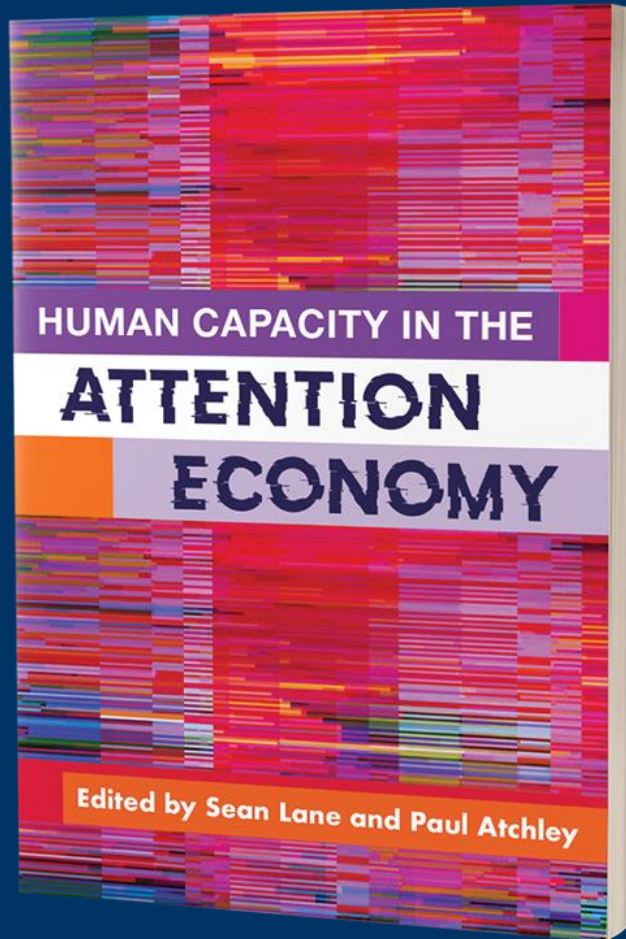


# Fooling Ourselves: Why do we Drive Distracted?

*Dr. Paul Atchley  
University of South Florida*

*Bus Industry Safety Council  
Orlando, FL, 25 July 2023*





## Multitasking is a myth

- Our brain has processing bottlenecks – tasks share the same hardware
- Switching between tasks takes time
- Information gets lost when trying to do two things at once



- *Driving safely*  
*“You need your brain to drive”*
- *Brief review of the research*  
*“Distraction is killing us”*
- *A view of the future*  
*“It will get worse”*
- *How our brain works*  
*“We fool ourselves”*
- *Making the change*  
*“A Productive Safety Culture”*



You need your brain to drive

# SPIDER

- **S**canning
- **P**rediction
- **I**dentifying
- **D**eciding
- **E**xecuting  
**R**esponses



# Distractions

- MANUAL distractions interfere with vehicle control
- VISUAL distractions interfere with scanning and spatial awareness
- COGNITIVE distractions interfere with everything



**Distraction is killing us**



# This is not a new research problem

Brown, I. D., Tickner, A. H., & Simmonds, D. C. (1969). **Interference between concurrent tasks of driving and telephoning.** *Journal of Applied Psychology*, 53(5), 419-424.

# Over 4-fold increase in crash risk

## The New England Journal of Medicine

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VOLUME 336

FEBRUARY 13, 1997

NUMBER 7



### ASSOCIATION BETWEEN CELLULAR-TELEPHONE CALLS AND MOTOR VEHICLE COLLISIONS

DONALD A. REDELMEIER, M.D., AND ROBERT J. TIBSHIRANI, PH.D.

### Role of mobile phones in motor vehicle crashes resulting in hospital attendance: a case-crossover study

Suzanne P McEvoy, Mark R Stevenson, Anne T McCart, Mark Woodward, Claire Haworth, Peter Palamara,  
Rina Cercarelli

# 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

# Look like demented drivers

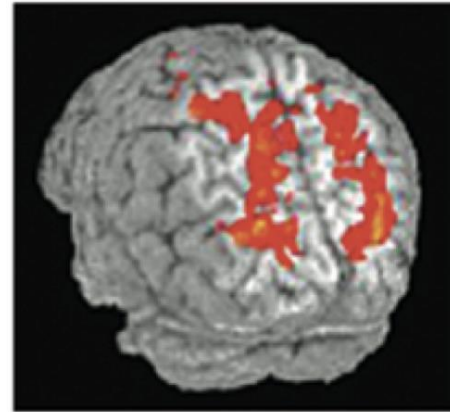
## **SPECIAL SECTION**

### **Conversation Limits the Functional Field of View**

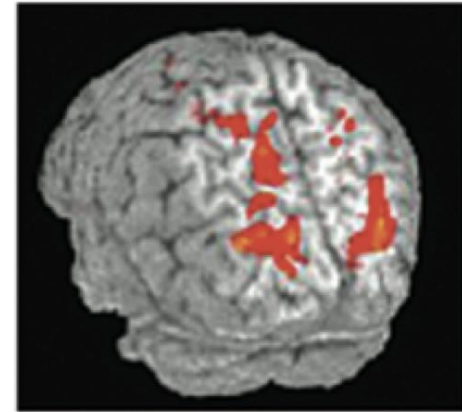
Paul Atchley and Jeff Dressel, University of Kansas, Lawrence, Kansas

Atchley & Dressel (2004)

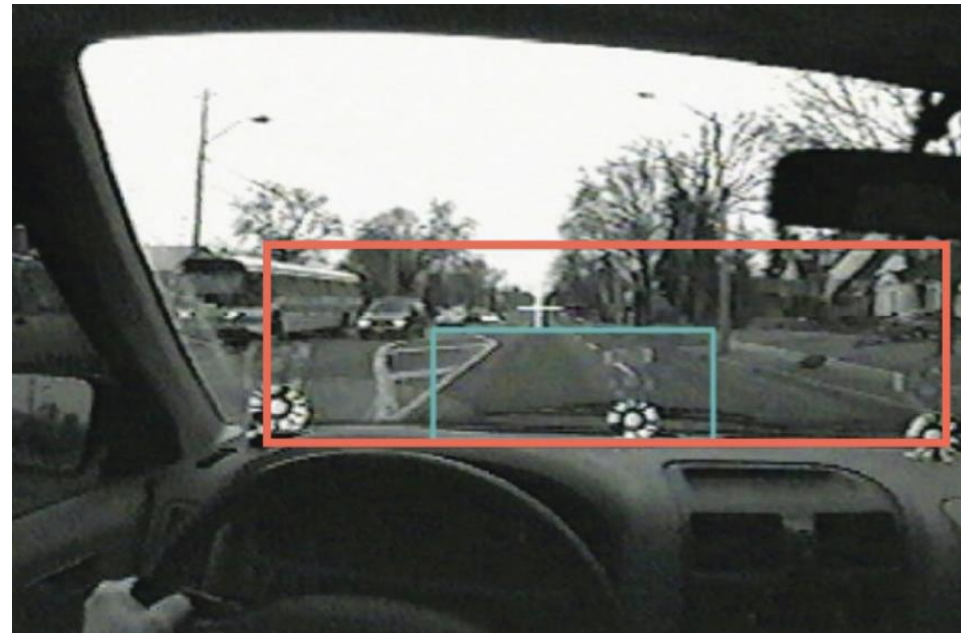
- **Scanning** – Reduced scanning area
- **Prediction** – Fewer anticipatory glances
- **Identifying** – Failure to process objects
- **Deciding** – Misjudge speed and distance
- **Executing Responses** - Slower



