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DO ADVISORY LETTERS
ENGAGE PARENTS IN TEEN
DRIVER SAFETY?



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Do Advisory Letters Engage Parents in Teen Driver Safety?

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TABLE OF CONTENTS

1. INTRODUCTION.....	1
2. METHOD AND DATA	5
3. RESULTS	6
3.1 Letter Reaction and Action	7
3.2 Preparation	8
3.3 Rules, Monitoring, and Privileges.....	10
3.4 Demographics.....	11
3.5 Parent Comments	12
4. SUMMARY	14
5. APPENDIX. SURVEY INSTRUMENT	15
6. REFERENCES.....	16

LIST OF FIGURES

Figure 1.1 Driver Group Fatal Crash Risk Ratio, Crash Share Compared to Count and VMT Shares in 2017	1
Figure 1.2 Traffic Citations by Driver Age Group.....	2
Figure 1.3 Driver Group Fatal Crash Involvement, Adjusted for Time Trend using All Drivers in Fatal Crashes	3
Figure 3.1 Monthly Parent Advisory Letters, by Agency Reason	6
Figure 3.2 Citation Basis for the Teens' Parent Advisory Letters	7
Figure 3.3 Supervised Driving Hours in Year Prior to Full Licensure	9
Figure 3.4 Environments in Supervised Driving Experience.....	10
Figure 3.5 Parent Monitoring and Rules for Teen Drivers during the First Nine Months of Licensure...	11
Figure 3.6 Teen Driving, Miles per Week	12

LIST OF TABLES

Table 3.1 Parents' Reasons for Revoking Driving Privileges	11
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ABSTRACT

Teens are a high-risk driver group. Previous research shows risk-based injury prevention programs for subpopulations or individuals can be successful as buildouts to universal strategies. The goal here was to assess the efficacy of parent advisory letters as a supplement to graduated driving license and seat belt strategies. The state licensing agency mailed advisory letters to parents of teens that had been identified as high-risk. A follow-up survey resulted in 309 parent responses. The letter was generally viewed as positive. About 80% of parents reported action subsequent to receiving the letter such as discussions with their teen, learning more about teen driver risk, and finding additional driver training. Comments and an open-ended question provided insight for program refinement. For instance, some negative comments were associated with parents' perception that the letter was accusatory or overreaching. Others commended the letter, saying it provided additional knowledge and suggestions that were helpful. It is an example of continued innovation to improve public safety. The localized and pragmatic approach used here can be refined based on survey results and experience gained during the pilot project. Results inform other states considering low-cost individualized programs to complement their "one-size-fits all" driver improvement strategies.

1. INTRODUCTION

Motor vehicle crashes are a leading cause of death among teens in the United States (Centers for Disease Control and Prevention). Indices in Figure 1.1 gauge relative crash risk in terms of annual driver group crash count, compared with the driver group share in the total crash count and annual vehicle miles traveled (VMT).¹ Teens appear as a high-need group based among the driver age cohorts in crash counts. With teen risk in terms of driving exposure, in distance driven by age group, the difference between the expect neutral and actual crash risk rates is narrower with other age groups. This metric could, however, be biased by low mileage bias (Janke 1991; Baldock and McLean 2005; Thompson, Boldock, and Dutschke 2018). A large share of teen crashes occurs within the first year of licensure. During the first month, crash rates are as high as 123 per 10,000 but steeply decline to 41% by month seven (Mayhew, Simpson, and Pak 2003). Thus, early interventions may be especially beneficial in teen crash prevention.

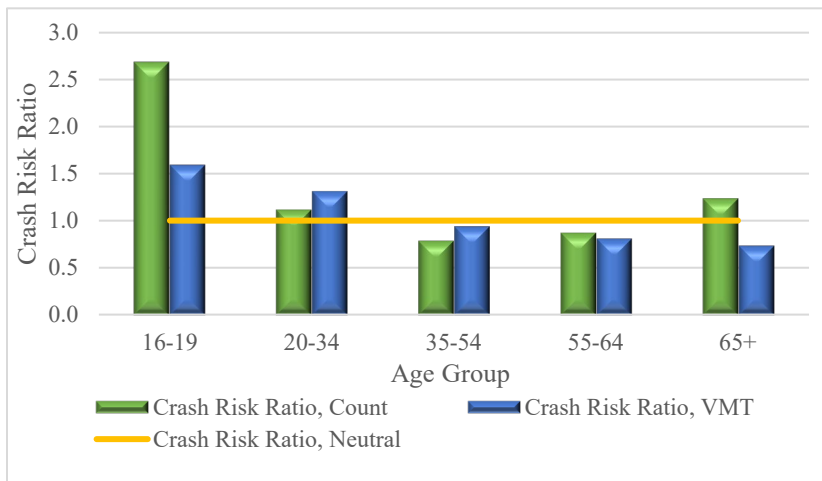


Figure 1.1 Driver Group Fatal Crash Risk Ratio, Crash Share Compared to Count and VMT Shares in 2017

Teen crash risk evolves from five key areas: skills, knowledge, experience, maturity, and environment (National Research Council 2007). Skills encompass areas such as vehicle operation and hazard perception while knowledge would refer to understanding traffic rules and action consequences. Experience and maturity have non-linear and individualized relationships to age. Parents are the primary decision-makers in ensuring a safe driving environment for teens to gain adequate skills/knowledge and essential practice needed in joining other drivers on the road.

¹ Author calculations from FHWA and NHTSA.

For teen drivers, reliance on a deliberate rather than intuitive thinking process results in less timely, often dangerous, responses to signals in the environment (Kahneman, 2011, Carter 2018). Deliberate thinking is characterized by focus and reasoning, while the intuitive reactions are more from habit in instantaneous decisions. That habit, or quick reaction, is possible based on past experiences. These decision processes are reflected in the acknowledgement that age and experience are independent factors in teen crash risk (McCartt et al. 2009, Scialfa et al. 2011, Mayhew et al. 2017, Carrarino and Murphy 2018, Robins and Chapman 2019). Evidence of the error in driver judgment is apparent in Figure 1.2.

