

# **Forensic Aspects of Driver Perception and Response**

**Third Edition**

**Paul L. Olson  
Robert Dewar  
Eugene Farber**



**Lawyers & Judges  
Publishing Company, Inc.**


**Tucson, Arizona**

This publication is designed to provide accurate and authoritative information in regard to the subject matter covered. It is sold with the understanding that the publisher is not engaged in rendering legal, accounting, or other professional service. If legal advice or other expert assistance is required, the services of a competent professional person should be sought.

—From a Declaration of Principles jointly adopted by  
a Committee of the American Bar Association  
and a Committee of Publishers and Associations.

The publisher, editors and authors must disclaim any liability, in whole or in part, arising from the information in this volume. The reader is urged to verify the reference material prior to any detrimental reliance thereupon. Since this material deals with legal, medical and engineering information, the reader is urged to consult with an appropriate licensed professional prior to taking any action that might involve any interpretation or application of information within the realm of a licensed professional practice.

Copyright ©2010 by Lawyers & Judges Publishing Co., Inc. All rights reserved. All chapters are the product of the Authors and do not reflect the opinions of the Publisher, or of any other person, entity, or company. No part of this book may be reproduced in any form or by any means, including photocopy, or electronic use, without permission from the Publisher's representative at the Copyright Clearance Center, Inc. (CCC) at [www.copyright.com](http://www.copyright.com).

 **Lawyers & Judges  
Publishing Company, Inc.**

P.O. Box 30040 • Tucson, AZ 85751-0040  
(800) 209-7109 • FAX (800) 330-8795  
e-mail: [sales@lawyersandjudges.com](mailto:sales@lawyersandjudges.com)  
[www.lawyersandjudges.com](http://www.lawyersandjudges.com)

Library of Congress Cataloging-in-Publication Data

Olson, Paul L.

Forensic aspects of driver perception and response / Paul L. Olson, Robert Dewar, Eugene Farber. -- 3rd ed.

p. cm.

Includes bibliographical references and index.

ISBN-13: 978-1-933264-78-3 (hardcover : alk. paper)

ISBN-10: 1-933264-78-0 (hardcover : alk. paper)

1. Liability for traffic accidents--United States--Trial practice. 2. Trial practice--United States. 3. Traffic accidents--United States. 4. Traffic accident investigation. 5. Automobile driving--Physiological aspects. I. Dewar, Robert. II. Farber, Gene. III. Title.

KF8925.T7O57 2010

346.7303'22--dc22

2009046119

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

**Table 18.2 Response Times of Approaching Drivers to the Onset of the Yellow Phase of Traffic Signals at Different Locations**

Intersection Approach	Mean Time (sec)	Standard Deviation (sec)	85% Time (sec)
University Drive	1.28	0.82	2.0
Southern Ave. (Day)	1.49	0.62	1.9
Southern Ave. (Night)	1.43	0.73	2.0
U.S. 60	1.38	0.60	2.1
First Ave.	1.24	0.51	1.8
Sixth Street	1.55	0.70	2.0
Broadway Blvd. (Day)	1.16	0.48	1.5
Broadway Blvd. (Night)	1.09	0.44	1.5
All Approaches	1.30	0.60	1.8

From Wortman and Matthias (1983)

Rakha et al. (2007) tested 60 subjects in a formal study on a closed course. Measures were made of PRT and run-stop decisions as a function of distance from the simulated intersection. Based on this work the investigators concluded that the 1.0-second PRT recommended in signal design procedures is valid.

When considering the value of these data as indicators of driver PRT it would be helpful to recall the mindset of a driver approaching a signal that has been green for some time. The driver knows there is a possibility it will change to yellow before the intersection is reached. If a pedestrian signal is visible to the approaching driver its status will provide an additional cue to the likelihood of a signal change. If the signal does change from green to yellow then the driver must decide whether she is close enough to clear through or must stop. Detection and identification are not really issues in this case, only decision.

Another approach utilizing unaware motorists is the so-called "trap study," which has been employed as a means of evaluating vehicle signaling systems. This procedure requires two test vehicles and is run in normal traffic. A test vehicle with the lighting system of interest merges in front of a potential subject, a second vehicle with the measurement equipment merges behind. When all is ready the lead vehicle presents a brake signal for a few seconds (without actually slowing). The time from that presentation until the subject responds by braking is measured in the following vehicle. The test vehicles then move away from the subject who, ideally, has no awareness that a test was conducted, and locate another subject. Three such investigations of interest are those reported by the Allen