



Transportation Construction Work-Zone Safety Impact on Time-Related Incentive Contracting Projects

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Work-zone safety on highway projects continues to be a national concern, and project safety performance is one of the indicators of project success. Many contractors and State Transportation

Agencies (STAs) believe that expedited construction time under incentive contracting contributes to reducing the safety risk of road users traveling through work zones. However, the truth of this belief has never been measured or supported by any statistical evidence. Obviously, understanding the impact of time-related incentive provisions on project-safety factors is important in order to provide better guidelines for the effective use of incentives, as well as for construction work-zone safety. This research investigates the statistical relationship between time-related incentive road construction projects and frequency of vehicle crashes in the State of California and provides project planners and managers with a better understanding of the impact of time-related incentive contracting on project safety performance.

Time-related incentive contracting projects do not appear to have a negative impact on work-zone safety performance.

Study Methods

This research started with literature review of time-related incentive contracting performance and work-zone safety studies. The research team also collected incentive and non-incentive project data from the California Department of Transportation (Caltrans). Additionally, vehicle crash data was collected from the California Statewide Integrated Traffic Records System (SWITRS). Using Geographic Information System (GIS) software, the locations of construction projects and crashes at the project locations were then pinpointed on GIS centerline layers. Finally, statistical analyses were performed to investigate the relationship between the frequency and characteristics of crashes at incentive project sites and ones at non-incentive project sites in the State of California.

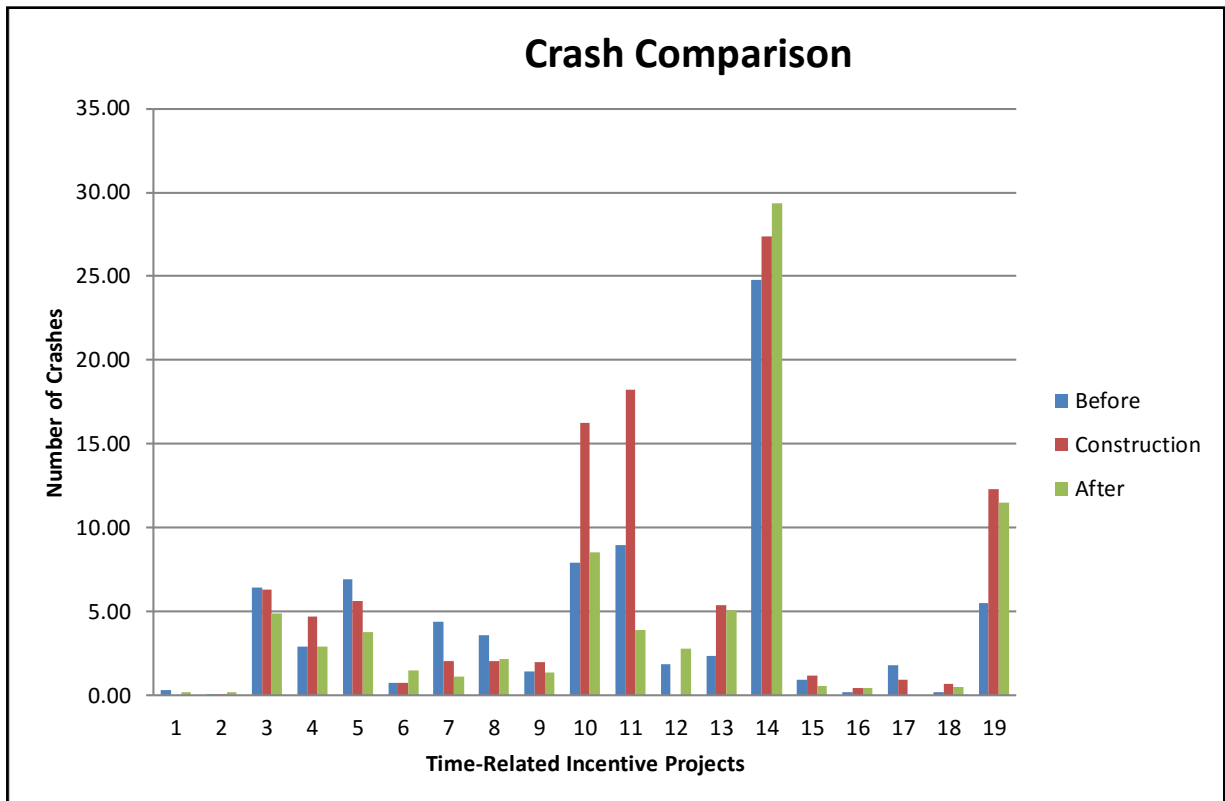
Findings

The research team successfully compiled data representing the locations of construction work-zones and crashes using GIS technology and performed statistical analyses to compare the frequency of crashes at time-related incentive construction project sites before, during, and after construction.

A statistical analysis for both time-related incentive projects and non-incentive projects was performed to test if the occurrence of crashes is significantly different among three scenarios: 1) Before Construction, 2) During Construction, and 3) After Construction. Results for both projects show that the difference of crash occurrence among all three variables are not significant. This indicates that there is no adverse safety impact on time-related incentive

contracting projects during the study period. No statistical evidence was found that time-related incentive contracting projects have a negative impact on work-zone safety performance.

Although there was no work-zone safety difference among three scenarios, it is noted that the number of project data used for this study was small. In order to draw more meaningful conclusions, it is necessary for the research to be replicated with a larger sample size.



Crash Comparison for Time-Related Incentive Projects

Policy Recommendations

The authors recommend that STA's develop clear guidelines for the selection of time-related incentive projects based on a comprehensive safety performance evaluation of time-sensitive highway construction projects, including urban rehabilitation and reconstruction.

About the Authors

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To Learn More

For more details about the study, download the full report at transweb.sjsu.edu/project/1224.html