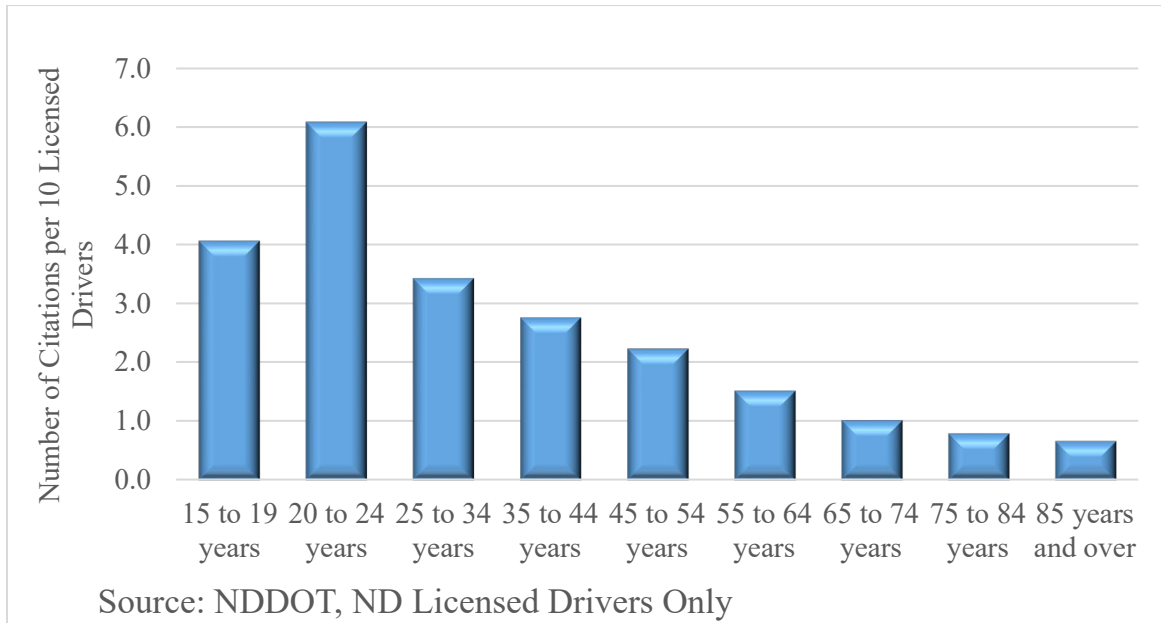


Figure 1.2 Traffic Citations by Driver Age Group

Graduated driver license (GDL) policy has been the primary strategy in teen driver improvement over recent decades. Research has shown GDL legislation, which often institutes a longer permit phase and driving restrictions such as nighttime and passengers, has been effective in crash reduction among teen drivers (Hedlund, Shults, and Compton 2006; Williams 2007; Masten, Foss, and Marshall 2011; and Williams, McCartt, and Sims 2016). Driver age group trends in Figure 1.3 show a substantial decrease in

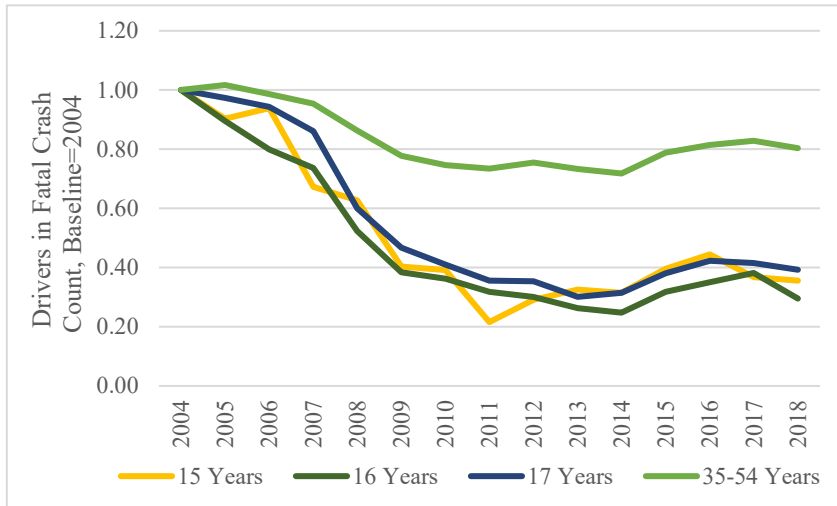


Figure 1.3 Driver Group Fatal Crash Involvement, Adjusted for Time Trend using All Drivers in Fatal Crashes

teen crashes over the past 25 years.² These gains have become more fully realized as all states have enacted GDL laws. Therefore, it is important to look at refining policies and programs to continue to push teen crash rates down. Reducing teen crash incidence, particularly those that result in injury or fatality, is a priority in many state highway safety plans. The ability to effectively improve safety performance for these young drivers, as a population and specifically the higher-risk individuals, is essential.

In a study of 822 serious crashes nationally, Curry et al. (2011) found that driver error was the critical pre-crash event in 95.6% of teen driver cases. Understanding the nature of these crash events enhances the ability of stakeholders to select interventions that most successfully mature these novice drivers. The learning curve at this point in their driving history is still steep, which makes teen drivers more susceptible to interventions. These interventions could limit novice driver risk exposure and/or change an individual driver's behavior, ultimately reducing the number of crashes.

² Author's calculation using NHTSA data. Crash involvement in terms of annual driver group crash count, with all groups adjusted by total drivers in crashes for each year to recognize underlying temporal effects.

