

POV Safety

Six Point Program

The director of army safety has developed a model POV safety program. I am directing that this Six Point Program be used in every unit. It is the minimum standard. the model POV safety program requires:

1. Command Emphasis

Positive leadership at all levels is imperative. Leader emphasis on POV safety must be unrelenting. Our junior officers and non-commissioned officers see their Soldiers every day. They should know where their Soldiers go, what they do, and then assert positive influence on how, when, and where they operate their POV's.

2. Discipline

Our junior leaders work with their Soldiers daily and know them well. Soldiers sometimes telegraph signals that translate later into accidents. Negative behavior such as traffic offenses, alcohol abuse, misconduct, and poor performance often are indicators of potential POV accident victims. Identify "at risk" Soldiers; counsel them; take proactive measures to modify their risky behavior.

3. Use risk management

Identify hazards associated with POV operations; assess the hazards; make decisions to control them; implement the controls; and supervise execution. The director of army safety has prepared a POV risk management toolbox for commanders and leaders. This toolbox provides a comprehensive set of tools and controls that have proved successful throughout our army. The toolbox is available at <https://safety.army.mil/>. Use it. Make it available to leaders at all levels.

4. Standards

Set high and unmistakable standards. Enforce them. Follow army regulatory traffic standards. Be uncompromising on the use of seatbelts and motorcycle safety equipment. Educate Soldiers on the risks of speed, fatigue and use of alcohol. Conduct mandatory POV safety inspections and random roadside checks. Emphasize the use of designated drivers for social events.

5. Provide Alternatives

Provide alternatives for Soldiers to driving POV's. Schedule activities on post to keep Soldiers on post and off the road. Keep gyms, recreation centers and other places Soldiers use off-duty open later. These same measures also can provide alternatives to alcohol use. Look for transportation alternatives as well. Promote use of alternate transportation methods to POV use. Prominently post public transportation schedules. Where possible, use morale, welfare, and recreation (DMWR) services to provide buses or vans to transport Soldiers to the places they go when off-duty. Arrange reduced hotel rates in nearby communities to encourage Soldiers to remain overnight on weekends and stay off the highways late at night.

6. Commander's Assessment

Following every fatal and serious injury POV accident, commanders will conduct an assessment of the accident with the involved Soldier's chain of command. Determine what happened, why it happened, and how it could have been prevented. Implement corrective and preventive measures. Publicize lessons learned.

POV Accident Prevention Program

Links

- [Cell Phone Use](#)
- [Winter Driving](#)
- Travel Risk Trips Planning System
 - https://crcapps2.crc.army.mil/ako_auth/asmis2/default.aspx
- POV Toolbox
 - https://crc.army.mil/riskmanagement/driving_pov/1toolbox3v4.pdf

DRIVER DISTRACTION PRESENTATION

Driver Distraction:

Understanding the Problem,
Identifying Solutions

January 7, 2005

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National Highway Traffic Safety Administration



What is Driver Distraction?



Then

Now

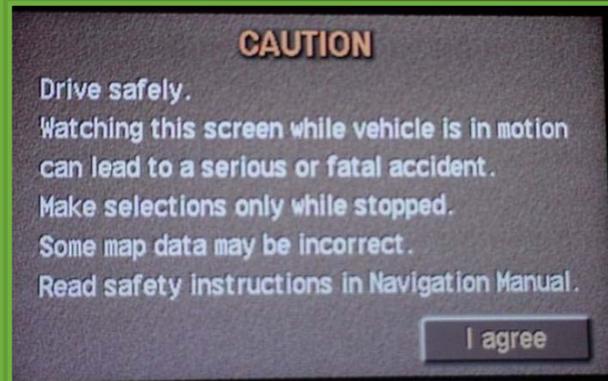
Future



High Technology vs Low Technology Distractions

- **May engage attention longer and more frequently**
- **May place more cognitive and manual demands on drivers**
- **May interrupt drivers at unsafe times**

