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Title Page

**Assessing seatbelt usage among teenagers in rural settings:
The Drive Alive Program**

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A Thesis Submitted to the Graduate Faculty of Georgia State University in Partial
Fulfillment of the Requirements for the Degree:

MASTER OF PUBLIC HEALTH ATLANTA, GEORGIA

Approval Page

Assessing seatbelt usage among teenagers in rural settings:

The Drive Alive Program

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April 15, 2016

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This thesis is dedicated to my children: Ciarra, Brandon, and Caeden – you can do anything you set your mind to – reach for the stars my loves, you will succeed. Mommy loves you.

Abstract

Working to increase seatbelt usage among teenagers in rural settings: The Drive Alive Program (Under the direction of Dr. Monica Swahn)

Background: Motor vehicle crashes are a leading cause of death in the United States.

Teens are less likely to wear seatbelts than other age groups and more likely to be involved in a crash. The Drive Alive program was designed to improve seatbelt usage among teens.

Purpose: This analysis aims to evaluate seatbelt use among teen drivers in a rural setting. Specifically, are there differences between males and females in terms of seatbelt use? Are drivers more likely to wear their seatbelts than passengers?

Methods: Data was gathered from observational surveys (N= 3,743). Surveys were gathered by trained observers in South Georgia from 2010-2011. Records were analyzed in SPSS using three categories: occupant, sex, and belt use. The null hypotheses for this study are: 1) there is no significant difference between male and female drivers or passengers in seatbelt usage; and, 2) there is no significant difference between driver and passenger seatbelt usage.

Results: Descriptive analyses were computed to determine average seatbelt use across all occupants. Chi Square for Independence tests were computed to determine differences between drivers and passengers and males and females. Females were significantly more likely than males to wear their seatbelt (Females, 70%; Males, 59%). There were no significant differences in seatbelt use for drivers and their passengers.

Conclusions: Results for females being more likely to wear seatbelts is consistent with the literature. Future research might include comparison between schools with different versions of the program. Programs to increase seatbelt usage among teens should include parents, education, enforcement, teen-led activities, and partnership with educators and community organizations. Save the lives of young drivers by modeling seatbelt wearing, appropriately implementing comprehensive seatbelt use improvement programs, and enforcing the law. These simple measures will improve seatbelt use and reduce roadway fatalities.

INDEX WORDS: teen drivers, seat belts, motor vehicle crashes, injury, rural

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Author's Statement Page

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- *Managing Editor.* Doll, L.S., Bonzo, S.E., Sleet, D.A., Mercy, J.A. (2007). Handbook of Injury and Violence Prevention. New York, NY: Springer.
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Chapter I

Introduction

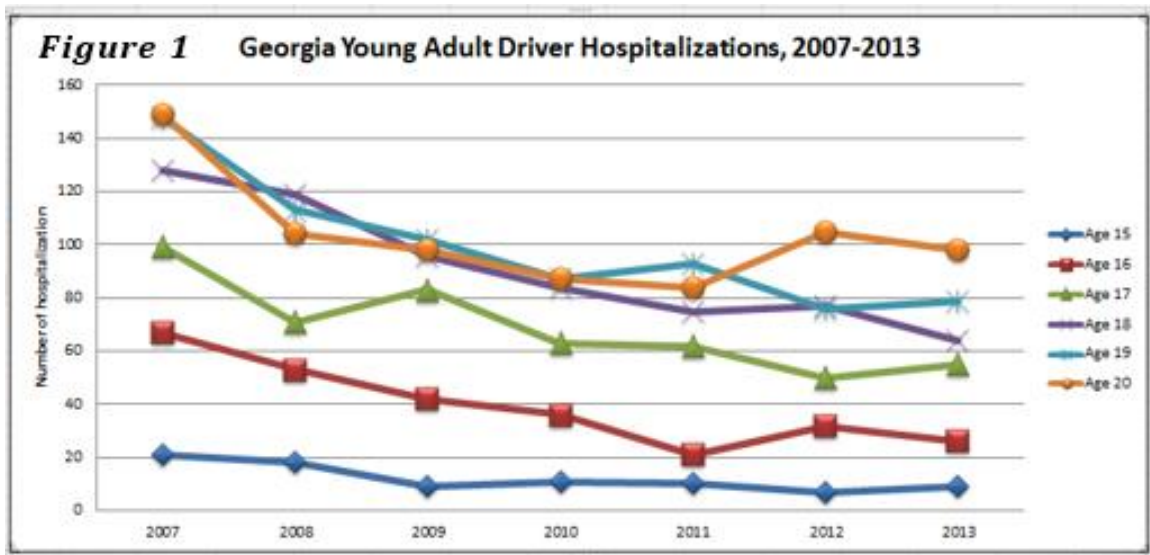
In 2007, in the United States, injuries, including all causes of unintentional and violence-related injuries combined, accounted for 51% of all death among people 1-44 years of age (CDC 2013); that is more deaths than non-communicable and infectious diseases combined. These injuries have an annual cost of more than \$400 billion annually in medical costs and lost productivity (CDC 2013). Injuries can be predicted because of the associated risk factors and fairly stable trends; therefore, they are, largely, highly preventable (Dawson, personal communication 2012). The focus of this thesis is one of the leading causes of injury death across the nation for the last fifty years – motor vehicle crashes. Only recently surpassed as number one by prescription drug overdose (which also has driving implication), motor vehicles are often fatal and highly preventable.

In 2013, 32,719 people were killed on American highways (NHTSA, 2015). Motor vehicle crashes (MVCs) are a leading cause of injury in the United States (CDC, 2016). Motor vehicle crashes are an important public health problem, as this injury mechanism has been in the top two leading causes of injury death for people 1 – 44 years of age for the last fifty years. Despite overall declines in MVC fatalities – largely due to the enactment of primary seatbelt laws, education, and enforcement - MVCs remains the leading cause of injury death for young adults ages 15-20 (NHTSA, 2013). Deaths from motor vehicle crashes are one of the most preventable causes of injury death in the U.S.

In Georgia, the story is similar to the national statistics. There were 1,179 fatalities on Georgia Roadways in 2013(GOHS, 2013). Overall, Georgia fatalities have declined every year since 2007. Primary seatbelt laws and Georgia's Graduated Licensing system, the Teen and Adult Driver responsibility Act (TADRA), have contributed to the continued decline of fatalities. However, when looking at the crash and injury numbers specific to teen drivers, these same declines are inconsistent. From 2007-2013, nearly 2,911 young adult drivers ages 15-20 were hospitalized as a result of a motor vehicle crash. While the overall number has declined from 2007, the reductions have been unstable. In 2012, hospitalizations for drivers 20 years of age rose to 100, an increase of 20 from 2011 and similar to 2008 hospitalizations (Figure 1, below). According to the Georgia Department of Transportation and the Georgia Department of Public Health, both the overall numbers of motor vehicle crashes and the related deaths and hospitalizations for 2015 will exceed the previous year for the first time in almost a decade (GA DPH, 2016). It is this inconsistency, that makes motor vehicle crashes a

threat to the safety of all drivers, but especially to those young drivers that lack the experience to anticipate dangerous situations and avoid some collisions.

Motor vehicle crashes, and injuries in general, are preventable because public health professionals are able to predict incidents based on risk (e.g., speeding/distracted



driving) and protective factors (e.g., seatbelts/obeying traffic laws) (GA DPH, 2010), and use this information to focus programming and policy. These programs and policies have, historically, reduced MVC occurrence and impact to the individual. For example, enactment of primary seatbelt laws has significantly reduced roadway fatalities (Molnar et al., 2012, Garcia-Espana, 2012). While overall, driver's education courses have limited and controversial success (Mayhew, 2007, Lonero, 2008), graduated Driver's licensing (GDL) has significantly improved outcomes for young drivers (Shell et al., 2015). The practice associated with drivers education is important in embedding defensive driving skills, delaying driving, and minimizing known risks through the provisions of GDL.

Appropriate restraint use is a critical protective factor in reducing the impact of a motor vehicle crash. Driver fatalities could be reduced by as much as 50% with

appropriate use of a seatbelt (Gonzales, 2005, NHTSA, 2010). This makes teen driver safety particularly important because young drivers 16-24 years of age are the least likely of any age group to buckle their seatbelt, yet the most likely to be involved in a crash (NHTSA, 2008). Once a teen earns their driver's license, distracted driving, inexperience behind the wheel, and other factors (discussed in greater detail in the literature review) put them more at risk for a crash (McCart, 2004, Ginsburg, 2008). In fact, a new driver is most likely to crash in the first few months after licensure (IIHS, 2016).

Programs implemented to increase seatbelt use and improve safety for this high risk age group have had varying degrees of success. Some programs focus on the parents, while other programs focus on enforcement or peer-led education. Research has also been conducted on the conceptual frameworks and theories that should inform these programs and increase success rates. Many of these programs utilize a multi-faceted approach. The combination of these factors leaves a clear need for comprehensive, cross sector, interdisciplinary partnership in order to implement comprehensive programming aimed at improving seatbelt use and shifting to an overall culture of driver safety. The focus for this thesis is teen, or young adult, drivers; specifically, increasing seatbelt use among this high risk group. Seatbelt usage is a simple protective measure that could be used to increase survivability in a crash.

