

NORTH STAR WORKSHOP PROCEEDINGS

Connecting the Minnesota Safety Agenda: Towards Zero Deaths

June 11-13, 2001
Earle Brown Center
St. Paul Campus
University of Minnesota

Sponsored by:

**Minnesota Department of Transportation, Minnesota Department of Public Safety,
Federal Highway Administration, National Highway Traffic Safety Administration**

Hosted by:

Center for Transportation Studies, University of Minnesota



Proceedings

North Star Workshop

Connecting the Minnesota Safety Agenda: Towards Zero Deaths

June 11 - 13, 2001

Earle Brown Center, St. Paul Campus, University of Minnesota

Published by

Center for Transportation Studies
University of Minnesota
511 Washington Ave. S.E.
Minneapolis, Minnesota
www.cts.umn.edu

Prepared by

Nancy Strege, Envy Communications

Edited by

Erin Streff, Center for Transportation Studies

Introduction

Last year there were 625 traffic deaths in Minnesota and 41,800 in the United States or approximately 100 people a day. It was suggested at this three-day North Star workshop that if a 100-person passenger jetliner crashed and killed 100 people a day, public outcry for safer air travel would be loud and clear. But somehow, this same number of deaths caused by traffic crashes gets little attention from the general public. The number of traffic deaths seems to be accepted among the driving public, many of whom don't believe it will happen to them or a loved one.

Participants with a concern for public safety from U.S. local, state, and federal agencies, as well as Sweden and Australia, came together to discuss ways to reduce the number of fatal and severe injury traffic crashes. These proceedings are derived from the workshop and contain the discussion and ideas generated for moving toward a goal of zero traffic deaths in Minnesota in 10 years.

This document contains summaries of individual presentations, panel discussions, participants questions and comments, and breakout group discussions. Speakers' slides are available in Appendices B — F.

Table of Contents

Monday, June 11, 2001—Day 1

Welcome and Opening Remarks	1
Moderator Robert Johns , Director, Center for Transportation Studies, University of Minnesota	1
Elwyn Tinklenberg , Commissioner, Mn/DOT	1
Charlie Weaver , Commissioner, MN Department of Public Safety	2
 What Can We Learn From Others?	 4
Moderator Steve Mengelkoch , Assistant Chief, Minnesota State Patrol	4
Jim Nichols , Director, Office of Research and Traffic Records, National Highway Traffic Safety Administration	4
John Moffat , Director, Washington Traffic Safety Commission	7
Colin Jensen , Executive Director, Queensland Department of Main Roads	10
George Ostensen , Director of Field Services, Midwestern Federal Highway Administration	15
 What are the Obstacles? Small Group Discussions	 17

Tuesday, June 12, 2001—Day 2

What Can We Learn From Others? Day 2	18
Anders Lie , Specialist, Traffic Safety, Swedish National Road Administration	18
 What Could The Future Bring?	 22
Moderator Robert Johns	
Nic Ward , Director, Human Factors Research Laboratory, Department of Kinesiology, University of Minnesota	22

Tom Scott , Director, Center of Urban and Regional Affairs, Department of Political Science, University of Minnesota	26
Max Donath , Director, Intelligent Transportation Systems Institute, Department of Mechanical Engineering, University of Minnesota	30
What Could The Future Bring? Panel Discussion	32
Moderator Dave Ekern , Assistant Commissioner, MN Department of Transportation Panelists: Colin Jensen, Anders Lie, Nic Ward, Max Donath, Tom Scott	
What Have We Learned and Where Should We Go? Small Group Discussions	38
Wednesday, June 13, 2001—Day 3	
What Are We Going To Do? Presentation of small group reports	39
Moderator: Richard Larson , Mille Lacs County Engineer	
Group 1: Dawn Spanhake	39
Group 2: Bill Shaffer	39
Group 3: Meg Tilly	40
Group 4: Virginia Lockman	40
Group 5: Maureen Janke	40
Group 6: Jean Ryan	41
Group 7: Karla Jensen	41
Group 8: Peggy Oberg	42
Group 9: Marjorie Ebensteiner	42
What Did We Hear? Panel Discussion	44
Moderator: Kathryn Swanson , MN Department of Public Safety	
Panelists: Patrick Hughes , Assistant Commissioner, MN Department of Transportation	45
Mancel Mitchell , Deputy Commissioner, MN Department of Public Safety	47
Alan Steger , Division Administrator, Federal Highway Administration	49
What's Next?	52

Appendices

Appendix A: List of Participants	A-1
Appendix B: John Moffat's Presentation	B-1
Appendix C: Colin Jensen's Presentation	C-1
Appendix D: George Ostensen's Presentation	D-1
Appendix E: Anders Lie's Presentation	E-1
Appendix F: Nic Ward's Presentation	F-1
Appendix G: Breakout Group Roster	G-1
Appendix H: Small Group Summaries from What are the Obstacles?	H-1
Appendix I: Small Group Summaries from What Have We Learned?	I-1
Appendix J: Presentation from Small Group Discussion Where Should We Go?	J-1

Monday, June 11, 2001—Day 1

Welcome and Opening Remarks

Robert Johns *Director, Center for Transportation Studies, University of Minnesota*

Welcome to the University of Minnesota St. Paul Campus. We are pleased to host this event. Looking around the room I can see that there are a lot of familiar faces as well as some unfamiliar faces with us today; that's a good thing.

The University of Minnesota Center for Transportation Studies tries to advance knowledge in transportation-related topics through research at the University, through education programs for students and professionals, and through outreach events such as this workshop. We try to bring together all sectors of academia, business, government, private, and non-profit. I'm happy to say that all of those groups are represented here today.

It is our hope that you will feel compelled to participate actively in this event. We have an intriguing program today in which we will learn about what others are doing to reduce traffic deaths. Tomorrow we'll discuss what the future can bring and begin to think about what's possible. Then we'll have you work on some ideas that will help create an action plan.

Now I'd like to ask Commissioner Elwyn Tinklenberg and Commissioner Charlie Weaver to give us some opening remarks.

Elwyn Tinklenberg *Commissioner, Minnesota Department of Transportation*

Thank you. We appreciate the time, effort, and energy you are giving to this workshop. On behalf of the Ventura administration and all of us at Mn/DOT, I welcome you to this North Star workshop. I especially want to welcome guests from outside of Minnesota and those from outside the United States. We've attracted experts from Sweden and Australia, Washington State, FHWA, and the National Highway Safety Administration. The fact you're all here is a testament to the importance of the issue of traffic safety.

Our purpose here this week is a bold one and fits the old adage that our reach should always exceed our grasp. We want to chart a course to make Minnesota a traffic death-free state in 10 years, and this workshop is a groundbreaking step forward in achieving that purpose.

This truly is a partnership effort, and I want to thank CTS for facilitating our work and hosting this event. I'd also like to say how proud I am of the partnership between Mn/DOT, the Department of Public Safety, and the federal and local agencies that came together to make this workshop possible.

This event is in large measure a reflection of our common mission to provide for the safety of the millions of people who use our transportation systems every day. I know that there are many who will be watching the work you do here, looking for opportunities for the next breakthrough for making our roads safe. It is even more important that you keep in mind those who will never know you met here. Their only association with this event is that they return home from their travels safely.

Great strides have already been made in the area of traffic safety, but there is much we can learn from the programs and experiences of other countries and other states. The fact that the number of traffic

deaths has remained steady, while the number of miles traveled has soared is a tribute to the work that many have done previously. We have now reached a time in our history to make the next great breakthrough. We want to move beyond education, enforcement, and engineering to new ways of thinking and new practices. No ideas in this workshop will be dismissed. Creativity and stepping beyond the traditional should be your approach in developing new directions and solutions. I encourage you to be bold, exciting, and innovating, but to stay focused and stay on target to zero traffic deaths in 10 years.

Charlie Weaver *Commissioner, Minnesota Department of Public Safety*

I want to echo what Commissioner Tinklenberg said in that our departments do have a great relationship. I also want to thank our federal partners. We've relied on them to come through for us and they have consistently. The great relationship we have isn't just between the commissioners. When I'm out in the field, I try to meet the Mn/DOT people. The relationship is deep and it's making a difference for Minnesotans.

Last year we had twice as many people killed by drunk drivers alone than were killed in all of the homicides. I've become a believer in the whole issue of traffic safety. What you're doing is enormously important. Maybe you don't get the press or all of the accolades that crime does, but I can tell you that from my perspective, public safety isn't just about crime. Public safety is just as much, and perhaps more importantly in terms of saving lives and preventing injuries, about traffic safety.

Let me give you a few important and powerful statistics I think would be important to get in front of the public: There are 283 crashes a day, in Minnesota. There are 1.7 traffic deaths per day in Minnesota. There were 625 traffic deaths total last year in Minnesota. There are more than 122 people injured every single day in Minnesota. And, there is \$4.6 million in economic loss per day, or more than \$1.6 billion a year in economic loss, to the state because of traffic crashes.

There's good news and bad news: The good news is that our fatality rate per mile traveled is the lowest it's ever been in the state per 100 million vehicle miles traveled. That is great news, and we should celebrate it. The bad news is that we need to do a better job of marketing our challenges, which include an increasing number of drunk drivers on our roads.

I'd like you to think out of the box, be creative, don't be bashful, and let's not be Minnesota nice when it comes to the advertising and public relations part of this. I've seen some of the ads coming out of New Zealand and Australia and it is powerful stuff. It hits you right between the eyes. We need to move toward that. We need to get our message across to the public and should reconsider our marketing strategies. We need to be tougher and not be timid, and we should be more willing to hit the public between the eyes with our message. We need to involve private sector partners in this effort, and I think they are eager to work with us. Our challenge is to really think about how we can do a better job in our advertising and advocacy. How do we get the general public interested?

Traffic safety issues are often overshadowed in the media by other more sensational stories. For example, recently there was a patrolman who ran over a turkey, and for four days in a row it was on the front page of the newspaper. But what happens when we kill 625 people on our roads each year? It doesn't make the news. So, how can we be smarter about capturing the public's attention on this very real problem that is killing our sons, daughters, moms, and dads? We hope to see some new ideas coming out of this smart, thoughtful group, and I want you to know that our governor will support you. This governor is not afraid of anything, and in this administration, anything goes. So if you can come up

with something new, original, thoughtful, and innovative, we're 100 percent in support of it. Together we really can save lives.

Robert Johns

I think that Commissioner Weaver's statement, anything goes, is very appropriate. You've all been challenged here to think in new ways. So let's get started by moving to the next part of the program, What Can We Learn from Others. Anne Beers, Chief of the State Patrol, was scheduled to moderate this session but may be called away this afternoon depending on what happens at the special session of the legislature. So, instead, please help me welcome Assistant Chief of the State Patrol, Steve Mengelkoch, who will moderate this session.

What Can We Learn From Others?

Steve Mengelkoch *Assistant Chief of the State Patrol, Moderator*

For about the next hour and 15 minutes, we will investigate the topic, What Can We Learn From Others? We are fortunate today to have people here who will make that a reality. Please help me welcome our first presenter, Jim Nichols.

Jim Nichols *Director, Office of Research and Traffic Records, National Highway Traffic Safety Administration*

I am pleased to be here today because I have a long history with Minnesota. You have some law enforcement liaisons who have done some of the best jobs of any across the country, and you should be proud of the things you've done in Minnesota.

In general, we have made a lot of progress. Some initiatives have been clearly and unequivocally proven to work, such as deterrence programs. The problem is that we've hit a plateau in this area. It's a time for innovation, but I don't think we need to throw away what we've not yet finished. Deterrence still has a big role to play, but clearly, technology on the highways and in vehicles is going to play more of a role. Crash avoidance systems probably have the most potential, but they will not solve all of the problems.

United States traffic fatalities have seen kind of a rolling cycle. The rates go up and down but at a lower level than in the past. The economy and exposure tend to affect the rate. When the economy is better, more people drive and there are more crashes.

More often than not, traffic crashes are a male problem. I was the worst that there was in terms of the type of person prone to a traffic-related death. The whole world revolved around my vehicle. The only thing that mattered was if someone took away my license or my car.

But whether the driver is male or female, young or old, 93 to 95 percent of crashes are due to some behavioral problem. The youth part of it is particularly difficult to deal with. From age 16 the minute kids become old enough to drive to age 20, the problem increases dramatically.

Although the number of youth fatalities is significant, the rate has gone down over the years. Around the early 90s, people said the rate is going down because the youth population was going down. True, some of it was due to that. But in the last half of the decade, the youth population began going up and still the fatalities are going down. It's primarily because of what we've done with the alcohol portion of it. We've been able, by luck or by plan, perhaps by enforcement and laws, to dramatically reduce alcohol-related deaths and injuries. In spite of all the problems that still exist, the higher drinking age and other efforts have made a difference, and we can continue to do more in the future as we learn how to better use the tools we have.

With regard to older drivers, clearly, the population is aging. However, older drivers, in general, have fewer crashes. They are not like the 18-year-olds. The elderly generally kill fewer other people; it's almost always the elderly driver himself who is killed, primarily because of frailty. The protection systems we have in vehicles, including airbags and seatbelts, don't work as well for the elderly as they do for younger people. These systems work, they just aren't as effective as they are on someone with a very strong bone structure. Since there will be many more older drivers driving more, we project more

fatalities in this group. It's almost always an exposure plus frailty issue. It's not primarily a bad driver issue, although there are some elements of that.

There are many issues we could talk about. There are the traditional traffic safety issues of alcohol impaired driving, lack of occupant protection, speed and unsafe driving issues, pedestrian and bicyclist issues, motorcycle issues, and young novice drivers. I just want to hit on a few of these and talk about the trends, what has worked, and what will work in the future.

