drugs while driving. Approximately 40% of fatalities in Alabama are caused by alcohol/drugs. Planned action items follow.

- In close coordination with SMART, activate the Governor's Task Force against Drinking and Driving, and charge it with formulating optimal countermeasures that do not make unrealistic demands on agencies charged with implementation.
- Develop and implement a statewide alcohol Public Information & Education campaign.
- Coordinate and facilitate a statewide DUI workshop.
- Develop local alcohol safety plans and councils to formulate problem-solving strategies and to transfer alcohol crash countermeasure technology.
- Provide education to school age children in grades K-12 on alcohol awareness as part of a comprehensive program of traffic safety. Perhaps groups like MADD or SADD could conduct these programs.
- Provide uniform training in the Standardized Field Sobriety Test Battery (SFSTB), Breath Alcohol Screening Devices (BASD) to adhere to changes in Alabama's Traffic Laws (Act 96-324), which requires consistent calibration.
- Expand the dispenser awareness program into a mandatory training course.
- Expand statewide the program to coordinate college personnel and activities and teen alcohol outreach peer counseling.
- Encourage joint enforcement activities (e.g., include ABC enforcement officers where appropriate).
- Establish a responsible vendor training program for all alcohol beverage handlers.

Occupant Protection Action Items

Restraint systems have been demonstrated and recognized for decades to be one of the most effective countermeasures for reducing the severity of crashes. However, they do no good if they are not used, and failing to use them is clearly risky behavior. The following activities are planned in this area:

- Continue the promotional and educational campaigns to reinforce the importance of safety belt usage and serve as a strong reminder of the Alabama Primary Safety Belt Law.
- Increase police emphasis on restraint enforcement.
- Coordinate the activities of the nine regional highway safety coordinators, the Alabama Department of Public Health, the Alabama Department of Public Safety, local law enforcement agencies, governmental agencies and other organizations to promote the Click It or Ticket safety belt campaign during major holidays.
- Expand the Click It or Ticket campaign efforts to be an ongoing, yearlong program.
- Conduct area briefings, establish partnerships, employ the media, conduct training, and perform rigorous law enforcement of the state's occupant protection laws.
- Provide educational programs and technical assistance (brochures, advertising campaign, and other informational materials) throughout the state.
- Develop special programs to concentrate on groups that exhibit low safety belt and child restraint usage.
- Conduct standardized Child Protection System (CPS) training as well as CPS checks and clinics, and increase the size of the trained personnel pool qualified to conduct CPS clinics and training throughout the state.
- Provide a comprehensive educational program designed to heighten community awareness, provide CPS information, train and certify CPS technicians and establish car seat checking stations.
- Increase fines to include court costs for seat belt violation citations.

Police Traffic Services Action Items

Police Traffic Services countermeasures include all traffic enforcement efforts as well as the various publicity efforts that are facilitated by State and local police departments. Countermeasures under consideration follow.

- Enforce Alabama's Primary Safety Belt Law by means of Selective Traffic Enforcement Programs (STEPs), which are implemented in conjunction with educational campaigns (PI&E).
- Purchase video equipment to support police STEP efforts.
- Promote the use of the Law Enforcement Tactical System (LETS) at check-stops.
- Provide funding for overtime for all STEP and check-stop activities through the Community Traffic Safety Programs (CTSPs).
- Implement a special overtime effort to conduct a statewide rural STEP project aimed at identified segments of roadway with high crashes, including D.U.I. enforcement, safety belt and child seat enforcement as well as strict enforcement of posted maximum speed limits, including public information and education efforts.

Youth-Targeted Action Items

The term "youth" refers to two age groups: 16-20 year old drivers for non-alcohol related risk taking, and 19-23 year old drivers in alcohol related risk taking. The rationale for these target age groups is given in Appendix E of this report. Planned action items follow.

- Develop and implement an "early education" program starting in the grade schools and providing reinforcement over a 10-15 year period.
- Develop a component aimed at parents, for the program defined in the "early education" bullet above.
- Establish a mechanism to promote alcohol free events for colleges.
- Promote education on traffic safety and alcohol use at college orientation or through some type of freshman class.
- Work with universities to develop and incorporate messages on their web sites or through e-mail.
- Create a statewide program to expand the education effort of School Resource Officers and ABC enforcements agents.
- Expand ABC enforcement to combat youth access from point of origin.
- Provide an avenue to receive complaints about youth alcohol usage, including a secure web site to receive anonymous complaints; report the results to enforcement agencies.

Setting Priorities

The establishment of priorities among countermeasures within the risky driving category is problematic because of the great interaction among the various proposed countermeasures. In addition, several funding sources might be applied from agencies with entirely different purviews. Rather than prioritizing specific countermeasures, the team recommends considering the potential to reduce the various crash types from Table 1-4 (presented in the Chapter 1 of this document). Table 5-2 extracts those crash types that are related to risky driving.

Table 5-2. Crash severity by crash type for risky driving crash types

Crash Type (Causal Driver)	Fatal Number	Fatal %	Injury Number	Injury %	PDO No.	PDO %	Total
1. Restraint Not Used*	449	3.09%	5,685	39.18%	8,376	57.73%	14,510
2. Speeding	276	3.72%	3,164	42.69%	3,971	53.58%	7,411
4. Alcohol/Drug	192	2.55%	2,984	39.57%	4,366	57.89%	7,542
6. Youth -- Age 16-20	152	0.53%	6,842	23.69%	21,889	75.79%	28,883
11. Fail to Conform to S/Y Sign	56	0.66%	2,420	28.47%	6,023	70.87%	8,499
17. Fail To Conform to Signal	24	0.25%	3,023	31.52%	6,545	68.23%	9,592
20. Child Not Restrained*	12	0.85%	767	54.13%	638	45.02%	1,417

* Person count as opposed to crash count for "fatal number" category.

This indicates that, all other things being equal, there are higher potentials for reduction in the restraints, speeding, alcohol/drug and youth areas than in the remaining categories, which are significantly lower in potential. However, all other things are not equal. In applying these numbers to prioritize countermeasures, the following must be considered:

- Neither these categories nor the countermeasures that are proposed to address them are mutually exclusive. For example, a crash might simultaneously involve speeding,

alcohol and an unrestrained driver of age 16. Similarly, a selective enforcement effort might consider alcohol, speeding and restraints simultaneously.

- The effectiveness of the countermeasure is as important in determining priorities as the potential that this effectiveness will impact. For example, a countermeasure with 20 percent impact on the speeding category would have to be given a higher priority than a 10 percent impact on the restraint-not-used category.
- Given that considerable recent efforts have been made to increase restraint usage in Alabama, the marginal effect of applying resources to this topic might not return benefits as large as they did immediately after the passage of the mandatory usage law. On the other hand, the recent gains will most surely be lost unless the effort is maintained to some degree.
- In many cases categorical funding, federal agency guidelines, and regional programs dictate overall countermeasure strategy. In these cases, information should be generated and applied to assure that the most effective tactics are applied in carrying these strategies out.

The procedure for performing cost-effectiveness studies discussed above should be applied when it is clear that a particular budget needs to be allocated among a variety of countermeasures, and should always be applied when working out the specific tactics of implementation (who, what, where, when and how). In those cases of multi-agency investments, it would be wise to assemble a multi-disciplinary oversight group to provide overall project guidance. Such a group can also be of great use in resolving priorities where there is no documented history of new or innovative programs. Additional information on prioritizing projects may be found in Appendix B of this report.

Responsible Agencies

For each safety work task, a lead agency should be assigned to implement the effort. This ensures that someone is charged with designing, scheduling, and implementing the safety initiative. To the extent possible, appropriate agencies have been identified as part of this study. They may be found in the more-comprehensive discussion of Risky Driving action items found in Appendix E.

Funding

When Congress passed SAFETEA-LU, it included unparalleled emphasis on highway safety, including increased levels of funding, requirements for SHSPs, and requirements for cooperation between safety-related agencies. Alabama is poised to meet these requirements, and to take advantage of all sources of safety funding. Examples of agencies and potential funding for SHSP elements are shown below:

- ADECA/Law Enforcement Traffic Safety Division receives an allotment of funds from the National Highway Transportation Safety Administration, and would be expected to be a major leader in funding these projects. The ADECA/LETS detailed plan for implementing most of these countermeasures may be found on the CARE web site

(http://care.cs.ua.edu). In addition ADECA has recently received federal "incentive funding" that is available for safety programs.

- The Alabama Department of Public Health has developed a strategic plan that includes several of the countermeasures mentioned above.
- The Alabama Beverage Control Board enforcement officers will commit a portion of their time to enforcement and education efforts with regard to underage drinking.
- The Alabama Department of Public Safety provides ongoing resources for enforcement and education.
- Volunteer organizations, such as MADD, SADD, etc. contribute both financial and personnel resources in advancing and advocating the particular aspects of traffic safety that fall within their charters.
- Private companies, such as insurance and trucking companies, invest in research and educational efforts.

Implementation Plan

Each of the organizations listed above has a specific implementation plan for allocating those funds available to it for traffic safety. It is important that agencies which execute components of the plan participate in planning these components, and that these organizations and state agencies keep abreast of parallel efforts by other agencies minimize conflicts or non-productive overlaps. Modifications of agency activities should be performed when research findings or other evaluations indicate that such modifications are warranted. The following implementation plan is recommended now that the SHSP has been approved by the Governor:

- Establish a Risky Driving Project Steering Committee, as an active overseer of the projects that have been recommended; this will involve all of the agencies indicated above. This Steering Committee will perform the following functions.
    - Hold periodic progress checks in which each of the proposed countermeasures is reviewed and reports are made to the Steering Committee to assure that projects are either underway or are being implemented on a prioritized basis.
    - Document those areas in which projects are lagging, and contact the responsible agency heads to determine if the Steering Committee can be of assistance.
    - Provide a continuous communication function to assure that all activities in the various agencies are coordinated and mutually supportive.
    - Perform an annual evaluation to assure that that the plan is being followed and that it is also periodically improved as new information becomes available and as new issues arise.

References

NHTSA, 1993: Addressing the Safety Issues Related to Younger and Older Drivers; A report to Congress," Office of Program Development and Evaluation, Traffic Safety Programs, January 19, 1993.

CHAPTER 6
LANE DEPARTURE COMPONENT

Problem Statement

There are two different types of lane departure crashes. The first and most common type is when a single vehicle runs off the road (ROR) and crashes into a fixed obstacle or ditch, or overturns. These are very severe crashes with higher than normal injury and fatality rates. The second type occurs when a vehicle crosses the centerline of a two-lane road or the median of a divided highway, and causes a head-on crash. This portion of the SHSP will cover both types of crashes.

ROR Crashes

The SMART Task Force selected ROR crashes for further study based upon their high severity rates. This is illustrated by Figure 6-1, which shows that they are involved in 40 percent of all fatal crashes. However ROR causes only 15 percent of crashes so ROR is 2.67 times over-represented in fatal crashes (i.e., 40% fatal divided by 15% crashes). That implies that Alabama crash fatalities can not be significantly lowered unless off-road crashes are addressed.

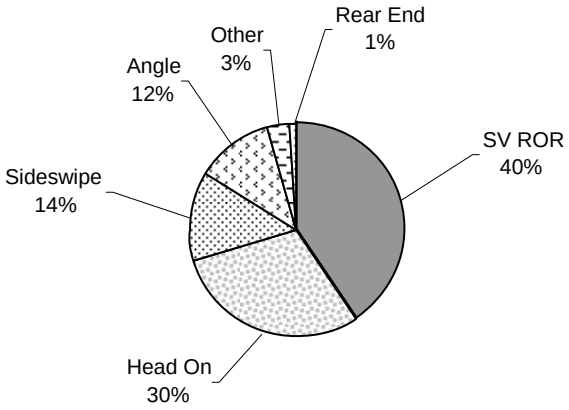

Figure 6-1: Types of fatal crashes

Figure 6-2 and Table 6-1 provide more definitive information. The figure shows the types of roads upon which these crashes occur. It is obvious that county roads are the leading contributor to fatal ROR crashes with 42 percent of the total. This is the type of information needed to develop a good safety program – it looks like a ROR safety effort dedicated to this one category of roads might treat half of all ROR fatalities. The figure also shows that Federal and state roads (these categories have similar design characteristics and both are under the jurisdiction of ALDOT) constitute another 29 percent of these crashes. This appears to be another good candidate for a safety program. Two separate safety efforts are needed because county roads have much different characteristics from federal/state roads; this implies that the factors contributing to ROR crashes will be different on the two classes of road. Certainly the types of

countermeasures used to reduce ROR crashes on county roads will be much different from federal-state roads.

The table shows what happens to these vehicles after they leave the roadway. The most frequent "first harmful event" is hitting a ditch, which occurs in 30 percent of fatal ROR crashes. Hitting a tree is the next most frequent, and the combination of these two constitutes about half of all off-road crashes.

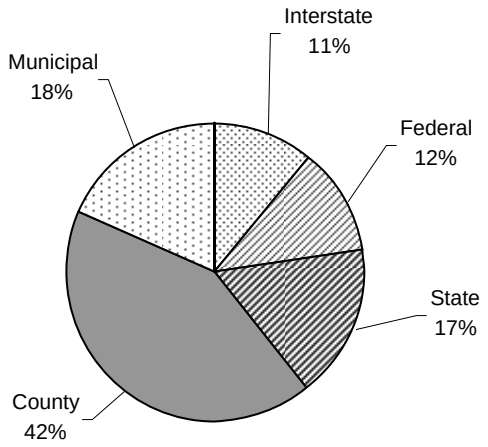

Figure 6-2: Fatal ROR crashes by highway type

Table 6-1:
First harmful event in ROR Crashes, 1994-2003

First Harmful Event	Crashes	Percent
Ditch	57,413	30%
Tree	37,018	19%
Utility Pole	16,114	8%
Overturned	14,620	8%
Side Slope	10,411	5%
Fence	9,646	5%
Guardrail	9,091	5%
Mailbox	8,898	5%
Culvert Headwall	6,838	4%
Non-breakaway Sign	6,650	3%
Curbing	5,616	3%
Breakaway Sign	3,704	2%
Other Fixed Object	2,498	1%
Non- Parked Vehicle	2,470	1%
Bridge Rail	2,413	1%
Totals =	193,400	100%

Lane Departure across Centerline

The second type of crash occurs when a vehicle crosses the centerline. For example, some portions of Interstate highways have experienced situations when out-of-control vehicles "crossover" the median and hit oncoming vehicles. These can be very severe, violent collisions, and often are featured by TV news shows and newspaper articles. It is often difficult for a safety program to identify, locate and diagnose these types of crashes because the accident report form does not contain a specific variable for "median crossover" crashes. In other words, a computer scan of the data can only look at surrogate data items to try to find them. A review of paper copies of accident reports can effectively find them; however, reviewing almost 150,000 annual crash reports by hand is out of the question. ALDOT has initiated an Interstate Median Barrier installation program, by it is cost prohibitive to install barriers in the medians of all Interstate highways and four-lane divided, non-access controlled highways in Alabama. There are too many miles and the cost would be prohibitive.

