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Original Research Article

DO ADVISORY LETTERS ENGAGE PARENTS IN TEEN DRIVER SAFETY?

Kimberly Vachal, Ph.D.[1]

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Abstract

Purpose: Teen drivers are at high risk for motor vehicle crash injury. Previous research has shown that risk-based injury prevention programs for subpopulations or individuals can be successful as build-outs to universal strategies. The goal here was to assess the efficacy of state agency-administered parent advisory letters as a supplement to graduated driving license and seat belt policies.

Methods: A multiple-method approach was used to collect information about parents' reactions and actions after receiving the letter. A mail survey, comprised of closed- and open-ended questions, was administered to gather information. The survey resulted in 309 parent responses which was near the expected 10% response rate, resulting in robust statistical analysis. Statistical analysis of the closed-ended responses was complemented by thematic analysis of the open-ended parent responses.

Main Findings: The parent advisory letter was successful in initiating parent engagement with teen drivers. The letter was generally viewed as positive. About 80% of parents reported action after 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 the letter was accusatory or overreaching. Others commended the letter, saying it provided additional knowledge and suggestions that were helpful.

Application: It is an example of continued innovation to improve public safety. Results inform other states considering low-cost individualized programs to complement their 'one-fits-all' driver improvement strategies.

Novelty: Parents are highly influential with teens. An advisory letter to parents of teens with high motor vehicle crash risk elicited engagement. Many parents reported action spurred by the advisory letter such as discussions with their teen, learning more about teen driver risk, and finding additional driver training.

Keywords: Teen Driver, Traffic Safety Policy, Parent Engagement, Crash Risk, Low-Cost Strategies.

[1]Upper Great Plains Transportation Institute, North Dakota State University, Email: kimberly.vachal@ndsu.edu

Introduction

Motor vehicle crashes are a leading cause of death among teens [1]. During the first month of licensure, crash rates are as high as 123 per 10,000 but steeply decline to 41% by month seven [2]. Therefore, early interventions are especially beneficial. In a national study of serious crashes, Curry et al. [3] found that driver error was the critical pre-crash event in 95.6% of teen driver cases. GDL and other universal, population-based driver improvement programs have reduced teen crashes [3, 4, 5, 6, 7]. Gains are increasingly challenging as most states have laws such as graduate driver licensing (GDL) and primary seat belts. Novel strategies and refined policies are needed to push teen crash trends downward.

Moving beyond universal strategies recognizes that drivers are vulnerable and make mistakes [8]. Winston and Janke [9] pose the Institute of Medicine framework as a three-intervention-tier approach that has been successful in injury prevention. It is consistent with the National Research Council's recommendations for preventing teen driver crashes [10]. In this, the tier one strategies are often substantially impactful with a 'one-size-fits all' approach. Strength is achieved by augmenting tiers two and three. Tier two interventions recognize subpopulations based on factors such as relative risk. The third-tier addresses need among those that have already experienced an adverse event.

Here, an advisory letter sent to teen driver parents was aimed to (1) encourage parent safe driving discussions with their teen, and (2) increase parent awareness with GDL restrictions and resources. Masten and Peck [11] found warning letters, group meetings, individual hearings, and license suspension/revocation were associated with improved driver safety. While the driver advisory letter has mixed success as a low-cost driver improvement strategy, it has been effective when aligned to affect a receptive driver group. Thus, reaching them with licensing requirements, parental tools and teen crash risk knowledge may empower in beneficial actions [12, 13, 14, 15, 16]. Teen driver that exhibited the risk marker(s) would potentially alter their behavior reducing the likelihood of crash involvement based on parent intervention [17, 18, 19, 20].

The goal here was to investigate the state's new teen driver safety strategy. A parent advisory letter pilot program was analyzed. The letter was aimed at increasing parental awareness, knowledge, and engagement with teen crash risk. The intentioned outcome was parents' empowerment in safe driving discussions teens. Ultimately, meaning fewer teen-involved crashes. The survey also asked parents about teen driver preparation, monitoring and their involvement.

Method and Data

Teens account for 3% of the driver population but are drivers in 6% of crashes [21]. Multivariate analysis showed gender, traffic convictions, rural/urban residents, and property-damage-only (PDO) crash involvement were significant markers in the likelihood for future injury crashes among ND teen drivers [22]. These findings were moved into an actionable strategy with a parent advisory letter pilot program for at-risk teen drivers.

