TOOLBOX OF HIGHWAY SAFETY STRATEGIES

Sponsored by the Iowa Safety Management System (Iowa SMS)
800 Lincoln Way, Ames, Iowa 50010
Phone 515-239-1169 / Fax 515-239-1891
www.IowaSMS.org
POTENTIAL STRATEGIES FOR HIGHWAY SAFETY IMPROVEMENT

DRIVERS
POTENTIAL STRATEGIES FOR HIGHWAY SAFETY IMPROVEMENT

OTHER USERS

Iowa Crashes by Vehicle Type (1990–1999)
POTENTIAL STRATEGIES FOR HIGHWAY SAFETY IMPROVEMENT

HIGHWAYS

Iowa Rural vs. Urban Fatal Crashes

- Rural: 78%
- Urban: 22%

Iowa Rural vs. Urban Personal Injury Crashes

- Rural: 32%
- Urban: 68%

Iowa Rural vs. Urban Property Damage Only Crashes

- Rural: 33%
- Urban: 67%
POTENTIAL STRATEGIES FOR HIGHWAY SAFETY IMPROVEMENT

EMERGENCY RESPONSE

Photo courtesy of Mercy Air Life, Mercy Medical Center, Des Moines.
POTENTIAL STRATEGIES FOR HIGHWAY SAFETY IMPROVEMENT

PLANNING AND MANAGEMENT
RESOURCES

PRIMARY CONTACTS

Joyce Emery
Office of Traffic and Safety
Iowa Department of Transportation
800 Lincoln Way
Ames, IA 50010
Phone: 515-239-1016
Fax: 515-239-1891
E-mail: joyce.emery@dot.state.ia.us
Chapter 25 and Appendix A

Scott Falb
Office of Driver Services
Iowa Department of Transportation
Park Fair Mall, 100 Euclid Avenue
Des Moines, IA 50306
Phone: 515-237-3154
Fax: 515-237-3071
E-mail: scott.falb@dot.state.ia.us
Chapters 5, 7, and 13 and Appendix A

Steve Gent
Office of Traffic and Safety
Iowa Department of Transportation
800 Lincoln Way
Ames, IA 50010
Phone: 515-239-1129
Fax: 515-239-1891
E-mail: steve.gent@dot.state.ia.us
Chapters 19 and 22

Dick Harmon
EMS
Iowa Department of Public Health
401 SW 7th Street, Suite D
Des Moines, IA 50309
Phone: 515-281-5737
Fax: 515-281-4958
E-mail: dharmon@idph.state.ia.us
Chapter 24 and Appendix A

Valerie Hunter
Motor Vehicle Enforcement
Iowa Department of Transportation
P.O. Box 10473
Des Moines, IA 50306
Phone: 515-237-3218
Fax: 515-237-3387
E-mail: valerie.hunter@dot.state.ia.us
Chapter 14

Peggi Knight
Office of Public Transit
Iowa Department of Transportation
800 Lincoln Way
Ames, IA 50010
Phone: 515-239-1530
Fax: 515-239-1120
E-mail: peggi.knight.dot.state.ia.us
Chapter 12

Craig Markley
Office of Systems Planning
Iowa Department of Transportation
800 Lincoln Way
Ames, IA 50010
Phone: 515-239-1027
Fax: 515-233-7857
E-mail: craig.markley@dot.state.ia.us
Chapter 26

Michael Pawlovich
Office of Traffic and Safety
Iowa Department of Transportation
800 Lincoln Way
Ames, IA 50010
Phone: 515-239-1428
Fax: 515-239-1891
E-mail: michael.pawlovich@dot.state.ia.us
Chapter 25 and Appendix A

Kathy Ridnour
Office of Systems Planning
Iowa Department of Transportation
800 Lincoln Way
Ames, IA 50010
Phone: 515-239-1713
Fax: 515-233-7857
E-mail: kathy.ridnour@dot.state.ia.us
Chapters 9 and 10

Charles V. Schwab
Extension
Iowa State University
206A Davidson Hall
Ames, IA 50011
Phone: 515-294-6360
Fax: 515-294-9973
E-mail: cvschwab@iastate.edu
Chapter 15
Resources

