International Journal of Social Science and Economic Research

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

Manipulating Auto-Insurance Systems to Minimize Car Accident Rates Among U.S. Teens

Neha S. Kukatla[1] and Ms. Leila Chawkat[2]

[1]Glenelg High School, USA

[2]Intern/Mentor Program Period 5, Mac Kantruss, Personal Injury Attorney Law Office of MacKenzie A. Kantruss 22 March 2024

DOI: 10.46609/IJSSER.2024.v09i08.013 URL: https://doi.org/10.46609/IJSSER.2024.v09i08.013

Received: 23 July 2024 / Accepted: 10 August 2024 / Published: 20 August 2024

ABSTRACT

This paper explores various auto insurance systems and their impact on teenage driving behaviors and crash rates. The manipulation of auto insurance systems can be effective in minimizing car accident rates among teenage drivers in the United States. Auto insurance systems encompass the regulations governing insurance coverage for motor vehicles, influencing driving behaviors through incentives, penalties, and risk perceptions. The primary auto insurance systems in the U.S. are fault-based, no-fault, add-on, and choice-based systems, each with distinct implications for driving behaviors and road safety. The leading cause of death for teenagers in the U.S. is car accidents, underscoring the urgency of implementing effective strategies to mitigate crash risk among this demographic. The literature review details the factors influencing crash risk among teenagers by highlighting behavioral science theories, and the factors contributing to elevated crash risk among teenage drivers. A meta-analysis was conducted, revealing correlations between insurance system types, driving behaviors, and crash rates among teenagers. Findings suggest that fault-based auto insurance systems, due to their tort liability principles, are the most effective auto insurance systems in promoting safe driving habits among teenage drivers. The fault-based system increases accountability, mitigates moral hazard, and incentivizes cautious driving practices, thereby reducing crash rates. This research provides compelling evidence supporting the adoption of fault-based insurance systems as a critical measure to minimize car accidents among teenage drivers in the United States.

Introduction

All around the United States, there are many different types of auto insurance systems. Auto insurance systems refer to all of the regulations that govern the insurance coverage of motor

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

vehicles. From a policy stance, automobile insurance refers to a contract between an individual and an insurance company wherein the individual pays premiums in exchange for financial protection against losses or damages resulting from car accidents, theft, or other incidents involving their vehicle. Auto insurance systems impact driving behavior through a combination of incentives, penalties, and risk perception, encouraging cautious driving, adherence to traffic laws, and the prioritization of road safety to qualify for lower premiums, avoid penalties, and mitigate financial risks associated with accidents or uninsured losses.

While many different types of automobile insurance systems exist in the United States, among them are four main ones: at-fault/fault-based, no-fault, add-on, and choice-based systems.

At-fault systems are when there is the traditional tort liability system and the injured party can file lawsuits in order to receive compensation for their losses. No-fault systems are when the insurance company guarantees the injured parties compensation for their losses regardless of which party is at fault. Add-on systems are when there are the same regulations there are under a no-fault system, however, there are certain restrictions on what lawsuits the injured party can file. Finally, choice-based systems allow individual drivers to choose whether or not to accept restrictions on their right to sue other drivers in exchange for lower premiums. The different rules of these different motor vehicle insurance systems affect driving behaviors, road safety and most importantly, accident rates.

The leading cause of death for teenagers in the United States is car accidents, a stark reality that demands urgent attention. Teenage drivers, being less experienced, less mature, and prone to risky driving behaviors, are particularly vulnerable to the risks associated with driving. Addressing this issue requires effective strategies, including the wide implementation of the most effective auto insurance system in the United States. The fault-based insurance system is the most effective automobile insurance system that can be implemented to decrease car accident rates among teenage drivers in the United States.

Literature Review

Background

Teenagers have a plethora of distinctive qualities that contribute to their disproportionately high car crash rates compared to other age groups. These characteristics, including their developmental stage, driving experience, risk-taking behaviors, susceptibility to peer influence, and propensity for distractions, shape their reactions to various insurance systems. Recognizing these factors is pivotal in understanding how different insurance frameworks affect teenage drivers in their own unique ways. For instance, some teenagers may respond favorably to incentives offered by usage-based insurance models, while others may be more influenced by

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

punitive measures. The impact of insurance systems on teenage drivers varies based on personal characteristics, underscoring the need for new approaches that account for the unique characteristics of teenage drivers.

