



TERRORISTS VS. CHAIRS: AN OUTLIER STORY

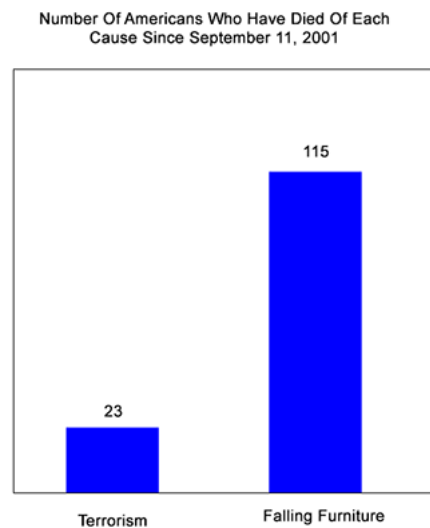
POSTED ON AUGUST 31, 2016 BY SCOTT ALEXANDER

The other day I [needed to know](#) how many people were killed by chairs, and while searching I came across the W Post's [You're More Likely To Be Fatally Crushed By Furniture Than Killed By A Terrorist](#). It argues that worrying about terrorism is irrational, because terrorists kill fewer people each year than falling furniture, and nobody cares about

Consider, for instance, that since the attacks of Sept. 11, 2001, Americans have been no more likely to die at the hands of terrorists than being crushed to death by unstable television furniture [...] What accounts for the fear that terrorism inspires, considering that its actual risk in the United States and other Western countries is so low? The answer lies in basic psychology.

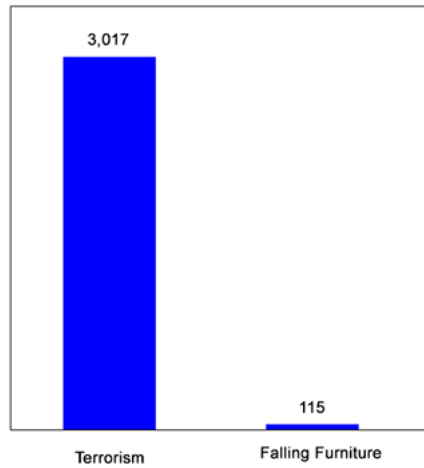
I once saw the *perfect* response to this kind of argument on Twitter, but I forgot to screenshot it, so I'll have to try to remember it from memory here.

One person posted a graph that looked something like this:



And somebody else edited it to look like this:

Number Of Americans Who Have Died Of Each Cause Since September 10, 2001



And *whoa* I had never realized before how sketchy it is to start your interval for recording the average number of attacks *the day after* the last major terrorist attack.

I mean, I know why people do it. It's because September 11 was an "outlier", and [outliers should not be counted](#). is, depending on your distribution, sometimes "outliers" are the only thing that matters.

Let me give an example. Suppose I'm trying to make an argument that earthquakes are totally not a problem for that there's no need to invest in earthquake preparedness, and that Haitian people who worry about earthquakes I make a graph showing that since January 13, 2010, fewer Haitians have died per year from earthquake-related than from crazy furniture-related mishaps. This is totally 100% true. Look at those stupid Haitians, worrying about something that *on average* never hurts anybody!

(the Haitian earthquake of January 12, 2010 killed about 100,000 people)

I'm sure there are a zillion small Richter 1.0 and Richter 2.0 earthquakes in Haiti all the time. I'm sure our monitoring interval of January 13, 2010 to present picked up lots of these and correctly noted that they don't kill anybody. The Haitian earthquakes anyone needs to worry about are the outliers.

If you start your monitoring interval on January 13, earthquakes kill 0 people/year. If you start it on January 11, earthquakes kill 20,000 people a year. Neither of these is entirely fair – one is purpose-designed to maximize casualties and the other to minimize it. I don't think there's an obvious fair way to do things – the best solution would be to extend the interval back to infinity, but then you get into problems like Haiti having fewer people back in the day, or Haiti not having the sea yet back in 4,000,000,000 BC. Maybe the best solution is to pick an arbitrary block of time like "the last 100 years" or to do something very complicated like using the remote historical record to produce earthquake numbers and then combine it with modern populations to produce expected casualties.

The same is true of September 11. Start the interval September 12, and you get 5-10 terrorism deaths/year. Start it on September 10, and you get 200. I don't know when the *best* time to start it would be. If I had to choose *something*, I might say maybe 1985, when jihadist terrorism got started after the Soviet invasion of Afghanistan. But someone else could choose 1776, or 2000, based on similarly arbitrary criteria. And it would all be irrelevant – September 11 either made terrorists more ambitious, made security forces more watchful, or both, and so probably changed the calculus for

Granted, even when you include September 11, terrorism isn't the *worst* thing, and people probably do overestimate the danger. On average, the flu kills something like 20,000 people worldwide each year. That's a lot, but not *apocalyptically* much. If you go back year after year, the average stays at something like 20,000/year, right up until 1918, when about [100,000,000 people died](#). So flu deaths over the last century average about 1 million/year. In the years from now, average flu deaths over the last century will average about 20,000/year. A death rate of only 20,000/year might make our current efforts to contain the flu seem excessive compared to other diseases. But a death rate of 1 million/year makes them look if anything the opposite.

Even worse: did you know that [giant asteroids kill about a hundred people per year](#), on average? This is admitted

definition of “kill” and “average” given that no human being has ever been killed by a giant asteroid. But given the asteroids strike Earth about every ten million years, and an asteroid strike today might kill about a billion people, *average* giant asteroids kill about a hundred people per year.

Actually, un-forget terrorism. I have a friend who is *very* in favor of the War On Terror, and he argues that the probability of terrorism isn't the average suicide bomber who kills three people. It isn't even the 9-11 hijackers who killed three people. It's the group that steals a nuke and kills three million people. Just as “on average” a hundred people die from giant asteroid strikes, maybe “on average” thirty thousand people die each year from nuclear terrorism. All of this for this to be true is one nuclear attack per century. And that's *as bad as an average flu season!*

The thing about falling furniture is that there's probably not going to be a furniturepocalypse where suddenly millions of people all perish at once after being struck by a really really big desk. Furniture is constant. Terrorism isn't. The value of [black swans](#) is that we pay too much attention to constant risks and ignore the outliers, *especially* the outliers who are outliers so far that they haven't happened yet. That's true whether it's terrorism, earthquakes, pandemics, or AI.

I worry that someday many years from now, terrorists are going to have some improbable victory which is even more destructive than September 11. I worry that uncounted people are going to die. And I worry that ten years later, I'm going to post on Facebook about how “From the day after ISIS nuked London through today, on average fewer people per year have died of terrorism than from hilarious accidents involving bedside dressers!”

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402 RESPONSES TO *TERRORISTS VS. CHAIRS: AN OUTLIER STORY*



ikea, doombringer says:

August 31, 2016 at 11:03 pm ~new~

> Maybe the best solution is to pick an arbitrary block of time

There's the “exponentially weighted moving average”, where you weight the current year at 1, and the year before that at d where $d < 1$, and the year before that gets weighted d^2 and the year before that gets weighted d^3 and so on to infinity.

But then you've replaced your problem “how do I choose the size of my arbitrary block of time?” with “how do I choose the exponent for my moving average?” and maybe that's an improvement to be worth the math.

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DanielLC says:

August 31, 2016 at 11:24 pm ~new~

Well, you don't have to worry about average number of flu deaths per year this century suddenly dropping from 1,000,000 to 20,000, so that's something.

[Hide](#) ↑



Alejandro says:

September 1, 2016 at 4:10 am ~new~

Wait, is that a throwaway username crafted solely for this post? Because if not, it is the most perfectly relevant username ever for the first comment in a post discussing furniturepocalypse.

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Izaak Weiss says:

September 1, 2016 at 9:53 am ~new~

IMPORTANT: If you do this, you also need to multiply your entire sum by $(1-d)$ to get the weighting right. Otherwise, you'll get the wrong answer.

Example: With $d=.75$ and 20 being the number of events per year every year since the big bang, we can type ``sum 0 to inf (20 *.75^n)`` into wolfram alpha and it gives an answer of 80; this is obviously wrong.

However, $80 * (1-.75) = 80 * .25 = 80/4 = 20$

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Emma says:

September 1, 2016 at 11:30 am ~new~

Yes. When you calculate a weighted average you divide a weighted sum by the sum of just the weights. And

$$\sum_{n=0}^{\infty} d^n = 1/(1-d),$$

so dividing by it is the same as multiplying by 1-d.

Edit: Also, is there a way to use latex or unicode in comments? Specifically to write capital sigma and super- and subscripts?

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Robert L says:

September 1, 2016 at 2:40 pm ~new~

Test

Σ

edit: that works – it is & Sigma ; without spaces

sub and sup tags don't work.

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Izaak Weiss says:

September 1, 2016 at 5:31 pm ~new~

Not everyone in the comment thread is a math person; I just wanted to make sure that this method wasn't used badly, as without the normalization will get a bigger number than you should.

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person says:

September 1, 2016 at 10:13 pm ~new~

[+] 402 comments since 1969-12-31 18:00

But then you've replaced your problem "how do I choose the size of my arbitrary block of time?" with "how do I choose the exponent for my moving average?" and not enough of an improvement to be worth the math.

The lesson there is that the numeric value isn't what's important. In fact, having infinitely many distinct choices, each equally valid, you could not possibly think that choice.

But nobody cares about the exact numbers anyway. Numbers are used to extract some qualitative notion of the relative likelihood or rarity of events. And for any above, you get that. Fix any arbitrary d, then set some qualitative milestones such as the likelihood of lightning strikes in your exponentially weighted moving average, the likelihood of changing careers, the likelihood of getting in a car accident, the likelihood of a drought/tornado/etc. until you have a sense for how much different familiar events are "worth" in this scale, and then by comparing the numerical value for some new thing like terrorist attacks, against those for familiar things, you how proportionately more likely things are.

(This works because although the exact numerical value varies with d, the RATIO of different things does not depend on d.)

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Good Burning Plastic says:

September 2, 2016 at 4:42 am ~new~

(This works because although the exact numerical value varies with d, the RATIO of different things does not depend on d.)

Yes it does. If A has been getting rarer than it used to be and B has been getting more frequent, then the smaller d is, the more recent years will be weighted more heavily. Frequent B will be calculated to be with respect to A.

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Steve Sailer says:

September 4, 2016 at 1:31 am ~new~

Here's the One Percent Doctrine as explained by Dick Cheney (played by Richard Dreyfus) to George W. Bush (played by Josh Brolin) in Oliver Stone's biopic "W:"

https://youtu.be/zQ07cLD_jzE?t=40s

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FooQuuxman says:

August 31, 2016 at 11:03 pm ~new~

The thing about falling furniture is that there's probably not going to be a furniturepocalypse where suddenly millions of people all perish at once after being struck by a re

big desk.

This can be solved by shaping an asteroid into a Really Big Desk.

What makes terrorism different from furniture is that the decision process of other people is intimately connected with it's occurrence, how you respond to it can wildly cha get.

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DanielLC says:

August 31, 2016 at 11:25 pm ~new~

> how you respond to it can wildly change how much you get.

Isn't that the point? Why worry about something if your response can't change how much it happens? How much we worry about the flu can wildly change how m

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MugaSofer says:

September 1, 2016 at 6:48 am ~new~

The difference is that it can change *wildly*. And you may not realize you've changed the amount of terrorism wildly until it's too late, because terrorism co outliers.

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albatross says:

September 1, 2016 at 3:06 pm ~new~

It seems to me that there are two different things going on w.r.t terrorism deaths vs furniture deaths:

- Terrorism is an intentional action by a thinking entity that can change tactics or be convinced to give up and do something else.
- The impact of terrorist attacks in the west are dominated by the outliers (9/11), rather than by the average (nutcase with a Glock in a mall).

Those two aspects need to be treated separately. Street crime fits (a), but not (b)—muggers are thinking beings who respond to incentives, but low-but-unknowable probability that a small group of muggers will somehow manage to carry out a single mugging that makes the total damag muggings go up by a factor of 100 that year.

On the other side, earthquakes and hurricanes are natural phenomena that aren't being directed by intelligent adversaries, but whose impact is dominated by the outliers.

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Steve Sailer says:

September 3, 2016 at 3:22 am ~new~

Violence gets our attention more than accidents because violence is political.

It has costs to the victims beyond just the first order effects. The costs of being victimized by violence traditionally over human history were not just the immediate ones but the costs of losing resources to groups that use violence successfully to control resources. The l they have less access to food and thus fewer descendants.

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Matt H says:

September 1, 2016 at 9:38 am ~new~

Terrorism is memetic and contagious. Order is fragile and can break-down. This is why it's worth responding to. Not that I know how to respond. I can properly se stud, one TVs actions don't influence another's, at least not until the singularity.

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Gudamor says:

September 1, 2016 at 7:41 pm ~new~

I badly misread this comment at first:

"Terrorism is memetic and contagious. Order is fragile and can break-down. This is why it's worth responding to. Now that I know how to respond: I can tv to a stud"

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Derannimer says:

September 1, 2016 at 10:40 pm ~new~

This is so hilarious I had to screen-shot it.

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Furslid says:

September 1, 2016 at 1:12 pm ~new~

How may people die from terrorism is not just linked to how many terrorists there are. I don't think that terrorism has been less deadly because there are less ter since September 11. The change also comes from how deadly each attack is.

Falling furniture kills 1 or 2 people in each lethal incident. So if there are 10 falling furniture incidents a year, and they include unusually deadly incidents, there m of 20. 10 die in a year with low deadliness furniture falls. So the main driver for how many people die from falling furniture can be how many lethal furniture falls

What does a year with an average number of terrorist attacks, but unusually deadly terrorist attacks look like? It doesn't just have twice the number killed as a ye number of attacks of low deadliness.

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Autolykos says:

September 9, 2016 at 10:37 am ~new~

I don't think that terrorism has been less deadly because there are less terrorists in the world since September 11.

There seem to be, however, less qualified and competently led terrorists since September 11, 2001. Few of the more recent attacks seem to be planned i leadership, and judging from those that were (e.g. Mumbai) the quality of their personnel seems to have deteriorated from "skilled and patient operative with a complex plan that takes years to prepare for" to "village idiots you can hand a Kalashnikov or a suicide vest and point at the nearest crowd".

All of the more ambitious plans that I heard of failed horribly, and quite a few were infiltrated (and possibly orchestrated) by police or intelligence service beginning, with the actual wanna-be terrorists far too incompetent to have pulled the plan off by themselves (like the Sauerland group in Germany).

The fixation on suicide attacks may be good theatrics (and terrorism is mostly theater), but it has the tendency to burn quickly through your best person any sane organization will avoid like the plague. There are just so many more civilians than even semi-competent potential terrorists, that we can probat and let the police handle them like they would any other common criminal. They will run out of recruits way before they'll make a noticeable dent in our |

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rossry says:

September 1, 2016 at 9:50 pm ~new~

This can be solved by shaping an asteroid into a Really Big Desk.

Relevant: ["The Vending Machine Murders"](#)

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SamO says:

August 31, 2016 at 11:19 pm ~new~

The role of intention seems to be really important on this issue. Terrorism is worrisome merely because of the historical body count. There are multiple (citation needed) pc who would actively plan a large scale attack if given the opportunity. In my mind, part of the mechanism that limits future opportunities for terror attacks is actively worryi

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SamO says:

September 1, 2016 at 12:47 am ~new~

Correction: Terrorism *isn't* worrisome merely because of the historical body count.

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Ryan Beren says:

September 1, 2016 at 11:39 am ~new~

The Missing Not: the most frustrating typo.

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Warwick the Wild says:

September 1, 2016 at 12:48 am ~new~

This is the problem with estimating the value of a lot of security-related efforts. Did the zillion dollars you spent on security and intelligence successfully deterred : spies, and terrorists, or was it all a giant boondoggle cooked up by security firms/agencies to make money/justify their budget?

We can sort-of guesstimate with foiled attacks or some such, but even that seems pretty spotty, especially if you're positing a deterrent effect (either by scaring w off or by shutting down supply chains enabling them).

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Murphy says:

September 1, 2016 at 7:08 am ~new~

Plus it can go in the opposite direction. In an effort to "deter" terrorists you send a load of jackbooted thugs to kick in doors and smash teeth all around t

Amazingly the people involved seem to like you even less afterwards and the number of attempted terrorist attack just seems to go up rather than down

To top that off in the course of finding people to kick their teeth in you may find people are making deals with ancient unspeakable evils that have murde
that even the most ambitious outlier terrorists ever could dream of:

<https://blog.jaibot.com/foes-without-faces/>

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J says:

September 1, 2016 at 2:05 pm ~new~

The one thing I will never forgive Obama for is letting the CIA pose as polio vaccination health workers when going after bin Laden.

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Douglas Knight says:

September 1, 2016 at 3:10 pm ~new~

You've fallen for propaganda. That story is completely false. It's just a ... CIA cover story. (Also, it was hepatitis, not polio.)

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J says:

September 1, 2016 at 3:52 pm ~new~

Can you offer any proof? Here's [the Guardian](#), [Scientific American](#), and [NPR](#) all affirming that the CIA posed as vaccination workers (th
the white house directly).

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Douglas Knight says:

September 1, 2016 at 4:05 pm ~new~

What do you mean by "proof"? Does the Guardian offer proof? They say that they performed an "investigation," but they just assert th
explanation of how they could know. Maybe it's just a CIA press release.

All I can offer is [Seymour Hersh](#), but surely he is a more reliable source than the White House.

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Macbi says:

September 1, 2016 at 4:44 pm ~new~

Surely the CIA claiming to have impersonated vaccinators is just as damaging as them actually doing so?

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Jaskologist says:

September 1, 2016 at 5:04 pm ~new~

Morally, is there really much difference between using vaccinators as spies, and just convincing people that you're using vaccinators as

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Douglas Knight says:

September 1, 2016 at 5:08 pm ~new~

Morally, is there much difference between DUI and murder?

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albatross says:

September 1, 2016 at 3:16 pm ~new~

Yep. And again I think there are two different effects there:

a. The "wasted life insurance effect." I've carried life insurance for many years now (I have a wife and kids who need my continued income). Since I'm st
this, clearly that money was wasted, right?

That's an error you could make if you spend a lot of ways to respond to / prevent terrorist attacks, but nobody tried one. That doesn't mean the TSA's pc
blue-glove-groping routine is justified by definition, it just means you can't definitively say "see, no attacks were stopped this year, therefore there's no v

b. You can't detect most of the attacks you prevented. If the right set of visa applications to the US had been rejected, we might never have had a 9/11. I would never have any idea that our visa rejections had prevented it.

It's notoriously hard to tell if you're preventing something with your precautions—think about statins or baby aspirin or quitting smoking. Those are all cases where you can gather lots of statistics on lots of people using / not using the preventatives and try to tease out subtle effects. I don't know how we'd do anything like that with war on terror activities.

For the record, I actually think most of our (US) war on terror activities range from not very helpful to useless to actively harmful. But figuring out whether (and in which cases) I'm right looks pretty hard, in practice.

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Warwick the Wild says:

September 2, 2016 at 11:29 am ~new~

For the record, I actually think most of our (US) war on terror activities range from not very helpful to useless to actively harmful. But figuring out whether (and in which cases) I'm right looks pretty hard, in practice.

I can't say I disagree with that. I'm virtually certain that a lot of our security spending is useless theater (consider last year's embarrassments that I think that is an area where you can test the efficacy of your methods. You might not be able to say whether or not there really is a threat, but you can say that *if there was a serious threat*, these measures wouldn't have stopped it.

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27chaos says:

September 4, 2016 at 1:40 am ~new~

I agree that it is theater, but terrorists seem drawn to choosing airports as targets because of the theater, which helps make them easier to catch. Civilians respond to theater by feeling safer about flying, so it's not as useless as it might appear at first glance. Still fairly useless, admittedly.

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John Schilling says:

September 4, 2016 at 9:46 am ~new~

Terrorism is about hacking people's risk-assessment heuristics to make them feel more afraid than would be merited by the material cost of the threat. Is it really a surprise that part of the defense involves hacking people's risk-assessment heuristics to make them feel safer than they would by the material effect of the security procedures?

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Who wouldn't want to be anonymous says:

September 4, 2016 at 12:46 pm ~new~

When terrorists still manage to be successful despite the theater, people end up *even more* risk hacked by the terrorists. Naturally they then expand the theater to un-hack people again. Recurse as needed.

The problem is that theater is way, way, way more expensive than terrorism; and successful theater does not appreciably increase the cost of terrorism, but successful terrorism appreciably increases the cost of theater. Despite the imbalance of resources in the starting configuration, I suspect the theater would run out first.

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John Schilling says:

September 4, 2016 at 4:47 pm ~new~

The problem is that theater is way, way, way more expensive than terrorism

What's your estimate for the cost of, say, restructuring the entire airline industry to fly with half the present number of passengers because the other half are too scared to fly?

What's the cost of a Worse Than Donald Trump administration, when the existing government and opposition both lose their legitimacy and inaction in the face of a persistent terrorist threat?

Yes, yes, I know – nobody *you* know is afraid to fly on airliners. Indeed, all your friends have cut back on flying because of the intrusive inconvenience of the TSA's security theater. Nice bubble you've got there.

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Glen Raphael says:

September 5, 2016 at 2:33 pm ~new~

What's your estimate for the cost of, say, restructuring the entire airline industry to fly with half the present number of passengers because the other half are too scared to fly?

If – as you seem to assert – an *appearance* of airline safety really matters to customers, then it is **too important** to leave that up to customers. Rather, let's let individual airlines and airports *decide for themselves* how much or little security theater to provide their customers. Let airports *compete* along the “appearing safe” axis. If most customers want lots of theater, airlines that provide lots of theater will gain market share and the ones that provide less will lose market share until “the market” decides how much is the right amount.

More likely I suspect you would see market segmentation. *Comfort Air* might specialize in providing LOTS of theater – Strip searches for back the nail clipper ban! – while *Freedom Air* specializes in serving people like me. Freedom Air terminals return us to a 1960s-era level where non-customers can walk out to the gate to meet incoming flights and passengers can bring a rifle as a carry-on. Freedom Air has lower prices and faster end-to-end travel times because the time and money budget doesn't include a TSA-caliber screening procedure.

We'll see who wins.

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John Schilling says:

September 5, 2016 at 3:29 pm ~new~

If – as you seem to assert – an appearance of airline safety really matters to customers, then it is too important to leave that up to customers. Rather, let's let individual airlines and airports decide for themselves how much or little security theater to provide their customers.

Do you understand that the single most important contributor to the *perception* of security is the uniforms with American flags on them? For example, an airline might be at providing *actual* security, and no matter how lazy and inept the TSA's people may actually be, almost all of them are a bunch of venal mercenaries working for a greedy corporation the way they will all be a civil servant sworn to the defense of the nation.

Some things, governments are better at than corporations. This is one of them. Again, not actually securing airplanes against terrorist threats (but being trusted to secure airplanes against terrorists).

More likely I suspect you would see market segmentation. Comfort Air might specialize in providing LOTS of theater [...] while Freedom Air specializes in serving people like me

Yes, and the easiest way to win that competition isn't to provide actual security or even the illusion of security, but to put out scary ads about how dangerous Comfort Air is, about how Freedom Air only puts on a good show but they're really as rotten inside as the TSA was.

Congratulations – you've just incentivized American citizens who command something like fifty billion dollars in market capitalization, tens of billions in advertising resources and expertise to doing the terrorists' work for them. ISIS thanks you for your contribution to the global jihad.

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David Friedman says:

September 5, 2016 at 3:56 pm ~new~

“Do you understand that the single most important contributor to the perception of security is the uniforms with American flags on them?”

Private security people can have uniforms with American flags on them.

As you may know, there are airports, such as SFO, where security has been subcontracted to private firms instead of being done by TSA. Is there any evidence that people feel less secure as a result?

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Glen Raphael says:

September 5, 2016 at 5:22 pm ~new~

put out scary advertisements about how dangerous Comfort Air is

I'm pretty sure the incentives don't work that way.

In most industries the health of the ENTIRE INDUSTRY is a major concern for participants in it and they are inclined to cooperate and sacrifice to achieve that end. Airlines are even more inclined in this direction than most due to unusually strong *network effects* – the value to customers of being able to fly commercially is much larger when customers know they can get anywhere and are certain they'll be able to get **back** than if they had to get where you want to go and not get stranded is strongly tied to the whims of or continued survival of *particular specific companies*.

Thus in times of special crisis (storms, volcanoes, crashes...) airlines with free seats have often been known to *honor one another's tickets* (and later) just to get everybody home. And in normal times they do stuff like code-sharing, partnering behind the scenes to increase the size of their route network.

The fact that falsely advertising “Company X planes are deathtraps!” would harm the health of the industry in general is obvious enough. The right mind would do it any more than one peanut butter company would try to gain market share by claiming other peanut butter is poisonous. Peanut butter companies don't want eating peanut butter to seem scary; neither do airlines want flying to seem scary.

(My family ran a travel agency for much of my life so I've heard a lot of stories of both airlines and travel agencies helping out their co the common goal of collectively keeping customers safe and satisfied.)

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Glen Raphael says:

September 5, 2016 at 5:34 pm ~new~

@David Friedman:

Private security people can have uniforms with American flags on them.

Yup! Google image search confirms [Covenant Aviation Security](#) (CAS), the private firm that protects the gates at SFO airport instead of wear uniforms with American flag features.

UPDATE: I can't find a *good* picture – that round shoulder thing *might* be a regular TSA logo badge they're wearing. Though there's no couldn't wear some OTHER badge with a flag/bird motif. Badges are cheap...

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John Schilling says:

September 5, 2016 at 8:50 pm ~new~

Private security people can have uniforms with American flags on them.

Do you understand that I was not being 100.00% literal in that statement?

Private security people cannot reliable cause their customers to believe they are dealing with uniformed military personnel or law enforcement. Any such deception will not hold, and will likely backfire if attempted.

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Glen Raphael says:

September 5, 2016 at 9:13 pm ~new~

Private security people cannot reliable cause their customers to believe they are dealing with uniformed military personnel or law enforcement officers.

First off, you've provided no evidence that customers *care* about this. Do you have any? I fully grant that my own impression that "government employee" suggests "probably incompetent" might just be something that happens in my own bubble, but how do you know your content that "government employee" means "reassuring" is any less bubble-prone?