L R  
Driving alone



L R  
Driving with sentence listening





# A research summary

Between 1969 and 2016 there were

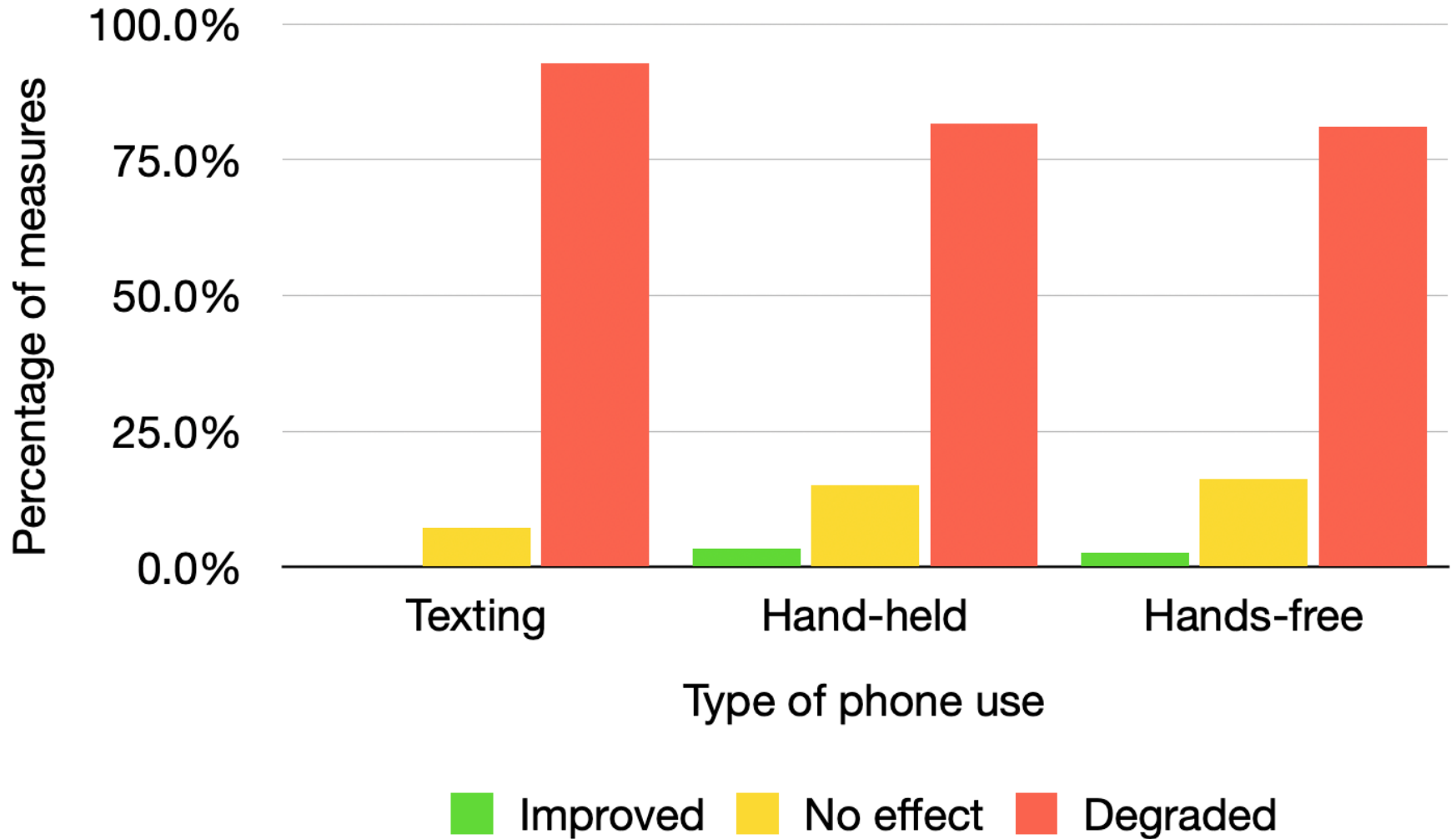
**342 studies** examining

**1608 measures**

with **19370 subjects**

on the effects of distraction on driving  
performance

# Results of the research summary



## The bottom-line

The National Safety Council has  
estimated that

**one-quarter of crashes  
in the U.S.**

are attributable to cell phones

It will get worse

~~It will get worse~~

Worse is here. Now.



# We should be safer

Seat belts

Air bags

Vehicle design

Antilock brakes

Electronic stability  
control

Backup cameras

Blind spot detection

Driver assistance  
technologies

Improved road design

Better emergency  
response

Better medical care

# 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.



# The trend continued



## RISKIER ROADWAYS

More distracted drivers

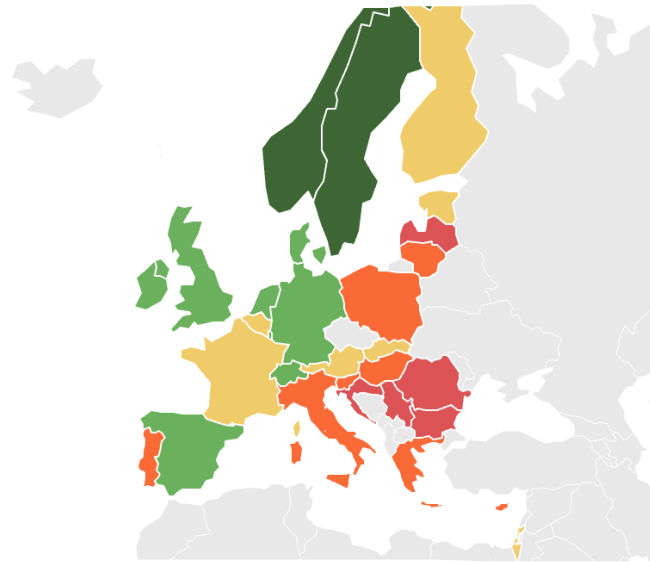
More speeding

More hard braking

## Motor Vehicle Deaths in 2020 Estimated to be Highest in 13 Years, Despite Dramatic Drops in Miles Driven

A 24% spike in roadway death rates is highest in 96 years; NSC calls on President Biden to commit to zero deaths immediately.

