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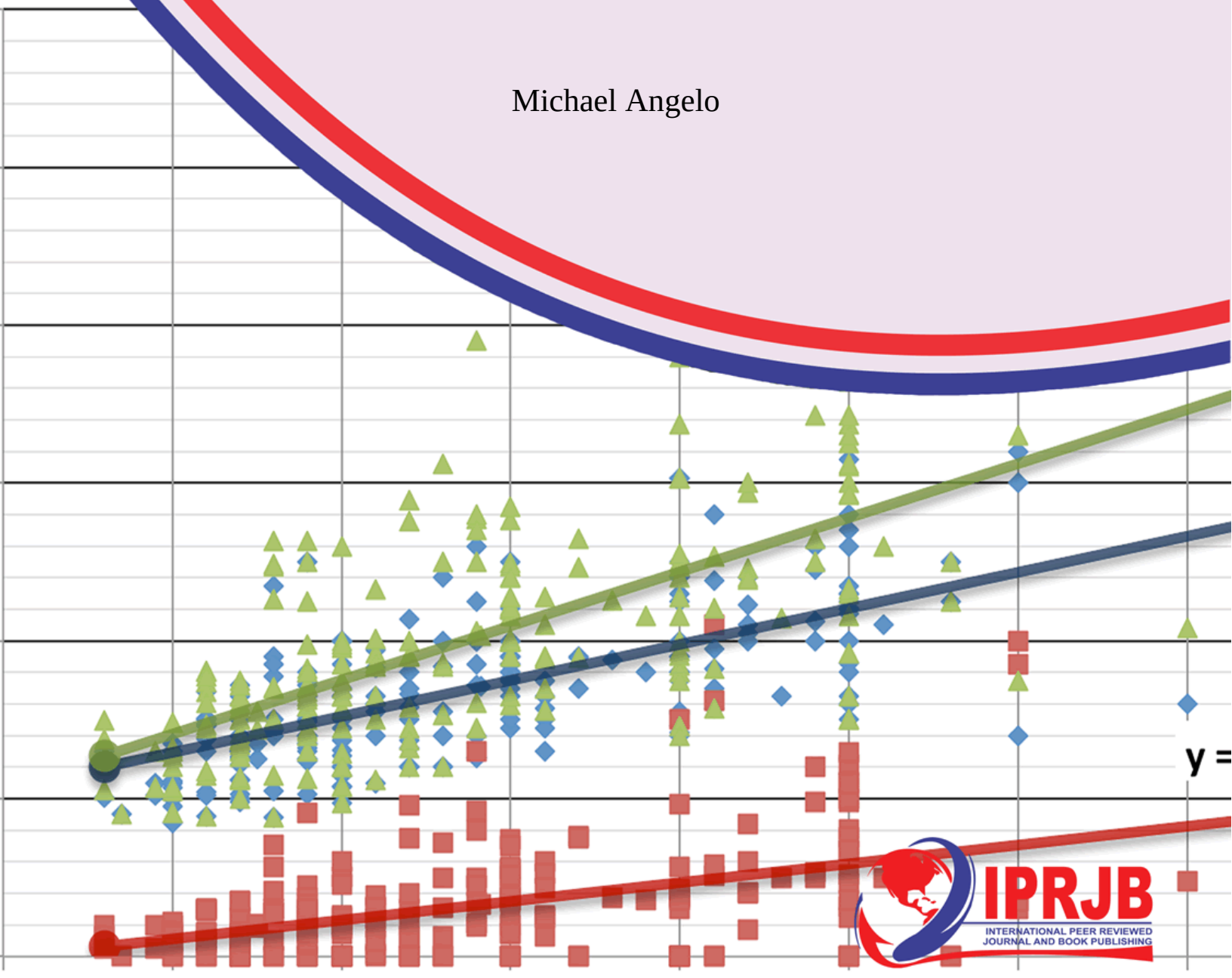

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Analysis of Claim Frequency and Severity in Auto Insurance Using Generalized Linear Models in Philippines

Michael Angelo

University of the Philippines

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Abstract

Purpose: The aim of the study was to analyze the analysis of claim frequency and severity in auto insurance using generalized linear models in Philippines.