The Safety Problem of Electronic Distractors



Recognized by many manufacturers



Crash data not complete regarding existing sources of distraction

Distraction and Crash Risk: NHTSA Research Focus



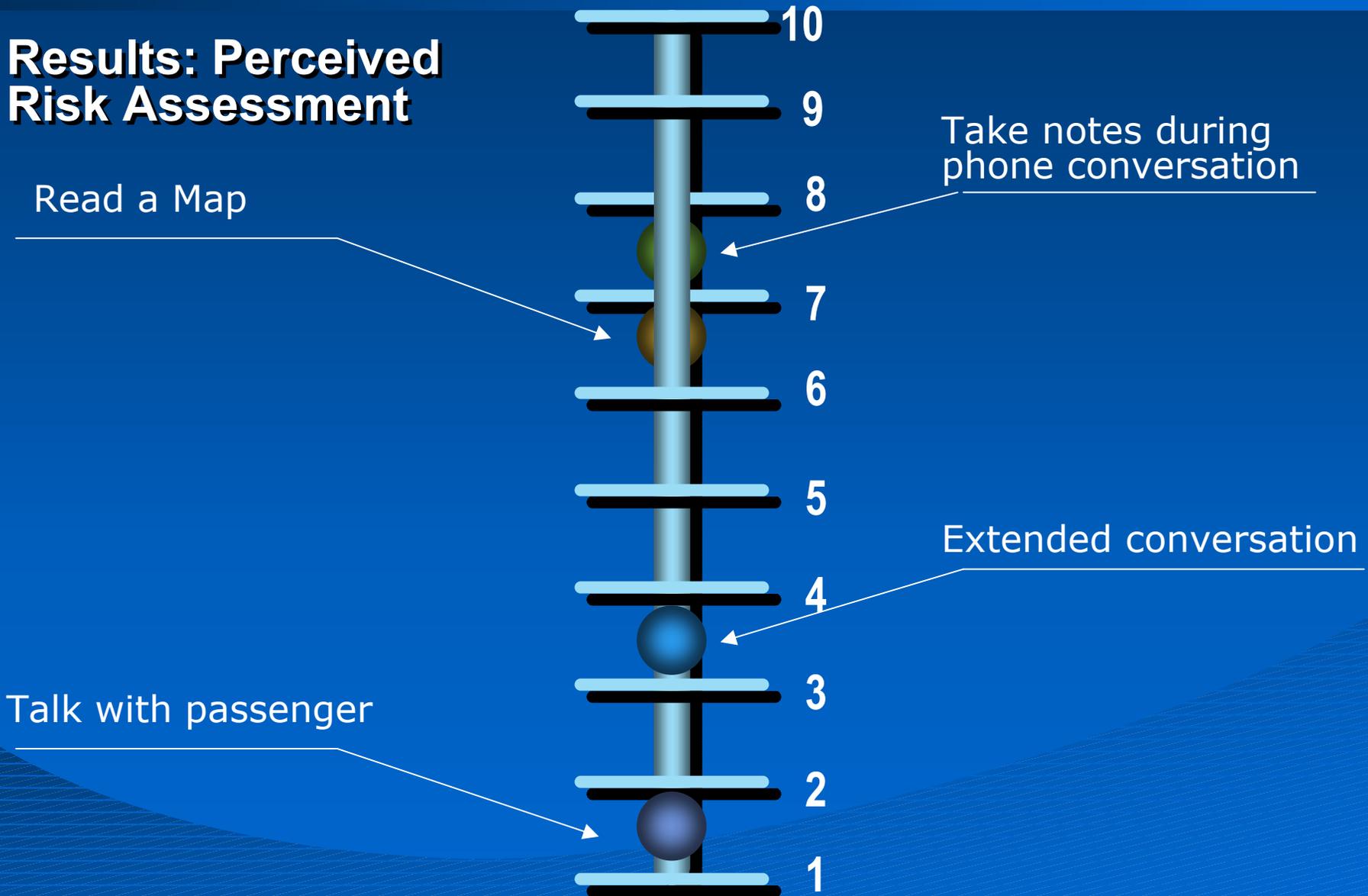
**Driver Willingness
to Use**



**Distraction Demands
of Driver/Vehicle
Interface**

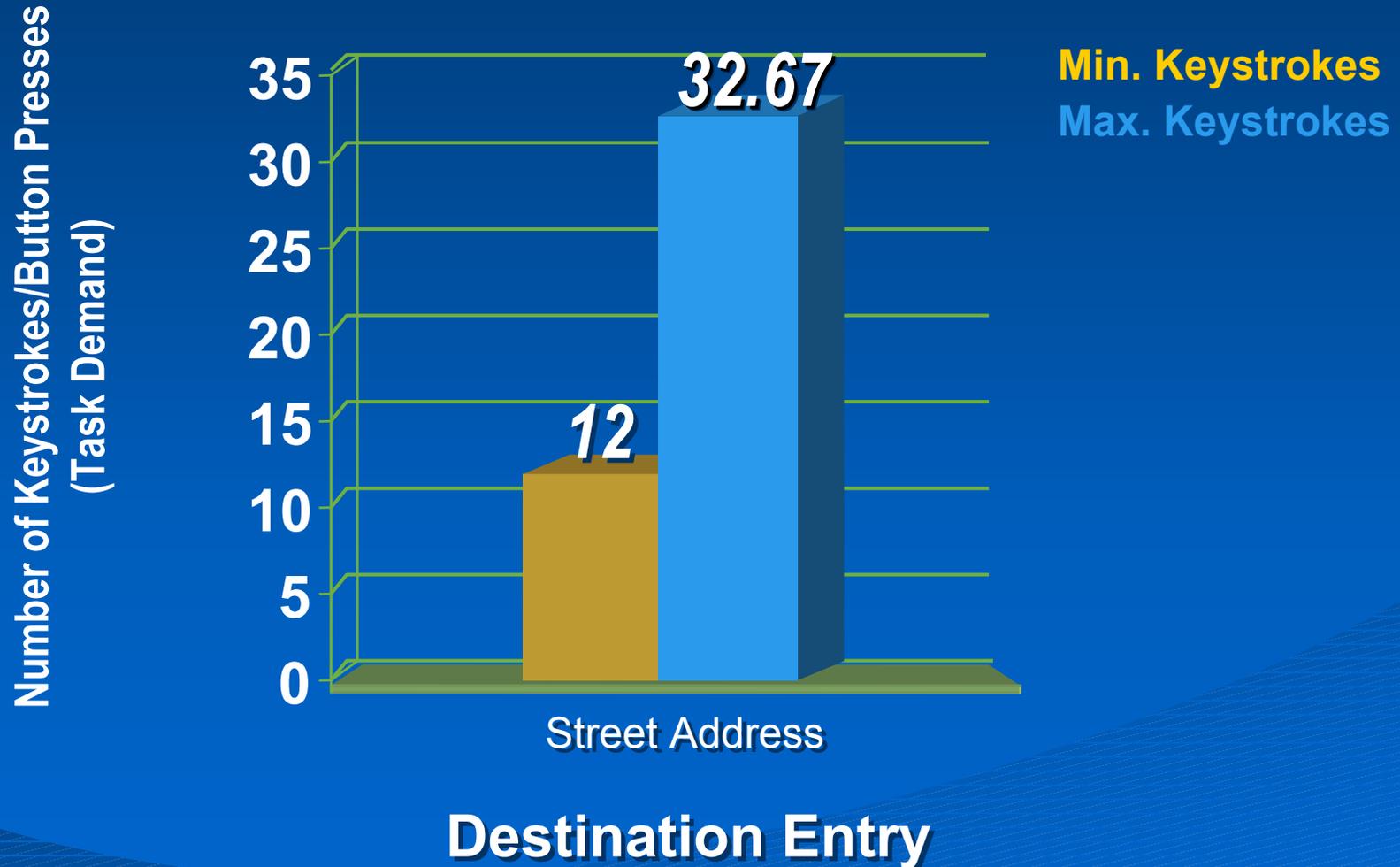
Willingness to Engage While Driving

Results: Perceived Risk Assessment



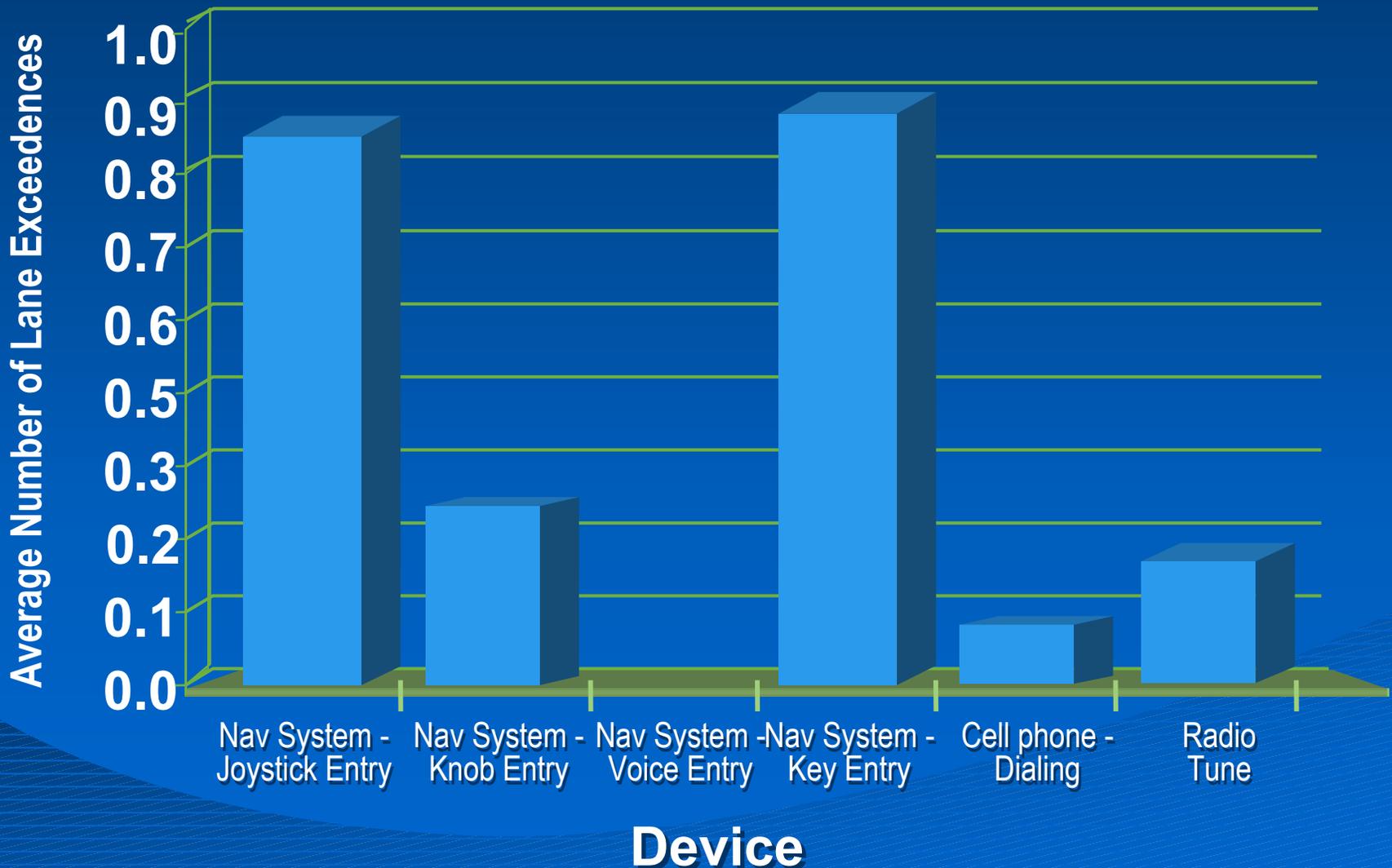
Inventory of Navigation Interface Designs: Task Demand

Results: Mean Minimum, Maximum Keystrokes for Entering a Street Address for Navigation Systems



How Interface Design Can Influence Driver Performance

Results: Average Number of Lane Exceedences per Trial by Device



100-car Naturalistic Driving Study

- **Goals:**
 - Understand the preceding factors associated with crashes, near crashes, critical events
 - Develop relationship between task completion time, eyes-off-road time and critical incident likelihood
 - Provide baseline relating performance to safety-related risk
- **Overview: 1 year, 43K hours, 1.37M miles**
 - Approx. 76 crashes recorded, with about 38% related to driver distraction
 - Will also be looking at near crashes
- **Research questions include:**
 - Assessment of willingness to engage in and associated risk of distracting activities
 - Types of critical events related to distraction
 - Potential role of crash warning systems in preventing distraction related crashes

100-Car Naturalistic Driving Study



Data Collection Capabilities

CAMP - Driver Workload Metrics Project

Measuring workload in lab



Measuring workload on road



CAMP

Driver Workload Metrics Consortium



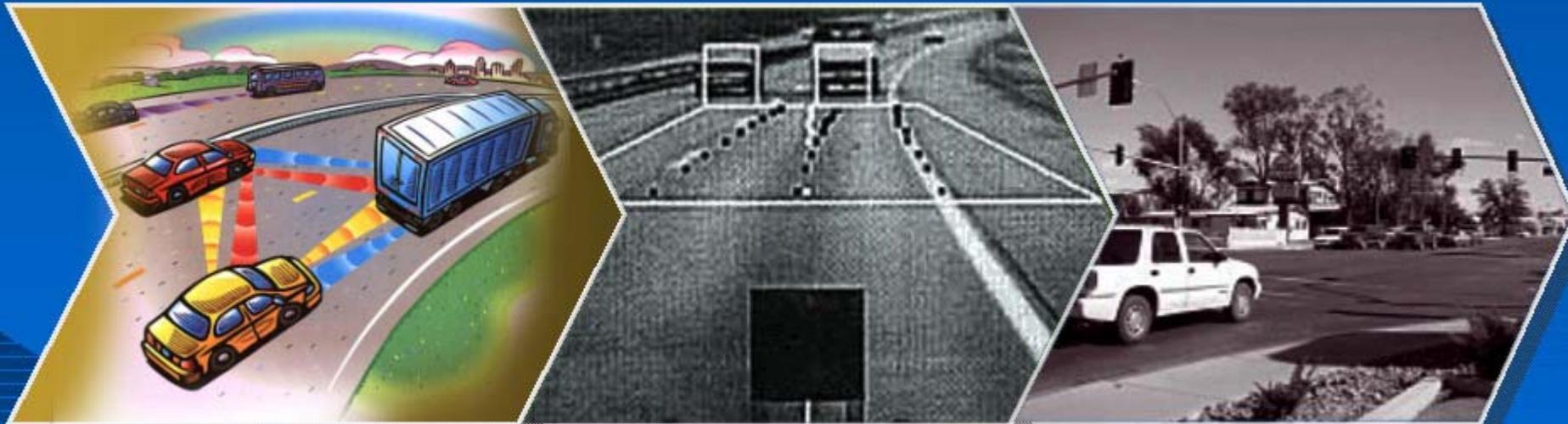
IVI Light Vehicle Enabling Research Program

