

# Traffic signals and their impact on National Highways

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**Abstract:** At the most basic level, traffic signals are infrastructure assets for the control of vehicular and pedestrian traffic. Traffic signals are designed to assign the right of way to the various traffic and pedestrian movements at an intersection. Even the most uninformed traveler recognizes the impact that traffic signals have on travel. Travelers are also surprisingly astute at realizing when signals do not meet their needs for efficient travel.

Road Traffic Signs are not only important to new car drivers. It is also important that every citizen in India know the important of traffic signs. Over the years of statistics, more and more people both on the road and off-road find these signs very important. This is why, the Department of Transportation is strictly implementing these rules and regulations to avoid accidents on the road.

The main reason why these signs are available on the road is because of SAFETY. Traffic signs make sure that all drivers are aware of the rules and the dangers on the road. Without these signs, accidents may occur more often. These signs also warn the drivers of the potential dangers that can be encountered on the roads.

**Keywords:** traffic signals, road safety, national highways, drivers.

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## Introduction

There are certain rules that have been prepared for the benefit of people and the idea of preparing these rules is not that they should be understood by the drivers, but it should also be understood by the cyclists, pedestrians and other people. It is essential to follow all the rules and regulation and they are clearly listed here. People are recommended that they should be carefully observing all the rules and regulation and it is effectual to be careful, considerate and patient.

Traffic marking is a type of material or device that is applied on every road surface to inform everyone regarding the official details of road's rules and regulation. Street area labels are any kind of device or material that is used on a road area in order to express formal details. They can also be applied in other features used by automobiles to mark vehicle-parking areas or assign places for other uses. Road area marks are used on highways to provide guidance and details to individuals and people on the streets. Consistency of the marks is an important aspect in reducing misunderstandings and doubt about their meaning and initiatives exist to standardize such marks across boundaries. However, countries and places classify and specify road area marks in different ways.

Road area marks are technical, non-mechanical or short-term. Street area labels can also indicate control for vehicle parking. There is an ongoing effort to improve the way of label system and technical advancements include adding reflectivity, increasing durability and lowering installation cost. Road marks are a visitor's sign in the form and design of labels on the top area of the way. They have the same standing as erect signs. Motorists must respect these road marks. Therefore following the rules and regulations of the roads, you can save yourself as well as others from major road accidents. You need not feel embarrassed on following the rules and regulation of roads as it has been designed to protect you from the road accidents.

## Public Guidelines for Road Crossing

People are recommended to follow the rules and safety guidelines while crossing the roads.

- Cross streets at a corner, using traffic signals where available and crosswalks.
- Always look left, right, and left again before crossing a street, and keep watching as you cross. Be aware that drivers have differing levels of eyesight and skill in operating motor vehicles.
- Pedestrians should be especially careful at intersections, where drivers may fail to yield the right-of-way to pedestrians while turning onto another street.

Make sure you are seen:

- a) Make eye contact with drivers when crossing busy streets.
- b) Wear bright colors or reflective clothing if you are walking near traffic at night.
- c) Carry a flashlight when walking in the dark.
  - Walk on the sidewalk whenever possible. If sidewalks are not available, walk facing traffic on the edge of the road, as far from the travel lane as possible.

Walk defensively and be ready for unexpected events. Know what's going on around you and don't allow your vision to be blocked by clothing, hats, or items that you are carrying.

Watch the pedestrian signals, not the traffic signal, and follow the "WALK/DON'T WALK" lights (they're set up to help you cross safely). Look for pedestrian push buttons for crossing protection at signalized intersections.

Watch out for parked vehicles. Parking lots can be as dangerous as streets.

- Avoid alcohol and drugs as they can impair your ability to walk safely.
- When crossing, use all of your senses and don't use your cell phone for calls and texting.
- Use particular caution when crossing driveways and alley entrances. Drivers may not expect you to be there or see you.
- Adults should supervise children when crossing streets. Smaller children may be difficult for drivers to see and young children may not be able to judge whether it is safe to cross a street.

### **Road Safety Cell**

The renowned organization, RSC provides the nodal organization for planning & managing initiatives of all Govt, Social & Business companies about Street Protection. It is well known today that the internalization of road guidelines and road self-discipline by the motorists is a crucial precondition for guaranteeing more secure streets. Motivated by the "Catch them Young" viewpoint, the RSC concentrates its major actions on training our children, the people of the future and the basic principles of road safety. The RSC has also given certain allied actions like performing analysis on causes of road injuries, performed to reduce road accidents etc.

