Alcohol: Partially Attributable

- Lip cancer
- Oral cancer
- Esophageal cancer
- Colon cancer
- Rectal cancer
- Hepatic cancer
- Pancreatic cancer
- Laryngeal cancer
- Breast cancer
- Pellagra
- Hypertension
- Ischemic heart disease
- Cardiac dysrhythmias
- Heart failure
- Stroke
- Low birth weight
- Acute pancreatitis
- Esophageal varices

Alcohol: Partially Attributable

- Road injuries
- Fall injuries
- Fire injuries
- Drowning
- Machine injuries
- Aspiration
- Suicide
- Assault
- Child abuse
- Sexual abuse

Alcohol dependence is likely if one gives two or more positive answers to the following questions...

CAGE Questionnaire

- Have you ever felt you should **C**ut down on your drinking?
- Have people **A**nnoyed you by criticizing your drinking?
- Have you ever felt bad or **G**uilty about your drinking?
- Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover (**E**ye-opener)?

Tobacco: 100% attributable

- Tobacco abuse

Tobacco: Partially attributable

- Respiratory TB
- Lip cancer
- Oral cancer
- Pharyngeal cancer
- Esophageal cancer
- Gastric cancer
- Pancreatic cancer
- Laryngeal cancer
- Lung cancer
- Peptic ulcer
- Bladder cancer
- Renal pelvic cancer
- Renal parenchymal cancer
- Parkinson's disease
- Pneumonia
- Influenza
- Chronic bronchitis
- Low birth weight
- Sudden infant death syndrome
- Fire injuries

Other Drugs: 100% Attributable

- Opiate dependence
- Opiate non-dependent abuse
- Opiate accidental poisoning
- Opiate caused suicide
- Barbiturate dependence
- Barbiturate non-dependent abuse
- Barbiturate accidental poisoning
- Barbiturate suicide
- Other barbiturate poisonings
- Other drug dependence
- Other drug suicide
- Drug psychosis
- Maternal drug dependence
- Newborn drug dependence

Costs Associated with Substance Abuse

- Consequences to health and welfare system
- Lost productivity costs
- Law enforcement and criminal justice costs
- Other costs, e.g. property damage
- Intangible costs, e.g. pain suffering

Fatally Injured Drivers

354 fatally injured drivers in Quebec '99-'01

- Alcohol 35% (124/354)
- Cannabis 19.5% (69/354)
- Drugs other than alcohol 30.2% (107/354)
- Alcohol in 41% of all drug cases (44/107)

Substance Abuse and Injuries

- Alcohol involved in over 65% of snowmobiling deaths
- Close to half of all drowning cases involve alcohol
- Violence and substance abuse is even higher
- Up to 61% of fire deaths had alcohol involved
- Alcohol involved in 3-11% of work injuries

Risk Behaviors

- Sleep deprivation
- Decreased response times
- Lack of judgment
- Take greater risks
- Absenteeism
  - Lack of adequate replacements
- Impact on co-workers and managers

Silence

Brain Disorders

The Working Wounded

- Depression is the leading cause of disability in the world
- 8% of workers in Canada are on medications for mental illness
- 21% of workers suffer a bout of mental illness
- 40% of all short and long tern disability claims related to it
- 60% drop in family income when a breadwinner diagnosed
- 500,000 workers off sick each day in Canada as a result of mental illness
- $8.5 billion spent by employers and insurers each year as a result on long-term disability claims related to mental illness
- $9.3 billion annual cost of short-term leave
- $51 billion amount that mental illness costs the Canadian economy each year

Andre Picard: Globe and Mail June 23, 2008

Anxiety Disorders

- 1 of 8 Canadians will suffer an anxiety disorder
- 13% of the population has social anxiety
- 9% males and 16% females suffered anxiety disorder this past year
- 50% of sufferers whose anxiety disorder started before age 10
- 90% of sufferers whose anxiety disorder started before age 20

Source: Globe and Mail June 21, 2008

Bipolar Disorder

- 1% of adult Canadians currently diagnosed
- 2 out of 3 people with disorder are employed
- 50% of people with bipolar disorder has considered or attempted suicide
- 80% of cases effectively treated with medication
- 8 years before a person with disorder is correctly diagnosed

Source: Globe and Mail June 21, 2008

Schizophrenia

- 1% of Canadians diagnosed with schizophrenia
- 80% of people with schizophrenia who abuse drugs or alcohol, often as a form of self-medicating
- 30% of people with the disease who recover well and are able to return to previous level of functioning
- 40-60% of Canadians with schizophrenia who attempt suicide
- 10% of Canadians with schizophrenia who die from suicide

Source: Globe and Mail June 21, 2008

The Silent Killer

Fatigue

Insurance Bureau of Canada

"Also, according to a 2005 study,
one in five Canadians – 4 million people –
admitted to nodding off or falling asleep
at the wheel at least once
in the previous 12 months."