Factors Increasing Crash Risk Among Teenage Drivers

Understanding the factors that contribute to the heightened crash risk among teenage drivers necessitates an exploration of behavioral science theories, which offer insight into adolescent behaviors and their implications for driving. There are three important ones to know in order to better understand teenage driving behavior: Social Learning Theory, Social Cognitive Theory, and Problem Behavior Theory. Social Learning Theory posits that people behave in response to positive reinforcement. This is true on the roads as well. Social Cognitive Theory emphasizes the role of individual experiences, environmental influences, and social factors in shaping behavior. Lastly, Problem Behavior Theory suggests that behaviors typically viewed as problems may serve a developmental purpose, highlighting the complexities of adolescent decision-making processes and risk-taking behaviors on the road (Shope et al., 2006). Integrating these three theories into the understanding of teenage driving behavior is crucial for developing effective strategies to mitigate crash risk and promote safer driving practices among young drivers.

Social and situational factors significantly contribute to the heightened crash risk among teenage drivers. The presence of passengers plays a crucial role. Studies indicate that as the number of passengers increases, so does the likelihood of crashes, as young drivers are more influenced by peer approval and tend to engage in speeding behaviors (Watson, 2015).

Furthermore, alcohol or drug use significantly increases the risk of severe injury in crashes involving young drivers (Bates et al., 2014). Peer perceptions of driving skills and social group dynamics also influence risk-taking behaviors on the road. Additionally, teenagers from lower socioeconomic status groups experience higher crash rates and are more prone to severe injuries compared to their peers from higher socioeconomic backgrounds (Bates et al., 2014). Fatigue poses another significant risk, especially among young drivers (Bener et al., 2017; Truelove et al., 2017). Violations such as frequent lane changes and aggressive driving behaviors further elevate crash risk among teenage drivers, who are also more likely to engage in distracted driving, especially with their phones (Shope et al., 2006; Truelove et al., 2017). Addressing these social and situational factors is essential for implementing effective interventions to enhance the safety of teenage drivers on the road.

Exposure factors also contribute to the increased crash risk among teenage drivers.

According to Bates et al. (2014), young drivers exhibit a higher likelihood of crashing during nighttime and weekends, emphasizing the importance of considering both the time of day and

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

week in assessing crash risk. Additionally, the amount of time spent on the road plays a crucial role, as more driving experience is associated with reduced risk. With increased experience, teenage drivers tend to make fewer errors and are less likely to be involved in crashes. Lastly, environmental factors such as poor weather disproportionately elevate the risk of crashes among teenage drivers compared to other age groups (Jafarpous 7 Rahimi-Movaghar, 2014).

The Fault-Based System is the Most Effective for Teenagers

One of the alternate systems is the no-fault system. It is not as effective as the fault-based system in limiting car accidents among teenage drivers. While these types of systems aim to streamline the compensation processes, they fall short in addressing the root causes of risky driving behaviors among teens. One of the key drawbacks of no-fault systems is their resulting moral hazard, which is when people feel less compelled to exercise caution on the roads since they are shielded from the full consequences of their actions by insurance coverage (Ebrahim et al., 2013). Additionally, no-fault insurance externalizes costs to taxpayers, leading to a decrease in the overall incentive for careful driving and responsible behavior behind the wheel (Harrison, 2013). These factors contribute to a system that fails to adequately deter risky driving practices among teenage drivers.

The add-on system is another alternate system, and a variation of the no-fault system. Restrictions on lawsuits under the add-on system restrict the compensation drivers can receive for general damages, thus diminishing the deterrent effect of the tort system. While add-on systems may provide compensation under certain conditions, such as dollar or verbal thresholds for injury severity, they ultimately fall short of the comprehensive coverage offered by the fault-based system. The tort system, on the other hand, enables drivers to seek compensation for all types of losses, ensuring that victims are adequately compensated for their injuries and losses sustained in car accidents (Winkler, 2015).

The last main system is the choice-based system, which has elements of both fault and no-fault systems, making it less effective than the fault-based system in promoting safe driving practices among teenage drivers. Mixing the systems undermines the deterrent effect of the tort system.

