

Two Centuries of Increasing Paper Abundance

Abundance doesn't come from good intentions; it comes from innovation.

GALE POOLEY
MAY 01, 2026

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In 1826, a ream of 500 sheets of paper cost about \$5.00. With average wages near five cents an hour, the time price was 100 hours. Paper was precious because modern papermaking techniques had yet to be invented—we had yet to discover the knowledge needed to innovate the product.

Today, a ream of 500 much higher-quality sheets sells for \$7.99 at Staples. With average wages around \$36.86 an hour, the time price is just 13 minutes.

The time price of paper has fallen by 99.78 percent over the last 200 years. For the time required to earn the money for a single sheet in 1826, a worker today can obtain 461 sheets. Scarcity didn't disappear because we conserved paper, but because we learned how to transform abundant trees into even more abundant paper.

1826



100 Hours

2026



13 minutes

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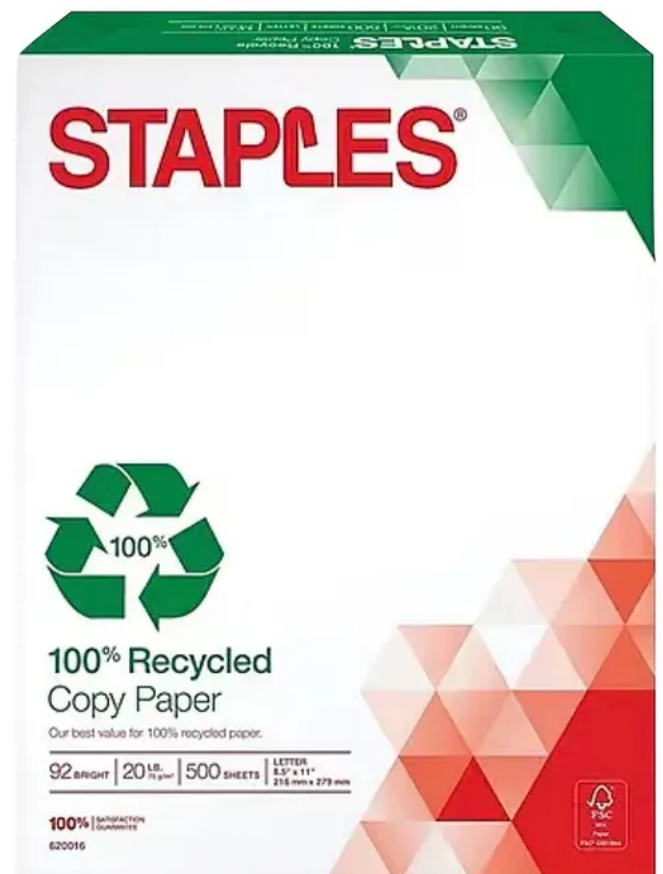
What About Recycled Paper?

Many people assume that recycling paper saves resources. If that were true, why is recycled paper about 85 percent more expensive than virgin paper? The answer is that the United States has roughly 300 billion trees, while recycling itself consumes substantial energy, labor, and capital.

\$7.99



\$14.79



A useful question whenever someone warns that we're "running out" of something is simple: *If it's so scarce, why is it so cheap?*

Remember, abundance doesn't come from good intentions; it comes from innovation. Over two thousand years, paper has migrated from papyrus to cotton and linen rags to wood pulp—each transition a triumph of human ingenuity over scarcity. What we consume is not trees or fibers, but knowledge encoded in matter. And the more we consume, the more we discover. That is why paper is plentiful, [pencils are cheap](#), and [light is abundant](#). Wealth is learning made visible, and abundance is the dividend of ideas.

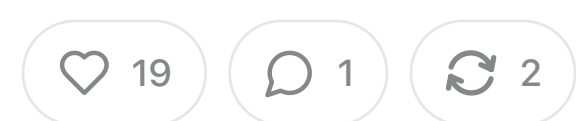
Find more of Gale's work at his Substack, [Gale Winds](#).

Doomslayer: Progress Roundup

Appalachian lithium reserves, heat-resistant corals, a desalination record, and more.

MALCOLM COCHRAN

MAY 03, 2026



Economics & Development

- **India and New Zealand have signed a [free trade agreement](#)**, making all Indian exports to New Zealand duty-free and cutting or eliminating tariffs on 95 percent of New Zealand's exports to India.

Energy & Environment

- The United States Geological Survey [recently estimated](#) that **there are over 2 million metric tons of undiscovered, economically recoverable lithium in the Appalachian Mountains**, enough to supply the country for centuries at current levels of consumption.
- **Salmon populations are bouncing back in California** following dam removals and a series of wet winters. Responding to that recovery, the Pacific Fishery Management Council has [reopened](#) commercial salmon fishing off the California coast.
- **Ribbed mussels are proliferating along Virginia Beach**. These aren't the kind of mussels you'd order at a restaurant, but ecologists say the growing population could help reduce erosion and clean up excess nitrogen, phosphorus, and bacteria in local waterways.
- **Scientists have found some remarkably heat-resistant corals near the Houtman Abrolhos archipelago off Western Australia**. During an extreme 2025 marine heatwave and in lab tests, the corals showed little bleaching or mortality at temperatures that are typically deadly to coral. The researchers are still trying to explain the source of that resilience.

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Health & Demographics

- A recently published randomized controlled trial found that **the GLP-1 drug semaglutide substantially reduced alcohol consumption in heavy drinkers compared to a placebo**.
- **Australia has eliminated trachoma as a public health problem**. While the disease was already rare in most of the country, it remained endemic in some remote indigenous communities until recently.

Science & Technology

- **California is now allowing companies to test and deploy driverless trucks**, beginning with a safety driver behind the wheel, then moving to fully driverless testing, and finally commercial deployment once companies satisfy the state's requirements.
- The Chinese battery manufacturer CATL has signed **the world's largest sodium-ion battery deal to date**, which will supply 60 gigawatt-hours of sodium-ion batteries to Beijing HyperStrong Technology over three years. Sodium-ion batteries are less energy-dense than lithium-ion batteries, but they use cheaper, more abundant materials, making them especially promising for grid storage.
- **A desalination plant in Saudi Arabia has set a new desalination efficiency record**: a reverse-osmosis unit at the Yanbu complex used just 1.55 kilowatt-hours to produce a cubic meter of fresh water, below the previous 1.7 kWh/m³ benchmark set earlier in 2026 and the 2.34 kWh/m³ record reported in 2025.

Violence & Coercion

- **Pakistan's Punjab province has banned child marriage**, following Sindh, which became the first Pakistani province to do so in 2013.

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Earth Day's Bad Bet Against Humanity