Symptoms of Fatigue

Cumulative sleep loss over a few days may create short temperedness, depression and anxiety

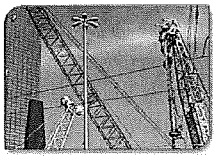
Chronic sleep deficit

Symptoms of Fatigue

Inadequate sleep, even just one night:
- has a negative effect on mood & emotions,
- memory,
- ability to make good decisions,
- concentration,
- and causes increased sensitivity to pain

Signs of Fatigue

- Slower than normal reaction time
- Impaired judgment and vision
- The driver pays less attention to:
  - Important road signs
  - Road changes
  - Actions of other drivers
- Involuntary eye closing
- Yawning
- Feeling tired
- Inability to stay in line
- Inattention



Signs of Fatigue

- Has a hard time keeping head upright
- Disconnected thoughts / daydreaming
- Restless / irritable
- Can't remember last several kilometers driven
- Engages in "tailgating"

USA Fatal Crashes

2.7% of all fatal crashes in 2003 were caused by driver fatigue

Fatal Crashes Due To Driving While Fatigued

100,000 CRASHES PER YEAR
71,000 INJURIES PER YEAR
1,500 DEATHS PER YEAR

Source: National Highway Traffic Safety Administration, NHTSA

Canadian Statistics

- Dr. Alison Smiley, President, Human Factors North, and a leading expert in driver behaviour and accident analysis, says: "The best countermeasure for fatigue is pre-planning. The early morning hours of 2-6 am should be avoided. During this time, the risk, per kilometer traveled, of a single-vehicle collision skyrockets."
- "Driver fatigue is a serious road safety issue that kills 400 Canadians every year."

Tips That Don't Work

- Rolling down the window
- Listening to the radio - loud music
- Singing or talking to yourself
- Taking off your shoes
- Eating a snack
- Splashing cold water on your face

Minimum Sleep For Most Adults

Most adults need 8 hours sleep each night for optimum daylight alertness and performance

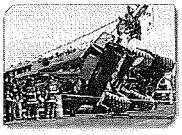
Who Is Most at Risk?

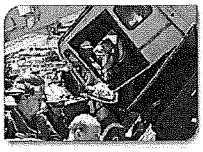
Young Drivers Aged 18 to 29

- Lifestyles are prone to less sleep
- Extracurricular activities are prevalent
- Late night socializing
- Poor sleep habits

Can I Tell When I am Going to Fall Asleep?

False - Sleep is not voluntary. If you're drowsy, you can fall asleep and never even know it. You cannot tell how long you've been asleep.





Time of Day and Traffic Collisions

From a human biological standpoint there is a strong relationship time and traffic collisions

The most dangerous time biologically is between 2400 and 0600

Driver Fatigue Question

Rolling down the window or singing along with the radio will keep me awake?

False - An open window or the radio has no lasting effect on a person's ability to stay awake.

Driver Fatigue Question

Young drivers are able to get by on less sleep because of their stamina and physical condition?

False - Young people need more sleep than adults. Males under 25 are at the greatest risk of falling asleep. Half of the victims fatigued-related crashes are under 25.

Driver Fatigue Information

Fatigued people who nod off behind the wheel are just as dangerous as impaired drivers

More than 24% of drivers who crashed from fatigue had less than six hours of sleep prior to getting behind the wheel

Sleepy drivers are at particular risk for motor vehicle crashes because they may not perceive a potential crash threat or react quickly enough to take evasive action

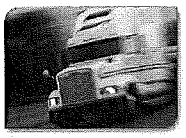
At 250 KM (155 mph) the motorcyclist is traveling at 227 feet per second. With normal reaction time to SEE-DECIDE-REACT of 1.6 seconds the above motorcyclist would have traveled over 363 feet while making a decision on what actions to take.

A "Microsleep" Lasts Four or Five Seconds?

TRUE - During a "microsleep" of four or five seconds, a car can travel 100 yards, plenty of time to cause a serious or possibly fatal crash.

