

Analysis of Factors Leading to Disregarding Traffic Signal Accidents

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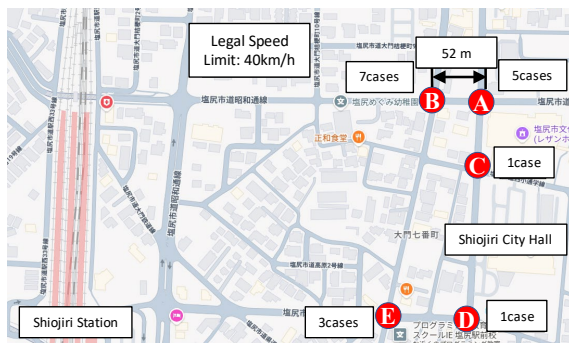
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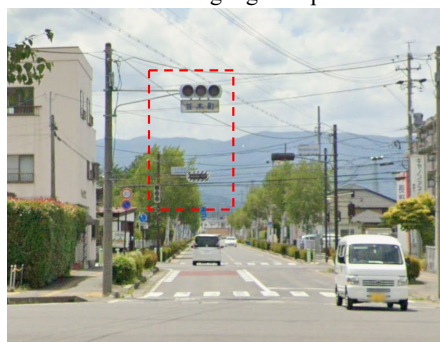
In this study, high-accident locations in urban areas where accidents caused by drivers' disregarding traffic signals frequently in Nagano Prefecture were investigated and analyzed to clarify contributing factors. The analysis covered 14 years of accident data from Nagano Prefecture (2010–2023), focusing on accidents in which the first party involved was a four-wheeled vehicle and the terrain type was classified as “densely populated urban areas” or “other urban areas.” The results showed that in the area around Shiojiri Station, the proportion of accidents caused by disregarding traffic signal was approximately 25%, which is higher than in nearby other areas.

Consequently, after conducting a detailed analysis of disregarding traffic signal violation accidents across the entire city of Shiojiri, two areas were identified where such accidents occur frequently. The areas with the highest incidence were the vicinity of Shiojiri City Hall (17 accidents as shown in figure 1) and the Takaidecade intersection on National Route 19 (19 accidents as shown in figure 2). Accordingly, on-site investigations were conducted at these two locations to analyze the factors contributing to disregarding traffic signal violations.

The results revealed that these locations are characterized by short intervals between traffic lights at intersections and the presence of a large intersection further ahead. It is considered that short intervals between traffic signals make drivers more likely to perceive these intersections as a single unit, while the presence of a major intersection ahead causes them to overlook the preceding intersection, which are the primary contributing factors to these accidents. As a countermeasure, there is a need for road signs that make it easier to distinguish between two nearby intersections, as well as information that prioritizes traffic signal recognition.

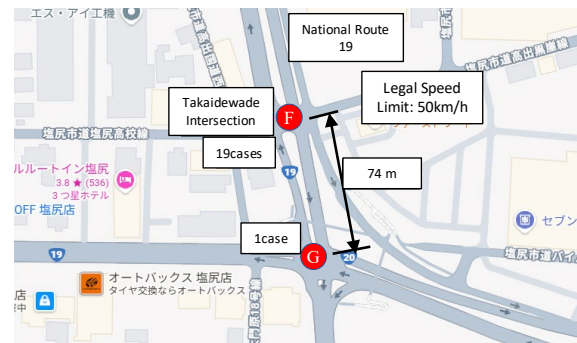


(a) Disregarding traffic signal accident sites
Source: google map

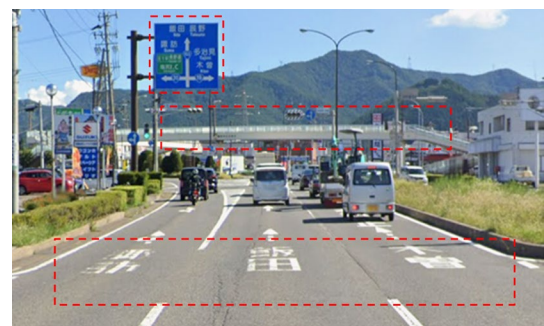


(b) Intersection ㊦ toward ㊧

Fig.1 Intersections around Shiojiri City Hall



(a) Disregarding traffic signal accident sites
Source: google map



(b) Intersection ㊦ toward ㊧

Fig.2 Takaidecade intersection on National Route 19