There are also things I call emerging traffic safety issues, such as aggressive drivers, distracted drivers, fatigued drivers, older drivers, and older pedestrians. These aren't necessarily new issues; we're just focusing more on them now.

Let's look at the alcohol impaired driver issue. We have made progress in reducing drunk driving. I have the numbers of alcohol-related traffic fatalities from 1982 to 1999. I wish the statistics went back a little further. If they did, we'd see that there was a drop around 1980 that bottoms out about 1985. Then we plateau and there's a second phase that begins around 1992, then the rates drop until we hit another plateau. There are two periods of time where we have made a lot of progress: The early 80s and the early 90s. As an optimist, I predict we'll have another time of progress in the early 00s, and that will get us back on track. But right now, everyone is worried because we're in that plateau area.

We don't just measure this in terms of deaths or arrests. From time to time, we've done roadside surveys to try to find out how many people have alcohol on board, and those numbers have clearly gone down.

Again, as an optimist, I think we'll get off this plateau if we can get to that third phase and if we get to it on time. Others aren't as optimistic as I am, and they say that if we plateau right now, we won't make much progress. So really, we need to get this ball rolling again and re-implement some of the things we know will work or stumble on to something that's innovative.

Let's talk a bit about how we determine what things work. The best way to determine what works is to have a controlled test. You test it in one place and not in another. You try to determine if there was an intervention effect. What happened where you did implement a program and where you didn't implement a program? We can also do post hoc looks at alcohol related information.

There is a common sense of what is right and what is wrong. Using controlled evaluation works. In other words, if we put together all the literature we have for what works and what doesn't, you would find that laws work. Things that have to do with deterrence and prevention, such as a law or a highly publicized enforcement or sanction that was implemented, work. The minimum drinking age, administrative license laws, and lowering the BAC to .08 have had an effect.

It's important to note that when dealing with drunk drivers, only about five percent are caught in one year. The other thing to remember when dealing with drunk drivers involved in fatalities is that three out of four of these drunk drivers have never been in the system before. So, we need a better system for how we deal with the people we do catch. The problem with many court-imposed sanctions is that they aren't done very regularly throughout a state much less throughout the country. People need to realize that if they drink and drive they will be punished.

Again, deterrence efforts, such as the minimum drinking age and administrative license revocation laws (ALR), have worked. The result of the reduction of alcohol-related fatalities worldwide in the 80s is clearly the result of deterrence initiatives. Although no one can really explain what happened in the 90s.

I have some theories: MADD was really gearing up its public policy efforts, many ALR laws were passed, but I also think that when we increase seat belt usage we decreased alcohol-related fatalities. There are three things that have increased seatbelt usage: laws; the switch from secondary to primary laws; and highly visible enforcement.

I'll just quickly touch on a few other issues. With regard to drowsy driving, it is not a new problem, but it's hard to measure. I think this issue will be helped by the implementation of some type of in-vehicle system. To curb aggressive driving we need visible enforcement. As far as distracted driving goes, distractions cause at least 25, maybe 50 percent of crashes. What's making it worse is new technology. Drivers face a different level of cognitive distraction. I think technology, if it will be used by a driver, needs to run auditory, not manually, and we need to be careful with telematics and the elderly.

In closing, let's not forget that we have made great progress. Deterrence is one part of the continuing effort. Education and public information is another important element, and all of our efforts can be successful if we better support the initiatives that work.

Questions for Jim Nichols

How effective is the curfew in preventing teen traffic fatalities? Curfew is very important, as is the number of teenagers in the car. If there's someone else in the care and it's nighttime, the risk increases dramatically. Parental involvement, nighttime curfew, and number of teens other than family in the vehicle are three very important elements.

What's your thought on using photo cop as a deterrent? You can't put enough police officers on the road to arrest all the speeders, drunk drivers, and red light runners. I think this is a fair system. It seems to work. People accept this system's use for catching red light runners, but it's not as accepted to catch speeders, but we'll have to go there. I think this is a great deterrent.

John Moffat Director, Washington State Traffic Safety Commission

(Slides of John Moffat's presentation are included in Appendix B.)

It's interesting to note that Washington and Minnesota have a lot of similarities. Washington has about the same population as Minnesota. We have the same urban/rural split, and there are a lot of other similarities between us. We also have some of the same issues with the media. We had a petroleum pipeline blow up and kill three young boys. That got a lot of attention in Washington, but that same weekend there were several teenagers killed in a traffic accident and that incident didn't receive any press coverage at all. Traffic accidents are so ordinary and expected that they don't get the attention they should.

Because Washington has high seatbelt use rate and has passed the .08 BAC law, my office receives lot of federal money. Anyone who knows legislators knows you can't get them to pass traffic legislation when you want it, but when there is some extra money, they will come and act. We had the problem of new money, plateaued results, and no clear path of where to go, because we were leaders on the highway safety issue along with California and Minnesota and a few other states. No one knows the trail from here.

In Washington State, we began looking at what we can do to move forward. How do we get a primary seatbelt law? People get into crashes because they're drinking and they die because they aren't wearing seatbelts. How do we get a new vision for the future?

That's what got our Target Zero thinking going on. We needed a strong goal and something attractive to move the legislators' hearts.

I started asking myself, What do people care about? What do people want from traffic safety? That's what is driving this Target Zero concept. And this concept comes down to one main issue: Why can't we cut the death toll in traffic?

Part of that comes from comfort with change. How happy are we with the status quo? When you look at comfort with change, there are several factors involved: We are used to the way things are now and we don't have vision for the future; we don't see a better future; we have forgotten our past successes; and some of our leaders may not support change because change is hard. To initiate change, we need dissatisfaction; that is the only motivation. But right now, we're not dissatisfied enough to change.

When I look at the past, I see clearly that we've been successful because the death toll has gone down. Statistics show that the death rate has plummeted. We have a long history of success that we have forgotten about. From 1910 the death rate was around 64.6. As more and more people got on the roads, the death rate went up until the 1930s when licenses were started. Deaths went up to a peak in the 80s until they steadily started to come down. Two major reasons: Effective seatbelts were installed, and we reduced the incidences of drunk driving. The death toll has trended downwards, and I believe it will continue to go down. This is substantiated by the fact that roadside surveys indicate people are drinking and driving less.

So what is still needed? People need to be aware that the situation is bad. We also need to show them a better future and talk more about a brighter future for all of us, which means whenever you take a trip in your car, you will arrive safe and alive. I think we need to highlight and celebrate our past success and continue to talk about what is to be gained through positive change.

What can we do? Well, we know that we can't prevent all crashes. But we insure against property damage so that people recover and traffic crashes aren't a long-term event for one's life. We can agree that minor injuries are acceptable again, we recover. We won't try to prevent all crashes, property damage, and minor injuries, but we will agree that death permanent loss of loved one or self is unacceptable. People need to understand that the bad news is permanent. A person killed in a traffic accident will never rise again in this life, and that's what we have to communicate to people.

We also need to agree that disabling, long-term injuries resulting from traffic crashes are also unacceptable. We need to look at fatal and disabling injuries over the long haul. The number of speeding drivers has been decreasing over time, drunk driving has been decreasing, and inattentive/asleep driving has been decreasing. This is why nighttime curfews are good, because youth are prone to falling asleep at the wheel.

What is the Target Zero vision and how does it lace all this together? Our vision in Washington is for a safe and efficient traffic system with no deaths or disabling injuries by the year 2030. We are about 30 years through a 50-year process of addressing the drunk driver. We're about 20 years into a 30-year seatbelt process. People are slow to change and not easily convinced. But Target Zero is not about preventing all crashes, only the disabling and fatal crashes. The fatality rate can be reduced to zero. There are better roads, better cars, better drivers, and fewer drunk drivers, and we have great expectations for the future.

Statistically, we've addressed the trends for the next 20 years. The general trend will continue downward. We've reminded our legislatures that none of the things our predecessors did were easy. It was not easy to reduce the blood alcohol limits because people felt at that time that driving after drinking was a normal part of living. Requiring seatbelts in every auto wasn't easy either. So, we have to be prepared to make difficult changes, including primary seatbelt laws and things unknown to us now that will come about late in the program. We need to look at our vision and ask ourselves if we are being short-sighted. Are we prepared to make the hard decisions?

Who are the Target Zero planning partners? We decided that we needed a broad base of state government representatives and people from outside the state government. We've brought in a large number of people to work on this project. Our real question is How do we get to Target Zero? The answer is that we need to commit some assets to it. We need to build public support, the agencies must dedicate resources, we need to work together, and we need to spend some money. We're just beginning to put the money we do have out on the streets. All of our commissioners have endorsed this and have committed to spending the money on traffic safety issues.

This is a very exciting period where we get off of the plateau and move on to something new.

Questions for John Moffat

How important is the role of the governor and the legislature to get to Target Zero? Their role is very important because they are the formalized leaders. I think both groups were highly skeptical of the whole idea, but they've become believers that it's theoretically possible. I think they are hoping that this will work, and I think there has been an element of change and they are now willing to do the hard work.

What's the origin of the traffic safety commission? Our traffic safety commission in Washington State dates back to 1968, and it's a product of the Federal Highway Safety Act that required each state to

start a traffic safety program; Minnesota's would date back to that as well. Our state is one of the few that still has an independent traffic safety commission that involves all the state cabinet officers, representatives from the cities, the county, and the judiciary, and is charged by the legislature with making traffic safety policy for them and bringing laws to them and getting other traffic safety issues to the forefront. There have been times when we thought about merging it with the Department of Transportation or the Department of Public Safety, and so far the State has chosen to keep it as an independent body, which I think reflects the importance of the issue. In answer to a follow up question, we have a \$10 million budget to work with.

Colin Jensen Executive Director, Queensland Department of Main Roads, Australia

(Slides of Colin Jensen's presentation are included in Appendix C.)

Thank you for the opportunity to speak with you today. An event such as this is very important. In the Queensland government, we've been doing similar workshops on an annual basis for about half a decade, and I commend you on this initiative.

On average, in Australia, we have one road fatality every five hours. For us, we consider this quite enormous and even worse when you consider that it could be someone you know. As a previous speaker said, when you start putting names and locations to it, it becomes more personal.

Some of our road safety advertisements were a bit shocking, so I didn't bring the movies to show you, but I do have some of the stills to show you. Public education is a major part of what we're doing, but it is backed up with enforcement and it's backed up with pragmatism. It's not just doing one thing, it's doing everything in a pragmatic way.

As far as our ads go, I still think they were rather shocking myself. I have a 12-year-old son who wants to begin driving in four years. I asked him what he thought of these ads and he said, "It's quite simple, dad. If you speed, you drink, you drive, you crash, you die. What's the problem with the ad?"

I'd like to give you a bit of an introduction to explain the scope of Australia, a bit of history in terms of road safety, what we're doing currently, and perhaps where we're going. Australia is about the size of the continental United States and has 19 million people. Eighty percent of our population live in the city. We have urban problems like other places, plus we have long distances separating the major cities.

The major urban areas are along the Pacific coast, and there are very few major settlements more than 100 miles from coast. Most travel occurs within 100 miles of the coast. Eighty percent of the travel is done on twenty percent of the network, but that twenty percent of the network is not exactly up to standard.

Australia began keeping traffic and vehicle records in 1925. At that time, there were 300,000 registered vehicles and 700 deaths. The number of fatalities kept climbing until 1970, not a dissimilar time in terms of the United States, where it peaked at about 3,800 fatalities, or 30 per 100,000 population, which is pretty horrific.

Prior to 1970, the attitude to road safety was largely moralistic and had nothing to do with facts or figures or goals or objectives or visions. Motoring was a gentleman's activity and to have an accident showed that you weren't a gentleman.

That changed a lot in terms of the National Roads programs that the Commonwealth Government undertook in the 1970s. This was the era of nationally funded road construction and included the upgrade of many main highways. In the 1980s, the Government provided additional funds to other roads through the Australian Bicentennial Road Development fund.

While there were major improvements to the roads, very little of this was driven by concerns about road safety. There was more of an economic force behind improving the roads: How do you get your cattle to market? How do you get your grains exported?

Forty to forty-five percent of road trauma decreases over the last 25 years have been due to improving the road infrastructure. Of course, with improved road infrastructure comes increased speeds and in some cases, increased fatality rates.

The Federal Road Safety Black Spot program is a particularly targeted fund at the moment. It says that if there are more than three road deaths at an individual location that area gets a limited amount of federal funding to fix the problem area. In Queensland, we think it's quite horrific that you have to wait for three people to die before you can do anything about it, so we've pressured the federal government to turn that around and say, How about if we do an audit, which shows that there is a road safety problem at this location. Eighty percent of our funds under that program are now spent in that way, much to the disgust of the Commonwealth Government.

Currently, our action plan consists of focusing on the fatal four, which I'll describe more later, helmets, enforcement, and vehicles. In 1975, we had 26.6 deaths per 100,000 population in Australia. In 1998, we decreased this to 9.4. While we can say we're not doing too bad, we're still 50 percent worse than the best, which includes the United Kingdom and Sweden who have more like 6 deaths per 100,000 population.

What are we doing? These are the some of the priorities that have come out of the most current national road safety action plan. In terms of improved road user behavior, we're talking about drug education and enforcement, a reduced incidence of drink driving, improved compliance with speed limits, improving the matching of speed limits to conditions, increasing the measures to reduce the incidence and risk while driving fatigued, increasing the use of restraints, increasing deterrence of unlicensed driving and motorcycling and enabling police to confirm the identity of those drivers and riders, improving the safety of work-related road use by working with the community, improving design standards for vehicle compatibility this is the issue about big cars running into small cars improving occupant protection through regulation and consumer demand, using new technology to reduce human error, and improving the equity among all road users including pedestrians, cyclists, and indigenous people in Australia.