Crossover crashes on two-lane roads are usually of the head-on variety. These are random occurrences that might be caused by impairment, inattention, sleep deprivation, risky driving on the part of the vehicle operator, mechanical failure of the vehicle, or similar causes. The roadway may also contribute due to poor geometry, below minimum sight distance or similar factors. These types of crashes are also hard to single out using a digital database because there is not a unique data variable that identifies them.

Lane Departure Work Team

At the initial meeting of the SMART taskforce in February 2004, volunteers were solicited to form a work team to analyze lane departure crashes in the state. These volunteers and other individuals identified by the project steering team formed an interdisciplinary work team. As the study progressed, additional volunteers joined the effort. Members of the team are identified in the following list by agency or organization represented:

- Alabama Department of Public Safety (two representatives)
- Alabama Department of Economic & Community Affairs
- ALDOT County Road Bureau
- ALDOT Construction Bureau
- ALDOT Design Bureau
- ALDOT Maintenance Bureau
- ALDOT Modal Programs (three representatives from Safety section)
- ALDOT Public Relations Bureau (two representatives)
- ALFA Insurance
- City of Montgomery Traffic Engineer
- Elmore County Engineering
- FHWA, Alabama Division
- Montgomery County Sheriff's Office
- University of Montevallo, Safety Center
- University Transportation Center for Alabama (two representatives)

Work Plan Development

This team met six times over six months. Team members reviewed ROR crash statistics and trends in Alabama, learned about general countermeasures for ROR crashes (keep vehicle on the road, minimize chances of a crash if the vehicle leaves the road; and minimize severity if the off-road vehicle crashes). They discussed causative factors and potential countermeasures, and they divided the overall crash situation into a series of work tasks that could be accomplished to reduce the overall problem.

The work team's early analysis of data and study of the characteristics of ROR crashes in Alabama identified the five primary work topics shown below. They will be discussed individually in the next several pages of this report:

- County road ROR crash analysis;
- Interstate median crossover crashes;
- Rural two-lane state route ROR crashes;
- Two-lane state route head on crashes; and
- Changes to ALDOT policies and procedures to reduce ROR crashes.

Work Plan

1. RISKY DRIVER ASPECT –Many lane departure crashes include some element of risky driving. For example, speed, impairment and lack of seat belt use (all associated with risky driving, especially when they occur simultaneously) are commonly found in these crashes.

> Recommendation:
>
> Coordinate the implementation efforts of the risky driver team with those of the lane departure plan team to increase the effectiveness of the countermeasures applied by both teams.

2. COUNTY ROAD ROR CRASHES – County roads account for the largest segment of ROR fatal crashes, with about 40 percent of the annual total for the state. This made it the leading candidate for safety action.

County roads are much different from state and federal routes. In general, they are older and often started as dirt roads that were eventually "blacktopped" by county commissioners. Compared to state routes, county roads are likely to be narrower, carry lower traffic volumes, have thinner pavements, have narrow or no shoulders, have fewer traffic signs, and have sharp curves and steeper grades. All of these factors contribute to crash potential, especially for ROR crashes.

The situation is compounded by the relatively low level of funding available to county engineers, and the scarcity of traffic and roadway data. Accident data is also less complete than for state routes, especially location data. It appears necessary to overcome these challenges before an effective crash reduction program could be designed and implemented.

Recommendations:

1. Conduct a pilot study of a representative county to determine the magnitude of the problem, and whether a manual study of the crashes could provide a better understanding of and a clearer solution to county road lane departure crashes. The following work steps are suggested for such a study:

- Determine the number of lane departure crashes as well as their locations;
- Analyze and categorize such crashes;
- Identify high crash locations;
- Meet with the county engineer and his staff to determine whether they can provide surrogate variables or approximations of desired road and traffic data;
- Map the locations of crash data and search for clusters;
- Determine whether potential countermeasures can be identified for the county road system; and
- Determine the cost effectiveness of potential countermeasures.

Funding

Up to $2 million in Federal funding might be available through the SAFETEA-LU "High Risk Rural roads (HRRR) program.

Agencies Involved

One or more county engineers, DPS, ALDOT (several bureaus should be represented, including County Roads, Design, Construction, and Modal Programs/Safety Section), and others should be included on the study team.

3. INTERSTATE MEDIAN CROSSOVER CRASHES – This type of crash is similar to a ROR crash, except that the vehicle departs the travel lane to the left and crosses through the median. Since it involves collisions between vehicles traveling at high speeds in opposite directions, these crashes have high numbers of fatalities and severe injuries.

Since the initial UTCA project was initiated to study off-road crashes, ALDOT has funded in excess of 100 miles of Interstate median barriers in past two years (construction/planned).

It is not easy to identify such crashes from digital data files, because the crash report form does not include a variable for crossover crashes. Crashes must be identified intuitively by looking for patterns or combinations of unique data values. For example, crossover crashes usually involve the front of one vehicle striking the front of another, with one of the vehicles indicated as traveling the "wrong way."

In simplified form, a project could be conducted to determine the magnitude of the problem, and whether it is possible to quickly review data by computer to find sites that were having an abnormally high number of crossover crashes

Recommendations:

1. Continue to examine paper copies of crash reports to determine the number of Interstate crashes in which a vehicle crossed the median and struck a vehicle traveling in the opposite direction;
2. Analyze and categorize such crashes;
3. Identify locations where such crashes were over-represented; and
4. Determine whether the CARE software could be used (periodically) to determine locations to investigate for potential safety treatment.

Funding
ALDOT is the appropriate agency to fund this study.

Agencies Involved
ALDOT (several bureaus, including Design, Maintenance, and Modal Programs/Safety Section) and DPS are the primary agencies to conduct the project.

4. ROR CRASHES ON RURAL TWO-LANE STATE/FEDERAL ROUTES– About 29 percent of ROR fatal crashes occur on federal and state routes. Both road types are under the jurisdiction of ALDOT, and are typically addressed through its HES safety program. As such, they are subject to an automated procedure that identifies sites for safety study. This methodology identifies the most appropriate countermeasures for each site, finds the cost effectiveness of each countermeasure at each site, and prioritizes improvements using the marginal utility procedure. It is an extensive and rigorous procedure that provides the best use possible for the limited amount of safety funding available.

ROR collision sites are rarely identified for treatment through the automated procedure. This is because the most cost effective safety treatments involve multiple collisions at a single site (i.e., a cluster of crashes). In other words, one treatment can address many crashes and produce substantial safety benefits. Because ROR crashes are more likely to be single events at multiple locations, they do not compete well against crash clusters for limited funding.

Recommendations:

1. Determine whether two-lane, state/federal route ROR over-representations can be identified by a computer analysis for a given road section by looking for a “dense distribution” of crashes rather than a cluster at a given site;
2. Determine the most appropriate screening parameters to identify and categorize such dense distributions (i.e., two ROR fatal crashes in a two-mile section, or perhaps four ROR injury + fatal crashes in a three mile section, or …);
3. Determine appropriate countermeasures for dense distributions;
4. Determine whether the CARE software can identify such crashes with sufficient accuracy compared to the paper copy crash reports provided by the DPS; and
5. Determine whether the CARE software could be used (periodically) to determine locations to investigate for potential safety treatment.
6. All steps in these recommendations should be carefully correlated to ALDOT’s roadway inventory file.

Funding
ALDOT is the appropriate agency to fund this study.

Agencies Involved
ALDOT (Design Bureau, Construction Bureau, Maintenance Bureau, and Modal Programs Safety Section) and the DPS are the primary agencies to address this recommendation.

5. TWO-LANE RURAL HEAD-ON CRASHES – About 30 percent of fatal traffic collisions in Alabama involve head on crashes. In rural locations on high-level roads (state and federal routes), these are likely to be high speed, severe crashes. Similar to ROR crashes, they tend to occur in dispersed locations rather than in clusters. This means that they do not compete well for safety funding in ALDOT's automated procedure.

Recommendations:

1. Determine whether the procedure developed to identify two-lane, state/federal route ROR crash over-representations is applicable for two-lane, state/federal route head-on crashes;
2. Determine the most appropriate screening parameters to identify and categorize such dense distributions;
3. Determine appropriate countermeasures for dense distributions;
4. Determine whether the CARE software can identify such crashes with sufficient accuracy compared to the paper copy crash reports provided by the DPS; and
5. Determine whether the CARE software could be used (periodically) to determine locations to investigate for potential safety treatment.

Funding
ALDOT is the appropriate agency to fund this study.

Agencies Involved
ALDOT (several bureaus should participate, including Design, Construction, Maintenance, and Modal Programs/Safety Section) and the DPS are the primary agencies to address this recommendation.

6. CHANGES TO ALDOT POLICIES AND PROCEDURES – ALDOT has incorporated the roadside clear zone concept into its new designs to the extent that funding allows. This will help prevent many future off-road crashes and will minimize the severity of those crashes that do occur. However, there might be other areas of roadway design, construction, maintenance and operation where existing policies could be revised to provide additional crash reduction without adding significant cost or time to projects. An important step in developing policy changes is use of data from ALDOT's roadway inventory files.

Recommendations:

1. Interview appropriate ALDOT managers involved in design, operation, maintenance, rehabilitation and similar activities to identify topics, policies and procedures that might be revised to decrease the possibility of off road crashes;
2. Investigate whether possible policy and procedure improvements are cost effective and within existing budgetary restraints;
3. Determine whether existing policies are based upon applicable national criteria, or whether ALDOT literature and computer programs might be upgraded to more recent versions to diminish off-road crashes;
4. Consider the development of a design manual. The Alabama Longitudinal Barrier Installation Manual developed for ALDOT by Auburn University is a good example and could become one chapter of such a manual.
5. Determine whether any identified improvements might be applied to non-state routes (county roads, etc.).

Funding

ALDOT is the appropriate agency to fund this study.

Agencies Involved

Multiple ALDOT bureaus and the Alabama Division FHWA will be involved in the study.

Implementation Plan

A portion of the implementation of this SHSP element is already underway. ALDOT engaged UTCA to conduct both the SHSP project and the AASHTO "Lead State" project (ROR studies, median cross over studies, two-lane head on studies, policy studies, etc.) in late 2003. So while the SMART group and its work teams were developing the SHSP, another group was already pursuing a plan to address lane departure crashes.

When SMART identified lane departure as one of the five key traffic safety topics, plan preparation was already underway by a parallel study team. The implementation plan for lane departure was prepared, in more detail than the other four key traffic safety topics in this SHSP. ALDOT received the report and began to implement the applicable portions.

CHAPTER 7
SHSP Implementation

The SHSP implementation is being conducted at two levels. At the highest level, the State Safety Coordinating Committee was reactivated by amending the legislation that created it. At the second level, the implementation is being conducted by five large teams of coordinated safety volunteers, under the guidance of key leaders serving as an Executive Committee.

State Safety Coordinating Committee

At the encouragement of the Governor, the 2005 Legislature reactivated the SSCC by amending the Act that created it. The renewed SSCC has already has met several times in 2006. The SSCC is an ideal organization to conduct high level coordination among the agencies that are conducting the implementation process. In addition it is the logical entity to conduct an evaluation of the results of implementation in the five crucial elements, and of the overall SHSP.

Implementation Teams of Volunteers

The SHSP is being implemented in the same manner as it was prepared. Five teams of well organized volunteers are working to develop coordinated action plans for the five elements of the SHSP.

The draft SHSP (initially called the Comprehensive Highway Safety Plan, or CHSP, when this effort started in 2004) was introduced to the overall traffic safety community in November 2005 at the first Traffic Safety Summit, SAFE HOME ALABAMA. Approximately 350 individuals attended to hear Governor Bob Riley and five state agency directors discuss traffic safety in Alabama. Additionally there were presentations by national experts, a high ranking FHWA safety manager, and others. At the conclusion of the Summit, attendees were offered an opportunity to volunteer to serve on implementation teams, and a large number of volunteers responded positively. In June 2006 the second Summit was held, again with very positive results, and again with a good response from volunteers.

In July of 2006, ALDOT again engaged UTCA to lead the implementation effort. A management structure was prepared to guide implementation of the five elements. It utilized an Executive Committee (Excom) composed of representatives of ALDOT, Alabama Division FHWA, the Alabama Department of Economic and Community Affairs (ADECA), the Administrative Office of Courts (AOC) and UTCA. The ALDOT, ADECA and AOC members were directors of traffic safety units or traffic data units within their agencies. In addition, the Chairs of the five teams addressing SHSP elements are members of Excom.

Volunteers from the two Summits were organized into implementation teams for the five elements of the SHSP. Five of the Excom members served as team facilitators and a sixth

Excom member served as the liaison to the SSCC. Prior to the kickoff meeting to begin implementation, the Excom secured a chair and co-chair for each team.

Alabama's SHSP is unique because it does not contain a list of specified action items or countermeasures for implementation. Instead it identifies the top five elements for action base upon traffic safety data. For each element, the plan provides information like background data, traffic safety statistics, suggested treatments or programs, general estimates of cost and time, and agencies appropriate to carry out the safety treatments. The SHSP depends upon the second set of volunteers (recruited at the Safety Summit meetings) to conduct a very thorough analysis of each element, and to develop specific recommendations for implementation of countermeasures, policies or other actions.

The first meeting of the volunteer teams was held on September 15, 2006, in Montgomery, where the individual teams received their charges, and laid out a work plan and three-six month time table leading to a detailed, coordinated implementation for their SHSP element.

Coordination with Other Safety Plans

The SHSP cannot be addressed without considering ongoing safety efforts and other traffic safety plans. Three of these Alabama plans were identified for special coordination efforts: the Office of Highway *Safety Highway Safety Plan* (HSP), the Federal Motor Carrier Safety Administration *Commercial Vehicle Safety Plan* (CVSP) and the *Traffic Safety Information System plan* (TSIS) for traffic-related safety data.

Each of these plans has certain mandated aspects and expectations, many of which are coincident with portions of the SHSP. However, there are other portions of these plans that are mandated by the funding agencies and which might not address the five SHSP elements. To ensure that these five plans were considered and embraced by the SHSP to the extent possible, managers of the agencies preparing and executing the SHSP, CVSP and TSIS were incorporated into the Excom and the five implementation plans. These managers will be leading discussions and negotiations in the development and execution of detailed implementation steps of SHSP.

Appendices E, F and G contain materials abstracted from the HSP, CVSP and TSIS. The full plans are available from the agencies which prepared them.

Future SHSP

As the individual elements are completed, their effectiveness will be evaluated. On a periodic basis, probably biennial, the SHSP will be updated, with crash data being used to identify new elements to add to the plan to replace completed elements. These evaluations and updates may be performed by the SSCC. Or it could be that one or more state agencies will conduct the evaluation and update functions. ALDOT appears to be the appropriate agency for this task.