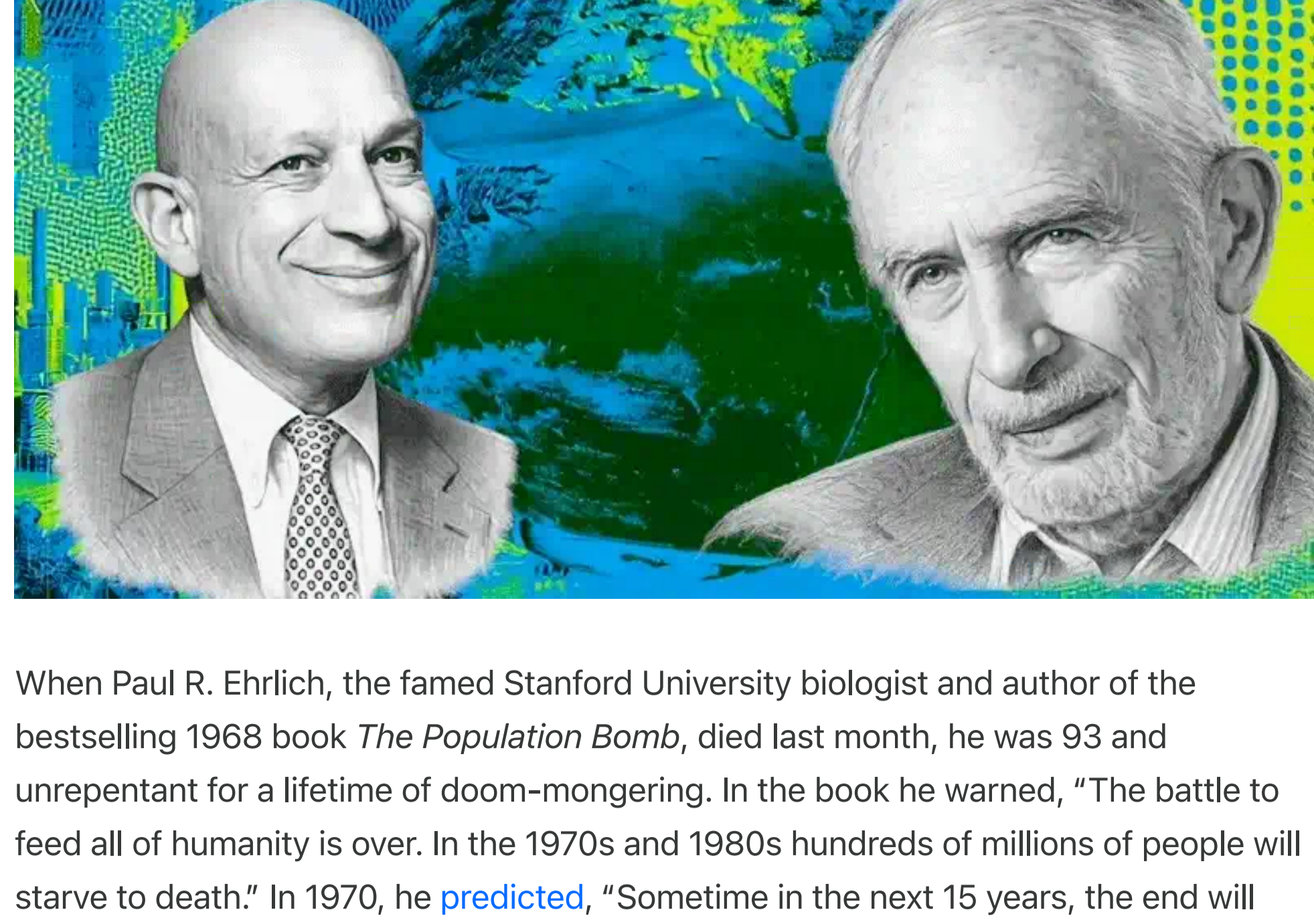
The Malthusian mind does not see the human capacity to cooperate, trade, discover, invent, and adapt.

MARIAN L TUPY

MAY 05, 2026

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When Paul R. Ehrlich, the famed Stanford University biologist and author of the bestselling 1968 book *The Population Bomb*, died last month, he was 93 and unrepentant for a lifetime of doom-mongering. In the book he warned, "The battle to feed all of humanity is over. In the 1970s and 1980s hundreds of millions of people will starve to death." In 1970, he [predicted](#), "Sometime in the next 15 years, the end will come—and by the end, I mean an utter breakdown of the capacity of the planet to support humanity." Over the succeeding decades, he maintained that less-than-cheerful disposition. In 2013, he [wrote](#) that "a global collapse appears likely." In 2018, he [stated](#) that a "shattering collapse of civilization is a 'near certainty.'" In 2024, he gave his [last interview](#), reiterating his position that humans are destroying the planet and committing civilizational suicide.

Ehrlich's confident and, to some, attractive demeanor made him a television star with more than 20 appearances on Johnny Carson's *The Tonight Show*—a record unmatched by any other individual guest. Slowly but surely, the techno-optimistic 1960s (*Star Trek* 1966–1969, *The Jetsons* 1962–1963, *Thunderbirds* 1965–1966, etc.) gave way to the doom and gloom of the 1970s. Consider the 1973 film *Soylent Green*, set in an overcrowded and overheated New York City in 2022. Food is scarce, and most people survive on processed wafers made by the Soylent Corporation. A detective played by Charlton Heston investigates the murder of a wealthy businessman and uncovers a horrific secret: Soylent Green, marketed as a new food source, is made from human remains. Its final revelation made "Soylent Green is people!" one of cinema's most famous lines.

The first Earth Day—April 22, 1970—came during the transition from optimism to doom and gloom, and Ehrlich played a role in that. He served on the steering committee put together by Earth Day founder Sen. Gaylord Nelson and spoke on campuses across the country. So it's not surprising that, as the Columbia Climate School has [noted](#), Earth Day was infused not only with the usual and more understandable environmental concerns over pollution and carcinogens, but "Malthusian" worries over overpopulation and overconsumption of resources.

The first Earth Day was a massive success. About 20 million Americans participated. Lectures and rallies took place at more than 2,000 college campuses, 10,000 elementary and high schools, and thousands of other locations around the country. Forty-two states adopted resolutions endorsing Earth Day, and Congress recessed so that legislators could take part in activities back home. In September 1970, Congress strengthened the 1963 Clean Air Act. That December, President Richard Nixon created the Environmental Protection Agency. Long before Ehrlich warned we were stripping the planet of resources, the English preacher and economist Thomas Robert Malthus wrote in his 1798 *Essay on the Principle of Population* that human numbers, if left unchecked, grow geometrically, while food supply grows only arithmetically. From that simple and, as it turned out, badly mistaken idea, he concluded that humanity would always press against the limits of subsistence. If people multiplied too quickly, nature would restore balance through war, famine, and plague. Those were his "positive checks" on overpopulation and overconsumption. He regarded them as awful, but also as inevitable unless societies adopted "preventive checks," such as celibacy, that limited reproduction. It is easy to see why Malthus' argument seemed persuasive. For most of human history, harvest failures could ruin entire populations. Malthus looked at that long record and saw a pattern. The problem was that he took a pattern that had held for centuries and assumed it would hold forever. He mistook a long chapter of human experience for an eternal law of nature.

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In fact, Malthus had already lost his main argument before his essay even appeared in print. Between 1700 and 1798, the population of England rose from 5.2 million to 8.44 million, an increase of 62.3 percent. Over the same period, nominal GDP per person rose from 12.37 British pounds to 23.97 pounds, an increase of 93.8 percent. The nominal price of a four-pound loaf of bread, a staple that fed much of the poor, rose from 5.2 pence to 7.4 pence, or 42.3 percent. Because incomes rose much faster than the price of bread, the latter became 36.2 percent more abundant, not less. Put plainly, as England added more people, the bread of the poor became easier to afford.

Why did Malthus miss what was happening? Partly because the Malthusian thinking, shared by Ehrlich, reduces human beings to their appetites. It sees more mouths and stomachs, but not more hands and minds. It assumes that each additional person means one more claimant on a fixed stock of food and other goods. What it does not see is the human capacity to cooperate, trade, discover, invent, and adapt. Human beings are not trapped in the same ecological logic as bacteria in a dish or buffalo on a plain. We exchange with one another. We build institutions. We create tools. We improve production methods. We substitute one material for another. We grow more from the same soil—sometimes much more. In other words, we create new knowledge. Atoms without knowledge are mostly useless. New knowledge organizes atoms into fertilizer, irrigation systems, container shipping, refrigeration, or high-yield seeds. That is the variable that Malthus ignored and that led to Ehrlich's very public humiliation.

