ANALISIS POLA KECELAKAAN DAN PERILAKU MENGEMUDI BERISIKO PADA KECELAKAAN ANTAR-MOBIL

TESIS

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ABSTRAK

Kecelakaan lalu lintas antar-mobil di Indonesia masih menjadi permasalahan serius yang menimbulkan korban jiwa dan kerugian materi setiap tahunnya. Penelitian ini bertujuan untuk menganalisis pola dan faktor penyebab kecelakaan antar-mobil berdasarkan rekaman video, menilai pengaruh perilaku mengemudi berisiko terhadap tingkat keparahan kecelakaan, dan merumuskan rekomendasi sistem keselamatan aktif berbasis hasil analisis tersebut. Data penelitian terdiri dari video kecelakaan yang diperoleh dari media sosial dan Kuesioner yang diisi oleh pengemudi mobil di Indonesia. Hasil penelitian menunjukkan bahwa kecelakaan didominasi oleh benturan depan yang berkaitan dengan kegagalan menjaga jarak aman dan kesalahan menilai kecepatan kendaraan lain. Sebagian besar insiden terjadi pada cuaca cerah, siang hari, dan jalan lurus. Faktor pemicu utama meliputi kecepatan tinggi, kesalahan menilai kecepatan, serta manuver tidak aman seperti pindah jalur atau menyalip. Kondisi jalan berlubang dan licin turut memperbesar peluang kehilangan kendali sebelum terjadinya tabrakan. Berdasarkan hasil analisis statistik terhadap data kuesioner, perilaku berisiko paling sering muncul pada pengemudi berusia 20-30 tahun, laki-laki, dan yang memiliki riwayat kecelakaan berulang. Namun, tidak ditemukan bukti yang cukup untuk menyatakan bahwa perilaku mengemudi berisiko berkontribusi secara signifikan terhadap kecelakaan antar-mobil. Temuan ini menunjukkan bahwa kecelakaan juga dapat terjadi pada pengemudi dengan perilaku relatif aman akibat kondisi lingkungan, jalan dan kondisi lalu lintas. Berdasarkan pola kecelakaan dan karakteristik risiko yang teridentifikasi, teknologi keselamatan aktif seperti *Driver Monitoring System* (DMS), *Forward Collision Warning* (FCW), *Automatic Emergency Braking* (AEB), *Lane Departure Warning* (LDW), *Intelligent Speed Assistance* (ISA), *Traffic Sign Recognition* (TSR), *Adaptive Cruise Control* (ACC), *Blind Spot Monitoring* (BSM), dan *Traction Control System* (TCS) dinilai sangat potensial untuk diterapkan dalam upaya menekan angka kecelakaan antar-mobil di Indonesia.

Kata Kunci: Kecelakaan antar-mobil, Perilaku Berisiko, *Driver Behaviour Questionnaire (DBQ)*, Teknologi keselamatan aktif.

ABSTRACT

Car-to-car traffic accidents in Indonesia remain a serious problem, resulting in fatalities and substantial material losses each year. This study aims to analyze accident patterns based on video recordings of car-to-car crashes, evaluate the role of risky driving behavior in accident severity, and formulate recommendations for active safety technologies based on the identified risk characteristics. The research data consist of car-to-car accident videos obtained from social media platforms and driving behavior questionnaires completed by car drivers in Indonesia. The results indicate that car-to-car accidents are predominantly characterized by rear-end and head-on collisions, reflecting failures to maintain safe following distances and misjudgments of other vehicles' speeds. Most accidents occur under clear weather conditions, during daytime, and on straight road segments in both urban and rural areas. The main triggering factors include high driving speed, errors in speed estimation, and negligence during maneuvers such as lane changing or overtaking. Poor road conditions, including potholes and slippery surfaces, further increase the likelihood of loss of vehicle control prior to a collision. Based on statistical analysis of questionnaire data, risky driving behaviors were most frequently observed among drivers aged 20–30 years, male drivers, and those with a history of repeated accidents. However, there was insufficient evidence to indicate that risky driving behaviors contribute significantly to car-to-car accidents. These findings suggest that accidents can also occur among drivers with relatively safe driving behaviors due to environmental factors, road conditions, and traffic circumstances. Based on the identified accident patterns and risk characteristics, active safety technologies such as Driver Monitoring System (DMS), Forward Collision Warning (FCW), Automatic Emergency Braking (AEB), Lane Departure Warning (LDW), Intelligent Speed Assistance (ISA), Traffic Sign Recognition (TSR), Adaptive Cruise Control (ACC), Blind Spot Monitoring (BSM), and Traction Control System (TCS) are considered highly potential for implementation to reduce the incidence of car-to-car accidents in Indonesia.

Keywords: *Car-to-car Accident, Risky Behavior, Driver Behavior Questionnaire* (DBQ), *Active Safety.*