Appendices

A - Participants in Preparation of Strategic Highway Safety Plan
B - Safety Priorities, Optimization and Evaluation (Getting the Biggest Bang for your Safety Resource Investment)
C - Pertinent Alabama Legislation
D - Elaboration of Risky Driving Characteristics and Recommended Countermeasures
E - Overview of the Highway Safety Plan (HSP)
F – Overview of the Traffic Safety Information System Plan (TSIS)
G - Overview of the Commercial Vehicle Safety Plan (CVSP)

APPENDIX A

Participants in Preparation of Strategic Highway Safety Plan
(Initially called the Comprehensive Highway Safety Plan)

Preparation of the Strategic Highway Safety Plan involved nearly 100 stakeholders representing 31 federal, state and local agencies, safety organizations and individual safety advocates. Much of this time involved meetings, discussions and decisions by teams of safety experts during the plan preparation. The names of many of these participants were identified through meeting rosters, and are presented in Table A-1 on the next page. The table represents only a partial list, since meeting rosters were not prepared for all meetings.

The implementation of the SHSP was conducted using five teams of volunteers. Many of these volunteers had also worked on the plan development, and additional individuals had joined the effort after having attended the Safety Summits. The names, organizations and SHSP team assignments are shown in Table A-2.

The project steering committee expresses its deep gratitude to the individuals who participated in this process, whether included in the table or not. The extensive participation and deep commitment by individuals dedicated to improving traffic safety in Alabama is an example that others must follow to totally implement the plan to reach the goal of reducing Alabama's highway fatality rate by 20 percent.

Table A-1: Individuals participating in the development of the SHSP

Vernon Barnett	Governor's Office	Legislate	William Wallace	ALDOT, Safety	ROR
Mike Carroll	Admin Office of Courts	SMART	Pat Stringer	ALDOT, Safety	SHSP
Jack Doane	Admin Office of Courts	SHSP	Sonya Baker	ALDOT, Safety	Risky
Jan Byrne	ABC Board	Risky	Ginger Johnson	ALFA Insurance	Risky
John D. Harrison	ADECA, Director	Exec	Kim Davis	ALFA Insurance	SMART
Rhonda Pines	ADECA, LETS	ROR	A. Buttenshaw	Ala Optometric Assn	Older
Carlos Kimbro	ADECA, Montgomery HSO	Risky	Janie Applegate	Alabama Safe Kids	SHSP
Kris McDowell	ADECA, Montgomery HSO	Legislate	Martin Spellicy	Ala Traffic Safety Center	SMART
Tasha Washington	ADECA, W AL HSO	Legislate	Freddie Ford	Ala Traffic Safety Center	ROR
Tom Barclay	ADECA, Mobile HSO	Risky	Gene Vonderaux	Ala Trucking Association	Risky
Maxie Thomas	ADECA, West Ala HSO	Legislate	Cathi Russell	Ala Trucking Association	Legislate
J'Varra McCall	ADECA, LETS	Older	Brian Bowman	Auburn University	SHSP
Michael Bassett	Ala Dept Education	SHSP	Bob Vecellio	Auburn University	ROR
Joe Lightsey	Ala Dept Education	SMART	John Moore	BellSouth	Risky
Earl Langley	ADPH, EMS	EMS	Suzanne Respess	Children's Hospital	Legislate
Melissa Khan	ADPH, Injury Prevention	EMS	Bubba Bowden	City Montgomery DOT	Older
Lynn Williams	ADPH, Injury Prevention	Legislate	Woody Johnson	City Montgomery DOT	SMART
Jim Lewandowski	ADPH, EMS	EMS	David Griffin	City Tuscaloosa DOT	SMART
John Campbell	ADPH, Trauma Task Force	EMS	Dan Thompson	City Tuscaloosa Police	SMART
Col. W.M. Coppage	Ala DPS, Commander	Exec	Richie Beyer	Elmore Co., Co. Engineer	ROR
Major C. Andrews	Ala DPS, Administration	Legislate	Melissa Hoercher	Eye Clinic of Prattville	Older
Major P. Manning	Ala DPS, Highway Patrol	CHSP	Joe Wilkerson	FHWA, Alabama Division	Exec.
Capt H. Kearley	Ala DPS, Motor Carrier	SHSP	Linda Guin	FHWA, Alabama Division	Steer
Capt Danny Hall	Ala DPS, Highway Patrol	EMS	Kay Batey	FHWA, Alabama Division	SMART
Lt Chris Williams	Ala DPS, Public Info	Risky	Lewis Harden	FHWA, Alabama Division	SMART
Capt. Hugh McCall	Ala DPS, Public Info	Risky	Jeff Dogan	FHWA, Alabama Division	Restrict
Lt Terry Chapman	Ala DPS, Driver License	Older	Karen Brooks	Fed Motor Carrier Safety	SMART
Trooper D. Frazier	Ala DPS, Public Info	Risky	Judy VanLuchene	Fed Motor Carrier Safety	SHSP
Tina Hartley	Ala Dept Senior Services	Older	Dale Lenoir	Ala Institute of Trans Engrs	Legislate
Joe McInnes	ALDOT, Director	Exec	Bobby Murphy	Montgomery Co, HR	Older
Ronnie Poiroux	ALDOT, Division Engineer	SHSP	Lt Leigh Persky	Montg'ry Co, Sheriffs Office	ROR
Frank Courson	ALDOT, County Roads	ROR	Peggy Batey	MADD - Alabama	Risky
Steve Walker	ALDOT, Design	ROR	Denise Hornbuckle	MPO/HSO, Birmingham	SHSP
Ron Newsome	ALDOT, Maintenance	ROR	Bill Kootsikas	NHTSA, Atlanta	SMART
Tim Taylor	ALDOT, Maintenance	Older	Nancy Hudson	Operation Lifesaver	SMART
George Ray	ALDOT, Trans Planning	SHSP	Jackie Hammock	State Safety Coord Comm.	Legislate
Norman Lumpkin	ALDOT, Public Relations	ROR	Jack Chancey	SE Ala Medical Center	EMS
Linda Crockett	ALDOT, Public Relations	CHSP	David Brown	University of Alabama	Steering
Wes Elrod	ALDOT, Safety	Steering	Brett Wood	University of Alabama	ROR
Waymon Benifield	ALDOT, Safety	Steering	Kerri Keith	University of Alabama	Risky
Bill Luckerson	ALDOT, Safety	Older	Dan Turner	University of Alabama	Steering
LaShaundra Clay	ALDOT, Safety	ROR	A. Curtis-Hartsfield	Voices for AL Children	Legislate
Ray Pugh	ALDOT, Safety	SHSP	Lenwood Herron	Wentwood Corporation	ROR
Eric Marable	ALDOT, Safety	EMS			

Acronyms And Abbreviations Used In Tables A-1 and A-2

ABC Board = Alabama Beverage Control Board
ADECA = Alabama Dept of Economics & Community Affairs
ADPH = Alabama Dept of Public Health
ALDOT = Alabama Dept of Transportation
DPS = Alabama Department of Public Safety
DOT = Department of Transportation
Exec = Executive Team
EMS = Emergency Medical Services Team
FHWA = Federal Highway Administration
HR = Human Resources
HSO = Highway Safety Office
Legislate or Leg = Legislative Team
LETS = Law Enforcement/Traffic Safety
MPO = Metropolitan Planning Organization
MADD = Mothers Against Drunk Driving
NHTSA = National Highway Traffic Safety Administration
Resp. Vendor = Responsible Vendor/Alcohol Awareness Division
Older = Older Driver Team
Risky = Risky Driving Team
ROR = Run Off Road Crash Team
SMART = Safety Management, Action and Resources Task Force
Steering = Steering Team
SHSP = Strategic Highway Safety Plan Team

Table A-2: Individuals participating in implementation of the SHSP

Joan Carter	AARP, Ala State Director	Older	Scott Erwin	City of Huntsville, Safety Dir.	Risky
Ray Fitzgerald	AARP, Ala Driver Safety	Older	Richard Kramer	City of Huntsville, Traffic Engr	Older
Terry Henderson	ADECA	Steer, Risky	Carlos Kimbrough	City of Montgomery, Hwy Safety	EMS
Mike James	ADECA, Child Pass. Safety	Legislate	Bradley Pemberton	City of Montgomery, Police Dept	Legislate
Mike Carroll	Administrative Office of Courts	Steer, Leg	Stuart Manson	City of Montgomery, Traffic Engr	Older
Dennis Blair	ADPH, EMS Dir	EMS	Robert Smith	City of Montgomery, Trans Plan	Risky
Melissa Kahn	ADPH, Injury Prevention	EMS	Sam Noble	Clark Co., Co. Engineer	ROR
Russell Crowley	ADPH, Acting Dir EMS & Trauma	EMS	Benjamin Sanders	Crenshaw Co., County Engr	EMS
Dr. John Campbell	ADPH, Medical EMS Director	EMS	Derek Brewer	Dale Co., County Engineer	ROR
Jim McClendon	AL Legislature, Rep, District 50	Legislate	Mark McAdams	Earth Tech, Inc.	ROR
Michael Bassett	Ala Dept of Education	Risky	Richie Beyer	Elmore Co., Co. Engineer	ROR
Aaron Wren	Ala Dept of Education	EMS	Linda Guin	FHWA, Alabama Division	Steer, Older
Lt. Danny Hall	Ala DPS	Risky	Judy Van Luchene	FMSCA, Ala Administrator	Legislate
Kevin Claunch	Ala DPS	ROR	George Eischens	Fountain City Eyecare	Older
Tim McGlothlin	Ala DPS	ROR	Mark Poole	Houston County, Co. Engineer	ROR
Maj Roscoe Howell	Ala DPS, Drivers License	Older	Denise Hornbuckle	Jeff State, Hwy Traffic Safety	Risky
Harry Kearley	Ala DPS, Motor Carrier Safety	ROR	Marie Crew	Jeff State, Hwy Safety Program	Risky
John Perkins	Ala SADD, State Coord.	Older, Risky	Nadia Shalaby	Jeff State, Safety Educator	Risky
Gene Vonderau	Ala Trucking Assn	Risky	Scott Parker	KBR, Design Manager	ROR
Wallace McAdory	ALDOT, 5th Div., Maint. Ops	ROR	Tom Barclay	Mobile Co., Hwy Traffic Safety	Risky
Deborah Leo	ALDOT, 9th Div, Asst Traf Engr	ROR	Tim Omick	Montgomery Area Transit Sys	Older
Wayne Curry	ALDOT, 9th Division Traffic Engr	ROR	William W. Moss	Moss Enterprises, Inc.	Legislate
Don Arkle	ALDOT, Asst Chief Engineer	ROR	Eddie Russell	N Ala Highway Safety Office	Risky
Bill Sherlock	ALDOT, Modal Programs	EMS	Vernon Dolberry	NE Ala Traffic Safety Office	Older
Wes Elrod	ALDOT, Modal Programs	Steer, EMS	Lora Weaver	NE Ala Traffic Safety Office	Risky
Waymon Benifield	ALDOT, Modal Programs	Steer, Leg	Glen Cummings	NHTSA, Ctr - Rural Veh Trauma	EMS
Sonya Baker	ALDOT, Modal Programs		Brandon Hughes	Office of Prosecution Services	Leg, Risky
Linda Crockett	ALDOT, Public Affairs	Risky	Dr. Dawn Wilczek	Optometrist	Older
Norman Lumpkin	ALDOT, Public Affairs	ROR	Mike Hare	Quick Kurb, Inc	ROR
Tim Taylor	ALDOT, Traffic Engr	Older	Julie Farmer	Safe Kids, Children's Health Sys	Risky
Paul D. Ray	ALDOT, Trans Planner	Older	Julie Lenoir	Skipper Consulting, Inc.	ROR
Ray D. Pugh	ALDOT, Trans Planner	Risky	Richard Caudle	Skipper Consulting, Inc	Leg
Larry McGhee	City of B'ham Police Dept.	EMS	Anthony Crear	Sumter Co., County Engineer	ROR
Derrick Richardson	City of B'ham Regional Council	Legislate	Shannon Stephens	UAB, Depart Emer Medicine	EMS
Geraldine Curtis	Choctaw Co. EMS	EMS	Katherine Terry	UAB, Injury Control Resh Ctr	Risky
Brian Brandenberg	City of Alabaster, Police Dept	ROR	Kate Leonard	UAH, Civil & Enviro Engr Dept	Older
Bettye M. King	City of B'ham, Municipal Court	Legislate	Richard Gonzales	Univ S Ala, College of Medicine	EMS
James Summers	City of B'ham, Police Dept	Older	Dave Brown	University of Ala, CARE	Steer, Risky
Scott Heath	City of Dothan, Police Dept	Legislate	Dan Turner	University of Ala, CRDL	Steer, ROR
Tim Ward	City of Dothan, Police Traf Safety	Legislate	Nancy Rhodes	University of Ala, ISSR	Risky
Anthony Nelms	City of Dothan, Police Traf Safety	Risky	Kristin N. Bailey	VOICES, Ala Kids Count	Legislate
Rodney Long	City of Hoover, City Engineer	ROR	Robert W. Lee	Vulcan Inc.	Older

APPENDIX B

Safety Priorities, Optimization and Evaluation

(*Getting the Biggest Bang for your Safety Resource Investment*)

With the possible exception of legislation, all countermeasures recommended in this plan require the allocation of limited resources. The ultimate authority for making these decisions rests with the agency head to which these resources have been allocated. In reality, usually individuals on the staff of the agency head will determine the best way for these resources to be allocated according to agency and funding program constraints. Typical constraints include:

- Total funds allocated, plus some of the constraints listed below that apply to the types of funds received (all funds cannot be used for all purposes even within a given agency);
- Personnel limitation constraints, usually dependent on the state personnel budget for that agency, but at times augmented with federal funds; and
- The specific traffic safety activities allowed by individual funding categories.

While all of the respective decision-makers in the various agencies will have to work together to reach an optimal and unified approach to traffic safety, it is recognized that each agency head maintains ultimate authority and responsibility to allocate the resources entrusted to him or her in a way that produces the maximum benefit for the roadway users of the State of Alabama. This balancing of allocations to a variety of countermeasures will be *optimal* if the allocated funds produce the maximum possible benefit (lives saved and suffering reduced).

Optimization and Prioritization

This section presents a plan for each of these decision makers (or their respective staffs) to use in prioritizing allocations of resources to specific countermeasure projects and activities. In this regard, the first and most important element is the recognition that three factors are necessary for an optimal allocation of resources:

- An estimate of the total maximum gain that can be achieved in the type of crashes that can be affected by the countermeasure, in terms of crash frequency by severity;
- The impact that the countermeasure will have on this total maximum potential gain; and
- The cost of the countermeasure.

It is imperative to recognize that every countermeasure implementation has a downside, namely that the funds are earmarked for specific programs expended cannot be used for any other countermeasure. So knowledge of the three factors above does not guarantee optimization. However, ignorance of them will most certainly assure that the allocation will be deficient. The goal then becomes to fit all competing countermeasures a budget that maximizes the total benefit produced. Before going any further, these principles will be illustrated with simple examples.

Location improvement example A location had 20 crashes per year over the past three years, and an average of two per year involved cars hitting a particular tree. The maximum potential gain for removing the tree is two crashes per year, assuming that the removal of the tree will not expose vehicles to another hazard. Other countermeasures might have additional beneficial

effects. For example, the addition of a guardrail might reduce severity although it will not reduce crash frequency.

