PROGRESS ROUNDUPS

Doomslayer: Weekly Progress Roundup

New deep sea ecosystems, the world's largest mosquito factory, a triumph of citizen science, and more.

MALCOLM COCHRAN

AUG 03, 2025

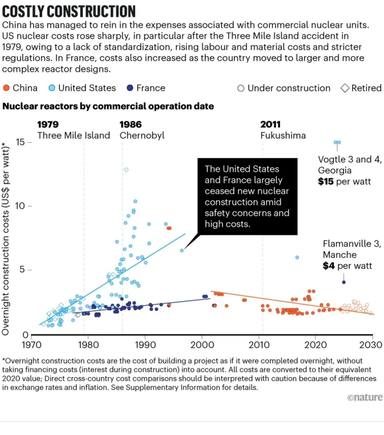
Energy & Environment

Conservation and biodiversity

- **The world's smallest snake has been rediscovered** in Barbados after it was lost to science for nearly 20 years.
- **A team of scientists has discovered thriving ecosystems nearly 10 kilometers beneath the ocean surface**—deeper than ever observed before—sustained by chemical-rich fluids seeping from the seafloor. Notably, the researchers found life on 19 of their 23 dives, suggesting that these **deep-sea trench ecosystems may be more common than previously thought**.

Energy & Natural Resources

- **Helion Energy has broken ground on the site of a planned fusion power plant**, part of an optimistic initiative to supply a Microsoft data center with electricity by 2028.
- Ore Energy, a Dutch battery manufacturer, has become **the first to connect an iron-air battery to the grid**. Their prototype uses a reversible rust reaction—iron oxidizes to release power when discharging, and reverts back when charged—to provide up to 100 hours of energy storage, far beyond the 4–8 hours typical of lithium-ion batteries.
- **China is proving that nuclear power in the West is way more expensive than it needs to be**. While the US and France have seen costs climb for decades thanks to overregulation, bespoke reactor designs, and fragmented supply chains, China has kept costs low by doing the opposite.



Health & Demographics

- **Timor-Leste has eliminated malaria.**
- **Brazil has opened the world's largest *Wolbachia*-infected mosquito factory** after field trials saw the insects slash dengue, Zika, and chikungunya incidence.
- **Doctors in Italy have restored a man's sight** using an innovative gene therapy. The treatment involved injecting a viral vector into the man's eye to deliver a working copy of a missing gene, allowing retinal cells to produce the protein needed for vision.

Science & Technology

- **iNaturalist**, a popular wildlife identification app, **has become a core tool in ecological research**. Since its launch in 2008, users have logged more than 250 million species observations, contributing to over 5,000 peer-reviewed papers.
- A research project called African Next Voices is creating **an open-access database of 18 African languages** containing thousands of hours of translated and transcribed voice recordings. The goal is to make it easier for large language models to learn and support these widely spoken but underrepresented languages.

Violence & Coercion

- **Female genital mutilation in Egypt, while still widespread, is becoming less popular**. In 2014, 61 percent of girls ages 15–17 were mutilated; by 2021, that fell to 37 percent. Public support for the practice has also fallen; 30 percent of Egyptian women supported genital mutilation in 2021, down from 75 percent in 2000.

Progress Studies

Dan Williams challenges some common criticisms of social media.

Asterisk Magazine

Scapegoating the Algorithm

By Dan Williams...

Read more

a month ago · 28 likes · 5 comments · Asterisk Magazine

Noah Smith explains how sweatshops lay the groundwork for lasting economic growth.

Noahpinion

The only thing worse than sweatshops is no sweatshops

I was going to write about U.S. politics today, but sweatshops came up in an online discussion, so I'll write about that instead. It's so rare to have interesting, substantive discussions about economic policy on social media, so I relish the chance to dive into one when it pops up...

Read more

a month ago · 402 likes · 109 comments · Noah Smith

Derek Thompson debunks claims about monopolies driving up housing costs.

Derek Thompson

The Anti-Abundance Critique on Housing Is Dead Wrong

The sharpest criticisms of the book Abundance have sometimes come from the antitrust movement. This group, mostly on the left, insists that the biggest problems in America typically come from monopolies and the corruption of big business...

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a month ago · 569 likes · 157 comments · Derek Thompson

High-Skilled Immigration Is Key to America's Success

Top human capital is hard to come by.

RICHARD HANANIA
AUG 07, 2025

Among the more intellectual supporters of the 2024 Trump campaign, there was a message that stressed technological progress and a positive outlook toward the future. The American venture capitalist Marc Andreessen's "Techno-Optimist Manifesto" became a touchstone for this group, celebrating the virtues of innovation, abundance, and human agency. Rather than focus solely on grievances or cultural retrenchment, these advocates of progress framed the Trump agenda as a rejection of stagnation and an embrace of the future. They argued that the true enemies of progress were the left-leaning bureaucracies, academic institutions, and regulatory regimes that, in their view, had become hostile to risk-taking and entrepreneurship.

Silicon Valley investor Peter Thiel's famous maxim that "we were promised flying cars, instead we got 140 characters" has become a rallying cry among the tech right. Vice President JD Vance, in a high-profile speech at the AI Action Summit in Paris, struck many of the same notes, warning against overregulation in the name of safety and stressing that we should expect future developments to make workers more productive rather than put them out of jobs.

The tech right is of course correct not to fear the future and to see technology as the key to human progress, not a threat to it. Unfortunately, the Trump administration has taken us backward on what is arguably the most important issue from an enhanced-growth perspective: openness toward high-skilled immigration.

Human capital—the skills, knowledge, and health of workers—is increasingly the engine of productivity growth, far more so than natural resources or physical inputs. In his 2008 book *Triumph of the City*, Harvard economist Edward Glaeser shows how American cities have risen or fallen over the past several decades according to their ability to serve as places where smart and talented people can cluster together. Our great industries are built on conglomerations of talent in different locales: tech in Boston and San Francisco; finance in New York City; entertainment in Los Angeles. College towns throughout the country play a similar role on a smaller scale.

And since only a minority of the talent in the world belongs to people born in the United States, immigration is necessary to make sure that the most productive workers can cluster together. According to the Indian American venture capitalist Deedy Das, of the 44 members of Meta's recently recruited superintelligence team, who can earn packages of up to $100 million a year, half are from China and 75 percent are first-generation immigrants. As of 2024, 46 percent of Fortune 500 companies were launched by first-generation immigrants (108) or their children (123). A 2022 study by the National Foundation for American Policy showed that this same group had founded or cofounded more than half of the US start-up companies valued at $1 billion or more.

Even if you look at rates of entrepreneurship more generally instead of focusing on the most successful firms, we see how dependent the American economy is on recent arrivals. Immigrants are nearly twice as likely to start businesses as native-born Americans, and they make up about a quarter of all entrepreneurs. These figures highlight how immigration fuels not only population growth but also innovation, job creation, and long-term economic dynamism. And this isn't simply a question of deliberately skimming off a few geniuses born overseas, even if it were possible for the government to be that discerning in its assessment of talent. The goal should instead be to have as large a pool as possible of skilled individuals who can contribute to dynamism and growth at all levels.

Innovation is driven not just by increasing private-sector productivity but also by breakthroughs made on university campuses. In 2019 and 2020, 49 percent of STEM (science, technology, engineering, and mathematics) master's degrees and 57 percent of STEM PhDs were obtained by students on temporary visas. As of the 2023–2024 academic year, over 500,000 international graduate students were pursuing advanced education in the US, with roughly 70 percent of full-time graduate students in fields like electrical engineering and computer science hailing from abroad.

Members of the tech right who have either worked in the Trump administration or supported it are themselves proof of the United States' ability to attract the most talented and ambitious people in the world. Elon Musk was born in South Africa, and Thiel is German. Other examples include David Sacks, born in South Africa, who is now Trump's AI and crypto czar, and Chamath Palihapitiya, a Sri Lankan–born investor who helped scale Facebook and is now a major Republican donor. Note that Musk could not have been able to immigrate to the US if our policy were to accept proven geniuses only. He accomplished his remarkable feats after he arrived in the United States. The same can be said of Taiwan-born Jensen Huang, who came to America as a child, and ended up founding Nvidia, which has a market capitalization of over $4 trillion.

Yet despite what members of the tech right may think about the issue of immigration, the Trump administration has been making it much more difficult for smart and talented people to arrive and settle in the United States. One major area of anti-immigrant crackdown has been international students. In early 2025, a Japanese graduate student at Brigham Young University faced deportation proceedings after being cited for a fishing violation—an example of the administration's increasingly aggressive enforcement posture, where even minor infractions can trigger visa revocation. The student's visa was reinstated a few weeks later, but the case is troubling, for it shows that there can be serious consequences for nonserious criminal behavior such as administrative mistakes or minor legal citations. Foreign students are also being screened for political opinions, with the government checking social media accounts for vague criteria such as not believing in American values.

This trend has broader consequences for America's long-term talent pipeline. For decades, foreign students—particularly in STEM fields—have formed a core component of the US innovation economy. Many arrive on F-1 student visas, transition to work under Optional Practical Training (OPT), and then eventually become permanent residents and citizens. Clogging this pipeline with unnecessary obstacles means that fewer of the world's smartest young people will build careers and start companies in the United States. As universities report declines in international applications, and graduates face heightened risks of removal, the cumulative effect is to shrink the future pool of scientists, engineers, and entrepreneurs who would otherwise contribute to American technological leadership.

In May 2025, the State Department reported a 22 percent drop in F-1 visas granted compared to the year before, and a 13 percent decline in J-1 visas, both used by foreign students. This decline is probably due to some combination of restrictions put on new arrivals, bureaucratic hurdles placed in their way, and foreigners simply seeing the United States as a less desirable destination than it used to be. Studyportals, a website that matches applicants to schools in other countries, reports a massive decline in interest in coming to the US among international students, reaching its lowest levels since the COVID-19 pandemic.

The losses that result from that drop-off will be felt by not only the US. One might imagine a simple global redistribution of talent, with the total amount of innovation in the world staying the same. If that is the case, we may not worry about the US pushing away skilled foreigners.

Unfortunately, returning to Glaeser's arguments, there are outsized returns to clusters of smart people. If all of the most talented researchers in biotechnology were distributed among 10 major cities across the world, those researchers would accomplish much less than if they were concentrated in one or a few locales. That is because there are benefits to face-to-face interactions.

When smart people are in close geographic proximity, they can more efficiently exchange ideas and find ways to collaborate. That is why it still makes sense to move to the Bay Area if you are in tech entrepreneurship, despite its high housing costs and the ease of remote work. The US has benefited both itself and the world by having localities where clusters of unusually talented people congregate. We are in danger of losing that advantage due to the administration's policies.

Ultimately, we should be thinking about not only how to go back to the days of a more welcoming high-skilled immigration policy, but also about how to increase the number of talented migrants. Politics is making that more difficult. The Fairness for High-Skilled Immigrants Act, championed in 2019 and 2020 by Sen. Mike Lee (R-UT), would have accelerated the path to permanent residency—and thus naturalization—for tens of thousands of skilled immigrants already working in the US, predominantly in STEM fields.

By eliminating per-country caps that limit the number of entrants into the US from individual countries, the bill would have dramatically shortened wait times for applicants from places such as India and China, significantly increasing the number of highly skilled workers eligible for citizenship over time. This shift would have raised the skill level of the American workforce and expanded the talent pool available to US companies, bolstering innovation and productivity and creating a larger class of potential inventors and entrepreneurs. Unfortunately, intense opposition from elements of the MAGA-aligned right, who argued that the bill would unfairly disadvantage American-born workers, ultimately doomed the effort.

Republicans since that time have decided not to touch the hot stove again. Any effort to increase the number of visas or naturalizations is now bound to stir up a cauldron of discontent among the president's supporters and influencers. That's doubly unfortunate, given that the president has on occasion expressed his support for high-skilled immigration, stating as recently as 2024 that "[when] you graduate from a [US] college, I think you should get automatically, as part of your diploma, a green card to be able to stay in this country."

Nativism is limited in how much damage it can do in terms of reducing the number of newcomers, because immigration policy is mostly set by statute, but much more harm is likely done by the fact that it has become politically impossible to enact the kinds of more open policies that have traditionally had bipartisan support and greatly benefited the nation.

Not everything done by the administration on this front has been negative. A proposed rule change to the H-1B lottery—giving preferences based on the salaries of applicants, from highest to lowest—would be particularly effective. Since earnings are a rough proxy for economic contribution and potential to innovate, this change would be an improvement on the current system. At the same time, such a shift would disadvantage early career professionals. While a change like that should be welcomed on balance, the goal should ultimately be many more visas given to skilled professionals, as two-thirds of H-1B applications are now rejected.

To support techno-optimism and techno-futurism while being hostile or indifferent toward high-skilled immigration is like worrying about climate change without prioritizing technologies that limit the release of carbon dioxide into the atmosphere. High-skilled immigration is not one issue among many. Human capital is the ultimate input that determines whether cities, states, and nations rise and fall. Surely the same people who claim to worry about America's decline and China's rise should want innovation-friendly policies in the United States rather than in China?

It has often been noted that there is an uneasy alliance between the tech right and President Trump's MAGA base, with the immigration issue often being highlighted as a major point of contention. I believe the idea that this is a minor divergence of opinion rather than an unreconcilable difference in worldviews can be held only by ignoring just how important high-skilled immigration is to technological progress. Human capital is not simply one factor in the combination it takes to have a successful, dynamic, and innovative economy. It is the foundation of progress. Without understanding that, all visions of a bold technological future are likely to end in disappointment.

THE HUMAN PROGRESS PODCAST

Is Progress Making Us Miserable?

Tim Lomas joins Chelsea Follett to explore surprising global trends in happiness, meaning, mental health, and more.