Sudden, Uncontrolled Sleep Attack

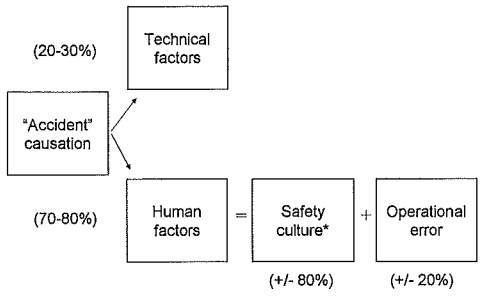
When confronted with this situation, stop driving immediately and rest.



It All Boils Down To...

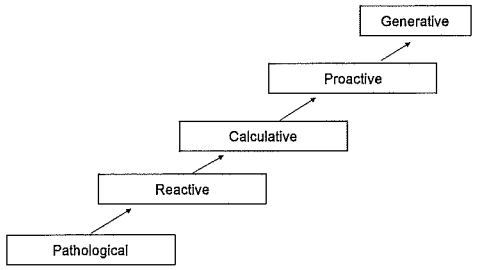
- Culture!
- The current societal safety culture is very weak at best.
- There are some excellent examples in industry – air lines, nuclear plants.

Organizational Safety



Source: Rhona Flin

Hudson: An Evolutionary Progression



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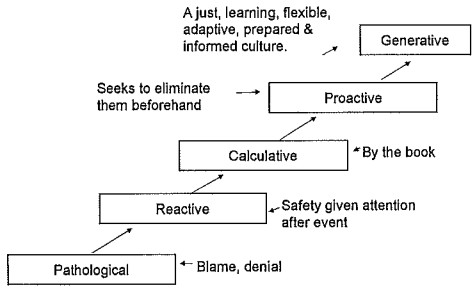
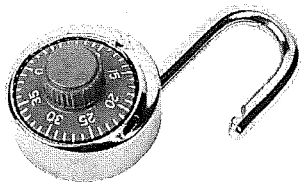
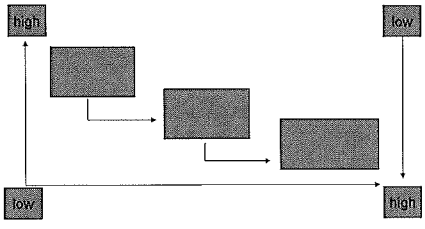


Barriers to Cultural Change

- Blaming
- Denial
- Silence
- Quick fixes
- Tradeoffs
- Biases

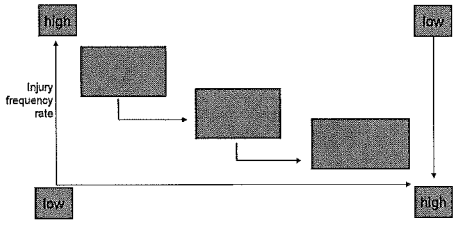


Stages of Safety Culture Improvement



Source: Dr Mark Fleming, St. Mary's University

Stages of Safety Culture Improvement



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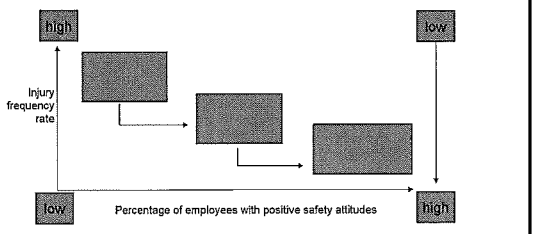

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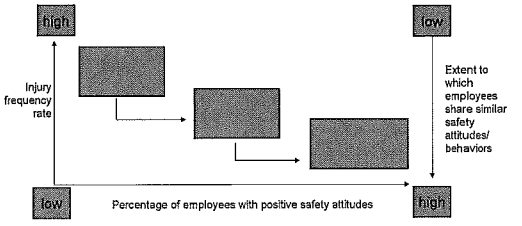

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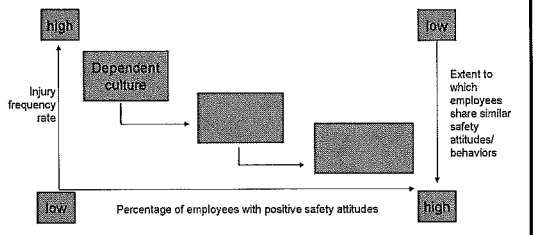

