Actuarial Risk Management
Global Actuarial Consultancy

Strategies & Risk Solutions for Executives
1Q2023 Issue 5

Contents

Sign up for the associated March 15 webinar at https://us02web.zoom.us/meeting/register/tZcqcu-rqjIsGtwt0S_npRysx0nXIbTZINip

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To Our Subscribers

We want to thank our new subscribers and welcome everyone to the fifth issue of the ARM quarterly newsletter! We hope you find this publication valuable. With a few short articles meant to provide unique insights, we present ideas about how to address specific problems and introduce potential risks that may not yet be on your radar.

The primary authors are Dave Ingram and Max Rudolph. We have been active participants in the risk management, actuarial, investment and insurance spaces for many years.

Subscribers are encouraged to suggest topics for articles and ask questions of the authors during our follow-up webinars. Ever cognizant of regulatory requirements, leveraging them to add value to your company in practical ways, will be our focus.

Published by Actuarial Risk Management (ARM), the Strategic and Risk Solutions for Executives (SRSE) subscription is free to all.

A free webcast is also available and our podcasts covering these topics is called Crossing Thin Ice. If you would like to further engage the authors as consultants or for continuing education purposes, please reach out. More info can be found throughout this newsletter. We hope to help you find a solution that meets your needs!

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2023 Dangerous Risks Survey

Over 200 respondents in the Dangerous Risks to Insurers Survey reordered the top risks, with Inflation swapping with Cybersecurity and cybercrime, and Global/National recession moving into the top 5 at #3.

Other risks in the top ten overall reflected concerns about risks tied to strategy, financial markets, personnel and claims. The three new risks in the top 10 included Global/National recession (#12 in previous survey), Interest rate changes (#13 to #4) and Strategic direction and opportunities missed (#11 to #9).

While each of the top 10 were in the top 13 of the previous survey, other risks moved much farther. The largest advances in ranking included:

•Stock market drop (#47 to #14)

•Asset Credit Default or Downgrade (#43 to #15)

	2023	2022	2020	2019	2018
1	Inflation	Cybersecurity and cybercrime	Cybersecurity and cybercrime	Strategic direction and opportunities missed	Cybersecurity and cybercrime
2	Cybersecurity and cybercrime	Inflation	Disruptive technology	Cybersecurity and cybercrime	IT / Systems and technology gap
3	Global / National recession	Employee Retention	Pricing and product line profit	Pricing and product line profit	Strategic direction and opportunities missed
4	Interest rate changes	IT / Systems and technology gap	Legislative and regulatory	IT / Systems and technology gap	Pricing and product line profit
5	Employee Retention	Ability to hire new employees	IT / Systems and technology gap	Competition	Runaway frequency or severity of claims

Check out the full 2023 Dangerous Risks report at:
https://riskviews.wordpress.com/2023/02/28/most-dangerous-risks-of-2023/

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2023 Dangerous Risks Survey (cont'd)

Some risks that we are watching in 2023 include Property/Mortgage Exposure (#51) and Company Culture (#17)

•Inadequate Capital (#42 to #21)

•Credit Spread fluctuations (#60 to #23)

•Liquidity (#68 to #31)

Giving higher priority to these risks makes sense given the concerns about an economic slowdown. A few risks that might have a higher priority over a longer time horizons saw large drops in their ranking. They included:

•Pandemic (#10 to #66)

•Climate Change (#24 to #48 and down from #9 in 2020)

•Organizational Change (#27 to #49)

•Aging Demographics – Distributors & Agents (#25 to #44)

Some risks that we will be watching in 2023 include Property/Mortgage Exposure (#51) and Company Culture (#17), driven by a decreased need for office space and the rapidly changing business environment as work-from-home evolves.

Surveys are very helpful at both extremes. They report on what respondents are currently concerned with but also can act as contrarian indicators. Pandemics are potentially one of these risks. It did poorly in the current survey, likely reflecting some level of burnout on the topic. China's release from lockdown and regional flareups could generate new variants, H5N1 "bird flu" could become transmissible in humans, a new spillover disease could appear and, most importantly, the recent pandemic's indirect claims due to lockdowns and future claims due to long COVID could impact insurer solvency. Dangerous risks abound – continual search must include obvious and not so obvious places for a competitive advantage.