HUMAN PROGRESS

AUG 09, 2025

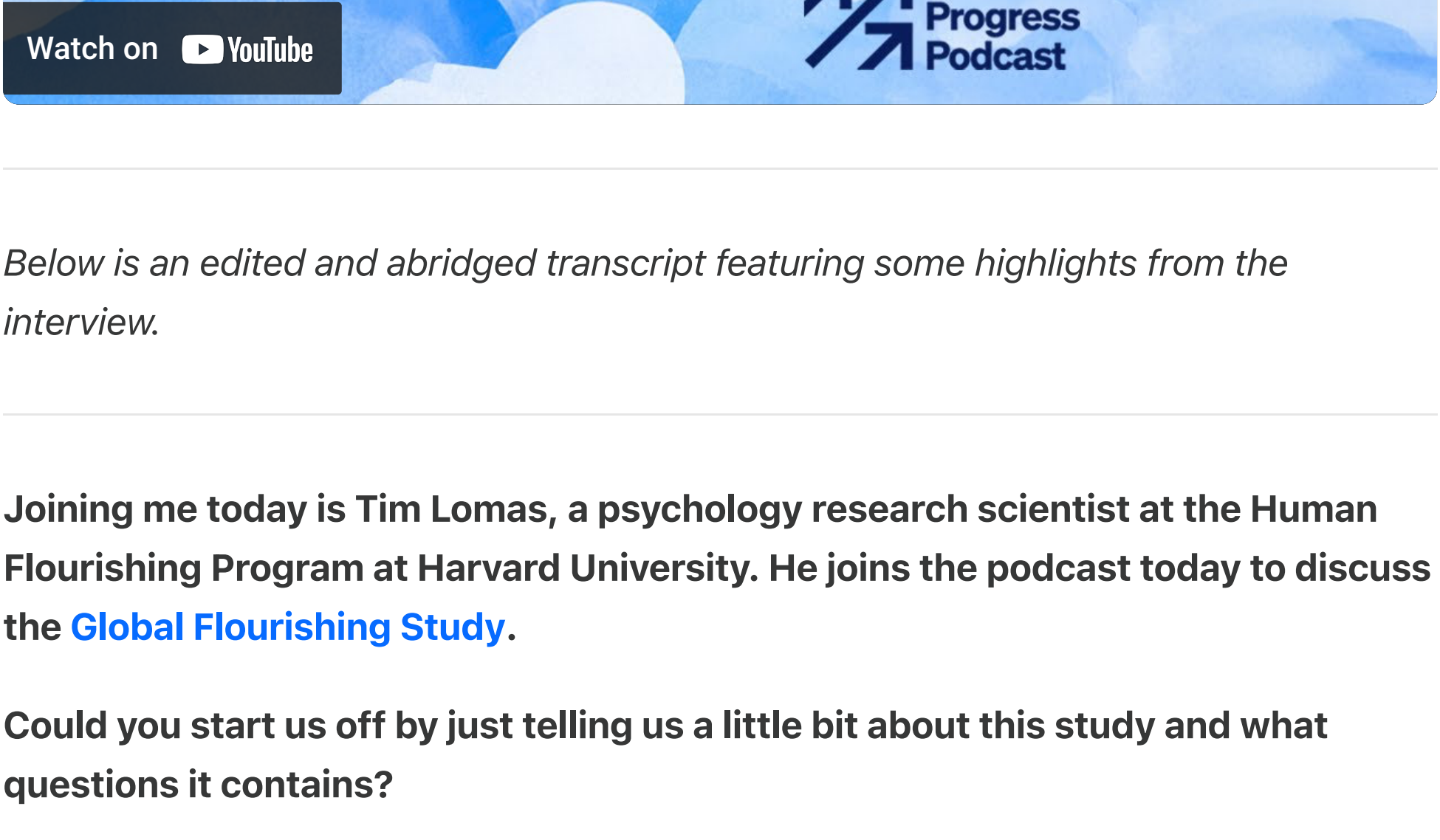
There's a longstanding and counterintuitive finding in global happiness research: the richest countries don't always report being the happiest, and rising wealth doesn't necessarily lead to higher life satisfaction.

More disconcertingly, people in wealthy nations—especially younger generations—seem to be experiencing rising rates of anxiety and depression.

What should we make of this paradox?

In this episode of *The Human Progress Podcast*, psychology researcher Tim Lomas joins Chelsea Follett to discuss his research on global human flourishing and what it reveals about the relationship between economic development and well-being.

Listen to the interview



Below is an edited and abridged transcript featuring some highlights from the interview.

Joining me today is Tim Lomas, a psychology research scientist at the Human Flourishing Program at Harvard University. He joins the podcast today to discuss the Global Flourishing Study.

Could you start us off by just telling us a little bit about this study and what questions it contains?

The two masterminds behind the study are Tyler VanderWeele, director of the Human Flourishing Program at Harvard, and Byron Johnson at the Baylor Institute for the Study of Religion. Around six years ago, they hatched this incredibly ambitious plan to do a global study of flourishing.

There are lots of international studies of well-being. The Gallup World Poll, for example, has been around for 20 years, covering some 150 countries. However, one issue with that study is that it's cross-sectional: it's a snapshot of people each year. It doesn't track people over time, so it can't really tell us about causal trends or patterns other than at the international level. Our study takes a set of people and follows them over time.

In 2023, we did the first wave of data collection from over 200,000 people. 2024 was wave two, so we now have two waves of data. Wave three has just gone into the field. The plan has been for it to go on for at least five years.

The heart of the study is a questionnaire covering different aspects of flourishing. It's centered around a framework with five main domains of flourishing plus an additional sixth one. So the five main domains are happiness and life satisfaction, health, both physical and mental, meaning and purpose, character and virtue, and close social relationships. The additional sixth dimension is financial and material stability. That's not exactly an end in itself like the others, but it's pretty important for securing those other domains. There are also questions on religion, spirituality, society, government, relationship to nature, and some that are harder to categorize, such as experiences of beauty connected to nature.

There are some well-known issues with self-reported data. There are the issues of subjectivity, individual interpretation, and differing cultural norms. So, we need to interpret this data very cautiously and ideally alongside some more objective metrics. That said, it's still really interesting, and some of the insights are very counterintuitive.

Let's start by examining more of these different domains. Can you tell me about the different main domains and why they were selected?

The domains were selected by Tyler VanderWeele on the basis of being prominent in the literature, as well as just making intuitive sense. Most of the attention in the literature has been on those first two domains: happiness, life satisfaction, and health. Obviously, for health, there are plenty of objective metrics.

When it comes to happiness and life satisfaction, it's hard to find objective metrics, and there are lots of nuances to get into. One of the papers I've been leading compares life evaluation with life satisfaction and with happiness. These concepts all seem very similar and are sometimes even used synonymously, but there are actually considerable and intriguing differences between them. But I would say those two domains have been very well covered. Close social relationships are also a big focus of attention.

The other two main domains, character and virtue, and meaning and purpose, have had much less attention, but we think that they're integral to human flourishing. If you score highly in the other domains but don't have a sense of character and virtue, or meaning and purpose, then your life could feel hollow or superficial.

The sixth dimension, financial material stability, is fairly well studied. In a lot of our analyses, we seek to combine the self-report data with objective metrics, and that can be interesting. For example, incorporating something like GDP per capita creates some very strange and perplexing patterns.

Absolutely. That was one of the interesting points to me. The countries that score the highest are not necessarily the ones that you would expect based purely on material standard of living. Many of the countries that score very high, like Indonesia, Mexico, and the Philippines, are middle-income countries. They're not very rich, but they are experiencing a high growth rate. I would be interested in hearing your thoughts on that.

I really love your insight about trajectory. I'll start with a caveat relating to what you mentioned about cultural and linguistic differences.

To give you an example, Japan is at the bottom of a lot of the rankings. And Japan is clearly an economically developed nation. I've been there a few times and I love the place. You walk around thinking, this is an amazing society. And then when you see this data, you think, "am I missing something as an outsider, or are there cultural differences that I'm not picking up on?" There is a suggestion in the literature that Japan and other cultures in that region might have more pressure to be self-effacing. So, the question arises, does that account for their relatively low scores? My sense is that would account for some of it.

That is just a general caveat about the task of comparing cultures. That said, you can still see some meaningful patterns, and I think you're right, the countries that seem to do very well in terms of flourishing are not the most economically developed countries. And then one might wonder whether development comes at the expense of other aspects of flourishing, like societal cohesion, community structure, traditions, religion and spirituality, and social connections.

The lesson here isn't that societies shouldn't develop economically because that's a vital component of flourishing. The question is how to develop economically without sacrificing those other domains. That's really the key question we're trying to think through.

I also want to touch upon your point about the trajectory. One's sense of how well one's life is or how well one's society is doing is not static. It's based on where it's been and where it's going. I can imagine two countries that are almost identical in terms of their current state, but one is on a downward trajectory, and the other is getting better. My sense of which society is better might be the one that's improving. So even if those countries may not be as developed economically, the people in those countries sense they're on this upward trajectory, and that positive sentiment is reflected in their flourishing scores.

I've seen completely unrelated studies that show something similar happening with age. In most countries, almost all of them, actually, older people have more positive reports across many domains than younger people. I wonder if that might have to do with the greater perspective that older people have, especially if they've seen a lot of positive economic change in their lifetime. What do you think about that?

I think that's a really key point. There is this striking trend where satisfaction, happiness, and even flourishing generally are somewhat U-shaped over lifetimes: they are relatively high in the young, then they fall to their lowest level around middle age, and then they rise again as people get older, though it tends to fall off as people get very old. This U-shaped pattern is well corroborated, although now the left-hand side of the U is starting to come down into a kind of J-shaped curve, where older people are doing even better than younger people, with the lowest level still in middle age.

You can even see this with self-reported health. Objectively, the younger person is going to be in better health than an older person, but it's a question of relative judgement. Do you feel like you're doing okay relative to where you expect to be, or to your peers, or to people in the past?

This emerging J-shaped pattern is also kind of worrying in terms of what it shows about the well-being of young people. Perhaps younger people today are facing significant challenges that weren't faced by people of a similar age in earlier generations. Things around the climate, the economics of AI, and the future of work. You can imagine there are so many issues on young people's minds that could be weighing them down.

Absolutely, though every generation has its challenges. My parents' generation had to hide under their desks in drills out of fear that a nuclear weapon could fall on them. I think something that has changed is the perspective people have. At Human Progress, we believe that many people lack historical perspective, and it's important to show them longitudinal data about how things have changed.

That brings me to mental health. The United States is not scoring as well on self-reported mental health as a lot of countries that are economically worse off. For example, Tanzania, Kenya, Nigeria, and Egypt all seem to have what you call a surplus in this domain of mental health.

I wonder if people in wealthy countries have become much more fragile or sensitive in this domain. With growing acceptance of mental health struggles, you might even get a social reward for saying that you have anxiety or for ranking your mental health poorly. So I wonder how much we can really make of some of these comparisons.

You could imagine that in certain cultures, and maybe the US is one example, certain states of mind or experiences are more likely to be medicalized, and in other countries, perhaps less so. There's been so much work around the therapization and medicalization of ordinary life, not just in the United States, the tendency to take ordinary struggles and see them through a mental illness lens. I can see certain incentives for using mental illness as a badge of identity, let's say.

There's also evidence that technology plays a role. Not technology per se, but the way in which it's used, certain apps and so on. You could imagine that in certain cultures, perhaps the more economically developed ones, those risk factors could be more prevalent. Progress always has a dialectic; it brings good things and bad things. So countries with less economic development could have less opportunity to benefit from the gains, but also less exposure to the risks.

Another factor you mentioned is voluntary community life. Group activities, both secular and religious, seem to be associated with greater flourishing. Even after controlling for other well-known predictors, it seems like some of the best support systems for human flourishing, as measured by this study, are these bottom-up systems of voluntary communities, civil society, and religious organizations.

Walk me through some of your findings there.

Yeah, I think they're so important. Close social connections and social institutions are both strong predictors of happiness and life satisfaction, and key aspects of flourishing themselves.

You're often asked with studies like this, what can people do to improve their well-being? Many aspects of life are out of our control, but one thing that is within our control is trying to find community. Some groups can be more conducive to flourishing than others, but as a general principle, joining communities and organizations is a powerful route to flourishing.

I also think that at least part of the counterintuitive relationship between economic development and flourishing is that development can come at the expense of traditional communities and groups. The takeaway here is that economic development alone is not sufficient; we should also try to preserve things like community, tradition, social structures, and close social relationships, and try to learn lessons from countries that seem to be doing that.

One of the factors that a lot of the literature has looked at is a sense of agency or an internal locus of control. People who are high agency, who feel that they do have more control over their lives, often report higher well-being across a whole range of dimensions.

Do you see that trend in this study as well?

We do. Now, when we ask about agency, it's more at a societal level. We're asking people, "Can people in your society trust each other? Can you trust the government? Is there corruption? Do people in your country have the freedom to do X?"

So, agency as freedom from coercive institutions, freedom to pursue one's own ends economically, religiously, and so on. And we do find a strong correlation between this kind of structural agency and flourishing.

Read the full transcript

Doomslayer: Weekly Progress Roundup

Radioactive rhino horns, new AI models, the end of fur farming, and more.

MALCOLM COCHRAN
AUG 10, 2025

Energy & Environment

Conservation and biodiversity

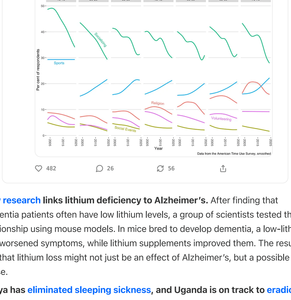
- To help crack down on poaching, **scientists in South Africa are injecting rhino horns with low-level radioactive isotopes** that are harmless to the animals but detectable by scanners at airports and border crossings.
- **Researchers have identified the pathogen responsible for billions of sea star deaths** off the Pacific Coast of North America and the widespread destruction of kelp forests. The finding solves a decade-long mystery and could help efforts to restore sea star populations and the ecosystems they support.

Energy & Natural Resources

- **BP has made what it calls its "largest global oil and gas discovery in 25 years"** in Brazil.

Health & Demographics

- **More Americans are playing sports.**



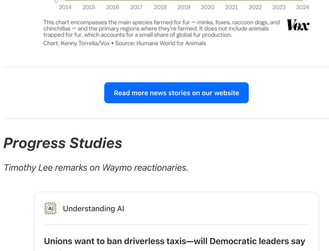
- **New research links lithium deficiency to Alzheimer's.** After finding that dementia patients often have low lithium levels, a group of scientists tested the relationship using mouse models. In mice bred to develop dementia, a low-lithium diet worsened symptoms, while lithium supplements improved them. The results hint that lithium loss might not just be an effect of Alzheimer's, but a possible cause.
- **Kenya has eliminated sleeping sickness, and Uganda is on track to eradicate river blindness.**
- **Breastfeeding is becoming more common in Indonesia.** The World Health Organization estimates that 66.4 percent of Indonesian infants were exclusively breastfed [1] in 2024, up from 52 percent in 2017. ~~This is a big deal. According to the WHO:~~

> ~~Evidence shows that breastfeeding boosts children's cognitive development by 3-4 IQ points, reduces overweight and obesity risk and provides lifelong protection against non-communicable diseases. Babies who are not breastfed are up to 14 times more likely to die before their first birthday than those who are exclusively breastfed during their first six months.~~

Correction: While the WHO claims that exclusive breastfeeding is causally linked with higher IQ and lifelong health benefits, other research finds that most of these long-term associations disappear after accounting for selection effects.