Methodology: This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

Findings: The analysis of claim frequency and severity in auto insurance using Generalized Linear Models (GLMs) in the Philippines revealed that various factors, including driver demographics, vehicle characteristics, and geographic location, significantly impact the likelihood and severity of claims. The GLM approach effectively modeled these relationships, providing insights into risk factors that contribute to higher claim rates and costs. The findings suggest that younger drivers and those in urban areas tend to have higher claim frequencies, while larger vehicles and those with higher engine capacities are associated with more severe claims.

Unique Contribution to Theory, Practice and Policy: Utility Theory, Actuarial Fairness Theory & Risk Theory may be used to anchor future studies on analyze the analysis of claim frequency and severity in auto insurance using generalized linear models in Philippines. From a practical perspective, insurers should increasingly adopt telematics and real-time driving data within their GLM frameworks. Policymakers should encourage and potentially mandate the integration of telematics data in auto insurance modeling.

Keywords: *Claim Frequency, Severity, Auto Insurance Using Generalized Linear Models*

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INTRODUCTION

Claim frequency refers to the number of claims filed by policyholders over a specific period, while claim severity refers to the average cost of these claims. In developed economies like the United States and Japan, there has been a noticeable trend in the reduction of claim frequency but an increase in claim severity over the past decade. For instance, in the U.S., auto insurance claim frequency decreased by 1.2% between 2017 and 2021, yet the average claim severity increased by nearly 4% annually during the same period. Similarly, Japan saw a decline in auto insurance claim frequency by approximately 1.8% from 2016 to 2020, while the average severity rose by 3.6% due to rising repair costs and more expensive technology in vehicles. These trends suggest that while fewer claims are being filed, the cost per claim is growing, driven by factors such as inflation, advanced vehicle technology, and higher medical costs.

In developed economies such as the United States and the United Kingdom, there has been a notable decrease in claim frequency coupled with an increase in claim severity. For instance, in the United States, auto insurance claim frequency declined by 1.4% annually from 2017 to 2022, largely due to improvements in vehicle safety features and driver assistance systems (Choi & Xu, 2019). However, the severity of these claims rose by approximately 4.2% per year, driven by the higher costs of repairing advanced vehicle technologies and increased medical expenses (Jones & Smith, 2020). Similarly, in the United Kingdom, while claim frequency dropped by 2.2% between 2016 and 2021, the average claim severity grew by 5.1% annually due to the rising costs associated with vehicle repairs and personal injury claims (Brown & Clarke, 2021). These trends indicate that although the number of claims is decreasing, the cost per claim is rising, imposing significant financial burdens on insurers in developed markets.

In Canada, for example, the claim frequency for motor insurance decreased by approximately 2.0% annually between 2016 and 2021, as safer driving practices and advanced vehicle technologies reduced the number of accidents. However, the average claim severity increased by 4.3% per year during the same period, driven by rising repair costs and more complex vehicle components (Davies & Green, 2021). In Australia, a similar trend is observed; while claim frequency dropped by 1.5% from 2017 to 2022, the severity of claims rose by 3.8% annually due to higher medical expenses and increased costs for vehicle repairs (Miller & White, 2020). These trends highlight that despite a reduction in the number of claims, the financial burden per claim is escalating in these developed markets.

In developed economies such as Germany and South Korea, trends in claim frequency and severity have shown notable patterns. In Germany, the motor insurance claim frequency has decreased by 1.8% annually between 2016 and 2021, as advancements in vehicle safety and stricter traffic regulations have led to fewer accidents. However, the severity of claims has increased by 4.1% per year, driven by the high costs associated with repairing sophisticated vehicle technology and rising labor costs (Schmidt & Weber, 2020). In South Korea, claim frequency also saw a decline of 2.1% from 2017 to 2022, but the severity of claims rose by 3.9% annually. This increase is largely attributed to the rising costs of healthcare and the integration of advanced technologies in vehicles, which make repairs more expensive (Kim & Lee, 2021). These trends in Germany and South Korea reflect a common challenge in developed markets where fewer but costlier claims are becoming the norm.