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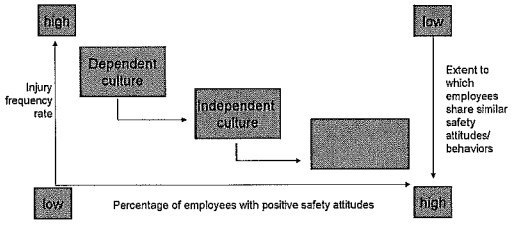
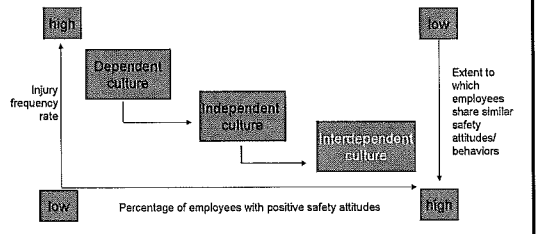


Source: Dr Mark Fleming, St. Mary's University

Stages of Safety Culture Improvement



Source: Dr Mark Fleming, St. Mary's University

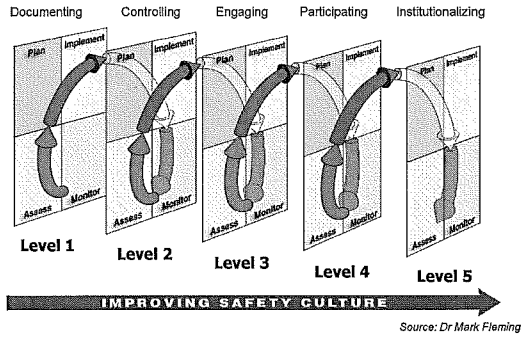
Features of a Positive Safety Culture

1. High levels of management safety concern, involvement and commitment
2. Safety prioritized over profits and production
3. Good organizational learning
4. Frequent informal safety communication
5. Good job communication

Features of a Positive Safety Culture

6. Good plant design, working conditions and housekeeping
7. Confidence is safety rules, procedures and measures
8. Trust in workforce to manage risk
9. Satisfaction with training
10. High levels of employee participation in safety
11. Acceptance of personal responsibility for safety
12. Willingness to speak up about safety

Safety Culture Improvement Model



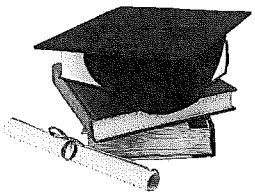
Source: Dr Mark Fleming

Four Stage Process

1. A senior management workshop
2. Training internal facilitators
3. Safety culture workshops
4. Identification and implementation of actions to improve safety culture

Your "Take Home" Messages

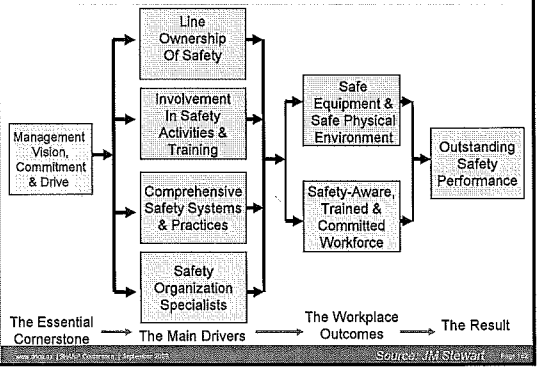
- Learn from other industries (especially aviation and nuclear)
- Identify and groom new champions now
- Be a sprinter in a marathoner's disguise
- Sell the injury problem first, then sell the solution
- Culture, culture, and culture



Leadership Traits....

- Be a good listener
- Keep your word
- Know yourself
- Tell the truth
- Do your homework
- Speak their language
- Stay loyal to your goal
- Let them take credit
- Keep your promises
- Know your abilities
- Know your needs
- Be resourceful
- Care
- Have fun!

The Model for Managing for Outstanding Safety



Source: JM Stewart

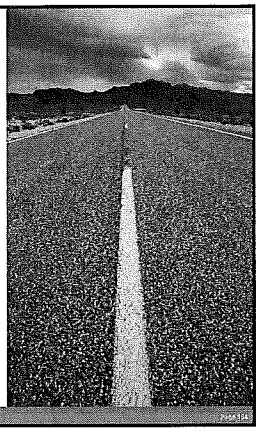
Transportation Injuries

"I Never Thought This Could Happen To Me."

....Most common words we hear in emergency

Preventing Traffic Injuries

- The following information is required prior to being able to develop targeted interventions:
  - Who is getting injured?
  - Where are they getting injured?
  - When are they getting injured?
  - Why and how are they getting injured?