Alcohol countermeasure example The number of alcohol crashes in the area that might be affected by a check stop averages about 100 crashes per year (of typical alcohol crash severity). It is estimated that the check stop can affect as many as 10% of these crashes.

In both of these cases the cost of the countermeasure is fairly easy to compute – this is usually provided to decision-makers as part of the funding proposal. Of the two other factors, the maximum potential impact is generally fairly easy to obtain from the Alabama CARE system. The most difficult factor, which of necessity must be estimated, is the impact. This might be estimated as either a reduction in frequency (independently of severity), or a reduction in severity (independently of frequency), or both. Consider the following general procedure for obtaining data on the required three factors for every countermeasure that is under consideration:

1. Carefully determine for each alternative countermeasure the crash type, location, age group, time to be applied, and any other factor that might limit its application.
2. Use CARE to create a filter and then determine the frequency and severity of all crashes that would qualify according to the restricting characteristics determined in Step 1. Obtain both the frequency and the severity of these crashes.
3. Estimate the percentage reduction due to the countermeasure. All severity classifications might not be affected in the same way (e.g., the total number of crashes might not change, but the number of injury crashes may decrease and the number of property-damage-only crashes might increase). The soon-to-be published national Highway Safety Manual will contain excellent advice on how to perform this calculation.
4. Calculate a benefit in terms of "equivalent injury crashes." First, convert the percentage reduction into crashes reduced by the countermeasure, by applying the estimated percentage reduction to the maximum potential crashes that can be reduced for each severity classification. Then convert the results to equivalent injury crashes by applying a common formula, for example:
    - 1 property-damage-only crash = 0.20 injury crashes
    - 1 injury crash = 1 injury crash
    - 1 fatal crash = 5 injury crashes

    Any consistent set of weighting factors can be applied, but recognize that past crash severities are being used to predict future crash severities. So the question that these weighting factors should answer is "to what extent does a property-damage-only (or fatal) crash predict a future injury crash?
5. Project this equivalent injury crash reduction over the effective life of the countermeasure (e.g., a roadway improvement might be effective for 15 years, while a check stop might only be effective for a few weeks after its implementation).
6. Estimate the cost/benefit of the countermeasure.

This should be done for every possible countermeasure under consideration, including various levels of any given countermeasure, if it is feasible to implement them at various funding levels.

This will produce a measure of cost and a measure of benefit for each alternative countermeasure.

Optimization must consider all possible alternatives, since they are all competing against each other for funding. The simplest way to do this is to set up a table like that shown in Table B-1:

Table B-1: Example optimization of alternatives

Alternative Countermeasure	Cost	Benefit	Cost/Benefit
1.	$150,000	100	$1,500
2.	$300,000	150	$2,000
3.	$200,000	80	$2,500
Continue with list of alternatives	Etc.	Etc.	Etc.

The countermeasure descriptions have been omitted to remove implications with regard to real countermeasures. The alternatives are arranged in order of increasing cost/benefit. The units for cost/benefit are the cost in dollars to prevent one "equivalent injury" crash. Generally, optimization can be obtained by implementing countermeasures in the order of the lowest remaining cost/benefit until the budget (or other resources) is expended. Exceptions to this rule are possible when several lower cost projects further down the list can displace a larger cost project to increase the total benefit. Clearly the combination of alternative countermeasures that both fit within the budget and return the maximum total benefit is optimal. And correspondingly, the ordered list of countermeasures presents a priority ordering for implementation.

While the data might not always be available to perform the analyses detailed above, it is critical for decision-makers to understand the basic concepts of optimization if they are going to make the best decisions while allocating the resources under their control. Once published, the national Highway Safety Manual will provide detailed guidance for such studies.

Tactical Optimization

The process described above is called strategic optimization. The analysis was conducted at the general project level, and little consideration was given at that point to the details of implementation. Once a decision is made to include a particular project in the allocation, additional steps should be taken to assure that the project is implemented in the best possible ways. Information can be generated from CARE to support the following types of tactical decisions:

- To whom should the project be directed? Information can be extracted from CARE on age, gender, race, vehicle age and geographic demographics to identify the best target situations or groups.
- What specifically should the project consist of? This is typically developed in fairly specific terms before it is approved for implementation. However, a CARE IMPACT analysis of all of crash variables, ordered by most significant first, will assist in answering many of the questions regarding the details of implementation.

- Where? Answer this question using information from CARE for county, city, and (perhaps for some countermeasures) roadway classifications, urban/rural locations, intersections/segments, and (in the most detailed case) specific locations for the crash type of concern.
- When? Use information from CARE on time of day, day of the week (and cross-tabulate these variables), and other variables such as lightning conditions to help answer this question.
- How and why did the crashes occur? These questions give further insight to support countermeasure development. They can best be obtained by a CARE IMPACT analysis over all variables, with further drilldowns into subsets using the automated filter generator from cross-tabulations.

In summary, as many decisions as possible should be based upon information derived from crash data. Fortunately for safety officials in Alabama, this capability is at the disposal of decision-makers via CARE.

Evaluation

Evaluation by its nature must take place after the countermeasure project is implemented. However, no effective evaluation can take place unless the groundwork is laid for it during the planning for the project. Administrative evaluations can be conducted to assure that the project was implemented at least to the specifications given in the proposal. Effectiveness evaluations can be performed to determine the impact that the countermeasure had on the crash history for the specific types of crashes that are being treated. These evaluations are greatly facilitated by the pre-project analyses that lead up to strategic and tactical optimization (as presented above). Effectively, by repeating these analyses after the project is completed, it is possible to determine if the goals of the project were met. Also, the evaluation can assess strengths and weaknesses of this particular project as a way to conduct more effective future projects.

Preparation for evaluation is important, because typically one to three years of crash data must be accumulated, after project implementation, before an evaluation study can be conducted.

APPENDIX C
Pertinent Alabama Legislation

§ 32-3: STATE SAFETY COORDINATING COMMITTEE

§ 32-4: COORDINATOR OF HIGHWAY AND TRAFFIC SAFETY

STATE SAFETY COORDINATING COMMITTEE

Section 32-3-1

Establishment; composition; terms of members.

There is hereby established a committee to be designated the State Safety Coordinating Committee which shall be composed of the Governor as chairman thereof, the Director of Public Safety, the Director of the State Department of Transportation, two members of the Senate appointed by the President of the Senate, two members of the House appointed by the Speaker, the Attorney General, the Administrator of the state Alcoholic Beverage Control Board, the State Toxicologist and the Chief Justice of the Alabama Supreme Court and a person appointed by the Governor for a term of four years from the state at large. The same per diem allowance and travel expenses paid state employees will be paid to the Governor's appointee. Thereafter, he shall serve four-year terms. The ex officio members shall serve until the expiration of the terms for which they have been elected. The appointive members shall serve for the terms for which they have been appointed.

(Acts 1965, 1st Ex. Sess., No. 92, p. 107, & sect 1; Acts 1982, 2nd Ex. Sess., No. 82-708, p. 166.)

Section 32-3-2

Time and purpose of meetings.

The State Safety Coordinating Committee shall meet regularly upon call of the Governor for the purpose of exploring every facet of the complex problem of traffic safety; to identify major highway and traffic problems; to formulate concrete plans of action to meet those needs; to establish a schedule of priorities for action; and to coordinate the separate programs adopted by traffic officials in all executive branches of state government, as well as those of county and municipal governments, and those of civic, commercial, industrial, labor, fraternal, religious, educational and national organizations in a major effort to promote all aspects of public safety.

(Acts 1965, 1st Ex. Sess., No. 92, p. 107, § 2.)

Section 32-3-3

Problems to be specifically studied.

The State Safety Coordinating Committee shall study specifically the problems of interstate and intrastate highway safety; the feasibility and advisability of the adoption of interstate highway safety compacts; the adoption of uniform laws and ordinances, uniform signs, signals and markings; the means of obtaining more uniform enforcement of traffic laws, the use of motor vehicle safety equipment; and the problem of engineering safety control in roads and highways.

(Acts 1965, 1st Ex. Sess., No. 92, p. 107, § 3.)

Section 32-3-4

Recommendations of committee.

The State Safety Coordinating Committee shall also from time to time make recommendations to the Legislature for the enactment of laws designed to promote improvement in existing programs of highway safety and for the adoption of additional programs or measures as may be considered necessary and advisable to accomplish the objects of the committee.

(Acts 1965, 1st Ex. Sess., No. 92, p. 107, § 4.)

Section 32-3-5

Administrative expenses.

The State Safety Coordinating Committee is hereby authorized to expend for payment of administrative expenses heretofore or hereafter incurred in its program any funds appropriated to it by Section 32-5-313
(Acts 1965, 1st Ex. Sess., No. 92, p. 107, § 5.)

Section 32-3-6

Allocation of funds — Highway and traffic safety programs.

The State Safety Coordinating Committee is hereby authorized to allocate any funds appropriated to it to the office of the coordinator of highway and traffic safety for expense of highway and traffic safety programs and for participation to secure benefits available under the National Highway Safety Act of 1966, and all subsequent amendments thereto, and similar federal programs of highway and traffic safety.
(Acts 1971, No. 957, p. 1716, § 1.)

Section 32-3-7

Allocation of funds — Department of Education or any educational institution for pre-licensing driver education and training program.

The State Safety Coordinating Committee is hereby authorized to allocate any funds appropriated to it to the Department of Education or to any educational institution in Alabama for the sole purpose of instituting and conducting a program of pre-licensing driver education and training. All funds so allocated shall be set up in a special fund in the State Treasury known as the "Driver Education and Training Fund" which shall be used solely for the purpose of carrying out the provisions of this section.
(Acts 1973, No. 1137, p. 1921; Acts 1977, No. 501, p. 657.)

COORDINATOR OF HIGHWAY AND TRAFFIC SAFETY

Section 32-4-1

Short title.

This chapter shall be known as, and may be cited as, the "Highway and Traffic Safety Coordination Act of 1967."
(Acts 1967, No. 270, p. 775, §1.)

Section 32-4-2

Declaration of policy; authority of Governor.

It is the public policy of this state in every way possible to reduce the number of traffic accidents, deaths, injuries and property damage through the formulation of comprehensive highway and traffic safety programs. The Governor, as the chief executive and highest elected official of this state, is hereby invested with the power and authority to act as the chief administrator in the formulation of such programs on highway and traffic safety.
(Acts 1967, No. 270, p. 775, § 2.)

Section 32-4-3

Coordinator of Highway and Traffic Safety — Office created; appointment; term of office; duties.

There is hereby created within the executive department of the state government, and immediately under the supervision of the Governor, the office of Coordinator of Highway and Traffic Safety. The coordinator shall be appointed by the Governor, and shall serve at the pleasure of the Governor. The coordinator shall advise with and assist the Governor in the formulation, coordination and supervision of comprehensive state and local highway and traffic safety programs to reduce traffic accidents, deaths, injuries and property damage within this state. The coordinator, acting under the direction and supervision of the Governor, shall also advise the various departments and agencies of state government concerned with highway and traffic safety programs. He shall coordinate and review, cooperatively, the programs developed by the various local political subdivisions, for the purpose of assisting them in the preparation of their highway traffic safety programs to insure that they meet the criteria established for such programs by the appropriate state and federal authorities.
(Acts 1967, No. 270, p. 775, § 3.)

Section 32-4-4

Coordinator of Highway and Traffic Safety — Quarters; staff; supplies.

The Governor is authorized to provide and designate for the use of the coordinator such space as shall be necessary to quarter the coordinator and his staff. The coordinator is authorized to employ and secure the necessary staff, supplies and materials to carry out the provisions of this chapter, subject to the approval of the Governor, under the provisions of the Merit System.
(Acts 1967, No. 270, p. 775, § 4.)

Section 32-4-5

Participation in benefits of National Highway Safety Act of 1966; standards and programs of political subdivisions.

The Governor is hereby authorized and granted the power to contract and to exercise any other powers which may be necessary in order to insure that all departments of state government and local political subdivisions participate to the fullest extent possible in the benefits available under the "National Highway Safety Act of 1966" and all subsequent amendments thereto and similar federal programs of highway and traffic safety. The Governor is hereby authorized to formulate standards for highway and traffic safety programs for political subdivisions to assure that they meet criteria of the national highway safety bureau, or its successor, and shall institute a reporting system for the local political subdivisions to report the status of their programs to the state.

(Acts 1967, No. 270, p. 775, § 5.)

Section 32-4-6

Cooperation with and participation in programs of federal and other agencies.

The Governor, acting for and in behalf of the State of Alabama, is authorized to cooperate with, and participate in, the programs of all federal, state, local, public and private agencies and organizations in order to effectuate the purposes of this chapter.

(Acts 1967, No. 270, p. 775, § 6.)

Section 32-4-7

Powers of local governing bodies.

The governing authorities of the various counties and municipalities are empowered to contract with the state, federal and other local, public and private agencies and organizations and exercise other necessary powers to participate to the fullest extent possible in the highway and traffic safety programs of this state, the provisions of the "National Highway Safety Act of 1966" and all subsequent amendments thereto and similar federal programs of highway and traffic safety.

(Acts 1967, No. 270, p. 775, §7.)

APPENDIX D
Elaboration on Risky Driving Characteristics and Recommended Countermeasures

ALCOHOL/DRUGS ACTION ITEMS

No other single causal entity can be tied to as many fatalities as the use of alcohol/drugs while driving. Approximately 40% of fatalities are caused by alcohol/drugs. Planned action items follow.

- (Community Traffic Safety Program (CTSP) Coordinator) Establish mechanisms that consider the entire systems affect of alcohol countermeasures, and the downsides that each may present to the total system. For example, increased enforcement coupled with mandatory jail sentences may so bog down the prison systems as to make judges reluctant to convict. This function could be served by the Governor's Task Force against Drinking and Driving.
- (CTSP Coordinator) Activate the Governor's Task Force against Drinking and Driving, and integrate it into the efforts of SMART.
- (ADECA) Develop and implement a statewide alcohol Public Information & Education campaign.
- (ADECA) Coordinate and facilitate a statewide DUI workshop.
- (ADECA) Implement publicity efforts by utilizing key events and activities like the Governor's Safety and Health Conference planning committee, and Operation Lifesaver.
- (ADECA; CTSPs) Develop local alcohol safety plans and councils to formulate problem-solving strategies and to transfer alcohol crash countermeasure technology.
- (ADECA; CTSPs, DPS, Local Police) Apply police traffic services to the problem of alcohol and drugs – this is covered in more detail below under "Police Traffic Services."
- (Alabama Department of Forensic Sciences) Provide uniform training in the Standardized Field Sobriety Test Battery (SFSTB), Breath Alcohol Screening Devices (BASD) to adhere to changes in Alabama's Traffic Laws (Act 96-324), which requires consistent calibration.
- (Alabama Alcoholic Beverage Control Board) Expand the dispenser awareness program into a mandatory training course.
- (Community Services of West Alabama) Establish teen alcohol outreach and peer counseling designed to reach underage youth to deter alcohol use, and to encourage youth who have participated to refrain form further use.