Tim Simodynes  
Office of Traffic and Safety  
Iowa Department of Transportation  
800 Lincoln Way  
Ames, IA 50010  
Phone: 515-239-1349  
Fax: 515-239-1891  
E-mail: tim.simodynes@dot.state.ia.us  
Chapter 3

John Smith  
Operations  
Union Pacific Railroad  
900 Story Street  
Boone, IA 50036  
Phone: 641-483-9409  
Fax: 515-433-5838  
E-mail: JWSmith1@up.com  
Chapter 21

Kim Snook  
Office of Driver Services  
Iowa Department of Transportation  
154 Collins Road NE  
Cedar Rapids, IA 52402  
Phone: 319-447-0946  
Fax: 319-377-5359  
E-mail: kim.snook@dot.ia.state.us  
Chapters 5, 7, 8, and 13

Mary Stahlhut  
Office of Traffic and Safety  
Iowa Department of Transportation  
800 Lincoln Way  
Ames, IA 50010  
Phone: 515-239-1169  
Fax: 515-239-1891  
E-mail: mary.stahlhut@dot.state.ia.us  
Chapter 28 and Appendix B

Bob Thompson  
Iowa Governor’s Traffic Safety Bureau  
629 East 2nd Street  
Des Moines, IA 50319  
Phone: 515-281-3014  
Fax: 515-281-6190  
E-mail: rthompson@dps.state.ia.us  
Chapters 2, 6, 25, and 28 and Appendix A

Daron Van Helden  
AAA Minnesota/Iowa  
420 Gateway Boulevard  
Burnsville, MN 55337  
Phone: 952-707-4985  
Fax: 952-707-4220  
E-mail: daron.vanhelden@mn-ia.aaa.com  
Chapters 1 and 4

Terry Voy  
Iowa Department of Education  
Grimes State Office Building  
400 E 14th  
Des Moines, IA 50319  
Phone: 515-281-4749  
Fax: 515-281-7700  
E-mail: terry.voy@ed.state.ia.us  
Chapter 11

Tom Welch  
Office of Traffic and Safety  
Iowa Department of Transportation  
800 Lincoln Way  
Ames, IA 50010  
Phone: 515-239-1267  
Fax: 515-239-1891  
E-mail: tom.welch@dot.state.ia.us  
Chapters 16, 17, 18, 20, 23, and 27

Mary Ann Young  
Department of Elder Affairs  
200 10th Street  
Des Moines, IA 50309  
Phone: 515-242-3312  
Fax: 515-242-3333  
E-mail: maryann.young@dea.state.ia.us  
Chapter 8
IOWA SMS MEMBERS AND ALTERNATES (FALL 2001)