# An American tragedy



● <19 ● 23-37 ● 38-45 ● 48-59 ● >72



**45 road deaths per mln. inhabitants in the EU in 2021**

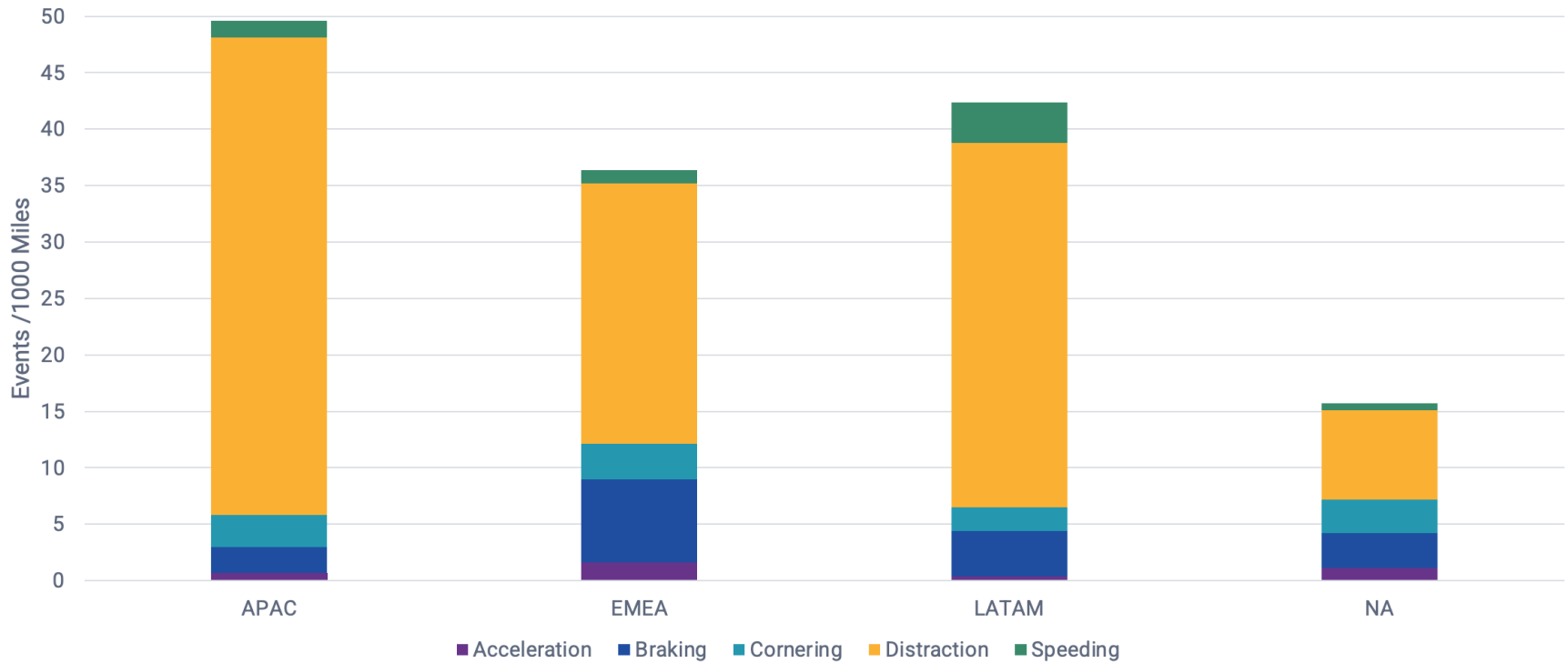


**13% decrease in the number of road deaths between 2019-2021 in the EU**

The EU 27 has collectively reduced the number of road deaths by 17% over the last five years

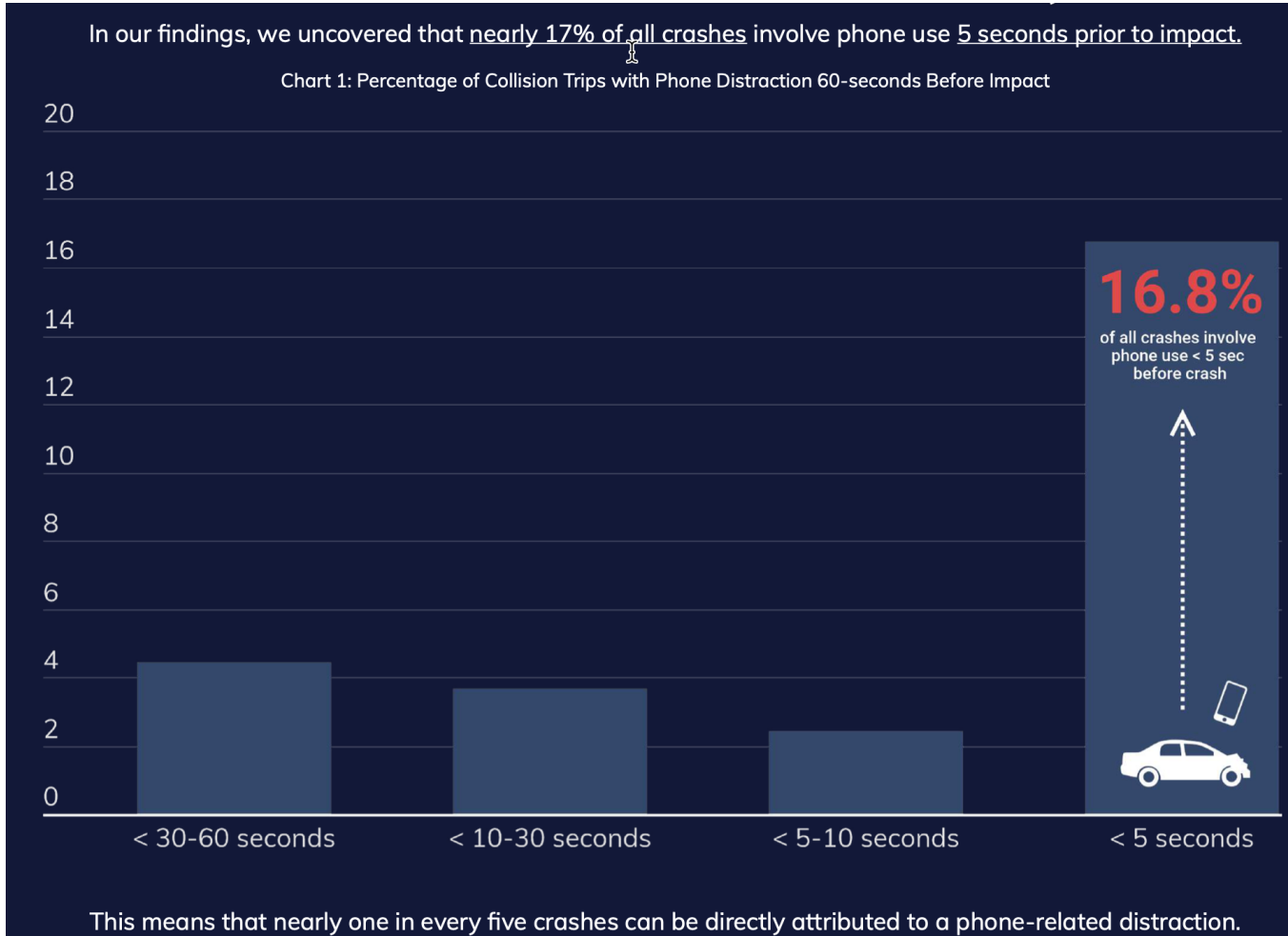
# 131,147,433 miles of data

## Risky Driving Behaviors – Events/1,000 Miles – August 2022





# Telematics: It's the phone!



# A continuing trend

← NEWS

## NHTSA Early Estimates Show Record Increase in Fatalities Nationwide

**“NHTSA estimates that 9,560 people died in motor vehicle traffic crashes in the first quarter of 2022. This is an increase of about 7% as compared to the 8,935 fatalities projected for the same quarter in 2021. This would be the highest number of first-quarter fatalities since 2002.”**

**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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# How do we fool ourselves?