Ultimately, the fault-based insurance system remains the most effective mechanism for promoting road safety among teenage drivers, as it provides comprehensive compensation for all types of losses and maintains the deterrent effect necessary for fostering responsible driving habits by avoiding moral hazard.

What Works: Targeted Incentivization of Teenagers

Incentivizing teenagers to decrease their crash rate requires a multifaceted approach that

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

combines legal enforcement, fixed penalties, and the reinforcement of deterrence factors.

Research by Jafarpour and Rahimi-Movaghar (2014) highlights the importance of effective legal enforcement in deterring risky driving behaviors among teenagers, emphasizing that poorly enforced traffic regulations decrease the incentive to respect and follow them, ultimately leading to more car crashes (Jafarpour 7 Rahimi-Movaghar, 2014). Another important regulation is fixed penalties, which are a deterrent to poor driving behaviors because they give clear, fixed consequences for infractions (Elvik 2007).

There are three key factors influencing deterrence of offending behaviors: the perceived certainty of apprehension, severity of the punishment, and timeliness of the punishment (Love, 2022). Increasing these factors can effectively reduce rash driving behaviors among teenagers. The traditional liability system, particularly the fault-based system, emerges as the optimal mechanism for achieving these goals, as it holds teenagers more accountable and prevents them from engaging in reckless driving by making them feel like they are more likely to face punishment (Devlin, 1990). By addressing these factors, policymakers and law enforcement agencies can create a more effective framework for incentivizing safe driving practices among teenage drivers and reducing the incidence of car crashes.

Data Collection

Methodology

A quantitative study will be conducted since a data set analysis will be used. This study compares data sets from 5 different sources on the characteristics of the top 5 states in the U.S. where teens have the highest risk of road-related accidents. These states are Michigan, Rhode Island, Lousisiana, Colorado, and Florida (The Zebra). The Zebra identified these states as the most dangerous for teenage drivers by analyzing various risk factors, including teen fatality rates, teen DUI arrests, statewide seatbelt usage, and the average monthly insurance rates for teens in each state. A risk score was then generated and produced these 5 states as the most dangerous place for teenage drivers in the U.S.. The sources for where the data sets were taken from are the Zebra, the World Population Review, Credit Karma, Insurance Institute for Highway Safety, and The Law Offices of Maloney and Campolo. All of these sources took data from the Insurance Institute for Highway Safety (IIHS) and the Highway Loss Data Institute (HLDI), and did some calculations to produce their own data sets. These 5 states will be categorized by the rate of crashes from car users in the state, the state's alcohol-impaired driving rank, motor fatality per 100,000 teens in 2023, underage DUI arrests per 100,000 teenagers in 2023, minimum entry age for drivers, state seat belt usage, whether or not PIP coverage is required in that state, type of insurance automobile system, and type of threshold (if there is any).

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

The data under the "Motor fatality per 100,000 teens in 2023" category may not provide an accurate picture of the number of teenage drivers getting into fatal car crashes since this category includes deaths from drivers of other types of motor vehicles as well. By categorizing the data in this way, it can be analyzed to determine the characteristics and car insurance systems that are associated with an increased crash rate among U.S. teens. All of the data collected in this study is from 2023 and 2024. This small variation in time might slightly weaken or strengthen the correlations found in this study. However, the conclusions should still remain accurate.

Data Table

State	% of crashes from car users	Alcohol-Impaired driving rank (out of all the states)	Motor fatality per 100,000 teens in 2023	Underage DUI Arrests per 100,000 teens in 2023	Minimum Entry Age for Drivers	State Seat Belt Usage	PIP Required?	Insurance System Type	Threshold
Michigan	31%	14	14	26	14	94%	Yes	No Fault	Verbal
Rhode Island	49%	30	4	12	16	88%	No	Fault	N/A
Louisiana	31%	42	25	9	15	88%	No	Fault	N/A
Colorado	29%	23	20	68	15	88%	No	Fault	N/A
Florida	31%	32	25	12	15	90%	Yes	No-Fault	Verbal

Sources of Data:

Author(s)	Title	Publication Date
Susan Meyer	"Teen driving statistics and the most dangerous states for teen drivers"	August 31, 2023
The Law Office of Maloney & Campolo	Fault Vs No-Fault Insurance Laws By State	February 13, 2020
Insurance Institute for Highway Safety, Highway Loss Data Institute	Fatality Facts 2021 State by state	May, 2023
Gaby Lapera	Car accidents by state: Worst and best drivers	October 24, 2022
World Population Review	Fatal Car Accidents by State 2024	2024

Analysis

The data shows that in all of these states, the majority of the road accidents are not due to car users, since every percent of crashes from car users was around 30, besides in Rhode Island.