Driver Assistance Systems To Alert Distracted Drivers

Forward Collision
Warning System

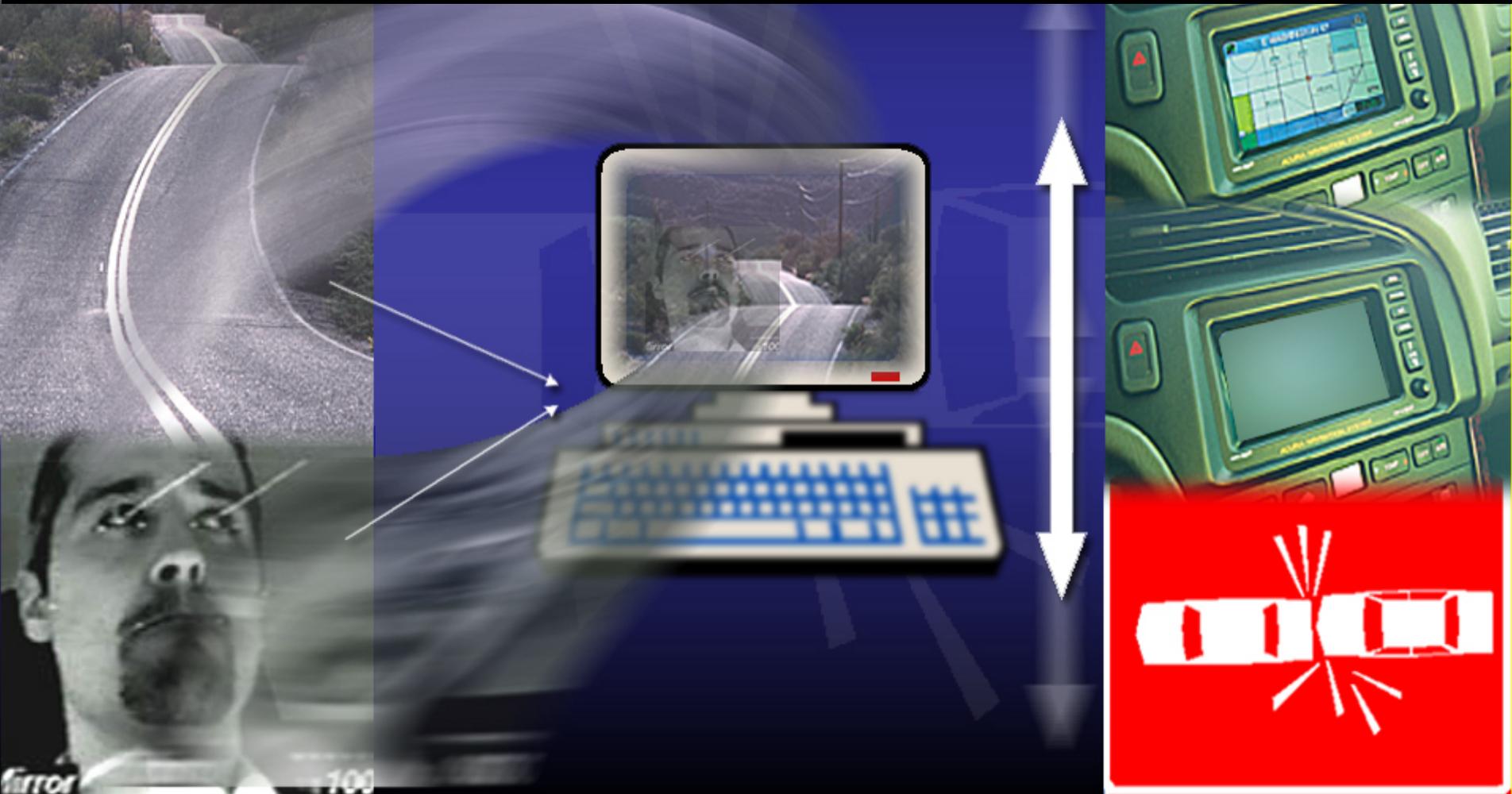
Road Departure
Warning System

Intersection Collision
Warning System



Adaptive Interface Workload Management

SAfety **VE**hicle Using Adaptive **I**nterface **T**echnology



In conclusion...



DRIVER CELL PHONE USE

Traffic Safety Facts

Research Note

December 2005

DOT HS 809 967

Driver Cell Phone Use in 2005 – Overall Results

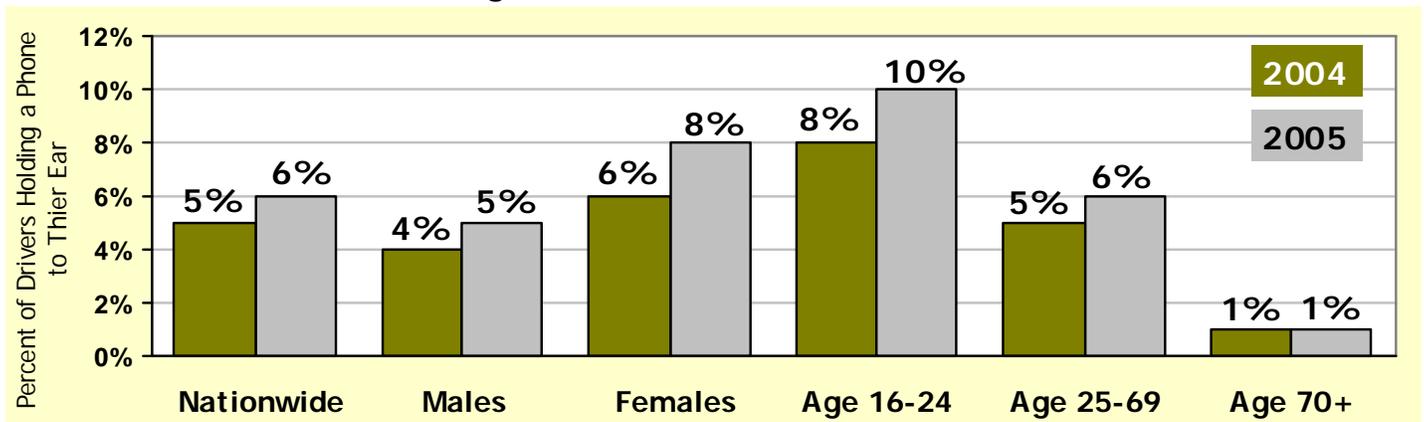
Donna Glassbrenner, Ph.D.

Driver cell phone use increased in 2005, with 6 percent of drivers on hand-held phones in 2005 nationwide compared to 5 percent in 2004. This result is from the National Occupant Protection Use Survey (NOPUS), which provides the only probability-based observed data on driver cell phone use in the United States. The NOPUS is conducted annually by the National Center for Statistics and Analysis of the National Highway Traffic Safety Administration (NHTSA).

The 2005 rate translates into 974,000 vehicles on the road at any given daylight moment being driven by someone on a hand-held phone. It also translates into an estimated 10 percent of vehicles in the typical daylight moment whose driver is using some type of phone, whether hand-held or hands-free. The 2005 survey also found the following:

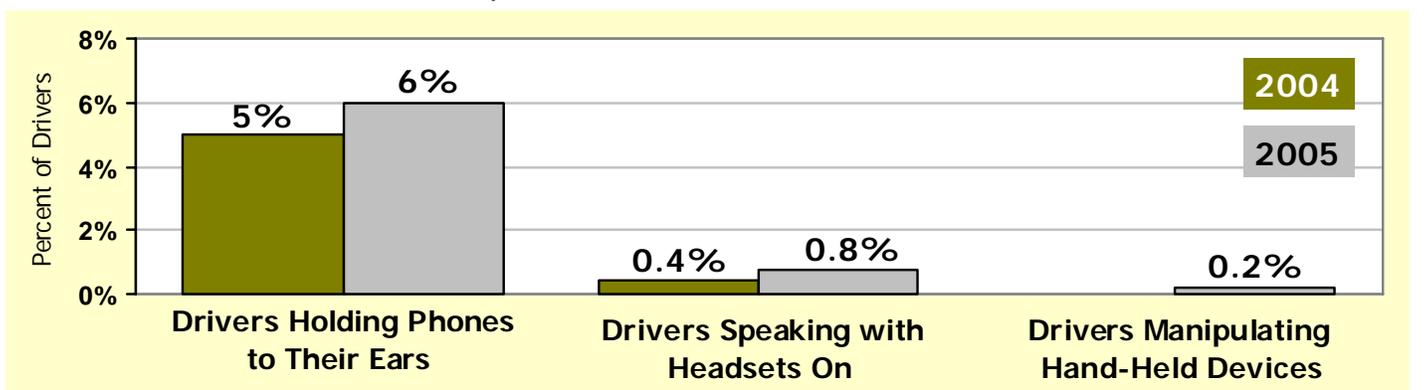
- Hand-held use increased in a number of driver categories, including female drivers (from 6 percent in 2004 to 8 percent in 2005), drivers age 16-24 (8 percent in 2004 to 10 percent in 2005), and drivers in suburban areas (4 percent in 2004 to 7 percent in 2005).
- The incidence of drivers speaking with headsets on while driving also increased in 2005, from 0.4 percent of drivers in 2004 to 0.7 percent in 2005.
- In the first nationwide probability-based estimate of the incidence of hand-held device manipulation, the survey found that 0.2 percent of drivers were dialing phones, checking PDAs, or otherwise manipulating some hand-held device while driving in 2005.

The Percent of Drivers Holding Phones to Their Ears



Source: National Occupant Protection Use Survey, NHTSA's National Center for Statistics and Analysis, 2004-2005

Various Distraction Behaviors, 2004-2005



Source: National Occupant Protection Use Survey, NHTSA's National Center for Statistics and Analysis, 2004-2005

The Percent of Drivers Holding Phones to their Ears, by Major Characteristics

Motorist Group ¹	2004		2005		2004-2005 Change	
	% of Drivers Holding Phone to Ear ²	Significantly High or Low Rates ³	% of Drivers Holding Phone to Ear ²	Significantly High or Low Rates ³	Difference in Percentage Points	Confidence in a Change in % of Drivers Holding Phone to Ear ⁴
All Drivers	5%		6%		1	84%
Males	4%		5%		1	40%
Females	6%		8%		2	99%
Drivers Who Appear to Be						
Ages 16-24	8%	H	10%		2	93%
Ages 25-69	5%		6%	L	1	70%
Ages 70 and Up	1%	L	1%	L	0	16%
Drivers Who Appear to Be						
White	5%		6%		1	65%
Black	5%		6%		1	57%
Members of Other Races	3%	L	6%	L	3	97%
Drivers on						
Expressway Exit Ramps	6%		7%		1	74%
Surface Streets	5%		6%		1	76%
Drivers Traveling Through						
Light Precipitation	5%		6%		1	66%
Fog	NA		6%		NA	
Clear Weather Conditions	5%		6%		1	81%
Drivers of						
Passenger Cars	4%		6%		2	93%
Vans & SUVs	6%		7%		1	52%
Pickup Trucks	5%		5%		0	18%
Drivers in the						
Northeast	3%	L	4%	L	1	81%
Midwest	5%		8%		3	88%
South	6%		5%		-1	41%
West	6%		8%		2	98%
Drivers in						
Urban Areas	7%		7%		0	47%
Suburban Areas	4%		7%		3	99%
Rural Areas	6%		3%		-3	86%
Drivers Traveling During						
Weekdays	5%		7%		2	80%
Rush Hours	5%		8%		3	99%
Nonrush Hours	5%		6%		1	15%
Weekends	3%		4%		1	90%
Drivers With ⁵						
No Passengers	6%	H	8%	H	2	88%
At Least One Passenger	2%	L	2%	L	0	92%
Drivers With ⁵						
No Passengers	6%		8%	H	2	89%
Passengers All Under Age 8	7%		6%		-1	33%
Passengers All Ages 8 and Older	2%		2%	L	0	64%
Some Passengers Under Age 8 and Some Age 8 or Older	2%		2%	L	0	16%

¹ Drivers of passenger vehicles with no commercial or government markings stopped at a stop sign or stoplight between the hours of 8 a.m. and 6 p.m.