Any such deception will not hold, and will likely backfire if attempted.

Um. We gave you the example of San Francisco Airport. Has that "deception" held? Did it backfire? At last count there are [23 airports with alternatives to TSA](#) (up from 5 initially) and many others are considering switching despite a painfully drawn-out approval process to do so. Switchover takes a full year). According to the article I just linked:

airports that have switched to private firms say they consider the contractors more responsive and better able to adjust staffing to accommodate surges and lulls.

The article does not mention "customers think they're less safe" as a reason for concern – should it?

Recently there was a single week in which roughly [6,800 American Airlines passengers missed flights](#) due to TSA delays. TSA has started to let people arrive [THREE HOURS early](#) for domestic flights (up from a mere TWO last year) to accommodate screening delays. Is that *enough* would we "feel safer" to add even MORE random delay to a transport method whose chief attribute used to be speed and efficiency?

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David Friedman says:

September 6, 2016 at 1:42 am ~new~

At a [slight tangent](#) on the subject of TSA vs private firms ...

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Who wouldn't want to be anonymous says:

September 6, 2016 at 9:58 am ~new~

The problem is that theater is way, way, way more expensive than terrorism

What's your estimate for the cost of, say, restructuring the entire airline industry to fly with half the present number of passengers but the other half are too scared to fly?

I was speaking of the cost to commit terrorism, not the cost resulting from terrorism. That under the "terrorism is mind-hack" model, theater you better actually be doing something effective because they can bankrupt you by forcing ever more intrusive security measures, the implication being that terrorism is a whack-a-mole; when we've beaten Islamic terrorism—if we beat Islamic terrorism—there will just be things people are upset about and willing to blow things up over. So adopting theater is to set yourself on the path to certain bankruptcy.

But since you bring it up, I fail to see how it is different than any other asset bubble groaning on the verge of collapse after decades of distortions in the market. Yes, yes, of course we're obligated to run around screaming and tearing our hair out that airlines have invested in planes and a drop in passenger numbers will drive them all bankrupt and so ever increasing government measures to prop up passengers called for... or whatever.

I mean, that's really the root problem isn't it? The real cost of flying is more than (some) passengers are willing to pay. That if those costs were internalized to the transaction VTC would eat the airlines' business traveler lunch. Tourists would rather stay home and spend their money on games and Real Dolls. Facebook and Instagram and Skype make it much less important for retirees to spend their pensions flying around the world and grandkids in the four corners of the Earth. Affordable virtual reality headsets have even come on the market in the last year or so which makes visiting impressive landmarks less important than it used to be. Skype could easily be combined with virtual reality headsets, too, now it's possible.

I am pretty sure those things are called substitute goods, and have been enabled by the march of technology. Airlines need to compete with other modes of transport or become as obsolete as transatlantic passenger ships. Government subsidizing their security isn't the answer. That's what all the talk about "flags on them" is about after all.

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bean says:

September 6, 2016 at 11:12 am ~new~

There is a tacit agreement throughout the airline industry, manufacturer and customer alike, not to compete on safety, at least in front of the public. Some of this is because of concern for the general reputation of the industry, but some of it is also because the bar has been set so high by the government. But I'm not sure the agreement would hold in the face of attempts to privatize the whole system.

In even the best possible case, totally privatized security will be destroyed by the next 9/11. Airliners hitting buildings hurts the builder of the airliner. Enforcing some minimum level of security/safety on large, fast-moving pieces of metal is a good thing, because if you don't, society is retroactively pressured by mob pressure in the aftermath of a disaster. If the system works right, when there is a disaster, the mob pressure is what the experts can fix actual problems. To some extent, the problem with 9/11 was that it was big enough that the experts couldn't deflect mob pressure as they normally do.

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Subbak says:

September 1, 2016 at 7:16 am ~new~

In my mind, part of the mechanism that limits future opportunities for terror attacks is actively worrying about them.

You can have an argument that you can limit terror attacks by enacting efficient countermeasures, that often have very bad side-effects for individual liberties (by something like what Israel does, not what the TSA does). I think the loss of freedom is definitely not worth it, but I have to concede that it is *possible* to reduce or prevent terrorism by being sufficiently authoritarian (but you have to do it right, authoritarianism does wrong only has drawbacks). Obviously to think of those measures, someone has to worry about terrorism.

However, people who are not doing that should never worry about terrorism. Because the more people worry about terrorism, the more efficient the terrorist attack becomes. The point of terrorists is to use fear to advance their political agenda. If they made you afraid, then they've succeeded at their primary goal. Now obviously you can't avoid not being afraid of terrorist attacks, but it's better to act to reduce the global fear inspired by terrorists. This reduces the impact they really care about. While it doesn't affect the "number of people killed" impact, hopefully not seeing panicked reaction might deter terrorist actions and indirectly affect that.

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scav says:

September 1, 2016 at 8:10 am ~new~

Interesting. So it's a game where each side is trying to maximise a different thing.

We obviously win by preventing deaths, because we don't want people to die.

But terrorists can't actually *win* by killing any plausible number of people: they are outnumbered by a gigantic ratio. Even if every potential suicide bomber kills a few people, the end game is 0 suicide bombers left and still about 7 billion non-terrorists mourning the dead and getting back to their lives.

They only "win" by provoking a terrified response and by our making an unforced error in how we deal with them. Although of course, they don't actually win. Western capitalist liberal democracy goes on apace. The terrorists just get to feel like they achieved *something*, enough to recruit more angry young men.

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albatross says:

September 1, 2016 at 3:20 pm ~new~

To what extent do terrorist attacks recruit more terrorists and thus lead to more attacks? And what role does media coverage and political react play in this?

I strongly suspect that mass-shootings are affected by previous mass shootings and heavy media coverage of them, but I don't know to what e true of terrorist attacks. (And there's overlap—the Orlando and San Bernardino attacks were pretty classic mass shooting attacks, but done by p sympathetic to the goals of ISIS and perhaps were actually motivated by the thought of carrying out a suicide attack on their behalf.)

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Maware says:

September 1, 2016 at 9:55 am ~new~

The point is not “worrying” it’s “thinking and planning effectively.”

The problem is that people don't think at all, something happens, and we get a brief, reactive response. Over time, people complain about the effects of we slowly slip back into not thinking or doing anything. Then the next outlier incident happens, and the cycle repeats again.

Then we get stupid articles like the WaPo one. If anything, we should think about terrorism more, and plan effective measures against it while taking into for personal liberty. But stupid people who immediately go back to “oh, see? terrorism kills less people than chairs over time!” aren't doing that, they are cycle. And it's not just that, either. So many other issues are driven by the reactive-forgetful cycle.

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Sok Puppette says:

September 1, 2016 at 10:22 am ~new~

The thing is that there are in fact no effective measures short of creating a totalitarian dystopia. And even that might not be effective. It's really havoc in a universe that favors entropy. And, whatever kind of world you create, SOMEBODY is going to hate it enough to be willing to do that.

On edit: I think I have to retract this because I find I can't clearly articulate the standard of “effectiveness” that I'm using. Basically none of the ever seen taken, or even suggested, would prevent a plausibly competent actor from causing mass damage, or reduce the size of that damage. that they don't raise the bar above the capabilities of a plausibly INCOMPETENT actor, and we've seen that there are a lot of incompetent terror

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J says:

September 1, 2016 at 2:00 pm ~new~

We do the things that actually help, like [reinforcing cockpit doors](#). We just also do lots of other stupid, counterproductive, destructive, too.

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Simon says:

September 4, 2016 at 1:14 pm ~new~

Aum Shinrikyo were flush to the eyeballs with cash, had competent engineers and chemists working on the problem, weren't really bei carefully and still failed to do that much harm with the sarin attack on the Tokyo subway.

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Sandy says:

September 4, 2016 at 1:56 pm ~new~

Aum Shinrikyo launched the Tokyo subway attack because the police were closing in on them and they thought a distraction would hel It was an improvised, last-minute thing.

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idjit says:

September 1, 2016 at 10:12 am ~new~

My two thoughts on this.

One, their primary goal is not to cause fear, it is to see the change they want. Yes the ideal situation for a terrorist is, have goal, cause fear, achieve goal me, particularly if you look at America, this does not work? Mostly you get, terrorists have goal(change in policy?), cause fear, drones. Unless their goal i want more drone strikes” then terrorism is not super effective as a tool to achieve an end as used against Americans, even if it is causing them fear.

Two, I imagine a large number of ‘terrorists’ are not actually terrorists at all, as per the understood definition. They are not making a rational and calcula the hopes of changing western foreign policy in the middle east from (blank) to [blank]. It seems to me that they are just living out something of a powe last pockets of human resistance setting off bombs to kill a few of their new alien over lords. The aliens are never going to give them what they want, an never going to ‘lose’. The humans just keep attacking them out of a sense of revenge, and justice, and all that jazz.

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Zakharov says:

September 1, 2016 at 11:01 am ~new~

Going by revealed preferences, terrorist leaders want to increase the size of their organisations, while grunts want a sense of meaning in their l

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mogden says:

August 31, 2016 at 11:20 pm ~new~

The problem with terrorism is that crafty people are trying to invent new schemes to increase casualties far beyond what we have seen so far (for example: bioterrorism). ' enhancement is not occurring with wooden furniture.

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Loquat says:

September 1, 2016 at 7:08 pm ~new~

Also, there are relatively simple precautions you can take to reduce your risk of being killed by furniture – securing heavy items to the wall is commonly recomme have much downside unless you enjoy frequently rearranging your furniture. There aren't a lot of things an ordinary citizen can easily do to reduce their risk of be terrorist without changing their own lifestyle.

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Simon says:

September 4, 2016 at 1:20 pm ~new~

And that's because in insurance terms your risk for being killed by terrorists is considered de minimis, i.e none. What could you possibly do to mitigate a none? Of course that's no consolation if someone you know picks up the losing lottery ticket.

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Thomas Redding says:

August 31, 2016 at 11:20 pm ~new~

I don't have a solution, but...

A couple years ago, I assumed that the probability of an event occurring each year had a flat prior between 0% and 100%. Then, using just the last time it occurred as evi the posterior distribution. If I remember correctly, the expected value of the posterior distribution was $2/(n+2)$. In other words, if an event happened 10 years ago, it had a happening next year.

Now, I don't think the odds of another 9-11-esque terrorist attack is 1-in-9, but that's because I have additional knowledge.

I also agree with ikea, doombringer. This seems like an ideal place to use an exponentially weighted moving average, though just what that decay constant should be is a s question. The other thing to think about is how much we can do about it.

Presumably, it'd be quite difficult to reduce the number of furniture-relatd deaths. However, reducing cold-related deaths by preventing huge outbreaks using vaccines seer doable and utility-increasing even if no huge outbreak would've happened anyways. To me, the big question concerning terrorism isn't so much how likely I am to die in an a effectively we can reduce that probability. This is a difficult question to answer, to say the least!

[Edit, SamO said it better than I did: "part of the mechanism that limits future opportunities for terror attacks is actively worrying about them"]

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doubleunplussed says:

August 31, 2016 at 11:47 pm ~new~

What additional knowledge do you have?

I would have thought a one in nine chance of a 9-11-esque attack per year sounded plausible. Events an order of magnitude or two smaller in terms of deaths in c countries seem to happen yearly or so, so 1 in 9 per year for a large event doesn't sound that crazy.

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The Nybbler says:

August 31, 2016 at 11:54 pm ~new~

Interesting idea; if we look at the smaller-scale terrorist events, do we see a consistent power-law distribution? If so, we can estimate the larger-scale ev

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doubleunplussed says:

August 31, 2016 at 11:58 pm ~new~

...and you've just nerd sniped me. BRB writing Python script to fit power law to wikipedia data.

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Douglas Knight says:

September 1, 2016 at 12:13 am ~new~

Try a [database](#)

[Hide ↑](#)



doubleunplussed says:

September 1, 2016 at 12:37 am ~new~

Thank you, much easier.

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doubleunplussed says:

September 1, 2016 at 3:07 am ~new~

Here's the result:

<http://i.imgur.com/uzDmpRv.png>

Power law fit doesn't look half bad. If you take it seriously and extrapolate you get:

Attacks killing a thousand ($\pm 25\%$) people: once every 7 years = 142 deaths per year

Attacks killing ten thousand ($\pm 25\%$) people: once every 250 years = 40 deaths per year

Attacks killing a hundred thousand ($\pm 25\%$) people: once every 6000 years = 16 per year

(the $\pm 25\%$ comes from the binning of the histogram)

So the rare events are not contributing significantly to the overall expected death rate, as you can see in this plot, which is the same a each point is scaled by its number of deaths, so we get to see the contribution of each size of attack to the overall death rate:

<http://i.imgur.com/DOQYI7a.png>

If you use the power law and add up the contributions from each event size to the overall death rate (i.e integrate it), you get a grand 3200 deaths per year.

This is slightly higher than the 7581 deaths per year average that's in the raw data, and I think that's probably due to this power law r effect of expected but as of yet unobserved events. But it's not much higher. The vast majority of deaths from terrorism—even if this p come from the smaller attacks of 10-100 deaths.

But I don't see why you couldn't find yourself in a situation where the power law describing the severity and frequency of events had s the integral didn't converge. In that case you would be in the bizarre situation of expecting an essentially infinite death rate from a prc a possibly small rate had been observed so far.

I'm totally on board with the idea that this might be people's subconscious reasoning behind being more afraid of terrorism than the si indicate. Perhaps our monkey brains know about fat-tailed risk, and overriding those instincts with supposedly cool reason is actually t almost always the case in clashes between system 1 and system 2, the irrational things our brain does usually have reasons behind th brains just happen not to have the right numbers being input to them in this case.

There's also the meta-level that we don't know it's a power law, there is still a lot of uncertainty in what the probabilities of events tha happened are. In some sense if this uncertainty about uncertainty is also fat-tailed, the fearful people might be making the right call a

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doubleunplussed says:

September 1, 2016 at 4:19 am ~new~

To add to this, the best fit power law above had an exponent of $\alpha = -1.5 \pm 0.1$.

That is, $\text{frequency_of_attacks} \sim \exp(-1.5 * \text{number_of_deaths})$.

A power law's integral does not converge if the exponent isn't less than -1. If the frequency of attacks were like $\exp(-1.0 * \text{number_of_expected number of deaths per year})$ would be infinite. But that exponent is five sigma away from being the best fit to the data, so is p case. Phew, the probability of terrorism having an infinite kill rate is only five sigma (one in 2 million).

But just out of interest, below is the same two plots as my above post, but with the exponent forced to be -1.0:

Freq vs severity: <http://i.imgur.com/5mZbrf5.png>

Contribution to death rate vs severity: <http://i.imgur.com/K3kRYiF.png>

It's a worse fit, to be sure. The second one in particular looks pretty bad. Thankfully the frequency of terror attacks in reality drops off severity. But appreciate how bizarre this is – the first plot has a line that does not look ridiculously at odds with the data (though this is ϵ sigma away from being the best one, as mentioned). And yet that line describes a probability distribution with an *infinite* expected rate per year. Basically that every year you are gambling with some probability of all of humanity being killed, and the only reason your naive rate from recorded events so far doesn't reflect that is essentially due to it being too small a sample.

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Good Burning Plastic says:

September 1, 2016 at 6:19 am ~new~

It looks like you would get a better fit with an exponent close to 1 but with an [exponential cutoff](#).

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Jacob says:

September 1, 2016 at 9:23 am ~new~

I would encourage the mathematically inclined to read some of Talebs published papers on the subject, he dives into a lot of details about distributions. Some of my thoughts:

1) doubleunplussed noted that the fit had a slightly higher average than the raw data. This is actually a trait of power laws. Naive intent to underestimate the average.

2) Fat-tailed distributions are difficult to fit, because they are most important in the tails (where the outliers are), but that's also where amount of data. If we have some reason to believe the data is an exact power law that's not the biggest deal, but for terrorist attacks we just use that form because it's mathematically convenient. It's extremely possible that the "true" distribution is different.

Nate Silver talks about this in the "Signal and the Noise", regarding the distribution of earthquake. It's empirically observed the frequency power law...except maybe at high intensities, which is where we care the most. The difference between expecting a Richter 9.0 earthquake vs every 5000 years is a difference in building codes, but two grad students crunching the data slightly differently might get each

3) Keep in mind when looking at power laws on log scales, small visual changes can mean dramatic changes in death tolls.

4) Regarding existence of the mean...yeah that's interesting. Financial modellers often use a gaussian distribution for price changes, but a Cauchy distribution is more appropriate. It looks similar near the center but has fat tails...and no mean. I don't know how to interpret that makes the Von Neumann–Morgenstern utility theorem hard to apply.

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haishan says:

September 1, 2016 at 11:23 am ~new~

Please don't try to derive parameters for a power law by [fitting a linear regression to log-log data](#).

Also, check other heavy-tailed distributions! Might a lognormal distribution be a better fit? (I'd do it myself but I'm supposed to be working

In any case, I agree with Chalid that fitting a model without some good reason to believe in that model will give us, at best, a very rough estimate of the probability of a large-scale attack.

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Douglas Knight says:

September 1, 2016 at 11:29 am ~new~

Jacob, are you endorsing Taleb over other technical papers on fat-tailed distributions?

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Decius says:

September 1, 2016 at 1:27 pm ~new~

You can't have an infinite tail on expected deaths because it's capped at human population.

What's scary is the non-negligible chance that there's a terrorist attack that kills everybody.

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Thomas Redding says:

September 2, 2016 at 12:42 pm ~new~

Just want to say, this is why I love SSC! Thanks for the analysis!

[Hide ↑](#)



Anthony says:

September 3, 2016 at 6:15 pm ~new~

So looking at your plot, if you started with data for 20 deaths or more, the exponent would be higher, but so would the intercept. I'd think that terrorist attacks with low numbers of casualties might be under-reported, as many might be (innocently) considered "ordinary" crime that is easier to cover up by authorities who don't want to report a terrorism problem.

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Murphy says:

September 6, 2016 at 7:13 am ~new~

@Anthony

I'm not sure the bias would be in that direction:

When many countries have special legal powers for terrorism cases it can be tempting for police to call every damned thing terrorism.

People heckling politicians and people having anti-war marches have had anti-terrorism laws thrown at them:

<http://www.telegraph.co.uk/comment/personal-view/3620110/The-police-must-end-their-abuse-of-anti-terror-legislation.html>

Also let's not forget those same powers being used to remind journalists that their family are fair game to be targeted if they get too uppity.

<https://yougov.co.uk/news/2013/08/21/terrorism-laws-are-they-being-abused/>

In a world where councils are willing to pursue littering, dog shit and people smoking in non-smoking areas under anti-terrorism legislation, the **reporting** of terrorist attacks seems unlikely to be any kind of likely problem.

http://www.huffingtonpost.co.uk/2012/08/21/local-councils-abusing-anti-terrorism-powers_n_1819715.html

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Titanium Dragon says:

September 16, 2016 at 2:02 am ~new~

To be fair to the infinite deaths possibility, we can't actually rule it out. It is consistent with the Fermi paradox, after all.

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Chalid says:

September 1, 2016 at 6:26 am ~new~

While this sort of thing is interesting, I don't think there's much reason to trust the distribution "out of sample" on very large attacks.

Some processes tend to generate power-law distributions, and it's easy to see that in sciences and the like. And perhaps one could come up with a power-law within a certain class of terror attack. But the really big events aren't necessarily going to be generated by the same processes as the smaller ones.

I think the thing to do would be to look at the various mechanisms that generate power laws, see which ones might explain a power law in death attacks below 10^3 deaths, and from that think about whether it's logical to extrapolate to 10^7 deaths or not. (I rather doubt it.)

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SCAV says:

September 1, 2016 at 8:16 am ~new~

Is there a power-law distribution of radius-of-effect for things that a terrorist could plausibly use to kill people? There's obviously an upper radius, so the number of kills is then limited by population density of the target.

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Ilya Shpitser says:

September 1, 2016 at 11:05 am ~new~

Agree with this. You can fit lots of models to lots of data, that tells you very little, and "background knowledge => model fits well" is not much better than "model fits well => ex post facto explanation."

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vV_vv says:

September 1, 2016 at 12:13 pm ~new~

I think the thing to do would be to look at the various mechanisms that generate power laws, see which ones might explain a power law from terrorist attacks below 10^3 deaths, and from that think about whether it's logical to extrapolate to 10^7 deaths or not. (I rather

I assume that human population density already follows a power law because of reasons.

The more populated targets tend to be better defended, but if the terrorists manage to overwhelm the defenses, for instance by figuring out an attack tactic (e.g. flying an airliner into a skyscraper), they can usually kill some near-constant fraction of people at the target, yielding a power law effect.

An attack causing 10^7 deaths would most likely involve WMDs. This is less likely than an attack causing 10^3 deaths, but not 10,000 times less likely, hence a power law is plausible at that scale.

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K says:

September 1, 2016 at 2:36 am ~new~

A new 9/11 attack is very unlikely to get similar body counts, simply because of 9/11. Cockpit doors are now reinforced, and pilots are not going to open themselves to a terrorist threatens a flight attendant with nail scissors. At most, you will bring down a few planes, for a body count in the hundreds.

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Emma Casey says:

September 1, 2016 at 6:08 am ~new~

A new 9-11 attack wouldn't target a plane though. It would target a football stadium or a cruise ship or something else we're not planning for.

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Murphy says:

September 1, 2016 at 7:23 am ~new~

Blowing up a dam, releasing a biological weapon, some novel attack using microdrones, other.

Airplanes are extremely unlikely to be the vector of any notable new terrorist attacks.

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Furslid says:

September 1, 2016 at 1:19 pm ~new~

You're oversimplifying. The lesson of 9/11 is that there are small areas in our society where a minimal amount of force can have a disparate impact. These areas are difficult to anticipate and defend.

Terrorists could buy people with multiple drug resistant TB tickets to the super bowl, comicon, burning man, etc. Terrorists could attack dams. Terrorists could contaminate food warehouses. Terrorists could attack electrical infrastructure.

Modern society has a lot of vulnerabilities. Clever and evil people can attack them. This is the lesson.

Planes were vulnerable and we can be safe by protecting them isn't the lesson.

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Mary says:

September 1, 2016 at 7:20 pm ~new~

There is a limit in that terrorists, unlike the Joker, aren't doing it for giggles. They will be limited to things they can plausibly claim.

Mind you, that's not MUCH of a limit.

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Publius Varinius says:

September 2, 2016 at 8:08 am ~new~

@Mary: I don't think terrorists are limited at all to things they can claim. Sure, terrorists need to do *some* things they can plausibly claim, but they have no reason to refrain from doing unclaimable things to weaken their enemies.

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houseboatonstyx says:

September 2, 2016 at 4:33 pm ~new~

they have no reason to refrain from doing unclaimable things to weaken their enemies.

Remember the 60s-70s? When damage was done, half a dozen groups claimed credit. This tied up the US in trying to find which one or more suspects, the more Iraqs.

Plus which, claiming credit got attention to groups no one had heard of before or since.

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Publius Varinius says:

September 3, 2016 at 12:58 pm ~new~

The Brazilian terrorists arrested in July were apparently planning to [carry out a biochemical attack](#).

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Mary says:

September 4, 2016 at 1:10 am ~new~

"they have no reason to refrain from doing unclaimable things to weaken their enemies."

Sure they do. They use up resources that could be devoted to things that they could claim. They really, really, really want to claim credit otherwise most of the value of terrorism is lost.

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Publius Varinius says:

September 4, 2016 at 1:51 am ~new~

@Mary:

Russia will not build any airplanes. That would use up resources they could spend on tanks.

Terrorism is merely a tool that our enemies use against us, and not the terminal goal of said enemies.

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Good Burning Plastic says:

September 1, 2016 at 5:34 am ~new~

I would have thought a one in nine chance of a 9-11-esque attack per year sounded plausible.

Well, there's the fact that there was not a single such attack in the US in quite a long time before 2001. (But certain relevant things have changed mean

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Milo Minderbinder says:

September 1, 2016 at 9:59 am ~new~

Well, there was the first WTC attack in 1993, which only killed 6 and injured a thousand but could have brought down both towers if the terrorist van in a different spot.

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Scott Alexander says:

September 1, 2016 at 1:28 am ~new~

That doesn't seem like a good idea, because if there are a thousand different disasters that each happen once a millennium, you'll end up obsessing over the last example, you might think that giant earthquakes strike Haiti once every 4 years since it last happened six years ago, whereas in fact maybe that's a once a millen next year a giant tsunami will strike Brazil.

This is clearly silly in terms of natural disasters, but if it's across broader categories it might not be so obvious. If 9-11 is a once-in-a-millennium level of terrorist : we're spending the next twenty years or so worrying a lot about terrorism for no reason.

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wintermute says:

September 1, 2016 at 1:06 pm ~new~

It's even worse than this: using time-weighted averages completely strips you of the ability to consider certain long-term or skewed distribution events.

The Yellowstone supervolcano is an interesting example. On a time-weighted scale, it's not that big a deal, even if you adjust for the fact that humans die if it went off. But it's a rare, high-impact event, and even worse it's *cyclic*. So using time weighting, it will only be safe when you *are* worried about it, and not when you *aren't* worried about it.

And yes, obviously that's silly to do, but it means a time-weighting system hasn't actually given us any power to make a threat comparison here.

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Garrett says:

September 1, 2016 at 1:45 pm ~new~

This is one of the things that Bruce Schneier has been talking about and one of the reasons that I got into EMS. Trying to harden specific targets like airports is futile because attackers can simply pick another target like shopping malls. Instead, by beefing up our response capabilities to all events (such as EMS) we can better respond not only to any arbitrary terrorist attack, but natural disasters as well.

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Good Burning Plastic says:

September 3, 2016 at 4:15 am ~new~

If the *only* thing you know about Event A is that it happened once X days ago and never in the last (X-1) days, then the probability it will happen tomorrow is 1/X. If you have more information you can shift this probability up or down.

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27chaos says:

August 31, 2016 at 11:20 pm ~new~

I don't think people are making comparisons between terrorism and furniture with the expectation that we remove 100% of our attention from terrorism.

If you want to see how ineffective our current spending on terrorism is in more detailed arguments, I recommend you read some Bruce Schneier. Actually, now that I think about it, he is right up your alley anyway. He's a very interesting and smart technological libertarian blogger.