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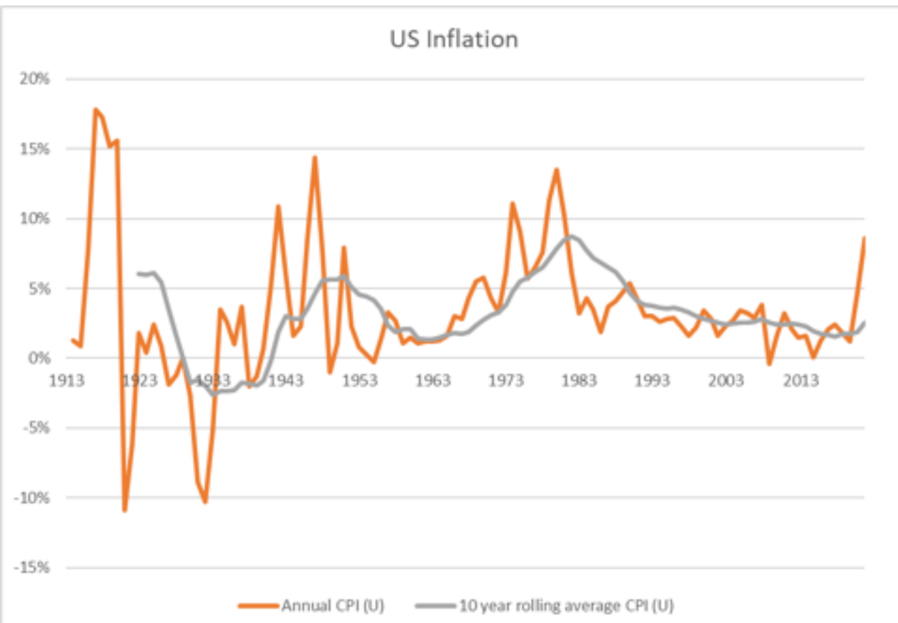
Inflation

The inflation we have been experiencing feels bad to almost everyone. But to a large degree, it has so far been the brush of a feather on the cheek compared to a hammer on the head of the inflation of the 1970s and 1980s.



Coming off a 30-year period when inflation averaged just above the 2% per year Fed target, the 6.5% calendar year CPI increase in 2022 seemed extremely high. But the chart above shows that in the 1970s the US lived through an entire 10-year period when inflation averaged 1.4% higher than the current one-year result.

Inflation hawks have been predicting this inflation since the Fed actions of 2008 and 2009 that followed the Global Financial Crisis. We finally got the inflation that they were predicting, but to get this result it took three big events: A major pandemic, historic money supply expansion from the Fed to fight the economic effects of the pandemic as well as the invasion of Ukraine by Russia. In addition, COVID triggered the so called "Great Resignation" which both put a crimp in supply chains, also causing a surge in wages with employers often having to pay new hires much more than prior staff.

Inflation is a major risk though because we do not know for certain the future course of any of those four recent drivers of inflation. COVID keeps evolving into new variants, each one more contagious than the last. On the other hand, the Federal Reserve seems to be committed to working against future inflation as it is one of their two major charges. The future of the conflict in Ukraine is seen as much more uncertain now than it was expected to be a year ago. The Great Resignation seems to be settling down some, but workplace attitudes likely have "permanently" changed in ways that we do not yet fully understand.

Some economists argued that much of this was "temporary", and some of it has been. Gasoline prices actually fell by 1.5% in 2022. But many of the price increases have been persisting, causing other prices to rise:

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Inflation (cont'd)

•Catch up on wages - workers wishing to get higher wages due to prior inflation in cost of consumer goods, along with cost-of-living allowance (COLA) automatic adjustments for Social Security

•Catch up on prices - businesses wishing to get higher prices to catch up with cost of goods and labor

- Anticipation of future inflation impact on wages and prices (expectations)

- Catch up on profit margins - businesses looking to get higher profit margins in prices that may have had inadequate margins in the past as prices are changing

- Increased interest rates demanded by lenders to achieve a positive real return

- Increased interest rates due to Fed actions to raise rates; to reduce economic activity; to reduce demand; to reduce inflation are themselves an increase in costs to businesses with floating rate debt