This means that it is possible that the data under the "Motor fatality per 100,000 teens in 2023" provides an inaccurate idea of what the fatal car crash rate of teenage drivers actually is since the numbers for motor fatality per 100,000 teens includes drivers of other types of motor vehicles.

The rankings for alcohol-impaired driving vary between all of these states. There seems to be no correlation between the level of risk for teenage drivers and alcohol-impaired driving. However, All of these rankings are not very high, meaning a good amount of drivers in all of these states engage in drinking and driving. Most of these states have a low teenage motor fatality rate, all of them being within 25 deaths per 100,000 teens. Rhode Island has a very small rate of only 4 out of 100,000 teens. The underage DUI arrests per 100,000 teens are all between about 10 and 30,

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

with the exception being Colorado. Colorado has a rate of 68 per 100,000 arrests. The minimum entry age for drivers in Louisiana, Colorado and Florida are all 15. In Michigan it is 14 and in Rhode Island it is 16. Most of these ages are relatively young, showing how age may have a correlation with teenage car accident rates. The seatbelt usage in Rhode Island, Louisiana and Colorado are all 88%. In Michigan it is 94%. In Florida it is 90%. Overall, the seatbelt usage is pretty high, and around 90%. Michigan and Florida are the only no fault states in this dataset. It is important to note that there are a total of two states out of these five in the dataset that use a no fault insurance system (40% are no-fault states). This rate is much higher than the total nine no-fault states out of the 50 states in the U.S. (18% no-fault states). Michigan and Florida are also the only states where PIP coverage is required. This is because PIP coverage is required in every no fault state. Both these states also have a verbal threshold, allowing the drivers in those states to still be able to sue if serious damages were suffered, despite it being a no-fault state.

These two states also have the two highest rates of seatbelt usage, suggesting that a no-fault insurance system incentivizes more drivers to wear their seatbelts.

Discussion

The results suggest no correlation between the number of alcohol impaired drivers and the motor fatality rate of teens in each state, and the type of auto-insurance system used in the state. In general, the number of Underage DUI arrests for teenagers in each state is higher in the no-fault states, with the outlier being the high number of arrests in Colorado. This could suggest that no-fault systems lessen the incentive for teen drivers to engage in careful driving habits and increase moral hazard among teenagers. The clear correlation between seat belt usage and type of insurance system also supports this conclusion. These results are consistent with the information in the literature review since they both suggest that the fault based insurance system (or the tort liability system) increases incentive for teenage drivers to drive more safely. Two ways this can be done is wearing a seatbelt and being sober while driving. These findings show that driving laws under different automobile insurance systems have the capability to greatly impact the driving behaviors of teenage drivers in the United States. Therefore, it is important to embark in further research to explore the exact laws and regulations that are effective in tort liability systems that minimize car accident rates among teenage drivers in the United States. As of now, this study provides strong evidence to support the links between how auto insurance systems impact teen psychology and consequentially, their driving behavior. This link proves to be especially strong when affecting alcohol impaired driving behavior and seat belt usage.

Conclusion

The fault-based auto insurance system is the most effective system to decrease car accident rates

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

among teenagers in the United States. Teenagers are more likely to participate in risky driving behaviors, more likely to be distracted while driving, less experienced in driving, and more likely to be fatigued while driving than drivers of any other age group. The tort liability system that the fault-based system is based on is the most effective at counteracting the characteristics that teenage drivers in the United States have that cause them to have an increased crash risk, specifically, social and situational factors. The tort liability system keeps drivers accountable for their actions, minimizing moral hazard among teenage drivers and increasing incentive to have care when driving. This makes drivers more motivated to drive with caution, while not fatigued, and while not under the influence of alcohol and drugs. This decreases the likelihood of drivers getting into car crashes. This effect is especially strong for teenage drivers, as they are more prone to participate in risky driving behaviors than drivers of any other age group. It is important to understand what causes teenage drivers to experience such a disproportionately higher crash risk than drivers of any other age group in order to create an effective plan to minimize this problem. A crucial step to doing this is to implement the fault-based automobile insurance system all over the United States to decrease the number of teenage drivers in the United States getting into car crashes.