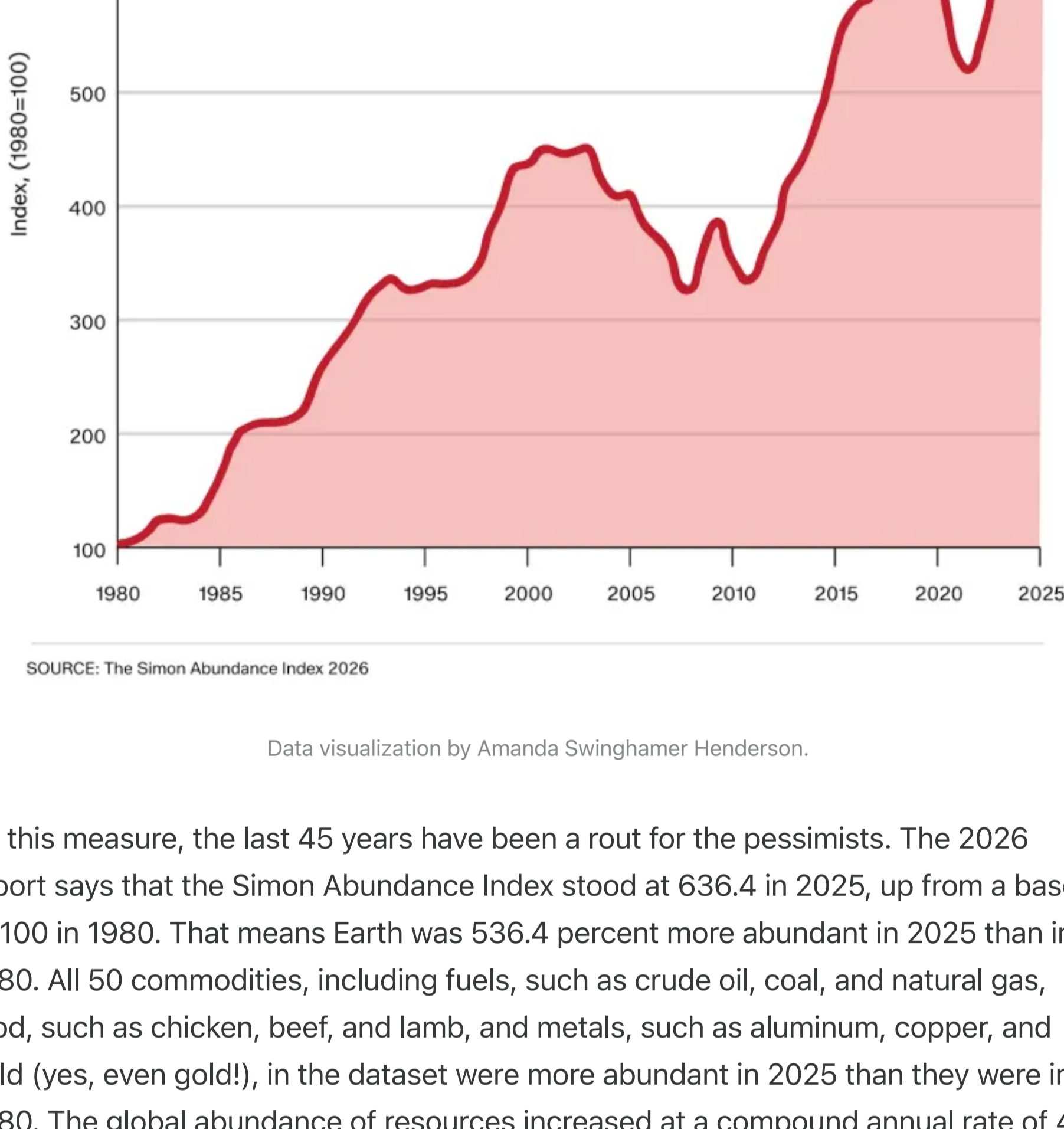
Unlike Malthus and Ehrlich, the University of Maryland economist and Cato Institute senior fellow Julian Simon understood that scarcity is not the end of the resource story. It is just the beginning of a human response. Higher prices signal a problem. Those higher prices then encourage knowledge creation, and new knowledge leads to greater abundance. And so it was that in 1980, Simon proposed a 10-year futures-style bet. Ehrlich, along with ecologist John Harte from the University of California-Berkeley and John P. Holdren, a Berkeley scientist who later became President Barack Obama's science adviser, jumped at the opportunity. The bet ran from September 29, 1980, to September 29, 1990.

Ehrlich's group chose five metals: chromium, copper, nickel, tin, and tungsten. They fixed the starting value of the chosen quantities at \$1,000 in 1980 and agreed to compare the inflation-adjusted value of that same basket 10 years later. If the real price of the basket rose, Simon would pay Ehrlich's group. If it fell, Ehrlich's group would pay Simon. The wager, therefore, used prices as a proxy for scarcity. When the term ended in 1990, all five metals were cheaper. Ehrlich sent Simon a check for \$576.07, reflecting a 36 percent decline in the inflation-adjusted price of the basket. The check was signed by Paul's wife, Anne Ehrlich. There was no accompanying letter Simon replied with a thank-you note and offered to raise the stakes to \$20,000 for a future bet, but Ehrlich declined.

The [Simon Abundance Index](#), which [Dr. Gale L. Pooley](#) and I publish every year on Earth Day, is named after Julian Simon. It is a deliberate continuation of the quantitative analysis of the relationship between population growth and resource abundance that Simon's bet with Ehrlich began. Unlike Simon and Ehrlich, who measured the abundance of resources in inflation-adjusted dollars, we look at "time prices." Money prices are distorted by inflation and disputed deflators. Time prices solve that problem by dividing a good's money price by hourly income, showing how long a person must work to buy it. They capture both falling prices and rising wages, require no inflation adjustment, and allow comparisons across countries and centuries. Time is universal, cannot be printed, and reflects the real cost people pay: hours of life. Time prices provide a clearer, simpler, and more meaningful measure of resource abundance than money prices for ordinary people.

