



Recommendations of the
Young Adult Driver Task Team
GEORGIA STRATEGIC HIGHWAY SAFETY PLAN
2007-2008



Every Life Counts—Strive for Zero Deaths and Injuries on Georgia Roads

Recommendations of the Young Adult Driver Task Team - Publication Data

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34 Peachtree Street, N.E.
One Park Tower
Suite 800
Atlanta, Georgia 30303
(404) 656-6996
www.gahighwaysafety.org



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Foreword

The Young Adult Driver Task Team (YADTT) dedicates this recommendation report to the families who have lost loved ones on Georgia's highways, especially young adults. The guiding principle and goal of these recommendations has been to focus on the areas of education, enforcement, engineering and emergency medical which can lead to the greatest reduction in young adult fatalities and injuries resulting from automobile crashes in the state. The task team hopes that these recommendations will become a decision-making tool which can be utilized to drive educational emphasis, policy direction and regulations to support that result.

Contributors and Acknowledgements

A full listing of member organizations may be found in Appendix A.

The Team

The collage features the following logos and text:

- Governor's Office of Highway Safety (GOHS) 40th Anniversary 1960-2000
- THE UNIVERSITY OF GEORGIA GTIPI Georgia Traffic Injury Prevention Institute
- GOVERNOR'S OFFICE OF HIGHWAY SAFETY
- NATIONAL SAFETY COUNCIL
- Strategic Highway Safety Plan (centered graphic with categories: engineering, enforcement, education, emergency, medical)
- GDOT Keeping Georgia on the Move
- DDS GEORGIA DEPARTMENT OF DRIVER SERVICES
- DEKALB County School System
- GOVERNOR'S OFFICE OF HIGHWAY SAFETY
- EMORY
- PIONEER RESA Regional Educational Service Agency
- GEORGIA DEPARTMENT OF HUMAN RESOURCES (DHR) Georgians living safe, healthy, and self-reliant lives
- Georgia Tech
- MADD (Mothers Against Drunk Driving) Action | Victim Services | Education
- The University of Georgia
- Kennesaw State UNIVERSITY
- CONYERS

The YADTT members represented GOHS, GDOT, EMS, GTIPI, DHR, various Law Enforcement agencies, Kennesaw State University, Emory University, DDS, Driver Education Schools, National Safety Council, and others.

Young Adult Driver Task Team Members

Dr. Roger Bernier
Senior Advisor For Scientific Strategy and Innovation
Center for Disease Control and Prevention

Ronald Boodhoo, MSc EI
YADTT Editor
Assistant TMC Planning Manager
Georgia Department of Transportation

Sgt. Darryl Dunn
Georgia State Patrol
Georgia Public Safety Training Center

Lt. Cheryl Elliott, MPH
Police Services Division
Emory University

Fred Grant
Operations Analysis Manager
Georgia EMS

Kal Kelliher
Driver Education Coordinator
DeKalb County Schools Driver Education

Lt. Harry McCann, MPA
Conyers Police Department, ACE Unit
Central Region Traffic Enforcement Network (CRTEN)
Coordinator

Brook Nash, MPH, CHES
YADTT Secretary, Editor
Planner
Governor's Office of Highway Safety

Dr. John O'Shea, FAAP
NIAMS Scientific Director
American Academy of Pediatrics

Sarah O'Leary, MPH, MA
Public Health Prevention Specialist
Division of Public Health
Injury Prevention Section

Spencer Moore, MPA
Deputy Director
Governor's Office of Highway Safety

Dr. Carol Pierannunzi
A.L. Burruss Institute for Government
Kennesaw State University

Janice Raiford
Compliance Analyst
Regulatory Compliance Division
Georgia Department of Driver Services

Lt. Chico Scott, Retired
National Safety Council/ Roadwise

Alvin Shultz, MS
YADTT Editor
Epidemiologist
Governor's Office of Highway Safety

Dr. Ruth Shults
Captain, U. S. Public Health Service Injury Center
Center for Disease Control and Prevention

Randall Townley, MS
Safe and Drug Free Consultant
Pioneer RESA

Kelleigh Trepanier, MA
YADTT Editor
Research Associate
A.L. Burruss Institute of Public Service
Kennesaw State University

Andrew Turnage, M.Ed. candidate
YADTT Chair, Executive Editor
Public Information Coordinator
Georgia Traffic Injury Prevention Institute
The University of Georgia

Les Walker
Transportation Planning Engineer
Georgia Department of Transportation

Lt. William "Bill" Watterson
Newton County Sheriff's Office

Robert "Bob" Wilson
YADTT Co-Chair
National Safety Council

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Mission and Overview

Nationally, an average of 119 persons died each day in motor vehicle crashes in 2005—one every 12 minutes (NCSA, 2007). In 2005, Georgia ranked 22nd in percentage of traffic fatalities involving at least one 16-20 year old driver (END, 2007). To address this epidemic in Georgia, Governor Sonny Perdue released the Strategic Highway Safety Plan (SHSP) in October, 2006, which set the goal of 1.0 fatality per 100 million vehicle miles traveled (VMT) by 2010.

The Young Adult Driver Task Team (YADTT) began meeting at least monthly in December, 2006 to conduct an empirical review of known programs, policies and legislation pertaining to Education, Enforcement, Emergency Medical and Engineering, (the “Four E’s”) for the purpose of evaluating their impact on achieving the goal. In furtherance of the 2006 goal, this year’s charge to traffic safety partners in the Four E’s is to further evaluate which actions and countermeasures will be the most effective at decreasing highway fatalities as a part of an Integrated Safety Management Process.

In these Strategic Highway Safety Plan Recommendations, the Young Adult Driver Task Team (YADTT) strives to provide an analysis from leaders in their respective fields, combined with current research (conducted within the last two years), which will yield the greatest number of young adult lives saved. Implementing safety strategy at the adolescent and young adult development stages of life may indeed hold the greatest promise for changing Georgia’s traffic fatality rate. Interventions with young adult drivers, and earlier age groups, create a culture of lifelong driver education and a base of safer drivers that “rolls forward” to positively impact driving in Georgia for years and decades to come.

For 2007, YADTT shares the overall SHSP goal focus of “ZERO deaths and Injuries on Georgia roads.” To stress measurable progress towards that focus, YADTT set a fatality and injury reduction goal of 25% by 2012 (i.e., a minimum of 5% per year). All of the efforts and opportunities reviewed herein are from the perspective of how best to

achieve this goal. YADTT has developed a prioritized list of key recommendations, supported by current data and research, believed to be the most effective at preventing injuries and fatalities for young adults.

Definition of Young Adult Driver and Other Key Terms

Young Adult Driver

For the purposes of this report, “Young Adult Driver” means a licensed driver between the chronological ages of 15 and 24. This Young Adult Driver set is broken into two sub-groups:

- 1) 15-17 year-olds (GDL class)
- 2) 18-24 year-olds

Key Terms

The following terms and acronyms are used frequently throughout this recommendation report:

4E’s

This is an abbreviation for the four focus areas of: Education, Enforcement, Engineering and Emergency Medical

AAA

American Automobile Association

ADTSEA

American Driver and Traffic Safety Education Association

AMA

American Medical Association

AMF

Accident Modification Factor

CDC

Centers for Disease Control and Prevention

CEU

Continuing Education Unit

CRF

Crash Reduction Factor

DDS

Department of Driver Services

DHR

Department of Human Resources

DOT

Department of Transportation

DPH

Division of Public Health

DPS

Department of Public Safety

DUI

Driving Under the Influence of drugs, alcohol or controlled substances

EMS

Emergency Medical Services

FARS

NHTSA’s Fatality Analysis Reporting System

FHWA

Federal Highway Administration

FTA

Federal Transportation Authority

GDL

Graduated Driver Licensing

GDOT

Georgia Department of Transportation

GOHS

Governor’s Office of Highway Safety

GTIPI

Georgia Traffic Injury Prevention Institute

IID
Ignition Interlock Device

IIHS
Insurance Institute for Highway Safety

IPS
Injury Prevention Section

JOSHUA'S LAW
Requires driver education to obtain a driver's license effective January 1, 2007

LOPC
Level of Predictive Certainty

MADD
Mothers Against Destructive Decisions

NHTSA
National Highway Traffic Safety Administration

PSA
Public Service Announcement

SHSP
Strategic Highway Safety Plan

TADRA
Teenage and Adult Driver Responsibility Act, Georgia's GDL law enacted in 1997 (updated 2002).

VMT
Vehicle Miles Traveled

YADTT
Young Adult Driver Task Team

Executive Summary

Task Team Composition

The Georgia Young Adult Driver Task Team (YADTT) is comprised of members representing a broad spectrum of organizations and agencies from both private and public sectors. Sectors represented in the YADTT include Education, Transportation, Public Health, Public Safety, Teen Advocacy, Pediatrics, Healthcare, Alcohol and Substance Abuse Prevention, Law Enforcement, Injury Prevention and Community Organizations. The Georgia Traffic Injury Prevention Institute at The University of Georgia heads the YADTT with funding from the Governor's Office of Highway Safety.

Goal

YADTT shares the overall Strategic Highway Safety Plan goal of “ZERO deaths in Georgia.” To begin progress towards that end, YADTT set a Crash Reduction Goal of reducing fatalities and injuries by 25% by 2012 (i.e., a minimum of 5% per year). All of the critical findings within the YADTT’s recommendations are aimed at achieving this goal.

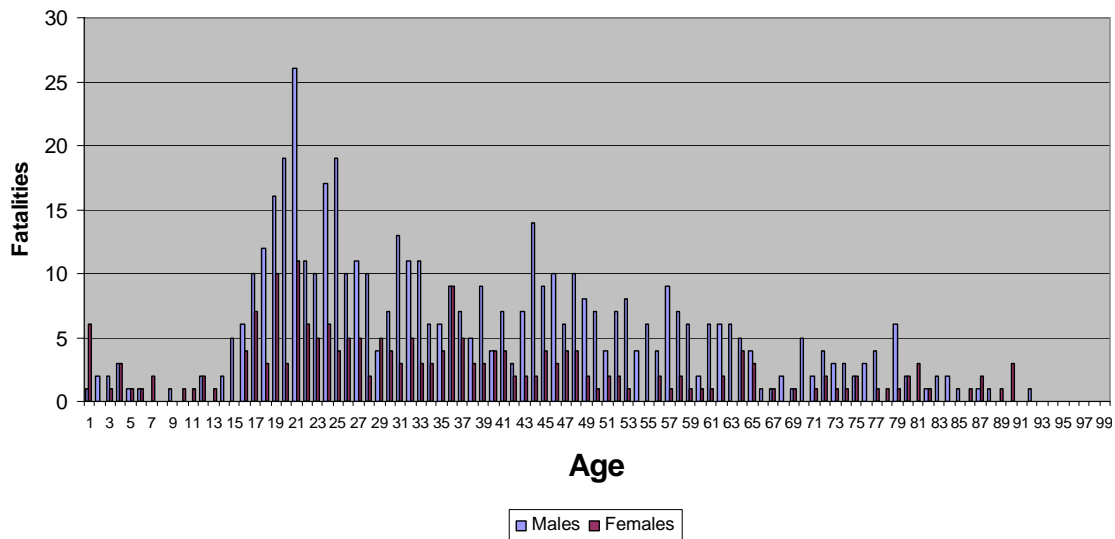
Scope

Young Adult Drivers are one of ten key Strategic Highway Safety Plan (SHSP) emphasis areas designated for Georgia. In December, 2006 the Georgia Young Adult Driver Task Team (YADTT) was established to study credible research and current practices, in Georgia, nationally, and internationally, in order to recommend effective approaches for reducing young adult driver fatalities and injuries resulting from automobile crashes in the state. The Young Adult Driver Task Team’s guiding principle and goal is to recommend preventive, programmatic and intervention foci in the areas of education, enforcement, engineering and emergency medical which can lead to the greatest reduction in young adult fatalities and injuries that result from automobile crashes in Georgia.

Problem Identification

Young drivers have a higher rate of crashes, injuries and fatalities than older drivers. In 2005, 229 young people ages 16 to 20 were killed in motor vehicle crashes in the State of Georgia. Although young people (ages 16-20) account for only 7% of Georgia’s population, they were responsible for 13% of the total crash fatalities for 2005. According to the most recent data from FARS (2005), 64% of the 16-20 year-old passenger vehicle occupants killed or seriously injured were unrestrained. The following chart illustrates that Georgia experiences the highest number of unrestrained occupant fatalities from the late teens through the mid-twenties. This chart also shows that more unrestrained males die in highway crashes than females.

**Unrestrained Occupant Fatalities by Age and Sex
(2005; N = 721)**



15-17 Year-old Drivers

High-risk behavior, peer pressure, inexperience, limited use or no use of occupant safety devices, lack of proper driving information and education are a few of the problems that our youth face while driving on Georgia’s roadways. In an effort to address these issues the Teenage and Adult Driver Responsibility Act (TADRA) was enacted on July 1, 1997 to reduce the number of lives lost in crashes involving young drivers. On January 1, 2002, the TADRA law was strengthened by adding minimum requirements for supervised driving, passenger limitations, and a stricter curfew.

An evaluation of TADRA completed in 2006 by an Emory University study team found that in the 5 ½ years since TADRA was enacted:

- Fatal crash rate of 16-year-old drivers declined by 36.8% and 17-year-old drivers by 19.1%,
- Speed-related crashes of 16-year-old drivers fell by 49%; and
- Alcohol-relates crashes of 16-year-old drivers fell by 62.1%, 30% for 17-year-old drivers and 4.4% for 18-year-old drivers.