[Hide](#)



K says:

September 1, 2016 at 2:56 am ~new~

It is ineffective in deterring terrorism, but that's not its primary purpose. The purpose is to make people **feel** more secure (and although I tend to get nervous about terrorism – obviously something very dangerous must be likely to happen – it appears to work for some people), and to demonstrate that the government is doing **something**.

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MugaSofer says:

September 1, 2016 at 6:49 am ~new~

Don't arguments like the one Scott discusses in the beginning also serve this function?

[Hide ↑](#)



Subbak says:

September 1, 2016 at 7:07 am ~new~

I'd argue that on the contrary, it serves to make people feel more scared. Politicians, especially right-wing ones (but not only them, far from it), will offer more security, of crime, of immigrants...) to get people to vote for them. If everyone is constantly talking about terrorism, worried about terrorist attacks, and threatened by constant pointless security checks, that helps them get elected, and it helps them justify their more authoritarian measures (think Patriot Act and similar laws everywhere in the world).

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Dr Dealgood says:

August 31, 2016 at 11:22 pm ~new~

I'm not a statistician by any means, but I could have sworn that there were methods of statistical analysis specifically for analyzing large low-frequency events.

Ok, yeah according to [Professor Wikipedia](#) the term is "Rare Event Modelling" or REM. Typing that into google gives me a bunch of pages all pointing to or citing this paper: '[Regression in Rare Event Data](#)'.

So this is a sort of good news / bad news situation. The good news is that we can totally account for this sort of thing and provide meaningful comparisons between the like furniture accidents and terrorist strikes. The bad news is that nobody will because it requires a level of statistical numeracy beyond that of the average scientist, much less pundit.

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suntzuanime says:

September 1, 2016 at 12:08 am ~new~

For the cranky insults version instead of the mathy version you could try Nassim Nicholas Taleb.

[Hide ↑](#)



Lowell says:

August 31, 2016 at 11:28 pm ~new~

Fun related fact: On average over the last 22 years, land in Florida has earned about \$0.03 per acre per year in [cocaine falling from the sky](#).

[Hide](#)



Leonard says:

August 31, 2016 at 11:28 pm ~new~

Your points are interesting, but there's a much more fundamental difference between chairs and terrorism as sources of danger: we derive great utility from the existence of chairs, which more than balances out the negative utility of the very rare chair maiming or death. By contrast, we gain no positive utility from terrorism, or at best the positive utility we derive is dwarfed by all the dead. Or the positive utility is unseen. (I.e., if you buy the "blowback" theory then it's actually a price we are paying for driving the Soviets out of Afghanistan... worth it for sure!)

This is why nobody really cares whether you start at Sept 10 or 12: even 23 deaths per year from terrorists is too much.

It's also why nobody makes a big point of it that 32000 people per year die on the roads. Sure, we do try to minimize it; we care. But we all know that the ability to drive a car provides a massive utility to us, and we accept that there are risks.

[Hide](#)



Mengsk says:

September 1, 2016 at 12:50 am ~new~

This really isn't a fundamental difference here. The reason why we tolerate 32,000 road deaths is because we don't have good (i.e. inexpensive) ways to prevent those deaths. The low-hanging fruit has been picked in the area of road safety, which means that the only remaining way to save lives is "spend a lot of money for little more safety" or "invent new safety technology" or "change the way we use cars". Currently, none of these are feasible, so we tolerate the 32,000 road deaths.

A similar formulation works for terrorism. Although we don't benefit from terrorism, we may well decide that we're willing to tolerate 23 deaths a year from terrorism. We get to pass on the dis-utility associated with implementing a horrible, costly preventative measure (such as deporting all Muslims).

[Hide](#)



eh says:

September 1, 2016 at 2:13 am ~new~

Thought: by looking at https://en.m.wikipedia.org/wiki/List_of_countries_by_traffic-related_death_rate, and possibly comparing the government spending on road safety, you could approximate the market value of life in each country: very high in Finland, high in the US, vanishingly small in the DRC. With better data you could approximate a QALY, too.

Does that make effective altruism a kind of arbitrage?

[Hide](#)



K says:

September 1, 2016 at 3:05 am ~new~

Don't go overboard rationalizing this. Something like 20 000 people died from the tsunami that hit Fukushima, but instead of building a slightly taller fence around nuclear power – at tremendous cost financially (need to replace that power), politically (dependence on importing fossils), and globally (if you believe in global warming) nobody died from radiation, and a few simple modifications (putting generators on higher ground – or better, replacing old reactors by the coast with new places) could have prevented the meltdown.

Humans worry about spectacular events, human-created events, things we don't understand, things we can blame somebody for. Everybody forgets the thousands who die in tsunamis and earthquakes, but harps on about a handful that died in a plane crash, or the fact that somebody could have almost avoided the accident.

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Mengsk says:

September 1, 2016 at 10:04 am ~new~

I definitely think that people in general are more sensitive to the impact of rare, but spectacular events (like plane crashes). But I think there are many difficult-to-coordinate systemic interventions to address "chronic/mundane" hazards that go beyond people underestimating their impact. They tend to focus on problems where it's easy to pass the buck along to the next administration, or implementing a solution would require the coordination of significant changes or be vulnerable to free riders.

[Hide](#)



Squirrel of Doom says:

September 1, 2016 at 3:09 am ~new~

There isn't much positive utility from terrorism, but there *is* from the innocent bystanders that would be killed if we try to destroy it.

[Hide](#)



Murphy says:

September 1, 2016 at 7:33 am ~new~

Talking about the utility of terrorists is like talking about the utility of only the 50 chairs which failed lethally while ignoring the millions of other chairs. Obviously they have almost no value, people sat on them a few hundred times then they caused a death.

Obviously those 50 chairs are a menace and have almost no redeeming qualities.

To be more reasonable you have to talk about the utility of the population from which the terrorists come. The rest of the world's population provides massive utility. Saudi Arabia provides massive utility in the form of oil, the fact that 15 mostly Saudi people killed a few thousand Americans is dwarfed by the utility of all the thin with Saudi oil. Or at least it is if you're using the same scale where the road deaths are acceptable.

[Hide ↑](#)



Jacob says:

September 1, 2016 at 9:40 am ~new~

The war on terror has cost about \$1.5 trillion since 2001. That money could have saved many lives by providing food, medical care, legal aid, police, education, and average statistical life is valued around \$10 million, so \$1.5 trillion = 150,000 lives. Because of a loss of 3,000. Doesn't seem like a good deal.

[Hide ↑](#)



Anonymous says:

September 2, 2016 at 9:40 am ~new~

The Clean Water Act has cost about \$AWholeBunch trillion since 1972. That money could have saved many lies by ListOfPreferredPoliciesHere, and so on fire... and no deaths. Doesn't seem like a good deal.

I hope you can see why this is terrible reasoning... for things like environmental regulations and military activities.

[Hide ↑](#)



Saint Fiasco says:

September 2, 2016 at 10:02 am ~new~

ListOfPreferredPoliciesHere isn't arbitrary. Jacob seems to be arguing in favor of policies that save more lives per unit of money.

The only incorrect part is comparing the 150,000 hypothetical lives to 3,000 actual lives. It should be 150K hypotheticals compared to a hypothetical deaths in a world where the War on Terror did not happen.

[Hide ↑](#)



Murphy says:

September 2, 2016 at 11:50 am ~new~

Jacob was pointing to the typical value of a statistical life. In general if a government intervention that's supposed to be saving lives is saving lives for a higher cost it doesn't matter what it is or what the alternatives is, you're probably spending more than you should on it.

But there's deeper problems.

It's so fantastically easy to wave your hands and declare that had we not spent all the money then the Klingons/terrorists would have killed us all.

You need to deal with the problem of tiger repellent rocks.

How do you tell the difference between when you're paying for something that actually works or when you're paying for a rock which keeps tigers away?

If your country has spent 1.5 trillion on tiger repellent rocks ever since a load of people were killed by a truck full of escaped tigers you need a "the head of the department of tiger prevention who's best friend owns the company Tiger Repellent Pebble Co says that the rocks are our only way to keep tigers away and we should keep spending just as much on the rocks" to decide if it's really been worth it.

That same guy and his friends super double plus swearing that their opinion is that we shouldn't cut back on pebble acquisition doesn't cut it.

Pointing out that there have been almost no tiger attacks ever since every street was lined with the pebbles also doesn't cut it, especially if we're in a situation on every day prior to the day a truck full of tigers crashed.

If tigers might indeed be a threat, it might be important to stop more trucks full of tigers crashing but with so few tigers we need some concrete proof that pebbles really are what are keeping us safe if we're going to spend a non-trivial fraction of the entire world's wealth on them.

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K says:

September 3, 2016 at 3:00 am ~new~

If you can estimate the number of lives saved and the cost of the various programs, you can get a monetary quantification of the "spectacularity" of various programs.

If terrorism would result in 5,000 deaths since 2001, and spending \$1.5T reduced it to 2,000, this gives a spectacularity index of \$500 million per life. (If you want to calculate it, it's (1.5T / (5000 - 2000)) = \$500 million per life.)

right).

The estimates are probably too hard to make meaningful – e.g. the wars in Asia have many other causes and intents than preventing terror. But generally money we are willing to spend to prevent a death varies tremendously, and if it could be calculated more precisely, would give a good measure for how various causes of death are more serious than others.

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doubleunplussed says:

August 31, 2016 at 11:31 pm ~new~

Maybe we should fit a pink noise distribution to the past occurrences within a large block of time, and report the “average” as that of the distribution, rather than that of the way the reported average will take into account our best estimate of the size of the tail on the distribution, which is really the problem here.

Edit: I see Dr Dealgood beat me to it with a Wikipedia link to rare event modelling. I disagree that this is beyond people’s skill set. As a mathematically apt person it seems statistics presented to the public are incredibly primitive metrics of things even though the people producing them are definitely capable of more sophisticated analysis. I think how comprehensible the statistic is to the public, rather than what the researchers are capable of. Which is also misguided perhaps, the public also doesn’t know the difference between median and mean, so their understanding is something you didn’t have in any case. Might as well present the more sophisticated metric and call it an “average”, people will understand the difference anyhow.

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Autolykos says:

September 1, 2016 at 1:37 am ~new~

Totally agree on this one. Statistics should be done right, or not at all. And they would still provide value to people who don’t understand the method. If they are not semi-literate, they can look the method up on Wikipedia and check whether it was applied correctly (not that anyone except a few nerds would do such a thing). And if they are completely math-illiterate, they have to take it on faith anyway – but at least they get the right numbers.

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TrivialGravitas says:

September 1, 2016 at 2:05 am ~new~

I think you misunderstand the degree to which people are capable of being bad at statistics. It’s not that the general public is bad at stats, or that journalists are bad at stats, or that scientists are bad at stats.

Mathematicians are bad at stats in my experience. This doesn’t apply to statisticians of course, but to people in less practical fields of math. Stats aren’t hard or really intuitive either. Maybe those journalists can do the analysis, but they can’t explain it.

[Hide ↑](#)



Franz_Panzer says:

September 1, 2016 at 5:18 am ~new~

I am a mathematician .

I concur.

Statisticians know statistics. Other mathematicians are certainly capable of learning statistics, but few of them do.

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doubleunplussed says:

September 1, 2016 at 3:10 am ~new~

Anyone interested should see my comment above:

<http://slatestarcodex.com/2016/08/31/terrorists-vs-chairs-an-outlier-story/#comment-404498>

In which I’ve fitted a power law to the frequency vs severity curve of recorded terrorism attacks.

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Kevin S Van Horn says:

August 31, 2016 at 11:35 pm ~new~

Likewise, most governments don’t go full-blown Pol Pot, Mao Zedong, Lenin/Stalin, or Hitler, but every once in a while they do, and unbelievably large numbers of people die even in a democratic state (Weimar Republic).

If you haven’t read R. J. Rummel’s *Death By Government*, you should. In the 20th Century, governments killed 262 million people in mass murder and genocide. That’s an average of a million per year over the course of the century — another number that vastly exceeds the numbers killed by terrorism globally. That number **excludes** soldiers killed in war and noncombatants killed during attacks on military targets so long as the primary target was military, and actions taken against armed civilians during mob action or a riot.

[Book on Amazon](#)

[Hide](#)



nm. k. m. says:

September 1, 2016 at 4:30 am ~new~

On the other hand, for most of its lifetime, Weimar government was on the brink of becoming *failed* democracy, and in 15 years, it failed, to the surprise of very fe

The argument that posits that "governments go full-blown " ignores most of the reality of how genocidal tyrannical governments actually rise into power. Usually, ' maybe violent) *overthrow* of the previous government.

[Hide](#) ↑



Tatu Ahponen says:

September 1, 2016 at 9:04 am ~new~

Rummel's methodology is incredibly flawed and his numbers are wildly inflated compared to all serious studies on the individual genocides and other mass killings instance, that number, 262 million? It used to be 174 million... and a big part of the reason for the change then Rudy just went "Whoops, I forgot to include the de colonialism in my original analysis, I'll add in 50 million extra deaths due to that" – apparently just pulling that number out of thin air.

<http://www.crappytown.com/2011/12/why-rj-rummel-shouldnt-be-taken.html>

[Hide](#) ↑



Kevin S. Van Horn says:

September 1, 2016 at 2:43 pm ~new~

The fact that Rummel did not *originally* include deaths due to colonialism is not an argument against including them. Are you saying that he is not allowe oversights? What is your *specific* argument against including the deaths European colonization of Africa caused?

Even if Rummel overcounted by a factor of 2, the death toll is enormous — still *orders of magnitude* greater than the global death toll from terrorism.

[Hide](#) ↑



Fahundo says:

September 1, 2016 at 2:48 pm ~new~

I think Tatu's complaint was more that the 50 million number seemed to be something like a guess.

[Hide](#) ↑



David Friedman says:

September 1, 2016 at 3:24 pm ~new~

The large increase in his total that I remember was due to his conclusion that the famine during the Great Leap Forward was democide not acci his reason for changing his mind on that in some detail.

[Hide](#) ↑



Tatu Ahponen says:

September 1, 2016 at 4:12 pm ~new~

Not only that the number was a guess, but the whole "I just forgot about colonialism!" thing talks about how arbitrary his method is.

[Hide](#) ↑



David Friedman says:

September 2, 2016 at 1:35 am ~new~

Could you quote Rummel saying that his number was a guess?

[Hide](#) ↑



Tatu Ahponen says:

September 2, 2016 at 6:37 am ~new~

<https://www.hawaii.edu/powerkills/COMM.7.1.03.HTM>

"As a result of this research, I'm willing to estimate that over all of colonized Africa and Asia 1900 to independence, the democide was million."

His research here seems to consist of looking at some evaluations of Congo genocide and then, indeed, making an estimation – also ki

This is not by far the only problem with Rummel's numbers, as the link I posted also notes.

[Hide](#) ↑



Cerebral Paul Z. says:

September 1, 2016 at 11:37 am ~new~

I'm planning to get a copy just so I can tell the magnificent bastard I read his book.

[Hide ↑](#)



Troutwaxer says:

September 7, 2016 at 12:00 am ~new~

Nice. Very nice.

[Hide ↑](#)



Cypher says:

September 2, 2016 at 9:00 pm ~new~

That does lump together deaths caused by different forms of government with different ideologies, which is like lumping together all deaths caused by electrical p

I certainly do think that it's justified to demand far higher standards of evidence from Communists and Fascists (literal) for roughly this reason, however.

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Simon says:

September 4, 2016 at 1:44 pm ~new~

And what figures does he use to quantify lives *saved* due to government activity? It's going to be quite a large number I suspect.

[Hide ↑](#)



David Friedman says:

September 4, 2016 at 2:20 pm ~new~

Much harder to measure, since it requires you to know what would have happened without that activity.

Rummel isn't looking at arguments about excess mortality due to regulation and the like. He is counting people actually shot, deliberately starved to death where it is clear that they died because of deliberate state action.

[Hide ↑](#)



cassander says:

September 4, 2016 at 11:35 pm ~new~

Rummel's numbers run a lot higher than most other estimates. He assigns Stalin a body count nearly double that of Conquest, for example.

[Hide ↑](#)



Scott Alexander says:

August 31, 2016 at 11:50 pm ~new~

Right, but then when you find that it doesn't (eg terrorism, flu) what do you do?

[Hide](#)



Mengsk says:

September 1, 2016 at 12:13 am ~new~

It seems to be that a lot of the confusion here is caused by the fact that very unlike events are being grouped together under the umbrella label of "terrorism". Although the Bernardino shootings, 9/11, and a hypothetical nuclear attack on Istanbul would all be connected by a common affiliation of radical Jihad, the preventative measures you'd take are radically different.

I suppose the heuristic would be "When calibrating our response to different hazards, we should compare the death rates of hazards where the preventative measures are cheap to expensive".

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Anon says:

September 1, 2016 at 11:58 am ~new~

If you're not squeamish about trampling human rights there is a single and obvious preventative measure for all three of those events.

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fubarobfusco says:

September 1, 2016 at 5:56 pm ~new~

"Human rights" includes "right to life", so there's certainly a trivial one.

[Hide ↑](#)



tmk says:

September 2, 2016 at 5:28 am ~new~

Kill all humans?

[Hide ↑](#)



Jill says:

September 1, 2016 at 12:32 am ~new~

I agree with Thomas Redding here.

"To me, the big question concerning terrorism isn't so much how likely I am to die in an attack, but how effectively we can reduce that probability. This is a difficult question the least!"

What can we do about it, is the question. And is what we are doing about it now helping, hurting or making no difference whatsoever?

27chaos mentioned this writer, Bruce Schneier

Billions Wasted on Anti-Terrorism Security

https://www.schneier.com/blog/archives/2005/06/billions_wasted_1.html

Good Article on Airport Security

https://www.schneier.com/blog/archives/2016/07/good_article_on_2.html

Billions Wasted on Anti-Terrorism Security

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Alex Zavoluk says:

September 1, 2016 at 12:55 am ~new~

Don't forget the question of "what can we do about it, and how much does it affect the number of deaths"? Furniture deaths may be caused by simple stupidity on behalf of seems expensive to reduce (massive campaigns about the danger of standing on chairs?)

Terrorism is also expensive to fight, but terrorists may respond directly to what we do, in the sense that if we do nothing, terrorism will keep ratcheting up.

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Fahundo says:

September 1, 2016 at 10:40 am ~new~

but terrorists may respond directly to what we do

Now I'm reminded of a Key & Peele sketch about a group of terrorists brainstorming ways to attack the USA , and at every turn they're exasperated by the fact they anticipated their next move. First they give up on a plan which would require a 5-inch blade, because 4-inches isn't enough to hurt anyone, then they lament how 3.5-oz of liquid onto a plane, because 3.5-oz is the magic amount of liquid which makes it possible to unleash untold destruction. Then a terrorist comes up with explosives that look like toothpaste tubes, but it won't work if he's only allowed to bring travel size toothpaste.

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Alex Zavoluk says:

September 1, 2016 at 10:55 am ~new~

I certainly don't mean that everything we do is effective, but rather that if we had done nothing at all in response to 9/11 there would have been more terrorists would have been emboldened by our inaction.

[Hide ↑](#)



Saint Fiasco says:

September 1, 2016 at 1:21 pm ~new~

Does that happen? Terrorists escalating because their enemies give them the silent treatment?

[Hide ↑](#)



Edward Scizorhands says:

September 1, 2016 at 1:48 pm ~new~

If absolutely nothing was done in response to 9/11, I'm sure terrorists would have started doing it weekly.

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ThirteenthLetter says:

September 1, 2016 at 4:18 pm ~new~

Ask the Israelis; there's a strong argument that they've gone through exactly that scenario multiple times. Ignore the attacks, the attacks, things get quiet for a while.

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Alex Zavoluk says:

September 1, 2016 at 6:09 pm ~new~

Are there examples of functional states not responding at all to terrorism?

[Hide ↑](#)



albatross says:

September 1, 2016 at 3:33 pm ~new~

How would we tell if our fight against terrorism so far has made the expected impact of terrorist attacks on us larger or smaller? I rather suspect that our military made things worse overall, but I don't know that for sure.

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Bram Cohen says:

September 1, 2016 at 1:12 am ~new~

A much less silly comparison is the one about deaths caused by forms of power. The overwhelming majority of all *immediate* deaths caused by power were from the failure of the Three Mile Island Dam, which killed 171,000 people in 1975. Without that one accident hydro looks very safe. With it it looks fairly mediocre.

The 9/11 attacks were hardly singular unexpected events. There was an earlier attack when I went to high school two blocks away which took out the basement of one of the most uniquely vulnerable and attractive targets for terrorist attack, and the lessons which should be drawn from them are about predicting predictable events rather than not predictable events.

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Scott Alexander says:

September 1, 2016 at 1:23 am ~new~

Yes, this seems like the strongest argument against (non-thorium) nuclear power to me.

[Hide ↑](#)



Douglas Knight says:

September 1, 2016 at 1:52 am ~new~

Similarly, the Titanic is the strongest argument against ice cubes in drinks.

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TrivialGravitas says:

September 1, 2016 at 2:51 am ~new~

What are you possibly imagining nuclear could do that would be that bad?

Chernobyl would have to happen 10 times a year to do as much damage as fossil fuels (mainly coal) do in the US when everything goes right. We would need 10 Chernobyls to meet the worst single chemical disaster (the Bhopal fertilizer plant) and 285 to meet the above mentioned dam collapse.

And that's based on plant designs that were pants on head retarded (no system for containment if something went wrong) run by bureaucrats who would be incompetent if they worked at the FDA. It can't happen in a western plant *even if terrorists successfully attack it*, because even a damaged containment structure would block the worst of it (demonstrated by Fukushima, which isn't expected to kill anybody at all who wasn't actually inside the plant). But I'll sport you the numbers, because why not, it's not actually as bad as not taking the risk at all.

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Andrew Clough says:

September 1, 2016 at 8:53 am ~new~

Well, the Fukushima evacuation did kill 45 people though through exhaustion, disruption of medical care, etc. And the number of expected cancer deaths is a matter of dispute. Still, even a plant that Fukushima that exploded isn't that much above a median world coal plant in terms of deaths per megawatt generated.

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Gbdub says:

September 1, 2016 at 10:14 am ~new~

Can't find the article at the moment, but I remember reading that the Fukushima evacuation demonstrably killed more people than statistically expected to. (Then again I think that only accounted for the radiation that was actually released, at the time there was an unknown risk of a larger more dangerous release of radiation)

[Hide ↑](#)



Douglas Knight says:

September 1, 2016 at 11:04 am ~new~

Fukushima may have only killed 45 Japanese, but it killed 100x as many Germans.

[Hide ↑](#)



onyomi says:

September 2, 2016 at 1:09 pm ~new~

There's also the issue of rendering parts of a country without a lot of habitable land uninhabitable (or habitable*) for who knows how long.

*But I wouldn't want to live there because I'd worry, rightly or wrongly, that I'm subtly increasing my cancer risk. Then again, lots of people live in Beijing despite the coal mine quality air.

[Hide ↑](#)



wintermute says:

September 1, 2016 at 1:12 pm ~new~

Bear in mind that *after* the chain of bad luck at Chernobyl, we actually got off pretty lightly. If the (risky, suicidal) effort to open the drainage valves at Chernobyl itself might have been 10x or 100x worse.

Of course, even spotting *those* numbers nuclear power looks pretty good. Chernobyl-bad disasters are substantially less likely than they used to be. A 100x catastrophe would only have matched a decade of coal deaths.

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Diadem says:

September 1, 2016 at 3:43 pm ~new~

The "Chernobyl was badly designed" argument I think is a very weak one. Chernobyl was designed to be extra safe. The designers contained fatality by design, so that our new 'safe' designs don't contain fatal flaws?

I mean, sure, if no one makes any mistakes, then no very serious disasters are going to happen. But the worst case scenario is always a scenario that does screw up, horribly.

And Chernobyl wasn't a worst case scenario either. It wasn't a full meltdown. They came close to one, but they managed to avoid that. The disaster would have been far worse if it had been a full meltdown.

That all being said: In a comparison between nuclear and coal or oil, nuclear wins by a huge margin. Even if our modern designs are far worse than the average nuclear disaster is far worse than disasters so far have been.

We need nuclear power. Solar and other green sources simply won't cut it.

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John Schilling says:

September 1, 2016 at 4:07 pm ~new~

Chernobyl was designed to be extra safe.

A nuclear reactor designed to be extra *safe*, would have complete primary and secondary containment structures. The RBMK-1000 has incomplete primary containment. It also has a core made of ~~coal~~ graphite, which is about as "safe" as it sounds for a thing that is supposed to never burn.

Chernobyl was designed to be *infallible*. That never works. Things that are designed to be *safe*, should be designed to fail rarely but must tolerate failure. Neither Chernobyl nor any other RBMK-1000 nuclear reactor was designed to be "extra safe".

[Hide ↑](#)



bean says:

September 1, 2016 at 4:16 pm ~new~

Chernobyl was designed to be extra safe.

What are you talking about? I'm not suggesting that the designers set about with 'lack of safety' as a goal, but 'designed to be extra safe' was a really special consideration during the design process. It wasn't. Online refueling for plutonium production was. This led to positive temperature and void reactivity coefficients, which would be unacceptable in the west, at least as implemented. (Yes, the CANDU has a positive void coefficient, but it's much smaller and the reactor doesn't run as hot.)

[Hide ↑](#)



Mary says:

September 1, 2016 at 7:26 pm ~new~

If you design things to be correct all the time and completely neglect robustness (coping when things go wrong), you will discover that knows a lot more different times than you thought it did.

[Hide ↑](#)



A Definite Beta Guy says:

September 4, 2016 at 8:26 am ~new~

If you design things to be correct all the time and completely neglect robustness (coping when things go wrong), you will discover the universe knows a lot more different times than you thought it did.

I think this is true, but I can also see why people would want to wash their hands of the whole deal.

Maybe there's always some Final Destination-esque danger lurking in the background, which breaks through all your design systems a million people.

Then you're always patching the last Final Destination disaster, the experts tell you "we're finally safe," only for another crazy sequence years.

