

# ISSUE BRIEF

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Risk Management and  
Decision Processes Center

## The Ostrich Paradox: Why We Underprepare for Disasters<sup>1</sup>

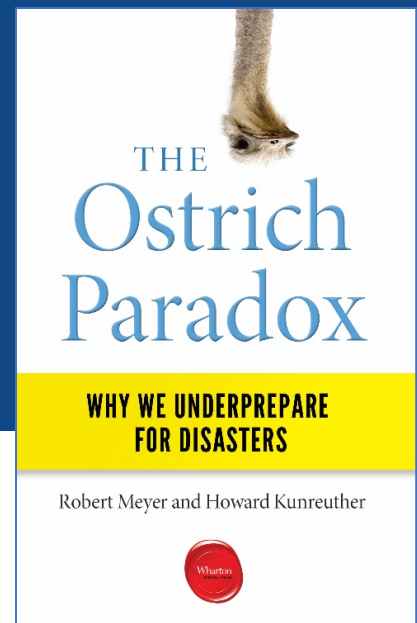
We fail to evacuate when advised to do so. We rebuild in hazard-prone areas after experiencing a disaster. We don't wear helmets when riding motorcycles. We often purchase insurance only after experiencing a disaster and then cancel our policy a few years later if we haven't made a claim. We would rather avoid the risk of "crying wolf" than sound an alarm.

What can we do to encourage people to take steps now to reduce future losses? In our book *The Ostrich Paradox*, we characterize six decision-making biases that cause individuals, communities and organizations to underinvest in protection against low-probability, high-consequence events. We then propose a behavioral risk audit that recognizes that these biases are difficult to overcome but that they can be used to develop strategies to improve individuals' decision making processes in preparing for disasters before they occur.

### SIX DECISION-MAKING BIASES

Research in cognitive psychology and behavioral economics suggest that most disaster preparedness errors can be traced to the effects of the following six decision-making biases:

- Myopia – a tendency to focus on overly short future time horizons when appraising immediate costs and the potential benefits of protective investments.
- Amnesia – a tendency to forget too quickly the lessons of past disasters.
- Optimism – a tendency to underestimate the likelihood that losses will occur from future hazards.
- Inertia – a tendency to maintain the status quo or adopt a default option when there is uncertainty about the potential benefits of investing in alternative protective measures.
- Simplification – a tendency to selectively attend to only a subset of the relevant facts to consider when making choices involving risk.
- Herding – a tendency to base choices on the observed actions of others.



### KEY FINDINGS

- Our ability to protect ourselves against the consequences of natural catastrophes has never been greater, yet, we often fail to do so.
- Research in cognitive psychology and behavioral economics suggests that most errors in disaster preparedness are caused by biases in decision-making under uncertainty.
- There is an opportunity to improve preparedness by recognizing these biases and designing strategies that deal with them.
- We propose a behavioral risk audit that couples protective decision-making with economic incentives to encourage individuals to undertake preparedness measures.
- Examples of such strategies include: stretching the time horizon when presenting the likelihood of disasters; short-term financial incentives; use of default options; multi-year insurance contracts; and seals of approval.
- In dealing with societal problems, such as those posed by climate change, there is need to embrace guiding principles that make long-term preparedness a top priority for public sector planners at the local, state and national levels.

<sup>1</sup> By Robert Meyer and Howard Kunreuther, Wharton Digital Press, 2017  
Ebook: 978-1-61363-079-2 <https://wdp.wharton.upenn.edu/book/ostrich-paradox/>

## NEED FOR RISK PREPAREDNESS

When individuals are unsure how best to prepare for a disaster, they often choose the option that requires the least amount of mental effort. For example, individuals who purchase insurance often choose the lowest deductible (highest premium) to maximize the chance of getting a return from their policy. Following a hurricane warning they may decide to remain in their home rather than evacuating in the hope or belief that the storm will not impact their community. Unfortunately, these choices often do not reflect a systematic analysis of the data, and in some cases can lead to tragic consequences.

## A BEHAVIORAL RISK AUDIT

We propose a behavioral audit that recognizes the decision-making biases and uses framing techniques coupled with economic incentives in ways that lead individuals to consider preparedness measures for disasters.

The tendency to look for easy ways out can be flipped on its head by making preparedness for disaster something one needs to actively *opt out of* rather than choosing to *opt into*. As an example, one might overcome the hesitancy of people in flood-prone areas to buy flood insurance by providing it as part of a homeowners policy. People who actively prefer not to have it could opt out of this coverage and obtain a refund of their premium.

The behavioral risk audit is a new approach to preparedness planning founded in behavioral economics and psychology. Utilizing this systematic framework to identify the decision biases at play can help us design more effective strategies and enact policies that work *with*, rather than *against*, our natural tendencies to not think about adverse events that we perceive as having a low probability of occurrence. The behavioral risk audit can be used as a source of guidance not just for individuals and households but for communities and government at the local, state and national levels.

