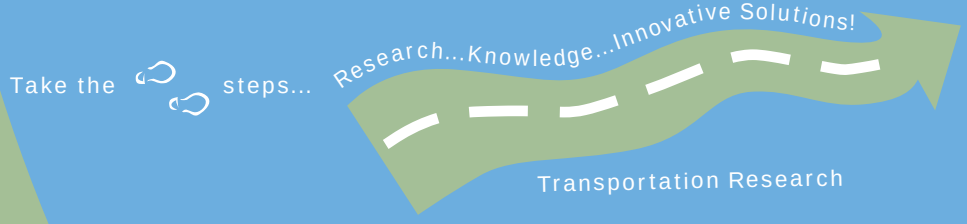
RESEARCH

2008-36

Generational Perspective on Teen and Older Drivers on Traffic Safety in Rural and Urban Communities



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16. Abstract (Limit: 200 words)

The purpose of this project was to explore beliefs and attitudes about risky driving behavior and traffic safety interventions between urban and rural drivers as a function of age. This was accomplished by conducting focus groups and surveys in rural and urban areas with teens and seniors. Results indicated that traffic safety policy for teens should focus on distraction and sensory-motor functioning amongst seniors. In terms of traffic safety policy for rural areas, attention should be given to interventions promoting seatbelt compliance. Relative to traffic safety interventions, teens felt GDL helped them become better drivers but weren't convinced GDL had made them better/safer. Teen felt smart technology could have positive effects on safety, but an acceptable program based on this technology needs to balance factors such as cost, robustness, and limitations on driving. Seniors were receptive to mandatory testing but felt it must be flexible, objectively administered, and based on criteria other than age. Rural seniors were concerned about alternative mobility programs for those drivers that fail the proposed test. Relative to these alternative programs, seniors' acceptance was related to the perceived accessibility to a safe and affordable program that is sufficiently versatile to accommodate a range of transportation needs.

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Generational Perspective on Teen and Older Drivers on Traffic Safety in Rural and Urban Communities

Final Report

Prepared by:

Michael Manser
Michael Rakauskas

Department of Mechanical Engineering
University of Minnesota

Nic Ward

Department of Mechanical and Industrial Engineering
Montana State University

Pam Jones
Amy Mayer
Rossana Armson

Minnesota Center for Survey Research
University of Minnesota

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St. Paul, Minnesota 55118

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EXECUTIVE SUMMARY

Data indicate that traffic safety is a major public health issue within the United States, especially for rural areas. The treatment of this public health issue must focus on the driver, given that most crashes are the result of driver impairment or high-risk driving behavior (Evans, 1991). Only by examining rural crash risk factors may it then be possible to develop human-centered and culturally sensitive programs to improve traffic safety in both urban and rural America. A first step in the process is to understand the attitudes and behaviors that differentiate urban and rural crash risk as well as the receptivity of urban and rural drivers to certain types of traffic safety intervention.

The purpose of this project was to further explore the nature of beliefs and attitudes about risky driving behavior and traffic safety interventions between urban and rural drivers as a function of age cohort. It was expected that this research would further support decisions to guide the development of effective and acceptable traffic safety programs in Minnesota.

The method and results of two research phases are presented and discussed in this report. The purpose of the first phase of the project was to conduct focus groups under the supervision of the Minnesota Center for Survey Research. The main goals of the focus group phase were to qualitatively explore how Minnesota drivers defined what they saw as issues of importance related to driving safety and to gather information regarding drivers' views and experiences that could be used in making decisions related to crash reduction. In addition, information was sought regarding teen driver, parent, and senior driver perceptions about the suitability and effectiveness of proposed driving safety interventions.

The purpose of the second phase of the project was to administer surveys to focus group participants. The main goal of the survey phase was to obtain specific and quantitative data from drivers in the focus groups about their self-reported driving behavior, crash risk, and perception of intervention usability. This survey was based on standardized questionnaires previously utilized in a comparison of rural and urban residents. The analysis focused on differences between age cohorts in addition to rural and urban residency.

Results of this project indicated that whereas the purpose and destination of driving may differ, driving serves an important mobility function for both teen and senior drivers. Both teen and senior drivers rely on their driving to preserve their independence and avoid inconveniencing others (parents, children, and friends). Driving may also be a necessity in rural areas that lack public transport and have unique driving purposes (e.g., emergencies, hunting). Results suggest crash risk and associated risk factors are different for young and senior driver cohorts and areas of

residency which further suggest that traffic safety policy for teen drivers should focus on distraction amongst teens (especially in urban areas) and sensory-motor functioning amongst senior drivers. In terms of traffic safety policy for rural areas, attention should be given to interventions that promote seat belt compliance.

There are also related differences in the perceived effectiveness and acceptance of traffic safety interventions. Teen drivers felt that smart technology could have some positive effects on teen safety, but an acceptable program based on this technology would need to balance factors such as cost, robustness, and limitations on driving patterns. When asked about GDL programs teens were aware of the GDL principles, but were skeptical about the provisions for limiting the number of passengers and nighttime driving, were dubious about parent's involvement and compliance with certifying teen compliance with GDL programs, and were also notably disgruntled with current driver education programs. All of these aspects are relevant for future research in order to increase perceived credibility of the GDL program.

Comments that were made by both the rural and urban senior participants relative to mandatory testing pertained to cost, whom should be tested, and whether testing should be mandatory. The senior participants in all discussion groups were particularly concerned about the age at which testing would be required. Overall they felt that it would be difficult to set a specific age because driving ability is not necessarily tied to age. The participants suggested that testing should be required if a senior had a crash or was found to be having difficulty with their driving. In general, seniors felt the positive aspects of a mobility program were that it might keep poor drivers off the road, it possibly could help people stay in their own home longer, it might save seniors money since they wouldn't need to have their own car and insurance.

INTRODUCTION

The World Health Organization (WHO) estimates that 1.2 million people worldwide die each year from injuries related to road traffic crashes. In 2002, the global traffic fatality rate was 19.0 per 100,000 population. It has been estimated that the global cost of these fatal injuries is $518 billion annually (Peden et al. 2004). Overall, road traffic injuries represent the largest single cause of death worldwide (see Figure 1).

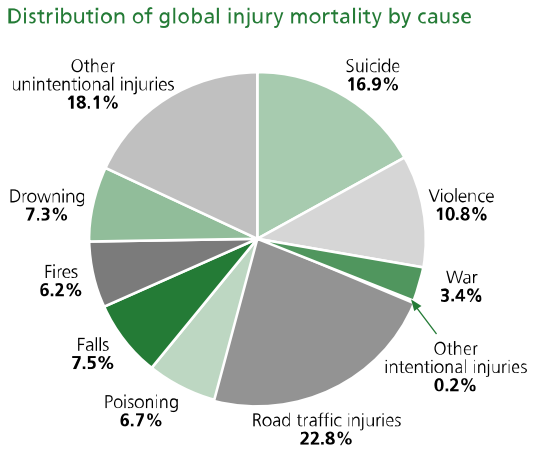

Figure 1: Sources of Fatal Injuries (Peden et al., 2004).

The National Safety Council has reported (NSC 2002) that road traffic injuries are also the most common cause of death in the United States for all age groups up to 75 years. Whereas the 2002 U.S. traffic fatality rate (14.8 fatalities per 100,000 population) was slightly better than the global rate (USDOT, 2002), it was significantly worse than other first-world nations such as the United Kingdom (6.0 fatalities per 100,000 population). Notably, areas of the United States that are defined as "rural" tend to have the highest fatality rates (Brown, Khanna, and Hunt 2000).

These data indicate that traffic safety is a major public health issue within the United States, especially for rural areas. The treatment of this public health issue must focus on the driver, given that most crashes are the result of driver impairment or high-risk driving behavior (Evans, 1991). Only by examining rural crash risk factors may it then be possible to develop human-centered and culturally sensitive programs to improve traffic safety in both urban and rural America. A first step in the process is to understand the attitudes and behaviors that differentiate urban and rural crash risk as well as the receptivity of urban and rural drivers to certain types of traffic safety intervention.

On this theme, previous research has surveyed differences between urban and rural drivers (Rakauskas and Ward, 2007; Rakauskas, Ward, Gerberich and Alexander, 2007). The results suggested that rural drivers, compared to urban drivers, engage in riskier behaviors such as not wearing seatbelts and driving under the influence (DUI) because they have lower perceptions of the risks associated with such behaviors. Moreover, rural drivers perceive the utility of government-sponsored traffic safety interventions to be lower than their urban counterparts." (p. 3) To continue this line of research, the current project extended the survey methodology to (1) compare responses of high risk cohorts (teens, older drivers), and (2) supplement the survey data with information

gleaned from focus groups conducted with cooperation between urban and rural schools.

The purpose of this project is to further explore the nature of beliefs and attitudes about risky driving behavior and traffic safety interventions between urban and rural drivers as a function of age cohort. It is expected that this research will further support decisions to guide the development of effective and acceptable safety programs in Minnesota.

PHASE I: FOCUS GROUPS

The purpose of the first phase of the project was to conduct focus groups under the supervision of the Minnesota Center for Survey Research. The main goals of the focus group phase were to qualitatively explore how Minnesota drivers defined what they saw as issues of importance related to driving safety, and to gather information regarding drivers' views and experiences that could be used in making decisions related to crash reduction. In addition, information was sought regarding teen driver, parent, and senior driver perceptions about the suitability and effectiveness of proposed driving safety interventions.

RECRUITMENT

The primary purpose of this portion of the project was to compare rural and urban responses. Thus, the sampling strategy focused on the selection of communities that were classified as rural and urban. Rural counties were defined as those areas that did not have a major paved, non-divided road with a speed limit greater than 60 mph within their boundaries. They also did not contain a city with a population over 5000 persons. Urban counties were defined as densely populated areas of Minnesota that exhibited high total vehicle miles traveled. These counties also share three of the four lowest Minnesota fatality rates per 100M VMT. These are currently accepted definitions of a rural and urban areas by the Minnesota Department of Transportation. In addition, the selection of communities for this study deliberately overlapped with the cities sampled in previous survey-based studies (Rakauskas and Ward, 2007; Rakauskas, Ward, Gerberich and Alexander, 2007). Specific schools were selected in the identified communities based on ease of access (e.g., travel distance from University of Minnesota) and willingness of the school to participate in the recruitment process. The sample for the recruitment of focus group participants consisted of individuals from two geographic areas of Minnesota, one rural (Mora) and one urban (Minneapolis). Participants within those two areas were recruited from the following three subgroups:

(1) teenage drivers (high-school-aged teenagers who had a valid driver's license and had been driving for at least six months);
(2) senior drivers (people aged 65 or older who had a valid driver's license);
(3) parents of teen drivers (who may also have a senior parent that is driving);

Recruitment for the rural focus groups took place in several stages. First, in June 2007, personnel from Mora High School mailed a letter to parents of students who would be juniors or seniors at Mora High School in September 2007. Included with the letter was a postcard that parents could fill out and return to MCSR, indicating their interest in participating in the project. A total of 42 parents who returned a postcard were contacted by telephone and their teenage driver and one parent per household were invited to participate in the focus group discussions. For the urban focus groups, recruitment also took place in several stages. A total of 172 parents of teens who had

completed their behind-the-wheel training through the driver education program at either Roosevelt High School or South High School were first sent a letter describing the project and informing them that MCSR staff would be calling to ask if one parent and/or their teenage son or daughter would be interested in participating in a discussion. These programs were identified to facilitate the recruitment process and to ensure basic driving experience. The week after the letters were mailed, parents were contacted by telephone. One parent and one eligible teen driver per household were invited to attend different discussions.

All six Mora focus group discussions were held in a classroom at Mora High School. The Minneapolis teen and parent focus groups were held in the Media Center at South High School, and the Minneapolis senior discussions were held at the Waite Community House in Minneapolis. As people arrived at the focus group location, they were greeted, asked to put on a nametag, and provided with refreshments. Each focus group discussion was audio taped, and the co-facilitator also recorded group members' responses on paper or on a flip chart. During the focus group discussions, participants answered questions about driving safety issues and also provided feedback about specific interventions designed to reduce teen and/or senior traffic crashes. To ensure that the focus groups were run efficiently, all participants were asked to complete a written survey about driver behavior and traffic safety as well as basic demographic information *prior to* attending the focus group session. Each focus group discussion lasted for approximately one and one-half hours. At the conclusion of each focus group discussion each participant was given $25 for participating. A total of 116 individuals participated in 12 focus groups that were held from August 13 to October 29, 2007 (see Table 1 for a summary of the focus group locations, dates, and number of attendees).

Table 1. Summary of Focus Group Demographics.

Group		Date	Location	Number Attending
Urban Teen	1	10/23/07	South High School, Minneapolis	9 (3 male)
	2	10/24/07	South High School, Minneapolis	10 (3 male)
Rural Teen	1	08/13/07	Mora High School	12 (8 male)
	2	08/15/07	Mora High School	9 (4 male)
Urban Parent	1	10/23/07	South High School, Minneapolis	9 (1 male)
	2	10/24/07	South High School, Minneapolis	6 (1 male)
Rural Parent	1	08/13/07	Mora High School	10 (3 male)
	2	08/22/07	Mora High School	10 (1 male)
Urban Senior	1	10/29/07	Waite House, Minneapolis	10 (4 male)
	2	10/29/07	Waite House, Minneapolis	10 (5 male)
Rural Senior	1	08/15/07	Mora High School	13 (5 male)
	2	08/22/07	Mora High School	8 (5 male)

METHOD

Members of the MSRC, who are trained researchers that have had extensive experience in forming and interviewing focus groups, conducted the focus groups. The focus groups were managed in relation to a set script (see Appendix A) to ensure that a comprehensive set of questions was consistently solicited from all focus group sessions for each demographic group. These questions and probes related to the perception of each person about the crash risk and the risk factors that predominate for themselves and their cohort. Specifically, they were asked about the importance of their license to them in terms of mobility as well as the risk they perceived for themselves and their cohort. The focus groups were also asked to speculate on types of intervention that may be applied to their cohort to reduce traffic crashes. The types of intervention selected for presentation in the focus groups were determined by the research team and reviewed with the Technical Advisory Panel. These interventions were deemed to be relevant to Minnesota and representative of contemporary intervention strategies for these demographic groups.

After this initial focus group discussion, each focus group was given a presentation on the background and purpose of several safety interventions specific to their cohort. Specifically, the teen drivers received presentations on 1) Graduated Driver Licensing Programs (GDL) and 2) onboard technology to monitor and record high risk driving behaviors. They were asked to discuss the perceived utility of such interventions and propose methods of improving both effectiveness and acceptability within the cohort for these interventions.

Teen Intervention: Smart Technology

The teen participants viewed a PowerPoint presentation (see Appendix B) that first presented a commercial that was developed by a teenager for the purpose of illustrating the risks faced by teenage drivers. The commercial was followed by several slides presenting teen driving statistics (number of crashes, risk factors, etc.). Following that information, the teens viewed film footage from a television news broadcast describing a "Smart Technology" device that was being developed to help reduce teen traffic crashes. The device consisted of a computer and other sensing equipment that could be installed in a vehicle and could track various aspects of a driver's behavior, such as road speed, acceleration, curve speed, and seatbelt use. If the driver's actions were unsafe, a voice could be heard telling the driver what the error was. For example, if the speed limit was exceeded, a voice could be heard saying, "exceeding speed limit." The voice also could be heard indicating that the speed limit had changed ("speed limit changed to 65 miles per hour"). In addition, teens were told the device recorded various aspects of the trip and also could send a text message to a parent informing them if the teen driver had driven unsafe, such as exceeding the speed limit or not wearing a seatbelt. Information from each driving trip also could be downloaded to a computer and reviewed by a parent. The Smart Technology was developed by researchers at the University of Minnesota for the purpose of reducing teen-car crashes. Because many

teen driving crashes occur soon after a teen first acquires a driver's license, the researchers' goal was to have a device that would help remind teen drivers about safe driving practices during their early months of driving, thus enhancing their driving skill and decreasing the likelihood of being involved in a serious car crash.