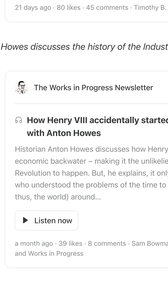
Science & Technology

- **OpenAI has released GPT-5, its most capable model yet, as well as two additional open-weight models.** These open models let developers run and modify the code themselves, enabling offline use and a greater level of customization.
- Google's DeepMind has developed **an AI model that can generate interactive 3D environments in real time from text prompts**—potentially transforming filmmaking, video game development, and even AI training methods.
- **Microsoft has taken a step toward solving one of cybersecurity's biggest bottlenecks:** detecting and classifying malicious software. Its new AI agent, Project Ire, can automatically analyze suspicious files—work that normally takes hours of expert analysis. In testing, it caught just 25 percent of malicious files, but close to 90 percent of its flags were correct.
- The AI voice-over company **ElevenLabs has launched a music-generating software**. Here's the impressive demo:



Violence & Coercion

- According to new FBI data, **the US violent crime rate fell 4.5 percent from 2023 to 2024**, hitting its lowest level in two decades.
- **Fur farming is in steep decline.** Between 2014 and 2024, the number of animals in fur farms fell from over 140 million to around 20 million.



Progress Studies

Timothy Lee remarks on Waymo reactionaries.

Understanding AI

Unions want to ban driverless taxis—will Democratic leaders say yes?

Waymo hasn't announced any specific plans to launch a driverless taxi service in Boston. But the Google self-driving company did some preliminary testing and mapping there this summer (with safety drivers behind the wheel) and the Boston City Council wasn't happy about it. The council grilled Waymo about its plans at a...

Read more

21 days ago · 80 likes · 45 comments · Timothy B. Lee

Anton Howes discusses the history of the Industrial Revolution.

The Works in Progress Newsletter

How Henry VIII accidentally started the Industrial Revolution, with Anton Howes

Historian Anton Howes discusses how Henry VIII turned Britain into an economic backwater – making it the unlikeliest place for the Industrial Revolution to happen. But, he explains, it only took a small cabal of people who understood the problems of the time to turn the fate of the country (and thus, the world) around...

Listen now

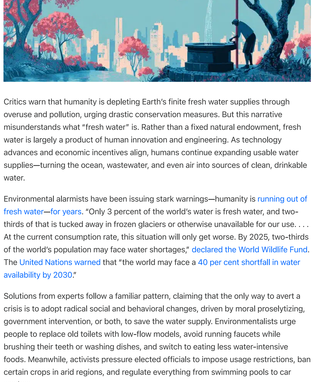
a month ago · 39 likes · 8 comments · Sam Bowman, Ben Southwood, Anton Howes, and Works in Progress

1 Meaning the child is given only breast milk during its first six months, no other foods or beverages.

The Infinite Well: How Innovation Keeps Water Flowing

Humans are not running out of fresh water.

KYLE O'DONNELL
Aug 13, 2025



Critics warn that humanity is depleting Earth's finite fresh water supplies through overuse and pollution, urging drastic conservation measures. But this narrative misunderstands what "fresh water" is. Rather than a fixed natural endowment, fresh water is largely a product of human innovation and engineering. As technology advances and economic incentives align, humans continue expanding usable water supplies—turning the ocean, wastewater, and even air into sources of clean, drinkable water.

Environmental alarmists have been issuing stark warnings—humanity is running out of fresh water—for years. "Only 3 percent of the world's water is fresh water, and two-thirds of that is tucked away in frozen glaciers or otherwise unavailable for our use. . . . At the current consumption rate, this situation will only get worse. By 2025, two-thirds of the world's population may face water shortages," declared the World Wildlife Fund. The United Nations warned that "the world may face a 40 per cent shortfall in water availability by 2030."

Solutions from experts follow a familiar pattern, claiming that the only way to avert a crisis is to adopt radical social and behavioral changes, driven by moral proselytizing, government intervention, or both, to save the water supply. Environmentalists urge people to replace old toilets with low-flow models, avoid running faucets while brushing their teeth or washing dishes, and switch to eating less water-intensive foods. Meanwhile, activists pressure elected officials to impose usage restrictions, ban certain crops in arid regions, and regulate everything from swimming pools to car washes.

Fortunately the economics of water innovation reveals why the apparent scarcity tends to be self-correcting, without requiring us to adopt ascetic lifestyles or perform symbolic actions like picking up dropped ice cubes to water house plants or writing letters to elected officials. Rising prices, not moralizing pleas, lead people to conserve, look for substitutes, recycle resources, and innovate helping to meet demand through alternative means or improved efficiency.

Fresh Water Is a Product of Human Ingenuity

Scarcity is a fundamental feature of our world, but framing discussions about the realities of water scarcity as a matter of running out of fresh water is misleading and reveals an underlying conceptual error. Such a term conjures up images of humanity consuming Earth's natural endowment of clean water until it's gone. Fresh water is not a fixed stock nor is it simply out there in nature waiting to be discovered and used. It's created through human effort.

There is nothing natural about turning on a tap in one's home and having clean, fresh water flowing out on demand. The water flowing from your tap began its journey as rain, groundwater, or surface water, and it became "fresh" only after passing through treatment plants, filtration systems, and distribution networks. What we call fresh water is best understood as water that has been made usable for human purposes through innovations in technology and infrastructure.

If we had a magic wand to instantly transform seawater, agricultural runoff, or industrial wastewater into pure H_2O, the distinction between fresh and other water sources would dissolve. But, human ingenuity, enabled by markets and the price system, address water scarcity as well as any magic would.

As the price of water rises due to increases in demand or decreases in supply, market mechanisms kick in to encourage conservation and efficiency improvements while higher prices make previously uneconomical water sources profitable, thus spurring investment in new technologies and supply sources. Indeed, the full spectrum of solutions to water scarcity is far broader and more diverse than discussions about a monolithic global water crisis suggest. To see that, it helps to disentangle the major uses for fresh water.

Most fresh water withdrawals are for agricultural and industrial uses. According to the 2024 United Nations World Water Development Report, agriculture consumes roughly 70 percent of global fresh water withdrawals, industry accounts for 18 percent, and domestic use makes up the remaining 12 percent. These proportions vary significantly between countries, with larger shares for industry in higher-income countries and for agriculture in least-developed countries.

Agricultural Revolution: Precision and Efficiency

Agriculture's major share of water use reflects market forces and technology driving remarkable efficiency gains. Israel, where "two thirds of the land is semi-arid or arid and much of the soil is of poor quality [and where] there is a shortage of natural water resources, a scarcity of precipitation" leads in agricultural innovation. Between 1986 and 2008, the country's crop production increased by 40 percent while agricultural water use remained constant. How? Technologies such as drip irrigation, which apply water directly to plant roots and see 95 percent uptake by avoiding evaporation, are used to water 75 percent of Israel's crops.

Elsewhere, technologies such as precision agriculture using GPS and sensors are used to enable farmers to apply water exactly where and when it is needed. For example, Valley Irrigation's smart pivot systems adjust water application based on real-time soil moisture data. Controlled environment agriculture represents an even more dramatic leap in water conservation. AeroFarms' vertical farming systems use 95 percent less water than field agriculture and produce yields 75 times higher per square foot. Plenty's indoor farms recycle 99 percent of their water and produce crops year-round regardless of climate. As technology advances, genetic innovations can also reduce agricultural water needs, such as utilizing CRISPR gene editing to enable the development of crops that require less water while maintaining their nutritional value.

What's Old Is (Made) New Again

Advanced wastewater recycling now produces water that exceeds WHO drinking water quality standards, with water-stressed countries such as Singapore meeting 40 percent of its water needs (and growing) through wastewater recycling. San Diego's Pure Water program will produce half of the city's water supply by 2035 from treated wastewater.

Advances in chemistry and materials science promise to make purifying water even cheaper. Graphene oxide membranes developed at the University of Manchester could make desalination far more energy-efficient, while biomimetic membranes inspired by plant cell structures promise breakthrough efficiencies in water filtration and desalination. Furthermore, electrochemical treatment can remove virtually any contaminant from water, enabling the reuse of previously unusable industrial wastewater.

Beyond treatment plants, innovative groundwater management pumps treated wastewater and excess surface water back into underground aquifers, creating massive underground reservoirs for drought protection. These managed aquifer recharge projects globally now store billions of gallons annually, turning natural storage systems into actively managed water banks.

Substituting Away from Fresh Water

Digging into industry's 18 percent share of fresh water usage reveals that many functions currently performed by water, such as cooling, may not require water at all. Data centers, which consume 5–10 percent of the total US electricity supply, traditionally use massive amounts of water for cooling because it had been cheap and abundant.

Here we see a demonstration of market forces at work as rising resource costs incentivize innovation and substitution: Google has developed AI-powered cooling systems that reduce energy consumption by 40 percent, while Microsoft is testing underwater data centers that use seawater for cooling to achieve better efficiency than land-based facilities. Further, immersion cooling technology submerges servers in specialized fluids, eliminating water use entirely while improving the servers' performance.

Meanwhile, thermoelectric power plants, which account for 34 percent of US freshwater withdrawals, increasingly use dry cooling systems and recycled wastewater. Palo Verde Nuclear Station, the largest generator of electricity in the United States, operates entirely on treated sewage water from nearby municipalities.

Turning Our Oceans and Air into Fresh Water Sources

Perhaps the paradigmatic example of humans creating fresh water from previously unusable sources is desalination. Desalination technology has transformed seawater into a primary fresh water source in some countries. Israel desalinates more than 55 percent of its domestic water supply—a figure expected to rise to 90 percent in the future. Similarly, Qatar desalinates 48 percent of its water needs. Modern reverse osmosis filtration technology has dramatically reduced desalination costs. As such, Israel's newest plants, to give one example, produce water for less than $0.50 per cubic meter, which is competitive with many traditional sources of fresh water.

And what may be one of the most futuristic fresh water technologies already exists. Atmospheric water generation technology from companies such as Watergen can extract water directly from air humidity using solar power. Such systems are now operating in more than 65 countries and produce up to 5,000 liters daily, even in desert conditions. FountAir LTD's AIR4WATER device combines air conditioning with water generation to simultaneously cool air and produce purified drinking water from condensation.

Building-integrated water systems capture rainwater and condensation for reuse. Skysource/Skywater Alliance has developed atmospheric water generators integrated into buildings that can supply significant portions of the occupants' needs. Smart buildings increasingly include gray water recycling systems that reuse shower and sink water for irrigation and cooling.

Conclusion: The Innovation Pipeline and Global Markets Mitigate Future Risk

The Earth isn't running out of water any more than it ran out of food after the English preacher Thomas Malthus made his dire predictions about the consequences of overpopulation more than two centuries ago. Water follows the same pattern as every other resource: human creativity applied to the challenges of scarcity drives innovation that creates new forms of abundance.

From ancient aqueducts to modern desalination plants and atmospheric water generators, humans have never accepted natural limitations on freshwater supplies. The same creativity that turned seawater into municipal water supplies and transformed sewage into drinking water continues expanding the definition of usable water. Global markets further reduce water stress by enabling regions to specialize by importing water-intensive goods from water-abundant areas rather than producing everything locally.

Rising demand creates rising incentives for innovation. As traditional sources become more expensive, market signals encourage both conservation and technological advancement, resulting in a continuously expanding water supply that grows to meet human needs and capabilities.

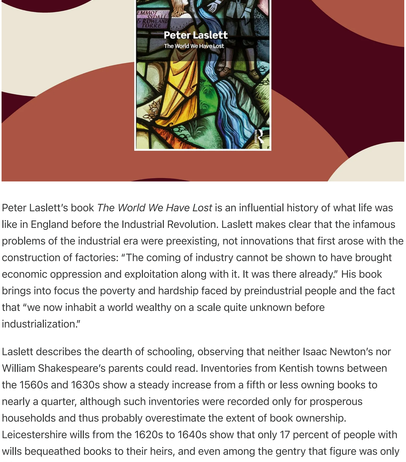
The lesson is clear: Water scarcity isn't about planetary limits but about the pace of human innovation relative to demand growth. Given the remarkable technologies already emerging and the powerful economic incentives driving their development, the future promises water abundance through human ingenuity and market-driven innovation, not sacrifice and restriction.

Grim Old Days: Peter Laslett's The World We Have Lost

Poverty and hardship long predated the factory age.

CHELSEA OLIVIA FOLLETT

AUG 14, 2025



Peter Laslett's book *The World We Have Lost* is an influential history of what life was like in England before the Industrial Revolution. Laslett makes clear that the infamous problems of the industrial era were preexisting, not innovations that first arose with the construction of factories: "The coming of industry cannot be shown to have brought economic oppression and exploitation along with it. It was there already." His book brings into focus the poverty and hardship faced by preindustrial people and the fact that "we now inhabit a world wealthy on a scale quite unknown before industrialization."

Laslett describes the dearth of schooling, observing that neither Isaac Newton's nor William Shakespeare's parents could read. Inventories from Kentish towns between the 1560s and 1630s show a steady increase from a fifth or less owning books to nearly a quarter, although such inventories were recorded only for prosperous households and thus probably overestimate the extent of book ownership. Leicestershire wills from the 1620s to 1640s show that only 17 percent of people with wills bequeathed books to their heirs, and even among the gentry that figure was only 50 percent.

The "inability to share in literate life cut most men off from even contemplating a share in political power." And the idea of women attaining a political voice was more absurd still. Even James Tyrrell—an associate of John Locke, a critic of absolutism, and a believer in limited political authority—noted in 1681, "There never was any government where all the promiscuous rabble of women and children had votes."

Illiteracy often not only limited women's ability to engage with society but also increased women's vulnerability. "An illiterate maidservant whose place was five or ten miles from home was cut off from her parents and her brothers and sisters," effectively unable to send them messages and alert them if her employer physically abused her or sexually assaulted her (as was, sadly, common).

Instead of learning to read, many children began work at shockingly young ages. Laslett informs the reader that, as John Locke noted in 1697, poor children were expected to start working at age three, contributing in what capacity they could, often through apprenticeships. The apprentice's contract typically went thus: "He shall not absent himself by night or by day without his master's leave." Some apprentices "stayed subordinate to a master in a master's house for the whole of their lives," far beyond the initial terms of their contract.

Not only could children start work at age 3, but by age 12, they were considered old enough to help run businesses. In 1699, at an alehouse in Harefield, Middlesex, run by Catherine and John Baily, 6 of their 10 children still living at home "were above the age of twelve, . . . old enough to help run the family establishment."