GDL and other universal or population-based driver improvement programs, such as seat belt laws, have been valuable in reducing teen crash injury risk (Curry et al. 2017). The GDL should be treated as an evolving intervention with policy and administrative elements that can be refined based on the environment, risk factors, and safety outcomes for teen drivers in the state. Moving beyond universal strategies recognizes that not all drivers are created equal. Winston and Janke (2016) pose the Institute of Medicine (IOM) framework as a three-intervention-tier approach that has been successful in injury prevention. It is consistent with the ideals posed by the National Research Council in its recommendations for preventing future teen driver crashes (2007). In this, the tier one strategies are often substantially impactful with a “one-size-fits all” approach. It can be strengthened by tiers two and three. Tier two interventions provide an ability to build out, recognizing subpopulations based on factors such as relative risk. The third tier addresses the needs of individuals who have already experienced an adverse event.

In this case, the universal GDL and primary seat belt interventions have contributed to reduced risk for teen driver crash injury. Behavioral programs in traffic safety can be even more effective when policies are augmented with driver interventions. Masten and Peck (2004) found warning letters, group meetings, individual hearings, and license suspension/revocation were more often associated with driver improvement in their analysis of 106 interventions across 35 studies. While the driver advisory letter has had mixed success as a low-cost driver improvement strategy, it has been effective in the right environment.

Here, a driver improvement letter was directed to teen driver parents in an effort to (1) encourage parent/teen safe driving discussions, and (2) strengthen parent practices with GDL restrictions. Parents play a critical role in teen driver safety, so reaching out to them with GDL and teen crash risk knowledge may empower them in the short-term actions that will benefit their teens in the long run (Simons-Morton and Ouimet 2006; National Research Council 2007; Nyanzi et al. 2016; McCartt, Shabanova, and Leaf 2003; McCartt, Hellinga, and Haire 2007; Goodwin et al. 2014).

In addition, real-time performance-based interventions at the driver-level offer a potential supplement for targeting the highest risk teen drivers. Crash risk markers, or predictors, may be used in a preventative intervention such as an advisory letter to parents or warning letters to teen drivers. These drivers who have exhibited the risk marker(s) would hopefully alter their behavior, reducing the likelihood for crash involvement (McBride & Peck 1970, Jones 1997, Masten 2004, Strathman 2007, Brookland 2014). Parental involvement that may result from these letters has shown to be positively related to teen driver safety in terms of crash outcomes. Specific training or education requirements attached to licensure may also be intervention strategies, but those would typically be beyond the bounds of administrative agency authority.

The goal of this project was to assess the efficacy of newly introduced teen driver safety strategies in an early phase, specifically the program administered by the state driver license agency. A parent advisory letter pilot program was analyzed. The letter was intended to empower parents in safe driving discussions with their teens. The letter was aimed at increasing parental awareness, knowledge, and engagement regarding their teen driver’s crash risk.

2. METHOD AND DATA

Teen drivers are over-represented in North Dakota crashes; they account for 3% of the driver population but are involved in 6% of reported crashes (North Dakota Department of Transportation). Multivariate analysis of state driver license and crash records showed gender, traffic convictions, rural/urban resident, and involvement in previous property-damage-only (PDO) crashes were significant markers in the likelihood for future injury crashes among teen drivers (Malchose and Vachal 2010). Applying the same model to more recent driver and crash records showed consistent results. Living in an urban area increased the risk of being in an injury or fatal accident, within the first year of licensure, by 2.5 times compared with drivers who live in rural areas. Drivers involved in a previous PDO crash were 25 times more likely to be involved in an injury or fatal crash than those without previous PDO crash involvement. These empirical findings were moved into an actionable effort in the pilot program for a parent advisory letter for at-risk teens. It is an innovative approach to improving public safety.

Based on previous research and experience with teen drivers, the state licensing agency identified two parent subpopulations for the North Dakota pilot. The first parent group was for high-risk teen drivers. This high-risk subgroup included teen drivers with two or more points on a driver record from citations, any four-point traffic citation, or police-reported PDO crashes. The other parent group had teens reaching their ninth month of licensure. The agency perceived the nine-month point as a time teen drivers were gaining more driving freedoms and potential crash risk exposure. Considering the IOM framework, the letters build around tier three and two, respectively, building out from the universal policies. The licensing agency system monitored license records for drivers under age 18 to compile a mailing list for these parent subpopulations between May 2018 and February 2019. The mailing list population was 5,565 households that were collected from a database of 7,016 address letters that had been mailed. A random sample was drawn from this list to produce a mailing sample of 3,590 households.

A multiple-method approach was used to collect information about parents' reactions and actions after receiving the letter (Creswell and Clark 2017). A mail survey, comprised of closed- and open-ended questions, was administered to gather information. The state licensing agency cover letter invited parents to take part in the survey to help them make decisions about the pilot program. Participants responded to a one-page survey regarding reactions and actions. Results were used to assess program efficacy as a high-risk individual intervention for teens that experience serious traffic incidents, and for a general reminder for parents of an at-risk teen group reaching their ninth month of licensure.

Between April 1, 2019, and May 15, 2019, 309 parent survey responses were collected. The 9% response rate is slightly lower than the anticipated 10% response in the mail survey. It is, however, robust for statistical analysis with a 95% confidence level and 5% confidence interval. The Institutional Review Board at North Dakota State University reviewed this study and determined it was exempt. While the human subject research review process is continuous, it was determined that no informed consent and protection of subjects was required. The identity of the human subjects cannot readily be ascertained, directly or through identifiers, as recorded by the investigator.