Teen Intervention: GDL

A second intervention, the Graduated Driver License (GDL) program, designed to reduce teenage driving crashes was the second intervention discussed during the focus groups. The purpose of the GDL program is to reduce risk exposure and improve teen driving skills through a program of progressive phases of licensing. The three licensing phases in Minnesota are (1) the instructional permit, (2) the provisional license, and (3) the full license. Various requirements and limitations are stipulated during each phase of the licensing process. Another important aspect of the GDL program is parental supervision of teen driver progress. To obtain an instructional permit, a parent's or legal guardian's signature and certification is required. For the provisional license, parents/guardians are also required to certify that their teen driver has driven under the supervision of a licensed driver at least 21 years of age for not less than 30 hours (at least 10 of which were at night). A number of limitations exist for teens at the instructional permit and provisional license stage, such as a minimum age requirement and no cell phone use while driving.

As part of the focus group discussion, the teen participants were asked for their opinions regarding additional proposed teen driver limitations on nighttime unsupervised driving and limitations on the number of teen passengers allowed while a teen is driving. In addition to viewing presentation slides describing the GDL program, the teens were also shown a commercial about teen GDL driving limitations that are already implemented and demonstrated in traffic safety commercials in Hawaii.

Senior Intervention: License Re-Testing

The discussion participants were shown a presentation (see Appendix C) about a safety intervention that would involve sensory, cognitive, and physical testing for senior drivers, as well as taking written and behind-the-wheel driving tests. The presentation covered the types of tests that have been proposed at the national level, as well as the premise that such testing should be age dependent.

Senior Intervention: Intelligent Transportation Network

Following the discussion about the testing program, senior focus group participants were shown a second PowerPoint presentation relative to a program for providing transportation to seniors using volunteer drivers and vehicles identified previously as "Intelligent Transportation Network" (ITN) (www.itninc.org). This is a community-based program that schedules transportation for seniors using local residents and a nominal fee structure. An expanded description of the model ITN can be found in Appendix D. The focus group scripts asked participants to comment on the perceived

effectiveness and acceptability of these interventions for their cohort, and propose any suggestions to modifying the interventions to increase usability. In addition, respondents were encouraged to offer any alternative intervention concepts that they believed to be useful for their cohort.

Parent Cohorts

The parent cohorts responded to the same focus group scripts as the teen and senior drivers but were directed to respond in terms of the perceptions of their own teen drivers and/or own senior parents. The parent cohort focus groups only considered one teen and senior driver intervention that was provided via a presentation (see Appendix D).

RESULTS

The objectives for the focus group analysis were:

- Compare cohort specific perceptions of driving purpose and crash risk.
- Describe cohort perceptions of crash reduction methods and usability for cohort specific safety interventions.
- Assess cohort perceptions as a function area of residency (rural and urban).

Teen Focus Groups

The results of both the Mora (rural) and Minneapolis (urban) teen focus group discussions are summarized in this section of the report. Results that differed between the rural and urban groups are noted *with an emphasis on unique responses of the rural respondents* given that this group typically represents the high crash risk.

Driving Purpose

Teen participants were asked how long they have had their driver's license. The shortest length of time was six months and the longest was approximately two years.

Quite a variety of reasons for driving places were given by the teen drivers and included the following: work, school, school sport activities, other extracurricular school activities such as plays or clubs, visiting with friends or family, partying, skateboarding, running errands for parents, transporting siblings, going to appointments, and recreational activities. Activities specifically mentioned by the rural teens were hunting, night clubbing, cruising the strip, attending church, and driving as part of their job. Urban teens also mentioned needing to drive for road trips, sporting events, going to movies, giving rides to friends, going out to eat, and attending college classes.

Teens from both rural and urban focus groups indicated it was important that they be able to drive to these places for the following reasons: to help their parents/family (e.g., giving rides to siblings, helping with errands), for freedom or independence, so they don't have to walk, so their parents don't have to drive them, and so they don't have to

wait to be picked up. Rural teens specifically mentioned that driving is important because they could help out in case of an emergency, their parents are more likely to let them go places if the parents don't have to drive, and because it gives them some responsibilities.

Teens within both rural and urban focus groups indicated that if they did not have a driver's license they would get to the places by employing the following: bicycle, walking, parents, other relatives, friends, school bus, or rollerblading. Some of the rural teens mentioned that they might get around by riding a horse, while the urban teens would use a city bus, the LRT, or a taxi.

Crash Risk

With regard to knowing any teens in their area who had been involved in car crashes, the rural teens mentioned that several years ago two teenagers died in a car crash that involved speeding. Two teens attending the rural focus groups also indicated they had been in serious crashes and other rural teens mentioned they were involved in other less severe crashes, such as minor collisions ("fender benders"), or being side-swiped while at a stop sign. One of the serious crashes was caused as the teen drove off the road to avoid hitting a deer. The other serious crash was due to slippery road conditions and going around a curve at too high a speed. Causes of other crashes were teens being in a hurry or being careless, not knowing how to judge distance from other cars, or trying to drive out of a busy, crowded parking lot.

The urban teens felt that the main causes of crashes were not paying attention, not knowing how to drive defensively due to lack of experience, using cell phones, alcohol, being distracted, going too fast or too slow, teens not knowing how to react if another driver starts to have trouble, using MP3 players, and texting while driving.

Crash Reduction

Rural and urban teens had several similar suggestions for ways the number of teen car crashes could be reduced:

- Require more hours of behind-the-wheel training or practice driving.
- Have more difficult written and road tests.
- Limit the number of passengers in the car (e.g., to 1 or 2 people) to reduce distractions.
- Don't allow teens to play car radios loudly.
- Limit night driving to not after 9:00 p.m. (although they acknowledge this would be difficult for teens who work at night).

The rural teen participants had several additional suggestions for ways that the number of teen car crashes could be reduced:

- Limit cell phone use, especially text messaging, and better enforce the law that prohibits teens with provisional licenses from using cell phones while driving.

- Require teens to have a certain GPA before they are allowed to get their license.
- Have more severe consequences for speeding.
- Increase the number of law enforcement officers on duty.
- Have law enforcement officers stop more speeders or teens committing other traffic violations.
- Improve the driver's education program (have it be more up-to-date, show more examples of teen crashes).
- Improve behind-the-wheel training by doing the following: instructors should provide more tips to students, instructors should have a planned route and itinerary when driving with students that is geared toward learning specific skills, practicing specific skills rather than just going for a casual drive, and instructors should not fall asleep during a behind-the-wheel practice drive.
- Have a day at school where there is a fake car crash and the victims are brought into the school while waiting for the paramedics so the students can see how severe the injuries might be; a "scare tactic" to help educate teens about what might happen in a real car crash.
- Limit the number of hours teens can drive at one time to avoid crashes caused by fatigue.
- Educate teens about time management so they can plan better and won't have to rush while driving.
- Give teens more information about the number of teen car crashes and/or about the problem of teen crashes.

Smart Technology Intervention

Following the Smart Technology presentation teen participants were asked what they thought of that intervention as a way to reduce teen driving crashes. The reactions of both rural and urban teen drivers were somewhat mixed, with some teens stating that it might help reduce crashes and others indicating that it would not be effective for encouraging safer teen driving. The teens who favored the technology thought that it might help to reduce speeding by teen drivers which could reduce crashes, and also might encourage their parents to trust them more. They also thought the technology might help new teen drivers develop better driving habits. Other comments made by teens in both locations were as follows:

- It would be too expensive and their parents could not afford to buy it.
- They don't think their parents would want to use it.
- Several of the teenage drivers thought they would "play it like a game."
- Having a voice speak to them while driving might be too distracting and might cause them to have a crash.
- It would take away some of their freedom.
- It might be more beneficial to have teenage drivers use the technology sooner, such as when they have their permit, rather than waiting until they have passed their road test.
- They felt that there were times when it was safer to drive slightly above the

speed limit (such as when they were trying to stay with the flow of traffic rather than impeding other drivers); therefore, having a constant reminder that they are speeding might be very annoying or unnecessary.

Rural teens also questioned if the technology would be difficult to use effectively if the teenager drove multiple vehicles (so the device would need to be moved from car to car). The rural teens were also worried about losing driving privileges as a result of monitoring by the Smart Technology. They also suggested that the technology might provide useful feedback or information for other drivers as well, in particular their parents.

Additional comments offered by urban teens at the Minneapolis sessions are as follows:

- Teens might get used to or dependent on the technology, so when it is taken away they will have more crashes.
- They did not like the geo-fencing[1] feature of the technology because they were worried that their parents would make it too restrictive.
- It might be easy to fool it by having someone else use their fingerprint to access the car.
- One teen did not like the fact that the technology was developed by people who will never have to use it. He felt that the training for teen drivers shouldn't need to change; what worked in the past should still apply now.
- Some teens thought they would turn up the radio volume very loud so they couldn't hear the voice from the device.
- Because it is disrespectful and untrusting of teenage drivers, teens will probably ignore it.
- One teen mentioned having "Drive Cam" in her car, which her parents opted to install because it reduced their car insurance. The teen's first comment was, "I hate it." The teen thought it had not helped at all and was more of a distraction. She also complained that the device sent information to the insurance company that was then sent to her parents. Because the feedback was after the fact, she did not think it was useful. One other teen said their parents also were thinking about getting the Drive Cam.
- The teens also suggested that drivers of any age should be forced to use the Smart Technology as a form of punishment for violations such as drunk driving or speeding.

In terms of the overall effectiveness of the Smart Technology for reducing teen car crashes, the teen drivers felt it only would be effective if both teens and parents care about the issue. The teens also felt that the effectiveness would depend on the person using it since some might be easily distracted by the technology which might cause a crash.

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[1] Geo-fencing is defined here as in-vehicle technology that is 'aware" of geographic areas in which a driver should or should not be present and can subsequently warn/inform drivers that they should avoid or leave the areas.

Next, the teenage drivers were asked what suggestions they had for making the Smart Technology intervention a more effective way to reduce teenage car crashes. A number of differing suggestions or comments were offered by both the rural and urban teens. These were suggestions or comments made by the Mora teens:

- Reduce the cost.
- Send reports about speeding directly to the police and not just to the parents.
- Make it as simple as possible to use.
- Have it available for purchase at a convenient location.
- Be sure to provide easily accessible technical support.
- Make sure the teenage driver can't disable or disconnect it.
- They were also concerned about the cost of sending text messages to parents.

Minneapolis teens indicated:

- Don't use parents' voices.
- Aim the information about the program more for teens. The presentation shown at the discussion was more for parents, and it showed teens "here is another way your parents can control you." They suggested emphasizing how it will help teens' driving and that here is a way you can prevent accidents. Let them know that there is something in your car but it will help you and not just make your parents feel better about your driving.
- Eliminate the geo-fencing feature.
- Maybe the car could actually shut off after giving you a warning. "If it just talks to me, I don't really care; it's just an empty threat."
- Or, perhaps it could make the car's hazard lights come on if the teen driver is doing something such as going too fast.
- Have a beeping noise instead of a voice indicating that the driver is speeding, etc. Or perhaps the voice could say something such as, 'I just wanted to let you know that you're going too fast.'
- The teens would prefer it if the technology would tell just the teen that they are speeding rather than sending a message to their parents.
- It could be helpful if you're driving and you don't know the speed limit.
- The teen should be able to turn it off and turn it on.
- Maybe the device could contact the police if someone is doing something extreme, such as driving very erratically.
- Add a breathalyzer for starting the car.
- If you get pulled over 5 times for speeding, regardless of age, you would be required to use the Smart Technology in your car.

GDL Intervention

Rural and urban teen drivers were then provided with a presentation detailing GDL programs. The presentation (see Appendix B) indicated that GDL programs are intended to reduce risk exposure and improve driving skills while teens learn to drive, entail progressive phases of licensing, and involve parent participation to supervise driving progress. After viewing the presentation teen drivers were asked what they thought about the GDL program as a way to encourage teenagers to be safer drivers and to help reduce teen driving crashes. In general, the teens in both the rural and

urban focus groups were not familiar with the name of the program but were aware that the GDL criteria existed. Most felt the GDL had helped them to be better drivers (better in terms of driving skills) as compared to what they think would have happened had it not been in place. However, the teens weren't really sure if the GDL program had made them better or safer (i.e., reduce the number of crashes) drivers since they only had their provisional licenses.

Relative to GDL passenger restrictions, teens in both the rural and urban focus groups felt that restricting the number of teen passengers while a teenager is driving would mean that more teens would be driving, which might increase the number of crashes. They also felt they usually drove more carefully when they had teens or other passengers in the car and that it would be a major inconvenience if they couldn't give rides to their friends. The majority of teens were also not in favor of the suggested nighttime driving limitation because of concerns about getting home after work or other activities. They felt this would put too much of a burden on their parents.

Other comments made by the rural teenage drivers were as follows:

- The behind-the-wheel training did help them to be better drivers.
- Teen drivers should spend more time driving with adults since this might allow them to learn more from experienced drivers.
- The GDL program also might help to reduce teenage drinking and driving because of the limitations in place while teens have their provisional license.

The teens at the Minneapolis focus groups offered these additional comments:

- A few of the teens thought it might be a good idea to limit passengers and nighttime driving to give teens a chance to get experience.
- However, some teens thought that nighttime restrictions would mean that teens wouldn't get experience driving at night and, therefore, might have more accidents later on.
- The next few years the teens that are newly affected won't like it but in a few years people will get used to it.
- Instead of making more rules they should have more police on the roads.
- One teen wanted to know why new regulations are needed now since they weren't needed.

Teens in both the rural and urban focus groups were not sure if their parents monitored their compliance with the GDL requirements. However, most did recall that their parents had to sign a form indicating they had driven the required number of hours with an adult. Because the teens weren't certain their parents monitored their compliance with GDL requirements they weren't really sure how effective the monitoring was with regard to encouraging them to be a safer driver. In addition, the

teenage participants were unsure if their parents actually reported their compliance with the GDL requirements. Most teens in both rural and urban focus groups reported their parents did warn them not to use their cell phone while driving and to wear their seatbelts. One rural teen was surprised to learn that teens with a provisional license were not supposed to use a cell phone while driving.

A specific question was asked of the teen participants about how effective they thought the limitation on the number of teenage passengers would be for improving teen driving safety. As noted above, the teenagers from both areas questioned whether or not that would be an effective means of reducing teen crashes. However, they also mentioned that some teenage drivers might be tempted to show off or be distracted by conversations when other teenagers are riding with them. They also felt that such a limitation should depend on the teenager since some teens are very calm and mature and would be careful drivers with teenage or other passengers. One rural teen suggested that the passenger limitation only should be enforced if a teenage driver made a mistake, such as speeding or had another traffic violation. In particular, the rural teens felt it would be difficult if they were not allowed to transport their siblings because they often do that to help their parents. The urban teens also felt that such a limitation would be difficult to enforce, and that the number of teen passengers allowed should be two or three rather than only one. Another urban participant felt that having other teens in the car is a positive thing because, "we help each other out." Another teen mentioned that, "I drive better when someone else is in the car."

A similar question was asked regarding how effective limiting the amount of unsupervised nighttime driving would be for improving teen driving safety. In general, both rural and urban teens felt this would not be an effective or necessary means of reducing teen car crashes because they believe that nighttime driving is not more dangerous for teenagers. They also thought that teens might attempt to rush to get home, which might cause more crashes, before a nighttime driving curfew. Additional comments made by the rural teens were as follows:

- There would be no efficient or practical way to monitor or enforce teen nighttime driving.
- It would be a problem for teens who work at night.
- It wouldn't reduce crashes enough to justify a law.
- Many teens drive more cautiously after dark and so the provision would be unnecessary.

Rural and urban teen focus group participants were asked what changes they would suggest to make GDL a more effective way to encourage safe driving for teenagers. Rural teens had the following suggestions:

- After passing their road test, teenage drivers could be required to drive a certain number of hours with a parent in the car. Then, if they met that requirement, they would be granted their provisional license.

- If a teen driver made a mistake (e.g., speeding or other traffic violation) they would need to take another driver education class and perhaps their license could be suspended until they pass the class.
- Require teens to have their permit for longer than currently specified.
- Have "big fines" for traffic violations as that might discourage speeding or other risky driving behaviors.
- Require teens to achieve a certain GPA in order to be eligible for their license.

