

Damage assessment of cyclists collided by high-velocity runaway vehicle

- Risk assessment between high-velocity runaway vehicle and bicycle collision from accident data analysis -

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In recent years, a growing social problem has arisen when some irresponsible users, having acquired high-performance vehicles, drive recklessly on public roads at velocity far exceeding the velocity limit in order to satisfy their personal desire to enjoy driving at high velocity, resulting in tragic fatal accidents. Then, in 2024, the Ministry of Justice established a study group to discuss revising the application requirements for the crime of causing death or injury through dangerous driving. In previous research, the author analyzed accident statistics data on the relationship between collision velocity and injury level in collisions of 4-wheeled vehicles, motorcycles, pedestrians etc., and by deriving an approximate formula, clarified the harmfulness to victims caused by collisions at speeds significantly exceeding the velocity limit. However, cyclists have also been injured in collisions caused by high-velocity runaway vehicles. So, this study analyzed accident statistics to examine the relationship between vehicle collision velocity and the fatal or serious injury rates among cyclists, and clarified the dangers of high-velocity runaway vehicles to cyclists from the perspective of injury level. Furthermore, the author attempted to examine the appropriateness of applying the charge of dangerous driving resulting in death or injury based on the collision velocity.

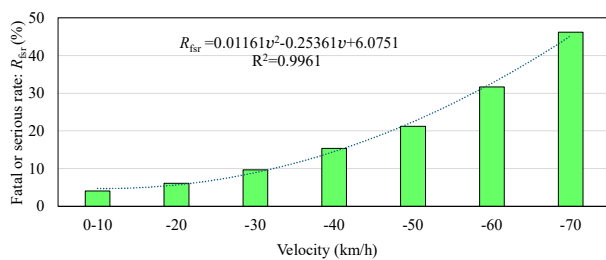


Fig.1 Velocity and injury level (Light motor sedan)

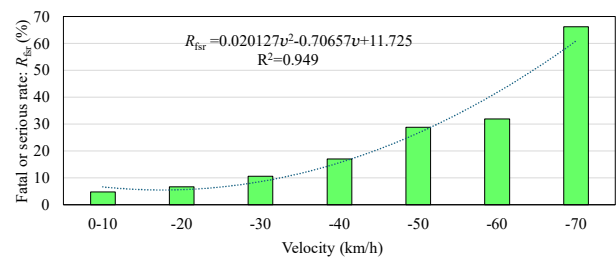


Fig.4 Velocity and injury level (SUV)

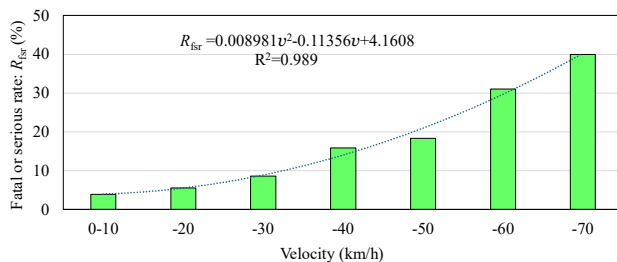


Fig.2 Velocity and injury level (Sporty type vehicle)

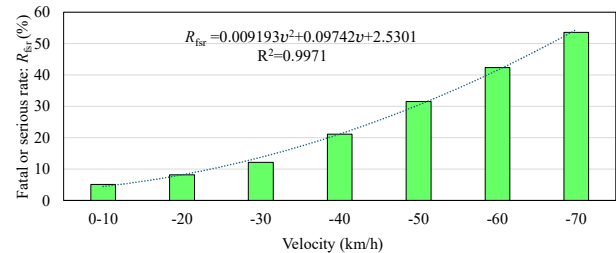


Fig.5 Velocity and injury level (1BOX)

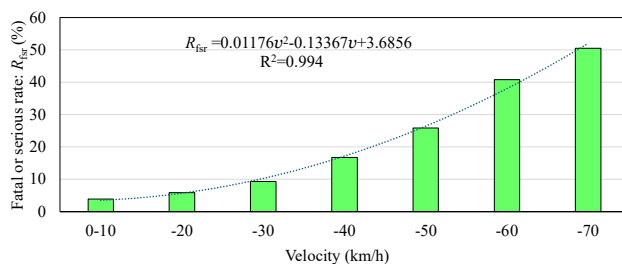


Fig.3 Velocity and injury level (Large sized sedan)

Table 1 Number of cyclists' injuries by velocity

		0-10 km/h	-20 km/h	-30 km/h	-40 km/h	-50 km/h	-60 km/h	-70 km/h	-80 km/h	-90 km/h	-100 km/h
Light motor sedan	Fatal or Serious	681	697	710	691	374	183	67	19	4	0
	Slight	16215	10732	6649	3824	1393	396	78	18	16	0
Sporty type vehicles	Fatal or Serious	143	124	103	131	94	91	56	40	8	15
	Slight	3573	2135	1103	698	419	202	84	25	7	4
Large sized sedans	Fatal or Serious	666	541	436	440	293	222	99	56	10	6
	Slight	16551	8591	4220	2178	839	321	97	32	17	1
SUV	Fatal or Serious	483	413	316	268	197	81	53	15	3	4
	Slight	9570	5769	2679	1305	487	173	27	8	11	1
1BOX	Fatal or Serious	941	898	664	633	404	201	69	16	5	0
	Slight	17819	10147	4813	2370	877	274	60	11	13	0