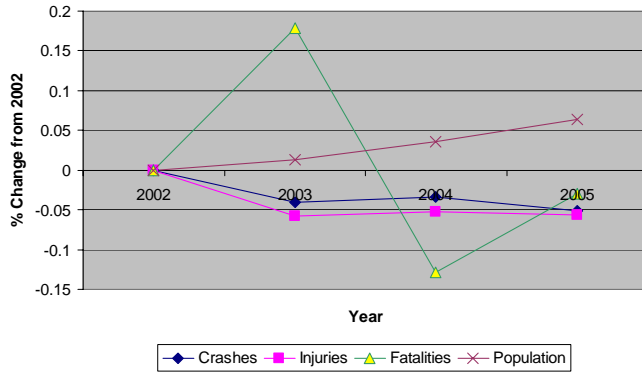
Graduated driver licensing policies serve to delay licensure and then limit exposure to the highest risk conditions after licensure, allowing young drivers to gain experience under less risky driving conditions. A similar strategy of gradual involvement may be needed to guide parents through this process.

Researchers from the National Institute of Child Health and Human Development report that parents do not appear to appreciate just how risky driving is for novice drivers and tend to exert less control over their teenage children driving than might be expected. Additionally, a research study by Allstate Foundation (2007) indicates that although every state has enacted Graduated Driver Licensing laws, 60% of parents don’t know what they are.

Recent research has demonstrated that simple motivational strategies can persuade parents to adopt driving agreements and impose greater restrictions on teen driving. Several studies have shown that greater parent involvement is associated with less teen risky driving behavior.

Finally, the following GOHS table illustrates strides that Georgia has made with drivers aged 15 through 17. While the population of drivers in this category has increased, crashes, injuries and fatalities have all decreased.

Trends in Teen Driver Crashes (15 - 17 yrs.; 2002 - 2005)

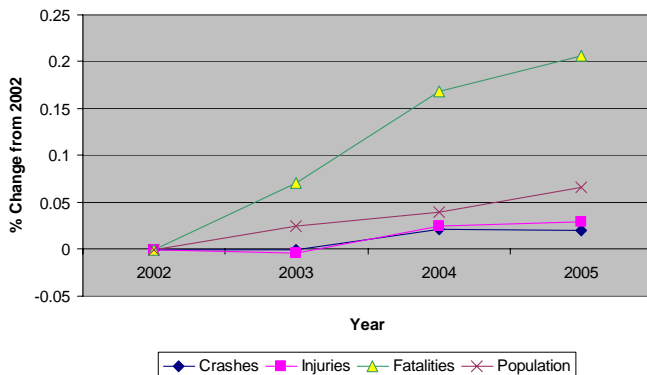


Gains in improved outcomes for drivers aged 15 through 17 may be contrasted with the continual increases in negative outcomes for those aged 18 through 24.

18-24 Year-old Drivers

The number one cause of death in the U.S. for those 18 to 24 years of age results from motor vehicle crashes. The number of crashes and injuries in Georgia also reflects what is occurring among the young adult drivers aged 18 to 24. However, the number of fatalities has increased at a higher rate in recent years compared to the state trends. The figure below depicts the steady increase of crashes and injuries and the substantial increase of fatalities in young adult drivers.

Trends in Young Adult Driver Crashes (18 - 24 yrs.; 2002 - 2005)



There is also a problem with young adult drivers and occupant protection. In 2005, 67 % of the 243 fatalities of occupants aged 18 – 24 were unrestrained.

Critical Findings

The Georgia YADTT identified three critical findings in the following areas: data, safety belt use and alcohol. These critical findings are recommendations by the task team that are necessary for the implementation of other priority recommendations. These are detailed in the full recommendations section following the Executive Summary.

Data

In order to assess and identify the status of young adult driver issues, as well as to determine and establish the efficacy of existing and future efforts, a Crash Reduction Goal should be tied to the national standard of Vehicle Miles Traveled (VMT). A procedural roadblock prevents progress in this area. VMT cannot currently be determined with a high degree of accuracy in Georgia because the driver data (specifically, the number of licensed Class CP and Class D drivers) used for establishing the statistical denominator in VMT is not readily available. Obtaining data is limited both by current process and technology. At present, data is available from DDS only via an “official request” (e.g. by a state-level elected official) or for a technology and service fee to these agencies making a data request.

The impact of inaccessible and limited data has historical significance in Georgia. The lack of supporting data was the primary reason the efficacy of Driver Education nationwide could not be established during the “DeKalb Study” mandated by the U.S. Congress and conducted in Georgia from 1977 – 1981.

The lack of credible data was also noted as a present-day obstacle in the study assessing the impact of TADRA published in April of 2006 by Emory University (Rios, et.al., p. 365-366):

In the past, highway safety researchers used counts of licensed drivers as the denominator for calculating fatal crash rates. Unfortunately, it is no longer possible to obtain consistent state-specific data about licensed drivers in the youngest age groups.

The only national source of information on licensed drivers is the Federal Highway Administration's Highway Statistics Series Table DL-22. In 1989 a Federal Highway Administration committee decided that the enumeration of licensed drivers should not include class P (i.e., instructional permit) holders or drivers with limited-use or restricted licenses. As a result of this rule change, Federal Highway Administration statistics significantly undercount drivers in the youngest age groups, in which issuance of class P and class D restricted licenses is common, especially in states with graduated driver's licensing laws.

Safety Belt Use

In 2005, there were 479 Young Adult Driver fatalities in Georgia; of these, 64% were not properly restrained by a safety belt. The highest magnitude of unrestrained occupant fatalities in Georgia is within the Young Adult Driver age group (from the late teens through the mid-twenties).

Alcohol

Twenty-eight percent (28%) of 15- to 20-year-old drivers who were killed in motor vehicle crashes in 2005 had been drinking (SADD, 2007). Drivers are less likely to use seat belts when they have been drinking. In 2005, 64% of the young drivers of passenger vehicles involved in fatal crashes who had been drinking were unrestrained. Of the young drivers who had been drinking and were killed in crashes, 74% were unrestrained (SADD, 2007).

Roughly 1/3 of all Young Adult traffic fatalities in Georgia involve alcohol use (15-20 year olds). During the last 30 days, 28.5% of high school students nationwide had ridden one or more times in a car or other vehicle driven by someone who had been drinking alcohol. The average age youth begin to drink is 12.8 years.

Priority Recommendations

Data

Georgia needs to establish a plan for access to and sharing of driver data. The first step in this process is for "Periodic Data Sampling" of driver data (Monthly and Annual) to be collected and made available. Next, an "inter-agency agreement" or other memorandum of understanding (MOU) should be drafted as a means for agencies working with young adult driver issues to access and share this anonymous driver data. This should be coupled with the development of a protocol for privacy, storage and use of driver data by those agencies involved. Finally, to establish a baseline for 4E efforts, the licensed driver data from 2000-2005, for ages 15-17 and ages 18-24, is needed.

To study the effectiveness of all young adult driver efforts, at present and in the future, YADTT recommends that "program identity codes" be assigned in the DDS driver license database to programs and efforts specifically targeting young adult drivers. This will enable the statistical monitoring and measurement of existing 4E programmatic and enforcement impact.

Execution of this data effort will position Georgia to be a national leader in documentation, analyses and development those program areas which demonstrate the greatest potential to save lives.

Safety Belt Use

As identified in the Critical Findings, approximately 300 Georgia young adult driver lives could have potentially been saved if they were properly wearing safety belts. No other single issue has the potential to save a greater number of lives than an intense focus on safety belt use. Concurrent with the magnitude of these findings, YADTT recommends a progressive amendment to the current safety belt law to add 4 points to licenses for safety belt violations as well as increasing the fine to \$150, with fines collected going to occupant protection education and enforcement programs. Additionally, YADTT recommends the current safety belt law be amended to require safety belts in pickup trucks.

YADTT also recommends the development and implementation of progressive fines for repeat violators. YADTT supports increased safety belt enforcement by law enforcement state-wide, combined with distribution of public education and information materials at every traffic stop. YADTT also supports pro-active education initiatives that involve law enforcement, EMS, engineering and education partners to deliver information first-hand to young adult drivers and parents at the community level.

Alcohol

YADTT supports the establishment of a Felony DUI charge, Hospital BAC Reporting, Vehicle Impound, Vehicle Sanctions While Suspended, and the Elimination of Youth Exceptions as recommended by MADD. These changes would elevate Georgia's current rating from "B+" to an "A." YADTT also supports the creation of an independent foundation, financed by the alcohol industry, to campaign against, and educate about, the effects of underage drinking. YADTT envisions this partnership as being similar to existing governmental and non-profit partnerships with the tobacco industry to support education and awareness about the use of the drug. YADTT recommends that any increase in alcohol taxes require proceeds be dedicated to prevention and treatment, with particular emphasis on young adults.

- Assure that all designated driver and safe ride programs avoid unintentionally enabling over consumption among those relying on the designated driver.
- Expand partnerships between the courts and Georgia transit agencies so that urban and rural transit agencies provide transportation to those convicted of DUI and prohibited from driving.
- GA already has driver's license penalties (less than full suspension) for attempting to purchase, possess, or consume alcohol under age 18. Driver license penalties may be expanded to include suspension up to age 21 for any alcohol or drug violation.

- There are few enforcement programs that target the underage drinker. Most underage drinking enforcement is conducted by the Department of Revenue. There is no ongoing effort by most law enforcement agencies to target underage DUI violations. Opportunities exist for a statewide initiative in this area.

Additional Recommendations

Following is a brief summary of additional recommendations. Many of these are examined in detail in the Full Recommendations section of this report:

- Engage culture-specific media in efforts
- Require media to air/print minimum hours/numbers of PSAs
- Establish traffic safety in K-12 curriculum
- Increased parental involvement
- A 'model policy/procedures' handbook for all faculty/staff at schools throughout the state as it relates to driver education requirements
- Cell phone prohibition for GDL drivers
- Professional standards for driver education instructors
- Two-tier driver's ed: level one at 15 years of age, begin level two at 17-18 years of age
- Extend passenger restrictions and curfew through GDL
- As an incentive, mandate insurance companies offer discounts for successful completion of driver's education
- Count-down timers for traffic lights
- Bicycle lanes for regular bike routes
- Exceed DOT distance standards for signage on interstates
- Encourage media to engage the public as an educator (education vs. sensationalism of teen traffic incidents)

Young Adult Driver Task Team Full Recommendations

In October 2006, Georgia Governor Sonny Perdue published the Strategic Highway Safety Plan in which Georgia adopted a goal of 1.0 fatality per 100 million vehicle miles traveled by 2010. The outcome of this goal, if achieved, is projected to save 511 lives. In keeping with the Integrated Safety Management Process, the charge from last year's plan to traffic safety partners in Education, Enforcement, Emergency Medical and Engineering, the "Four E's," is to further evaluate which actions and countermeasures will be the most effective to decrease highway fatalities. The Young Adult Driver Task Team (YADTT) strives, in these Strategic Highway Safety Plan Recommendations, to provide an analysis from leaders in their respective fields which will yield the greatest number of young adult lives saved.

The YADTT began meeting at the December SHSP Planning Meeting in Atlanta. YADTT has since met at least monthly to conduct an empirical review of known programs, policies and legislation pertaining to the Four E's for the purpose of evaluating their impact on achieving the goal.

YADTT shares the overall SHSP goal focus of "ZERO deaths and Injuries on Georgia roads." To begin progress towards that end, YADTT set a goal of a 25% reduction in fatalities and injuries by 2012 (i.e., a minimum of 5% per year). After a review from that perspective, YADTT has developed a prioritized list of key recommendations, supported by data, believed to be the most effective at preventing injuries and fatalities for young adults.

Definition of Young Adult Driver

Young Adult Driver

For the purposes of this report, "Young Adult Driver" means a licensed driver between the chronological ages of 15 and 24. This Young Adult Driver set is broken into two sub-groups:

- 1) 15-17 year-olds (GDL class)
- 2) 18-24 year-olds

Task Team Composition

The Georgia Young Adult Driver Task Team (YADTT) is comprised of members representing a broad spectrum of organizations and agencies from both private and public sectors. Sectors represented in the YADTT include Education, Transportation, Public Health, Public Safety, Teen Advocacy, Pediatrics, Healthcare, Alcohol and Substance Abuse Prevention, Law Enforcement, Injury Prevention and Community Organizations. The Georgia Traffic Injury Prevention Institute at The University of Georgia heads the YADTT with funding from the Governor's Office of Highway Safety.

Goal

YADTT shares the overall Strategic Highway Safety Plan goal of "ZERO deaths in Georgia." To begin progress towards that end, YADTT set a Crash Reduction Goal of reducing fatalities and injuries by 25% over the next 5 years (i.e., a minimum of 5% per year). All of the critical findings within the YADTT's recommendations are aimed at achieving this goal.

