The Bill Blackwood
Law Enforcement Management Institute of Texas

Red Light Camera Enforcements in Missouri City, Texas

An Administrative Research Paper
Submitted in Partial Fulfillment
Required for Graduation from the
Leadership Command College

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March 2009

ABSTRACT

Red light running is one of the major causes of vehicle accidents, resulting in injuries, deaths, and property damage at signalized intersections. This research will examine the necessity of red light camera enforcement and determine if the need for such a system is necessary in the test city of Missouri City, Texas, at this time. It is estimated that 22% of all accidents in the United States are caused by drivers running red lights. Further, it is estimated that red light violations have increased by ten percent since the 1980s. Nearly 1,000 Americans were killed and 176,000 were injured in 2003 due to red light running related accidents in the nation. The monetary impact of vehicle accidents to society is approximately $14 billion annually. Drivers who run red lights are responsible for an estimated 260,000 accidents each year in the United States. Red light enforcement, among other police duties, is an essential function of policing as a means to ensure public safety.

Law enforcement agencies are challenged by lower than desired staffing levels, and consequently, some police services, like traffic law enforcement, are often sacrificed to address more pressing matters. In an effort aimed at improving traffic engineering strategies and traffic law enforcement, the test city, Missouri City, has examined the potential installation of red light cameras as one method to curb this trend. It is widely purported that red light camera enforcement is necessary as a means to change driver behavior by increasing the perception of being caught running red lights. This shift in driver behavior is believed to translate into accident reduction.

This research will show that the test city, Missouri City, will benefit from not having a red light camera system because of the public perception and media coverage

of red light camera systems installed in neighboring cities, which correlates to a change in driver behavior in Missouri City.

TABLE OF CONTENTS

Page

INTRODUCTION

Imagine, for a minute, a man is driving a vehicle on a major thoroughfare and is in a hurry to get to a local retail establishment before it closes. As this man approaches a major intersection controlled by an electronic traffic control device, the light changes from green to yellow for his lane of travel. The man must consider whether he will take the chance that he will make it through the intersection before the light changes to red or stop and take the chance the retail establishment will be closed before he gets there. He must also recognize the possibility of being pulled over if he runs the light and wonder if there is a red light camera.

Many drivers traversing the streets and intersections of local communities face this dilemma in their travels everyday and, for a variety of reasons, choose to take that chance. Many drivers effectively get away with the violations, but consequently, others are not so lucky, and their decision leads to a tragic and unnecessary ending.

With the increase in red light running accidents resulting in substantial sheet metal damage and personal injury at intersections by a driver who chooses to take the chance, local governments are fighting back electronically. Many entities are implementing red light camera enforcement tools in an effort to apprehend, fine, and change red light running behaviors and deter drivers from running red lights.

The test city of Missouri City is not immune to red light runners. For more than a year, elected city officials, police managers, and traffic engineers have examined the feasibility of red light cameras at high collision rated intersections. While this discussion ensues, cities like Houston, Sugar Land, and others are installing red light camera devices. With other cities utilizing red light cameras, it is important to analyze if

Missouri City can reap the same benefit of neighboring communities while not having a red light cameras.

It is believed that Missouri City will experience a decrease in the number of red light running intersection accidents without having installed red light cameras. This thought is based on the belief that driver behavior will be influenced by news media events covering red light cameras, thus creating omnipresence at electronic traffic controlled intersections in and around the Houston area.

REVIEW OF LITERATURE

A report issued in 2005 by the Federal Highway Administration shows that one of the major causes for all accidents resulting in personal casualties and property damage is a result of red light running. The report further reflects that of all persons killed and injured in 2003, as a result of red light running, are a substantial cost to society wherein billions of dollars are lost. More than 200,000 accidents annually are a result of persons who disregard stop and go signals.