² The percent of drivers who appeared to be holding a phone to their ears. Age, gender, and racial classifications are based on the subjective assessments of roadside observers.

³ Rates flagged with an "H" or "L" are statistically high or low in their category at a 90% confidence level.

⁴ The degree of statistical confidence that the 2005 use rate is different from the 2004 rate.

⁵ Among passengers observed in the right-front seat and the second row of seats.

NA: Data not sufficient to produce a reliable estimate.

Source: National Occupant Protection Use Survey, National Highway Traffic Safety Administration, National Center for Statistics and Analysis

The Percent of Drivers Speaking with Headsets On, by Major Characteristics

Motorist Group ¹	2004		2005		2004-2005 Change	
	% of Drivers Speaking with Headsets ²	Significantly High or Low Rates ³	% of Drivers Speaking with Headsets ²	Significantly High or Low Rates ³	Difference in Percentage Point Tenths	Confidence in a Change in % of Drivers Speaking with Headsets ⁴
All Drivers	0.4%		0.7%		0.3	88%
Males	0.5%		0.7%		0.2	75%
Females	0.2%		0.6%		0.4	96%
Drivers Who Appear to Be						
Ages 16-24	0.8%		1.3%		0.5	49%
Ages 25-69	0.3%		0.6%		0.3	94%
Ages 70 and Up	NA		NA		NA	
Drivers Who Appear to Be						
White	0.3%		0.6%		0.3	87%
Black	0.8%		1.3%		0.5	41%
Members of Other Races	0.2%		0.7%	L	0.5	85%
Drivers on						
Expressway Exit Ramps	0.4%		0.9%		0.5	80%
Surface Streets	0.3%		0.6%		0.3	76%
Drivers Traveling Through						
Light Precipitation	0.1%	L	0.4%	L	0.3	73%
Fog	NA		NA		NA	
Clear Weather Conditions	0.4%	H	0.7%		0.3	87%
Drivers of						
Passenger Cars	0.4%		0.7%		0.3	76%
Vans and SUVs	0.3%		1.0%		0.7	97%
Pickup Trucks	0.4%		0.3%		-0.1	45%
Drivers in the						
Northeast	1.0%		0.9%		-0.1	17%
Midwest	0.2%		1.7%		1.5	98%
South	0.4%		0.4%	L	0.0	7%
West	0.3%		0.3%	L	0.0	39%
Drivers in						
Urban Areas	0.9%		0.9%		0.0	1%
Suburban Areas	0.2%		0.7%	L	0.5	99%
Rural Areas	0.4%		0.5%		0.1	26%
Drivers Traveling During						
Weekdays	0.4%		0.8%		0.4	91%
Rush Hours	0.6%		0.8%		0.2	47%
Nonrush Hours	0.3%		0.8%		0.5	95%
Weekends	0.2%		0.2%		0.0	30%
Drivers With ⁵						
No Passengers	0.5%	H	0.8%	H	0.3	84%
At Least One Passenger	0.1%	L	0.4%	L	0.3	84%
Drivers With ⁵						
No Passengers	0.5%		0.8%		0.3	84%
Passengers All Under Age 8	NA		1.0%	L	NA	
Passengers All Ages 8 and Older	0.1%		0.3%	L	0.2	65%
Some Passengers Under Age 8 and Some Age 8 or Older	NA		NA		NA	

¹ Drivers of passenger vehicles with no commercial or government markings stopped at a stop sign or stoplight between the hours of 8 a.m. and 6 p.m.

² The percent of drivers who appeared to be wearing a headset with a microphone and speaking. Age, gender, and racial classifications are based on the subjective assessments of roadside observers.

³ Rates flagged with an "H" or "L" are statistically high or low in their category at a 90% confidence level.

⁴ The degree of statistical confidence that the 2005 use rate is different from the 2004 rate.

⁵ Among passengers observed in the right front seat and the second row of seats.

NA: Data not sufficient to produce a reliable estimate.

Source: National Occupant Protection Use Survey, National Highway Traffic Safety Administration, National Center for Statistics and Analysis

The Percent of Drivers Manipulating Hand-Held Devices, by Major Characteristics

Motorist Group ¹	2005		
	% of Drivers Manipulating Hand-Held Devices ²	Significantly High or Low Rates ³	
All Drivers	0.2%		
Males	0.1%		
Females	0.2%		
Drivers Who Appear to Be			
Ages 16-24	0.3%		
Ages 25-69	0.1%		
Ages 70 and Up	NA		
Drivers Who Appear to Be			
White	0.2%		
Black	0.1%		L
Members of Other Races	0.2%		
Drivers on			
Expressway Exit Ramps	0.1%		
Surface Streets	0.2%		
Drivers Traveling Through			
Light Precipitation	0.3%		
Fog	NA		
Clear Weather Conditions	0.1%		
Drivers of			
Passenger Cars	0.2%		
Vans and SUVs	0.2%		
Pickup Trucks	0.1%		
Drivers in the			
Northeast	0.3%		
Midwest	0.1%		
South	0.2%		
West	0.1%		
Drivers in			
Urban Areas	0.1%		
Suburban Areas	0.2%		
Rural Areas	0.1%		
Drivers Traveling During			
Weekdays	0.2%		
Rush Hours	0.1%		L
Nonrush Hours	0.2%		H
Weekends	0.2%		
Drivers With ⁴			
No Passengers	0.2%		H
At Least One Passenger	0.0%		L
Drivers With ⁴			
No Passengers	0.2%		H
Passengers All Under Age 8	NA		
Passengers All Ages 8 and Older	0.0%		L
Some Passengers Under Age 8 and Some Age 8 or Older	NA		

¹ Drivers of passenger vehicles with no commercial or government markings stopped at a stop sign or stoplight between the hours of 8 a.m. and 6 p.m.

² The percent of drivers who appeared to be manipulating some type of electronic device, whether a cell phone, video game, or other device. Age, gender, and racial classifications are based on the subjective assessments of roadside observers.

³ Rates flagged with an "H" or "L" are statistically high or low in their category at a 90% confidence level.

⁴ Among passengers observed in the right-front seat and the second row of seats.

NA: Data insufficient to form a reliable estimate.

Source: National Occupant Protection Use Survey, National Highway Traffic Safety Administration, National Center for Statistics and Analysis.

Survey Methodology

The National Occupant Protection Use Survey (NOPUS) is the only probability-based observational survey of driver cell phone use in the United States. The survey observes usage as it actually occurs at a random selection of roadway sites, and so provides the best tracking of the extent to which people in this country are using cell phones while driving.

The survey data is collected by sending trained observers to probabilistically sampled intersections controlled by a stop sign or stoplight, where motorists are observed from the roadside. Data is collected between the hours of 8 a.m. and 6 p.m. Only stopped vehicles are observed to permit time to collect the variety of information required by the survey, including subjective assessments of motorists' age and race. Observers collect data on the driver and observe the presence of a right-front passenger and up to two passengers in the second row of seats. Observers do not interview motorists, so that the NOPUS captures the untainted behavior of motorists. The 2005 NOPUS data was collected between June 6 and June 25, while the 2004 data was collected between June 7 and July 11, 2004, excluding the period July 2 – 5.

Because the NOPUS sites were chosen through probabilistic means, we can analyze the statistical significance of its results. Statistically significant increases in the use of hand-held phones (respectively, headset use or manipulation of hand-held devices) between 2004 and 2005 are identified in the tables of hand-held use estimates (respectively, headset use estimates or the percent of drivers manipulating devices) by having a result that is 90 percent or greater in column 7. Significantly high and low levels of hand-held use, headset use, or the manipulation of hand-held devices, such as the lower use of hand-held phones by drivers 70 and older than by younger drivers in 2005, are identified by H's and L's in columns 3 and 5. Such comparisons are made within categories, such as road type, delineated by changes in row shading in the tables. The exception to this is the grouping "Drivers Traveling During ...," in which weekdays are compared to weekends, and weekday rush hour to weekday nonrush hour.

The estimates of the numbers of drivers on phones and the percent of drivers using cell phones hands-free were derived via calculations that use data from the publications (Boyle and Vanderwolf, to appear) and (Stutts et al., 2003), and from the Department of Transportation's National Household Travel Survey. These calculations are explained in detail in the upcoming publication, "Driver Cell Phone Use in 2004 – Analysis," expected to be published in the spring of 2005.

The NOPUS uses a complex multistage probability sample, statistical data editing, imputation of unknown values, and complex estimation and variance estimation procedures. See the NHTSA Technical Report referenced below for more information on these procedures.

Data collection, estimation, and variance estimation for the NOPUS are conducted by Westat, Inc., under the direction of the National Center for Statistics and Analysis in NHTSA under Federal contract number DTNH22-00-D-07001.

