Risk v. Reward

Risk-Based Decision Making At 10,000 Feet

**Risk Based Decision Making is Gambling
Your Risk is not My Risk
Risk is Global, Impact is Personal
You Don't Know What You Don't Know**

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Critical Take Homes

$$Risk = Likelihood * Impact$$

The **Impact** in the *Risk-Based Decision* will **Occur**.

The **Likelihood** in the *Risk-Based Decision* will be **Greater**.

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Question

https://dmlnews.com/breaking-woman-killed-self-driving-uber-car-video/ 032118 1734

http://www.projectpro.co.za/e-Zine/Top_10_Disasters/Bhopal/Bhopal_Disaster/body_bhopal_disaster.html 032118 1740

What do the 2018 Driverless Uber Accident and the 1984 Bhopal Tragedy Have in Common?

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Answer

https://www.nytimes.com/interactive/2018/03/20/us/self-driving-uber-pedestrian-killed.html?hpw&rref=automobiles&action=click&pgtype=Homepage&module=well-region&region=bottom-well&WT.nav=bottom-well 03/22/18 1011

The Technologies Relied on Risk-Based Decisions.
The Technologies Relied on Administrative Protection.
The Administrative Protections Failed.

Risk-Based Decision Making
'RBDM'

- What are the potential imp... ...occur?

- How likely are the pot... ...to occur?

- How severe mig... ...al impacts be?

- Is the ris... ...mpacts tolerable?

- Wh... ...d be done to lessen the risk?

A Cautionary Tale
This is a Tough Row to Hoe!

Risk = (Likelihood * Impact)

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Impact Will Happen
Likelihood Will Be Greater

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Risk-Based Decision Making is Gambling
We All Practice RBDM

© Victor Lucas 2010

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Risk-Based Decision Making is Gambling
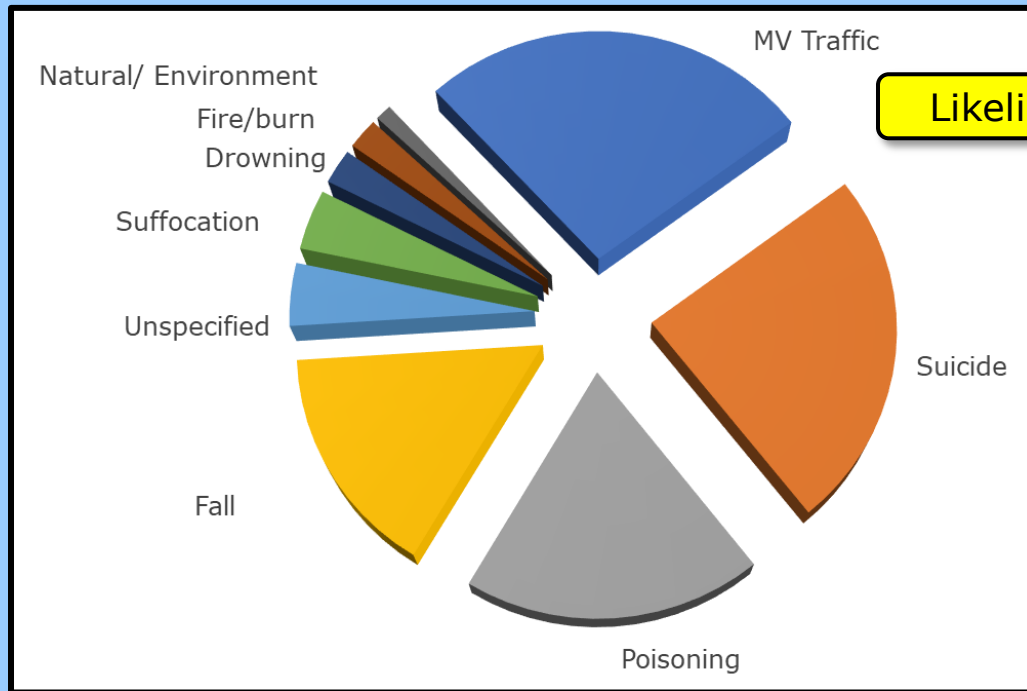## We All Practice RBDM

Takata Airbags

Ammonium Nitrate

https://www.drive.com.au/motor-news/around-1-million-australian-motorists-put-at-risk-by-grenade-airbags-20170722-gxgjgw - 1300 04/04/18

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CDC Personal Activity Statistics 1999-2015

Likelihood = 1/114

Cause of Death	Deaths	Percent
MV Traffic	664,177	25.3
Suicide	604,878	23.1
Poisoning	474,861	18.1
Fall	383,504	14.6
Total	2,621,388	

https://webappa.cdc.gov/cgi-bin/broker.exe?_service=v8prod&_server=aspv-wisq-1.cdc.gov&_port=5099&_sessionid=iSI8RSR1P52&_program=wisqars.dd_details10.sas&_service=&type=U&prtfmt=STANDARD&age1=.&age2=.&agegp=AllAges&deaths=2016510&_debug=0&lcdfmt=lcd1age&ethnicty=0&ranking=10&deathtle=Death – 7/13/17 1135
https://webappa.cdc.gov/cgi-bin/broker.exe - 7/13/17 1136

