

MOVING UPSTREAM 2030

Protecting the DoD Workforce
Against Future Insider Threats



INSTITUTE FOR THE FUTURE

About this Project

In late 2019, the DoD Counter-Insider Threat Program, Office of the Under Secretary of Defense for Intelligence & Security (OUSD[I&S]), engaged Institute for the Future (ITF) to identify and analyze the external future forces that will emerge over the next decade to help DoD better protect its workforce for the long-term future. The goal of this research has been to proactively identify emerging threat vectors that provide the opportunity to create innovative, holistic, and positive mitigation and prevention strategies that will push intervention upstream.

Institute for the Future

Institute for the Future is the world's leading futures organization. For over 50 years, businesses, governments, and social impact organizations have depended upon ITF global forecasts, custom research, and foresight training to navigate complex change and develop world-ready strategies. ITF methodologies and toolsets yield coherent views of transformative possibilities across all sectors that together support a more sustainable future. Institute for the Future is a registered 501(c)(3) nonprofit organization based in Palo Alto, California.

Visit www.iftf.org/upstream2030

to access all project materials.

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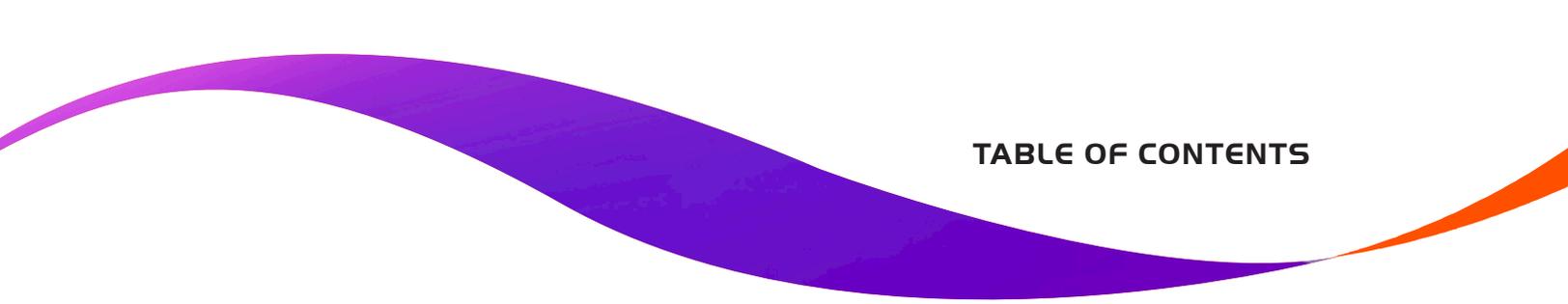
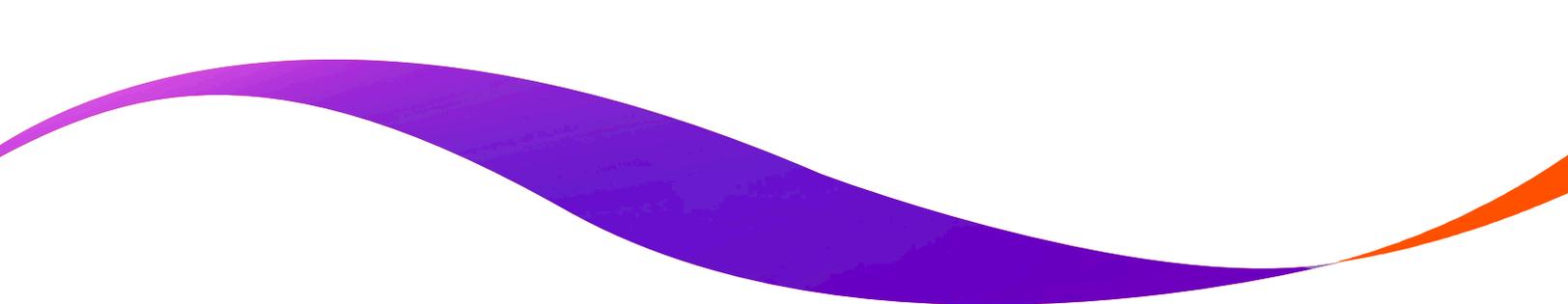


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I: Executive Summary

As we enter the 2020s, the digital transformation that has already remade our global systems will continue to disrupt, mature, and be accelerated by advances in IT—a process that has been kickstarted by the demands of adapting organizational processes to the coronavirus pandemic. But the forces changing the landscape for insider threat prevention aren't just coming from digital technologies. Shifting family structures and expectations of gender roles are opening up new ways for individuals to express themselves and creating gaps between these expressions and institutional expectations. Long-standing economic trends have fissured traditional employer-employee relationships and are remaking the professional expectations of young people. And all these changes, including stark impacts of climate change, are taking place in a landscape where social polarization has reached historic rates in the United States.

In late 2019, the Office of the Under Secretary of Defense for Intelligence & Security (OUSDI&S) engaged Institute for the Future (IFTF) to analyze the external future forces that are emerging over the next decade to help DoD's

Counter-Insider Threat Program better prepare for the long-term future. The goal of this research has been to identify emerging threat vectors that will demand new kinds of mitigation and prevention strategies as well as emerging opportunities to push beyond reactive strategies and move upstream to develop more holistic, positive approaches focused on prevention.

Through the lens of foresight there is an opportunity to stay in front of these changes and move upstream to protect against insider threats.

The DoD defines an insider threat as anyone who “has, or once had authorized access to information, a facility, a network, a person, or a resource of the Department; and wittingly, or unwittingly, commits an act in contravention of law or policy that resulted in, or might result in, harm through the loss or degradation of government or company information, resources, or capabilities; or a destructive act, which may include physical harm to another in the workplace.”¹

Methods: Exploring future possibilities

To conduct this analysis, IFTF engaged in a year-long, mixed-methods research project focused on analyzing the external landscape. This analysis was informed by a framework known as STEEP—a commonly used framework in foresight research for Social, Technological, Environmental, Economic, and Political—to ensure that our scan considered a wide range of possible futures.

Within each of the STEEP categories, IFTF conducted a literature review to identify candidate areas for potential exploration. From this comprehensive list, we narrowed our focus to ten future forces—two per STEEP category—that represent the most relevant and urgent forces to the future of insider threat prevention. Forces represent large-scale directions of change that are likely to reshape the broad operating environment in the coming decade.

Following this narrowing process, we conducted a more in-depth literature review for each force. We supplemented this literature review with an exploration of weak signals—early indicators that hint toward larger possibilities—to identify the kinds of factors that are too new to identify through traditional social science methods but are relevant on a longer-term timeline. In addition, we conducted a series of interviews with subject matter experts to add depth and nuance to the research. We then shared highlights of these external findings with members of the counter-insider threat community of practice in a series of workshops to strengthen their relevance and draw out implications.

The result of this process is a set of ten external future forces, two for each of the STEEP categories, which are highlighted in this report. For each broad force, we further identified three forecasts of either new threat vectors or new opportunities to mitigate threat.

Some of these forces, such as cybersecurity and resilience, point toward an evolution of current challenges for insider threat prevention. Others, such as persistent climate risk and volatility, are rarely a focus of current insider threat prevention efforts but will become an increasingly important source of threat as the decade plays out. Together, they paint a picture of a landscape in which new sources of threat are emerging from a variety of causes but also new ways to address these threats.

The goal of foresight research is not to provide a specific prediction of an exact future state; rather, it's to develop plausible, provocative, internally consistent points of view about directions of change in order to influence present-day decision-making. IFTF calls this the Foresight-to-Insight-to-Action cycle. If **foresight** provides a sense of expanded possibilities, **insight** connects broad possible futures to specific activities in the present. One can think of insights as new threats or opportunities that will emerge over time but that work can begin on now. This report focuses on foresight and insight, with the goal of ultimately informing present-day decision-making. Recommendations for specific **action** steps are beyond the scope of this report.



Key findings for insider threat prevention

As part of this analysis of the future landscape, IFTF conducted a series of working sessions with members of the counter-insider threat community of practice in order to draw connections between the future landscape and prevention efforts. Key insights are documented throughout this report. Highlights of these findings include:

TECHNOLOGICAL FORCES

- Investments in technical infrastructure will remain critical, yet many of the challenges related to insider threat are human problems more than technology problems.
- Some risk can be mitigated by training individuals to be more skeptical of information and improving literacy in misinformation.
- How social media are used in detection and mitigation will be an evolving challenge to organizations. Most secure is someone not connected to any social media.
- Preventing cyber risks relies on cultivating cognitive security against attacks as much as on cultivating technical expertise and infrastructure.

SOCIAL FORCES

- Family dynamics, gender identities, and gender roles are changing rapidly, creating new permissions and acceptance of self-expression. But some individuals and groups find these practices threatening.
- As work-life balance becomes more fluid, behavior in the home is increasingly relevant to performance on the job. Domestic violence is a pervasive issue that must be addressed by the workplace as an insider threat issue.
- Transparency is a balancing act. How much transparency is it safe to offer in a security environment?

ECONOMIC FORCES

- In the trend toward fissuring of work, traditional assumptions about the employer-employee relationship become less relevant because those relationships are assumed to be temporary. Younger generations, including digital natives, are used to organizing rapidly and code-switching across platforms.
- Research suggests that employees need both flexibility and psychological safety to be successful. In the long term, balancing such variables will help promote health, well-being, trust, and resilience among DoD staff.

- High-tech industries are characterized by a radical divergence in outcomes and success between the top performers and everyone else. This increases the value and potential risk of IP theft.

POLITICAL FORCES

- Rising polarization will be perpetuated by social media, algorithmic newsfeeds, and a fractured media environment. Polarization is distinct from disagreement; it arises when differences of opinion come to be seen as attacks on identity.
- Some of the core tenets of military training can help mitigate the threat of polarization by building cohesion among diverse people from all over the country.
- One strategy for improving low-trust environments is to improve transparency. Despite its potential, the viability of this strategy is limited in high-security environments.
- The US has been experiencing a long-term decline in trust in virtually every institution, with fewer people expressing generalized trust in business, government, or the media. These declines are particularly acute among lower-income Americans.

ENVIRONMENTAL FORCES

- Threats such as climate change will be stressors on the current environment, and the relationship to insider threat will merit additional research.
- Over the next decade, the impacts of global warming will be increasingly pronounced. Though we can't pinpoint where or when climate change-related events will occur, it's clear that impacts will be widespread. Every organization's long-term strategy needs to account for these risks.
- We're our own enemy on climate change. Social solidarity is a big consideration for what combatting this force will look like.

II: The Ten-Year Landscape



TECHNOLOGICAL FORCES

Compromised Cybersecurity and Resilience

Key insights for insider threat prevention:

- **Cybersecurity challenges will grow** over the coming decade because vulnerable legacy systems underpin critical infrastructure.
- While technical infrastructure will remain a critical investment, many of the challenges related to insider threat are **human problems** more than technology problems.
- As a result, training and skill development—in other words, **improving human capabilities**—may represent an underutilized opportunity for insider threat prevention.
- In the long run, **preventing cyber risks** is as much an issue of cultivating cognitive security against attacks as it is a question of technical investment.

The challenge of securing your assets is as old as civilization itself. In the past, security meant using tall electrified fences, security cameras, hardened locks, guards, gates, and guns.² But after the world became connected through electronic networks, these traditional security protocols lost their effectiveness. An armed guard or a motion detecting camera is useless against a remote phishing attack or other form of social engineering designed to exfiltrate valuable digital information.

Unfortunately, when it comes to cybersecurity, many organizations are still thinking metaphorically of guards, gates, and guns. Not only is this a poor way to fend off outsider attacks, it's an even worse way to address emerging and future insider threats. "The paradigms of defense and national security that had lasted for literally

over a thousand years don't work on the Internet," says Marc Goodman, author of *The New York Times* bestseller *Future Crimes* (2015). Even though organizations pay lip service to modern cybersecurity, they fail to understand why old security protocols don't work.

In other words, to arrive at a future of effective cybersecurity, the first step is getting unstuck from the past.

Openness and security

The Internet and computer networking in general were designed by a small community of computer researchers biased toward designing systems that maximized openness, interoperability, transparency, and resiliency. The protocols of the internet were designed primarily

to facilitate basic transport of information.³ Because a residue of the original spirit of openness and tolerance of anonymity has persisted as new technology layers have been added to the Internet technology stack over the years, we're facing an increasingly fraught dilemma. On one side, the openness of networks provides the opportunity to identify vulnerabilities and fix them, and the ease of anonymity protects whistleblowers and oppressed groups. On the other side, openness and anonymity make it easier for hackers to identify network vulnerabilities and exploit them.

Because strong security wasn't baked into the internet's foundational protocols, it became necessary for third parties to add it. Today, countless cybersecurity solutions are available both as open source and on the private market.⁴ But even a theoretically bulletproof cybersecurity program has to operate in an insecure ecosystem. Woe to any organization that runs under the false impression that its internal cybersecurity system is bulletproof, because as soon as it connects that system to the outside world, it will come into contact with insecure software and insecure people, making it ripe for exploitation.⁵

Today, networked databases and cries against information silos have increased inter- and intra-organizational demand for information, which increases the number of insiders with access. "Previously, if you were working at a national security organization and were assigned to sector 3G," says Goodman, "you might only have access to the paper files and section 3G. But now, everybody can go online and access all different types across the government. And in response to 9/11, we saw this major push to increase sharing across the 17 or 18 intelligence agencies so that FBI could read things from the Agency and the Agency could read things from Fort Meade and the like. And so now, we have this massive push for everybody to get access to everything." This dynamic creates a dilemma for insider threat prevention. Sharing information widely can help uncover behavioral patterns that indicate a threat but this comes with the added risk that more people have access to information, which puts that information at a greater risk of compromise.

Outsider and insider

It's time to stop thinking of insider threats and outsider threats as unrelated, because insiders and outsiders often work together to devastating effect, such as phishing attacks against CEOs, planting spies, or introducing malware into a computer network.⁶ Goodman notes that in many cases it's counterproductive, from a cybersecurity standpoint at least, to make such a distinction between insider and outsider. "External threats...can very much appear like internal threats because even though they're bad actors from the outside, they have made entrance into your system," he says.

Cybersecurity is more usefully viewed as an ecosystem that includes insider as well as outsider threats that interact. Outsiders often use insiders to gain access to otherwise highly secure systems. The most common way is through social engineering that turns well-meaning insiders into unwitting facilitators, often in the form of phishing attacks that succeed by creating urgency⁷ or even unfortunate typos, such as when Clinton campaign manager John Podesta's aide accidentally sent an email describing a phishing attempt against Podesta's Gmail account as "legitimate" instead of "illegitimate"⁸.

A variant of phishing, called whaling, is especially important to note. "With whaling," says Jack Rhysider, a former network security engineer in a network operation center and now the host of the popular cybersecurity podcast *Darknet Diaries*, "you're sending an email that looks like it's from the CEO of the company or a big supplier and it says, 'Hey, I need you to transfer this \$1 million. Just between you and me. I don't want the news to hear it.'"

The specter of deepfaked audio and video that impersonates organizational whales could prove to be an especially effective way to recruit unwitting, or accidental, insiders. For example, this 2019 *Forbes*' headline, *A Voice Deepfake Was Used To Scam A CEO Out Of \$243,000*, hints at a future in which criminals will be able to deploy sophisticated, fake audio and video to steal money and IP.⁹



II: The Ten-Year Landscape

Other ways outsiders use insiders is by compromising them through threats, blackmail, bribes, and computational propaganda designed to radicalize them to a belief or cause. Again, deepfakes can supercharge this kind of coercion. Imagine an outsider sending a deepfaked video of an insider appearing to do something humiliating or illegal. The outsider could send it to the insider and say “Look, we have this video of you, send us some money or else we’re gonna release it to the world,” says Rhysider.