Scope

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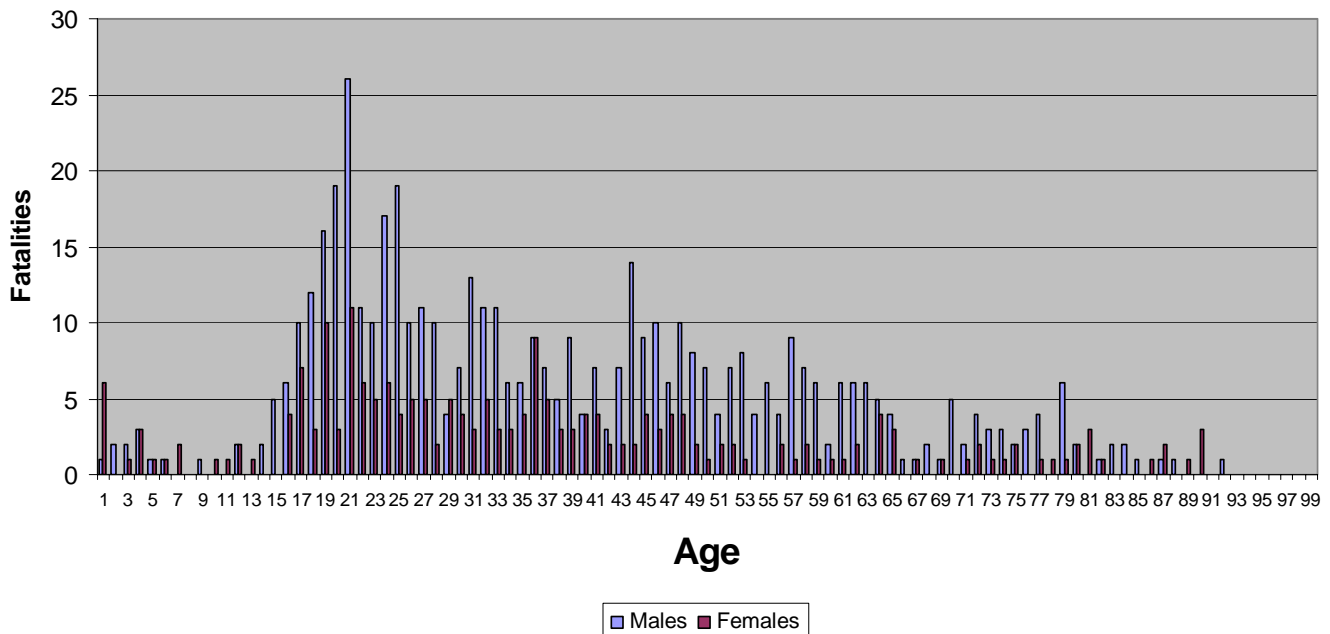
Young Adult Driver Overall Problem Identification

Young drivers have a higher rate of crashes, injuries and fatalities than older drivers. In 2005, 229 young people ages 16 to 20 were killed in motor vehicle crashes in the state of Georgia. Although young people (ages 16-20) account for only 7% of Georgia's population, they were responsible for 13% of the total crash fatalities for 2005.

“64% of the 16-20 year-old passenger vehicle occupants killed or seriously injured were unrestrained”

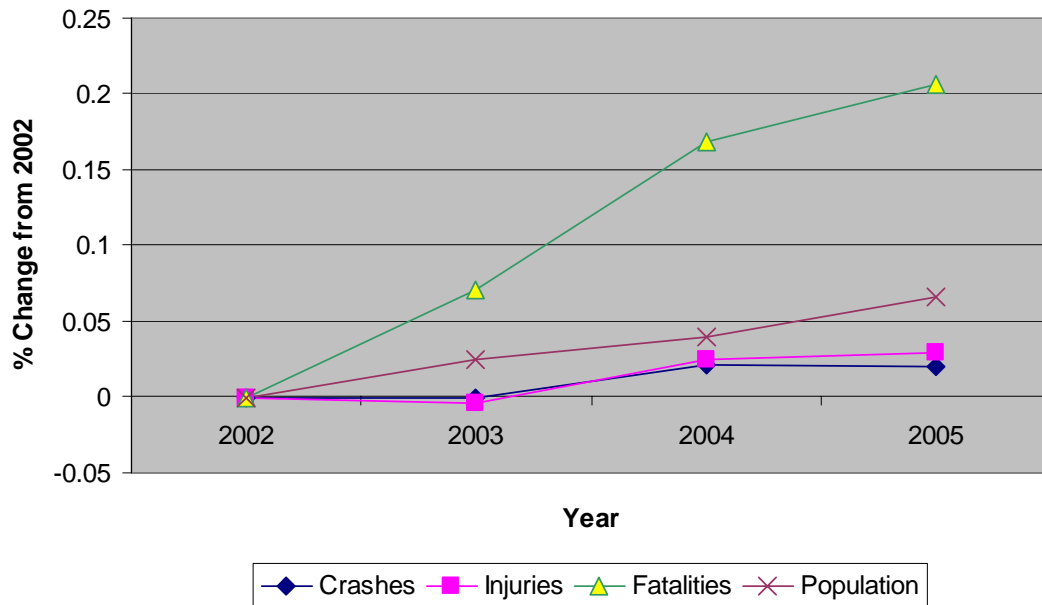
According to the most recent data from FARS (2003), 64% of the 16-20 year-old passenger vehicle occupants killed or seriously injured were unrestrained. The following chart from GOHS illustrates that Georgia experiences the highest number of unrestrained occupant fatalities from the late teens through the mid-twenties. This chart also shows that more unrestrained males die in highway crashes than females.

**Unrestrained Occupant Fatalities by Age and Sex
(2005; N = 721)**



The number one cause of death in the U.S. for those 18 to 24 years of age results from motor vehicle crashes. The number of crashes and injuries in Georgia also reflects what is occurring among the young adult drivers aged 18 to 24. However, the number of fatalities has increased at a higher rate in recent years compared to the state trends. The figure from GOHS below depicts the steady increase of crashes and injuries and the substantial increase of fatalities in young adult drivers.

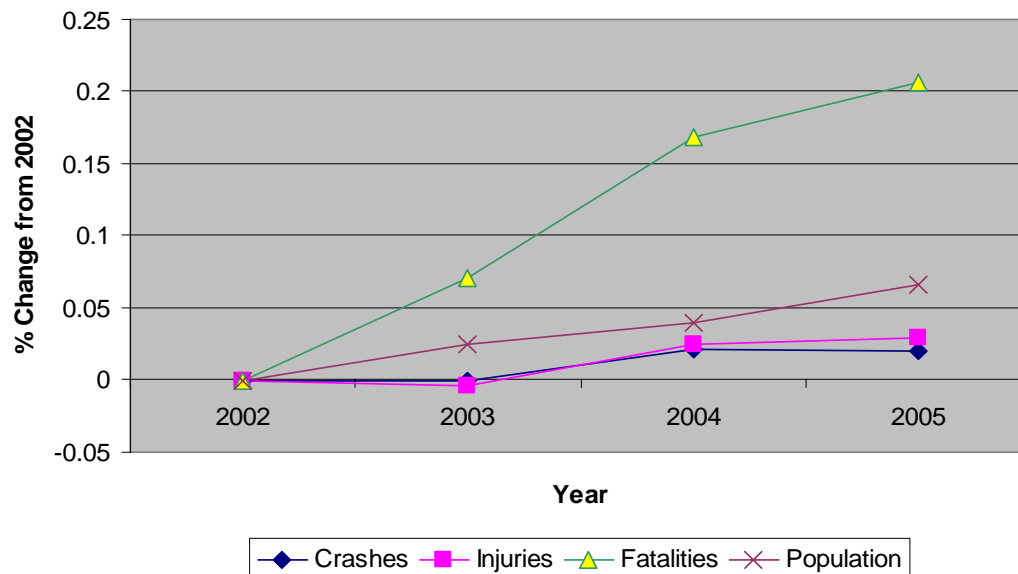
Trends in Young Adult Driver Crashes (18 - 24 yrs.; 2002 - 2005)



“In 2005, 67% of the 243 fatalities of occupants aged 18-24 were unrestrained.”

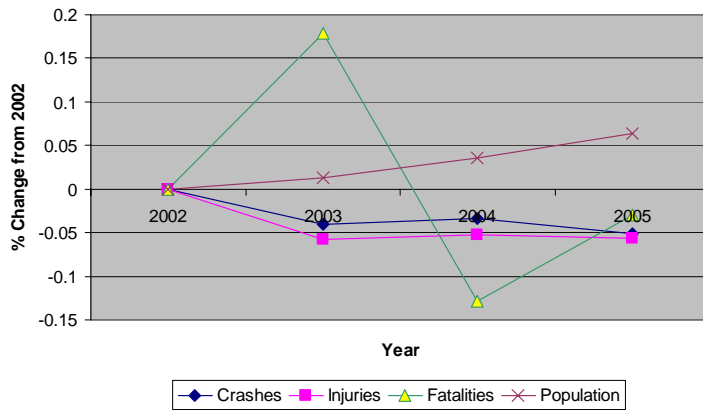
There is also a problem with young adult drivers and occupant protection. In 2005, 67 % of the 243 fatalities of occupants aged 18 – 24 were unrestrained, as indicated in the GOHS chart below.

Trends in Young Adult Driver Crashes (18 - 24 yrs.; 2002 - 2005)

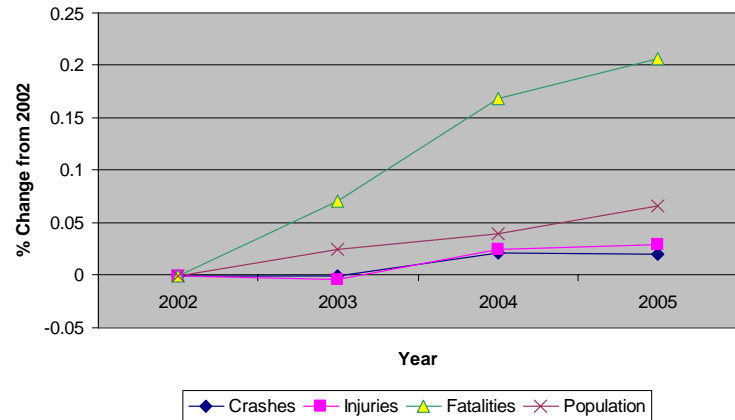


The same chart for teens aged 15 through 17 (below) is quite different from the 18-24 chart above. While population has increased, crashes, injuries and fatalities have decreased in number for drivers in this category. This is an age group that has been targeted heavily with countermeasures such as graduated driver's licenses.

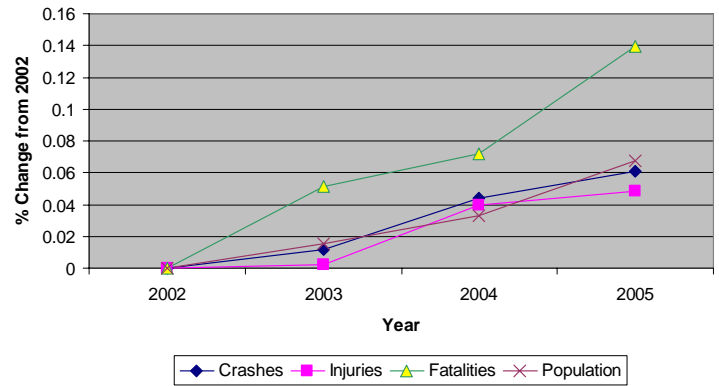
Trends in Teen Driver Crashes (15 - 17 yrs.; 2002 - 2005)



Trends in Young Adult Driver Crashes (18 - 24 yrs.; 2002 - 2005)



Trends in Georgia Crashes, Injuries and Fatalities (All Ages.; 2002 - 2005)



The potential factors for the trend happening with 18 through 24 year-olds mirrors the overall state trend where fatalities increased at a high rate in recent years, while crashes, injuries and population stayed fairly stable. A comparison chart for all age groups is show below (GOHS).

Although fatalities for young adults were higher than in the general population, statistically, these numbers are not significantly different. The tables above shows 95% confidence intervals for percent change in fatalities by year for young drivers and for the general population; in no year were these percentages significantly different.

Year	18 through 24			Overall		
	Number	CL Lo	CL Hi	Point	CL Lo	CL Hi
2003	425	386	467	1610	1532	1690
2004	464	423	508	1641	1563	1722
2005	479	437	523	1744	1663	1828

Year	18 through 24			Overall		
	Point	CL Lo	CL Hi	Point	CL Lo	CL Hi
2003	7.05%	-2.77%	17.63%	5.16%	0.07%	10.39%
2004	16.88%	6.55%	27.96%	7.18%	2.09%	12.48%
2005	20.65%	10.08%	31.74%	13.91%	8.62%	19.40%

The conclusion is that overall, young adults are suffering from many of the same factors affecting the entire State of Georgia. The driving forces behind increased fatalities appear to be increased VMT and speeding in rural areas. While urban parts of Georgia are characterized by low fatality rates, those areas that are less urban experience much higher fatality rates and higher speeds. Contrast this with urban areas where, due to congestion, speeds are often not fast enough to produce nearly as many fatal accidents per VMT.

“The driving forces behind increased fatalities appear to be increased VMT and speeding in rural areas.”

There are several factors related to the crash rates on rural roadways. These include a higher incidence of severe crashes which include run off and rollover crashes. Additionally, rough terrain, less vehicle traffic, and longer times between the crash and time of discovery make the injury outcomes more severe.

Another consideration is roadway geometrics; rural roads may have narrow lanes, less enforcement, limited sight distances, and lack of clear roadsides since many rural roads evolved from farm roads which have been upgraded to accommodate increased traffic volume and vehicle size.

YADTT also investigated changing demographics as a possible influence on data findings. The Peach State has 24 of the nation’s 100 fastest-growing counties, according to a U.S. Census housing unit estimate. Much of the increase is in Georgia’s Blue Ridge Mountain counties, figures show.

A review found that the proportion of the population living in rural counties has stayed fairly stable; the same can be said about the gender breakdown. Additionally, the proportion of young adults aged 18 through 24 has stayed constant. All of these numbers have increased over the period

under investigation, but not at a rate higher than that of the overall population.

These factors do highlight, however, that Georgia has a unique growth component to address with young adult drivers both coming to age as well as moving into the state.

Data

Problem Identification

In order to assess and identify the status of young adult driver issues, as well as to determine and establish the efficacy of existing and future efforts, a Crash Reduction Goal should be tied to the national standard of Vehicle Miles Traveled (VMT). A procedural roadblock prevents progress in this area. VMT cannot currently be determined with a high degree of accuracy in Georgia because the driver data (specifically, the number of licensed Class CP and Class D drivers) used for establishing the statistical denominator in VMT is not readily available. Obtaining data is limited both by current process and technology. At present, data is available from DDS only via an “official request” (e.g. by a state-level elected official) or for a technology and service fee to these agencies making a data request.