Simon Abundance Index, 1980–2025

World Population × Personal Resource Abundance indexed to 100 in 1980



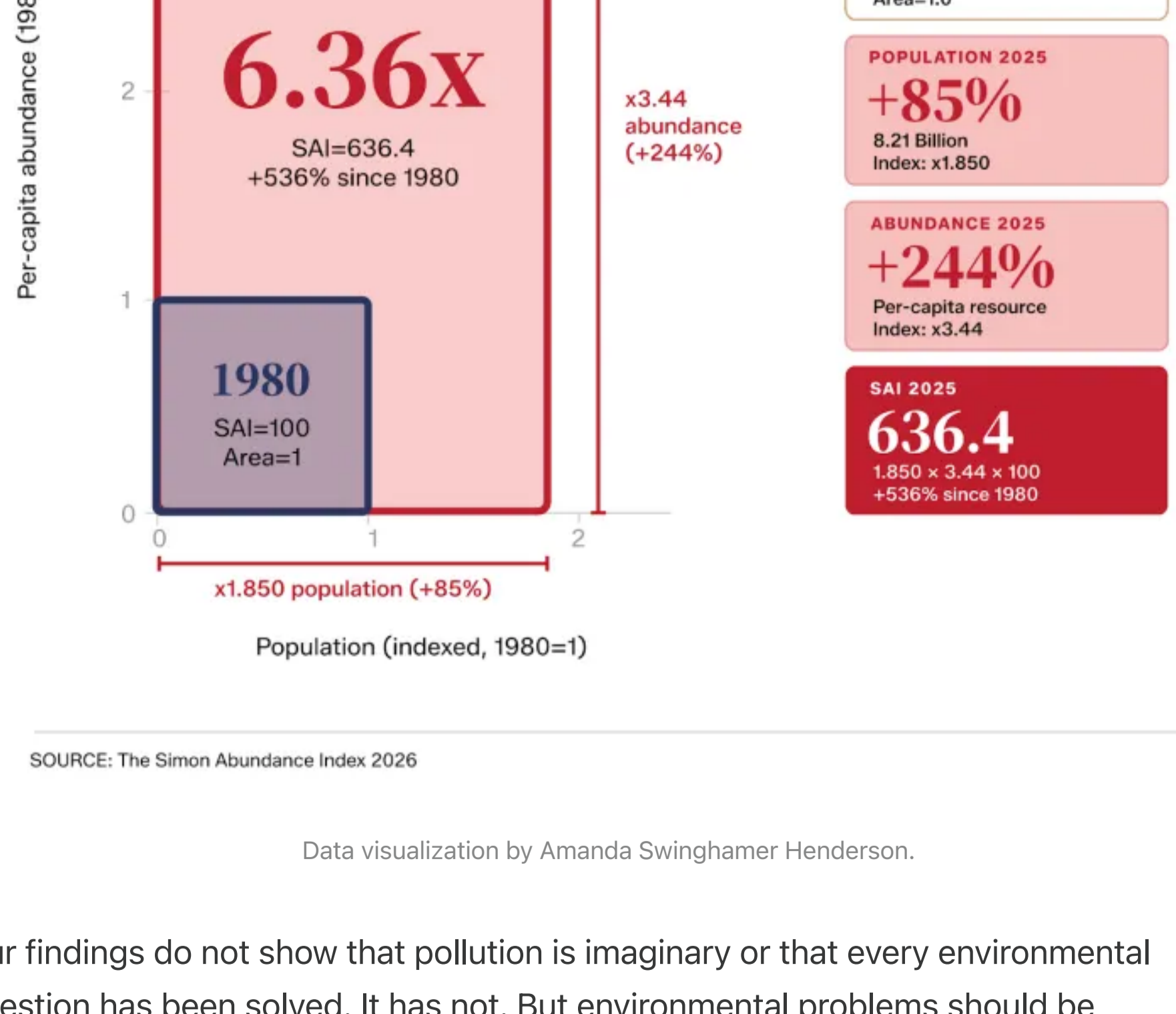
By this measure, the last 45 years have been a rout for the pessimists. The 2026 report says that the Simon Abundance Index stood at 636.4 in 2025, up from a base of 100 in 1980. That means Earth was 536.4 percent more abundant in 2025 than in 1980. All 50 commodities, including fuels, such as crude oil, coal, and natural gas, food, such as chicken, beef, and lamb, and metals, such as aluminum, copper, and gold (yes, even gold!), in the dataset were more abundant in 2025 than they were in 1980. The global abundance of resources increased at a compound annual rate of 4.2 percent, doubling about every 17 years. In the 42 countries tracked by the report—accounting for 85.9 percent of global gross domestic product and 66.3 percent of the world's population—none saw lower resource abundance in 2025 than in 1980. That is not what a species trapped in Malthus' arithmetic is supposed to produce.

The mechanics of that gain matter. Between 1980 and 2025, time prices for the 50 commodities fell by an average of 70.9 percent. What required an hour of work in 1980 required about 18 minutes in 2025. The same hour of work that bought one unit of a typical commodity in 1980 bought 3.44 units in 2025. That is a 244 percent increase in personal resource abundance. At the same time, the world population grew by 85 percent, from 4.44 billion to 8.21 billion. Put those two changes together and you get the index's central finding: For every 1 percent increase in global population, population-level resource abundance grew by about 6.3 percent. Resources growing at a faster pace than the population is what Pooley and I call *superabundance*. It is the opposite of Malthus' conjecture that each additional person leaves less for everyone else.

The critics sometimes retreat to complaining about the short-term noise, as though any temporary spike in prices confirms the Malthusian creed. Our report addresses that, too. In 2025, 27 commodities became more abundant, and 23 became less abundant. The abundance of oranges rose the most, by 65.6 percent, while coconut oil's abundance fell the most, by 36.3 percent. But commodity markets always swing because weather changes, disease hits crops, wars disrupt markets, and investment arrives late or early. Simon never argued that every price falls every year in a straight line. He argued that scarcity signals provoke adjustment. A temporary setback is not a vindication of Malthus. It is often the first stage of a correction. That is why the long trend matters more than the annual changes.

The Abundance Rectangle, 1980 vs. 2025

Population Growth × Personal Resource Abundance Growth = Population Resource Abundance



Our findings do not show that pollution is imaginary or that every environmental question has been solved. It has not. But environmental problems should be addressed as side effects of human flourishing, not as evidence that human flourishing itself is a mistake. The Earth Day mentality blurred that distinction. It converted planetary stewardship into misanthropy. It taught millions to look at a growing population and see only a burden, never a contribution. It treated the human animal as uniquely destructive when, in fact, people are the only animals who can recognize ecological damage and fix it. It is new knowledge—human knowledge—that gives societies the capacity to clean rivers, regulate toxins, build sewage systems, improve fuel efficiency, and move from dirtier technologies to cleaner ones. A poor society burns what it can find and dumps what it cannot manage. A rich society can afford scrubbers, pipelines, wastewater treatment, research labs, and better rules.

The green extremists often speak as though abundance is the disease, when in fact abundance is usually what makes environmental improvement possible. And so, despite half a century of doomsaying, the Earth is not collapsing under the weight of humanity. It is supporting far more people who can command far more resources with far less labor than their predecessors could. That is not the picture of a planet in terminal decline. It is the picture of a planet made more habitable by the one species clever enough to improve it. The Earth is not a museum piece. It is a working planet inhabited by learning beings who desire and are entitled to flourish.

This article was originally [published](#) in The Dispatch on 4/23/2026.

What Climate Science Really Says

Roger Pielke Jr. joins Marian Tupy to discuss the latest climate research and how to think clearly about climate change.

MARIAN L TUPY
MAY 09, 2026

60 6 4

Share Transcript

Few public debates are as distorted as the one over climate change.

One side waves away the risks, while the other treats warming as an existential crisis requiring degrowth, austerity, and sweeping political control.

In this episode of *The Human Progress Podcast*, our editor Marian Tupy speaks with Roger Pielke Jr., professor emeritus at the University of Colorado Boulder, about what the latest climate research really says.

They discuss rising temperatures, hurricanes, flooding, wildfires, ocean warming, sea level rise, the decline of worst-case warming scenarios, and why climate policy must be rooted in energy abundance, adaptation, and honest risk management rather than panic or moral crusades.

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

Today I'm joined by Dr. Roger Pielke Jr., a Professor Emeritus at the University of Colorado Boulder, Senior Fellow at the American Enterprise Institute, and author of influential books like *The Honest Broker* and *The Climate Fix*. He's a leading voice on the politicization of science and climate policy, and his scholarship is known for being rigorous, data-driven, and impartial.

I want to spend most of our time talking about climate change and global warming, but let's start by looking at the extremes of the climate change debate.

People who are critical of the dominant view that climate change is a crisis or even a problem will say things like CO2 concentrations in Earth's atmosphere are much lower than they were in the distant past, or that CO2 is vital for life, it is plant food, so there is nothing to worry about. What is wrong with that point of view?

Science supports global greening and the fact that CO2 levels were higher in the past. Where that goes away from scientific understanding is the "nothing to worry about" part.

The late Steve Schneider, who was a famous climate scientist and climate activist, once said that the fundamental challenge of climate change is that outcomes could be very benign, or they could be very serious, and we won't know the difference during the time that we need to prepare. So, both extremes—the apocalyptic and the "don't worry, be happy" folks—are guilty of selectively interpreting evidence. The reality is that both outcomes are in the spectrum of possibilities, but smart decision-making has to consider that entire spectrum, not just one tail of the distribution.

Is there such a thing as an optimal amount of CO2 in the atmosphere?