### **Organization**

The Street Protection Mobile is advanced by a Sub-Inspector official of the Traffic Cops and is served by one Head Constable, 7 Constables and 5 Home secure volunteers. The performing of the mobile phone is separated into three branches:

**Knowledge Branch:** - The Knowledge Division is the primary Street Protection Mobile and is given with the task of distributing attention about road safety.

**Research Branch:** - The analysis branch is accountable for the study of the ways of injuries to recognize the actual causal factors. The branch indicates road technological innovation and other actions to prevent the event of road injuries.

**Car owner Test Branch:** - The Street Protection Cell's Car owner Test Division is accountable for performing the 'Test of Knowledge' (test for Learner's License) and the 'Test of Generating Competence' for Generating the Driving License or Certificate.

### **Maximum Speed Limit of Motor Vehicles**

Speed limits would be varying in various states and it can be according to the vehicles as well. These Maximum Speed Limit of Motor Vehicles are set through the local government and people are required to follow all of them. If you are driving on the expressway and then it is common to drive on the speed till 100 to 120 km/hr. India is known to have very less expressways and one of the notable is Mumbai and Pune Expressway. It is highly recommended that you should avoid using the motorcycles and you speed should not be more than the 80 km/hr. These days, highway police is making usage of automated instruments through which they can track the speed of vehicles. If you would not be following the rules and regulations and then it may result in fine. The severe case can be you can get arrested or you would be required to make the fine as well.

### **Traffic Signals Management**

While a traffic signal can eliminate the need for manual control of the right of way, it does not eliminate human involvement, intervention, or intelligence in service delivery - the customer understands this even though he/she does not know the underlying technologies or engineering involvement. The traffic signal system cannot be effectively maintained and operated without adequate planning and oversight. The issues faced in this section are programmatic management actions that address these important functions.

**Traffic Signal Operations:** Traffic signal operational strategies support efficiency while maintaining safety and providing signal timing that minimizes and balances congestion while promoting smooth flow. These strategies must address the management of traffic conditions predictably and consistently. Reviewing and updating the timing and operational aspects of signalized intersections on a regular basis is extremely important, especially where changes in traffic volumes and/or adjacent land uses have occurred since the last review. This is important for all signalized intersections, regardless of whether they are isolated or coordinated or whether the coordination is provided by a central system or a smaller, more localized system composed of a few intersections. Traffic signal coordination is one of the more vital aspects of traffic signal control because it ensures that motorists are able to travel through multiple intersections along a corridor with minimal stops and short delays. The issues addressed in this section include review and update of the phasing sequence, detectors, displays, timing parameters (settings), and other related operational aspects of individual signalized intersections, as well as the timing, interconnection, and operation of coordinated systems.

**Signal Timing Practices:** Some of the questions in the self assessment address issues such as the frequency of signal timing and the number of operational detectors. While these questions are important, it is equally important to consider the outcomes of signal timing activities and whether they have met the intended results of the program objectives; in other words, determining the overall effectiveness of the signal operations that results from all of these activities. This section evaluates the effectiveness of the signal operations through consideration of the degree to which the agency employs signal timing practices that have been shown to produce efficient operations.

**Traffic Monitoring and Data Collection:** A robust program and supporting systems are needed to determine the condition of traffic flow on roadway networks. These programs and supporting systems collect data connected to agency objectives to:

- Provide input to traffic signal control operation.
- Monitor systems in real-time.
- Formulate strategies to effectively manage and control the flow of traffic.
- Monitor flows over long periods of time via data archiving.
- Distribute to others, such as peer agencies, public, universities, and local planning programs.
- Assist in incident response and management.

**Maintenance:** The maintenance function supports the key strategy of field infrastructure reliability that leads to effective signal operations. A well-timed system must be accompanied by effective maintenance if it is to provide high-quality service to the motoring public. This section can be used to assess the effectiveness of the planning, management, and execution of maintenance activities.

### TRAFFIC SIGNALS

Traffic signals control the flow of traffic, warn you of hazards ahead, guide you to your destination, and inform you of roadway services. As indicated below, traffic signs are intentionally color coded to assist the operator.

