Actuarial Risk Management
Global Actuarial Consultancy

Crossing Thin Ice
1Q2024 Issue 9

Contents

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To Our Subscribers

We want to thank our new subscribers and welcome everyone to the ninth issue of the ARM quarterly newsletter recently renamed to Crossing Thin Ice! We hope that you all find this publication valuable. With a few short articles meant to provide unique insights, we present ideas about how to address specific issues related to ERM and introduce potential risks and opportunities 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 and podcasts. Ever cognizant of regulatory requirements, leveraging them to add value to you in practical ways, is our focus.

Sponsored by Actuarial Risk Management (ARM), the Crossing Thin Ice subscription is free to all readers.

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, for continuing education purposes or to join our ERM Discussion Group, please reach out. More info can be found throughout this newsletter. We hope to help you find a solution that meets your needs!

Please forward to others who study risk.

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The content of this newsletter is meant to be educational and thought provoking.

Nothing in it should be interpreted as investment advice.

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Dangerous Risks 2024: Return to Normal Concerns

The 2024 Dangerous Risks survey suggests that insurance industry concerns have shifted back to more traditional issues after several years of turmoil. Risks like Inflation, Ability to Hire and Employee Retention that were top concerns in the 2022 and 2023 survey have receded. For 2024, the top risks are all things that we have seen over and over for many years: Cyber, Profit, Strategy, IT and Claims.

	2024	2023	2022	2020	2019
1	Cybersecurity and cybercrime	Inflation	Cybersecurity and cybercrime	Cybersecurity and cybercrime	Strategic direction and opportunities missed
2	Pricing and product line profit	Cybersecurity and cybercrime	Inflation	Disruptive technology	Cybersecurity and cybercrime
3	Strategic direction and opportunities missed	Global / National recession	Employee Retention	Pricing and product line profit	Pricing and product line profit
4	IT / Systems and technology gap	Interest rate changes	IT / Systems and technology gap	Legislative and regulatory	IT / Systems and technology gap
5	Runaway frequency or severity of claims	Employee Retention	Ability to hire new employees	IT / Systems and technology gap	Competition

Ability to Hire dropped from 8th to 25th place and Employee Retention went from 5th to 27th, suggesting that both risks have substantially abated. IT / Systems & Technology Gap went from 6th to 4th place, reversing last year's move and finishing back in the top five for the sixth time in the seven-year life of this poll.

Are you finding these articles thought provoking? Did you know that Dave and Max are now leading ERM Discussion Groups for insurers?

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Dangerous Risks 2024 (cont'd)

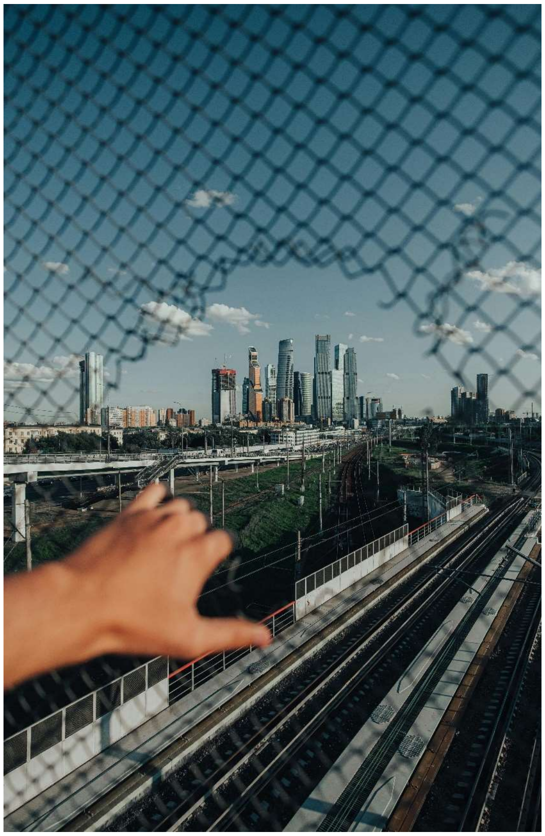
Top 5 Risks

1. Cybersecurity and cybercrime (Up from #2 last year and a Top 5 risk all seven years of this survey). Insurers had a bad year in 2023 with several large life insurers with pension businesses hit by MOVEit file transfer cyberattacks and health insurers experiencing a significant number of ransomware attacks. (See separate article: Cybercrime – The Most Dangerous Risk)

2. Pricing and product line profit (Up from #10 in 2023 and a top 10 risk in all seven years). Through mid-year 2023 aggregate Insurance earnings have taken another step downwards after a significant drop in 2022. Hence the concern about profitability. Claims continue to surprise and rate increases have not been enough to counteract. Higher interest rates can help with earnings if insurers can hold onto customers in this environment.