The simple answer is, as a risk management problem, the emission of carbon dioxide through the burning of fossil fuels has risks associated with change. And those risks could be profound. So, limiting the rate of change is much more important than whether 425 parts per million is better than 350 or 575.

There is also the question of trade-offs. For example, by emitting more CO2 into the atmosphere, we are making the world much richer. So, even if we do emit a lot more CO2, society in the future will be much richer and much more technologically advanced than we are, and they'll be able to take care of any problems.

Humans are a fantastically inventive species. And it's absolutely true that fossil fuels, which have the side effect of emitting carbon dioxide, have been central to human progress. One data point, a trend that I don't think many people are aware of, is that the carbon dioxide intensity of economic activity—carbon dioxide per unit of GDP—has been dropping for decades. So, as we've become wealthier, we've also become much less carbon-intensive. As a species, we really like getting more output for less input, and we like cleaner-burning fuels. So, if that trend were to continue, we do at some point go over the hump of increasing carbon dioxide emissions, and they start going down.

In fact, right now, over the last decade, emissions have plateaued. There are small increases, but they're within the margin of error measurement. So, there is a background force of decarbonization that has nothing to do with climate policy. I know it's not as fast as some would like, and it could be faster, but decarbonization is just a fundamental reality of human civilization.

Now let's address the other side of the extreme: people who believe that climate change is an existential crisis, and to avert it, we need to shrink the global economy. What's wrong with that picture?

The big problem with that view is that the vast majority of people on this planet have no interest in degrowth. There are not very many politicians able to win an election by campaigning on making people poorer. The reality is that any successful path to decarbonizing the economy has to be accompanied by greater growth and wealth for most people. There are 5 or 6 billion people who do not enjoy anything close to the energy consumption that people who are watching this podcast get to enjoy every day. So, the world's going to consume more energy no matter what degrowthers say.

What do you think about the very out-there techno-optimist view, which is that we should aim to have the technological sophistication and wealth necessary to completely control the climate? That's a kind of sci-fi scenario that I sometimes hear.

I think we should get as wealthy as possible and be able to make our way through a volatile environment as safely as possible. The idea that there's going to be a control panel where we can perfect climate conditions is science fiction. I have no expectation we'll ever be doing that. The track record of humans trying to influence ecosystems is horrible.

We hear about this with proposals to "geoengineer" the climate. And full disclosure, I signed onto a geoengineering non-use letter, because it's the height of arrogance for us to think that we can control the climate. It's like gain-of-function research on viruses. Yeah, maybe you'll learn something, but maybe you'll kill 20 million people. So, I'm not a big fan of the "control panel" approach to climate.

I want to now turn to specific concerns that people have when it comes to climate change. Let's start with the rising global temperatures and extreme heat. What does the latest research say about this problem?

What I normally do—and I think this is a good practice in any area where science and politics meet—is I start with assessments that have been put together by authoritative bodies.

In this case, that's the Intergovernmental Panel on Climate Change, which is a sprawling, massive thing. It's got three working groups and many dozens of chapters and hundreds of authors. But it's a touchpoint for assessing the science. The IPCC gets some things right and some things wrong. But in general, Working Group 1, with its focus on extreme events, has pretty much called things straight over the past 30 years.

When it comes to extreme heat, the IPCC says that there has been an increase in heat waves around the world. It's been detected, to use their language, and they attribute that increase of heat waves to human causes, including increasing greenhouse gas concentrations in the atmosphere.

The World Health Organization has argued that with effective adaptation, the number of people who should die from excessive heat is zero. We have air conditioning, we have weather forecasts and good warnings. The challenge is that those adaptations to heat are not well implemented everywhere around the world. If places that are adapted to one level of temperature start seeing a greater frequency of heat waves, they will need to adapt.

The other factor is that ecosystems are far less adaptable than humans are. If it's 110 outside, I can come inside in the air conditioning. Ecosystems can't do that. So, material changes in the physical environment can have profound consequences for ecosystems.

Okay, now onto changes in precipitation patterns.

The extreme weather phenomenon the IPCC has the second-highest confidence in is an increase in heavy downpours, which they call "extreme precipitation."

People have to be careful with that. And the IPCC, to its credit, is very careful. Extreme precipitation is not the same thing as flooding. Here in Boulder, Colorado, if we got 2 centimeters of rain today, that would be extreme precipitation, but it wouldn't cause a flood. I wish we would get 2 centimeters of rain.

There has been a documented increase in the activity of the hydrological cycle around the world due to increasing temperatures. It hasn't been detected everywhere, and the numbers are not super large in the context of natural variability, but they've been detected and attributed. However, the IPCC has low confidence that flooding has increased globally. Flooding is very difficult to document because we manage so many river basins. We change runoff patterns through urbanization and agricultural irrigation. So, flooding is much more confounded than precipitation itself.

Extreme weather events, especially hurricanes, cyclones, wildfires, and droughts.

We need to take these one by one.

I've studied tropical cyclones for 30 years, which includes hurricanes, and the IPCC gets this one right: there is no convincing evidence that there are more hurricanes or more intense hurricanes over the period of record. The IPCC is clear on that, and the National Oceanic and Atmospheric Administration in the US is very clear on that.

Hurricanes have become a kind of poster child of climate change. They're very photogenic. Al Gore had one coming out of a smokestack in his famous movie. However, hurricanes are probably one of the worst places to look for any signals of climate change. There are only 60 to 80 hurricanes on planet Earth in any given year. That's a small number of events when you compare it to the millions and millions of temperature measurements we take every year.

Flooding, as I said, has no detection or attribution. Drought, for most metrics of drought, again, no detection or attribution. The one distinction that the IPCC makes is soil moisture deficits, basically dry land, which is associated with warming more than it is with precipitation. Winter storms, again, no detection or attribution there.

You have to be careful with wildfires because the wildfire record is very confounded by human land management. While we might be able to tease out trends in wildfires, attributing causality is much more difficult. There are some published studies out there that say that warming, particularly in, say, the western United States, has led to an increase in fire-prone conditions. There is also good research that says before the human settlement of North America, the intensity and scale of wildfires were much, much greater than anything we've seen, so we actually have a fire deficit.

Moving swiftly onto ocean warming and acidification.

I'm glad you brought those up. Despite all the arguments that have been made over the decades about the surface air temperature and the location of thermometers and things like that, it turns out that the best place to look for a signal of warming is the oceans. Over the last several decades, there have been very good temperature measurements showing that most of the energy imbalance caused by our emission of greenhouse gases is actually going into the oceans.

Onto acidification. So about half of the carbon dioxide we emit is taken up by the oceans, and that changes the chemistry of the oceans. On the one hand, it's a good thing that the oceans are absorbing carbon dioxide because then there's less of a radiative effect in the atmosphere. But on the other hand, it means we're changing the chemistry of the ocean, and that will have impacts on sea life. If you go through all that math, this is one place that takes you to net zero. To stop changing the chemistry of the ocean, we couldn't just reduce emissions to the amount that the oceans are taking up; we would have to reduce emissions to zero.

My next concern, melting ice and glaciers, is also tied to the rising sea levels and so forth. So maybe you can talk about that.

Runoff from glacial melt and also melt from Greenland, and to some degree from Antarctica, is contributing to sea level rise. That's tightly associated with warming and has been attributed to human causes. There are also other factors beyond warming. Something I was fascinated to learn about from one of my colleagues at the University of Colorado was that when we put particulates in the atmosphere, and it precipitates out in snow, it changes the albedo—basically, the snow is a little darker because it has soot in it—and the snow melts faster.

Understood. Let's talk a little bit about the different climate change scenarios. How much warming have we experienced? What are the worst and the best-case scenarios? And what does the most likely scenario mean for the planet?

That's a great question.

Using a preindustrial baseline of 1850 to 1900, the world has already warmed about 1.5 degrees Celsius.

