

**Research (5)**

**The Spatial Analysis of the Road Traffic Crashes in Saudi Arabia (2005 – 2015) Using the Geographic Information Systems Techniques**

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## **Abstract**

The study dealt with the characteristics of the roads' network in Saudi Arabia, the development the number of traffic crashes and their spatial distribution, focusing on the spatial variations of traffic crashes, the factors affecting them, conducting the spatial analyses, and identifying the areas liable to the frequent crashes and the economic, environmental and social impacts of them.

The study came to several results, including:

- The number of the crashes in Saudi Arabia amounted to about 514000 in 2015, being 320.9% of the figure of 1994, with annual growth rate of 14.6%
- Al Riyadh Administrative Region recorded the highest number of crashes (28.7% of the total) as well as the severest ones (29.7%).
- The human factor was found to be the main cause of crashes, as it accounts for 23.9% of the traffic violations in Saudi Arabia.
- The standard distance analysis showed that the traffic crashes are concentrated in the cities of Al Riyadh, Dammam, Mecca and Medina, the roads connecting them and the cities lying on these roads.
- Najran and Al Jawf Administrative Regions have the highest rates of severity, if the numbers of deaths are compared to that of injuries.

The study recommends the following:

- Setting an integrated national plan to confront the problem of road traffic crashes, declaring the political commitment to this plan, an implementation program and the continual follow up of the implementation.
- The regular update of the proposed map of the risks on roads that shows the "black spots" of frequent crashes, a task that requires the use of the geographic information systems techniques.

- Taking immediate and effective actions to monitor and control speeds, constructing bumps, multi-lane roadways separated by a median with lighting columns and the enforcement of safety.