The impact of inaccessible and limited data has historical significance in Georgia. The lack of supporting data was the primary reason the efficacy of Driver Education nationwide could not be established during the “DeKalb Study” mandated by the U.S. Congress and conducted in Georgia from 1977 – 1981.

The lack of credible data was also noted as a present-day obstacle in the study assessing the impact of TADRA published in April of 2006 by Emory University (Rios, et.al., p. 365-366):

In the past, highway safety researchers used counts of licensed drivers as the denominator for calculating fatal crash rates. Unfortunately, it is no longer possible to obtain consistent state-specific data about licensed drivers in the youngest age groups. The only national source of information on licensed drivers is the Federal Highway Administration's Highway Statistics Series Table DL-22. In 1989 a Federal Highway Administration committee decided that the enumeration of licensed drivers should not include class P (i.e., instructional permit) holders or drivers with limited-use or restricted licenses. As a result of this rule change, Federal Highway Administration statistics significantly undercount drivers in the youngest age groups, in which issuance of class P and class D restricted licenses is common, especially in states with graduated driver's licensing laws.

Georgia needs to establish a plan for access to and sharing of driver data. The first step in this process is for "Periodic Data Sampling" of driver data (Monthly and Annual) to be collected and made available. Next, an "inter-agency agreement" or other memorandum of understanding (MOU) should be drafted as a means for agencies working with young adult driver issues to access and share this anonymous driver data. This should be coupled with the development of a protocol for privacy, storage and use of driver data by those agencies involved. Finally, to establish a baseline for 4E efforts, the licensed driver data from 2000-2005, for ages 15-17 and ages 18-24, is needed.

To study the effectiveness of all young adult driver efforts, at present and in the future, YADTT recommends that "program identity codes" be assigned in the DDS driver license database to programs and efforts specifically targeting young adult drivers. This will enable the statistical

monitoring and measurement of existing 4E programmatic and enforcement impact.

Execution of this data effort will position Georgia to be a national leader in documentation, analyses and development those program areas which demonstrate the greatest potential to save lives.

Recommendations

- Retrieve 2000-2005 data for GDL class drivers for use in research efforts.
- Conduct periodic data sampling of the driver license database.
- Create protocol for storage and sharing of license data.
- Establish and assign "program identity codes" to measure the efficacy of efforts targeting young adult drivers.
- Utilize data efforts as a means of developing further those program areas found to be most effective.

Restraint Use

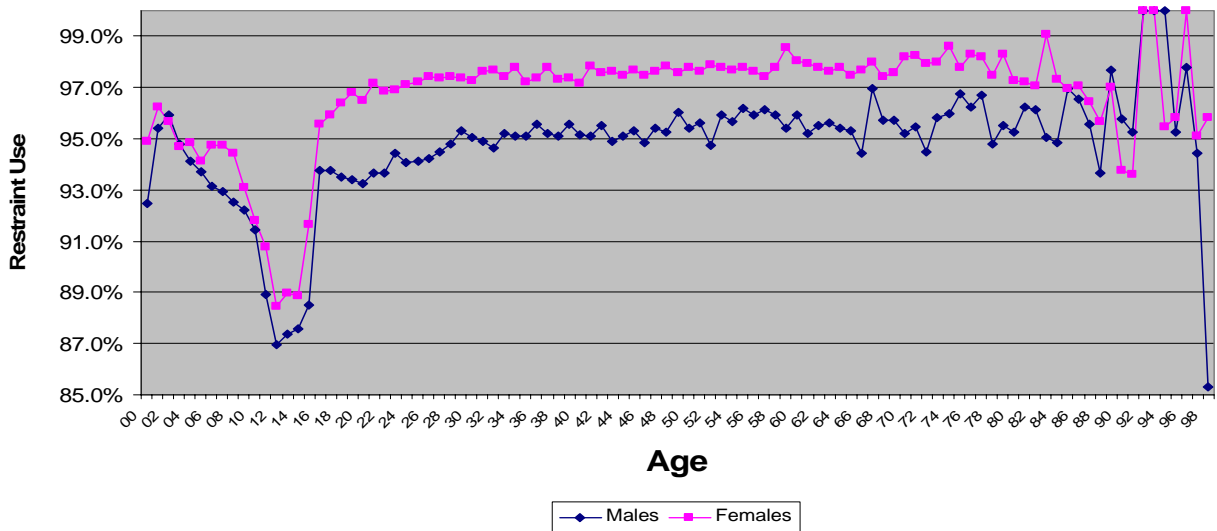
Problem Identification

Young drivers have a higher rate of crashes, injuries and fatalities than older drivers. In 2005, 229 young people ages 16 to 20 were killed in motor vehicle crashes in the state of Georgia. According to the most recent data from FARS (2003), 64% of the 16-20 year-old passenger vehicle occupants killed or seriously injured were unrestrained.

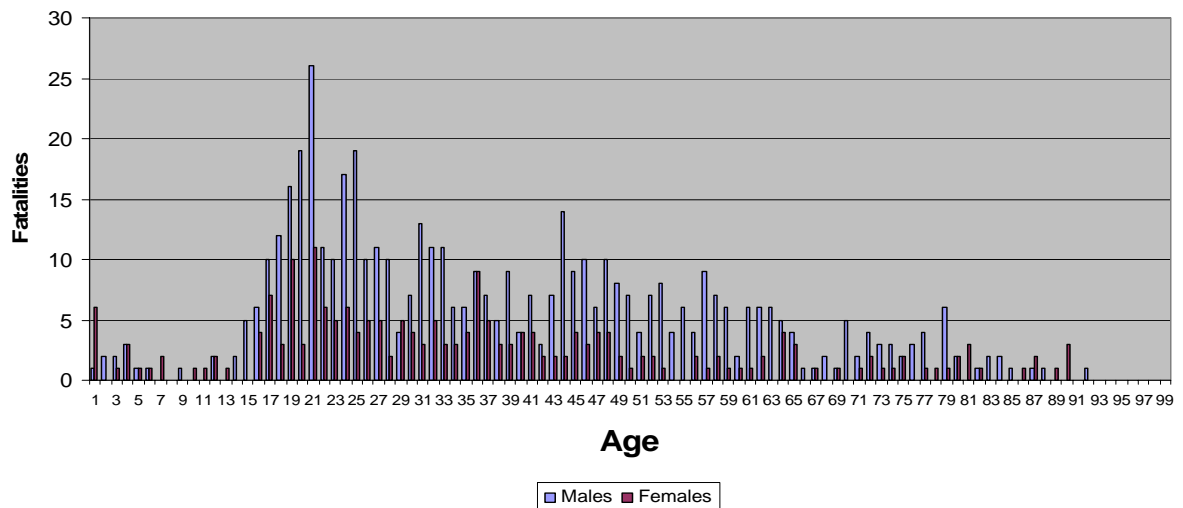
“In 2005, 64% of the 16-20 year-old passenger vehicle occupants killed or seriously injured were unrestrained.”

Although young people (ages 16-20) account for only 7% of Georgia’s population, they were responsible for 13% of the total crash fatalities for 2005. The following chart from GOHS shows that Georgia experiences the highest magnitude of unrestrained occupant fatalities from the late teens through the mid-twenties – the group that the Young Adult Driver Task Team is targeting.

Restraint-Use in Crashes by Age & Gender (2005)



Unrestrained Occupant Fatalities by Age and Sex (2005; N = 721)



Nationally in 2004, 58% of the 5,135 occupants of passenger vehicles and light trucks age 16 to 20 who were killed in crashes were not buckled up. (NHTSA, 2006). NHTSA also found that teenagers are likely to believe stories of people being decapitated by safety belts or people walking away from crashes when they were ejected from the vehicle.

Current Georgia law requires all persons ages 6 to 17 years old to be restrained in all seating positions. A \$25.00 fine is assessed to the driver of the vehicle. No penalty points are assessed for safety belt violations (O.C.G.A. § 40-8-76.1). The National Transportation Safety Board recommends safety belt violations include driver’s license penalty points and appropriate fines. (*Safety Recommendation H-97-2*)

Additional information from the Insurance Institute for Highway Safety (2007) finds:

- Fifty-four percent of motor vehicle crash deaths among teenagers in 2005 occurred on Friday, Saturday, or Sunday.
- Half of teenage motor vehicle crash deaths in 2005 occurred between 3pm and midnight.
- Under TADRA, the driver’s license of a Class D driver is suspended with the conviction of any violation for which four or more points are assessed, or with the accumulation of four or more points on their driving record.
- The following assess penalty points for safety belt violations: District of Columbia (2 points), New Mexico (2 points), New York (3 points if child under 16 involved).

- The following assess a maximum fine of \$50.00 or more on the first safety belt offense: District of Columbia, Maine, New Mexico, New York, Oregon, Tennessee, and Texas. Texas assesses a fine of \$200.00.

Pickup Trucks

Georgia is the only state in the nation that exempts an entire class of passenger vehicles- pickup trucks- from safety belt laws. Estimates suggest that legislation introduced in 2007 as Senate Bill 86, if approved, would save at least 21 lives and prevent 300 serious injuries in the first year of enactment. The bill did not pass again this year.

“Georgia is the only state in the nation that exempts an entire class of passenger vehicles- pickup trucks- from safety belt laws.”

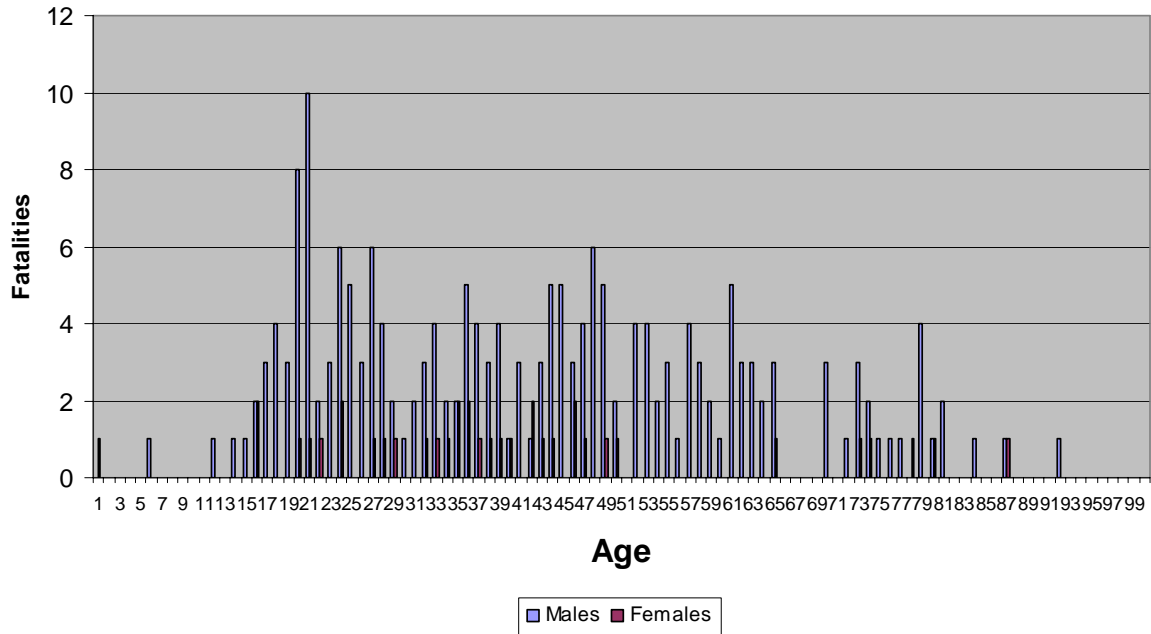
In addition, Georgia would have received a one-time \$20.7 million safety incentive from the federal government had the pickup exemption been removed and would save \$25.1 million in Medicaid expenses over a 10 year period. Young adult drivers would benefit from this type of legislation.

Pickup occupants and occupants in the younger age category had lower restraint-use rates. Percentages are compiled from the crash database. Instances where restraint-use is unknown were excluded.

Age Group	Pickups	All Vehicles
16-17	91.95%	94.75%
18+	92.06%	96.04%

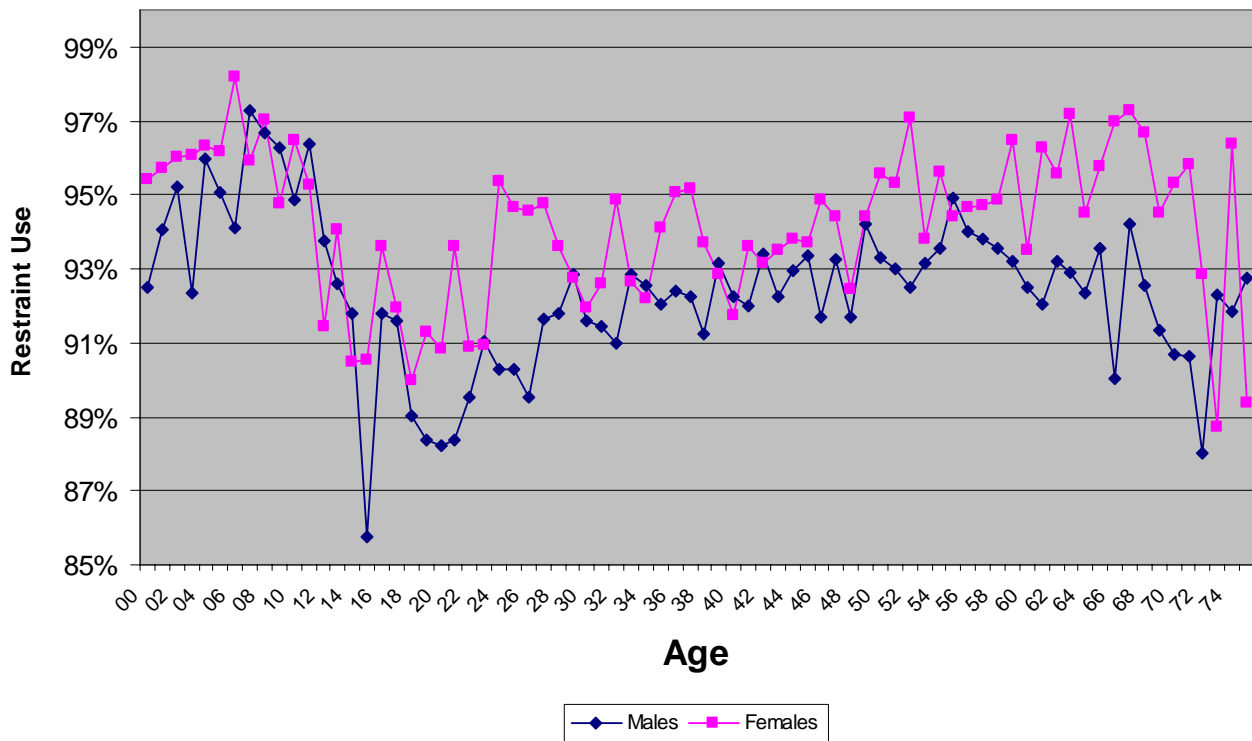
The GOHS graph below for unrestrained fatalities in pickup trucks is very similar. Note that males comprise approximately 84% of these fatalities.

