The Safety Illusion
A reflection for new and seasoned drivers

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In memory of Nica, Samantha, Ana Maria, and Robert.

http://www.robertandanamaria.com
It’s about the **action stream**...

We often think about a single action like “*send text message now*”

But many of the things we do, like texting, are best viewed as repeated patterns that leap across time as *action streams*.
From Habits to Surprises

Common thought—and it’s true:

“I can glance at a phone and it’s not a problem.”

“Texting while driving seems pretty safe”

“Haven’t had a problem....well, once I looked up a bit late, but, even then, I had time to brake.”

“Please! I can glance at phone and it’s not a problem.”
From Habits to Surprises

Common thought—and it’s true:

“I can glance at a phone and it’s not a problem.”

Problem:

You can expect an eventual surprise!

“Texting while driving seems pretty safe”

“Haven’t had a problem....well, once I looked up a bit late, but, even then, I had time to brake.”

“Please! I can glance at phone and it’s not a problem.”
From Habits to Surprises

“Seems pretty safe”

“Seems pretty safe”

Time

texting
Illusion: I am as safe as the “small risk” that comes each time I text while driving.
From Habits to Surprises

“Seems pretty safe” “Seems pretty safe” “Seems pretty safe”

texting

Time

Reality:
Behavior over time → Terrible single outcome

Illusion: I am as safe as the “small risk” that comes each time I text while driving.
The Safety Illusion

We think about the risks and benefits of a single action, rather than the outcomes that will arise from the continuing pattern of action over time.

**Perception**

“Seems pretty safe”
The Safety Illusion

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“Seems pretty safe”

**Reality**
Let’s estimate the chance of having a major accident over time based on distracted driving.

Consider that your pattern is just 2 text or email sessions while driving per day.

We need to assume some probability of having a major accident each time you read email or text while driving.

We’ll start with a 1 in 1000 chance of an accident per session and consider the implications of this low level of risk and also higher probabilities.
Curves show the probability of a serious accident (vertical axis) over time (horizontal axis) for chances of 1 in 1000, 5 in 1000, and 1 in 100 of an accident per session, when you text just two times each day.
Surprises that you can expect...

If you assume there’s a 1/100 chance of an accident each time, there’s a 90% chance of a major accident in about 4 months.
Surprises that you can expect…

If you assume there’s a 5/1000 chance of an accident each time, there’s a 90% chance of a major accident in about 8 months.
Surprises that you can expect...

If you assume there’s a 1/1000 chance of an accident each time, there’s a 90% chance of a major accident in about 3 years.
Surprises that you can expect...

So, a pretty safe single action is linked to a very dangerous pattern, in ways that people often do not understand.
Surprises that you can expect...

What risk are you at of having a surprising accident?

You can compute the likelihood in advance for any assumption of risk (see equations at back of slides).
Surprises that you can expect...

You don’t have to simply wait for the bad outcome.

You can immediately “get off the curve.”

Prob. of serious accident

Months of continuing texting pattern
Now that you’re in the know...

Don’t fall for the safety illusion

→ Use the deeper understanding to your advantage!

→ Make a long-term commitment *today* to reduce or halt risky patterns of action

→ Explain the *safety Illusion* to others*

*Without knowledge about the safety illusion, your friends may be surprised with a terrible outcome. Your sharing of these ideas can truly be a gift of life for them and others.*
Now that you’re in the know...

Mastery of the safety illusion highlights the value of making commitments *now* that change patterns of actions over the long term.

*Such a mindful change takes effort, but can have a tremendously valuable influence on your life.*
Several tragic outcomes... of folks just like you.
Meet Taylor Sauer  
*Bright, outgoing college teen*

Graduated high school last year with a sparkling 3.9 grade point average, was class salutatorian, played first base on her softball team and was active in community charities.
After she was named a National Merit Scholar, she told a local TV station:

"I want to go even further and take on the world."
Meet Taylor Sauer
*Bright, outgoing college teen*

She was making a late-night, four-hour drive from the Utah State University campus in Logan to visit her folks in Caldwell, Idaho.
But she stopped short, writing in her final text msg:

"I can't discuss this now. Driving and facebooking is not safe! Haha."

Meet Taylor Sauer
*Bright, outgoing college teen*
Moments later, going more than 80 mph, she slammed into a tanker truck that was slowly creeping up a hill at 15 mph.

She was killed instantly.
Investigators saw no signs that she applied the brakes before the fatal crash.

And in checking her cell phone records, they learned Sauer was posting about every 90 seconds during her drive.
“She just loved everybody and was an amazing friend," said her mother Shauna Sauer.

"She wanted to take on the world, and she would have."
Taylor is not atypical.

Meet Allison Smith

“Investigators: Teen Texting Before Fatal Collision With School Bus”

(ABC 6 NEWS) - The Iowa State Patrol believes a teen from Stacyville was texting before her car collided with a school bus, killing her.