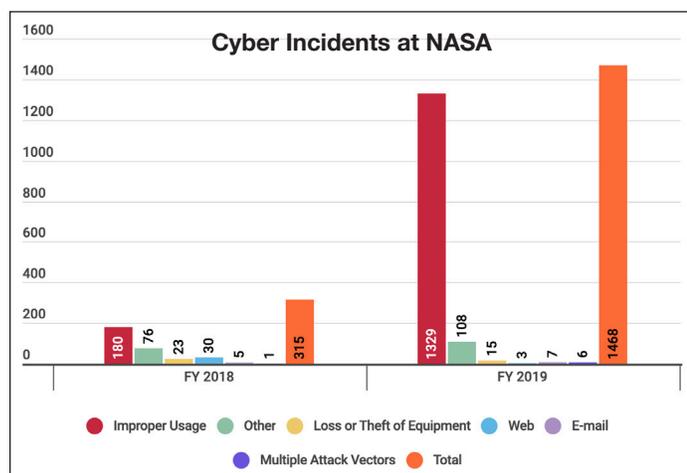
That said, it’s useful to note a key difference between insiders and outsiders. While both insiders and outsiders are motivated by greed or ideology, insiders can also be motivated by anger or other emotions, even boredom. As former Deputy U.S. Chief Technology Officer Edward Felton noted, “Given a choice between dancing pigs and security, users will pick dancing pigs every time.”¹⁰ This is a humorous way of saying that understanding human behavior will be essential for creating effective cybersecurity systems in the future.

As Mike Liebhold, Distinguished Fellow at Institute for the Future, notes, “Psychology is the big frontier...as the adversaries are probing the system, they’re looking for psychological vulnerabilities as well as technical vulnerabilities.”

We now know that many insiders who attack their organizations’ IT systems have shared characteristics. They are, according to Goodman, often younger, “highly disaffected,” people who think “all their bosses were idiots,” and think “the system is stupid and is mistreating them.... This psychological profile makes ideal candidates for sleepers who are being pulled by foreign adversaries to get access to information,” says Goodman.

But psychological attacks are becoming more sophisticated, and as a result, even well-adjusted people with no axe to grind are susceptible to being manipulated by outside entities. These forms of psychological persuasion include memes, botnets, conspiracy theories, and fake news. These will increasingly become larger threats, but little is being done to address them at this time, at least from a security standpoint. “There is now a thriving field of computational social science that studies how social networks and other digital media affect society, but the field does not generally address the topic as a security question—let alone a defense problem,”¹¹ write researchers David Perlman and Pablo Breuer.

Liebhold summarizes the problem: “We’re all insiders as people on the planet, and we live in a fragile digital infrastructure. What are the new behaviors to detect when somebody’s trying to persuade you? And how do we behave properly in secure systems and fragile systems?”



C., John. “Cyber incidents at NASA surges by 366%.” AtlasVPN. June 8, 2020. <https://atlasvpn.com/blog/cyber-incidents-at-nasa-surged-by-366>

SEEING THE FUTURE IN THE PRESENT

What:

NASA, which is one of the few government agencies that had its cybersecurity budget cut back rather than increased between 2018 and 2019, saw a 638% increase in improper usage attacks. Of the 1,468 digital security incidents reported by NASA, 1,329 were caused by improper use.

So what:

Improper use of technology creates serious vulnerabilities for cybersecurity, making insider threats easier to commit. The numbers suggest that maintaining an adequate cybersecurity budget is crucial to preventing cybersecurity attacks.

Forecasts

Opportunity: Insiders as assets

Goodman presents the challenge faced by organizations' IT security teams: "The good guys have to be right 100% of the time to keep out bad actors. But a single bad actor, like a Chelsea Manning, can be right once and do terrible damage." While it's important to identify and weed out disgruntled, greedy, and other problematic insiders, it's equally important to understand that the overwhelming majority of insiders want only the best for the organization and are willing to step up and become assets, provided they're given training, guidance, and encouragement.

Insider threat programs of the future could look to gamifying and incentivizing employees as a way to proactively seek out cybersecurity vulnerabilities. We're starting to see early signals of gamified cybersecurity training and awareness for employees that provide feedback via "elements like scoring, leaderboards, and chat features."¹² The creators of one such gamified cybersecurity program reports that people "were 50% less likely to click on a malicious link and 82% more likely to report the link."¹³

Gamification could become even more useful when it becomes an always-on, pervasive aspect of cybersecurity—not just simulation training on virtual machines. For instance, says Rhysider, when employees are told they will be tested once a quarter with a fake phishing attack, they become more alert, and the number of phishing incidents drops precipitously. He says not many companies incentivize their employees this way, "but I have seen a few and it's really effective for those companies." Rhysider also recommends tying bonuses to employees who practice good security hygiene.

Threat: Algorithmic security management

Machine learning, coupled with automation, can process endless amounts of data about human-computer interactions to develop early warning systems that detect potential malicious users in an organization's network. A number of threat mitigation companies claim to have commercially available sophisticated machine learning systems to sniff out insider threats.

But AI, machine learning, and automation can go beyond threat detection and start to become useful tools to help non-security members of organizations practice good security hygiene. Rhysider envisions the advent of smart compilers that help programmers code in a secure way, warning them if certain parts of a program could create a security hole. Rhysider acknowledges a downside to this approach: a similar type of artificial intelligence script could crawl GitHub to find vulnerabilities to exploit.

Liebold thinks that within ten years, people could have "private, personal security agents" similar to the ones being developed by Stanford's Almond project, which is aimed at providing the same kind of virtual support provided by Siri or Amazon's Alexa without sacrificing privacy to the tech giants. These agents would act like a coach and "whisper to you" when you're doing something that could compromise your or your organization's security. This kind of agent, however, according to Liebold, would come with its own security vulnerabilities and would certainly be a "high-powered target in the threat landscape, if [it] got infiltrated and started coaching people to do the wrong thing."

Of course, using AI and machine learning to prevent insider threats also introduces new vulnerabilities. Malicious actors will probe algorithms developed through machine learning for weaknesses and develop adversarial attacks against commercial machine learning platforms. For instance, a paper presented at the 2018 Conference of Computer Vision and Pattern Recognition described the successful exploitation of a machine vision system to "interpret a subtly modified physical Stop sign as a Speed Limit 45 sign" by using a "set of black and white stickers that an adversary can attach to a physical road sign (Stop sign)."¹⁴ In an era of algorithmically managed cybersecurity, hackers will increasingly use data instead of code to orchestrate adversarial attacks against brittle algorithms.¹⁵

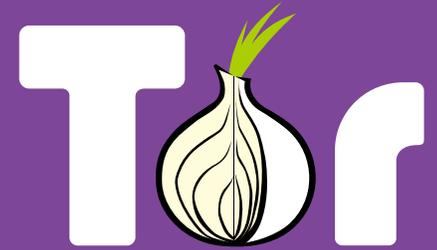


Threat: Deep web risks

Today's background checks aren't able to penetrate the deep web, which is becoming a safe space for white supremacists, neo-Nazis, sovereign citizens, QAnon cultists, Boogaloo militias, flat-earthers, anti-vaxxers, and other extremists. Facebook and Twitter are easy to monitor, but the action is increasingly happening in onion sites on the deep web, which are exceedingly difficult to monitor. According to Asia & The Pacific Policy Society, "The deep web is roughly 500 times that of the regular web in raw data terms,"¹⁶ and it's nearly impossible to index. What's more, "if a host suspects that law enforcement is accessing their site, they can simply change the address. When this happens, it can be very difficult to find it again. Website links can be shared via encrypted messages or even simply be passed physically on a scrap of paper, and are difficult for law enforcement to track."

The challenge for cybersecurity professionals is to develop screening technology that can either penetrate the deep web and identify the actors there—a tall order—or develop psychological assessment technology that obviates the need to see a person's deep web activity. We will likely see a shift from interviews and surveys toward measuring actual behavior, perhaps through virtual reality simulations to learn how people react under pressure.¹⁷

**SEEING THE FUTURE
IN THE PRESENT**



<https://www.torproject.org/>

What:

The Onion Router (TOR) was developed at U.S. Naval Research Lab in the mid-1990s. According to the TOR project website, "The goal of onion routing was to have a way to use the Internet with as much privacy as possible, and the idea was to route traffic through multiple servers and encrypt it each step of the way."

So what:

It's very difficult to trace users on the TOR darkweb. Many websites that would normally be shut down on the Internet are able to thrive on the darkweb. A site called "End Chan" is a site that promotes racism and antisemitism, SecureDrop is "an open-source whistleblower submission system that media organizations can use to securely accept documents from and communicate with anonymous sources," and Zerobin is an "open source online pastebin where the server has zero knowledge of pasted data."

Intentional Manipulation of Perceptions

Key insights for insider threat prevention:

- Over the next decade, **tools to manipulate audio and video** will become increasingly powerful and democratized, opening up the floodgates of highly targeted, convincing forms of misinformation.
- Some **risk can be mitigated by training individuals** to be more skeptical of information and improve literacy in misinformation.
- Opportunities will also stem from **creating organizational processes** that allow employees to feel comfortable with slowing down, questioning information, and admitting to not knowing key information or answers.

Human brains are pattern-seeking machines.¹⁸ Being able to see connections and patterns—such as in the movement of animals or the planets—gave us an evolutionary advantage. However, the patterns we find may not be real. From seeing faces in clouds to turning coincidences into conspiracies, human brains sometimes construct meaning and structure where there really is neither.¹⁹

Historically, we've found that increased amounts of information and clarity can often help dispel the mythical and the mistaken. We've built institutions to expand and pass along what we've learned. In recent years, the expansion of digital technologies, especially the Internet, has enabled us to create an unprecedented degree of transparency about who we are, how we behave, and what we know.

The desire for structure and meaning within an explosion of data has led to the conundrum of the modern era: this vast transparency can actually make the world opaque. We have access to broad knowledge, but can't be certain of what we know; we have cameras everywhere, but can't be sure of what we see. The tools we've created to facilitate the rapid spread of ideas and connect an ever-growing number of people have proven to be not just mechanisms to share facts. They're also perfectly structured to share confusion.²⁰

Such confusion has a home in social media technologies, underscoring the ambiguous nature of these tools. Global

social platforms have enabled members of marginalized and oppressed communities to find each other and build solidarity and support.²¹ We must recognize, however, that marginalized is not necessarily the same as oppressed. Enabling connections between fragmented white supremacist groups is just as much a consequence of the spread of the Internet as support for persecuted LGBTQ communities.

The ability of Internet-based platforms to create close connections among distant people has proven to be a gold mine for those seeking to manipulate political, religious, and sociocultural beliefs. Until now, this manipulation has remained largely text-based, appearing most often in interactions over platforms such as WhatsApp or Facebook. With the explosion in remote gathering engendered by the COVID-19 pandemic, however, people are becoming used to group video gatherings.

This has implications for using social media for manipulation. In a world in which an increasing amount of interaction takes place over video, people who communicate only via text become highly suspect. A solution comes with a process called generative adversarial networks²²—a form of machine learning that can create utterly lifelike images of people. This technology has reportedly already been used to support espionage attempts.²³ Although it's largely been used with still images, this technology can increasingly be applied to video.

Advanced voice emulation and phoneme generation²⁴ can provide believable voices for video entities, and emerging deepfake technologies can manipulate video to put one person's face on another person's body in a highly believable way.

Arguably, the nature of our technological links tends to make sharing lies easier and more fruitful than sharing facts. As a rule, reality is complex, nuanced, and dependent on context or history for true meaning, while mistruths are simple, straightforward, and easily understood. The intentional development of tools to manipulate our perceptions in ways are making it harder to distinguish the artificial from the real.

The fundamental link between misinformation and manipulated perceptions and the broader problem of insider threat is that malinformation, which encompasses both intentional and unintended falsehoods, is a force multiplier for all the problems addressed in this project. Questions of identity, resilience, inequality, and mistrust run through all these forecasts, whether our focus is health, the workplace, or the impacts of climate change. Information manipulation can be used to worsen both our perception and the reality of these issues. Pick any of these forecasts and you can likely find an information manipulation story to be told.

Forecasts

Threat: Targeted misinformation

Employing social networking platforms as a medium for malinformation is widely recognized²⁵—which doesn't necessarily mean that the effort has lost its efficacy. Moreover, it has arguably legitimate, if not entirely welcome, uses. Although shadowy groups such as the Internet Research Agency²⁶ play political games around the globe, the advertising industry and fringe financial markets often use the same kinds of tools and schemes to change minds.

Community manipulation can be seen on just about any platform that allows persistent group communication,²⁷ from Reddit to YouTube to multiplayer games. For the most part, these efforts are one-to-many, functioning like broadcast media, making arguments and claims to a wide audience but not doing extended one-on-one interaction. This form of media tends to be aimed at groups with little in the way of direct individual influence. Over the next ten years, this will change.

Machine-learning-based intelligent agents will enable the creation of direct forms of manipulation. These agents will be used for “person”-to-person manipulation, especially on platforms like Tinder that don't lend themselves to group broadcast. We've seen intelligent agent technology in action over the past few years. For example, a small number of people have been seeking out romantic companionship from AI characters during the pandemic.²⁸ While the current generation of companions can usually be recognized as AI fairly quickly, their capacity for complex conversation is growing. In time, sufficiently advanced systems will add to the apparent reality of intelligent agents by creating unique and entirely believable fake backgrounds for pretend people.

And because they're software, there's no reason to limit their use to one-to-one. The relationship will flip so that it's not the one speaking to the many, it's the many all focused on the one. A targeted individual could be engaged by a cluster of agents, each portraying a different person, adding the social pressure of group conformity to the manipulation arsenal. Someone engaged in active manipulation could have an online army with a size limited only by the storage capacity of their servers.

SEEING THE FUTURE IN THE PRESENT



What:

People are setting looped videos of themselves as their Zoom background to appear like they are paying attention in Zoom meetings.

So what:

In an era where video conferencing is a commonly used medium for communication, customizable backgrounds pose opportunities for deception.



What:

A UK energy company's chief executive was conned into wiring over \$200,000 to another company because he believed it was his boss on the phone telling him. It turns out this was not his boss, but AI deepfake voice fraud software that perfectly mimicked the energy firm CEO's boss.

So what:

Deepfake software is becoming more advanced and creating dangerously deceptive circumstances that can lead to intellectual and financial theft, misinformation, and disinformation.

Forecasts



Threat: Deepfakes proliferate

The glaring threat of deepfakes and similar visual manipulation tools has the potential for digital deception to alter behavior. A video message from a known contact rather than from a random face may be immediately more trustworthy. A news report showing a public or political figure doing something unethical or illegal will undoubtedly be convincing to a portion of the public. Moreover, the goal of those undertaking intentional deception may not be to convince, but to confuse.

By 2030, deepfake systems and tools for using generative adversarial networks in video will be faster, more detailed, and far simpler to use. It's important to recognize that these technologies will have entirely legitimate uses for business, for social interaction—for example, software translation for video calls that makes a person's mouth appear to be speaking the translated language—and especially for the entertainment industries. People will have become accustomed to seeing and interacting with digital entities.

This could be beneficial, as people learn to recognize the earmarks of a digitally altered or generated face.²⁹ Those using such tools for deception will undoubtedly improve their results, leading to something of a cognitive arms race between deception and clarity. We're likely to see emerging research on building "immune systems" to fight manipulation in our interactions with social media.



Opportunity: Develop cognitive and technical immunity

The best way to push back against the manipulative capabilities of digital tools spreading information will likely be to build up immune systems. This may actually be simpler for generated images and video than for text. Human brains do a wonderful job of recognizing other people, and as a result, humans are able to pick up on tiny details and nuances that would make a digitally created person feel *wrong*. Computer scientists refer to this as the "uncanny valley,"³⁰ a well-known problem in computer graphic images.

But defense against the digital arts won't be limited to looking for the uncanny. Multiple computer labs around the world are working on systems able to spot misleading or faked video.³¹ Often, manipulated and edited video will show unavoidable artifacts when examined closely, such as unnaturally smooth regions or mismatched shadows. This sort of digital forensics is likely to become a key part of information security.

We won't simply rely on our machines; we'll need to boost our own skepticism.³² We will develop systems to examine everything about a person on the other side of a video call, from visuals to signal lag to voice echo, looking for inconsistencies. We'll learn to listen to what's being said, how it's being said, and in what context it's being said, all with the same goal of spotting something that seems off. We'll develop best practices for protecting both the individual and the organization from malinformation. Most important, we'll need to make certain that our immune systems can evolve along with the threats.