Speculated Interventions

Finally, teens were asked if they had any final thoughts about strategies that could be used to reduce teenage car crashes. The teen drivers attending the rural discussion had a number of specific suggestions, such as having more television commercials such as the one shown in the PowerPoint presentation where teens were killed in a car crash due to the driver being distracted (by having several teenage passengers that distracted the teen driver).[2] One teen commented that the commercial "gave me goose bumps." The rural teens thought that developing an ad campaign that targeted teenage drivers might be an effective way to encourage teens to be safer drivers, thus reducing teen traffic crashes. Another suggestion was to have a separate road test that would be given at night to test teens' proficiency for driving after dark. The rural teens also voiced a concern about having limitations without having exceptions because there are times, such as in an emergency, when a teen might need to drive at night, use a cell phone while driving, or have more teen passengers in the car than allowed.

The urban teens also had a number of specific suggestions:

- One teen thought that people shouldn't be allowed to get their license until they are 17 or a senior in high school. Another teen disagreed and stated that having a driver's license at a younger age allowed the teen more time to drive with parental supervision.
- Education and time behind the wheel is most important.
- If a teenager has crashes or speeding violations they should be required to attend additional driver's education classes.
- Some teens thought it should be illegal to use a cell phone or do other activities, such as putting on makeup, while driving.
- Other teens felt that such a law is not needed because sometimes it is necessary to use a cell phone while driving, and it should be up to the individual driver to decide if it's safe to do so.
- Another teen suggested that more information should be provided about how to use public transportation and that the public transportation system should be improved so that more teenagers would use it.
- Several teens thought that giving free bus passes to teenagers would encourage more teens to take the bus since taking the bus was sometimes "more

[2] Commercial was originally available through the Hawaii DOT but is no longer available.

expensive than driving."
- One teenager thought there should be a Smart Technology device for motorcycles as well as for cars.

Both rural and urban teens had some sharp criticism of the driver's education classes they attended, with most stating that the classroom instruction was not very helpful. The rural teens suggested that the driver's education classes have fewer students and be taught by driver's education specialists. One rural teen recalled that the instructor told her that the driver's education class was pointless, and others mentioned that they were told, "just read the book." The rural teens mentioned that they thought that some of the instructors were good but others "could care less." One of the urban teens commented that, "I took driver's education here and it was a joke." Several urban teens mentioned that they watched sitcom television programs during driver's education classes, and others thought that the driver's education classes were crammed into too few weeks.

Senior Focus Groups

This section of the report details the results of the senior focus groups. As with the previous summaries, results that differed between the rural and urban groups are noted with an emphasis on unique responses of the rural respondents given that this group typically represents the highest crash risk.

Driving Purpose

Senior focus group participants were asked "What are some of the reasons you need to drive places?" A variety of reasons were mentioned by both rural and urban focus group participants including: grocery shopping, other shopping, work, meetings, visiting friends and family, family activities, vacations, appointments, church, recreational activities, and dining out. Rural senior participants also drive for hunting, fishing, volunteering, garage sales, and teaching grandchildren to drive. The rural seniors indicated it is important that they are able to drive for those reasons because there is no public transportation, so they usually have no other way to get around and they would have to stay home most of the time. If they did not have a driver's license the rural seniors indicated they would get to the places they need to go by employing the following means: spouse, other family members, a neighbor, or the county-run "senior bus" service. Several people mentioned that they might need to move into town so they would be closer to the services they need. One person mentioned that they would "feel like a pest" if they had to ask others for rides all the time. Another person made the comment that, "your world gets mighty small when you can't get in that car and drive anymore."

The urban seniors also felt that driving is important, otherwise they would not easily be able to get to the places they need to go. In addition they mentioned that, although buses are available, the buses are uncomfortable and difficult for many seniors to use (trouble getting up the steps, having to stand around in cold weather while waiting for

a bus, concerns about safety). The urban seniors also stated that they enjoy the independence they have by being able to drive, and also are able to help out other seniors who can't drive. Seniors attending the urban focus groups also mentioned a number of other reasons they needed to drive: sometimes it's the only way to get there, out of boredom, it's a necessity, can't walk as much anymore, for the convenience, just to go out for a ride, freedom to go when you want to, for the enjoyment of driving, it's easier to drive than walk, driving others to work, driving around to check on what's going on in neighborhoods, to go to events in the downtown areas, to drive around the country, babysitting, and to go to the bank or post office. Seniors in the urban discussion groups would also rely on friends, neighbors, or family for rides if they were not able to drive. Other transportation options mentioned by the urban seniors were as follows: take a cab, walk, move to a housing facility that provides transportation, Metro Mobility, bus, light rail, a bike, or a moped. The urban seniors also mentioned that they sometimes had difficulty walking places because some sidewalks are not well maintained and are often slippery in the winter. One person pointed out that it is sometimes more expensive to own and operate a car than to take a cab. The urban seniors also disliked having to ask others for rides because they felt like they were imposing on other people.

Crash Risk

With regard to knowing any seniors in their area who had been involved in car crashes, the rural seniors mentioned that they were aware of a number of crashes. They indicated that the majority of the crashes were fender-bender crashes, usually in the parking lot at the local grocery store on senior discount day. One fatal crash was mentioned which involved a senior driver who ran a stop sign and was hit by another car. Other crashes that were mentioned were a senior hitting a deer and a senior backing into a garage.

Participants in the urban senior focus group discussions also knew of a number of car crashes involving seniors. In addition to minor fender-bender crashes, such as bumping fenders in parking lots, bumping fenders while pulling out of parking spots on the street, or bumping into a garage in a driveway, a number of more serious crashes were mentioned. One crash involved a senior who hit someone who had run a red light (two cars ran the light and the senior hit the second car), and another senior driver who had run a red light hit another vehicle. Another crash involved a senior pulling out at an intersection and hitting a car that was driving by.

Regarding why these crashes occurred, the rural seniors felt that intersection crashes were more likely for seniors than for other age groups because they can't judge the speed of the cross traffic, have slower reaction times, poorer vision, reduced hearing, or other physical problems such as stiffer necks or shoulders. Others felt that many seniors are safer drivers than they were when they were younger because they are less aggressive and more experienced drivers. However, one person pointed out that when

seniors or others drive the speed limit they often hold up traffic and noted that, "if you look behind you, it looks like there's a funeral."

Both rural and urban seniors also felt that some seniors have trouble seeing well when driving after dark and may cause crashes because of that limitation. Discussion participants felt that another cause of senior crashes was driving too slowly. One rural senior mentioned that some seniors think that other drivers watch out for senior drivers simply because they are older. Several of the seniors in the rural discussions also mentioned that seniors who drive primarily in rural areas are sometimes afraid of, or not very good at, driving in urban areas.

Crash Reduction

The senior focus group participants were next asked for suggestions for ways that the number of senior car crashes could be reduced. The suggestions mentioned by both the rural and urban groups were to require seniors to take a road test when renewing a license, and that seniors need to admit when they shouldn't be driving and turn in their license.

Other suggestions made by the rural seniors were as follows:

- Offer educational classes about both safe driving and how driving abilities may change as people age; perhaps make the classes mandatory rather than being voluntary as they are now.
- Encourage more seniors to carpool.
- Have limited licenses for some seniors, such as only being allowed to drive in certain areas or not being allowed to drive after dark.
- Require seniors to take other tests besides just a road test, such as a test for reaction time.
- Plan trips to make as few left turns as possible since it is usually safer to make right turns.
- Have virtual or simulated driving testing or practicing.
- Allow law-enforcement officers to suggest that someone be tested for driving competence.
- Have improved or increased law enforcement to try and catch more people who are having driving problems while they are actually driving.

Several of these crash reduction suggestions are currently offered through various organizations in Minnesota. The notion that these crash reduction techniques exist but are not known to drivers suggests a potential need for greater promotion and awareness of existing crash reduction techniques.

Driver License Testing Intervention

Senior drivers were next shown a presentation about a safety intervention that would involve sensory, cognitive, and physical testing for senior drivers, as well as taking written and behind-the-wheel driving tests. After viewing the presentation the

participants were asked what they thought of the testing program as a way to reduce senior driving crashes. The comments that were made by both the rural and urban senior participants pertained to cost, who should be tested, and making the testing mandatory. The seniors were concerned that the testing would be cost prohibitive both for the state to conduct and for seniors to afford. With regard to who should be tested, seniors thought that testing should be required for drivers of all ages who have trouble driving safely, not just for seniors. Therefore, the testing should be "behavior based" rather than age based. The seniors also felt that the testing would need to be mandatory.

The following additional comments were made by rural seniors:

- It might help but they wouldn't be too happy about having to take the tests.
- There would need to be an increase in the number of personnel at the current driver testing locations to do the additional senior testing.
- It might be helpful to have an organization, such as AARP, back the testing or educate people about being more aware of when they should stop driving.
- If someone doesn't pass the tests it would really affect their independence.
- Some seniors might be so nervous about taking the tests that they might not pass.
- Perhaps an incentive, such as reduced car insurance, would encourage people to take the tests.

One person commented that "the state can't keep the drinkers and uninsured people off the road, so I don't think this state is smart enough to do it." "How often or how many times would someone need to be tested?

As far as who should do the testing, seniors in both the rural and urban focus groups felt the state should be responsible for performing the testing since it would be too costly to have a private organization do the testing. They also thought that special training would be required to ensure that the people performing the testing would be competent and qualified. The urban seniors also suggested that perhaps a simulator could be used as part of the testing because that might be more fair.

The senior drivers in all discussion groups (urban and rural) were particularly concerned about the age at which testing would be required. Overall they felt that it would be difficult to set a specific age because driving ability is not necessarily tied to age. Seniors suggested that testing should be required if a senior had a crash or was found to be having difficulty with their driving. When asked if they were forced to choose an age at when testing would begin, the general consensus was 70. The urban seniors suggested that a study be conducted to determine whether or not the testing was effective at reducing senior crashes. They also suggested that some seniors be issued a restrictive license that would prohibit them from driving at night or during inclement weather.

Senior drivers were also asked who should recommend that someone be tested. A number of suggestions made by both rural and urban senior drivers included: physicians, the police, pastors, spouses, and other family members. The seniors mentioned the need to be cautious about who would have the authority to recommend that someone be tested because "you may have a neighbor who doesn't like you and will say you need to be tested just to be mean."

With regard to how effective a testing program would be for reducing senior crashes, drivers in all both urban and rural focus groups agreed that it would help to take some dangerous drivers off the road. One urban senior commented that, "if it stopped one crash, it would help." However, both rural and urban seniors were concerned that there are drivers in other age categories, such as teenagers, who are as or more dangerous than seniors. The comment was made that testing "would catch the people over 70 but what about those who are, say, 55 to 69?" The senior participants were also concerned that there would be many seniors who would just drive without a license. One rural senior commented that perhaps the fear of not passing the tests would make some seniors stop driving. An urban senior also mentioned that, "it's an educational process, so people need to be educated about rules." The urban seniors also thought that a testing program would be most effective if it could be more instructive and call attention to the bad driving habits that people have. When asked for final suggestions about the senior testing program the following comments were offered by the rural seniors:

- There can't be a program that is "one size fits all."
- It's not fair to say that everyone over 65 should be tested.
- If you don't want to discriminate against older drivers, test everyone every four years.
- Perhaps it should be a federal program.
- The state would need to run it which means that a politician would need to get behind the program to push it through.

Senior Mobility Intervention

Following the discussion about the testing program, the senior drivers were shown another PowerPoint presentation about a model community-based transportation program for seniors (ITN, see section Senior Intervention: Intelligent Transportation Network in this report for a review of a description of ITN). After viewing the presentation, the focus group participants were asked what they thought about the ITN program. The rural seniors felt the positive aspects of the program were that it might keep poor drivers off the road, it possibly could help people stay in their own home longer, it might save seniors money since they wouldn't need to have their own car and insurance, and the people who donate cars to be used for an ITN could receive a tax benefit.

The urban seniors first mentioned that they knew of several similar programs that already exist in the Twin Cities area. One was a program in Dakota County that also used volunteer drivers to transport seniors to various locations. Another was a church-sponsored program in which seniors were transported to the grocery store once a week. In addition, the urban seniors were aware of assisted living facilities that provide transportation for people residing at those locations, and also mentioned a grocery store that had a van that was used to pick up seniors and bring them to the grocery store once a week. One senior commented that if the volunteer drivers were neighbors of the seniors who utilized the service that might make the seniors more comfortable since the drivers would be more familiar, as opposed to a stranger such as a cab driver. The urban participants also thought that paying $7.50 per trip would be reasonable because the senior would be saving more money by not paying for insurance and upkeep on an automobile. They also thought that using an ITN-type service would be cheaper than using a taxi. Urban discussion participants also felt that having an ITN-type of transportation that was convenient and affordable might give urban seniors who are poor drivers or who no longer drive more freedom since they would be able to get to activities more safely. One urban senior commented that, "I would quit driving if I had access to this."

Seniors from both the rural and urban discussions had a number of concerns about the ITN program:

- There was concern about finding enough volunteers to staff the program. They thought that it most likely would be seniors driving seniors. They also were concerned about the insurance costs that might be incurred by the volunteer drivers.
- There were also concerns about who would screen the volunteer drivers.
- The cost of $7.50 per ride might be too high for some seniors.
- Only covering an area with a 15 mile radius (as was the case for the sample program) would not be large enough for a rural or urban area.

The rural seniors had a number of concerns and suggestions about the program, as follows:

- The program might work well in town but they were concerned that the distances would be too great for those who live outside of town.
- They were concerned about how difficult it would be to get something like that started in their community. They felt that people would need to be educated about the benefits of the program.
- It would be inconvenient for last-minute or spontaneous trips because of the need to schedule rides ahead of time.
- Perhaps existing volunteers could get together to organize an ITN program.
- The seniors suggested that perhaps local churches could work together to help establish the ITN program.
- If the hours when rides were available were limited, it might take a lot of independence away from seniors.

- Having a program that operates much like a taxi service would be useful.

Seniors were also asked to assess the overall effectiveness of an ITN program for reducing senior car crashes. As mentioned previously, participants in both the rural and urban groups felt this type of program might help keep poor drivers off the road, thus reducing crashes. However, rural seniors questioned the need for a formal ITN program in their community. They felt that people were already giving seniors rides and they couldn't think of any seniors who could not get out to the places they needed to go to.

Speculated Interventions

Lastly, the senior focus group participants were asked if they had any final thoughts about strategies that could be used to reduce senior car crashes. The following suggestions or comments were offered by the rural participants:

- Make it mandatory that all people 55 and older take a driver education class, and people who take the class should receive a discount on automobile insurance.
- There should be testing and education for all drivers, not just seniors.
- Increase law enforcement patrols to help reduce speeding and to catch seniors or other drivers who violate traffic laws.
- "Hit them in the billfold" (i.e., increase fines for traffic violations).
- Widen highways since narrow roads are harder for some seniors to drive on.
- Have more turn lanes to increase safety at intersections.
- Install traffic lights at busy intersections.
- Have more public transportation available.
- Increase everyone's awareness about the issue of senior driving safety.
- Some seniors need to realize that they should not drive after dark or should just stay home and not drive.
- Have seniors attach a sign to the back of their car that would say, "I'm old, be careful."

Participants in the urban senior discussions offered the following final comments:

- People shouldn't drive too slowly.
- Have better law enforcement.
- Have a flashing sign on your car that says: "Beware, Senior Citizen."
- Remember that being a senior doesn't always mean being senile.
- Offer some type of financial incentive to seniors for giving up their license.
- People should have to actually give away their car before they can use the ITN program.
- Have educational or public service announcements calling people's attention to the importance of senior drivers needing to stop driving.
- Encourage seniors to attend driver safety/education classes.
- Have cars that make a beeping sound when they back up.

- Have cars with technology that can warn people if they are too close to the car in front.
- GPS could help people be better drivers because it will give directions; especially, for people who have dementia/Alzheimer's.
- Have better and more consistent road signs, which would be important for all drivers, not just seniors.
- Anything that teaches drivers to be more defensive would be good.
- Maybe seniors should be exercising more to maintain flexibility and enhance their physical condition that would help them to be safer drivers.
- One person suggested using the right foot on gas and left foot on brake.
- Car manufacturers could install mirrors that would enable drivers to better see behind their car.
- Test how quickly someone can gauge depth and movement and their ability to gauge how far they are away from another car.