The Drive Alive Program is an example of such a multi-faceted program working to increase seatbelt usage among teens, particularly in rural areas where overall all seatbelt usage is lower. The Drive Alive pilot program (DAPP) was implemented in 2006 (Burkett, 2010). It was designed as a joint venture between the Georgia Department of Public Health's (DPH) Rural Roads Initiative (a field office within the GA DPH Office of

Injury Prevention) and the University of Georgia. The program is a theory-based program based on highway safety best practices. The program consists of four parts: 1) observational surveys, 2) incentives, 3) disincentives, and 4) education/media activities geared toward educating drivers about the importance of safety belt use (Burkett, 2010). In addition, the schools enact and inform students about policies around losing parking spaces for non-compliance. Finally, local law enforcement creates an atmosphere of perceived enforcement by increasing their presence at and near the school. Trained volunteers conduct observational surveys at the entrances of local high schools. The survey instruments document gender and seatbelt usage of drivers and passengers in vehicles entering and exiting the school. Surveys are, ideally, collected before and after planned program activities. Local organizations, student groups, and others work with the school administration and local law enforcement to conduct activities to raise awareness about the importance wearing safety belts (Burkett et al., 2010).

Purpose of the Study

The purpose of this study is to evaluate seatbelt use among teen drivers participating in the Drive Alive program from 2010-2012 in South Georgia. Drive Alive was designed to increase seatbelt usage among teen drivers in rural Georgia. The program, which was first introduced and implemented in 2006, has been in place for nearly ten years. During that time, changes in program funding, staff turnover, and inconsistent implementation within the community have caused inconsistencies in program delivery. This analysis and subsequent discussion aims to answer the following research questions: Are there differences between males and females in terms of seatbelt use? Are drivers more likely to wear their seatbelts than passengers?

Hypotheses

This study posits that females (drivers and passengers) will have higher seatbelt usage rates than their male counterparts. This is consistent with the literature (Zambon et al., 2008, Nambisan and Vasudevan, 2007) and a previously published study of the Drive Alive program, where seatbelt usage was higher among female occupants (Davidson et al., 2013). In addition, the study posits that drivers are more likely to buckle seatbelts than passengers. The null hypotheses for this study are: 1) there is no significant difference between males and female drivers or passengers in seat belt usage; and, 2) there is no significant difference between driver and passengers in seat belt usage.

Chapter II

Review of the Literature

State and federal agencies, as well as community and other professional organizations have created materials, launched programs, and enacted policies to increase safety and reduce fatalities and injuries for young drivers 16-20 years of age. This is a high risk age group for motor vehicle crashes (MVCs). Despite these scientific and programmatic efforts, teens remain the most at-risk group of drivers across the lifespan. This literature review breaks down the different components of teen driver issues into six sections. Each of these sections could be detailed (and have been) in independent studies. For the purposes of this work, articles were sorted into six themes, with some articles being appropriate across multiple themes:

- Young Drivers: Risk Factors, behavior, gender differences, unique population perspective,
- Seat Belt Use: Differences between Rural/Urban, Drivers/Passengers, Teens/other populations,
- Policy/Enforcement: Laws, policies, and program featuring enforcement for seat belt usage and increased safety behind the wheel,
- Education/Training: Programs, technology, or training efforts to increase overall safety and seat belt usage among young drivers,
- Belief/Theory/Behavior: Theoretical constructs that support behavior change and teen behaviors that impact seatbelt use,
- Parents: Overview of parent-involvement in specific interventions for teen drivers.

Young Drivers

Why do Teen Drivers Crash more often? The body of literature on teen / young driver safety is broad. A common theme among the different research is the quest to find and explore the details of exactly how the known risk factors increase crash risk (McCartt, 2013) and how to reduce those risky behaviors and habits. Teens are at the highest risk for a crash in the first months after licensure (IIHS, 2016). While the rate drops by nearly half by the end of the first year of licensure, young, inexperienced drivers remain at an elevated risk for a motor vehicle crash. There are many factors described in the literature: from age and length of licensure (McCartt, 2009) to driver error versus environmental issues (Braitman, 2008, Curry, 2011). Young driver willingness to accept high risk (e.g., speeding, racing, etc.) (Weiss, 2006) coupled with a lack of experience also impacts likelihood of a crash and propensity for a more severe crash (McCart, 2004, Ouimet et al., 2008). Teen driver risk can also be thought of in terms of driver error and cognitive maturity to make safe decisions. For example, new drivers have difficulty detecting a hazard in time to react appropriately, so despite faster physical ability to react quickly, they do not recognize a hazard in time to react (Scialfa et al., 2011).

Many professions interact with and therefore have an opportunity to influence teen driver safety. A 2013 study utilized a service-learning approach that significantly improved seat belt use (Goldzweig, 2013). This study assessed the implementation of a peer-to-peer service learning approach to increasing seat belt use among high school students. In this learning approach a teacher mentors and infuses the curriculum into lessons and discussion. Students lead the actual project/education effort and are tasked with developing projects that reflect the topic. This type of topic inclusion into another discipline is important for getting the message across to young drivers. The medical profession has a similar approach where the physician and staff include SBU messaging

during visits. Nurse practitioners and other clinical professionals can incorporate messages of safety into their exams of driving-age adolescents (Heald, 2004). Providing written material during a visit and discussing it during the question and answer portion of the visit could provide additional exposure to the importance of seatbelt use.

Seat Belt Use

Since the enactment of the first seatbelt law in New York in 1984, there has been significant variations and disparity in use and adoption of this simple and passive safety device (Molnar, 2012). In the large body of literature dedicated to safe driving, there are surprisingly few reports that specifically address teen driver seatbelt use. In fact, within the body of research that looks specifically at teen driver safety, few articles not specifically dedicated to belt use even address safety belt use as a protective factor for teen driver safety. Just as programs designed to reach special populations should address the beliefs of those populations, seatbelt use must be integrated as a foundational piece of vehicle safety and an overall safety culture.

There are specific teen driver characteristics that indicate a decreased likelihood of wearing a seatbelt. Males, those with older cars, passengers, pick-up truck occupants, and those who crashed at night are all less likely to be wearing seatbelts (McCartt and Northrup, 2004). The level of risk and types of risk that young drivers are willing to accept also increases their susceptibility for crash. Ultimately, a new driver's assessment of risk for a crash or utility of a seatbelt differs from what actually triggers the change in behavior (Calisir and Lehto, 2002). This is a critical concept for triggering behavior change of young drivers.

Rural versus Urban trends. There are important environmental and driver behavior differences between urban and rural communities (Zwerling, 2005). These differences contribute to increased crash and fatalities in rural areas. Rural communities' population and community services/businesses are spread out, requiring citizens to travel longer distances and on two-lane windy roads for basic needs. Rural roads have less lighting, and often lack appropriate striping and are not properly maintained. Urban community populations tend to be dense and housed close together with multi-lane highways and one-way slower moving city streets (CDC, 2001). Crashes and fatalities are more prominent in rural areas than urban ones; these crashes are generally a combination of speed, lack of seatbelts, car disrepair, and increased EMS response time (Zwerling, 2005). These differences are important when considering appropriate partners and programs to increase seat belt use and overall safety.

SES Differences. There are also significant differences in seatbelt use across different ethnicities and the socio-economic status (SES) spectrum. Overall, studies have shown that minorities are less likely to use safety equipment or apply safer behaviors (Baker, 1998, Block, 1998, Schwarz, 1993). Minority populations and those with lower SES are often a more challenging audience to change behavior. This can be attributed to other more pressing concerns of those populations, such as communication barriers, health problems, and stable housing and jobs. Disparities might also exist because of differences in ideology or theological constrictions. For this reason, these special populations are more difficult to recruit and study.

For African-Americans, there continues to be a greater disparity in seatbelt use when compared to other ethnicities. A 2006 study out of Ohio discusses the

implementation of a culturally sensitive program to improve seatbelt use for all ages. This study utilized a multi-generational approach and outlined social learning theory and the health behavior model as the foundation for the program components. Focus groups were used to identify six appropriate messages. These messages were infused with biblical references about personal accountability, which was found to be a problem associated with lack of seatbelt use in the literature. There was a significant improvement of both restrained drivers (58.6% pre/73.6% post) and their passengers (57.8% and 74.7%) in the intervention churches from pre to post intervention. This study illustrated an increase in seatbelt use in every age group. Results were significant for children and teens (Falcone, 2006). This study emphasized two important points. First community-based participatory research in combination with appropriate public health learning and behavior theories can impact minority communities. Second, it is imperative to work with faith-based organizations in order to reach minority communities.

In addition to involving faith-based (and other) community organizations to improve seatbelt use, creating a shift in behavior or culture is important to improving overall program safety and seatbelt use. A systems approach, to involve the whole community and include the interactions among different partners within the community could help achieve this type of holistic approach (Scott-Parker et al., 2014). In a 2009 study by Rakauskas and colleagues, the authors examined differences in safety cultures. Surveys were used to measure sensation seeking, social motivation, safety intervention utility, driving behaviors and fatality factors. Of these, rural participants had lower sensation seeking tendencies and, interestingly, lower perceived utility of enforcement or engineering interventions than their urban counterparts. Both groups found education to

be useful. In addition, the study found age to be a protective factor, higher risk/sensation-seeking tendencies among males, and fewer driving violations but lower seatbelt use among rural participants (Rakauskas, et al., 2009). These types of mixed results between urban and rural population highlight some of the importance differences that could affect safety and seatbelt use among teen drivers.