The accident happened in November 2011 on Highway 218 near St. Ansgar. Authorities say 17 year old Allison Smith was alone in the car and died on the scene. No one on the bus was hurt.

Investigators used cell phone records and video from the school bus to determine that Smith was texting prior to the collision. They also determined that data from the car's airbags show smith never braked and likely never saw the bus before impact.

Smith was a junior at St. Ansgar High School. Before she was killed, there were only a class of 58 students.
Taylor is not atypical. *Meet Allison Smith*

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Smith was a junior at St. Ansgar High School. Before she was killed, there were only a class of 58 students.
“Deputies: Mother texting on cell phone before head-on collision that killed son”

Her 4-year-old son, Diego, was sitting in a booster seat and wearing a seatbelt, but he died at the scene.
The Safety Illusion is everywhere

Click on image for video.
The first study of drivers texting inside their vehicles shows that the risk sharply exceeds previous estimates based on laboratory research — and far surpasses the dangers of other driving distractions.

The new study, which entailed outfitting the cabs of long-haul trucks with video cameras over 18 months, found that when the drivers texted, their collision risk was 23 times greater than when not texting.

Details...
A tiny bit of math can take us a long way.... Consider the probability that you’ll have a major accident because of inattention coming from texting while driving. The probability \( p \) may be small, but it is not 0.

Let’s assume that \( p \) is 1 in a 100. So, \( p = 0.01 \)

This means that there’s a 1% chance of a crash with a single texting session while driving.

For each text session, the probability that “things are fine!” is 1-.01 = .99. That is 99% of the time, things will be okay!
Wait. Given that you’re comfortable texting...

**You will be sending an expected stream of txt messages over time...**

So, if you have 50 texting sessions over a month, what is the probability that things are still okay?

*Can you figure this out?*
Let’s consider probability of a bad outcome for a stream of actions over time.

We first compute the probability that things are still okay after several text sessions—the probability you make it fine through $n$ sessions of texting and driving.
From Habits to Surprises

“Seems pretty safe” “Seems pretty safe” “Seems pretty safe”

$\text{Probability of bad outcome for whole stream}$

The probability you make it fine through $n$ sessions of texting and driving is an **and** of all the separate, independent events or times that things are okay following each texting session.

This is computed as a multiplication of each probability of getting through okay:

$\text{Okay after } n \text{ txt sessions } \rightarrow = .99 \times .99 \times \ldots \text{etc. or } (.99)^n$
So, to compute the probability of not having an accident over \( n = 50 \) texting sessions (one month) of driving, we need to do 50 multiplications of .99, a 99% chance of getting through each texting session without a crash:

\[
= .99 \times .99 \ldots \text{ or } (.99)^{50} = .60
\]

\( \rightarrow 60\% \text{ chance that everything is OK!} \)
Finally, to compute the probability of a major accident over the month, we compute the complement. 60% of the time there’s no crash, but, there is a crash with the complement probability of $1 - .60 = .40$. So, you will not make it through all 50 text sessions safely, with a $P$ of:

$$= 1-.60 = .40 \rightarrow 40\% \text{ chance of a crash}$$
From Habits to Surprises

"Seems pretty safe"  "Seems pretty safe"  "Seems pretty safe"

$p$

Time

So, there’s a 40% chance of a major accident within 50 texting sessions, even though the risk is only 1 in 100 each time.
We can compute the probability of an eventual bad outcome for any probability $p$ and any number of text sessions $n$ as follows:

$$\text{Prob. of bad outcome} = 1 - (1-p)^n$$

You can use this equation to compute the risk of having a major accident using your own numbers.
Plug in your own numbers!

"Seems pretty safe" "Seems pretty safe" "Seems pretty safe"

Try out your own numbers

$p$: __ (prob. of a bad accident for a text session while driving)

$n$: __ (number of sessions of texting while driving)

Probability of bad outcome = $1 - (1 - p)^n$

= _____
Here’s an example...

Assumed values

\( p: \) **001** (prob. of an accident for each text session)

\( n: 500^* \) (number of sessions of texting while driving)

\[
\text{Prob. of bad outcome} = 1 - (1 - p)^n
\]

\[
= 1 - (1 - .001)^{500} = 34\% \text{ of a major accident!}
\]

*Note that 500 = 10 text sessions per week for year.*
Assumed values

\( p: .01 \) (prob. of an accident for each text session)

\( n: 100^* \) (number of sessions of texting while driving)

*Prob. of bad outcome = 1 − (1 - \( p \))^n

= 1 − (1 - .01)^{100} = 64\% \text{ of a major accident!}
Mastering the Safety Illusion

Critical need: A decision and commitment now to immediately stop or modify the long-term pattern.

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“Seems pretty safe”

**Reality**
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Time
Additional resources on decision skills can be found at the Decision Education Foundation site.

http://decisioneducation.org