This evolution is absolutely possible—it already happens, at least at an informal level. Advertising of the 1970s, for example, seems ridiculous to people of the 2020s and certainly unfit to sell a product. Our goal should be a parallel to this—the people of 2030 should be able to look back at clumsy attempts at manipulation in the 2020s and wonder how they fooled anybody.



SOCIAL FORCES

Shifting Identities, Roles, and Family Dynamics

Key insights for insider threat prevention:

- **Family dynamics, gender identities, and gender roles are rapidly changing**, creating new permissions and acceptance of self-expression. But some individuals and groups find these practices threatening.
- **The structure of social identity is tied to the structure of society**; the Internet has made subgroup ideology more accessible to the masses.
- Current policies overcompartmentalize home life and work life and will need to shift toward a **model that encourages the whole person to come to work**.
- As work-life balance becomes more fluid, **behavior in the home is increasingly relevant to performance on the job**. Domestic violence is a pervasive issue that the workplace must address; domestic violence offenders pose a threat outside as well as in the home.

We're in an era in which individuals' roles and identities—social category, defined by membership rules and alleged characteristic attributes or expected behaviors—are changing rapidly.³³ But despite rapid change, cultural expectations and institutions have not yet adapted. This disconnect will be a source of both substantial threat and opportunity in the next decade. We already see these changes taking place with attitudes and perspectives around gender: not only are many more Americans viewing gender as a fluid construct rather than a set category, but our assumptions about traditional roles for men and women are changing rapidly while institutions struggle to catch up.

Today, throughout the U.S., people are identifying as trans, gender-fluid, and nonbinary in increasingly large numbers. According to Pew Research Center, about one in five Americans knows someone personally who uses gender

neutral pronouns.³⁴ There is, however, a big generational gap—32% of the people surveyed who were born between 1996 and 2004 know someone who uses gender-neutral pronouns versus eight% of people born before 1953. The age cohort correlation appears to be fairly linear, with 29% of people born between 1968 and 1988 and 24% of people born between 1954 and 1968 reporting that they know someone personally.

This recognition of gender as fluid intersects with substantial changes to gender roles that have happened over the last half century, due in many ways to strides made by the women's movement. Today, we still see a gap between personal and societal understandings of gender identities and the actual roles people have access to in the professional world and in their personal lives—and the recognition of gender fluidity has the potential to either widen this gap or close it.



For instance, while in one poll, Pew found that 91% of Americans agreed that “gender equality is very important,”³⁵ respondents to another survey offered views that contradict, or at least complicate, this stated commitment to equality. When asked if it is “very important for a man to be able to support a family financially in order to be a good husband or partner,” 71% agreed, while just 32% said it was important for women to be a financial provider in order to be a good partner.³⁶ And while men still make substantially more money than women, even for doing the same work, this is changing, and the share of households in which women are the breadwinner is increasing.³⁷

If these workforce trends continue, and mainstream notions of masculinity do not change, there could be significant consequences. That is, if men are seen as having to be able to support a family financially to be a good partner, some men might feel like women out-earning them undermines their role. There is substantial research that suggests men who feel they don’t live up to traditional notions of masculinity are more likely to be aggressive³⁸ and more likely to commit intimate partner violence.³⁹ These dynamics are linked to more extreme outcomes: a recent investigation by Mother Jones⁴⁰ suggests a connection between “toxic masculinity” and mass public shootings.

Over the next decade, such disconnects will exacerbate stresses on both individuals and institutions and represent new vulnerabilities and sources of insider threat—new ways to attack people and make them feel disrespected or even humiliated, as well as new sources of alienation and resentment for people who feel their own roles and identities are being undermined. At the same time, finding ways to reconcile these disconnects represents new avenues to make people feel included and recognized, new intervention points for encouraging desired behaviors and discouraging behaviors that are harmful, and ultimately new opportunities for closing the gap and making both individuals and institutions more resilient.

SEEING THE FUTURE IN THE PRESENT



What:

Around the world, domestic violence cases have surged as a consequence of the COVID-19 lockdowns; in some regions, officials are receiving three times as many domestic violence calls as they were during the same time in 2019.

So what:

Experts have characterized domestic violence as an “invisible pandemic” during the COVID-19 crisis. As many abusers have been out of work as a result of the outbreak, heightened situational factors have increased economic and emotional stress, which are known stressors related to insider threat.

Bettinger-Lopez, Caroline and Bro, Alexandra. “A Double Pandemic: Domestic Violence in the Age of COVID-19.” *Council on Foreign Relations*. May 13, 2020.



Forecasts

Threat: Shifting identities and reactionary backlash

Change in the realm of roles and identities is not linear or universal. So while we can anticipate rapid change in identity over the next decade, we should also anticipate new forms of backlash. We see this today in the rise of many often overlapping but distinct reactionary movements, such as white nationalists and incels.⁴¹ Although people who openly identify with these movements may not be numerous, an analysis of American National Election Studies data⁴² conducted by the Institute for Family Studies indicated that millions of Americans share many white nationalists' beliefs.⁴³

It's nearly impossible to accurately gauge public sentiment on these kinds of identity issues due to what is called in information theory "preference falsification," also known as social desirability bias. People don't disclose their true opinions out of fear of social or material consequences and "partial adaptive preferences,"⁴⁴ in which people feel some doubt or misgiving about their publicly stated preference. This has been used as an explanation for how social change can seemingly happen overnight.⁴⁵ But once social change has occurred—for instance, once it becomes acceptable for people to openly disclose gay or transgender identities—it stands to reason that some people will falsify their preference in the new direction. That is, not everyone who begins to publicly support the new norm actually completely agrees with it. This means that social change is likely to both appear more rapid than it actually is, because many people previously hid their preference for the new norm, and more complete than it actually is, because once a tipping point is reached, people will likely conceal their opposition to the new norm.

Over the next decade, we can anticipate quite a bit of social change, but also sudden backlash. Institutions will need to both adapt to new norms and also be mindful of ways in which such norms are tenuous. People who are only superficially committed to these norms represent a new source of potential conflict and threat that must be managed. They may seem to be aligned with an organization during periods of change when that may not actually be the case.

Opportunity: Better understand how to strategically activate identities

Identity has always been a tool for encouraging and discouraging behavior. Over the next decade, technology is likely to enable substantial advances in the art and science of strategic identity activation, that is, making one part of someone's identity salient to them in a way that can influence behavior. As our data trails from social media and other sources become richer, and as tools for processing data such as machine learning become more powerful, we're likely to be able to measure responses to particular forms of identity activation more precisely. We'll also get an increasingly granular understanding of how and why identities change over time and how to influence them.

From subtle verbal priming to cues in the physical environment, the means of influence, and their effects can also range from how people process information to how they perform tasks.

Stereotype threat research provides instructive examples for how making certain aspects of identity salient to a person can affect performance.⁴⁶ For instance, if you remind someone of a negative stereotype of a group they belong to and then give them a task related to that stereotype, it will instill a sense of self-doubt that inhibits their performance.

Identity salience also impacts how we evaluate information. One study found that the way people evaluate the legitimacy of scientific findings was influenced by the implications those findings have for their social identity groups.⁴⁷

There are also subtle ways to change someone's sense of identity and influence their behavior. For instance, studies in the field of enclothed cognition suggest that you can prime people to do better on scientific tasks if you have them wear lab coats.⁴⁸



II: The Ten-Year Landscape

Already people are using social media data to understand radicalization pathways. For instance, investigative data journalism site *bellingcat* (www.bellingcat.com) pored over posts on white supremacist Discord servers to identify self-reported radicalization narratives, the triggers that contributed to someone adopting a white nationalist identity, in an attempt to better understand that process.⁴⁹ This kind of research is likely to become much more automatable in the coming years, potentially allowing those working in threat prevention to intervene in more upstream and less invasive ways.

Opportunity: Cultivate resilient identity portfolios

We're entering a decade in which people will increasingly find once-stable identities that they rely on for a sense of meaning and purpose are not as solid as they were, due to a changing economy and social environment. This loss of identity and status could contribute to making employees and contractors a threat to themselves and others. However, one potential preventative measure could be helping people cultivate resilient "identity portfolios."

Identities aren't fixed and singular. Everyone has multiple identities that become more or less salient depending on the context. However, we don't invest equally in all aspects of our identity. While this has been true to some extent for most of human history, we could see deliberately distributing meaning more evenly across multiple identities as a strategy for resilience in a decade in which identities and roles are in flux—and in which some roles and group memberships that people rely on for a sense of identity will likely be devalued.

One key area we might look to better understand this strategy is job-related identities. People who work in government or nonprofit organizations or are self-employed, and people with more education, are fairly likely to see their job as an important part of their identity.⁵⁰ And research going back decades has established that the more strongly a person's sense of identity is rooted in work, the more at risk for depression they are when they retire.⁵¹

However, it's also in this field where we see potential pathways to resilience. For instance, a 2016 literature review of studies around well-being and retirement in the US, Europe, and Australia found that people's multiple identities, which they define as "the number of social groups that [the person] regards as self-defining," correlated with greater well-being after retirement.⁵² While these studies are specific to retirement, they point to ways in which the damage to well-being caused by the loss of one important identity can be mitigated by cultivating a more diverse and resilient identity portfolio.

To encourage such portfolios, employers need to give employees and contractors the time and flexibility to cultivate these identities outside of work. But this is easier said than done. Much like we see with paternity leave, introducing work-life balance policies does not mean employees will necessarily take advantage of them. 2002 research by the UK-based Institute of Employment Studies identified what it calls the work-life balance "take-up gap," the gap between the availability of work-life balance benefits a company offers and people actually taking the company up on those offers and utilizing the benefits.⁵³ A relatively small survey by the Institute found that those who didn't take advantage of these policies felt that career prospects would be reduced if they did not work long hours. And while a more recent survey of 1,000 white-collar workers found that American workers are now slightly more likely than not to take advantage of work-life balance policies, they also largely agree that doing so hurts their careers.⁵⁴

All in all, this suggests that going beyond making policies available to ensuring they are utilized will entail changing workplace culture to allow people the space to cultivate identity resilience. Workplace culture reflects organizational values, which will need to change to replace incentives for working long hours with other criteria that lend substantive widespread support for developing identity resilience.

Increasing Loneliness and Disaffiliation

Key insights for insider threat prevention:

- A growing body of research shows that **loneliness, both pervasive and much worse for us than previously understood**, is a contributing factor in a variety of physical and mental health challenges, including suicide.
- Likewise, **participation in traditional spiritual organizations is down considerably**, particularly among younger people. Although formal spiritual affiliation is lower, the need for spirituality still persists.
- Emerging research suggests that rather than attempting to funnel lonely employees into wellness programs, the biggest opportunities to mitigate loneliness lie in investing in **support for interpersonal relationships**.

Even before the highly contagious COVID-19 virus resulted in aggressive social distancing across the globe, groundbreaking research was under way to better understand deleterious health effects of social conditions such as loneliness and emotional states such as feelings of hopelessness and despair. Rigorous work in psychology and public health has identified strong, troubling associations between feelings of disconnection, hopelessness, and loneliness and poor health outcomes, including shorter lifespans, inflammation, and heart conditions.⁵⁵ As a consequence of the months-long social isolation coupled with colossal levels of unemployment and economic stress, the mental illness epidemic ravaging the health of millions of people across the US will only worsen.

Over the next decade, researchers will demonstrate more causal relationships between poor social health and poor physical health, substantiating much current cutting-edge work and shedding light on emerging health risk factors. Similar to how the dangers of the nebulous term “stress” slowly integrated into society’s understanding of health in the 20th century, over the next decade the biological consequences of feelings of isolation and despair will become more common in our health lexicon.

As a result of this new understanding, clinical care models will expand to diagnose and treat feelings of disillusionment or loneliness more systematically. Barring dramatic increases in investment in mental health infrastructure, which is historically severely underfunded, communities, schools, and workplaces will need to build out their capacity to support those with mental illnesses.⁵⁶ They will develop prevention strategies designed to mitigate these conditions and accommodate students and workers experiencing them. Improved instruments for measurement will reveal how specific signs and symptoms of loneliness will manifest themselves far upstream, long before an adverse health event occurs. As part of the improved measurement tools, organizations interested in promoting a culture of prevention will experiment with systematically integrating social and spiritual offerings into their health and well-being strategies.

Increasing numbers of people identifying as lonely, a pattern of consistent growth in suicide rates, and a sharp increase in the number of people who identify as religiously unaffiliated, particularly among young adults, are shaping future insider threats to the health and well-being of the workforce. This section describes potential threats, and forecasts directional changes needed to respond to each threat and promote a culture of well-being in the workplace.



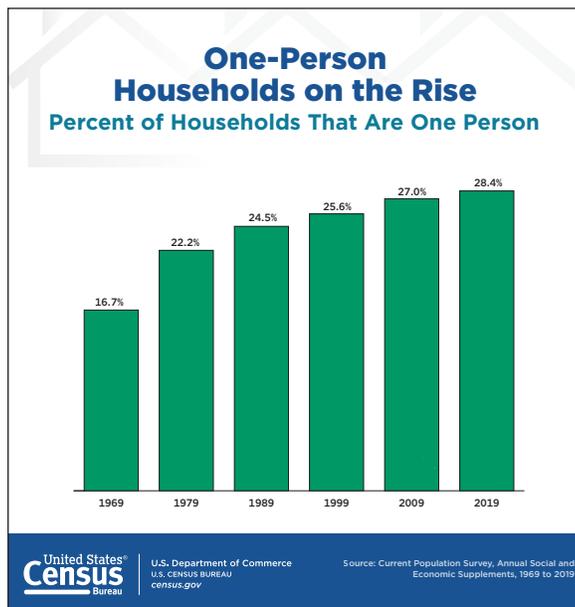
The lonely society

By 2019, 28% of all U.S. households were single-person households, up from 22% in 1979 (see sidebar for more detail).⁵⁷ Living alone is not the same as being alone, and in fact, sociologist Eric Klinenberg, argues that many of the 32.7 million people living alone are “quite social.” However, ours is a more physically distant society than in the past.⁵⁸ The ability of those living alone to engage in social activities has been impaired during this unprecedented time of social distancing in an effort to slow the spread of COVID-19, creating opportunities for a natural experiment in substitutable goods. Time will tell if video calls will offset some of the health risks that come from a lack of real-life social activity, but experts fear that, without “the chemical process taking place during face-to-face encounters with others,” the consequences of this sustained physical distancing will further harm the mental and physical health of those in one-person households.⁵⁹

The debate over whether living alone contributes to social isolation notwithstanding, a growing body of work is shedding light on the “loneliness epidemic” under way

in the United States.⁶⁰ In 2018, a study conducted by the health company Cigna explored the prevalence of loneliness in the United States, finding that a large subset of Americans regularly experience feelings associated with loneliness.⁶¹ 43% of respondents reported that their relationships are not meaningful, 43 percent are isolated from others, and 39% are not close to anyone. For many, the most surprising finding was that the youngest adult generation, those between the ages of 18 and 22, presented as the loneliest generation in the U.S.

This is concerning because loneliness carries the same mortality risk as smoking 15 cigarettes a day.⁶² As U.S. former Surgeon General Dr. Vivek Murthy explains, “Loneliness places us in a threat state.”⁶³ The psychological stress of being in an elevated threat state leads to biological responses such as higher blood pressure and inflammation.⁶⁴ Reducing the risk factors of loneliness and disconnection, whether or not due to living alone, will be a critical public and clinical health challenge over the next decade.



SEEING THE FUTURE IN THE PRESENT

What:

One-person households are on the rise, from 16.7% in 1969 to 28.4% in 2019.

So what: While it remains unclear whether living alone contributes to social isolation, there is a growing “loneliness epidemic” in the U.S.

Source: U.S. Census Bureau, 2019. <https://www.census.gov/library/visualizations/2019/comm/one-person-households.html>



What:

Loneliness carries the same mortality risk as smoking 15 cigarettes a day.