Parent Focus Groups

This section of the report details the results of the parent focus groups with reference to the teen and senior driver cohorts. As with the previous summaries, results that differed between the rural and urban groups are noted *with an emphasis on unique responses of the rural respondents* given that this group typically represents the high crash risk.

Teen Driving Purpose

Both rural and urban parents indicated that their teenage children need to drive places for the following reasons: school (usually as a carpool with other teens), work, school sports, social activities, church, to run errands for parents, so parents don't have to pick them up, to transport siblings, to hang out with friends, appointments, shopping, it gives them more freedom, and because it saves time and is convenient. The parents who have teens living in a rural area felt it was very important for the teens to drive because they have limited transportation options. Teens in the Minneapolis area also had the option of light rail.

Teen Crash Risk

The parent focus groups were queried about teen crash risk. In response to the question of whether they know of any teenage drivers in their area who have been involved in a car crash, one rural parent remarked, "I think all of us do." The rural parents mentioned that two teens had been killed in a car crash a few years ago. Other serious crashes that were mentioned were ones involving hitting a deer, going around a curve too quickly which caused a rollover crash, and a third crash in which a teen took a curve too fast and hit a tree when they went off the road. Nearly all of the parents attending the urban discussions also stated that a teen driver in their household had been involved in a crash.

Parents in both the rural and urban focus groups mentioned a number of reasons for these and other teen car crashes that included: speeding, racing other cars, inexperience, cell phone use while driving, peer pressure, too many passengers in the car, fatigue, and teens thinking that they are invincible. The parents also felt that many teens believe that a crash won't happen to them.

Teen Crash Reduction

Parents were asked what suggestions they had for reducing the number of teen car crashes. The following suggestions were mentioned by parents from both areas:

- Better enforcement of traffic laws, especially for drunk driving or speeding.
- Don't allow teens to use devices such as MP3 players while driving.
- Have more or longer driver education classes, and improve driver's education.
- More hours of behind-the-wheel instruction or practice.
- More practice driving under hazardous conditions (perhaps on a driving course of some sort) so the teens learn more about how to respond in those situations.
- More limitations on when teens can drive, such as restricting nighttime driving until they are a certain age.
- No cell phone use or text messaging while driving.
- Raise the age limit at which teenagers can get a license.
- Limitations on the number of teenage passengers.

Other suggestions made by parents attending the rural focus group discussions were as follows:

- Give teen drivers tickets for traffic violations (such as speeding) rather than giving them several warnings, and also have stiffer penalties for traffic violations.
- Require teens to pay for their own traffic tickets (could be monetary or a community service-type payment).
- Have harsher penalties (such as suspending their license) for violations such as not wearing a seatbelt while driving.
- Have a specific test for being allowed to drive after dark.
- Have better parental and police enforcement of the no cell phone use regulation.
- Have some type of technology to watch teen drivers; keep tabs on them via a computer.
- Have the car set up so it won't start for the teen driver if they have a certain number of violations, or if their seatbelt isn't fastened.
- More supervised driving with parents.
- Publish the names of teens who have received tickets as a means to embarrass them.
- Require teens to have their permit longer (perhaps until age 18).
- Limitations on how far they are allowed to drive from their home for the first 6 months they have their license.
- Take radios out of cars.
- Require teens to pay for their car insurance.

Teen Driver Smart Technology Intervention

During the parent focus group discussions, parent reactions regarding how effective the Smart Technology would be for reducing teen car crashes were varied. Overall, parents in all the discussion groups thought the Smart technology would be somewhat effective for reducing teen crashes. However, the parents expressed concern that this type of intervention might work well for parents who are already involved and very conscientious about teen driving safety, but it might not be used by parents who aren't as involved with their teenage driver. Parents were also concerned that a teenager may simply turn up the radio volume so they can't hear the Smart Technology voice. Parents in all focus groups mentioned the following benefits of the Smart Technology intervention:

- It might help the teenage driver to make better decisions and learn good driving habits

while they are gaining experience.
- Hearing the parent's voice might make them more aware of their mistakes.
- The parents would know how the teenager is driving.
- The cost of $300 sounds reasonable if it could save lives.
- It might help to reduce teen crashes by encouraging them to slow down.

Rural parents mentioned that if it could help even a small percentage of teen drivers to become safer drivers that would be a good outcome. The rural parents also felt that using the Smart Technology would be one more way for parents to show their teenager that they care about them and that the Smart Technology could provide a safety net so that if a teenager was in a crash, they could be found more easily. Rural parents expressed concern about the effectiveness of the technology if there was lack of parental oversight or involvement and they questioned whether it would be small enough to be easy to use.

Both rural and urban parents had the following questions and concerns about the Smart Technology:

- Would it be compatible with older cars?
- The cost might be too high for many families.
- It would be beneficial if their car insurance rates could be reduced by using the Smart Technology.
- Would the teens who really need the intervention get it? It might not work well for hard-headed or stubborn teens.
- The teenagers may learn to get around it; some would try to disable it.
- Some parents don't have or use text messaging; texting information to parents would be minimally useful for immediate feedback.
- It would be a trust issue. Should the teenager be driving if you don't trust them?

Regarding suggestions from parents for changes to make the Smart Technology for teens a more effective way to reduce teen car crashes, parents in both the rural and urban groups reiterated that the technology needs to be compatible with older vehicles, especially those that don't have GPS. They also suggested adding a device that would check for breath alcohol level.

Parents attending the rural focus groups made the following additional suggestions:

- Have it be a standard part of new vehicles.
- If a teenager is pulled over for speeding, allow law enforcement officers to view the data from the device to reduce arguments about whether the teenager was indeed speeding.
- Perhaps the Smart Technology device could be made to "piggyback" with technology such as On Star.
- There would need to be an option for turning the voice commands on and off.
- Perhaps it could be issued with every teenage driver's license so it is a requirement.
- The device should send a message to the parent if the teen attempts to disable it.

Speculated Interventions for Teen Drivers

Parents in both urban and rural focus groups suggested a number of additional strategies that could facilitate a reduction in teen car crashes. Both rural and urban parents would like to see increased parental involvement as far as teaching teen drivers good driving skills and setting a good example as a safe driver. Parents in both groups also suggested that perhaps showing

teenagers wrecked or mangled cars that had been damaged in crashes, or showing them films depicting teen car crashes, might help deter teen drivers from engaging in risky driving behaviors.

Specific comments from parents attending the rural discussions regarding methods to reduce teen vehicle crashes included:

- Make teenagers pay for their car insurance by earning money through a job.
- Install more cameras at intersections or other areas to catch teenage and other traffic violators.
- Take them to the morgue to view teens that have been killed in car crashes.
- Do more crash re-enactments (more than one per year).
- Don't allow teens to leave school during the day (such as for lunch) because they often have several other teens in the car and are in a hurry which makes them more likely to have a crash.
- Have guest speakers come to schools, such as someone who survived a crash because they had their seatbelt on, or someone from an organization such as MADD.
- Have cars equipped with devices that won't allow the car to start unless seatbelts are fastened.

Urban parent focus group responses indicated that they worry less about their teens driving in the metro area because the trips are usually shorter and they aren't driving as fast as they would be in a rural area.

Senior Driving Purpose

Parents in both the rural and urban focus groups mentioned several reasons why seniors drive which included: social gatherings with friends or family, shopping, visiting, eating out, appointments, work, vacation travel, transporting grandchildren, church, attending school functions for grandchildren, volunteering, taking classes at a school, hobbies (golf, fishing, hunting, etc.), the desire to be independent, and having nothing else to do. Parents in the rural focus groups specifically mentioned bingo, trips to a casino, and checking out crops in the next county as other reasons why seniors need to drive. Parents in the urban focus groups specifically noted that seniors drive because they still can, they need to drive to Florida in winter, and because not driving means their life is over.

Senior Crash Risk

Parents in both urban and rural focus groups indicated that they did know of some seniors who had been involved in car crashes. Most of the crashes they were aware of were minor fender-bender types of crashes, such as bumping into another vehicle in a parking lot or hitting a garage in a driveway. However, a few more serious crashes were mentioned. One rural parent mentioned having grandparents who were killed in a car crash and another rural person spoke about a crash where a senior stepped on the gas instead of the brake and caused a serious crash. One other rural discussion participant remembered seeing a very old man driving in the wrong lane, weaving back and forth. Although she didn't witness that driver having a crash, she was concerned that the person might be "a crash waiting to happen." In terms of the "causes" of the senior crashes, the following reasons were mentioned by parents in both urban and rural focus groups:

- Not using a directional signal, or leaving it on.

- Driving too slowly or too fast.
- Having slower reaction times.
- Not being able to see well after dark.
- Poor vision in general.
- Not being used to driving in heavy traffic.
- Not being able to judge the speed of other cars, particularly when pulling out into or crossing intersections.
- Losing consciousness due to a medical problem.

Senior Crash Reduction

The following crash reduction strategies for senior drivers were offered by both urban and rural parents:

- Have more low-cost options for getting around, such as better public transportation.
- Require physicals for older drivers.
- Require senior drivers to attend driving safety classes.
- Have testing for senior drivers (general vision, night vision, reaction time, mobility).
- Require seniors to renew their license more often and/or take a behind-the-wheel test every two years.
- Have limitations for seniors who have had crashes, such as not being allowed to drive after dark, and/or only being allowed to drive in a certain area.

Rural parents specifically suggested having police officers or doctors speak with seniors about no longer driving, so that children would not have to try and convince their senior parents to give up their license. In contrast, parents in the urban focus groups recommended seniors be given more information about what signs to which they should pay attention as indications that they should give up their license. The urban parents also suggested that perhaps using the Smart Technology might help senior drivers avoid crashes.

Senior Mobility Intervention

Regarding how effective an ITN program would be, the rural parents felt that it would be good "if you can get people to use it." However they thought it would be challenging to have an effective program in a rural area because the area covered would need to be quite large, there might not be enough volunteers available in a small community, and it would be too expensive for many seniors. The only positive aspect that was mentioned by the rural parents was that an ITN program would allow seniors to maintain some mobility and independence.

Parents in both the rural and urban focus groups felt that some of the drawbacks to the ITN program would include difficulty finding volunteers and that the cost might be too high for some seniors. The following are other issues or problems that the rural parents raised about the ITN program offered to senior drivers:

- The area covered would need to be quite large and therefore perhaps not practical.
- Drivers would need to be carefully screened to ensure that vulnerable older adults would not be harmed.
- Unless there was broad community support, the program would not be viable.

In terms of improving rural ITN programs, suggestions offered by the rural parents were as follows:

- To help with the cost, have gift certificates that could be given to seniors.
- Have grocery stores pay for or subsidize rides one day a week.
- Have rides paid for by a senior's health insurance.
- Have a wide area covered for rural areas.
- Use public money, such as from the gas tax, to help pay for rides.
- Car insurance companies might be encouraged to help pay for some of the program since they will save money by not paying for crashes.
- Work to get the public involved to ensure an adequate number of volunteer drivers.
- Have Medicare pay for a portion of medical trips.
- Keep the cost low so it is affordable.
- The community would need to be adequately educated about the program.

Speculated Interventions for Senior Drivers

When asked for other suggestions for strategies that could be employed to facilitate a reduction in the rate of senior crashes, participants in both urban and rural parent focus groups mentioned requiring testing for seniors who are involved in one or more car crashes. Parents in the rural focus groups offered the following additional suggestions:

- Have churches get more involved with providing rides for seniors.
- Teenagers also could be asked to drive seniors.
- Have more publicity to let the community know that senior driving safety is an issue.
- Have a cab service of some type made available that is low cost so seniors could afford it.
- Have grocery stores offer a delivery service.
- Start or expand a volunteer network to communicate with others about the need for providing rides for seniors.
- Conduct more studies to learn more about why seniors have crashes and what can be done to prevent crashes (such as modifications to windshields that might help seniors see more easily).

The urban participants suggested that when it becomes clear that a senior is no longer a safe driver, someone (e.g., family member, physician, law enforcement personnel) should talk to them about not driving. In addition, if the senior is not willing to stop driving, someone would need to be responsible for taking away the senior's car keys. The participants did express concern for ensuring that any such action be done fairly.

Additional Parent Comments

To conclude the focus group sessions, parents were asked if they had any final thoughts about strategies that could be employed to reduce either teen or senior car crashes. Parents in the rural focus groups offered the following suggestions:

- Have stricter penalties for teen drunk driving (such as suspending their license), and more minor consumption violations should be issued for teens being drunk.
- Have a sober cab phone number for teens to call so they don't have to call their parents if they need a ride home.
- Start a parent program to help reduce teen use of alcohol and drugs.
- Have the schools become more involved with promoting safe driving and helping to reduce teen alcohol and drug use.

- Require the teens to do community service for traffic violations.
- Take away teens' cell phones for a few weeks so they realize they don't need to use them so frequently or while driving.
- Have teens meet with MADD representatives to discuss drunk driving issues.
- Encourage both teens and seniors to do more ride sharing so there are fewer cars on the road.
- Parents need to be more proactive with both teens and seniors.
- People need to be more willing to tell their parents when it is time to stop driving. It's better to embarrass them and take their car keys away than to risk them having a serious crash.
- Have a graduated license program for seniors with limitations such as not driving after dark.

Urban parents provided the following final suggestions or comments:

- Perhaps have more public service announcements to remind teens about safe driving practices.
- Some teens are over confident and think they are invincible. Maybe a minor crash will wake them up a bit.
- High gas prices might discourage both teens and seniors from driving.
- Have the seniors do some type of simulator driving to help them see how they are driving.
- Have both seniors and teens utilize an ITN program.
- Require teens to have more driving practice time and also more education about driving

FOCUS GROUP RESULTS SUMMARY

The following section provides a summary of the focus group results for teens, seniors, and parents within rural and urban areas.

Teen Driving Issues

Regarding the causes of crashes for teenage drivers, the teen discussion participants from both the urban and rural groups mentioned a number of factors that contribute to car crashes, including lack of attention while driving (such as being distracted while using a cell phone), lack of experience, speeding, and poor driver's education programs. Rural teens also thought that fatigue might cause some teen traffic crashes, while the urban teens mentioned alcohol as a factor contributing to teen driving crashes. Parents of teenage drivers in both the rural and urban discussion groups mentioned the following as factors related to teen car crashes: speeding, inexperience, cell phone use, peer pressure, fatigue, and having too many teen passengers in the car.

Reactions of both rural and urban teenagers to the Smart Technology intervention were mixed. Some teens stated that they thought the Technology might help reduce speeding or encourage their parents to trust them more. However, other teens in both rural and urban focus groups expressed skepticism about the program stating that it would be too distracting and expensive, it would take away their freedom, and they would play it like a game. The rural teens were also concerned about how easily the Smart Technology device could be moved from car to car if their family had multiple cars.

Urban teens did not like the geo-fencing feature and also stated that they would most likely turn up the radio volume so they couldn't hear the Smart Technology device. Parents in both rural and urban focus groups were also split in their opinion about the Smart Technology intervention. Several parents thought the device might help reduce some teen crashes, while others were unsure about its effectiveness as a crash deterrent. Some parents thought the Smart Technology might help a new teenage driver learn good driving habits while they were gaining experience, might encourage teen drivers not to speed, and would inform parents about their teen's driving. Other parents were concerned about the device's compatibility with older cars, the cost being too high, teens disabling it or ignoring it, and not all parents using text messaging. Rural parents tended to be slightly more optimistic that the Smart Technology might help teens become better drivers, and might provide a safety net if the teen driver was in a crash. However, they were concerned about its effectiveness if there was not sufficient parental oversight. Urban parents were pleased that the Smart Technology would help them keep track of where their teen driver was traveling. However, they felt it would be best if the device could be rented as opposed to purchased, they thought the device seemed limited in terms of what it could do to improve teen driving safety, and they believe that teens need more parental involvement rather than a Smart Technology intervention.

Regarding the Graduated Driver License (GDL) program, teens in both the rural and urban groups were not familiar with the name "GDL" but most were aware of the GDL limitations. Some of the teen drivers felt the GDL helped them to be better drivers but others were not sure if that was true. Teens in both groups were also unsure if their parents monitored their compliance with the GDL requirements. When asked about the proposed GDL requirements of restricting the number of teen passengers and restricting unsupervised nighttime driving, teens in both groups did not think these new regulations would reduce teen traffic crashes. In terms of differences between the two groups, some rural teens thought that both new limitations might reduce teen drunk driving. In contrast, the urban teens thought that the nighttime limitation would be problematic for many teen drivers.