[Hide ↑](#)



Bram Cohen says:

September 1, 2016 at 7:10 pm ~new~

It's a misconception that a malfunctioning nuclear power plant could produce a nuclear explosion. What it can possibly do is irradiate the immediate vicinity of radioactive isotopes into the environment, most problematically Iodine-131. While that could be very bad, is several orders of magnitude less dangerous than people assume. Also while liquid fluoride thorium reactors have a number of very deep inherent safety features, and are a design I advocate for, all models are much better than the older ones. A happenstance benefit of thorium reactors is that they hold onto Iodine well instead of it escaping into the atmosphere. A nice extra safety mechanism on top of the more inherent ones.

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wintermute says:

September 1, 2016 at 1:18 pm ~new~

This does raise the question of self-disrupting probabilities.

There's no dam in the US that could reproduce the (direct) Banqiao death toll – I don't think even catastrophic failure of the Hoover would approach that. And part of what people have learned not to build dams such that catastrophic failure would kill huge numbers of people.

Pointing to the previous WTC attack feels a bit fuzzier – it was the same target, but the security measures to prevent each incident don't overlap. Worse, terrorism because it comes with an opposing player. Attempts to learn from past instances have to contend with attackers trying to invalidate those lessons. So there's some "all we can expect is that we won't expect the next attack".

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Bram Cohen says:

September 1, 2016 at 6:56 pm ~new~

I'm not saying that there aren't good engineering countermeasures for both dams and buildings! Buildings in particular can (and now are) made with the supports encased in concrete, so the thermal insulation is much harder to remove and they can survive an airplane flying into them (other than the floor taken out directly, of course).

[Hide ↑](#)



CatCube says:

September 1, 2016 at 8:36 pm ~new~

Encasing structural steel members in concrete for fire protection is something that *used* to be done in the 30s (the Empire State Building, for example, is generally done now. If you're going to add that much dead weight, easier to just go ahead and design the structure as reinforced concrete.

And "taking out a floor or two" is a major contributor to the collapse of the WTC—the floor diaphragm was bracing the exterior columns to reduce their length and prevent buckling.

[Hide ↑](#)



Bram Cohen says:

September 2, 2016 at 3:06 am ~new~

Reinforced concrete is what I meant. The world trade center in Beijing, for one, is built with concrete, as a direct result of worries about attacks, and I believe that's increasingly the trend these days.

[Hide ↑](#)



Titanium Dragon says:

September 16, 2016 at 2:10 am ~new~

TBH, I'm skeptical that any tall building like that can be made to survive 9/11. The problem is that the uncontrolled fires above the height of the probable loss of water pressure in the sprinkler system means that most likely you're going to end up with the building on uncontrollable fire for which combined with the structural damage is going to probably trigger progressive collapse of the structure sooner or later.

There was enough time on 9/11 to evacuate the buildings; making it so that the building collapsed after 10 hours instead wouldn't have made a difference.

[Hide ↑](#)



albatross says:

September 1, 2016 at 3:43 pm ~new~

Is there some reason the WTC was uniquely vulnerable to terrorist attack, relative to other large buildings?

[Hide ↑](#)



Alex Zavoluk says:

September 1, 2016 at 6:33 pm ~new~

Possible reasons Bram could be referring to:

It was a private civilian complex, not a military base or government building, which would likely have more security.

It had lots of people and practical value, but was also heavily symbolic (ie not a monument and not just any random office building).

It was very important for the economy.

It was very difficult to get emergency responders high enough up on the building.

[Hide ↑](#)



Bram Cohen says:

September 1, 2016 at 6:54 pm ~new~

As another commenter said it's extremely large, expensive, and symbolic. But it also had the problem that heat insulation of the structural supports was on thermal insulation. Since then gigantic buildings have gone back to being built with concrete and rebar and have been able to survive an airplane full of fuel flying into them as one of their core design criteria.

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Titanium Dragon says:

September 16, 2016 at 2:05 am ~new~

You're forgetting the Oklahoma City Bombing, which killed well over 100 people. Different group, sure, but we shouldn't forget that 9/11 wasn't even the only major attack within that decade time span.

[Hide ↑](#)



Markus Ramikin says:

September 1, 2016 at 1:55 am ~new~

For a problem in which outliers is the only thing that matters, I'd take the last two major outliers, and count from the day after the earlier one, to the day of the latest one. From last outlier to now. Wouldn't this be a fair, non-maximised way to measure the "average" impact of the last outlier? Extend to several to get a less random "average"

[Hide](#)



Incurian says:

September 1, 2016 at 2:06 am ~new~

After reading the previous post, and re-reading "All Debates are Bravery Debates," I started to think about how a lot of disagreement boils down to whether you're concerned about the average case or the extreme case. Often there are unstated assumptions that one is more important than the other, and I think figuring out the relative importance of the extreme cases would be beneficial to most arguments.

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Gbdub says:

September 1, 2016 at 10:34 am ~new~

That's a very interesting point, although I'm not really sure every case has someone arguing for the average side. More often we see people arguing about the extreme and the average gets ignored.

E.g. Gun control – the most common gun related deaths are people intentionally shooting themselves and criminals shooting other criminals in ones and twos, more handguns. But the hottest debate surrounds comparatively very rare mass shootings and the semiautomatic rifles often used in them.

E.g. Police violence – we're throwing riots over police shootings of black people as evidence of racism, but it looks like shootings are much less racially disproportionate than lower level police use of force.

Certainly these aren't original points on my part – there are certainly discussions around the "average" events in both examples, but that's not where most of the and forth is focused.

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Incurian says:

September 2, 2016 at 7:44 am ~new~

I think you are correct that these debates may often center around the extreme cases. What I meant to say was that regardless of what gets the most attention, positions held by each side in a debate might be broken down into average vs extreme. I also think in many cases it's not clear which is which, and it's not explicitly.

To continue with your gun control example, one side focuses on the extremes of mass shootings while the other side focuses on the average case of responsible gun owners.

Or perhaps another way of looking at it is that one side does not acknowledge (or is unaware) of the average case of responsible gun owners and believe that shootings ARE the average case. If that's so, then establishing which is average and which is extreme is probably very important to the debate – but because we have unstated assumptions about what is extreme and what is average they tend to talk past each other.

Or maybe they both may correctly identify the average and extreme cases, but don't acknowledge the relative significance they assign to each. "The small tragedies are outweighed by the many benefits of an armed citizenry" versus "these egregious tragedies are too high a price to pay for the supposed benefits of citizenry." Often both sides refuse to concede the other side has any kind of point, when really they ought to broadly agree on the facts (where they are not disagreeing about the relative weighting of the externalities).

To put it another way, these kinds of debates ought to focus on the frequency and magnitude of X, and a cost/benefit analysis of solutions for X. Probably what doesn't is that both sides suspect the other side is arguing in bad faith and that any concession will doom them.

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Kevin S. Van Horn says:

September 6, 2016 at 3:14 pm ~new~

"we're throwing riots over police shootings of black people as evidence of racism, but it looks like shootings are much less racially disproportionate than the police use of force."

Race is a red herring here. Even if police shootings had no racial bias at all, we would still have a huge problem — American police kill far more people, on a per capita basis, than police in any other developed country. I don't remember the exact numbers, but it wasn't 20% more, or 60% more, it was several times, many times more than what is typical for European countries.

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John Schilling says:

September 7, 2016 at 9:48 am ~new~

American criminals shoot policemen more often than in any other developed country as well – and it's not because they are responding to unprofessional policemen.

As has been noted here repeatedly in the past, the United States is home to several extremely violent demographic groups that are largely absent in other "developed nations". In at least one case because friendly, peace-loving Europeans encouraged them to go settle in America, or Else. One can call it a bug or a feature, but it isn't likely to change any time soon. This is where the violent-tempered people of the developed world wind up living.

If you see it as a problem, your choices are to go somewhere else, to convince tens of millions of violent people embedded in violent subculture to change, or find a way to turn those cultures peaceful. And we've had lots of smart people trying that third option over the past century or two; so far it has failed.

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K says:

September 1, 2016 at 2:50 am ~new~

I think in general, the cognitive bias here is worrying too much about very rare events with spectacular consequences.

One case in point is nuclear power. It seems evident to me (data/elaboration available on request) that, assuming IPCC is roughly correct, the only way to avert the looming large scale global deployment of nuclear. Yet, few seem willing to go down that road. If you look at the history of nuclear power, there has been exactly one accident where people died from radiation – in contrast to e.g. medical use of radiation, where accidents have killed a number of people, and nobody cares much. The question is how much statistical

give Chernobyl – and in general, we can't really estimate probabilities from a single event like that. You could of course look at current reactor designs and operating procedures, but they are much, much safer, but most people aren't going to bother. Instead they will attempt to avert climate change by growing their own tomatoes in their window sill, or ask somebody else when things go to hell.

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Chris H says:

September 1, 2016 at 8:38 am ~new~

Since you're offering, I at least would like elaboration on the necessity of nuclear power to contain climate change. What target are you going for and what assumptions are you making? Thanks!

[Hide](#) ↑



Edward Scizorhands says:

September 1, 2016 at 12:18 pm ~new~

1. People will not accept significant impacts on their lifestyles. You can say that they should or they will have to, but they won't do it unless you force them.
2. It works. There's not "studies show that..." or "scientists predict that..." or "experts agree..." Nuclear has been demonstrated to work, and can produce energy. Even if it's just baseline power, that gets you well over 50%.

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Callum G says:

September 1, 2016 at 9:10 am ~new~

Nuclear would be a great option for reducing the GHG from power generation, especially because it would be less disruptive to the way we live compared to other options. We would get rid of coal which WHO reckons kills up to a million people each year(!). I think the explicit association with nuclear with weapons paired with the Fukushima explosion causes a lot of the paranoia.

There are a few drawbacks to nuclear though. To start with we might now have enough economically recoverable reserves to cover the change. With current technology the International Energy Association estimates that we have about [200 years worth](#) of resources at current consumption. Worldwide nuclear adoption would have to increase by a factor of 10 to cover fossil fuels so the reserves mightn't be enough. There's also issues with the long time it takes for a new plant to move through planning to operation as well as the [cost of decommissioning plants](#). Gen IV reactors are more likely to be the 'saviour' if humanity is to go down this route.

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Jiro says:

September 1, 2016 at 10:45 am ~new~

"Reserves" are a stupid way of measuring how much fuel we have. The trick is that it usually means "how many sources do we know about", but people say "reserves" when the existing sources seem like they'll last a while. "Reserves" are rarely an estimate of how much we actually have remaining in the ground. It's just estimates for sources that will be found when people start looking again.

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Douglas Knight says:

September 1, 2016 at 11:13 am ~new~

Callum said "resources," not "reserves." But the answer to that question is at least [billions of years](#).

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Callum G says:

September 1, 2016 at 9:57 pm ~new~

If all reactors are fast breeder reactors and if all uranium can be extracted from all seawater. At the moment seawater extraction is still very inefficient and experimental, and even if that changed I imagine accessing the seawater in the bottom of the Mariana Trench would prove difficult.

I'd like to see more breeder reactors but alongside renewable energies as they can be cheaper and more readily deployed. Either would require significant government intervention at this point.

[Hide](#) ↑



roystgnr says:

September 1, 2016 at 10:53 am ~new~

Is it safe to guess that WHO is including poisoning from home coal stove fumes among those deaths? If so then *any* centralized power supply would fix that, not just nuclear.

Hmm... looks like indoor air pollution deaths indeed make up [more than half of the WHO estimate](#), but not the ~90% I was expecting. I still suspect that reducing coal use by even centralized coal power plants (with more complete burning, scrubbers, etc) would make a huge dent in the remainder. Nuclear would be a good option but might not be as feasible in the short term in areas which are still so poor that an indoor coal-burning stove is a popular idea.

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gbdub says:

September 1, 2016 at 1:11 pm ~new~

Reserves would be higher if we go to breeder reactors that reprocess used fuel – the reasons we don't are mostly political rather than technical.

Reprocessing would also reduce decommissioning and waste management costs.

One of the biggest expenses is the assumption that we need to store waste in something that can reliably contain for like 10,000 years. Why? In a hundred years, almost certainly have a better way to contain or eliminate waste, or we'll be dead and won't care, so build a 100-year storage facility and monitor it for leaks.

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Callum G says:

September 1, 2016 at 10:05 pm ~new~

Interesting point with the storage, especially considering at the moment it's a massive cost with the likes of Yucca Mountain. A lot of infrastructure for nuclear (actually surrounding power plants for the matter) suffers from NIMBY and that's a great barrier to change. I'm not sure many people would want to secure nuclear storage in their town/county/state.

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cassander says:

September 5, 2016 at 2:12 pm ~new~

There's no reason you can't just warehouse high grade waste in very heavy storage vessels. In fact, that's what's [done currently](#) in the US.

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Maware says:

September 1, 2016 at 10:12 am ~new~

Uh, of course, there's really very few nuclear power stations at all. There's only 100 in the USA. The question is when you start increasing that number and rolling out on a large scale, and if we can maintain the same safety standards without the particular fear people have of nuclear energy. Especially considering the levels of corruption in some countries have, and the shoddiness of infrastructure, and the massive instability of elected government.

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Garrett says:

September 1, 2016 at 1:32 pm ~new~

There's been a lot of research and design work on nuclear power plants in the past 40 years or so, such as the [AP1000 reactor](#).

Thus the available safety standards for new power plants would increase in comparison to the older plants.

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Douglas Knight says:

September 1, 2016 at 11:07 am ~new~

exactly one accident where people have died from radiation

Where do you get your numbers? There were 3 separate incidents in Japan in the 90s where power plant workers died from radiation poisoning.

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bean says:

September 1, 2016 at 4:21 pm ~new~

Doing industry is inherently dangerous, and in the US at least, the nuclear industry is the most safety-conscious industry around, period. How many people died during that period? How many died at other power plants? How many died from falling off of roofs while installing solar panels?

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K says:

September 3, 2016 at 3:03 am ~new~

You're absolutely right – I just went over the list on Wikipedia of radiation accidents, and included only accidents with five or more fatalities. Of those, Chernobyl was the only power station accident, the rest are (mostly) medical, and (some) nuclear subs or weapons production. Sorry about the inaccuracy.

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Titanium Dragon says:

September 16, 2016 at 2:15 am ~new~

The problem is that we don't really want non-developed countries to have nuclear reactors, because that would allow them to build nuclear weapons. This is an environmental concern.

That said, the developed world universally going over to nuclear power would be a good thing.

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Albatross says:

September 1, 2016 at 3:22 am ~new~

For several reasons, I like both graphs and for these kinds of events I think you use the the day before and the day after the extreme example to understand the numbers.

The first graph, with 23 deaths a year gives us a good average. For example when more than fifty people died in Orlando it tells me that terrorism might be on the rise. And correctly pointed out, there is much more variability in the terrorism numbers and much more effort being spent on reducing terrorism compared to chair deaths.

This is where the second graph, with its 3,017 tells us that terrorism is fundamentally different than chair deaths. This tells me we probably never should have compared terrorism deaths in the first place because lots of people die from chairs every year but there are years with zero terror deaths on US soil. Similarly there are no recorded years with zero chair deaths.

So “look at chair deaths” would have lots of meaning when stacked against “deaths from cars backing up – around 200 a year, 17,000 injured.” But chair deaths versus terrorism is a fair comparison in that OSHA can’t get through the year with nobody dying from chairs, but they have mitigated it pretty well.

Thus the two graphs tell the story, just like the flu and earthquake two number sets tell a story. In fact, looking at both sets we can make a strong case for flu vaccines and resistant architecture. But what should the ratio of spending be? Comparing flu deaths to earthquake deaths gives us interesting numbers.

My point is this – saying there have been zero world wars in the last fifty years OR saying there have been two in the last hundred years are both a bit misleading. The proper point, I think, is to say it has been about 70 years since the last world war AND to say there have been two in the last hundred years. And it doesn’t make any sense to compare chair deaths. Instead we can just look at them in a vacuum – just like terrorism. Why? Well, if you compare world war deaths and flu deaths then it looks like flu deserves more attention. But the correct answer is that we don’t want a world war OR the flu and so how much we spend avoiding shouldn’t be determined by the comparison. Boosting GDP of GDP might not be cost effective, and flu budget sized military budgets might not prevent world war three. They are, like chairs and terrorism, apples and oranges.

Even comparing similar data sets like war deaths to dictator genocide is problematic. I mean at some point Ukraine was invaded because of a lack of military spending, but the problem in part due to excessive military spending. Both outcomes are undesirable. But then telling us that unchecked military power is bad, and having a military big enough to protect a country is good the stats don’t really tell us what those numbers should be. Just because the flu and malaria kill different numbers of people doesn’t mean we shouldn’t prevent them. Aside from our personal charitable donations, it simply isn’t necessary to rank these things... consider:

1. Chairs. 115 people. Despite several chairs per capita. OSHA seems an appropriate level cost benefit analysis when we consider other workplace hazards like farm equipment. We already have OSHA in place for the more dangerous events. So reducing chair deaths is really mostly sunk cost in general workplace safety.
2. Terrorism. 23/year, up to 3,017. Ok, maybe we shouldn’t go to war over that. What would be an appropriate response? 150,000 more diplomats? Hmm. Well, the diplomatic effort has more benefits than just terrorism – they also improve trade and help human rights. Worth it.
3. Earthquakes – worth building codes, especially when comparing cities hit with equal level quakes. The earthquakes didn’t kill most of those Haitians. Terrible building standards.
4. War. The UN stopped counting after 250,000 people were killed in Syria in 2010. After the Iraq War, the UN estimate of 30,000 was eventually tallied at somewhere near 1,000,000 deaths. Based on migration patterns and similar conflicts, I suspect there have been 3 million people killed in the Syria region, 7 million wounded and roughly 40 million refugees. I suspect the UN is between reasonable estimates and the UNs count ought to drive pursuit of better information. But when people wring their hands in ten years saying nobody knew about the situation in Syria, I would say the UN deliberately looked the other way. Invading Syria with four million troops sounds extreme and would cost a fortune. But it might save a million lives. Conflict results in hundreds of thousands of war dead.
5. The Flu. This one the cost benefit is very easy. Get a vaccine.
6. Genocide. See also Terrorism and War. Here we can see why it might be a good idea to build a coalition instead of having one nation build up to four million troops. This argument against having Iran, Turkey or the Kurds do all the fighting. One of those militaries getting sufficiently large to finish the job in Syria could result in problems for them later on.

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cassander says:

September 1, 2016 at 9:52 pm ~new~

>4. War. After the Iraq War, the UN estimate of 30,000 was eventually tallied at somewhere near 1,000,000 deaths

this [is incorrect](#). A few studies that did not tallie deaths, but made elaborate assumptions based on interviews got numbers that high. In terms of bodies found, that’s around a quarter million.

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anon says:

September 1, 2016 at 3:49 am ~new~

Maybe you’re worried about terrorists nuking London, but that’s not what the Washington Post is answering to. People are worried about being shot by a terrorist when they are at home.

Also, the fact that even including 9/11 makes deaths from terrorism *only* 30 times more abundant than deaths from furniture is still an argument in favor of the Washington

[Hide](#)



Macbi says:

September 1, 2016 at 4:07 am ~new~

One lesson to draw from this is that anti-terrorism efforts should focus on preventing the tail risks. Securing the cabin doors on aeroplanes was an excellent idea because it from crashing planes into buildings. But screening people's luggage only prevents them from destroying the plane itself. Clearly it's bad for a plane to be destroyed, but sin rarely worrying about it is like worrying about chairs.

(I'm talking from a western perspective here. Things are different if you live in Iraq or Nigeria.)

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Alphaceph says:

September 1, 2016 at 7:41 am ~new~

agreed.

At the moment I don't expect terrorists to be well-organised enough to do anything really dangerous, and our intelligence agencies have the advantage when tern communicate with each other, which correlates with the more high impact attempts.

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gbdub says:

September 1, 2016 at 1:15 pm ~new~

Then again, there have been at least a couple known attempts to bring down airliners (and probably a successful one in that plane full of Russian vacatio decade (e.g. the shoe bomber and underwear bomber).

If those are successful, they kill probably ~300 people each, and one or two of those working every year starts to make air travel look pretty scary.

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Alphaceph says:

September 1, 2016 at 4:54 pm ~new~

600 people per year is bad, but not that bad.

"Tail risks" IMO covers the really big stuff, such as terrorists getting something into the water supply.

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Tekhno says:

September 1, 2016 at 4:57 am ~new~

I'm not worried about terrorism itself much, so much as the reaction to it.

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Alphaceph says:

September 1, 2016 at 5:55 am ~new~

What is a reasonable estimate for the chance of an Islamic terror organisation pulling off > 10,000 deaths in the developed world over the next 10 years in a single inciden

It seems like it's rather low in the next 10 years. They're not competent enough?

If I bet against that at 20:1 against would anyone take the other side?

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Salem says:

September 1, 2016 at 7:01 am ~new~

20:1 has implied odds of 4.7%. That implies that we 'average' at least 47 deaths/year in Western countries from Islamic terrorist action on an unprecedented scal presumably far more, as 10k is a minimum not a cap.

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Alphaceph says:

September 1, 2016 at 7:30 am ~new~

> 10k is a minimum not a cap.

yeah, let's say I assign a 3% probability to 10,000-50,000 deaths, 1% to 50,000-100,000 and the remaining 1% trailing off with a fixed expectation per

until you hit 7 billion.

Still, will anyone take the other side on any of those? I'm trying to get a feeling for reasonable probability distributions.

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Mengsk says:

September 1, 2016 at 12:39 pm ~new~

We can probably make this a little more specific. The only way i can think of for a terrorist to kill more than 10,000 people at once is with a nuclear weapon. You could probably talk about the odds of either of these things happening and multiply by the likelihood of either of these things killing people

[Hide ↑](#)



Alphaceph says:

September 1, 2016 at 4:46 pm ~new~

- > The only way i can think of for a terrorist to kill more than 10,000 people at once is with a nuclear or biological weapon.
- An attack on a sports stadium with significant numbers of automatic small arms or explosives might achieve 10k dead
- bringing down several packed skyscrapers,
- chemical in the water supply (not biological – merely a chemical poison).
- mass drone attacks, e.g. to create a firestorm
- a mass attack with many terrorists with small arms on a particular city, such that the police are temporarily outnumbered
- infrastructure destruction that devastates the economy, e.g. taking out all the power stations in a country could easily lead to thousands of deaths

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throwaway says:

September 24, 2016 at 7:46 am ~new~

"mass drone attacks, e.g. to create a firestorm" – enough drones to cause firestorm?

<https://en.wikipedia.org/wiki/Firestorm#Firebombing>

"based on World War II experience with mass fires resulting from air raids on Germany and Japan, the minimum requirements for a firestorm are considered by some authorities to be the following: (1) at least 8 pounds of combustibles per square foot of fire area (40 kg per square meter), (2) at least half of the structures in the area on fire simultaneously, (3) a wind of less than 8 miles per hour at the time, and (4) a minimum fire area of about half a square mile."

40 kg per square meter is far too high to be doable with drones.

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Alphaceph says:

September 1, 2016 at 7:35 am ~new~

> That implies that we 'average' at least 47 deaths/year in Western countries from Islamic terrorist action on an unprecedented scale

9/11 already exceeds that. What my betting odds imply is that 9/11 involved unusually competent adversaries who were a bit of a one-off. ISIS has not been as effective in its attacks, despite the easy ride we have been giving them.

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Salem says:

September 2, 2016 at 10:30 am ~new~

But this is separate to 9/11 stuff, which "only" killed 3000. Your numbers suggest that *in addition* to the deaths we observe from terrorist attack there are another >50 deaths/year in Western countries from as-yet-unobserved very-high-scale terrorist action.

In other words, there is an invisible terrorist attack every year, as bad as the 2005 London Bombings, and maybe much worse.

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Alphaceph says:

September 3, 2016 at 7:47 am ~new~

I think the penalty term for a 10k death event every 100 years should be higher than a 100 death event every year actually. Look at 9 decision that followed.

Spectacle is definitely something terrorists should aim for, but its hard to pull off.

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Rob says:

September 1, 2016 at 7:02 am ~new~

This is why Taleb is always getting angry about people using stats like that – I think “the empiricism of idiots” is the term he uses.

He tries to expand it to say that violent death may not truly be declining through modern history because we’ve just shifted it to a couple of huge black swan risks of nucle

Regardless, if it was the black swans we were truly worried about, it would suggest that we should shift our focus of anti-terrorism spend. More on securing nuclear storage world, less on airport screening.

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Albatross says:

September 1, 2016 at 7:59 am ~new~

Makes sense. This is one reason I appreciate the Iran deal. The US supports a lot of horrible regimes like Turkey, Saudi Arabi and China. At least with the Iran dea establish an environment with some accountability in terms of nuclear security.

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ThirteenthLetter says:

September 1, 2016 at 4:58 pm ~new~

At least with the Iran deal we were able to establish an environment with some accountability in terms of nuclear security

What makes you believe there is any accountability here? If tomorrow Iran announced that due to American provocation they were tearing up the deal, c there would be any consequences?

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utilitarian troll says:

September 1, 2016 at 7:28 am ~new~

I’m in favor of rationalists promoting concern for terrorism because I expect a lot of measures that help guard against terrorist attacks also help guard against existential ri groups of malcontents. It’s easier to talk about terrorism than existential risk because it’s a concept the public is already familiar with. This strategy isn’t dishonest either–j “black swan terrorist attacks” in the form of terrorists e.g. engineering some kind of deadly virus and killing millions or billions. Yes, I do believe this concern plausibly justi surveillance state in the form of the sort of stuff Edward Snowden complained about.

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J says:

September 1, 2016 at 2:29 pm ~new~

Except that the measures we take often make risks worse rather than better. You mentioned bio attacks. The anthrax attacks came from a government bio lab. WI [Built a lot more bio labs](#), which ended up [accidentally shipping live anthrax to dozens of places](#).

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utilitarian troll says:

September 2, 2016 at 7:20 am ~new~

It’s not clear to me the degree to which “things will be done incompetently and the situation will be left worse than it was to start with” is a valid fully ge counterargument against doing anything.

Note that we don’t always hear about foiled terrorist plots.

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B says:

September 1, 2016 at 8:53 am ~new~

Yeah, the nuke argument is the standard answer to the “terrorism is a trivial problem” argument, remember Sam Harris making it in the Joe Rogan podcast at some point (that while it is a problem worth spending time into, a lot of people blow it at least an order of magnitude out of proportion).

