

Risk of collisions between high-velocity runaway vehicles and motorcycles/motorized bicycles on public roads

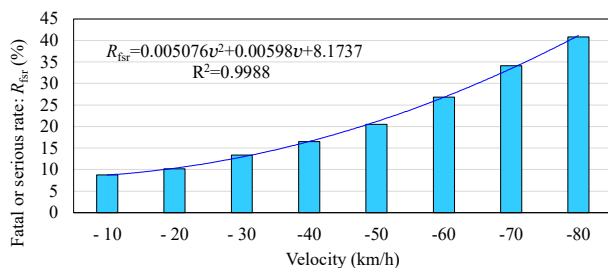
- Risk assessment based on the personal injury level of motorcycle/motorized bicycle riders -

Yasufumi Sekine ¹⁾

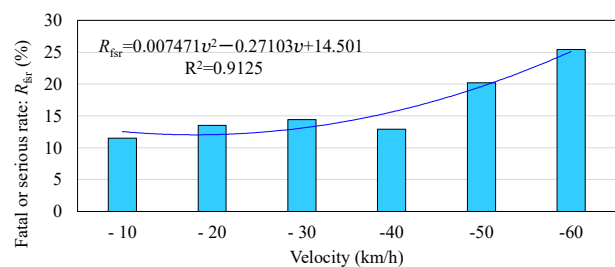
1) Fukuyama University, Faculty of Engineering, Electrical and Electronic Engineering Dept
1 Sanzo 1, Gakuencho, Fukuyama, Hiroshima, 729-0292, Japan (E-mail: sekine_y@fukuyama-u.ac.jp)

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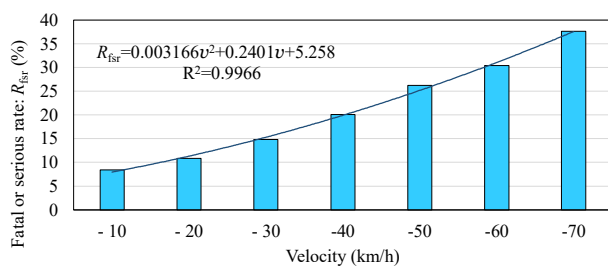
In recent years, there has been remarkable progress in technology related to the stability of vehicles when driving at high-velocity. Many vehicles that even Inexperienced drivers who have only recently obtained a driver's license can easily drive at high-velocity are sold on the market and are now driving on public roads. One of the original goals behind the development of such high-performance vehicles was to improve vehicle safety and reduce the occurrence of accidents. However, recently, some users have been driving their vehicles at high-velocity significantly exceeding the velocity limit on public roads in order to enjoy the high performance of their vehicles, causing tragic fatal accidents. This has become a social problem. In addition, with regard to traffic accidents caused by malicious driving, a new crime of dangerous driving resulting in death or injury was created in the 2001 amendment to the Penal Code with the aim of imposing stricter penalties. However, the current crime of dangerous driving resulting in death or injury does not apply if the court determines that "it was not difficult to control the vehicle," even if the accident occurred at a velocity significantly exceeding the velocity limit. For this reason, there has been criticism that the bill is "far removed from common sense among the public." The Ministry of Justice established a study group in February 2024 to discuss revising the requirements for applying the crime of dangerous driving resulting in death or injury, and compiled a draft report in November, which stated, among other things, that "any velocity above a certain level will be subject to uniform punishment." Furthermore, on September 29, 2025, the Legislative Council, an advisory body to the Minister of Justice, presented specific proposed numerical standards. For example, proposals have been put forward such as "On public roads where the velocity limit is 60km/h or less, dangerous driving resulting in death or injury will be charged for velocity over 40km/h or 50km/h." In traffic accidents, collision velocity is an important factor that determines the severity of injuries sustained by vehicle occupants and pedestrians. In a previous study, the author used statistical traffic accident data to derive an approximate formula for the relationship between vehicle velocity and fatal or serious injury rates for vehicle-to-vehicle collisions and vehicle-pedestrian collisions, and clarified the danger of collisions occurring at velocity significantly exceeding the velocity limit. However, there have been cases where motorcycles and motorized bicycles have become victims of accidents caused by high-velocity runaway vehicles. For this reason, this paper analyzes traffic accident statistics data on motorcycles and motorized bicycles, and attempts to numerically clarify the risk of accidents caused by high-velocity runaway vehicles based on the relationship between injury severity and collision velocity.



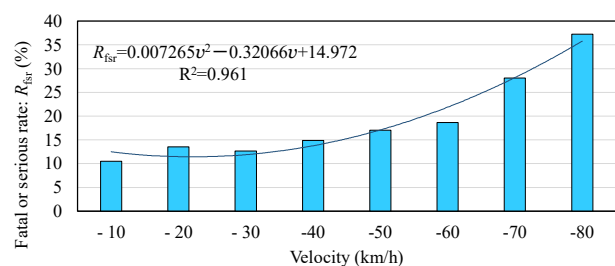
(a) Sporty vehicle to motorized bicycle collision



(a) Sporty vehicle to motorcycle collision



(b) Large sized sedan to motorized bicycle collision



(b) Large sized sedan to motorcycle collision

Fig.1 Velocity and injury level (Motorized bicycles)

Fig.2 Velocity and injury level (Motorcycles)