In England grooms could legally be as young as 14 and brides as young as 12, although Laslett notes that thankfully that was relatively rare in practice. Early marriages did occur, though. In 1623, a London parish clerk wrote disapprovingly of the wedding of a 17-year-old boy working as a threadmaker to the 14-year-old daughter of a porter, calling them a "couple of young Fooles."

A rather offensive (to modern sensibilities) form of divorce known as "wife-selling" sometimes occurred among those who could not afford a formal dissolution of marriage. The *Ipswich Journal* records such a sale occurring in 1789:

> Oct. 29, Samuel Balls sold his wife to Abraham Rade in the parish of Blythburgh in his county for 1 [shilling]. A halter was put around her neck and she was resigned up to this Abraham Rade.

Such bizarre episodes "reveal something of the slightly quizzical attitude of ordinary people to the official marriage code," with local customs and practices varying wildly. Upon settling down typically, a man tilled land with the aid of his wife and children. Picture the "hard-working, needy, half-starved labourers of pre-industrial times," who toiled nonstop and yet never produced enough to live comfortably.

> Here was an economy conspicuously lacking in those devices for the saving of exertion which are so marked a feature of our own everyday life. The simplest operation needed effort; drawing the water from the well, striking steel on flint to catch the tinder alight, cutting goose-feather quills to make a pen, they all took time, trouble and energy. The working of the land, the labour in the craftsmen's shop, were infinitely taxing. [The peasantry would] shock us with their worn hands and faces, their immeasurable fatigue.

Those who didn't work in agriculture were often servants. The percentage of workers employed as servants in the population varied from as low as 4 percent to as high as a third of the population in relatively wealthy times and places, such as London and parts of Norwich in the 1690s. "Everywhere work of all kinds varied alarmingly with the state of the weather and of trade, so that hunger was not very far away." Many had no employment and begged. "Wandering beggars . . . were . . . a feature of the countryside at all times."

Any increase in the cost of food staples could prompt social discord. "Right up to the time of the French Revolution and beyond, in Europe the threat of high prices for food was the commonest and most potent cause of public disorder." Public panic about food was often warranted, as the threat of hunger was all too real. In 1698 in Scotland, contemporary accounts say, "[m]any have died for want of bread, and have been necessitate to make use of wild-runches draff and the like for the support of nature." A runch is a common weed.

Laslett makes clear that England, being wealthier than much of Europe, saw relatively few famines by the late early modern period. Still, England's harvest year of 1623–1624 was devastating, and in some locations, such as Ashton, the number of recorded burials was over two-and-a-half times the typical level. Numerous burials record the cause of the death as starvation. The deaths recorded in the Register of Greystoke in England, in 1623, put names to some of these victims of starvation, including, "A poor hungerstarved beggar child, Dorothy," and "Thomas Simpson, a poor hungerstarved beggar boy," as well as "Leonard . . . which child died for want of food," and 4-year-old "John, son of John Lancaster, late of Greystoke, a waller by trade, which child died for want of food and means."

Preindustrial people also froze. Indeed, in cold climates such as those of northern and western Europe, "the necessity of gathering round fires and sharing beds, make it obvious that the privacy now regarded as indispensable, almost as a human right," was once rare, with the masses forced to sleep next to each other and their farm animals for body heat.

If there was one thing that was better about the past, it was perhaps that people were —by necessity—tougher. London's suicide rate circa 1660 is estimated as somewhere between 2.5 and 5 per 100,000 people, low by modern standards.[1] But on the whole, what Laslett calls "the world we have lost" is not a world we'd want back.

1 According to the most recent data from Britain's Office of National Statistics, London's suicide rate now stands at 7.3 per 100,000 people, while England and Wales have a suicide rate of 17.4 per 100,000. According to the most recent year of OECD data, only one OECD country has a suicide rate of under 5 per 100,000: Turkey, at 4.8 per 100,000. (In recent years, only two or three OECD countries typically manage to keep suicides below the upper bound of the estimated level seen in 17th-century London).

The Rising Tide: How Trade Lifts All Boats

Free exchange turns scarcity into abundance for rich and poor alike.

HUMAN PROGRESS
AUG 15, 2025

by Walker Wright

In his book *The Rational Optimist*, the British science writer Matt Ridley argued that economic progress began when people began to trade. "By exchanging," he explained, "human beings discovered 'the division of labour,' the specialisation of efforts and talents for mutual gain… The more human beings diversified as consumers and specialised as producers, and the more they then exchanged, the better off they have been, are and will be." For Ridley, "exchange is to cultural evolution as sex is to biological evolution."

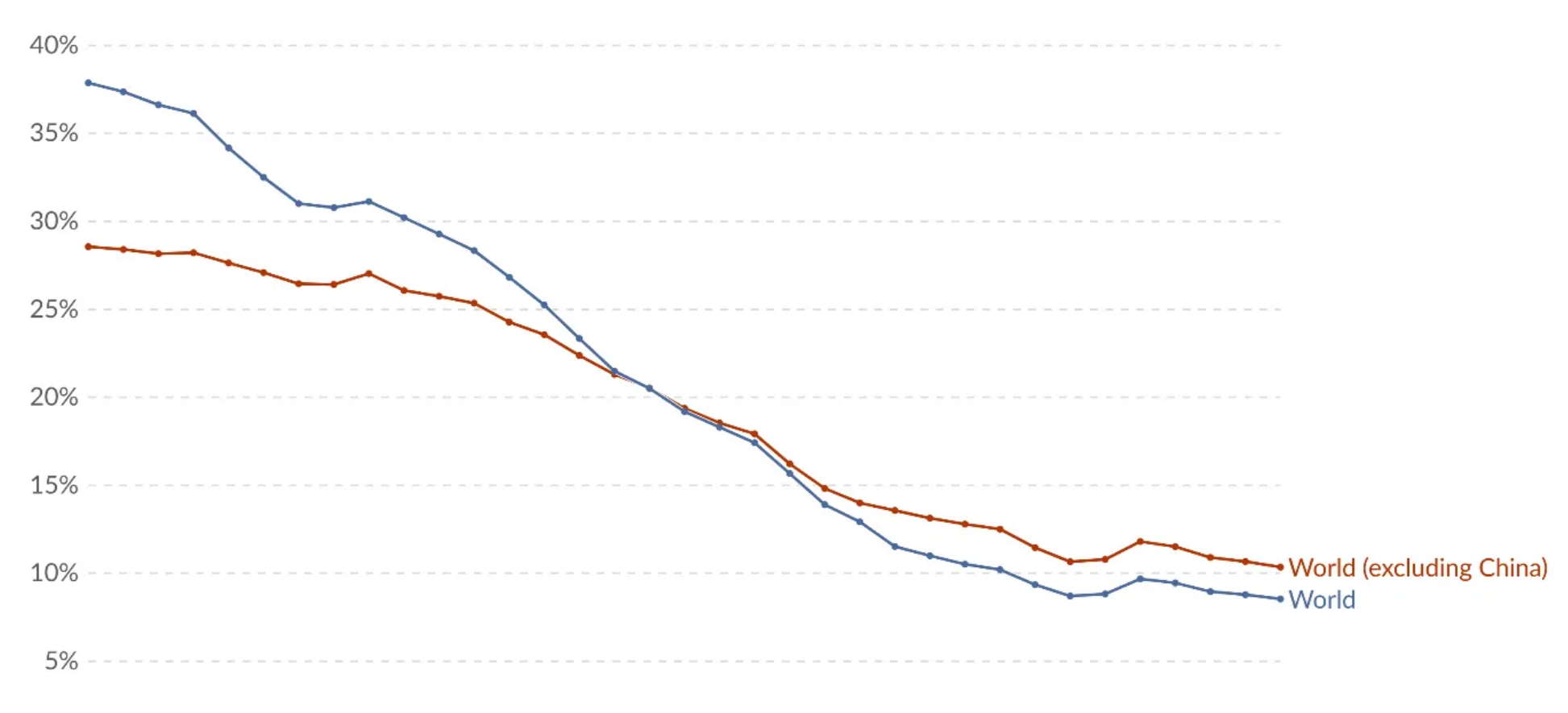
The Scottish father of economics, Adam Smith, recognized the economic potential of trade when he noted that "the liberal system of free exportation and free importation" is "not only the best palliative of a dearth, but [also] the most effectual preventative of a famine."

While economists disagree on several policy issues, trade is generally not one of them. For example, survey data suggest that 95 percent of economists agree that tariffs tend to reduce economic welfare. Another 90 percent do not think the United States should restrict outsourcing.

You'd never know that by listening to today's political debates. While protectionism is nothing new, the recent rise in anti-trade policies is an unfortunate setback for the United States and for the world.

Far from a rigged game that exploits those at the bottom, the globalization of the market system has brought global extreme poverty to its lowest levels in human history. That is why the Turkish-American Nobel Prize–winning economist Daron Acemoglu and his coauthors have described the creation of the market system as "one of the greatest achievements of humankind."

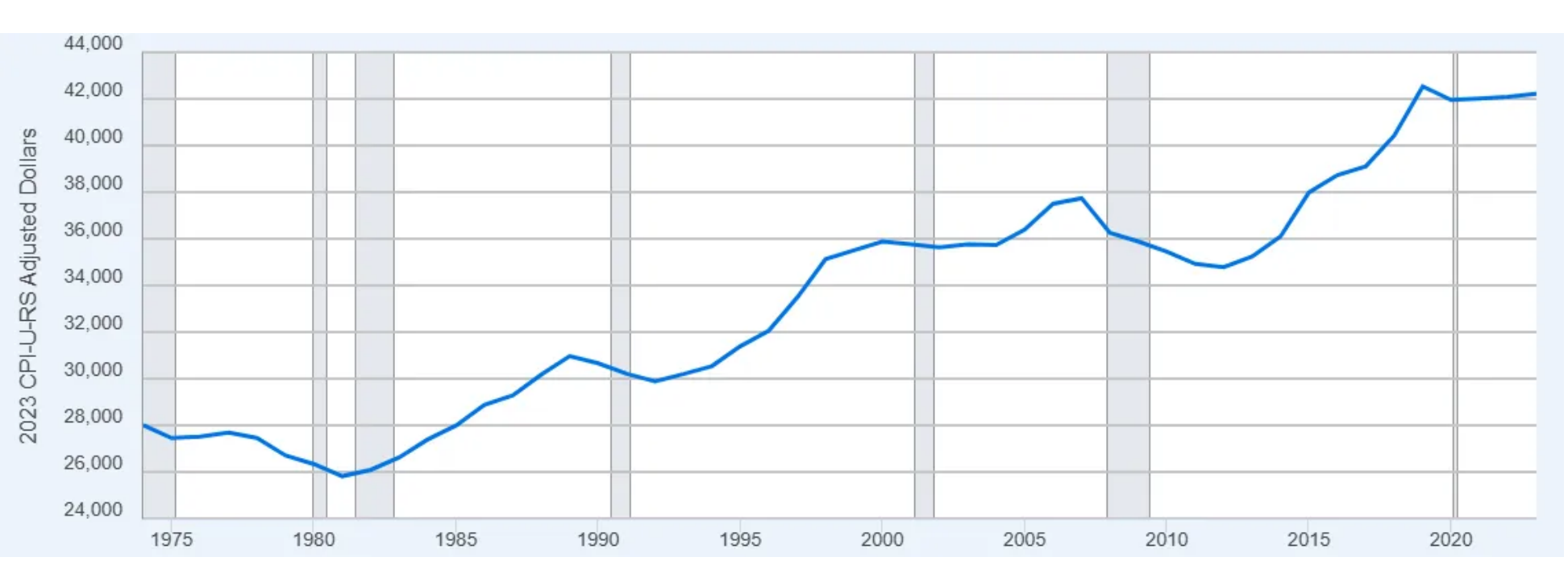
Share of global population living in extreme poverty, including and excluding China [1]



Sources: World Bank Poverty and Inequality Platform 2024; Our World in Data 2024.

Furthermore, despite claims to the contrary, the United States' participation in the global economy has significantly benefited American consumers and workers. Real incomes have not stagnated over the past few decades. They've risen, including for those at the bottom of the income distribution.

Real median personal income in the United States [2]

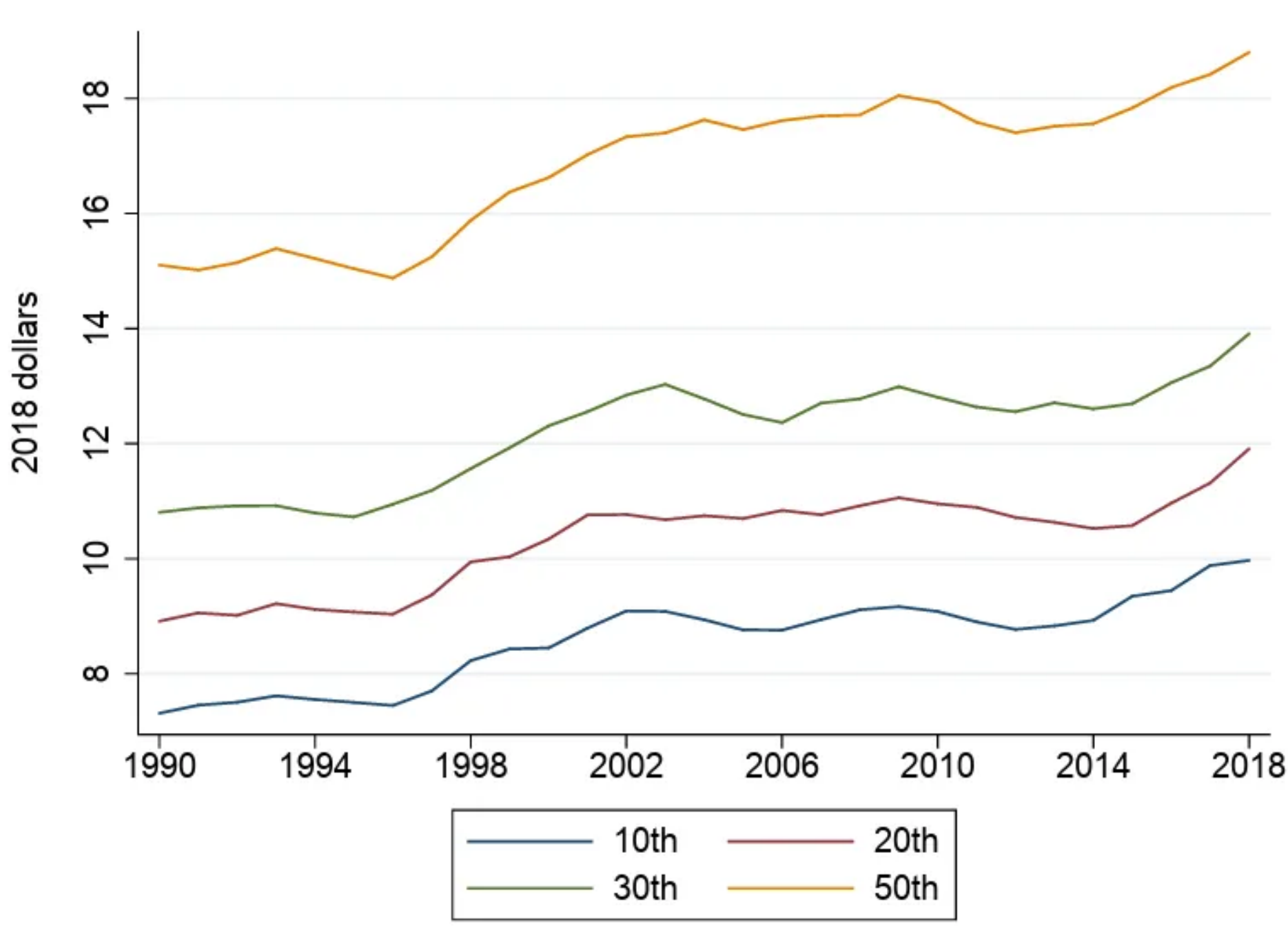


Source: Federal Reserve Economic Data (FRED), St. Louis Fed

Nor has international trade hollowed out American manufacturing. While employment in the sector has declined as a result of automation and productivity gains, manufacturing output—especially output per worker—has increased.