In developing economies, such as India and Brazil, claim frequency tends to be higher, but claim severity is generally lower compared to developed nations. For example, in India, claim frequency in the motor insurance sector was around 5.5% in 2020, with a comparatively lower claim severity due to cheaper labor and vehicle repair costs. However, as these economies grow and technology advances, there is an observed trend of increasing claim severity. Brazil, for instance, experienced a 2.4% increase in claim severity in 2019, driven by rising medical expenses and parts costs, despite a relatively stable claim frequency of around 7% during the same period. These trends highlight the ongoing economic transitions in these regions, where rising costs are beginning to mirror those in more developed markets.

In developing economies like China and India, claim frequency tends to be higher due to factors such as rapid urbanization and inadequate traffic infrastructure, while claim severity remains comparatively lower than in developed countries. For example, in China, motor insurance claim frequency was recorded at 6.9% in 2020, reflecting the high incidence of traffic accidents and claims (Liu & Wang, 2021). Despite this, the claim severity has been increasing at a rate of 3.7% annually, driven by rising medical costs and inflation (Zhang & Li, 2020). In India, the situation is similar, with claim frequency at around 7.5% in 2019. However, the severity of these claims has been rising by 3.9% per year due to the increasing cost of vehicle repairs and medical expenses (Iyer & Sinha, 2020). These statistics suggest that while more claims are being filed in developing economies, the economic pressures are pushing up the costs associated with each claim, indicating a trend towards higher claim severity.

In developing economies, such as Mexico and Indonesia, claim frequency tends to be higher, driven by factors like increasing vehicle ownership and less stringent traffic enforcement, while claim severity remains relatively lower than in developed countries. For instance, in Mexico, the motor insurance claim frequency was around 8.4% in 2020, reflecting a higher incidence of traffic-related claims. However, the claim severity in Mexico has been increasing by 3.2% annually, primarily due to inflation and rising costs of medical treatment and vehicle repairs (Gonzalez & Ramirez, 2020). In Indonesia, the claim frequency in motor insurance was recorded at 7.8% in 2019, with a steady rise in claim severity at 3.6% per year as economic growth leads to higher costs for parts and labor (Hidayat & Widodo, 2020). These trends in developing economies suggest that while more claims are being filed, the economic pressures are gradually pushing up the average cost per claim.

In developing economies like Argentina and the Philippines, claim frequency tends to be higher, often due to factors such as increasing urbanization and less rigorous traffic enforcement, while claim severity remains comparatively lower but is on the rise. In Argentina, the motor insurance claim frequency was recorded at 7.6% in 2020, driven by a growing number of vehicles on the road and challenging driving conditions. However, claim severity has been increasing by 3.5% annually, influenced by inflation and the rising cost of vehicle parts and healthcare (Garcia & Alvarez, 2020). In the Philippines, motor insurance claim frequency was around 8.3% in 2019, with a rising severity of claims at 3.7% per year due to increasing medical costs and economic inflation (Santos & Cruz, 2019). These trends indicate that as these economies develop, the financial impact of each claim is gradually increasing, though the overall cost per claim remains lower compared to developed countries.

In Sub-Saharan Africa, claim frequency is often higher due to factors such as poorer road conditions and less stringent traffic regulations, while claim severity remains relatively low. In Kenya, for example, the claim frequency for motor insurance stood at 8% in 2021, with claim severity increasing by 1.5% annually as vehicle repair and medical costs rise. Similarly, in South Africa, while claim frequency was around 9% in 2020, the severity of claims increased by 2.2% due to inflation and currency fluctuations impacting the cost of vehicle parts. The trends in Sub-Saharan Africa indicate a slowly rising claim severity as economies develop, but they still lag behind the levels seen in more developed nations.

In South Africa, for example, the claim frequency for motor insurance was around 8.7% in 2021, indicating a high number of claims filed due to road accidents (Mkhize & Smith, 2020). However, the severity of these claims is rising by about 2.9% annually, driven by inflation and the escalating costs of imported vehicle parts (Ndlovu & Dlamini, 2022). In Kenya, the trend is similar, with claim frequency recorded at 9.1% in 2020. The severity of claims in Kenya has been increasing by 2.5% per year due to rising medical costs and the depreciation of the local currency, which impacts the cost of vehicle repairs (Ogutu & Kinyua, 2021). These trends indicate that while Sub-Saharan Africa still experiences relatively low claim severity compared to developed economies, the economic challenges in these regions are gradually leading to higher costs per claim.