Definitions

Drivers were counted as "holding phones to their ears" if they were holding to their ears what appeared to the observer to be a phone. In particular, drivers holding personal data assistants (PDAs) or corded car phones to their ears might have been counted as holding a phone. (They would have been so counted if the PDA or car phone appeared to the observer to be some type of phone.) Drivers need not have been speaking into the phone to be counted as using the phone.

Drivers were counted as "using a headset" if they appeared to have on their heads a device that had a microphone, and they appeared to be speaking. The microphone might be on a wand or other visible attachment. A device identified as a headset need not have a headpiece (i.e., a piece of plastic running across the top of the head), and need not have a wire attached to it. Drivers identified by the survey as using headsets might have been, for instance, using voice-activated software on laptops seated on the seat next to them, rather than speaking on cell phones. Observers did not attempt to distinguish these two behaviors because they cannot be reliably distinguished from the roadside. Likewise, drivers identified as using headsets might have been speaking to a passenger or themselves, rather than speaking into the headsets.

Drivers were counted as "manipulating a hand-held device" if they appeared to be manipulating some type of electronic device, whether a cell phone, video game, or other device. Such behaviors included dialing. Note that a driver characterized by the survey as "manipulating a hand-held device" might or might not have been speaking. If the driver was manipulating a phone while holding it to the ear, the driver would have been characterized as "holding a phone to the ear," rather than "manipulating a hand-held device."

We note that there are means by which drivers can use (or even talk on) cell phones that would neither be recorded as holding a phone nor as using a headset nor as manipulating a hand-held device in the NOPUS. For instance, some phones have a push-to-talk feature, in which the users push a button on the phone when they wish to speak and release the button when they wish to hear the people on the other end of the line via a speakerphone built into the cell phones. Additionally, some cell phones have built-in speakerphones by which drivers can converse on phones hands-free. Drivers conversing on phones using either of these technologies would not appear to roadside observers to be holding phones to their ears (assuming the push-to-talk users are not holding the phones to their ear) and would not be wearing

Sites and Vehicles Observed

Numbers of	2004	2005	Percentage Change
Sites Observed	1,200	1,200	0%
Vehicles Observed	38,000	43,000	13%

headsets. If the drivers were using built-in speakerphones, or were using push-to-talk features with their hands out of the data collector's view, they would not be characterized as "manipulating a hand-held device."

The racial categories "Black," "White," and "Other Races" appearing in the tables reflect subjective characterizations by roadside observers regarding the race of motorists. Likewise observers recorded the age group (8-15 years; 16-24 years; 25-69 years; and 70 years or older) that best fit their visual assessment of each observed motorist.

"Expressway exit ramps" are defined as the access roads to roadways with limited access, while "surface streets" comprise all other roadways. A roadway is defined to have "fast traffic" if during the observation period the average speed of passenger vehicles that passed the observers exceeded 50 mph, with "medium speed traffic" defined as 31 - 50 mph and "slow traffic" defined as 30 mph or slower. A roadway is defined to have "heavy traffic" if the average number of vehicles per lane mile on the roadway during the observation period exceeded 45 vehicles per lane mile, with "moderately dense traffic" defined as 26 - 45 vehicles per lane per mile and "light traffic" having at most 25 vehicles per lane per mile.

Driver cell phone use is largely unrestricted by State laws. No States ban use outright. Currently, three States and the District of Columbia ban the use of hand-held phones while driving. One of these bans took effect in 2001 (New York), two in 2004 (New Jersey in May 2004 and DC in July 2004), and one in 2005 (Connecticut). However, Connecticut's ban took effect in October, after the 2005 NOPUS was conducted. A small number of States otherwise restrict the manner of use, e.g., by requiring sound to travel unimpaired to at least one of the driver's ears or requiring at least one hand on the steering wheel at all times. A few States ban use in certain situations, such as when operating a school bus or public transit vehicle. In addition, some major cities have hand-held bans or otherwise restrict use.

States with Laws Banning Hand-Held Cell Phone Use While Driving¹

New York	New Jersey	District of Columbia
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¹States with laws in effect as of June 30, 2005. Also includes DC. In no other States did such laws take effect during the period June 30, 2004 - June 30, 2005. However, Connecticut enacted a law that took effect in October 2005.

Driving while using a headset is even less restricted by traffic laws. No States or major cities ban use outright. As with driver cell phone use, a small number of States restrict the manner of use, e.g., by requiring sound to travel unimpaired to at least one of the driver's ears, or ban certain types of use in certain situations, such as by banning cell phone use (whether hand-held or hands-free) when operating a school bus or public transit vehicle.

NHTSA's policy on using cell phones while driving is conveyed in the following statements from www.nhtsa.gov: "The primary responsibility of the driver is to operate a motor vehicle safely. The task of driving requires full attention and focus. Cell phone use can distract drivers from this task, risking harm to themselves and others. Therefore, the safest course of action is to refrain from using a cell phone while driving." More information on the agency's policy can be found on this Web site.

For More Information

For detailed analyses of the data in this publication, as well as additional data and information on the survey design and analysis procedures, see the upcoming publication, "Driver Cell Phone Use in 2005 - Analysis," expected to be available at the Web site www.nrd.nhtsa.dot.gov/departments/nrd-30/nca/AvailInf.html in the spring of 2006.

The NOPUS also observes other types of restraints, such as safety belts, child safety seats, and motorcycle helmets. This publication is part of a series that presents overall results from the survey on these topics. Please see other members of the series, such as "Motorcycle Helmet Use in 2005 - Overall Results," and the corresponding NHTSA Technical Report "Motorcycle Helmet Use in 2004-5 - Analysis," for the latest data on these topics.

References

Boyle, J., and Vanderwolf, P., 2003 Motor Vehicle Occupant Safety Survey, Volume 4, Crash Injury and Emergency Medical Services Report, NHTSA Technical Report, 2003.

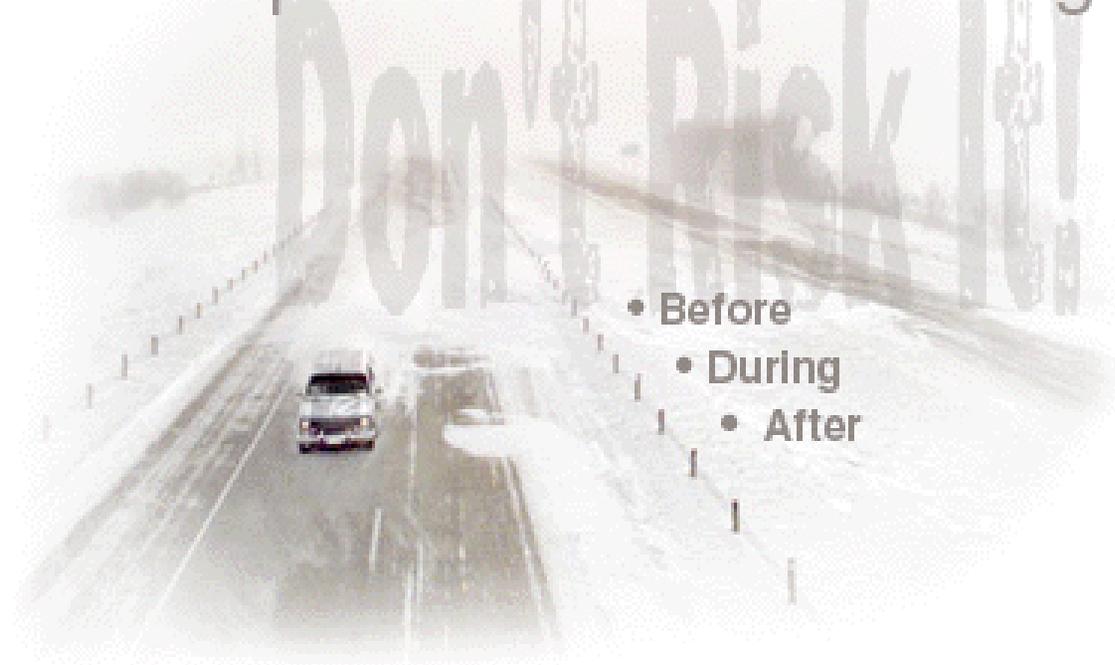
Federal Highway Administration, Nationwide Personal Transportation Survey, 1995, and National Household Travel Survey, 2001.

Stutts, J., Hunter, W., and Huang, H., Cell Phone Use While Driving: Results of a Statewide Survey, Transportation Research Board, Annual Meeting CD-ROM, 2003



BE PREPARED FOR WINTER DRIVING

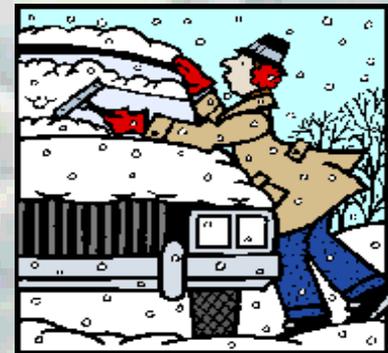
Be Prepared for Winter Driving



Traveler's Tools

RISK MANAGEMENT DRIVING DECISIONS

- CAN I DO THIS LATER?
- AM I PREPARED FOR EMERGENCIES?





You must Understand how cold weather's effect's your vehicle before, during and after operation.



Vehicle Preparation

Routine precautions help you avoid starting problems:

- ❖ Get an engine tune-up in the fall.
- ❖ Be sure all lights are in good working order.
- ❖ Have the brakes adjusted.
- ❖ Remember to switch to winter-weight oil if you aren't already (using all-season oil).
- ❖ Battery and voltage regulator should be checked.

Vehicle Preparation



Make sure battery connections are good.

- ❖ If the battery terminal posts seem to be building up a layer of corrosion, clean them with a paste of baking soda and water. Let it foam, and then rinse with water. Apply a thin film of petroleum jelly to the terminal posts to prevent corrosion, and reconnect.
- ❖ Be sure all fluids are at proper levels.



Vehicle Preparation

❖ Antifreeze should not only be strong enough to prevent freezing, but fresh enough to prevent rust.