The Insurance Institute for Highway Safety (IIHS), in a 2002 report, found that 22% of all traffic accidents in the United States are caused by drivers running red lights. The Institute also suggested that since the 1980s, red light violations have increased by ten percent or more. In addition to improving traffic engineering strategies and traffic law enforcements, many cities have installed red light cameras as one of the methods to curb this trend. It is widely purported that red light camera enforcement is necessary as a means to change driver behavior by increasing the objective and perceived chances of being caught. This shift in driver behavior is believed to translate into accident reduction. The 2002 IIHS report pointed out that standard police

interdiction/enforcement in red light violations in of itself is not enough to solve the problem. This is especially true in today's policing arena, where police agencies are struggling to retain and hire sufficient staff to address traffic and other criminal related issues. Drivers are aware of the police inability, thus the risk of being detected is small.

According to research from the National Campaign to Stop Red Light Running (http://www.stopredlightrunning.com), the first red light camera program in the United States began in New York City. Officials in New York City began looking for a solution to what they considered to be a significant problem: red light running. Data, at the time, showed that more than 500,000 citations had been issued for red light running, but the real catalyst behind the program came in 1982, when an 18 month-old child was dragged in her stroller for 13 blocks by a red light runner. The child survived, but her mother and a neighbor formed a coalition called Stop Traffic Offense Program (STOP).

STOP worked closely with New York City Transportation over a five-year period and, subsequently, convinced New York City leaders to begin a red light camera program. Within the first year of operation, almost 170,000 citations were issued using 15 cameras. It is reported that after three years of operation red light violations decreased by 60%. The New York City red light program became one of the largest in the U.S., with more than 50 cameras in operation. An interesting side note is that, in 2002, New York City officials added an additional 200 "fake cameras" at intersections throughout the city. Fake cameras, which flash but do not actually record a picture, were implemented to further deter red light running.

Red light cameras have since been installed in many other cities throughout the United States. A data sheet (n.d) offered by the City of Houston website

(http://www.houstontx.gov/police/traffic_safety/ts_behavior.pdf) provided statistical information of those other cities that have employed red light cameras technology. For example, in Arnold, MO, accidents decreased by 11% at intersections where red light cameras were deployed. In Philadelphia, PA, State House Speaker John M. Perzel reported that during the first year of operation, red light violations decreased 70% and 88% at two intersections where cameras were in operation. Officials in Oxnard, CA reported a 7% decrease in accidents overall city-wide after red light cameras were introduced. Fairfax, VA, after one year of operation, reported red light violations were reduced by 40%, and 84% of the city's population supported the use of red light cameras. It was reported that in Baltimore County, MD, there was a 30% decrease in accidents after the first year of red light cameras was recorded. Savannah, GA also experienced a 45% reduction in red light violations after red light cameras were installed. Of all the cities in Texas where red light cameras are used, only the city of Garland has been operating a system the longest. Officials in Garland reported that since the installation of the red light cameras in 2003, violations and citations had dropped each consecutive year.

In September of 2003, a report released by the Texas Transportation Institute, sponsored by the Texas Department of Transportation, documented the culmination of a two-year research project to determine the safety impact of red light running in Texas and attempted to establish guidelines for establishing where enforcement is really needed. The findings of the report suggested that "The problem of red light running is widespread and growing: its cost to society is significant" (Texas Transportation

Institute, 2003, p. 1). The report concluded that red light running accidents are more severe than other accidents.

The report found that 95 motorists die annually as a result of red light running, thus making Texas rank fourth in the nation, on a per capita basis, for traffic related fatalities. It was discovered that the number of persons killed or injured in red light running accidents had grown from 10,000 persons per year in 1975 to 25,000 persons per year in 1999. Of all U.S. cities with a population greater that 200,000, Dallas, Corpus Christi, Austin, Houston, and El Paso had an above-average number of accidents due to red light running. In the spring of 2006, the City Council in Houston, Texas approved the use of red light cameras in an effort to deter red light running, cause motorists to be more conscientious, and think twice before running a red light, whether a camera was installed or not.

An article in the December 7, 2006 edition of the *Houston Community Newspaper* related that the Houston Police Department installed red light cameras at intersections the department deemed as dangerous. Houston officials told the paper that the purpose for the equipment was to deter motorists from bad driving habits. HPD spokesperson John Cannon said that HPD adopted the program after studying intersections with the highest rate of accidents. He stated that a six-week study revealed motorists dangerously ignore traffic lights. The study further identified some of Houston's most dangerous intersections where some of the red light cameras were being installed. Cannon said the goal was to create a higher awareness among drivers and increase public safety. Video footage developed during the Houston study showed many instances where motorists did not even attempt to stop for a red light and further

showed more instances where motorists drove through an intersection and never slowed when the light was clearly red.