As Michael Strain from the American Enterprise Institute observes, "America is upwardly mobile, particularly for those nearer the bottom of the income distribution. Incomes aren't stagnant. Workers do enjoy the fruits of their labor. The argument that life hasn't improved for typical households in decades borders on the absurd. The game is not rigged. The American Dream is not dead."

Average real wage at percentiles of the wage distribution



Source: Michael Strain, *The American Dream Is Not Dead*, p. 47.

In a 2020 article, I reviewed the scholarship linking trade to economic growth and poverty reduction. Overall, the empirical literature shows that trade reduces poverty predominantly through economic growth. Critics sometimes claim that growth leaves those at the bottom behind. It may improve the average, they say, but only because of large income boosts at the top.

That talking point is simply untrue. Economic freedom, including openness to trade, and growth have been shown to improve incomes across the board. A rising tide truly does lift *all* boats, not just the yachts of the wealthy. Growth positively touches every tier of the economic ladder. A bigger economic pie means better living standards for *everyone* involved, making economic growth pro–poor.

The Indian economist Arvind Panagariya has documented trade's role in the economic success of Hong Kong, Singapore, Taiwan, South Korea, India, China, and other countries throughout Asia, Africa, and Latin America. Across more than 200 jurisdictions and five decades of data, he found a causal relation between trade and per capita income: the countries that experienced intensive growth always maintained a high and/or expanding trade-to-GDP ratio.

In a new review of the literature, Dartmouth's Douglas Irwin found the same thing. The empirical research on trade liberalization has been "remarkably consistent" in its conclusion that open trade fosters growth in productivity and, therefore, standards of living (Tables 1 and 2). Tariffs, on the other hand, hold growth, productivity and standards of living back. Previous literature reviews have come to similar conclusions. That is why economists from all sides of the political spectrum come together on trade.

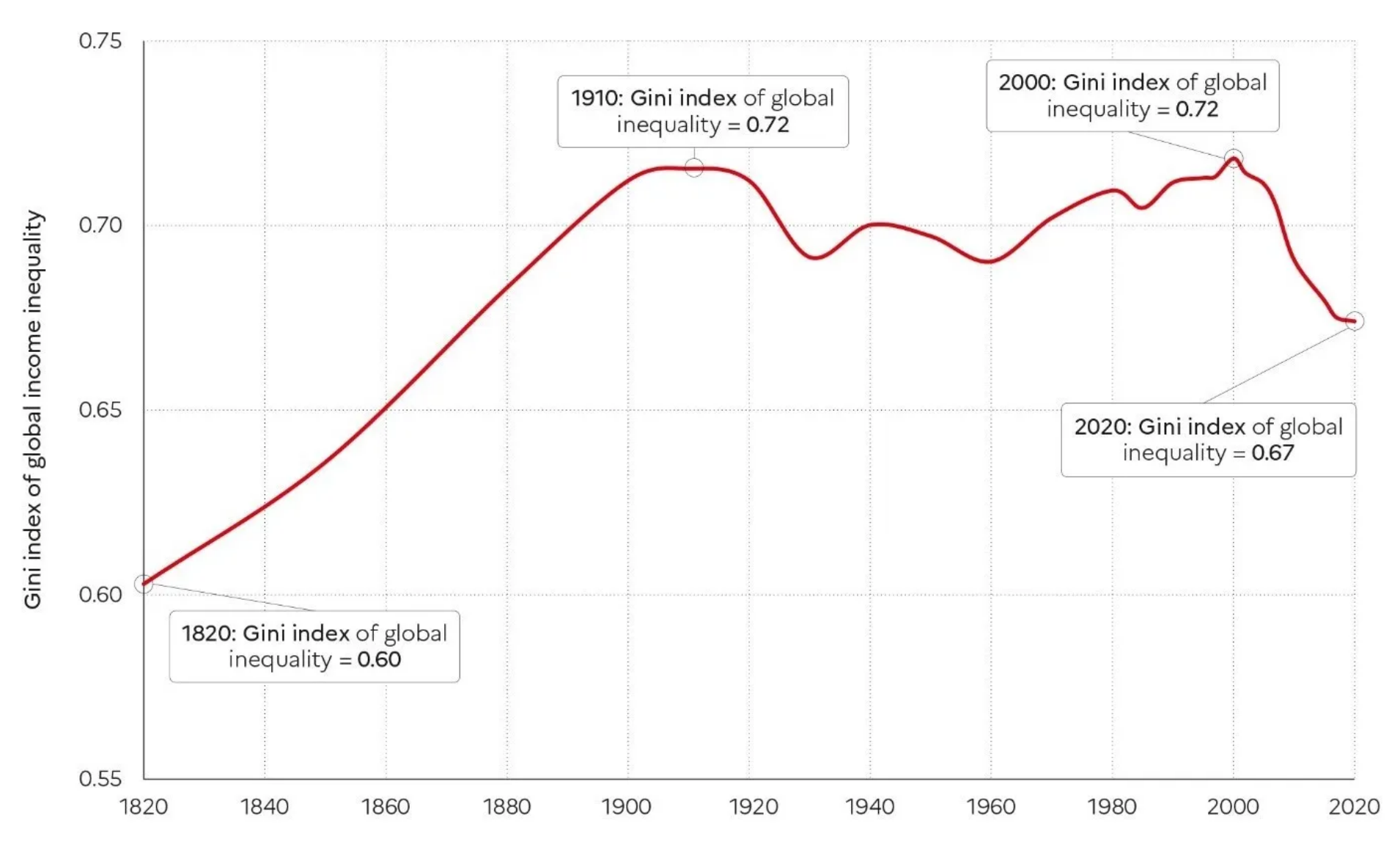
Despite the populist rhetoric about helping the American workers and consumers, those same workers and consumers end up eating the cost of tariffs in the form of higher prices. The negative effects of protectionism also have a disproportional impact on the poor, who tend to gain the most from trade.

And keep in mind that living standards aren't just about income. Open market economies have higher adult literacy rates, longer life expectancies, lower infant mortality rates, better environmental stewardship, and greater life satisfaction than closed economies do. As Nobel Prize–winning American economist Robert Lucas wrote, "The consequences for human welfare involved in questions [about economic growth] are simply staggering. Once one starts to think about them, it is hard to think about anything else."

Income inequality is a major criticism of an open economy, but, interestingly enough, most studies find no relation between greater economic freedom and income inequality (though the findings are somewhat mixed). It's worth noting that concerns over income inequality are often concerns over inequality within *already rich countries*. When it comes to inequality, in other words, it tends to be the global rich arguing with the super global rich (and much of that concern is overblown).

But look at the bigger picture. Overall, globalization has led to both a decline in global poverty *and* global inequality.

Global income inequality: Gini index, 1820–2020 [3]

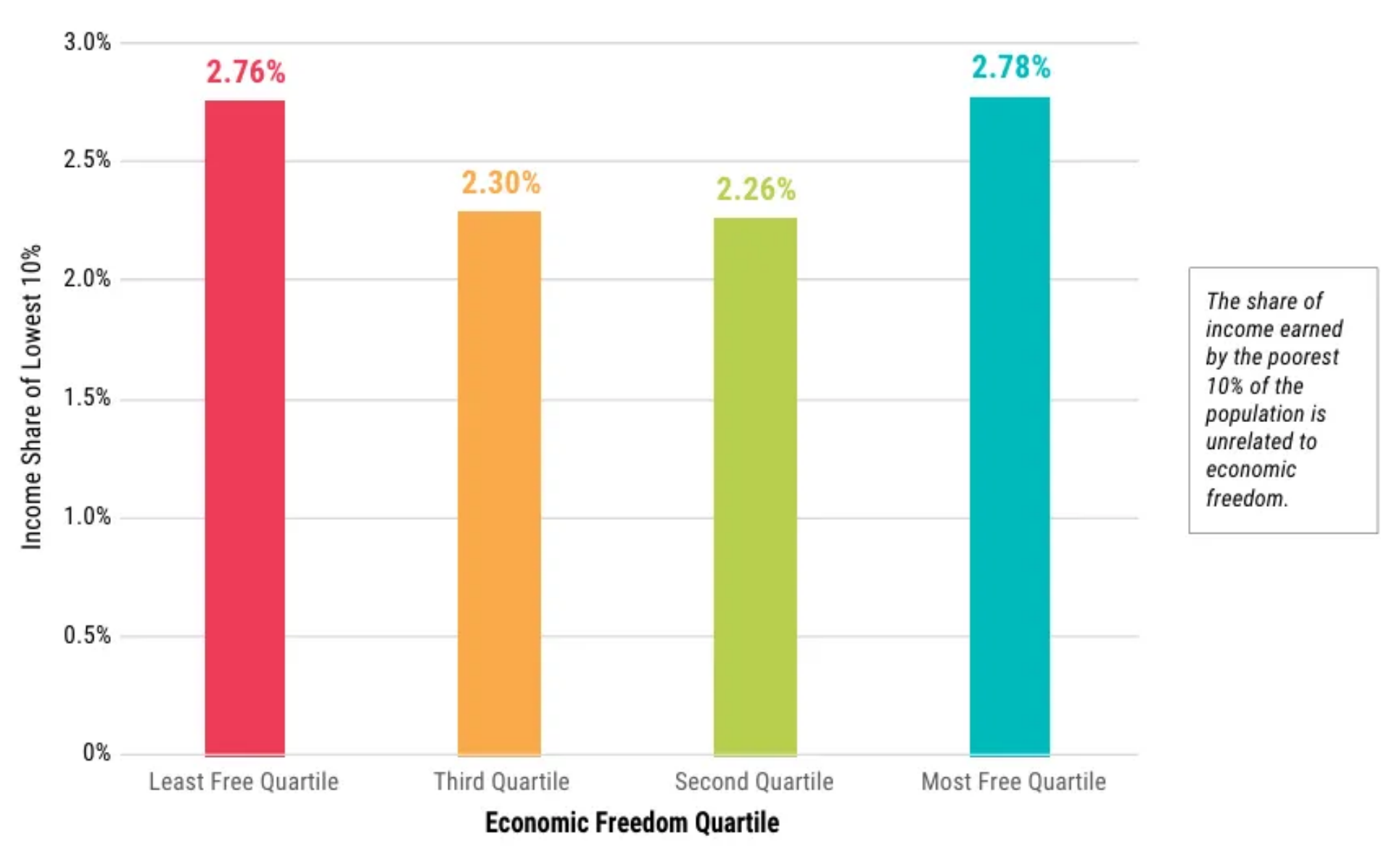


Source: World Inequality Report 2022.

Income is measured per capita after pension and unemployment insurance transfers and before income and wealth taxes.

According to the 2024 "Economic Freedom of the World" report, the *share* of income earned by the poorest 10 percent in the most economically free countries is about the same as that of the poorest 10 percent in the least economically free countries. In other words, the income distribution—the slicing of the economic pie—looks the same across countries, no matter the level of economic freedom.

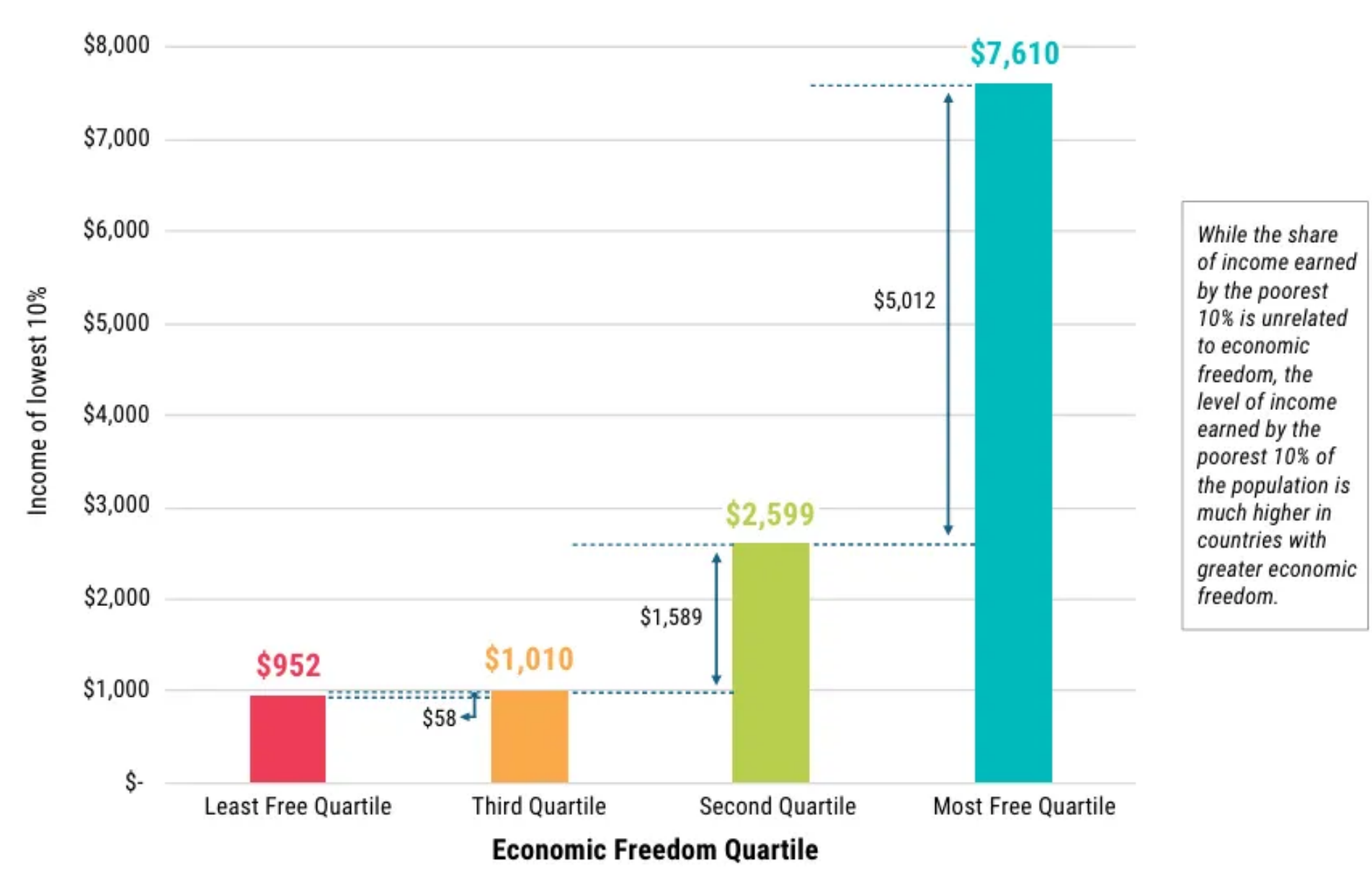
Economic freedom and income share of lowest 10 percent



Source: *Economic Freedom of the World: 2024 Annual Report*, p. 28.