Policy & Enforcement

The federal government began requiring safety belts be installed in all passenger vehicles in 1968 (NHTSA, n.d.). Since that time, many state legislatures have passed primary seatbelt laws that have improved seatbelt use and driven down crashes/fatalities (Garcia-Espana, 2012). An ideal seat belt law would be primary (as opposed to secondary) and have fines of at least \$50 (Houston. 2005). In primary seatbelt law states, law enforcement may stop a driver specifically for this infraction; in secondary law states, a seatbelt violation can only be ticketed when pulled over for another infraction (e.g., speeding). Professionals have also educated the public and constituents about the dangers of improper restraint and the potential for lives saved with appropriate policy, education, and enforcement (Juarez et al., 2006, Maupin et al, 2004). These efforts continue to reduce motor vehicle deaths and injuries. Primary seat belt laws have significantly increased seatbelt usage throughout the U.S., and across all age groups although, belt use is still lower among teens and those that live in rural areas.

In addition to legislation, enforcement of enacted legislation and the creation of organization/agency policy (with enforcement) is needed to continue to improve seatbelt use and reduce crash fatalities/injury severity among teen and young adult drivers (Kaye 1995, Conner 2010). Graduated drivers licensing systems (GDL) are designed to reduce

risks, yet provide practice for inexperienced drivers (Masten et al., 2011). Restrictions through this system cover established high crash risk factors such as driving after midnight and driving with peer passengers (Masten et al., 2011). Enforcement-centric programs such as *Click It* or *Ticket* focus specifically on the enforcement of seatbelts laws and couple those efforts with media campaigns to provide education and awareness about the importance of buckling up and being safe while driving (Thomas et al., 2011). This program, designed to be a short blitz, has been particularly successful in North Carolina and other states where constituents from the governor to local organizations were supportive of the program (Reinfurt, 2004). Another important policy application could be the adoption of school parking permit programs/policies. There has been some success increasing seatbelt use among teen drivers using this approach; however, results were modest in the study area where there was only a secondary seatbelt law and where seatbelt use was fairly consistent (McCart, 2005). These examples of policy change and modest gains for labor intensive programs speaks to the importance of systemic change and shift toward a culture of safety.

Education & Training Programs for Teens

There is some evidence that despite drivers' education being offered since the 1950s, there has not been a consistent or positive correlation between taking driver's Ed and safer driving (Heald, 2004). Driver education was designed to instill safe driving habits in new drivers, as well as reduce roadway fatalities (Mayhew 2007), yet research has consistently shown that results do not meet these stated outcomes/objectives. While there have been other positive outcomes measured from drivers education such as insurance premium discounts, improved mobility for young drivers, and good additional practice (Lonero, 2008, Mayhew, 2007), the lack of actual improved driving or reduction

in fatalities makes community safety and seatbelt use programs a key factor in improving young driver skills and reduce crash risk.

There is an important link between the inability of teens to assign personal risk and seatbelt use (Weinstein, 1986). This linking issue is evident, as programs typically focus on hazard detection, distracted driving, speeding, and other topics. While these issues are also vital to overall safety behind the wheel, making the link between safety, personal risk, and seatbelt use is a crucial aspect of overall teen driver safety. This link proves difficult, as some campaigns using passive education and awareness have yielded non-significant improvements to seatbelt usage (Weinstein, 1986). Other programs have shown promising initial improvements, only to have those results drop off after the program concluded (Kay et al., 1995).

There is some research on different types of training tools. One such tool assessed the use of simulated driving scenarios as a training tool to reduce crashes among newly licensed drivers, who have the highest rate of crashes among all drivers (Fisher, Pollastek, and Pradhan 2006). The question is: what makes a successful campaign to increase seatbelt usage? Research shows that different messaging is required when working with teenagers than with adults, and that teenagers should be involved in the development of education messaging used in their domains. A much older study combined crash scenes (sometimes called Ghost Outs), incentives, and education into a ten week program that utilized education and incentives to increase seatbelt use (Bross 1994). This study saw a 21% increase in seatbelt use among males and a 17% increase in females. Inconsistent reporting tendencies make it difficult to ascertain baseline seatbelt use.

In an effort to provide data on seat belt use, many programs utilize observational surveys before and after the program in order to have a baseline and measure of improvement. Gathering that baseline measurement can be important in building the program. In order to provide baseline belt use data for a rural area, a 2013 Georgia study employed observational surveys in 12 schools over 16 months. These pre-program implementation observational surveys captured an overall seatbelt use of 38.6%. The wide range from 9% to 66% is consistent with other studies (Burkett 2010) indicating that, indeed, seatbelt use in rural areas is variable and much lower than the national average (Davidson et al., 2013). It also points to the overall challenge of behavior change in that, despite Georgia being a primary seatbelt law state, rural rates are very low. This low seatbelt usage is complicated by the fact that school populations turn over by more than a fourth every year.

Other seat belt use programs have placed more emphasis on a multi-faceted (rather than strictly enforcement or passive education) approach. The 2010 study by Burkett et al., was a study of the pilot program, *Drive Alive*. The program employed theory, education, incentives, media, and perception of enforcement. Researchers trained students and community partners to conduct observational surveys at two points in time before and after an intervention designed to increase seatbelt use among teen drivers. Observers recorded drivers and front seat passengers (gender and seatbelt use). The program utilized incentives (e.g., gift cards and newspaper write-ups for seatbelt use) and disincentives (e.g., perception of enforcement by police and the school) to enhance the programmatic interventions such as publishing of surveys in the local paper and student led activities such as ghost outs (Burkett et al., 2010). Initial seatbelt use at the school

prior to the intervention or pre-observation was 47%. At pre-intervention observation, seatbelt use averaged 51.2% (February – April 2007). Post intervention, the average seatbelt use increased to just over 23% (23.3). This was a statistically significant finding ($p < 0.0001$; OR 2.806, CI 2.32-3.40) (Burkett 2010).

The Role of Theory

Theory is a critical guiding principal for the behavior change necessary to improve seatbelt use. The body of literature on theories applicable to traffic safety consistently outlines a gap in the translation of research to practice (Foss, 2007), use of available and applicable theories as a guideline for program implementation (Wallis and Horswill, 2007, Runyan and Yonas, 2008), and improved program outcomes when a sound theoretical framework is infused into proper program implementation (Foss, 2007). These types of gaps are what distract from creating a solid program focus and outlining challenges up front – two key aspects of program sustainability. Theoretical framework, if applied in the beginning and used as a driving force, could improve overall program success. Part of ensuring that this happens is the development of an implementation guide for new partners to follow when implementing the program or policy.

Behavioral Considerations for Safety

The brain of a teenager, specifically areas in charge of reasoning and emotion, does not fully develop until the age of 25 (Holloway, 2016), which makes understanding the behavioral component to teen driver decision making a critical part of improving driver safety and reducing crashes and fatalities. For example, new drivers are unable to perceive risk (Calisir and Lehto 2002), they are easily distressed, which also impacts driving (Scott-Parket et al., 2011). Teens inability to see down the path of action to the related consequences can lead to poor decisions about substance/alcohol use, both of

which are big factors in risk taking (Shults, 2016). A 2015 article by Taubman-Ben-Ari et al. applies the ecological model in terms of each sphere of influence on risk to teen driver safety (Taubman-Ben-Ari, 2015). Each sphere of influence should be recognized and addressed when tailoring the appropriate programs and policies within each sphere of influence of the teen driver.

The Role of Parents in Teen Driving

The role of the parent and families is important to the young driver learning process, particularly in the first six months of licensure (Yang, 2013). Several key themes emerge concerning parents and families' role in young driver safety: the role of communication, the importance of clear rules and expectations (established through clear and frequent communication) (Hamann et al., 2014), and the involvement of the parent with the teen in driving activities both as a gatekeeper and mentor (Beck, Hartos, and Simons-Morton, 2002). This can be achieved through appropriate communication, discussion of rules, and modeling of appropriate behavior. A particularly well known program, checkpoints, creates a formal agreement between parent and teen in order to establish clear rules, consequences, and communication (Hartos et al 2001). These important concepts can reduce crashes and violations, particularly for new drivers (Beck, Hartos, and Simons-Morton, 2006).

There are seven concepts that have been brought together to form the idea of a Family Climate for Road Safety (FCRS). These seven concepts are designed to be used together to create a, "climate for safe driving" (Taubman-Ben-Ari et al., 2012). The concepts include modeling, positive feedback, communication, monitoring (who, what, where, when, and why of teen driving), commitment to safety, messages, and limits. The

FCRS scale was derived from other established scales, tested, and found to have validity for safe driving. The goal of the 2012 study was to examine the individual and combined contribution to reckless driving among the FCRS 7-item scale, social aspects/influences on driving, conformity to authority, and peer pressure. While the article alluded to safety and appropriate driving, it never outwardly said that seatbelt use was in any of the areas. Instead, “obeying all appropriate laws”, was used. This is a theme in some of the literature on parental involvement in teen driving education and practice. Gill et al., also discusses the importance of modeling appropriate and safe behavior for the teen (2013). Schmidt discussed the role of parents play in teen risky driving habits and cultural differences (Schmidt, 2014). This is consistent with other research that discusses geographic and special population differences in seatbelt use.