The projections are, as you say, scenarios. They're a function of what we think the global population will be, how big the economy will be, where we're going to get our energy from, and how we apply that energy in the economy. Last December, the UN Framework Convention on Climate Change said that the world is headed to 2.2 to 2.5 degrees Celsius by 2100. It just so happens that it aligns very nicely with a paper I did with Justin Ritchie and Matt Burgess.

I call this one of the best-kept secrets in all of climate science.

It wasn't so long ago that those same types of projections were looking at 4, 5, 6 degrees Celsius by 2100. They've come down dramatically, not because of anything to do with the physical science of climate, but because our expectation for future emissions has come down dramatically. There was an assumption that coal, the most carbon-intensive fuel, was going to fuel everything around the world. And it turns out we're not going in that direction.

Another big factor, and one that really hasn't made its way into climate projections yet, is the changing projections of the global population. The leading climate scenarios still have 12 or 13 billion people on the planet in 2100. And demographers are now seriously talking about the global population peaking under 10 billion and then going down to maybe 7 billion in 2100. Once that gets factored in, projected temperature ranges are going to drop further.

Climate change has morphed from something that was plausibly extreme—I don't think existential threat was ever the right language, but possibly extreme—to something that looks a lot more manageable. It's a troublesome condition that will require a lot of action, but it's not going to be the end of the world.

So, you actually had a paper some time ago where you nailed the trajectory of global warming with great precision. And that fantastic performance didn't protect you in American academia. Meanwhile, people who wheel out the RCP 8.5 scenario, where everything is run on coal, get columns in major newspapers.

What on Earth is going on?

Extreme results are a lot more attractive to journals. And if you use an extreme climate scenario, you're going to get extreme results. Journals like to put out press releases, and so the more shocking the headline, the more likely it is that it's going to get picked up. At the same time, climate advocacy for decades now has focused on the notion of an existential threat, and extreme studies feed that notion.

Another factor is that the climate community updates its scenarios only every 10 to 20 years. Imagine doing economic policy with data from 2006 in 2026. It's crazy. The energy system modelers update their energy scenarios every year. That's one reason why it's easy, I would say, to come up with better projections than you find in the IPCC, because they're still using scenarios from two decades ago. If you use a more updated scenario, as we did, for energy consumption, population, and GDP, you'll be much more accurate than one that was based on 2005 data.

It seems to me that the extreme environmentalist viewpoint has begun to come to an end. The break really came in 2022 with the Russian invasion of Ukraine and the resulting spike in energy prices.

Do you agree with that?

Yeah, I think that's right. The price shock in Europe following Russia's invasion of Ukraine was an eye-opener. People really do want action on the environment and on climate, but they don't want to do it at the expense of their monthly utility bill.

I don't think that the extreme environmental movement is going to completely disappear. The concern about overpopulation never really ended; it kind of faded away. I think that's the best model for extreme environmentalism focused on climate. There will continue to be a segment of people, particularly in the scientific community, who emphasize apocalyptic scenarios and existential threats, but policymakers around the world have become much more focused on the security of energy, the price of energy, and energy access. For a long time, energy policy was discussed as if it were a subset of climate policy, and climate policy was the dominant framing. I think that has now reversed. Climate policy is now rightly viewed as a subset of energy policy. But don't make any mistake: the radical wings on either side are going to remain with us.

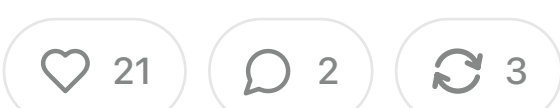
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Doomsayer: Progress Roundup

The first malaria drug for infants, a fiscal boon from data centers, the least murderous Spring in Manhattan history, and more.

MALCOLM COCHRAN

MAY 10, 2026



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...

Economics & Development

- A common concern about data centers is that they burden local communities with noise and higher electricity demand without giving much back. **Loudoun County, Virginia**, offers a [strong counterexample](#). The affluent jurisdiction was an early center of data-center construction and will soon **get nearly half of its tax revenue from data centers**, helping lower the homeowner property-tax rate by about 40 percent over the past decade.
- For years, governments have mostly agreed not to put tariffs on digital trade, meaning countries do not tax cross-border downloads, streaming media, software, and other electronic products the way they tax some physical goods. That arrangement recently came under pressure, with Brazil and some other countries reluctant to extend the measure because they worry it limits future tax revenue. Now, **19 countries including the United States have agreed among themselves to keep digital trade duty-free**, helping preserve a small but important piece of open commerce.

Energy & Environment

- **The Asiatic wild ass**, which vanished from Mongolia's Eastern Steppe in the mid-20th century after the Trans-Mongolian Railway fenced off its migration routes, **is beginning to return** thanks to targeted fence removals along the railway.
- Until recently, the **Victorian grassland earless dragon was thought to be extinct** after farms and suburbs destroyed almost all of its native habitat. Then, in 2023, scientists found a surviving wild population on a single private grazing property. **Melbourne Zoo is now breeding the lizards**, with the ultimate goal of returning a restored population to the wild.

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Health & Demographics

- The World Health Organization has [prequalified the first malaria drug designed specifically for newborns and small infants](#), clearing the way for UN agencies, donors, and public health systems to buy and distribute it in highly malarial countries.
- In a [randomized controlled trial](#), **an experimental pill helped men with pattern baldness regrow significantly more hair than a placebo**. After six months, men taking the drug reportedly gained about 30 to 33 hairs per square centimeter of scalp, compared with about seven for men on placebo.
- **The World Health Organization says that Sudan and South Sudan have eliminated maternal and neonatal tetanus**, an infection that can kill newborns within days without proper care. Note that Sudan's validation relies on data collected before its civil war began, so it is uncertain how that achievement is holding up.
- **The government of Burkina Faso is reporting a major drop in malaria cases and deaths after adding the malaria vaccine to a broader prevention campaign**. Recorded malaria cases fell 32 percent between 2024 and 2025, while deaths fell 44 percent, though officials note that the gains came from several tools working together, including vaccines, bed nets, seasonal prevention drugs, and insecticides.

Science & Technology

- **Japan Airlines is testing humanoid robots as baggage handlers at Tokyo's Haneda Airport**, starting with the hard physical work of moving luggage and cargo on the tarmac.
- In a [recent blog post](#), **Jack Clark, one of the founders of Anthropic, argues that AI systems may soon be capable of performing AI research by themselves**, citing major improvements in their ability to code, conduct research, and manage other models. If he's right, it would raise the possibility of "[recursive self-improvement](#)," a milestone that could dramatically accelerate AI progress.

Violence & Coercion

- **New York City has recorded just 76 murders over the first four months of the year, the lowest number for that period in the city's history**.
- **Jamaica recorded 673 murders in 2025, the lowest number since 1993 and a 40 percent drop from the year before**. The country's national security minister credits the decline partly to an increase in tips to police, which have risen nearly tenfold over the past decade.

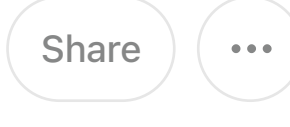
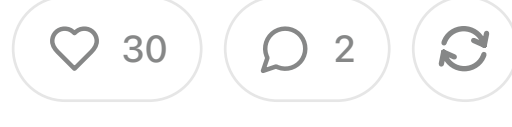
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Time Pricing Big Macs Around the World

Even if a Big Mac is more expensive in money, it can be less expensive in time.