In the December 27, 2006 edition of the *Fort Bend Sun*, a Sugar Land, Texas newspaper, an article appeared directly related to a red light accident. The article stated that on September 12, 2005 in Missouri City, Texas, resident Lee Criddle, a U.S. Postal Carrier, encountered, firsthand, a Houston red light runner. While on his route, his postal vehicle was struck by a red light runner at the intersection of Murphy Road and the Southwest Freeway feeder road. Criddle was thrown from his vehicle and his resulting injuries were so significant that he was left paralyzed without the use of his hands or legs.

The use of red light cameras in communities across the U.S., Canada, and Europe is not without its critics and advocates. The National Motorists Association (NMA) (n.d) suggested red light camera enforcement does little, if anything, to reduce traffic accidents or improve traffic flow (http://www.motorists.org/photoenforce/home /nma-objections-to-photo-enforcement/#prevent). It is suggested that red light camera enforcement is a means of generating local revenue to line the coffers of local governmental general funds. It had also been suggested that photographic enforcement is a violation of the Fourth Amendment right to be free of unwarranted governmental intrusions. The NMA website (www.motorists.org) hosts a myriad of other issues and concerns related to red light camera enforcement.

In October 2005, the *Washington Post* released an article on the use of red light cameras in Washington, DC. The report suggested that during the previous six years of operation of red light cameras in Metro DC, 500,000 tickets were issued generating over

$32 million in fines. The report also found that the number of accidents had increased at intersections where the red light cameras were installed. This report was released in difference of DC officials who claimed red light enforcement made busier roads safer. Dick Raub, a traffic consultant with Northwestern University's Center for Public Safety, analyzed the DC data and reported that intersections with red light cameras were not performing any better than intersections without them.

Washington, DC Police Chief Charles H. Ramsey countered and said the cameras are worthwhile even though the percentages of accidents were not dropping. He reported that citations for red-light running had dropped by 60% at the intersections where cameras were placed. He stated that accidents at intersections where cameras were placed would be significantly higher if no camera existed.

In 2005, Washington, DC had 45 intersections equipped with red light cameras. The analysis showed the number of accidents of these intersections more than doubled since 1999. DC officials countered by saying the increase correlated to traffic volumes being higher.

The National Campaign to Stop Red Light Running provided statistical data and other criteria in favor of red light enforcement issues. This coalition was formed to help bring about public awareness to the consequences of red light running. Some of the consequences include: fatalities, injuries, property damage, and impact on society. It promotes public education about core safety issues and provides support for more broad and coordinated law enforcement response, including red light camera technology.

The National Campaign to Stop Red Light Running representatives said there was no debate because red light runners are dangerous drivers who are irresponsible and place others at risk. It further reported that the problems in some areas of the country are far greater than conceived and suggested that more than half the deaths in red light accidents are other motorists and pedestrians. Though it does not reference a specific cite, it states that red light running is the leading cause of urban automobile accidents in American cities and the yellow, cautionary, light has come to symbolize "hurry-up" instead of "slow down."

Other research found that a significant number of accidents are associated to red light running. One survey cited that of those Americans poled, 96% were afraid of being hit by a red light runner. Interestingly though, one in five of those surveyed admitted to running a red light in the last ten intersections they traversed. "Being in a hurry" was the leading excuse given for running a red light.

METHODOLOGY

Red light cameras are not necessary in the city of Missouri City because the city will experience a reduction in red light violations from the perception that red light cameras exist. Several factors illustrated in this research will show drivers will change their behavior. It is further believed that the research for this paper will support that the city of Missouri City will benefit in the short term for not installing red light camera enforcement devices because of the fear drives will have that cameras exist.

