Title: The influence of a bypass road on road safety

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Background

One of the principal reasons for the construction of bypass roads in towns is the removal of through-traffic from the center of a town or city to the periphery, for the purpose of improving the flow of traffic, reducing travel times, and decreasing road accidents. Bypass roads, however, also have environmental and economic consequences. On the one hand, they reduce noise and pollution emissions along the previous route. On the other hand, such projects are often accompanied by concerns on the part of local proprietors and businesses regarding the scope of their business revenues, the value of their properties, and the impact of the road on land uses. These changes in land use arise the question whether the construction of the bypass decrease road crashes and improve road safety or shift the problem from site to other sites?

Aim

This paper analyzes the effect of bypass construction on road safety, specifically crash rates on bypass segments and in bypassed communities. It further investigates the effect of bypass construction on those communities’ economic development through changes in the number and spatial distribution of businesses and residential development, and examines whether these changes affect the road-safety level.

Methodology

A descriptive longitudinal analysis approach is conducted investigating changes that have occurred over a length of time both previous to and subsequent to the construction of the bypass. The descriptive longitudinal analysis investigates changes that occurred over time in relation to the construction of the first bypass road in 1952 and the second bypass in 1996. The research period for this case study is 1945-2018. The study focuses on Arab cities in the Galilee region of Israel.

Results

A summary of the findings of this study reveals that the construction of the two bypass roads had significantly affected the town in all areas examined: the land spatial distribution of residential housing and business activities, land uses and road crashes.

The results show that bypass construction does not necessarily reduce overall crash frequencies or crash rates. It merely shifts road crashes from the highways (the bypass roads) to inner roads (bypassed) and from there to local traffic, with no significant reduction.