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## **Investigation of Crash Risk Reduction Resulting From Red-Light Cameras in Small Urban Areas**

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### **Executive Summary**

(Full report at [http://www.motorists.org/photoenforce/Burkey\\_Obeng\\_Updated\\_Report\\_2004.pdf](http://www.motorists.org/photoenforce/Burkey_Obeng_Updated_Report_2004.pdf))

This paper analyzes the impact of red light cameras (RLCs) on crashes at signalized intersections. It examines total crashes and also breaks crashes into categories based on both severity (e.g., causing severe injuries or only property damage) and by type (e.g., angle, rear end).

Prompted by criticism of the simplistic methods and small data sets used in many studies of red light cameras, we relate the occurrence of these crashes to the characteristics of signalized intersections, presence or absence of RLC, traffic, weather and other variables. Using a large data set, including 26 months before the introduction of RLCs, we analyze reported accidents occurring near 303 intersections over a 57-month period, for a total of 17,271 observations. Employing maximum likelihood estimation of Poisson regression models, we find that:

***The results do not support the view that red light cameras reduce crashes. Instead, we find that RLCs are associated with higher levels of many types and severity categories of crashes.*** (emphasis added)

An overall time trend during the study indicated that accidents are becoming less frequent, about 5 percent per year.

However, the intersections where RLCs were installed are not experiencing the same decrease. When analyzing total crashes, we find that RLCs have a statistically significant ( $p < 0.001$ ) and large (40% increase) effect on accident rates.

In addition, RLCs have a statistically significant, positive impact on rear-end accidents, sideswipes, and accidents involving cars turning left (traveling on the same roadway).

The one type of accident found to experience a decrease at RLC sites are those involving a left turning car and a car traveling on a different roadway.

When accidents are broken down by severity, RLCs were found to have a statistically significant ( $p < 0.001$ ) and large effect (40-50% increase) on property damage only and possible injury crashes. There was a positive, but statistically insignificant estimated effect on severe (fatal, evident, and disabling) accidents.

These results run contrary to the many studies in the RLC literature. Previous studies have sometimes found an increase in rear-end accidents, but often find offsetting decreases in other types of accidents. While this study incorporated many advances in methodology over previous studies, additional work remains to be done. Because accident studies rarely use a true experimental design and data are not perfectly observable, additional careful study of RLCs is warranted to verify our results.