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Link Dumper says:

September 1, 2016 at 9:08 am ~new~

Your flu death numbers are really unfair. Looking at a within-country plot of flu deaths you see 1918 was only 4-6x as bad as usual.

[Info on contagious disease death](#)

[Flu deaths in the US](#)

Worldwide there are 250k to 500k deaths per year from epidemics, so 1 mil/year from rare events isn't as big a change. Admittedly, most flu deaths in developed countries who are pretty fragile to start, so maybe epidemics are more worrying if they kill young people.

It would be cool to see analysis on the distribution of earthquake deaths. Haiti's the biggest, but still typical of big earthquakes. Big earthquakes, plus their resulting tsunam most of the deaths. Doubleunplussed, want to try?

[Worst earthquakes](#)

Nb, poor countries suffer more from disasters

[Poverty and natural disaster death](#)

A somewhat interesting post overall, and I agree that meteor strikes, financial collapse, AI, and nuclear terrorism are still potential problems.

[Hide](#)



Murphy says:

September 1, 2016 at 9:24 am ~new~

I'd be a bit cautious about the GA link. I've found a fair few of their articles to be simply wrong. I'm not saying those graphs are incorrect... just to double check th basing statements off them.

While some of GlobalResearch's articles discuss legitimate humanitarian concerns, its view of science, economics, and geopolitics is conspiracist. The site has long magnet: If you disagree with "Western" sources on 9/11, or HAARP, or vaccines, or H1N1, or climate change, or anything published by the "mainstream" media, tl GlobalResearch is guaranteed to have a page you will love.

[Hide](#) ↑



Link Dumper says:

September 1, 2016 at 9:46 am ~new~

Fine, how about [this paper](#)? It shows that the 1918 pandemic was about 10x as bad as 1930, when reporting became common.

[Hide](#) ↑



Murphy says:

September 1, 2016 at 10:08 am ~new~

Cheers!

[Hide](#) ↑



Wency says:

September 1, 2016 at 9:58 am ~new~

We are doing the vast majority of what we can to manage the risk of chair death. Every time your parent or teacher told you, "Don't lean back in the chair, you could crack a measure was taken to reduce chair death. Also, every time someone fell off a chair due to their own stupidity but didn't die, a lesson was learned and a possible future cf prevented. People are constantly doing things every moment of every day to reduce the risk of death by furniture. Managing chair death is largely a personal matter. As I v sitting properly in a comfortable, well-built chair.

If chair death is something you worry about, you can take even more measures to minimize your personal risk while still living a mostly normal life. Get a standing desk. Si when you eat dinner. Chairs, being inanimate objects, do not actively try to circumvent the measures we take to reduce chair death.

Terrorists, on the other hand, are a community problem — there's not much we can do to manage terrorism as individuals without, say, avoiding life in a major city, which i social and career disruption for us. Also, terrorists actively work to circumvent the countermeasures we put in place, so there is an inevitable arms race of sorts, and there be an inclination to discuss how we manage that arms race.

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Rosemary7391 says:

September 1, 2016 at 1:14 pm ~new~

I think people do tend to worry more about things they can't control. As you say, chair death is trivially easy for me personally to reduce the risk of, mostly by one (eg putting the thing together properly rather than quickly, or repairing it when broken). How can I reduce my risk of falling subject to terrorism? Or my loved one very little. I can sneakily fix my friend's chair, I'm unlikely to convince him to go live in the middle of nowhere with me. (Incidentally, I wonder which of harm to se ones people fear most? If the latter, that's another reason people fear it more, even more out of their control).

As such, people are going to talk about terrorism more and want "society" to be actively doing something to reduce that risk. One time decisions (akin to fixing th when someone is constantly trying to break your chair.

[Hide](#) ↑



David Pinto says:

September 1, 2016 at 9:59 am ~new~

Thanks you for this article.

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CorporateLawyer says:

September 1, 2016 at 10:04 am ~new~

I've always thought the biggest difference between terrorism and natural disasters or flu or chairs is that terrorism is an indication people want to kill you! The "don't worry because its statistically unlikely you'll die" is basically saying yes, people want to kill you, they just don't have the capability to do so. But how reassuring is that? If a guy in letters about how he is going to murder your family, do you feel okay because he's in prison and can't harm you? Or do you worry that maybe he will motivate someone else

It's the same reason why we worry about small geopolitical conflicts. If China sunk one submarine in the Pacific, we wouldn't discount that because only a few dozen people freak out because it would be an indication that even more conflicts is to come in the future .

I find it funny that Bryan Caplan, who is all about signaling in higher education, fails to miss the point with terrorism. Terrorism is a signal that people want to hurt you, and kill you if they had the chance. You need to take these threats more seriously than natural disasters because people's capabilities change. The U.S.'s could weaken, ISIS could Nothing is preordained

Wait sorry, one thing is preordained: people love to garner status by lecturing others how stupid they are to be focusing on terrorism instead of chair deaths, and how enlightened lecturer is to be moving beyond such simple human cognitive biases. That is preordained.

[Hide](#)



Desertopa says:

September 1, 2016 at 10:30 am ~new~

If a guy in prison writes letters about how he is going to murder your family, do you feel okay because he's in prison and can't harm you? Or do you worry that he motivate someone else to kill you?

I think that reasonably depends on the context. If the guy is, say, a mob boss, then of course you should be worried. But if the guy is an impulsive idiot, and is only about how he wants to kill you as a manifestation of his usual level of caution and forethought, then his being in jail is a perfectly adequate security mechanism and remain there a long time.

On a societal level, the prospect of China deciding on open conflict with us is scary. The prospect of a tiny cult with thirteen members and thirty grand in assets deciding conflict with us is not very scary. Spending lots of money to hedging against a conflict with China is fairly intelligent, spending lots of money hedging against a conflict with a tiny cult isn't.

Terrorist organizations fall somewhere in between (on an absolute, rather than log scale, certainly much closer to the tiny cult than to China.) Yes, it's true, their capabilities change. But their abilities are highly unlikely to change suddenly without us noticing, and money spent on security isn't the same as money spent trying to limit their growth (empirically money spent trying to limit their growth hasn't offered very good returns so far.) Besides, money spent on security is to a large extent predicated on a certain level of resources anyway. Investments in measures to prevent people, say, leaving bombs in crowded areas and detonating them, are not going to help an ICBM at us. If the people who you once worried about planting improvised explosives become capable of launching ICBMs, the money you spent securing your improvised explosives isn't an investment into the now-salient endeavor of preventing them from firing them at you.

[Hide ↑](#)



Jiro says:

September 1, 2016 at 10:51 am ~new~

on an absolute, rather than log scale, certainly much closer to the tiny cult than to China

How is using an absolute scale instead of a log scale a remotely sensible thing to do here? If you're using an absolute scale, terrorists could kill 49% of the people that could be killed in a war with China and they would still be closer to the tiny cult than to China.

[Hide ↑](#)



Desertopa says:

September 1, 2016 at 2:43 pm ~new~

Having less than half the resources at their disposal of China, an open conflict with them is probably going to result in a *lot less* than half the damage conflict with China. The severity of the conflict doesn't scale linearly with relative power.

[Hide ↑](#)



Liskantope says:

September 2, 2016 at 3:59 am ~new~

I think that reasonably depends on the context. If the guy is, say, a mob boss, then of course you should be worried. But if the guy is an impulsive idiot, a writing letters about how he wants to kill you as a manifestation of his usual level of caution and forethought, then his being in jail is a perfectly adequate mechanism and he's likely to remain there a long time.

Speaking as someone who was once in a very similar situation, I can say that this makes sense on an intuitive level to me. When I was a teenager, another person (who fit the description of “compulsive idiot” much better than “mob boss”) was in prison for a while and wrote a description of having killed me in which he remember feeling not terribly worried at the time. On the other hand, it made my parents very stressed, but I think that was mainly due to their fears of (some 15 years later, that guy’s still in prison but I’m long gone from where we grew up).

From a rationalist point of view, situations like this aren’t very dangerous, even while it can be extremely unsettling to know that someone is actively imagining a world where they are the victim. But I think the main reason why terrorism garners what seems like a disproportionate amount of concern is simply that a major terrorist attack is upsetting in a way: there is something much scarier about the idea of 100 people being killed by one action of a smaller group with no way of knowing how to avoid the possibility of 100 people being killed in separate car accidents within a wider area on a particular day.

[Hide ↑](#)



Edward Scizorhands says:

September 1, 2016 at 12:25 pm ~new~

Agency is really important.

People get much more upset if they found out I took \$20 from their wallet than if they found out they dropped \$20 and it blew away.

[Hide ↑](#)



ThirteenthLetter says:

September 1, 2016 at 5:14 pm ~new~

Exactly right. Who was it who said that even a dog knows the difference between being stumbled over and being kicked?

Even aside from the highly valid point that, unlike a poorly built chair, someone attempting to kill you is not going to give up after one failure, arguments that “worry about terrorism, chairs kill way more people!” are doomed to failure because they boil down to “stop being human beings, guys!”

[Hide ↑](#)



Doctor Mist says:

September 3, 2016 at 12:03 am ~new~

We are hardwired to detect and punish defectors, of which a terrorist is an extreme example. I sometimes wonder if that wiring is actually counterproductive in the modern world, where our fate is so thoroughly tied up with complete strangers. If our natural reaction to a terrorist event was “In other news, a terrorist exploded today when one of them exploded” would there be more suicide bombers? Fewer? Any?

[Hide ↑](#)



ThirteenthLetter says:

September 3, 2016 at 7:21 pm ~new~

Maybe there would and maybe there wouldn’t, but you might as well posit that human beings wouldn’t gossip, or be self-interested, or enjoy music; it’s equally likely to happen.

[Hide ↑](#)



Jiro says:

September 5, 2016 at 5:03 pm ~new~

Just like regular people usually aren’t rational, neither are terrorists. Terrorists generally aren’t very good at reaching their stated goal: they’re pretty good at fanaticism, feeling important, self-sacrifice, signalling to co-religionists, gaining power over members of their own group, and values in them that lead to those other things, and generally all sorts of other social things that humans do that don’t achieve their stated goal. The idea that your own self-interest in destroying the infidels is looked on as praiseworthy regardless of whether this has any effect towards actually destroying the infidels is a bit silly.

I would expect that if nobody reacted to suicide bombing, there would be no differences whatsoever in how often terrorists use suicide bombing.

[Hide ↑](#)



Doctor Mist says:

September 6, 2016 at 8:19 pm ~new~

you might as well posit that human beings wouldn’t gossip, ...

Heh. Of course. I wasn’t advocating policy, just idly musing.

[Hide ↑](#)



Simon says:

September 5, 2016 at 8:22 am ~new~

The internet concludes that it was said by Oliver Wendell Holmes. Good phrase.

[Hide ↑](#)



Desertopa says:

September 1, 2016 at 10:08 am ~new~

With regards to the friend afraid of terrorists stealing a nuke...

This isn't where the real danger lies. Not because there's some specific doomsday scenario which is much more destructive, but because the big danger lies in scenarios where forces haven't already thought of and made preparations against. Paranoia against people trying to steal nukes is built into our security infrastructure, in a way that, before against people hijacking planes and flying them into national monuments wasn't.

But this is one of the reasons that anti-terrorism security doesn't make for a very good investment. I have a particularly devious and morbid imagination, and I've had a few would be a good idea for me to work for the Department of Homeland Security. But this is a terrible idea! If you're constantly trying to guard against all the possible methods used by the most devious people, you're reducing the risk of those black swan events, but this is way more expensive than investing in something like "make nukes safer," majority of these defenses will probably never be used. Say a terrorist measure can kill 300,000 people, and there's a 0.1% chance of them ever trying it in the next century chance of it working if they try. If we spend 50 million dollars a year combating it, we could bring the chance of them successfully pulling it off down to .1%. That's 50 million saving approximately one and a half people a year. The chance of a massively destructive terrorist attack isn't concentrated in something obvious like "stealing nukes," it's in the space of a large number of possible plots, all of which are individually highly improbable. That's why trying to safeguard against these kinds of events is almost certainly investment.

At least naturalistic outlier events aren't anti-inductive. If you spend resources preparing against earthquakes, nature isn't going to hit you with a plague instead to avoid war on a preemptively foiled attack.

[Hide](#)



Maware says:

September 1, 2016 at 10:32 am ~new~

Now apply this to AI Risk, which this community obsesses over and which doesn't have a single case of actually existing.

[Hide](#) ↑



Desertopa says:

September 1, 2016 at 3:06 pm ~new~

Sometimes you have to work from models, rather than frequency analyses. There's no shortage of society-shaping events that have occurred in the last century which never occurred before. Our best models of terrorism suggest that it's more dangerous than a frequency analysis of terrorism over the last decade (highest impact is in outlier events,) and possibly more dangerous than a frequency analysis including those outlier events (because terrorists are trying for impact, and if they can pull off a plot to do much more damage than they have with the previous attacks, they'll take it,) but we don't have a model under being civilization-threatening is realistic.

If we don't worry about things that have never happened before, regardless of evidence of how likely such events would be to occur, then this also means a reason to worry about, say, nuclear exchanges, because they've never happened. There are zero real life examples of escalating conflict from a nuclear war. In a hundred percent of cases where nukes have been used, there was no retaliation. But this isn't very comforting when you consider that in all existing cases either there was no other country in the world with the capability for nuclear retaliation, or the nukes were being used in tests rather than attacks and then retaliate for. Considering that we've had some very close brushes with outright nuclear conflict, the lack of standing examples certainly doesn't tell us that their plausibility as low.

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Macbi says:

September 1, 2016 at 10:43 am ~new~

This is true. It suggests that we should make all-purpose preparations that will defend us against many different attacks. For example we would want to make sure our personnel could communicate with each other even if the usual phone network collapses. I imagine that many good protocols like this are already in place.

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Desertopa says:

September 1, 2016 at 3:11 pm ~new~

This is what separates useful security infrastructure from, essentially, throwing money into a bottomless pit. Since most of it goes on behind the scenes that have much impact on the appearing-to-do-things front. Most of the public discussion around terrorism defense essentially revolves around security theater.

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Aegeus says:

September 1, 2016 at 11:37 am ~new~

This reminds me of Bruce Schneier's argument about how to handle terrorism: Don't invest in fighting a specific plot you're worried about, invest in intelligence to find out what the terrorists are thinking of.

Reinforcing security at the most popular targets is still a good idea – not every terrorist is creative and devious, Al Qaeda kept on trying to hit airplanes for years – but a much smaller range of targets to protect if you try to stop plots at the planning and preparation stages.

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SUT says:

September 1, 2016 at 1:16 pm ~new~

The problem with the stolen nuke isn't purely or even primarily tragic loss of life. It's what we have to do as a country, and what we have to do as individuals and vote with their feet.

a.) Nuclear defense involves retaliation, we will have to mass murder innocent people who have nothing to do with the act, all based on an obscure isotope analysis we will need to do 5-20 "Iraqs" simultaneously and initiate regime change and occupy the states which are most anti-American.

b.) Not only will we lose the total economic value of the one city hit, but the desirability of living in a downtown metropolis anywhere will plummet for anyone "willing" [sure people who move to Detroit to do urban gardening will move to 42nd Street, but not average finance guy with a wife and kid] and industries, the arts, and so on into the safety of sprawl. It will be the devaluation of taxi-medallions times about a million.

c.) the security response of millions of new customs inspectors and immigration monitoring will make DHS/TSA look quaint than the Pony Express. Can't wait for the job of the 21st century to be parcel inspector.

Etc, etc. In sum, the feedback response from an act of nuclear terrorism in the West is *THE* primary fork in the 21st century. If there's one thing that would be monstrously large federal gov't to pursue as a goal, [and something only said gov't can achieve] it would be to avoid going down that fork. There's no turning back.

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Desertopa says:

September 1, 2016 at 2:49 pm ~new~

The feedback from nuclear *warfare* would be dramatic, but the feedback from nuclear terrorism which the terrorists don't have the capacity to readily repay is much less, and besides which, preventing people from stealing nukes and using them is *much* easier than preventing regimes which can build their own.

But terrorists can provoke similar levels of escalation to that which would be caused by nuclear terrorism with any sort of attack that causes a similar level of escalation.

[Hide ↑](#)



Mary says:

September 1, 2016 at 8:03 pm ~new~

Except that feedback is the desideratum. They would probably try, for that exact reason, to hit twice in rapid succession.

Note that we used it twice in Japan — a "we're not joking" sort of thing. (And used up our store in the process.)

[Hide ↑](#)



Will Everett says:

September 1, 2016 at 10:54 am ~new~

Hey Scott,

I just wanted to mention that you're comparing the worldwide flu deaths in 1918 to the average US flu deaths per year. According to the WHO, worldwide there are on average 290,000 influenza deaths per year. I'm not sure why the US gets 5-10% of those when we make up less than 5% of the population, but maybe we just have more old people and thus more likely to kill the elderly?

<http://www.who.int/mediacentre/factsheets/fs211/en/>

[Hide](#)



mobile says:

September 1, 2016 at 11:36 am ~new~

We Americans are really good at attributing deaths to the flu.

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Murphy says:

September 1, 2016 at 12:02 pm ~new~

Also there's lots of common causes of death which just aren't a thing in the US. TB, malaria etc. If you don't die of those then you eventually die from something else.

[Hide ↑](#)



SlightlyLessHairyApe says:

September 1, 2016 at 12:10 pm ~new~

Yes, the flu is more likely to kill the elderly and otherwise immunocompromised folks. This is also a statement about the relative efficacy of antivirals as opposed to antibiotics. A patient in ICU (with no AD) that has a bacterial infection will get potent IV antibiotics. If that patient ever gets the flu, however, we can slow it down but ultimately the immune system has to clear it.

So we've kind of squeezed a lot of those deaths (some of which were, sadly, inevitable) into the flu because that's something we can't fix too well.

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bean says:

September 1, 2016 at 11:26 am ~new~

Your friend has a bad calibration on the destructiveness of a typical nuclear weapon. Modern cities are built much more strongly than those of Japan in the 40s, and terrorists likely to be able to get one into a nice airburst. Also, buildings would get in the way, and most methods can't account for that. Nukemap estimates 757,000 fatalities and injuries from a 340 kT B-61 in lower Manhattan. This is probably rather high, because of the shielding effects of the city. For a 10 kT weapon, I get 103,000 fatalities and 2 The real threat is bioterror, which is a lot harder to control, and could increase these numbers by orders of magnitude.

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Chalid says:

September 1, 2016 at 11:53 am ~new~

As someone who lives and works near a prime nuke target, I would be interested in hearing more about this. Do you have any recommended reading?

[Hide ↑](#)



Eric Rall says:

September 1, 2016 at 3:15 pm ~new~

"The Effects of Nuclear Weapons" by Samuel Glasstone and Philip Dolan. It's widely available online ([one source here](#)). Chapter 5 — Structural Damage F probably the most directly relevant section.

The short version is that wood-framed residential construction and unreinforced masonry construction (typical building types in WW2 Japan, and not too modern US suburbs) are very vulnerable, while steel-framed and reinforced concrete buildings (common modern urban construction types, especially for industrial buildings) hold up much better.

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Chalid says:

September 1, 2016 at 3:35 pm ~new~

TYVM

[Hide ↑](#)



bean says:

September 1, 2016 at 3:36 pm ~new~

That is the best source. The slide rule is pretty nifty, too, if a bit less user-friendly than [this](#).

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The Nybbler says:

September 1, 2016 at 12:08 pm ~new~

The deaths from a terrorist nuke in NYC are unlikely to be largely from the blast; it likely won't be an airburst. Rather, it'll be a surface blast in New York Harbor, k Brooklyn, Jersey City, and lower Manhattan with the blast, but spreading a lot of fallout over heavily populated regions (which particular regions depending on whi blowing; mostly Brooklyn and Queens on a typical day)

[Hide ↑](#)



bean says:

September 1, 2016 at 3:44 pm ~new~

[I modeled it as a surface burst, not an airburst.](#) An airburst would be worse.

[Here's what the burst you describe looks like.](#)

242,000 fatalities, 829,000 injuries. Not nearly as bad as the one in Lower Manhattan. (Note that this is a B-61, the biggest thing I can imagine terrorist hands on.) And the fallout isn't as bad as you make it out to be. It seems to skip over a fair bit of Brooklyn and Queens.

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Edward Scizorhands says:

September 1, 2016 at 12:30 pm ~new~

Society could break down if some unknown group sets off just one nuke. What if they announce they have a second, even if they don't, and are going to use it in days?

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SUT says:

September 1, 2016 at 1:25 pm ~new~

Or worse, use the threat of the second (under "some city") to extort us into allowing aggressors free pass in a campaign of conquest and genocide on the

MENA) or even on our allies (e.g. Japan)

[Hide ↑](#)



Edward Scizorhands says:

September 1, 2016 at 1:57 pm ~new~

Not knowing who did it would make everything worse. I'd rather Russia successfully shoot a nuke at NYC than having an unknown group detonate and then we can bargain with Russia and strike back and they have something to lose.

[Hide ↑](#)



bean says:

September 1, 2016 at 3:44 pm ~new~

I suspect that in that case, said country would end up glowing very, very quickly.

Of course, if our nuclear forensics capabilities are still intact, we'll know who was involved pretty quickly. (I'm not sure about this. 20 years ago, I was pretty certain.)

[Hide ↑](#)



ediguls says:

September 1, 2016 at 7:38 pm ~new~

I want to read this thriller.

[Hide ↑](#)



J says:

September 1, 2016 at 2:38 pm ~new~

Yeah, I came here to post the [nukemap](#). Detonating a "crude nuclear terrorist weapon" in the middle of San Francisco kills (cue trombone) 2900 people, and the area within a radius of 500m. I count about 7 blocks from end to end.

[Hide ↑](#)



John Schilling says:

September 1, 2016 at 3:59 pm ~new~

The calculator seems accurate as it goes, but I'm not sure why they imagine the yield of a "crude terrorist nuclear weapon" would be 0.1 kilotons. The simplest nuclear weapons, whether gun or implosion assembly, mostly either produce a yield of ~10 kilotons or don't work at all. Getting 0.1 kilotons requires either a very inefficient design, one which is also inefficient and wasteful of scarce fissile materials, or it requires an unlikely edge-case failure scenario. I note that "Nukemap" also has an entry for a 10 kT improvised HEU device; I'd recommend using that even if you expect the hypothetical terrorists to be using plutonium.

I'd also recommend assuming terrorists are smart enough to detonate their bomb at, say, the corner of 1st and Market in the densely-populated Financial District rather than the geometric center of the somewhat irregular city. That leads to 95,000 fatalities with a 10 kT device, and still 10,000 dead if you insist on imagining the bomb only getting a 0.1 kT fizzle.

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J says:

September 1, 2016 at 6:25 pm ~new~

Are you sure? The 3 NK tests, which are probably the closest thing to a terrorist improvised bomb, are 0.5kT, 6kT and 10kT.

But let's grant the 100k fatalities. That's about 1/8th (~12%) the population of SF city proper, and 1.4% the population of the bay area as a whole. If the terrorists get a NK-state-of-the-art bomb to your metropolitan area (wp lists [62 metros over 1M pop](#)), to the very center of it (which presumably would put their radiation monitors), your chance of death is 1-10% (and way lower if it happens in a randomly selected metro area).

I stopped stressing out over terrorist nukes when I plugged an airburst of the largest current US H-bomb (B-83, 1.2MT) into nukemap in downtown San Francisco that it doesn't even make it to SFO.

[Hide ↑](#)



bean says:

September 1, 2016 at 6:30 pm ~new~

Are you sure? The 3 NK tests, which are probably the closest thing to a terrorist improvised bomb, are 0.5kT, 6kT and 10kT.

My understanding is that everyone was surprised that they managed to fizzle the first one the way they did.

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John Schilling says:

September 1, 2016 at 6:57 pm ~new~

The 2006 North Korean test was almost certainly a failure of the device which then achieved 4-6 kT in 2009 – and there are unconfirmed preannounced the yield to the Chinese in a “don’t be alarmed but...” sort of way, indicating that this was the design yield.

Of the eight nations which have openly tested nuclear devices, seven achieved approximately the design yield on the first test and the within a factor of two or so of the 10 kT “easy setting” on all but one of those. Possibly some of those nations had complete failures well before the first reported test. One out of eight, North Korea, got a sub-kiloton fizzle. As bean says, that surprised people.

That’s not something you can plan on, or expect from someone else. It’s the equivalent of, say, a presidential election being decided by association football game being decided by penalty kicks. If you play to win, you’re much more likely to just plain win or just plain lose the cliffhanger ending, you’re most likely going to just plain lose unless you are *very* good.

If you’re worried that someone might try and detonate their very first atom bomb in your city, you estimate the effects of a 10 kiloton you estimate the cost of cleaning up after a dud, and that should cover at least 90% of the possibilities.

And see my post below regarding the true measure of terrorism. If you stop the calculation with, “...and there’s only a 1.4% chance of the blast”, you’ve ignored most of the potential harm.

[Hide ↑](#)



mobile says:

September 1, 2016 at 11:34 am ~new~

If you’re going to cherry pick a date to exclude Haitian earthquake deaths, consider going out a few weeks, say, to March 2010. It may take a long time to die from an earthquake injury, or for some deaths to be discovered, or there may be deaths from aftershocks that occur several days after the main quake.

[Hide](#)



SlightlyLessHairyApe says:

September 1, 2016 at 12:04 pm ~new~

Just to geek out on the data/stats question, perhaps the right thing to do is to call out our uncertainty explicitly by grabbing all the sliding 5 year averages and treating the ensemble (weighting right at the ends where there’s less overlap). In other words, if the question is “how many terrorism deaths do you expect over the next ten years”, then that reasonable upper/lower bounds would be the highest/lowest ten year window in the recent past.

So we can say that expected terrorism deaths per year are in the range of (10,600). That’s a large range, but to me that’s a feature in that it strongly highlights the year-to-year variability in the underlying data.

[Hide](#)



Vegas says:

September 1, 2016 at 12:09 pm ~new~

I see even more dramatic illustration.. Gun grabbers point to German government as example how disarmed population resulted in less shooting, but expand time horizon to German government killing tens of millions of disarmed people.

[Hide](#)



Skef says:

September 1, 2016 at 12:11 pm ~new~

Congratulations! I think this is the first time [The Browser](#) has shared a post of yours that doesn’t have something to do with psychiatry. You now have authority in their eyes on psychiatry expertise.