Communication is a vital component of family and parent involvement in the development of young drivers. The frequency, tone, and messaging in communications between parent and teen all impact the likelihood of a teen to absorb and follow that communication. Family communication patterns, particularly outcomes on teen’ attitudes, are important to get a sense of the relationship between family communication and driving safety (Yang et al, 2013). While the topic of family or parent and teen and communication has been studied extensively and validated; it has been studied for topics like reducing alcohol or other drug use and sexual activity decision. Certainly, safe driving, as a health behavior is associated with heavy parental involvement (Simons-Morton et al, 2003, Yang, 2013, Zakrajsek et al, 2009); however, the Yang study focuses specifically on four communication styles and emphasizes the importance of teaching parents appropriate communication practices. Other work, focuses more on parent

modeling of either good or poor behavior (Simmons- Morton et al., 2005,) or parent lack of involvement as a risk factor in teen driving safety issues (Schmidt, 2014). The Yang study looks specifically at four types of validated communication types: pluralistic, protective, consensual, and laissez-faire. Families with a consensual communication style talked more frequently with their young drivers about six different commonly identified driving safety topics: seat belt use, driving sober, avoiding distraction, safe speeds, anti-aggressive driving, and good passenger etiquette. The study examined the four types of communication against frequency of communication and the communication messages. Of the four communication styles, consensual communication groups were more likely to have communications with their teens about safe driving. Importantly, frequency of communication was positively associated with attitudes about safe driving. As with behavior change, championing a program, and working on sustainability, creating a culture of safety and communication takes time. More interaction likely creates a safe and comforting environment in which to discuss potentially emotionally charged driving safety or driving rules issues, which could improve outcomes (Yang, 2013). This drives home the importance of communication.

Despite the well documented importance of including parents in teen driver safety programming, researchers still struggle to appropriately and consistently engaging parents and families (McCartt 2013). Parents have busy schedules and may not always model the most appropriate behavior for students (Schmidt et al., 2014). In interviews about the *Drive Alive* program, students felt that they shouldn't be forced to buckle up if administrators or others in positions of authority didn't buckle up (S. Davidson, personal communication, June 2015). Program sustainability and continued improved safety

measures for young drivers could depend on this involvement as appropriate (Schmidt et al., 2014, Ben-Ari 2012). This further solidifies the point that a multi-faceted program is a must for changing behavior since different key influencers for teen drivers may not be the most appropriate example of good driving behavior.

The Drive Alive Program History

The Drive Alive pilot program (DAPP) was implemented in 2006. It was designed as a joint venture between the Georgia Department of Public Health's (DPH) Rural Road Initiative (RRI), managed out of the office of injury Prevention, and the University of Georgia. Funding for the pilot program came from a Governor's Office of Highway Safety (GOHS) grant held by Georgia DPH, Rural Roads Initiative. Program implementation efforts were led by Mr. Steve Davidson and rural roads staff.

The program is theory-based and founded on highway safety best practices. The principal theories that drive the program are fuzzy trace theory, theory of reasoned action, and social cognitive theory. These theories, when taken together account for each stage of the ecological model (social cognitive theory) and bring in how individuals assess risk (fuzzy trace) and guide behavior (theory of reasoned action). The program consists of four parts: 1) observational surveys, 2) incentives, 3) disincentives, and 4) education/media activities geared toward educating drivers about the importance of safety belt use. Media played a role, in that survey results and student winners of incentives for wearing seatbelts were published in the paper. This provided a way for the community to participate and for parents to ask their child about rewards for wearing seatbelts. In addition, the schools enacted and made known policies around losing parking spaces for non-compliance (perception of enforcement). Finally, local law enforcement enhanced

the perceived enforcement by increasing their presence at and near the school. Trained volunteers conducted observational surveys at the entrances of local high schools. The surveys capture the gender and seatbelt usage of drivers and passengers in vehicles entering and exiting the school. Surveys are conducted before and after planned programming. Local organizations, student groups, and others work with the school administration and local law enforcement to conduct activities to raise awareness about the importance wearing safety belts.

This program, which was part of the Rural Roads Initiative (RRI), reached a 22-county area, and included schools that participated in the Drive Alive program. Two studies from this program were associated with teen seat belt usage. For the first study, surveys and programs were conducted at a single school from February 2006 to April 2009. The study specifically studied the Drive Alive Pilot Program. The second study analyzed overall seatbelt rates for teens by gender in the rural roads initiative program area. Schools in the area were beginning to develop their own *Drive Alive* programs during this time (Davidson, 2015). Analysis included surveys from September 2009 to January 2011 from 12 schools.

As all six themes suggests, increasing seatbelt use among teen drivers, particularly teens in rural settings is a critical component to overall young driver safety and the potential reduction in fatalities for all road users. Certainly, appropriate laws, specifically primary seatbelt laws and GDL laws should be on the books as a first step. Communities might also consider utilizing a multi-faceted, tiered approach that includes a theory-based foundation, cross sector partnerships with law enforcement, schools, community organizations, teens, and parents. Program implementation is challenging, but

it seems critical to include education, enforcement, and engineering components within the program. The resulting program should be delivered and enforced at school, in the home, throughout the community in order to increase safety of young adult drivers.

Chapter III

Methods and Procedures

January 2011- September 2013 data were collected for this study from a review of available paper and electronic surveys. These observational surveys were collected as part of the *Drive Alive* program, which was conducted in South Georgia. The Drive Alive program, which has been conducted at high schools across southern Georgia since 2006, has been previously studied and published (Burkett 2010, Davidson 2013). As described elsewhere (Burkett 2010), *Drive Alive* was developed by Georgia Department of Public Health and University of Georgia. The program pilot was funded by the Governor's Office of Highway Safety (GOHS). The 2011-2013 data has not yet been reviewed or analyzed.

The review of paper and electronic records yielded thirty-eight surveys from 2011-2013 for analysis. Two surveys for the same school, conducted on the same day from different school parking lot entrances were combined. Eight surveys were excluded due to missing or incomplete data fields. One survey was excluded because counts within the survey could not be reconciled. The final count was 28 surveys from 12 schools, representing 10 counties in rural South Georgia. The twelve participating schools included: Appling Christian, Appling County HS, Toombs Lyons HS, Montgomery HS, Treutlen HS, Vidalia HS, Wayne HS, Wheeler HS, Ludowici HS, Brantley HS, Ware HS, and Claxton HS. These schools represent a convenience sample based on available and complete data; the surveys from these schools yielded 3,743 seatbelt observations for analysis.

Historically, the seatbelt observation data for the *Drive Alive* program has been collected by trained volunteers, either students or community groups. Survey teams of two stood at the entrances of participating high schools and observed drivers and passengers for all vehicles entering the high school. For each observation session, teams were instructed to observe at least 100 vehicles (Burkett 2010, Davidson, 2015). Observers used a tally sheet (Appendix B.1) to capture perceived gender of vehicle occupants and document seatbelt use for drivers and passengers. These tallies were recorded on survey results forms (Appendix B.2) and sent to the program office for review and analysis. Surveys were conducted before and after a planned intervention (described in Burkett 2010).

Surveys for this analysis were organized by school (1-12) and by ordered chronologically by observation date with the oldest survey being labeled as survey one and so on. Surveys were entered into an Excel file for organization and review. The original project codebook contained twelve variables. The variables were recoded to binary (zero or one) to allow for chi square analysis. The variables included: Gender

Table 1: SPSS Codebook Variables

ID for each survey recorded

School

Time (Survey 1, 2, etc.)

Date

Occupant (Driver 0, Passenger 1)

Gender (Male/Female)

SeatbeltUse2 (No belt 0, belt 1)

(males or female), Occupant (driver or passenger), SeatbeltUse2 (seatbelt or no seatbelt observed) (Table 1, above).

Statistical Analysis

Once all records were entered, they were transferred into SPSS for analysis. SPSS 22 was used for analysis. Analysis in SPSS required a different flow for the variables to allow for appropriate chi square and other possible analyses, so categories were changed. Each school that had at least two surveys was assigned a School ID, 1-12. Categories were created for occupant (1, driver or 0, passenger), gender (1, male or 2, female), belt use (0, no belt or 1, belt use). In addition, a category for time (number of times surveys were administered at that school) was created. Participating schools conducted surveys between two and six times. Descriptive analyses were computed to determine average seat belt usage. Chi Square for Independence tests were used to identify any statistically significant differences between males and females and between drivers and passengers in terms of seatbelt usage. Crosstabs of survey time by school were computed to get a sense of the change in seatbelt use over time.

Program History

Program administrators at each school used a combination of perceived enforcement, incentives, media coverage, and consequences (disincentives) in order to encourage seatbelt usage. Students and/or community groups conducted the programs, which ranged from student assemblies, to “ghost-outs”, where mock crashes are set-up and the risks discussed, flyers, rewards for compliance, or other activities as determined by student leaders, community partners, or school administrators (Burkett 2010). Consistent or detailed documentation of intervention program content that occurred between surveys was not available for the time period studied.