References

Bates, L. J., Davey, J., Watson, B., King, M. J., & Armstrong, K. (2014). Factors Contributing to Crashes among Young Drivers. *Sultan Qaboos University medical journal*, *14*(3), e297–e305.

Bener, A., Yildirim, E., Özkan, T., & Lajunen, T. (2017). Driver sleepiness, fatigue, careless behavior and risk of motor vehicle crash and injury: Population based case and control study. *Journal of Traffic and Transportation Engineering (English Edition)*, *4*(5), 496–502. https://doi.org/10.1016/j.jtte.2017.07.005

Credit Karma. (n.d.). Car accidents by state: 2022 data and statistics. Retrieved from https://www.creditkarma.com/insights/i/car-accidents-by-state

Devlin, R. A. (1990). Some welfare implications of no-Fault Automobile Insurance. *International Review of Law and Economics*, *10*(2), 193–205. https://doi.org/10.1016/0144-8188(90)90023-m

Ebrahim, S., Busse, J. W., Guyatt, G. H., & Birch, S. (2013). Managing moral hazard in motor vehicle accident insurance claims. *Journal of Public Health Policy*, *34*(2), 320–329. http://www.jstor.org/stable/43287966

Elvik, R., & Christensen, P. (2007). The deterrent effect of increasing fixed penalties for traffic offenses: The Norwegian experience. *Journal of Safety Research*, *38*(6), 689–695.

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

https://doi.org/10.1016/j.jsr.2007.09.007

Hassan, H. M., & Abdel-Aty, M. A. (2013). Exploring the safety implications of young drivers' behavior, attitudes and perceptions. *Accident Analysis & Prevention*, *50*, 361–370. https://doi.org/10.1016/j.aap.2012.05.003

Harrison, M. (2013). Evidence-free Policy: The Case of the National Injury Insurance Scheme. *Agenda: A Journal of Policy Analysis and Reform*, *20*(1), 55–69. http://www.jstor.org/stable/43200631

Insurance Institute for Highway Safety. (n.d.). State-by-state fatality statistics. Retrieved from https://www.iihs.org/topics/fatality-statistics/detail/state-by-state

Jafarpour, S., & Rahimi-Movaghar, V. (2014). Determinants of risky driving behavior: a narrative review. *Medical journal of the Islamic Republic of Iran*, *28*, 142.

Love, S., Truelove, V., Rowland, B., Kannis-Dymand, L., & Davey, J. (2022). Is all high-risk behavior premeditated? A qualitative exploratory approach to the self-regulation of habitual and risky driving behaviors. Transportation Research Part F: Traffic Psychology and Behaviour, 90, 312–325. https://doi.org/10.1016/j.trf.2022.09.002

Maloney & Campolo. (n.d.). No-fault insurance states. Retrieved from https://www.maloneyandcampolo.com/no-fault-insurance-states/

Shope, J. T. (2006). Influences on youthful driving behavior and their potential for guiding interventions to reduce crashes. *The Science of Safe Driving among Adolescents*, *12*(1).

The Zebra. (n.d.). Teen driving statistics. Retrieved from https://www.thezebra.com/resources/driving/teen-driving-statistics/

Truelove, V., Freeman, J., Szogi, E., Kaye, S., Davey, J., & Armstrong, K. (2017). Beyond the threat of legal sanctions: What deters speeding behaviors? *Transportation Research Part F: Traffic Psychology and Behaviour*, *50*, 128–136. https://doi.org/10.1016/j.trf.2017.08.008

Watson, B., Watson, A., Siskind, V., Fleiter, J., & Soole, D. (2015). Profiling high-range speeding offenders: Investigating criminal history, personal characteristics, traffic offenses, and crash history. Accident Analysis & Prevention, 74, 87–96. https://doi.org/10.1016/j.aap.2014.10.013

Winkler, K. (2015). Effects of no-fault auto insurance on safety incentives. SSRN Electronic Journal, 1-38. https://doi.org/10.2139/ssrn.2747006

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

World Population Review. (n.d.). Fatal car accidents by state 2022. Retrieved from https://worldpopulationreview.com/state-rankings/fatal-car-accidents-by-state