❖ Make sure wiper blades are cleaning properly. Consider changing to winter wiper blades, which are made for driving in snow. They are covered with a rubber boot to keep moisture away from working parts of the blade.



Vehicle Preparation



- ❖ **The exhaust system:** Have the exhaust system fully checked for leaks that could send carbon monoxide into your vehicle.
- ❖ **Heating and cooling system:** Check your radiator and hoses for cracks and leaks. Make sure the radiator cap, water pump and thermostat work properly. Test the strength of the anti-freeze, and test the functioning of the heater and defroster.

Vehicle Preparation



❖ **Windshield:** Make sure wipers are in good condition and fill up on winter washer fluid. Ensure your windshield can give you clear vision of the road and traffic around you.

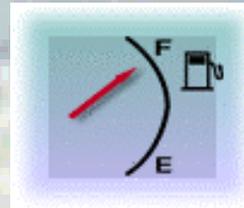
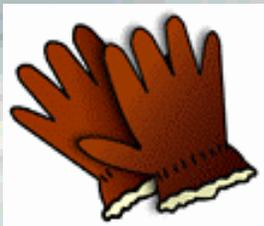
❖ One way to find a good repair facility to tune-up your vehicle is to look for an ASI Approved Auto Repair Services sign at garages or ask a friend.

Vehicle Preparation

❖ Stay in your car until help arrives



HOT HOT HOT – DON'T FORGET TO
FILL UP WITH FUEL



Don't forget the gloves. Your fingers will stick to the cold metal

Essential Supplies

Here's what you'll want to have on hand, especially in an emergency:

✓ Snow shovel.



✓ Scraper with a brush on one end.



✓ Tow chain or strap.

✓ Warning device (flares or reflective triangles).

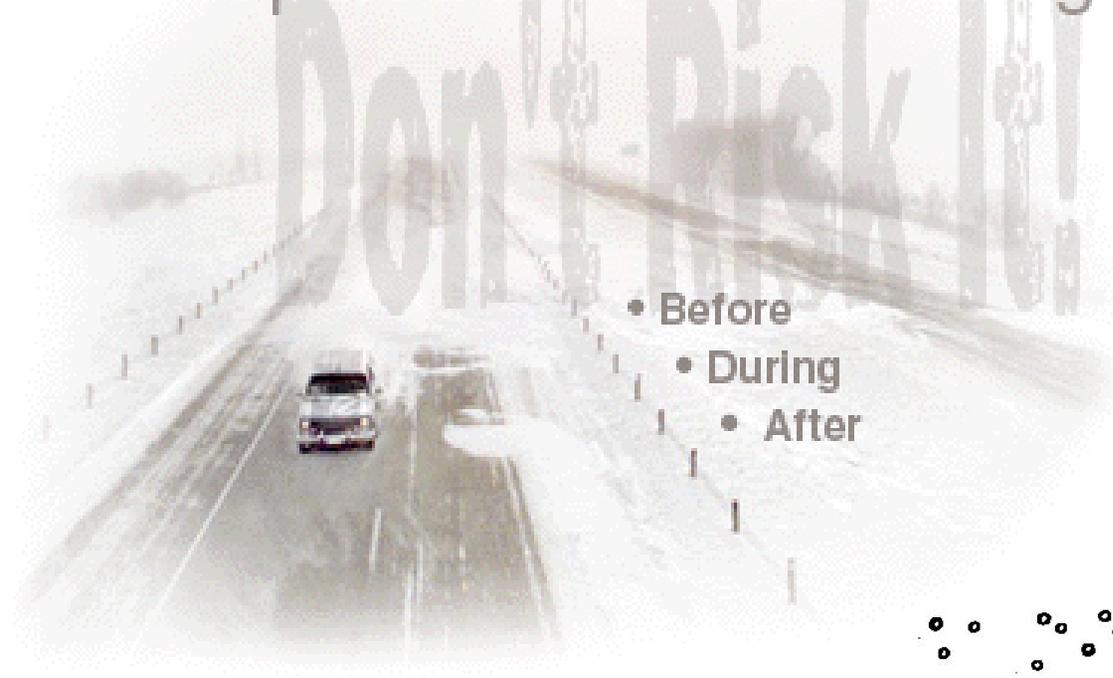
Essential Supplies

Here's what you'll want to have on hand, especially in an emergency (Con't):

- ✓ Flashlight (with extra batteries)
- ✓ Abrasive material (cat litter, sand, salt, or traction mats).
- ✓ Compass, Warning light or road flares, Booster cables
- ✓ First Aid Kit



Be Prepared for Winter Driving



- Before
- During
- After

Weather





Winter Deaths

Everyone is potentially at risk during winter storms. The actual threat to you depends on your specific situation. Recent observations indicate the following:

- Related to ice and snow:
 - ✓ About 70% occur in automobiles.
 - ✓ About 25% are people caught out in the storm.
 - ✓ Majority are males over 40 years old.

Weather



FLURRIES - Light snow falling for short durations. No accumulation or light dusting is all that is expected.

SHOWERS - Snow falling at varying intensities for brief periods of time. Some accumulation is possible.

SQUALLS - Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant. Snow squalls are best known in the Great Lakes region



Weather



BLOWING SNOW - Wind-driven snow that reduces visibility and causes significant drifting. Blowing snow may be snow that is falling and/or loose snow on the ground picked up by the wind.

Heavy snow - Ten centimeters or more in 12 hours, or 15 cm or more in 24 hours, and snow falling reduces visibility up to a quarter of a mile or less.



Weather

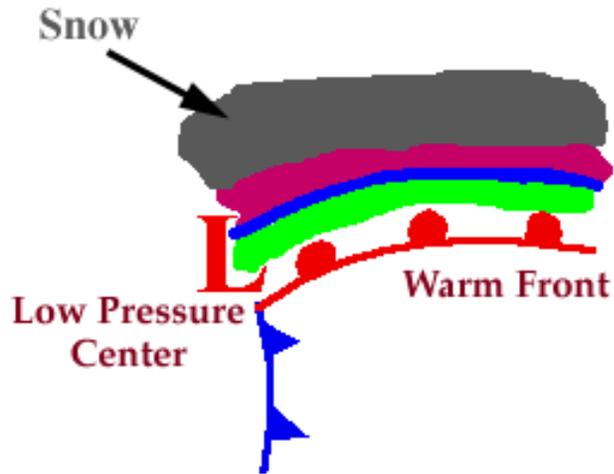
SNOW

Snow is frozen precipitation in the form of six-side crystals. Snow is produced when water vapor is deposited directly into o airborne particles as ice crystals, which remain frozen as they fall. When temperatures remain below freezing from the cloud to the ground, snow results.



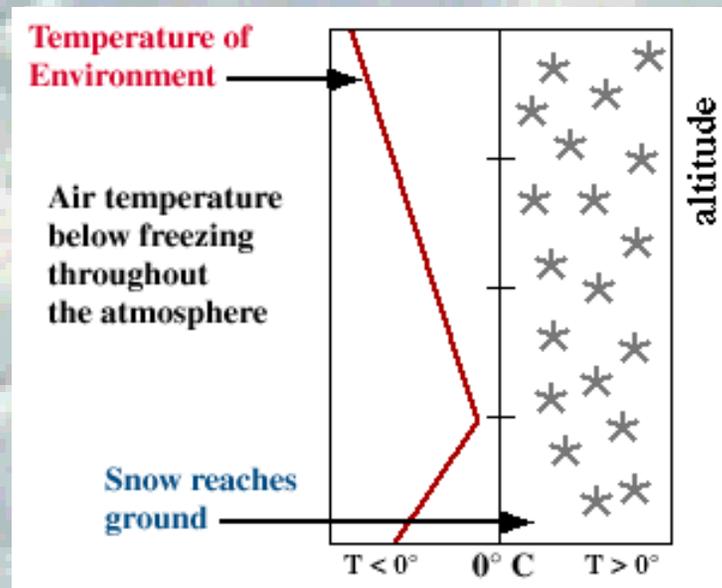
SNOW

Progressing even further away from the warm front, surface temperatures continue to decrease and the sleet changes over to snow.



SNOW-FLAKES

Snowflakes are simply aggregates of ice crystals that collect to each other as they fall toward the surface.



Weather



BLIZZARD - The most perilous of winter storms combining falling, blowing, drifting snow, winds of 40 km/hour or more, visibility less than 1 km, temperatures less than -10-C; duration: six hours or more.

Cold Wave - A rapid fall in temperature in a short period, requiring greater than normal protective measures.

Winds The cause of blizzard conditions, drifting, reduced visibility and wind-chill effects.

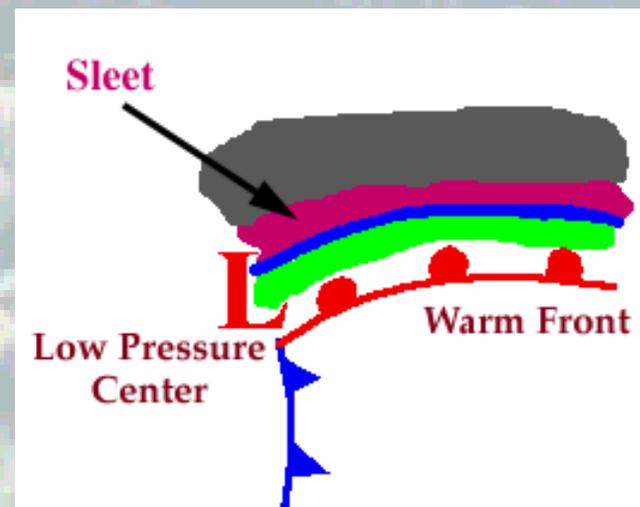
Weather



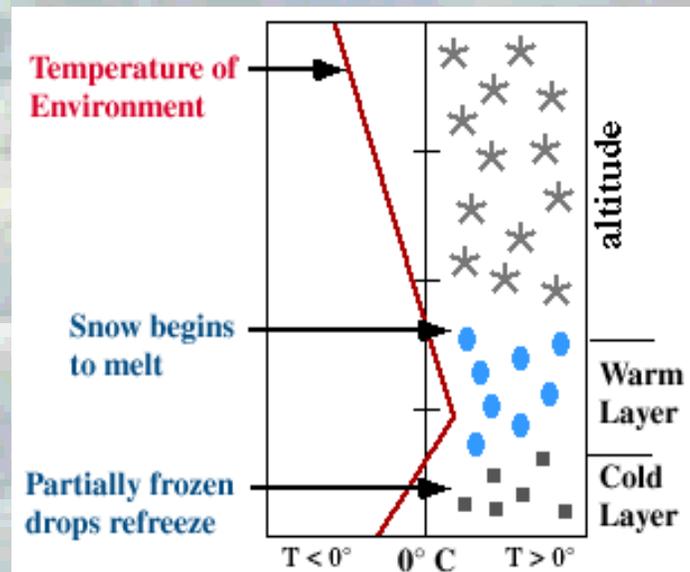
Sleet falls to earth as ice pellets. These ice pellets are formed as snowflakes melt into raindrops as they pass through a thin layer of above-freezing air. The rain drops than refreeze into particles of ice as they pass through a sub-freezing layer of air near the ground.