Now let me get back to the fatal four as we call it. It's an easily understood tag for the community. The message is that these four things, speeding, drunk driving, not wearing a seat belt, and driving tired, are totally avoidable.

Police enforcement is crucial to making an impact on the community. Our police look for what we call LEOs: life-endangering offences. If a police officer is handling incidence management on highways, his priority is to keep the freeways moving during peak periods and not stop someone unless he sees a LEO. If a police officer sees someone not wearing a seatbelt, for example, he has to do something about it. Half the road fatalities and twenty percent of the hospital stays in Australia can be attributed to someone neglecting one of the fatal four.

With regard to speeding, in blind surveys, the number of people who say speeding is okay is decreasing. The number of people who say safe speeding is okay is also going down. What are of particular interest are residential streets. Today, the general speed limit is 50 km/h unless otherwise posted. It had been 60 km/h. We've seen a 16 percent reduction in casualty crashes on residential streets and a 27 percent reduction in pedestrian deaths. In the end, that's how it was sold to the community: We simply said, look, these are residential streets where your children play. We can dramatically reduce the number of pedestrian fatalities if we reduce our speeds by 10 km/h.

With regard to drinking and driving, it's true that Australia has one of the highest per capita alcohol consumption rates in the world. That's changing a bit now that light beers and wines are readily available rather than just the one type of high-alcohol beer. Until recently it was popular culture to be able to hold one's liquor in Australia, particularly in rural areas, and still drive.

Driving under the influence has been an offence since the 1920s, but it wasn't always looked upon as a real offense. In 1972, a national expert group said that 53 percent of drivers killed in Queensland had a significant blood alcohol level. Beginning in 1973, some jurisdictions required blood testing on crash victims who were hospitalized. Then, the first random breath test was introduced in 1976 in Queensland and was progressively introduced nationwide by 1988. In 1990, all Australian states moved from .08 and adopted .05 as the legal limit.

Today, enforcement is crucial. We want to be seen testing people and catching drunk drivers. We set up booze buses and catch people leaving liquor establishments then give them a breath test. Interestingly, we have zero limits for inexperienced drivers and any driver of a public transport vehicle or heavy vehicle. If drivers in this group are caught with a BAC of anything, their license will be taken away, end of story.

The public attitude is now simply that you don't drink and drive. The young people are particularly receptive to education as they grow up with this attitude. We've gotten through to the young people, but it's the 25- to 50-year-olds we're having trouble convincing with education. Since only a quarter of people say they know how much alcohol they drink when they have a standard drink, we need to include a lot of education on what a standard drink is.

Seat belts click and clack, front and back those sorts of messages are important in educating the public. Short, catchy things they can remember. Seatbelts, by the way, are mandatory for us.

In terms of driving tired driving home after a long day at the office is a way of life. Driving fatigued is probably as bad as driving under the influence and is estimated to cause as many fatal crashes as drunk driving.

We are implementing drive and revive stops to encourage people to stop, rest, and survive the drive. We offer them a place to stop and break up their journey, and during holiday periods, we give them a free cup of coffee and a chocolate bar sponsored by Nestle to encourage people to pull over.

Helmets for both motorcycling and bicycling are required, and we have motorcycle programs, which require drivers to start with a smaller motorcycle first before moving to a bigger one.

We have improved enforcement technologies, including speed cameras, laser-based speed measuring devices, and other devices that let the driving public know they will be pulled over if they are driving inappropriately.

We also require drivers to use hands-free cell phones in Australia. But it's not actually holding the device to the ear that's the problem; it's actually being engaged in the conversation.

Our enforcement system is made up of both dollars and points. When you're engaged in an offense, you pay a fine and lose some points. When you lose all your points, you're off the road.

As far as vehicle standards go, we have Australian Design Rules, which are performance-based rules. We say that there is a survivability indicator that has to be met by vehicles. While the ADR are rather slack now, they are about to change, and vehicles won't pass unless they have all the latest side-intrusion bars, occupant protection, and supplementary restraints such as an airbag. If we got every car to be as safe as the safest vehicle in its class, we'd reduce fatalities by half.

Heavy vehicles are increasingly a problem, and overloading is a serious problem. Larger vehicles are also prematurely degrading road surfaces. Safe-T-cam is an intelligent transport system application that uses infrared photos to measure speeds between distances to catch commercial vehicles that are speeding. If we catch a commercial vehicle speeding, we send a letter to the owner of the vehicle and ask them to explain why the vehicle was speeding. We can now prosecute companies who are telling their drivers to speed. There's only a two percent re-offence rate from drivers of companies to whom we've sent a letter, yet we don't actually have to send a ticket at all.

In Australia, we have some big trucks with several trailers that are 53 meters long, running on public roads. Some vehicles on public roads weigh 200 tons. These vehicles are not the problem with regard to traffic safety. They are extremely safe. It's the old vehicles that are the problem.

So, are we there yet? Well, we've made gains, but we aren't there yet. Our current public philosophy sets targets for improvement based on benefit-cost analysis. Unfortunately, Vision Zero is not currently on the political agenda and no major political party is showing leadership on road safety. And currently, traffic fatalities are not recognized as a public health problem.

This year, the media has actually been doing a great job saying that road safety is something we need to be worried about. This is extremely heartening, and we want to figure out how to capitalize on this and assist them.

In terms of where we go now, there's a major set of research going on with ITS and how we can use ITS to make vehicles safer. But, the main point to remember moving forward is if you always do what you always did, you always get what you always got. So it's time for change.

Questions for Colin Jensen

What role do public transport and taxi play in keeping alcohol fatalities down? One of the things is that taxi prevalence has become ITS friendly. In terms of public transport it has its own problems lack of seatbelts for example.

Can you estimate your DUI arrests, and can you tell me what are your hours of service requirements? With males 20 to 40, DUI arrests are pretty high. In youth, it's little lower. A semi-trailer driver can drive a 40-ton truck for 12 hours with three breaks totaling one-and-a-half hours. They can drive ten hours before they have to have a break. They can do that almost everyday. I don't remember it could be six days on.

You had a slide that talked about fatigue and sensors. Are there other types of sensors you work with? Yes there is a type of system installed on certain hospital beds. A person lies on the bed, which has sensors in place to measure the person's vital signs. Another system has in-vehicle sensors to measure how people sit. As soon as you sit in the seat, the system measures where your hands are on the steering wheel, your position in the seat, etc. If something changes to indicate that you may be falling

asleep, the system turns on the air conditioner, roles the window down, and sounds the horn to wake you up.

George Ostensen Director of Field Services, Midwestern, Federal Highway Administration

(Slides of George Ostensen's presentation are included in Appendix D.)

Raising the bar on highway safety: That's what this is all about. Our goal is to improve traffic safety to reach the target of zero deaths. Today we'll talk about the state of highway safety and then take a look to the future of highway safety. I want to provoke your thinking and challenge your perspectives. I expect that some of you will agree with me and some will not agree with me. We all see the problem of highway safety slightly differently. The power of coming together is the potential of this group.

In the United States, there are 3.9 million miles of roads, 216 million vehicles, 187 million drivers. This system is used each year for 2.68 trillion miles of travel. We are the most mobile society in the world. Americans value their mobility, but it comes with a price. In 1999, there were 41,611 fatalities. That's more than a jetliner everyday. I think we need the FAA at a conference like this because they do have a zero tolerance for death. There is a huge outcry when a plane goes down, yet somehow we mask the problems of traffic fatalities in the later stages of the newspaper. What is the FAA doing that we don't do?

Let's look at highway deaths in terms of 100,000 population. We don't do so well compared with other countries. Traffic crashes cost society \$150 billion each year. Wouldn't this money be better spent in leveraging highway safety rather than cleaning up after a crash?

In the Midwest, we have a fairly good record. Five of ten states are better than the national average in terms of the number of fatalities over the past six years. Minnesota has the lowest fatality rate among the ten states. Unfortunately, unless you are successful here today, in the future, you may not have the lowest fatality rate.

I want to talk about some of the things that will impact your goal of zero deaths: future travel demand; changing driver demographics; institutional challenges; and maybe some help with the power of technology. Vehicle miles traveled (VMT) have grown historically at two to three percent per year. That means that if we stay even with our fatality rate, we'll kill more in the future than we did this year. That's unacceptable if you have a zero death target.

Drivers in the United States are getting older. Older drivers have different needs, and the mere fact that our capacities diminish at the time in our life when we enjoy the desirability of mobility means we have conflicting problems. Older drivers are the fastest growing segment of population and the fastest growing segment of the traveling population. This presents a significant issue moving forward.

Let's look at some changes in the driving task. We have some positive influences about us in today's world. We have higher safety awareness today. But knowing is not the problem. Drivers know that if they wear seatbelts they'll be safer. It's getting them to change their behavior that's the challenge. It's not about knowing; it's about behavioral change.

In terms of vehicle safety, we know that vehicles are much safer today than they used to be. But, there are negative influences that go along with the better technologies including driver overload. It's not just the radio in the vehicle, it's now e-mail, Internet, cell phones, PDAs, etc. What else will be put in the cockpit? I don't think hands off is the issue. It's brain off when you're on the phone that's the problem.

Normal driving is hard enough, now we experience aggressive driving. There are more people in more

of a hurry on the roadways. My suggestion? Resist the temptation to retaliate. You are in control of your vehicle. Forget it; drive on or FIDO as I like to call it. Keep score, go for seven of those a day. Maybe we'll make a national game out of this. How would this influence the driving task? I bet driving would be safer.

No one would argue that we are all consumed with the information age. But how do we leverage the IT potential in the next 10 years? They are putting stuff in cars that can help keep up safer, but who is paying the bill? We're putting technology on vehicles that people can't afford. We have to think differently to attain a goal of zero deaths in the future.

Today's IT world helps us make better decisions. The power of computers helps us create and manage databases, not only in a world of crash analysis, but also in how we deal with highway design. Safety audits could be part of this along with the interactive highway safety design model, the next-generation CAD tool to be used by highway designers to rate their design's safety. This is underway now. It's a great tool for helping highway designers make roads safer for us in the future.

Carmakers today have the ability to put technology on board to help us in terms of safety. There are a multitude of items waiting to come out. Minnesota has been a leader in investigating these technologies and needs to leverage its good reputation in the ITS arena.

Albert Einstein said that, The significant problems we face cannot be solved by the same level of thinking that created them. The future is different and we need to embrace that difference in a way that leverages traffic safety. We need someone to develop the long view that transcends the short political time frames of our leadership.

What's the measure of success? It's not just a number: miles of roadway, number of bridges, etc. I think we should use lives saved as a measure of success.

Remember, your goal of zero deaths is a great goal, and we at FHWA support you. I'll leave you with this: We cannot become what we need to be by remaining what we are. Anonymous

Robert Johns

Tomorrow we will hear from University researchers about future safety strategies that go beyond what's happening today. We don't expect these experts to agree on all of the various approaches. You'll have a chance to participate in a dialog with them on their varied perspectives.

Today we'll end with a warm-up session for our small group discussions tomorrow. We'd like you to gather in your small groups to brainstorm on what the obstacles are in Minnesota to reaching zero deaths.

What are the Obstacles?—Small Group Discussion

In this first small group session, participants began by identifying current obstacles that exist to developing comprehensive solutions to achieve the goal of Zero Deaths. The obstacles were divided into five categories: human behavior (e.g. attitudes, performance); technology (e.g. vehicle, information); policy (e.g. legislation, regulation); systems (e.g. infrastructure, communication); and process (decision-making, jurisdiction). The obstacles each group came up with are listed in Appendix H.

(Editor's note: Each small group was comprised of 10 - 12 participants. Appendix G is a roster of the small groups).

What Can We Learn From Others?—Day 2

Robert Johns

Good morning. We're ready to continue our conference and our efforts to develop strategies that will move us towards zero deaths. Today we'll start with the last session of What Can We Learn From Others? We are very pleased to have Anders Lie with us, who is with the Swedish National Road Administration. I think you'll be intrigued with what he has to share, as Sweden is the first government to develop this vision of zero fatalities in traffic safety. Please join me in welcoming Anders Lie.

Anders Lie *Specialist, Traffic Safety, Swedish National Road Administration*

(Slides from Anders Lie's presentation are included in Appendix E.)

Good morning. I will try to give you some historical facts about Vision Zero and what has happened in Sweden. I'll give you a tour of the history and what's happening today.

A typical Swedish road is different from many of the roads in the United States. We are a large country without a lot of people living in it, so we don't have the economical power to build motorways everywhere.

Generally, humans don't have any natural fears of riding in a car. We don't have any fear for speed. In the car, we can feel perfectly safe. But one small mistake can lead to a big catastrophe.

We have trained the driver to be sober, to be educated, to learn everything needed to pass the test to get a license. We've put all the responsibility on the driver, and when there's an accident, we say the driver did something wrong. In Sweden we agree that yes, 100 percent of the accidents occurred because of driver error, but we also agree that the road and vehicle designers have a responsibility for the crashes too, as do the police and everyone buying or selling transportation. This is an important part of the Zero Death vision.

It was decided by the Swedish Parliament in 1997 that our new target for traffic safety should be no fatalities and no disabilities. We decided we had to make the world of road transport better and should use other sectors in society, like aviation, railroad, or navigation as our benchmark rather than benchmark with other road transport sectors. Although Sweden is among the best in road transport in the world, we still aren't satisfied with the level we're at today.