But the *amount* of income earned by the poorest 10 percent in the most economically free countries is eighttimes that of the poorest 10 percent and slightly more than the average person in the least economically free countries. The poor's portion of the economic pie may be the same across countries, but free countries have bigger pies.

Economic freedom and income share of lowest 10 percent



Source: *Economic Freedom of the World: 2024 Annual Report*, p. 28.

We did not redistribute our way into riches or plunder our way into prosperity. Instead, the historical shifts both institutionally and culturally in favor of a trade economy led to a radical upsurge in material well-being that the American economist Deirdre McCloskey has aptly labeled "The Great Enrichment":

> In the two centuries after 1800 the trade-tested goods and services available to the average person in Sweden or Taiwan rose by a factor of 30 or 100. Not 100 percent, understand—a mere doubling—but in its highest estimate a factor of 100, nearly 10,000 percent, and at least a factor of 30, or 2,900 percent. The Great Enrichment of the past two centuries has dwarfed any of the previous and temporary enrichments.

It's not that we suddenly figured out how to slice up the economic pie just right. We made the pie 2,900 to 10,000 percent bigger through commercial exchange. When the pie is bigger, there's more pie to go around. And we're all richer for it.

Author: Walker Wright, the manager for Academic Programs at a public policy think tank in Washington, DC, and an adjunct faculty member at Brigham Young University-Idaho. His forthcoming book, In Trade We Trust: How Commerce Makes Us More Social*, will be published by Bloomsbury.*

1 Extreme poverty is defined as living below the International Poverty Line of $2.15 per day. These data are adjusted for inflation and for differences in living costs between countries. These data are expressed in international dollars at 2017 prices. The data relates to income measured after taxes and benefits, or to consumption per capita.

2 Shaded areas indicate US recessions.

3 Global inequality, as measured by the global Gini coefficient, rose from about 0.6 in 1820 to about 0.7 in 1910 and then stabilized around 0.7 between 1910 and 2020. It is still too early to say whether the decline in the global Gini coefficient observed since 2000 will continue.

PROGRESS ROUNDUPS

Doomslayer: Weekly Progress Roundup

Remote work comes for ships, undernourishment is finally coming back down, and climate deaths hit historic lows.

MALCOLM COCHRAN

AUG 17, 2025

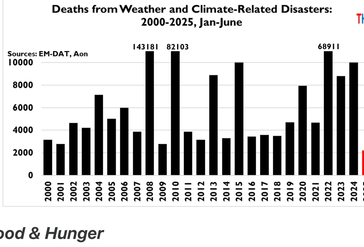
Energy & Environment

Conservation and biodiversity

- *Rhizopsammia wellingtoni,* **a coral once thought extinct, has been rediscovered near the Galápagos Islands.**
- **An attempt to boost the genetic diversity of Florida panthers by introducing panthers from Texas appears to have been successful.** Nearly three decades after the introduction, the population has rebounded from 30 to around 200, inbreeding problems have eased, and, according to recent research, the Florida panther's unique genetic identity remains intact.
- **The number of black rhinos grew from 6,195 to 6,788 between 2021 and 2024,** while other rhino species remained relatively stable.

Natural disasters

- A recent study analyzed 22 years of heat mortality in Europe and found that **adaptation is outpacing climate change**, with Europeans gaining "the capacity to tolerate an additional 1 °C rise every 17.9 years."
- So far, **2025 has seen the lowest number of climate-related deaths this century**.

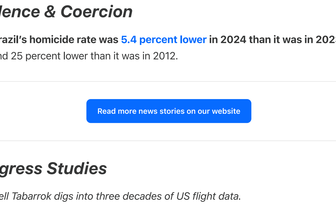


Food & Hunger

- **Rice prices are now at their lowest level since 2017.**
- The global dairy supplier Hoogwegt has signed a purchase agreement with Opalia, **a startup using cultivated bovine mammary cells to produce milk.**

Health & Demographics

- **OpenEvidence, an AI model designed specifically for medicine, has achieved a perfect score on the United States Medical Licensing Examination.**



- **Cardiac amyloidosis**, a common and deadly cause of heart failure, **is now treatable** thanks to recent drug breakthroughs.
- The CDC reports that **US life expectancy rose to 78.4 years in 2023**, up from 77.5 in 2022, though it had still not returned to its pre-pandemic level.
- **MIT researchers used generative AI to create two entirely new antibiotics** that killed drug-resistant gonorrhea and MRSA in infected mice.
- **Undernourishment**, which refers to the share of people who lack the calories they need to live a normal life, **has started to retreat from its COVID-era spike**. According to the FAO, the global prevalence of undernourishment fell to 8.2 percent in 2024, down from 8.7 percent in 2022.
- **A man with type 1 diabetes is now producing some of his own insulin after receiving a transplant of gene-edited islet cells.**

Science & Technology

- **Scientists have discovered a giant new species of stick bug in Australia thanks to a post on iNaturalist**, a popular wildlife identification app that is accelerating ecological research.
- **Marine pilots in Denmark are testing new technology that allows them to steer ships remotely**. Proponents say it could save fuel and ease a looming pilot shortage.
- **President Trump has signed an order to make it easier for private companies to launch rockets in the US.** It directs the Department of Transportation to speed up or eliminate environmental reviews for launches and reentries, roll back certain FAA rules, and set up a quicker process for approving new activities like refueling spacecraft in orbit.
- **Scientists at Stanford have built a brain implant that can translate a person's internal thoughts into spoken words in real time.** This system taps into the motor cortex, bypassing the need to attempt actual speech, and even includes a mental "password" that can turn the thought decoding on and off.

Violence & Coercion

- **Brazil's homicide rate was 5.4 percent lower in 2024 than it was in 2023—** and 25 percent lower than it was in 2012.

Progress Studies

Maxwell Tabarrok digs into three decades of US flight data.

Maximum Progress

Is Air Travel Getting Worse?

Over the past couple of years, bad personal experiences with delays, testimonies from friends, and news or reactions to air travel incidents seem to have become much more common...

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Why We Don't Worry About Scarlet Fever Anymore

The infection killed millions of people throughout history. Today it's considered a mild illness.

CHELSEA OLIVIA FOLLETT

AUG 18, 2025

My 1-year-old daughter recently got sick. She cried nonstop, she ran a fever, and her body broke out in a fiery red, spotty, measleslike rash. But it wasn't measles. (Recent outbreaks notwithstanding, that disease is blessedly rare in the U.S., thanks to widespread vaccination.)

Alarmed by the spreading rash and worsening symptoms, I rushed my screaming toddler to an emergency room, where a doctor calmly diagnosed her with scarlet fever.

I thought I had misheard. Scarlet fever sounds like something from a different century.

Many people today are only vaguely familiar with the term from classic literature. Scarlet fever is prominently featured in the plots of many old books, such as *Frankenstein*, *Little Women*, *The Velveteen Rabbit*, and *Little House on the Prairie*. The disease is described in *Anna Karenina* as an inevitable part of life. Scarlet fever's prominence in fiction makes sense, given that many writers once had real-life experience with the illness. *Little Women* author Louisa May Alcott's sister died from it at age 22.

Yet scarlet fever, a scourge that has caused millions of deaths throughout history and that was once described as "agonizing" and "diabolical," is now a mild illness. This formerly feared disease once sent countless children into isolation from their loved ones at so-called fever hospitals, where the young patients often contracted additional illnesses and died, separated from their families. Yet today a scarlet fever diagnosis is no cause for alarm. Modern medicine played an important part in that change, but there is more to the story.

Many lethal epidemics of scarlet fever occurred throughout Europe and North America during the 17th and 18th centuries, and such deaths were numerous in the 19th century. In fact, from 1840 through 1883, scarlet fever was among the most common causes of death for children in the United States, with case fatality rates ranging from 15 percent to 30 percent.

Making matters worse, scarlet fever sometimes occurred in combination with other potentially deadly ailments, further lowering the chances of survival. As the historian Judith Flanders put it, "Before the age of five, 35 out of every 45 Victorian children had experienced either smallpox, measles, scarlet fever, diphtheria, whooping cough, typhus or enteric fever—or some combination of those illnesses—and many of them did not survive."

In 1865, there were around 700 scarlet fever deaths per 100,000 1-year-old children in England and Wales. Despite a decline in the scarlet fever death rate, at the beginning of the 20th century the disease still caused around 350 deaths per 100,000 people of all ages.

Scarlet fever is caused by a toxin produced by *Streptococcus pyogenes*, the same bacteria behind the far more common ailment strep throat. Even before Alexander Fleming discovered penicillin in 1928, scarlet fever cases and deaths were falling. That was likely thanks to improvements in the population's overall health, partly due to cleaner water and better sanitation. Research suggests that better maternal nutrition also greatly increased children's resilience against the disease. Once penicillin was discovered, doctors could employ it to fight off most bad bacteria.

Scarlet fever spread easily among the poor but killed without regard to wealth or status, even slaying royalty, including queens of Denmark and Norway and a young Romanian princess. The Romantic composer Johann Strauss I lost his battle with scarlet fever in 1849 at age 45. It could kill at any age but was particularly deadly to children. The philosopher René Descartes' daughter Francine lost her life to scarlet fever in 1640 at age 5. Scarlet fever killed biologist Charles Darwin's 10-year-old daughter in 1851 and his last child, an 18-month-old son, in 1858. Scarlet fever also claimed the life of the 3-year-old grandson of oil tycoon John D. Rockefeller Sr. in 1901.

Too often, those who survived untreated scarlet fever developed rheumatic fever a few weeks later. Triggered by an immune system overreaction to scarlet fever, rheumatic fever can permanently damage essential bodily organs such as the heart and brain. Potential long-term complications ranged from an irregular heartbeat to neurological issues to heart failure. Today, thanks to antibiotics, rheumatic fever is rare.

Due to antibiotics, already-declining deaths from scarlet fever became virtually unknown. Cases of scarlet fever also became few and far between by the year 1950. The Harvard Medical School website notes the reason why scarlet fever has become so rare "remains a mystery, especially because there has been no decrease in the number of cases of strep throat or strep skin infections." Recall that the same bacteria causes all those ailments.

Sadly, cases of the disease are now rising again, although they remain far rarer than in the 19th century. Many areas of Asia began to see an increase in scarlet fever around 2009. Starting around 2014 and especially since 2022, there has been an uptick in cases in children in Europe and, more recently, in the United States. Scientists suspect that new mutations or variants in the bacteria may fuel the return of scarlet fever as a serious problem. Thankfully, the mortality rate for scarlet fever is now less than 1 percent, as almost all cases receive antibiotic treatment.

My household's tiny scarlet fever patient has been drinking each dose of the strawberry-flavored antibiotic that she was prescribed and is on the road to recovery. I am grateful to live in an era of modern medicine and good general health, where diseases with scary, old-timey names are no longer so frightening. If only the children of the past were so fortunate.

This article was published in the July 2025 issue of Reason.

Artificial Intelligence Can't Replace Free Markets

Algorithms process data from the past while economic decisions are dynamic and forward-looking.

MARIAN L TUPY AND PETER BOETTKE

AUG 21, 2025

Imagine artificial intelligence controlling the economy. That's the future envisioned in three recent manifestos. Law professor Ted Parson introduces "Max," an AI that overlays markets with Pigouvian price tweaks—taxes here, subsidies there—until every externality is neutralized. Computer scientist Spyridon Samothrakis proposes a mesh of data hubs and reinforcement-learning schedulers to guide economic coordination, resource allocation, and production. And economist Leo Schlichter argues that an AI system could reduce output, respect ecological limits, and meet human needs through participatory dashboards and feedback loops. Their pitch is straightforward: AI can help to replace the function of prices and the free market that generates them.

Not so fast.

Economic coordination isn't a problem to be solved by computing an optimal answer. It emerges from the decentralized decisions and adjustments made by billions of economic actors—each with their own plans, preferences, and knowledge—in an ongoing, evolutionary process. Certain rules and institutions are essential for transforming decentralized decision-making into orderly and socially beneficial outcomes. The three Ps—property rights, prices, and profit and loss—provide the three Is—information, incentives and innovation.

Prices enable people to engage in economic calculation, which forms the basis for the rational allocation of scarce resources among alternative ends. Prices also function as decentralized feedback loops. "A price is a signal wrapped up in an incentive," note Tyler Cowen and Alex Tabarrok. This dual signal communicates information about relative scarcities and simultaneously encourages economic actors to adjust their plans accordingly. When lithium prices rise, producers and consumers conserve, recycle, innovate, and explore alternatives.

The belief that AI can achieve comparable results to free markets, let alone surpass them, reflects a misplaced confidence in computation and a misunderstanding of the price system. The problem for the would-be AI planners is that prices don't exist like facts about the physical world for a computer to collect and process. They arise from competitive bidding over scarce resources and are inseparable from real market exchanges. Moreover, prices aren't fixed inputs to be assumed in advance. They are continually being discovered and formed by entrepreneurs testing ideas about future consumer wants and resource constraints.