Sleet

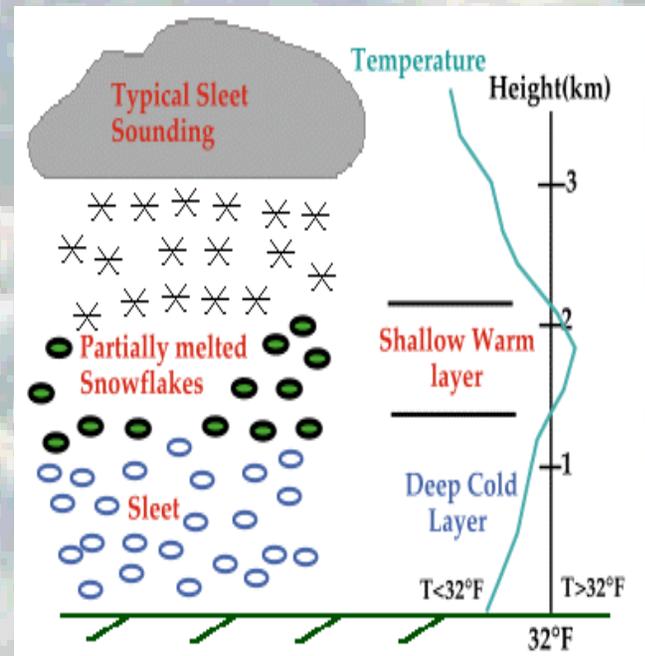
Progressing further ahead of the warm front, surface temperatures continue to decrease and the freezing rain eventually changes over to sleet. Areas of sleet are located on the colder side (typically north) of the freezing rain band.



Sleet is less prevalent than freezing rain and is defined as frozen raindrops that bounce on impact with the ground or other objects.



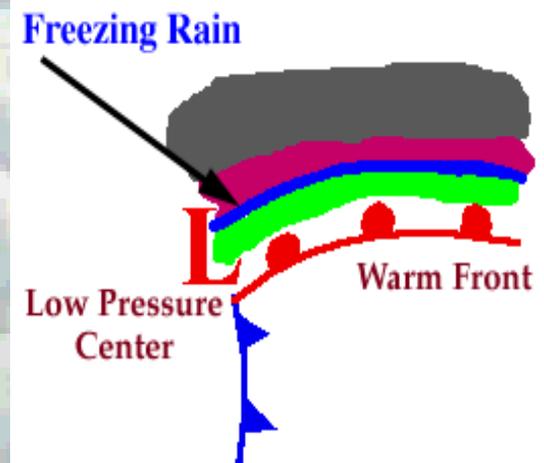
Sleet is more difficult to forecast than freezing rain because it develops under more specialized atmospheric conditions. It is very similar to freezing rain in that it causes surfaces to become very slick, but is different because its easily visible.



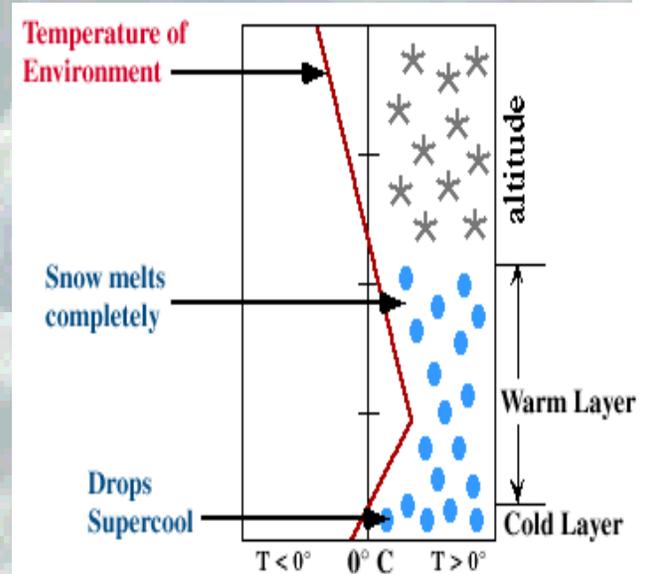
Freezing Rain

- ✓ Freezing rain is caused by rain droplets that freeze on contact with the ground or objects near the ground, leaving a frozen glaze. The temperature of the ground must be below freezing, and the rain droplets must exist in a liquid state at temperatures below freezing for freezing rain to occur.
- ✓ Freezing rain can glaze roadways with ice causing extremely hazardous driving conditions.

Ice storms can be the most devastating of winter weather phenomena and are often the cause of automobile accidents, power outages and personal injury. Ice storms result from the accumulation of freezing rain, which is rain that becomes super cooled and freezes upon impact with cold surfaces. Freezing rain is most commonly found in a narrow band on the cold side of a warm front, where surface temperatures are at or just below freezing.



The diagram below shows a typical temperature profile for freezing rain with the red line indicating the atmosphere's temperature at any given altitude. The vertical line in the center of the diagram is the freezing line. Temperatures to the left of this line are below freezing, while temperatures to the right are above freezing.





ICE

Expect icy conditions any time the outside air temperature reaches 40 degrees F or lower. Although water freezes at 32 degrees F, road surface can freeze when the air temperature drops to 40 degrees or less.

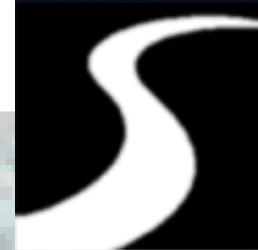
An important place to watch for this condition is on bridges. Bridge surfaces are exposed to the wind and cool off faster than the rest of the road.

You should also prepare for icy conditions on roads through shaded areas where a cold wind can freeze a wet road surface.

Visualize a baseball dropped from a 747 flying at 30,000 feet; it's speed reaches 120 MPH, visualize you going 70 MPH under this big ugly cloud.....bam!



WHITE ICE

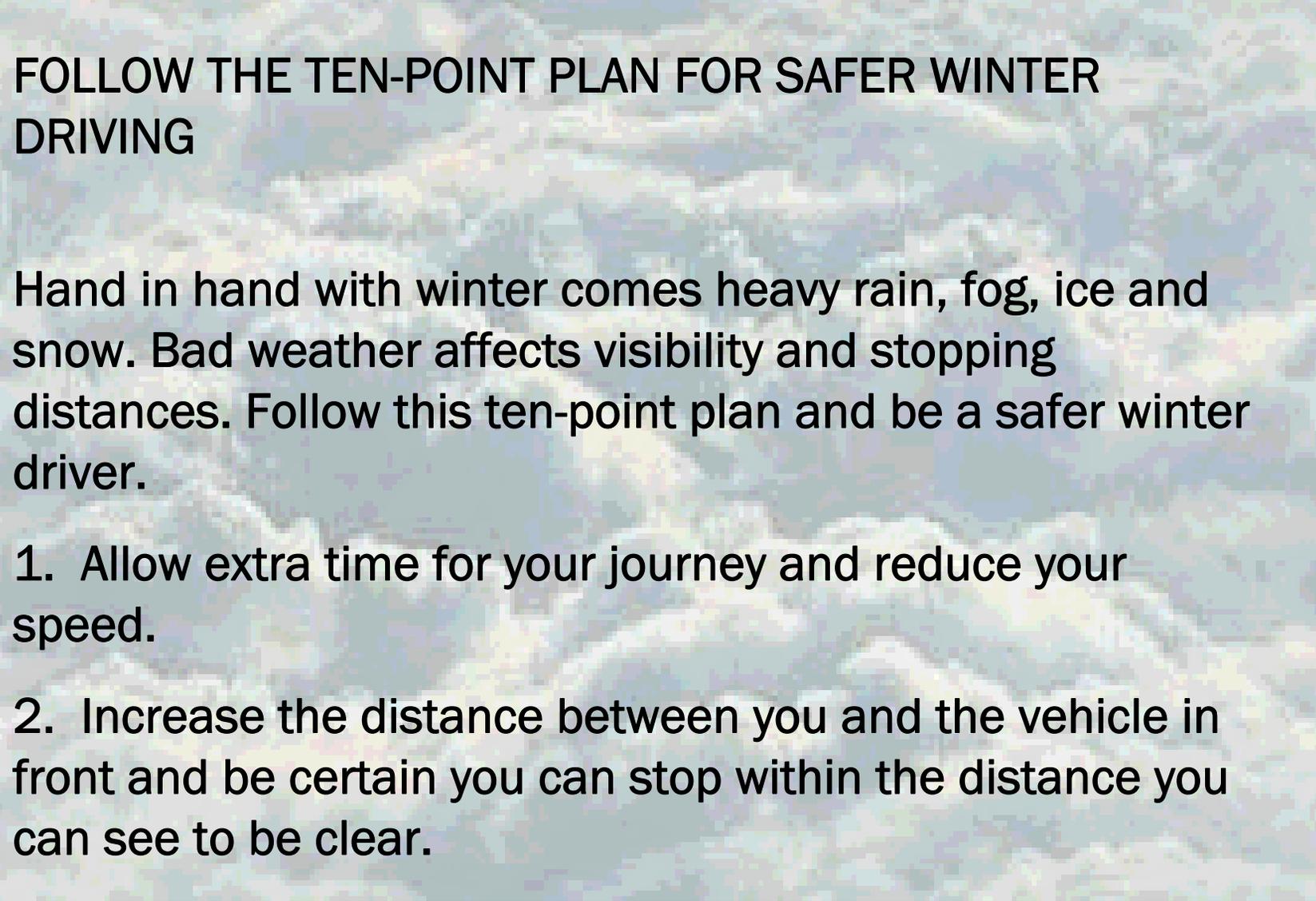


Snow that has been compacted during the day and has slightly melted will freeze at night. Usually this white ice can be seen on the road. When traveling on white ice, drive very slowly. If you cannot find a place to park until conditions improve, install tire chains for better traction.