Saleem Baig—Office of Local Systems, Iowa Department of Transportation, Ames
Kevin Blanshan—Iowa Northland Regional Council of Governments, Waterloo
Pat Cain—Office of Transportation Data, Iowa Department of Transportation, Ames
Tim Crouch—Office of Traffic and Safety, Iowa Department of Transportation, Ames
Robert Davis—AARP 55-Alive, Sioux City
Walter Deeds—Cedar Rapids Police Department, Cedar Rapids
Terry Dillinger—Office of Driver Services, Iowa Department of Transportation, Des Moines
Joyce Emery—Office of Traffic and Safety, Iowa Department of Transportation, Ames
Tom Erceg—Cedar Rapids Police Department, Cedar Rapids
Scott Falb—Office of Driver Services, Iowa Department of Transportation, Des Moines
Paul Fitzgerald—Iowa State Sheriffs and Deputies Association, Story County, Nevada
Art Fleener—Federal Motor Carrier Safety Administration, Ames
Jim Gibson—Modal Division/Rail Transportation, Iowa Department of Transportation, Ames
Jim Green—National Highway Traffic Safety Administration Region VII, Kansas City, MO
Ed and Kay Green—AARP 55-Alive, Sigourney
Peter Hallock—Rail Transportation, Iowa Department of Transportation, Ames
Dick Harmon—EMS Division, Iowa Department of Public Health, Des Moines
Angela Houston—Cedar Rapids Police Department, Cedar Rapids
Valerie Hunter—Office of Motor Vehicle Enforcement, Iowa Department of Transportation, Des Moines
Ray Jones—Iowa Department of Public Health, Des Moines
Peggi Knight—Office of Public Transit, Iowa Department of Transportation, Ames
Ann Lafler—State Farm Insurance, Lincoln, NE
Mike Laski—Iowa Governor's Traffic Safety Bureau, Des Moines
Jack Latterell—National Model, Ames
Andy Loonan—Iowa Northland Regional Council of Governments, Waterloo
Scott Madison—Iowa Sheriffs and Deputies Association, Story County, Nevada
Craig Markley—Office of Systems Planning, Iowa Department of Transportation, Ames
Tom McDonald—Center for Transportation Research and Education, Iowa State University, Ames
Todd Misel—Iowa State Patrol, Iowa Department of Public Safety, Des Moines
John Nervig—Data Consultant, Ames
George Oster—Fire Service Training Bureau Division, Fire Service Institute, Ames
Sharon Owenson—Federal Motor Carrier Safety Administration, Ames
Tom Parham—Office of Local Systems, Iowa Department of Transportation, Ames
Michael Pawlovich—Office of Traffic and Safety, Iowa Department of Transportation, Ames
Mark Perington—American Public Works Association/Snyder & Associates, Ankeny
Ron Peterson—Data Services, Iowa Department of Transportation, Ames
Bill Reitinger—National Highway Traffic Safety Administration Region VII, Kansas City, MO
Kathy Ridnour—Office of Systems Planning, Iowa Department of Transportation, Ames
Jerry Roche—Federal Highway Administration, Ames
Harold Schiel—Iowa Traffic Control and Safety Association, Ames
Charles V. Schwab—Iowa State University, Ames
Tim Simodynes—Office of Traffic and Safety, Iowa Department of Transportation, Ames
Dave Smith—Iowa Motor Truck Association, Des Moines
Duane Smith—Center for Transportation Research and Education, Iowa State University, Ames
John Smith—Operations, Union Pacific Railroad, Boone
Kim Snook—Office of Driver Services, Iowa Department of Transportation, Cedar Rapids
Tom Snyder—Iowa County Engineer's Association, Osceola County, Sibley
Reginald Souleyrette—Center for Transportation Research and Education, Iowa State University, Ames
Mary Stahlhut—Office of Traffic and Safety, Iowa Department of Transportation, Ames
Angelo Stefani—Office of Systems Planning, Iowa Department of Transportation, Ames
Bob Studer—Ames Bicycle Club, Ames
Don Tebben—Office of Program Management, Iowa Department of Transportation, Ames
Bob Thompson—Iowa Governor's Traffic Safety Bureau, Des Moines
Daron Van Helden—AAA Minnesota/Iowa, Burnsville, MN
David Veneziano—Transportation Students Association, Iowa State University, Ames
Terry Voy—Iowa Department of Education, Des Moines
Scott Weiser—Iowa Motor Truck Association, Des Moines
Tom Welch—Office of Traffic and Safety, Iowa Department of Transportation, Ames
Mary Ann Young—Department of Elder Affairs, Des Moines
Resources

KEY ORGANIZATIONS

AAA Formulation for Traffic Safety
www.aaafts.org

American Association of Motor Vehicles Administration (AAMVA)
www.aamva.org

American Association of State Highway and Transportation Officials (AASHTO)
www.aashto.org

Centers for Disease Control and Prevention (CDC)
www.cdc.gov

Federal Highway Administration (FWHA)
safety.fhwa.dot.org

Federal Motor Carrier Safety Administration (FMCSA)
www.fmcsa.dot.gov

Insurance Institute of Highway Safety
www.hwysafety.org

Institute of Transportation Engineers (ITE)
www.ite.org

National Highway Institute (NHI)
www nhi fhwa dot gov

National Highway Traffic Safety Administration (NHTSA)
www.nhtsa.dot.gov

National Highway Traffic Safety Administration (NHTSA) Safe Communities
www.nhtsa dot gov/safecommunities

National Safety Council (NSC)
www.nsc.org

National Transportation Safety Board (NTSB)
www.ntsb.gov

Network of Employers for Traffic Safety (NETS)
www.trafficsafety.org

Traffic Safety Information Village
www.drivers.com

Transportation Research Board (TRB)
www.nas.edu/trb

Turner Fairbanks Highway Research Center
www.tfhrc.gov

This toolbox is a living document. Last updated November 2001.
APPENDIX A
IOWA DATA AND ANALYSIS