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Risk-Based Decision Making is Gambling
We All Practice RBDM

Action Threshold Color Coding and Definitions

Color Code	Threshold Action
	Corrections are required immediately
	Corrections are required at next opportunity
	Corrections may be necessary and should be evaluated
	Corrections are not required

Risk Evaluation Table

Frequency (per year)	Impact →				
Likelihood ↑					

Your Risk is Not My Risk

*Perceived Risk = (Likelihood * Impact) / Comfort*

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Your Risk is Not My Risk

Perceived Risk *= (Likelihood * Impact) /* **Comfort**

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APPARATUS FOR FACILITATING THE BIRTH OF A CHILD BY CENTRIGUGAL FORCE

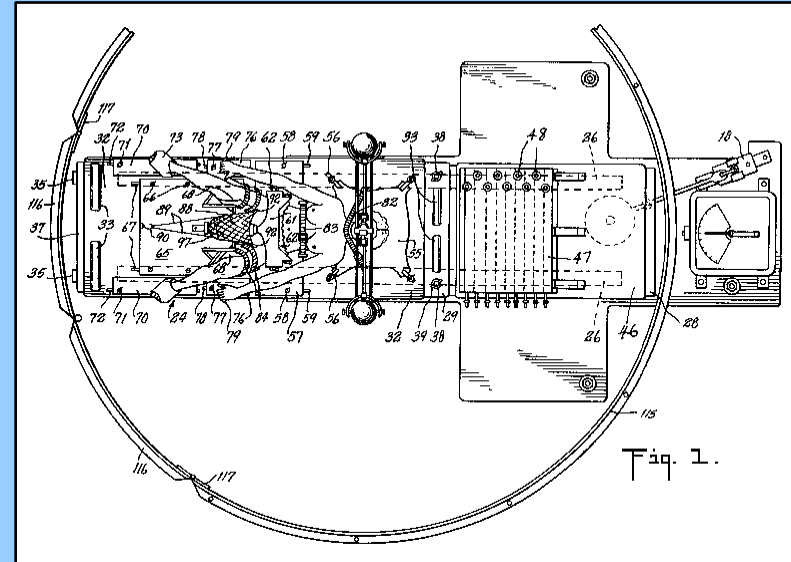GEORGE B. BLONSKY and CHAROLETTE E. BLONSKY
Patented November 9, 1965

Fig. 1.

rpm	rps	ft/sec^2	g's
0.0	0.0	0	0
31.2	0.52	32	1
41.1	0.76	64	2
53.9	0.92	96	3
62.4	1.04	128	4
69.7	1.16	160	5
76.3	1.27	192	6
82.3	1.37	224	7

Fig. 2.

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Your Risk is Not My Risk

Selected Hazards Ranked in the Psychometric Framework

http://www.on-sitemag.com/features/aligning-risk-perception-and-reality/- 07/13/17 1828