The state identified two teen-driver parent target subpopulations for the pilot. The first group included parents of teens with at least one high-risk indicator: two or more points on a driver record from citations or any four-point traffic citation; or a PDO crash. The other parent group had teens reaching their ninth month of licensure. The agency perceived the ninth month as a time point when teens had more driving freedom and increased crash risk. Considering the IOM framework, the letters built out universal strategies to tiers three and two with teens that were (1) drivers with a high-risk crash indicator or (2) in the ninth-month driver subpopulation, respectively. The parent letter had been mailed to 5,565 households based on the 7,016 letter addresses the state provided. A random sample of 3,590 households was drawn for the survey.

A survey instrument was comprised of closed-ended questions and a free text comment section. The state licensing agency cover letter invited parents to take part to help them make decisions about the pilot program. Between April 1, 2019 and May 15, 2019, 309 valid parent surveys were collected. The nine percent response rate is slightly lower than the anticipated ten percent response in the mail survey. It is, however, robust for statistical analysis with a 95 percent confidence level and a 5 percent

confidence interval. Responses were used to assess parent perceptions and actions for program efficacy. Parent cohorts for the high crash-risk and ninth-month safety groups of teen drivers were considered in compiling findings. The Institutional Review Board at North Dakota State University approved the study.

Results

Among parents who recalled receiving an advisory letter, 60% reported it was for the nine-month safety reminder. The high-risk letter for crashes or citations in 26% and 14% cases, respectively. The four-point and citation letters were combined in the analysis. One in three (34%) did not remember receiving a letter. The state confirmed that the mailing addresses were highly accurate. Less than one percent of letters returned to the agency. Due to a gap of up to ten months between the letter and the survey, they may not have remembered it. It is also possible teens intercepted the letter.

Parents' recollections of letters for crashes were slightly higher than those for citations compared to the composition mailed by the state. This difference could be related to parents' concern in the severity of the traffic incident in a crash rather than citation. Specific to high-risk letters among the survey group, the largest share was speed-related offenses, followed by care required and failure to yield/stop (Figure 1).

