Professors study dilemmas in sustaining red light camera programs

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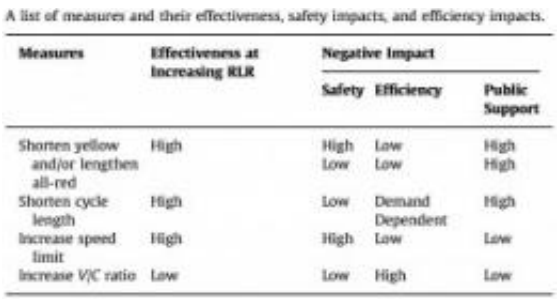

A list of measures and their effectiveness, safety impacts, and efficiency impacts.

Measures	Effectiveness at Increasing RLR	Negative Impact		
		Safety	Efficiency	Public Support
Shorten yellow and/or lengthen all-red	High	High Low	Low Low	High High
Shorten cycle length	High	Low	Demand Dependent	High
Increase speed limit	High	High	Low	Low
Increase *V/C* ratio	Low	Low	High	Low

This figure shows a list of measures and their effectiveness, safety impacts and efficiency impacts.

It's a common driving predicament: As you approach the intersection, the light is yellow. Do you hit the brakes or face a red light camera fine?

Some municipalities engineer their traffic signals to force drivers into this situation in an effort to generate revenue from the cameras.

Professors at UT have analyzed this issue to determine if traffic control measures intended to boost red light revenue—such as shortening yellow light time or increasing the speed limit on a street—compromise safety.

The study by professors Lee Han, Chris Cherry, and Qiang Yang in the Civil and Environmental Engineering Department is published in this month's issue of *Transport Policy* journal.

Most municipalities acquire their red light camera systems through private vendors and pay for them either through a monthly flat rate or a portion of citations. Thus, the more successful red light programs are at improving safety by decreasing red light running, the less profitable they become. This creates a predicament for traffic engineers—meet financial guarantees to sustain the programs, or increase safety?

"Traffic engineers are facing an ethical dilemma of balancing revenue generation to sustain their red light camera programs with their traffic safety and efficiency goals," said Han. "This is a new conundrum for them."

The authors analyzed prior research related to four traffic signal measures—shortening yellow duration and/or lengthening all-red duration, shortening cycle length, increasing the speed limit and increasing high volume-to-capacity conditions such as with an unwarranted turn signal—and their impacts on red light running, safety, and efficiency.

Among their findings:

- Shortening the yellow and/or lengthening the all-red, shortening the cycle length, and increasing the speed limit increased the chance of drivers running a red light.
- Shortening the yellow and increasing the speed limit increased the chance of a crash.
- Shortening the yellow and/or lengthening the all-red and increasing the speed limit did not impact efficiency of traffic flow.
- Increasing high volume-to-capacity conditions increased the chances of traffic congestion at a signal but not the chances of running a red light or crashing.

According to the researchers, within the bounds of engineering design standards, there is room for traffic engineers to apply their judgment and develop the best signal-timing strategy. They note that while each strategy has its merits and faults, a combination of the strategies could possibly produce adequate revenue without causing traffic delays or congestion.

"One of the major challenges with implementing red light camera policy is the conflict of matching incentives of tangible revenue for industry and the municipality contrasted with external cost savings such as safety and congestion the value of which is not easily captured," said Cherry. "We hope the public sector and the public use our research to reflect on the motivations for changing signal operations."

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