We think we see more than we do

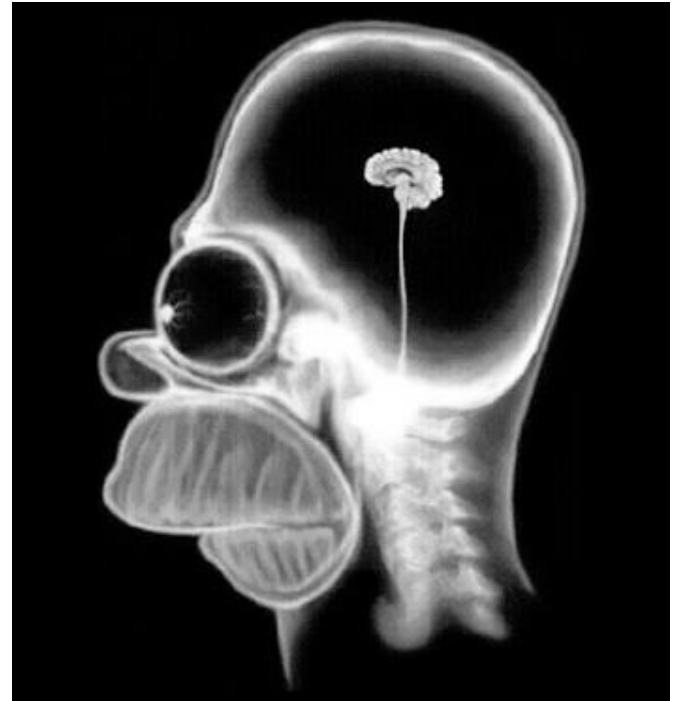
Our view:

A complex computer



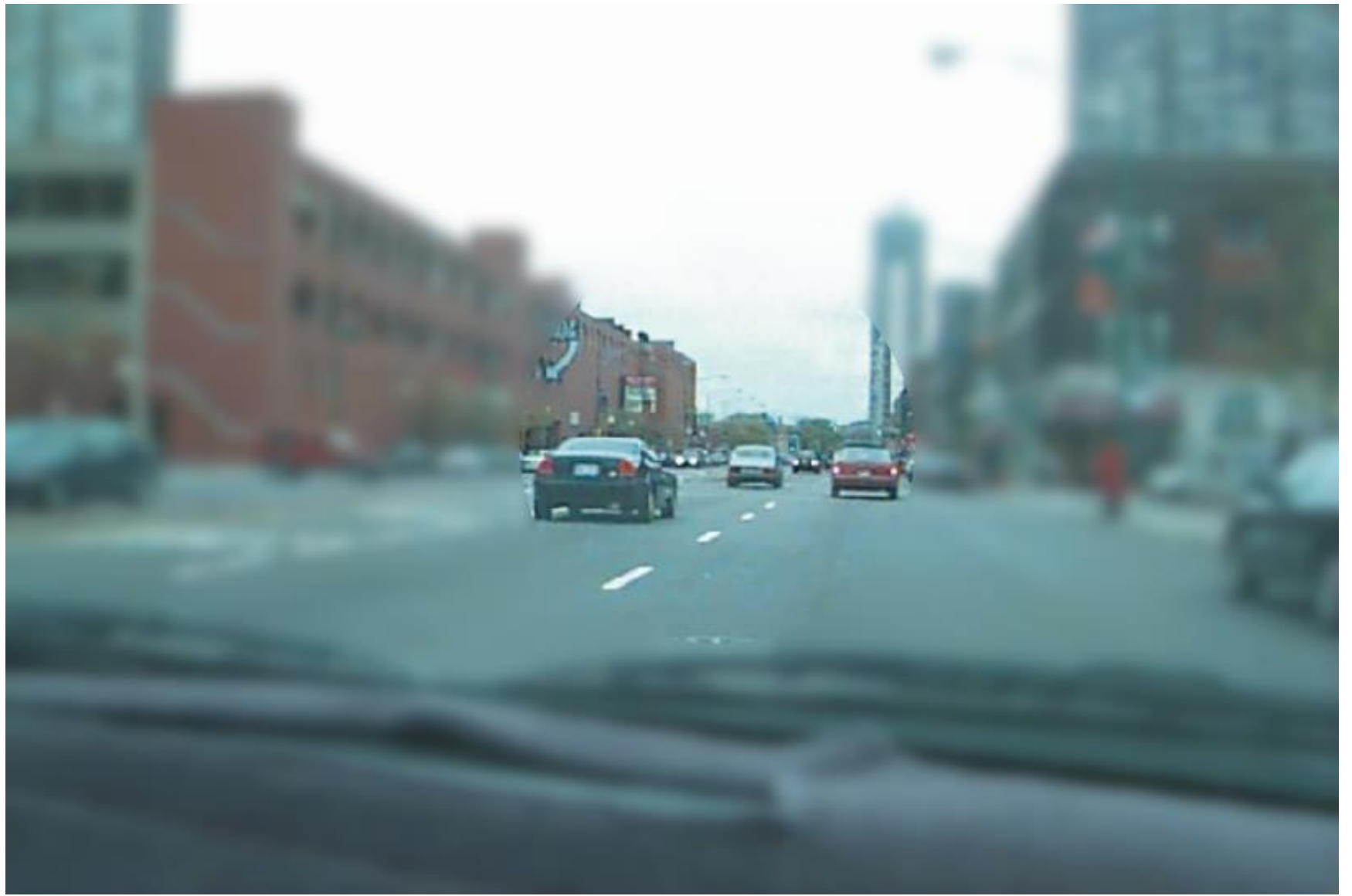
Reality:

A limited processor

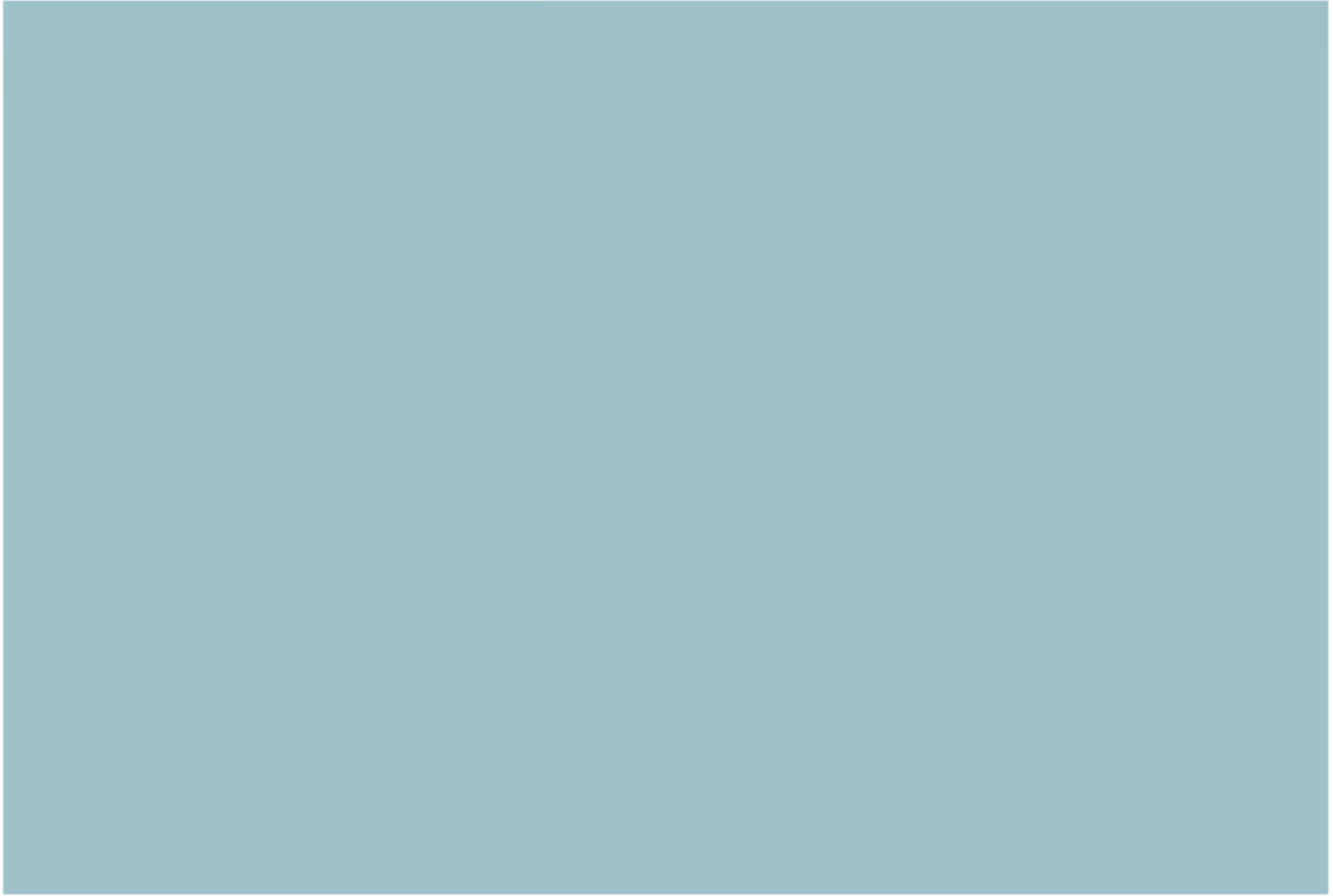












*Pringle, Irwin, Kramer & Atchley, 2001*

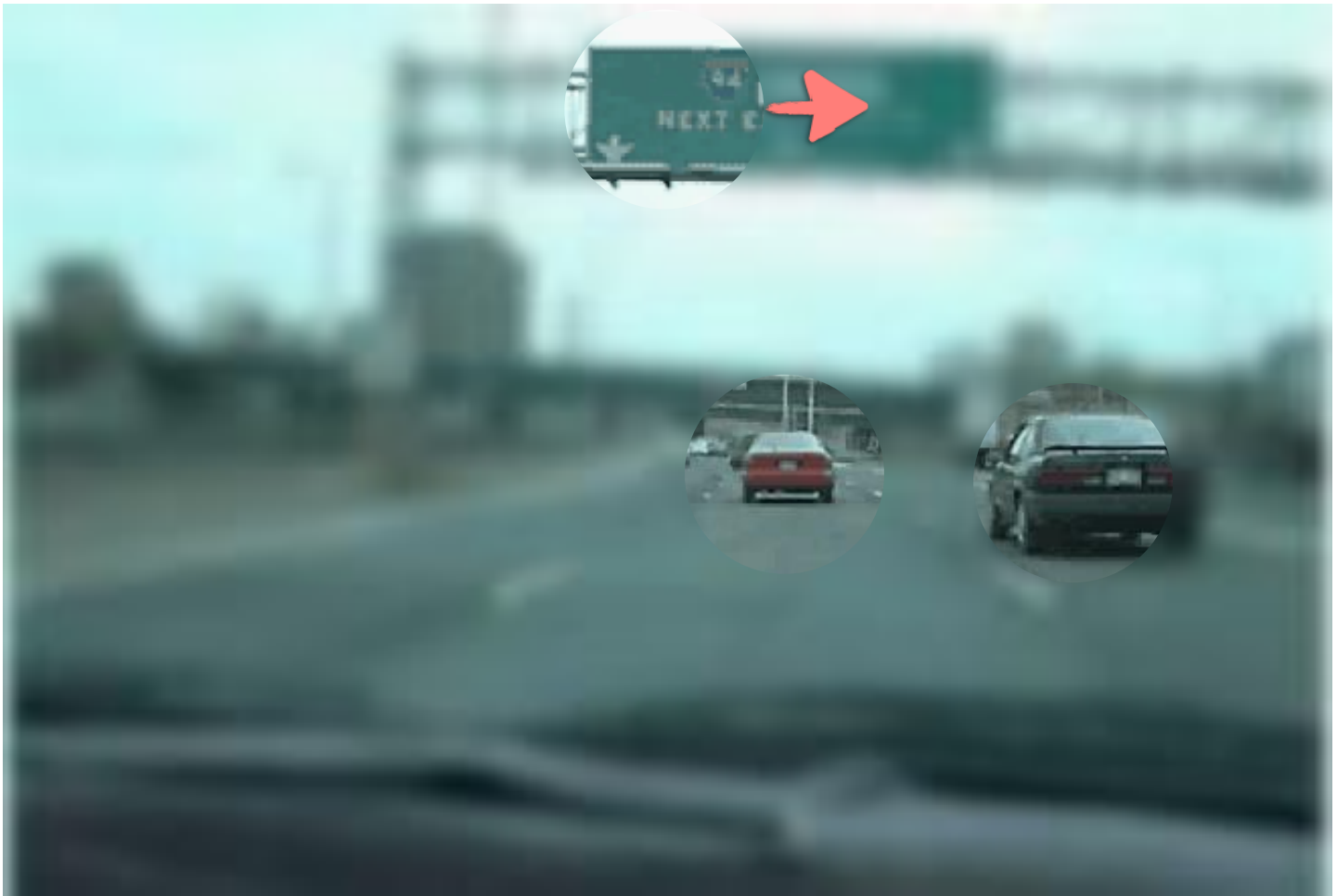






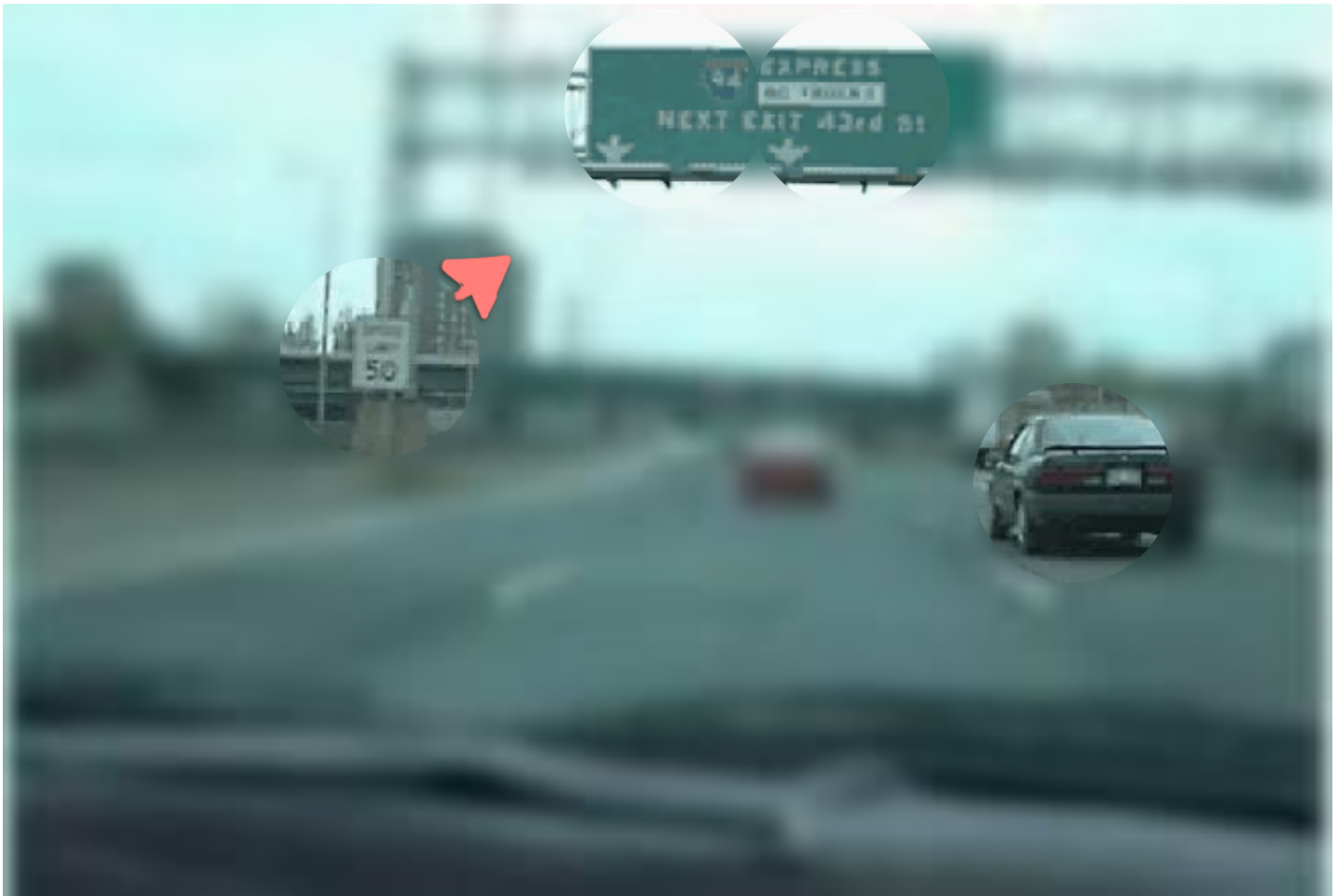








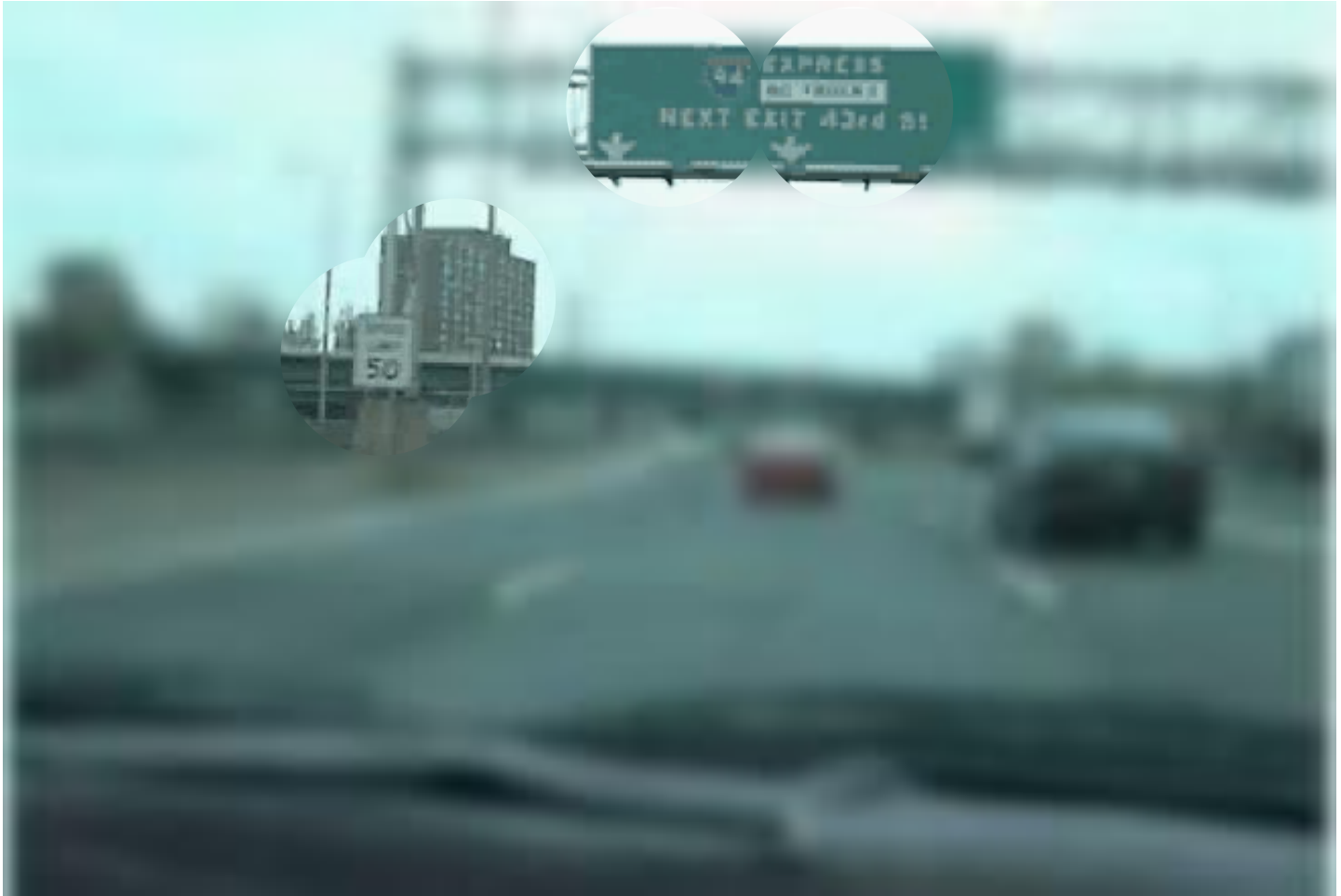




EXPRESS  
NEXT EXIT 43rd St

50







Making the change

Change behaviors to change  
attitudes

# How to change safety culture

- Leadership