3. RESULTS

Among parents who recalled receiving an advisory letter, 60% reported it was for the nine-month safety reminder. Parents had received the high-risk letter for crashes or citations in 26% and 14%, respectively, when recalling the letter. The four-point letter was combined with the citation letter type in the analysis to avoid confusion with parents in reporting the letter reason. Among the 309 responses collected in the survey, 34% reported they did not remember receiving a state licensing agency letter regarding teen crash risk. The state licensing agency confirmed that the mailing addresses were highly accurate since teens were recently licensed. For the less than 1% of letters returned to the agency, most addresses were updated and the letter forwarded. Due to a gap of up to 10 months when the parent received the survey, they may not remember receiving the parent advisory letter (Figure 3.1). It is also possible that teens may have intercepted the letter since the driver identity was included in the address block, “Parents/Guardians of *name*.”

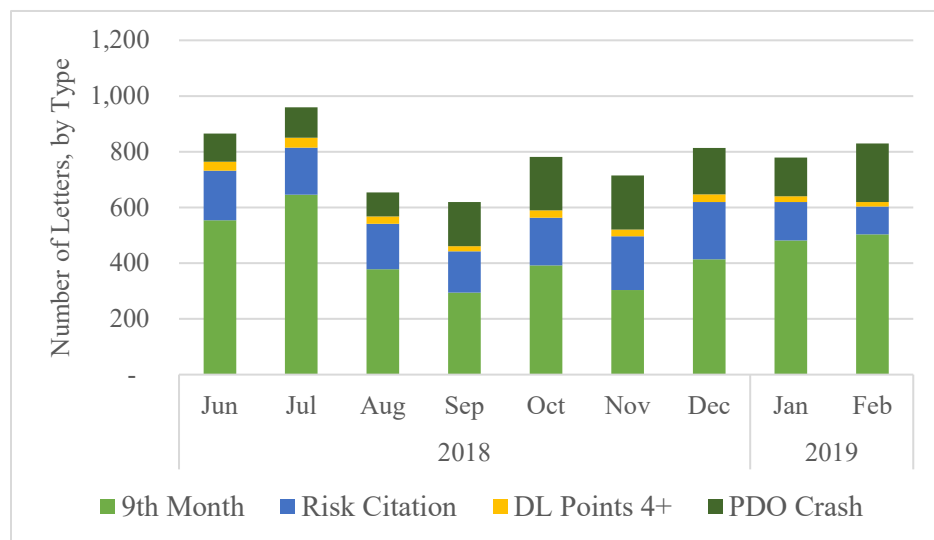


Figure 3.1 Monthly Parent Advisory Letters, by Agency Reason

Parents’ recollections of letters that involved crashes were slightly higher, and those based on citations were slightly lower, than their share in the composition mailed by the state. This difference could be related to parental concerns regarding the severity of the traffic incident in a crash rather than a citation. The severity of the citation and parent recollection were beyond the survey scope. The largest share of the advisory letters was sent for speed-related offenses, followed by care required and failure to yield/stop (Figure 3.2). Understanding the most common offenses among the high-risk traffic citations is useful in future advisement to parents of teens, law enforcement, and policy makers as they work to keep all road users safe.

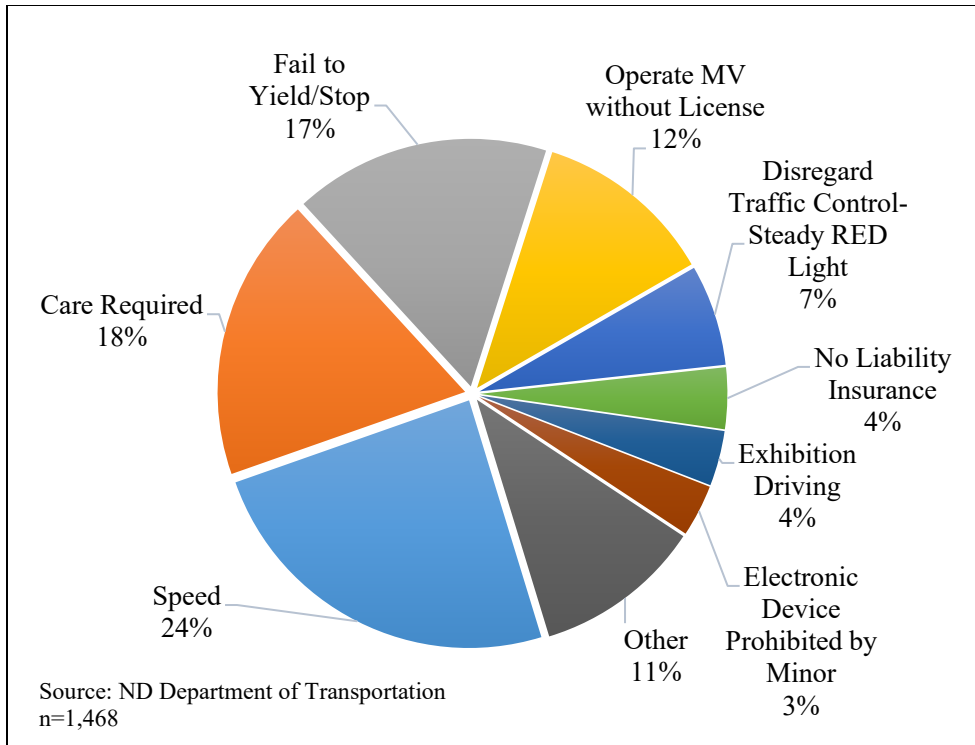


Figure 3.2 Citation Basis for the Teens' Parent Advisory Letters

3.1 Letter Reaction and Action

Parents were asked to indicate a general reaction to the letter on a scale of one to five, with one being very negative to five being very positive. Three was assigned a neutral rating. Among parents who reported they had received the letter, the average reaction was positive at 3.7. The rating did vary significantly based on the reason ($F=7.94$, $df=2$, $p<0.001$). The highest mark was given by parents, who received the ninth month reminder letter at 3.9. The lowest was for the crash-related advisory letter at 3.3. An average reaction of 3.4 was reported by the group receiving the citation-rated letter. Among the 106 parents who did not recall receiving a letter, the “idea” was positive with an average reaction of 3.4 among their 103 responses to the question. Parent comments suggesting a negative reaction to the crash-related advisory letter may have been in cases where they felt the letter was accusatory in tone or disregarded their teen was not at fault. For example, “I don’t like the blanket letters sent out after a crash. My son was not at fault but the letter made me feel that way!” and “He was not at fault.”