So what:

Psychological well-being is crucial to overall physical health. Loneliness increases mortality, which will pose significant public health risks over the next decade if interpersonal relationships are not invested in.

Source: Julianne Holt-Lunstad, Timothy B. Smith, Mark Baker, Tyler Harris, David Stephenson, “Loneliness and Social Isolation as Risk Factors for Mortality: A Meta-Analytic Review” in Perspectives on Psychological Science (March 11, 2015). <https://doi.org/10.1177/1745691614568352>



Threat: Remote work breaks social connections

Birthday celebrations in the breakroom, walks to coffee, days of service spent in the community, team lunches, pleasantries exchanged with a co-worker en route to the elevator—these activities help build social cohesion and a shared identity at work. Routine practices and behaviors that transpire are thought of as work rituals, and they're core to strengthening group ties and fostering a shared culture.⁶⁵ Most work rituals, however, assume that the people share the same work location.

The coronavirus outbreak has dramatically accelerated the pace with which work has become remote. This swift conversion from office to home has not transpired after deliberate investigation into how to preserve work culture and promote emotional connection. As a result, distributed work is ad hoc without any established norms or rituals. As journalist Derek Thompson wrote in *The Atlantic*, “The Coronavirus is creating a huge, stressful experiment in working from home.”⁶⁶ In research conducted prior to the outbreak, Google’s People Innovation Lab (PiLab) found “no difference in the effectiveness, performance ratings, or promotions” between individuals and teams who work remotely and those who work in the same physical space. However, the researchers did find that the level of connection was weaker among distributed teams.⁶⁷

Over the next decade, new work rituals will emerge that are more appropriate for teams that do not co-locate. Distributed work rituals will learn from the mistakes of “compulsory corporate fun” and not simply digitally relocate holiday parties and other awkward work engagements.⁶⁸ Successful digital work rituals will foster meaningful social connections and a stronger sense of belonging by applying the structure of “interaction scripts” or what management professors define as “concrete guidelines for interaction that specify content parameters and participation rules.”⁶⁹ They will formalize virtual clubs (e.g., books, movies, video games) and learning opportunities to enable interpersonal sharing. Critically, they will balance the interaction structure needed for virtual environments with open, unstructured ways to gather in person. Playing to the respective strengths of virtual and physical gatherings will help organizations promote a culture of respect, openness, and connectedness, positively contributing to a well-being culture.

Opportunity: Improve mental health measures

In addition to negative impacts loneliness has on our health, persistent loneliness is a known risk factor in suicide and suicide attempts.⁷⁰ Despite significant investment in prevention and awareness for decades, suicide remains a major public health issue and a leading cause of death.⁷¹ In Healthy People 2020, the goal was to reduce the suicide rate to under 10.2 suicides per 100,000 population.⁷² Even with substantial resources allocated to achieve this goal, between the years 1999 and 2018, the rate actually increased by 35%.⁷³ The rate now sits at 14.2 suicides per 100,000.⁷⁴ Physicians have the highest suicide rate of any profession, more than double that of the general population.⁷⁵ Over 6,000 veterans died by suicide between 2008 and 2017.⁷⁶

Equally troubling are the number of attempted suicides and people reporting suicidal thoughts.⁷⁷ Despite the challenges associated with collecting accurate numbers, the CDC reports that, in 2017, approximately 10 million adults had serious thoughts around suicide, 1.2 million made a suicide plan, and 1.4 million attempted to kill themselves.⁷⁸ Among adults, the prevalence of serious suicide thoughts was highest for those 18 to 25 years old.

These concerning reports about self-harm thoughts and actions align with the alarming growth of mental health disorders among adolescents and young adults over the last decade. According to the American Psychological Association, “Serious psychological distress, which includes feelings of anxiety and hopelessness, grew by 71% among 18–25 year olds, with no corresponding increase in older adults.”⁷⁹ Some argue that this shocking increase in mental health concerns could be explained by young people’s comfort in admitting to mental health struggles; however, suicide rates have also increased. As San Diego State Professor Jean Twenge explains, “Suicide is a behavior, so changes in suicide rates can’t be caused by more willingness to admit to issues.”⁸⁰

A combination of broader social intervention and innovative ideas may be needed to reverse the troubling patterns of growth in suicide across all age and gender groups. A greater societal understanding that experiencing sustained feelings of hopelessness is a mortality risk factor, and better tools to measure that risk may help flatten the curve in



suicide in this country. A reversal may require participation from all aspects of society—including clinicians, schools, and organizations—to prevent, measure, and treat the risk factors that lead to self-harm. Like all employers, DoD will have an important role to play in implementing informed and effective interventions. Without improving the collective psychological well-being of the workforce, work performance will suffer, which may lead to a higher incidence of insider threats. Studies show that depression symptoms interfere in work performance, and some link mental illness and occupational injuries.⁸¹ In general, poor mental health makes it harder for a worker to concentrate, learn, and make decisions.⁸² In turn, these employees may be at more risk of becoming “negligent insiders,” unintentionally making errors and disregarding policies.

At the height of physical distancing implemented to curb the transmission of COVID in the Spring of 2020, public health experts were sounding the alarm that the infectious disease intervention will only exacerbate the loneliness crisis under way in the United States. As Harvard historian Jill Lepore posits, “In the age of quarantine, does one disease produce another?”⁸³

In the short term, the unprecedented levels of physical distancing and, for many one-person households, social isolation will substantiate the robust research on loneliness as a critical health factor and not a social failure. A more universal acceptance of the dangerous health outcomes directly caused by loneliness will generate more interest in building better tools to measure levels of social connection. Emerging instruments will enable the development and diffusion of higher-resolution tools to measure mental and emotional health, and connect those measures to broader workplace wellness offerings.

Over the next decade, employers will have dashboard levels of visibility of the prevalence of feelings of loneliness in their workforces. As part of their well-being strategy, they will modify existing loneliness instruments, such as the UCLA Loneliness Scale, to make them more appropriate for work, including omitting the words “lonely” or “loneliness”

from the instruments so as not to discourage participation due to social stigma.⁸⁴ Just as the Perceived Stress Scale, published in 1983, has helped normalize the tracking and management of stress as a preventative health strategy, so will loneliness scales help reveal the prevalence of loneliness and open the door for mitigation and treatment.⁸⁵ Organizations with more precise and timely information into the emotional health of their workforce will be able to anticipate, intervene early, and connect workers with appropriate resources. They also will have more insight into the organization’s overall well-being, productivity, and performance. As workplaces address loneliness issues, they will need to respond thoughtfully to an array of questions related to privacy.



Opportunity: Facilitate relationship-building

A strong sense of belonging and an active community life are powerful antidotes to loneliness. Research published in the *British Medical Journal Open* in 2016 showed that participating in social groups such as book clubs or church groups decreases the risk of death for older adults.⁸⁶ The fact that only 7% of Americans report feeling satisfied with the quality of life in their communities suggests that few are enjoying the health benefits that are derived from feeling connected to others or to a cause.⁸⁷ While there are many explanations of the high levels of dissatisfaction in community life, including long work hours and a dearth of affordable childcare to allow for parents to recreate outside of the home, a marked decline in religious affiliation may also contribute to a lack of both community and a sense of belonging.

In just over a decade, the United States has transitioned from a majority white Christian society to a country in which fewer than half of the population identifies as white and Christian (43%). Just under a quarter (24%) of Americans are not affiliated with any religion, but many more young people fit this category.⁸⁸ Thirty-seven percent of young Americans, aged 18–29, are religiously unaffiliated compared with less than 10% of people in the 80+ age group.⁸⁹

**II: The Ten-Year Landscape**

Research shows that religious-based social ties deliver two benefits to health. First, they offer all the benefits around social connection and accountability that secular social relationships do. In addition, they offer a sense of identity and belonging.⁹⁰ The consequences of this rapid and dramatic social shift in religious affiliation will play out over the next decade. For some, a lack of religious community may exacerbate feelings of loneliness. For others, particularly young Americans, this absence of institutional religious structures will allow for the cultivation of new identities, practices, and rituals around sense-making and belonging.

Without formal institutional structures through which to help define spirituality and form communities, people's desires for belonging and social connection remain strong and are in many ways growing. As Angie Thurston, Casper ter Kuile, and Sue Phillips of Harvard Divinity School's Sacred Design Lab argue, the decline in religious affiliation, particularly in young adults, is "less like a process of secularization and more like a paradigmatic shift from an institutional to a personal understanding of spirituality."⁹¹ Young Americans are cultivating new communities and creating blended secular and spiritual rituals to "reconnect the loneliest generation."⁹²

For instance, unaffiliated Millennials (defined by Pew Research Center as those born between 1981 and 1996) aren't turning to religious leaders to discuss grief and mortality. Rather, they're turning to one another, gathering in groups to share a homemade meal and talk openly and honestly about their feelings around death and loss. This is the premise of a loosely affiliated group called The Dinner Party whose aim is to build community and help people make sense of emotional and spiritual pain.⁹³ Similarly, modern fitness offerings such as Crossfit and Soul Cycle

endeavor to foster community and personal transformation in ways that traditional gyms and fitness centers do not. The members of a "Crossfit box" apply what ter Kulie and Thurston describe as an "evangelical enthusiasm" to supporting the physical and mental health of their fellow community members.⁹⁴ These new social rituals reveal novel insights about the connection between emotional health and spiritual well-being.

Over the next decade, the ways in which the religiously unaffiliated will build and tend to communities dedicated to supporting their physical, mental, and spiritual health will seep into work environments. Employers will learn that this workforce is less interested in participating in corporate wellness programs or any programming developed for them by others. They will not favor building out social support systems as traditionally defined. Instead, they will look for a workplace culture that supports their relationship cultivation. In practical terms, they will want employers to help resource their relationships, not expand institutional well-being offerings.

Notably, the workplace will also evolve into, as ter Kulie forecasts, "a real site of spiritual activity." Between meditation and mindfulness offerings and conversations about ethics and society, topics at work are inching closer and closer to discourses previously held in churches, synagogues, and mosques. "Where do most Americans learn about questions of gender and race? It's in trainings from HR in their workplace," explains ter Kulie. By 2030, workplaces interested in fostering a culture of well-being will incorporate spiritual health resources in their health offerings. To do so successfully, they will need to learn from Millennials in how they form communities, pursue meaning-making, and define and practice spiritual well-being.



ECONOMIC FORCES

Fissuring of Work

Key insights for insider threat prevention:

- **Macroeconomic growth and household wage and asset growth decoupled** in the late 1970s, and this trend has left millions of American households financially vulnerable. These financial stresses have the potential to increase risk of threats.
- **Economic trends are being accelerated by the fissuring of work**, in which traditional assumptions about the employer-employee relationship no longer apply, and employer-employee relationships are assumed to be temporary.
- As younger generations, including digital natives, enter the workforce, many of them will **experience work as ad hoc and flexible** rather than formal and fixed.
- As expectations for flexibility increase, **a growing body of research suggests that employees need both flexibility and psychological safety** to be successful. In the long term, balancing these variables will be critical to promoting the health and wellness of DoD staff.

Before the pandemic hit the U.S., prompting a massive economic and health crisis, headlines about the economy boasted high growth and low unemployment rates. That picture of prosperity was touted under the guise of aggregate indicators, which don't illustrate the economic security of everyday Americans. Economic growth continues to disproportionately go to the top, and low unemployment numbers don't hold much weight when jobs are barely paying.

The virus has exposed many of these structural fragilities in our economy. Over the past 40 years, the top 1% of earners' share of national income has risen to be 20% of

national income, while the bottom half of earners' share has dropped 12.5% during this time.⁹⁵ Wealth inequality is significantly worse. The wealth gap between America's richest and poorest families more than doubled from 1989 to 2016, and since the Great Recession, the richest families are the only income group to have gained wealth.⁹⁶ Wealth is particularly important as it's the pool of resources people can fall back on during times of economic uncertainty and hardship; the wealth gap reveals that Americans are unequally equipped to weather the economic and health crisis. Today most people obtain healthcare and other benefits such as paid sick leave, retirement, and vacation through their employer. In the first few months of the virus



in the U.S., 30 million people filed for unemployment, meaning their access to health insurance was also going to disappear during a time when they needed it most. A myriad of factors have contributed to economic insecurity, and one major factor is the transformation of the employer-employee relationship.

Employment has transformed over the past few decades as outsourcing, subcontracting, and third-party management have proven financially, organizationally, and bureaucratically advantageous for employers. Economist David Weil refers to this phenomenon as the “fissuring of work”⁹⁷, in which employer-employee relationships are blurry and ill-defined. Since the 1970s, growth in productivity and wages have been decoupling,⁹⁸ and through the 1980s, public and private capital markets were pushing businesses to focus on their core competencies in order to deliver the most value to the customer. While this method cuts business costs and responsibilities, it has a pronounced impact on the structure of business and how labor is valued a critical impact of the fissuring of work is its impact on how wages and working conditions are determined.⁹⁹

While productivity has continued to increase, labor’s share of Gross Domestic Product (GDP), which had historically gone hand-in-hand, began to decline.¹⁰⁰ The majority of Americans reap the benefits of economic growth through the wages they earn for their labor. The labor market, however, has seen negligible real wage growth, and job growth since the Great Recession has been primarily in low-wage jobs.

The fissured workplace has profound consequences for the economic security Americans depend on jobs to provide. In an era of skyrocketing costs of basic needs, little increase in wages earned, and a weaker social safety net than other advanced countries,¹⁰¹ workers are stretched thin and

feeling more hostile toward institutions.¹⁰² As the traditional employer-employee relationship continues to erode, fewer workers have access to important benefits such as health insurance and paid sick leave. Full-time jobs are not paying enough, so millions of Americans have begun to take on additional jobs to make ends meet.¹⁰³ The employer-employee relationship is weak. Working more in order to barely cover expenses is not a sustainable system.

Work-life balance is increasingly important to people entering the workforce. By 2030, Millennials and Generation Z (defined by Pew Research Center as those born between 1981 and 1996, and between 1997 and 2012, respectively) will make up the majority of the labor force.¹⁰⁴ A comprehensive Gallup study on Millennial attitudes toward work and life found that Millennials want more than a paycheck—they want a purpose; they want their bosses to be more like coaches; they want ongoing feedback rather than annual reviews; and they want their career to align with their values.¹⁰⁵ Research on Gen Z reveals similar preferences—a paycheck is important but personal fulfillment is prioritized; they prefer to work in industries that they interact with in their personal life; they want employers to foster career development; and they prefer individual tasks over team-based activities, ultimately preferring independence but not isolation.¹⁰⁶ Both generations expect flexibility on when and where they work. The pandemic already has the ability to reset workplace expectations and capabilities in line with these preferences.

The emerging threats and opportunities arising from the transforming labor market landscape lie in the fragmenting employer-employee relationship, changing generational workplace expectations, and the decline in job security, safety, and mobility.

Forecasts

Threat: Household financial security erodes

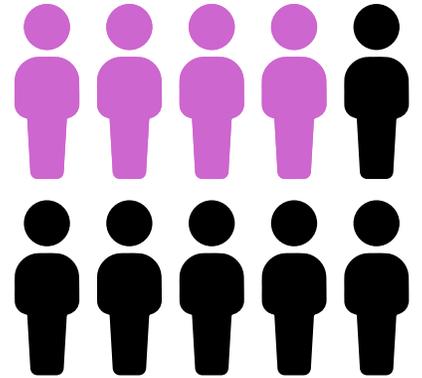
Rising costs of living and stagnating wages are putting more financial strain on Americans than before. Mid- to low-income earners have been disproportionately hit financially by COVID-19. Historically, these groups take the longest to recover financially, if they do at all.¹⁰⁷ As growing costs of basic needs steadily outpace growth in wages, people are taking on more debt and work such as gigs to supplement their income. Unlike full-time employment, gig work is short-term, temporary, and flexible and rarely comes with benefits or paid time off. According to the Federal Reserve Board’s well-being household survey 2019, 30% of workers engaged in some gig work and 5% of workers did gig work as a primary source of income.¹⁰⁸ This figure is likely to change given the off-the-charts unemployment that hit in early 2020—Instacart, the grocery delivery service app that hires gig workers, hired over 300,000 workers in the month of March, and they are in the process of hiring more.¹⁰⁹ People are working multiple jobs to make ends meet, yet they’re barely getting by.