3. Strategic Direction and Opportunities Missed (Up from #9 last year). This was a top 5 risk pre-COVID in 2018 and 2019. Now that we have survived the pandemic, this risk has moved back into the top 5 because we are back to worrying about strategy again. People are expecting that new strategies are in order, but no one is sure what those changes need to be, and they are not at all confident that anyone at their company knows either.

4. IT / Systems and technology gap (Up from #6 in 2023). This risk has been in the top 6 for all 7 years of our survey. In 2023, the rise of Artificial Intelligence into public prominence has added to the gap that most insurers see between their own IT capabilities and that of the best in class of their competitors. Now in addition to the cost and time constraints on resolving legacy issues, there is an immense talent/knowledge shortfall of people who understand both AI and insurance.



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ORSA, internal ERM process, communicating with rating agencies

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Dangerous Risks 2024 (cont'd)

5. Runaway frequency or severity of claims (Up from #7 last year). Insurers have seen claims increases for both frequency and severity in 2022 and 2023 in almost every line and almost every market. We cannot just point to a few mega storms. And though the inflation rate has abated in some markets, insurers are not sure that they have yet seen the full impact of the inflation that has already happened upon their claims reserves.

Rankings changed drastically for several risks:

- Geographic Concentration - Jumped from #47 to #11.
- Terrorism – Up from #72 to #45.
- Property Market/Commercial Mortgage Exposures- Rose from #51 to #28.
- Inflation – Dropped from #1 to #19.
- Employee Retention – Fell from #5 to #27.
- Age of Employees and Distributors – Dropped from #25 to #47.

The prospects for our world in 2024, with wars and elections threatening to upend some longstanding regularities, do not seem to be pointing to a return to any sort of normal. We will be keeping our eyes out for the emergence of new risks from Artificial Intelligence and Commercial Real Estate in the coming year. We suggest that risk managers should all be on the alert for new and unexpected emerging risks.

Download the full 2024 Dangerous Risks Report at https://tinyurl.com/23wklewm or scan the QR code

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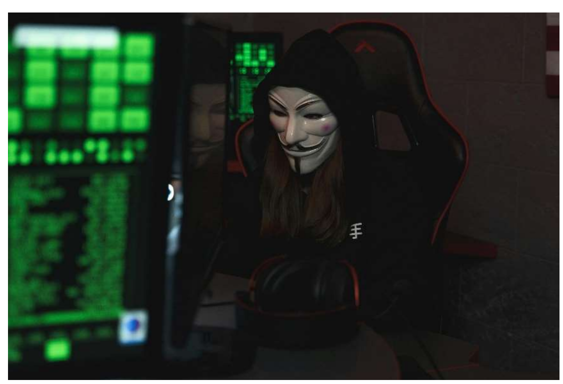
Cybercrime
The Most Dangerous Risk 2024

Each year, we take greater and greater advantage of the ever-increasing capabilities of computers. However, we find that we are all afraid that security over our electronic systems is just not on par with the capabilities of cyber criminals. For 2024, Cybercrime was identified as The Most Dangerous Risk after ranking as the number one or number two risk in all seven years of the study.

Cybercrime presents real danger. In the U.S., the FBI reports over $10 Billion in losses from Cybercrime in 2022 and annual growth of reported losses of over 30% in the five years prior. Cyber security spending adds a significant amount to the losses with one study reporting that over 10% of IT budgets are devoted to security.

In early 2023, at least four major insurers suffered data losses through a flaw in a file transfer software that was used by as many as 200 other firms with over 2.5 million records affected. Ransomware attacks hit several health insurers. In the largest attack of 2023, around 9 million records of an insurer were compromised through malware that entered an unprotected portal and infected clients and partners of the firm that left their "door open".

In addition, Cybercrime presents all of the elements that generate fear. Exposure to cybercrimes is seen as <u>involuntary</u> especially by businesses like insurers who cannot possibly conduct business without computers connected to the internet. People <u>dread</u> the result of cybercrimes where they can suddenly be faced without access to their data or to a massive data breach and concurrent damage to company reputation. The methods employed by cyber criminals are beyond almost all executive's <u>knowledge</u>. And even with all of the spending on security and encryption and multiple passwords that are changed frequently (and stored on sticky notes) this all seems to be out of our <u>control</u>. (See "Fear vs. Danger" for more on this - 1Q2023 SRSE Newsletter.)



