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A GIS Approach to Evaluate Infrastructure Variables Influencing the Occurrence of Traffic Accidents in Urban Roads

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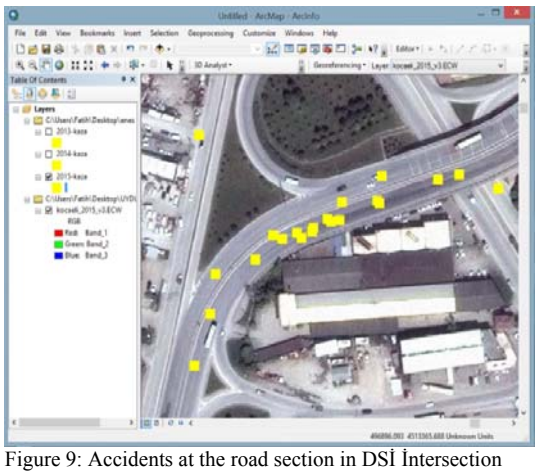

Figure 9: Accidents at the road section in DSİ İntersection

Another road section that is marked as high risk on the density map, is known as "Akmeşe-Serdivan bağlantı yolu" region (Figure 10). It is believed that vertical curb geometry and reduced sight distance yielded higher risk for the users.

Figure 10: Road section in Akmeşe- Serdivan access road

This vertical curb is a striking sample for obstructing of vehicle's (or driver's) sight in the concavity. As it can be seen from the Fig.10, vehicles on the road are not able to be seen by drivers at this "gap" area. Hence, the journey on this road segment carries significant accident risks depending on lack of visibility. Terrain model analysis which was performed in the case study shows that the dip caused to sightless can be prevented readily. Examination of profiles yielded that the cavity at vertical curve on the road is rectifiable with a small amount filling. It is known that roadways which have many "blind" points as in our example can easily be fixed without high costs and avoided from accidents caused by concavity.

Conclusion

GIS-based approach has been a popular tool for visualization of accident data and analysis of hot spots in motorways. Accident analysis studies aim at the identification of high rate accident locations and safety deficient areas on the motorways. A GIS-based approach was used to tackle the traffic safety issues in urban roads in Kocaeli city. This study aims at highlighting the influential geometrical factors to accident occurrence at hazardous locations of local urban roads in the region. The paper will focus on identifying hazardous locations using spatial density functions in urban areas and the correlation of accident characteristics with geometrical elements of the roads. When the road sections (or spot locations) containing the studied hazardous locations are determined, these areas are investigated from the geometrical design standards. It is worth mentioning here that further improvements for geometric design of the detected road sections can reduce fatal accident rates in the region.

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