While the on-demand economy lowers the barrier to entry in obtaining a gig and making money, these workers, classified as “gig workers” or independent contractors, are managed by an on-demand app, and receive little to no employment rights or benefits. Groundbreaking legislation in California¹¹⁰ will enforce a stricter worker classification so more workers are covered by basic protections. Setting an employment rights and wage floor will ultimately eliminate a race to the bottom for the cheapest labor, in which many companies are engaging.

Overall, wages have not kept up with the growing cost of basic expenses, adding mounting financial pressure on working Americans. Baby Boomers, who are largely financially unprepared for retirement,¹¹¹ have begun to retire and will be retiring for the next decade. Many will rely on their children or government-funded social services, compounding existing financial pressures on a micro and macro scale.

Prolonged financial stress has profound cognitive effects: namely, poor decision-making, a crucial factor in mitigating and preventing insider threat. At an individual level, financial trouble has been shown to contribute to tunneling, or one’s decreasing capacity to focus or think clearly due to mounting distractions or pressing thoughts, and also to scarcity—a factor that researchers Sendhil Mullainathan and Eldar Shafir note is a hidden factor in reduced performance.¹¹² To capture the concept, the researchers use the term bandwidth to refer to two broad and related components of cognitive function—the first, “cognitive capacity, or fluid intelligence, is the ability to think and reason abstractly and solve problems,” and the second “executive control, which underlies our ability to manage our cognitive activities...scarcity affects both.” They argue

SEEING THE FUTURE IN THE PRESENT



Can’t afford \$400 unexpected expense

What:

In 2017, four in ten Americans would not be able to pay an unexpected expense of \$400.

So what:

In 2017, unemployment rates were low and the U.S. was in the thick of the longest economic expansion in U.S. history. Given the surge of unemployment due to COVID-19, it is very likely these numbers are increasing. The aggregate indicators for overall economic health do not reflect the lived realities of everyday Americans. This is problematic because it suggests a large number of DoD insiders may face financial stressors that would put them at a great risk of becoming an insider threat.

Source: Federal Reserve. Report on the Economic Well-Being of U.S. Households in 2017. (2018). <https://www.federalreserve.gov/publications/files/2017-report-economic-well-being-us-households-201805.pdf>



that a constant draw to an urgent unmet need, ranging from feeling hungry to experiencing poverty, causes individuals to tunnel in on that unmet need at the expense of reducing other cognitive capacities.¹¹³

Financial strain is one of three stressors identified in the critical-path analysis, a method used in the business and medical sectors to “identify the interrelationships of processes and their most critical and vulnerable points.”¹¹⁴ These stressors—personal, professional, and financial—can squeeze underlying predispositions to encourage acts against a worker’s organization. In their analysis, Shaw and Sellers (2015) cite a number of spies who were “motivated initially, in part, by financial stress.” From being more susceptible to impulsive decision-making to making a simple, unintentional computing error, financial strain challenges our most fundamental capacities, ultimately posing a risk to a secure environment. At organizational levels, having spare capacity to address unexpected challenges hasn’t just been linked to better individual performance but to improved performance and abilities to handle emergencies.¹¹⁵

+ **Opportunity: Rethink trade-offs between stability and flexibility**

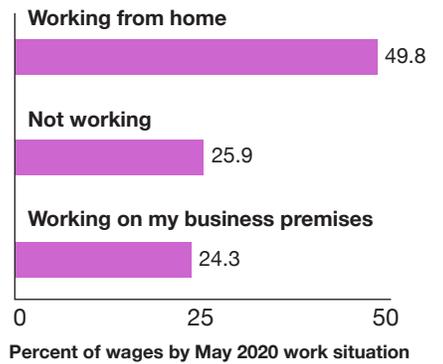
One strategy to mitigate the negative effects of a scarcity mindset in employees is to rethink trade-offs between flexibility and stability. For several decades, many companies and startups have prioritized shareholder value at the expense of workers, especially their subcontracted workers. This results in poor working conditions and underpayment, which in the aggregate can undercut productivity and workforce cohesion. Employees are feeling the lack of their prioritization in their employer’s eyes—and a third of employees don’t trust their employer.¹¹⁶ A trust gap is accelerating between businesses and the general public.

There are several opportunities to address the challenges of the changing employer-employee relationship in digitized fissured workplaces. Organizational psychologist Marla Gottschalk notes that she’s adopted a “lens of stability” to her work, arguing that “in the race for innovation and digital transformation, the idea of stability has been somewhat lost in the mix, and there are strong indications that we should revisit its merits.”¹¹⁷

Zeynep Ton, professor of operations management at the MIT Sloan School of Management and president of Good Jobs Institute, also advocates for stability—consistent, predictable schedules and fair pay and benefits.¹¹⁸ When employees have stability, they’re not only more productive and less likely to switch jobs, they are also happier.¹¹⁹ Ton also notes that having a flexible schedule contributes to job quality, but flexibility is only a real advantage when workers don’t have uncertainty about their future earnings.

SEEING THE FUTURE IN THE PRESENT

Covid has normalized working from home for younger generations



According to a recent policy brief by Stanford’s Institute for Economic Policy Research, roughly half of U.S. workers (sample weighted) are now working from home full-time as a result of the Covid-19 outbreak and stay-at-home orders. Work-life balance and flexibility is an important aspect of a job to people, and as the virus largely prohibits working in an office, the mandate to work remotely (if possible) could challenge the institutional norms around the value of physical proximity in the workplace, potentially posing security threats.

SOURCE: Bloom, Nicholas. “How working from home works out.” Stanford Institute for Economic Policy Research (SIEPR), Policy Brief, June 2020. Note: Graph redrawn to only show earnings weighted



While flexibility is certainly a feature of self-employment, many companies have taken advantage of this perceived benefit in order to attract workers. In response to California legislation that would require workers to be classified as employees in on-demand platform businesses, the CEOs of ride-hailing services Uber and Lyft penned an OpEd in the *San Francisco Chronicle* outlining the issues with the bill. They specifically call out that drivers “are attracted to the work because of the flexibility it affords,” and even cite a study that “shows the flexibility this new type of work affords has created real, quantifiable value for drivers and the economy.”¹²⁰ They claim flexibility would disappear if reclassification were enforced. As concessions, they propose extending protections to drivers and suggest a system of worker-determined benefits in order to “deliver a measure of security that independent workers currently lack.” Flexibility without stability, however, is not as valuable.

Organizational psychologists have referred to an implicit understanding between employers and employees—that good performance for a growing firm will lead to more professional opportunities—as the psychological contract.¹²¹ That contract is disintegrating as the continued rise of temporary, contract, or gig work has enabled platform apps firms such as Uber and Door Dash to experience phenomenal growth through the use of at-will contractors who have no formal stake in the company itself.

Dr. Gottschalk suggests organizations consider and acknowledge the psychological contract, which is often largely unstated. Explicit acknowledgement of what an individual brings to one’s work and what they expect to gain from their employers can set a foundation of trust with employees. Psychological safety, defined as “being able to show and employ one’s self without fear or negative consequences to self-image, status, or career,” is another concept Dr. Gottschalk encourages organizations to foster. These concepts not only apply to the employer-employee relationship, but also to employee-employee dynamics; Google’s Project Aristotle, a study intended to identify what makes for effective team dynamics, found that psychological safety was crucial to making a team work.¹²²



Opportunity: Remake the workplace for Generation Z

Millennials and Generation Z will make up the large majority of the workforce by 2030. These generations will increasingly be joined by a younger cohort often called digital natives—a group that IFTF Distinguished Fellow Bob Johansen describes as “a threshold shift, not a generational cohort” that ties this shift to the emergence of sophisticated mobile, social media.¹²³ They bring different attitudes on the nature of work and a radically different sense of the way work gets done.

Because these cohorts entered the workforce after the fissuring of work began, they’re coming with a different set of assumptions and expectations about what work provides. Gen Z’s worldview has been shaped by the slow recovery from the Great Recession. Many watched parents lose jobs and saw Millennial siblings move back home amid the increasing wealth gap of the previously booming economy and dramatic rises in the cost of living against stagnant wages.¹²⁴ In addition to a different set of financial experiences, Millennials have deeper connections to movements like #MeToo and Black Lives Matter. These factors will impact how this cohort evaluates the mission, values, and social impacts of businesses and other organizations.

While Millennials and Gen Z are closely aligned on key social and political issues from human-induced climate change to prioritizing gender equity,¹²⁵ they have varying work preferences. Millennials and Gen Z want their work to provide purpose and meaning and are more likely to take a job if it’s in line with their values.¹²⁶ Employees want and expect the ability to work from home. According to a study by Gallup, work-life balance, which includes flexibility, is also important for over half of employees—37% of employees say they “would change jobs for one that offered them the ability to work where they want or at least part of the time.” Longitudinal Gallup data shows that the percentage of employees who are able to spend at least some of their time working remotely has grown over the years to 43%. Research points to Millennials’ preference for working in teams, whereas Gen Z prefer individual tasks, prioritizing independence but not isolation; they value in-person connection.¹²⁷



Because digital natives are younger, less quantitative data is available. But Johansen argues that because digital natives have grown up in an era of distributed computing where ad hoc coordination is normal and fixed hierarchies are not, there's a lot to learn from this group. They are more likely to engage in full-spectrum thinking, which is the "ability to seek patterns and clarity across gradients of possibility while resisting the temptation of certainty."

This will not just challenge the ways large institutions operate; the ability to perform ad hoc coordination will enable digital natives to make new kinds of demands on the workplace. Johansen argues, "As the unemployment rate for young people remains high worldwide and new work platforms reorganize work into a 'gig economy' of consultants, freelancers, Uber-style workers, and Internet celebrities, more and more people are building personal

economies around their individual portfolios of skills, resources, and public identities."¹²⁸ Digital natives are able to harness technology to advocate for change very quickly on a global scale. High-profile examples like Greta Thunberg and the students from Parkland who organized March for Our Lives highlight the ways in which digital natives are already learning to coordinate in ad hoc ways, even to the point of organizing global movements in just a few weeks.

This rapid movement creation is a possible threat vector, but it's also an opportunity to understand how to shapeshift as an organization, which is a huge advantage in building a resilient workforce. A shapeshifting organization requires training people to have multiple roles in order to remain nimble and increase autonomy, both of which new workplace generations value.

Extreme Winners and Losers

Key insights for insider threat prevention:

- **Tech-intensive sectors** of the economy increasingly produce radically diverging financial outcomes, where the gap between being first and second or third is enormous. This increases the value of intellectual property (IP), the market rates of top performers, and is a vector for IP theft.
- Because of this, and because IP is often stored in digital formats where it can be copied and shared, the **potential costs of IP theft are much higher**. This suggests designing work environments—or at least security protocols—with more barriers to sharing information.
- **The growing gap in outcomes** has been associated with increases in general mistrust. It has also contributed to the growth in “deaths of despair” among middle-aged populations.

In 2019, journalist Kashmir Hill set out on an experiment: She and her family would try to live without using any of the major tech giants—Amazon, Facebook, Google, Microsoft, and Apple—for a week, followed by a week of blocking all five companies from her life.¹²⁹ The stunt, which required security engineers to design specialized virtual private networks and other technical workarounds to block the tech giants, was aimed at trying to understand just how integrated big tech has become in everyday life. When the effort to block them failed, it was particularly illustrative. Despite shifting all her online purchases away from Amazon, she still wound up with packages that had been stored at Amazon’s warehouses. When she blocked Google for a week, she found herself unable to order a Lyft or Uber to get to a work meeting because Google Maps provides the technical underpinnings for the ridesharing companies—as it does to approximately 85% of location-based services online.¹³⁰ This seemingly small technical detail hints at a larger point about the digital economy. Technology advances rely on network effects that perpetuate advantages. Every search doesn’t just return information to the user but provides the search engine with data to improve their results, which, in turn, creates a dynamic where, once you’re ahead, it’s nearly impossible for competitors to catch up. Winning in one of these markets means an enormous victory. For example, Google has 85% of the market for mapping software, while Toyota, the world’s largest car manufacturer, has just above 10%.¹³¹

The digital economy is increasingly producing markets—such as mobile operating systems, social networks, maps, enterprise databases and more—characterized by a small number of highly profitable winners and a much larger group of organizations struggling to maintain relevance. Sangeet Paul Choudary, who has authored two books on platform companies such as Facebook, argues that these companies leverage network effects to maintain their dominance. “As these platforms get more popular, their user value increases, leading to a virtuous cycle where the entire market coalesces around them....While users have come to coalesce around these platforms because their needs are being well-served, their powerful network effects risk guaranteeing their winner-take-all position.”¹³²

These dynamics aren’t simply altering the markets that platform economies operate within but impacting the broader ways the economy works. They’re driving talent wars for expertise in in-demand field such as AI, cybersecurity, and other highly technical work where gaining a first-mover advantage could cement a monopoly¹³³, dramatically increasing the value of any IP developed by this workforce. Because this expensive talent is working on software like Google Search that can be deployed at the scale of billions of users, they’re driving advances in automation that will continue to impact formal employment and automate more traditional jobs—and further shift risk and uncertainty onto everyday people.



Forecasts



Threat: Talent wars accelerate

Although autonomous vehicles have yet to make it to market, the talent wars, lawsuits, and indictments around the IP used in these systems have been enormous. These talent wars have included almost unprecedented events—like Uber essentially buying out Carnegie Mellon University’s robotics center to staff its self-driving car division¹³⁴ as well as multiple acquisitions in the hundreds of millions of dollars for small startups with specialized talent. Earlier this year, Anthony Levandowski, an engineer with Google’s self-driving car unit who was lured away by Uber, pled guilty to stealing trade secrets on his way out.¹³⁵

In part, these battles are emerging from the assumption that the market for autonomous vehicle software—like the market for search engines and social networks—will be dominated by a few big winners.¹³⁶ This dynamic is being intensified by demand outstripping supply for talent in specialized technical fields like deep learning, cybersecurity, and more. Recent data show that federal software engineers earn about 80% of the salaries of private-sector counterparts.¹³⁷ The disparity is much clearer for top-talent engineers, who can command salaries in the millions of dollars per year.¹³⁸ The enduring polarizing wealth and today’s unprecedented inequality necessarily come with an inequality of opportunity. In her recent book *Unbound*, economist Heather Boushey argues how inequality constricts economic growth. One of the three main ways this happens is by “obstructing the supply of people, ideas and capital as wealthy families monopolize the best educational, social and economic opportunities.” There is an opportunity for DoD to expand its talent pipeline to populations and individuals who are systematically left out of these opportunities.

In this race for the largest share of the market and talent, IP threats loom large, and information divulgence in exchange for more money or due to ideological opposition is possible.



Opportunity: Reward top performers fairly

Incentives that reward winners with huge gains don’t just encourage fierce competition and cheating; they reduce trust and produce adverse outcomes across the system. Over the past 40 years, as economic inequality has grown in the United States, trust has been in sharp decline. Results from a recent paper by the International Monetary Fund cite research¹³⁹ showing that since the 1970s, the share of individuals in the U.S. responding that most people can be trusted declined from about 50% to 33% by 2010. This same paper noted that 44% of the decline in trust in the United States can be attributed to growing inequality.¹⁴⁰ Inequality has been linked to a wide variety of negative social impacts. In their books *The Spirit Level* and *The Inner Level*, epidemiologists

SEEING THE FUTURE IN THE PRESENT

What:

According to the recent American Psychological Association 2018 Work and Well-Being Survey, one in five working Americans doesn’t trust their employer, and 71% of working Americans who don’t trust their employer said they’re typically tense and stressed out at work.

So what:

A lack of trust has negative effects on workplace behavior and performance, which has the potential to undermine an organization’s productivity and success. Additionally, prolonged stress can lead to cognitive depletion which can make someone more susceptible to committing negligent insider threats.