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Cybercrime (cont'd)

Insurers and Healthcare providers are favored targets because of the extensive customer data that is collected – for underwriting in insurance and for admittance for healthcare. Health insurers are especially damned as they have both insurance and health data collected. Many insurers will keep files of not just their active customers on their systems, but of all prior customers, making their exposure many multiples of their active customer base.

Cyber-attacks can take the form of emails (also called phishing), Ransomware, data breaches and thefts, which may come at a company through current or former employees, through malicious programs (malware and viruses), from vendors who have access to company systems and networks or from new flaws in normally useful programs.

The cyber security spending above will go towards following recently reviewed and updated Cybersecurity policies and procedures for data handling, access control, employee training and threat awareness, network security, antivirus software, security of employee laptops, data encryption, incident reporting and response planning, data backup and recovery as well as vendor security monitoring. Regular software updates and patches moves from a nice to have to a must have.

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Cybercrime (cont'd)

Cyber insurance now has a major place in the Cybercrime mitigation tool kit. In a recent study, 55% of companies responding have some Cyber insurance. Ten years ago, most cyber coverage was provided through other comprehensive insurance policies. As insurers became aware of their liability for cyber coverage, they started to write exclusions and to offer separate stand-alone cyber coverage.

And while Cyber insurance has grown explosively over the past 10 years, it is expected to keep growing for the foreseeable future at a high rate. Insurers who were early into this market have learned important lessons about underwriting, policy language, pricing and claims handling that new entrants will need to master quickly if they want a share of this market. Insurers who write multiple lines of business see Cyber insurance as particularly

Besides the usual things like limits and deductibles, here are some additional things that a buyer considers when looking for cyber insurance:

- As the threat landscape continues to evolve, conduct regular risk assessments to identify potential vulnerabilities and areas for improvement in your security measures.

- Have a plan in place and work with experienced loss control providers prior to an event. Incident response companies can improve resilience and reduce the likelihood of suffering significant losses.

- The regulatory landscape has also been changing, so stay informed about the latest developments and the potential impact on your insurance coverage.

- Cyber coverage is a developing market, so carefully review the terms and exclusions of your insurance policy to ensure that you have adequate coverage for your needs.

Jim Evans, FCAS, CFA
Property & Casualty Business Leader

Actuarial Risk Management P&C

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Cybercrime (cont'd)

attractive if they can manage the business profitably because it would not be correlating to any of their other lines.

In addition, insurers are subject to a number of regulations regarding cyberrisk and security. In the U.S. most prominent among those are the NAIC Data Security Model Law which has been adopted by over 20 states and the 2024 SEC Cybersecurity Disclosure Rules for public companies. In Europe, businesses are regulated under the Cybersecurity Act and by a single body, the European Union Agency for Cybersecurity (ENISA). Businesses are subject to cybersecurity requirements and disclosure requirements of cyber events. To the extent that these regulations actually strengthen cybersecurity in the places with regulations, other places will have higher risks because cyber criminals are not at all sensitive to physical locations and can readily shift their focus to places with less effective security practices.

And that leads to our conclusion here. Cybercrime will exist as long as there are opportunities that make it profitable for the criminals. As businesses in the most developed countries all adopt more effective cybersecurity practices, activities will shift to other places. And as less developed countries move more and more into modern practices with almost everything being highly connected to computers, the opportunities in those places for cybercrime will grow there, until they adopt the most effective cybersecurity practices as well. Cybercrime will be with us for a long time, an endless escalation of attacks and mitigations until the cost of the attacks outweighs the potential benefits to the criminals.

Dave, Max and other ARM consultants are available to help with your ERM needs. Whether setting up a voluntary ORSA from scratch, updating an internal ERM process or improving communication with rating agencies, let us share our knowledge, brainstorm ideas and help meet your goals.

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Interest Rate Risk for Insurers

Interest rates cycle. They go up. They go down. I think about them like a clock, where your guess of the current time is right twice a day. There is some randomness to changes in rates, but some factors get the direction right over time. Respondents to the Dangerous Risks Survey ranked it 10th overall for 2024. Over longer time horizons, government fiscal policy becomes the biggest factor (fiscal dominance). Monetary policy can temporarily influence rates, but there is always an underlying pull towards a natural rate, like mean reversion, based on government spending, types of spending (infrastructure is better than tax reductions), regulation and economic market forces.