**Unrestrained Pickup Occupant Fatalities by Age and Sex
(2005; N = 235)**



Restraint-use in pickup trucks for males also lags behind females. There is a notable decrease in restraint use for crashes by age and gender for ages 18 through 22.

Pickup Restraint-Use in Crashes by Age & Gender (2005)



Recommendations

- Assess up to four (4) penalty points to any driver holding a Class CP or Class D driver license and conviction of a safety belt violation.
- Set fines at \$100.00 to \$150.00 for any driver holding a Class CP or Class D driver license and convicted of a safety belt violation. This puts violations at about the average price of a Nintendo Wii or X-Box video game player, a tangible penalty for teens.
- Enact legislation to require safety belt use in pickup trucks.
- Highly visible and targeted law enforcement road blocks conducted after school hours, weekend and in areas with heavy teenage travel, such as school events, athletic games, and local “hang outs” to check for occupant protection.
- Tougher Safety Belt Enforcement and Class-specific Penalties for GDL Drivers.

Graduated Driver Licensing

Teen Drivers

High-risk behavior, peer pressure, inexperience, limited use or no use of occupant safety devices, lack of proper driving information and education are a few of the problems that our youth face while driving on Georgia’s roadways. In an effort to address these issues the Teenage and Adult Driver Responsibility Act (TADRA) was enacted on July 1, 1997 to reduce the number of lives lost in crashes involving young drivers.

TADRA

The Teenage and Adult Driver Responsibility Act (TADRA) took effect in July 1997. Results showed that during the first 5 ½ years following the enactment of TADRA, the average annual driver crash rate for 16-year-olds declined 36.8 percent. Speed-related fatal crashes involving 16-year-olds were cut by 42 percent.

Prior to the enactment of TADRA, the average annual fatal crash rate involving Georgia drivers 16 years old was 77 percent higher than that of Georgia drivers 25 and older. After enactment, the fatal crash rate was only 12.8 percent higher than Georgia drivers 25 and older. Despite the encouraging findings, the rate of fatal crashes involving 16-year-old Georgia drivers was still 28.6

percent higher than the U.S. average among 16-year-olds.

The National Highway Traffic Safety Association (NHTSA) compared Georgia to Tennessee, South Carolina and Alabama, surrounding states that didn’t enact similarly restrictive legislation during the same time period. Prior to enactment of TADRA, the rate of driver fatal crashes among 16-year-old Georgia drivers was similar to that of 16-year-old drivers in the three comparison States. Following enactment, the rate of fatal crashes involving 16-year-old drivers in Georgia was 34 percent lower than that in Tennessee, 32 percent lower than that in Alabama, and 18 percent lower than in South Carolina. NHTSA’s evaluation confirmed earlier reports of favorable impacts to fatal crashes rates and indicated that the effects of TADRA were sustained over time.

A 2006 evaluation of TADRA by an Emory University study team found that in the 5 ½ years since TADRA was enacted:

- Fatal crash rate of 16-year-old drivers declined by 36.8% and 17-year-old drivers by 19.1%
- Speed-related crashes of 16-year-old drivers fell by 49%

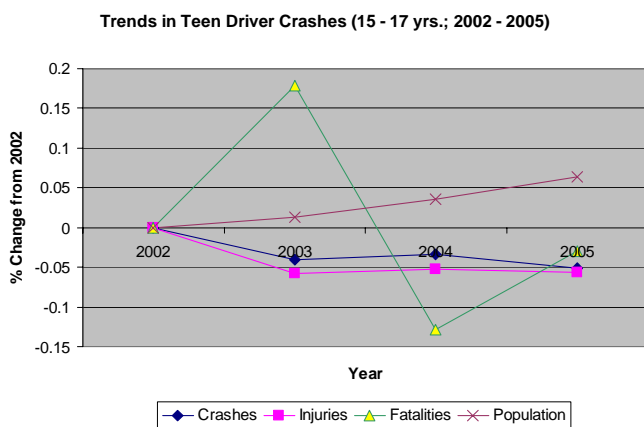
- Alcohol-related crashes of 16-year-old drivers decreased by 62.1%, 30% for 17-year-old drivers and 4.4% for 18-year-old drivers.

On January 1, 2002, TADRA was strengthened by adding minimum requirements for supervised driving, passenger limitations, and a stricter curfew.

Graduated driver licensing policies serve to delay licensure and then limit exposure to the highest risk conditions after licensure, allowing young drivers to gain experience under less risky driving conditions. A similar strategy of gradual involvement may be needed to guide parents in their responsibilities with GDL.

Researchers from the National Institute of Child Health and Human Development reports that parents do not appear to appreciate just how risky driving is for novice drivers and tend to exert less control over their teenage children driving than might be expected. Recent research has demonstrated that simple motivational strategies can persuade parents to adopt driving agreements and impose greater restrictions on teen driving. Several studies have shown that greater parent involvement is associated with less risky teen driving behavior.

Finally, the following table illustrates strides that Georgia has made with drivers aged 15 through 17. While the population of drivers in this category has increased, crashes, injuries and fatalities have all decreased.



Gains in improved outcomes for drivers aged 15 through 17 may be contrasted with the continual

increases in negative outcomes for those aged 18 through 24.

Passenger Restrictions

Current Restrictions for GDL-class licenses in Georgia are as follows:

Class CP:

- No restrictions on passengers; must have licensed driver over 21 years of age in front seat, supervising the driving.

Class D:

- For the initial six-month period immediately following the issuance of a Class D license, only immediate family members may ride in the vehicle.
- During the second six-month period immediately following issuance of a Class D license, only one (1) passenger under 21 years of age (who is not a member of the driver's immediate family) may ride in the vehicle.
- After the second six-month period, only three (3) passengers under 21 years of age (who is not a member of the driver's immediate family) may ride in the vehicle.

“Sixty-one percent of teenage passenger deaths in 2005 occurred in vehicles driven by another teenager.”

The relative risk of death among 16- and 17-year-old drivers who have at least one passenger in the vehicle is significantly greater compared to driving alone. The risk increases with an increase in the number of passengers. Carrying at least three passengers results in a threefold increase in probability of suffering a fatal injury (Lin & Fearn, 2003).

Sixty-one percent of teenage passenger deaths in 2005 occurred in vehicles driven by another teenager. (IIHS) Among fatal crashes with 16-year-old drivers in 2003, 28 % of the drivers had three or more teenage passengers while only 13 % involved drivers with a blood alcohol content above .08. (IIHS) Several states restrict passengers to no more than one during learner and intermediate stages: Delaware, Hawaii (passengers under 18), Idaho (passengers under 17), Kentucky (passengers under 20 unless supervised by a driving instructor), New Jersey, New Mexico, North Carolina, Ohio, Oklahoma, Rhode Island, Tennessee, Texas, Wisconsin, Wyoming (passengers under 18) (IIHS, 2007b).

Parental Involvement

Lack of experience is one of the major reasons that teenage drivers are over-represented in highway crashes. Parental involvement plays a critical role in helping their teen driver obtain the necessary experience in a reduced risk environment using all the components of a Graduated Drivers License (GDL). Experts agree that young drivers need a concerned and involved parent. The key is to encourage and require parents to be more involved. Both research and surveys by practitioners in the field indicate many parents are not providing the current requirement of at least 40 hours of supervised driving, including 6 hours at night.

“Both research and surveys by practitioners in the field indicates many parents are not providing the current requirement of at least 40 hours of supervised driving, including 6 hours at night.”

Parental involvement is critical in enforcing the states minimal GDL requirements and establishing stricter requirements depending on the maturity and preparedness of their teen driver (extending learner’s permit holding period). Parents must support and enforce safety belt usage, no alcohol/drugs, no speeding, no cell phone/texting while driving, nighttime driving restrictions, passenger restrictions and no aggressive driving.

Recent studies conclude that risky driving, traffic violations, and crashes are lower among teens whose parents set limits on high risk driving conditions such as teen passengers and night driving (Simons-Morton, B., 2007).

Under TADRA, teenager drivers must have 40 hours of supervised driving with a parent or guardian prior to obtaining a Class D license. This allows teens to acquire driving skills in low risk situations, with guidance from an experienced driver.

Current procedures require parents or guardians to sign an affidavit verifying the teen has completed at least 40 hours of supervised driving. Unfortunately, many teens report they did not complete the mandatory 40 hours and their parents “just signed off” on their driving time at the point of license application.

Current and New Programs and Resources

There are numerous resources and training programs available for parents of teen drivers and more are being developed. There are public funded, insurance company funded, not-for-profit and for-profit programs and materials available. A partial list of programs and resources includes the following:

Georgia Teens Ride With P.R.I.D.E. (Parents Reducing Incidents of Driver Error) is a two-hour free course designed to help parents and their new (or soon to be) teen drivers, ages 14-16, learn what they need to do during the 40 hours of required supervised practice driving. www.ridesafegeorgia.org 678-413-4281 or 800-342-9819

Alive at 25, Parent Program. Three-hour course that identifies those risks and helps parents partner with their teen in the learning to drive process. National Safety Council (2007) www.nsc.org 678-457-5100

Parents Deserve a Brake, A comprehensive training module for coaching teen drivers. CD-ROMs, one interactive for computer use and one audio only for use in car. Road Wise, Consolidated Driving Programs, Inc. www.roadwiseinc.com 800-747-3979

Parent Supervised On the Road Program. 40-Hour Parent/Teen Driving Guide is a comprehensive program that can be used in conjunction with a 30 hour virtual program or 30 hour classroom program. www.dds.ga.gov

Joshua's Law and Driver's Education in Georgia 2007 Driver's Education requirements from the Georgia Department of Driver Services. www.gateendrivereducation.com

Teenage and Adult Driver Responsibility Act (TADRA). Governor's Office of Highway Safety. www.gahighwaysafety.org 404-656-6996 or 888-420-0767

Teen Driver, A Family Guide to Teen Driver Safety. 68-page guide to assist families in understanding and managing the journey their teens will travel from beginner to independent driver. National Safety Council www.nsc.org/GDL/ 678-457-5100

MobileTeen GPS. Real-Time Teen Driver Monitoring. www.mobileteengps.com 877-477-3748

Public Education Campaigns and Media Involvement

Fatal crashes, particularly those involving teen drivers, generate a great deal of media attention and public outcry. In many media news reports, less attention is focused on promoting safety measures regarding driving to young adult drivers and their parents than headlining the incident.

“Many media news reports place less attention on promoting safety measures for young adult drivers and their parents than on headlining the incident.”

Joshua's Law, effective January 1, 2007, has attracted some positive media attention and parents and teens have benefited from awareness about both GDL requirements and the importance of safety measures while driving. However, the magnitude of the problem and the specifics of graduated driver license restrictions and penalties, are less well understood by most future and current drivers.

YADTT recommends increased promotion of current and newly enacted laws, restrictions, and penalties as well as fatality statistics through existing Public Information and Education distribution efforts, public service announcements (PSAs) and opportunities for public information pamphlets to be included with routine state and local mailings, such as driver's license renewal notices, Board of Education and PTA meeting notices, utility bills, and vehicle registrations.

Enforcement of GDL

Enforcement of GDL begins at the point where young adults meet with the opportunity to get behind the wheel or ride with another young adult. YADTT recommends highly visible and targeted law enforcement road blocks conducted after school hours, weekends and in areas known for teenage travel, such as school events, athletic games and local “hangouts.” These efforts will ensure teen drivers are licensed and that both they, and their parents, are aware of the importance of abiding by existing GDL laws.

Enforcement efforts should include highly visible and targeted road blocks conducted after schools hours, weekends and in areas known for teenage travel, such as school events, athletic games and local “hangouts.”

Georgia may need to consider attaching penalties for failure to comply with GDL restrictions. For enforcement to be practical, traffic officers need a visible indicator that a vehicle is being driven by a driver with a limited license. This might include some sort of window decal or license plate “stripe” to clearly mark a vehicle, in addition to license restrictions which are only apparent after a traffic

stop is initiated. This could be used in other restricted license situations (e.g., daylight only, Georgia only, no passengers, no expressways, etc.). The indicator could be voluntary, inexpensive, and provided for parents of teens or guardians of older drivers. Opportunity exists for insurance companies to offer discounts to families who promote safe driving practices in this way. A similar indicator might also be used for assuring compliance with court-ordered driving restrictions.

“Young drivers are at greater risk when driving at night.”

Young drivers are at greater risk when driving at night. Factors contributing to nighttime accidents include: inexperience, lower visibility, passenger distractions, risk-taking behaviors, fatigue and alcohol use.