Kate Pickett and Richard Wilkinson find that inequality increases risks of bullying, homicide, imprisonment, drug abuse, and more.¹⁴¹ A lack of aggregate trust is detrimental to the whole economy and, unsurprisingly, also has negative implications for the workplace.¹⁴² Trust plays a critical role in an effective working environment by influencing employees' well-being and job performance (see more detail in sidebar).



Threat: Rising deaths of despair

Poverty has life-and-death implications. Life expectancy in the U.S., the wealthiest country in the world, has fallen three years in a row since 2015,¹⁴³ while in other OECD countries life-expectancy rates have been rising for almost a century.¹⁴⁴ The U.S. spends the most resources on healthcare as a part of GDP in the world,¹⁴⁵ and it's also the most expensive to access. Because health care is traditionally accessed through one's employer, the eroding employer-employee relationship and deteriorating middle class is making access to affordable health care harder to come by. The link between poverty and poor health has become more apparent over the past few decades as economic inequality widens—"as family income increases, the number of families reporting poor health decreases."¹⁴⁶ This inequity is being exacerbated by the pandemic as lower income people and, in particular, people of color, experience mortality at far higher rates.¹⁴⁷

Economists Anne Case and Sir Angus Deaton have studied a phenomenon they refer to as "deaths of despair," characterized by suicide, drug overdose, and alcohol-induced liver disease.¹⁴⁸ These types of deaths have spiked over the past two decades, increasing particularly for working-class white men without a four-year college degree, and continue to surge. Wages have been on the decline for this group since 1979.¹⁴⁹ The authors note this long-term trend has slowly but surely led to increasingly lost opportunities and "lost meaning and structure in life." Purpose and meaning can be derived through one's occupation—in fact purpose and meaning in one's work has been closely tied to high engagement and job performance, when the jobs that are actually available

in the labor market don't provide the economic security required to thrive. Economic security is not the only crucial aspect waning for this population; marriage rates are lower and divorce rates are higher for people without a bachelor's degree.

In Case and Deaton's first working paper¹⁵⁰ covering this topic, they found self-reported declines in "health, mental health, and ability to conduct activities in daily living, increases in chronic pain, and inability to work which all point to growing distress in this population." These trends make the entire U.S. economy less resilient and more susceptible to crumbling in economic downturns. Some experts predict that deaths of despair will further increase as a result of the novel coronavirus pandemic.¹⁵¹

The forces—including stagnating wages, high health costs, and concentrated corporate power—are long-standing macroeconomic factors that exhibit few signs of slowing, which is likely to make related risks and threats persistent challenges for the coming decade. The increase in deaths of despair reveals the debilitating effects of a lack of hope for the future. A missed car payment or unexpected health emergency can send someone into spiraling debt. Without the security of a well-paying job with access to affordable healthcare, despair overrides hope, undermining an individual's agency and motivation to plan for the future.¹⁵²



POLITICAL FORCES

Polarized Communities

Key insights for insider threat prevention:

- In recent years, **political disagreements** have moved from being abstract and intellectual to increasingly shaped by polarized identities. This shift means that a political disagreement can feel like a personal attack.
- **This cycle is being perpetuated by social media, algorithmic newsfeeds**, and a fractured media environment—all factors beyond the control, or even influence, of insider threat prevention efforts. That said, these forces will impact the work environment and the people within it.
- One opportunity to mitigate this threat is to revisit some of the **core tenets of military training**, which build cohesion among a diverse set of troops from all over the country.

According to University of Maryland political scientist Lilliana Mason, polarization is the consequence of disagreement becoming identity.¹⁵³ It often manifests as an intense, persistent, and seemingly implacable division between groups. But disagreement, even angry disagreement, isn't sufficient; true polarization depends on the particular issue becoming intertwined with a person's sense of self, where an attack on an idea is equivalent to an attack on the person.

Although we usually think of polarization in political terms, any divisive topic can be polarizing if advocates see the topic as intrinsic to who they are. Witness vitriolic online arguments over Mac vs. PC or Marvel vs. DC Comics. Sports teams can become polarizing as exhibited by football rivalries. In all of these areas, most partisans do not express their advocacy in polarized terms. But for those who do, supporting the opposing side is tantamount to becoming an enemy.

Nevertheless, we mostly talk about polarization in terms of sociopolitical positions, as it's become a highly visible—and, arguably, increasingly dangerous—element of American society. There are myriad examples of the connection between polarization and identity. Valdis Krebs's 2003 and 2008 examination of partisan divisions regarding Amazon book purchases offers one of the more infamous visualizations of how political postures in the U.S. become signifiers of identity¹⁵⁴ (see page 32).

In 2018, Nailya Ordabayeva at Boston College examined partisan differences in broad retail patterns, showing how the intersection of “politics as identity” and “material consumption as identity” have profound economic impacts.¹⁵⁵ Even personal computing choices have a political aspect.¹⁵⁶

The divisions that manifest as political polarization have deep roots. Age, ethnicity, and geographic location

Forecasts

Threat: Social platforms accelerate mistrust

Chaos has been troublingly easy to sow. As discussed more fully in the Media Manipulation forecast, groups like Russia's Internet Research Agency have tried to make use of social media to add uncertainty and emotion to political and social conversations. They're not alone, but it's important to remember that such groups and influence attempts represent a small portion of online aggression. Still, online aggression shouldn't be discounted. Name-calling, harassment, and overwrought threats may seem juvenile, but mass online attacks on individuals can be overwhelming and terrifying.¹⁶¹ Attacks on women tend to be especially vile.¹⁶²

To be clear, it's not only that social media have become an avenue for extremist words and polarized arguments. There's a recognized pipeline from disaffected young men online who engage in usually sexist "trolling" to organized groups of angry men to recruitment into violent extremist groups. This is as true for Islamic terror groups¹⁶³ as it is for American alt-right groups.¹⁶⁴

Sophisticated online attacks target beliefs alongside individuals. We saw examples of this in 2016 and see it again in 2020, but it goes beyond politics to health (the anti-vaccination movement¹⁶⁵), climate (chemtrail activists¹⁶⁶), and more. Misinformation and hysteria can activate already unsettled or tense communities. The COVID-19 pandemic has unquestionably increased the stressful environment¹⁶⁷ for many Americans. A restless, frightened population can be a prime target for political destabilization through social networks.

Improvements in technology for online agents and bots will likely accelerate the recruitment and the intensity of online extremism. Technologies that allow for easier video and audio deception will add to this process as well. Especially during an extended shelter-at-home period, we may well see a rapid increase in social media polarization.

Threat: Polarization sparks fringe movements

The ongoing delegitimization of opposing views could have a stark consequence: the belief that a victorious opposition is an illegitimate, unlawful, and unacceptable government, and that its removal is the duty of all uncorrupted citizens. The American origin story valorizes armed resistance to illegitimate rule, and that spirit remains pervasive, especially in fringe groups. Although the prevalence of armed citizenry has been consistent over the years, the presence of survivalist, "sovereign citizen," and militia-type movements is a newer phenomenon.

An unsettling element that adds fuel to the fire of armed anger is the generation-long experience of insurgencies in Iraq and Afghanistan. These wars demonstrated with great clarity the ability of a distributed movement with small arms and homemade explosives to fight successfully against the American military. These demonstrations will not have gone unnoticed, and the capabilities of an active, violent movement could be far greater than generally imagined.

This forecast does not assert the emergence of an actual revolutionary movement or a full new civil war, but a structured increase in political violence directed against declared-to-be illegitimate institutional structure and those people who support it. In short, it's violence against the complicit. The key concept here is the direct and explicit refusal to accept the legitimacy of a political opponent. "Not my president," accusations of voter fraud, claims of stolen elections, and declarations that an opposing political leader does not meet the criteria for a legitimate office all display the fundamental desire to cast political opponents as not just *wrong*, but *never to be accepted*.

 **Opportunity: Implement new understandings of mitigating polarization**

As polarization—political or otherwise—is intrinsically a freedom-of-speech issue, there are few direct ways to eliminate it, and none of them are constitutional. Mechanisms to reduce polarization are more tenable, but those can only go so far. Lilliana Mason observes that there are two approaches to reducing violent polarization: attempts to reduce the likelihood of an individual attaching to an extremist group and attempts to increase the sense of identity of an individual within the primary group.¹⁶⁸ Most of the efforts to reduce polarization and extremism fall into the first category, whether by direct suppression of access and participation in extreme groups or by direct efforts to delegitimize the groups themselves.

Many of these efforts prove counterproductive. Evidence shows that increased exposure to contrary information or opinion tends to further solidify an individual's beliefs.¹⁶⁹ There may be neurological reasons that changing opinions can be difficult—recent research has shown that when

individuals with strongly held convictions are challenged, it activates parts of the brain related to negative emotion and identity.¹⁷⁰

Social media platforms have taken on some of the responsibility to police extremist views and propaganda. The platforms use what could be considered a form of shunning: they can remove a given user or group from the system, taking away some visibility and opportunity for making connections. We've seen rare examples of mass digital shunning, where a user is deemed sufficiently problematic that their digital presence gets eliminated from every available mass platform.¹⁷¹

The critical element of the polarization story is the interweaving of disagreement and identity. It's no longer simply a factual debate over information or even an emotional argument around norms; it's a direct assault on who a person is. And anything—or anyone—who makes such an attack has lost all legitimacy.

Mitigating Institutional Mistrust

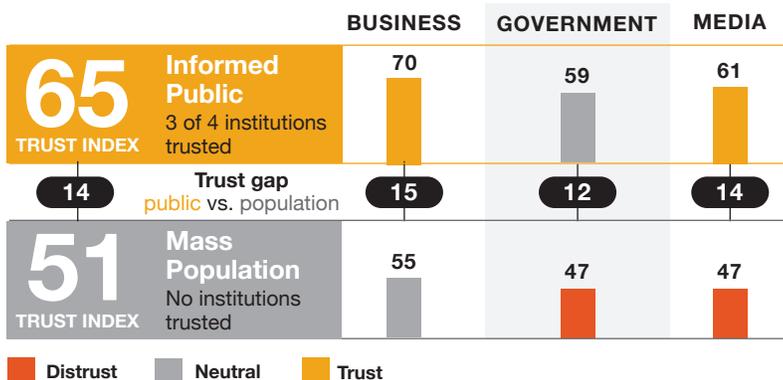
Key insights for insider threat prevention:

- **America has been experiencing a long-term decline in trust** in virtually every institution— with fewer people expressing generalized trust in business, government, or the media. These declines are particularly acute among lower-income Americans.
- In place of abstract notions of trust, **digital ratings systems have become widespread.** These metrics are likely to become increasingly important to how individuals manage their reputations and seek employment. Yet it isn't clear that they provide useful, or even accurate, measurements.
- One strategy for improving low-trust environments is to **improve transparency.** Despite the potential of this strategy, its viability is limited in high-security environments.

Americans don't have a lot of trust these days. Studies by various organizations suggest that a majority don't trust most private¹⁷² or government¹⁷³ institutions or even each other.¹⁷⁴ A Gallup poll¹⁷⁵ from 2019 found that trust in news media, religion, government, and medical institutions has tanked over the decades. In 1973, all of these institutions enjoyed the trust of most Americans. By 2019, none of them did. Others, like organized labor, big business, and the criminal justice system were not trusted in the first place, or at least in 1973, when Gallup started polling.

But when you start to pull apart the data,¹⁷⁶ you can see that some segments of the population—educated and wealthy people, for example—have relatively high levels of trust in institutions. In contrast, lower-income people tend to have less trust in the same institutions, creating what some have labeled a “trust gap” (see below for more detail).

In some ways, this gap might be almost self-explanatory. Those in power are served well by existing institutions and are more likely to assume that this will continue to be the case. In contrast, if your income is lower, it's more likely



Two different trust realities: Edelman, a marketing firm that has been studying global shifts in trust across four major institutions—government, business, media and NGOs—since 2000, has identified a “trust gap,” where people whom they describe as the “informed public,” which Edelman defines as college-educated, media-consuming, policy-knowledgeable individuals who are in the top 25% of household income per age group and are between the ages of 25-64, have much higher trust than the general population. The trust gap indicates there are two different groups institutions must appeal to. This suggests the possibility that these two groups have had very different experiences with institutions.

Eldelman Trust Barometer Global Report, 2020. Note: redrawn for clarity.



II: The Ten-Year Landscape

that you've been failed, in some way, by an institution. And research into how humans build trust and mistrust indicates that just being failed by these institutions once, or even knowing someone who has been, is enough to undermine trust substantially.

While conventional wisdom says that trust and distrust are opposite poles in a spectrum, they have distinct neural correlates, according to research conducted using fMRI neuroimaging,¹⁷⁷ and are created by completely different areas of the brain.

Because of this, trust and distrust are triggered and built differently. Trust is rational and has to be established through consistent interactions. Distrust is emotional and can be created through primary or secondhand information, making distrust more easily triggered and more powerful and long-lasting, because our brains are more likely to process emotion, rather than data, as useful. And negative emotion is particularly potent, with research conducted by the University Medical Center of Geneva¹⁷⁸ suggesting that negative emotions on average command three times as much of our brain's attention as positive thoughts.

There are, however, promising experiments in mitigating institutional mistrust in a number of different sectors. And a common thread is that, in many of them, institutions

are looking outside their boundaries, and in some cases strategically relaxing those boundaries, in order to build trust.

Edelman, a marketing firm that's been studying global shifts in trust across four major institutions—government, business, media, and NGOs—with increasing granularity since 2000, has suggested what it calls a new “trust compact.” Edelman highlights two key ways to build trust: participation (“trust is predicated on transparency and flexibility and continually shaped by the give-and-take of stakeholders”) and a focus on the local (“the most trusted people are now my employer and, after scientists, my fellow citizens in my country and in my community”). Indeed, many of the most promising practices for mitigating institutional mistrust do both of these things.

Over the next decade, many organizations will need to take a systems perspective and rethink their boundaries in order to be effective and *trustworthy*, to gain the confidence of their stakeholders and be *trusted*. This mission is highly urgent because organizations will have to work to repair trust that's been declining over decades, which will be a long and laborious process. They will also need to proactively anticipate and intervene in emerging trust issues whose onset will be ever more rapid and increasingly high-stakes.

Forecasts:

Opportunity: Portable reputation scores

How do you establish whether or not someone you want to work with is trustworthy? In many cases, you would most likely use a combination of personal references and institutional vetting. More recently, new trust metrics, largely created by crowdsourcing performance ratings for discrete tasks, have become increasingly common—for instance, driver scores on Uber or merchant ratings on eBay. Over the next decade, as these distributed trust metrics grow, we could see norms shift so that people become accustomed to being able to use them to prove their trustworthiness.

While crowdsourced-generated trust scores are common, most of them are task-based and based on one-time events—they score a driver based on their driving record, they score a merchant based on their commercial transaction history. However, we’re increasingly seeing efforts to take behavior in one domain as a way of predicting how people might behave in a totally different domain. For instance, they might use someone’s driving record to predict behavior that is not related to driving in any obvious way at all. In a way, this is a form of trust transference, where behavior in one domain is used to predict behavior in another.

Today, we already see several experiments in using such techniques to extend credit to people who are unbanked or lack a formal credit history for other reasons.¹⁷⁹ For instance, Bancolombia is piloting a credit score based on social media data, such as how long someone has had a social media account and how large their network of contacts is. Similarly, Commercial International Bank Egypt is collaborating with Careem, a leading ride-sharing company in the country, on a pilot that uses driving performance data and rider review ratings to assign credit scores and extend credit to high-performing drivers. A more mature example is Tala, a controversial microlending startup that uses mobile phone data, such as call logs, commercial transactions, and overall app usage to score a user, make a decision, and deliver funds within minutes.¹⁸⁰

These experiments are early and ongoing, and their efficacy is yet to be established in many cases. However, over the next ten years, we’re likely to see substantial advances that could lead to scoring mechanisms that are highly accurate in their ability to predict behavior. But efficacy, of course, is not the only consideration for whether or not to adopt such metrics. Political scientist Virginia Eubanks and others have catalogued the many ways algorithmic assessment and prediction has been used in punitive, damaging, and discriminatory ways. Yet these emerging trust metrics also have the potential to allow people to prove their trustworthiness in a field where they have no behavioral record or references to point to.