The cities of Missouri City and Sugar Land are sister cities and typically follow suit of each other. With the installation of red light camera enforcement devices in the greater Houston area and where these cities are located in proximity to Missouri City,

drivers will assume intersections in Missouri City will be equipped with the detection devices. This will cause drivers to change driving behaviors.

Five years of data collected by the Missouri City Police Department (MCPD) on accident causes and four years of data collected by the MCPD on citations issued will be examined. In addition to examining the data, phone interviews with the Missouri City Public Works director and city engineer and Mr. Bob Barnard, senior traffic development consultant employed with American Traffic Solutions (ATS), will be conducted as part of this research. It is believed that the data will illustrate that red light crashes and violations in Missouri City will diminish as the time draws near the year red light cameras were installed in Houston and the surrounding communities.

A compilation of data from the Missouri City Police Department on traffic accident data for accident cause factors and traffic citations issued by police officers will be surveyed. The accident cause factors surveyed will be specifically focused on five critical areas believed to be related to movement of vehicles within an intersection against an electronic or other traffic control device. The cause factors examined will be the following: the disregard stop and go signal, the disregard stop sign or light, the fail to stop at proper place, the fail to yield right of way (FYROW) at an open Intersection, and the FYROW turn on red.

FINDINGS

Missouri City, TX, is a residential suburb located 12 miles southwest of the city of Houston, TX. In the last 5 years, Missouri City has experienced dramatic development in the residential and retail sectors. The population in 1996 was 33,000. It has risen to over 67,000 in 2006. One could argue that an increase in population correlates to an

increase in motor vehicles and traffic related issues, including traffic violations and accidents. There is in excess of 600 lane miles of streets, roadways and/or highways that traverse Missouri City, and there are approximately 40 intersecting streets that are controlled by an electronic traffic control device.

The Missouri City Police Department is the primary law enforcement entity in the city and is responsible for traffic law enforcement and traffic accident investigation. The department collects traffic accident data and reports it to the Texas Department of Transportation. It also collects and stores accident and citation issued data in its department computer database for statistical and reporting purposes.

The Missouri City Public Works Department (PW) is responsible for traffic engineering and the facilitation of continuous movement of traffic. The PW department studies traffic engineering and mobility issues and implements strategies throughout the city. It is also responsible for the maintenance and operation of the fixed and electronic traffic control devices. In a phone interview with Scott Elmer, the director of the Missouri City Public Works Department and a city engineer, it was discovered that he believes the use of red light camera technology will not benefit Missouri City for various reasons. One reason is that the veracity and intentions of some of the installation contractors, who may tamper with established signal box timing of the signals to favor violations. Another concern he has is that it has not been completely proven that the installation of said devices will not have an effect on the continuity or flow of traffic at intersections and may even cause an increase in rear-end collisions. He believes the technology is new to the Houston area market and more study needs to take place before implementation in Missouri City.

In a phone conversation with a senior traffic development manager, Bob Barnard, (B. Barnard, personal communication, November 29, 2007), he indicated he is very much an advocate of red light cameras and believes the historical data illustrates these devices increase public safety by reducing the likelihood of people running red lights. He further believes and suggests data supports a decrease in red light traffic violations correlating to a decrease in red light running accidents. He does concede, however, that there are some less than creditable and/or reliable venders who have adjusted the timing of traffic lights to increase the likelihood of someone committing violations. He said that this is why it is imperative for a local government considering red light camera enforcement to conduct a thorough vender search. He said that there should be no reason for a red light camera vender to enter the electronic control box to install their devices at intersections. He advised that if there is a reason to enter the box, it should be done with supervision of the local government's traffic engineers/specialists or representatives from the state department of transportation.