[Hide](#)



Anonymous says:

September 1, 2016 at 12:27 pm ~new~

I’m not sure how to navigate the Browser, but what about [this](#) or [this](#)?

[Hide ↑](#)



Skef says:

September 1, 2016 at 1:20 pm ~new~

Huh – I guess I missed those when they came around (although I don’t remember if I knew about this site in 2014). I subscribe to the RSS feed and just seemed to pick up all the psychiatry articles but not the others.

[Hide ↑](#)



RCB says:

September 1, 2016 at 1:11 pm ~new~

I think the whole premise here is flawed. My view is that the total number of deaths is not a good way to order “how much one should care” about an issue.

From an actionable standpoint, the real question is “which issue, if devoted attention and money, would result in a greater number of lives saved?” It’s about return per unit expenditure.

While falling furniture might kill more people than terrorists in any period of time, it might also be that efforts to reduce terrorism will save a lot more lives than efforts to stop falling. Perhaps furniture deaths are all freak accidents that all but the craziest laws and regulations would prevent. I’m not certain this is true, but it sounds right.

[Hide](#)



MichaelT says:

September 1, 2016 at 2:21 pm ~new~

The problem with your friend’s argument is that most of the resources expended on the War on Terror, as well as most of the curtailing of our civil liberties, are directed at medium sized terrorist attacks, not the large black swan ones. How can the Department of Homeland Security, who can’t even find 10% of banned contraband being brought in by someone from detonating a nuke in Times Square? How do our military adventures in Afghanistan, Syria, Iraq, Yemen, etc. stop ISIS from getting nuclear technology when it exists in any of those countries?

[Hide](#)



Sandy says:

September 1, 2016 at 4:29 pm ~new~

The obvious answer would be that it requires a lot more organization, communication and planning to smuggle a nuke into Times Square than it does to conceal a plane.

A nuclear plot is a lot more conspicuous, making it easier for DHS to detect and act on. It’s not like you can just buy a nuke on Amazon, after all. Nuclear weapons are heavily guarded, monitored and regulated.

How do our military adventures in Afghanistan, Syria, Iraq, Yemen, etc. stop ISIS from getting nuclear technology when none currently exists in any of those countries?

ISIS aren’t the only terrorists with nuclear ambitions. al-Qaeda and the Taliban are quite open about their desire to get their hands on Pakistan’s nukes, and that country is exactly known for its firm clampdown on terrorist groups.

Also America has nukes parked in Turkey, which is right next door to Syria, and 4 more degrees will get you to Kevin Bacon.

[Hide ↑](#)



Aegeus says:

September 2, 2016 at 10:18 am ~new~

I’d argue that large-scale attacks are thwarted by overseas adventures more than small-scale ones.

Large-scale terror attacks take planning, coordination, and supply chains, which can plausibly be destroyed by bombing. Terrorists who are hiding from drones are aren’t out shopping for uranium. But the smaller “lone-wolf” terror attacks only need a suicidal guy with a gun (or even a truck), so there’s very little chance to stop them before they launch the attack.

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Edward Scizorhands says:

September 2, 2016 at 10:49 am ~new~

You now have me pondering the theory “overseas adventures stop the large-scale attacks, but encourage the small-scale attacks, and this is worth it because a nuclear bomb could end American civilization.”

I’m not saying I agree with it. Just that I have to think about it.

[Hide ↑](#)



houseboat on styx b says:

September 2, 2016 at 6:41 pm ~new~

@ Aegeus

the smaller “lone-wolf” terror attacks only need a suicidal guy with a gun (or even a truck), so there’s very little chance to stop them before they launch

So, how long before a small or medium size group obtains a nuclear bomb to put in their truck? Quite a few years before they could get the bomb to the terrorists start nuking European/UK cities in retaliation when the US does something they don’t like ... how long til Europe/UK get fed up with it, and what do they do then?

[Hide ↑](#)



Saint Fiasco says:

September 5, 2016 at 9:01 am ~new~

how long before a small or medium size group obtains a nuclear bomb to

I honestly don't know. Aren't nuclear bombs very hard to get?

I think you would need to be a nation-state or have a nation-state sponsor to get one and at that point MAD applies. After all, Afghanistan had a connection to 9/11 and look what happened to them. If those terrorists had a nuclear bomb Afghanistan would have been nuked too.

[Hide ↑](#)



A Definite Beta Guy says:

September 5, 2016 at 9:21 am ~new~

You can crudely create a nuclear weapon with some probability of success. However, there is a high chance of failure, and you're probably 10kt.

You also need the fissile material, which is NOT easy to get. There are over a dozen reported cases of stolen fissile material, but you need more material.

Successive nuclear blasts are not going to happen unless Pakistan immediately collapses and someone steals all the HEU.

[Hide ↑](#)



Sly says:

September 1, 2016 at 2:28 pm ~new~

Did anyone else find this to be weirdly one of Scott's worst posts? No, you do not get to count hypothetical non information in your average calculation. Meteors kill 0 people on average, not a hundred – and saying that they kill 100 is simply an error.

[Hide](#)



J says:

September 1, 2016 at 3:50 pm ~new~

My personal beliefs are skewed heavily toward "the best response to terrorism is to not overreact", so I'm sure that colors my judgment. But yeah, while he makes a point about tail risk, I feel like it's a big omission not to address the absolute scale: even if you start counting from 9/10/2001, death by terrorist is still ridiculously unlikely.

[Hide ↑](#)



SUT says:

September 1, 2016 at 7:04 pm ~new~

The whole point of what we learned is that we didn't take it seriously enough.

Every bookshelf in the country has Tom Clancy's *Debt of Honor*, which portrays a terrorist crashing a plane into the capital. People at the flight school found out that certain students didn't want to learn to land the plane. And there was the entrenchment of Al Qaeda leadership in a mountainous safe space with increasingly sophisticated acts being executed thousands of miles away, e.g. USS Cole.

Even if you're not sympathetic with the current War on Terror, it very likely could have been prevented from reaching its current state, including Bush's war on terror, drones, from all ever happening if we had truly evaluated our risk and acknowledged the ruthlessness of the enemy. If we could have thwarted the attack, we would need to respond.

[Hide ↑](#)



J says:

September 1, 2016 at 9:00 pm ~new~

That's hindsight bias. Lots of books have people getting mugged when they go into big cities. Some people get suspicious when they see people who look like the stereotypes they saw on TV and in books. Some people actually do get mugged. None of that tells us very much about whether we are too lenient on crime as a society, or how much risk there actually is of getting mugged. And even if we emptied out all the cities and bombed stereotypical mugger-looking people to death, people would still get mugged once in a while.

[Hide ↑](#)



TomFL says:

September 2, 2016 at 12:01 pm ~new~

100 year on average is in fact technically correct over a long enough time period. The statistics for large asteroids is fairly well known and death tolls from large strikes are estimated. So a crapload of people will be killed in very rare strikes.

But the statement is misleading. One should instead say 10,000,000 will die in a large asteroid strike that occurs about once every 100,000 years. The prior state is that 10,000,000 die every year.

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Graeme says:

September 1, 2016 at 2:51 pm ~new~

If I may point out the obvious, the more influence humans have in precipitating/mitigating an event, the more complex analysis becomes.

Let's look at the simple one: volcanic eruptions/earthquakes/tsunami are regular and recurring. You can approximate the probability and severity, estimate the odds of it or future period, etc, etc. It only gets complicated when you have to analyse the costs, namely the damage done to a city and it's people, with and without mitigation, but even easy compared to human precipitated disasters. Call these N=1.

We can't STOP tsunamis, we can only mitigate the consequences. By contrast, nuclear disasters are much harder to deal with. They don't occur with some sort of blind exte periodicity, our actions effect both the severity and the frequency of disaster. The hydro dam example is a good one, because of the complexity involved in examining both the event AND it's consequence. With hydro, you can mitigate most effectively by making sure you don't put villages in the flood zone, but there may be compelling reason probability of failure is highly dependent on civil engineering practices.

The good news is that people DO make a study of these things. As structures fail, we can examine the causes, and determine whether they are applicable elsewhere and accordingly. In the light of Chernobyl, Three mile and Fukushima, we are much better positioned to evaluate the risk, even if those events themselves were rare and unpre N=2

Terrorism is particularly difficult to analyse. Other entries in this class of problem would be disease epidemics, war, crime, and to a lesser extent famine (and Economics). L failures, both the cause and effect are due to human factors, but unlike structural failures, the failure is caused by active, responsive agents. Call these N=3.

The conditions experienced by a building are constant (or rather variable, but within predictable statistical constraints). Buildings are subject to an external set of rules; we we build them, but we don't change how they fall down. They are essentially deterministic.

By contrast, level 3 problems create response and are themselves responsive to attempts to mitigate. Terrorists may come up with new ways to attack (use of an airliner as the innovation, when you think about it), or they may be motivated not to bother. The level of terrorist threat determines our response, our response determines the terror endless complexities spiral outward. The crux of the matter is that we can examine level 1 and level 2 problems at any point in history, and we get an apples to apples comparison factors are known, or at least knowable to some degree of statistical certainty. By contrast, you cannot calculate the risk of a bombing in 2017 because you can't calculate were in 2001, even in retrospect. Unless you can create a comprehensive, accurate, and predictive model of human behavior, you are not going to come up with a cogent a

Which makes certain comparisons very dangerous. You can't talk about the odds or casualty rates of terrorism because we literally don't know what they are, and historical reflect the current reality. There have been no major US attacks in the last 14 years: was this due to the security apparatus? Or did the probability of occurrence change?

That said, we if we pretend level 3 problems are level 1 or 2 problems, we get conspicuously awful and misleading statistics, as Scott's essay so nicely demonstrates. If we and we need to if we are to cogently allocate resources to fighting problems of this type, we need to look at both sides of the problem. We must make a study of more than outcomes, but also the sociology underlying the system. At a bare minimum, if we can identify a set of characteristics that occur reliably in successful terrorists, we can at estimate the scale of the potential threat.

[Hide](#)



Uncle Ilya Kuriakin says:

September 1, 2016 at 3:53 pm ~new~

Graeme says: "Terrorism is particularly difficult to analyse."

Many people (including me) have long agreed with Graeme's point, as illustrated by these three resources:

- President Harry Truman's presentation to General George Marshall of the Distinguished Service Medal and Gen. Marshall's acceptance of it ([audio recording, 194](#)
- The [CAIN \(Conflict Archive on the INternet\)](#) of the Irish Peace Process, including [Michael McKeown's Database of Deaths](#)
- The [Parents Circle-Families Forum \(PCFF\)](#), an organization of Palestinian and Israeli families who have lost family members in the conflict.

Michael McKeown's Database of Deaths, in particular, represents on the one hand, the apotheosis of SSC-style number crunching. And yet on the other hand, the Troubles, when appreciated as a whole, brightly illuminates the post-quantitative post-rational cognition that effective peace processes require.

And the PCFF's articulation of anguished hopes speaks even more directly to the vital role of post-quantitative post-rational cognition in successful peace processes

Historically speaking, it's not easy to better Marshall's 1945 reflections upon practical methods for the construction of peace and prosperity; reflections that provided the Marshall Plan (1948-1952) — a plan that was much-reviled by the far-right of that era — which led to Marshall's Nobel Peace Prize (1953):

(audio here) To the soldiers of the Army, you still in uniform and you who have already returned to your home, I, as one citizen and one comrade, express my deepest gratitude.

You were the greatest protective force this nation has ever known. In its darkest hours you carried the might of America into action. You gave to the United States its prestige among nations. And no one knows better than you that you did not do it alone. You know how tremendous was the contribution of the nation as a whole, millions of laboring men and women whose productive efforts supplied your munitions, of the factories of this great nation and the science and management that operation, of the farms, and of the plain citizen who put your needs above his own.

But of all these efforts yours was by far the greatest. You faced death and swallowed fear, endured the agonies of battle and of hearts torn by loneliness and home starvation for the normal life you loved. Yet you took it — all there was to take anywhere on the battlefronts of the world. And you had the strength and will to give

give back much more than your enemies could take. You know that those who stayed behind were no different than you. Had they been out front and you behind, you have served just as you did. That is the genius of America; that is the strength of a free people.

Most of you know how different, how fortunate is America compared with the rest of the world. That is something those at home cannot fully appreciate.

Today this nation with good faith and sincerity, I am certain, desires to take the lead in the measures necessary to avoid another world catastrophe, such as you have endured. And the world of suffering people looks to us for such leadership. Their thoughts, however, are not concentrated alone on this problem; they have the most immediate and terribly pressing concerns—where their next mouthful of food will come from, where they will find shelter tonight and where they will find warmth in the cold of winter.

Along with the great problem of maintaining the peace we must solve the problem of the pittance of food, of clothing and coal and homes. Neither of these problems solved alone. They are directly related, one to the other.

It is to you men and women of this great citizen-army who carried this nation to victory, that we must look for leadership in the critical years ahead. You are young, vigorous and your services as informed citizens will be necessary to the peace and prosperity of the world.

To belabor the not-so-obvious, the history of conflict resolution shows plainly, that a too-strict insistence upon the numerical accounting of terror and suffering, and unending arguments associated to that accounting, have far more commonly occluded paths to peace and prosperity, than illuminated them.

Do you want to effectively illuminate paths to peace? Begin by listing the deaths associated to a conflict. All the deaths. But don't categorize the deaths as justified or terrorist (or not). Just list them. That's the start.

PS On many medical services, a [Morbidity and Mortality Conference](#) serves many of the same purposes as a [Truth and Reconciliation Commission](#), and runs under similar guidelines.

A sincere question (whose answer is not known to me) is this: do psychiatric services commonly host Morbidity and Mortality Conferences? If so, what lessons are learned, and why not?

[Hide ↑](#)



Graeme says:

September 1, 2016 at 5:46 pm ~new~

While I agree with what you are saying in general, the phrases "Post-Rational" and "Post-Quantitative" concerns me a bit. We should not give up on ratio or quantify the damage, we just need to recognize that the current toolbox is insufficient to the task. In particular, average deaths per year is utterly inadequate.

The hardest part of this stuff is that resources are finite, and allocation is generally by consensus (even if that consensus is collected under threat of lethal force). We never know how many people would have died in Vietnam if the US had been a little weaker, nor how many if they'd been stronger. Would the world have had a different war if the US pulled its military budget out of missiles and put it into schooling and public health? It's frustrating, when you know exactly how much a life is worth (say, 10 million USD is one less dead child), but you don't know how valuable airport scanners are (I think they're worthless and expensive, but I'm no expert).

It's even harder when you realize that people LIKE having a military and are willing to coordinate to have one, but are pretty ambivalent about saving the world (revealed preferences). I am not sure you could rally people around saving 30 million lives in Africa. Actually, I'm 100% sure they wouldn't: no one has ever proposed axing 100 billion dollars from defence to hand over to the third worlders. If they did, they would be torn apart immediately for leaving America and selling out their people to foreigners.

So yeah, we need better metrics than deaths. But this stuff is HARD. One of my favorite quotes:

For every complex problem, there is an answer that is clear, simple, and wrong

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Uncle Ilya Kuriakin says:

September 4, 2016 at 8:26 pm ~new~

Graeme observes: "The current toolbox is insufficient to the task."

Extending humanity's cognitive toolbox is exceedingly dangerous in practice and hence, inherently contentious in principle, isn't it?

Today's counter-Enlightenment finds its disciples (AFAICT) chiefly among those who seek reasons to reject progressive modernity's campaign of progress (both specifically in respect to anti-terrorism, and generally in regard to all realms of human enterprise).

"Modernity+" (as it might be called) has at least four active initiatives:

The First Peace Initiative of Modernity+: Rationality (with a social emphasis) See for example, Saaty and Zoffer "[Principles for implementing a strategy to the Middle East Conflict](#)" (*Notices of the American Mathematical Society*, 2013).

The Second Peace Initiative of Modernity+: Parcellation (with an empathic emphasis) See PubMed surveys of the rapidly evolving STEAM-ente [PubMed/MESH terms like "Connectome/methods"\[MAJR\] or "Brain+Mapping/methods"\[MAJR\]"](#).

The Third Peace Initiative of Modernity+: Freethinking (with an Anabaptist/Spinozist emphasis) For a conservative-friendly historical grounding Kolakowski's "Dutch seventeenth-century non-denominationalism and *Religio Rationalis*: Mennonites, Collegiants and the Spinoza connection" (: parallel strand of feminist-friendly hilarity — equally in the comedic and philosophical senses of "hilarity" — see Amélie Rorty's good-hearted "[Spinoza's pathos of idolatrous love and the hilarity of true love](#)" (2009).

The Fourth Peace Initiative of Modernity+: Medicine (with a regenerative emphasis) Here a good starting point is are the survey articles that w the theme issue of *The Journal of Academic Medicine* for 2009: "[How should academic medicine contribute to peace-building efforts around the](#)

Against Modernity+'s diverse cognitive, social, philosophical, and STEAM-initiatives [the counter-Enlightenment has embraced a futile strategy of abusive "Thwhack-ye-Mole"](#) ... while the fast-evolving cognitive toolset of Modernity+ gains inexorably in STEAM-power and global social dom

Which is good, isn't it? 😊

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John Schilling says:

September 1, 2016 at 3:39 pm ~new~

OK, the biggest problem with both of those graphs is that they are counting the number of people who have *died* from terrorist attacks. That's about like counting the numl have died of rape – it happens, but it's not the point, and by any rational metric it is a small fraction of the cost.

The purpose of terrorism isn't death, it is terror. There have been successful terrorist attacks which have caused plenty of terror [without killing anyone](#), usually by design. *A* in the attacks that do cause death, the bulk of the harm is not in the shortened lives of the relatively few direct casualties but in the reduced quality of life for everyone els

Granted, reduced quality of life due to chronic terror is not something that can be easily quantified and put on a graph. But it's the one thing that absolutely does need to b

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albatross says:

September 1, 2016 at 3:52 pm ~new~

The poster child for this is the anthrax attacks. They caused a huge amount of panic, and yet if the attacker had sent the same spores in the same envelopes to tt but with no reference to them containing anthrax spores, I doubt anyone would know what had happened. Probably more people would have died, but nobody wo the deaths and realized there had been a terrorist attack with bioweapons.

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TomFL says:

September 2, 2016 at 11:52 am ~new~

The panic from a dirty bomb will be off the charts. However it appears that these can actually be cleaned up fairly effectively given some effort. Radiation levels w after cleanup but the risk fairly low. This will convince absolutely no one to move back in.

Realistically they just need to explode a tiny dirty bomb with measurable radiation for the same effect. Most people's understanding of radiation levels is non-exist should measure everything in banana-rads.

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Macbi says:

September 3, 2016 at 3:55 am ~new~

In fact the government will force people to leave like they did in Fukushima. Otherwise low house prices would induce smart people to move in.

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Jiro says:

September 3, 2016 at 9:54 am ~new~

Two types of people would move in:

- 1) people who are smart, and by whose standards moving in is a good deal
- 2) people who are stupid, and by whose standards moving in would be a bad idea, but who would choose to move in anyway. (Note that saying revealed preference to move in" is essentially equivalent to saying "there is no such thing as stupid".)

Actually, there are more, overlapping, types:

- 3) People who are children and can't control where to move to, but who have parents who are stupid and by whose standards moving in is bad
- 4) People whose presence makes life easier for other people by whose standards it would be better living near the first group far from Fukushima than near Fukushima. In other words, if your employer moves near Fukushima, you may be stuck.

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Anon says:

September 1, 2016 at 3:49 pm ~new~

Thinking more about it, I'd add people aren't concerned necessarily that they'll be killed by a terrorist as much as that someone frequenting a high profile target will be kill. Say ISIS manages to detonate a crude nuclear weapon (100 ton yield) at Grand Central. Nukemap gives a fatality estimate of roughly 45,000. Now what were the relative arbitrary time period x of a person *who had visited Grand Central* being killed by a terrorist vs. by falling furniture? Of course an individual could simply avoid Grand Cen in a situation where someone acting rationally must avoid one of the most culturally significant locations in America to get their safety back down to falling furniture levels. to justify the fear and outrage we observe in response to terrorism, yes?

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J Mann says:

September 1, 2016 at 4:11 pm ~new~

Some random thoughts:

1) At one level, it's OK for people to be more upset than some deaths than others. We do our best to achieve 0 airplane deaths, not because airplanes are bigger killers than because air crashes are more upsetting. See also police shootings of black suspects, soldiers dying in overseas wars, victims of mass shootings, etc.

In every case, Mister Spock might be more influenced by a "if you want to save lives, outlaw motorcycles" argument, if if people are more upset by plane crashes or terrorism shootings than by chair and motorcycle deaths, then that factors into the utility equations as well.

2) I've been astonished for a while about how bold some of the facebook comparisons (terror to mass shootings or whatever) are about starting the clock on 9/12/01. You're going to cut 9/11 as an outlier not likely to be repeated, you'd start a few years after 2001 just to look fair, or at least 1/1/02.

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Montfort says:

September 2, 2016 at 9:38 pm ~new~

As for 2, they make it obvious because if you think 9/11 is an outlier, then you also think excluding it *is* fair, so why would you try to conceal it?

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J Mann says:

September 6, 2016 at 10:32 am ~new~

It seems to me that if you include the terror-free period right up to the last even that you want to cut, you're throwing off your average.

Theoretically, you could have started at any point in the period between 9/11/01 and the next terror event, but by grabbing that whole period, you get the one you possibly could.

I'm no statistician, but it seems to make more sense either to include a much longer period and explicitly exclude 9/11 or normalize it to what you think have been, or to use a point halfway between 9/11 and the next event.

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mjg235 says:

September 1, 2016 at 4:18 pm ~new~

We should also note that the tail risks of a major terror attack are not only measured in extremely high death toll, but substantial loss to infrastructure and heritage. Say IS launches our nukes in Turkey and takes out New York City. The loss of life will be in the millions, which is astonishing enough, but we would also lose Columbia, NYU, the New York Times, our best deepwater port infrastructure, the vast majority of the fashion industry. I could go on.

These are a lot of the things that structure modern life, and I shudder to think what we would do were they to disappear in an instant. It is far more difficult to quantify, but part of the risk analysis for this sort of event.

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Jacobian says:

September 1, 2016 at 4:36 pm ~new~

Didn't Nate Silver write in *The Signal and the Noise* that terror attacks, like earthquakes, are distributed according to a power law? I think for terrorism, attacks that are 10 times less often.

This means that there's an equal number of casualties from each "band" of terror attacks: the hundreds that kill a few people, the dozens that kill dozens and the 9/11 that 9/11 can happen roughly once every 20 years, an attack that kills 300,000 happens once every 2,000 years. Maybe that's too long to worry about, or maybe were due 🤔

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J Mann says:

September 1, 2016 at 4:47 pm ~new~

There's a big discussion upthread on this – just search on "power law." Here's a good article on Aaron Clauset, the guy whose research Silver discussed in his book

<http://www.westword.com/news/how-aaron-clauset-discovered-a-pattern-behind-terrorist-attacksand-what-it-told-him-5121178>

TLDR: Clauset thinks power law fits terror pretty well, and that this implies that the risk of a catastrophic attack is small but much larger than people think, but he has enough data to be confident in his conclusions.

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Douglas Knight says:

September 1, 2016 at 5:02 pm ~new~

You're saying that it's distributed by a particular power law, not just some power law. I don't think Silver is that specific, but his source, Clauset and Young, say the parameter of 2, not 1.

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TomFL says:

September 2, 2016 at 11:45 am ~new~

Terrorism isn't physics. Extrapolating terrorism to natural laws is a bit of a stretch and seems like academic whacking off. Modelling death by wars in 1950 would tell huge numbers of dead were highly likely in the next 50 years and the advent of nuclear weapons would have been further proof of the likelihood of that happening convincing...in 1950.

I'd like to see what his model would have been on Sept. 10th 2001 and what his predictions would have been for a catastrophic terror attack the next day.

I can see where the ability of small groups to commit catastrophic damage is controlled by their will and means to do so. Cavemen don't have the means to commit holocausts. The local nunnery will never have the will. Beyond that I think modelling this is worth exactly zero.

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Jacobian says:

September 1, 2016 at 4:41 pm ~new~

Scott, you're not worried about the giant chair of Yur-Nagansa that will topple on top of the world killing us all? Outliers!

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Patrick says:

September 1, 2016 at 4:53 pm ~new~

I don't understand why death by chair accident is being held up as something silly. People are really bad at falling off stuff. Especially as they get old. Every time an old lad has a chance that their card just got punched. It's a real thing.

That being said the cynic in me wants to run this chair graph alongside "margin of police shootings of unarmed African Americans above the expected value given population" and see if they'd print it.

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Chalid says:

September 2, 2016 at 4:41 am ~new~

Also, toddlers are occasionally killed by pulling heavy pieces of furniture down onto themselves (say, having it tip while they are climbing it). There was a major incident of this.

As the parent of a kid who likes to climb, "death by furniture" features much more prominently in my daily nightmares than "death by terrorism."

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Mary says:

September 1, 2016 at 7:15 pm ~new~

One notes that unlike the flu and the furniture, terrorism has a motive to escalate.

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Sabril says:

September 1, 2016 at 7:35 pm ~new~

How many people are year died from lynching during the Jim crow Era? Very few but the problem was worth taking seriously because the aim of lynching was to terrorize a community with modern terrorism. Because the victims are not just the dead and injured. It includes everyone who now feels uneasy on a clear autumn day in NYC.

These people who downplay terrorism by counting the dead, I wonder how they distinguish lynching? I doubt they can do it. I doubt they can distinguish any crime where race is psychological

[Hide](#)



cassander says:



September 1, 2016 at 9:40 pm ~new~

FWIW, less than one, [after the 1940s](#).

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pku says:

September 1, 2016 at 9:55 pm ~new~

But talking about how terrorism is rare and unlikely to harm you does a lot more to address this part of it than, well, pretty much anything else.

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sabril says:

September 2, 2016 at 11:46 am ~new~

But talking about how terrorism is rare and unlikely to harm you does a lot more to address this part of it than, well, pretty much anything else.

Well that's a different issue. But do you have any evidence to back up your claim?