- Education
- Rules
- Monitoring
- Enforcement





# Corporate policy



Enforced distracted driving policy:  
**2/3 fewer crashes**

Policy at discretion of units:  
**2/3 more crashes**



# Corporate policy

FORTUNE

500

Large delivery fleet

No strike policy

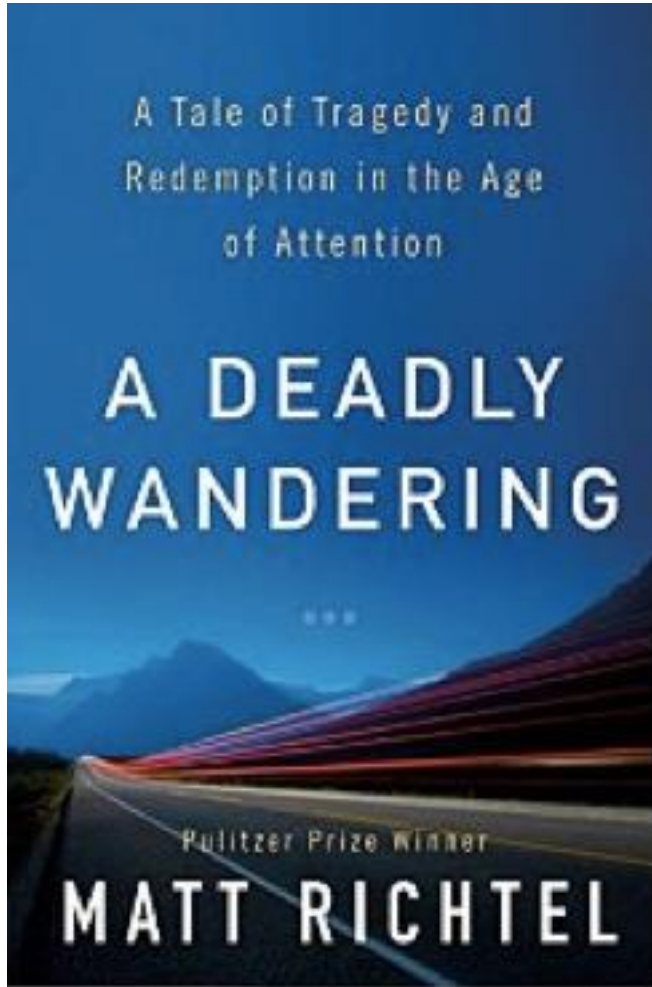
Telematics

Crash rate fell by  
72%

# Summary

- People are dying from inattention
- The problem will get worse
- Our brain fools us
- We can fix this! Provide leadership, educate, set rules, monitor and enforce

# Thank you for your attention!



Paul Atchley, Ph.D.  
University of South Florida  
*patchley@usf.edu*

# What I will ask

Was there a comprehensive policy?

Was there education about risks?

Was there monitoring for compliance?

Is there a record of enforcement of the policy?