Learn from the Mistakes of Others

Before we get into the three ways (borrowing, assets, liabilities) that higher interest rates impact an insurer, let's look at history. If rates are at historic lows and a financial firm fails to test a mean reversion scenario to historically normal levels, they are failing to do their job. In spring 2023 the crisis that engulfed Silicon Valley Bank (and other regional banks) was that simple. Rates went up and neither management nor regulators planned adequately for that possibility. Neither did their customers, including venture capital firms and other startups in the tech industry, caught with deposits well beyond FDIC guarantees and bailed out. The banking industry retains large unrealized losses on their balance sheet, and many depend on FHLB loans. In the murky world of shadow banks, the risks are less transparent and the business less regulated. Additional problems are likely, especially if rates move up from current levels. Insurance regulators tend to be slow identifying a new risk but try their best to protect retail customers.

While this spike in rates provided an opportunity for those who think ahead to share what they had done to hedge this type of “bet”, it's best to focus on learning from the mistakes of others and move forward. Many hope interest rates have peaked, but history tells us that rates can go higher. Five-year maturity Treasuries peaked in 1981 at 16%, over triple those of today. It is not the risk manager's job to predict rates, only to prepare and provide competent counsel for management to discuss and make decisions.

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Interest Rate Risk for Insurers (cont'd)

Impact on insurers

For insurance companies, it is important to stress test in both directions. Rates below zero and above 15% are not out of the question. Government issued bonds considered risk-free in Europe have experienced negative rates. Previous rules of thumb have been disproved so it is not clear where the limits are. Higher rates impact insurers in three ways: borrowing, assets and liabilities.

Borrowing

Bonds and loans will have higher rates as they are rolled over or floating rates reset. This cuts into profitability and needs to be stress tested. Indirectly, higher coupons increase both credit and inflation risk.

Assets

Credit spreads on fixed income assets purchased by insurers in a higher rate environment will also be elevated, but there may be offsetting costs (and increased volatility) to the higher rates. A tight Asset-Liability Management (ALM) match without convexity risk allows asset and liability cash flows to move in unison with rates, minimizing the impact on intrinsic value. A mismatch acts as leverage, magnifying small rate changes into material changes in value.

Many loans, both bonds and mortgages, require dynamic repayment models. As rates rise, few borrowers choose to prepay the principal. This lengthens the duration of assets and adds convexity risk. It also indirectly impacts the economy as movement between jobs to a different town or region becomes sticky and inefficient. The recent rise in rates has left many companies struggling to meet their debt obligations as debt rolls over. These "zombie" companies could survive only when rates were abnormally low. Defaults have already started to rise.

Liabilities

Life insurers need to stress test scenarios more in the tail than those built for regulatory purposes. We have seen how quickly rates can rise, both recently and 40 years ago, and this should be tested. Rates increasing quickly to levels 10% above current levels, as well as negative rates, help determine the sensitivity and convexity of a specific block of business. Products should be priced including these sensitivities to avoid a catastrophic scenario and ALM, with interactions between assets and liabilities, should also be contemplated. Our current understanding of dynamic lapses and the impact on defaults of higher rates are among the concerns. We don't have a full cycle of historical data for either.

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Interest Rate Risk for Insurers (cont'd)

Lapse formulas are old. The recent rise in rates has left many companies struggling to meet their debt obligations as debt rolls over. These "zombie" companies could survive only when rates were abnormally low. Defaults have already started to rise.

Some insurers tend to think of assets and liabilities as separate buckets, but it is important to make sure the assumptions behind the sensitivities and stress tests are consistent. High inflation has led to high combined ratios (over 110%) for auto policies, and homeowners continue to see higher premiums due to the increasing frequency of extreme weather events. Reinsurers are likely to react quickly, and this business reprices each year. The pandemic created mischief in the auto market, with fewer miles driven but more high-speed crashes. This recent experience has put pressure on auto policy profitability. Some writers cut advertising and allowed new business to stagnate until premium increases were approved by the local regulator.