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DaveL says:

September 1, 2016 at 7:54 pm ~new~

My friends and I made an app that uses mortality stats to show you what you're likely to die of (built in <2 days, only works well on mobile)

<https://feartheburger.herokuapp.com/>

Video: <https://govhack-storage.s3-ap-southeast-2.amazonaws.com/2016/GovHackWhatAreYouAfraidOfv2.mp4>

We just went back and used all the data we had (eg all terror attacks in database and shark attacks since white settlement). Outliers and the future isn't guaranteed to be
But I still think it would probably be better to have a fear of fatty foods and lack of exercise etc than more visceral yet less common ones like sharks and terrorists.

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John Schilling says:

September 1, 2016 at 8:18 pm ~new~

Where did you get the mortality stats for "killed as a Suspicious Loner by one of the neighborhood vigilante groups that sprung up when the legitimacy of governn one too many terrorist attacks (even though the terrorists didn't kill that many people)"?

As Scott said, it's the outliers that matter. If you're wondering whether you should be afraid of terrorists, "how likely am I to die in a terrorist attack" is not the mc question.

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sabril says:

September 1, 2016 at 8:34 pm ~new~

I think it's pretty likely that this Andrew Shaver is just virtue-signalling by downplaying the crimes of non-westerners. If some right-wing White Nationalist group started ly blacks or gays a year, would he whitewash it by arguing that you are far more likely to be killed by a piece of furniture? Or would he be marching in the streets, screaming Be Done? I know where my money is on that bet.

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pku says:

September 1, 2016 at 9:53 pm ~new~

I don't know about Andrew Shaver specifically, but in general, "terrorism is statistically negligible and shouldn't be as scary as it is" is used by the more moderate, rather than the SJW left – that is to say, the people who *don't* want to justify or excuse it, but want to talk calmly and rationally about how everyone should stop p
The same group who are most likely to argue that both KKK members and people who riot during BLM protests are marginal phenomena that shouldn't terrify us, side between them.

[Hide ↑](#)



sabril says:

September 2, 2016 at 4:44 am ~new~

I don't know about Andrew Shaver specifically, but in general, "terrorism is statistically negligible and shouldn't be as scary as it is" is used by the more moderate/practical left rather than the SJW left that is to say, the people who don't want to justify or excuse it, but want to talk calmly and rationally al everyone should stop panicking about it.

I'm a little skeptical . . . can you give me three examples of pundits who use the "body count argument" to downplay terrorism AND make a similar argu where the perpetrators are white and the victims are non-whites?

[Hide ↑](#)



Protest Manager says:

September 6, 2016 at 6:18 pm ~new~

Could you let us know when those same people use the "small body count" argument against "Black Lives Matter"?

Because of the terrorism body count is "no big deal", neither is the police body count. Esp. when compared to the number of blacks killed by other blacks

[Hide ↑](#)



Saint Fiasco says:

September 7, 2016 at 10:10 am ~new~

Terrorism is a big deal when it consistently targets a specific subset of a population. For example when terrorists persistently attack tourist attraction countries, it can have a significant effect on that country's economy because tourists don't feel safe there, making the job of the tourism industry

If police treat black people badly that makes blacks feel less safe, making the job of the police more difficult.

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John Schilling says:

September 7, 2016 at 11:37 am ~new~

But terrorists treating the class of "American people" badly can't make American people feel less safe, have any significant economic impact, or undermine the legitimacy of governments, etc?

You might argue that terrorist attacks *shouldn't* have such broad effects, but they do.

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Macbi says:

September 2, 2016 at 4:49 am ~new~

I can't speak for the author's motivation, but I don't think your analogy is good. It's not that terrorism isn't worth fighting, it's that it isn't worth spending a trillion dollars. I would be happy for the police to spend millions of dollars to take down a White Nationalist group like the one you describe, but if the price tag headed up toward a trillion dollars, that's a problem. If government regulations on chairs cost a few million a year then that's fine by me if it saves some lives, but if they cause the price of the average chair to rise to a few million, they've gone too far.

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sabrill says:

September 2, 2016 at 12:03 pm ~new~

I can't speak for the author's motivation, but I don't think your analogy is good.

Well are you disputing that — just like the case with lynchings — there is a good deal more at issue with terrorism than just the body count?

t's that it isn't worth spending a trillion of dollars fighting.

That's a bit different from the point I was addressing.

Let me ask you this: Do you agree that more should be spent to fight crimes or other societal ills which cause massive psychological harm & physical harm than societal ills which cause the same amount of physical harm but far less psychological harm?

[Hide ↑](#)



Macbi says:

September 3, 2016 at 4:08 am ~new~

I agree with you in principle, but in the case of terrorism it seems that politicians are intent on *increasing* the psychological harm as much as possible for their own ends. It would be better if as well as trying to stop terrorism we also tried to assure people that they needn't be afraid of it.

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David Friedman says:

September 3, 2016 at 2:23 pm ~new~

I don't think anyone yet has mentioned *Syndic*, an old sf novel where governments have collapsed and been largely replaced by organized crime. The eastern half of the U.S. is run by the syndicate—undemocratic but a reasonably free and attractive society.

The terrorists are the U.S. government in exile, based on islands in the Atlantic. They occasionally blow things up and the Syndic most recently a chemical factory blew up? That's too bad—but chemical factories sometimes do that."

Which is very frustrating for the terrorists.

There is a conversation near the end between the protagonist, who wants something done about the government, and an older and wiser man who argues that doing anything serious about them will undercut the existing structure of the Syndicate's society—better to ignore them and prevent an occasional explosion.

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LHN says:

September 3, 2016 at 2:38 pm ~new~

Though being unflappable in the face of repeated, varied attempts to determine what will provoke a reaction may not actually be possible for any individual might be arbitrarily stoic, but I'm more skeptical that a government or society can be. E.g., it's easier for a mob boss to be afraid of a chemical plant than about his kid's school.

I haven't read the book, so it may be the USG in exile has limits on what it's prepared to do. But obviously there are real-world groups that are at least anywhere within the plausible tolerance range of Western electorates.

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David Friedman says:

September 3, 2016 at 5:39 pm ~new~

I think it's clear in the story that the damage being done by terrorism, while significant in absolute size, is tiny in terms of the total size of the world.

[Hide ↑](#)



sabrils says:

September 3, 2016 at 8:26 pm ~new~

I agree with you in principle, but in the case of terrorism it seems that politicians are intent on increasing the psychological harm as much as possible for their own ends.

Can you give me 3 examples of this so I know what you are talking about? TIA.

[Hide ↑](#)



Njnnja says:

September 1, 2016 at 8:51 pm ~new~

When doing statistical analyses, outliers should receive close scrutiny to look out for data errors, or to find relationships or regime changes that are otherwise difficult to see. It's not the job of a competent researcher who would say to remove outliers from an analysis *simply because they are outliers*.

Outliers are not less important than "normal" data points (whatever those are). The idea that outliers should be removed is what researchers joke about when data don't do what they want the data to do, not a legitimate approach to data scrubbing and validation.

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TallDave says:

September 1, 2016 at 10:56 pm ~new~

This reminds me of the question from the guy who is struck by lightning on Monday, who asks which day in the future is most likely to be his next to feature a lightning strike. The answer was "Tuesday" (because each successive day has to account for the increasing probability of any of the prior days' having already experienced the next lightning strike). But technically this depended on the time the question was asked on Monday, because very early in the day not enough of Monday has passed that the greater amount of Tuesday overrides that "prior day" effect, and we could probably calculate that time from the likelihood of lightning strikes.

And then Jimmy Wales liked my comment. It was the greatest day of my life [citation needed].

So anyways, the most likely day for the next horrifying terrorist attack is always... tomorrow. Unless you're up late, in which case it may be "today." Enjoy that in your brain.

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Yossarian says:

September 2, 2016 at 12:31 am ~new~

One other thing you shouldn't forget is the existence of feedback loops in cause and effect chains. It would be better to compare terrorism with yet another highly publicized event like airplane crashes.

Sure, each airplane crash by itself kills a lot of people, but still, statistically, air travel is among the safest travel modes. And yeah, with the sort of media coverage these events get, people are irrationally scared of flying. But what happens afterwards? The plane people get together, analyze the event, figure out what caused it and invent ways to make it safer – using redundant systems, figuring out ways to make engines fail less often, making sure the pilots are professional and healthy, prepare contingency plans for what to do if something goes wrong, yada yada. This might cause the ticket prices to go up, but it's also likely to actually make planes safer (and that probably among the reasons that we do have air travel). So it's a neutral, maybe even benevolent feedback mode.

On another hand, once we start media hysterics about terrorism and start making too many waves – we give the terrorists the publicity, fame and notoriety that they want to get more people interested in terrorism as a result. Couple that with all kinds of unpleasant things and costs that an overly paranoid counter-terrorist program will inflict

get a feedback mode that is bad, no matter how you look at it. And once you get more terrorism, you get even more paranoia and media coverage, then you get even more

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Doug M. says:

September 2, 2016 at 2:46 am ~new~

Just for the record: asteroid strikes are rapidly becoming a thing we don't need to be scared of.

Why not? Because in the last fifteen years or so, we've mapped the orbits of every Near-Earth Object (NEO) with a diameter greater than a kilometer or so.(1) NEOs are the short-term comets that cross Earth's orbit. By definition, NEOs are almost the only thing that can possibly hit us. (2) And as of this writing, we're pretty sure we've bagged bigger than 1 km, and the majority of NEOs bigger than 300m. By 2030, we expect to have all the 300m NEOs as well and to have taken a solid bite out of the 100m NEOs

None of the asteroids that we've currently mapped are on a collision course with Earth. NEO orbits are chaotic over astronomical time, but on a time scale of decades to centuries, they are extremely predictable. So, nothing big is going to hit us in the next hundred years or so. *We know this*. We know it to a very high degree of confidence.

What does "nothing big" mean? Well, the asteroid that killed the dinosaurs was probably around 6 km across. At the other extreme, the one that exploded over Chelyabinsk — making a loud scary bang and breaking a lot of windows, but not injuring anyone — was around 25m across. The biggest rock that could plausibly "sneak up" on us in the decades would be around 300m across. That would hit with a force around 800 megatons(3), which would kill everything within about a twenty mile radius and might give us a "year without a summer", depending on when and where it hit. Unpleasant, but for most of humanity no more than an inconvenience — and let's note again that we'll have mapped all the asteroids by the end of the next decade. When you start talking about 100m asteroids, well, that's just a big random bang that's not going to have any major effects on the immediate locale. (With regard to which, recall that 80% of the Earth's surface is deep ocean, empty desert, or Antarctica.)

Fear of asteroid strikes is becoming as irrelevant as fear of smallpox.(4) This is not widely appreciated, but it's true.

Doug M.

(1) Scroll down to the last graph on this page: <http://neo.jpl.nasa.gov/stats/>. That's the one for discoveries of big asteroids, over 1 km across. The surge around 2000 is when our techniques got good enough to start capturing them consistently. See how it declines into a long tail? In 2000 we were finding new large NEOs every few days. In 2016 we bagged a new one since April. The current count is around 880; the best guess is that the actual number of large NEOs is well under 1,000, and that we already have around 800.

(2) In theory we could be hit by a long-period comet. However, this is a lot less likely than being hit by a NEO. Your average NEO crosses Earth's orbit once every couple of years. The average long-period comet crosses Earth's orbit once every few thousand years. (Halley's Comet is an oddity — for a long-period comet, it has a very short orbital period.) The odds of a comet strike are so small that it's possible it may never have happened once in Earth's history. Comet strikes should look slightly different from asteroid strikes — a different composition, and is moving a lot faster. But every time we've been able to firmly identify the source of a strike, it's been an asteroid. Long-period comets don't seem to be a threat.

(3) Assuming a porous rocky asteroid striking at average NEO orbital velocity and inclination, using the Imperial College impact calculator.

(4) Wait, but what happens when we DO spot an asteroid that's going to hit us? — Well, then we can probably move it. The more advance warning you have of a strike, the more time you have to move the NEO off an impact course. With decades of warning, only a very gentle nudge — a few cm/s at most — will do the job. That's well within our current capabilities.

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J Mann says:

September 2, 2016 at 10:33 am ~new~

Very interesting – thanks!

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Edward Scizorhands says:

September 2, 2016 at 10:57 am ~new~

Since you have the knowledge, I'll ask: how do we know we can see the 1km NEOs? What if they have a low albedo? Do we have independent evidence (meaning evidence we can see") that low-albedo bodies are rare?

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Douglas Knight says:

September 2, 2016 at 11:20 am ~new~

The link says that they assume that the albedo of NEAs are like those in the asteroid belt, which is big and thus easy to study. It should be easy to model the probability of spotting an object as a function of albedo, and thus have good bounds on how common are dark asteroids, and thus dark NEAs.

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John Schilling says:

September 2, 2016 at 11:23 am ~new~

A very low-albedo, near-earth body will necessarily be a warm body – it will be absorbing lots of solar radiation, and then reradiating it in the infrared. Our [prolific NEO detectors](#) was an orbiting infrared telescope operating at the right wavelengths to look for the signature of such dark objects.

As Doug notes, we haven't found 100.00% of them, but we do have the statistics to say that we have found >95% of them. The postulated remainder are whose orbits are inconvenient for observation from Earth; any time they are close to us in space they are also close to the sun in angle and so tend to get the images. To get to 100% detection of near-Earth asteroids, you'd want to put a telescope somewhere in the vicinity of Venus looking outwards. There do just that, but not yet flight hardware.

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John Schilling says:

September 2, 2016 at 11:09 am ~new~

The long-period comet threat is roughly one impact per 150 million years, but those impacts are the really bad ones – big, fast, and little prospect of detecting the anything but try and evacuate the continent or basin it's going to hit. Typically 1 mile / 1.6 km diameter, 50-60 km/s impact velocity, and ~100,000 megatons effe

Whether we "need" to be scared of such things is perhaps debatable, but there doesn't seem to be much point.

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Psmith says:

September 2, 2016 at 11:33 am ~new~

Both this and the parent comment are very interesting stuff. There is no great stagnation.

Can you and/or Doug M. elaborate some on the long-period comets? Once every 150 megayears vs. none verified and possibly none ever?

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Andrew says:

September 2, 2016 at 11:47 am ~new~

John- you say 1 per 150 megayears, but Doug said never in Earth's history (so at least a few dozen times rarer?). What's the dispute, here?

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John Schilling says:

September 2, 2016 at 12:18 pm ~new~

There are definitely large impacts – and we're still mostly talking an order of magnitude smaller than dinosaur-killers – in Earth's history. More than 1/1. unless they are very large or very recent, we usually can't identify the source of the impactor. So no *known* long-period cometary impacts.

But we've been watching the skies long enough to get pretty good statistics on the frequency and orbit distribution of long-period comets, and we know the Earth presents. If the last couple of centuries are statistically representative of geological time, and if the fine details of comet trajectories are essentially uncorrelated with Earth's orbit, the impact rate comes to ~6.5E-9 per year.

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Doug M. says:

September 3, 2016 at 2:46 pm ~new~

There's a minority of impacts where we're pretty sure, or reasonably sure, that it was an asteroid. There's a majority of impacts where we don't know. There isn't a single impact that we're reasonably sure was a comet.

Cometary impacts should have a somewhat different signal. Comets are mostly ice, so they should produce weaker isotopic and abundance anomalies. That's stuff like the iridium layer, or the layer of chromium with an extraterrestrial isotope signature. They shouldn't leave an impact field (actual extraterrestrial material lying around) which asteroids sometimes do. They hit faster, releasing more energy and more heat, so they should produce a different mix of impact minerals — impact diamonds like the ones found (and mined) at Popigai crater in Russia, weird stuff like stishovite which is super-quartz that can only form at very high pressures and temperatures, that sort of thing.

That said, if the frequency of long-period cometary impacts really is around once every ~150 MY, then it's not really surprising that we haven't found one yet. ~70% of the Earth's surface is ocean basin, and ocean basins are geologically young — ocean crust generally gets subducted within a couple of million years. You'd need to find an impact crater on relatively old, stable, near-surface rock — probably on a continental craton (core), somewhere in Siberia. Such a thing may exist; we just haven't spotted it yet. (Yes, we are still finding impact craters. All the time. They're not necessarily all new.)

Doug M.

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Doug M. says:

September 3, 2016 at 2:50 pm ~new~

A thing to keep in mind: the study of impact craters is still really young. I'm living in Tajikistan at the moment. There's a large, suspicious crater in the Pamirs a few hundred km east of me. It's called Lake Karakul and it just recently (2013) got positively identified as a meteorite impact. It's tentatively estimated as somewhere in the Miocene, 15 to 30 MYA. Those error bars are huge because the French team of geologists only had a few weeks to work. Lake Karakul is incredibly isolated, and there are maybe sixty days per year when it's accessible by car — winter, it's snowed out, and then in spring there are floods and landslides. (The local inhabitants consist of a single village and some very hardy nomads.)

Lake Karakul is clearly a very large and important impact site, but we've only barely glanced at it. The French want to come back and work, but the last I heard they were still waiting for a grant to come through. Maybe next summer...

And then there's stuff like the Eltanin crater and the "Fried Egg Formation", which are seabed impact craters. (Well, probably. Nobody is about the Fried Egg Formation.) They're under thousands of feet of water, and the Eltanin crater is also near Antarctica, under a chilly regularly afflicted with horrible weather and lots of icebergs. So, detailed studies are not going to happen soon.

TLDR: the study of Earth impacts is very much still an open field, with a lot left to learn.

Doug M.

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Tybalt says:

September 6, 2016 at 10:21 am ~new~

"But we've been watching the skies long enough to get pretty good statistics on the frequency and orbit distribution of long-period comets"

There is an active school of thought that complicates the picture:

'Clube and Napier suggested that the outer planets occasionally divert giant [centaurs] (more than 50 kilometers in diameter) into the inner solar system short-period orbits. Debris from the resultant disintegration of these giant [centaurs] can adversely affect the environment of the Earth. Dusting the Earth by sunlight, resulting in globally cooler conditions. Impact events in the super-Tunguska class may result in not only heavy localized destruction but also occasional "impact winter" or dust veil with global climatological effects.'

<https://www.pibburns.com/catastro/clubenap.htm>

<http://www.boulder.swri.edu/clark/cohcat.pdf>

<http://www.buckingham.ac.uk/wp-content/uploads/2011/09/Centaurs-as-a-hazard-to-civilisation.pdf>

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John Schilling says:

September 6, 2016 at 11:35 am ~new~

Last time I checked, the Tunguska impactor itself was believed to be a fragment of a short-period comet, though the community may have changed their mind about that again.

More generally, if the current population is typical, short-period comets are a more numerous threat over geologic time than long-period comets. Perturbing a long-period comet by e.g. Jupiter into a short-period orbit is unlikely, but if it happens it gives a potential impactor many chances to hit the Earth. A long-period comet. It also tends to boil off the volatiles and break up the core, resulting in more numerous but smaller impactors.

But the original discussion was about things we need to be scared of today. And today, we have a pretty good idea where all the large comets are because we've made a hobby out of looking for them for rather more than a short period. Right now, there aren't any big comets on Earth-impacting orbits. In ten thousand years, we'll have a new population of short-period comets and we'll have to reevaluate that.

In ten thousand years, I'm hoping that evaluating the entire population of short-period comets in some quaint little solar system will be an enterprising Boy Scout can do as a civic-service project.

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Liskantope says:

September 2, 2016 at 4:22 am ~new~

This post reminds me of a closely related question: assuming for the sake of argument that terrorist attacks or school shootings cause fewer deaths than something complex that nobody worries about, should we go out of our ways to take measures to prevent them? This came up some months ago when there was a big argument on rationalist Tumblr about whether people quoted statistics showing that a kid in school is more likely to die of a heart attack than a shooting. This was presented as an argument against gun control.

My opinion is that this argument is not very effective. We already do a lot to improve children's physical health, and there's not that much more we can do in the sense that no proposal on the table for this cause that enough people agree on. There are, on the other hand, many proposals on the table for the goal of reducing mass shootings, which are all variants on one idea. People may disagree as to whether they would be effective at making people safer from guns at school or whether they might make things more dangerous, but it's a debate that we should have. But I don't see the fact that something else causes more deaths as a reason why people shouldn't push particular strategies for preventing gun violence. We have what they think are good ideas. In general, "X causes less harm than Y" isn't a good argument for not putting resources towards combating X, unless it directly draws resources from the fight against Y. And in cases like this, where there is no clear path in the fight against Y, I don't think we have to worry about resources being taken away from it.

Take the oft-cited example of airplane crashes versus car crashes, for instance. I don't believe that the main reason that we put so many resources towards making planes safer is because plane crashes are more upsetting or the idea of flying is inherently scarier to the public. I believe that the primary reason for so many airline regulations is that we have to and enforce them for commercial flights, while we are much more limited in what we can do to make private car rides safer (although there are some things we can do to make cars safer with driving laws, and we have gone out of our way to do them). The fact that cars are more dangerous than planes is irrelevant — because people have seen specific measures to make flying easier, it makes sense to go ahead and take them.

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Macbi says:

September 2, 2016 at 5:13 am ~new~

Are aeroplanes more regulated than cars?

I think the reason they're safer (per passenger mile) is that between taking off and landing they travel in the air where there are very few obstacles. They also tra carry a lot of passengers.

I agree with your point that "low hanging fruit" regulations should be enforced whenever we see them. However I suspect that fewer regulations are low hanging i would think. For example the life jackets in aeroplanes have never saved anybody's life, but the crew has to go round every morning checking that they're all still them sometimes). If they didn't have to do this air tickets would become slightly cheaper, more people would choose flying over driving, and lives would be saved

EDIT: My mistake, life jackets did save lives on [ALM Flight 980](#), which makes this one of those difficult cases where you actually have to calculate if the regulation

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Liskantope says:

September 2, 2016 at 6:23 am ~new~

I would say that commercial flying is *far* more regulated than driving. The pilot is subject to just as many rules as a car driver, and probably loses their jo them; there is no way to enforce driving laws this well. Also, there are more regulations for everyone involved in commercial air travel than could possibl private activity (e.g. driving one's car to work). Yet even other forms of commercial have nowhere near this level of regulation; when traveling by bus or never had to put my luggage through an X-ray machine, turn off all electronics and stow my backpack in front of me at certain times, etc., and I'm sure I subject to fewer rules and looser procedures as well. Still, I don't know exactly how much this contributes to the low rate of death by plane travel, and th gave are obvious factors as well.

As for your point about life jackets, I suspect that nearly every rule introduced for commercial aviation arose from at least one accident where the rule m some lives. But I would also say that some of this regulation has gone too far. For instance, the rule about keeping all electronics off during take-off and seemed ridiculous to me (if I understand the relevant science right), although it came as a response to a single incident where someone using their mobi with communications. Most airlines have only just recently begun to ease that rule back.

(Nitpick: I don't find it immediately obvious that removing safety measures like life jackets would increase demand for air travel, because it might make fliers more nervous... but probably not enough to overcome the power of lowered prices, and that wasn't your main point anyway.)

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Snodgrass says:

September 7, 2016 at 12:20 pm ~new~

I've had my luggage X-rayed before getting onto trains a few times (not a surprise for Eurostar, but a bit of one for the slow Malaga-to-Seville s the goal there is to prevent people bringing weapons onto the crowded station concourse, but the crowded station concourse adjoins a no-less-i shopping centre).

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John Schilling says:

September 2, 2016 at 9:52 am ~new~

Are aeroplanes more regulated than cars?

Yes, by far. Particularly for airliners, the only type of airplane most people will ever fly in, but even a four-seat Cessna and its pilot are subject to a much regime than any automobile. Starting, on the aircraft side, with the requirement for an airworthiness certificate. There is no equivalent on the automotiv requirements that an automobile has to meet, and the manufacturer can be fined for not meeting those requirements, but all they have to do is meet th not get caught breaking them). The airplane manufacturer has to meet the (requirements of [FAR Part 23](#), and has to *prove* by test, analysis, and inspec discretionary satisfaction, that they meet those requirements. For the simplest airplanes, built in accordance with established practices, this takes years i millions of dollars. The Tesla, were it an airplane, would probably still be awaiting approval while the FAA tried to figure out how to evaluate the safety of

The airplane then has to be re-inspected every year, or every hundred hours if used in commercial service, to verify that it continues to meet those requi that bears no resemblance to any "safety inspection" your state might require for automobiles.

Pilot training standards, even for private pilots, are much higher than for drivers. As are medical requirements; an actual physical exam by an FAA specia Both skills and health are re-tested every two years for private pilots; airline pilots have a very thorough medical exam every six months.

Basic regulations like speed limits (yes, they exist) are Not To Be Broken. There is no tolerance for "Oh, I got a ticket, happens to everyone now and ther recognized infraction is cause for a suspended license.

As I mentioned I think in the latest open thread, the government recently relaxed parts of the regulatory regime for the smallest airplanes, no more thar something more automobile-like where as long as the airplane is built to industry best practices the manufacturer doesn't have to specifically prove comp and as long as there's nothing known to be wrong with the pilot's health he doesn't need the special FAA medical exam. Airplanes flown under this regim as likely to crash as similar airplanes flown under the traditional regulations, and I believe somewhat more dangerous per mile or per hour than automob smallest airplanes, the danger is almost exclusively to the pilot and at most one passenger. The FAA's mandate is specifically to protect innocent bystand

people who buy passage on a commercial transportation service but not necessarily people who go for a ride with Uncle Bob in his little flying contraption

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Rosemary7391 says:

September 3, 2016 at 8:57 am ~new~

I never knew that you didn't have to get your car tested for roadworthiness in parts of the USA. You do in the UK (once per year after it's 3 years)
https://en.wikipedia.org/wiki/MOT_test

I'd still agree that air travel is more regulated than car travel despite that. It's just funny how little things that you assume must be true in other similar places actually aren't.

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bean says:

September 2, 2016 at 11:37 am ~new~

Are aeroplanes more regulated than cars?

Yes, in the same sense that drugs are more heavily regulated than chairs. I work for a manufacturer of airliners developing repair documentation, and that takes up the majority of my time. I've heard that it's easier to put something in a person than it is to put a part on one of our airplanes. I'm not sure, but the two are definitely of a similar magnitude. It used to be said that you knew when an airliner was ready, because the documentation weighed as much as the airplane. These days, it's worse than it used to be because we've gone all digital, and they haven't worked out an appropriate replacement mechanism.