Economic models that treat prices as given overlook the entrepreneurial actions that create them in the first place. Ludwig von Mises made this point in 1920: Without real market exchange, central planners lack meaningful prices for capital goods. Consequently, they can't calculate whether directing steel to railways rather than hospitals adds or destroys value.

AI can process vast amounts of data—but always from the past. Economic action, by contrast, is forward-looking. An algorithm may extrapolate trends, but it can't anticipate innovation and changing tastes. It can't discover what hasn't been imagined.

Free markets, by contrast, continuously produce real and reliable price information. That happens through the interplay of the three Ps. These institutions force participants to put skin in the game—bearing real costs for mistakes and earning profits for insight. Simulated markets can't replicate this feedback. Without consequences, algorithmic outputs fail to elicit true valuations or meaningful behavioral adjustments.

AI's economic champions confuse data processing with discovery and overlook how incentives shape the data AI receives. If political actors influence prices, then the input into algorithms is already distorted. "Garbage in, garbage out" still applies—only now the garbage is processed faster and packaged in technical jargon. AI may appear precise, but it has the same blind spots that doomed prior central planning efforts.

Centralizing decisions also distorts behavior. Entrepreneurs anticipating expropriation or opaque regulations may withdraw, reduce investment, or exit entirely. Consumers may hoard or barter. The very data planners rely on become unreliable as people adapt their behavior to avoid being captured by the system. Our research on post-socialist transitions shows that meaningful price signals only re-emerged after private exchange and budget discipline were restored. Computational power didn't restore order—institutional reform did.

Crucially, markets coordinate existing knowledge and generate new information. The price system reveals hidden scarcities and helps discover untapped opportunities. That discovery process is the engine of growth. Central planning by bureaucrats or algorithms can't substitute for it. As Friedrich Hayek observed, "the value of freedom rests on the opportunities it provides for unforeseen and unpredictable actions."

Economics and engineering don't substitute. If allocation becomes a technical problem and AI the solution, society may shift talent from exploration to optimization. But prosperity depends on experimentation, not blueprint execution. Economists should embrace what Hayek called catallaxy—order born from exchange among strangers, each pursuing new ends with evolving means. Centralized intelligence freezes that process, replacing dynamic evolution with rigidity.

AI is a powerful tool for recognizing patterns and improving processes. But it can't replace free markets. It can't generate genuine prices, account for opportunity costs, or bear entrepreneurial risk. Economic vitality still depends on free exchange, not on optimization routines run in sterile data centers. Rather than resurrect central planning with AI, policymakers should focus on strengthening the institutional foundations that make real market coordination possible.

This article was published in the Wall Street Journal *on 7/21/2025.*

Will the US Be a Safe Harbor for AI—Or a Roadblock?

Many countries are becoming safe harbors for AI startups. Will the US compete?

GALE POOLEY
AUG 22, 2025

Senator Ted Cruz wants a federal moratorium on state-level AI regulation, centralizing authority in Washington. But if the federal government takes control, who controls the bureaucracy that will decide which AI products get licensed — and which get banned?

Back in 2023, OpenAI CEO Sam Altman warned the US Senate that artificial intelligence posed risks on par with nuclear weapons. In hindsight, those warnings sound less like public service and more like strategic fearmongering — a bid to scare lawmakers into protecting OpenAI's market position through regulation and multibillion-dollar subsidies for his Stargate infrastructure project.

Today, Altman sounds a different note: "I believe the next decade will be about abundant intelligence and abundant energy," he told Politico. "We need to give adult users a lot of freedom to use AI in the way that they want." But noticeably absent is any call to give AI developers the freedom to compete with OpenAI.

If wealth is knowledge and growth is learning, then AI promises a revolution in both — accelerating discovery and lowering the cost of insight. It can put eight billion people on exponential learning curves. But will heavy-handed regulation actually accelerate this transformation — or suffocate it?

Perhaps the greater benefit comes not from centralized control, but more competition — among AI companies *and* among governments themselves. Let nations and states compete to foster innovation.

What makes your local McDonald's serve you better? It's the Burger King across the street, not a government inspector with a clipboard. Competition drives better service, lower prices, and more innovation. Regulation protects incumbents, empowers bureaucrats, and often serves political interests more than the public. If you want better choices, more value, and faster progress — bet on open competition, not central control.

Remember, it wasn't regulation that drove down the cost of AI models from $100 million to just $30. It was competition. And it happened in less than 60 days. That's the power of open markets. That's how progress happens.

Flags of Convenience for AI Innovation

Flags of convenience refer to the practice of registering a merchant ship in a country other than that of the ship's owner, usually to enjoy more favorable regulations, taxes, and labor laws. Four countries — Panama, Liberia, the Marshall Islands, and Hong Kong — account for over half of the world's maritime freight capacity today.

In the 1950s, the US registered 50 percent of global capacity. US registration has dropped almost 99 percent, to just 0.57 percent today. Could the same pattern repeat if the US government attempts to license AI?

"Capital goes where it is welcome," noted the great banker Walter Wriston, "and stays where it is well treated." By capital, Wriston meant both the capital in your wallet and the capital in your head.

Where Is AI Capital Welcome and Well-Treated Today?

While the US, the EU, and China build expansive bureaucracies to regulate and tax AI innovation, a new set of countries is emerging as "flags of convenience" for AI startups — offering low taxes, business-friendly environments, and innovation-focused policies.

Singapore stands out as the most advanced option, combining low corporate taxes, strong legal protections, world-class infrastructure, and active government support through its National AI Strategy. With top universities, generous R&D grants, and seamless access to Asian markets, it's an ideal launchpad for globally ambitious AI companies.

Estonia offers a lean, digital-first alternative within the European Union. Known for its zero-percent tax on reinvested profits, fully online incorporation, and GDPR-compliant data policies, Estonia is perfect for small, privacy-conscious AI teams. Its tech-savvy population and transparent government create a strong foundation for early-stage innovation.

The United Arab Emirates provides a gateway to the Middle East with zero- to nine-percent corporate taxes, fast-track company formation in free zones, and a national strategy focused on AI and smart cities. With strong infrastructure and no income or capital gains tax, it's well-suited for AI startups in logistics, finance, or government tech.

El Salvador, while less mature in its AI ecosystem, offers the boldest tax incentives — zero percent on income, capital gains, and import taxes for tech companies. With a pro-crypto stance and low cost of operations, it's especially attractive to early-stage or decentralized startups seeking freedom from regulatory overhead.

Together, these four countries are positioning themselves as global safe harbors for AI innovation, providing startups with the flexibility, incentives, and strategic advantages to grow in an increasingly restrictive global environment.

As the AI revolution accelerates, the real question isn't whether we need some rules — it's **who gets to make and impose them**, and whether those rules will help innovation thrive or tie it down. The history of economic progress shows us that technological breakthroughs don't flourish under monopolies or ministries or central planning — they flourish in open systems where people are free to build, experiment, and compete. That's why a new wave of countries is stepping up as "flags of convenience" for AI, offering low taxes, simple rules, and room to grow.

The US has always led by encouraging bold ideas and letting people build. We can keep that lead in AI, but only if we stay open, value competition, and trust in the power of free individuals. If the US tries to control AI through heavy-handed licensing and regulation, we won't stop the future. We'll just watch it happen somewhere else.

This article was published at The Daily Economy *on 7/17/2025.*

Doomslayer: Weekly Progress Roundup

Burrito drones, next generation nuclear power, the reality of AI resource use, and more.

MALCOLM COCHRAN
AUG 24, 2025

Economics & Development

- **Poverty is down in Iraq, Indonesia, Mexico, and Argentina.**
- **The last has also seen monthly inflation fall below 2 percent**, down from a peak of 25.5 percent in December 2023.
- **Eighty-one percent of rural Indian households now have tap water,** up from 17 percent in 2019.

Energy & Environment

Conservation and biodiversity

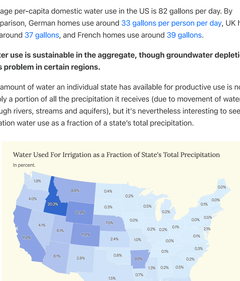
- Once nearly extinct, **Amur leopards are making a comeback** in East Asia. Their numbers have risen from a low of 25 to around 130 today, raising hopes for a long-term recovery.
- **Bobcats are back in New Jersey.** After vanishing from the state in the 1970s, they were reintroduced in the early 1980s and now number in the low hundreds.
- **Scientists are reporting a record calving season for southern right whales off the South Australia coast**—a welcome sign for a population whose recovery has slowed in recent years.

Energy & Natural Resources

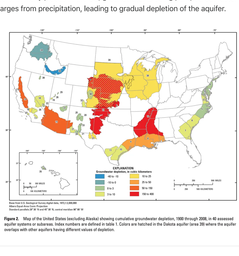
- **The Norwegian oil company Aker BP has announced a major hydrocarbon discovery in the North Sea** with the energy equivalent of 96–134 million barrels of oil.
- **Google is partnering with Kairos Power and the Tennessee Valley Authority to build a next-generation nuclear power plant.** The advanced reactor will use molten fluoride salt instead of water as a coolant, a design meant to be safer, simpler, and cheaper to construct.
- Google reports that its Gemini AI model uses just 0.24 watt-hours of energy for the median text prompt, meaning asking Gemini a question is roughly equivalent to watching TV for nine seconds. In June, Sam Altman reported a similar figure for ChatGPT. In short: **it's time to stop the hand-wringing over generative AI's energy use**.
- **Brian Potter put together a fantastic overview of US water consumption.** Some highlights:

US water consumption peaked in the 1980s.

> How have patterns of water consumption changed over time? Overall water use peaked in 1980, and has trended downward since then.



Thermoelectric power use is down more than 37% from its peak, irrigation use is down 21%, industrial is down at least 43% (and probably more), and public plus self supplied domestic water use is down 12% in absolute terms and 22% in per-capita terms.

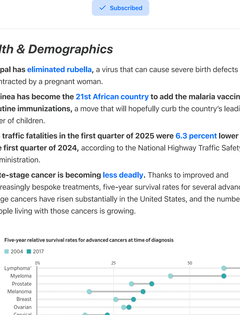


The US is a nation of water abundance.

> Average per-capita domestic water use in the US is 82 gallons per day. By comparison, German homes use around 33 gallons per person per day, UK homes use around 37 gallons, and French homes use around 39 gallons.

US water use is sustainable in the aggregate, though groundwater depletion is a serious problem in certain regions.

> The amount of water an individual state has available for productive use is not simply a portion of all the precipitation it receives (due to movement of water through rivers, streams and aquifers), but it's nevertheless interesting to see irrigation water use as a fraction of a state's total precipitation.



> Much of the water used for irrigation — roughly half — is pumped from underground aquifers. In many places in the US, groundwater is being pumped out faster than it recharges from precipitation, leading to gradual depletion of the aquifer.

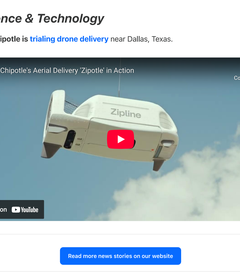


Figure 2. Map of the United States (excluding Alaska) showing cumulative groundwater depletion, 1900 through 2008, in 40 assessed aquifer systems or subareas. Index numbers are defined in table 1. Colors are hatched in the Dakota aquifer (area 39) where the aquifer overlaps with other aquifers having different values of depletion.

The Infinite Well: How Innovation Keeps Water Flowing

KYLE O'DONNELL · AUG 13

Learn how innovation is overcoming water scarcity in this essay by our policy analyst Kyle O'Donnell.

Read full story →

Natural disasters

- **The Arizona Public Service, an electric utility in Arizona, is using smart cameras to detect smoke or heat in areas with high wildfire risk.** So far, the cameras have successfully detected at least two fires before they grew out of control.

Health & Demographics

- **Nepal has eliminated rubella,** a virus that can cause severe birth defects if contracted by a pregnant woman.
- **Guinea has become the 21st African country to add the malaria vaccine to its routine immunizations,** a move that will hopefully curb the country's leading killer of children.
- **US traffic fatalities in the first quarter of 2025 were 6.3 percent lower than in the first quarter of 2024,** according to the National Highway Traffic Safety Administration.
- **Late-stage cancer is becoming less deadly.** Thanks to improved and increasingly bespoke treatments, five-year survival rates for several advanced stage cancers have risen substantially in the United States, and the number of people living with those cancers is growing.

- **A small clinical trial hints that Ozempic might slow aging.** After taking the drug for eight months, participants scored three years "younger" on biological age tests, with the biggest gains in brain and immune health.

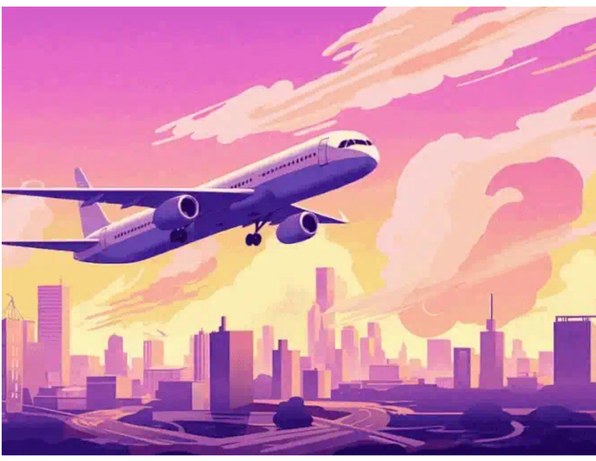
Science & Technology

- **Chipotle is trialing drone delivery** near Dallas, Texas.

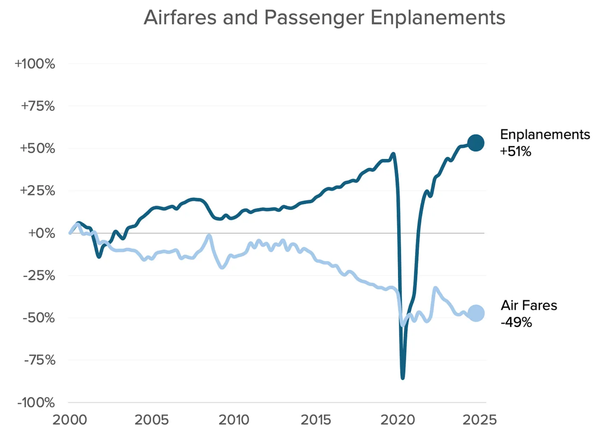
Flying Gets Cheaper as More People Fly

Since 2000, US airfare time prices decreased by 49 percent while passenger enplanements grew by 51 percent.