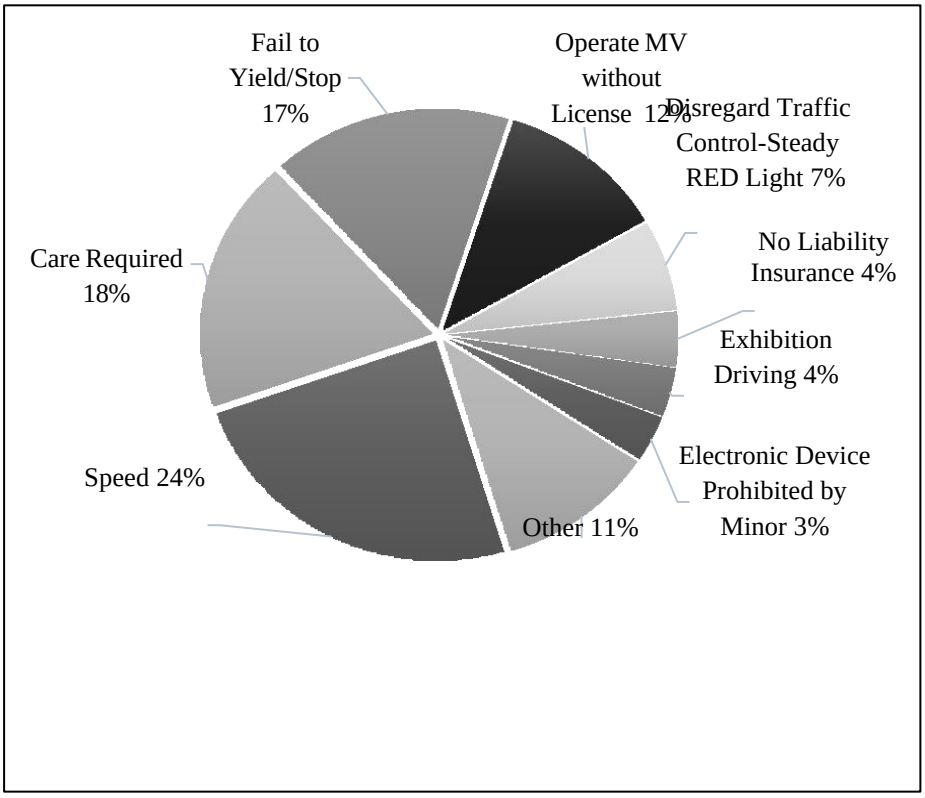

Figure 1. Citation Basis for the Teens' Parent Advisory Letters

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 neutral. Among parents who reported they had received a letter, the average reaction was positive at 3.7. The rating did vary significantly based on the letter reason as a nine-month safety or a high-risk event $t(144)=3.76$, $p<0.001$. The folded $F(2/198)=1.44$, $p=0.07$ shows sample variance ratio between the groups with results close to the $p<0.05$ critical value, so the Satterthwaite is reported. The highest mark was given by parents who received the ninth month reminder letter at 3.9 (SD = 0.96) compared to 3.3 (SD 1.15) among those receiving the high-risk letter. Among the 106 parents who did not recall receiving a letter, the 'idea' was positive with an average reaction of 3.4 (SD = 0.80). Parent comments suggest negative reactions 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 letters 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 before 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 the letter. This propensity did not vary significantly with the teen driver age or letter reason. Parents most commonly (58%) had conversations with their teens about safe driving practices. The letter was also useful in learning more about teen driver risk for about 33% of the parents. Comments by parents such as "Great survey with great reminders. Thank you!!" and "Already discussed but reminded" were included. About 8% indicated the letter was useful in finding training for their teen driver, but suggested inequity with access. The letter specifically mentions the *Alive at 25*® course.[2] 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 was supported. A majority did find the letter useful with comments such as "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!!' It is not unexpected some did not favor this strategy, noting "Multiple Letters! Wasteful!!'; "Govt overreach. Find a better way to spend our tax dollars."; "I thought the letter was intrusive."

Rules, Monitoring, and Privileges

Parents play a prominent role in teen driver readiness. In addition, they make important decisions in privileges, limitations, and monitoring. Early phases of independent driving, including the first nine months, were specifically studied. GDL restrictions during early licensure, intended to limit risk exposure, are one potential source for bounds on teen driving privileges. As explained, 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 am to 9 pm, unless traveling for work, school or religious purposes. While the GDL rules can be enforced by police, teen parents' risk knowledge and involvement are essential to creating a safe environment for new drivers.

About ninety percent of parents reported they had at least four of the rules or forms of monitoring in the common practices list (Figure 2). The most common was requiring seat belts at 93%. 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 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.

[2] https://www.nsc.org/safety-training/defensive-driving/teen-driving

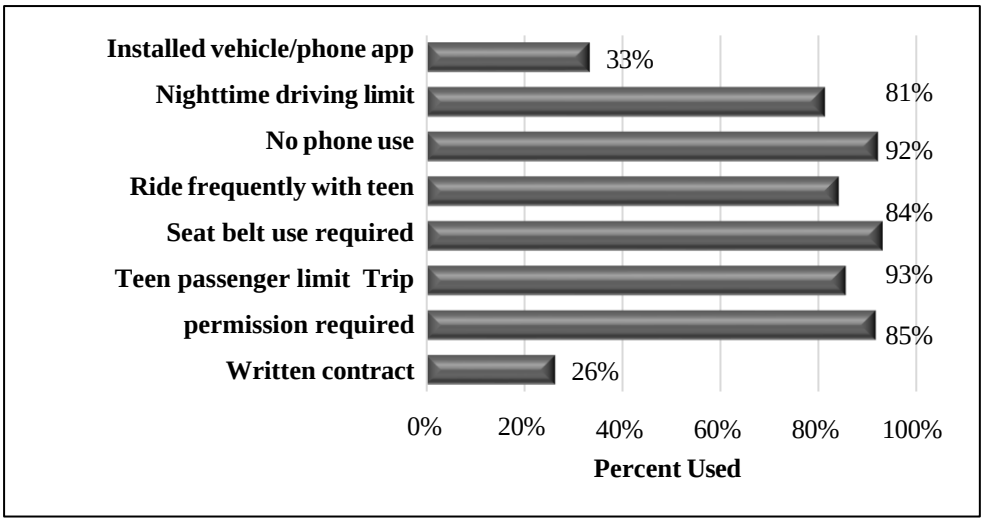

Figure 2. Parent Monitoring and Rules for Teen Drivers during the First Nine Months of Licensure