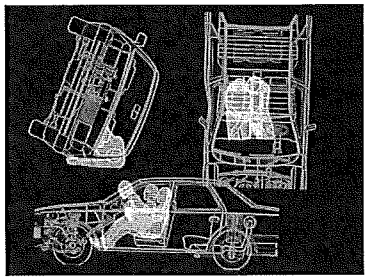


Crash Dynamics

Three major ways injuries and fatalities occur during a traffic collision:

1. Driver / occupant is ejected
2. Driver / occupant hit something within vehicle
3. Something within vehicle hits the driver or occupant

Crash Dynamics



Injury Control

- Injury control is the coordination of the three levels of prevention:
  - **Primary Prevention: Injury Prevention**
    - Preventing an injury from occurring in the first place
  - **Secondary Prevention: First Aid, EMS, ER, OR, ICU**
    - Reducing the severity of an injury that occurs
  - **Tertiary Prevention: Rehabilitation**
    - Returning an individual to as close as possible to the pre-injury condition

Three Collision Millisecond Concept

- **First** collision is the vehicle and an object
  - Car hits a tree

- **Second** collision is occupant with object
  - Skull hits the windshield

- **Third** collision is organ within body
  - Brain strikes skull

Injury Event Analysis

- Many factors are involved in an injury occurrence
- **Haddon's Matrix** is used in the analysis of injury events
  - Breaks down a single injury event into discrete factors
  - Each factor can increase or decrease the likelihood of an injury occurring

So What If ...

A 65 year old woman, is out drinking alcohol and playing bingo with friends in the country. She leaves and is driving impaired in a poorly maintained vehicle in an area where there are no road signs that indicate she is about to enter dead man's curve. Impaired driving is not aggressively enforced and society tolerates it. There are no road side barriers. As she speeds into the corner her brakes fail and she loses control. She drives over the embankment, unbelted, her vehicle catches fire, and no one finds her for hours. The EMS system is slow be to activated. At her age she does not tolerate trauma well. Society is not overly bothered by this event.

So What If ...

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Haddon's Matrix - Motor Vehicle Collision

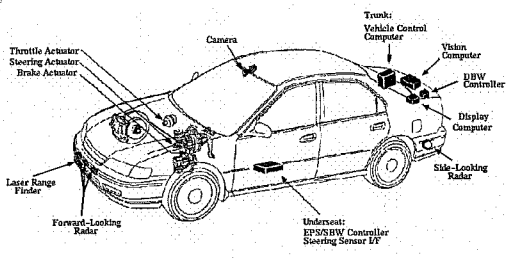
	Host	Agent	Environment	
			Physical	Social
Pre-event	Alcohol	Brakes	Signage	Attitudes
Event	Seal belt	Speed	Rails	Laws
Post-event	Age	Fuel tank	EMS	Response

Intelligent Traffic Systems

Automated Vehicles

- Highway vehicle automation can lead to:
  - greater roadway efficiency / capacity without reconstruction
  - shorter travel times
  - reduced pollutant emissions (by eliminating stop / go transients)
  - reduced aerodynamic drag (by decreasing spaces between roadway vehicles)
  - increased roadway safety

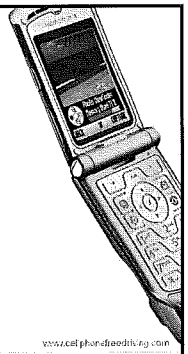
Automated Vehicle Concept



Source: Ohio State University

Case Study

Cellphones and Injuries



Louis Hugo Francescutti
MD, PhD, MPH, FRCPC, FACPM
University of Alberta

www.cellphonefreedriving.com

Coalitions
Cellphone-Free Driving

Background

In Canada, injuries are the leading cause of death for people aged 1 to 44 years and motor vehicle related injuries account for the majority of these deaths under the age of 34.

Traffic fatalities and injuries in 2005 in Canada
- 2,923 Deaths
- 17,529 Hospital Admissions
- 210,629 Injuries

Annual Costs of Injury

When health care costs, property losses and other factors are considered, the economic cost of traffic collisions to Canadians is as high as $25 billion annually.

The Problem

- The risk of collisions increases 4 times both for hand-held and hands-free cellphone users
- Driver distraction / inattention responsible for 25% - 30% of police reported traffic crashes due to cellphone
- Cellphone use while driving is a major distraction
- Driving while on a cell phone is similar to driving while impaired
- 7.5% of all roadway fatalities in France involve cellphones

And...Just So We're All on the Same Page...