OCCUPANT PROTECTION ACTION ITEMS

Alabama passed a primary safety belt law in June 1999 with an effective date of enforcement of December 10, 1999. As a result, in 2001 and 2002 Alabama's safety belt rate was 79 percent, the highest safety belt usage rate ever recorded in state history. However in 2003, Alabama's rate dropped two percentage points to 77 percent, but even then it continued to exceed the national average of 75 percent.

The state's primary law stipulates that each front seat occupant use a correctly fastened safety belt when the vehicle is in motion. As more emphasis is placed on the enforcement of the primary law, it is anticipated that Alabama's safety belt rate will continue to increase. The following activities are planed in this area:

- (Ongoing, ADECA) Continue the promotional and public education campaigns to reinforce the importance of safety belt usage and serve as a strong reminder of the Alabama Primary Safety Belt Law. Public information and Educational (PI&E) programs will serve three purposes: (1) educate the motoring public on the devastating problem of motor vehicle crashes, (2) demonstrate the effectiveness of safety belt use, and (3) inform motorists of the enforcement of the state's safety belt and child restraint laws. Recognize that PI&E is not effective without strong enforcement.
- Increase police emphasis on restraint enforcement (this will be covered further in the "Police Traffic Services" section.
- (Ongoing, ADECA) Coordinate the activities of the nine regional highway safety coordinators, the Alabama Department of Public Health, the Alabama Department of Public Safety, local law enforcement agencies, governmental agencies and other organizations to promote the Click It or Ticket safety belt campaign during major holidays.
- (ADECA) Expand the Click It or Ticket campaign efforts to be an ongoing, year-long program.
- (Ongoing, ADECA) Conduct area briefings, establish partnerships, employ the media, conduct training, and perform rigorous law enforcement of the state's occupant protection laws. Specifically:
    - Conduct Special Traffic Enforcement Programs (also known as Blitz programs) in nine Community Traffic Safety Program regions and in jurisdictions near 12 Department of Public Safety posts, as well as conduct a statewide Department of Public Safety STEP Program.
    - Implement an Incentive/Recognition Program for law enforcement officers who participate in the Blitz program.
    - Provide training in the areas of child passenger safety and occupant protection
    - Secure the services of a public affairs firm to implement a public information campaign.
- (Ongoing, ADECA) Provide educational programs and technical assistance (brochures, advertising campaign, and other informational materials) throughout the state.
- (ADECA, DPS) Develop special programs to concentrate on low safety belt and child restraint usage groups, e.g., teens, minorities, and those in lower socioeconomic classes.
- (Ongoing, Alabama Department of Public Health) Perform activities to increase restraint use, including "Click It or Ticket" and other public information/education programs.
- (Ongoing, ADECA Section 405) Conduct standardized Child Protection System (CPS) training as well as CPS checks and clinics, and increase the size of the trained personnel pool qualified to conduct CPS clinics and training throughout the state.
- (Ongoing, ADECA) Provide a comprehensive educational program designed to heighten community awareness, provide CPS information, train and certify CPS technicians and establish car seat checking stations along corridor 80/82.

POLICE TRAFFIC SERVICES ACTION ITEMS

Police Traffic Services countermeasures include all traffic enforcement efforts as well as the various publicity efforts that are facilitated by State and local police departments. They specifically include alcohol/drug and restraint enforcement and PI&E. However, they will also include all other aspects of enforcement, most violations of which involve risky behavior. As identified in the statewide problem identification, speeding and exceeding safe speed are over-represented where there is recorded alcohol involvement. Both speed and alcohol are high injury and fatal crash causative factors. Most severe crashes involving these factors occur from about sundown to sunrise and are over represented on weekends. Countermeasures under consideration follow.

- (Ongoing, ADECA Section 157, DPS and Local Police agencies) Enforce Alabama's Primary Safety Belt Law by means of Selective Traffic Enforcement Programs (STEPs), which are implemented in conjunction with educational campaigns (PI&E).
- (ALDOT, DPS and FMSCA) Purchases video equipment to support police STEP efforts.
- (ADECA, ACJIC) To increase officer productivity, purchase laptop computers and obtain field Internet connectivity to implement the e-citation pilot programs, and promote the use of the Law Enforcement Tactical System (LETS) at check-stops (according to the "Red Level" model).
- (Ongoing, ADECA) Provide funding for overtime for STEP and check-stop activities through the Community Traffic Safety Programs (CTSPs). All STEPs support the NHTSA-sponsored holiday enforcement blitzes such as Memorial Day and Labor Day.
- (Ongoing, ADECA, DPS, and other local law enforcement agencies) Implement a special overtime effort to conduct a statewide rural STEP project aimed at identified segments of roadway with high crashes, including D.U.I. enforcement, safety belt and child seat enforcement as well as strict enforcement of posted maximum speed limits.
- (Ongoing, ADECA, DPS, and other local law enforcement agencies) Continue the statewide public information campaign aimed at seatbelt use, driving under the influence, and speed enforcement, including public service announcements for both radio and television and various handout materials.

YOUTH-TARGETED ACTION ITEMS

By youth, we refer to two age groups: 16-20 year old drivers for non-alcohol related risk taking, and 19-23 year old drivers in alcohol related risk taking. Figure D-1 demonstrates the reason that young drivers in these age groups should be targeted for countermeasure actions.

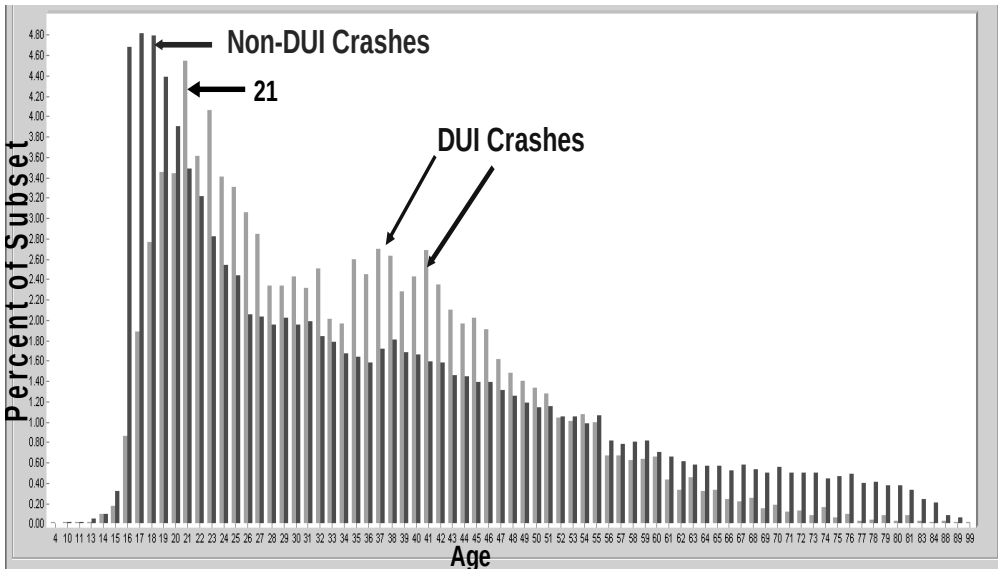

Figure D-1: Age differential in Alabama DUI crashes

It is clear that the 16-19 year olds are under-represented in DUI crashes in comparison to their overall crash records. However, the under-representation after age 18 is more attributable to their excessive crashes in general than to the lack of alcohol involvement. The linear increase in the direction of the 21-year old driver is quite interesting, indicating as they get closer and closer to the peer-age of "legalized drinking," they are much more apt to be involved in DUI crashes. The proportion for 17 year olds is about twice that for 16 year olds, and it continues to increase by almost this amount for ages 18 and 19, and levels out at 20. The huge over-representation of 16-20 year old drivers in general is the product of a combination of risk taking (mostly separate from the use of alcohol), and inexperience. It is impossible to distinguish these two causes, and it can be reasoned that inexperience is one major cause of risk-taking, although clearly not the only one.

The alcohol problem does not become pronounced until age 19, and it becomes dramatically over-represented at 21. This continues throughout the 20s and seems to diminish somewhat in the early 30s. What about the large over-representations in the late 30s and early 40s? These problems are caused largely by what are referenced in the traffic safety community as "problem drinkers." While these will not be the subject of this component of the plan, our hope is that by establishing habits of behavior in the early driving years, these will continue throughout life, thus ultimately impacting the older subset as well.

A preliminary comparison of alcohol crashes of the 19-23 causal driver age group with their counterparts who were 24 years of age and older produced the following differences (CY 1998-2002 Alabama data – generally ordered by significance):

- Time of crashes are later, as discussed above, and they are more likely to occur on weekends,
- Causal vehicle typically contains multiple occupants, leading to the expected over-representation in multiple-injury crashes,
- The cities of Auburn, Tuscaloosa and others containing college campuses are dramatically over-represented,

- Younger drivers are typically the driver of the second vehicle when a second vehicle is involved (second vehicles are involved in less than 43% of cases),
- The crash is more apt to be a single-vehicle, run-off the roadway crash than a crash with another vehicle,
- The causal driver is more likely to be driving at higher rates of speed,
- The driver's license of the causal driver is less likely to be revoked, reflecting that this is more apt to be a first offense or incident,
- The causal vehicle is more likely to be disabled, indicating greater severity,
- The causal driver is much more likely to be in the lower BAC categories, i.e., all categories below 0.199%,
- The crash is more likely to occur on a curve and/or a downgrade, or on a segment immediately following a sharp curve,
- Males are over-represented, accounting for 85% of crashes in the 19-23 age classification as opposed to about 80% in the older age classification.

Other significant variables also indicated a greater lack of judgment on the part of these drivers, e.g., the over-representation of their crashes in fog.

As discussed above, risky behavior and inexperience go hand in hand for the 16-20 age group, and they are not mutually exclusive. Planned SHSP activities will focus primarily on risky behavior because experience cannot be manufactured or controlled practically other than through countermeasures that have long been in place. On the other hand, risk-taking behavior can be modified, and therefore it shows the best promise for the reduction in injury caused by young drivers.

The age distribution in Figure D-1 demonstrates quite clearly from a pure frequency point of view that the ages 16-20 are very highly over-represented for crashes in general and non-alcohol-related crashes in particular. This age group is also significantly over-represented in its share of injury and fatal crashes, i.e., they are causing more than their share of injuries and deaths on a per crash basis. One major cause for the shape of this chart's distributions is the amount of driving being done within each age group. For example, the low proportions at the chart's upper end are due to the lack of driving by individuals in the older age groups, coupled with the relatively few persons in each of these age groups. However, there is no way that it can be reasoned that the high proportions of crashes in the 16-20 age group is due to their excessive miles driven, since their mileage cannot begin to compare to the professional drivers and parents in the center of the distribution. If this chart were transformed into crashes per million vehicle miles driven, the disparity in the 16-20 age group would become even more pronounced.

Table D-1 presents contributing circumstances for 16-20 year old causal drivers as compared with their 35-64 year old counterparts. The 35-64 age grouping was chosen for comparison purposes to exclude the risky driving aspects that might still be present in the 20's as well as the effects of aging in the 65 and older group. (Excluded from Table D-1 are all primary contributing circumstances that had less than 35 instances over the study period (1998-2002.)

Those primary contributing circumstances that are considered to be related in any way to risky driving behavior are shown in **bold.** Some of them are arguably closely related to inexperience,

and these interactions were discussed previously. This reports errs on the side of including all driving violations for which there seemed to be control on the part of the driver (i.e., which could have been prevented by adequate risk avoidance). It is interesting that some of these categories are significantly over-represented in the 35-64 age group.

Table D-1: Age comparison of primary contributing circumstances for injury/fatal crashes

Primary Contributing Circumstances	Age 16-20 Frequency	Age 16-20 Percent	Age 35-64 Frequency	Age 35-64 Percent	Over Representation
Over Speed Limit	3076	8.602	1408	2.633	3.267*
Driver Not In Control	6182	17.287	6989	13.070	1.323*
Improper Driving/Environ	1732	4.843	2073	3.877	1.249*
Avoid Object/Person/Vehicle	1947	5.444	2560	4.787	1.137*
Vehicle Left Road	939	2.626	1127	2.108	1.246*
Misjudge Stop Dist	3149	8.806	4501	8.417	1.046
Improper Passing	362	1.012	401	0.750	1.35*
Vision Obstruction	259	0.724	294	0.550	1.317*
Wrong Side Of Road	749	2.094	1031	1.928	1.086
Following Too Close	2153	6.021	3235	6.050	0.995
Defective Equipment	587	1.641	950	1.777	0.924
Improper Turn, U-Turn	292	0.817	547	1.023	0.798*
Pedestrian Violation	179	0.501	483	0.903	0.554*
Other	515	1.440	1020	1.907	0.755*
Fail To Yield Row	6342	17.734	9809	18.343	0.967
Improper Lane Change/Use	344	0.962	845	1.580	0.609*
Unknown	409	1.144	944	1.765	0.648*
Driver Condition	1153	3.224	2277	4.258	0.757*
Fail To Heed Sign/Signal	2337	6.535	4056	7.585	0.862*
Unseen Object	1699	4.751	3417	6.390	0.744*
Dui	1171	3.275	4783	8.945	0.366*
Risky Behavior Percentage		77.384		67.429	

The proportion of these crashes for the age 16-20 group is 77.384%, while for the 35-64 age group is it about 10% less. This is quite significant for this sample size. Even more important are the categories at the top of the list which are most over-represented for the younger drivers. The asterisk (*) on the "Over Representation" column indicates that the difference between the proportions is statistically significant (at least the 99% level). The proportion of crashes in which the reported primary contributing circumstance was speeding was over three times as much for the 16-20 age group as it was for the 35-64 age group.

This and most of the other over-represented categories of contributing circumstances are particularly important in explaining the reason that younger drivers generally account for a higher severity of crash than their older counterparts. While inexperience may account for the increased frequency of many of these crashes, there is little doubt that risk acceptance accounts for the relatively high severities noted above. This is an important aspect of reducing fatalities and the worst injuries caused by young drivers.

To further investigate this finding, the 16-20 aged causal drivers were compared with all drivers of age 24 and greater (the 21-23 age group was omitted since they were also expected to show risk-taking tendencies). Alcohol crashes were excluded from both sides of this comparison to keep it from masking other risk-taking behaviors. The following observations further established the pattern noticed above (CY1998-2002 Alabama data, generally ordered by significance):

- Time: before and after school were very highly over-represented, followed by late night and early morning hours correlated heavily toward weekends,
- Multiple occupants in the vehicle, and correspondingly, multiple injuries were over-represented,
- A greater than expected proportion of disabled and towed vehicles, indicating more severe crashes, reflected in more injury and fatal crashes,,
- Greater proportion of driving on county two-lane roadways, which tend to be more hazardous than four-lane and state roadways,
- More than expected driving in open country, residential, and school zones,
- Single vehicle off-the-roadway crashes are over-represented as opposed to two-vehicle crashes (this is an indication of unforced errors on the part of the causal driver),
- Restraint use is under-represented,
- More crashes than expected in rainy weather.