Chapter IV:

Results

There were 3,743 seatbelt observation records examined for this study. Males and females were nearly evenly represented, with males representing 49.8% of the group (Table 2). Records were also divided by occupant status: either driver or passenger. Over three quarters (76.9%) of the group were drivers.

Table 2: Drive Alive Survey, Gender distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	1864	49.8	49.8	49.8
	Female	1879	50.2	50.2	100.0
	Total	3743	100.0	100.0	

A Chi-square test for independence (with Yates Continuity correction) indicated no significant association between driver and passenger seatbelt usage, $\chi^2(1, n=3743) = 1.86$, $p=.17$, $\phi = -.02$. A second Chi-square test for independence (with Yates Continuity correction) indicated a significant association between gender and seatbelt usage, $\chi^2(1, n=3743) = 46.02$, $p=.00$, $\phi = .11$ (Table 3, below).

Table 3: Mean Program Seatbelt Usage: Males and Females

			BeltUse2		Total
			no seatbelt	seatbelt	
Gender	Male	Count	757	1107	1864
		% within Gender	40.6%	59.4%	100.0%
		% within BeltUse2	57.3%	45.7%	49.8%
		% of Total	20.2%	29.6%	49.8%
	Female	Count	563	1316	1879
		% within Gender	30.0%	70.0%	100.0%
		% within BeltUse2	42.7%	54.3%	50.2%
		% of Total	15.0%	35.2%	50.2%
	Count		1320	2423	3743
Total					
	% within Gender	35.3%	64.7%	100.0%	
	% within BeltUse2	100.0%	100.0%	100.0%	
		% of Total	35.3%	64.7%	100.0%

Average seatbelt use for all surveys ranged from 35% to 86% of occupants observed wearing their seatbelts (see Table 4 below). One school recorded just one survey (school four, T1), six schools showed a percent increase from Time 1 to Time 2. The increase ranged from 2% to 20%. The remaining five schools had a decrease in average seatbelt use. This decline ranged from 2% to 21%.

Table 4: Mean Seatbelt use for all occupants by School and Survey, 2011-2013

Survey ^a	School	Mean ^b	N ^c	Std. Deviation	% of Total N
Survey 1	1	.62	113	.488	3.0%
	2	.27	166	.446	4.4%
	3	.62	209	.486	5.6%
	4	.50	117	.502	3.1%
	5	.78	32	.420	0.9%
	6	.57	28	.504	0.7%
	7	.91	141	.290	3.8%
	8	.77	115	.420	3.1%
	9	.31	42	.468	1.1%
	10	.53	77	.502	2.1%
	11	.75	51	.440	1.4%
	12	.53	55	.504	1.5%
	Total	.60	1146	.491	30.6%
Survey2	1	.74	92	.442	2.5%
	2	.38	110	.488	2.9%
	3	.64	146	.483	3.9%
	5	.70	43	.465	1.1%
	6	.47	47	.504	1.3%
	7	.70	125	.462	3.3%
	8	.95	305	.217	8.1%
	9	.51	49	.505	1.3%
	10	.37	57	.487	1.5%
	11	.73	161	.447	4.3%
	12	.59	64	.495	1.7%
	Total	.69	1199	.461	32.0%
Survey 3	2	.45	110	.500	2.9%
	5	.44	122	.499	3.3%
	7	.44	130	.498	3.5%
	8	.82	137	.388	3.7%
	9	.63	51	.488	1.4%
	11	.73	44	.451	1.2%
	12	.65	63	.481	1.7%
	Total	.58	657	.495	17.6%

Survey 4	7	.50	123	.502	3.3%
	8	.83	133	.373	3.6%
	9	.71	79	.457	2.1%
	Total	.68	335	.467	9.0%
Survey 5	7	.62	147	.487	3.9%
	8	.80	123	.398	3.3%
	Total	.70	270	.457	7.2%
Survey 6	8	.82	136	.389	3.6%
	Total	.82	136	.389	3.6%
Total all Surveys	1	.67	205	.470	5.5%
	2	.35	386	.479	10.3%
	3	.63	355	.484	9.5%
	4	.50	117	.502	3.1%
	5	.55	197	.498	5.3%
	6	.51	75	.503	2.0%
	7	.64	666	.481	17.8%
	8	.86	949	.352	25.4%
	9	.57	221	.496	5.9%
	10	.46	134	.500	3.6%
	11	.73	256	.445	6.8%
	12	.59	182	.493	4.9%
	Total	.65	3743	.478	100.0%

a observational surveys were chronologically ordered 1-6, with the oldest survey labeled #1. Number of surveys varied by school

b represents average seatbelt use for all observed occupants for each chronologically ordered survey.

c Total observations for each survey, N varies by school and by survey.

Finally, Seatbelt use by Driver and Passenger was reviewed for each survey administered. Of the six times the survey was administered, the driver had a higher seatbelt use four times (Table 5, below). Average seatbelt use for drivers, for all schools combined increased from Time 1 to Time 2; from T3 to T4; and, from T5 to T6. Passenger seatbelt use had a similar trend. However, it is not possible to lend these averages statistical significance because at Survey administration T6, just one school had administered six surveys over time.

**Table 5: Mean Seatbelt Use by Occupant and Survey Number,
2011-2013**

Survey # ^a	Occupant	Mean ^b	N ^c	Std. Deviation	% of Total N
Survey 1	Driver	.61	901	.489	24.1%
	Passenger	.56	245	.498	6.5%
	Total	.60	1146	.491	30.6%
Survey 2	Driver	.70	906	.458	24.2%
	Passenger	.68	293	.469	7.8%
	Total	.69	1199	.461	32.0%
Survey 3	Driver	.57	519	.496	13.9%
	Passenger	.59	138	.493	3.7%
	Total	.58	657	.495	17.6%
Survey 4	Driver	.69	254	.465	6.8%
	Passenger	.67	81	.474	2.2%
	Total	.68	335	.467	9.0%
Survey 5	Driver	.75	199	.435	5.3%
	Passenger	.58	71	.497	1.9%
	Total	.70	270	.457	7.2%
Survey 6	Driver	.80	100	.402	2.7%
	Passenger	.86	36	.351	1.0%
	Total	.82	136	.389	3.6%
Total	Driver	.65	2879	.476	76.9%
	Passenger	.63	864	.484	23.1%
	Total	.65	3743	.478	100.0%

a Represents surveys in chronological order without regard to which school (e.g., all Survey #1's, etc.)

b Average seatbelt use by driver and passenger at each survey administration

c N for each survey, so total #1 surveys for the entire study, etc.

Chapter V: Discussion and Conclusion

Discussion

The purpose of this study was to examine differences in seatbelt use between males and females and drivers and passengers. Results from this study indicated that seat belt use among females is higher than males (females 54.3%, males 45.7%), that is the null hypothesis is rejected. This was an expected result, as it is consistent with the other published studies on the Drive Alive program (Burkett, 2010, Davidson, 2013), which yielded females buckling up more often than their male counterparts. In general, females display approval seeking behaviors. While this can lead to over reporting of seatbelt use, it also, generally, makes females more compliant with laws and policies (Nambisan, 2007). In contrast, males tend to rely on their own internal risk assessment and either don't think through the consequences or decide they can overcome the risk (McKay, Coben, and Larkin, 2003).

This study failed to reject the null hypothesis for no statistically significant difference between drivers and passengers in terms of seatbelt use. This is somewhat unexpected, as some literature indicates that passengers are more likely to buckle up when drivers fasten their seatbelt (Zambon, 2008). While other studies have concluded the teen passengers are statistically less likely to buckle than teen drivers. It is difficult to pinpoint a reason for this difference. It is possible that there was not enough statistical power to capture differences, since passengers represented just 23% of all observed occupants (Table 5).

Despite some of the strengths of the Drive Alive Program, which included a theoretical base, community support, and a multi-faceted approach, the program has struggled to sustain increased seatbelt use among teen drivers. In comparison to the first publication about this program, overall seatbelt use has decreased. Consistent implementation, with fidelity, has been a challenge for this program. When the program has been implemented consistently, the seatbelt usage has been higher (Davidson, 2015).

A common problem among community led programs is a lack of champions to carry the burden of keeping the community engaged. Sustainability planning must be a part of the process from the beginning. It might be necessary to employ technology-based solutions into vehicles and implement policies in schools and other community organizations that require use of seatbelts. As with any program, it is important to consider differences in approach for minority and different SES populations. However, it might be possible for this program, which has some of the same features of the YIPI program (Falcone 2006) to be implemented across all different types of community organizations, rather than just schools or only in faith-based community. In addition, adding another component to this project that more heavily involves parents, might help increase seatbelt usage among both parents and teens. This multi-tiered, theory-based approach could capture more organizations. This might create the appropriate dosage and implementation consistency needed to maintain belt use. Given the significant increase in these driver/person-centered approaches, and the subsequent slowing of continued increase in seatbelt use among the population in the area implementing this program, it might be time to consider a more systems approach (Scott-Parker, 2015), as opposed to the driver-centered approach.