Parliament said that traffic fatalities and impairments could not be accepted in the road transport system. They focused on crashes with long-term consequences and decided that crashes with minor injuries should not be the major focus. This vision is a shift from crashes being the focus to injuries being the focus. That takes a lot of new thinking. New systems must be tolerant off human failures, and mobility should be a function of safety and not the other way around as it is today. This is a long-term target, but I think it is a very important one.

In 1999, after a lot of discussion, the government decided on an 11-point action program that would work toward the goal of zero deaths. First, we have to focus on the most dangerous roads. About 12 percent of the roads cause about 70 percent of the problems, so it's fairly easy to focus on the worst

roads. We of course have to focus on urban road safety as well, which is where 30 percent of the fatalities occur in Sweden.

We also need to focus on user responsibility. We don't simply tell the population that it can behave however it wants to and we'll promise they'll be safe. We want to focus on bicycle safety and on getting a helmet law passed. We put a lot of focus on modern quality assurance for everyone buying and selling road transport services. We want to look at better use of technology and focus on the system designer's responsibility.

What is actually happening on the roads? I think roundabouts are a nice example of the new way of thinking. If you have an intersection where crashes are the problem and you tell the engineer to solve that problem, he will probably put up a traffic light. That will cut down the number of crashes, but the injuries from the crashes that occur become more severe. So, if you tell an engineer to solve your crash problem, he'll have one solution; if you tell the engineer to solve your injury problem, he'll have another solution such as the roundabout a different solution that may result in more crashes but fewer injuries.

In Sweden, head on collisions are a major problem, so we selected some roads that are wide enough for three lanes, and we put a fence in the median as a test. After three years, everyone is responding very positively to this solution. We have 300 km of experimental miles with the fence and we've had no fatalities. Plus, this is an extremely low-cost solution that can be integrated into existing roads. We also cleaned up what was happening on the side of the road. The goal is to design the side of the road in anticipation of people leaving the road.

It's also important to match up the appropriate speeds with the various roads. The vehicles, roads, and speeds all must match. We want to keep mobility up so we didn't just reduce speeds. We focused on what we could do with the roads and the vehicles to keep mobility up using sound and clever investments in the infrastructure.

The next question is how do we get everyone buying or selling something out there to behave in a safe way? We've started with a lot of quality assurance systems. We use intelligent speed adaptation as one tool. These systems could be used for quality assurance tools for professional drivers to report how many times they've been over the speed limit. A few transportation companies have added alcohol interlocks in their cars to make sure their drivers are always sober. We also put a lot of pressure on truck manufacturers to add seatbelt reminders in the vehicles they make.

Another part of this is for every company to have a travel policy. Every company has a responsibility to assure safety. At first, no Swedish car met the travel policy standards of having low fuel consumption and not being too heavy or too light. It took Volvo only six months after the travel policy was enacted to introduce a car that exceeded the standards. Today, the difference between the safest and the most dangerous car is 25 percent. We're trying to decrease that span. We want to get everyone up to best practices by educating the public about safety differences among different vehicles.

Seat belt use continues to be a problem. When we count usage in roadside studies, about 90 percent of those surveyed say they use their seatbelts. Yet, we know that usage is around 50 percent in severe and fatal crashes. Seat belt use, or lack of use, is closely connected to drinking and driving, having a lot of people in the car, etc. What we have done is develop a specification for a seatbelt reminder system using sound and noise to get people belted. The way to get this out in society is not to legislate it, but rather give car manufacturers credit for having a good seat belt reminder system.

How do you get system designers to take more responsibility? The government has started committee work and investigation on forming a road traffic inspectorate a new authority that will be responsible for road transport safety much the way agencies are responsible for air transport safety. The role of this inspectorate is to investigate fatal crashes in-depth, together with the system designers. The idea is to get the people who have the responsibility for crashes together to find out what happened. This is a very powerful tool, getting all the stakeholders to have a joint view on traffic safety rather than having each other pointing at each other saying, You should solve this.

I just want to finalize my presentation with some studies we've done on our fatal crashes. In January 1997, we began implementing in-depth studies of all fatal crashes. People from the road administration use these studies as a quality tool. They go out and look at every car at every crash site and they get the injury reports. Then they report the information to the local board of directors. It's a very powerful way to allow the people responsible for the roads to see what's actually happening out there. Before that, there was just a rather meaningless number that came out at the end of the year. Now, those responsible know about every individual case in their region. From that, we're trying to build a model for a crashworthy system a system that could handle human mistakes and misjudgments and would focus on how the injuries occurred.

What we've done is to look at our fatal crashes and try to understand how they line up in a multidimensional model. We've decided on three different categories. One is that you have a general problem with one group doing all that they can to obey the rules, but still making mistakes. There's another group of people who don't protect themselves the way they should. Either they don't wear seatbelts or they drive old cars that don't meet safety standards. Then there are those who don't accept the rules, but rather live beside the laws. We think it's a big problem when people don't obey.

Even if people do follow the rules, mistakes will still happen, but the system is not designed for these mistakes. If we try to divide all the fatal crashes into these three groups, the largest group is made of the type of crashes for which road designers and car designers need to take responsibility and design more error-tolerant systems. This will take more cooperation between the car industry and road authorities.

In closing, let me say that we have a lot to learn from the data we already have, but we need to reanalyze the data using injuries as the focus rather than crashes.

Questions for Anders Lie

Do you have issues with moose and other large animals? Moose are somewhat of a problem. It's not a real safety problem; it's a security problem. There are two kinds of moose the visible moose and the ones you hit. We're trying to build car assessment programs. If people stay at the speed limits they have (90 km on most roads) in modern cars, you should survive a crash with a moose.

One of the major themes yesterday was that many problems stem from ignorance of the public about auto accidents. How did you get the public to be more understanding? We have very high safety awareness in our country. There is a major public awareness of traffic safety being a public health problem. This has been discussed a lot in society. It's hard to argue against zero deaths, and we have very high public awareness. There's a major difference between young males and women, and we're trying to make an analysis of the difference.

You said you adjusted the speed limits. How strict is enforcement? It hasn't been very strict. We have a major difference between the posted speed limits and the actual speeds. That goes back to the

road designers who should design the roads for the actual speeds we're getting, not the speeds that are posted. But, we do have weak police enforcement.

What Could the Future Bring?

Robert Johns

We've had an impressive set of presentations that have illustrated what's going on nationally and in other countries. Now we want to look at what the future holds. What is our research telling us? What are some of the possibilities, and some of the challenges, for the future? We've asked three of my colleagues from the University to participate in this next round of discussion. We don't expect this interdisciplinary panel to agree on everything; in fact, we'd like a little bit of debate. Please help me welcome Nic Ward.

Nic Ward Director, Human Factors Research Laboratory and Department of Kinesiology,
University of Minnesota

(Slides from Nic Ward's presentation are included in Appendix F.)

I'm very pleased to see a European colleague here. Having spent eight years in Europe and then coming to the United States, it was my initial impression that there wasn't as much communication between Europe and North America as there could be so it's good to make this initial step to hear what's going on in Europe and see how we can adapt some of it here.

I want to talk from a psychologist's point of view about some of the barriers to zero deaths as well as some of the paths to improve safety.

One barrier to reaching zero accidents is that we as humans are breakable and fallible. That means, whereas we can make great strides to reduce accidents by improving the technical and environmental aspects of the environment with better cars and roadways, we can not improve the human driver and so must accept some failure rate from the driver in the transportation system. In addition, humans actually accept some level of risk in their environment and wouldn't like a world without risk. For example, risk could be reduced to zero by imposing very slow speed limits on all roads and having all cars tightly controlled in convoys to keep safe spacing, but few drivers would accept or support politicians advocating this traffic model.

The issue of fallible drivers and risk acceptance relates to the issue of using technology to improve safety. Technologies can improve safety, but only if it fixes a real problem and is accepted by the driver in exchange for reduced risk. We need to design from the driver's head from the driver's perspective. Otherwise, technology may only redistribute risk, introduce new forms of risk, or be ignored and misused by drivers.

Let us continue by first looking at a report card of our safety intervention in road transportation. A recent paper from a French writer named Paige tried to equate all of the OEC countries, including the United States, in terms of population, percentage of young drivers, vehicles per capita, the amount of alcohol consumed per capita, the percentage employed, the number of buses and public transportation, and the percentage of urban population. In other words, he tried to equalize all the countries in terms of what we would normally think of as contributing factors to the number of accidents in a country. His argument is that by comparing the number of predicted accidents based on this model to those actually occurring in a given year is a reflection of other factors such as safety policies, safety interventions and other cultural factors in those countries.

I have a graph that shows the calculation of safety for each country. Except for the Greeks, the United States is the worst on the list. That is, the US has one of the worst safety improvement records. This suggests that what we're doing compared to other countries isn't working as well as it could.

What is going wrong?

Well, as we discussed earlier, we are limited in zero risk by two factors; the first is the trend in accident rates resulting from the frail human element in the transportation system. In Minnesota, rather than a linear decline in accidents, a better function to map the trend over several years of data for the fatality rate is actually a power function. This shows that there is a diminishing return in improved safety with a lower boundary that is harder to break with each year. We need more and more efforts to get smaller increases in solutions, because we have the human fallible system that means there is a minimum boundary of potential accidents. We shouldn't feel alone about this, because other domains have the same problems. For example, in the United States Air Force, the accident rates drop and drop and drop, but the benefits of training and technology are decreasing because of the fallibility of humans.

Humans also accept and adapt to risk. In general, society doesn't want zero risk in their lives. People actually want risk as individuals and collectively as a population. People want a certain level of risk, and they modify their behavior to match the level of risk they want. Some theories posit that if you make something too safe, people will do things to increase the risk. And you can find data to support this contention. Although driving per mile is safer today, people are driving more; the net result is that the accident rate fluctuates around a certain level. The population actually accepts a certain amount of deaths, so we need to change the culture of this population to accept fewer deaths by increasing the perceived benefits of safe behavior and the costs of risky behavior, and reducing the costs of safe behavior and benefits or risky behavior. Society needs to change its culture to accept safety interventions that are currently not palatable.

But can we just throw technology at the problem of traffic safety? Technology may be one possible solution, but we have to use appropriate technology for particular problems. Technology needs to fix the problem, not just act as a Band-Aid, and technology must be designed from the driver's perception.

Sometimes technology does not remove the risk, it just shifts it. With intersections, for example, we shift from injuries to fatalities when traffic lights are installed. Technology can also introduce new forms of accident risk by imposing new demands on driver attention and by being too complex to use (e.g., mobile phones etc). Also, the technology may be automated to the point that it becomes responsible for driving and the driver has nothing to do and loses awareness of the driving situation.

In any case, we need to design technology to fix a problem rather than circumvent one. Vision enhancement systems increase the exposure of older drivers to nighttime conditions when they would not normally drive without fixing the real problem of poor nighttime eyesight. Similarly, fatigue detection systems may already alert a truck driver when they are tired, but the fundamental issues of shift work and hours of driving that may cause the fatigue are not resolved. At all times, we must remember that responsibility for safety must reside with the driver (and fleet operators) NOT the technology so that the user is motivated to comply with the safety intervention.

What should we be doing in addition to designing better technology? We need to take a human-centered approach and focus on why drivers aren't paying attention, why they are not perceiving things appropriately, and why they are making bad decisions. There are many cognitive processes that govern

driving. These processes relate to the allocation of attention, the perception of hazards, and the decision to respond. Failings and normal human functioning can lead to an accident. We need to understand these processes in order to identify sources of accident intervention and design technology to assist in these process and not induce a state that compounds the problem when using the technology.

Some suggestions on the perceptual end include attention cueing. Can we use technology to anticipate when the driver should be attending to something and provide them an augmented cue? Can we use technology to fix what is wrong with the attentional processes that lead to accidents in the driving environment?

Another suggestion is using generic impairment testing. This is very big in Europe right now. They are trying to come up with some sort of a generic impairment test that can be used on the roadside by police and at licensing facilities to detect whether drivers are young, old, tired, drunk, or on drugs, and prevent those drivers from being on the road.

Another idea is education on traffic hazards. Some people just don't know what the hazards are and experience them so infrequently that they can not learn about the concept of risk and develop appropriate responses.

So, we need to educate people on what the risks are, but communicate this in a meaningful way. For example, we tell people that cell phone use while driving is dangerous, but what does that mean? If you can show that using a cell phone while driving is as dangerous as driving after drinking two-and-a-half beers, for example, people may understand that because they have a tangible reference that they can relate their experience too.

Yet another suggestion is to provide risk-enhanced training using telematics and simulators. We don't get enough exposure to risk in driver training. We don't have much exposure to hazardous situations and don't really know how to quantify and gauge this concept we commonly refer to as risk and develop skills to react to real life road hazards. We could teach drivers what risk is using simulators (or telematics) by calculating risk based on some representative metric and provide a graphical representation (e.g., risk thermometer) to provide a real-time visual cue against which people can learn to relate the development of a hazard and the consequence of their avoidance actions.

We could develop intuitive environments, such as self-explaining roads, that make it apparent to the driver what the road is without a lot of signs and instructions. In essence, the road should look intuitively how it is. If the road is dangerous, we should make it look dangerous.

Perhaps we could have decision interventions. That is, people will accept more risk the greater they perceive the benefit of the risk. On the flip side, people will act safely if there is more cost to being risky. So, we can change people's motivation to accept less risk and drive safer. There are several ways by which we could reduce the population's level of acceptable risk. For example, we could reward people for accident-free driving and increase the benefits of being less risky. In the end, we would have to make a fundamental change in the culture.

So, what have I said? Target zero is a good mantra, but the strategy must be realistic. Society does not actually want a zero risk solution, and that means we need to make some cultural changes. That will take some tough political decisions but they need to be made because it won't work the way things are going now.