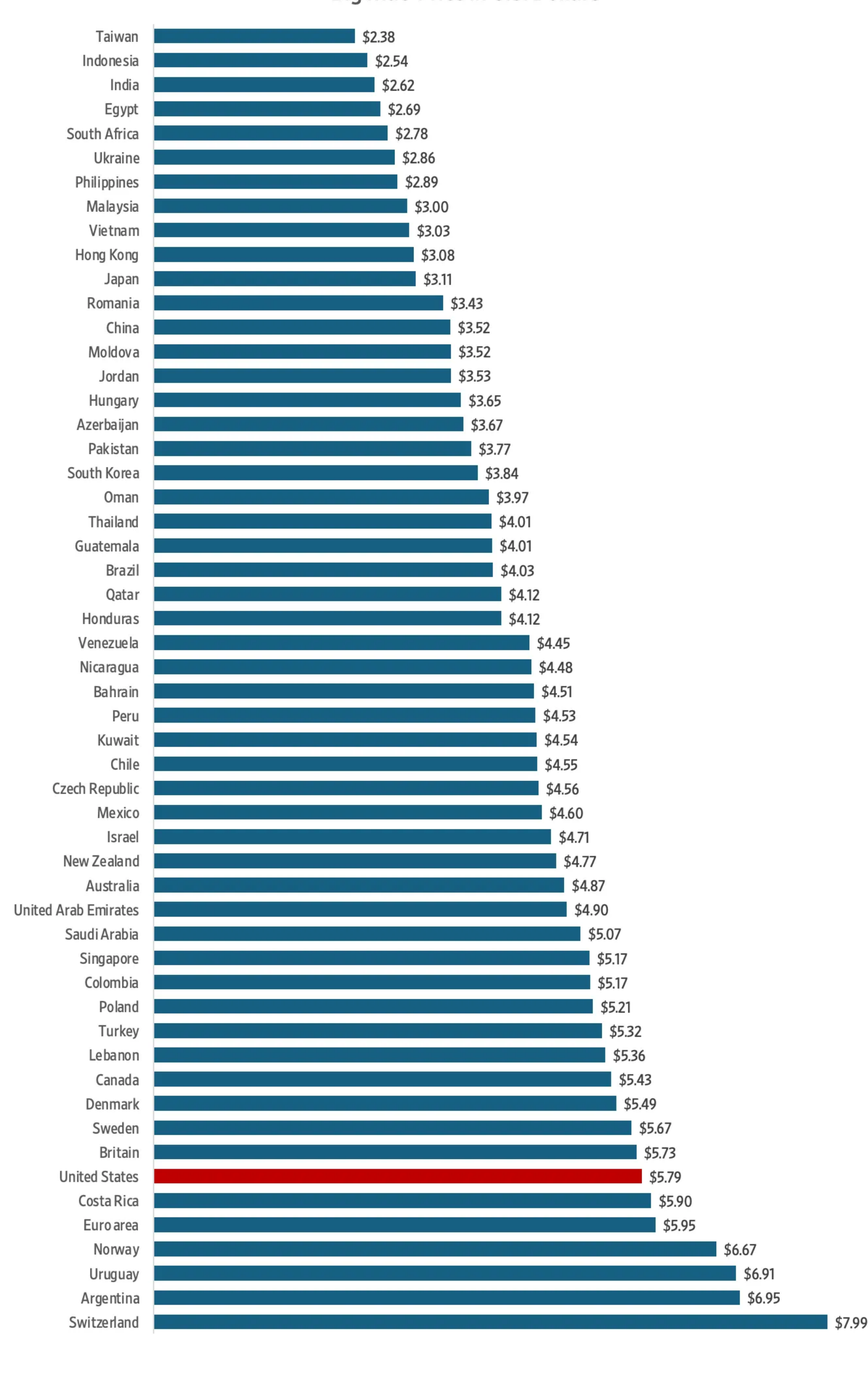
GALE POOLEY

MAY 13, 2026



McDonald's operates in over 100 countries worldwide. Since 1986, *The Economist* magazine has published the Big Mac Index, built on the theory of purchasing power parity (PPP)—the idea that exchange rates should equalize the price of an identical basket of goods across countries. The following shows the dollar price of a Big Mac in each country, sorted by price:

Big Mac Price in U.S. Dollars



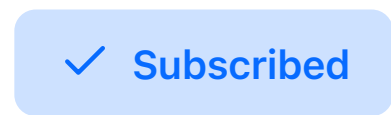
But we can go one step further.

Instead of comparing currencies, we can compare time.

We start with the nominal price of a Big Mac in each country, converted to U.S. dollars, and then compare it to average hourly earnings. Since average hourly earnings data are not available for all countries, GDP per capita divided by annual hours worked serves as a reasonable proxy for relative wages between countries.

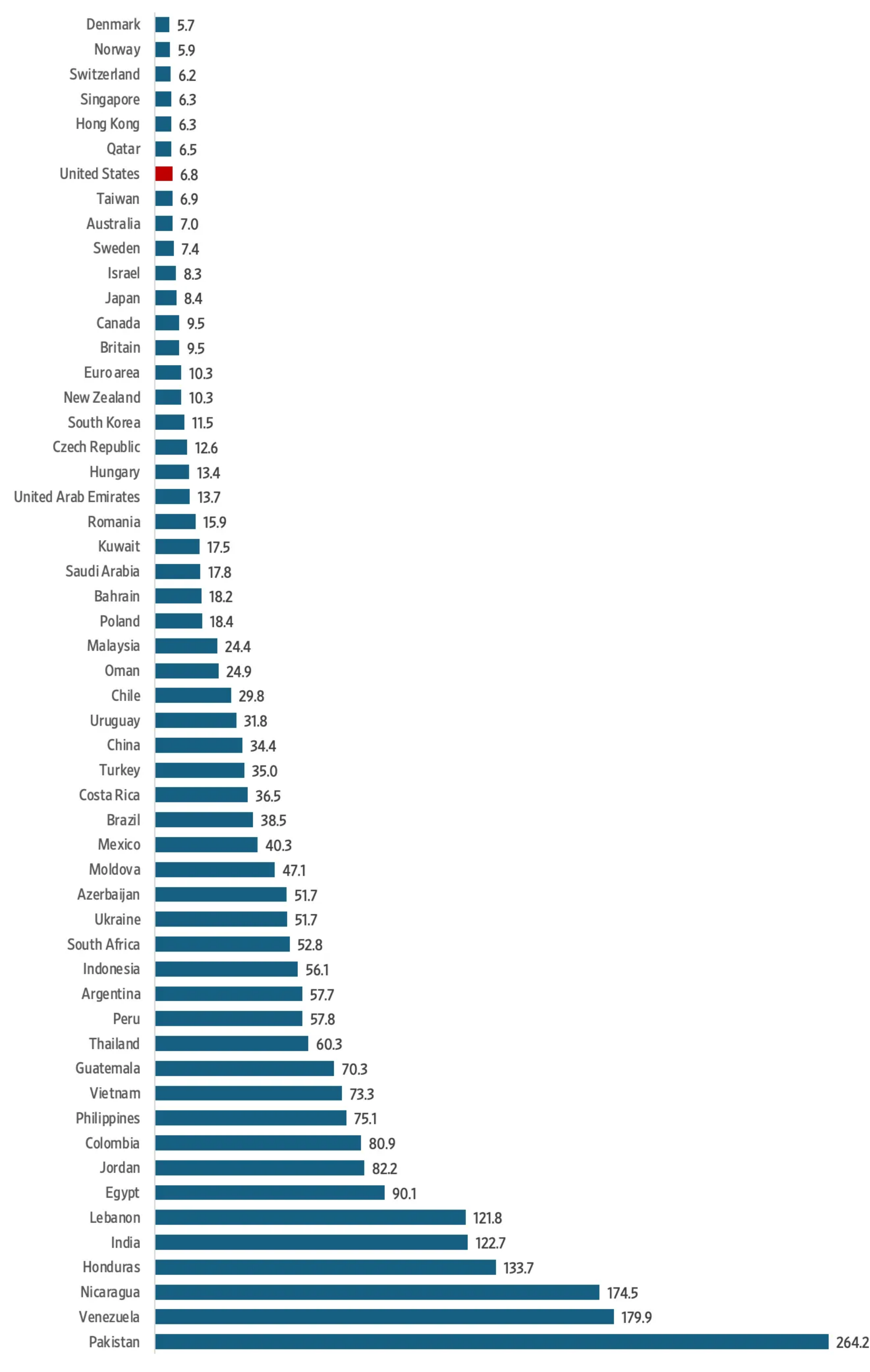
This transforms the question from "What does it cost?" to "How long do you have to work to get it?" A Big Mac can be more expensive in money but less expensive in time, depending on where you live.