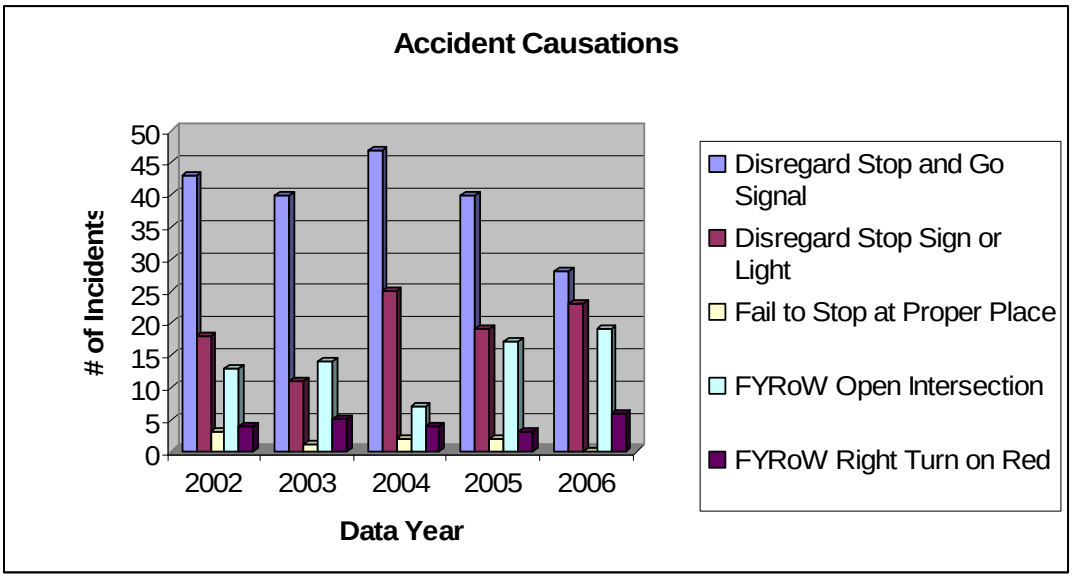
When asked if red light camera installation interferes with traffic initiatives such as vehicle detection at intersections and sequencing, Mr. Barnard said, "red light camera enforcement measures should not preempt or interrupt these functions." It was indicated that similar type efforts are not in place in other Texas cities like Houston, Humble, Arlington, and Irving, and the red light camera devices did not impede their operation.

In examining the survey data collected by the police department, it suggests that accidents caused by red light running are a serious problem in Missouri City. The data also suggests that causation factors for accidents in Missouri City at intersections for

the disregard stop and go signal and the disregard stop sign of light are significantly higher than the other categories listed. Specifically, accidents involving drivers who disregard a stop and go signal are more likely to be involved in accidents in Missouri City as opposed to other accidents examined at traffic controlled intersection. However, an analysis of the data collected for the time period at and around the time the cities of Houston, TX and Sugar Land, TX, were implementing red light camera systems, shows a marked decrease in the number of accident caused by red light violators

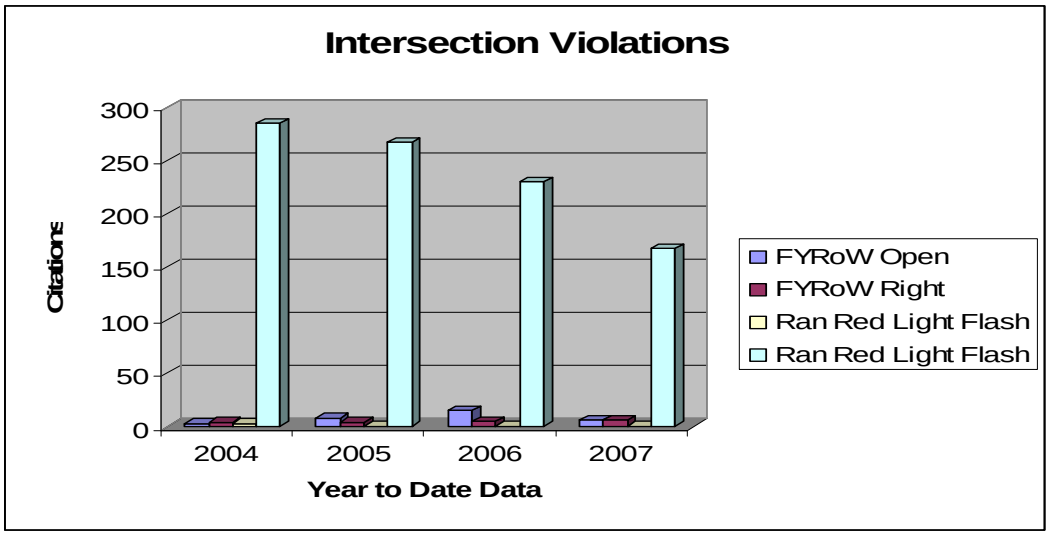
It is interesting to note, however, the declining rates of accidents involving drivers who disregard a red light, otherwise known as a stop and go signal. Accidents involving red light runners dropped 15% from 2004 to 2005; this would be 47 to 40 accidents respectively. Red light running accidents dropped 30% between 2005 and 2006 or by 28 accidents. From 2004 and 2006, red light cameras were introduced and installed in municipalities across Texas, specifically in the Houston and Sugar Land area. In Missouri City, during that time frame, accidents involving red light runners decreased 40% overall. Arguably, one can conclude that red light camera enforcement attention can affect driver behavior (see Table I).