In 91% of the risk advisory letter cases, teens had told their parents about the citation or crash. The high-risk advisory letter was the first information the parents had received about the citation or crash in 2% of the cases. Parents were not aware of the risk incident prior to receiving the survey in 6% of the cases.

Regarding parental engagement that was sought with the letter, about 80% of parents reported action subsequent to receiving the letter. This propensity did not vary significantly with the teen driver age or letter reason. Parents most commonly, in 58% of cases, reported discussing safe driving practices with their teens. The letter was also reported useful in learning more about teen driver risk by 33% of the parents. Comments by parents included “Great survey with great reminders. Thank you!!” and “Already discussed but reminded.”

About 8% indicated the letter was useful in finding training for their teen driver. The letter specifically mentions the *Alive at 25*[®] course.³ It was also mentioned in several parent comments. "... was much more respectful of winter driving conditions when had a low-speed crash. Made her take the *Alive at 25*[®] and has been a fabulous driver since these two items happened;" and "Not enough *Alive at 25*[®] courses available! Especially in rural communities. Bring it to schools as an option for parents please."

The need for multiple strategies is supported by survey findings. While a majority did find the letter useful, it is not uncommon to have a subpopulation that does not find value with this more individualized intervention. Comments provide some insight regarding the group that did not find the advisory letter useful. Some examples include "Multiple Letters! Wasteful!!;" "Govt overreach. Find a better way to spend our tax dollars;" "I thought the letter was intrusive." The multiple letter comment is interesting since this would indicate a case where a teen's parents were likely contacted for more than one risk incident. The licensing agency explained that a household had received at least five letters for their teen driver's high-risk incidents over the course of the seven-month pilot program.

3.2 Preparation

Preparing a teen for their driver license is key to safety. Parents were asked about their teen drivers' education, supervised driving, and early licensure monitoring. Teens can apply for a learner's permit when they are 15 years old. They are required to hold the permit for a minimum of one year, during which they must complete an approved driver education course and 50 hours of driving practice in various conditions. If licensing is postponed until the age of 16 or 17, the learner's permit requirement is reduced to six months and no driver education course is required.⁴ Successfully completing a road test through the state is required to obtain a license in all cases.

Parents reported an average licensing age of 15 years and 6 months, ranging from 15 to 17 years and 3 months (n=134). The average age reported for the permit, if obtained, was 14 years and 6 months. Among teens that had held a learner's permit, the phase averaged 12.8 months, ranging from 6 to 28 months. Within this group, drivers licensed under age 16 had held the permit for 12.5 months. This varied significantly compared with 13.8 months for the cohort licensed at 16 years or later (F=13.03, df=83, p<0.001). Teens had 1 to 500 hours of supervised driving experience in the year leading up to licensure.

Total supervised driving hours averaged 81 hours. Supervised driving, on average 67 hours, was predominately with parents/guardians. Time with driving instructors averaged 12 hours as the other substantial experience source for teens. Additional hours were gained under the supervision of others, such as relatives. The distribution was considered due to the wide range in hours (Figure 3.3). The positive skew of 2.86 and high kurtosis of 11.71 show asymmetric distribution, in this

³ <https://www.nsc.org/safety-training/defensive-driving/teen-driving>

⁴ <https://www.dot.nd.gov/divisions/driverslicense/permit.htm>

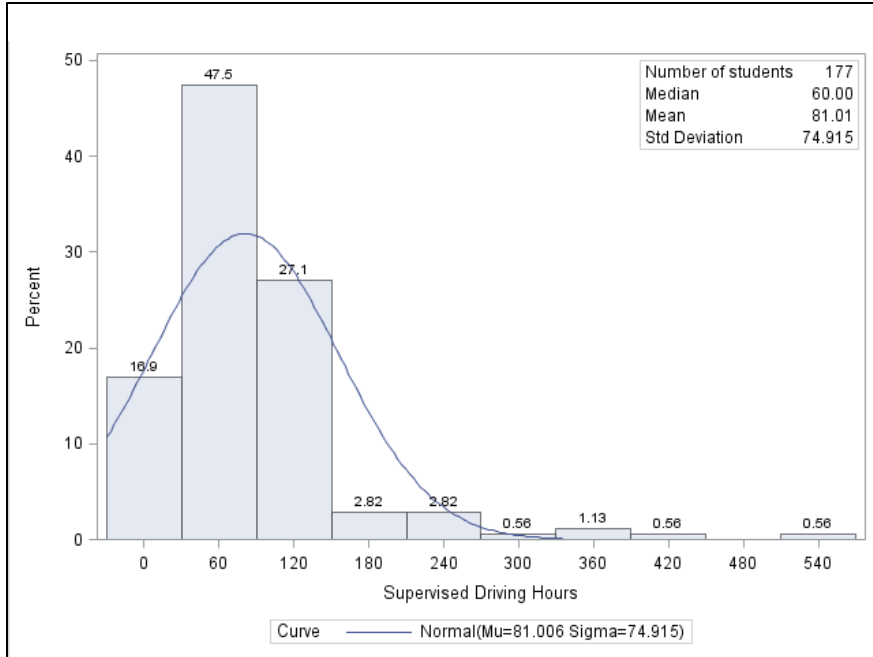


Figure 3.3 Supervised Driving Hours in Year Prior to Full Licensure

case, a long tail to the right with outliers likely. The median was 60 hours of supervised driving, with 25% reporting 36 hours or less. The miles were transformed to log function to normalize the distribution in testing significance with demographic factors. The supervised driving hours did not vary by gender or age licensed; nor did they vary significantly with regard to the type of letter the parent received. The seemingly low amount of supervised driving hours is certainly a deficiency in teen drivers' experience, which builds abilities to react to other driver actions, unexpected events, and various road environments.