Senior Driving Issues

Participants in the senior focus groups mentioned a number of causes of senior car crashes that included slower reaction times, driving too slowly, and physical problems such as poor vision and lack of flexibility. Rural seniors also felt that crashes were sometimes caused because seniors are not able to accurately judge the speed of traffic at intersections, and because some seniors have difficulty driving in high-traffic areas. The urban seniors mentioned that some older drivers are not willing to stop driving even though they are no longer capable of driving safely. Parents in both the rural and urban discussions mentioned similar causes for senior car crashes: slower reaction times, driving too slowly or too fast, poor vision, not being able to judge the speed of other cars, and poor driving skills.

Senior focus group participants were asked for their opinions about a program designed to test the capabilities of senior drivers. Seniors in both rural and urban focus groups expressed a number of concerns about a testing program, including cost, how to decide who should be tested, who should recommend that a senior be tested, and having the testing required of poor drivers of all ages and not just seniors. Both rural and urban seniors had difficulty deciding at what age testing should begin since they did not believe that driving ability is necessarily tied to age. The seniors were unsure if testing of older drivers would serve to significantly reduce the number of crashes since there are poor drivers in other age groups as well, particularly teenagers. However, when forced to choose, both rural and urban focus groups thought perhaps 70 would be an appropriate age for testing to be required. Rural seniors also mentioned that, although the testing might reduce crashes somewhat, they were concerned about losing their independence if they did not pass the tests, even though they were safe and capable drivers. Senior urban participants were concerned about how well the state would handle such a program, and also felt the testing would need to be easy and convenient, otherwise it would be too much of a burden.

Senior participants were also shown information about an Independent Transportation Network (ITN) program. Both rural and urban seniors thought such a program might keep poor senior drivers off the road but they also expressed concerns about the following: finding enough volunteers to staff the program, seniors would be driving seniors which might not reduce crashes, adequate screening of volunteer drivers, fear about their safety, the cost would be too high for many seniors, and the area covered would need to be more than the 15 mile radius shown in the example program. The rural seniors also felt that an ITN program might work well in town but not in the areas outside of town. In addition, rural seniors were concerned that the program might be difficult to initiate, would not be convenient for last-minute trips, and might not be needed in their town because several programs are already in place. The urban seniors were concerned that the program might only help a few people because many seniors are too independent to rely on an ITN. Several urban seniors said it sounded like a good program and that additional similar programs might be needed.

Parents in the rural and urban focus groups were also asked about the feasibility of and need for an ITN program. Both rural and urban parents expressed some of the same concerns as the seniors, including difficulty finding volunteers, the cost being too high for some seniors, and concerns about screening and background checks for drivers. Overall, rural parents felt that an ITN program might allow some rural seniors to maintain their independence, but also thought that the area covered would need to be quite large and that the program would not be viable without broad community support. Urban parents thought that an ITN would increase options for seniors and might be more affordable than some other current transportation options. They also felt that this type of program would need to be well publicized, very convenient, and better

than Metro Mobility. Urban parents were concerned that an ITN might not reduce the number of senior crashes since the seniors utilizing it would be those who had already given up their license. However, they also thought there might be seniors in the Metro area who would use this type of service, and that having access to an ITN might encourage more seniors to stop driving their own vehicles.

PHASE 2: SURVEY

The purpose of the second phase of the project was to administer surveys to focus group participants. The main goals of the survey phase were to obtain more specific and quantitative data from drivers in the focus groups about their self-reported driving behavior, crash risk, and perception of intervention usability. This survey was based on standardized questionnaires previously utilized in a comparison of rural and urban residents (Rakauskas and Ward, 2007; Rakauskas, Ward, Gerberich and Alexander, 2007). In this project, the analysis focused on differences between age cohorts in addition to rural and urban residency.

SURVEY METHOD

Participants

As shown in Table 2, survey data was obtained from 84 participants from the focus group sample (focus group sample presented in Table 1).

Table 2. Count of Survey Respondents as a Function of Driver Age and Residency Categories.

		Residence		
		Rural	Urban	Totals
Age	Teen	22	21	43
	Senior	21	20	41
Totals		43	41	84

Materials

The surveys comprised a number of standardized questionnaires (i.e., questionnaires that have been published in the scientific literature) and additional sets of questions developed for the purpose of this study. Respondents completed the survey prior to participating in the focus groups (surveys provided as previous deliverable). The purpose of the surveys was to quantify the following types of information:

Driving History

To understand the nature of the study sample, a simple demographic questionnaire was developed to solicit information about the participants driving history (e.g., licensed years, age, area of residency).

Crash risk

Given that the project focused on traffic safety, the demographic questionnaire also asked participants to self-report the number of crashes and traffic violations.

Driving Behavior: Driving Slips, Errors, and Violations (DBQ)

To understand the underlying behaviors that may be related to crash risk, a 28-item survey widely used and accepted in Europe to identify three categories of driver errors or mistakes was administered in the survey (Reason et al, 1990). The survey was modified from its original British-dialect version in order to reflect a North American dialect (e.g., 'junction' was changed to 'intersection') and driving protocol (e.g., 'right' turns were changed to 'left' turns). Respondents were asked to indicate how frequently they remembered exhibiting examples of three categories of driver errors and mistakes. Items are aggregated in each category to produce a score of the tendency to exhibit each category of driver errors or mistakes:

- *Driver errors* are defined as unintentional mistakes made by drivers that can increase crash risk.
- *Driver lapses* are unintentional errors and mistakes that are relevant to the driving context, but may not increase crash risk.
- *Driving violations* involve intentional violation of traffic regulations, rules, and laws that govern driving.

Dangerous Driving Behaviors: Risk Factors

To understand the underlying behaviors relevant to Minnesota that may be related to crash risk, a 16-item survey was created by the researchers in order to quantify the attitudes of respondents regarding types of high-risk driving behaviors that are targeted by the Minnesota Toward Zero Deaths (TZD) program and the Minnesota Comprehensive Highway Safety Plan. These represent driving activities that are often linked to fatalities on the road (e.g., alcohol use, speeding, and seat belt usage). Participants were asked how <u>frequently</u> they recalled engaging in the list of activities in the past 12 months on a 6-point scale from 'Never' to 'Always'. They were also asked how <u>dangerous</u> the activities were perceived to be on a 6-point scale from 'Not at all dangerous' to 'Extremely Dangerous', to correspond with the majority of other surveys in this packet.

The frequency and dangerous scores were multiplied to produce a composite score of "risk-taking" for each item. The individual items were then grouped into categories of related behavior to produce an overall risk-taking score for each category of driving behavior:

- *Aggressive behavior and impairment* included driving behaviors that were associated with a high crash risk such as speeding and alcohol use.
- *Moving violations (non-speed related)* included driving behaviors that could be charged as moving violations that included, for example, failure to yield or obey traffic signals – especially those that may be witnessed by other road users.
- *Private violations* included driving behaviors that are violations, but could not normally be witnessed by other road users, such as not driving with a license or failing to use a seatbelt.

In addition to the analysis of aggregated categories of dangerous driving, analyses were also conducted on the individual items commonly associated with the highest fatal crash risk: speeding, alcohol, fatigue, distraction, and seatbelt non-compliance (Blatt & Furman, 1998; NHTSA, 2001; NHTSA, August 1996). For these primary risk factors, the measures of reported frequency and perceived dangerousness were analyzed separately.

Safety Attitudes toward Interventions

To assess the general traffic safety culture of respondents to state interventions, a 20-item survey was created by the researchers to measure the perceived utility of common safety interventions that are proposed in the Minnesota Toward Zero Deaths program and the Minnesota Comprehensive Highway Safety Plan. Participants were asked how *effective* each intervention would be in their community on a 4-point scale from 'Ineffective' to 'Effective'. They were also asked how *desirable* each intervention would be for them in their community on a 4-point scale from 'Undesirable' to 'Desirable'. The ratings on these two scales were then multiplied to obtain a perceived utility score for each intervention. The interventions were then grouped into common types to produce aggregate scores for three categories (programs) of intervention:

- *Enforcement* interventions are defined as those involving the instatement and application of laws to dictate safety.
- *Education* interventions are defined as those involving training and communication of safety relevant skills and information to develop safer drivers.
- *Engineering* interventions were defined as those involving the development of roadway infrastructure to guide behavior and minimize the consequences of a crash.

SURVEY RESULTS

The objectives for the survey analysis were:

1. Compare cohort specific perceptions of driving history, crash risk, driving behavior, and risk factors.
2. Describe cohort perceptions of usability for cohort specific safety interventions.
3. Assess cohort perceptions as a function area of residency (rural and urban).

As a review, significant statistical differences between comparison conditions (e.g., such as age: young and old, or residence: urban and rural) are typically associated with mean scores for each condition that are not similar to others within the comparison (e.g., one mean will be high while the other is low), that the variation (i.e., standard deviation) in scores for one condition are not similar to another condition (e.g., one condition has high variability while the other exhibits low variability), and the range of variability for one condition exhibits little or no overlap with the variability with another condition. Lack of significant differences between conditions may indicate mean scores that are similar (e.g., both high or both low) or exhibit large variability and overlap substantially (even though the median scores might be dissimilar).

Relative to the current work all data were analyzed with a 2 (Age: young, old) x 2 (Residence: rural, urban) ANOVA with Age and Residence as between-subject factors. Outliers were removed based on a review of box-plots. Only significant results are reported ($p < .05$).

OBJECTIVE 1: DRIVER HISTORY, CRASH RISK, DRIVING BEHAVIOR, AND RISK FACTORS

Driving History

Table 3 presents the indices of driving history. As expected, the teen drivers reported having their license for fewer years than the senior drivers. Whereas the rural cohorts reported a higher percentage of driving pickup trucks, the most common vehicle type for all cohorts was a passenger vehicle. The most common reported driving frequency for all cohorts was "every day", with the exception of the rural senior drivers that reported less frequent driving ("most days"). All cohorts most often reported an annual mileage of 5,000 to 10,000 miles.

Table 3. Average Survey Response for Driving History Measures. [3]

	Teen Driver (self)			Senior Driver (self)		
Driving History	**Rural**	**Urban**	**Total**	**Rural**	**Urban**	**Total**
License year	2006	2006	2006	1952	1950	1951
*Vehicle Type	Passenger	Passenger	Passenger	Passenger	Passenger	Passenger
*Driving frequency	Every day	Every day	Every day	Most days	Every day	Every day
*Annual mileage	5,000 to 10,000	5,000 to 10,000	5,000 to 10,000	5,000 to 10,000	5,000 to 10,000	5,000 to 10,000
Crash Risk	**Rural**	**Urban**	**Total**	**Rural**	**Urban**	**Total**
Total crashes[4]	0.59	0.43	0.51	0.05	0.45	0.24
Total convictions[5]	0.05	0.05	0.05	0.00	0.05	0.02
Driving Behavior	**Rural**	**Urban**	**Total**	**Rural**	**Urban**	**Total**
Errors	11.9	13.7	12.8	11.4	12.7	12.0
Lapses	11.2	13.6	12.4	11.3	10.8	11.1
Violations	18.0	22.3	20.2	15.6	17.3	16.4
Risk Factors	**Rural**	**Urban**	**Total**	**Rural**	**Urban**	**Total**
Aggressive driving	16.6	18.6	17.6	13.6	13.2	13.4
Moving violations	9.2	11.6	10.4	7.8	7.9	7.8
Private violations	7.4	7.7	7.6	6.8	6.1	6.4
Speeding	2.5	3.0	2.7	1.8	1.9	1.8
Alcohol	1.0	1.2	1.1	1.2	1.2	1.2
Fatigue	2.0	2.4	2.2	1.8	2.0	1.9
Distracted	3.2	3.9	3.5	1.7	1.7	1.7
Seat belt	1.8	1.3	1.6	1.7	1.3	1.5
Interventions	**Rural**	**Urban**	Total	**Rural**	**Urban**	**Total**
Enforcement	24.8	23.0	23.9	30.1	28.4	29.2
Education	11.2	12.2	11.6	12.6	12.2	12.4
Engineering	20.4	21	20.7	22.4	21.4	21.9

Note: Mean values reported with exception of mode values for categorical measures (*).

Crash Risk

Table 3 presents the mean frequency of self-reported crashes and traffic violations. There were no significant differences noted between groups. However, this self-report measure of crashes could logically pertain only to non-fatal crashes.

Driving Behavior

Driving ability was measured in terms of three driving characteristics (driver errors, driver lapses, driving violations) computed by summing survey items descriptive of each characteristic (see Table 3):

[3] Missing values were replaced for the mean valued computed across all subjects on that item.
[4] Number of reported crashes (minor and major) recalled in past three years.
[5] Number of reported convictions (speeding, careless driving, DUI) recalled in past three years.

Driver Errors

There was a significant main effect for Residence [F(1,80) = 7.86, p = .006] with the urban drivers reporting significantly more driver errors (M = 13.2) than the rural residents (M = 11.5).

Driver Lapses

There was a significant main effect for Age [F(1,80) = 4.40, p = .039] with the teen drivers reporting significantly more driver lapses (M = 12.4) than the senior drivers (M = 11.1). There was also a significant interaction between Age and Residence [F(1,80) = 4.97, p = .028]. As shown in Figure 1, the more frequent reported lapses amongst teen drivers were primarily evident amongst urban residents.

Driving Violations

There was a significant main effect for Age [F(1,80) = 7.65, p < .001 with the teen drivers reporting significantly more driving violations (M = 20.2) than the senior drivers (M = 16.4). There was also a significant main effect for Residence [F(1,80) = 11.97, p = .002] with the urban residents reporting significantly more driving violations (M = 19.8) than the rural residents (M = 16.8).

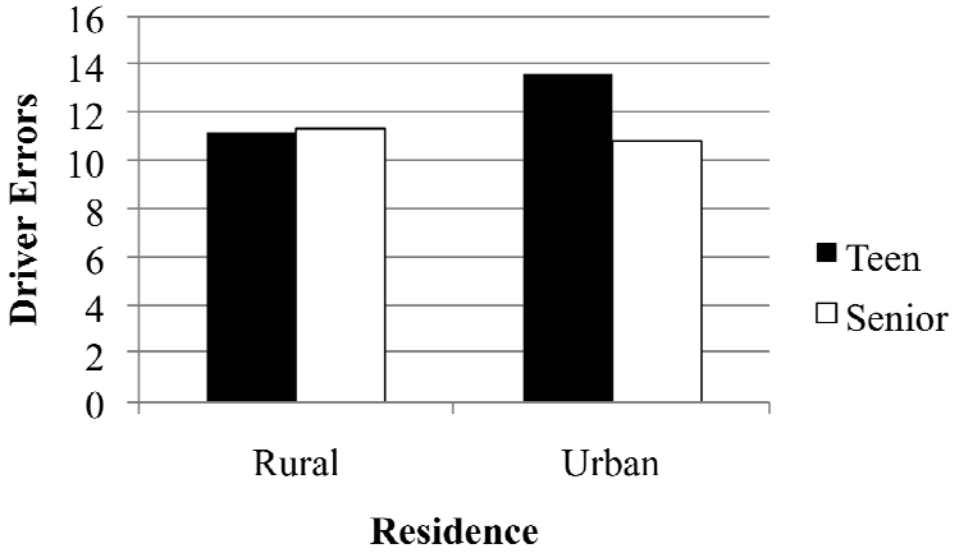

Figure 2. Reported driver errors as a function of age and residence area.

Risk Factors

Reported crash risk factors were measured in terms of three categories of behavior (aggressive & impairment, moving violations other than speed, private violations) by

summing survey items descriptive of each category (see Table 3):

Aggressive Driving and Impairment

There was a significant main effect for Age [$F(1,80) = 27.80$, $p < .001$] with the teen drivers reporting significantly more instances of aggressive driving and impairment ($M = 17.7$) than the senior drivers ($M = 13.4$).