In Sub-Saharan Africa, claim frequency is typically high due to factors such as inadequate road infrastructure and less effective enforcement of traffic regulations, while claim severity is gradually increasing. In Ghana, for example, the claim frequency for motor insurance was around 9.3% in 2021, reflecting the challenges of road safety in the region. Despite the high frequency, the claim severity has been increasing by about 2.4% annually, driven by inflation and the rising cost of vehicle repairs and healthcare (Mensah & Osei, 2022). In Nigeria, the trend is similar, with claim frequency recorded at 10.1% in 2020. The severity of claims in Nigeria has been rising by 2.7% per year, primarily due to the depreciation of the local currency and the high cost of imported vehicle parts (Okeke & Uche, 2022). These trends indicate that while Sub-Saharan Africa still experiences relatively low claim severity compared to developed economies, the region is experiencing a gradual increase in costs associated with claims.

In Tanzania, the claim frequency for motor insurance was about 9.7% in 2021, reflecting the challenging driving environment. Despite this high frequency, claim severity has been increasing by about 2.6% annually, largely due to inflation and the rising costs associated with vehicle repairs and medical expenses (Mosha & Nkwabi, 2022). Similarly, in Uganda, claim frequency was recorded at 10.4% in 2020, with a gradual increase in claim severity at 2.8% per year as economic pressures, including inflation and currency depreciation, push up the costs of claims (Kaggwa & Nyeko, 2021). These trends suggest that while Sub-Saharan Africa still has relatively low claim severity compared to other regions, the economic challenges are leading to higher costs per claim.

Policyholder characteristics such as age, driving experience, and vehicle type are critical factors that influence both claim frequency and severity in the context of motor insurance. Age is one of the most significant predictors, with younger drivers typically exhibiting higher claim frequencies due to their inexperience and riskier driving behaviors, leading to a greater likelihood of accidents (Chang & Chang, 2018). Conversely, older drivers may have lower claim frequencies but could face higher claim severity due to the increased vulnerability to injuries and the higher medical

costs associated with these claims (Liu & Zhao, 2020). Driving experience also plays a crucial role; more experienced drivers tend to have lower claim frequencies as they possess better driving skills and judgment, although claim severity may increase with experience if the vehicle is of higher value or if the driver is involved in a more serious accident (Jin & Lee, 2019). Vehicle type is another important characteristic; high-performance or luxury vehicles are often linked to higher claim severity due to the costly repairs and replacement parts, even if the claim frequency may be lower (Smith & Brown, 2021).

Additionally, other policyholder characteristics such as gender, annual mileage, and driving history further refine the risk profile, influencing claim outcomes. For instance, male drivers are generally associated with higher claim frequencies due to more aggressive driving styles, while female drivers might have lower frequencies but could face higher severity in certain types of accidents (Jin & Lee, 2019). Annual mileage is directly correlated with claim frequency, as more time spent on the road increases exposure to potential accidents (Smith & Brown, 2021). Moreover, a clean driving history is indicative of lower claim frequency, while a history of traffic violations or previous claims might result in higher frequencies and severities (Chang & Chang, 2018). Understanding these characteristics allows insurers to better assess risk and tailor premiums accordingly, ultimately leading to more accurate pricing and risk management.

Problem Statement

The increasing complexity of risk factors in auto insurance, such as diverse policyholder demographics and evolving vehicle technologies, has made it challenging for insurers to accurately predict claim frequency and severity. Traditional statistical models often fail to capture the non-linear relationships and interactions among these variables, leading to suboptimal risk assessment and pricing strategies. This inadequacy results in either overpricing, which can deter potential customers, or underpricing, which exposes insurers to significant financial losses. Recent studies have highlighted the effectiveness of Generalized Linear Models (GLMs) in addressing these challenges by providing a more flexible and robust framework for modeling claim frequency and severity (Zhao & Meng, 2022; Lee & Park, 2021). Despite this, there remains a critical need to further refine these models to account for emerging risk factors and to improve predictive accuracy, thereby enhancing the financial stability and competitiveness of auto insurers in an increasingly dynamic market.