This study is subject to at least five limitations. First, additional time to review and appropriately analyze the program elements from each school would have enriched the analysis and provided an opportunity to assign ‘intervention’ and control groups for a more in depth analysis. Additionally, based solely on the inconsistent nature of the collected surveys from schools, additional training could help increase consistency; both in reporting and implementation of the program across all schools. Third, there were approximately 10 additional surveys from 2013 that were not able to be included in analysis because they were not found with the original groupings of surveys. Fourth, a lack of inter-reliability measures does weaken the overall program; however, results are consistent with previous iterations of the Drive Alive program, as well as other, similar programs, across the nation. Finally, not knowing when, what, or if programs were conducted at the schools in between surveys made it impossible to assess pre-/ post status to the surveys collected. This limitation is particularly problematic because even for those schools where there were programs conducted, there was little consistency of programs, making it difficult to ascertain what actually led to any potential change in seatbelt use.

Research Recommendations

Previously published studies about the *Drive Alive* program have suggested that future research should include maintenance of achieved seatbelt use as a result of the program (Burkett 2010). A more formal analysis of the complete *Drive Alive* dataset, coupled with qualitative interviews with program staff and participants, could shed light on and formalize the suspected declines in seatbelt use seen in this study. Additionally, an in depth analysis of available program details (e.g. activities conducted in between observational surveys) might allude to differences between schools in terms of seatbelt

use over time. Finally, future evaluation efforts of the *Drive Alive* program should be planned when planning program revitalization efforts.

Program Recommendations

There are several recommendations for potential improvement of teen driver seat belt use programs; and specifically, *Drive Alive*. The issue with many programs, not only those with a focus on improving teen driver seat belt use, but across all topics, is fidelity, sustainability, and flexibility. Often evaluation is not considered during the planning phases, and so surveys are not designed in an evaluation friendly manner. In addition, programs should have a theoretical framework, be multi-faceted, and be implemented with fidelity.

First, programs should follow a theoretical framework. The *Drive Alive* program was particularly strong in this area. *Drive Alive's* use of theory (fuzzy trace and health belief) created a solid program focus, direction, and outlined potential challenges with the target audience – rural dwelling teens. A thoughtful and specific approach for all aspects of program activities could improve programs, facilitate replicability in other communities, and improve sustainability. The path to evidence-based programming, besides rigorous evaluation, includes the development of an implementation guide. This type of guide could be very helpful for others implementing *Drive Alive* or similar seat belt use programs.

Next, programs should be multi-faceted. Specifically, they should have coinciding activities that include the teen, parent, school, and community. They should work specifically on the seven principles: modeling, positive feedback, communication, monitoring (who, what, where, when, and why of teen driving), commitment to safety,

messages, and limits as outlined in Taubman-Ben-Ari et al. (2012). This ecological model approach could allow for consistent messaging, better communication overall, and improved communication flow across sectors of the community. By co-promoting events and programs together parents would be informed. Active parents might include content at home in their own way. Certainly, hard to reach populations, or non-communicative households (Tauban) would still be a difficult reach; however, the inclusion of community enforcement, school programs, parents, and teens, meets the social ecological model and are geared for some potential measure of additional success. This could also create a Hawthorne effect that could contribute to the eventual safety culture shifts needed to sustainably improve seatbelt use.

It might also improve sustainability to implement program activities across the ecological model. This might create better accountability and more stable partnerships throughout the community, which could give the program the strength needed to weather events such as staff turn-over, loss of funding, and changes in student participants/leaders. These were all stated issues of the *Drive Alive* program (Davidson, 2015).

Finally, many programs struggle with program fidelity. *Drive Alive* is no different. An interview with former program director, Steve Davidson, revealed issues with survey administration and return, staff turnover, grant funding loss, and inconsistent program implementation across participating schools. Each of these could have potentially contributed to the sharp decline and usage inconsistency found in the 2013 publication on seatbelt use at 12 schools in the program area. It would also be important that program leaders have some training or connection with an evaluator that could help

guide implementation and fidelity. In addition, among the 38 surveys collected for this analysis, there was not consistent documentation of what programs were happening at the corresponding schools. However, a survey was provided (outside the analysis dates for this study) that showed the survey dates and described the scheduled intervention program activities. This simple inclusion was not ever on other surveys; however, it could be very helpful for knowing the success of specific program components (e.g., ghost outs or student-led demonstrations). It might be beneficial to take a service learning approach to the program, where content is built into the curriculum of school courses and happens at consistent and scheduled times, just like practice SAT tests or fire drills – routine in implementation.

Each of these programmatic design and implementation issues outlines the larger issue of seatbelts not being a consciences decision and not specifically included in the community. The creation of a safety culture in the family to improve safety outcomes would be an important piece (Rakauskas, Ward, Gerberich, 2009). That same culture of safety should be applied to the community when thinking about citizen safety and programs that would produce sustainable improvement in seatbelt use.

Conclusion

Seatbelt use among young adult drivers is an important public health problem. This age group falls below the usage rates of any other age group and yet is at a higher risk for serious injuries or death from motor vehicle crashes. Research indicates this elevated risk is due to lack of experience and not wearing seatbelts. This predictable pattern of no experience, not wearing seatbelts, and more serious injuries or death is what makes teen driver seatbelt usage, and motor vehicles, such an important public health

issue. Because these events can be predicted, practitioners are better able to prevent them through program and policy. Seatbelt use has been shown to increase with appropriate theory-based, multi-tiered programs that include environment, enforcement / policy, education, and parents/family. Appropriate community support, staffing, and implementation fidelity are important pieces to the possible stability or instability of a program. Future research on this program should include retraining of sites for consistent implementation of the program, including survey administration. Additional considerations would be to think carefully about sustainability. Intervention/Control groups could be considered; particularly to address the variability of the programs implemented by each school. No matter what program is introduced into the community, it is imperative to increase seatbelt use among young adult drivers in order to reduce Motor Vehicle Crashes and the injuries and fatalities in the young adult driver population. Save the lives of young drivers by modeling seatbelt wearing, appropriately implementing comprehensive seatbelt use improvement programs, and enforcing the law. These simple measures will improve seatbelt use and reduce roadway fatalities.

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Appendices

A. Raw data files

A1 Means Tables and Reports

A2 Drive Alive Dataset Variables

B. Drive Alive materials

B1. Survey format (Observation tally sheet)

B2. Survey reporting template

B3. Sample newspaper article

C. 2011 School Surveys and Activities: Post RRI Staff Turnover

Appendix A –data

A.1 Means Tables and Reports

```
MEANS TABLES=BeltUse2 BY Time BY Occupant  
/CELLS=MEAN COUNT STDDEV NPCT.
```

» Means

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
BeltUse2 *Time * Occupant	3743	100.0%	0	0.0%	3743	100.0%

A2 Drive Alive Dataset Variables

HeadREVISED THESIS DATA.sav [DataSet1] - IBM SPSS Statistics Data Editor									
Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help									
ID	1								
	ID	School	Time	Gender	Occupant	BeltUse	BeltUse2	OccupantRec	var
1	1	1	1	2	1	1	1	1	
2	2	1	1	2	1	1	1	1	
3	3	1	1	2	1	1	1	1	
4	4	1	1	2	1	1	1	1	
5	5	1	1	2	1	1	1	1	
6	6	1	1	2	1	1	1	1	
7	7	1	1	2	1	1	1	1	
8	8	1	1	2	1	1	1	1	
9	9	1	1	2	1	1	1	1	
10	10	1	1	2	1	1	1	1	
11	11	1	1	2	1	1	1	1	
12	12	1	1	2	1	1	1	1	
13	13	1	1	2	1	1	1	1	
14	14	1	1	2	1	1	1	1	
15	15	1	1	2	1	1	1	1	
16	16	1	1	2	1	1	1	1	
17	17	1	1	2	1	1	1	1	
18	18	1	1	2	1	1	1	1	
19	19	1	1	2	1	1	1	1	
20	20	1	1	2	1	1	1	1	
21	21	1	1	2	1	1	1	1	
22	22	1	1	2	1	1	1	1	
23	23	1	1	2	1	1	1	1	

Appendix B – Drive Alive program materials

B.1: Tally Sheet

Community Seat Belt Survey

Long County Junction: 301 & Hwy 23 N

Date: 6/20/13 Time: 11:45-12:15 Checkers: B. Fuiks

627

Enter #	M for male F for female	Driver YES	Driver NO	Pass YES	Pass NO	#	Driver YES	Driver NO	Pass YES	Pass NO
1						51				
2	F					52				
3	M					53				
4						54				F
5	F					55				
6	M			F		56			F	
7	M					57			F	
8	M					58				
9						59			F	
10						60				
11	M					61				
12	M					62			F	
13						63				
14	F					64				M
15	F					65				
16	F					66				
17	F					67				
18	F					68				
19	F					69			F	
20	F					70				
21	F			F		71				
22	F					72				F
23	F			F		73				
24	F					74				
25	F					75				
26	F					76				
27	F					77				
28						78				
29	F					79				M
30						80				
31						81				
32	M					82				
33	M					83				
34						84				
35	F					85				
36	F			F		86				M
37						87				
38						88				
39						89				
40						90			F	M
41						91				
42	M			F		92				
43	F					93				
44	F					94				
45					F	95				
46	M			F		96				
47	F					97			M	
48						98				
49						99				M
50						100				
Tot M	15	14	0	3		Tot M	17	11	1	5
Tot F	16	5	6	1		Tot F	17	5	2	3
Registration #s										
	31	19	6	4			34	16	7	8