Moving Violations (other than speeding)

There was a significant main effect for Age [$F(1,80) = 23.31$, $p < .001$] with the teen drivers reporting significantly more moving violations ($M = 10.4$) than the senior drivers ($M = 7.8$). There was a significant main effect for Residence [$F(1,80) = 5.65$, $p = .020$] with the urban residence reporting significantly more moving violations ($M = 9.7$) than the rural residents ($M = 8.5$).

There was also a significant interaction between Age and Residence [$F(1,80) = 4.91$, $p = .030$]. As shown in Figure 3, the more frequent moving violations amongst urban drivers were primarily evident for teen drivers only.

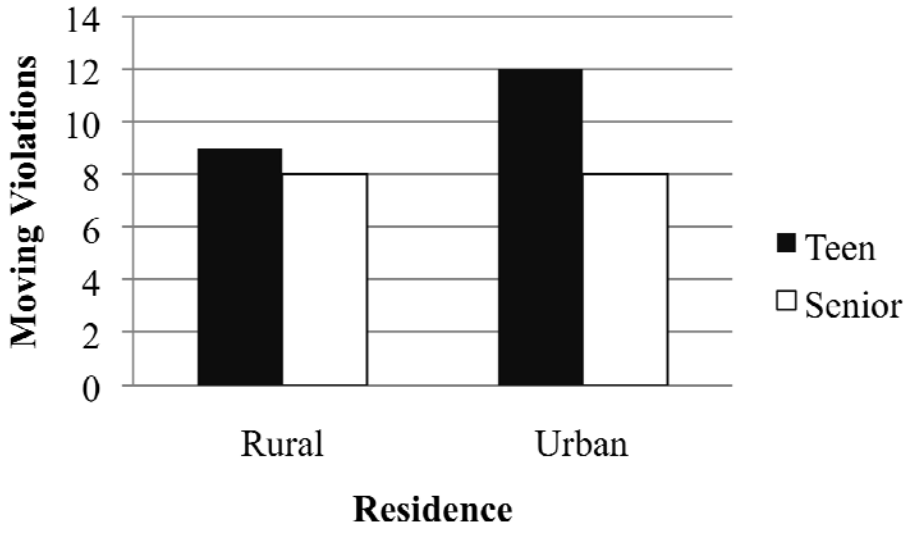

Figure 3. Reported moving violations as a function of age and residence area.

Private Violations

There was a significant main effect for Age [$F(1,80) = 5.50$, $p = .021$] with the teen drivers reporting significantly more private violations ($M = 7.6$) than the senior drivers ($M = 6.4$).

In addition to the above *risk categories*, individual *risk factors* were also analyzed that represent those factors most often related to fatal crashes (speeding, alcohol, fatigue, distraction, seatbelt noncompliance).

Speeding

There was a significant main effect for Age [$F(1,80) = 20.61$, $p < .001$] with the teen drivers reporting significantly more frequent speeding more than 10 mph above the speed limit ($M = 2.7$) than the senior drivers ($M = 1.8$).

Alcohol

There was not significant effect of Age or Residence in terms of reported frequency of driving after consuming two or more drinks.

Fatigue

There was not significant effect of Age or Residence in terms of reported frequency of driving when tired.

Distraction

There was a significant main effect for Age [$F(1,80) = 69.24$, $p < .001$] with the teen drivers reporting significantly more frequent occasions of driving with distractions ($M = 3.5$) than the senior drivers ($M = 1.7$).

Seatbelt Noncompliance

There was a significant main effect for Residence [$F(1,80) = 3.84$, $p = .05$] with the rural residents reporting seatbelt noncompliance significantly more often ($M = 1.8$) than the urban residents ($M = 1.3$).

OBJECTIVE 2: SAFETY INTERVENTIONS

Safety Interventions

Perceived effectiveness of traffic safety interventions (enforcement, education, and engineering) were measured in terms of three categories of intervention by summing survey items descriptive of each category (see Table 3):

Enforcement

There was a significant main effect for Age [$F(1,80) = 21.1$, $p < .001$] with the teen drivers reporting perceiving enforcement interventions to be significantly less effective ($M = 23.9$) than the senior drivers ($M = 29.2$).

Educate

There were no significant effects of Age or Residence for the perceived effectiveness of educational safety interventions.

Engineer

There were no significant effects of Age or Residence for the perceived effectiveness of engineering safety interventions.

OBJECTIVE 3: INFLUENCE OF RESIDENTIAL AREA

The analysis for this objective is equivalent to the interaction term between Age x Residence in the ANOVA results reported above. That is, the effect of residential area on the perception of age cohorts is tested by the interaction between these two factors. As noted above, residential area significantly interacted with age in terms of reported driving errors (Figure 2) and moving violations (Figure 3) with teens reporting more instances than senior drivers only amongst urban residents.

SURVEY DISCUSSION

The results of the survey analysis can be summarized in terms of the research objectives.

Compare cohort specific perceptions of driving history, crash risk, driving behavior, and risk factors.

Overall, the teen drivers had less driving experience and reported more lapses and violations than did the senior drivers. Notably, teen drivers reported more episodes of aggressive driving and violations (both moving and private). For example, teen drivers reported more frequent speeding and distraction. These driving characteristics are consistent with state and national crash statistics that indicate a higher crash risk for teen drivers.

Describe cohort perceptions of usability for cohort specific safety interventions.

Teen drivers perceived safety interventions based on enforcement to be less effective than did senior drivers. The perceived effectiveness education and engineering interventions were similar for both age groups. Education interventions were perceived to be the least effective of all intervention types.

Assess cohort perceptions as a function area of residency (rural and urban).

Overall, urban drivers reported more frequent driving errors and (moving) violations. However, consistent with national surveys and observation studies, rural resident reported *less frequent* use of seatbelts. Area of residency also modified some of the cohort effects noted above. For example, the higher incidence of violations (see Figure 1) and moving violations (see Figure 3) by teen drivers compared to senior drives was most evident amongst urban residents.

PROJECT CONCLUSIONS

Whereas the purpose and destination of driving may differ, driving serves an important mobility function for both teen and senior drivers. Both teen and senior drivers rely on their driving to preserve their independence and avoid inconveniencing others (parents, children, and friends). Driving may also be a necessity in rural areas that lack public transport and have unique driving purposes (e.g., emergencies, hunting). However, *crash risk* and associated *risk* factors are different for these age cohorts and areas of residency. There are also related differences in the perceived effectiveness and acceptance of *traffic safety interventions*.

CRASH RISK

The rate of fatal crashes is higher in rural areas (see Figure 4) with teen (16 - 20 years of age), young adult (21 - 24 years of age), and senior drivers (greater than 74 years of age) representing the demographic groups with the highest fatality rates (see Figure 5). Whereas the subjective data from the focus group and survey do not directly corroborate these historical trends, the subjective data do indicate that teen and senior drivers in both rural and urban areas are aware of the significance of traffic crashes and fatalities for their demographic groups. In conclusion, the subjective and self-report data from this study was not sensitive to the dramatic historical trends from objective crash data that indicate that the fatal crash risk is highest in rural areas and for both teen and senior driving cohorts. Regardless, future research should strategically target high-risk cohorts and increasing risk trends based on quantified crash data.

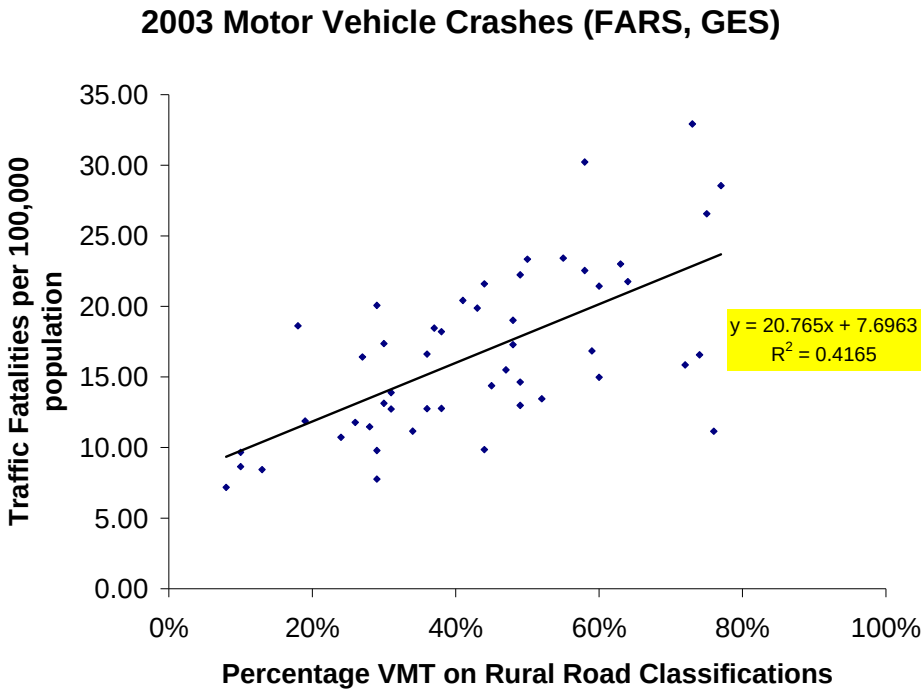

Figure 4. Relationship between rural VMT and fatal crash risk.

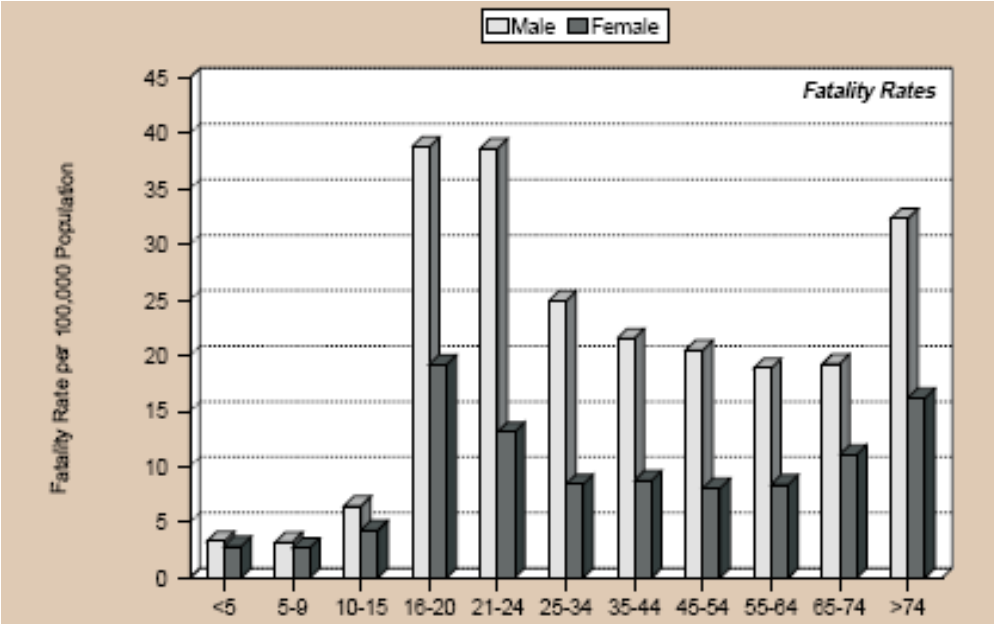

Figure 5. US fatal crashes (2003) per capita as a function of age (US DOT, 2003).

RISK FACTORS

This project examined risk factors from several behavioral perspectives. First, it was apparent that the urban drivers reported more frequent *driver errors* and *traffic violations* than the rural drivers. This distinction may reflect the higher exposure and opportunity of urban drivers to commit errors and violations. For example, urban areas tend to have lower speed limits and a higher frequency of traffic lights and other intersection control devices. Consequently, urban drivers may have more opportunities to drive faster than posted speed limits and negate intersection control devices. Alternatively, there may be a presence of contributing factors that predispose urban drivers to commit errors and violations. For example, the urban focus groups noted a prevalence of distraction that may predispose them to committing errors while driving. In addition, teen drivers also reported more *lapses of attention* (distraction) in relation to driving, especially in the urban environments. This may again correspond to the focus group reports about the prevalence of distracting activities in the urban environment as well as the perceived lack of driving experience amongst teen drivers.

The focus group data also suggested that crash factors for senior drivers may be predominately related to the deterioration of perceptual, cognitive, and psychomotor processes, a finding that is corroborated with research published in scientific literature. As a specific example, it was noted in the focus groups that senior drivers attribute some crashes to reduced vision at night and slower reaction times, especially during the negotiation of intersections.

Whereas the consideration of general categories of driving behavior did not differentiate any crash risk between rural and urban drivers – or suggested a higher propensity amongst urban drivers – a more detailed examination of specific risk factors was more revealing. Teen drivers reported more episodes of aggressive and impaired driving as well as moving violations (e.g., red light running, failure to yield, etc), especially in urban environments. Notably, the main differentiating factor amongst rural drivers was a significantly higher reported rate of seatbelt non-compliance than for urban drivers. This may suggest that a factor contributing to the higher fatality rates in rural environments may not necessarily be the commission of high risk behaviors per se, but rather the omission of safety precautions (e.g., not employing seatbelts) that would negatively influence the outcome of a crash.

In conclusion, the data from this project suggest that traffic safety policy for teen drivers should focus on distraction amongst teens (especially in urban areas) and sensory-motor functioning amongst senior drivers. In terms of traffic safety policy for rural areas, attention should be given to interventions that promote seat belt compliance. Future research should examine education, engineering, and enforcement strategies to reduce distraction and increase seatbelt compliance as well as the psychological basis for engaging in distracting activities and disengaging seat belts while driving.

SAFETY INTERVENTIONS

Both the focus groups and the surveys sought driver opinions about general categories of traffic safety interventions as well as specific examples of traffic safety (and mobility) programs. Whereas there was no differentiation between age cohorts and areas of residency in terms of perceptions of intervention effectiveness and acceptance for education and engineering based interventions, the teen drivers were significantly less receptive of enforcement as an approach to traffic safety.

Teen Drivers: Smart Technology

There was a mixed response from teen drivers in reaction to the proposal of smart technology to monitor and report teen driving behavior. The teens that favored the technology thought that it might help to reduce speeding by teen drivers that could reduce crashes, and also might encourage their parents to trust them more. They also thought the technology might help new teen drivers develop better driving habits. Comments that referred to potential barriers to implementing such smart technology included:

- Expense too high.
- Resistance from parents.
- Potential to "play it like a game."
- Potential to serve as a distraction.
- Limitations to freedom.

In terms of the overall effectiveness of the Smart Technology for reducing teen car crashes, the teen drivers felt it only would be effective if both teens and parents care about the issue. The teens also felt that the effectiveness would depend on the person using it since some might be easily distracted by the technology that might cause a crash.

A number of differing suggestions or comments were offered by both the rural and urban teens to improve the effectiveness and acceptance of smart technology. For example, the rural teens offered the following suggestions as improvements:

- Reduce the cost.
- Send reports about speeding directly to the police.
- Make it as simple as possible to use.
- Have it available for purchase at a convenient location.
- Be sure to provide easily accessible technical support.
- Make sure the teenage driver can't disable or disconnect it.
- No cost for sending text messages to parents.

In conclusion, teen drivers felt that smart technology could have some positive effects on teen safety, but an acceptable program based on this technology would need to balance factors such as cost, robustness, and limitations on driving patterns. Future research may examine cost models that would be acceptable to parents and teens as well as solutions to providing flexibility in the types of limitation applied to teen

driving.

Teen Drivers: GDL Program

Results of the teen driver focus group discussions relative to GDL programs highlighted several prominent findings. In general, teens in both rural and urban focus groups were not familiar with the name of the GDL program but were aware that the GDL criteria existed. Most felt the GDL had helped them to become better-skilled drivers, as compared to what they think would have happened had they not experienced the program, however, the teens weren't really sure if the GDL program had made them safer drivers (i.e., not sure if the program would help them avoid crashes). Relative to teen passenger restrictions teens in both the rural and urban focus groups felt that limiting the number of teen passengers may would result in more teens driving (i.e., fewer teens in each vehicle = more vehicles being driven by teens) which might result in an increase in the number of crashes. Notions of parental involvement were mixed. Teens in both the rural and urban focus groups were unsure if their parents monitored their compliance with the GDL requirements, however, most did recall that their parents had to sign a form indicating they had driven the required number of hours with an adult. Because the teens weren't certain their parents monitored their compliance with GDL requirements they weren't really sure how effective the monitoring was with regard to encouraging them to be a safer driver.