In summary, these results indicated over-representations in most attributes that might indicate the inclination toward risky driving behavior.

Planned action items include the following:

- (ADECA; Department of Education) Develop and implement an "early education" program starting in grade schools and providing reinforcement over a 10-15 year period. Its main goal will be to counter the drinking portrayed in the media as the "fun and adult" thing to do. This should seek for an optimal mix between portraying the graphical injury/death consequences of risky behavior as opposed to the social and license sanction consequences.
- (ADECA; Department of Education) Develop a second component, aimed at parents, for the program in the first bullet of this list.
- (ADECA) Establish a mechanism to promote alcohol free events for colleges.
- (ADECA) Promote education on traffic safety and alcohol use at college orientation or through some type of freshman class; consider using voluntary celebrities/sports figures (alumni) to speak on lifestyle choices. This needs to be refreshed periodically throughout the academic career.
- (ABC; ADECA) Work with universities to develop and incorporate messages on their web sites or through e-mail. Universities could allow all of the userids of their students to be contacted. Pop-up messages could appear on their web sites with responsible drinking messages.

Appendix E
Overview of the Highway Safety Office HSP
(Excerpted from the 2007 HSO Highway Safety Plan)

Alabama Highway Safety Office (HSO) Problem Solution Plans

As part of the NHTSA-required planning process for all state Highway Safety Offices, several strategies for the coming (FY-2007) year were adopted. While these strategies support all of the SHSP countermeasures in some way, most of them address the Risky Driver emphasis area of the SHSP.

The HSO goal was to utilize its funding in the most effective way possible for the reduction of fatal crashes. Three crash types rose to the top in areas that are within the HSO purview. These areas were speed, alcohol, and those associated with lack of adequate restraint use. The HSO initiated the Speed Hazards, Alcohol and Restraints Project (SHARP) to galvanize their Community Traffic Safety Program (CTSP) Coordinators for action on these areas. This Appendix will outline how these strategies will be approached during the 2007 fiscal year.

Planning and Administration:

The Law Enforcement/Traffic Safety (LETS) Division of the Alabama Department of Economic and Community Affairs (ADECA) houses the state Highway Safety Office (HSO) charged with implementing the state's highway safety efforts to reduce traffic deaths, injuries and crashes. In order to properly coordinate the efforts from across the state, funds are allotted each year for the state office located in Montgomery, Alabama.

Continue the Nine Community Traffic Safety Program (CTSP) Projects:

In addition to the efforts of the state office in Montgomery, there are nine CTSP Regions across the state. For the coming year, each CTSP is charged with focusing on the SHARP crash location problem areas for their region. In order to coordinate the efforts within the nine regions, a CTSP office is located in each region. Each of these regions is responsible for the problem areas within their region and will supply reports and information back to the central office regarding the efforts taking place within their region.

Support the *CARE* Research & Development Laboratory (CRDL):

CRDL develops and maintains the CARE program which is the search engine used for all traffic crash and safety analysis done in Alabama. CRDL provides the State, and in particular the HSO, with crash and traffic safety data throughout the year. This includes preparing reports and grant applications as required and providing answers for data request from across the state that comes up throughout the year.

Conduct SHARP Special Traffic Enforcement Program (STEP) projects:

There will be nine local STEP projects during the coming year as well as one statewide STEP project. Each of these STEP projects will focus on SHARP crashes and the problem locations that have been identified by CARE analysis across the state. One STEP project will take place in each of the nine CTSP regions, and the statewide STEP project will be

conducted in conjunction with the Alabama Department of Public Safety. By conducting these STEP projects, additional efforts can be focused on the reduction of alcohol related crashes, speed related crashes and those where the driver/passenger was not properly restrained.

Statewide "Click It or Ticket" and "BUIYT" campaign (Paid Media):

As a part of the nationwide initiative to increase safety belt usage, Alabama will participate in the "Click It or Ticket" campaign and have additional emphasis on Buckle Up in Your Truck "BUIYT." This campaign will be scheduled in May and concluding on the Memorial Day Holiday. This has been a highly successful program in the past several years. Alabama will continue to lend its full support to the program in the coming year.

Statewide "Click It or Ticket" and "BUIYT" campaign (High Visibility Enforcement):

In addition the paid media, the HSO will sponsor a High Visibility Enforcement program for a three week period. The enforcement program will consist of members from the Municipal Law Enforcement Agencies, County Sheriffs and State Highway Patrol (Department of Public Safety).

Statewide "Click It or Ticket" and "BUIYT" campaign (Surveys and Analysis):

The HSO will perform pre and post surveys for safety belt programs. The surveys will be coordinated by the Alabama Department of Public Health.

State wide "Click It or Ticket" and "BUIYT" campaign (Paid Media Evaluation, etc):

The University of Alabama will coordinate the DMV surveys (pre and post) with the selected regions within the state. This will include a post-program telephone survey to evaluate the effectiveness of the paid media project.

Child Passenger Safety Training and Coordination

We will have a state Child Passenger Safety coordinator. This will provide training for first technicians, re-certification, and renewals for trained technicians. Fitting stations will be available to the public. The technicians will ensure the child passenger restraints are installed correctly.

Statewide "Drunk Driving Over the Limit, Under Arrest" (Paid Media):

As a part of the nationwide alcohol campaign to reduce alcohol fatalities, Alabama will participate in the "Drunk Driving Over the Limit, Under Arrest" campaign. This campaign will begin in August and conclude on Labor Day.

Statewide "Drunk Driving Over the Limit, Under Arrest" (High Visibility Enforcement):

In addition to the paid media, a High Visibility Enforcement program will be conducted over a two week period. The enforcement program will consist of members from the Municipal Law Enforcement Agencies, County Sheriffs and State Highway Patrol (Department of Public Safety). This campaign will begin in August and conclude on Labor Day.

Statewide "Drunk Driving Over the Limit, Under Arrest" (Paid Media Evaluation):

The University of Alabama will conduct post telephone survey to evaluate the effectiveness of the paid media project.

Traffic Safety Records Improvement Program:

Alabama has an active Traffic Records Coordinating Committee (TRCC). Funding will be provided as per the Section 408 funding application priorities that were determined by the Traffic Safety Information System (TSIS) Strategic Plan.

Motorcycle Safety Training Program:

Plans are to fund the Motorcycle Training Facility in Alabama. The HSO will provide funding through the State's 2010 Motorcycle Safety Incentive funding.

Drivers License Suspension Appeals (DLSA) Program:

Plans are to fund the DLSA program through the Alabama Department of Public Safety. The goal of this program is to assure that that DUI case load is maintained at a manageable level. Previously this program was funded through the Alabama Safety Trust Fund.

Traffic Resource Prosecutor Program:

Beginning in April 2006, this program was initiated and was funded through the Alabama Safety Trust Fund. In FY 2007, plans are to fund this through Section 402. Goals of this program are to provide training requirements to all District Attorneys and their staffs in order to increase the level of readiness and proficiency for the effective prosecution of traffic related cases. Additionally the goals of this program will emphasize:

- Practical DUI Course: Nuts & Bolts
- Handling the Experts
- Legal Updates
- Search & Seizure
- Jury Selection

For additional details of the HSP, the reader is referred to the "reports" page at [http://care.cs.ua.edu].

Appendix F
Traffic Safety Information Systems (TSIS) Component
(Excerpted from the 2007 TSIS Plan)

Problem Statement

History
Alabama's Traffic Safety Information System (TSIS) component includes all of the hardware, software and data needed to generate information that impacts either the frequency or the severity of traffic crashes. Just the definition of these various files and systems is an enormous project, and the problems involved in coordinating the inter-agency activities to support safety decision-making create serious issues in every state. The large number of agencies involved at both the state and local levels include a wide range of activities throughout the traffic safety community, including collection, editing, forwarding, data entry, processing and distribution of information. More recently the impact of case management systems in addition to the crash case have come into the purview of the state's TSIS. Examples of these include the citation, which begins with the issuance of an e-citation and proceeds through the court system to ultimately impact the driver history record. Alabama's Model Impaired Driver Access System (MIDAS) is another example, which intensively tracks alcohol and drug impairment cases from citation through treatment or incarceration.

These issues began to be addressed in Alabama when the National Highway Traffic Safety Administration (NHTSA) awarded Alabama a contract in July 1994 to coordinate and facilitate the creation of a strategic plan for traffic information systems within the state. The first step in this process was the performance of a Traffic Records Assessment (TRA) for the state of Alabama. The major result of the TRA was a set of over 50 recommendations for improving the traffic information system, which became the basis for the state's Strategic Plan. This chapter is a summary of the total TSIS Strategic Plan, which is an update of this first Strategic Plan completed in 1995.

The following are the key events that have driven the planning process over the past decade:

- The Alabama Traffic Information Systems Council (ATISC) was created in 1994 as a prerequisite to obtaining funding from the National Highway Traffic Safety Administration (NHTSA) for the original Strategic Planning project.
- The establishment of a statewide Safety Management System (SMS) was a requirement under the Intermodal Transportation Efficiency Act (ISTEA) of 1991. It was determined that initially ATISC would function as a subcommittee of the state's SMS committee.
- The Alabama Traffic Records and Safety Committee (ATRSC) was formed and had its first meeting on May 3, 2000. It commissioned the update to the Traffic Records Assessment and the Strategic Plan.
- The Alabama Traffic Records Coordinating Committee (ATRCC) was organized with a membership to include policy level representatives of the key safety data systems within the state. Membership includes the data managers, data collectors, and major data users for each of the following system components: Traffic Crash, Roadway Inventory, Citation / Adjudication, EMS / Injury Control, Driver License / Driver History, and Vehicle Registration and had its first meeting on March 28, 2006. The State TRCC prescribed by

Section 408 should have the authority of overseeing the planning and improvement of the key safety data systems within the state. The State TRCC will be expected to approve the strategic plan and implementation plan on an annual basis.

Summary of the TSIS Planning Process

TSIS coordination activities are required in the areas of crash records, emergency response and other medical records, traffic citations, roadway characteristics (construction, maintenance, traffic volumes, etc.), driver history, vehicle history and other demographic data. The coordination of this planning process is a microcosm of the overall ongoing coordination that is required to move the state ahead effectively in applying information technology to its transportation systems. Through a series of meetings, individual efforts and contacts, information was submitted and synthesized into the plan given in this report. It is difficult to summarize such a comprehensive plan in a nutshell. However, the following points summarize the anticipated advances that will be brought about by implementing the actions recommended by these planning activities, and they provide a vision that defines the goals that the implementation of this plan will realize over the next five years:

- The vast majority of police and EMS vehicles (both state and local) will be equipped with laptops or other equipment that will enable the direct entry and retrieval of all relevant records (e.g., including crashes, citation, criminal and medical records).
- Global Positioning System (GPS) technology will enable officers and EMS personnel to automatically enter accurate locations directly into the records, and to optimally map out quickest routes around congestion and to emergencies.
- Three-dimensional bar coding on drivers' licenses will enable accurate and complete driver data to be entered directly into the record.
- Records will be immediately available at the local levels, and software will be provided to enable them to obtain any information to define problem locations and other problems on a continuous basis.
- There will be continued growth in the number of UTC and crash records that will be automatically uploaded to the central database, saving considerable data entry costs and resulting in totally complete and consistent records that are readily available for analysis and case management.
- GIS will enable the roadway characteristics data to be merged with crash data to provide the basis for surfacing those roadway characteristics that have the maximum potential for crash frequency and severity reduction.
- Case number cross references will enable the merging of crash and medical/EMS data to enable optimal deployment of EMS resources and the development of new countermeasures.
- Geographical Information Systems (GIS) portals will enable any and all of this information to be viewed on virtually any computer in use. This increased visualization in map form will enable decision-makers to better understand the true nature of problems, especially those which go beyond solutions at point locations and involve comparative analysis.
- There will be a unified approach to court records such that the violation and criminal histories will be available to all courts throughout the state in a timely manner.

While this scenario might seem futuristic, *all of the technology needed to implement it is currently available*, and much of it is being implemented now in the more progressive local agencies. This plan will enable this technology to be optimally applied in Alabama, while taking advantage of the successful pilots in Alabama and throughout the country.

It is impossible to make such major changes overnight without some major impacts on current operations. Thus, it is essential that these changes be implemented in a logically phased way over the next five years to minimize this downside. This plan is the first step in that direction. It should not be considered a static end in itself. Rather, it is a working document that can and should be updated on a regular basis and especially as progress is made. Some of the plans are already in the process of being implemented.

The following gives a summary of the various projects within this plan according to the six components into which they were organized:

- *Citation and Adjudication Component* includes the extension and roll out of the electronic citation, a proposed DUI defendant intake system, a method for moving digital information directly to the field officers using available cell phones, a statewide Internet based incident reporting network which is the forerunner of the electronic crash, and technological advances to make the traffic citation reporting and processing system paperless.
- *Crash Component* includes the further integration of GIS capabilities into CARE, the generation of an updated Crash Facts Book, and the development of an electronic crash (e-crash) reporting system.
- *Driver Component* calls for more effective driver licensing information (including pictures) to be distribution to the field through the extremely successful Law Enforcement Tactical System (LETS).
- *EMS-Medical Component* includes the implementation of the National Emergency Medical Services Information System (NEMSIS), an ambulance stationing research project, the development of a spinal injury database, and a pilot project to reduce EMS delay time to the scene of crashes with a moving map display.
- The *Roadway Component* involves a wide diversity of projects. This includes a major upgrade in the video monitoring system for the city of Birmingham as part of the states ITS projects. Several projects are ongoing and proposed for converting the state's link-node reference systems to GIS, including a project upgrading of the state and federal routes (mile-posted roadways), and several projects for addressing city streets and county roadways. Two projects are involved with using imagery to view actual roadways, one from the air and the other as a driver would view the roadway. Finally, a system to monitor congestion and incidents on I-65 is included that will have a major impact on safely removing citizens from areas threatened with hurricanes.
- *Vehicle Component* plans include a statewide distribution network that will make vehicle information immediately available to all consumers of these data in the state, including the LETS system.
- An *Integration Component* was added to the other functionally oriented categories to consider those projects that transcend and have the goal of integrating several databases. The Centralized Agency Management System (CAMS) is essential to enabling users to access multiple systems from a single logon source. The CODES implementation project is

necessary to integrate crash, EMS and medical records. Finally, a major effort is proposed to create a unique Safe Home Alabama web portal that will integrate all of the information generated by all agencies and present it in one unified source to the traffic safety community.

Alabama Traffic Records Coordinating Committee (TRCC)

With such a large complex system involving literally hundreds of data sources and thousands of data elements administered by dozens (but involving hundreds of different) agencies, one might ask if coordination is even possible. Time holds the answer to this question – an answer that will depend almost entirely upon the willingness of each of the involved individuals to put aside departmental interests in order to attain the goal of maximizing the safety interests of the state's roadway users. To this end, an interdepartmental committee was established to provide guidance to the planning efforts that are essential to this process. Called the Alabama Traffic Records Coordinating Committee (TRCC), it has the responsibility, initially for the Section 408 effort, but ultimately for the many interdepartmental development efforts that are expected to be forthcoming from this effort.