Technology has its own set of evils, and we need to be careful about using technology as a panacea. It needs to be designed from the human's point of view. In addition to eliminating hazards as they naturally exist in the environment, including road design, for example, and making cars more survivable in crashes, we have to understand processes of attention, risk perception, and decision-making, particularly why people actually accept what we consider to be too high a level of risk. We need to understand these processes so that we can design better interventions and have those interventions be more accepted by the driving population.

My T-shirt slogan of the day is: At the heart of safety is an understanding of the mind of the driver.

Questions for Nic Ward

If the experience of humans is such that monitoring an environment is not what we do well, can we learn something from the success of the airline industry with the use of autopilot? Yes, we can learn from the air industry. A lot of work on attention has come from the air industry. We've learned that automation can actually be a bad thing potentially so we can learn some lessons on how to design technology better. But when you say success, I would debate that it is a success because they are still bottoming out on their ability to hit zero deaths, and they have gone through a lot of serious accidents due to attentional problems with the new technology they brought in before they actually redesigned them the Airbus, for example. Also, airplanes also have two crewmembers which is a different operational context to driving. Resource management is a training program that commercial airlines and military uses to train their aircrews on how to fly better. A large part of that is how to communicate better and learn what the hazards are and how to communicate what those are. Maybe we can teach drivers how to better recognize and respond to hazards.

The commercial industry is looking at hours of service versus fatigue issues. Is there any technology crutch for fatigue? One of the major applications for technology is looking at ways to use technology to detect when a driver is becoming fatigued. That by itself is a good thing what you do with that information is where the issues come in. You can inform the driver when you are fatigued, but is that going to make the driver change his behavior? They are making decisions that override the fact that they are fatigued. Maybe you re-alert the driver. Or you have some mandatory control that says that once you're fatigued you must pull over in the next hour or so. The extreme version of this is that the system calls the next police station if you do not stop. But at the end of the day, we need to ask why commercial drivers are fatigued. And the responsibility is on the driver and fleet operator NOT the technology to drive safely.

Tom Scott Director, Center of Urban and Regional Affairs, and Department of Political Science, University of Minnesota

I'm the rookie here obviously, but I just want to make a few comments now, and I'll make more comments later when I'm on the panel.

I have the most recent issue of the *New Yorker* that has a fascinating case study of the seatbelt versus the airbag evolution. It goes back to the pre-Ralph Nader days up to the more recent analysis of the effectiveness of those two technologies. It tells a great story, but it also says some things about the political and public processes of how we struggle with the issue of traffic safety and fatalities in particular.

Many of the important issues from the small group discussions yesterday raise the fundamental question that was brought out in the two presentations this morning. It seems to me that the problem here is perhaps part a psychological, human factors problem or in part a technological problem. The other side is how do we organize the parts, the interests, and the agencies that have a stake in this question of traffic safety? That in turn is both a cultural issue and a political issue. They are related: the political system deals with the culture. Sweden is lucky in that they've begun to think about this problem in a systemic fashion. They are trying to bring together the various actors who have a piece of this problem and are bringing a systemic solution to the problem.

In the United States, we have a complex organizational system, or lack of system, that deals with this problem. We have the federal government as well as state and local governments, counties, and municipalities, all of which have some role in design and enforcement. We have auto manufacturers, regulators, the insurance industry; it's a complex system that's grown up historically not by accident, not by design. If we were to design a system, we wouldn't have designed it to be what we presently have.

General aviation, for example, is organized differently than commercial aviation. It's almost entirely controlled at the federal level. We don't have anything like that with respect to passenger vehicles. So the question is whether or not we should look at road transportation in the way we do aviation. Could we do that? Despite our cultural differences, unwillingness to shift the blood alcohol level lower, desire to not require helmets and other things that could reduce the number of fatalities, we could do this, I think, if we had the political will to do so.

The question, is what would cause that political will to do what Sweden did? I don't have the answer to that. But we see some small examples of this sort of thing like Ralph Nader and the seatbelt development. We see the results of MADD in some small and dramatic ways over a long period of time with a lot of effort. It is possible to make these changes, but we need to create a political will in ways that I can't suggest now, where the notion of reducing the number of fatalities would become enough of a political issue.

Perhaps we could shift the cost dramatically from the insurance companies to the public sector. That might be something to think about. One of Nic's slides showed the curve in terms of the significantly increased cost to the system not achieving much reduction in the fatality rate. That is an important component in all of this. We are reaching the point where the cost for significant reduction becomes higher and higher. Will the political function be willing to pay that? If we remove a significant number of drivers from the road who make bad decisions and who are unqualified which we could do with technology and the will to do that we'd have to think seriously about how to alter the transportation

system so that those who are removed still have transportation. We don't have a system that allows for much flexibility beyond the automobile. We need to accommodate people getting to work, shopping, getting kids to school, etc.

I have a friend who's prone to small accidents and now her insurance won't cover her any more. It's caused a transportation problem because she's off the road but has no other transportation alternative.

I'll reiterate the fact that to a very considerable extent, making much progress, further progress, requires an understanding of both human and technological factors, but more importantly, the real issue is how we are organized to accomplish these purposes in the United States complex way of organizing and managing the automobile and truck transportation system.

Questions for Tom Scott

How would we shift the cost to the public sector away from insurance industry? I don't have the faintest idea. It just occurs to me that the government pays a lot more attention to issues when they have to find the money to pay for them. If traffic safety and fatalities are a public question, we've taken the sting out of it by having private insurers pay a significant portion of the cost. But maybe that's just a cost we want to pay. We assume quite a bit of risk when we go on the highway, and we accept it. Maybe we're prepared to continue to pay the cost side of this through insurance. Maybe we could push this more into the public side.

Workshop Participant: I have just an additional point on that. This legislative session, when we were encouraging the legislature to implement primary seatbelt laws, the estimates were that Minnesotans would save \$90 million from those injured by not wearing seatbelts. Since the savings to the state was about \$8 million, the legislature said that's not enough. If the savings would have been the whole \$90 million, they may have paid attention.

Nic Ward presented some technology ideas on behalf of Max Donath, whose airplane was late.

First, there is roadside technology, such as variable message signs, which can automatically present information to drivers depending on detected events upstream, for example, if there is a collision. Second, there is infrastructure-based technology or technology inside the vehicle. These functions can be mapped on to sources of human error related to accidents whereby the driver fails to attend, decide or engage control appropriately.

There are advantages to both. For example, if you put infrastructure-based technology in place, cars of any age can take advantage of it without being retrofitted. If you rely on in-vehicle technology, then you have to wait until the driving population has gotten rid of their old cars and begin driving new ones.

I would like to focus on the in-vehicle technologies. There are three general approaches you can take with a piece of technology put inside the vehicle where you're trying to provide some kind of service or function for the driver. The general philosophical approaches are that you inform the driver, advise the driver, and input control on behalf of the driver.

An example of an information system is one in which you could point out things of interest to the driver. Vision enhancement systems, which are of generally two types, may be an example of this. The Europeans, and Cadillac here in the United States, are looking at using an infrared technology to present to the driver what the actual road looks like if they can't see it well enough, perhaps at night or in poor visibility. The idea is to provide only information to the driver. The other variation of a vision enhancement system is to simply highlight key features such as pedestrians, other vehicles, and road markings. Again, the idea is to provide information only, not the whole scene, in this case, just the critical elements. This is the approach that my colleagues at ITS and the Human Factors Lab are currently undertaking.

The next level is where technology actually makes decisions for the driver and warns the driver when the system deciphers something bad has happened. An example here might be a collision warning system where the front radar, back radar, or blind spot radar gathers information about elements around them and takes this information to perform some calculations on behalf of the driver to provide an alert if the calculated condition exceeds some internal logic or criterion such as when a minimum following distance is encroached.

The third level is when the system is perceiving, deciding, and taking control. An example here is the speed control system that perceives the speed that is prevailing on the road and decides if you are speeding relative to conditions and posted limits and then engages action to slow you down (or prevent driver input in excess of the criterion speed).

Each of these levels has different benefits. In theory, a system, which decides for you more accurately and quickly than you can do yourself and engages in a prompt response, may have a larger safety benefit than a system that simply gives the driver information. But I would argue that as you move up the levels, you also have the potential for more unintended disadvantages. When you give less responsibility to the driver, the driver becomes more complacent. Complacency may have effects on attention and skill that reduce the capacity of the driver to respond to emergencies for example. So you have to decide at what level you want to tackle the problem with the technology and balance off the pros and cons with those approaches.

There are many examples of technology that fall along those domains including speed control, vision enhancement, collision control, and fatigue control.

But what do we do with multiple systems in a car? And how does a driver deal with a cockpit like this? They aren't pilots. We'll have highly technical systems used by non-technical people. So there's a training issue. And how do you not overload the user? What happens if all system warnings go off at the same time? The solution is NOT cascading effect of adding more technology. Instead, we need to focus on the interfaces and integration for the systems. Here, the intelligent interface which helps the driver attend, interpret and use the systems will be a key feature in future developments. I think the key role of technology in the future will be in helping us integrate all of these new technologies. That's the real trick and the real contribution technology can make.

Robert Johns

There have been some comments about the fact that there aren't any auto manufacturers in the audience. Coincidentally, Max Donath has been in St. Louis working with General Motors and others on a federal RFP looking at technology to avoid automobile lane departures. Our ITS Institute is actively involved with the auto manufacturers on safety issues. We'll start the next panel discussion, continuing to prepare you for this afternoon when we will ask you what we should do in Minnesota.

Max Donath, Director, Intelligent Transportation Systems Institute and Department of Mechanical Engineering, University of Minnesota

(Editor's note: Max Donath was late to the conference because of a plane delay. He offered the following remarks when he arrived.)

I'd like to share with you some of the negotiations we've been having with General Motors and OnStar. We've been negotiating a joint proposal in response to the federal government's request for a lane departure crash warning system.

We know where the fatalities are occurring. Two-thirds of them happen on our rural roads. In Minnesota, 57 percent of the fatalities are lane departures. This is predominantly a rural problem associated with distraction, fatigue, and driving long distances. Cell phones are increasingly becoming yet another distraction. Alcohol is primarily a rural problem as well. In rural communities, the bar is the fundamental meeting point for society. There is no theatre or restaurant that you can get to easily. What that means is that if you go to a bar to interact with your law-abiding friends, you can't help but have a drink here and there, and you end up being intoxicated to some extent. In the United States, 16,000 fatalities each year are related to alcohol.

There are a lot of reasons that we drive impaired: We're tired or we've been drinking or we're distracted. We're also aging. And as we age, we have a harder time looking right and left. We have greater difficulty in judging speeds, merging correctly, etc.

Where lies the solution? We have been working with Mn/DOT for a number of years on driver assistive systems. We focused on a snowplow and soon will be implementing systems in a patrol car and an ambulance.

Several weeks ago, someone from OnStar test-drove our snowplow. When he stepped out he said, "This is cool." That started a snowball effect. OnStar is adding two million customers a year. Their long-term goal is for OnStar to become a cocoon around the driver. What's interesting is that they are just one year ahead of the pack, and they must keep jumping forward.

Let me explain what is in an OnStar system. There is a GPS receiver, and not a very good one at that. The GPS receiver receives signals from multiple satellites and calculates where the car is based on the signals. GPS satellites in the sky don't track you. If this information is shared with dispatchers, it requires another piece of equipment as well as your okay. They don't continuously know where you are; your location is known only when you hit the button. They don't know where you've been. But, if you've signed a contract and get a pin number, if your car is stolen, you can have them turn on the tracking feature.

That's the heart of the OnStar technology. They are looking at where do they go from here. Now they say, if we could have higher accuracy maps directly on the car, and if we had higher accuracy GPS on the vehicle, then we could use that information to help guide us to stay in the lane. Some of the cool things that the OnStar person saw in the snowplow included the boost from the steering wheel that keeps the vehicle in the lane, audio that warned the person when they were beginning to leave the lane, and a vibrating seat that vibrated on the bottom either on the right or the left to warn you to come back into the center of the lane.

OnStar has said that they'd like to include those interfaces in every OnStar supplied system in the future, but there are several major obstacles to that happening. Those are as follows: We need a national, high-

accuracy digital map. There's no such thing today at the centimeter level. And it has to use geo-references, a map that can calculate how far you are to the edge of the road, how close you are to signs, how close you are to hitting something on the side of the road. They also need a national source correction signal because high-accuracy differential GPS can't work without correction signals. So, OnStar is saying they can't deliver unless they partner with those who can deliver the infrastructure.

So, what is the future DOT going to be? It's not simply the keepers of the road, the keepers of the pavement. What GM sees and what they need is a partner who is a keeper of the infrastructure, the keeper of the maps, and the keeper of the correction signals. They also want access to the public safety pool of radio frequencies. One part of infrastructure is the very limited radio band waves we have out there. They are in very short supply. The DOTs of the world have control over certain parts of that spectrum, and OnStar would like to have access.

If you take a look at the fatality curve, it's been dropping. It hasn't changed in the last ten to 15 years. We need to start a new curve from those 42,000 deaths. The only way to do that is to have significantly new and innovative ways to break out of the old box. The old box says that DOTs provide roads and vehicle manufacturers provide vehicles. The new box has to be one in which something works together that the transportation infrastructure provides signals and provides maps, and the vehicle manufacturers provide technology to take advantage of that to provide those kinds of assistance that we need. If you take a look at any causal-factor analysis, driver error represents a very significant part of the fatalities and the crashes we have. And we may think it's the dummy out there that gets into these crashes, but you and I are all dummies. There is example after example of technologies that are put into vehicles without any appreciation of how humans have to integrate that technology into their ability to drive.