When queried about methods for making GDL more effective rural teen drivers' most prominent responses suggested that: 1) after passing their road test, teenage drivers could be required to drive a certain number of hours with a parent in the car. Then, if they met that requirement, they would be granted their provisional license. 2) if a teen driver made a mistake (e.g., speeding or other traffic violation) they would need to take another driver education class and perhaps their license could be suspended until they pass the class, 3) require a longer time frame for holding a permit, and 4) increase fines for traffic violations.

Senior Drivers: Mandatory Testing

The comments made by both the rural and urban senior participants in the focus groups highlighted several prominent senior driver perceptions relative to mandatory testing. Seniors indicated significant concern that the testing would be cost prohibitive both for the state to conduct and for seniors to afford. In addition, seniors felt testing should be required for drivers of all ages who have trouble driving safely (not just for seniors) and, therefore, the testing should be "behavior based" rather than age based. Perhaps most importantly, seniors also felt that the testing would need to be mandatory. Seniors felt that barriers to implementation and acceptance of mandatory testing would include 1) seniors being disgruntled at being "forced"to take age-based test, the need for additional testing facilitates, and loss of independence and absence of accommodating services for those who fail the test. The senior participants in all discussion groups were particularly concerned about the age at which testing would be required. Overall

they felt that it would be difficult to set a specific age because driving ability is not necessarily tied to age. The participants suggested that testing should be required if a senior had a crash or was found to be having difficulty with their driving. When asked if they were forced to choose an age, the general consensus was 70.

Senior Drivers: Mobility Program (Independent Transportation Network)

Senior drivers in the rural focus groups felt the positive aspects of the Independent Transportation Network (ITN) were that it might keep poor drivers off the road, it possibly could help people stay in their own home longer, it might save seniors money since they wouldn't need to have their own car and insurance. Many of the urban senior drivers were already aware of programs like this in there area and felt that such programs are useful as long as they are convenient and affordable to use. Both the rural and urban senior drivers did share some concerns about these types of mobility programs including (1) difficulty recruiting sufficient (screened) volunteer drivers and vehicles; (2) excessive costs; and (3) restrictive coverage area.

In conclusion, senior drivers were receptive to this type of mobility program. Acceptance was related to the perceived accessibility to a safe and affordable program that was sufficiently versatile to accommodate a range of transportation needs. Future research should investigate in greater detail the feasibility of implementing such mobility systems – especially in rural areas – and the barriers to program use and sustainability.

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APPENDIX A – FOCUS GROUP SCRIPTS

DRIVER SAFETY FOCUS GROUP – TEENS
ONE TEEN/ONE SENIOR INTERVENTION
INTRODUCTION

Before the group begins:

Have people put on a name tag (first name only)

When the group is ready to start:

Good evening, and thank you for coming to our discussion tonight. My name is (moderator's name,) and I'll be leading the discussion. This is (assistant's name), who will be assisting with the discussion tonight.

Purpose:

The main purpose of the discussion is for you to help us learn about what strategies might help reduce teen traffic accidents.

Participants:
We have invited _____ from _____ to participate in our discussion. You were selected because you have had a driver's license for at least six months.

Guidelines for the how the group works together:
To help us work well together, there are some guidelines I'd like to mention:

1. Please participate freely in the discussions and share your opinions with us. Receiving feedback and ideas from each participant is very important. We are particularly interested in your views because you are representative of other teens in your area.

2. There are no right or wrong answers. Every opinion is valuable, even if they differ.

3. If you have any questions or things you are uncertain about at any time during the discussion, please feel free to ask.

4. This is strictly a research project. Everything you say here is completely confidential. We are taping the discussion only so that we don't miss anything. We want to be certain that we accurately record what is said. We will be recording several other groups just like this one, and we will be reporting what each group says as a whole. Your name will never be mentioned in the results of the study, or in any papers or reports.

5. The discussion will last about an hour and a half; there will be no formal break.

Beginning the discussion:
Okay, let's get started. First, let's go around the room and introduce ourselves, one at a time. Please just give your first name, and tell us why you decided to attend the discussion.

TEEN FOCUS GROUP QUESTIONS

1. Next, I'd like you to go around and tell us how long you've had your driver's license.
2. And, what are some of the reasons you need to drive places? (LIST ON FLIP CHART)
3. Why is it important to you that you are able to drive for these or other reasons?
   3a. If you didn't have a driver's license so you couldn't drive yourself, how would you get to the places you need to go?
4. Do you know any teens in this area, including yourselves, who have been involved in a car accident?
   4a. What types of accidents have they been involved in?
   4b. Why do you think these accidents occurred? (What caused them?)
5. Do you have any suggestions for ways that the number of car accidents for teenage drivers could be reduced? (LIST ON FLIP CHART)
6. Now I'd like to talk to you about a program that has been developed to help reduce teenage car accidents. (SHOW FIRST POWERPOINT PRESENTATION)
   What do you think of this as a way to help reduce teen driving accidents? (LIST PROS AND CONS ON FLIP CHART)
   6a. Overall, how effective do you think this strategy would be for reducing teen car accidents?
   6b. What changes would you suggest for making this a more effective way to reduce teenage car accidents?

7. And now I'm going to show you some information about another program that has been developed to help reduce teenage car accidents.
(SHOW SECOND POWERPOINT PRESENTATION – GDL)
What do you think of this program as a way to encourage teenagers to be better or safer drivers and help reduce teen driving accidents? (LIST PROS AND CONS ON CHART)

7a. SPECIFIC PROBES:

1. Do you think the GDL program has made you a better or a safer driver?
(YES: How has it made you a better or safer driver?
2. Did your parents monitor your compliance with the GDL requirements?
(YES: How did they monitor your compliance?
How effective was this monitoring in terms of encouraging you to be a safe driver?)
3. Did your parents report your compliance with the GDL requirements?
(YES: How effective was this reporting in terms of encouraging you to be a safe driver?)
4. How effective do you think restricting the number of passengers will be for improving teen driving safety?
(How do you feel about that restriction?)
5. How effective do you think restricting the amount of unsupervised nighttime driving will be for improving teen driving safety?
(How do you feel about this restriction?)

7b. What changes would you suggest for making the GDL a more effective way to encourage safe driving by teenagers?

8. Do you have any final thoughts about strategies that could be used to help reduce teenage car accidents?

Thank you very much for attending our discussion tonight. The information you have provided will be very useful.

DRIVER SAFETY FOCUS GROUP – PARENTS
ONE TEEN/ONE SENIOR INTERVENTION

INTRODUCTION

Before the group begins:

Have people put on a name tag (first name only)

When the group is ready to start:

Good evening, and thank you for coming to our discussion tonight. My name is (moderator's name,) and I'll be leading the discussion. This is (assistant's name), who will be assisting with the discussion tonight.

Purpose:

The main purpose of the discussion is for you to help us learn about strategies that might help reduce traffic accidents for teenage drivers and also drivers 65 years of age or older.

Participants:
We have invited people from _____ to participate in our discussion. You were selected because you are the parent of a teenage driver.

Guidelines for the how the group works together:
To help us work well together, there are some guidelines I'd like to mention:

1. Please participate freely in the discussions and share your opinions with us. Receiving feedback and ideas from each participant is very important. We are particularly interested in your views because you are representative of other people in your area.

2. There are no right or wrong answers. Every opinion is valuable, even if they differ.

3. If you have any questions or things you are uncertain about at any time during the discussion, please feel free to ask.

4. This is strictly a research project. Everything you say here is completely confidential. We are taping the discussion only so that we don't miss anything. We want to be certain that we accurately record what is said. We will be recording several other groups just like this one, and we will be reporting what

each group says as a whole. Your name will never be mentioned in the results of the study, or in any papers or reports.

5. The discussion will last about an hour and a half; there will be no formal break.

Beginning the discussion:
Okay, let's get started. First, let's go around the room and introducing ourselves, one at a time. Please just give your first name, and tell us why you decided to attend the discussion.

PARENT FOCUS GROUP QUESTIONS

1. And, what are some of the reasons your teenage daughter or son needs to drive places? (LIST ON FLIP CHART)

   1a. If your teenage daughter or son did NOT have a driver's license, how would they get to the places they need to go?

2. Do you know any teenage drivers in this area, who have been involved in a car accident?

   2a. What types of accidents have they been involved in?
   2b. Why do you think these accidents occurred? (What caused them?)

3. Do you have any suggestions for ways that the number of car accidents for teenage drivers could be reduced? (LIST ON FLIP CHART)

4. Now I'm going to show you some information about a program that has been developed to help reduce teenage car accidents.
   (SHOW SMART TECHNOLOGY POWERPOINT PRESENTATION)
   What do you think of this program as a way to help reduce teen driving accidents? (LIST PROS AND CONS ON FLIP CHART)

   4a. Overall, how effective do you think this strategy would be for reducing teen car accidents?
   4b. What changes would you suggest for making this a more effective way to reduce teen car accidents?
   4c. Do you have any suggestions for other strategies that could be used to help reduce teen car accidents?

5. And now, let's switch gears and talk about senior drivers. What are some of the reasons your parents need to drive places? (LIST ON FLIP CHART)

5a. If your parents did NOT have a driver's license, how would they get to the places they need to go?

6. Do you know any senior drivers in this area, who have been involved in a car accident?

   6a. What types of accidents have they been involved in?
   6b. Why do you think these accidents occurred? (What caused them?)

7. Do you have any suggestions for ways that the number of car accidents for senior drivers could be reduced? (LIST ON FLIP CHART)

8. And now, here is a senior transportation program that is being developed. (SHOW MOBILITY POWERPOINT PRESENTATION)
   What do you think about this program? (LIST PROS AND CONS ON FLIP CHART)

   8a. What changes or improvements would you suggest for this program?
   8b. Overall, how effective do you think this strategy would be for reducing senior car accidents?
   8c. Do you have any other suggestions for strategies that could be used to help reduce senior car accidents?

9. Do you have any final thoughts about strategies that could be used to help reduce either teen or senior car accidents?

Thank you very much for attending our discussion tonight. The information you have provided will be very useful.

DRIVER SAFETY FOCUS GROUP – SENIORS
ONE SAFETY/ONE MOBILITY INTERVENTION

INTRODUCTION

Before the group begins:

Have people put on a name tag (first name only)

When the group is ready to start:

Good evening, and thank you for coming to our discussion tonight. My name is (moderator's name,) and I'll be leading the discussion. This is (assistant's name), who will be assisting with the discussion tonight.

Purpose:

The main purpose of the discussion is for you to help us learn about what strategies might help reduce senior traffic accidents.

Participants:
We have invited seniors from _____ to participate in our discussion. You were selected because you are 65 years of age or older and have a driver's license.

Guidelines for the how the group works together:
To help us work well together, there are some guidelines I'd like to mention:

1. Please participate freely in the discussions and share your opinions with us. Receiving feedback and ideas from each participant is very important. We are particularly interested in your views because you are representative of others seniors in your area.

2. There are no right or wrong answers. Every opinion is valuable, even if they differ.

3. If you have any questions or things you are uncertain about at any time during the discussion, please feel free to ask.

4. This is strictly a research project. Everything you say here is completely confidential. We are taping the discussion only so that we don't miss anything. We want to be certain that we accurately record what is said. We will be recording several other groups just like this one, and we will be reporting what each group says as a whole. Your name will never be mentioned in the results of

the study, or in any papers or reports.

5. The discussion will last about an hour and a half; there will be no formal break.

Beginning the discussion:
Okay, let's get started. First, let's go around the room and introducing ourselves, one at a time. Please just give your first name, and tell us why you decided to attend the discussion.

SENIOR FOCUS GROUP QUESTIONS

1. And, what are some of the reasons you need to drive places? (LIST ON FLIP CHART)

2. Why is it important to you that you are able to drive for these or other reasons?
   2a. If you didn't have a driver's license so you couldn't drive yourself, how would you get to the places you need to go?

3. Do you know any seniors in this area, including yourselves, who have been involved in a car accident?
   3a. What types of accidents have they been involved in?
   3b. Why do you think these accidents occurred? (What caused them?)

4 Do you have any suggestions for ways that the number of car accidents for senior drivers could be reduced? (LIST ON FLIP CHART)

5 Now I'm going to show you some information about a program that has been developed to help reduce senior car accidents.
(SHOW SAFETY POWERPOINT PRESENTATION)
   5a. SPECIFIC PROBES:
   1. What do you think of this program as a way to help reduce senior driving accidents? (LIST PROS AND CONS ON FLIP CHART)
   2. Who should do the testing?
   3. Where should the testing be done?
   4. At what age do you think this testing should be mandatory?
   5. Who should be able to recommend that someone be tested?
   6. Overall, how effective do you think this strategy would be for reducing senior car accidents?
   7. What changes would you suggest for making this a more effective way to reduce senior car accidents?

6. And, here is another senior transportation program that is being developed.
(SHOW MOBILITY POWERPOINT PRESENTATION)
What do you think about this program? (LIST PROS AND CONS ON FLIP CHART)

6a. What changes or improvements would you suggest for this program?
6b. Overall, how effective do you think this strategy would be for reducing senior car accidents?

7. Do you have any final thoughts about strategies that could be used to help reduce senior car accidents?

Thank you very much for attending our discussion tonight. The information you have provided will be very useful.

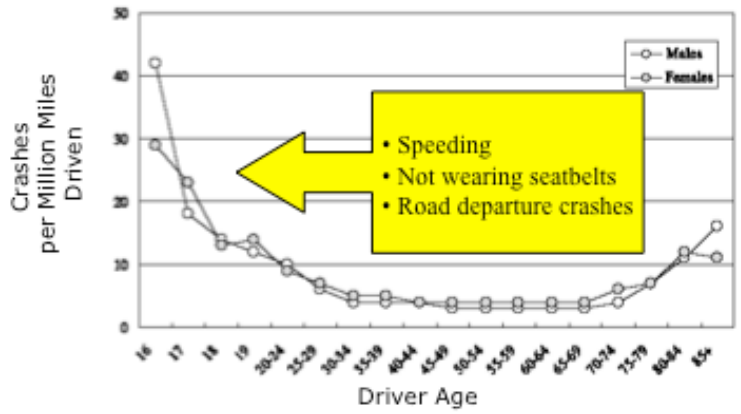
APPENDIX B – TEEN FOCUS GROUP PRESENTATION

Interventions to Support Teen Driver Safety

The Problem: Teen driver safety

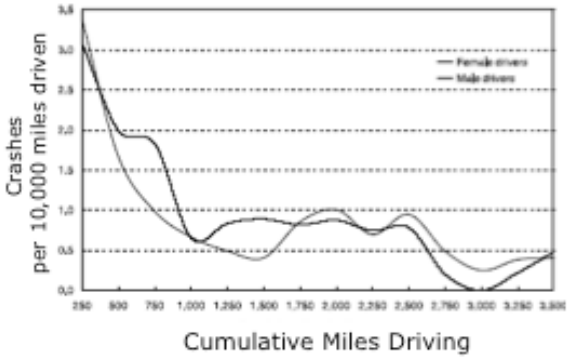
[www.youtube.com]

Teens have the highest crash risk amongst all driver age groups



Source: Williams, A. F., 2003. Teenage drivers: patterns of risk. *Journal of Safety Research*, 34, 5-15.

Novice driving skills of teen drivers is a risk factor



"Novice drivers (those just beginning to drive) represent approximately 7 percent of the driving population, but 14 percent of the crash population, and about 20 percent of the fatal crash problem"

(National Highway R&T Partnership, 2002)

The Solution: What can we do?