Beyond driving hours, parents were asked about the diversity of driving environments their teens experienced with supervised driving. Nearly all parents, 98%, reported their teen had driven on local roads. Interstate experience was also common, with 89% including it in the supervised driving experience. Parents were also asked about gravel, nighttime, and urban traffic as other common road driving environments. About one in four teens did not have experience in at least one of these environments during their supervised driving hours (Figure 3.4).

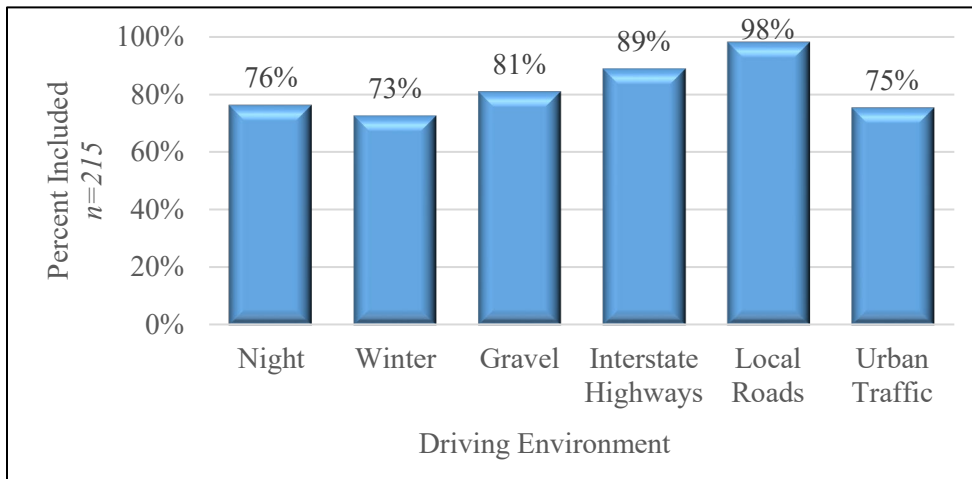


Figure 3.4 Environments in Supervised Driving Experience

3.3 Rules, Monitoring, and Privileges

Parents obviously have a prominent role in teen driver readiness for driving. In addition, they make important decisions in privileges, limitations, and monitoring. The early phases of independent driving, including the first nine months, were specifically considered in the survey. GDL restrictions during early licensure, intended to limit risk exposure, are one potential source for bounds on teen driving privileges. As noted, 15-year-olds are required to practice at least 50 hours of supervised driving in different environments during the learner’s permit phase. In the licensed phase of the GDL, drivers under age 17 are restricted to driving vehicles owned by relatives and limited to driving between 5 a.m. to 9 p.m., unless traveling for work, school, or religious purposes. While the GDL rules can be enforced by police, parental risk knowledge and involvement is essential to creating a safe environment for new drivers.

About 90% of parents reported they had at least four of the rules or forms of monitoring in the list provided for common practices (Figure 3.5). The most common rule was requiring seat belt use at 93%. Several parents commented “Always” and one wrote “It’s the law.” Close behind were restricting phone use and requiring permission for trips. Teen passengers (non-sibling), identified as a crash risk factor, were prohibited or limited by parents as well as nighttime driving. One in three parents had installed a vehicle or phone application for technological support in monitoring their teen’s driving. One parent included a “good idea” note on the survey with this monitoring item. Written contracts were the least common but have been shown to be a valuable tool in teen driver safety (Centers for Disease Control and Prevention). One parent noted that the contact “worked” for them.

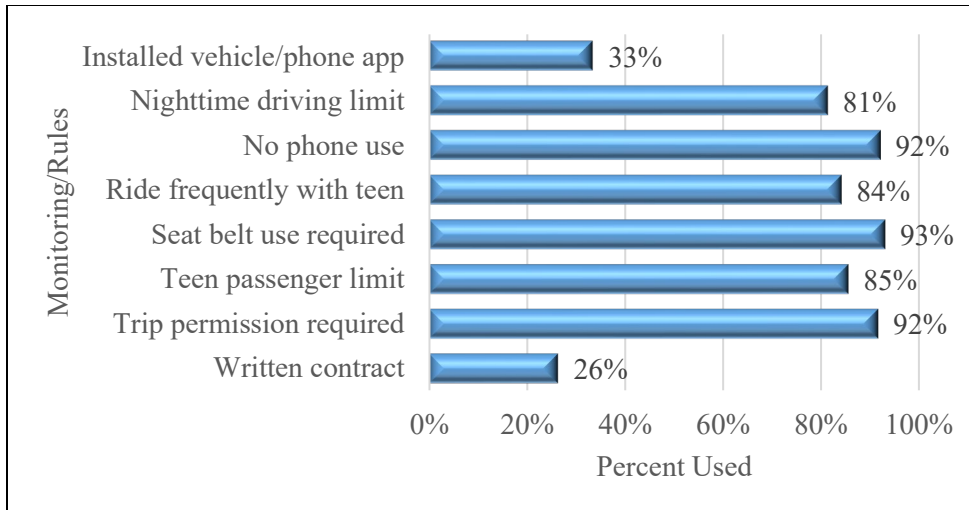


Figure 3.5 Parent Monitoring and Rules for Teen Drivers during the First Nine Months of Licensure

A few parents reported that they had briefly revoked their teen’s driving privileges. In these instances, roadway actions such as traffic citations, crashes, speeding, and driving without permission were most common (Table 3.1). Parents indicated other reasons teens lost driving rights. Common themes were low grades, behavior, and driving practices. Parent descriptions included “Attitude, school grades,” “Following too close the other driver hit brakes while talking on the phone we think,” “Phone use,” “Bad grades,” and “None of your business!”