A few parents reported that they had briefly revoked their teen's driving privileges. In these instances, roadway actions such as traffic citations, crash, speeding and driving without permission were most common (Table 1). Parents indicated other reasons teens lost driving rights. Common themes were low grades, behavior, and driving practices.

Parent Role in Driving Readiness

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 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 variable environments. If licensing is postponed until the age of 16 or 17, the learners permit requirement is reduced to six months and no driver education course is required.[2] 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 6 months, ranging from 15 years to 17 years and 3 months (n=114). The average age reported for the permit, if obtained, was 14 years 6 months. Among teens that had held a learner 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. The length varied significantly compared to 13.7 months for the cohort licensed at 16 years or later $F(116)=13.03$, $p=0.07$ at the 90^{th} percentile. 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). The positive skew 2.86 and high kurtosis 11.71 show asymmetric distribution, in this 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 it vary significantly with regard to the type of letter the parent received. The seemingly low supervised driving hours was a potential deficiency in teen drivers' experience that builds abilities to react to other drivers' actions, unexpected events, and various road environments.

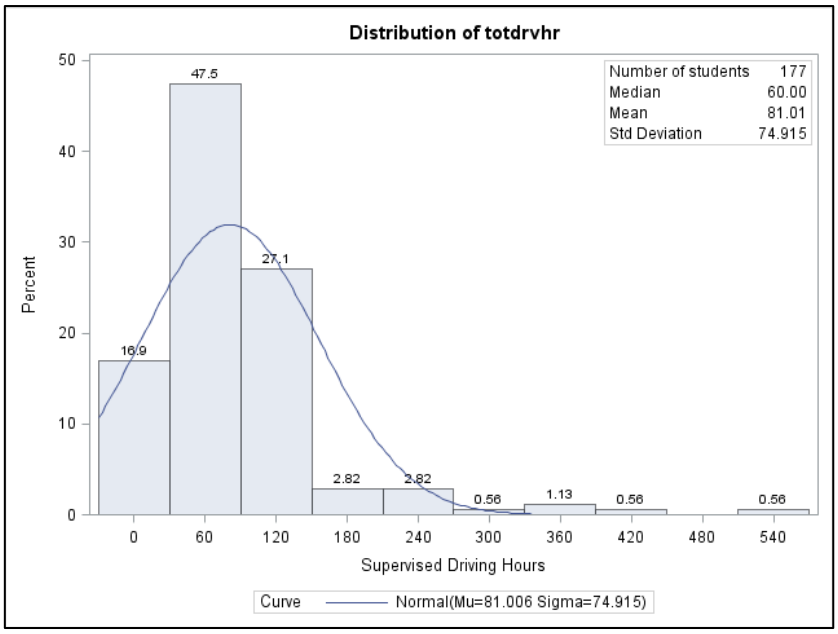

Figure 3. Supervised Driving Hours in Year Prior to Full Licensure

Beyond driving hours, parents were asked about the diversity of driving environments their teens experienced during 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 other environments during their supervised driving hours (Figure 4).

