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### Title

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### Permalink

<https://escholarship.org/uc/item/1nk1m8kd>

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### Publication Date

2014-11-14

Peer reviewed

## **VARIATIONS IN TEENS' PERCEPTION OF RISK FACTORS FOR TEEN MOTOR VEHICLE COLLISION INJURIES**

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Word Count: 3,956 words + 5 tables/figures (250 words each) = 5,206 words

Submission Date: November 14, 2014

**ABSTRACT**

Teen drivers, especially males, are known to be at greater risk of being involved in a motor vehicle collision than any other age group. While novice teen drivers' primary risk factors are commonly known, less is known about what teens perceive as risk factors for peers getting hurt or killed in motor vehicle collisions. This mixed methods study uses survey data from the Teens in the Drivers Seat (TDS) program in California to explore (1) teens' perceived risk factors for motor vehicle collision injury; and (2) the relationship between perceived risks and age, gender, and driving experience. Findings may inform future program development and expansion for TDS and other teen driver safety programming.

## INTRODUCTION

Motor vehicle crashes are the leading cause of death for teenagers in the United States (1). The fatal crash rate per mile driven is about three times higher for teens than for drivers over age 20 (2). The CDC identifies being a male, drinking, low seatbelt use, driving with teen passengers, night and weekend driving, and being a novice driver as factors putting teen drivers at higher risk of death or injury (3). Furthermore, teen drivers are more inexperienced, have a greater tendency towards risk-taking, and overestimate their driving skills (4).

Although California has one of the strongest graduated driver licensing programs in the country, including strict restrictions on nighttime driving and transporting teenage passengers, the number of teens being hurt or killed in motor vehicle collisions remains too high. In California, between 2008 and 2012, the Fatality Analysis Reporting System (FARS) data shows an average of 425 fatalities in crashes involving young drivers aged 15 to 20. While the number of teens involved in fatal crashes is on a downward trend, the total number of deaths in crashes involving teen drivers still exceeded 4,500 nationally and 350 statewide in 2012 (5). Additionally, though the focus of this paper is on teen drivers, many teens also die as passengers in motor vehicles. In 2012, nearly half of the fatalities in crashes involving teen drivers were passengers either in vehicles driven by teens (26.4%) or in another vehicle (20.7%) (5). In response to this public health crisis, the Texas Transportation Institute developed the Teens in the Driver Seat (TDS) in 2003, the first peer-to-peer program for adolescents focused exclusively on traffic safety. The 2012 to 2013 academic year marks the inaugural year for TDS in California after much success in Texas.

TDS relies on peer-to-peer interactions and influence to improve teen traffic safety culture. With guidance from TDS program staff and a faculty adviser, a team of student leaders plan and implement activities around driver and passenger road safety at their school and in their communities. This mixed methods study will use data collected from the TDS program's pre-assessment survey tool to explore differences in teens' perceptions of top driving risks leading to teens being hurt or killed in motor vehicle collisions.

## BACKGROUND

Numerous studies have focused on the role of peer pressure or influence on teens' behavior. As a group, novice teen drivers perceive lower risk levels for high-risk situations, underestimate the consequences of engaging in high-risk behaviors, and overestimate their ability to navigate these situations (6). In addition to the tendency to engage in riskier behaviors, adolescence is also marked by a need to please peers and obtain their approval (7). One study discusses how the "perfect storm" of developmental and structural factors, such as individual risk taking and susceptibility to negative peer pressure increases the risk of teens becoming hurt or killed in a motor vehicle collision (8). Another study exploring the link between peer influences and driving behavior found that teens perceive driving as a means of attaining social prestige and that peer pressure could be applied in both a positive or negative manner (9).

Research shows that peer influence has a great impact on teen behavior. For example, teens with friends who are susceptible to peer pressure regarding drinking and driving and other risk taking, are more likely to engage in risky behaviors (7, 10). This suggests that peer influence should be considered in program design. TDS is an innovative, yearlong, teen, peer-to-peer traffic safety programming that addresses all crash risks holistically. Historically, other peer-to-peer safety programming was focused on alcohol specifically or was diluted to include broad-based adolescent issues, such as pregnancy, drugs, and bullying.

Public health research supports positive peer pressure in health promotion in such activities as smoking, alcohol use, and teen pregnancy. Evaluation of the TDS program in Texas also shows improvements in teens' knowledge of risk factors and a reduction in crashes involving teen drivers (11). Passengers have a large impact on teen drivers' behaviors. Studies found that young males acknowledge that their driving is adversely affected by having friends in the car, especially male passengers (12, 13, 14). In an observational study of teenage drivers, male passengers were associated with riskier driving

behavior, such as higher speeds and closer following distances (15). Males were also more likely to put the brakes on risky behavior when they had a female passenger (16). Furthermore, females expressed greater concern about driving safely and were more likely to self-report that they would inform the driver if they felt unsafe in a vehicle (17, 18).

Understanding peer approval as a critical component of adolescence and the conceptual framework in which teens drive, the TDS program works to change teen traffic safety norms. Student involvement in activity planning has shown promise in reducing alcohol use; this approach can be translated to other prevention and deterrence strategies (19). Modeling safe driving behaviors and positive reinforcement from peers can become normative. Peer programs not only support approaches that promote positive reinforcement but should also channel peer judgment to enhance the value of teens being crash free (8).

Historically, teen driving safety campaigns have focused primarily on alcohol and were designed and implemented by adults. TDS allows for peer-to-peer communications about the risks, perceived or unperceived, of teen driver safety. Research has identified the primary risk factors injuring teens in motor vehicle crashes, but it is important to understand what teens perceive as their risks. This study evaluates what teens in participating California high schools perceive as top concerns and will help inform how future interventions should approach teen driver safety.

## **METHOD**

### ***Study design***

This study utilizes survey data collected as part of California's TDS program. TDS is a peer-to-peer traffic safety program available to high schools in five states (20). As part of the program, students are asked to complete a two-page pre-assessment survey, see *Figure 1*, in a classroom setting. The survey asks for demographic information, perceived primary risk factors, and self-reported behaviors. The analyses will focus on teens' perceived risk factors for why teens are injured or killed in motor vehicle collisions stratified by gender, age, and driving experience.