Conclusion

While the Federal Reserve and its policy committee are followed closely in the press and investors attempt to outguess their future actions and motives, they are not the key player. The key player in the US is Congress, where deficits are the norm. Politicians have delegated management of the economy to the Fed along with monetary policy. Congressional actions that ignore federal debt levels could be the primary reason rates increase from current levels. The lack of discipline has led to rating agency downgrades and a higher overall likelihood of rates going moderately higher. There are also increased possibilities of hyperinflation and stagflation, initially in countries that tie their economy to the US and eventually even in the US economy despite the dollar being the reserve currency.

Interest rates are not easily predicted over the short term, but continuing deficit spending increases the likelihood of higher rates at some point and even a possibility of hyperinflation or stagflation. Rate changes will directly and indirectly impact profitability through borrowing, and cash flows from assets and liabilities. Regulators and insurers will need to work together to ensure that pricing is both equitable to customers and sustainable for insurers.

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Risk Management Beliefs

A prominent business organization expert, Edgar Shein, tells us that culture has three primary aspects: what people say, what people do and what they believe. Since the Global Financial Crisis of 2008, regulators have been telling financial firms that they needed to have stronger risk management cultures. And then they went on to describe at length what management in a strong risk management culture would say and what management and employees in that strong culture would do. With no mention of that third element of culture - belief.

So what happens? Risk management, in many financial services firms, becomes a compliance exercise. No one was asked to believe in risk management, and few do.

When something is a compliance exercise, there are some parts of it that management "says" that they are going to do that they never get around to actually doing. Management of a firm that failed after recording a large loss from a risk where they far exceeded their risk tolerance was asked what the risk committee of the board said about the very high-risk position. Their response was that while they had filed a risk management program description with the regulator that said that they had a board risk committee, that committee had never met even once. No one at that firm was bothered by that omission, because they did not "believe" that they needed a risk committee.

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Risk Management Beliefs (cont'd)

When something is a compliance exercise, people may do something that is required by the regulators, but only when it does not interfere with achieving the real goals of the business. They believe that they know what to do to achieve those goals. The actual culture of the business is just the small triangle in the middle of the Venn diagram above, the things that the leaders say and the staff does because they all believe will lead to success for the business.

Forming or changing the beliefs is a slow and very deliberate process. I have worked at two companies that successfully went through a culture change and joined a third right after they had gone through one. In all three cases, the process was very similar. It required a constant focus from the executives to keep saying the new belief over and over again and to point out situations repeatedly when people in the company acted according to the new belief and especially when the results were a success for the new belief.

The three elements – Say, Do, Believe- were all there.

One thing that will stand in the way of a culture change is often the individuals who were the most successful under the old culture. They may feel that they must actively oppose the culture change and management may feel that they must bend the new rules to accommodate them. That accommodation would be the death knell of the culture change.

A risk management culture is particularly difficult to install or change materially. If a company wants to change their sales culture, they can tell people to do something different and then they can point to the successes that are the result of that change. The successes will be tangible changes in sales. But the result of a working risk management system is the absence of excessive losses, or maybe just losses that are smaller than competitors in adverse times. People are not wired to pay as much attention to something that doesn't happen. Building belief in a risk management culture will require plenty of communication from executives about the risk management "successes" of staying within risk tolerances and limits and the resulting controlled loss environment that results. This will always be difficult to get enough airtime for these communications because the most senior executives have limited time for messaging, and they also need to support the very important goals of sales and profits. This is why the Chief Risk Officer needs to be a master communicator – they need to be able to tell the stories of risk management success and keep telling them without becoming a bore.

If you are concerned about the risk culture of your firm, try thinking about the situation in terms of these three elements – Say, Do, Believe – and how the company might get to the point where the employees Believe in risk management.

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Permafrost

The earth has been relatively stable since the end of the last ice age 10,000 years ago, but small temperature changes of well under a degree have forced climate migration in the past. Global warming that is now occurring and likely to occur in the future is increasingly complex, causing us to react to and consider the environmental ramifications. The melting of permafrost, which in some locations is 1,000 feet thick, is such an event. There is more carbon stored in permafrost than is currently found in the atmosphere, and once it starts melting it would take less than a century to release it. Temperature increases exponentially drive the decay rate of permafrost. That temperatures in higher latitudes are increasing at twice the rate of the global average is not helping. Even if no additional greenhouse gases were released, warming based on imbalances currently in the ecosystem would continue. It is baked in.