Antilock brake systems, or ABS brakes, have been introduced, and we can see that there is evidence that ABS has not reduced the fatalities in the country because none of us really know how to use ABS. Once we pass the initial driving test, we don't learn any new vehicle technology. If we aren't going to design a totally new education system and totally new vehicle licensing systems to make sure people stay on top of the latest technologies, then we have a responsibility to design these interfaces so that they are completely intuitive. So, not only do we need a partnership, we also need to look at how we design these technologies to match how people use them.

We won't reach zero fatalities, but there's no reason we can't make a significant dent in preventing a large number of fatalities that happen for no good reason.

What Could The Future Bring?—A Panel Discussion

Moderator: **Dave Ekern**, Assistant Commissioner, Mn/DOT

Panelists: **Colin Jensen, Anders Lie, Nic Ward, MaxDonath, Tom Scott**

Dave Ekern

We're trying to prepare for this afternoon's discussion about what we've learned and what we're going to bring to the table as a result of this afternoon's discussion. So this is a critical opportunity to ask the panel questions and hear the dialog. As we begin, I want each of the panelists to give us a couple of minutes on what they've heard and how they react to what they've heard from others.

Colin Jensen

I thought the presentations have been very good. There's room for conflict or for further discussion, but there is no right or wrong in this. In terms of technology, for example, I think one of the elements is the appropriate use of technology, appropriate use of education and enforcement. There is no one solution, you need to mix and match the solutions and figure out what works best.

Anders Lie

Although I wasn't here yesterday, what I've heard today is that we need to focus not on knowing what to do but rather on getting something to happen. How do we make important things happen? Scientists must dare to go out to the political arena to try to get things happen. We need more research to find out why we can do things in Sweden you can't do here and vice versa.

Tom Scott

I think one of the most important innovations in traffic safety was the electric windshield wiper. The point is that in my driving lifetime, there have been tremendous strides in safety on the roads in all kinds of ways. Almost everyone wears a bike helmet. Although I don't have one, the social pressure is such that I should have one. We have reduced a lot of the worst aspects of driving, or we've picked off the low-hanging fruit, perhaps. But we have done a lot in the past 50 years. Perhaps we need to take some pride in that as we try to achieve the equivalent of the electric windshield wiper.

Nic Ward

What I've heard in general, is how successful a program can be when the public and political force is behind it and when all agencies communicate. We need to change the local culture perception of risk. We have great ideas on what we can do in terms of technology, but we need public acceptance. I remember when drinking and driving was naughty but not that bad, but people younger than I were exposed to a lot of advertising and enforcement, so now the culture is you just don't drink and drive. It's not what a good citizen does. We can change, but it just takes time.

Dave Ekern

As you have questions, don't hesitate to raise your hand and feel free to challenge the panelists. Colin, my perception of Australians is that they are rugged individualists, they believe in their individual freedoms, they exercise them, they are as we see ourselves in the United States. Yet Australia seems to be able to get laws passed, national programs implemented that would never fly in our country because it infringes on our personal freedoms. It's the same story in Sweden. Why is that?

Colin Jensen

We actually don't care for politics as much as the United States does. I found the inauguration of the new president quite a spectacle. We don't have as much lobbying that goes on. But we get a bit sneakier about getting around the bureaucracy. We set up broad-based programs. We set up legislation that says

if you have a traffic offense, can you detect it with a camera? We say yes. We don't put all of the details in the legislation. If it's an offense you can enforce it. It doesn't get to the legislation. A healthy disrespect for the political process helps.

Anders Lie

I think Sweden is similar to Australia in many ways. But building societies is a very cultural thing. It's not evident how to build a society, especially if you take such an important thing as the road transport system. How you do that is, of course, a very cultural thing. In my spare time, I've tried to think about what I would do if I were leading China. How would we design a system in an emerging country from a blank sheet of paper? We would have a lot less personal freedom. We wouldn't first teach people to drive without seatbelts at the speed they choose themselves. We would instead set up strict regulations around the system as we have in aviation. We have less of a problem to change our society in Sweden than you have here in the United States. If we were to design the system from the ground up, we wouldn't design the system we have now.

Questions and Answers Session with the Panel

Workshop Participant: In Sweden, you have a .02 law. Did the liquor industry lobby?

Anders Lie

No. At that time, the government sold the liquor. What was lobbied for was a zero limit, but then we got into the many engineering discussions about what is zero. But what happened in our culture is that we've decided that you don't drink and drive. The majority of people decided that drinking and driving is not the thing to do any more. Most people just don't drink at all before driving.

Colin Jensen

We went from .08 to .05. We told the alcohol industry that we could and would religiously enforce .08 and target each hotel and liquor establishment individually kind of the "it's not fair, but tough" approach. Going to .05, the observation is that the hotel industry is thriving because people don't drink and drive. They go out and nightclub and party and drink more, but take a taxi home. In fact, alcohol consumption in some age groups has gone up because people feel they are free to drink as much as they want because they don't drink and drive, they just take a taxi.

Workshop Participant: Are there penalties for liquor establishments if drinkers are caught?

Colin Jensen

Not officially, but Australia is following the United States' litigious ways. The industry is heading to some self-regulation about what responsible consumption is.

Workshop Participant: Zero death is a shift to try to impact the legislature and the culture. There was a lobbying effort for people to stop for pedestrians in crosswalk law, but there was no money for education. A cultural shift did occur over time about the smoking fact over time. Could that be paralleled to this industry? It was a constant bombardment of antismoking messages, and I think that's what has to occur in this venue.

Tom Scott

You're right. We have seen changes in what you're calling cultural or behavioral attitudes. These things can be brought about. It's instructive to look at those and see what process took place to bring them about. Your example of smoking is a very good one. It hasn't been very long. In any case, I think you're right. It's possible to bring about these changes, but it requires combined and complex organizational

and political response to do that. Legislature and politicians have to be behind it. There needs to be public education. We know how to do it, but it requires whatever it takes to get that off the ground and sustain the effort long enough to get it accomplished.

Workshop Participant: **We manage risk in every aspect of our lives. The most dangerous place in our lives is our bathroom. What is society's response to risk and does it vary from culture to culture? And why does Greece have a different view of risk?**

Nic Ward

You're right. People do pick different levels of risk in different environments. But individuals can be typified by certain traits. If they are risky in one area of their lives, they are probably risky in other areas of their lives. As to why different cultures accept different risk levels, that is outside my sphere of expertise. I suspect that one defining characteristic of a culture is that level of risk. It's often hard to separate the cultural aspect from the safety infrastructure what type of education they have, they type of enforcement, etc.

Workshop Participant: **Technology on vehicles is very futuristic. We want to move vehicles down the roadway without the driver touching the controls. We have that technology. We've gotten away from the basics. With all the technology we have, why can't we design a new car in which the windshield will defrost without having the temperature rise to 80 degrees, the wet windshield wipers will maintain contact with the windshield at highway speeds and won't get clogged up with snow. We don't deal with the basics as far as how technology can help us.**

Nic Ward

That's a good point. But I have a very non-scientific theory on why that is. It's just not sexy to add a better defrost system or better wipers, whereas sticking in a computer that helps you stay a certain distance from the car ahead is a much sexier problem to deal with. You can also argue that there are more accidents because are caused by high speeds not bad wipers, but you have a good point.

Anders Lie

When our government made the 11-point program it didn't say better use of new technology, but better use of technology in general. And that was bearing in mind that there are so many straightforward, easy things we can do, such as adding seatbelt reminders. That's not sexy at all, but it could be implemented with just a couple of switches in your car. Alcohol interlocks are also very easy. We have a strong belief in already known, everyday technology to play a major role in getting the levels of safety up.

Workshop Participant: **Does the feedback we give back to the legislature on how the laws are working make a difference or not?**

Tom Scott

Your question suggests one problem we have in the United States: In each state, we ask legislatures to do different things at different times. We split the energy into 50 different pieces every year. We all have a bunch of issues we go after one at a time. We need some kind of national effort. Without this, we weaken our possible attention from the media. The other part of your question about what difference does information make: I think good information makes an impact in the long run, but if legislators see too many numbers, their eyes glaze over; anecdotal information is better. If legislatures get the same information from constituents, that really makes an impact. Legislators have to deal with an enormous amount of information on all types of topics. The method of processing that information is difficult. You have to come at this in a deliberate way to get through. That's what the antismoking people learned. The special education people are good at getting things into the legislative process too. We are dealing with a

decentralized system, so we have to treat this problem of how to get information into it state by state and nationally to make an impact. That includes the media, which does have an effect on the political system.

Anders Lie

We have tried to give up legislation as our main tool to change society when we talk about Vision Zero. We learned early that we couldn't legislate things to happen. I think the power is in the market. That's why every local community in Sweden now, when they order the school bus, in their quality assurance program, it's up to the company supplying the driver to find a good quality system to assure that the driver will be sober. We're not part of society to only give our vote to the politicians but also as citizens, we can dramatically influence the safety level of society. We need a shift from blaming the driver of that truck to blaming the company and asking, How come you have a transport system that takes doesn't safety into account? Why do you use breaking the law as a competitive advantage? For example, courier delivery drivers often have to speed as part of their job. These are tools we must explore. It's in the marketplace that we set the standards.

Colin Jensen

With our automatic license recognition on heavy trucks we have only a two percent rate of those drivers breaking the rules more than once. We don't see the same truck out breaking the rules again. This room is full of very intelligent people who know how to work the system, but I'm surprised that you don't do that. I said the 90 percent of people approved of reducing the speed. That's the kind of work we do before going to the legislature. We take the public opinion to the politicians and tell them, Look if you don't do this, the voters will penalize you.

Workshop Participant: Driver's licenses were granted and taken away for safety reasons. Now they are used to control other behavior: You don't pay your child support you lose your license. Some kids who drop out of school lose their license. Non-payment of library fines in Wisconsin you lose your license. But more and more people are driving without licenses. What's the future of driver's licensing?

Colin Jensen

Smart licenses are in the works. The real issue is that we are talking about graduated licenses. The next step is to go from photo identification to smart licenses. We need to match your vehicle to your license. If you are an offender, you get a smart license that allows you to drive only a certain car, maybe with an alcohol interlock.

Workshop Participant: One intervention strategy is risk-enhanced training. Can you elaborate on that?

Nic Ward

The principal behind this is two-fold. When drivers learn to drive, they are driving in a safe environment. It's hard to pick up skills on how to deal with something you don't deal with very much, or drivers may have no idea of what risk is as a concept. There's no visual cue to the novice driver of what risk is -you can not see it and its constitution may not be intuitive. We can then look at driving simulators to recreate more risky experiences to help them develop their skills to respond to those hazards. You could also figure out how to graphically show risk. In a simulator, you can change the color of something more risky so drivers can learn about risk and learn how to change their driving behavior. You could also put this in the vehicle like a risk thermometer.

Workshop Participant: Would you teach defensive driving skills?

Nic Ward

That would be the end result of it. As someone sees that as they drive faster and closer, the risk overlay redness gets brighter and brighter. As I back off, it gets less and less. I have learned from feedback that this defensive maneuver results in less risk. Novice drivers need a visual cue of this notional thing we call risk.

Workshop Participant: How can the public sector get the businesses of the community involved? How do you get the business involved more and help them really know what they can do, how they can do it, and how they can fund it?

Anders Lie

I don't have a quick answer to that. It's a very long process. How do we change the culture around safety and change the responsibility shift? It will happen, but it will take a long time. It doesn't happen over night.

Workshop Participant: Is there any evidence that we are becoming a more risk-taking society?

Nic Ward

I think it depends on how you define risk. There is some evidence that we are becoming more aggressive in our driving and we are taking more risks. But I don't know if that's actually true. Based on the risk adaptation theory, one could argue that we are becoming more risky. Even if you make an environment safer, people will still need a release of thrill and risk. But they are still trying to maintain, over time, a constant risk level.

Workshop Participant: Some individuals are willing to assume more risk. In terms of education, should we be raising the perceived cost of some of these behaviors?

Nic Ward

Yes. You can actually educate people that a particular activity is risky, or you can actually increase the cost. But, some people mistakenly underestimate the risk and the cost, so they react riskier. If they mistakenly overestimate the level of risk, they act safer. So, if you educate people about the true level of risk, the two may cancel each other out. You could give people false information that something is risky but it's actually not, or you could introduce a safety device without telling them about so they can't adapt to it. But these forms of deception may be unethical even if the result is altruistic.

Colin Jensen

I think society wants to take more risk, so we need to tell people that the road is not the place for the risk taking. But people do need risk outlets. We can educate people of the other outlets where it is appropriate to take the risk.

Anders Lie

We can't use traditional risk theory on these small numbers. We have to understand that the risk to die on the road transport system, overall, is generally small, especially on the individual level. People aren't trying to take the risk to die. We're mixing up a risk to crash with risk of injury. As a road designer, I can make roads that orchestrate safer crashes. It's hard to tell people about the risk of being killed because it's only small numbers of people killed. I could drive with the risk meter at red all my life and not experience anything for real.

Workshop Participant: We know that seatbelts and lowering the alcohol limits will save lives the fastest, and we haven't even done that here. We should do that first. We need better laws here to start.

Workshop Participant: The word zero I'd like to talk about that. The subtitle of this workshop is Toward Zero Deaths. I want to use the word zero in a different way. I think we need to aim a program at the 5 million people in Minnesota who educate the legislature. We need a zero ignorance program so that people understand issues like .08 and primary seatbelt laws. You can't simply go to the legislative committees with these facts and get this done. If we can give better information to those in the population who step forward, this will be a beginning. Can you respond to this zero ignorance idea?