Recommendations

- Assess driver license penalty points for violations to any driver holding a Class CP or Class D drivers license; OR Establish violation as mandatory suspension offense for any driver holding a Class CP or Class D drivers license.
- Strengthen supervised driving verification procedures and parental involvement.
- Enact tougher passenger restrictions for drivers holding a Class CP or Class D drivers license.
- Assess driver license penalty points for curfew violations; OR Establish violation as mandatory suspension offense for Class D drivers.
- Educate parents about the dangers of lack of experience and maturity and how the GDL process helps to mitigate these risks.
- Educate and encourage parents to delay licensing for teens that are not ready to accept the huge responsibility of driving (extend learner’s permit holding periods).

- Encourage parents to attend training such as the free Georgia Teens Ride with P.R.I.D.E. (Parents Reducing Incidents of Driver Error) program that teaches them why their teen is at risk, their role and responsibility in the learning process, what GDL laws are, and how to set and enforce expectations (parent/teen driver contract).
- Continue research on using existing and new technology to instruct and monitor novice drivers.
- Strengthen the system for completing and reporting (affidavit) the 40 hour minimal requirements. Require parents and teens to maintain a driving log detailing drive times and conditions. Each entry should be signed by parent and teen.
- Require parents and teens to complete a mandatory 40 hours supervised driving program, such as the free Parent Teen Driving Guide available at www.dds.ga.gov, which would provide guidance on driving tasks, checklists, tools for evaluation and driving log.
- Class CP drivers:
No more than one passenger under 21 permitted, in addition to the supervised driver. (Exceptions for immediate family members)
- Class D drivers:
Maintain provision for no passengers other than immediate family members during initial six-month period following the issuance of the Class D license. Add provision that driver may have no more than one passenger under 21 after the first six (6) month period (Exceptions for immediate family members).
- Establish passenger restrictions violations as a primary offense.

- Strengthen the curfew restrictions for drivers holding a Class D drivers license. Consider adding 1 to 2 points for violations.
- Establish curfew restrictions as Primary Offense.
- Partner with the insurance industry to offer discount incentives for drivers who successfully complete GDL requirements violation-free.
- Extend the current curfew from Midnight to 6 a.m. to a new curfew of 11:00 p.m. to 6 a.m.
 - Numerous states have similar 11:00 p.m. restrictions: California, Delaware (10:00pm), District of Columbia (Su-Th, during Sept – June), Florida (16 yrs), Hawaii, Illinois (Su-F), Indiana (Su-F), Louisiana, Mississippi (10:00 pm), Montana, Nevada (10:00 pm), New York (9:00 pm), Oklahoma, Pennsylvania, South Dakota (10:00 pm), Tennessee, West Virginia, Wyoming. (*IHS, 2007b*)
- More local media involvement to accurately report traffic related incidents and their cause in community
- Culture specific media sources to inform high risk groups on improving safety
- Educate media about the opportunity to accurately report crashes and their causes without sensationalizing.
- Incentives for and/or mandatory television and radio network coverage of PSAs related to teen and young adult driving.
- Educate and encourage schools, places of worship and other organizations involving GDL drivers to implement ending times consistent with curfew laws.

Alcohol

Problem Identification

Next to restraint use, Georgia's next challenge to reducing injuries and fatalities on our roadways is young adult alcohol use. Twenty-eight percent (28%) of 15- to 20-year-old drivers who were killed in motor vehicle crashes in 2005 had been drinking (SADD, 2007). Drivers are less likely to use seat belts when they have been drinking. In 2005, 64% of the young drivers of passenger vehicles involved in fatal crashes who had been drinking were unrestrained. Of the young drivers who had been drinking and were killed in crashes, 74% were unrestrained (SADD, 2007).

Following is key data from the State Department of Education's survey administered Spring, 2006. A large percentage of the state, 83% of Georgia counties, participated with a valid response of 175,311 students in grades 6, 8, 10, and 12.

Only the 10th and 12th grade data from this survey will be referred to.

- > Broken down by ethnicity, the percentage of alcohol use reported in the survey was: Caucasian – 24.9%, Latino – 19.7%, African-American – 17.2%, Asian – 15.7%, and other – 22.2%.
- > Alcohol use increased with grade level from 7.1% for 6th graders to 40.5% for 12th graders. This is compared to all other drug use which increased from 7.2% for 6th graders to 20.3% for 12th graders.
- > 68% of the 10th graders indicated alcohol was easy to obtain while 78% of the 12th graders reported alcohol was easy to obtain.
- > For 10th graders, 22.4% began using alcohol after the age of 13 while 16.7% began using before the age of 13.

- > For 12th graders, 41.9% began using alcohol after the age of 13 while 12.3% began using before the age of 13.
- > "I think alcohol is harmful" was indicated by 10.3% of the 10th graders and 11.9% of the 12th graders.
- > Alcohol is "socially disapproved" by 58.2% of 10th graders and 47.6% of 12th graders.

“More than 1/3 of 10th graders used alcohol by age 13. Twenty-two percent have used alcohol in the last 30 days.”

It makes sense to shift the focus from treatment to that of prevention, beginning with education efforts at younger ages, supported by enforcement efforts for all ages. To clarify the problem of alcohol further, YADTT collected samples from the front lines of young adult life.

The data also indicate that lack of education after the 9th and 10th grade is a factor in this increase in alcohol use among teens. Those teenagers who have had some alcohol education within the past school year have both a much lower incidence of drinking while driving, and also tend to not ride with other drivers who are drinking and driving.

The statistics shown in the table below are staggering: Those 10th graders who had alcohol education were more than six times less likely to ride with a driver that was drinking and driving. Similarly, 12th graders who had alcohol education were more than seven times less likely to ride with a driver who was drinking and driving. These statistics accentuate the need for alcohol education in our local schools.

	Grade 10		Grade 12	
	YES	NO	YES	NO
Have had alcohol, drug education in past year	84.5%	15.5%	48.7%	51.3%
Have driven while drinking within past 30 days	2.4%	97.6%	6.1%	93.9%
Have ridden with driver who was drinking within past 30 days	13.4%	86.6%	11.6%	88.4%

Percent of teenagers using alcohol within past 30 days: 22% of Georgia 10th graders, 32% of Georgia 12th graders, and 38% nationally. These data indicate that many teenagers begin using alcohol and other drugs at an early age, but that the percentage of usage increases with the age of the students. This is validated by the comparison between the 6th graders and the 12th graders.

Many of the following recommendations were taken from the NHTSA State of Georgia Impaired Driving Assessment conducted Summer of 2007.

Recommendations

- Continue to support and implement effective programs which target this age group, such as the annual Governor’s Office of Highway Safety Youth and Young Adult Driver Highway Safety Leadership Conference and other traffic safety education, underage prevention and enforcement (Children and Youth Coordinating Council, Georgia Network for Substance Abuse Prevention in Higher Education, Department of Revenue), highway enforcement (Department of Public Safety), diversity (minority population liaisons), Prosecuting Attorneys Council, Administrative Office of the Courts, and the Probation Advisory Council, etc.

- Enact legislation restricting “happy hours” and other alcohol *promotions*.
- Advertise upcoming compliance checks prior to implementation.
- Provide responsible service training to alcohol beverage retailers at both management and non-management employee levels that is both cost effective and industry acceptable.
- Assure that all designated driver and safe ride programs avoid unintentionally enabling over consumption among those relying on the designated driver.
- Expand partnerships between the courts and Georgia transit agencies so that urban and rural transit agencies provide transportation to those convicted of DUI and prohibited from driving.
- Recognize participating transit agencies for providing an important community service.
- Driver license suspension for persons under age 21 for any violation of law involving the use or possession of alcohol or illicit drugs.
- Conduct a rigorous study with accepted research protocols on those who have taken the Alcohol and Drug Awareness Program training.

Future Opportunities

There are few enforcement programs that target the underage drinker. Most underage drinking enforcement is conducted by the Department of Revenue. There is no ongoing, coordinated statewide effort by law enforcement agencies to target underage DUI violations.

Driver Education

Problem Identification

The 2001 Public Affairs Survey, a scientific poll conducted by AAA Auto Club South of its membership, found that 87% of respondents favored making driver's education mandatory- even if the student's family has to pay for it. Georgia enacted "Joshua's Law" which became effective January 1, 2007 making driver education a requirement to obtain a driver's license. However, in 1985 Quality Basic Education (QBE) ended most high school driver education programs in the state.

As identified in the Overall Problem Identification, Georgia's teen drivers continue to be over represented in traffic crash data. While Georgia has a good Graduated Driver's License law the education component needs to be fortified further.

"Of the 127,000 16-year-olds in Georgia, only 20,000 have participated in some form of driver education."

Prior to Joshua's Law, the Georgia Driver Education Commission reported that there were approximately 127,000 16-year-olds in Georgia. Of those, only 20,000 had participated in some form of driver education. With an effective date of January 1, 2007, Joshua's Law emphasized the importance of education by making it a requirement in addition to the TADRA.

Although driver education is required to obtain a license at age 16 under the law, young drivers face a challenge to obtaining driver education. Classes are not currently offered in all areas of the state. According to a Fall 2006 research survey of public school systems statewide by Kennesaw State University's Burruss Institute for the Georgia Driver Education Commission, the average number of students turned away from existing driver education programs was 106. More than 60% of schools reported that existing driver education programs are serving less than half of the students eligible to attend.

Additionally, there is a lack of quality teacher preparation classes in the field of driver education. In the same Fall 2006 KSU survey, respondents listed difficulty finding certified instructors as a leading barrier to offering driver education. It is also difficult for prospective teachers to find the three classes recognized as the national standard by NHTSA necessary to obtain "Safety and Driver Education" as an endorsement to their teaching certificate. Therefore, many schools in Georgia are not able to find highly qualified teachers.

Recommendations

- Support stronger efforts to implement driver education in all Georgia high schools.
- Driver's ed programs need specific funding for program assessment. Following assessment, funding for driver's ed should be directed to those programs implementing the effective measures
- Provide additional or increased funding to support existing high school driver education programs and to initiate programs where they do not exist.
- Once driver education classes are established throughout Georgia consider a short four to six hour "refresher" or Driver Education II prior to full licensure.
- Establish accessible quality teacher preparation programs in the field of driver education.
- Establish a K-12 Traffic Safety component in the Health and Safety curriculum.
- Partner with the insurance industry and retail providers to offer discounts and incentives for drivers who successfully complete driver education requirements violation-free.
- All newly licensed drivers should take a computer based instruction driver education course within three months of licensure.

K-12 Curriculum

Problem Identification

Driver education does not begin and end with a 10th grade 30 hour classroom 6 hour behind-the-wheel program. Novice drivers begin driving with certain attitudes and behaviors learned from years of observing other drivers. Traffic safety needs to be included in the curriculum at all levels of K-12 education. Recommendations for driver education for high school students are addressed separately in this document. This section deals specifically with approach to, and applications for, students in grades K-12 in addition to formal driver education.

Applicable Current Statistics and Analysis

Currently Safety is included in the Georgia Quality Core Curriculum (QCC) Standards at each grade level. Motor vehicle safety, specifically, is targeted at grades K, 1, 6, and 8. The table below details these standards:

Georgia Quality Core Curriculum Standards that specify motor vehicle safety.

K	Topic: Environmental Safety Standard: Recognizes safe practices experienced in the home, at school, on the playground, in and around motor vehicles, on the street, in aquatic environments and around animals.
1	Topic: Accident Prevention Standard: Differentiates between safe and unsafe practices when: riding in a car, riding a bicycle, playing on a playground, in aquatic environments or other outdoor environments.
6	Topic: Consequences Standard: Recognizes and assesses the effects that alcohol and other drugs could have on individuals operating vehicles and other equipment, including the consequences of riding or being with someone under the influence.
8	Topic: Accident Prevention Standard: Analyzes safety factors for motorized and nonmotorized vehicles and equipment for land and water purposes

(Source: www.glc.k12.ga.us/qcc/homepg.asp)

Motor vehicle-related injuries kill more children and young adults than any other single cause in the United States. More than 41,000 people in the United States die in motor vehicle crashes each year, and crash injuries result in about 500,000 hospitalizations and four million emergency department visits annually. The economic burden of motor vehicle-related deaths and injuries is also enormous, costing the United States more than \$150 billion each year. (www.cdc.gov/ncipc/duip/mvsafety.htm)

In the state of Georgia, unintentional injury is the leading cause of death for individuals aged 1-34. For each age grouping, motor vehicle accident is the top cause of death within the category of unintentional injury (WISKARS, 2004) with the largest group of these being ages 15-24 (324 deaths).

Current and/or New Programs

Georgia's Child-Passenger Safety Law
Booster Seat programs for children under 80 lbs.
Safe Kids of Georgia
Safe Communities
KidsWalk/PEDS
K-12 UGA GTIPI's Poster Contest
8th grade- UGA GTIPI's PRIDE
9th grade- ADAP
10-12th grade Current driver education programs
GYAP/SADD
Click it or Ticket
Operation Zero Tolerance
National School Bus Safety Week
Buckle Up America Week
National Child Passenger Safety Week
AAA's National School Traffic Safety Poster Program and Senior High Communication Contest
Think First for Kids
Tween Traffic Safety
www.tweensafety.org/docs/Tween%20Booklet.pdf

Future Opportunities

- Partnerships with child advocacy groups such as AAP.
- Provide links to online resources for parents and teachers to promote traffic safety (e.g., MOST of Us Traffic Safety Resource Center).
- Work with Georgia Department of Education to include traffic safety in the Performance Standards at all grade levels.

Recommendations

- Georgia should join other lead states (e.g. Colorado, Iowa, Oregon, Washington, New York, Virginia, Maine, and Pennsylvania) already at various stages of adopting a K-12 curriculum model for transportation safety.