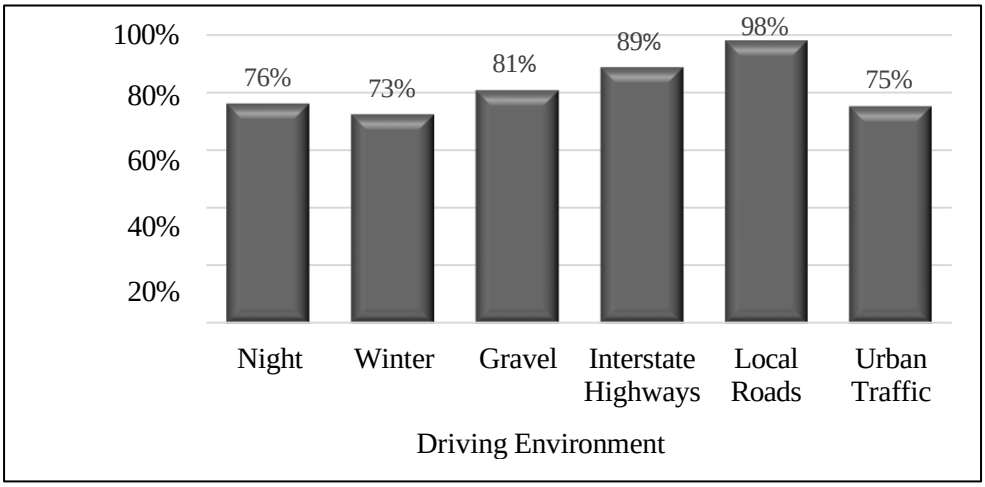

Figure 4. Environments in Supervised Driving Experience

Demographics

Parent responses were categorized by teen driver permit and license age groups as factors in crash and citation likelihood. Neither permit nor license age factors was significantly related to parent-reported crash or citation. Gender was also investigated as a factor in teen driver risk. 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 was regarding teen driver exposure in terms of weekly hours driven. As with the supervised driving experience, responses had a wide range and asymmetrical

distribution (skewness=1.30; kurtosis=1.21). The average weekly miles were 84.7 but this figure is skewed by the long right tail (Figure 5). The median weekly miles were 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 $F(177)=+1.30$, $p=0.20$ or crash $F(175)=0.66$, $p=0.66$ was not significantly related to the teen's weekly miles considering Satterthwaite results for nonhomogeneous distributions. 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.

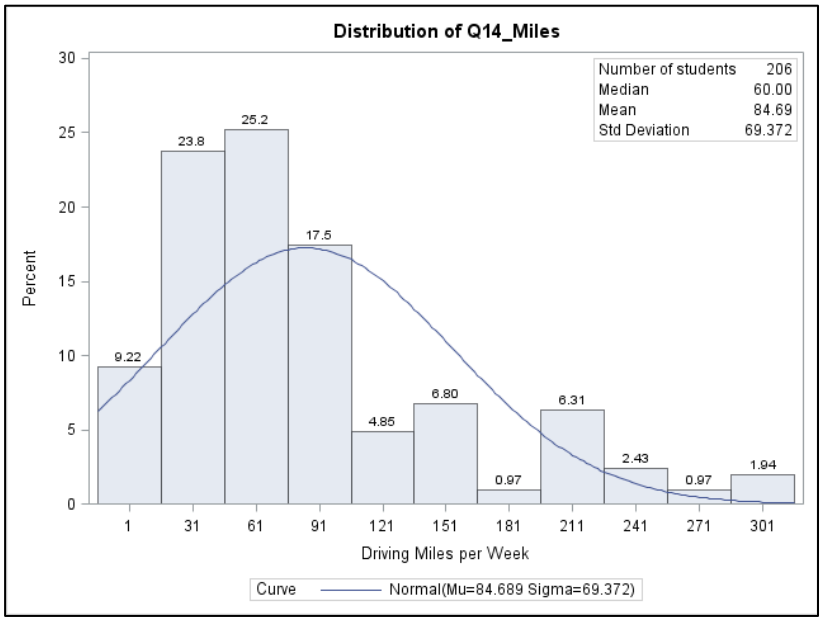

Figure 5. Teen Driving, Miles per Week

Summary

Teens remain a high-risk driver group. Finding innovative ways to reduce crashes among this population is essential injury prevention. While GDL has been a mainstay in this effort over recent decades, there is interest in exploring pragmatic, individualized program complements to those policies. The pilot studied here was designed to assess an effort to empower parents in teen driver safety with an advisory letter. A survey was conducted to assess program efficacy and generate feedback for continuation and/or refinement for a teen parent advisory letter pilot program. 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. 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 notion for more individualized strategies. These programs complement universal strategies such as the GDL and primary seat belt laws.

The localized and pragmatic approach used here provides a framework for investigating a driver subpopulation letter intervention in a survey. Survey results and experience gained during the pilot phase provide important information regarding initial impact and potential problems. Findings may 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 strategy with other at-risk populations.

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