GALE POOLEY
AUG 26, 2025



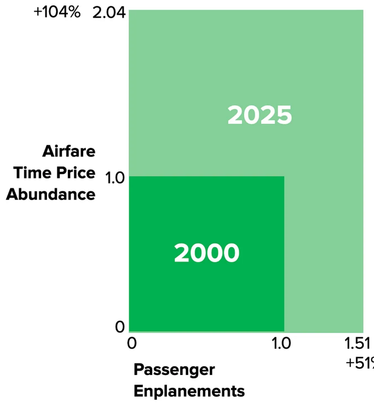
The Bureau of Labor Statistics tracks airfares while the Department of Transportation monitors enplanements (passenger boardings). Since 2000, the US population grew 22 percent while enplanements increased by 51 percent, and the time price of airfares for blue-collar workers decreased by 49 percent. This means that in 2025, these workers get 2.04 airfares for the same amount of time it took them to earn the money to buy one airfare in 2000, indicating an abundance increase of 104 percent. Every 1 percent increase in population corresponded with a 4.73 percent increase in personal airfare abundance (104 ÷ 22).



The historical chart clearly shows the negative impact of major disruptions – the September 11th attacks, the 2008 financial crisis, and the COVID-19 pandemic policies – on flying.

You can also analyze total airfare abundance by combining airfare time price abundance with increased passenger enplanements. To visualize that, we plot airfare time price abundance on the vertical axis and enplanements on the horizontal axis, creating comparative boxes for 2000 and 2025, and then overlaying 2000 onto 2025.

Using 2000 as our baseline (setting both variables to 1.0), the initial box measures 1.0 × 1.0 = 1.0. By 2025, enplanements had grown 51 percent (to 1.51) while airfare abundance increased by 104 percent (to 2.04). The 2025 box therefore measures 1.51 × 2.04 = 3.08.



That represents a 208 percent increase in total airfare abundance over 25 years, equivalent to a compound annual growth rate of 4.6 percent. At this pace, airfare abundance doubles approximately every 16 years. Every 1 percent increase in population corresponded with a 9.45 percent increase in personal airfare abundance (208 ÷ 22).

Tip of the Hat: Maxwell Tabarrok.

Growth Comes From Ideas, Not Degrees

Bryan Caplan joins Marian Tupy to discuss the relationship between formal education and innovation.

BRYAN CAPLAN AND MARIAN L. TUPY

AUG 30, 2025

Education is often hailed as the engine of prosperity, with many politicians, teachers, and economists insisting that more schooling means more growth. But what if that story is wrong?

In this episode of *The Human Progress Podcast*, the economist Bryan Caplan joins Marian Tupy to challenge that conventional wisdom. They discuss the impact of education on economic growth, whether school is more about learning or signaling, and what all that means for the future of innovation.

Below is an edited and abridged transcript featuring some highlights from the interview.

I want to start with a broad question. What is economic growth, and where does it come from?

Economic growth is just change in economic well-being. Usually, we measure it with GDP.

Where does it come from? There are a lot of stories that people tell. Traditionally, people said it comes from capital accumulation and better-quality labor. But when you really go to the numbers, neither of these things can explain anywhere close to the full change, so most growth has got to be from technological progress, broadly defined. That is the main difference between the world of today and the world of 2000 years ago.

In your piece, you distill it to a single word: ideas.

That's right.

Why is economic growth important?

In any given year, it seems like getting another percentage point of growth couldn't make much difference. You barely even notice it. And yet, as many people have pointed out, when you compound an extra percentage point of growth per year over the course of 100 years, it's the difference between poverty and riches. And riches are what allow you to buy free time. Riches are what allow you to buy culture, to save your child from worms.

Right. So economic growth is an increase in wealth, it comes from new ideas, and ultimately, it is highly correlated with things like better infrastructure, better hospitals, and so on.

Absolutely.

What is the purported relationship between education and growth?

The normal view is that education is the crucial determinant of growth, that it turns unskilled humans into the skilled workers of the modern economy. This is an idea not just from politicians, teachers, and the general public, but also from economics. If you take a class in economics, they will constantly talk about how it's important to have lots of education because that's how we build human capital.

So, the purported relationship is that education creates human capital, which creates new ideas and thus more growth?

That's one version. The more common one is simply that education leads to human capital, which immediately leads to growth. The typical college grad isn't going to invent anything, but they're capable of being a more valuable cog in the machine.

Right, so the standard inference is that if you have a more educated workforce, they can accomplish more sophisticated tasks. What does the evidence show?

So, I have a book called *The Case Against Education*, and I'm not going to be coy about this: I expected to find that education was overrated. However, I also expected to find that a lot of other people researching would say they had clear evidence that education raises economic growth.

However, when I read all the mainstream work on education, there was a big debate about "how come we're not finding what we know to be true, which is that education is the crucial cause of economic growth?" I think that they are finding the truth, which is that education isn't a factory for building human capital, but a certification machine for stamping people: good worker, great worker, not so great worker. People like to think about education as a way of building skills, but actually, it's more like a passport to the real training, which happens on the job.

So, by going to university, you are offering your employer a sign that you are intelligent and conscientious enough to do so.

You're showing intelligence, conscientiousness, and also conformity. There's no "I" in team. Most jobs require you to follow a chain of command to achieve the goal of the group. While on some level I don't like conformity, on a deeper level it's really important for most purposes.

I want to read you something that you wrote. "Contrary to conventional stories about the positive externalities of education, mainstream estimates of education's national rate of return were consistently below estimates of education's individual rate of return."

What does that mean?

Great question.

A rate of return is basically a measure of how good an investment is. So, for example, you might try to calculate the rate of return of putting extra insulation on a house. We can do the same for education and figure out how all the costs of education compare to the payoffs.

When you do this from the point of view of an individual person, it's pretty common to get a 10 percent inflation-adjusted rate of return. In my book, I say this is probably too high, but you can bring it down to maybe 7 or 8 percent.

We can also think about this at the level of the country. What if we raise the education level of the whole workforce of a country by a year? How much does that enrich the country? What that quote is saying is that even the high estimates of how much a year of education does for a country are typically around half of what it does for an individual. And a lot of the estimates find that sending the whole country to school for an extra year increases national income by 1 or 2 percent.

In other words, a stamp is a good way for one person to get ahead in life, but stamping the whole country does not help that country get ahead; it just creates credential inflation. You need more and more degrees in order to get the same job that your parents and grandparents got with fewer.

Let's talk a little bit about innovation. Where do new ideas come from? Are we talking about a very small group of individuals who share certain characteristics?

It's an exaggeration to say that innovation only comes from a few people. There are millions of small-scale improvements coming from many different people. Opening a new kind of restaurant is not revolutionary R&D, but so much of the improvement in our living standards comes from these small acts of entrepreneurship. When I was in high school, there were only three kinds of restaurants: American, Italian, and Chinese. Now we have a cornucopia of different cuisines. The same goes for so many other simple products. Dog collars now come in 100 more varieties than they did back when I was growing up in the '80s.

However, the really revolutionary stuff—new vaccines, new business models, new forms of energy—comes from very special people. I think it's reasonable to say that almost all the really big ideas are coming out of the top sliver of the IQ distribution. There was a psychologist named Lewis Terman in California who, I believe, in the 1920s, saw that there was a standardized test administered to all the kids in the state of California school system. He managed to get data on the top hundred scorers in the whole state of California in that year, and he followed them through life. In his honor, these kids are named the termites, and there's been a lot of research on them.

While the vast majority of this group didn't do anything really impressive, they had many times, maybe a thousand times, the normal rate of stellar success. So, just doing these kinds of tests is a good way of identifying the most promising people. At a minimum, just have a system where you basically let children advance as rapidly as they're capable of. A lot of very intelligent people feel very isolated from their own age group, and it makes sense just to advance them as far as their talent will take them.

I have a personal view, which is that our society is very open to the idea of the STEM prodigy, but we are very closed to the idea of there being a prodigy in, say, history. And I think that there are history prodigies. I have met kids with not just a broad, but a deep understanding of history by the time they're 13 or 14. People think it's crazy to put them in a PhD program in history when they're 14 years old, but I don't. Why not skip that kid ahead and let him become a star? Look, maybe he wants to be a regular 12-year-old even though he is a genius, but maybe he doesn't. Maybe he wants to be with a peer group of geniuses. Let's pave the way for him if that's what he wants.

Do you think that AI will allow us to continue innovating if the population starts declining?

There was a long period where people working on AI kept over-promising and under-delivering. I would personally hear extravagant claims and check them out and find that they weren't true. Finally, about two years ago, they started being correct. I was as shocked as anyone. I actually have a bet out about AI, which I'm probably going to lose. It's embarrassing because I have otherwise a perfect public betting record.

That said, one incredible achievement does not mean that they're going to have a whole series of incredible achievements. And there's a lot to the idea that AI is basically just amazing at compiling what has already been said rather than truly coming up with new stuff. While it's not impossible for it to get better, a lot better, it's also not guaranteed.

Another thing worth pointing out is that we've had, by many measures, falling rates of innovation despite a rising population. There's an idea that we've already discovered a lot of the low-hanging fruit, and so we need to keep multiplying our efforts to maintain the same rate of growth. Another plausible story is that we have doubled the number of people that we call researchers, but really only the best ones count, and the other ones are kind of fake.

Given that much of the money we spend on education is spent poorly or even counter-productively, what should we do with the money instead?

I'm totally on board with giving it back to the taxpayers or just paying down the national debt. We badly need austerity. We are driving at 100 miles per hour towards a brick wall, but there's still time to change course and get our foot on the brakes. One of the easiest ways of doing that is by spending less on education.

Is education more useful in the developing world?

Poor countries have a severe problem with teachers even showing up. They, on paper, have many years of education—I think Haiti now is around where France was in 1960—but mostly they are just throwing money at a corrupt system that doesn't even teach basic literacy and numeracy. The way that people in the third world are learning to use technology is the way that almost all normal people learn anything, which is by doing.

It seems to me that we are doing the exact opposite. We are keeping people in the education system for many years, which could prevent them from starting to work and learning by doing.

Yeah. It would be much better if people started adult life at an earlier age. They're totally ready for it. There's no reason why 13- or 14-year-olds should not be working. One of the best ways to get kids to actually learn stuff, especially the kids who hate school, is to make it practical. They need to see concrete results and make money.

If you read biographies or autobiographies of people in earlier eras, it is amazing how far people got at young ages. By the age of 15, Malcolm X had worked four different jobs and been all over the country. Many people listen to me and say, "Oh, that's so dystopian." I think the system we have now is dystopian, where someone has to sit in a classroom until they're 30 listening to some boring windbag talk about things he doesn't even know how to do.

Doomslayer: Weekly Progress Roundup

Billions gain access to safe water and sanitation.

MALCOLM COCHRAN

AUG 31, 2025

Economics & Development

- The latest WHO/UNICEF report on water and sanitation contains some impressive figures. **Between 2015 and 2024, 961 million people gained access to safe drinking water,** [1] **1.2 billion gained safe sanitation,** [2] **and 1.5 billion gained basic hygiene services.** [3]

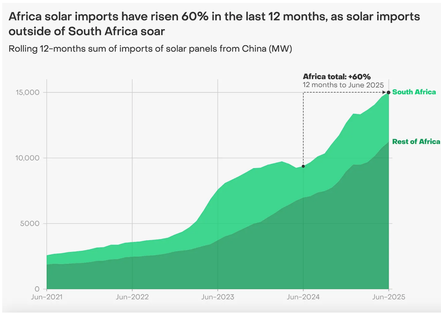
Energy & Environment

Conservation and biodiversity

- **The Roanoke logperch**, a fish once confined to just 14 streams, **has recovered enough to be removed from the US endangered species list**.
- **American Crocodiles are pushing northward, returning to their historic range**.

Energy & Natural Resources

- **Solar panel imports are accelerating in Africa**. According to Ember, an energy think tank, this is "the first evidence of a take-off in solar" on the continent.



Health & Demographics

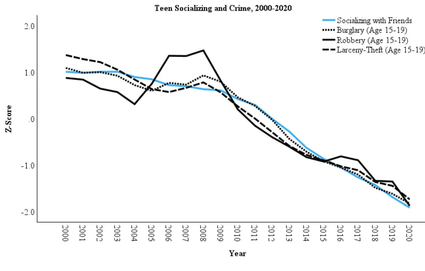
- **The global childhood leukemia death rate fell nearly 60 percent between 1990 and 2021**, along with a similar reduction in disability-adjusted life years, a measure of years lost to illness, disability, or early death.
- Researchers have found that **a small share of HIV-positive infants who receive antiretroviral therapy go into sustained remission.** Now, trials are underway to explore this phenomenon and test whether combining early treatment with vaccines or antibodies can help even more infected children.
- *Fortune* recently profiled Noland Arbaugh, the first person to receive a Neuralink brain implant. **Arbaugh, who is paralyzed from the shoulders down thanks to a swimming accident, has been able to play video games, enroll in classes, and give public talks thanks to the brain implant**, which lets him control a computer with his thoughts.

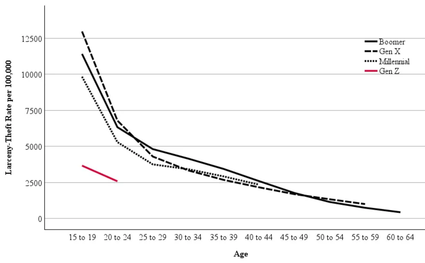
Science & Technology

- After a series of failures, **Starship's tenth test flight finally succeeded**, reaching space, deploying mock satellites, and testing a new heat shield before splashing both stages down in the ocean.
- **Scientists have engineered a supplement that helped honeybees produce up to 15 times more larvae in trials.**
- Thanks to a growing number of robot-leasing firms, **some small US factories are renting robots at roughly the hourly cost of human workers**, helping improve workplace safety and efficiency.

Violence & Coercion

- One silver lining to the worrying decline in teenage socializing is a concurrent drop in the teen crime rate. Data compiled by the sociologist James Tuttle suggests that **Gen Z is, by a large margin, the least criminal American generation in living memory.**





1 "In order to meet the criteria for a safely managed drinking water service, households must use an improved source that is: accessible on premises, available when needed, and free from contamination."

2 "People should use improved sanitation facilities which are not shared with other households, and the excreta produced should either be treated and disposed of in situ, stored temporarily and then emptied and treated off-site, or transported through a sewer with wastewater and then treated off-site."

3 "Households with a handwashing facility with soap and water available on-premises meet the criteria for a basic hygiene service."