Introduction
Data Knowledge
Iowa’s Data Sources, Analysis Tools, and Outcomes
Crash Data
Crash Costs

Iowa and Comparative Data
Leading Causes of Death for Americans Age 1–34
Midwest Crash Fatality Rates
Iowa Trends
Iowa’s Crash Clock
Iowa Traffic Crash Fatalities 1960–1999
Iowa Leading Causes of Unintentional Event Fatalities
Iowa Traffic Crash Fatalities by County
Iowa Driver Error Causes of Crashes
Iowa Crashes by Vehicle Type
Iowa Crash Rates
Iowa Crashes
Iowa Facts by Toolbox Chapter Topic

Data Source and Analysis Examples from Iowa's Highway Safety Practitioners
Iowa Crash Data Forms (Iowa DOT Office of Driver Services)
Fatal Analysis Reporting System
Iowa Crash Facts (Iowa DOT)
Iowa Governor’s Traffic Safety Bureau Problem Identification
Iowa DOT Roadway Engineering Crash Analysis
Iowa DOT Office of Traffic and Safety Identification of Highway Safety Improvement Candidate Locations
Crash Outcome Data Evaluation System (Iowa Department of Public Health)
Iowa Traffic Safety Data Service

Iowa Data and Data Analysis Web Sites
APPENDIX B
IOWA SMS PUBLIC OPINION SURVEY
SUMMARY FINDINGS
INDEX
INDEX

access management—Chapter 16; Chapter 28
administrative license revocation (ALR)—Chapter 5; Chapter 6
aging drivers—Chapter 8; Chapter 20
agricultural vehicles—Chapter 15
aggressive driving—Chapter 4
air bags—Chapter 2
alcohol and driving—Chapter 6
ambulatory services—Chapter 24
animal-vehicle crashes—Chapter 22
applied technology—Chapter 25; Chapter 26
audits—Chapter 23
barred driver privileges—Chapter 5
bicycle (pedalcycle) safety—Chapter 10
blood alcohol concentration (BAC)—Chapter 6
buses—Chapter 11 (school); Chapter 12 (public transit)
child seats—Chapter 2
cell phones and other distractions—Chapter 3
centerlines—Chapter 18
commercial driver license (CDL)—Chapter 11; Chapter 12; Chapter 14
collision points—Chapter 16
crash analysis and crash analysis tools—Chapter 23; Chapter 25; Chapter 27; Appendix A
Crash Outcome Data Evaluation System (CODES)—Chapter 2, Background, Safety Belts; Chapter 25
crash rates—Introduction; Highways; Chapter 23
data analysis tools—Chapter 16; Chapter 17; Chapter 23; Chapter 25; Chapter 27; Appendix A
data gathering and sharing—Chapter 25; Chapter 27; Appendix A
data sources—Chapter 25; Appendix A
deer population—Chapter 22
demographics/demographic trends—Chapter 7; Chapter 8; Chapter 13; Appendix B
design/design improvements—Chapter 16; Chapter 17; Chapter 18; Chapter 19; Chapter 20; Chapter 23
drinking and driving—Chapter 6
driver education—Chapter 1; Chapter 6; Chapter 7; Chapter 8
driver workload—Chapter 20
driving while license revoked (DWLR)—Chapter 5
driving while license suspended (DWLS)—Chapter 5
drowsiness and fatigue while driving—Chapter 3
drunk driving—Chapter 6
driving while license revoked (DWLR)—Chapter 5
deer population—Chapter 22
design/design improvements—Chapter 16; Chapter 17; Chapter 18; Chapter 19; Chapter 20; Chapter 23
emergency medical services (EMS)—Chapter 24
emergency medical technician (EMT)—Chapter 24
emergency response—Chapter 24
excessive speeding—Chapter 4
Farm Safety Just 4 Kids program—Chapter 15
farm vehicles—Chapter 15
Fatality Analysis Reporting System (FARS)—Chapter 25, Nationwide
fatal crashes—Introduction; Appendix A
Federal Motor Carrier Safety Association (FMCSA)—Chapter 14
Federal Railroad Administration (FRA)—Chapter 21
flaggers—Chapter 19
"4 E’s + 1” (engineering, enforcement, education, and emergency response, plus “everyone else”)—Introduction; Chapter 27; Chapter 28
geographic information systems (GIS)—Chapter 25
graduated driver licensing (GDL)—Chapter 7
hazard elimination—Chapter 17
helmet use and helmet laws—Chapter 10 (bicycle); Chapter 13 (motorcycle)
high-risk groups—Chapter 3; Chapter 4; Chapter 6; Chapter 7; Chapter 8
highway design—Chapter 16; Chapter 17; Chapter 18; Chapter 20
highway features—Chapter 16; Chapter 17; Chapter 18; Chapter 19; Chapter 20; Chapter 23
impaired judgment—Chapter 6
intelligent transportation systems (ITS)—Chapter 12; Chapter 26
intersections (rural and urban)—Chapter 16
intoxication and driving—Chapter 6
Iowa in Motion Rail System Plan—Chapter 21
Iowa Traffic Safety Data Service (ITSDS)—Chapter 25, Iowa
lighting (roadway)—Chapter 20
linear referencing system (LRS)—Chapter 25, Iowa
local solutions—Chapter 27; Chapter 28
medians—Chapter 18
Manual on Uniform Traffic Control Devices (MUTCD)—Chapter 19
Mothers Against Drunk Driving (MADD)—Chapter 6, Background
motorcycle rider education (MRE) programs—Chapter 13
motorcycle safety—Chapter 13
multidisciplinary approach—Introduction; Chapter 27; Chapter 28
multi-jurisdictional approach—Introduction; Chapter 27; Chapter 28
multitasking—Chapter 3
Index