Ignorance is no excuse

August 25, 2021 1:45 PM, EDT

## **Jury Issues \$1 Billion Verdict Against Two Carriers in Fatal Crash**



It's bad for productivity

# Distracted driving hurts productivity

## Fortune 500's with bans

- 7% said productivity decreased
- 19% said productivity increased

## NSC members with bans

- 1.5% report productivity decreased
- 10% report productivity increased



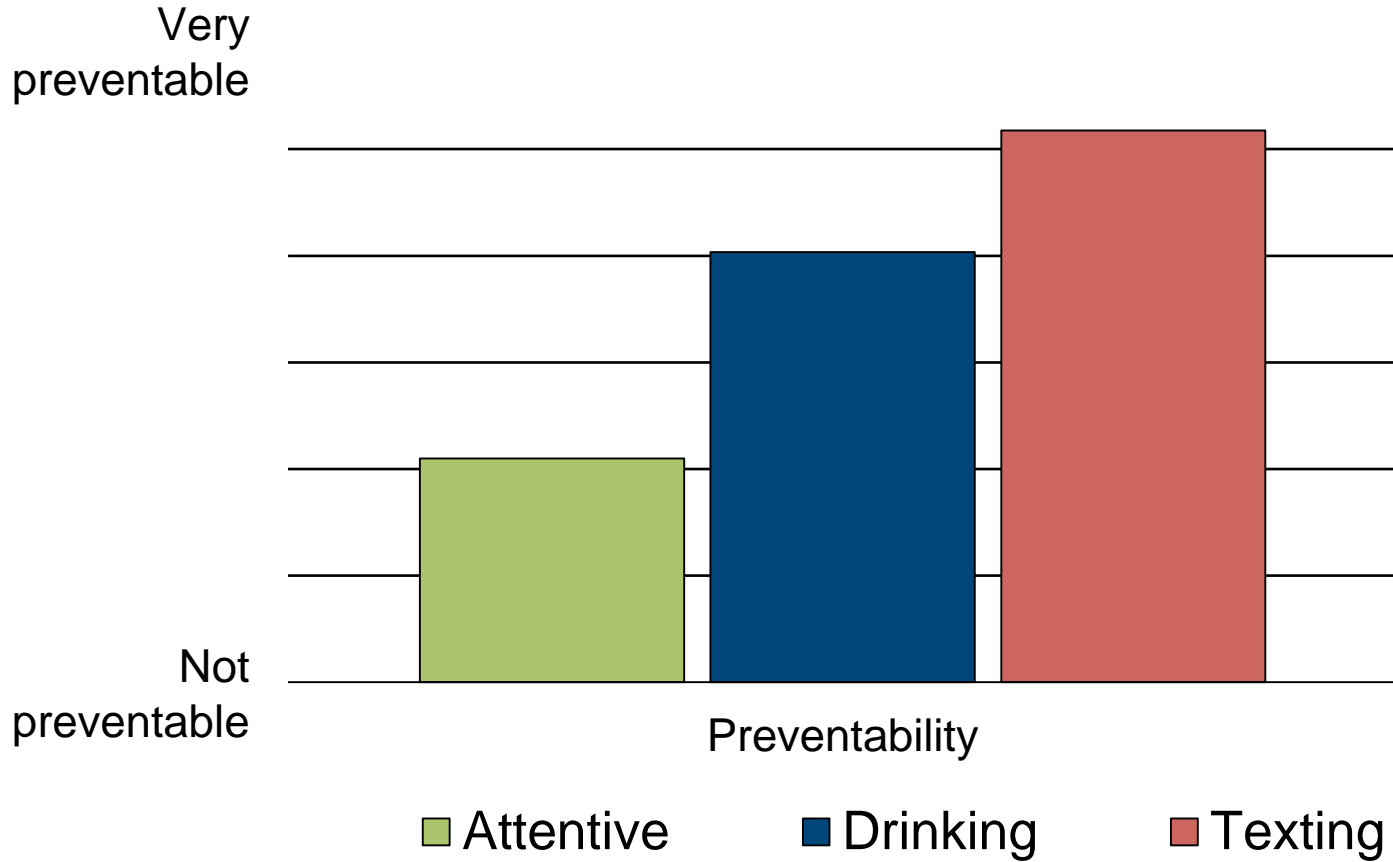
# Inattention hurts negotiations



30% reduction  
in negotiation  
performance



# How preventable was the crash?



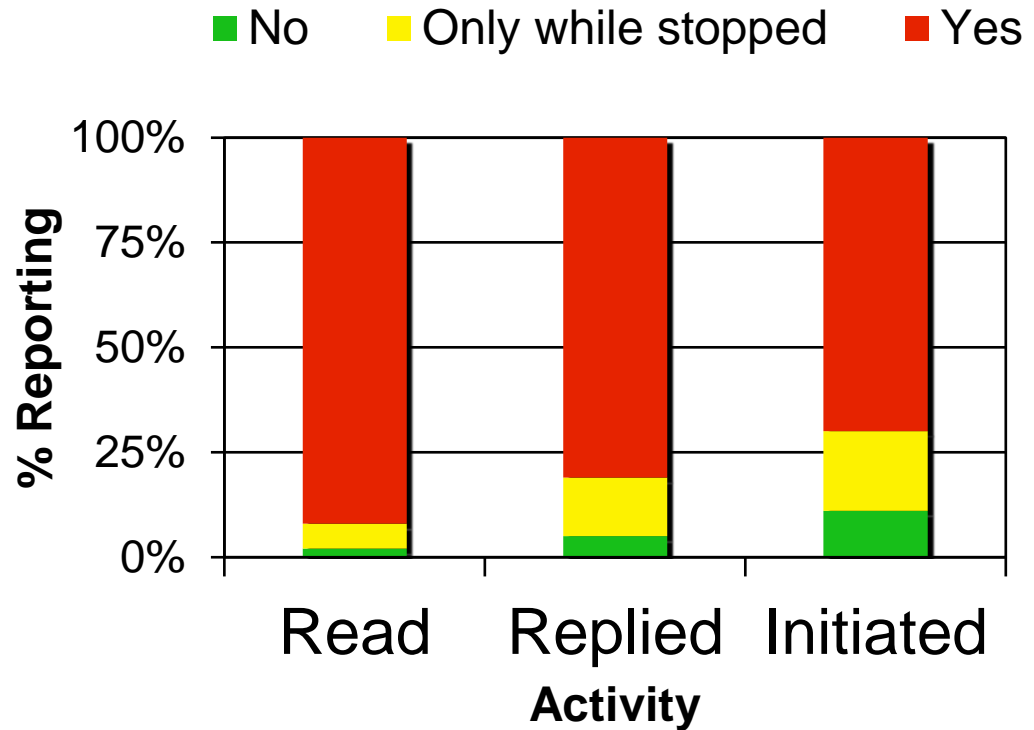
*Atchley, Hadlock & Lane, 2012*



“Everybody is doing it”



Reports about  
15 texts while  
driving per  
week



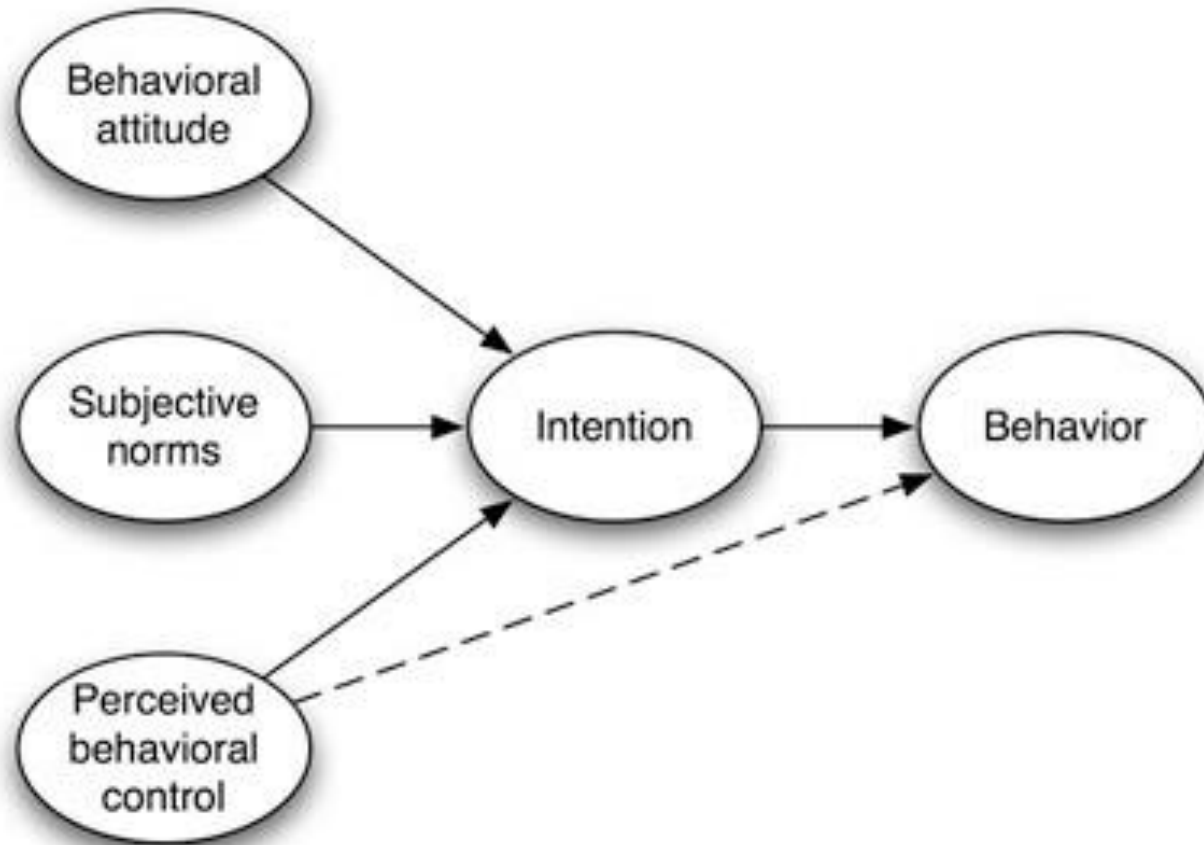
*Atchley, Atwood & Boulton, 2011*

# Federal Motor Carrier guidelines permitting hands-free phone use

The FMCSA guidelines are based on naturalistic driving studies (NDS)

- 1) The lead FMCSA scientist on the "100 Truck" study later said it was flawed
- 2) NDS results about the risk of phone use have changed over time (safer>no effect>double risk)
- 3) The results of NDS studies are at odds with hundreds of other studies
- 4) I have personally observed data are miscoded

# Theory of Planned Behavior



*Azjen, 1991*