Nic Ward

The key is to have the appropriate information to convince the right people of what the problems are and what the solutions are. When a research project comes on-line, it should have the foresight to come up with the measures that provide the right data. But different people can look at the same data and get different answers. We'd have to come up with some guidelines to the data we need and the forms of analysis required. We talked about having a centralized agency to control safety. The FAA does that for the aviation the FAA certifies what is safe. We need something like that in place in the automotive sector to ensure that you are getting these things certified as being effective or not effective based on an agreed set of standards. If they are taken care of by an independent body, they can provide the info you need — hopefully in an unbiased and transparent manner.

Tom Scott

How do you get this issue on the public agenda so that it is meaningful and produces some results? That's a very hard thing to do. I've been trying to think of other important issues that have gotten on the public agenda and into the marketplace. Smoking is one; maybe the AIDS campaign is another. There are examples out there of where we've had issues that require a mobilization of disparate entities to get an issue on the public agenda. We need to learn from them.

Anders Lie

It's not surprising when people are rather complacent about traffic deaths. I think benchmarking is extremely important. You should benchmark your road transport system with aviation. There have been zero years in commercial aviation. That is, there have been years with zero deaths from commercial airline crashes. I think the public can understand that. But then the public and governments aren't always logical. In Europe, we've spent a lot of money to save a handful of people from mad cow disease but we won't do anything to save 44,000 from traffic fatality deaths.

Dave Ekern

Well, Max is now here and with that, we've prevailed upon him to give us about 15 minutes of the technology side: where we're headed and what is possible in technology. So please help me welcome Max Donath.

Text of Max Donath's presentation is on page 30.

What Have We Learned?—Small Group Discussion

During this breakout session, the small group discussion focused on key findings that the participants see as being clear based on the presentations they had heard as well as their own experiences. They also identified issues or ideas that remain unresolved where data may be unclear or contradictory. The results from this discussion are summarized in Appendix I.

Where Should We Go?—Small Group Discussion

For the final breakout session, the small groups focused their efforts on identifying the ideas and directions that need to be pursued to achieve "Zero Deaths" in Minnesota. The groups brainstormed potential solutions and then prioritized them.

The small groups then took their top ideas and added detail including: leadership for the initiative; participation by individuals, agencies or organization; resources needed; timing and sequencing of the initiative; and any other key factors that should be considered. A slide presentation was developed from the summaries of the work done by each of the eight groups. Appendix J contains the presentation in its entirety.

What Are We Going To Do

Robert Johns

Good morning. We appreciate your coming here to listen to our reports. We'll discuss what our small groups came up with and then listen to our panelists' reaction to the reports. The group I was in had some very stimulating dialogue; I'm interested in hearing what the other groups came up with. To facilitate the discussion, let's welcome Dick Larson.

Presentation of Small Group Reports

Moderator Richard Larson Mille Lacs County Engineer

Thank you for being here, for presenting your ideas, and for participating in this effort. I'm here because I want to be here. I think that we have a problem. I was concerned that some of the speakers would come to the conclusion that we don't have a problem. This has been going on too long. I'm glad we're here. We found out that the public will tolerate 40,000 deaths, but I'm glad that we won't tolerate this and that we are moving forward with solutions to this problem.

As we hear the reports back from the groups, let's celebrate out loud the good ideas. We'll start with Dawn Spanhake from Group 1.

(Slides of the small group presentation are included in Appendix J.)

Group 1 Dawn Spanhake

It was pretty easy for us to come up with consensus. We came up with four very similar topics. We decided that the first thing we should do is to create a Minnesota Traffic Safety Council to be an advisory council to all the players in traffic safety. We want to have consensus and work together. This needs to happen first and happen soon to get the ball rolling.

Our second item is the first task for the Safety Council, and that is to develop a strategic plan to reach zero deaths, similar to the 11-point plan that was presented earlier.

We want begin better driver qualification and education programs. We need to get to the elementary schools with a program for pre-driving students, and we also want to implement lifetime driver learning, elderly screening tools, and tougher licensing guidelines.

Our final strategy is to put more emphasis on enforcement and have officers spend more of their time on the LEOs, or life endangering offenses. We want to make this a priority of the strategic plan, and we feel it's important to involve all Minnesota law enforcement agencies and the courts.

Group 2 Bill Shaffer

We worked through three strategies: First, we want to organize a high level Governor's Commission on Traffic Safety or Transportation Safety. We thought it was important to call it a Governor's Commission for the publicity reasons, etc.

Our second strategy is to increase public awareness and change public perceptions. We know it's hard to get traffic safety on the radar screen.

The third strategy is to pursue key legislation such as primary seatbelt laws. We feel it's appropriate for health care to take the lead on this. EMS has lobbied and made the primary seatbelt law a priority. We need organizations like that to commit resources to lobby these issues. We think that .08 should be the next thing to pursue.

Group 3 **Meg Tilly**

Our first action is to increase enforcement. We have good laws, but we need to enforce them. We found out that the state patrol is very understaffed, so we'd like grassroots effort and have the public help drive this.

Our next strategy is to have lifelong driver education. All first-time driving students should have their training paid for and later education should be a co-pay situation. A key factor includes curriculum development. It needs to meet the needs of the groups going through education for a lifetime.

We suggest including all partners in strategy for every day. We tied this to focus public awareness to influence decision makers, the public, media, and local government.

We feel we need to dramatically increase the penalties for first time and repeat DWI offenders. If we can get them the first time around and make an impression to stop it there, that will help.

Group 4 **Virginia Lockman**

Our first strategy is to encourage lawmakers to pass .08 and primary seatbelt laws. Another strategy is to create a traffic safety commission and this should come out of the Governor's office.

Our last strategy involves developing a multiple disciplinary crash team to investigate fatal and serious crashes. We feel if other people besides the state patrol are involved in getting real knowledge about what causes crashes, we could better learn how to prevent fatalities and serious injury.

*Group 5 **Maureen Janke***

Our first strategy is to establish a multi-disciplinary, private/public team, which takes the lead in setting the traffic safety agenda in Minnesota. We don't want this council to reinvent the wheel but rather carry forward the action items that came out of this workshop. We want to hire a new executive commission to help keep this group on track. This commission reports to someone: Maybe the commissioner of DOT and DPS. But maybe it should report to the Governor. But then that might be too politically fueled and the issues would get lost in the confusion of being under the Governor. So we're not sure how this should work. Nonetheless, it's important that we consider a commission, as it has been a theme in all the reports so far.

Our next strategy is to develop an in-your-face, Australian-style, comprehensive marketing plan. We want to get in the major media, and we want private partners who come with funding to make this happen. We heard that in-your-face messages will get to the attention of the young males, and young males are a particular group we want to target. We also want to pay attention to aging drivers, and we want to reach the policy makers with our message as well.

We don't want to limit ourselves to radio and television. Much of our target audience gets information from the Internet, so we should explore non-traditional marketing avenues.

Next, we want to pass .08 and a primary seatbelt law through a grassroots groundswell. We think the agencies have showed the facts to the legislature, yet these issues are getting nowhere. We need to help empower the groundswell to help get this to the legislature. We need a lot of people at the capitol who will talk to legislatures and get this on the agenda.

We want to push to get .08 and primary seatbelt laws passed soon. We ask for the .08 issue that MADD take the lead because they are already so well organized.

We closed our session by repeating something that was said in a previous presentation here; we need to be bold in order to get anything done.

Group 6 Jean Ryan

We want to organize a Zero Death coalition of traffic safety interest groups. It's the same concept that we've heard from the other groups. We have a lot of people out there working for traffic safety, but we need to organize them and bring them together and focus through this interest group.

The first job on their plate would be to create a media campaign. The coalition will include the DPS and the people who put this workshop together. This group will select a leader. We need the leader to get the message out to the public so we can get some of the work done that we need to. We need to have corporate sponsors to help us with the things that we don't have like money or maybe help us do things faster or see things from a different perspective.

The next strategy is a different idea from what we've heard so far. We want to use in-vehicle technology to increase seatbelt usage and decrease impaired driving. And, we want to demonstrate, in all state vehicles, the use of belts and ignition interlock. The idea is that no state agency personnel can drive a state vehicle without a seatbelt. We'll say zero tolerance for alcohol and not wearing a seatbelt for state drivers as well. Maybe other companies will catch on to this idea and start using this type of technology and use this as a start of a campaign.

We want to improve the role of insurance companies and the consequences of not using a seatbelt and driving impaired. Perhaps insurance costs could be lowered if one signs up to wear a seatbelt. And maybe the insurance company should be notified if the person isn't wearing a seatbelt. Today, if a person gets a DWI, the insurance company isn't always notified. Maybe if there was a more negative consequence for their action that would have an effect.

We also want to find ways to improve competency skills of all drivers. Our big picture idea, which would cost a fortune, is to increase transportation options. It's a long-term goal and hopefully in the future we'll get this done.

Group 7 Karla Jensen

We had a common theme for our strategies: belts and booze. Our first strategic idea is for the State of Minnesota to adopt the vision zero goal and proclaim, promote, and kick this off. We want to get the whole state excited and interested in vision zero. This sets the vision for all it's the cornerstone. We want to use the media in different aspects, maybe in more of a public relations aspect in this case. We want this initial kick off as soon as possible.

We want to pass a legislation package that includes .08 and seatbelt laws. We want everyone from the Governor to the citizens and everyone in between involved in this. We want to get the communities and the media involved. We'll get this education out there after Minnesota adopts the zero deaths vision.

We also agreed with the Australian marketing campaign and should target such a campaign at the elementary school children before they learn to drive. The idea is to get the mindset going before the kids begin driver-training classes. We really want to get that educational aspect in there. It's not just a matter of us telling parents to teach kids about safety. We want teachers, principals, and school boards involved. If possible, we'd like to get celebrity spokespeople behind this. Again, we would do this after Minnesota adopts the zero death vision, but we should start some sort of a campaign now.

We also want to get infrastructure in there. We want to support new technology by developing the infrastructure, and this will be an ongoing thing.

We want a multidisciplinary crash investigation team to get together after a fatal or serious crash. The idea came out of Sweden. They were working with companies and employers rather than going after only the individuals. We want to analyze, together, all the crashes as they happen.

Group 8 Peggy Oberg

I would say that our group strategies fell into five neat groups and are companions to what we have already heard today from other groups. We also felt that the partnerships were important among the public, private, academic, and non-profit sectors. We also feel the need to decide who the leaders are. Who are the champions and heavy-hitters for our cause?

Our next strategy is to invest in research and technology. We want to continue education on technology, and we want to do outreach communications. In this initiative, we need to take the long view that enables training of future professionals.

We next want to nurture partnerships for solutions and deployment. This is a toolbox of options, and we want to try to reduce injuries rather than accidents. We want to do this near and long term.

We also need to look at the measure of success: crashes versus injuries versus deaths. We want to look at market driven initiatives. We should also focus on what we can do in the rural areas.

Next, we want to increase serious enforcement and adjudication. We are compassionate about getting violators off the road. We need funding for enforcement personnel and for court systems. We need to use technology to help change behaviors.

Next, we want to improve driving and vehicle education and training. For example, we need to teach people how to use new technology such as ABS brakes. We also need to teach defensive driving classes throughout the driver's life, and as drivers, we need to learn respect for other drivers. We feel we need new legislation as an outcome of this cultural change initiative.

Group 9 Marjorie Ebensteiner

Our first strategy is to increase public outrage over traffic fatalities. We want to call them traffic homicides so that people feel a personal responsibility for traffic fatalities. We want to do this immediately, but we have to prioritize options to do this.

Next, we want to increase seatbelt use through legislation and enforcement. We talked about penalties,

education, and enforcement. To do this, we need more grassroots efforts. The timing is to reach for the 2002 legislative session.

Next, we want stronger enforcement increasing probabilities of being caught as well as the perception of being caught. We also want to explore what we can do to protect the early stage drivers. We're looking for small gains and prudent successes.

Finally, we need penalties and rewards to change behaviors. Maybe you get a reward from your insurance company for acting prudently. Reward people who engage in prudent behavior and penalize those who are violators.

Richard Larson

Does anyone have an idea that wasn't presented? I counted about 38 ideas some overlap a bit, others expand on each other. Do you have anything to add today? If not today, perhaps get in touch with someone from the committee. It seems to me there will be an organization that will be developed at some point, but everything starts with each one of us.

Each of you has contributed something here today, and that's what is wonderful. Please make a commitment to me, to follow through on this agenda. For starters, commit to me today that the first thing you do in your car is buckle up, and you don't start the car until everyone in the car has his/her seatbelt on. Thank you.

What Did We Hear?—A Panel Discussion

*Moderator **Kathryn Swanson** Director, Office of Traffic Safety, MN Department of Public Safety*

We will hear from FHWA, Public Safety, and Mn/DOT about how they feel about what's gone on so far. But first, we want Colin to come back up and talk about what we can do in Minnesota to decrease drunk driving. They've been successful in Australia; we'd like to hear his thoughts for what we can do.

Colin Jensen

There are three solutions on how to stop young people from drunk driving: You can stop young people from drinking; you can stop them driving; or you can teach them how to do both individually, responsibly and teach them that you don't do both together.

It took us a long time to go from .08 to .05. It's not a short-term plan. When .08 was introduced, it was done with a lot of education. With .05, it was more focused on the new people coming into the system. The reality is that you need to teach kids about the subject before they actually drink or drive. You get them young and you teach them the responsibility.

Indeed, having an Australian driver's license is necessary like it is in the United States. So our message is that we will take your license away if you break the rules. When .05 first started, it was hard for people to find alternative transportation. It was hard to get a taxi. But, with the increased demand, we've seen an increase in supply.