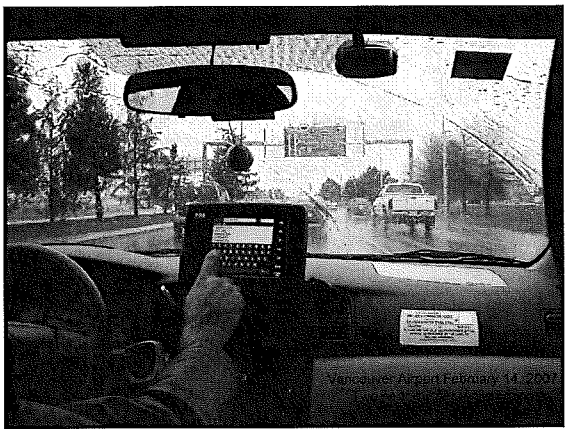
- Driver inattention or distraction is responsible for 85% of police-reported traffic crashes.
- In a NHTSA review of crash data, it was found that driver inattention is the most frequently cited pre-crash condition for drivers who use cellphones.
- The NHTSA reviewed research studies and collision data concluded that there are several factors in which cellphone use can increase the risk of collision, but of these factors, conversation appears to be the most associated with collisions.

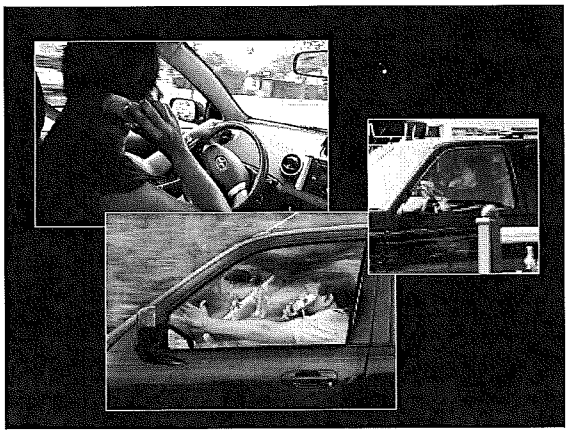
Cellphone Fact

The number of cellphone users in the United States has grown from fewer than 100,000 in January 1985 to an estimated 137 million in 2002.

The number of cellphone users in Canada has risen from 100,000 in 1987 to more than 14 million in 2004

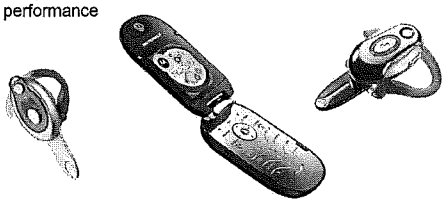
*The population of cellular data **users** will grow from 1.8 billion in 2007 to close to 2.5 billion in 2011 worldwide.*



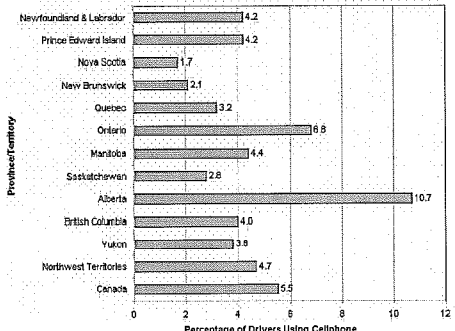


Talking on the Cellphone is the Issue

- Using a cellphone while driving slows a driver's reaction time by 18%
- The cellphone conversation increases the probability of running red lights
- Conversing on a hands-free or hand-held cellphone impairs driver performance



Rural and Urban Canada, Driver Cellphone use by Province / Territory – 2006-2007 (Transport Canada March 2008)



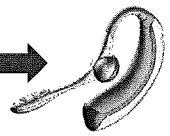
Is Hands-Free Risk Free?

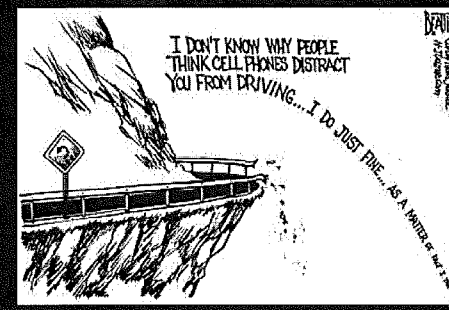
Whether hand-held or hands-free, cellphone use while driving increase the risk of collisions 4 times

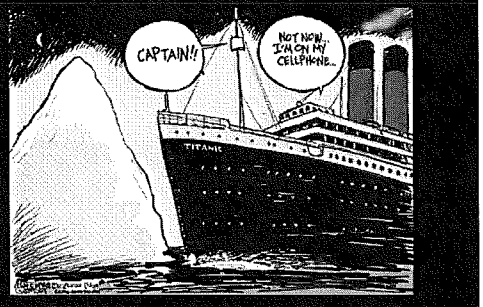
Hands-Free is just as Deadly...