Table I. Comparison of accident causations for a five-year period in the city of Missouri City.



The citations issued survey analysis were specifically focused on four types of infractions related to intersection violations where an electronic traffic control device was in place. The citations issued that were examined were mentioned above, but based on a review of the citations issued by police officers of the department for a four-year period on intersections controlled by some form of a traffic control device, drivers are cited more frequently for running a red light than the other categories (see Table II).

Table II. Comparison of electronic controlled intersection citations issued for a for four-year period in the city of Missouri City.



DISCUSSIONS/CONCLUSIONS

Many Texas police departments are strong supporters of red light camera enforcement because it is a tool that enhances public safety. The city of Sugar Land, TX has conducted a traffic study and will soon be placing red light cameras at certain intersections in that city. The city of Stafford, TX is contemplating red light camera enforcement, but it is unknown where they are in their effort. Other cities in and around the greater Houston area are following suit, and this has caused considerable media interest and sparked public attention.

Red light camera technology will allow police departments to allocate manpower more efficiently. While red light camera enforcement is still relatively new in Texas, it has spiked interest in the recent session of the Texas Legislature. The use of this technology will undoubtedly become more prevalent in future years, and when used properly, the public, by and large, will be safer as they traverse the streets and highways of the state. If there is a perception of a red light camera at an intersection,

even where none exist, drivers will tailor their driving habits, resulting in fewer red light running collisions.

Noted more locally, a series of vehicle detection cameras were installed at many intersections along a state highway corridor in the city of Missouri City as an effort by its Public Works department to improve mobility at intersections during peak traffic times. The vehicle detection cameras generated a significant amount of public interest and some controversy as it was seemingly installed for red light enforcement. This was evidenced at several homeowner meetings in some of the communities throughout Missouri City where it was not uncommon for a city official to receive questions about the cameras at these intersections.

Several city residents indicated the vehicle detection cameras made them think twice before entering the intersection because they feared the cameras were red light cameras. In addition to the belief that vehicle detection cameras were actually red light cameras, many resident and community groups assumed the city of Missouri City would be following of the cities Sugar Land, Humble, and Houston.

Statistical evidence, as shown in Table II, for Missouri City, illustrates drivers are complying with red lights more today than they have in the past. Data collected for this research for the past four years shows that red light intersection violations in Missouri City have decreased appreciably. With red light camera enforcement being introduced in the Houston market in 2005, the rate of red light running citations diminished 14% in 2006 as compared to 2005. The 2007 data comparison to 2006 shows a more substantial decrease, 27%, in red light violations.

It is found that a combination of factors, like other departments in the area implementing red light camera systems and vehicle detection cameras, have caused a decrease in red light violations in Missouri City, which supports the hypothesis that driver behavior will change even when there is no red light camera present. Coupled with the fear of being caught, drivers in Missouri City have modified their driving and are voluntarily complying with red lights at intersections even though red light camera do not exist.

Red light camera enforcement is a good deterrent that helps help reduce deaths, injuries, and sheet medal damage at intersections in Missouri City. Red light camera enforcement is a viable means to promote and improve public safety by changing driver behavior. At least one community can show that it benefits from red light camera enforcement by not having cameras.

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