Are you finding these articles thought provoking? Did you know that your company can schedule time with the authors? You drive the agenda or Max and Dave can develop specific continuing education topics for your team. For more information contact Marc Altschull at maltschull@actrisk.com

Inflation (cont'd)

Insurers are impacted several ways by inflation

- Expenses – mostly wages but all other expenses may rise
- Claims – Some coverages have fixed claims amounts, such as life insurance, but many are indexed to costs that will be rising.
- Investment returns – rates on new investments are likely to rise. Credit spreads and defaults may increase as well due to pressure on businesses profits due to their rising expenses.
- Asset values – may continue to fall as higher interest rates lead to higher discounts on future cashflows while increased expenses and lower demand for some products reduce expectations of future cashflows and increase default rates.

Insurers can react to the past and future inflation by addressing each of those four types of impact:

- Expenses - short term contracts can be re-priced – longer duration contracts will need to be creative with solutions including automatic and outsourcing
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- Insurers can react to the past and future inflation by addressing each of those four types of impact:
- Expenses - short term contracts can be re-priced – longer duration contracts will need to be creative with solutions including automatic and outsourcing
- Claims – fixed claim policies may offer no underwriting coverage to help with overhead and those indexed to higher costs (e.g., auto repair) will need to re-price.
- Investment returns – insurers have been forced to reach for yield during the low-rate regime and may now be able to take some risk off the table with more focus on investment grade bonds.
- Asset values – the recent rise in rates has extended the duration of residential mortgages in some portfolios by a factor of two – what other surprises are over the horizon? Historical stress test scenarios should be tested.

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Inflation Interview: Octavio Rojas

We asked Octavio Rojas, a Venezuelan actuary, to share some of his experience living and working in an inflationary environment.

How do we need to think about this inflation that we are experiencing now?

We have to treat it as a complex model. This inflation is a global issue. It is a problem that arose from COVID and the war in Ukraine, which are both international problems. So, it's an issue that has to be considered in terms of a global market and trades and so forth.

Octavio, what is your experience with inflation?

Personally? Well, that's quite an interesting question given that, for those of you who don't know me, I am from Venezuela. There, from the end of the 1990s to today, it has had first a high inflationary environment and secondly, it also had a period of hyperinflation. To be considered a high inflationary economy a country must experience a three-year period where inflation gets close to 100% or higher. For it to be labeled hyperinflationary it must have at least two months in a row with 50% or higher inflation. Since the 1990s, Venezuela hasn't been able to actually get into low figures. Right now, according to the government, last year, we had 300% inflation. So that's my experience. I found that there is a lack of information regarding inflation as a whole including in the actuarial issues. Then I decided to actually do research, even pursuing a Ph.D. in actuarial mathematics where my research topic was going to be surrounding inflation for pension systems.

What are some reactions you've seen to inflation that have not been helpful?

In countries with defined contribution Social Security programs, they saw that people needed money, they weren't able to work because of COVID, so they allowed people to actually take some money out. That's a big problem because if they take too much money out of their individual accounts when they retire, they will be with less income than what they need to live.

Insurers found that people stop paying their premiums. They need money in order to pay for medicines or to buy food which is more expensive because of inflation.

What strategies have insurance companies or pension plans taken in reaction to inflation that has been effective?

An issue that has been widely discussed, in particular in some African countries, Indian countries, and some Latin American countries, is inclusive insurance. This insurance could be affordable for people to actually have some insurance

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Inflation Interview (cont'd)

coverage for health issues, property issues, and crops. So that has actually started being introduced with some very interesting results to date.

Are countries providing inflation adjustments to pensions that are aligned with the needs of retirees?

Yes, in many countries they want to help retirees with inflation adjustments to their Social Security benefits because they are the most vulnerable. But consumption by retirees is completely different from that of families, where you have kids and so forth. Often the diet that a retiree may require, given their health issues is different. On the other hand, you'll find that there won't be so much going to the cinema, but they will have higher medical costs which have increased even more than other factors. It's very important to actually be able to take this into consideration because their shortfall will eventually fall on their family.

Octavio Rojas is an ARM consultant and Pension Actuary located in Venezuela.

Inflation - Contrarian View

While many worry about inflation, and rightfully so, in the US we have recently been experiencing disinflation (slowing of inflation), and longer-term pressures could lead to deflation.