Smart technology to support safer teen driving

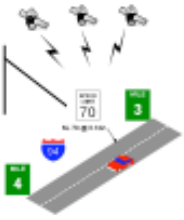
Limit exposure to high-risk driving situations (GDL)

Future technology can provide "smart" support for teens drivers

1. Driver identification

2. Location tracking (weather monitoring, geofencing)

3. Speed monitoring (and seat belt monitoring)



4. Speed alerts

The smart technology alerts parents to unsafe behaviors

Smart technology can also monitor compliance with GDL

Graduated Driver License (GDL) Restrictions

Stage	Restriction	States (+ D.C.)	IIHS Recommended
Learner Stage	Minimum learner permit age	51	16
	Mandatory holding period	49	6 months
	Minimum hours of supervised driving	40	30 - 50
	Cell phone use	10	
Intermediate Stage	Minimum intermediate license age	46	16 years 6 months
	Nighttime unsupervised driving	42	9/10pm-5am
	Number/Age of passengers	35	1 teenager
	Cell phone use	8	

Risk Exposure

Skill Development

- Amount of speeding
- Violations
- Seatbelt compliance
- Quality of driving skill
- Monitor progress
- Minimum "grade"

What do you think about smart technology to support teen drivers?

The Solution: What can we do?

Smart technology to support safer teen driving

Limit exposure to high-risk driving situations (GDL)

Graduated Driver's License

- Graduate Driver's License (GDL) programs are intended to reduce risk exposure and improve driving skills while the teen learns to drive.
- GDL programs involve progressive phases of licensing.
- GDL programs involve parent participation to supervise progress.

Phase 1 – MN Instruction Permit

Qualifications:
- Must be at least 15 years of age.
- Must have completed 30 hours of classroom instruction.
- Must enroll in behind-the-wheel instruction program.
- Must pass vision and written tests, complete application, and pay the required fee.
- Parent or legal guardian signature and certification required.

Conditions:
- Permit holder may drive under the supervision of licensed driver age 21 or older.
- Every occupant under the age of 18 must use proper restraint system.
- Restriction on cell phone use while driving.

Phase 2 – MN Provisional License

Qualifications:
- Must be at least 16 years of age.
- Must have completed driving education program.
- Must have held an instruction permit for six months.
- Must have no moving violations or alcohol-related convictions.
- Must pass the road test, complete application, and pay required fee.

(Note: *The parent/guardian who supports the application also certifies* that the applicant had driven under the supervision of a licensed driver at least 21 years of age for not less than 30 hours, at least ten of which were at night).

Conditions:
- Every occupant under the age of 18 must use proper restraint system.
- Restriction on cell phone use while driving.

Phase 3 – MN Full License

Qualifications:
- Must be at least 18 years of age, or
- Must have held provisional license for 12 months.
- Must have no alcohol or crash-related moving violations.
- Must have no more than 1 moving violation not related to crash.

(Note: If under 18 years, *the parent/guardian who supports the application must certify* that the applicant had driven under the supervision of a licensed driver at least 21 years of age for not less than 10 hours on the provisional license).

Conditions:
- None.

Proposed GDL Restrictions

Graduated Driver License (GDL) Restrictions

Stage	Restriction	States (+ D.C.)	IIHS Recommended
Learner Stg.	Minimum learner permit age	51	16
	Mandatory holding period	49	6 months
	Minimum hours of supervised driving	45	30 - 50
	Cell phone use	33	
Intermediate Stg.	Minimum intermediate license age	16	16 years 6 months
	Nighttime unsupervised driving	45	9/11pm - 5/6am
	Number/Age of passengers	37	1 teenager
	Cell phone use	9	

- Future GDL programs can involve additional restrictions based on known risk factors for teen driver safety.
- First 6 months of Provisional License:
  - Restriction on nighttime unsupervised driving.
  - Restrictions to number of (teen) passengers while teen driving.

What do you think about Graduated Driver's License Programs?

APPENDIX C – SENIOR FOCUS GROUP PRESENTATION

Interventions to Support Older Driver Safety

The Problem: Older Driver safety

Elderly driver sentenced to probation in California market crash

LOS ANGELES (AP) — An 88-year-old man whose car hurtled through a farmers market, killing 10 people, was let off on probation Monday by a judge who said he believed the defendant deserved to go prison but was too ill.

George Russell Weller was convicted Oct. 20 of 10 counts of vehicular manslaughter with gross negligence in a case that renewed debate over whether elderly people should lose their driver's licenses.

ON DEADLINE: Was probation enough?

Weller, confined to a wobbled, was not in court for his sentencing.

Superior Court Judge Michael Johnson said he agreed completely with the jury and called Weller's actions callous and showing "an enormous indifference to human life."

Weller was 86 when his 1992 Buick Le Sabre plowed into the crowded farmers market on July 16, 2003. In addition to the 10 killed, more than 70 people were injured.

Weller could have received up to 18 years in prison, but the judge said Weller's health problems, including severe heart disease, would make him a burden on prison authorities and taxpayers, and that imprisonment would most likely kill Weller.

Defense attorneys argued that Weller was a victim of "pedal error" in which he panicked and mistook the car's accelerator for the brake. Prosecutors said he was careless to the point of criminal negligence.

The judge noted that Weller had enough control of his vehicle to avoid cars and trucks within the farmers market.

"At times Weller drove to steer into the people, plowing into the crowd and literally launching bodies into the air as his car raced 2 1/2 blocks," the judge said. The judge also called Weller's apologies hollow.

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[Source: Minnesota Public Radio]

Older drivers have an increased crash risk after age 65 years

[Source: USA Today]

Older Driver Crashes

- Older drivers may become more frail as they get older, such that they are less likely to survive a crash.
- Intersections crashes are the most common type of crash amongst older drivers.
- Older drivers may have a higher probability of culpability for a crash.

The Solution: What can we do?

Driver License Testing

Mobility Support

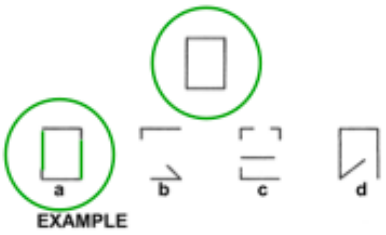
Mandatory testing for older drivers is being proposed in some states

- **Sensory Testing**
  - **Hearing, Sight**
- **Cognitive Testing**
  - Mental abilities
- **Physical Testing**
  - Strength, flexibility
- **Driving Test**
  - Knowledge of rules
  - Ability to drive

[Source: NHTSA, 2003]

Mandatory testing for older drivers is being proposed in some states

If you finished drawing these figures, which one would look just like the one above? Please point to the correct alternative.



- Sensory Testing
  - Hearing, Sight
- **Cognitive Testing**
  - **Mental abilities**
- Physical Testing
  - Strength, flexibility
- Driving Test
  - Knowledge of rules
  - Ability to drive

[Source: NHTSA, 2003]

Mandatory testing for older drivers is being proposed in some states

The test administrator says:

"I want you to walk along the side of this tape line to the end, turn around, and walk back here as quickly as you can."

The test administrator then demonstrates the walk and path, then says:

"I am going to time you. Go as fast as you feel safe and comfortable. If you use a cane or walker, you may use it if you feel more comfortable. Ready, begin."

You are evaluated on the time it takes you to walk the path and return.

- Sensory Testing
  - Hearing, Sight
- Cognitive Testing
  - Mental abilities
- **Physical Testing**
  - **Strength, flexibility**
- Driving Test
  - Knowledge of rules
  - Ability to drive

[Source: NHTSA, 2003]

Mandatory testing for older drivers is being proposed in some states

- Sensory Testing
  - Hearing, Sight
- Cognitive Testing
  - Mental abilities
- Physical Testing
  - Strength, flexibility
- **Driving Test**
  - **Knowledge of rules**
  - **Ability to drive**

[Source: NHTSA, 2003]

What do you think about mandatory testing for older drivers?

Should Pa. Have Mandatory Testing For Elderly Drivers?

Some Of Oldest Drivers In State Are In Allegheny County

Rick Earle, Target 11 Investigator

POSTED: 4:00 pm EDT May 14, 2007
UPDATED: 6:53 pm EDT May 14, 2007

PITTSBURGH -- When Target 11's Rick Earle investigated elderly drivers in Pennsylvania, he found some of the oldest drivers live in Allegheny County.

As part of his investigation, Earle took a ride with 79-year-old Victoria D'Angelo to see just how old is too old to drive.

D'Angelo, who will turn 80 in July, told Earle she doesn't have a problem driving, but not

VIDEO:
Can You Be Too Old To Drive?

The Solution: What can we do?

Driver License Testing

Mobility Support

Independent Transportation Network (ITN)

- Private, non-profit community organization to support mobility for older population over 65 years.
- Uses volunteers (and paid drivers) to provide door-to-door services.
  - Assistance getting in and out of vehicle
  - Assistance with shopping / packages
  - Assistance with wheelchair (trunk)
- Network operates in 15 mile radius around major cities.

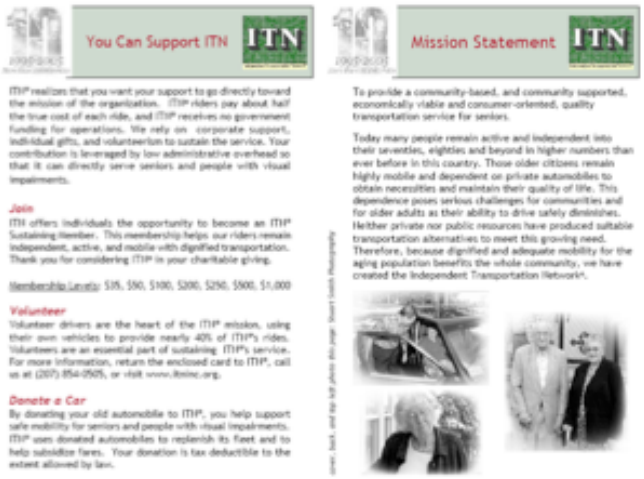
Independent Transportation Network (ITN)

- Funded by fares from riders and donations (government, private).
- Older riders request any kind of trip.
- Computer find nearest volunteer for trip.
- Volunteers drive own vehicles (or a vehicle donated to network) to transport older rider.
  - Volunteers receive small mileage reimbursement
  - Volunteers receive credit for future use of network

Independent Transportation Network (ITN)

- Riders register for network and open a prepaid account.
- Fares paid from account without cash transactions in car.
- Subsidized fares (average $7.50, minimum $5)
  - Discounts for sharing (%15)
  - Discounts for preplanning (%50)

What do you think about Independent Transportation Networks?



You Can Support ITN

ITN

ITN® realizes that you want your support to go directly toward the mission of the organization. ITN® riders pay about half the true cost of each ride, and ITN® receives no government funding for operations. We rely on corporate support, individual gifts, and volunteerism to sustain the service. Your contribution is leveraged by low administrative overhead so that it can directly serve seniors and people with visual impairments.

Join

ITN offers individuals the opportunity to become an ITN® Sustaining Member. This membership helps our riders remain independent, active, and mobile with dignified transportation. Thank you for considering ITN® in your charitable giving.

Membership Levels: $35, $50, $100, $200, $250, $500, $1,000

Volunteer

Volunteer drivers are the heart of the ITN® mission, using their own vehicles to provide nearly 40% of ITN®'s rides. Volunteers are an essential part of sustaining ITN®'s service. For more information, return the enclosed card to ITN®, call us at (207) 854-0505, or visit www.itninc.org.

Donate a Car

By donating your old automobile to ITN®, you help support safe mobility for seniors and people with visual impairments. ITN® uses donated automobiles to replenish its fleet and to help subsidize fares. Your donation is tax deductible to the extent allowed by law.

Mission Statement

ITN

To provide a community-based, and community supported, economically viable and consumer-oriented, quality transportation service for seniors.

Today many people remain active and independent into their seventies, eighties and beyond in higher numbers than ever before in this country. Those older citizens remain highly mobile and dependent on private automobiles to obtain necessities and maintain their quality of life. This dependence poses serious challenges for communities and for older adults as their ability to drive safely diminishes. Neither private nor public resources have produced suitable transportation alternatives to meet this growing need. Therefore, because dignified and adequate mobility for the aging population benefits the whole community, we have created the Independent Transportation Network®.

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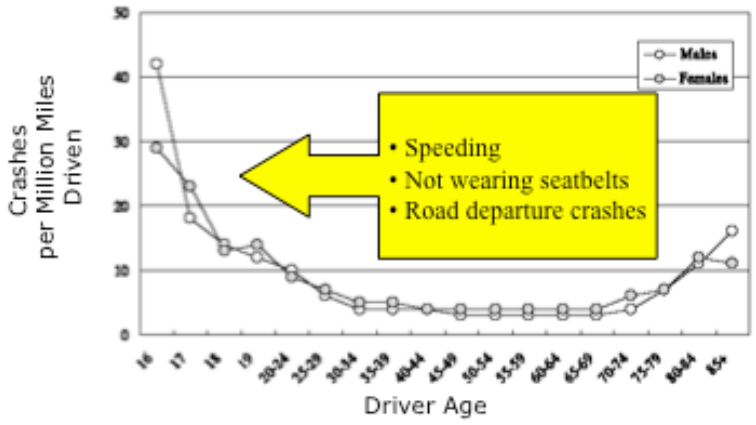
APPENDIX D – PARENT FOCUS GROUP PRESENTATION

Driving Safety and Mobility
Teen and Older Drivers

The Problem: Teen driver safety

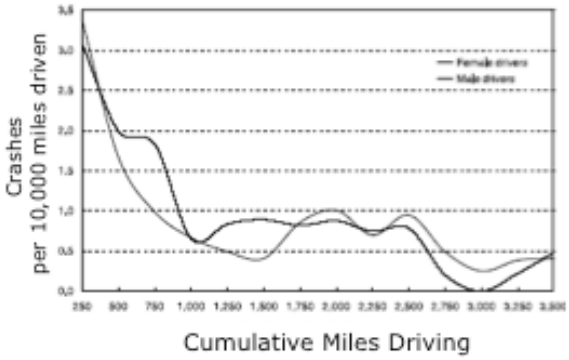
[www.youtube.com]

Teens have the highest crash risk amongst all driver age groups



Source: Williams, A. F., 2003. Teenage drivers: patterns of risk. *Journal of Safety Research*, 34, 5-15.

Novice driving skills of teen drivers is a risk factor



"Novice drivers (those just beginning to drive) represents approximately 7 percent of the driving population, but 14 percent of the crash population, and about 20 percent of the fatal crash problem"

(National Highway R&T Partnership, 2002)

The Solution: What can we do?

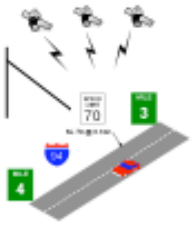
Smart technology to support safer teen driving

Future technology can provide "smart" support for teens drivers

1. Driver identification

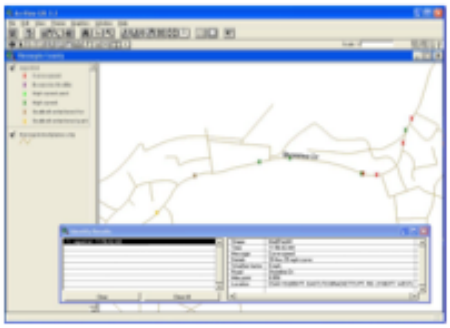
2. Location tracking (weather monitoring, geofencing)

3. Speed monitoring (and seat belt monitoring)



4. Speed alerts

The smart technology alerts parents to unsafe behaviors



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Smart technology can also monitor compliance with GDL

Graduated Driver License (GDL) Restrictions

Stage	Restriction	States (+ D.C.)	IIHS Recommended
Learner Stage	Minimum learner permit age	51	16
	Mandatory holding period	49	6 months
	Minimum hours of supervised driving	40	30 - 50
	Cell phone use	10	
Intermediate Stage	Minimum intermediate license age	46	16 years 6 months
	Nighttime unsupervised driving	42	9/10pm-5am
	Number/Age of passengers	35	1 teenager
	Cell phone use	8	

Risk Exposure

Skill Development

- Amount of speeding
- Violations
- Seatbelt compliance
- Quality of driving skill
- Monitor progress
- Minimum "grade"

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What do you think about smart technology to support teen drivers?

The Problem: Older Driver safety

Elderly driver sentenced to probation in California market crash

[Source: Minnesota Public Radio]

Older drivers have an increased crash risk after age 65 years

[Source: USA Today]

Older Driver Crashes

- Older drivers may become more frail as they get older, such that they are less likely to survive a crash.
- Intersections crashes are the most common type of crash amongst older drivers.
- Older drivers may have a higher probability of culpability for a crash.

The Solution: What can we do?

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