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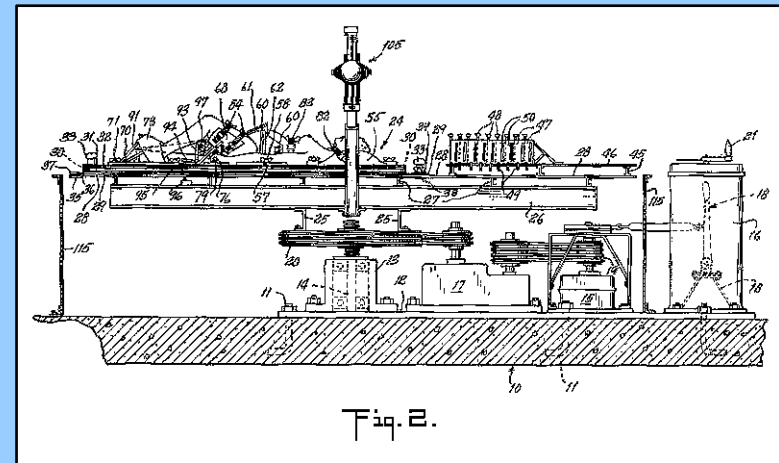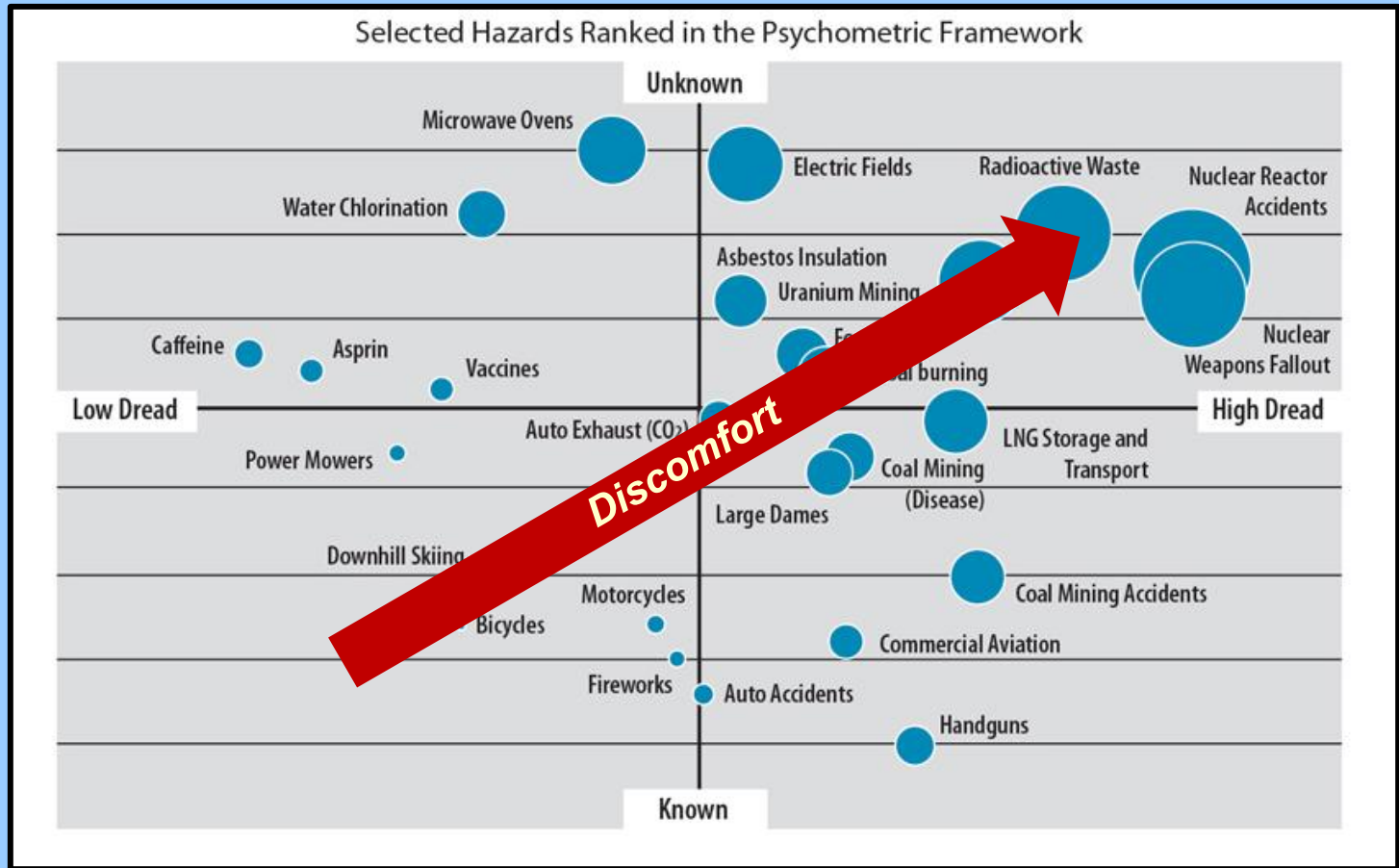
Risk is Global, Impact is Personal

> **The risk analyst, regulator, attorney, risk manager are not the target of the Impact.**
>
> **Risk is imposed upon those who will suffer the Impact.**

Perceived Risk = (Likelihood * Impact) / *Comfort*

Risk is Global, Impact is Personal

Drowning New Orleans

A major hurricane could swamp New Orleans under 20 feet of water, killing thousands. Human activities along the Mississippi River have dramatically increased the risk, and now only massive reengineering of southeastern Louisiana can save the city

By Mark Fischetti – Scientific American, October 2001

'New Orleans is a disaster waiting to happen.'

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Risk is Global, Impact is Personal

**Tolerable Risk Will Only Become Less So.
Risk is More Than Heads or Tails.**

. . . And, It Gets Worse.

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We Don't Know What We Don't Know

It is easy to design a technology to meet the intent to control the hazard.

It is extraordinarily difficult to anticipate all the ways it can go wrong releasing the hazard and having an Impact.

We Don't Know What We Don't Know

The Journey: *Initiating Event* that begins the failure.

The Journey: *Propagating Events* which continue the failure

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We Don't Know What We Don't Know

The Journey: Evaluating the hazard *Impact*

We Don't Know What We Don't Know

Perceived Risk = (Likelihood * Impact) / Comfort
Risk = (Likelihood * Impact) / Culture

Unknown Impact of Acute v. Chronic Exposure

Unknown Vitality of the Culture Managing the Hazard

Unknown Chemical and Biological Incompatibility

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Perceived Risk = (Likelihood * Impact) / Comfort
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