Some modelers hypothesize that we may hit a tipping point if temperatures increase about 3 degrees Celsius from levels in 1750, jumping quickly another 3 degrees. This has occurred in previous warming cycles, but those occurred over longer periods except when driven by volcanic activity that quickly released greenhouse gases and increased temperatures. Permafrost could be a key component in triggering a tipping point.

Our recent historical data sets include none of these instances, so modelers need to consider deterministic narrative scenarios (like the shared socioeconomic pathways developed by IPCC) to understand implications on health, finance, agriculture, geopolitics and other metrics. This would be the most challenging scenario humans have ever encountered.

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Permafrost (cont'd)

The Arctic region, much like Antarctica, sees direct warming as well as feedback loops that generate even more warming. One reason is the albedo effect. When ice covers the ocean and snow covers the landscape, much of the incoming radiation from the sun is reflected into the sky with much of it reaching space and exiting the ecosystem. As ice and snow cover melts it leaves open water and tundra which both absorb more radiation, increasing the local warming. The tree line shows current limits to the growth of forests due to cold air and frozen ground. As those areas warm the tree line is also moving to higher latitudes and altitudes. While the trees absorb carbon from the air and soil, they also absorb more radiation so warm the area. Animals are also migrating away from the heat with many struggling to adapt to the rate of change. Animals in the farthest north have nowhere to go so are now competing for food with the invading groups. Keystone species and decoupling (e.g., migrating insects no longer arriving at the right time to pollinate flowers) will lead to unexpected consequences.

When permafrost melts, microbes that were also frozen become active and start to eat the now decaying matter. A methane smell appears both underground and on the surface as the gas is released. To show this effect we see scientists poke holes in the ice covering lakes and light the methane on fire- it has been melting below the earth's surface and was previously constrained by the ice. Tundra turns to peat and creates depressions as the frozen ground melts, quickly draining lakes when a sinkhole forms.

Along with carbon, other bacterial, fungal and viral pathogens are also being released. In Siberia in 2016 a frozen reindeer thawed, releasing anthrax spores and sickening many animals and humans (killing one human). We could lack immunity or cures for other thawed pathogens, both ancient and new, or those we had previously eliminated (e.g., bubonic plague, smallpox). We know from experience that H1N1 (1918 influenza) frozen in permafrost was recovered and its genome collected from cemeteries.

Plants pull mercury from the atmosphere (leaves) and soil (roots). It's not a big deal when it is accumulating, with permafrost storing about twice the levels found elsewhere in soils, oceans and the atmosphere, but when it is released all in a short period of time through water runoff the levels of mercury can be very dangerous as it enters the food chain through fish. An even worse situation occurs when heavy rains are present and speed up the melting process.

The IPCC models become more accurate and sophisticated in each 7-year cycle. Previous iterations have not included permafrost and the ramifications that melting will have on feedback loops. A sudden release of methane from melting permafrost would accelerate any warming currently present. This could be why current models have underestimated recent temperature increases.

Much of the earth's permafrost occurs in the Arctic and in Greenland, with some now also found on Antarctica. The Arctic is currently a carbon sink, taking up more carbon than it releases. As the area warms, many processes will interact and could transform the region into a carbon source, like draining peatland.

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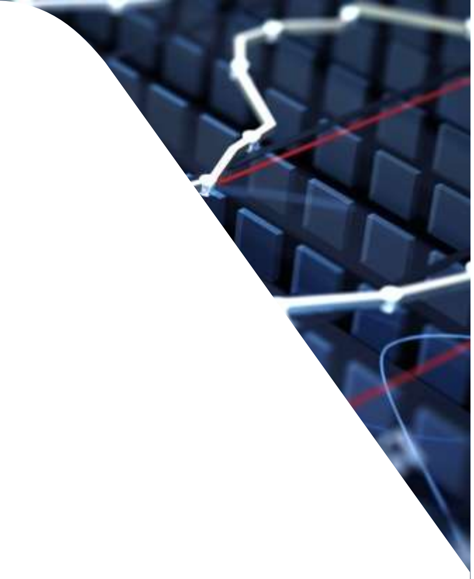

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Crossing Thin Ice

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Webcast

- One-hour live webcast once each quarter following the newsletter publication
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Podcasts

- Two per month
- Delivered by Dave Ingram & Max Rudolph
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While insurers have been challenged by low interest rates and the pandemic, the next few years will see a radically changing environment for insurers. We will be using this provocative platform to identify emerging risks and delve into what we see as the drivers of future success.

DAVE INGRAM | SENIOR ERM CONSULTING ACTUARY

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