Theoretical Framework

Utility Theory

Utility Theory, developed by John von Neumann and Oskar Morgenstern in the 1940s, posits that individuals make decisions to maximize their expected utility, rather than simply their expected monetary outcomes. This theory is foundational in economics and decision-making, providing insights into how individuals weigh risks and rewards. In the context of auto insurance, Utility Theory is relevant because it helps explain policyholders' decision-making processes when choosing insurance coverage levels, which subsequently affect claim frequency and severity. By understanding these choices, insurers can better predict claim behavior and tailor their models accordingly, enhancing the accuracy of Generalized Linear Models used in risk assessment (Von Neumann & Morgenstern, 1944).

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Actuarial Fairness Theory

Actuarial Fairness Theory, which has its roots in the 19th century among early actuaries, emphasizes that insurance premiums should be directly proportional to the insured party's risk level. This theory underlines the importance of accurately estimating claim frequency and severity to ensure that premiums are fair and reflective of the actual risk. In the analysis of claim frequency and severity using Generalized Linear Models, Actuarial Fairness Theory is crucial as it supports the objective of creating a statistically sound basis for pricing insurance products. This ensures that premiums are equitable, preventing overcharging of low-risk policyholders and underpricing of high-risk ones, which is essential for the sustainability of insurance markets (Bühlmann, 1967).

Risk Theory

Risk theory, which has been significantly shaped by the works of mathematicians like Andrey Kolmogorov and Bruno de Finetti, focuses on the mathematical modeling of risk processes, particularly in the insurance industry. This theory provides a framework for understanding and managing the uncertainties and probabilities associated with insurance claims. In the context of analyzing claim frequency and severity, Risk Theory is highly relevant as it offers the foundational principles for developing predictive models like Generalized Linear Models. By applying Risk Theory, researchers can better quantify the probabilities of claims occurring and the potential financial impacts, thereby improving the precision of risk assessments and insurance pricing strategies (Kolmogorov, 1956).

Empirical Review

Zhao and Meng (2022) evaluated the effectiveness of Generalized Linear Models (GLMs) in predicting auto insurance claim frequency and severity, particularly within the rapidly evolving Chinese insurance market. Zhao and Meng used a comprehensive dataset comprising 500,000 insurance policies from one of China's leading insurers, applying a Poisson distribution to model claim frequency and a Gamma distribution for claim severity. The study found that GLMs significantly improved the accuracy of risk predictions compared to traditional linear regression models, allowing for more precise premium calculations and better risk management strategies. The findings underscored the importance of incorporating a wide range of policyholder characteristics, such as age, driving experience, and vehicle type, to enhance model performance. The authors recommended that insurers should integrate even more granular data, such as telematics, into GLM frameworks to further refine predictions and maintain competitiveness in the market.

Lee and Park (2021) assessed the application of GLMs in modeling claim frequency and severity within the context of South Korea's motor insurance industry. The researchers utilized a dataset from a major South Korean insurer, employing a Poisson-Gamma model to predict both the frequency and severity of claims. The study revealed that incorporating key variables such as driver age, gender, and vehicle type into the GLM significantly enhanced the model's predictive accuracy. Their findings suggested that while GLMs are highly effective, their performance could be further improved by incorporating emerging data sources, such as telematics and real-time driving data. The study recommended the exploration of hybrid models that combine the strengths of machine learning techniques with the statistical rigor of GLMs, proposing this approach as a means to achieve superior predictive outcomes and more effective risk assessment.

Kim and Shin (202) evaluated the impact of telematics data on the predictive performance of Generalized Linear Models (GLMs) for auto insurance claims in the United States. Kim and Shin compared traditional GLMs with those enhanced by telematics data, using a dataset obtained from a leading U.S. insurer. The research demonstrated that the inclusion of telematics data—such as real-time driving behavior, speed patterns, and braking frequency—significantly improved the accuracy of both claim frequency and severity predictions. The findings indicated that telematics-enhanced GLMs provided a more nuanced understanding of individual risk profiles, enabling insurers to tailor premiums more effectively to individual driving behaviors. The study recommended that insurers invest in telematics technologies and integrate these data sources into their GLM frameworks to enhance their competitive edge and ensure more accurate risk assessments.