Proactively investigating and evaluating these new metrics, their efficacy, and their benefits, as well as their discriminatory potential and threats to privacy, are going to be critical to all employers over the next decade, in particular those whose decisions on whom to trust are high-stakes.

Opportunity: Anticipatory transparency

We’re in an era where transparency has become almost compulsory, where just about any piece of private information is subject to being leaked. In “Who Can You Trust?,” academic and author Rachel Botsman writes, “Institutional trust...wasn’t designed for an age of radical transparency...where politicians and CEOs must imagine they are operating behind clear glass. Trying to hide anything...is a high-stakes gamble.”¹⁸¹

This is partly because, as noted, once mistrust has been established, it becomes incredibly difficult to rebuild trust. This insight is critical to understanding the role of transparency in shaping trust: once a negative event has happened and mistrust has been built, it’s too late to form a strategy. Rather, to build trust, it is crucial to be transparent ahead of time—particularly for emerging issues. That is, building trust is likely to require more than just not hiding things and instead will require “anticipatory transparency.”

As part of Institute for the Future’s 2018 year-long research study on the Future of Trust, we looked at the history of mistrust around GMO (genetically modified organism) foods as well as efforts among nonprofits and food industry representatives to build consumer acceptance around the emerging categories of cultured meat.

GMOs are a particularly instructive example, because as best as we can tell today, the scientists who created the technology weren’t being secretive about what they were doing. The basic science underpinning the technique of genetic modification was a matter of public record, and there was little need to be secretive. The safety of genetically modified foods is well-established.¹⁸² However, by the time GMO became a widely known term, it described most of the food available at mainstream grocery stores in the U.S., and many people felt like the foods they were consuming had been altered without their knowledge or consent.

In an interview with Isha Datar, the CEO of a nonprofit promoting consumption of lab-grown meat, or “cellular agriculture” as they call it, she described her job as getting ahead of the “negativity” that was amassed around GMOs and building awareness “years out...to introduce science to the public.”¹⁸³

In anticipating trust issues likely to arise around their technologies in years to come, Datar’s nonprofit is not hiding or being secretive about what they do, but proactively communicating with the public and, in some ways, co-creating its narrative. Datar and others in the cultured meat domain are actively describing the benefits in terms of sustainability and preventing animal cruelty well in advance of some of their products hitting the market. In addition, they’re experimenting with nomenclature and trying to identify terms that are accurate and appealing to the public.

Over the next decade, this kind of anticipatory transparency could be used to gain buy-in for initiatives or interventions of all kinds and prevent backlash.

 **Opportunity: Fostering community trust**

Trust is incredibly important to the functioning of law enforcement and justice systems in a democracy. To get people to participate—that is, to report suspicious activity, crime, negligence, or other wrongdoing—people must trust that their participation is likely to lead to outcomes they want. For instance, reporting by the Associated Press suggests that a lack of willingness to report bad news up the chain of government command was a key factor in China’s delayed response to the pandemic—a reasonable assumption given that doctors who did raise public concerns about the pandemic were “officially reprimanded.”¹⁸⁴

At the same time, we’re seeing a number of experiments in increasing trust in law enforcement and the justice system through fostering wellness and positivity yield positive outcomes. Over the next decade, the findings of these ongoing experiments will set new standards and establish best practices that can be applied to insider threat.

Community policing, for example, encourages positive nonenforcement-related contact between police and citizens as a way of building trust and relationships. A randomized field experiment found that “a single instance of positive contact with a uniformed police officer can substantially improve public attitudes toward police, including legitimacy and willingness to cooperate.”¹⁸⁵ These effects persisted for up to 21 days and were not limited to individuals inclined to trust and cooperate with the police prior to the intervention. The lesson seems to be that having a preexisting relationship with the person or persons you might report crime to is an important factor in whether or not you actually do so.

Similarly, newer and less-studied approaches like “trauma to trust” training programs encourage “trauma-informed policing.”¹⁸⁶ Such programs are meant to help illuminate how individual, community, and even historical trauma shape interactions between police and citizens, in particular, African Americans—under the hypothesis that a more understanding and empathetic relationship between citizens and law enforcement will result in more cooperation.



“Restorative justice,” on the other hand, is less about law enforcement officers themselves and more about increasing the perceptions of fairness and justice to encourage people to participate in the system. This view of crime is inherently focused on relationships and the damage offenders do to their victims and communities. Consequently, it focuses interventions around attempts to repair damage done to victims and communities and to get offenders to take responsibility for their actions. A 2017 review of research on restorative justice in youth cases found a greater perception of fairness compared to conventional methods.¹⁸⁷ Other research reviews have found higher rates of victim satisfaction compared with traditional methods.¹⁸⁸

This perception of fairness and victim satisfaction are important when fear of punitive justice prevents people from reporting crimes when the offender is someone they know personally or is a community member.

Collectively, these less-conventional approaches point to a potential shift to a criminal justice system that prioritizes fostering positive relationships and wellness. Whether this shift is likely to take place depends on many factors, but these ongoing experiments can be instructive for thinking about utilizing positivity as a key way to improve workplace security and compliance.



ENVIRONMENTAL FORCES

Persistent Climate Risk and Volatility

Key insights for insider threat prevention:

- Over the next decade, **the impacts of global warming will be increasingly pronounced.** Though we can't know where or when climate change-related events will occur, it's clear that impacts will be widespread. Every organization's long-term strategy needs to account for these risks.
- **Climate impacts won't just affect infrastructure.** Concealed by descriptions of macro-level effects are the untold number of mental and emotional health challenges emerging related to climate change. These are likely to be particularly acute among younger people.
- Because the relationship between climate change and insider threat is unclear, this is an area where **further research** will be needed to better assess the relationships.

The August 14, 1912 edition of New Zealand's *Rodney and Otamatea Times, Waitemata and Kaipara Gazette* included a brief item,¹⁸⁹ just one paragraph, making an interesting claim in its title: "Coal Consumption Affecting Climate." It noted that the growing use of coal puts billions of tons of carbon dioxide into the atmosphere yearly. "This tends to make the air a more effective blanket for the earth and to raise its temperature." This wasn't some outlandish prediction or lucky guess, it was recognized science at the time. We have known for well over a century that adding greenhouse gases like carbon dioxide makes the planet warmer.

Unfortunately, this knowledge did not necessarily lead to action. We now face a planet with a higher atmospheric greenhouse gas load higher than any previous point in the history of the human species,¹⁹⁰ and an average temperature higher than at any other time in the last 120,000 years. There are no gradual changes or natural cycles to account for the increases. This is on us.

Climate change is a comparatively slow process, operating on geologic, not human, time scales. Over the next ten years, we will see a relentless intensification of the unexpected and unusual climate and weather patterns that have been growing in frequency over the past two decades. Such gradual environmental change will often be difficult to detect in our day-to-day lives, but a person from 2020 dropped into the year 2030 will immediately notice the difference.

These developments come from a steady growth in heat in the atmosphere—that is, *energy*—disrupting ocean-atmosphere systems around the world. This is why anthropogenic global warming can drive unseasonable or extreme cold weather; for example, additional energy in the atmosphere can cause the jet stream to shift position, allowing arctic air down much farther south than normal.

Further out, we see substantial reason for concern. We're on track for an increase of at least 2°C over the



preindustrial baseline by 2050, and, barring radical steps, 4°C above baseline by 2100.¹⁹¹ A 4°C increase may not sound like much, but even seemingly small numbers can have a radical impact on global environmental systems, and ultimately on us. The connections among all parts of the planet’s geophysics and biology are delicate and highly interdependent. A small but persistent disruption can lead to a cascade of long-term consequences.

The development with the greatest potential for long-term impact is the release of trapped methane. Methane is a greenhouse gas with up to 72 times the heat-trapping power of carbon dioxide. Overall warming is allowing methane trapped in frozen tundra and bodies of water to leak out in steadily increasing amounts; how quickly this is happening is under close study. If left unabated, a spike in methane has catastrophic implications, including mass extinctions.¹⁹²

Complicating all of this is the inherent lag—or hysteresis—in the ocean-atmosphere system, caused in large part by the enormous thermal inertia in the oceans. Temperatures will not drop when we reduce carbon levels, and will likely actually continue to rise because of this inertia. Therefore, it will take several decades for changes we make to our carbon emissions to show results in global temperatures. Beyond the obvious environmental problems, this suggests significant political risk. Will people be angry that the significant changes they make to their lives at the behest of scientists and political leaders seem to make no difference to the planet?

SEEING THE FUTURE IN THE PRESENT

What:

Nearly one-third of Americans believe a couple should consider the negative effects of climate change when deciding whether or not to have children.

So what:

There is growing evidence that the climate crisis is becoming more salient in young peoples’ worldviews and long-term decision-making. Climate change has the potential to be a particularly acute source of stress and anxiety for young people.

Source: Reiman, Eliza & Hickey, Walt. “More than a third of millennials share Rep. Alexandria Ocasio-Cortez’s worry about having kids while the threat of climate change looms.” *Business Insider*. March 4, 2019.



Forecasts



Threat: Extreme events have human costs

For now, we're seeing a variety of much more common disasters happening with an unprecedented frequency and scale, well beyond what we can readily cope with. Wildland fires, droughts, massive storms, and flooding are all familiar phenomena. But when "thousand-year" floods happen every decade, or an annual "fire season" covers more than half the calendar, the familiarity of these events becomes a source of chaos.

The human consequences are at least as unnerving as the devastation to our environment. Climate change-driven drought and famine in the Middle East may be a key driver for the ongoing civil conflicts and refugee problems.¹⁹³ Similarly, climate change-triggered damage to agricultural systems—whether via storms, drought, or infestations—has been recognized by the U.S. Department of State as a major cause of the wave of migration from Central America.¹⁹⁴

No solutions will be without cost to our immediate comfort, and none can bring a swift resolution to the problem. Any climate solution that makes a difference will cause substantive changes to energy infrastructure, economic strength, and political power, globally and in the United States. No individual or institution will be unaffected by what must be done to combat anthropogenic global warming. A steady decline in petroleum consumption, for example, will likely undermine economic strength—for example, in Texas¹⁹⁵ and other heavily oil-producing regions—increasing instability and causing significant economic dislocation, unemployment, and financial disruption. As bad as that sounds, it's crucial to recognize that the consequences of *not* pushing back against global warming will almost certainly be far worse in the long term.

Cold language of consequences and disruption masks the reality that these events affect *people*, particularly those in economically precarious situations. The current pandemic crisis offers evidence of what future climate damage may

incur. And while the economic and political fallout from dangerous climate change grabs our attention, we need to be aware of the scale of the emotional damage and community disruption that will also result. Many of the crucial structural decisions we make will be in the context of increased personal and organizational stress. We're already seeing early signals of how this stress can manifest.

To be clear, this means that the climate change-driven environmental disruptions will have a direct, harmful impact on the ability of many people—including those within the Department of Defense—to live and work. These changes strike at the core ability of individuals to provide shelter and support for themselves and their families. To the degree that dislocation, stress, and fear can lead to both unintended mistakes and angry reactions, the known and unavoidable consequences of anthropogenic global warming will greatly increase the likelihood of insider threat.



Threat: Catalysts for emotional stress

The near-certain impacts of climate disruption are already deeply affecting life choices of younger people.¹⁹⁶ Anecdotal reports suggest an increase in suicides by younger people due to climate fears.¹⁹⁷ Environmental problems were cited by two 2019 shooters—in El Paso, Texas and Christchurch, New Zealand—among¹⁹⁸ their many complaints about the world.

These reports are just the beginning. The emotional impact of significant climate disruption will be profound, long-lasting, and potentially highly damaging. Psychological reactions arising from the COVID pandemic offer a clear signal as to what we could see from global warming.

Groups ranging from the World Economic Forum¹⁹⁹ to a consortia of more than 40 national psychological associations²⁰⁰ have identified climate change as a source of enormous emotional health risk. These risks can manifest as fear, grief, or a form of traumatic stress

disorder. The real-world implications of the dangers of climate change are staggering when considered as a whole—but all the more unsettling is the knowledge of what could have been saved had we acted.

Fear is often coupled with a feeling of powerlessness. The kinds of outcomes we're likely to see as the planet warms are far beyond the control of individuals, but can have very direct and devastating consequences. This sense of powerlessness can take the form of grief, whether a broad "solastalgia,"²⁰¹ a lament for a place that no longer exists, or an intimately personal sadness over the loss of loved ones. Layered on all of this is the recognition that this is something we've done to ourselves.

One especially problematic consequence of powerlessness is an increased likelihood of people lashing out at perceived enemies.²⁰² These enemies can be seen as a direct cause of the problem—for example, threats to oil and gas companies—or as visible signs of the problem, as with immigrants. Violence as a reaction to victimhood, real or otherwise, is a common phenomenon.

 **Emerging threat: Understand links between climate change, mental health, and insider threat**

Literature surveys and expert interviews offer few if any consistent and reliable options for institutional responses to these stresses, other than the kinds of therapy and treatment for issues such as PTSD. We're likely to be able to gather some helpful data resulting from the current pandemic, although thorough research may still take years, and unlike COVID, which will likely subside with the emergence of a vaccine, there is no end state for climate change. This means that we're likely to see increased manifestation of violent and extreme reactions to climate change well before we have a reliable method of spotting and responding to those feelings.

It's unlikely that climate disruption in and of itself will serve as a catalyst for violence, but many of the ways in which anthropogenic global warming is changing our planet will strike directly at places and behaviors tied closely to our identities. The wholesale elimination of an island country presages an approaching moment when coastal locations in the United States—that is, people's homes—must be abandoned.²⁰³ The crisis operates at scales and over time-spans outside of everyday experience. Like climate change itself, its role as a possible trigger for insider threat is a complex, confusing, and deeply rooted problem.

New Measurements of Risk and Resilience

Key insights for insider threat:

- The old management adage, that **we measure what we can manage**, is particularly relevant in the context of climate change, where we have failed to adequately prepare for the risks as well as measure environmental factors that keep us healthy, safe, and connected.
- **Climate change**, as well as the financial impacts of preparing for climate change, will add a layer of stress to the coming decade that will impact virtually everyone and may further exacerbate economic and social polarization.
- New work from the social sciences is highlighting **hidden variables and details in our environment** that strengthen resilience to disasters. Understanding what these are, and cultivating them, provides an opportunity to improve social cohesion and mitigate the impacts of disasters.
- Likewise, there's an opportunity to **rethink disaster response and the nature of recovery**—with an understanding that recovery does not simply provide an opportunity to return to the status quo but to improve on the prior situation.

In 1934, in the early days of the Great Depression, economist Simon Kuznets is credited with creating the measurement of Gross Domestic Product (GDP).²⁰⁴ At the time—with the economy undergoing enormous strain—nothing like today's metrics for measuring value existed, with economists left to track things like “boxcar loadings” to try to gain a sense of economic activity.²⁰⁵ This new measurement was a breakthrough in helping to measure the state of economic activity—but has, over many decades, been used in ways its creator warned against. In 1934, in proposing to create the GDP measurement, Kuznets warned, “No income measurement undertakes to estimate the reverse side of income, that is, the intensity and unpleasantness of effort going into the earning of income. The welfare of a nation can, therefore, scarcely be inferred from a measurement of national income as defined above.”²⁰⁶

Fast-forward to the economic crisis of 2008—the Great Recession—and a separate group of economists, organized by French President Nicolas Sarkozy and led by Nobel Prize Winner Joseph Stiglitz, developed one of the largest global efforts to revisit the use of GDP in policymaking. This effort, at its core, was aimed at building upon GDP and integrating other kinds of factors, ranging from emergent efforts to quantify happiness to metrics about the environment, to develop a more precise and useful way for policymakers and societies to measure the well-being of the current landscape and the success of different interventions.²⁰⁷ Economist Justin Wolfers highlights the limits of current techniques by examining metrics around COVID-19 that account for the enormous economic costs of social distancing efforts but offer no clear way to account for the public health benefits. “If the lives that we are saving through social distancing are more valuable than whatever we were each doing last quarter, then the true value of our collective output must have risen. Unfortunately, the official measure of gross domestic product takes a much more limited view of what counts as ‘output,’ and it hides this progress.”²⁰⁸



One of the key new measures that has emerged in the last decade—relevant not just to senior policymakers but organizational leaders and individuals of all types—is *resilience*. The concept of resilience, the ability to withstand unexpected shocks, navigate uncertainty, and bounce back quickly, has been gaining increased traction in recent years as the external environment around us has continued to gain speed and complexity.²⁰⁹ Business professors have increasingly been developing tools to understand the kinds of decisions that make organizations more resilient and capable of weathering shocks from the external environment or from internal sources. Social scientists have

likewise begun to explore environmental and community-level factors that seem to increase “trust and cohesion,” and in the process improve the ability of a larger number of people to experience better aggregate outcomes.

