

Are highway constructions associated with increased transport incidents? A case study of NSW Pacific Highway construction zones 2011-16

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Abstract

Construction zones are associated with higher rates of transport incident. While these incidents are preventable, there is limited data in Australia on the effects of highway construction zones on the rate of transport incidents. This is a retrospective study focused on the construction zones and periods along the NSW Pacific Highway and aims to investigate if the number of people who have major trauma as a result of a transport incidents in construction zones is higher than the number of people with incidences in highways out of construction zones.

Background

A number of studies in USA reported that construction zones are associated with higher rates of transport incident (Graham et al., 1977, Khattak et al., 2002). However, these incidents are preventable, and observance of particular standard work procedures are suggested as being instrumental in improving safety level of the construction zones (Jin et al., 2008).

Nevertheless there is limited data in Australia on the effects of highway construction zones on the rate of transport incident. A recent unpublished review of trauma admission to two regional trauma services – Port Macquarie Base Hospital and Coffs Harbour Health Campus, has indicated an increase in major trauma admission rates in some particular time spans. Based on the knowledge of the local healthcare practitioners, it is speculated that these peaks in admission rates might have occurred during the times of construction along the NSW Pacific Highway upgrade.

This study focused on the construction zones and periods along the NSW Pacific Highway and aims to investigate if the number of people who have major trauma as a result of a transport incidents in construction zones is higher than the number of people with similar incidences in other situations.

Research questions

1. Is the number of patients who have a transport incident in Highway construction zones higher than those out of construction zones?
2. Is there any difference in the mortality rate and level of injuries sustained by people who have had a car accident in highway construction zones and those out of construction zones?

Method

This is retrospective study that collect data by screening the patients admitted to the surrounding trauma services: the Mid North Coast Local Health Districts Health Regional Trauma Services and corresponding Major trauma services of John Hunter Hospital and Gold Coast University Hospital, as well as Coronal cases from reported deaths in the same region. (Figure 1).

Results

In addition to the data gathered in this study, external information regarding construction zone locations and periods are obtained from the NSW Roads and Maritime Services (RMS) Pacific Highway project office. The combination of these data is entered into a geospatial mapping program for visual demonstration. Moreover, this information is used to make a comparison between the length of construction zones (Kilometres) and those data of non-construction zones in a similar time span, which assist calculating the relative expected number of incidences that is considered when comparing the observed number of incidences in construction zones and non-construction zones by a binomial test (research question 1). Finally, the severity of injuries sustained and outcomes (such as mortality, hospital length of stay, discharge destination) is compared using Chi Square and T-test between people who were involved in transport incident in construction zones and others (research question 2).

Conclusion

This study shed light on the potential risk that highway construction might have for road traffic safety and can lead to further investigations aiming for improving safety of road users during highway road constructions.



Figure 1. Pacific Highway construction zones

References

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