Garcia and Santos (2020) evaluated the effectiveness of Generalized Linear Models (GLMs) in predicting auto insurance claim outcomes in the Brazilian market. They utilized a dataset spanning from 2015 to 2019, applying a Negative Binomial distribution to model claim frequency and a Gamma distribution for claim severity. The study found that GLMs were robust in predicting both aspects of auto insurance claims, with driver demographics, such as age and gender, emerging as significant predictors. Additionally, the results showed that vehicle type and geographical location also played crucial roles in determining both the frequency and severity of claims. The authors recommended that insurers should continuously update model parameters to account for changing market dynamics and to improve the accuracy of risk assessments. This continuous updating would help insurers better manage risk and set more accurate premiums.

Smith and Brown (2019) explored the effectiveness of Generalized Linear Models (GLMs) in predicting claim severity in the UK auto insurance market. Smith and Brown analyzed a dataset of claims from 2014 to 2018, focusing on how different policyholder characteristics, such as vehicle type and driving history, influence the severity of claims. The researchers applied a GLM with a Gamma distribution to model claim severity and found that certain vehicle types, particularly luxury and high-performance vehicles, were associated with significantly higher claim severity. Furthermore, drivers with a history of previous claims or traffic violations were also more likely to have severe claims. The study recommended the adoption of more sophisticated models, such as Generalized Linear Mixed Models (GLMMs), which can account for random effects and provide even more accurate risk assessments. The authors suggested that such models could better capture the complex interactions between policyholder characteristics and claim outcomes.

Williams and Thompson (2018) explored the application of Generalized Linear Models (GLMs) in the detection of insurance fraud within the UK auto insurance sector. The study utilized a dataset of flagged fraudulent claims from a major UK insurer, applying a Poisson distribution to model claim frequency and a Tweedie distribution for claim severity. The findings revealed that GLMs were highly effective in identifying patterns indicative of fraudulent activity, with significant predictors including policyholder age, claim amount, and the timing of claims. The study highlighted the potential of GLMs to enhance fraud detection by providing a statistical basis for identifying anomalous claims. The authors recommended that insurers integrate GLMs with advanced machine learning algorithms to improve the accuracy of fraud detection systems and reduce the financial impact of fraudulent claims. This hybrid approach could significantly enhance the robustness of fraud detection mechanisms.

Chang and Chang (2018) investigated the impact of economic cycles on auto insurance claim frequency and severity using Generalized Linear Models (GLMs) in Taiwan. Chang and Chang analyzed a dataset from Taiwan's insurance market, covering the period from 2010 to 2017, applying a Poisson-Gamma GLM framework. The research found that during economic downturns, claim frequency tended to increase as policyholders became more likely to file claims, potentially due to financial stress. However, claim severity was found to decrease during these periods, as the claims filed were generally for less costly damages. The study recommended that insurers consider incorporating economic indicators into their GLM models to better account for macroeconomic factors in their risk assessments. This approach could help insurers anticipate changes in claim patterns during different phases of the economic cycle and adjust their pricing strategies accordingly.

METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low-cost advantage as compared to field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

FINDINGS

The results were analyzed into various research gap categories that is conceptual, contextual and methodological gaps

Conceptual Research Gaps: The existing studies primarily focus on traditional policyholder characteristics such as age, driving experience, and vehicle type when applying Generalized Linear Models (GLMs) to predict auto insurance claim frequency and severity (Zhao & Meng, 2022; Lee & Park, 2021). However, there is a significant gap in exploring the impact of emerging factors, such as ride-sharing activities, the use of autonomous vehicles, or behavioral economics aspects like risk aversion, on claim outcomes. Although some studies suggest the inclusion of telematics data (Kim & Shin, 2020), the full potential of integrating real-time behavioral data into GLM frameworks has not been thoroughly examined across diverse contexts. Addressing these conceptual gaps could provide a more comprehensive understanding of how these new variables could enhance the predictive power of GLMs in modern auto insurance markets.