The outcome of the behavioral risk audit will be a problem-solution matrix that provides planners with an explanation of the biases that can lead to distorted perceptions of risk, how misperceptions may be manifested in preparedness errors, and possible remedies.

## KEY FINDINGS

Errors in disaster preparedness can be traced to six cognitive biases relating to decision-making under uncertainty:

- Myopia – a tendency to focus on overly short future time horizons when appraising immediate costs and the potential benefits of protective investments.
- Amnesia – a tendency to forget too quickly the lessons of past disasters.
- Optimism – a tendency to underestimate the likelihood that losses will occur from future hazards.
- Inertia – a tendency to maintain the status quo or adopt a default option when there is uncertainty about the potential benefits of investing in alternative protective measures.
- Simplification – a tendency to selectively attend to only a subset of the relevant facts to consider when making choices involving risk.
- Herding – a tendency to base choices on the observed actions of others.

## BEHAVIORAL RISK AUDIT MATRIX

Bias	Impact on Beliefs	Manifestation	Remedy
<b>Myopia:</b> a tendency to plan over short future horizons	Focus on short-term horizons in evaluating flood loss mitigation options	Failure to invest in cost-effective measures due to high upfront costs	Couple long-term loans with insurance premium reductions to spread the upfront cost over time.
<b>Amnesia:</b> a tendency to base decisions on recent experiences	Fading memory of past floods and resulting damage	Failure to renew annual flood insurance policy	Automatically renew multiyear policies with constant annual premiums.
<b>Optimism:</b> a tendency to underestimate the likelihood of personal harm	Underestimation of the probability of a flood	Tendency to see flood insurance and mitigation as overly expensive relative to benefits	Stretch time horizon so individual perceives the probability of a disaster to be closer to the scientific estimate.
<b>Inertia:</b> a tendency to choose the status quo	A preference for the status quo in protective investments; for floods, doing nothing	Reluctance to purchase insurance or invest in loss-reduction measures (e.g., storm shutters); procrastination in decision making	Make protection the default; make insurance a condition for obtaining a mortgage, or part of a bundled policy the resident can opt out of.
<b>Simplification:</b> a tendency to pay attention to only a few relevant factors	Limited consideration of information available about flood risk	Ignorance of the flood risk of a location; lack of knowledge of possible remedies	Implement communication programs that make it easier for residents to understand their flood risk, providing examples of the consequences of a flood.
<b>Herding:</b> a tendency to make decisions by basing choices on the observed actions of others	Tendency to base insurance decision on whether friends and neighbors have flood policies	Low rates of take-up at the community level	Implement communication programs that emphasize social norms of safety; offer seals of approval that enhance the social status of protective investments.

For dealing with long-term risks such as those posed by climate change, public sector planners at the local, state and national levels also need to embrace the following guiding principles:

- **Principle 1:** Commit to long-term protective planning as a top priority.
- **Principle 2:** Discourage individual and community actions that increase exposure to long-term risks.
- **Principle 3:** Consider the cognitive biases that inhibit adoption of protective measures.
- **Principle 4:** Address problems equitably.

## OVERCOMING BIASES

Below are several ways to incentivize those at risk to take action now rather than waiting for a disaster to occur:

- **Stretch time horizons:** Instead of indicating that the likelihood of a severe hurricane next year is 1-in-100, experts could reframe their estimate as a greater than 1-in-4 chance that there will be at least one such hurricane in the next 25 years. This is the same probability presented over a longer time period assuming that hurricanes are equally likely to occur each year. This reframing may help overcome the myopia and optimism biases.
- **Short-term incentives:** Provide a loan to property owners that spreads the cost of a loss reduction measure over time. If the measure is cost-effective and insurance premiums reflect risk, then the annual cost of the loan will be less than the savings in insurance costs for the safer structure. Tying the loan and insurance to the property and/or to the mortgage rather than the individual will address the amnesia bias, as the safety measures in place is a constant reminder that one may experience a disaster in the future.
- **Use of default options:** Insurance premiums could be automatically included in a homeowner's mortgage or taxes. Individuals would be able to opt-out if they did not want the coverage; however, the need to exert time and energy to cancel a policy is likely to lead them to keep insurance due to the inertia bias.
- **Multi-year insurance contracts:** Insurers could consider offering homeowners multi-year insurance policies, thus freeing them from the need to make an annual decision about renewal. For example, flood policies could be written for three- to five-year terms with an annual premium that would remain stable for the length of the contract. Such an insurance policy would address the simplification bias. Rather than property owners having to deliberate each year about whether they should renew their insurance or worry about whether they would be covered should a flood occur, their policy would be automatically renewed for the length of the contract.
- **Seals of approval:** The most cost-effective means of making communities safer from hazards may be through social norms that directly address the herding bias. If residents in hazard-prone areas observe that all of their neighbors are making investments in loss prevention measures and buying insurance they are likely to follow suit. The Institute for Home Building and Safety has awarded seals of approval to homes that meet or exceed building code standards. The hope is that such marks of excellence would not only increase the property value of the home, but also nudge others to undertake improvements.

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