Σx = 125

B.2: Survey Results Form

REPORTED BY: RRI

Long County (off main road IGA parking lot and macon st SEAT BELT SURVEY RESULTS

REPORTED BY: RRI
DATE: 7/8/13

Seat Belt Usage: **67%**

VEHICLES		68			
DRIVERS & FRONT SEAT PASSENGERS		75			
TOTAL		YES SEAT BELTS	Percent	NO SEAT BELTS	Percent
33	FEMALE DRIVERS	23	70	10	30
34	MALE DRIVERS	22	65	12	35
4	FEMALE PASSENGERS	3	75	1	25
4	MALE PASSENGERS	2	50	2	50
37	FEMALES (DRIVERS & PASSENGERS)	26	70	11	30
38	MALES (DRIVERS & PASSENGERS)	24	63	14	37
TOTAL WEAR		67%			

B.3: Sample Newspaper Article

Appendix C: 2011 School Surveys and Activities: Post RRI Staff Turnover

School Number	Time	School	Date	Vehicles Checked	# Students
1	1	Appling Christian	10/2/2012	69	113
1	2	Appling Christian	10/26/2012	63	92
2	1	Appling HS	5/5/2011	127	166
2	2	Appling HS	9/18/2012	100	110
2	3	Appling HS	10/26/2012 AM	98	110
3	1	East Bullock HS	3/25/2011	167	209
3	2	East Bullock HS	5/18/2011	109	146
4	1	Toombs County, Lyon	5/16/2012	100	117
5	1	Montgomery County	3/4/2011	25	32
5	2	Montgomery County	4/14/2011	29	43
5	3	Montgomery County	5/16/2012	100	122
6	1	Treutlen HS	11/10/2011	21	28
6	2	Treutlen HS	2/1/2012	34	47
7	1	Vidalia HS (Tombs)	3/16/2011	110	141
7	2	Vidalia HS Tombs	4/7/2011	100	125
7	3	Vidalia HS tombs	3/16/2012	100	130
7	4	Vidalia HS tombs	3/27/2012	100	143
7	5	City of Vidalia	5/16/2012	100	123
7	6	Vidalia HS	8/21/2012	100	147
8	1	Wayne County HS	3/25/2011	100	115

8	2	Wayne County HS	5/13/2011	235	305
8	3	Wayne County HS	12/14/2011	100	137
8	4	Wayne County HS	5/14/2012	100	133
8	4	Wayne County HS	8/30/2012	100	123
8	5	Wayne County HS	11/30/2012	100	136
9	1	Wheeler county HS	1/28/2011	32	42
9	2	Wheeler county HS	3/24/2011	36	49
9	3	Wheeler county HS	1/31/2012	39	51
9	4	Wheeler county HS	4/12/2012	57	79
10	1	Brantley County HS	11/27/2012	65	77
10	2	Brantley County HS	12/14/2012	45	57
11	1	Ware County HS	2/15/2011	44	51
11	2	Ware County HS	4/15/2011	112	161
11	3	Ware County HS	10/1/2012	35	44
12	1	Evans County (Claxton)	12/19/2012	42	55
12	2	Evans County (Claxton)	5/9/2013	49	64
12	3	Evans County (Claxton)	9/24/2013	47	63

The following notes were summarized from the 2011-2012 monthly narrative reports of the Drive Alive project of the Rural Roads Initiative of the Department of Public Health. All activities in a county that were occupant safety related are documented as it was believed that all activities helped to change community health risk attitudes. Results are documented as much as possible from the information available by county, by school and last by month.

Appling

3/12 a special EMS transportation car seat was provided to Appling Co. EMS.

4/12 car seat class held

5/12 seat belt survey at Appling high school

6/12. A Safety Day was conducted at Plant Hatch Nuclear facility where students were given an opportunity to drive down a coned course while talking on the phone. In addition the students were given information and advice on not driving while talking or texting on the phone and on the importance of wearing seatbelts.

7/12 as part of the “give a child a boost program” the project assisted at occupant safety events in Appling County including a road check

Brantley Co.

6/12 there was a distracted driving activity at Brantley County High School where the local Sheriff’s Department brought in 75 students between the ages of 12 to 16 to come and learn about different safety issues and with the local Fire Chief set up an obstacle course and had students drive a golf cart down the course twice – once being able to fully concentrate with no distractions and then to return back while trying to text and with other distractions (passenger distractions to show how as a passenger you can distract a driver and make it a dangerous situation) The students found on the way back through the course they could not drive correctly and kept hitting cones. As a follow up, the students discussed what they learned (that they could not drive and text at the same time and how distracting it was to have a passenger acting badly). They also discussed whether their parents talked/texted on the phone and were asked what they felt about that (many said that after this exercise they would now tell their parents to not do this anymore. However some said their parents would get mad if they told them to not talk and/or text while driving. The importance of using seatbelts was also discussed and again, many said they would “try” to persuade their parents to wear seatbelts. The activity was a big success with many students saying they learned a lot and didn’t realize how distracting they could be just as a passenger and how dangerous it potentially is. In addition a display was set up and brochures handed out to students before they left.

Bulloch

11/11 did a seat belt survey

12/12 Worked with Bulloch County on a safety day at Statesboro Mall which included safety information and crafts for the children – One program done by the Pride students, who managed the seatbelt program in Bulloch County High School, was to take pictures of children and paste them onto the back of a heart shaped “card” pendent with the front saying. “The reason I buckle up.” These small pendants are to hang on the rear view mirrors of the parent’s vehicles. (Not east Bulloch)

2/12 At Bulloch Co. a student wrote a rap song about wearing seatbelts and was planning on performing it at the school talent show. He is also recorded it for students to listen to in their vehicles, and it is hoped it will be played during announcement time.

Bulloch- East Bulloch HS

3/12 E. Bulloch. A new school in Bulloch County (East Bulloch High School) did their first survey at the school and they are planning other educational activities before prom, such as chalk the walk and a pledge poster.

4/12 e. Bulloch seat belt survey

Candler co

10/11 **In Metter** provided a teen safety education intervention and a survey project was conducted.

8/12 Seat belt survey

Charlton

11/11 did a second survey and they did interventions with PA announcements, posters and table tents in cafeteria.

12/11 Charlton did a survey

Coffee County

10/11 worked to begin establishing program and provided PAS flashlight for SO.

11/11, worked with Coffee County on a Teen Maze and did the first survey at the High School prior to the teen maze event. The first survey was done with no prior information to students that a survey was being done. 10 students helped with the survey and 359 cars were surveyed. After the survey a PA was made to inform students about the survey – several students were thanked for being caught wearing seatbelts and students did informal education during the day explaining about survey. Coffee County also invited an insurance agent to come and talk to students about insurance costs and how tickets and/or accidents can affect the price you pay for insurance.

12/11 Coffee County had the hospital EMS director come and talk to the classes about safety while driving and about the importance of seatbelt use. It was also explained that in rural areas like Coffee County it can take a long time for emergency services to arrive. Many roads are not well travelled and you can end up in a ditch after being ejected from your vehicle and no one may see you for a long time. In an accident, time is crucial. Coffee County also received support from a local bank with eight \$10 visa cards to give to two students each month until the end of the school year who are caught wearing seatbelts at the monthly surveys. Coffee did a survey

Emanuel County

10/11 a teen driver safety education week was conducted with contracts for students and a side walk chalk project. In Swainsboro there was a teen driver education program.

2/12 seat belt survey,

3/12 Emanuel County did two surveys in March. The first survey was done at Swainsboro High School and was conducted by students with teachers giving out life savers to students who wore their seatbelts. Students not wearing seatbelts were asked to pull over and were given information on wearing a seatbelt and education about why it is important. The school is doing many other activities for prom night including signing a pledge poster, flyers for rental Tuxedos and potentially Chris Sandy coming to talk in April.

4/12 a proposal was made to Family Connection in Emanuel County for Chris Sandy to come and talk at Swainsboro High School about the dangers of drinking and driving (Chris Sandy was convicted and sentenced to prison for killing an elderly couple while under the influence). He now tours schools telling his story and telling students about poor decisions and what it did to him and his family when he made the poor decision to drink and drive. The proposal was successful and he came to talk to the school the week of prom.

5/12 submitted video for act out loud contest. Act Out loud contest voting started in May. The competition called for one winner and five runners up from voting results, plus an additional five winners from the judge's choice. The winning prize was \$10,000 with the runners up prizes of \$5,000. Emanuel County High School procured enough votes to place as a runner up, and will be receiving \$5,000 from the NOYS organization to help them work on Injury Prevention activities at their school. This competition garnered 208 entries initially with GA being the second highest entry applications (16 entries). These entries all received a special no-texting kit. Out of the 16 entries in GA, eight entries were from our Drive Alive schools. For the final video entry 73 videos were entered, with four coming from GA. Three of which were the schools in our Drive Alive program. Once again Drive Alive was an award winning program.

Emanuel County Institute

2//12 Emanuel County Institute did a texting program for the school assembly as part of the NOYS Act out loud grant initiative.

3/12 Emanuel County Institute High School did their regular monthly survey and did their regular educational activities.

4/12 a proposal was made to family connections for Chris Sandy to come to Emanuel County Institute and talk about the dangers of drinking and driving (Chris Sandy was convicted and sentenced to prison for killing an elderly couple while under the influence). He now tours schools telling his story and telling students about poor decisions and what it did to him and his family when he made the poor decision to drink and drive. The proposal was successful and he came to talk to the school the week of prom.