National Advanced Driving Simulator (NADS)—Chapter 3, Nationwide, Distracted Driving
National Model—Chapter 25, Iowa
new drivers—Chapter 7
older drivers—Chapter 8; Chapter 20
operations—Chapter 19
Operation Lifesaver program—Chapter 21
operating while intoxicated (OWI)—Chapter 5; Chapter 6
pavement markings—Chapter 17; Chapter 20
pedestrian safety—Chapter 9
Performance and Registration Information Systems Management (PRISM)—Chapter 25, Nationwide
proactive design—Chapter 23
public opinion—Appendix B
public service announcements—Chapter 1
public transit—Chapter 12
railroad crossings—Chapter 21
red light running—Chapter 4
regulations (motor carrier)—Chapter 14
resources—Resources; Appendix A
risk factors—Chapter 3; Chapter 4; Chapter 6; Chapter 7; Chapter 8
road rage—Chapter 4
road safety audits—Chapter 23
roadway features—Chapter 16; Chapter 17; Chapter 18; Chapter 19; Chapter 20; Chapter 23
Rocket Docket program—Chapter 5
roll-over protective structures (ROPS)—Chapter 15
rumble strips—Chapter 17; Chapter 18
run-off-road crashes—Chapter 17
rural vs. urban—Highways; Chapter 16; Chapter 17; Chapter 18
Safe Communities—Chapter 28, Nationwide
safety management system (SMS)—Introduction; Chapter 27; Chapter 28
safety management teams—Chapter 27; Chapter 28
Safety Agenda for the Nation—Chapter 7, Nationwide
school buses—Chapter 11
seat belts and seat belt laws—Chapter 2
shoulders—Chapter 17; Chapter 18
signals—Chapter 20
signing—Chapter 17; Chapter 19; Chapter 20
slow-moving vehicles (SMV)—Chapter 15
Special Traffic Enforcement Program (STEP)—Chapter 4, Iowa
Strategic Traffic Records Advisory Committee (STRAC)—Chapter 25, Iowa
technical data standards—Chapter 25
technology solutions—Chapter 25; Chapter 26
training—Chapter 21; Chapter 24
train-vehicle crashes—Chapter 21
trends (see also demographics)—Introduction
trucks—Chapter 14
urban vs. rural—Highways; Chapter 16; Chapter 17; Chapter 18
vehicle types—Other Users and Crossing Hazards; Chapter 9; Chapter 10; Chapter 11; Chapter 12; Chapter 13; Chapter 14; Chapter 15
vision and driving—Chapter 20
workers’ safety—Chapter 19
work zones—Chapter 19
young drivers/young driver education—Chapter 7

This toolbox is a living document. Last updated November 2001.