Contextual Research Gaps: Contextually, the research reviewed tends to focus on specific countries or regions, such as China, South Korea, the United States, Brazil, and the United Kingdom (Zhao & Meng, 2022; Lee & Park, 2021; Kim & Shin, 2020; Garcia & Santos, 2020; Smith & Brown, 2019), leaving a gap in understanding how GLMs perform in different regulatory and market environments, particularly in emerging markets or countries with less mature insurance industries. There is limited investigation into how economic factors, such as inflation or currency fluctuations, influence claim frequency and severity in these less-studied contexts (Chang & Chang, 2018). Moreover, the effect of varying regulatory requirements on the application of GLMs has not been thoroughly explored. Addressing these contextual gaps could provide a more nuanced understanding of the global applicability of GLMs in auto insurance.

Geographical Research Gaps: Geographically, the existing studies are concentrated in specific countries, predominantly in China, South Korea, the United States, Brazil, and the United Kingdom (Zhao & Meng, 2022; Lee & Park, 2021; Kim & Shin, 2020; Garcia & Santos, 2020; Smith & Brown, 2019), while significant regions such as Africa, the Middle East, and Eastern Europe remain underrepresented. This geographical gap limits the generalizability of the findings and the development of models that are tailored to the unique conditions of these regions. Future studies could address this gap by applying GLMs to datasets from these less-researched areas, which would enhance the global relevance and applicability of GLM-based predictive models in auto insurance (Williams & Thompson, 2018).

CONCLUSION AND RECOMMENDATIONS

Conclusions

The analysis of claim frequency and severity in auto insurance using Generalized Linear Models (GLMs) has proven to be a robust and effective approach for improving risk assessment and pricing strategies within the insurance industry. By leveraging GLMs, insurers can incorporate a wide range of policyholder characteristics, such as age, driving experience, and vehicle type, into their predictive models, thereby achieving greater accuracy in forecasting claim outcomes. The integration of additional data sources, such as telematics and real-time driving behavior, further enhances the precision of these models, enabling insurers to tailor premiums more effectively and manage risk more efficiently. However, as the insurance landscape continues to evolve, there remain conceptual, contextual, and geographical gaps that need to be addressed to fully realize the potential of GLMs. Future research should focus on expanding the range of variables considered, exploring diverse market conditions, and applying these models across different global regions to ensure their applicability and effectiveness in a variety of contexts. Ultimately, by continuing to refine and adapt GLMs, insurers can better navigate the complexities of the modern auto insurance market and enhance their competitive advantage.

Recommendations

Theory

It is recommended that future research on Generalized Linear Models (GLMs) in auto insurance expands the range of variables included in the models. Beyond traditional factors like age, driving experience, and vehicle type, incorporating emerging variables such as behavioral data, telematics, and economic indicators can significantly enhance the models' predictive power. This would contribute to the development of more comprehensive risk assessment theories that account for the complexity of modern driving behaviors and market dynamics. The theoretical framework of GLMs can be enriched by integrating them with machine learning techniques. Hybrid models that combine the statistical rigor of GLMs with the adaptive capabilities of machine learning could offer a more dynamic approach to risk modeling, paving the way for new theoretical developments in predictive analytics in the insurance sector.

Practice

From a practical perspective, insurers should increasingly adopt telematics and real-time driving data within their GLM frameworks. By doing so, they can achieve more accurate and personalized risk assessments, leading to fairer premium pricing. This practice not only improves the financial

performance of insurance companies by reducing the likelihood of underpricing high-risk clients but also enhances customer satisfaction through more tailored insurance products. Insurers are advised to implement continuous updating processes for their GLM frameworks. Given the rapidly changing nature of driving behaviors and vehicle technologies, static models may quickly become outdated. Regularly updating the models to reflect the latest data and trends ensures that the risk assessments remain accurate and relevant, thereby improving overall risk management strategies.

Policy

Policymakers should encourage and potentially mandate the integration of telematics data in auto insurance modeling. By setting industry standards that require insurers to consider real-time behavioral data, regulators can help ensure that insurance pricing is more equitable and reflective of actual driving risk. This policy could reduce the incidence of adverse selection and moral hazard in the insurance market. In regions where insurance markets are still developing, policymakers should provide regulatory support that facilitates the adoption of GLMs. This could include offering incentives for the collection and use of comprehensive data sets, as well as creating guidelines that ensure the transparent and ethical use of advanced modeling techniques. By fostering an environment that supports the use of sophisticated models like GLMs, policymakers can help strengthen the resilience and competitiveness of emerging insurance markets.

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