

Intersection Safety: Myth Versus Reality

Traffic engineering decisions about intersection safety are often the product of factors and relationships that are more complex than the casual observer may realize. In many cases, evaluating potential solutions to crash or violation problems may reveal aspects of intersection safety and efficiency that are in conflict with one another. In reality, traffic engineers must always consider a balance between managing safety and improving intersection operations before making their final choice for intersection control.

Over the years, a number of misconceptions about traffic-control solutions have become apparent. This briefing sheet attempts to shed some light on the rationale for why certain traffic-control decisions are appropriate and required.

The driving public has developed a number of misconceptions about traffic control solutions over the years. This brief attempts to expose some of those myths and shed light on the rationale behind certain traffic control decisions.

Myth 1: Installing signals always makes intersections safer.

Reality:

The installation of unwarranted signals, or signals that operate improperly, can create situations where overall intersection congestion is increased, which in turn can create aggressive driving behavior.

When more complex signal phasing causes longer waiting times at intersections, both drivers and pedestrians tend to become impatient and violate red lights, or drivers are tempted to cut through neighborhood streets. This subjects local residents to a greater risk of collisions, worse congestion and more air and noise pollution.

Clearly traffic diversion to side streets is an undesirable side effect of long cycle lengths and congestion. This diverted traffic may increase risk on the side streets, but the cause of this increased safety risk should not be attributed to the new signal.

Additional traffic safety measures are sometimes necessary to offset increased traffic and speeding through neighborhood streets. One way of improving waiting times at an intersection with a new signal is to make sure the minor street waiting times are less than they were before installation of the signal. This improvement will encourage motorists to use signals on main roads instead of neighborhood streets.

On occasion, other traffic control options, such as stop control or the introduction of roundabouts can perform as well as, or even better than, signals in managing both vehicle and pedestrian traffic safety at intersections. This is particularly true when signals are inappropriately placed at locations where traffic volume is relatively low. Intersections with signals that have very low traffic volumes tend to tempt drivers and pedestrians to violate that red light.

Myth 2: Having a stop sign is always better than no stop sign, OR, more stop signs are always safer than fewer stop signs.

Reality:

Unwarranted stop signs create problems at both the intersection and along the roadway by:

- Encouraging motorists to drive faster between intersections in order to save time. Placing stop signs on every low-volume local street promotes speeding between the stop signs as drivers try to offset the delays caused by stopping at every intersection;
- Encouraging violation of traffic laws. As the number of stop signs increase so that nearly every intersection has one, the rate of stop sign violations tends to increase;
- Encouraging the use of alternate routes. Placing too many stop signs in some areas



often causes traffic to use other neighborhood routes to avoid a sequence of intersections that may be controlled by stop signs; and

- Increasing the chance that drivers will disregard conflicting vehicle and pedestrian traffic, which raises the risk of collisions.



There is no evidence to indicate that stop signs decrease the overall speed of traffic. Impatient drivers view the additional delay caused by unwarranted stop signs as “lost time” to be made up by driving at higher speeds between stop signs.

Unwarranted stop signs breed contempt in motorists who tend to ignore them or only slow down without stopping. This can sometimes lead to tragic consequences.

Stop signs should never be installed as a routine, cure-all approach to curtail speeding, prevent collisions at intersections, or discourage traffic from entering a neighborhood. Stop signs should be installed only after an engineering study determines that there is a need. Stop signs are not a solution to intersection safety problems caused by poor sight distances and deficient road design.

Myth 3: Installing stop signs on all approaches (four-way stop) to an intersection will always result in fewer accidents.

Reality:

Four-way stop signs do not necessarily improve pedestrian or vehicle safety. In fact, pedestrians in stop sign-congested neighborhoods often have a false sense of security about crossing local streets

with four-way stop signs. The application of traffic control devices, to the casual observer, often creates this sense of security, but in reality may actually increase safety risk. If control devices are improperly applied, they can create confusion between the pedestrians and the driver as to who has the right-of-way, thereby increasing the risk that one of the two will make an improper decision resulting in serious consequences.

Placing four-way stop signs on roads of very unequal design, speed and traffic volume will tend to promote stop-sign violations by drivers, especially on main roads. Driver expectancies are violated in situations like this and when this occurs, improper actions result which can increase safety risk at intersections.

Placing four-way stop signs at every intersection where there were formerly only two-way stop signs also usually increases congestion. Four-way stop signs should only be considered after an engineering study and a capacity analysis are performed.

Generally, every State requires the installation of traffic control devices, including stop signs, to meet State standards of the department of transportation.

The State standards are based on the *Manual on Uniform Traffic Control Devices* (MUTCD). The MUTCD is the national standard for traffic control devices. It prescribes standards for the design, location, use and operation of traffic control devices. The MUTCD is located at the following Web site: <http://mutcd.fhwa.dot.gov>.

Myth 4: Signals are always better than stop signs.

Reality:

Installing stop signs instead of signals when there is no intersection traffic control, increasing the size or visibility of existing stop signs, or placing them in a better location often increases both vehicle and pedestrian safety without the initial expense and later maintenance costs of signals. While waiting for signals to qualify for installation, the substantial amount of money saved can be used to make roads safer.