The following agencies participate in TRCC and share coordination responsibilities for traffic safety and their corresponding information systems:

- Alabama Administrative Office of Courts has coordination responsibilities for all of the courts, which involves violation, adjudication, and criminal (including driver) histories.
- Alabama Department of Public Safety, which is responsible for the collection of violation and crash data, and is the custodian of several databases in this regard;
- Alabama Department of Transportation, which is responsible for building and maintaining safe roadways, and has also recently assumed responsible by federal legislation for a wide variety of countermeasures that are not roadway related;
- Alabama Department of Public Health, which has jurisdiction over all Emergency Medical Services, hospital, and trauma registry data;
- Alabama Department of Revenue, which handles the vehicle registration functions;
- Local police, departments of transportation, hospitals and emergency services;
- National Highway Safety Administration (NHTSA), which has had general responsibility for driver and vehicle countermeasures;
- Federal Highway Administration, which has in the past been mainly focused on roadway engineering countermeasures, but has recently been given flexibility by federal legislation for the distribution of other countermeasure funding as well; and
- Federal Motor Carriers Safety Administration, which has interests in commercial vehicle and driver safety.

The purpose of listing these agencies is to demonstrate the immense problem involved in coordinating the development of an effective statewide traffic safety information system. Coordination is quite difficult even within many of the larger of these state departments. In the past there were very few formal inter-departmental procedures established to organize and operate the data systems. Most of the essential interactions between agencies have been handled with informal relationships between individuals within the departments who had common traffic safety information interests. Little, if any, of this interaction has been dedicated to the design and

development of systems for the future. Also, diminishing resources have tended to put a strain on the informal relationships that have served the state so well in the past.

The TSIS Strategic Plan, which is summarized in the chapter, is a mechanism to attain the coordination that is essential to the goal of optimal traffic safety resource allocation. It is a *working document* that can and should be continuously updated and adapted to system development needs as they come into better focus. Its immediate objective is to document a plan for developing those technological advances that can be implemented within Alabama to best advance the cause of traffic safety. It is hoped that this report will facilitate communication between the various involved agencies so that Alabama can continue to improve its traffic safety information systems to provide the maximum benefit to the roadway users of the state.

The first step in accomplishing the strategic planning mission was to perform a traffic records inventory to synthesize the efforts being made and the problems being encountered within the state. These recommendations form the basis for the *goals* that appear in the Strategic Plan. These goals were then further subdivided into *activities* and sub-activities to form the plan.

The TRCC was provided with background materials, including a copy of the Federal Registry entry for Section 408 monies and other training materials provided by NHTSA (e.g. metrics). At the meeting, members were able to provide their immediate feedback. Inventories were given to the appropriate persons. The sections of the Inventory were obtained from each TRCC agency. Members had the opportunity to complete a project list of applicable projects that will improve the gathering of traffic safety information. All current systems must have one or more benchmarks in terms of Timeliness, Accuracy, Completeness, Uniformity, Integration, and Accessibility (TACUIA) , thus improving the data the NHTSA uses for their planning, problem identification and evaluation activities. The projects must address current system benchmarks set on databases and processes that reference current TACUIA (one or preferably more/all). Justification for all projects will be in terms of improving current benchmarks. These will form overall goals for the TSIS. Once the project list was returned, a project survey was given to each of the designated Project Leaders for a more detailed description. For each project, these descriptions were requested:

- Project title and brief description
- Purpose of project – project goals and high level objectives
- Project lead agency/partners
- Project description – paragraph or two
- Expected impact of project on performance measures
- Project timelines (very high level milestone dates)
- Project resource requirements (budget)
- Project justification (e.g. mandated by legislature, deficiencies identified earlier – inventory, Traffic Records Assessment, CHSP process requires data, etc.)

Once all this information was obtained, a draft of the Traffic Safety Information System (TSIS) Plan was formed, including budget. Projects were prioritized and feedback was obtained from TRCC. The Plan was revised accordingly. The Executive Committee of TRCC reviewed and approved the final draft of the TSIS Plan as seen today.

The Plan

Most of this has gone on within the various departments and agencies themselves, which is expected, since they were allocating their own agency budgets and had to give an accounting of it to their respective executive directors. One goal of this recent planning process was to pull these previous planning efforts together into a consolidated plan, and to assure that all agencies were totally familiar with the efforts in their sister agencies. This goal has been accomplished. The process employed was as follows:

- A meeting was held of the Traffic Records Coordinating Committee (TRCC) involving all known stakeholders within the traffic safety community. The agenda of this meeting was to go over the need for coordination, and to present three planning information needs:
    - The need for updating the inventory requirements,
    - The need for assessing current data in light of the MMUCC and NEMSIS standards, and
    - The need for communicating all ongoing and proposed projects back to the TRCC so that they could be evaluated and integrated into the comprehensive planning process.
- A form was distributed at the meeting that requested certain information to be submitted.
- Ad hoc subcommittees were formed within and among the various agencies to address each of the projects that should be part of the plan.
- A series of meetings were held in which the individual project plans were refined and their interactions with other projects were discussed.
- An initial TSIS Strategic Plan was drafted and submitted to the TRCC Executive Committee as well as all working members. This plan contained a tentative allocation of *all* resources (State, Federal Section 408 and other Federal) regardless of source, and an allocation of the Section 408 resources.
- Comments were solicited on a standard form with regard to the draft plan to be submitted to the TRCC Executive Committee for their consideration as far as the overall allocation of resources was concerned (overall and Section 408).
- A follow-up meeting was held by the TRCC Executive Committee to review, revise and approve the plan based on the input received from the working groups.

The project lists and resource allocations in this section are the result of this process.

Project Lists and Budget Allocations

The overall project list for planning and contact purposes is given in Table F-1. These projects are detailed in Section 5 of the TSIS Strategic Plan and referenced by their section numbers there.

The following may be helpful in explaining the table headings:

- Category – these are the six NHTSA-specified categories augmented by a seventh: Integration, which was added for those projects that fit in more than one of the other categories. The categories are arranged alphabetically with Integration last. The ordering of the categories and the projects is arbitrary and does not indicate priority.

- Project – these are the projects are ordered according to the section number given from Section 5 of the TSIS Strategic Plan, where they are detailed. In most cases projects were ordered as they were received, and no priority is inferred from their ordering. The brief project name in some cases was abbreviated to fit into the table.
- Lead Agency – this is the agency that is either putting the majority of resources into this project, will be expected to do so, or will be expected to administer any contracts with respect to these projects.
- Contact – this is the contact person within the agency.
- Time Frame – as indicated in the footnote, this has different meanings depending on if the project is ongoing or if it is a totally new project. If ongoing, it is the month in which the project actually started. If proposed, it is the anticipated start time for the project.

Table F-1: Planned projects by category, agency and contact

Category	Project	Lead Agency	Contact	Time Frame*
Citation	5.1.1 E-Citation	AOC	Mike Carroll	Oct-04
Citation	5.1.2 DUI Driver Intake and Analysis	AOC	Mike Carroll	Oct-07
Citation	5.1.3 MACE	ACJIC	Becki Goggins	Jun-06
Citation	5.1.4 ULTRA	ACJIC	Becki Goggins	Jun-06
Citation	5.1.5 Virtual Citation	AOC	Mike Carroll	Oct-06
Crash	5.2.1 CARE-GIS	ALDOT	Waymon Benifield	Oct-06
Crash	5.2.2 Crash Fact Book Data Generation	ALDOT	Allen Parrish	Oct-07
Crash	5.2.3 E-Crash	ADPS	Patrick Manning	Oct-06
Driver	5.3.1 LETS	ACJIC	Maury Mitchell	Oct-06
EMS-Medical	5.4.1 NEMSIS	ADPH	Mike Daughtry	Jul-06
EMS-Medical	5.4.2 Ambulance Stationing	USA	Glenn Cummings	Jan-06
EMS-Medical	5.4.3 Spinal Injury Database	USA	Glenn Cummings	Mar-06
EMS-Medical	5.4.4 Moving Map Display	USA	Glenn Cummings	May-06
Roadway	5.5.1 CMAQ-9802(908) Jefferson Co	ALDOT	Stan Biddick	Mar-06
Roadway	5.5.2 Link-Node DGN Conversion	ALDOT	Jimmy Carroll	Sep-05
Roadway	5.5.3 Geo-Referenced County Maps	ALDOT	Mike Rief	Jan-07
Roadway	5.5.4 GIS Layer County Rte Centerlines	ALDOT	Mike Pate	Apr-04
Roadway	5.5.5 Maint.GISLayerALDOTCenterlines	ALDOT	Mike Pate	Apr-01
Roadway	5.5.6 TRANSVIEW	ALDOT	Mike Pate	Apr-01
Roadway	5.5.7 ALTRIS	ALDOT	Jim McElmurry	Sep-04
Roadway	5.5.8 Orthophotography Database	ALDOT	Mike Pate	Jan-05
Roadway	5.5.9 I-65 Wi Traffic Surveillance System	ALDOT	Stacey Glass	Mar-06
Vehicle	5.6.1 Statewide Distribution Network	ADOR	Robert McCain	Jan-07
Integration	5.7.1 CAMS	ACJIC	Becki Goggins	Jun-06
Integration	5.7.2 CODES Implementation	USA	Glenn Cummings	Oct-04
Integration	5.7.3 Safe Home Alabama Portal	AOC	Mike Carroll	Oct-06

* Start time if future project; time actually started if ongoing.

Project Budgets in Overall Plan

The TSIS Strategic Plan considers all information technology projects that have an impact on traffic safety, not just those that will be funded by Section 408 funds. Table F-2 presents all of

these projects along with the funding resources that are anticipated that will either be expended or will be required in order to successfully complete the projects and implement the results.

Table F-2: Planned total funds to be allocated to projects by year (independent of source)

Agency	Project	2007	2008	2009	2010	2011	Total
AOC	5.1.1 E-Citation	80,000	127,000	200,000	600,000	230,000	1,237,000
AOC	5.1.2 DUI Intake	150,000	150,000	30,000	30,000	30,000	390,000
ACJIC	5.1.3 MACE	400,000	400,000	100,000	50,000	50,000	1,000,000
ACJIC	5.1.4 ULTRA	200,000	200,000	200,000	100,000	100,000	800,000
AOC	5.1.5 Virt Citation	175,000	175,000	75,000	50,000	50,000	525,000
ALDOT	5.2.1 CARE-GIS	150,000	50,000	20,000	20,000	20,000	160,000
ALDOT	5.2.2 Crash Facts	65,000	65,000	30,000	20,000	10,0001	190,000
DPS	5.2.3 E-Crash	300,000	400,000	300,000	300,000	300,000	1,600,000
ACJIC	5.3.1 LETS	400,000	150,000	50,000	50,000	50,000	700,000
ADPH	5.4.1 NEMSIS	175,000	175,000	60,000	60,000	60,000	530,000
USA	5.4.2 Amb Station	60,000	60,000	0	0	0	120,000
USA	5.4.3 Spinal Data	150,000	150,000	35,000	35,000	35,000	390,000
USA	5.4.4 Moving Map	60,000	60,000	10,000	10,000	0	140,000
ALDOT	5.5.1 CMAQ	150,000	150,000	30,000	30,000	30,000	390,000
ALDOT	5.5.2 Link-Node	500,000	500,000	500,000	450,000	100,000	2,050,000
ALDOT	5.5.3 Geo-Ref Co	30,000	30,000	30,000	30,000	30,000	150,000
ALDOT	5.5.4 GIS Co Layer	120,000	120,000	120,000	120,000	120,000	600,000
ALDOT	5.5.5 St Center	16,000	16,000	16,000	16,000	16,000	80,000
ALDOT	5.5.6 TRANSVW	100,000	100,000	100,000	100,000	100,000	500,000
ALDOT	5.5.7 ALTRIS	100,000	100,000	100,000	100,000	100,000	500,000
ALDOT	5.5.8 Orthophoto	160,000	160,000	160,000	160,000	160,000	800,000
ALDOT	5.5.9 I-65 Surveillance	30,000	297,500	117,600	50,000	50,000	545,100
ADOR	5.6.1 Data Network	500,000	500,000	500,000	200,000	200,000	1,900,000
ACJIC	5.7.1 CAMS	125,000	125,000	50,000	50,000	50,000	400,000
USA	5.7.2 CODES	85,000	85,000	85,000	85,000	85,000	425,000
AOC	5.7.3 Safe Home AL	350,000	200,000	50,000	50,000	50,000	700,000
	Total	**4,631,000**	**4,545,500**	**2,968,600**	**2,766,000**	**2,011,000**	**16,922,100**

Table F-2 considers three sources of funds and does not distinguish between them:

- State funds – this would be either the funding the state would pay to contractors or to their own staff personnel to develop and implement the projects.
- Federal NHTSA Section 408 funds – these are part of the costs listed; that part is broken out below.
- Other federal funds – many of the projects listed use other federal funds, including FHWA HES, NHTSA Section 402, FMCSA, USDOJ, USDHS and other federal funding sources.

All funding sources might include hardware as well as software if such is required specifically for that project implementation; it is the total cost of the project.

On the bottom line it will be noted that the years 2009-2011 show only about half of the funding that is shown in the first two years. This is due to the planning horizon. In information technology projects it is impossible to plan more than two years ahead with the same degree of accuracy as can be planned with regard to ongoing or currently proposed projects. The funding streams in the out years (2009-2011) are restricted to the projects that are currently underway or proposed in the near future. In some cases the assumption is that a very closely related follow-on project will have a high enough priority to receive the funding stream that is estimated. However, the uncertainty of totally new projects in the out years that might not even be feasible with current technology makes detailed planning for these projects quite problematic.

In summary, the diminishing funding stream on the bottom line is not to imply that there will not be continued, or even increase funding in the area or TSIS in the out years. It is just that these resources cannot be intelligently allocated until there is an assessment of: (1) the current projects as to their success, additional needs, or redirection in the technological approach, and (2) the technology that will exist at this point.

It is obvious that Section 408 funding is a relatively small component of the overall funding of IT projects that relate to traffic safety. However, they are extremely significant if used properly in that they can trigger investments in TSIS that cannot be attained in any other way. In particular, the TRCC saw where there are three needs that can be met by Section 408 funding that could not be met easily with other sources of funding:

- Traffic safety per se projects – these are cross-discipline IT projects whose only goal is to support the general traffic safety information needs of the state, and therefore they do not fall heavy enough within any particular agency's realm of responsibility for them to give it the priority over their other operational needs. An excellent example of such a project is the proposed Safe Home Alabama web portal that will draw on information from about a dozen sources, including the legislature and traffic safety advocate groups.
- Integration promotion – this is partial funding added to a major project within one agency for the sole purpose of adding value to the data or its processing so that other constituents within the traffic safety community can access or use it. This can sometimes be done with very little funding.
- Seed projects – this includes projects for the development of RFP/ITB, or for the rapid prototyping for demonstration and proof of concept so that agencies with access to the necessary resources will be willing to invest the required funding.