Japan provides recent experience about how a country deals with deflation. The US nearly experienced deflation in 2020 before the stimulus packages reignited price increases. The most recent longer-term bout with deflation in the US was associated with the depression from nearly a century ago. Recently, only when the Fed initiated a tight monetary policy did the transitory inflation peak subside.

There are forces working in both directions for inflation. Large levels of government debt, measured by debt to gross domestic product (GDP), signal inflationary pressures and a weak currency. Floating exchange rates reflect relative strengths and weaknesses, so require another country or major currency (e.g., Euro) to offset any changes. Longer term demographic trends signaling decreases in the working age population (low fertility rates) and increased older populations (longevity) are deflationary. So is the cost to repair the damage caused by wars and climate change.

The wildcard in this analysis is the velocity of money (VM) metric, which measures the number of times money changes hands in a year. In the 1980s VM was thought to be a constant, but experience showed this to be false many years ago. Recently it has bottomed out from historic lows and started to rise. It is said that a low value of VM means people are worried about their own economic situation, so they save rather than spend, while a high value means there is concern with the entire financial system blowing up so encourages immediate spending.

No one knows for certain how this will play out, making it important for risk managers to stress test in multiple directions. A high inflation scenario, say one that increases the inflation rate each year by 3% until reaching 15% then staying there for 5 years before falling, provides one challenge. Another type is faced by an inflation scenario that decreases 2% per year until it is negative and stays there for 5 years. These are good tests for capital levels. Test of reserve adequacy are not as extreme. Stress tests should reflect the current environment and be regularly reviewed for possible updates.

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Additionally for a fee, we offer a private session customizing Part 1 and/or Part 2 to incorporate specific information that reflects your company's unique ERM program, key risks and Board role for just your Board members and Executives.

Part 1 (May 24)

ERM & Board Role

- General introduction designed for new board members and executives and as a refresher for current board members and executives who have been less involved in ERM in the past
- Primary components of Insurer ERM Program
- Fundamental Board roles in ERM

Free registration for Part 1 here

Part 2 (June 7)

Current Focus of Insurer ERM Programs

- Provides broad perspective on risks most concerning to over 200 insurance executives for 2023 (identified in ARM's Dangerous Risks Survey) and the level of ERM practice by over 60 insurers (from ARM's ERM Practices Study)
- Essential background for board members to provide meaningful oversight to management in the area of ERM

Free registration for Part 2 here

"While Enterprise Risk Management is a continuous process, Own Risk Solvency Assessment (ORSA) and NAIC Corporate Governance Annual Disclosure (CGAD) require insurance company leaders to annually report on their risk management program including direct Board involvement."

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Fear vs. Danger

In a Presidential Inauguration speech Franklin D. Roosevelt said: "Let me assert my firm belief that the only thing we have to fear is … fear itself — nameless, unreasoning, unjustified terror which paralyzes needed efforts to convert retreat into advance."

Fear has been given a bad reputation, perhaps starting with FDR. Paralysis is certainly one of the reactions that fear causes, but there are at least two other more famous reactions: flight or fight. Fear is an emotional reaction to perceived nearness of danger. Psychologists have found that without emotions such as fear, humans are often frozen by analysis paralysis and unable to make decisions.

Fear is often contrasted with danger under the presumption that emotional fear is usually wrong and logical danger is correct. Maybe. But I would suggest that is a false choice. Oversimplified.

To address that question, let's first look at what people fear. Just as we have studied the most dangerous risks facing insurers, Chapman University has been studying fears. Their 2022 survey of the most common fears of people in the U.S. finds the top fears are:

1. Corrupt Government Officials
2. People I love becoming seriously ill
3. Russia using nuclear weapons
4. People I love dying
5. The U.S. becoming involved in another world war

If you compare the list of fears to the list of dangerous risks, there are no overlaps for the top 5 but some of the difference may be due to the fact that the Chapman survey was about the fears of individuals and our survey was asking about risks to insurers. But this could be an indication that fear results in bad risk assessment.

Four Drivers of Risk Misperception

Voluntariness: Do we get to choose whether to take this risk?

Dread: Is there a potential for a highly repugnant outcome?

Knowledge: Do we know anything about this risk?

Controllability: Are we able to prevent or at least reduce the consequences?

