Background
Traffic signals are a common form of traffic control used to address highway operations for all users. They allow the shared use of road space by separating conflicting movements in time and allocating delay. However, in some cases the dual objectives of mobility and safety conflict, and one element may need to be sacrificed to some degree to achieve improvements in the other.

It is estimated that there are 300,000 signalized intersections in the United States. Approximately 2,700-2,800 traffic fatalities, or 30-31% of all intersection fatalities, occur annually at these signalized intersections.

Report Features
This 2004 guide provides a single, comprehensive document with methods for evaluating the safety and operations of signalized intersections and tools to remedy deficiencies. The treatments presented in the guide range from low-cost measures, such as improvements to signal timing and signage, to high-cost measures such as intersection reconstruction or grade separation.

Some of the topics covered include: fundamental principles of user needs, geometric design, and traffic design and operations; safety and operational analysis techniques; and, a wide variety of treatments to address existing or projected problems, including individual movements and approaches, pedestrian and bicycle treatments, and corridor techniques.

In addition, this guide covers alternative intersection forms that aid in improving intersection performance through the use of indirect left turns and other treatments. Each treatment includes a discussion of safety, operational performance, multimodal issues, and physical and economic factors that should be considered.

Contacts
For more information on how to obtain a copy of this report contact the FHWA Report Center by email to report.center@dot.gov, by fax to (301) 577-1421 or by phone at (301) 577-0818; or visit the website www.tfhrc.gov/safety/pubs/04091. The report number is FHWA-HRT-04-091.