Table 3.1 Parents’ Reasons for Revoking Driving Privileges

Reason	Count	Reason	Count
Traffic citation	23	Drove without permission	10
Distracted driving	7	Following too close	2
Speeding	14	Failure to stop/yield	2
Traffic accident	12	Other	22
No seat belt use	2		

3.4 Demographics

Parents were asked about their teen’s learner permit and driver license ages, along with miles driven weekly. The average age for a permit was 14 years and six months, and 15 years and five months for licensing, respectively, as noted. Parent responses were grouped by teen driver’s permit and license ages for statistical inquiry. In a majority of cases, 71%, the teen had been licensed before turning 16. Neither the permit nor license age was significantly related to a parent-reported crash or citation.

Gender was also investigated as a factor in teen driver risk. The female teen drivers in the survey response represented a slightly smaller share, 46%, than in the state’s total population at 50%. While previous research has shown males to have greater proclivity for crash involvement, gender was not significantly related for likelihood in parent-indicated teen crash or citation event.

Another item collected from parents regarded teen driver exposure in terms of hours driven weekly. As with the supervised driving experience, responses had a wide range and asymmetrical distribution (skewness=1.30; kurtosis=1.21). The weekly miles average was 84.7, but this figure is skewed by the long right tail (Figure 3.6). The weekly miles median was 60, with 25% of parents reporting their teens

drove 30 miles or less each week. The miles were transformed to log function to normalize the distribution. The likelihood for parent-indicated citation or crash is not significantly related to the teens' weekly miles. Not unexpectedly, a high correlation was found between the supervised driving experience and the weekly miles driven (Pearson Corr. = 0.979, n=172). The Pearson correlation value shows that about 96% of their variability is shared.

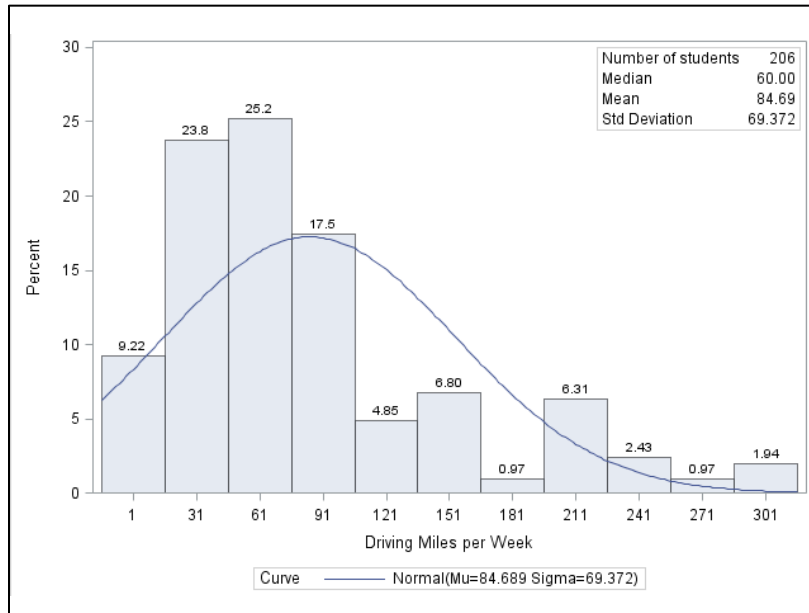


Figure 3.6 Teen Driving, Miles per Week

3.5 Parent Comments

Key words were used to find associations for themes within parent feedback. Three areas were identified: training/monitoring, crash risk, and advisory letter program. Regarding training and monitoring, access to training was noted as an issue related to proximity and cost.

- *We received a letter about additional class for teen drivers, but no date or time was listed. I wish they would have included that info.*
- *We feel that a driver's ed program is very helpful for teens, but the private schools here are too expensive.*
- *Would have done the extra crash instruction course but not avail(able) in Fargo & could not go to Grand Forks.*

Others thought improvement may be needed in teen preparation with comments such as:

- *ND needs to improve this type of education.*
- *Kids have accidents and so do adults.*
- *You need to revamp your driver's ed(ucation) classes. 1.6 hours not even per person on the real road... 2. Driving on the range way - way too much time... better spent on the real road with real life experiences. 3. Simulator stupid.*

Parents also comment on specific issues and additional supervised driving time.

- *I think there needs to be more help w/the texting issue.*
- *I think kids should be able to get permits at age 14, but not get license until 16. Would give them more practice time. I also think there needs to be classroom instruction before getting license...*

I think ND has this driving education all wrong. I grew up in IA and MN - way more education going on there & you have to be 16 years old for a license. Thanks for getting input from others. I hope ND makes some changes.

- *Teach children not to switch places when pulled over they don't understand the consequences.*

Also, specifically regarding the oil region:

- *Williston is a very dangerous place to drive. Because of the mix of people from around the country and from different countries. I would support any program that would require a review of federal, state, and local driving laws.*

Regarding crashes, several comments were offered regarding the nature of the teen driver crash, most often related to fault. As noted previously, revisiting the high-risk letter to state that parents are advised regardless of driver fault may minimize the parent perceptions regarding an accusatory tone. Comments included:

- *I never got a survey for my daughter who was the victim of a hit and run and who lost her license for 6 months.*
- *Teen had warning for speeding - accident - she was rear ended/not her fault.*
- *Driver has not been any accident due to her negligence other driver was cited for running red light.*
- *My son involved in accident, 0% fault as determined by Fargo Police Dept. and Insurance investigation. Our vehicle was totaled. "New American" with no Insurance Found 100% at fault. ...my understanding is that "New Americans" are barely passing the test and are told that they only need to know the shape of traffic signs and not their meaning... Please start social media campaign highlighting basic driving requirements, e.g. use of blinkers, how to turn in left lane to three lanes and what lane the turning vehicle is supposed to stay in. Stress that insurance is a requirement!*