- RED - stop
- GREEN - direction
- YELLOW - general warning
- BLACK/WHITE - regulation
- BLUE - motorist service (e.g., gas, food, hotels)
- BROWN - recreational, historic, or scenic site
- ORANGE - construction or maintenance warning

### STOP AND YIELD SIGNS



The STOP sign always means come to a complete halt and applies to each vehicle that comes to the sign. You must stop before any crosswalk or stop line painted on the pavement. Come to a complete stop, yield to pedestrians or other vehicles, and proceed carefully. Simply slowing down is not enough. If a 4-WAY or ALL WAY sign is added to a STOP sign at an intersection, all traffic approaching the intersection must stop. The first vehicle in the intersection of a four-way stop has the right of way. When you see a YIELD sign, slow down and be prepared to stop.

Let traffic, pedestrians, or bicycles pass before you enter the intersection or join another roadway. You must come to a complete stop if traffic conditions require it.

### REGULATORY SIGNS

The United States is now using an international system of traffic control signs that feature pictures and symbols rather than words. The red-and-white YIELD and DO NOT ENTER signs prohibit access or movement.

### WARNING SIGNS



Yellow warning signs alert you to hazards or changes in conditions ahead. Changes in road layout, proximity to a school zone, or some special situation are examples of warning signs. Slow down and obey the sign. Disregarding a warning sign is not only dangerous, it is against the law.

**GUIDE SIGNS**



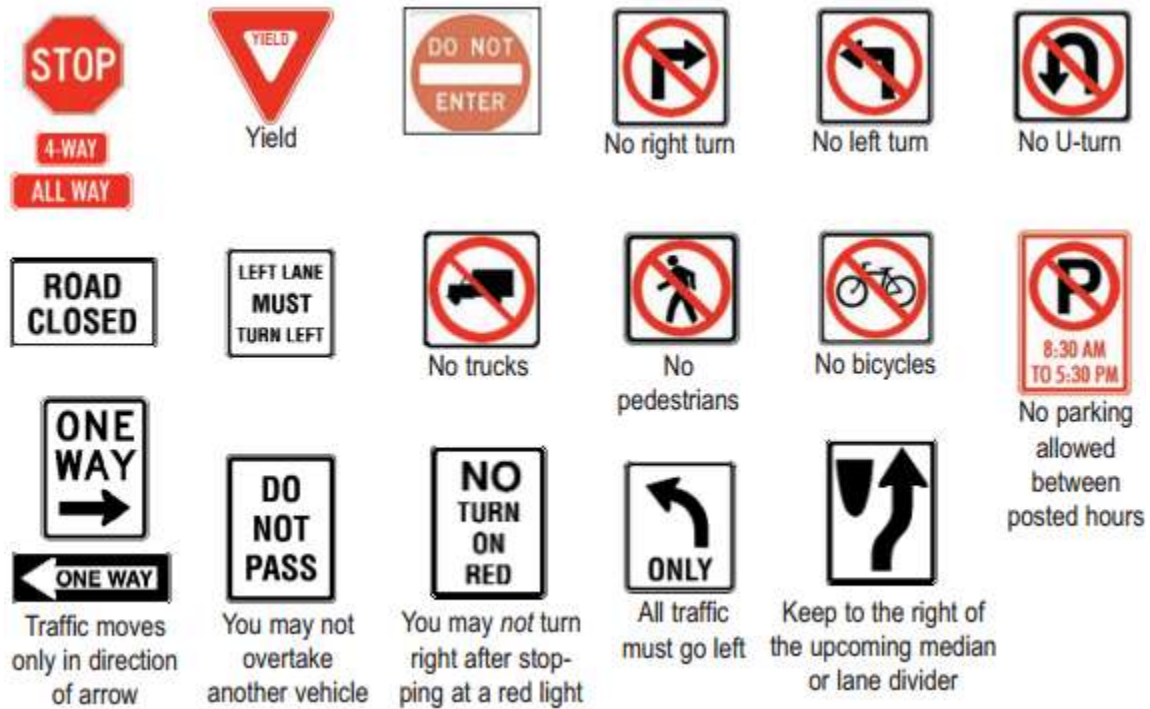
In the guide signs category, you will find route markers, distance-and-destination signs, and informational signs.

Green signs give highway directions and guide you through highway interchanges.

Blue signs list motorist services, like gas, food, and lodging. Brown signs direct you to public recreational areas, state and national parks, historical points of interest, and scenic sites.