- Other programs targeting this age group include those developed by:

- AAA (School Safety Patrol <http://www.aaapublicaffairs.com/Main/Default.asp?CategoryID=7&SubCategoryID=25&ContentID=71>); and
- NHTSA (Safe Routes to School <http://www.nhtsa.dot.gov/people/injury/childps/Int-WalkToSchoolPlanner2006/Index.htm>) should also be used in the development of Georgia's motor vehicle safety curriculum.

- Georgia should join with agencies such as ADTSEA in recognizing that driving a car is a lifelong learning process; one for which our current novice drivers are ill-prepared.

Technology

Problem identification

According to the Georgia Department of Transportation Office of Traffic Safety and Design, there were 1,703 traffic fatalities in 2006 in the state of Georgia. Of those fatalities, 544 were young adult drivers aged 16-24, accounting for almost 32% of all fatal crashes.

According to a study done by the Federal Highway Administration (2005), young drivers in Georgia aged 16-24 only account for approximately 13% of the total licensed drivers in the state. Analyzing this data leads to the conclusion that there is a large disparity between the percentages of young adult licensed drivers (13%) and their respective fatality rate (32%). The key question to be addressed is the following: Can the use of technology help to reduce the number of young driver fatalities?

Cellular Telephones

Technology is only valuable if it changes the attitude among drivers to engage in safer driving behavior. It is vitally important that the use of technology does not create additional driver distraction. Several studies have detailed the use of cell phones as a problem that needs to be addressed. According to the Insurance Institute of Highway Safety Status Report (2006), several US states have made it illegal to use a hand held phone while driving. Such bans are in effect in Connecticut, New Jersey, New York, and the District of Columbia. Ten states and the District of Columbia limit the use of any kind of phone by teenage drivers.

An Institute study based on the billing records of Australian drivers found a fourfold increase in the risk of an injury crash associated with cell phone use. This risk was consistent among male and female drivers as well as younger and older drivers. Research has shown that the use of cell phones increases the risk of a crash by approximately 536%, and likens a driver using a cell phone to that of a driver with a Blood Alcohol level of .08.

The task of answering a call is the most risky one, because mobile phones are often left in a place that is difficult to reach for the driver and people tend to leave whatever they are doing when the phone rings to the detriment of safe driving (Chittaro & DeMarco, 2004). Hands-free devices can reduce the mechanical effect of receiving a call, but cannot reduce the cognitive distraction involved in a conversation. The following data are cited (Green, 2000):

- > The risk of a collision when using a cellular telephone is four times higher than when a cellular phone is not used; units that allowed the hands to be free seem to offer no safety advantage over hand held units.
- > The risk of a collision increases with the frequency of calls. Crashes involving phone users are more likely to be caused by

inattention, unsafe speed, or being on the wrong side of the road.

- > A conversation with passengers is much less distracting than a phone conversation, because to some degree passengers limit the complexity of what they say to match the driver's ability to process that information at the moment, while a person on the phone has no knowledge of the driving situation.

The National Driver Training Institute (2007) brings the issue of cell phone usage to the forefront, highlighting the need for drivers to pay attention to the road while driving:

Text messaging may be one of the most dangerous distractions for any driver. "Clearly, the problem with texting is the same portion of your mind that you need to be using when you're focusing on the road is the same portion that you're using when you're texting," said Michael Pina of AAA. For young, inexperienced drivers, texting could be even more dangerous. And yet, 46 percent of teens in a new AAA/Seventeen magazine survey admitted to texting while driving.

Fifty-one percent said they talk on cell phones while driving, another distraction. "I do and it's very dangerous," one woman said. "I have these little flashes in my mind of thinking about getting into an accident while I'm doing it." Four states have made it illegal to drive and talk on a cell phone without a hands-free device. But so far, only Washington State has enacted a law banning text messaging while driving.

Benefits of technology for dealing with the young adult driver follows in a later section of this document.

Safety experts identify cell phone use by young adults while driving as a prevalent source of distraction. An Allstate Foundation (2005) survey found that 52 % of teenagers surveyed reported talking on a cell phone while driving. (www.allstate.com)

Numerous states have enacted restrictions on the use of cell phones and other cellular devices by teenagers while driving: California (eff. 7/1/08), Colorado, Connecticut, Delaware, District of Columbia, Illinois, Maine, Maryland, Minnesota, Nebraska (eff. 1/1/08), New Jersey, New York, North Carolina, Rhode Island, Tennessee, Texas, Virginia, Washington (eff.7/1/08) and West Virginia (IIHS, 2007b). The National Transportation Safety Board recommended States prohibit holders of learner's permits and intermediate licenses from using interactive wireless communication devices while driving. (*Safety Recommendation H-03-8*)

Cell phones enabled with GPS can, however, have positive benefits if they are used to determine if a driver is speeding, or the current vehicle location, if the vehicle is moved or stolen. "A Comparison of the Cell Phone Driver and the Drunk Driver" (Strayer, Drews & Crouch, 2006) details the results of a logistic regression which indicates a difference in accident rates for baseline and cell phone conditions was significant, and the estimated odds ratio of an accident for cell phone drivers was 5.36, a relative risk similar to the estimates for drivers with a blood alcohol level of .08% (Zandor, Krawchuk & Voas, 2000). This study clearly supports the contention that cell phone usage increases crash risk.

Global Positioning Satellite (GPS)

There are several manufacturers of GPS tracking systems, also known as "black boxes," which can provide real time information about the driving speed, safety belt use, acceleration, and braking behavior of the driver. More sophisticated systems may also give audible alerts to the driver if they are speeding or haven't buckled their safety belt. Black box units collect information to access at a different time, while real time units work in conjunction with GPS to relay information as it occurs.

On April 9, 2007, AIG Insurance announced the development of a Teen GPS Program. Utilizing GPS technology, the AIG Teen GPS program will automatically send the parent an email or text message if the teen's car exceeds predefined speed limits or is driven too far from a predefined

location. A list of features of the system is shown below:

- > SpeedAlert allows parents to set speed parameters and be alerted if vehicle exceeds set speed. Example: If parents designate 50mph as a speed threshold, they and/or their teen driver will be alerted each time the tracked vehicle exceeds 50mph.
- > TeenLocate lets parents know where and how long their teen driver has been at any location, within 30 feet. Parents also can receive alerts on location as often as they prefer. (Example: send alerts every 15, 30, 60 minutes, etc...)
- > GeoFence allows parents to designate approved and/or unapproved driving areas and locations. They are alerted if there are any violations. Example: If parents have limited their teen to driving to school, work, and a friend's house, they will be alerted if the vehicle travels outside this designated radius.
- > ForceField allows parents to wrap their teen's vehicle for unapproved use or to alert vehicle movement and prevent vehicle theft. Example: If parents do not want their teenager to drive the car while they are out of town, they will be alerted if the vehicle moves.
- > VoiceLocate is an interactive voice recognition feature that allows parents to locate the vehicle at the current time.

The costs of the program fall between fifteen to forty dollars per month depending on the functionality required. Several insurance companies offer discounts for real time monitoring systems since they qualify as anti-theft devices.

Following is a small sample of a few products that are presently available as reported on the www.smartmoney.com website posting on March 16, 2007:

Device	Cost	How It Works
Big Brother TeenTracker	\$699, plus \$4 to \$10 per week	Installed in the car, this GPS device tracks every start and stop, as well as where the teen driver is and how fast he's driving. Parents can set up alerts to notify them when their teen is in a prohibited area, or has been in an accident. Parents can check in on their cell phone, or online and can choose a service plan based on how often they want upgrades when the vehicle is on. A \$4-a-week Bronze plan will update every 20 miles, for example, while the \$10-a-week Gold plan updates every two miles.
CarChip	\$99	A tiny "black box" collects up to 75 hours of driving data at a time, from driving speeds and distance to any sudden stops or accelerations. The device uses a USB cable to connect to a computer, and the included software will map out the teen's driving habits.
Drive OK	\$195, plus \$15 to \$100 per month	Installed in the car, this GPS device logs a week's worth of driving locations and speeds. Parents are alerted when their child exceeds speed limits or goes beyond boundaries defined by parents. Parents can check in on their cell phone or online. Service plans vary in price by how many location requests or alerts made each month.
Teen Arrive Alive	\$15 per month	Using a GPS-enabled cell phone, this program collects data about the teen's location every two minutes, using it to calculate driving speed. Parents can check in on their cell phone or online. Currently, the program is available only for Nextel subscribers.

Vehicle

In their 2007 study entitled “The New Car Assessment Program Suggested Approaches for Future Program Enhancement”, the National Highway Traffic Safety Administration (NHTSA) identified three priority technologies which are based on technical maturity, fleet availability, and available benefits data that can reduce crashes.

1. Electronic Stability control – These systems prevent loss of control events associated with excessive vehicle yaw, which often result in run off the road crashes and rollovers. On September 14, 2006, NHTSA announced its proposal to make this technology standard equipment on all light duty passenger vehicles starting with model year 2009.

This system helps keep the vehicle on its intended path during a turn, to avoid sliding or skidding. It uses a computer linked to a series of sensors--detecting wheel speed, steering angle, sideways motion and yaw (spin). If the car starts to drift, the stability-control system momentarily brakes one or more wheels and, depending on the system, reduces engine power to keep the car back on course. ESC is especially helpful in providing an extra measure of control in slippery conditions and accident-avoidance situations. With tall, top-heavy vehicles like sport-utilities and pickups, it can also help keep a vehicle from getting into a situation where it could roll over

2. Lane Departure Avoidance – These are systems that track vehicle position within a lane and use this information to warn and/or provide steering assistance to help drivers maintain vehicle position in a lane, consequently helping to prevent run off the road crashes. Cameras that

detect the stripes between lanes can determine if an inattentive driver has let the car wander off its intended path and alert him with a chime and warning light.

3. Rear End Collision Avoidance – These are systems that have forward vehicle detection capability and use this information to warn the driver and/or automatically brake to prevent rear end crashes. Currently found on a few Mercedes-Benz and Lexus models, these sense a collision before it happens and take action to warn and prepare the driver for an accident. It detects vehicles in front and can sound an alarm, display warning lights, and take preventive steps to optimize the driver’s and passengers’ safety.

Of the three technologies prioritized by NHTSA, there has been extensive study done on the benefits of electronic stability control systems (ESC). According to NHTSA (2006, August) report entitled “Proposed FMVSS No. 126 Electronic Stability Control Systems,” it is estimated that 29% of all 2006 model year vehicles are equipped with ESC, and by 2011, at least 71% of all light vehicles will be equipped with this technology. NHTSA notes that the installation of ESC would save 1,536 to 2,211 lives and eliminate 50,594 to 69,630 Maximum Abbreviated Injury Scale (MAIS) 1-5 injuries once all passenger vehicles have ESC. The implications of this study are profound in that the implementation of ESC in all passenger vehicles would yield a net benefit of over 5.5 billion dollars yearly (most conservative estimate).

The NHTSA (2006) table below provides a detailed analysis of the savings derived from the implementation of ESC.

Cost-Effectiveness and Net Benefits by Discount Rate

(2005 \$)

	3% Discount		7% Discount	
	Low	High	Low	High
Fatal Equivalents	2,180	2,974	1,746	2,370
Injury Benefits (1)	\$8,179,248,820	\$11,158,296,326	\$6,550,902,954	\$8,892,119,130
PD&TD Savings	\$325,144,966	\$452,803,776	\$260,294,366	\$360,597,716
Vehicle Costs*	\$985,157,000	\$985,157,000	\$985,157,000	\$985,157,000
Fuel Costs	\$26,800,000	\$26,800,000	\$21,840,000	\$21,840,000
Net Costs (2)	\$686,812,034	\$559,153,224	\$746,702,634	\$646,399,284
Net Cost Per Fatal Equivalent (3)	\$188,014	\$315,051	\$272,742	\$427,665
Net Benefits (4)	\$7,492,436,786	\$10,599,143,102	\$5,804,200,320	\$8,245,719,846

PD&TD: property damage and travel delay

* Vehicle costs are not discounted, since they occur when the vehicle is purchased, whereas benefits occur over the vehicle's lifetime and are discounted back to the time of purchase.

(1) = \$3,751,949 * Fatal Equivalents

(2) = Vehicle Costs - PD&TD + Fuel Economy Costs

(3) = Net Costs/Fatal Equivalents

(4) = Injury Benefits – Net Costs

Definition of terms in NHTSA (2006) Cost-Effectiveness chart above:

- > Fatal equivalent = number of fatalities + (number of nonfatal injuries)*injury/fatality equivalence ratio. The injury/fatality ratio is a constant used to measure the extent of the injury that occurs in an accident. MAIS 1 (minor injury) – MAIS 5 (un-survivable injury). MAIS 2-4 refer to moderate, serious, and major injuries (which are survivable)
- > Discount rate = the interest rate used to discount future cash flows. The term can also be used to describe the rate at which you can borrow money from a bank.
- > Net Costs = Undiscounted Vehicle Costs – property damage – travel delay + fuel economy costs.
- > Net Cost/Fatal Equivalent = Total costs/Fatal equivalent (explained above)
- > Net Benefits = (Cost of a human life)*(Fatal Equivalents) – net costs. *Fatal Equivalent is positive since it represents the number of lives saved through the implementation of ESC technology.

These sobering numbers demonstrate that there is a great benefit to saving even one life. In 2006, there were approximately 1703 fatalities in the state of Georgia, which corresponds to almost 6.39 billion dollars of lost human capital (utilizing NHTSA's estimate of a human life as 3.75 million dollars). Of that amount, 544 fatalities were young adult drivers aged 16-24, representing over \$2 billion dollars of human capital.

“ In 2006, there were approximately 1703 fatalities in the state of Georgia. Of those, 544 fatalities were young adult drivers aged 16-24, representing over \$2 billion dollars of human capital.”

These statistics accentuate the need to accelerate the implementation of electronic stability control, departure avoidance, collision avoidance and other technologies that can make our roadway safer. The cost benefit analysis only shows the benefits of electrical stability control systems. By providing tax incentives and insurance discounts to drivers who adopt these life-saving technologies, there will undoubtedly be a growing acceptance of these technologies.