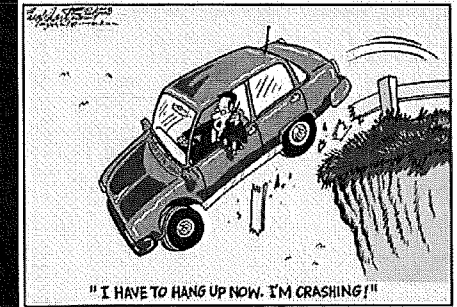
- Talking to a passenger does not cause the same amount of distraction as using a cellphone
- Cellphone use increases the risk of rear-end collisions by twofold
- Using a cellphone while driving reduces visual attention and peripheral vision

INSERT DANGEROUS DRIVER HERE









Mother Killed by Cellphone User

A careless driver on a cellphone blazed through a red light at 55 mph and the mother's driver door as she was going 20 mph attempting to make a left turn. Her car was pushed 40 feet. The driver of the car that was hit had her neck broken in 3 places. She died instantly.

Young Females

Worst offenders and getting worse

Risky Business – Walking and Talking while on the Phone?

- People on cellphones not paying attention at intersections
- Men cross the street more slowly at intersections
- Women not only crossed the street slowly but are also less likely to even look at traffic or wait for cars to stop
- Text-messages require even more attention
- Same findings as research on driving and cellphone use
- Distraction is the key

Texting While Driving...

- ► Decreases reaction time by 35%
- ► Increases the risk of drifting into another lane of traffic
- ► Presents a *greater* collision risk than if you were at the legal limit of alcohol or under the influence of marijuana

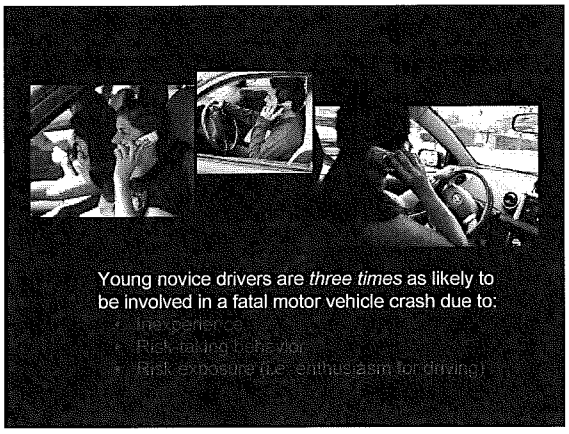
Reed, N. and R. Robbins. The effect of text messaging on driver behavior: a simulator study. Transport Research Laboratory, © 2008.

Drivers using Cellphones Are as Bad as Drunk Drivers Utah Study

A student talks on a hands-free cellphone while operating a PatrolSim driving simulator four times:

- Once while undistracted
- Once using a handheld cellphone
- Once using a hands-free cellphone and
- Once while intoxicated to the 0.08 percent blood-alcohol

Both handheld and hands-free cellphones impaired driving, with no significant difference in the degree of impairment.



Teens Behind the Wheel

Allstate survey of American Youth

► 83% of teens (90% of females) admit to talking on their cellphone while driving

► Only 43% said they were confident in their driving ability while talking on a cellphone

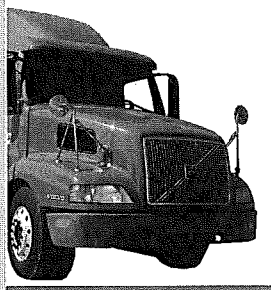
► 68% of teens (79% of females) admit to texting while driving

► Only 21% said they were confident in their driving ability while texting

National Organization for Youth Safety, 2009 Teen Driving Survey Highlights. http://media.allstate.com/categories/7-news-release-archives/releases/4510-young-drivers-understand-risky

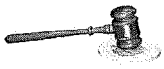
Employers have a Responsibility

- Employers could be liable for motor vehicle collisions involving their employees who were using cellphones while driving



Litigation

- Employers have been targeted when their employees are involved in car collisions while using cellphones.
- Victims argue that employers should be liable for not taking public safety into account when encouraging and profiting from an employee's cellphone use.
- If an employer provides a cellphone, or if cellphone use is a necessary part of a job, then that employer can be liable for problems created by their employees use.
- Even if employees are not officially on company business they still can be held liable if a collision occurs.