In India, numbered state highway routes are posted on white, rectangular signs with black letters and borders. Interstate highway signs are blue, red, and white shields.

**REGULATORY SYMBOLS**



**Traffic Signal Assessment**

The signal assessment was divided into five topic areas identified as necessary for good signal operations:

- Management
- Traffic signal operations
- Signal timing practices
- Traffic monitoring and data collection
- Maintenance

Figure below shows the 2012 national results by topic area in comparison to the results by topic area from the 2005 and 2007 report cards.

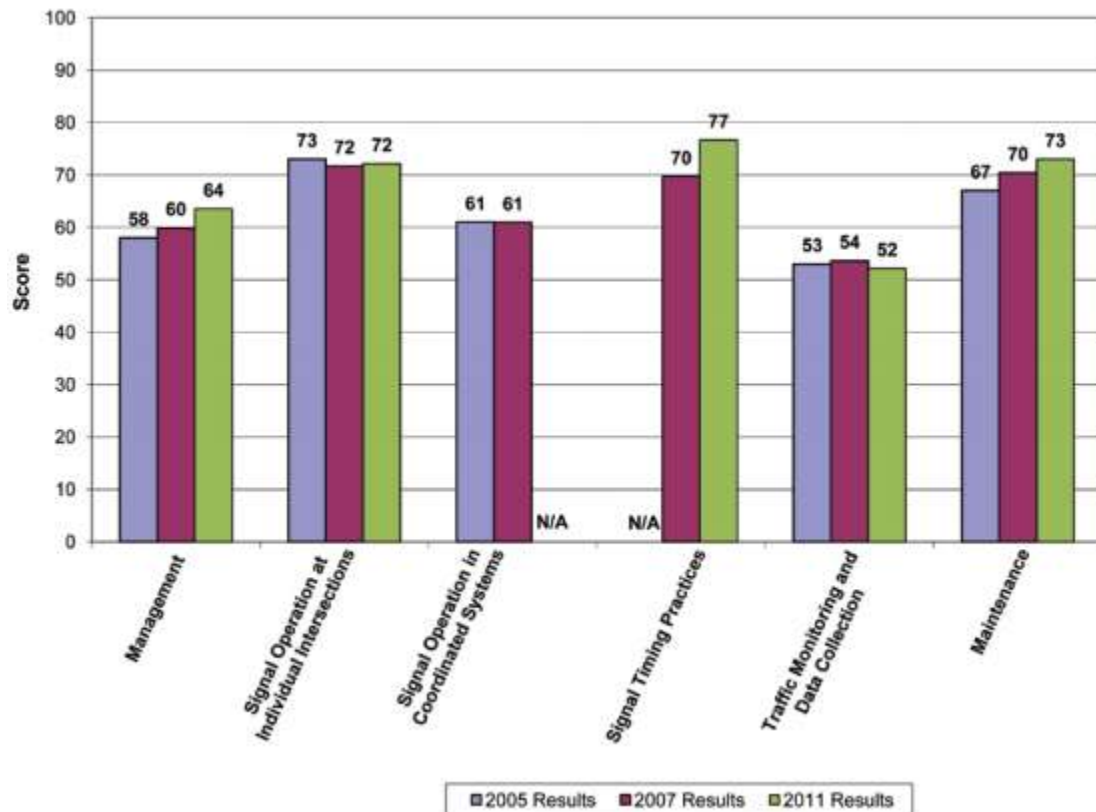


Figure : Comparison of Results of 2005, 2007, and 2011 Traffic Signal Operations Self Assessments

## CONCLUSIONS

The need for good traffic signal management and operations continues to be great. Time spent commuting and traffic congestion are major livability issues, particularly for cities and suburbs. Traffic signal management and operations have been historically underfunded as a core agency service. However, more recently there has been allocated funding toward traffic signal programs even during the economic downturn. Investment in traffic signal operations is one of the most cost effective means to improve transportation system efficiency and achieve agency and community objectives related to mobility. The self assessment measures how agency programs support traffic signal management and operations and helps agencies understand opportunities for improving their own policies and practices. Each of the agencies that participated can benefit by using their individual results to identify strengths in their signal systems and opportunities for improvement - some already have. The self assessment included notation that indicates the relationship of the questions to a generalized traffic signal program management plan incorporating forward leaning practices. The key element to improving traffic signal operations is developing effective leaders and giving them the tools they need to work within their resource constraints.

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