Over the next decade, our abilities to measure and pinpoint high-leverage interventions will continue to improve, giving an increasingly high-resolution view into the kinds of intervention points that can improve individual and collective outcomes in the face of adversity. But first, we’ll have to recalibrate how we measure and account for long-term climate risks.



Forecasts



Emerging threat: **Economic fallout**

Prior to the coronavirus pandemic, 2020 appeared to be the year that the risks of climate change had finally become a defining global story. In surveys of its global membership, the World Economic Forum listed climate-related threats—specifically extreme weather, failure to act on climate change, natural disasters, biodiversity loss, and human-made environmental disasters—as the top five long-term threats facing the planet.²¹⁰ Companies such as Microsoft made lofty commitments to go “carbon-negative”. Even Delta Airlines made ambitious commitments to be “carbon-neutral” by 2030.²¹¹ The driving factor behind many of these corporate decisions seems to have come from a relatively sudden shift in the ways that fiduciaries were evaluating the risks of climate change.

Attention to the climate crisis has waned, but that doesn't mean the risk has gone away.

As noted in the Persistent Climate Volatility and Risk section, we have entered an era where disasters such as hurricanes and wildfires that would have been once-in-a-generation occurrences are happening annually and operate on horizons beyond our normal planning horizons. These emerging systemic risks are overwhelming even aggressive preparation for climate risks through traditional organizational planning methods. PG&E is one example of this. The California utility, which had long been praised for its proactive approach to planning for climate change, became, as Bloomberg described it, “the world's biggest climate-change casualty” after a series of large-scale wildfires pushed the company into bankruptcy due to damage that was much worse than their worst-case projections.²¹²

Perhaps the most striking example of this reevaluation came from Larry Fink, CEO of Blackrock, in his annual letter to investors titled “A Fundamental Reshaping of Finance.” In the letter, he argued, “The evidence on climate

risk is...deepening our understanding of how climate risk will impact both our physical world and the global system that finances economic growth.... Will cities, for example, be able to afford their infrastructure needs as climate risk reshapes the market for municipal bonds? What will happen to the 30-year mortgage—a key building block of finance—if lenders can't estimate the impact of climate risk over such a long timeline, and if there is no viable market for flood or fire insurance in impacted areas?”²¹³ Later in the letter, Fink noted that “capital markets pull future risk forward,” suggesting that even though the worst impacts of climate change are not likely to hit us in the next decade, we should anticipate a significant “reallocation of capital.”

These factors will not simply alter institutional investing strategies or corporate governance policies but will radiate out and impact the ways that communities and neighborhoods are organized. For example, following the wildfires in Northern California in recent years, insurance companies have begun to rescind and otherwise restrict offers of fire insurance in fire-prone areas.²¹⁴ This has happened with enough frequency that the state of California has issued a one-year moratorium on the practice.²¹⁵ New York state officials have expressed fear that changes that are underway in the flood insurance market could price many of its poorer residents out of their homes and lead to a cascading set of consequences including a foreclosure crisis.²¹⁶ These kinds of forces are most likely to impact low-income communities. Researchers at Harvard have coined the term “climate gentrification” to describe the ways in which climate change is raising the costs of land in more climate resilient areas and pushing poorer families into houses that are more likely to be hit by natural disasters.²¹⁷ Understanding how to mitigate some of these forces will be critical to mitigating risk and creating more resilient communities.



⊕ Opportunity: Mount social and community interventions

In a world of big data—where the amount of data we track digitally is overwhelming and continues to grow exponentially—it’s easy to lose sight of the things we fail to think about measuring or valuing. One example of this is gender, which Caroline Criado Perez extensively documents in her book *Invisible Women: Data Bias in a World Designed for Men*. In the book, she explores the effects of a “gender data gap” created by data collection techniques that fail to adequately include women in situations ranging from pharmaceutical development to seat-belt design. This data gap even reaches seemingly gender-neutral domains such as snow-plowing. Following an analysis of snow clearing for gender equity, local government officials in Sweden found that their systems prioritized male commuting patterns contributing to a hidden effect that caused women to experience a disproportionate number of accidents. When city officials changed the snow-clearing practices, they not only substantially reduced accidents but saved significantly on costs associated with managing snow.

As Criado Perez argues, “One of the most important things to say about the gender data gap is that it is not generally malicious, or even deliberate. It is simply the product of a way of thinking that has been around for millennia and is therefore a kind of *not* thinking.”²¹⁸ By examining the seemingly gender-neutral issue of snow-clearing through the lens of gender, officials were able to uncover a new upstream intervention that ultimately saved government money, reduced human suffering, and provisioned services more equitably.

Gender is one example of a hidden data set where there are broader intervention opportunities. Social infrastructure is another.

In 1995, Chicago was devastated by a heat wave that killed 739 people in less than a week, primarily killing poor, African American, and Latino citizens.²¹⁹ In the aftermath of the heatwave, sociologist Eric Klinenberg sought to understand why some communities, despite high poverty levels and other risk factors, managed to avoid high mortality and found that something he has gone on to call “social infrastructure” is a critical determinant in the success of neighborhoods in the face of a disaster. Similar research following Hurricane Sandy found social factors in neighborhoods helped determine the immediate impacts of the storm as well as long-term outcomes following the event.²²⁰

Klinenberg defines the concept of social infrastructure as the kinds of third spaces and interventions—from libraries to coffee shops to strategic tree-planting in urban areas—that are likely to produce higher community levels of social capital in order to broadly improve outcomes in the community. These outcomes range from being more protected from the fallout of threats to higher levels of trust and cohesion. As he writes, “When social infrastructure is robust,

SEEING THE FUTURE IN THE PRESENT



What:

Public health researchers partnered with the Pennsylvania Horticultural Society to understand how small-scale environmental improvements such as clearing trash from abandoned lots can improve the quality of life in a neighborhood.

So what:

Throughout the partnership, these small-scale improvements have been shown to reduce gun violence, improve mental health, and reduce stress.

Source: <https://phsonline.org/our-story>



it fosters contact, mutual support, and collaboration among friends and neighbors; when degraded, it inhibits social activity, leaving families and individuals to fend for themselves.”²²¹

None of these examples are silver bullets for dealing with the overwhelming challenges of climate change. But they point to hidden intervention points that can help mitigate some of the challenges of climate change.



Opportunity: Develop a new playbook for responding to disasters

In her 2009 book *A Paradise Built in Hell*, author Rebecca Solnit explores the social response to five of the largest disasters in American history as a means to identify the kinds of improvisational social responses that emerge to manage crises. In the book, she argues that because of the enormous costs of disasters themselves, there is a tendency to overlook post-disaster experiences that can, at times, be quite positive for survivors who work together through adversity. Her point is not that disasters are positive; rather, she argues that in the aftermath of a natural disaster, “most people are altruistic, urgently engaged in caring for themselves and those around them, strangers and neighbors...and often the worst behavior in the wake of a calamity is on the part of those who believe that others will behave savagely and that they themselves are taking defensive measures against barbarism.”²²²

A key factor, then, in post-event response is encouraging solidarity and collaboration and mitigating fear and mistrust. Solidarity is an asset that can be cultivated or quashed.

As natural disasters have become more common and devastating in recent years, innovative community groups with an understanding of open-source technology have begun creating flexible, mobile tools to map community assets and needs in real-time. In 2019, Institute for the Future conducted a series of on-the-ground interviews with community leaders in Houston to identify emerging best practices that resulted from Hurricane Harvey and found that many of the most innovative responses crowd-sourced information about resources—such as clothing and the location of disaster relief centers and provided that information back to the community.²²³ Vanessa Mason, a research director with Institute for the Future who led this work, notes that these community groups now provide these tools to community groups in other hurricane-prone areas. “The big takeaway,” she said, is that community groups are beginning to collaborate because in many cases “the playbook for how to respond is reinvented with every single disaster.”

The next decade will be marked by climate-related events striking with increased severity and frequency—as well as a continued integration of mobile technologies and machine-learning techniques that enable ad hoc, distributed coordination. Developing tools and best practices to facilitate post-event solidarity and coordination will be critical.



III: Conclusion

This report, “Moving Upstream 2030: Protecting the DoD Workforce Against Future Insider Threats,” highlights ten external future forces shaping the landscape within which counter-insider threat efforts will operate. For each broad STEEP category—technological, social, economic, political, and environmental—we’ve identified two future forces and a combination of emerging threats and opportunities for the future of counter-insider threat.

This report is not intended to be an exact prediction of a future state; rather, it is aimed at providing foresight into plausible, internally-consistent, provocative future possibilities that DoD can begin working on now in order to “move upstream.” The goal of this research—and of moving upstream—is to proactively identify emerging threat vectors in order to identify opportunities to create innovative, holistic, and positive mitigation and prevention strategies that intervene before insider threat events take place.

Conversations about some of the forces we’ve identified in this report, such as cybersecurity and resilience, already are underway in the counter-insider threat community. Others, such as persistent climate risk and volatility, are rarely the focus of insider threat prevention efforts but will become increasingly relevant as the decade plays out. Together, they describe a rapidly changing operational environment that includes the emergence of new insider threat vectors as well as opportunities to get ahead of challenges and develop upstream interventions.



TECHNOLOGICAL FORCES

Over the next decade, tools to produce deceptive audio and video will become increasingly powerful, democratized, and targeted. Vulnerable legacy systems that underpin critical infrastructure will make institutions more susceptible to cybersecurity threats. While cybersecurity training for individuals poses complex challenges, research shows it to be directly correlated with a reduction in consequent cybersecurity attacks. Human recognition of these attacks can be referred to as cognitive security; equipping the human with the training and knowledge around interacting with potential cybersecurity threats. Improving human capabilities is as paramount to preventing cyber risks as is technical investment. This includes creating opportunities for employees to feel comfortable with slowing down to ask questions and admit to not knowing an answer.



SOCIAL FORCES

While technology can foster interpersonal relationships, it can also be isolating. A growing body of research shows that loneliness is becoming more pervasive and worse for physical and mental health challenges. Likewise, participation in traditional, formal spiritual affiliation is on the decline, even though the need for spirituality is not. Other research suggests that the biggest opportunities to mitigate loneliness and the consequential destructive stuff is investing in support for interpersonal relationships.

Family dynamics, gender identities, and gender roles are changing rapidly, allowing for new permissions and acceptance of self-expression. Some individuals and groups find these practices threatening. The structure of social identity is tied to the structure of society; the Internet has made subgroup ideology more accessible to the masses.

Within the DoD, the norm to over-compartmentalize home and work life will need to shift to a model that considers the whole person. How one behaves in the home is increasingly relevant to performance on the job. Domestic violence is a pervasive issue that must be addressed in the workplace; domestic violence offenders also pose a threat outside the home.



ECONOMIC FORCES

Household financial precarity has been on the rise since around the 1970s, when macroeconomic growth began to decouple from individual wage growth. This shift is partly characterized by an increase in independent contracting and outsourcing, or temporary jobs. The digital platform gig economy is a continuation of this fraying employer-employee relationship. Traditional assumptions about the employer-employee relationship will become less relevant because those relationships are assumed to be temporary. This fragmented employment structure is advantageous in the short term for businesses and in some cases for individuals, who gain flexibility at the cost of economic security. The growing gap in economic outcomes has been associated with increases in general mistrust, contributing to the growth in “deaths of despair” among middle-aged populations. However, as expectations for flexibility increase, research suggests that employees need flexibility, financial security, and psychological safety to be successful as an organization. Balancing these variables will be critical to promoting the well-being of DoD staff.

Younger generations, including digital natives, are already accustomed to organizing swiftly, code-switching across platforms, and working on an ad hoc basis. When they enter the workforce, they will arrive with a new set of expectations and skills, which must be reconciled with the norms and practices of older workers they’ll be working with.

Similar to the way in which most households haven’t benefited from the economic boom, smaller tech companies find themselves being squeezed out by big tech companies’ monopolistic practices. The gap between the big-tech 1% and every other player in the tech space leads to desperation, which in turn increases the value and potential risk of intellectual property theft. Additionally, because IP is often stored in digital formats for copying and distribution, opportunities for IP theft abound. Designing work environments or security protocols with more barriers to sharing information is a step DoD can take to limit these insider threats.



ENVIRONMENTAL FORCES

Over the next decade, the impacts of the climate crisis will be increasingly pronounced. While we can’t always know where or when climate-related events will occur, it’s clear the impacts will be widespread. Every organization’s long-term strategy must account for these risks. Climate change and the financial investments to prepare for it will add a layer of stress to the coming decade that may further exacerbate economic and social polarization. It’s important to note that environmental impacts won’t affect just infrastructure—they’ll also impair mental and emotional health.

While climate change will give rise to a host of new stressors, its relationship to insider threat is not clear and merits additional research. There is an opportunity to rethink disaster response and the very nature of recovery—why would we return to the status quo when we could fundamentally improve it for the future? Understanding what these improvements are and cultivating that ethos creates an opportunity to improve social cohesion and mitigate the impacts of disasters.



POLITICAL FORCES

In recent years, political disagreements, perpetuated by social media, algorithmic news feeds, and a fractured media environment, have moved from being abstract and intellectual to increasingly shaped by polarized identities. Polarization is distinct from disagreement as it arises when differences of opinion come to be seen as attacks on identity, yielding a low-trust environment. Perhaps unsurprisingly, the U.S. has been experiencing a long-term decline in trust in virtually every institution, with fewer people expressing generalized trust in business, government, and the media. Lower-income Americans are particularly distrustful.

In place of abstract notions of trust, digital rating systems have become widespread. While these metrics are likely to become increasingly important to how individuals manage their reputations and seek employment, their usefulness and accuracy remain unclear. An important question to explore is: how is trust operationalized in the DoD? Improving transparency is a strategy to improve low-trust environments, albeit limited in a high-security environment. Going back to some of the core tenets of military training, which include building cohesion among a diverse set of troops, would also mitigate this threat.

Opportunities for Further Explorations

While this report highlights an initial set of implications and opportunities to act on, it also presents avenues for further exploration. These implications and opportunities represent a starting point—rather than an endpoint—for identifying promising areas for future research that will help DoD develop and implement key strategic, operational, and tactical plans for upstream resilience against insider threat. The value of strategic foresight comes from drawing connections between future possibilities and actions in the present. As you consider your own efforts to prevent insider threat and pursue insider opportunity, use the findings in this report to identify strategies for moving upstream to get ahead of new threat vectors and prevent problems before they happen.

- The issue of trust recurred across external future forces, suggesting the need for research into ways to build quantifiable measurable trustworthiness. DoD also needs to establish an operational definition of trust and specific ways to measure trust.
- Because the relationship between climate change and insider threat is unclear, further research is needed.
- The connection between domestic violence and insider threat merits investigation, not only as an indicator of impending insider threat but also as a larger threat to fostering a culture of well-being and psychological safety.
- Although research around the pandemic may take years, it would be timely to investigate the related deleterious health effects of loneliness, hopelessness, and despair.
- Stereotype threat research is likely to become more automatable, allowing workers in threat prevention to intervene in more upstream and less invasive ways.
- Research into an employee rating system, focused on metrics that are the key levers for behavioral change, might include impacts on DoD's culture and social fabric.
- There are opportunities to use socio-technical approaches for threat detection that combine human and machine-learning capabilities.
- Research into developing cognitive and technical “immune systems” could help fight manipulation in our interactions with social media.

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