Cases in Point...

- In Miami, a jury awarded a woman $20.9 million in 2001 after she was injured in a car crash caused by a salesman making a cellphone call between appointments.
- A $30 million lawsuit was filed against the law firm Cooley Godward when one of their associates while driving and talking on a cellphone fatally ran over a 15 year old girl in March of 2000.

Coalition for Cellphone-Free Driving

- Student-led Coalition established in 2005 by graduate student's at the University of Alberta, School of Public Health
- Encourage driver's and companies to limit use of cellphones either hand held or hands-free in vehicles
- Generic policy developed
- Expansion – Whirlwind nine-stop tour of Alberta November 21, 2006

Our Partners.....

November 21, 2006 – Graduate students expand coalition for cellphone-free driving

A group of University of Alberta researchers and graduate students made a whirlwind tour of Alberta to mark the one-year anniversary of a program that convinces companies to keep employees cell-phone-free while driving.

Generic Policy

Company Policy Statement

- Company employees are not permitted to use a cellphone, either hand-held or hands-free, while operating a motor vehicle on company business and/or on company time.
- While driving, cellphones shall be turned off and calls directed to voicemail.
- If an employee must make an emergency call (911); the vehicle should be parked in a safe location before making the call.
- Passengers in the vehicle may answer cellphone calls for the driver.
- As a condition of hire, all employees must sign this policy agreement and a copy will be kept in the employee's file.

Education Resources/Activities

- Tool Kit for Creating a Cellphone-Free Driving Policy
- Fatal Distraction and Ripples video
- Website – **www.cellphonefreedriving.ca**
- Workshop – *All You Need to Know about Implementing a Cellphone-Free Driving Policy*
- PowerPoint Presentation
- 2007 Provincial Public Opinion Survey
- Students for Cellphone-Free Driving

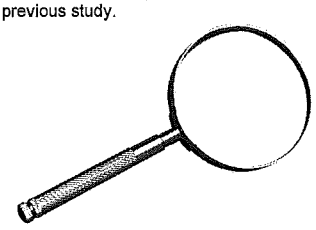
AMEC Survey Results

- Survey done one year post company wide cellphone restriction policy while driving
- The 95%+ of AMEC employees very accepting of policy
- No reported loss of productivity
- More than 97 per cent of respondents agreed that talking on a cell phone impacts a person's ability to drive safely

http://www.amec.com/news_media_releases_details.asp?PageId=576&NewsId=1163&myear=2006

A Revised Economic Analysis of Restrictions on the Use of Cell Phones While Driving

The result is a best estimate of zero for the net benefit of cell phone use while driving--a finding that differs substantially from the previous study.



Cohen, Joshua T.; Graham, John D.
Source: Risk Analysis, Volume 23, Number 1, February 2003. pp. 5-17(13)

FAQs

Is hands-free better than hand-held?

- ▶It doesn't matter which is used, it is the conversation that creates the distraction

How is having a conversation on a cellphone different than with a passenger?

- ▶A passenger can see the traffic situation and adapt the conversation accordingly

FAQs

What if there is an emergency?

- ▶The safest thing, especially when there is an emergency, is to pull over to the side before calling 911

How do I stay in contact with my clients/family?

- ▶Leave a voice message that you are driving
- ▶Let them know when they can contact you/provide an alternate contact

Besides Cellphone Use, What do You Think Distracts Drivers the Most?

- Car stereo / DVD / GIS
- Children or pets
- Conversations
- Driver fatigue
- Eating or drinking
- Being emotionally upset
- Personal grooming
- Rubbernecking
- Reading
- Smoking
- Drug / alcohol
- Sex

What Are You Doing Behind The Wheel?

Students for Cellphone-Free Driving

- ► Established 2009
- ► U of A medical students spreading awareness about the dangers of cellphone use while driving to youth
- ► Developing Curriculum and resources for high school Career and Life Management (CALM) classes, mandatory for an Alberta high school diploma
- ► Presentations delivered by medical students
- ► Creating a website for students, parents and teachers
- ► Plan to produce a youth targeted video
- ► Our goal is to empower youth to spread awareness to their peers