That said, there has been serious debate over the oxygen system on airliners. It's a hazard (improperly handled canisters have killed people), and so far hasn't really saved anyone. But the public isn't particularly interested in cost-benefit, so it stays.

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TomFL says:

September 2, 2016 at 11:27 am ~new~

It's cost efficient to make airliners safer than cars. Doubling the cost of cars and road infrastructure taxes will increase car safety, but pricing a car outside of 25% of one's ability to buy is a non-starter. Society has decided to accept the death tolls for the benefit.

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bean says:

September 2, 2016 at 11:52 am ~new~

I believe that the primary reason for so many airline regulations is that we can make them and enforce them for commercial flights, while we are much more limited in what we can do to make private car rides safer

This is true, but I think it's only part of the story. The other part is exactly the terrorism vs chairs issue. Big airliner crashes happen a couple times a year, infrequently, but they make the news. Car crashes happen every day, and only make the news when someone famous was killed in one.

(Of course, at least in the US, everyone in the industry is really concerned about safety. There aren't really good alternatives to cars if you're worried about safety. If the industry starts to worry about airline safety, they'll drive instead and the industry takes a big hit.)

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Petter says:

September 2, 2016 at 4:29 am ~new~

> because terrorists kill fewer people each year than falling furniture, and nobody cares about that

I don't think that is true. IKEA and many other places sell safety things that you use to fasten your heavy bookshelves to the wall. I think this is a big concern for most parents with children. When you visit the pediatrician, they constantly ask you whether you have secured your home. :-p

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J Mann says:

September 2, 2016 at 10:32 am ~new~

What percentage of people actually install those anchors in their wall? I throw them away.

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Said Achmiz says:

September 3, 2016 at 2:23 pm ~new~

I purchased a bookshelf recently and installed the anchors. It would have been extremely foolish not to; the bookshelf is 72" high and only 11" wide and the floor is not quite even. The bookshelf wobbled when touched before the anchors were installed; now it is secure.

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Julia says:

September 2, 2016 at 3:12 pm ~new~

This was my first thought as well. My two-year-old pulling a dresser down on herself concerns me a lot more than terrorism. Looks like it's around 25,000 kids injured year, roughly 1 in 1000 toddlers. That's in the realm of what I think it makes sense for parents to worry about.

<http://www.cpsc.gov/en/Safety-Education/Neighborhood-Safety-Network/Posters/1-Child-Dies-Every-Two-Weeks/>

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Jack V says:

September 2, 2016 at 6:43 am ~new~

I'm a bit torn.

On the one hand, even if no-one had EVER been killed by terrorism, it makes sense to have some precautions against it, because knowing there's nothing to stop you make that someone who wants to do that, actually will. So I don't think a straight-up chairs-vs-terrorists comparison is meaningful even if it comes out the way proponents intend.

But I also think september 11 was unusually bad, and we should expect less terrorism, not another even-worse event to come along eventually. Or maybe, that running around shoes on killing people at random is not actually helping and maybe we need to do better at removing the causes of terrorism, and less at polarising pro- and anti- muslim.

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Machine Interface says:

September 2, 2016 at 8:25 am ~new~

Maybe tangential and not really making a specific point but.

Until the November 2015 attacks in France, the deadliest terrorist attack in France was the bomb attack and derailment of a train in January 61, which left 24 people dead (on the source).

This was perpetrated by the Organisation Armée Secrète (OAS), a far right paramilitary organisation which at its height might have counted as much as 3,000 members, opposing giving independence to Algeria. They also committed several assassination attempts (two of which failed only by an inch) against then president Charles de Gaulle.

For a long time I thought the first attack I mentioned was an outlier, in the same pattern as recent Islamic terrorist attacks. But after some research, it turned out that isn't.

Apparently the OAS committed *hundreds* of both blind and targeted attacks over a very small period of time; and while most of these attacks had only one or two victims, a *estimate of the death toll attributed to the OAS reaches 2,200 deaths for just the period going from January 61 to July 62 (some sources contend that the actual death toll is significantly higher, since many of the victims were kidnapped and assassinated in remote locations with no claim being made by the OAS; French historians are still working and testimonies at this point).

And while most attacks were assassinations against a single person, a significant number still made over a dozen victims each time. Furthermore, after some research, it turns out it is only the most deadly attack committed by the OAS on what is *now* French territory, but they apparently committed much deadlier attacks in Algeria, back when it was so that some of those may have reached over a hundred dead.

(comment abruptly ends here)

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Galle says:

September 2, 2016 at 11:01 am ~new~

Our homework for this thread, clearly, is to come up with a semi-plausible chain of events that would result in the furniture apocalypse.

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Chalid says:

September 2, 2016 at 11:17 am ~new~

Probably a lot of people would die from falling furniture and shelves and the like in a really big earthquake. So we'd just need to convince whoever classifies these and categorizes these as "furniture" deaths as opposed to "earthquake" deaths. ("Cause of death: failure to use wall mounts.")

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Macbi says:

September 3, 2016 at 4:12 am ~new~

Internet of things + hacking

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TomFL says:

September 2, 2016 at 11:20 am ~new~

There ARE NOT universal methods for signal analysis. Sorry. Just stop trying. The best method to interpret data is to analyze the signal and noise, understand the underlying the appropriate analysis method for your intentions. There is understanding what happened, and then predicting what will happen. Interpolation is OK, extrapolation is dan

I find *just looking at the raw data* tells me 90% of what I need to know. No statistics necessary. Any analysis that use sophisticated statistics is immediately suspect in my drives me batty is when a “surprising” result occurs from an analysis using a single somewhat crazy data processing method. Perhaps the analysis is optimal, but I’d like to analyzed using standard methods and it made clear why special methods were deemed necessary.

People with an agenda choose analysis methods that suit their intended result. How many times have you seen a doomsdayer model an almost linear trend to an exponent just around the corner and start yapping about near term tipping points.

In terrorism it is the black swan that counts. The underlying data shows that people will intentionally commit the black swan event if given the resources, so it makes sense their access to these resources. An important distinction is that these are not random physics driven events.

People are too paranoid about terrorism generally, but those who dismiss it are deluded if they think we shouldn’t be looking hard for people trying to access biological weapons material. The biological weapons the USSR had at the end of the cold war were terrifying, tons of weaponized vaccine resistant smallpox among others. They may or may not of it all, but there are people who certainly haven’t forgotten how to do it again.

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The Sprat says:

September 2, 2016 at 1:09 pm ~new~

Conservatives are familiar with this problem, because every six months or so, some wiseacre blogger or “journalist” will cook up a version of that first chart, except instead of chairs, it’s Islamic terrorism vs. right-wing terrorism. And not only do these charts all strangely begin right there on 9/12/01, but if you dig deep into the data they also often include non-Islamic terror attacks/mass killings as “right-wing.”

(Also strange: when discussing the successful terrorism-prevention records of U.S. Presidents, 9/11 is suddenly included again.)

Another confounder is relative lethality: there are many millions of chairs inside the U.S. [citation needed], but a comparatively low number of terrorists at any given time.

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James says:

September 2, 2016 at 3:57 pm ~new~

You’re trying to find a way to make an average meaningful in a system that’s designed to defy such things.

The number of people killed via furniture is going to be roughly constant, because people (in aggregate) and furniture are roughly constant; any variation from the average is small, and almost certainly random. Chairs are chairs; there’s nothing much that’s going to happen to make them more or less hazardous.

Terrorism, in sharp contrast, relies on differences between normal life and the attacks. In areas where violence is the norm, terrorism gets no (or poor) results—during the Ukraine, when Russia invaded/intervened (depends on your perspective, the info I got from folks in the country was too muddy to interpret), someone setting off a bomb was unnoticed. In Israel it doesn’t disrupt life too much for anyone not affected by it. What’s one more explosion? It’s only in areas where violence is the exception, and a drastic one where terrorism has any potential to make an impact. A bomb that kills 5 people in the USA makes the national news, because that’s probably the worst bomb attack that’s ever shown showmanship, and it’s the contrast that makes it work.

Thus, looking at the average number of deaths due to terrorism is a nonsensical way to look at it. The most effective terrorist activities will be in areas where the average rate per year due to terrorism is fairly low. I’m not entirely certain what statistical analysis would be superior, but the average is quite obviously the wrong choice. An average of rates (including and excluding those thwarted or which fail due to other reasons) could be an option: it captures the relevant data about how dangerous an attack is, while simultaneously providing a picture of how likely an attack is going to be to succeed.

Further, furniture isn’t actively attempting to harm anyone (despite what you think at 2 am when your child wants a glass of water and you’re too lazy to turn the light on). The risks associated with furniture are passive; they are known, and can be accounted for. The risks posed by terrorists are active, and anti-inductive: terrorists are actively trying to evade our measures to stop them, meaning that they are hoping to achieve a level of unpredictability impossible in inanimate objects. This element is completely ignored in these calculations; we’re supposed to view the two situations as perfectly equivalent, when in reality they are vastly different in kind.

I have never been shot at by a hunter. More people have been injured in my family due to trees and tree limbs falling on them than by hunters. But when I’m in a woods I’m not a hunter I came across and not the trees, because the hunter can ACTIVELY CHOOSE to harm me. The tree can’t. And that matters from a threat-assessment perspective.

As an aside, I’m highly dubious about the utility of averages in statements about giant asteroids and the like. The variance is simply too high (and the definition of “giant” is too fuzzy) for the number to mean anything. Plus, the vast majority of the rock older than the Jurassic is gone, and most of what’s left has never been thoroughly analyzed. Sea floor sediments destroyed the majority of the sea floor since before the Jurassic (some Triassic stuff is left in the oceans, and some older stuff is on continents for various reasons). That’s missing from these calculations, particularly considering the fact that we should expect giant asteroids to decrease in number through the lifespan of the solar system. Cyclical mass extinctions is even worse. We have very few data points, and even fewer once you look at originate rates and realize there are two distinct kinds of mass extinctions. All we can tell, from a desire to fit past events in life’s history to popular theories. Once the Alvarez Hypothesis was confirmed everyone wanted to tie everything in life’s history to it, whether it fit or not. Basalt volcanism went through the same process. Global warming is now the pet one (I’m not saying anything about CURRENT global warming—I’m saying that ignoring everything but global temperature change when studying past events in life, just because it’s popular today). And I reject the notion that potential effects can be measured by actual averages in any case; it’s equivocation, pure and simple.

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Toma says:

September 2, 2016 at 4:07 pm ~new~

Scott, you should copyright “Furniturepocalypse” before some Hollywood screenwriter turns it into the next Sharknado hit series.

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Deiseach says:

September 3, 2016 at 10:22 am ~new~

Gives a sinister twist to all those cartoon deaths where guys get smashed by falling pianos – *the pianos are doing it on purpose!* 😊

de Maupassant has a [story](#) about sentient or somehow mysteriously animated furniture:

*I continued to listen for some time longer. I could distinguish now an extraordinary pattering upon the steps of my grand staircase, on the waxed floors, on the ca
boots, nor of naked feet, but of iron, and wooden crutches, which resounded like cymbals. Then I suddenly discerned, on the threshold of my door, an arm chair, n
reading easy chair, which set off waddling. It went away through my garden. Others followed it, those of my drawing-room, then my sofas, dragging themselves
crocodiles on their short paws; then all my chairs, bounding like goats, and the little footstools, hopping like rabbits.*

*Oh! what a sensation! I slunk back into a clump of bushes where I remained crouched up, watching, meanwhile, my furniture defile past, for everything walked a
behind the other, briskly or slowly, according to its weight or size. My piano, my grand piano, bounded past with the gallop of a horse and a murmur of music in
smaller articles slid along the gravel like snails, my brushes, crystal, cups and saucers, which glistened in the moonlight. I saw my writing desk appear, a rare cu
last century, which contained all the letters I had ever received, all the history of my heart, an old history from which I have suffered so much! Besides, there was
great many cherished photographs.*

*Suddenly — I no longer had any fear — I threw myself on it, seized it as one would seize a thief, as one would seize a wife about to run away; but it pursued its irr
course, and despite my efforts and despite my anger, I could not even retard its pace. As I was resisting in desperation that insuperable force, I was thrown to the
my struggle with it. It then rolled me over, trailed me along the gravel, and the rest of my furniture which followed it, began to march over me, tramping on my l
injuring them. When I loosed my hold, other articles passed over my body, just as a charge of cavalry does over the body of a dismounted soldier.*

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Montfort says:

September 2, 2016 at 9:44 pm ~new~

Gravatars are based on emails, right? Does anyone have a guess why mine appears to have suddenly changed? I’m reasonably sure my email is both entered correctly and

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Montfort says:

September 3, 2016 at 12:06 am ~new~

Nevermind, I meant to post this in the open thread, and sure enough there’s [a thread](#) about Gravatar’s algorithm change there already.

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lambdaphagy says:

September 2, 2016 at 10:05 pm ~new~

This seems to be a hobby horse of the Post’s. [Here](#), for example, is a graph showing us that in recent years, Islamic and right-wing terrorism have been of roughly equal cc
from the nice round start date of 2002.

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Sandy says:

September 2, 2016 at 10:18 pm ~new~

I don’t get how they use data like this to say “The problem of right-wing terrorism is just as bad as the problem of Islamic terrorism!” when Muslims are only abou
population — proportionately, if Islamic terrorism in the US is as bad as right-wing terrorism, the Islamic terrorists are punching far above their weight.

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ThirteenthLetter says:

September 2, 2016 at 11:56 pm ~new~

Why, it’s almost as if they’re trying to push a narrative instead of inform the populace.

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Steve Sailer says:

September 3, 2016 at 1:22 am ~new~

I think people are wired to worry about violence more than about other threats. I also think there may be good reasons for this.

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AL says:

September 3, 2016 at 2:39 pm ~new~

Terrorism often has a particularly strong effect on people's behavior, and that effect tends to be particularly destructive on a collective/societal scale.

Counting immediate terrorist kills as the only relevant metric fails to account for these other costs, which may be very significant indeed.

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Saint Fiasco says:

September 5, 2016 at 9:15 am ~new~

Aren't more than half of those effects caused by the victims (over)reaction?

We may be better off pretending that the immediate kills are the only consequence.

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sabrill says:

September 4, 2016 at 10:07 am ~new~

Professor Jonathan Katz (of "in defense of homophobia" infamy) had some interesting things to say about this issue:

[Why Terrorism Matters](#)

The terrorists of al Qaeda killed 2998 people on September 11, 2001. This is fewer than the number of Americans killed every month in highway accidents and about the same estimated number who die every ten days as a result of medical mistakes. Yet we consider terrorism to be an urgent national problem and an important threat, justifying a range of security measures of dubious value ranging from the inconvenient (long lines at airport security checkpoints) to the humiliating (public pat-down searches of people not conceivably be terrorists, such as old people in wheelchairs and small children) to the frankly ridiculous (it's now illegal to take photographs in the New York subway). Automobile accidents and medical errors are accepted as inevitable features of everyday life, justifying only modest efforts to reduce their frequency.

He goes on to hypothesize that terrorism matters because it's an assault on national honor. I do not totally agree with him, but of course I think he is right that there is a lot more than just the body count.

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Squirrel of Doom says:

September 4, 2016 at 10:46 pm ~new~

To me the difference is that terrorism is done by an intelligent force that aims to kill us all if we don't stop them.

Falling furniture, even if completely ignored, will not methodically escalate like that, since it is a mindless force.

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sabrill says:

September 5, 2016 at 7:04 pm ~new~

To me the difference is that terrorism is done by an intelligent force that aims to kill us all if we don't stop them.

I agree that's a big part of it, but I think there are other factors too.

Here's a thought experiment: Suppose there was some weird foreign religious cult which had been around for a hundred years and it had a practice of killing one American per year. The cult has no aim to kill all Americans or even many Americans. Just one a year.

I think under those circumstances, most Americans would still agree that it's worth spending a lot of resources to stop this cult. Far more than would be spent preventing an additional fatal car accident. Why is that? For one thing, most of us would agree that the world needs to know that there are serious negative consequences when you target Americans for killing. It's not something that we will just ignore. For another thing, honor. But those are two very similar things.

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Ben says:

September 4, 2016 at 9:28 pm ~new~

Thin tails v fat tails

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Jason says:

September 4, 2016 at 10:29 pm ~new~

There is an unspoken element to all this, which is "what problems can we sensibly and efficiently protect against?"

AI people, terrorism people, and earthquake people believe they know, if not the wingspan and beak size of the coming black swan, at least the direction it'll fly in from.

Furniture and flu people are more implicitly circumspect. Their assumption is of an infinite number of potential black swans against which we cannot reasonably protect our background of meta risk they propose we may as well do what we can about what we can. It would be silly for a person who lives next to a volcano to drive round with the for example.

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Squirrel of Doom says:

September 4, 2016 at 10:42 pm ~new~

In defense of the Haitians, the last major quake in Port-au-Prince was in **1770**.

So I don't know how much you can – without hindsight – blame them for not spending a lot of effort preparing for such an unlikely disaster, when they're always dealing with disasters.

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Krzys says:

September 6, 2016 at 12:04 am ~new~

The difference is very simple:

The chair fatality distribution is known. The terror distribution is unknown with high possible peak. That's what makes all those comparisons idiotic.

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Murphy says:

September 6, 2016 at 7:17 am ~new~

For terrorist attack n is 156,772

How big a sample do you think you need to be reasonably confident about the distribution?

<http://slatestarcodex.com/2016/08/31/terrorists-vs-chairs-an-outlier-story/#comment-404455>

I'm wondering whether there's even 156 thousand recorded chair deaths. Due to better record keeping it seems likely we might have *better* data about the distribution attacks.

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Protagoras says:

September 6, 2016 at 7:33 am ~new~

If, as Scott reports, 50 people a year die from falling from chairs in Britain alone, that puts it in the ballpark of 1 per million people per year. Assuming Britain is unusually susceptible to fatally falling off chairs, extrapolating that to the world as a whole easily gets you several times more chair deaths over the year deaths (also assuming that chair deaths haven't gone up over time). Admittedly, the former assumption is perhaps questionable, and the latter assumption (population of older people has definitely gone up over time, and amount of time people spend in chairs also seems to have), but neither seems likely to leave chair deaths below terrorism deaths.

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Jiro says:

September 6, 2016 at 9:11 am ~new~

If someone dies in falling off a chair, but they also have a medical condition (or just old age, which is a combination of medical conditions) which makes them unusually susceptible to death from falling off chairs, it isn't fair to count that as 100% a "death caused by falling off of a chair" and 0% a "death caused by medical condition". Your figure of 50 per year is, because of this, drastically overstated.

Also, deaths which happen in small quantities can have high percentages of misreporting. How many of those deaths caused by falling off of chairs are caused by something embarrassing (death by auto-asphyxiation), or even suicides or mob hits, and they're just officially reported in vague terms as "death by falling off of chair"?

(And if those two factors have an effect, it might not generalize to non-developed countries or countries with different cultures.)

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Yehoshua K says:

September 6, 2016 at 2:19 pm ~new~

Of course there will be a successful mass-casualty attack that dwarfs 9-11, sooner or later. There are a lot of would-be terrorists plotting, plenty of them are plenty smart, and plenty of resources backing them up. It is not plausible at all that America and similar countries will defeat every single attempt at a mass-casualty attack forever; therefore, it is inevitable that there will never again be a mass-casualty attack. Sooner or later enemy luck + skill + resources will beat friendly luck + skill + resources. Isn't this obvious?

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Troutwaxer says:

September 7, 2016 at 12:59 am ~new~

These numbers only apply to the U.S. I'll line 'em up and get back to furniture and terror in a minute.

We lose about 2.5 million people every year to all causes of death. We lose approximately 600,000 each year to heart attack and another 600,000 each year to cancer. Low diseases kill about 150,000/year, with similar numbers for accidents and stroke. We lose about 70,000 people each year to diseases they caught while in a hospital, 45,000 accidents specifically (as opposed to all accidents above) and 30,000 each year to deaths by gun (2/3 of those are suicides.) We lose about 7,500 each year because some the-counter pain reliever to which they were allergic or otherwise incompatible. (I've never heard of anyone dying this way.)

The first thing we can determine when we discuss terror and furniture deaths in the light of this data is that deaths from both causes are minuscule as a percentage of the worst set of terror deaths in any given year, 9/11, killed approximately 1/3 of the people who would die that year due to purchasing the wrong over-the-counter pain relief

Taking an average over time, say from 1996 to 2016, (leaving in 9/11 just to be fair,) we usually see 0-10 deaths in the U.S. every year which evaluate to terrorism. These domestic and done by right-wingers. We have two huge outliers to consider in the U.S., which would be 2001 and this year's slaughter of 49 people at a nightclub in Florida don't see more than 10 deaths due to terror, and frequently we see less than 5 deaths due to terror. Consider the following website, particularly Table 2. (Note that in 1999 transposed U.S. deaths and Israeli deaths by terror. I think I'd remember an incident where 218 people died.)

<http://www.johnstonsarchive.net/terrorism/terror-rate.html>

3161 people were killed by terror attacks between 1996 and 2016, which means we lose an average of 158/year due to terror attacks, even if we leave in the outlier. If we outlier - the 2998 people killed on 9/11 - we end up with an average of 8.1 people killed by terror each year.

Which means that furniture wins when considering the average number of deaths each year.

If we take it year-by-year instead of considering an average, and we assume that furniture ONLY kills 10 people a year, chairs still killed more people than terrorists in 1996-2003-2008, and 2010-2014, giving furniture a 15-5 margin of victory during the last 20 years.

Someone call Donald Trump. We need to deport all the Furniture. And we'll make Ikea pay for it!

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Glen Raphael says:

September 7, 2016 at 2:35 am ~new~

*we usually see 0-10 deaths in the U.S. every year which evaluate to terrorism. These are usually domestic and **done by right-wingers**.*

Got a source on that last bit?

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Troutwaxer says:

September 7, 2016 at 12:52 pm ~new~

There's a decent summary here:

https://en.wikipedia.org/wiki/Terrorism_in_the_United_States#1980.E2.80.9389

It lists terror attacks by ideology at the bottom. When I talk about right-wing attacks I'm lumping together the Right-Wing, Anti-Abortion, KKK, and Anti-generally right-wing/conservative stances.

That being said, it depends very deeply on what time period we're talking about. In the past twenty years, even excluding 9/11, the Islamists have committed more murders and more attacks generally than the right wingers, though the number of killings changes in the right-winger's favor if we go back one more year to the Oklahoma City bombings.

So I've had to change my position a little...

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David Friedman says:

September 7, 2016 at 2:17 pm ~new~

I went through the Wiki list for 1990-1999. About two thirds were arguably right wing, mostly anti-abortion. For the previous decade it looked a minority were, but I didn't do as careful a count.

For the 2000-2009 decade, I only counted one right wing incident (anti-abortion) out of about twenty. Several were by environmentalists, other Palestinian/anti-Israeli. In current politics, that's a left wing position not a right wing position.

So I don't think the evidence supports the claim that terrorist deaths are usually done by right wingers. To be fair, I was counting terrorist incidents, not all of which led to deaths.

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hlynkacg says:

September 7, 2016 at 12:57 pm ~new~

The standard MO is to use count Muslims and school shooters in the Klebold mold as “right-wingers” for these purposes. So yes, most of the deaths from century have been caused by “right-wingers”.

Edit: seems I’ve been ninja’d though I don’t see how adding another 168 deaths to the right’s total “tips the balance”.

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Troutwaxer says:

September 7, 2016 at 3:11 pm ~new~

When I’ve written Right-Wing I’ve meant Right-Wing Domestic terrorists, not Islamic Terrorists. If we discard our outlier (9/11) and add the furt the column for Domestic Right-Wing terror, we get a lot more deaths in that column. The problem is that this is not strictly fair.

My personal take on Islamic terror is that in the last twenty years or so we’re mainly seeing terror undertaken in response to Wahabi propaganc Arabia, so I tend to see the whole thing as an undeclared war with the Saudis than some standard notion of “Terrorism.”

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Titanium Dragon says:

September 16, 2016 at 2:19 am ~new~

That’s a flawed analysis. See also: Israel.

The reality is that Islamist terrorism has been a problem for a long time. It just hasn’t been *our* problem.

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Ben says:

September 7, 2016 at 12:45 pm ~new~

A big criticism of the war on terror is that it does little to actually address black swans instead of wasting everyone’s time with shoes and bombing the middle East back to t

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hawkice says:

September 7, 2016 at 6:55 pm ~new~

I don’t mean to be insensitive, but the second chart seems to indicate there were no deaths from falling furniture on Sept. 11th, 2001. Considering how much fell and how building) some of that was furniture, and that as many as 1,000 of the casualties inside the building died AFTER the towers fell, I find this a less-than-obvious “fact”. Also, definition of ‘falling’, some of the deaths were likely caused by blunt force of the internals of the aircraft, which, notably, contain furniture.

This is all by means of saying that these are not mutually exclusive categories. Using categories to describe these events kind of sucks, because we don’t care about catege about which interventions will help the most. But it’s harder to create a chart that says, number of lives that could have been saved by intervention, because it’s more obvi definitely ARE NOT mutually exclusive, and (2) no list of interventions is complete. It’s not X vs. Y. Which calls into question why on earth you’d use a bar chart for this kind

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Five Daarstens says:

September 20, 2016 at 11:45 pm ~new~

It’s not just dying of terrorism – Tens of thousands (maybe more?) were involved in 9/11 who survived in the surrounding blocks.

Tens of thousands were also involved in the first WTC attack in 1993, even though only six died.

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Voronoff says:

September 22, 2016 at 10:47 pm ~new~

Isn’t this the exact form of argument you used in the Reverse Vox post? You looked at the number of deaths caused by chairs and compared it against the historical data fo has a known black swan structure.

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ASK1 says:

September 25, 2016 at 7:22 pm ~new~

I don’t think the “exclude 9/11” motivation is as cherry-picked as you suggest. The reason for excluding black swans is not that they are not important; it’s that they are er analyzable, thus lending themselves to use by bigoted know-nothings who instinctively use Terror Management Theory to manipulate the populace (not that I’m thinking of particular 😊).

Even experts can stay up late arguing about whether 9/11 should be treated as currently possible, and if so what does it indicate for the likelihood and magnitude of anoth The point (to me at least) is that if you are arguing from historical experience, and leaving out one Hail Mary event makes your argument look stupid, then your argument

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