“In Vehicle Technology and GDL: Addressing Patterns of Teen Risk” (Donath, Brovold, Ward & Simon, 2006) notes that some unsafe driver behavior may be habitual. Drivers may be unaware of the risks, while other drivers may take risks because they feel anonymous.

Donath, et. al. emphasizes the importance of three promising technologies to combat these behaviors:

1. Safety belt interlocks - Requires all occupants to engage safety belt prior to starting vehicle. If any occupants do not use a safety belt, the vehicle will not start.
2. Alcohol ignition interlock – A device which requires the driver to breathe into a tube connected to a blood alcohol sensor. If the BAC is above the standard limit, the ignition lock will be engaged, so the driver cannot start the vehicle.
3. Intelligent Speed Adaptation – A system of in-vehicle speed limitation that discourages the driver from exceeding road’s posted speed limit. This is achieved through combination of Global Positioning System (GPS) and digital road map. In some systems, speed is limited by the link with elements of vehicle's power train, such as throttle or fuel system. The system will beep – alerting the driver through light signals and beeps if they exceed the speed limit.

Recommendations

- Prohibit the use of any interactive wireless communication device by any driver holding a Class CP or Class D driver license.
- Prohibit the use of cellular, hands-free, or mobile telephone or other interactive wireless device by any drivers holding a Class CP or Class D driver license.
- Develop a privacy policy addressing the use of GPS “black boxes” for issues such as liability in a crash, disclosure, enforcement, etc. Georgia does not currently have policies addressing this in the event of a crash, for example, where a driver has a black box system installed.
- Encourage investment in the technologies of Electronic Stability Lane, Departure Avoidance, and Collision Avoidance Systems in support of NHTSA’s vision.
- Encourage insurance companies to consider providing discounts to consumers that purchase a GPS or black box system that monitors driver behavior, as these systems constitute an added safety feature.
- Encourage parental involvement by giving parents tax incentives if they invest either in technologies such as safety belt interlocks and alcohol ignition interlocks or GPS and black box systems that monitor driver behavior systems.

Engineering

Problem Identification

Roadway Geometrics are an important consideration when assessing highway safety. The traffic fatality rate per one billion vehicle miles has fallen by more than 50% since the mid 1960's. Roadways have been made safer by design improvements such as increased super-elevation, intersection geometry, and the addition of grade separations.

Teen drivers account for more than 32% of all fatal crashes in Georgia. This statistic is alarming, and may be due in part to teen drivers exhibiting several of these factors concurrently. For example, a teenager driving under the influence of alcohol may lead to excessive speeding since the driver may be impaired due to reduced cognitive function. Despite the reason for a vehicle leaving the roadway, a roadside environment free of obstacles with flat slopes ameliorates the severity of the crash.

Almost one in every three fatalities is caused by a single vehicle leaving the roadway. These crashes are a result of driver fatigue and inattention, excessive speed, driving under the influence of drugs, crash avoidance, inclement weather conditions, or poor visibility.

Crash reduction factors

A Crash Reduction Factor (CRF) for a specific safety measure is the percent reduction in crashes due to the implementation of that safety measure. Crash reduction factors (CRFs) can be determined by comparing accident rates before and after a safety measure improvement.

In most situations, a crash is not a result of poor design, but is attributed to driver inattention. While safety is a function of engineering design, it

ultimately depends on the ability of the driver to be alert and responsive to their driving environment.

In May 2007, Ohio University released a study which analyzed 23 intersections of which 19 were previously controlled by stop signs and 4 were previously controlled by traffic signals.

The implications of the study are profound. Adding left turn exclusive lanes, installing guardrail, and adding raised medians at crosswalks are shown to be very effective countermeasures. Typically, crash reduction factors of .40 or higher are desirable at intersections. A negative crash reduction factor value means that crashes actually increased after the implementation of the safety measures. For instance, one can see that the installation of red light cameras actually increased the number of rear end crashes by 15% and the number of rear end crashes with injuries increased by 24%. Narrowing lane widths to add lanes also increased fatal and injury crashes by 11%.

There are engineering improvements that can be made to make Georgia's roadways safer. Before and after studies are effective ways to measure the usefulness of a safety treatment. Georgia should develop its own crash reduction factors, following the lead of states like Florida, California, and Texas. The development of crash reduction factors for all intersections in Georgia, especially those with high crash rates, would ultimately save lives.

Accident Modification Factors

By definition, an Accident Modification Factor (AMF) represents the relative change that occurs in crash frequency when a particular geometric design component is added or removed, or when a design element is changed in size. In their Research Results Digest 299 (2005), the Transportation

Research Board identified several key challenges regarding the use of accident modification factors

Some states have developed their own AMF utilizing their own crash data, while others may just adopt AMFs that were developed in other states. The extent to which AMFs are valid from state to state will vary based upon roadway, traffic, weather, and driver characteristics.

Many existing AMFs are derived from before and after studies, as opposed to cross sectional regression type analysis. Many current studies reflect changes in crash experience resulting from improvements at sites that had experiences unusually high accident rates in the before treatment period. The selection bias inherent in the approach may result in significantly exaggerated AMF estimates due to regression to the mean.

The following methodological problems are also found:

- The failure to properly separate out safety effects of other changes has been a problematic issue. The relative impacts of other treatments implemented at the same time, crash reporting differences between jurisdictions, and underlying crash trends over time must be considered in the formulation of an appropriate AMF.
- Small sample sizes are difficult to analyze. Several sites with the same combination of countermeasures are needed to conduct a valid statistical analysis. In addition, larger sample sizes would reduce error and provide greater accuracy. For some treatments and the subsequent type of crash reduction expected, thousands of locations may be necessary along with several years of crash data. The use of dissimilar comparison groups leads to an incorrect interpretation of the accuracy of the estimates.
- The value of an AMF may depend on a variety of factors such as traffic volumes, crash experience, and site characteristics. Research that results in a single AMF value may have

limited applicability. An accident modification function, rather than factor, may be more applicable.

- **Crash Migration and Spillover Effects.** After countermeasures have been implemented in a particular location, crashes may migrate to adjacent locations. The conversion of a two way stop control to a multiway stop control at an intersection may lead to an increase in crashes due to driver confusion at surrounding intersections that continue to be stop controlled. Likewise, the prohibition of left turns at an intersection may lead to an increase in left turn crashes at upstream and downstream intersections. Existing AMFs rarely account for these qualitative factors.
- **Lack of Information on Effectiveness.** AMFs have not been developed for many ITS improvements. No reliable AMFs exist for pedestrian safety treatments such as in pavement lighting, countdown signals, or changeable message signs. Many states rely on safety service patrols to reduce the impact of incidents and secondary crashes. However, no AMFs exist for this countermeasure.
- **Combination of Treatments.** Most AMFs are designed for individual treatments. However, multiple treatments are typically made when a facility is being rebuilt. Although states use different formulas for combining AMFs when considering multiple treatments, there is very little quantitative research on the multitude of actual combinations of treatments currently in use.

The Transportation Research Board (November, 2005) sent out a survey to state DOTs in which they asked respondents to rate the importance of having an AMF for each of the 100 intersection, roadway segment, and miscellaneous treatments. The results were used to establish an overall level of importance for each treatment, also known as a level of predictive certainty. The level of predictive certainty (LOPC) indicates the confidence level one should have in the AMF for that particular

treatment. The following table (TRB, 2005) lists these treatments by type and LOPC:

TABLE 2 Treatments with AMFs that have a Level of Predictive Certainty of High or Medium-High

Treatment	Level of Predictive Certainty
<i>Intersection Treatments</i>	
Install a roundabout	High
Add exclusive left-turn lane	High
Add exclusive right-turn lane	High
Install a traffic signal	High
Remove a traffic signal	High
Modify signal change interval	Medium-High
Convert to all-way stop control	Medium-High
Convert stop-control to yield-control	Medium-High
Install red-light cameras	High
<i>Roadway Segment Treatments</i>	
Narrow lane widths to add lanes	Medium-High
Add passing lanes (two-lane roads)	Medium-High
Add two-way left-turn lane (TWLTL)	Medium-High
Increase lane width	Medium-High
Change shoulder width and/or type	Medium-High
Flatten horizontal curve	Medium-High
Improve curve superelevation	Medium-High
Add shoulder rumble strips	Medium-High
Add centerline rumble strips	Medium-High
Install/upgrade guardrail	Medium-High
<i>Miscellaneous Treatments</i>	
Install raised medians at crosswalks	Medium-High

Recommendations

- **Clear zone Improvements:** Clear zones should be widened in areas where run off the road crashes are prevalent and if vehicles have hit rigid and removable objects within the clear zone. If non-removable objects are located in the clear zone, then this countermeasure would be difficult to enact. In areas with side slopes steeper than a horizontal:vertical ratio of 3:1, flattening the side slope should be considered. However, in many cases, installing guardrail along the roadway may provide a better, more cost effective solution. The relocation or removal of fixed objects such as utility poles, light standards, signs, or even parked cars should be considered if they present a hazard to vehicles. It must be duly noted, however, that the removal of a fixed object may create other hazards. Typically, warning signs and light standards are not removed (AASHTO, 2002).
- **Pavement markings:** Centerlines and edgelines should be visible during wet conditions and at night. Upgrading edgelines would reduce run off the road crashes in rural areas. Upgrading centerline delineation would reduce the number of crashes where drivers cross into the opposing lane of travel. No passing zone lines would be installed where passing maneuvers are not safe under existing horizontal and vertical curvature. In addition, areas with sharp vertical curvature would likely also have restricted sight distance. Adding Raised pavement markings (RPMs) to the centerline is recommended in areas where the centerlines are not visible or in situations where they provide inadequate delineation. Drivers will be alerted if they cross into another lane by the sound of their tire crossing the raised pavement marking (AASHTO, 2002).
- **Guardrails:** Guardrail should be upgraded or installed in areas where the side slopes are not traversable, and also in areas where run off the road vehicles may hit a fixed object. As shown above, the installation of guardrail accounted for

a 44% reduction in fatal injury crashes. This measure would not be recommended for areas with numerous driveways since the installation of guardrails could limit stopping sight distance (AASHTO, 2002).

AMFs should be determined to assess the effects of ITS technologies, such as changeable message signs (AASHTO, 2002).

- **Shoulder/Centerline improvements:** Edge Line Rumble strips should be installed on state routes with two feet or less paved shoulders and four feet or less of earthen shoulder. Priority should be given to sections experience a crash rate that exceeds the statewide average. There have been innumerable cases where rumble strips have helped to prevent rear end crashes. Shoulders should be widened in areas where drivers do not have enough room to redirect their vehicle back onto the roadway. According to the Georgia DOT Safety Action Plan (2006), On System Head On and Sideswipe Opposite Direction crashes represented 2% of the total crashes in Georgia, but accounted for 12% of the total number of fatalities statewide. States reporting on implementation results are showing an average 21% reduction in Head On and Direction Sideswipe crashes and also a 25% reduction in injuries after the installation of centerline rumble strips. **Traffic signs:** Warning signs should be installed in locations near school zones, areas with heavy pedestrian traffic, and on extreme curves to warn drivers. Advisory speed signs should be installed in all locations that have sharp high speed curves so drivers can reduce their speed. All ramps with sharp super-elevation should have advisory speed signs. Advisory signs would not normally be needed in low speed, tangent sections with good visibility. Chevron alignment signs should be installed on extremely sharp horizontal curves with tight radiuses. Drivers may experience difficulty in identifying the curve, especially during nighttime driving. In addition, chevron alignment signs would be useful at intersections with a change in horizontal alignment (AASHTO, 2002).
- **Accident Modification Factors (AMF)** should be developed for the state of Georgia. The AMFs should primarily address the methodological issues, crash spillover effects, and be able to deal with combinations of treatments. New

Additional Recommendations

- Routinely link citations to driver record.
- Engage culture-specific media in traffic safety and enforcement efforts
- Require (or create incentives for) media to air/print minimum hours/numbers of traffic safety PSAs
- A ‘model policy/procedures’ handbook for all faculty/staff at schools throughout the state as it relates to driver education requirements
- Count-down timers for traffic lights
- Bicycle lanes for regular bike routes
- Exceed DOT distance standards for signage on interstates
- Explore alternative transportation service as a part of DUI prevention.
- Increased restraint use and alcohol/drug enforcement in selected areas.

Future Opportunities

- Immobilize/impound/seize vehicle.
- Require ignition interlock devices (IID)
- Electronic Monitoring.
- “Stripe” license plate or decal.
- Invite automobile manufacturers (particularly those with sites located in Georgia) to the table to be involved in future State Highway Safety Plans.
- Tracking of the drinking establishment of persons who are stopped for DUI or commit other alcohol-related crimes. Police track the information and provide feedback, generally via a letter, to the owner/manager. One study out of Australia has shown promising results.
<http://www1.hnehealth.nsw.gov.au/hnepH/AlcoholLinkingProgram.htm>

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Appendix A

Member Organizations

A.L. Burruss Institute at Kennesaw State University
American Academy of Pediatrics
Center for Disease Control and Prevention
Conyers Police Department ACE Unit
DeKalb County Schools Driver Education
Emory University
Georgia Department of Driver Services
Georgia Department of Human Resources
Georgia Department of Public Safety
Georgia Department of Transportation
Georgia Division of Public Health
Georgia Governor's Office of Highway Safety
Georgia EMS
Georgia Institute of Technology
Georgia State Patrol
Georgia Teen Research Institute
Georgia Traffic Injury Prevention Institute
at The University of Georgia
Joshua Brown Foundation
Mothers Against Destructive Decisions
National Safety Council
Newton County Sheriff's Office
Pioneer RESA
Students Against Destructive Decisions