While the advisory program was rated favorably in many responses, comments were mixed as previously indicated. Among the negative comments about contact/resource use:

- *I thought the letter was intrusive.*
- *Gov(ernment) overreach Find a better way to spend our tax dollars.*
- *Spend the money used for this nonsense on something useful!! P.S. Focus on more funding for education in Western ND!!! Thanks.*
- *I don't like the blanket letters sent out after a crash. My son was not at fault but the letter made me feel that way!*
- *I could not believe how angry your letter made us. It was an accident-my teen did not intend to happen. It is hard to imagine my tax dollars pay somebody to write such nasty letters!!*

Positive feedback was also included among the open-ended comments:

- *Thanks for being proactive in sending out the advisory letter.*
- *Keep up the good work! Anything we can do to improve/keep safe teen drivers is appreciated.*
- *Great survey w/great reminders. Thank you!!*

The notes parents made with individual questions and results from the current survey should be informative for continuous improvement with the parent advisory letter program and related efforts.

4. SUMMARY

Teens remain a high-risk driver group. Finding innovative ways to reduce crash injuries among this population is essential in improving traffic safety. While GDL has been a mainstay in this effort over recent decades, there is interest in exploring pragmatic, individualized program complements. The pilot program studied here was designed to empower parents in teen driver safety. Parental engagement is highly valued in preparation, monitoring, and GDL policy adherence with young drivers. A multiple-method approach was used to assess program efficacy and generate feedback for continuation and/or refinement for a teen parent advisory letter pilot program.

The state licensing agency mailed advisory letters to parents of teens identified as at-risk in terms of a ninth month licensure subgroup and individuals who had a risk-marker citation or crash. The letter contained information about teen driver risk, parental resources, and driver training opportunities (Appendix A). A follow-up survey to parents about the advisory letter they had received resulted in 309 parent responses. The letter was generally viewed as positive and successful in generating parent engagement. About 80% of parents reported actions subsequent to receiving the letter such as discussions with their teen, learning more about teen driver risk, and finding additional driver training.

Comments and open-ended questions provided insight for program refinement and survey context. They were along three major themes: training/monitoring, crash risk, and advisory letter program. For instance, some negative comments were associated with parents' perceptions that the letter was accusatory or overreaching. Others commended the letter, saying it provided additional knowledge and suggestions that were helpful. The survey also provided an opportunity to better understand current practices and perceptions in the teen driver space. Limited supervised driving appears to be a deficiency in teen driver preparation. A wide range in this experience item and early exposure, in terms of weekly driving hours, supports the need for more individualized programs. These programs complement universal strategies such as the GDL and primary seat belt laws.

The localized and pragmatic approach used here can be refined based on survey results and experience gained during the pilot project. The project's findings inform other states considering low-cost individualized programs to complement their one-fits-all driver improvement strategies. Future research opportunities include continuous improvement work in the teen parent advisory letter program and new ideas to complement this innovative young driver program with other at-risk populations.

5. APPENDIX. SURVEY INSTRUMENT

North Dakota Parent of Teen Driver Traffic Safety Survey

All Responses
Are Confidential.

1. Did your household receive an advisory letter(s) from the NDDOT about your teen driver's safety?
 - No letter was received. → if no letter was received, please send your response and return the survey.
 - Yes, due to increased crash risk based on a traffic accident.
 - Yes, due to increased crash risk related to a traffic citation.
 - Yes, as a standard teen driver safety reminder.
2. What was your general reaction to the letter?
 - Very Negative Slightly Negative Neutral Somewhat Positive Very Positive
3. The letter was helpful to you in: (Please select all that apply.)
 - Discussing safe driving practices with your teen.
 - Finding training for your teen driver.
 - Learning more about teen driver risk.
 - Not helpful.
4. If you received the letter following a traffic citation, were you already aware of the violation?
 - No, I was not aware Yes, teen told me Yes, letter from the court Not Applicable
5. In the year leading up to licensing, how much supervised driving experience did your teen complete?

With Parent/Guardian? 0 hours With Driving School? 0 hours Other? _____, _____ hours
6. What type(s) of driver education did your teen receive? (Please select all that apply.)
 - Classroom Driver Ed Behind-the-Wheel Certificate Other _____ None
7. What was included in your teen's supervised driving experiences? (Please select all that apply.)
 - Nighttime Winter roads Gravel Interstate highways Local roads Urban traffic
8. Did or will you have monitoring or rules during the first nine months of licensing?

	During 0-3 months	During 4-6 months	During 7-9 months
Ride frequently with teen			
Trip permission			
Teen passenger limit (non-sibling)			
Nighttime driving limit			
Written contract			
Seat belt use requirement			
No phone use			
Installed vehicle/phone app monitoring device			
Other _____			
9. Has your teen received a traffic citation or been involved in a crash? (Please select all that apply.)
 - Yes, Traffic Citation Yes, Non-injury crash Yes, Injury crash No Citation/Crash
10. Have you revoked your teen's driving privileges for at least a day for any driving-related reason(s)? (Please select all that apply.)
 - Traffic citation Traffic accident Following too close
 - Distracted driving No seat belt use Failure to Stop/Yield
 - Speeding Drove without permission Other _____
11. What gender is your teen driver? Female Male
12. Age your teen received a learner's permit? _____ years _____ months
13. Age your teen received a driver license? _____ years _____ months
14. Approximately how many miles per week does your teen drive? _____ miles
15. Which category best describes your annual household family income before taxes?
 - <\$24,999 \$25-49,999 \$50-74,999 \$75,000-99,999 \$100,000 or more
16. In which North Dakota county do you live? _____
17. Comments: _____

Thank you for your time and participation.

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