

"Plans based on average assumptions are wrong on average"

Sam Savage's book, <u>The Flaw of Averages</u>, talks about the ways that we are misled by focusing on averages rather than considering the full range of possible outcomes. It's a fun read that makes some very important points. One of his illustrations is climate change, which is the subject of chapter 37.

Savage asks the read to consider a hypothetical in which, on average, we expect no sea level rise — perhaps because our best estimate is that climate change won't happen. However, assume further that we are not certain of this outcome, and the range of possible sea levels forms a bell curve. Savage then observes that: "If the sea level ends up below expectations, then damage will be a bit lower than expected, but if sea level is above expectations, damage will be much worse than expected." "Hence," he continues, "the damage associated with the average or expected sea level change may be tolerable, but averaged over all the things a scorned and furious Mother Nature might do to us, the damage could be disastrous."

Savage analogizes to a drunk walking down the center of a highway – the drunk's average position is on the centerline, so he is completely "safe on average" but in fact he's going to be killed because of his wobbles into oncoming traffic.

He emphasizes that "for this analysis I assumed that the expected temperature would be the same. yet the uncertainty *alone* created great risk." So even if you think that carbon emissions probably won't cause climate change, you might still want to think very serious

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about hedging that bet.