Paul Slovic, a professor at the University of Oregon's Department of Psychology and author of "The Perception of Risk," tells us that people's judgement of riskiness is strongly influenced by four drivers of risk misperception: "Voluntariness, dread, knowledge and controllability" none of which are actually directly tied to the level of danger. The expected level of reward for risk taking is an offsetting factor, but not as strong as our fear that is enhanced by some or all of the four aspects.

Let's look at what happens when our fears don't match the actual level of danger?

There are four possibilities related to risk taking:

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Fear vs. Danger (cont'd)

Danger	Fear: LOW	Fear: HIGH
LOW	Realistic	Take too little risk
HIGH	Take too much risk	Realistic

If our fear is low and danger is low, we will have a realistic assessment of risk and our risk taking will more likely end up being appropriate. But if our fear is high because of one or another of Slovic's four aspects, while actual risk is low, we will tend to avoid risk taking that might actually benefit us, especially in the risk business of insurance. This is a sin of omission and we may well never know about our missed opportunity. On the other hand, when our fear is low and danger is high, we may end up taking on much too much risk. That sin of commission was the situation with the subprime mortgage securities before the 2009 Financial Crisis. Those securities were seen to have almost no risk but carried a slightly higher return than other "riskier" investment options.

Cyber Risk has appeared in the top 5 in all six years of our Dangerous Risks Survey. But year after year, other risks produce much greater losses for the insurance industry. Have we been very lucky or is the fact that Cyber Risk is involuntary, the adverse outcome of a Cyber-attack is loss of control of our computers and loss of face with our customers, we do not know much from our own personal or business experience about Cyber risk and the folks who we get to educate us often seem to be selling fear and finally we feel that Cyber risk is totally out of our control. It hits all four of the Drivers of Risk Misperception; we do not voluntarily take Cyber risk; being locked out of our computer files without warning is repugnant, we do not know how Cyber-attacks work and we feel helpless to prevent them. Cyber-attack was ranked as the 12th most common fear in the Chapman survey as well. We need to be aware that our fears may cause us to overreact to a danger even when we are trying to be analytical.

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Fear vs. Danger (cont'd)

Risk Intelligence to the Rescue

Actuaries should be well positioned to provide good estimates of actual danger. See "Three Components of Risk Intelligence" https://contingencies.org/three-components-of-risk-intelligence/ By applying Risk Education, Risk Experience and Risk Analysis to the risks that have significant amount of Involuntariness, dread outcomes, lack of knowledge and lack of controllability we can apply the best knowledge available from our risk education as well as the best analytical processes, but remember to include our experiences including our fears to be sure to produce the best assessment of the danger actually inherent in a risk. You can also look for the Four Drivers of Risk Misperception and if you find them, redouble the diligence of your risk analysis to root out situations where your fear might be exaggerating the danger. But also, you might want to look for situation where they are completely missing from a situation where your experience tells you one or more should be expected as an indication of possible danger is being ignored.

Communicating the results of the application of Risk Intelligence is a serious challenge, especially when the audience's views are driven by fear. The experience of public health officials with communicating about COVID risks is a sobering example. Much of what they were communicating was long established science

What happens when our fears don't match the actual level of danger?

related to a pandemic and solutions that were well known within the scientific community for fifty years or more. In this case, a large segment of society had little fear of something that was actually dangerous.

In the end, we will need to decide, whether to freeze, fight or flee in the face of our fears, without full knowledge of the actual danger.

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Spillover Diseases

Diseases have periodically impacted geopolitics and socioeconomic circumstances since the dawn of civilization. The plague in the 14th century devastated European society, but the impact on the peasant population generated higher wages and increased mobility for survivors and reduced economic inequality. European ships brought smallpox to the Americas, reducing Indigenous populations with no previous immunity by as much as 90%.

Diseases jump from animals to humans in a process called zoonotic spillover. They are often benign in host animals but can be fatal to humans. Examples include coronavirus, influenza, HIV, Ebola and West Nile virus. As humans encroach further on natural ranges and evolving ecosystems, the likelihood of an existing or novel disease becoming transmissible among people increases.

Among the current concerns are H5N1 bird flu, an influenza virus lethal to many birds but not yet transmissible between humans. It appears that various animal coronavirus pathogens have jumped directly to humans in the recent past, often to children from host dogs.