The TRCC feels that the three needs given above serve to leverage the relatively small amount of Section 408 funds in order to produce their maximum impact on traffic safety. It is with this primary approach that the various priorities were determined with regard to the allocation of the Section 408 funds to the larger projects.

The major assumption is that the Section 408 allocation to Alabama will be $1 million. It is virtually certain that it will not be this amount, and it is our understanding that this cannot be determined until NHTSA has reviewed all state TSIS plans. This number was used for two

reasons: (1) it is felt that it is the right order of magnitude (in the ballpark) and (2) it is a round number and thus easily scalable. Therefore, the allocations should not be considered as absolute. Rather they reflect the relative allocations that will be made, and these will be scaled up or down once the actual allocation is received. If the allocation is greater than $1 million, the second and third year allocations could be moved up to accelerate most of the projects.

It should be noted that the same planning horizon issues that existed for the total allocations in also exist with regard to the Section 408 allocations. This was given as the explanation for the drop-off in funding allocations, which were not at all meant to infer that IT spending on TSIS will drop off. For the Section 408 allocations a line has been added toward the bottom of the table labeled "FY 2009+ Projects." This line absorbs the reductions in Section 408 funds that will not be allocated to the specific projects that are now on the drawing board. This allows for the fact that by FY 2009 we will be much more intelligent with regard to the allocation of these resources.

Both of the planning horizon issues demonstrate the need for and the TRCC's commitment to making this document a living and working document that will be updated at least bi-annually to take into account not only the progress and needs on current projects, but the changes in technology and new ideas being generated throughout the country to make our traffic safety information systems the best that they can be by allocating funds to them in an optimal way.

Section 408 Funding Justifications

The overall project plans are given in Section 5 of the TSIS Strategic Plan. However, these are given without regard to the source of funding. The rationale for applying Section 408 funds to each of these projects as listed in the table above will be given in the ordering as listed above (not to imply priority). Specific use of these funds to accomplish the three needs listed above will be emphasized.

5.1.1 Electronic Citation. The prototype rollout of the e-citation has been a tremendous success, leading up to major changes in legal requirements for electronic swearing and delivery of the citations that will result in great efficiencies in both law enforcement and the courts. The problem is that the e-citation at this point has only been applied to the DPS Motor Carriers unit. This relatively small allocation will be used to promote the very large and complex project of rolling the e-citation out statewide. The project will consist of software development to automate the rollout process as well as training. The equipment (networked laptops) justified by efficiencies brought to the law enforcement agencies will serve as host machines for the e-crash.

5.1.2 DUI Driver Intake System. The e-citation uses a function called the "Officer's Desktop" to automatically query LETS to determine if the offender has a criminal record, outstanding warrants or protection orders, or is otherwise dangerous to the arresting officer (e.g., has offenses involving firearms). This project will enlarge this capability to touch the MIDAS system and put this final link back to the field so that the officer can determine if the individual has a history of DUI offenses. It will also provide the linkage from the officer to MIDAS to initiate or augment a current case record. DUI accounts for nearly 50% of fatalities in the state of Alabama, and this is seen as an information tool that will be a major deterrent to DUI.

5.1.5 Virtual Citation. The Alabama legislature recently passed legislation allowing for electronic citations to serve as an "alternative approach" to tickets completed using the Alabama Uniform Traffic Citation form. This project involves the development of the technology infrastructure to support virtual tickets. It includes the development of the technology to print the notice to appear, as well as the technology to support electronic swearing. Also, since it is no longer necessary to print the full citation form, this project includes the ability to create citations using PDA/tablet/handheld technologies. This is a major integration of the law enforcement and the courts, ultimately leading to a paperless information flow through the system.

5.2.1 CARE GIS Reporting Capability. CARE is a National leader in converting crash data to information. Recently hooks were included within CARE to enable it to generate GIS maps directly without the user having to know or understand anything about the underlying GIS operations (one button operation). While this provided tremendous capability, it also surfaced the need for spatial and attribute filter dropdowns, the ability to export these filters and the ability to create templates for the various types of printers that might be employed in producing these maps. There are also security and confidentiality issues that need to be resolved as this technology is deployed on web-based systems for engineering, law enforcement and potentially general use.

5.2.2 Crash Facts Book. The software being used to produce the current Alabama Crash Facts Book was written in the 1984 time frame right after the change in the crash reporting form. There are two needs that must be addressed at this time: (1) enabling the generation of this information on a routine basis directly out of CARE, and (2) preparing for the change in the crash reporting form that will accompany the implementation of the e-crash. This project will accomplish both by putting into CARE a system by which a series of steps used to generate information can be incorporated into a script and re-used. This will insure that the results are uniform and consistent from year to year, and that the information is totally up-gradable as new data formats are applied.

5.2.3 Electronic Crash Reporting. This is a major project that has obvious positive ramifications in terms of timeliness, consistency, completeness, uniformity, and efficiency. The e-citation will assure that most law enforcement officers have laptops or other comparable hardware to do e-crash entry over the next five years. The first year of this project is to revitalize the efforts that have been made in the creation of a new MMUCC compatible form, to assure that it is reviewed, and to put in place all of the "get ready" steps that are required to assure success. It is expected that the major efforts will be accomplished in the second year once these steps are performed and full approval and dedication of the involved agencies are attained.

5.3.1 Law Enforcement Tactical System (LETS). From the law enforcement officers' perspective, the LETS project has without question been the most successful law enforcement IT project conducted within Alabama in the past decade. This project will take advantage of this momentum for traffic safety by integrating into LETS provisions by which serial traffic violators can easily be identified either directly by officers with networked laptops or PDAs, or by dispatchers as the officers check in. Electronic citation information will enable officers to know it a driver has been given a recent warning or related citation. LETS has also been quite

successfully used at DUI and safety belt enforcement check stops. Close to $1 million has already been invested into LETS; this allocation will be leveraged to assure that traffic safety applications obtain full use of the system.

5.4.1 National Emergency Medical Services Information System (NEMSIS). This project involves further development (refinement and beta testing) as well and subsequent implementation of new Emergency Medical Service Information System (EMSIS) software. Data presently collected by the Office of EMS and Trauma, EMSIS software, does not contain all the elements needed to meet compliance with the National Emergency Medical Service Information System (NEMSIS) data set. The new software release will be designed to include data points necessary to meet NEMSIS compliance. The software product is expected to be completed prior to the end of year 2006 and implementation should start on, or before, January 1, 2007. It is expected that once this is accomplished, considerable effort will be required to roll this out to the field and assure that all EMS units are using it.

5.5.2 Link-Node DGN Conversion. In order for the state to move from its current link-node system to a coordinate-based system it is essential that the coordinated of all current nodes be known and in a database so that the appropriate conversion can be made. This is because it is infeasible to think in terms of a general statewide conversion to a pure coordinate location system. Many jurisdictions will be slow in acquiring computers and others might not have them for several years. The state cannot wait for this to occur before going to a more accurate and reliable crash location system. The transition to the nodes is expected to occur with the roll-out of the new e-crash form and reporting system. Even the first year that this is made available it is expected that 80% of crashes will still be reported manually. The allocation is a very small part of the total cost, but it will be leveraged to accelerate the process.

5.5.3 Geo-Referenced County Maps. This is further related to the conversion from a link-node crash location reporting system to one based on GIS coordinates. The centerlines for all county roadways must be obtained in order to make the reporting by coordinates effective for the county roadway systems. It is important to note that county roadways are the most over-represented for fatal crashes. All of the rational for the link-node conversion applies to this project, including the small amount being invested to leverage an acceleration of this project.

5.6.1 Statewide Data Network. Accurate and timely vehicle information is essential to law enforcement officers engaged in traffic safety. The relatively small investment will be used to perform the necessary studies and develop an RFP/ITB for the larger data networking project that will reduce the time to receive vehicle registration updates from its current average of 45 days to under 72 hours. The network itself is expected to cost hundreds of thousands of dollars and draw on several potential funding sources.

5.7.2 CODES. This project will perform a linkage of state-wide crash, EMS, or trauma registry for a CODES limited pilot test in Alabama. A comparison of the results between the Alabama state-wide data and the research conducted to date under this Cooperative Agreement in Southwest Alabama (SW) Alabama will be performed to see if factors contributing to rural mortality in SW Alabama parallel those in the state as a whole. This allocation will cover a

small portion of the total cost of the project, but it will enable the CODES project to expand their coverage and become much more effective in the studies that they are performing.

5.7.3 Safe Home Alabama. This is a web portal that will include at least seven participating state agencies and the legislature's newly re-constituted State Safety Coordinating Committee. Its goal is to keep the entire traffic safety community totally aware of the most recent developments in traffic safety both in Alabama and Nationally. Much of the information generated will be directly obtained from the TSIS given in the plan. The rationale behind this web portal is that it is of no use to gather data unless it can be translated into useful information for countermeasure development. Alabama now has no form statewide system for distributing traffic safety information other than the annual Crash Facts book. Funding will be used not only to develop the site but ultimately to operate and expand the site based on stakeholder requests and needs.

TSIS Coordinator. The state has been operating without a formal TSIS coordinator for many years. The TSIS Coordinator will have the following responsibilities: (1) Administer the allocation of the Section 408 funds, including the performance of full effectiveness and administrative evaluations of all activities within the TSIS Strategic plan, whether Section 408-supported or not; (2) Generally promote and be a champion for the integration of data and information systems among all of the involved departments; (3) Survey nationally TSIS innovations and make them known to the respective subject matter experts within Alabama; (4) Update the TSIS Strategic Plan on at least a semi-annual basis; (5) Be the executive secretary and facilitate the activities of the TRCC.

Appendix G
Overview of the Commercial Motor Vehicle Safety Plan

(Excerpted from the 2007 Commercial Motor Vehicle Transportation Safety Plan)

The Alabama Department of Public Safety (DPS) develops an annual plan according to the requirements of the Federal Motor Carrier Safety Administration (FMCSA) guidelines. The following summarizes the major projects in the 2007 plan.

Hazardous Materials Transportation Safety:

Hazardous material shipments account for a significant portion of the traffic on Alabama's highways. The potential for disaster is high should any of these materials be released during a crash. The DPS Motor Carrier Safety Unit (MCSU) will continue to perform roadside hazardous materials inspections on all state/federal roadways, and more specifically, where there is a high concentration of hazardous materials traffic, or where there is a demonstrated need. The primary goal will be to enhance the security of hazardous materials transportation through increased law enforcement scrutiny.

Commercial Motor Vehicle Safety Data Quality:

The average timeliness of inspection data uploads has increased during the 2006 Fiscal Year to an average of 14 days, and the non-match percentages for inspections have also increased to an average of 3.17%. This improvement must be continued if there is to be a significant improvement of the projects that are driven by this data. The objective will be to decrease the number of days between the inspection dates and upload date from 14 to 10 days, and to decrease the percentage of non-matched inspections to 2.5% from 3.17%.

Commercial Motor Vehicle Safety Improvement:

The number of coil steel "falling cargo" crashes has increased in the Birmingham area over the past three years, causing severe damage to the elevated interstate highway system. On numerous occasions the Alabama Department of Transportation (ALDOT) had to close lanes and divert traffic for cleanup and repair to the travel deck of interstate bridges. The main cause of many of these incidents is a failure to comply with the standard "rules for securing metal coils with eyes crosswise on a flatbed vehicle" often coupled with driver speed violations. The objective of this project will be to perform high visibility inspection and enforcement of trucks transporting metal coils in the Birmingham area. Routine and strike force inspections of these trucks have the objective of producing better driver education, and high visibility enforcement will result in a reduction of reasonable and prudent speed violations.

Compliance and Enforcement:

The Compliance Section within the MCSU currently has two Troopers conducting compliance reviews. Their primary responsibility is to perform interstate compliance reviews in cooperation/conjunction with the FMCSA personnel. The goal will be to conduct 90 compliance reviews during FY2007. [The state currently has no means of addressing compliance problems with intrastate motor carriers. Legislation has been

drafted that will allow intrastate compliance reviews, provide rating methodology and impose civil penalties. The passage of this legislation will support the compliance review program, enabling it to have a significant effect on the overall highway safety for the motoring public.] The immediate objective of this project is to ensure that compliance review troopers continue to efficiently use their time in scheduling and completing compliance reviews.

Driver/Vehicle Inspections:

The MCSU will spend an average of three weeks out of each month conducting inspections in routine patrol areas, with the remaining week of each month being devoted to strike force activities on high-crash segments of the roadway system. The goal is to conduct at least 20,000 CMV/Driver inspections during the course of FY 2007. The inspection process will ensure that drivers and vehicles are operating in full compliance with state laws and FMCSA guidelines. The objective is to perform comprehensive inspections in regularly assigned patrol areas, as well as in areas identified as high-crash corridors or in areas in which there is a specially identified need, in an effort to reduce the number/percentages of crashes statewide.

Education and Outreach:

Education and Outreach activities are of paramount importance in a comprehensive, proactive effort to ensure the safe and expeditious flow of traffic on our state's highways. It is imperative to take advantage of the continuous advances in technology and to assure that all enforcement activities are combined with public education in order to obtain their maximum impact. In this regard, the MSCU will continue and strengthen its education and outreach program. This will consist of monthly safety talks with various motor carriers as well as utilizing MCSU printed material to reach all highway users. In addition, the MCSU will continue to conduct strike force details with emphasis on various problem areas, (i.e. load securement, driver fatigue, etc.)

Passenger Transportation Safety:

A single crash involving a passenger-carrying commercial vehicle (motor coach, bus or 9 to 15 passenger van) can result in a large number of injuries and fatalities. The DPS MCSU will continue to maintain a passenger carrier vehicle enforcement/inspection program. Given the DPS on-going personnel shortage, and the absence of any data indicating a specific problem or series of occurrences involving passenger carrier vehicles, this program will be maintained at the same level as given in SAFETYNET for FY 2006.

Commercial Motor Vehicle Traffic Enforcement:

Local Commercial Vehicle Enforcement (CVE) troopers, who have been trained to the Level 2 North American Standard, will work in conjunction with MCSU personnel to aggressively conduct Level 2 and 3 inspections on commercial vehicles. CVE inspection activity will be monitored during routine patrols to motivate increased inspection activity. Inspections will be conducted by CVE troopers in conjunction with other traffic enforcement violation stops; and MCSU inspections will also be conducted through a

random selection process. Advantage will be taken of the CVE knowledge of local areas in need of enforcement.

General Motor Vehicle Traffic Enforcement:

Calendar year 2005 fatal crash statistics show that for fatal crashes involving a CMV and a non-CMV, the CMV is the causal vehicle in only 25% of the crashes. Thus, it is essential to address the non-CMV if we are going to reduce the number of fatal crashes involving CMVs. This specific enforcement action is geared toward either aggressive driving of trucks or passenger vehicles around trucks. The objective will be to increase the number of citations as compared to the same time frame one year prior as well as a measured reduction of crashes in the enforcement areas as compared to previous year's statistic.