Emanuel Co. Institute did a safety assembly and performed a song written by the students about driving safely. Part of this was used for their “act out loud” video entry. They also did PA’s each day of prom week about the dangers of driving under the influence, texting while driving, talking on the cell phone and promoting use of seatbelts.

Seat belt survey

5/12 submitted video for act out loud contest.

Glynn

7/12, as part of the “give a child a boost program” the project assisted at occupant safety events in Glynn County,

Jeff Davis

8/12 a road/car seat check was conducted in Jeff Davis County

Liberty

7/12 In July, as part of the “give a child a boost program” the project assisted at occupant safety events in Liberty County including a road check

10/11 **In Montgomery County** supported a teen safety fair with educational intervention.

11/11 Montgomery did a seat belt survey

12/11 worked with Tri County Family Connection to give away seat belt incentives to students caught wearing seat belts. Funding for the incentives was provided by their NOYS grant. The gift cards were awarded to a student in Montgomery. Helped to procure two gift certificates from a local barbeque restaurant for use with the January seatbelt survey winner in Montgomery County. Montgomery did a survey. Drive Alive again an award winner from NOYS.

Seat belt survey

1/12 seat belt survey with incentives to random belted individuals

3/12, Montgomery County did two surveys, one was pre police intervention and the second was after the police did a seatbelt enforcement at the school entrances. Two gas cards were given away (1 for each survey) to students caught wearing seatbelts. They also did educational activities including adding a display board to the school information center giving survey information and information on who had won gas cards.

4/12 A Montgomery County Leadership group put up a bulletin board in the Information area (A section in the main corridor where students can place announcements) at the school and they posted the survey results and other safety information.

Pierce

3/12 A Passive Alcohol Sensor was provided to Patterson Police Dept. who are working with our program to encourage parents to ensure their children are strapped into correct restraints when leaving the elementary school. A survey was done at the Elementary school in March, and only 24% of students were correctly restrained in the vehicle. They will work on education and programs to increase this number. The police are also stopping people not wearing seatbelts and are handing out safety literature to motorists they stop.

4/12. A car seat road check was set up in Pierce County (Patterson) and education was given to eight drivers about car seat safety for children, with 16 seats being checked and eight seats provided for the safety of the children in those vehicles.

Tattnall 12/11 County Sheriff's department in conjunction with the SADD students did a road block at the school exits and handed out information on seatbelts and texting. They also told all students to buckle up before driving off. This event reached every student at the school that day, all parents picking up students, and teachers.

4/12 Tattnall County also did a ghost out the week of prom, they had a guest speaker, and did an impaired driving simulation by using a golf cart and impaired driving goggles.

10/11 In **Toombs** a survey project and an incentive project were conducted and the principal announced the winners of the incentives over the school PA. No information on which school

12/11 **Toombs** County HS did two safety events in December focusing on bike helmets and car seat safety checks.

3/12 Toombs County HS did a survey and had the GSP on hand to give out life-savers to students wearing seatbelts, and dum-dums to those who were not. Enforcement officers being at the morning survey resulted in a high percentage of students wearing seatbelts. Law enforcement also spoke to each student coming into school. Two gas cards were awarded to students who were caught wearing their seatbelts.

12/11 Tombs **VHS** seat belt survey

4/12 Tombs Vidalia High School in Toombs County did a Ghost out and Crash re-enactment prior to prom. The program was paid for by the NOYS grant that Safe Kids of Toombs Co. was awarded in 2010 for their seatbelt program. The event was captured on video for entry into the Act Out loud competition in May. In addition, the students did other educational activities each day during the week of prom including PA's on making good choices, handing out safety information at lunch, and asking students to sign pledge posters. Drive Alive again a NOYs grant winner.

Seat belt survey

5/12 submitted video for act out loud contest- received no texting kit

9/12 a safety fair was also held in Toombs County at the Lowes store.

11/11 **Treutlen** did a seat belt survey

12/11 Tri County Family Connection to give away seat belt incentives to students caught wearing seat belts. Funding for the incentives was provided by their NOYS grant. The gift cards were awarded to a student in Treutlen. Seat belt survey

1/12 seat belt survey with incentives

3/12 Treutlen County High School did their regular monthly survey which was pre-Crash Re-enactment/Ghost out, which had to be canceled the next day due to weather (re-scheduled for April). A gas card was given to a student caught wearing a seatbelt.

4/12 Treutlen County High School did a ghost out and crash re-enactment. This program was paid for from a NOYS grant received by Tri-County Family Connection. In addition the video was made of the event, and parts of this video were used as their entry to their act out loud contest coming up in May.

Seat belt survey

5/12 submitted video for Act Out Loud contest and received no texting kit

10/11 Ware County there were two survey projects and a PAS was provided to the school to donate to the SO.

11/11 Ware County did a chalk the walk and made posters to go along the school corridors using one word at a time saying: "Wear your seatbelt always." At the cafeteria they made one big poster saying: "wear your seatbelt always." The students also had the front school sign saying – "Wear your seat belt always." Each parent and teacher has to pass this sign.

2/12 seat belt survey

4/12 A police intervention was conducted in Ware County the day before prom with police stopping all students leaving school and reminding them that they have to wear seatbelts, to not text, and to drive safely for prom. They also handed out life saver candies and a coupon for a free Chic-Filet meal to students who were wearing seat belts. The students were informed of this police intervention by the Leadership students doing walking ads in the lunch room at lunch time. Ware County High School students also did PA announcements all week and did other walking ads in the lunch room to promote safe driving.

4/12. A car seat check was performed in Ware County (at Walgreens in Waycross) with education given to 14 drivers, with 21 children's seats checked and 16 seats provided for child safety.

Seat belt survey

5/12 In Ware County a Radian Car Seat was given to Ware County EMS to help promote safe transportation and was presented by the Drive Alive leadership class at Ware County High School.

Seat belt survey

7/12, as part of the “give a child a boost program” the project assisted at occupant safety events in Ware County,

8/12 two separate road/car seat checks in Ware County, One was done in the morning with the City Police Department in which a total of 14 car seats/booster seats were provided and one with the Sheriff’s Department later in the day with a total of 20 car seat/booster seats being provided.

A display and event was held in Waycross Mall (Ware County) where the rollover simulator, fire safety house, helicopter, fire truck and other exhibitors came and talked to families about safety

Wayne, 10/11 there was a teen driver seat belt survey project and a driver safety education week event with media coverage. In total there were six education/incentive projects and five seat belt survey projects for a total of eleven projects completed for the month.

11/11 In November Wayne County did the monthly survey and gave away two gas cards to students caught wearing seat belts. As an intervention they did a chalk the walk program. Wayne County, through Red Ribbon week, did a ghost out at the High School.

12/11 seat belt survey Wayne

1/12 seat belt survey Wayne- with incentives

2/12 seat belt survey, a Car Seat check held in county. Two gift card given to students who were buckled

3/12 Wayne County did their regular monthly survey and handed out 2 gas cards to students caught wearing their seatbelts.

. Four car seats were given out in Wayne County at a car seat class

4/12 car seat class held

Seat belt survey

5/12 In May, the Wayne County High School Safety Day was held the Friday before prom. This activity took place in the gym with many exhibitors and injury prevention had arranged for GSP and CATEN to be on hand with impaired goggles for students to wear and to explain the effects of impaired driving. The GSP officer showed them how drinking effects their ability to walk a straight line (sobriety test) and also demonstrated impaired depth perception by letting them shoot a basketball without glasses (they mostly scored a basket or were very close) and then let them shoot a basket again with the glasses on (this time they always missed by a long distance). Each student had an opportunity to wear the glasses and each commented on how they could not judge where they were. We also asked other students if they would want to be in a car with that person when they were driving. In addition, CATEN brought the Vince and Larry costumes and two students wore these during the morning part of the event and walked among the students. As part of the Safety day, the donation made earlier in the year

from Safe Kids of Wayne County of 1800 no texting thumb bands were handed out to students. They were a very popular attraction and a sought after give away with nearly all being handed out and asked for. In addition other brochures and safety literature was handed out while a video presentation of crashes with/without seatbelts was shown.

Seat belt survey

9/12 a public safety fair was held in Wayne County with a child safety seat check provided and thirty-six seats were checked and eighteen seats provided. In addition, there was a child safety seat class at the Wayne County health department and six seats were provided.

12/11 **wheeler co** worked with tri county family connections to get the program started at the High School in Wheeler County.

1/12 seat belt survey with incentive gift cards to random belted individuals. Wheeler County has a small high school that is combined with an Elementary School. At the moment less than 50 parking permits are in use and on the day of the survey 32 vehicle observations were made with 42 students' drivers and passengers. Only 31% of students were wearing seatbelts, of which only 10% of males wore seatbelts - most were driving trucks. This result and findings typifies the findings in rural communities and schools. While it was not possible to discuss the findings with the principal of the High School, we were able to talk to the principal of the Elementary School, and he will support our efforts and he started by promising from now on he would wear his seatbelt in his truck.

3/12. Wheeler county conducted their second survey at the school and a gas card was given to the student caught wearing a seatbelt.