Slick trick – Watch for slippery spots called glare ice. These may appear on an otherwise clear road in shaded areas. If you see a patch of ice ahead, brake before reaching it and try not to brake while actually on the ice



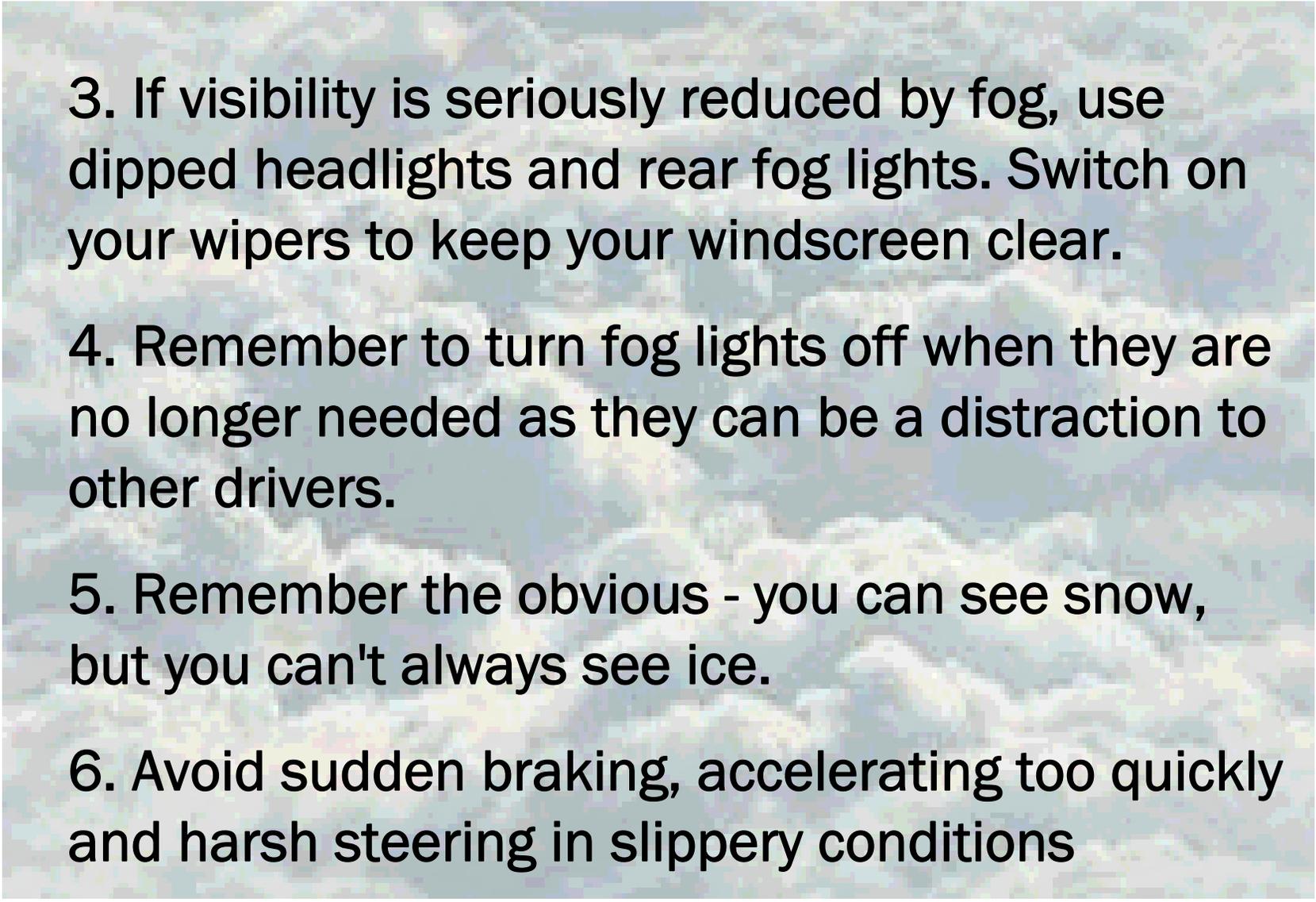
- **B**lack ice fools drivers. Its shine tricks them into thinking it's water on the road. What they may not realize is that condensation, such as dew, freezes when temperatures reach 32 degrees or below. This forms an extra-thin layer of ice on the road.
- **T**his shiny ice surface is one of the most slippery road conditions. Black ice is likely to form first under bridges and overpasses, in shady spots and at intersections.



FOLLOW THE TEN-POINT PLAN FOR SAFER WINTER DRIVING

Hand in hand with winter comes heavy rain, fog, ice and snow. Bad weather affects visibility and stopping distances. Follow this ten-point plan and be a safer winter driver.

1. Allow extra time for your journey and reduce your speed.
2. Increase the distance between you and the vehicle in front and be certain you can stop within the distance you can see to be clear.



3. If visibility is seriously reduced by fog, use dipped headlights and rear fog lights. Switch on your wipers to keep your windscreen clear.

4. Remember to turn fog lights off when they are no longer needed as they can be a distraction to other drivers.

5. Remember the obvious - you can see snow, but you can't always see ice.

6. Avoid sudden braking, accelerating too quickly and harsh steering in slippery conditions



7. Keep your windscreen clear of snow and check from time to time that there is not a build up of snow on your lights.
8. Carry a shovel, extra warm clothing, a blanket, a snack and a drink - especially if you are traveling through isolated areas.
9. If you are going on a long journey, advise someone of your destination and what time you expect to arrive.
10. If you feel uncomfortable driving in bad weather, consider whether your journey is really necessary or whether you can go by an alternative to the car.



When do I use Fog Lights?

Fog lights are designed to be used during fog or foul weather, in conjunction with your low beams to focus as much light as possible on the ground directly in front of you. Providing increased light on the ground helps you to follow the road and helps reduce the reflection on the fog from your headlights.



Fog Safety Tips:

- Drive with lights on low beam
- Reduce speed
- Avoid crossing traffic unless absolutely necessary
- Listen for traffic you cannot see



Fog Safety Tips (Con't):



- Use wipers and defroster as necessary for maximum vision
- Be patient! Don't pass lines of traffic
- Unless absolutely necessary, don't stop on any freeway or other heavily traveled road
- Consider postponing your trip until the fog clears



Dress Properly

- ✓ Wear several layers of thick loose-fitting clothing.
- ✓ Wear a hat, scarf and turtleneck sweater.
- ✓ The head and neck lose heat faster than any other part of the body.
- ✓ Dress for the cold.
- ✓ Don't forget a hat and gloves.

Examples of wind chill:

- with a temperature of -15°F and winds blowing at 35 mph, the wind chill index would be -74°F and would cause exposed skin to freeze in 30 seconds

- with the temperature of 15°F and winds blowing at 35 mph, the wind chill index would be -27°F , which would likely cause frostbite and make outdoor activities dangerous

Read right and down from the calm-air line. For example, a temperature of 0°F combined with a 20 mph wind, has an equivalent cooling effect of -39°F .

APPARENT WIND CHILL

	45	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40
4mph	45	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40
5mph	43	37	32	27	22	16	11	6	0	-5	-10	-15	-21	-26	-31	-36	-42	-47
10mph	34	28	22	16	10	3	-3	-9	-15	-22	-27	-34	-40	-46	-52	-58	-64	-71
15mph	29	23	16	9	2	-5	-11	-18	-25	-31	-38	-45	-51	-58	-65	-72	-78	-85
20mph	26	19	12	4	-3	-10	-17	-24	-31	-39	-46	-53	-60	-67	-74	-81	-88	-95
25mph	23	16	8	1	-7	-15	-22	-29	-36	-44	-51	-59	-66	-74	-81	-88	-96	-103
30mph	21	13	6	-2	-10	-18	-25	-33	-41	-49	-56	-64	-71	-79	-86	-93	-101	-109
35mph	20	12	4	-4	-12	-20	-27	-35	-43	-52	-58	-67	-74	-82	-89	-97	-105	-113
40mph	19	11	3	-5	-13	-21	-29	-37	-45	-53	-60	-69	-76	-84	-92	-100	-107	-115
45mph	18	10	2	-6	-14	-22	-30	-38	-45	-54	-62	-70	-78	-85	-93	-102	-109	-117

Unpleasant
Frostbite likely. Outdoor activity dangerous.
Exposed flesh will freeze within half a minute for the average person.

Risk Management Reminders

Prepare the driver

- o If you must drive in bad weather, plan ahead and make sure you have enough fuel.
- o See and be seen; clear all snow from the hood, roof, windows and lights.
- o Clear all windows of fog.
- o If visibility becomes poor, find a place to safely pull off the road as soon as possible.

Prepare the driver

- Wear warm clothes that do not restrict movement.
- In bad weather, let someone know your route and intended arrival time, so you can be searched for, if you don't turn up after a reasonable delay.



Coming Soon What to expect next

o During

o After



Remember!

The speed you travel in adverse weather, has a negative correlation to stopping distance and maneuver space.