I can't stress enough that we want to imbed the safety information into the very young kids. Although we've made progress, we haven't got the problem solved. We have the major issue now of walking under the influence and safely getting to the train or the taxi.

Kathryn Swanson

Thanks Colin, that was a good reminder that although we want fast action, we need to work at things over time.

Before we get to our panelists, I'd like to see if people would commit to a change in terminology. We've heard over and over crashes being referred to as accidents. That has bothered people in the Department of Public Safety and throughout this industry. I'd like you to remember that crashes aren't accidents.

Now we want to hear from the agencies that supported this conference about what they've heard and how it will effect their organizations.

Patrick Hughes, Assistant Commissioner, Mn/DOT

Thank you. I congratulate the planning committee for putting this workshop together. Mn/DOT is concerned about traffic safety, but we know we are only one part of the puzzle. We enjoy our relationship with CTS and all the other groups that we currently partner with, and we look forward to continuing our work with them.

Throughout the workshop, we've heard the importance of safety and that idea we need to be bold, aggressive, and innovative in how we handle the issues. Most of the things I've heard over the last few days are similar to what we've heard in the past. There are a few new ideas, but we need to take these ideas and do something with them. How do we become advocates and how do we market this?

I think that marketing will be a major emphasis area. We also heard from many speakers with both a national and international perspective. The best part of this conference was to hear all the different perspectives. There was a lot of consistency in what was said. Although the speakers emphasized a few things differently, the messages were the same.

Several speakers reminded us that we ought to look back at our past successes. Other speakers said that we need to benchmark not just to road transport industries, but to other industries as well. Anders talked about the need to focus on injuries rather than crashes. That message really changes your perspective.

I understand that we need designs based on human limitations. Nic talked about the idea of changing people's value of less-acceptable risk. Tom Scott suggested that we look at things systematically, and Max said a lot of things in a short amount of time about technology.

I also heard a lot of consistent messages from the small groups. We agree that we need to make a cultural change, but the question of how we accomplish that remains. There's no question that we need some high-level buy in. But how do you get that buy in? We need some other council, and we need to bring advocates and experts together from various disciplines including the private sector and corporations. We need whole group to feel that the issue is urgent. Again, the question is, how do we do that?

And, how do we market and create awareness? I think we start at a grassroots level, start in rural Minnesota and be aggressive about it. We can be very bold in this area, and I think we have to shock some people. We need to bring about better awareness and really try to change the culture and Minnesota values in this area.

We can work together to come up with creative solutions, and I like the idea of a crash investigation team. But it all gets back to awareness, and I think the media has a lot to do with this. We need to coordinate the efforts of our advocates out there and target the public with the intent of changing values.

I think we do need enforcement and increased penalties, and that we should look at the role of corporations that have a stake in transportation safety. Do corporations drive unacceptable behaviors in their people?

Also, we need to continue to investigate the role of technology in traffic safety and rethink how we educate drivers. Education has to be early, and it has to be life long.

Finally, we need to focus on multidisciplined research. I didn't hear about the response time to get to the crashes that take place. When a crash occurs, there is an issue of response time. There is work being done in ITS and various agencies and hospitals, and it is another area that can be brought to the table at the high level.

Mancel Mitchell, Deputy Commissioner, MN Department of Public Safety

I echo the things Pat touched on and I'm going to add Mitchell's Magnificent Seven. This is a review of what I've heard, and I'll also give you some anecdotal things from my own experience.

One important thing I heard here is that it's okay to think within the box as well as outside of the box. We know there are some things that do work, and we should continue to implement those strategies as well as investigate new ones. I realize that we still have a long way to go. We still have to deal with the alcohol and passenger restraint issues, and we have a long way to go in both areas.

I believe one fertile field as far as enforcement and education goes, is to get at the access to alcohol issue. I think a really important piece was taken out of the old alcohol statute. It said that if you were on the city council, etc., and you knew about a violation and didn't do anything about it, you yourself were in violation. Those types of things can actually be strategies for limiting the access to alcohol.

My thought is to stay the course and be persistent with what we know works. People have commented on using a multidisciplinary approach, and I agree. We need it for just about everything we do professionally. In Mn/DOT and the Department of Public Safety, we have good relationships, and we're doing a good job, but I think we can always improve somehow. Involving the many people with crash response and investigation is a great idea. Everything we do should be multidisciplinary, and I believe that teamwork is everything.

Another important element we've discussed is how to generate the popular and political support for .08 and for seatbelts. It's almost a no-brainer, but it's frustrating as to why we can't do this. But if we stay the course, I believe eventually we can make it happen. The cops and robbers stuff is still the sexy stuff as far as the media and the public is concerned, and generating interest in the importance of traffic enforcement is difficult, even though traffic enforcement ranks high on public surveys.

With regard to technology, the prudent and cautious approach to using technology is best. I also think the risk shift is an interesting concept.

I feel that there is still a lot we can do in the area of public/private partnerships. What's analogous to that is how CrimNet is working. From that experience, I learned first hand that private partnerships are important. It's also important that we continue investing in research. It's easy when the dollars get tight to move away from research and move to the more reactive things. But we need to invest and value research.

I think we can still do a lot more with our existing resources for enforcement purposes. There are some areas in the state that do a good job with enforcement using the resources they have and others who don't do much. The laws are there, so we don't need to complicate things with more laws. I think, also, that penalties sort of anesthetize people. We have the capacity to process only so much and sanctions become less effective. Swiftness and certainty of the sanction are more of a threat than the severity.

I want to throw some cold water on two ideas that were put forth. I believe in education, but don't think it's easy or doable to inject more into primary and secondary curriculums. There isn't room, and you won't be welcome. We need to think beyond turning to our public schools for education in the area of traffic safety.

The law enforcement agenda is enormous. We're asked to do more and more about child abuse, shoplifting, murder, and so on, but the resources are finite. We could use twice as many people in the State Patrol, but it's not going to happen. I don't think we can reasonably look at huge infusions of dollars to do the job.

Alan Steger, *Division Administrator, Federal Highway Administration*

It is my hope to give you a little bit of the federal perspective. In the past eight or nine years, I've been conditioned to think of safety as our number one goal. There was no question within the United States DOT and the Federal Highway Administration throughout the past administration that safety was our highest priority. Rodney Slater often referred to it as our North Star, which seems fitting for this workshop. It still is number one.

I not only have a federal perspective to share, I also have that of a citizen of Minnesota. I live here and work here. My family is here. And, I'm a potential fatality statistic just as all of you are. That concerns me.

So, what can you expect from the federal government? For starters, you can expect 100 percent support. My objective has been to gain more visibility for highway safety in Minnesota to match the emphasis at the federal level. This workshop will help in that regard.

Initially, I was part of the planning group for this workshop. We wanted to do something different. We didn't want to go through this conference, write up the proceeding, and then have them end up on a shelf somewhere. Attaching the North Star name was a first step to ensuring that this workshop would be different.

We also talked about using this workshop to set a new course for Minnesota, and we brought in the notion of zero deaths. I think all of us in that initial planning meeting concluded that it was the only acceptable target to have. Otherwise it would sound like we are happy with mediocrity.

Prior to this workshop, I thought we needed breakthrough thinking if we were ever going to hit that target. Now it's clear to me that we really don't need more breakthrough thinking. We have all kinds of good ideas, and we've had them for a number of years. What we need are breakthroughs in implementing those ideas.

We also talked about benchmarking against the best and figuring out how can we draw on their experiences to do better in Minnesota. So, I'm pleased with the people we have here today from Sweden, Australia, and Washington State, because they are well on their way to getting the job done. I'm happy to see that this workshop has matched our original goals.

Commissioner Tinklenberg said that our reach should always exceed our grasp. I differ with him a little bit. If we admit that zero fatalities are beyond our grasp, we'd have to admit that we can not succeed. I think we can. The door is open. Commissioner Weaver indicated that there's a new attitude in the governor's office, and truly anything goes. If we can get things together, I believe there's a good chance the Governor will buy off on it; he will listen to good arguments.

In my observations throughout this workshop, there were some things that stuck out. Pat and Mancel covered many of them already, so I won't repeat them. But, I do want to comment on some things they did not cover. Regarding the goal of zero deaths: I think we need this goal and I believe it is possible. It may be highly improbable, but I will never admit that our goal is anything but zero deaths. It helps to know that others also think that.

Washington State's target is to reach zero deaths in 30 years; ours is ten. That was a little troubling to me. I believe that Washington's figures assumed that we would continue to make breakthroughs at the

same rate we have been. We need to find ways to accelerate the rate of breakthroughs, if we are to make it in 10 years. We can make it, but not without extraordinary efforts.

Another thing that was troubling to me was the notion that fatalities rare statistically. That makes it sound as though the risk is lower than it is. I don't believe that's a very good message. I would venture a guess that all of us have somehow been touched by traffic fatalities. In all probability, we have all had a family member, a friend, a neighbor, a co-worker, or someone else we know well who has died in a traffic crash. I've been in two very serious crashes myself. Why I am still here I don't know. Maybe it is to help deliver a message. So, while fatalities may be rare statistically speaking, they are all too common and everyone can relate to them. And, that is a key to our success. We need to personalize the message to succeed.

Another thought that came through clearly is that there is no single answer. This will take a multifaceted effort, and it needs to remain so. While focusing our efforts on the highest payoff areas is important, we can't afford to leave anyone out. There are champions for each of the many facets and that's okay. We do need everyone involved so we continue to work on everything, but we need to do it in a more concerted fashion.

There was also a lot said about partnerships. I believe this calls for the highest level of partnership, one where we bring our varied experiences and knowledge to bear on the problem but leave our corporate identities at the door. We need to come together not as separate agencies and organizations to merely collaborate, but as a new entity with a single goal — zero deaths.

We also need new tools to market our programs and work with the media. We need to learn about market forces and leverage our ideas by using the private sector more effectively in our war on fatalities. I think that we could be more graphic in our public service announcements. More importantly, I think we need to be honest with each other and not be so Minnesota nice.

I'd like to issue a challenge to Mn/DOT. We've heard a lot in the last two years about the ABCs. We all know what they are. Mn/DOT has focused a lot of attention on Alternatives for transit, Bottleneck relief, and interregional Corridors. They have been quite successful in delivering the message. I'd like to suggest that ABCs is plural there's an's on the end and that's ought to be Safety. We need to give safety the same attention as the other planks in the platform.

Another thing I heard during the last two days is that we have been more successful than we are willing to admit. Think about 1972, a year in which we had 54,589 fatalities in this country, the highest number of fatalities we have ever had in one year. If someone had said to you back then that within 30 years, the number of registered vehicles would increase by 65 percent; vehicle miles traveled would increase by 208 percent, but we will reduce the number of fatalities by 25 percent, wouldn't you feel pretty good? Or to make it more graphic: 30 years from now we will have 13,244 fewer fatalities per year than we have today. Who wouldn't be proud of that? We should be proud of it. We were all part of it. We made it happen. We need to be proud; but we can't be satisfied.

Achieving zero deaths is really all about influence. It's about recognizing those we need to influence, those who are the decision makers who can make zero fatalities happen, and then tailoring our strategies to fit those people. We need to get inside their heads and figure out what it is that makes them tick, makes them think, makes them act, and then employ strategies accordingly. We need spin doctors who can tell us how we can communicate more effectively with everyone: youth, elderly, legislators, etc.

To conclude, here's my personal challenge to you: The road to zero fatalities starts with us, starts here, today. I hope you all leave here with a good idea about what you'll do tomorrow to further this cause. Here's one example that demonstrates the type of personal commitment that we all need to make. A colleague of mine got in the taxi and the driver wasn't wearing a seatbelt. She stopped the cab and said, I won't ride with you unless you buckle up. The driver did buckle up, and then admitted he had never done that before. She made a difference. It took very little effort, but it did take a lot of courage. If you can't picture yourself doing that, are you really committed to zero deaths? Let's all make sure that everyone we know or come in contact with buckles up every time we have the opportunity. In that way, we can do a great deal in starting off on the zero fatalities journey.

Thank you for this opportunity to speak to you. Remember, right now this is just another conference. What we do tomorrow will make it different.

Kathryn Swanson

I was encouraged by his reference to breakthrough implementation and personalizing statistics. In Minnesota we have about two funerals a day just from traffic crashes. Think of the feeling of a funeral. That's the feeling we're trying to prevent. I also liked what he said about proud but not satisfied. Maybe we should make that the Minnesota mantra.

What's Next?

Robert Johns

Thank you to everyone. I think we've really had a demonstration of commitment from leaders throughout the entire conference. It's impressive to see the high-level management people who have actively participated.

This workshop has been a great opportunity for CTS. As I said at the beginning, it is consistent with CTS's mission of bringing knowledge through research, education, and outreach to bear on problems that relate to transportation. We heard a lot of ideas from people from other organizations. Our international speakers, Colin and Anders, did a great job. They deserve a round of applause.

I also want to recognize the University of Minnesota speakers. Their ideas and new approaches are the result of research investments. Sometimes University research doesn't produce immediate results, but when the timing is right, the research can result in break-through innovations. They showed us that the time is right for innovations in traffic safety.

What's next? The steering committee is committed to the following steps. We'll produce proceedings to document everything that came out of this workshop. We'll also synthesize the small group recommendations, and we'll take those recommendations to agency leaders, some who were here this week. We'll let you know of any actions taken. Our commitment in terms of timing is that we hope to have the proceedings done and distributed to you by Labor Day. We think this event and report will have national interest, and we'll make the proceedings available to many interested parties.

Thank you again for your participation.