Influenza can jump directly from birds or pass through an intermediate mammal (often a pig), which is more common, where it can pick up genetic material that makes the virus easily transmissible among humans. The natural migratory patterns allow "bird flu" to travel geographically very quickly. Given the role of birds, especially chickens, in agriculture this leads to culling of entire flocks when a single case is discovered. This leads to high prices for products like chicken wings and eggs until the chicken flocks are replenished.

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Spillover Diseases (cont'd)

Viruses are one pathogen to worry about since they are built from RNA and reproduce by randomly matching up with a similar virus. Genetic changes can also occur through environmental stresses like heat or toxins. The resulting virus then competes with others that are circulating. One variant typically dominates until enough immunity is built up that another variant takes over. This can vary regionally and is impacted by vaccination rates and lockdowns.

When a host animal and humans exist side-by-side an immunity can gradually build up. This is why smallpox, which came to humans from cows, had less impact on farm-based societies who had domesticated cows but was devastating when introduced in the Americas. These relationships can lead to vaccines being developed using small components of the virus. These can be live, killed or weakened virus.

Diseases can live asymptomatically in a host animal. They don't even notice them. When jumping to a human, transmission can be direct or through another animal that acts as a mixing vessel to reassort, pulling pieces from similar diseases randomly (virus). Animals known to be factors in reassortment include pigs, ferrets, guinea pigs, camels, primates, dogs, cats and mink. The reassortment process is random, but enough combinations of genetics are available that a vast group of transmissibility and lethality options are constantly being tested to see if a new version will become dominant.

COVID-19 provides a recent example of a virus' evolution. For a virus to survive and reproduce requires a host capable of spreading the virus. This appears to be why so many viruses locate in the respiratory system and spread via sneezes – not because some entity determined this was the best way to survive, but because random trials found a distribution method that worked. Earlier coronaviruses survive today as the common cold, and this could be where the current pandemic virus ends up. If the virus finds the sweet spot of lethality and transmissibility for its host population, we may feel its effects for many years.

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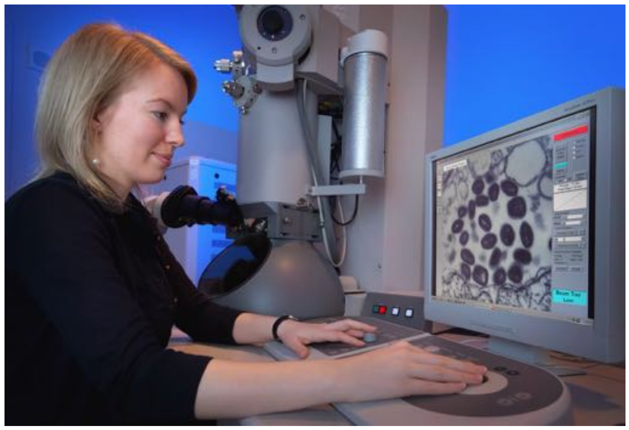
Spillover Diseases (cont'd)



One type of virus that originated on the African continent and has high lethality is Ebola. The Marburg virus is similar, and of great concern, but Ebola serves as a good example. Currently the Ebola virus is very deadly. Coming into contact with fluids (but not spread by air, food or water) of someone infected is very dangerous. Caretakers wear hazardous materials (hazmat) suits and bodies need to be burned rather than buried to eliminate contaminated bodily fluids.

Countries each dealt with the recent pandemic in their own way, providing guesses to where an Ebola epidemic could spread. To date Ebola outbreaks have all occurred on the African continent with travel taking the virus elsewhere in a few cases. Assuming a natural pandemic and not one spread intentionally, Ebola is likely to start in Africa where bats host the virus.

Concerns about an American response come from two perspectives; lack of preparation at the border and health care facilities, and a focus on rights and litigiousness. A highly lethal virus just needs a tiny crack to gain a threshold in a new location. Travel testing and detection of early cases must be prioritized to be successful. In the US, a split between those willing to accept government expertise and those who insist on individual rights could end up making the US a hotbed of disease.

A century ago, the mortality records of several states, including my home state of Nebraska, were considered so tainted that they were estimated based on neighboring states. We have had to resort to an excess deaths analysis to develop effective strategies to respond during the ongoing pandemic. How will we deal with a more lethal virus in the future? If we don't work together people will die needlessly.

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