Is Mission Zero a realistic goal?
Is 99.9% good enough?

A 99.9% standard in safety produces

- 1-hour of unsafe drinking water every month.
- 881-unsafe landings at Chicago O’Hare this year putting about 132,000 passengers in jeopardy.
- 500-improper surgical procedures each day.
- 268,500-tires produced per year with serious defects.

Mission Zero is the only acceptable goal
Distraction is killing us
This is not a new research problem

Crashes with phone records show increased in risk
Drivers on cell phones drive worse than drunk drivers

A Comparison of the Cell Phone Driver and the Drunk Driver

David L. Strayer, Frank A. Drews, and Dennis J. Crouch, University of Utah, Salt Lake City, Utah

Strayer, et al., 2006
Conversation restricts visual processing - attention

SPECIAL SECTION

Conversation Limits the Functional Field of View

Paul Atchley and Jeff Dressel, University of Kansas, Lawrence, Kansas
Conversation restricts visual processing - eye movements

Eye movements attending on cell

Transport Canada
Conversation impairs visual processing - fMRI

Just et al., 2008
The case against

Since 1969, there have been

342 studies examining

1608 measures with 19370 subjects

on the effects of distraction on driving performance
Talking (hand held)

Talking (hands free)

Texting

Performance improved

Performance degraded

No effect

Performance improved

Performance degraded

No effect
The bottom-line

The National Safety Council estimates that one-quarter of crashes in the U.S. are attributable to cell phones.
The National Safety Council reviewed 180 fatal crashes from 2009 to 2011, where evidence indicated the drivers were using cell phones.
It will get worse
It will get worse
Worse is here. Now.
Crashes and fatalities are up

NHTSA Reports Uptick in Traffic Accident Deaths

SEPTEMBER 12, 2016  By: Whitney Taylor  |  CAR ACCIDENTS

Traffic fatalities in 2015 were at the highest level since 2008, according to new data from the National Highway Traffic Safety Administration. The increase can be attributed at least in part to more miles on the road during that year, which could be due to a combination of an improved economy, higher employment rates and lower gas prices. However, statistics also show that failure to wear a seatbelt, driving under the influence and distracted driving also played a role.
Phones are important

- Average age of adoption is 8 years old
- Teens talk to peers twice as often via text versus face-to-face
The lure of media

“I have come to realize that five minutes without checking a text message is like the end of the world.”

“I went a solid five hours without media, and I was a wreck.”

“The withdrawals were too much for me to handle.”
The brain is wired for phones

Tamir & Mitchell, 2012
We fool ourselves
How do we fool ourselves?

We think we understand risk
Crashes Claim Teen Lives

Eight dead and 960 taken to emergency room

USA - In another day of tragedy, eight young Americans between the ages of 16 and 19 were killed in motor vehicles. Another 960 were taken to emergency rooms with injuries ranging from life-threatening to less severe. The Center for Disease Control reported that though this demographic only accounts for 14% of the U.S. population, they account for about 30% of the cost of crashes.
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Knowing risk does not change behavior

- Drivers rate distracted driving as very risky
- They do it anyway
- Importance of the call/text outweighs risk

Nelson, Atchley & Little, 2009
Atchley, Atwood & Boulton, 2011
How preventable was the crash?

Atchley, Hadlock & Lane, 2012
Reports about 15 texts while driving per week

“Everybody is doing it”

Atchley, Atwood & Boulton, 2011
How do we fool ourselves?

We think we see more than we do
Our view:

A complex computer
Reality:

A limited processor
Lack of driver attention is the most common crash cause
Multitasking is a myth
Multitasking requires resources

Multitasking does not exist. We “task switch”.

Switching requires prefrontal resources.

The pre-frontal cortex
The importance of the PFC

Making choices, and inhibiting poor ones.

The PFC makes us “human”
It’s bad for people
Victim impact
Audience choice: Productivity or culture?
It’s bad for productivity
The myth of lost productivity
Productivity may go *up*!

- Fortune 500’s with bans
  - 7% said productivity decreased
  - 19% said productivity increased
  - 22% said productivity the same
  - 52% don’t yet know

- NSC members with bans
  - 1.5% report productivity decreased
  - 10% report productivity increased
Corporate bans

- Exxon/Mobil
- DuPont
- Halliburton
- Shell
- BP
- Chevron
- Abbott
- Cargill
- CSX Intermodal
- Schneider National
- UPS
- Sysco Corporation
- Time Warner Cable
- Owens Corning
- AstraZeneca
- Spectra Energy

Fortune 500 companies w/ total bans: 20%
Doing “business”
Choose your negotiator
Choose your negotiator

• Distracted and inattentive
• Not customer focused
• Forgetful and emotional

• Focused and attentive
• Listening to the customer
• Calculating and rational
Some of our latest work

30% reduction in negotiation performance
Culture eats strategy for breakfast
<table>
<thead>
<tr>
<th>Country</th>
<th>Deaths/ 100,000 Vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>6</td>
</tr>
<tr>
<td>U.K.</td>
<td>7</td>
</tr>
<tr>
<td>Sweden</td>
<td>7</td>
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<tr>
<td>U.S.</td>
<td>13</td>
</tr>
<tr>
<td>China</td>
<td>84</td>
</tr>
</tbody>
</table>
Cultural foundations of safety culture: A comparison of traffic safety culture in China, Japan and the United States

Paul Atchley\textsuperscript{a,*}, Jing Shi\textsuperscript{b,*}, Toshiyuki Yamamoto\textsuperscript{c}

\textsuperscript{a}Department of Psychology, University of Kansas, United States
\textsuperscript{b}Department of Civil Engineering, Tsinghua University, China
\textsuperscript{c}EcoTopia Science Institute, Nagoya University, Japan

What can we do about this?
Helmet: It’s the law

Texting: Because he can
How to change safety culture

- Education
- Rules
- Enforcement
- Leadership
Change behaviors to change attitudes
Theory of Planned Behavior

Azjen, 1991
Behavior changes attitudes

- Behavioral attitude
- Cognitive dissonance
- Subjective norms
- Intention
- Behavior
- Perceived behavioral control

Factors:
- Education
- Rules, Enforcement
Summary

- People are dying from inattention
- The problem will get worse
- Our brain fools us
- Safety requires education, rules, enforcement and leadership
Thank you for your attention!

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