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A Big Mac in Taiwan costs only \$2.38, compared to \$7.99 in Switzerland, but after adjusting for hourly earnings, the time prices are very similar. In Pakistan, a Big Mac costs \$3.77, but hourly earnings are \$0.86, putting the time price at 4.4 hours. In Denmark, the price is \$5.49, but hourly earnings are \$57.60, so the time price is under six minutes. For the time it takes a worker in Pakistan to earn enough to buy one Big Mac, workers in Denmark can buy more than 46.

Big Mac Time Price in Minutes



The Big Mac doesn't just measure currencies; it measures the spread of knowledge.

What looks like inequality in dollars is often a difference in productivity, learning, and institutional capacity. The real divide is not between rich countries and poor countries—it is between places where knowledge compounds and places where it is constrained.

When a sandwich falls from four hours of work to four minutes, something profound has happened—not to the burger, but to the growth and sharing of knowledge.

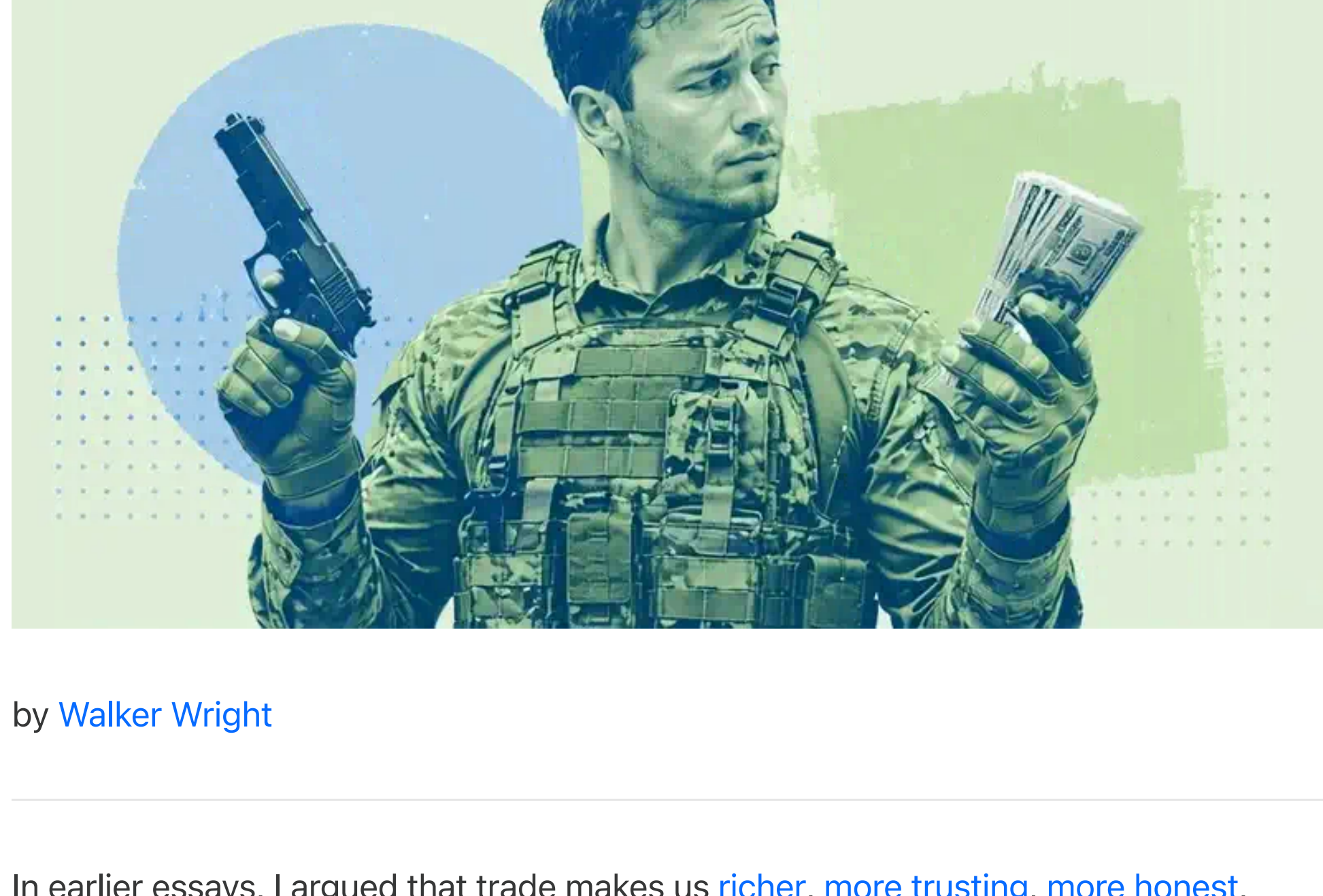
The story of abundance is not written in dollars. It is written in time.

Find more of Gale's work at his Substack, [Gale Winds](#).

Make Trade, Not War: How Free Exchange Creates Peace

Open markets lead to closed battlefields.

HUMAN PROGRESS
MAY 15, 2026



by Walker Wright

In earlier essays, I argued that trade makes us [richer](#), [more trusting](#), [more honest](#), [more fair](#), and more tolerant. In this final essay, I will show that trade also promotes peace and mitigates the outbreak of war. Distrust, corruption, unfairness, and intolerance can often erupt into violence. By undermining these less-than-desirable attitudes and behaviors, trade can help reduce violence as well. But it may be even more straightforward than that: it's simply not a good idea to maim or kill your customers or suppliers. War is bad for business. When you rely on others to buy your product or supply your needs, rocking the relational boat seems suboptimal. As economist Christopher Blattman wrote in his book [Why We Fight](#),

Interdependence doesn't eliminate the risk of war. There could still be a commitment problem, uncertainty, or unchecked leaders that push our two groups to fight. But because of entwined material interests, these forces must now overcome even more powerful incentives for compromise than usual. The gravitational pull of peace has grown stronger.

In [The Better Angels of Our Nature](#), Harvard's psychology professor Steven Pinker documented the worldwide decline in violence throughout history. One major contender for the driver of this more peaceful trend is known among international relations scholars as the *democratic peace theory*. As [explained by Pinker](#), "Democratic government is designed to resolve conflicts among citizens by consensual rule of law, and so democracies should externalize this ethic in dealing with other states." Trust in the procedures of democracy consequently builds trust between democratic governments. "Finally," [Pinker notes](#), "since democratic leaders are accountable to their people, they should be less likely to initiate stupid wars that enhance their glory at the expense of their citizenries' blood and treasure."

While the liberal peace theory [remains influential](#), a growing [wave of empirical research](#) over the last three decades suggests that markets may play a bigger role than the ballot box. This shift in consensus toward what's known as the *capitalist peace theory* posits that trade openness and economic interdependence are among the primary forces that mitigate war. Of course, scholars continue to debate over *how much* trade and economic freedom contribute to peace. But liberal peace theorists now include [economic interdependence](#) as an [essential element](#) within the [broader liberal peace project](#). [Economic interdependence](#) is "part of the glue that cements the 'liberal peace' together." As trade has grown worldwide, so has peace (see Figures 1 and 2).

Figure 1. Growth in Global Trade

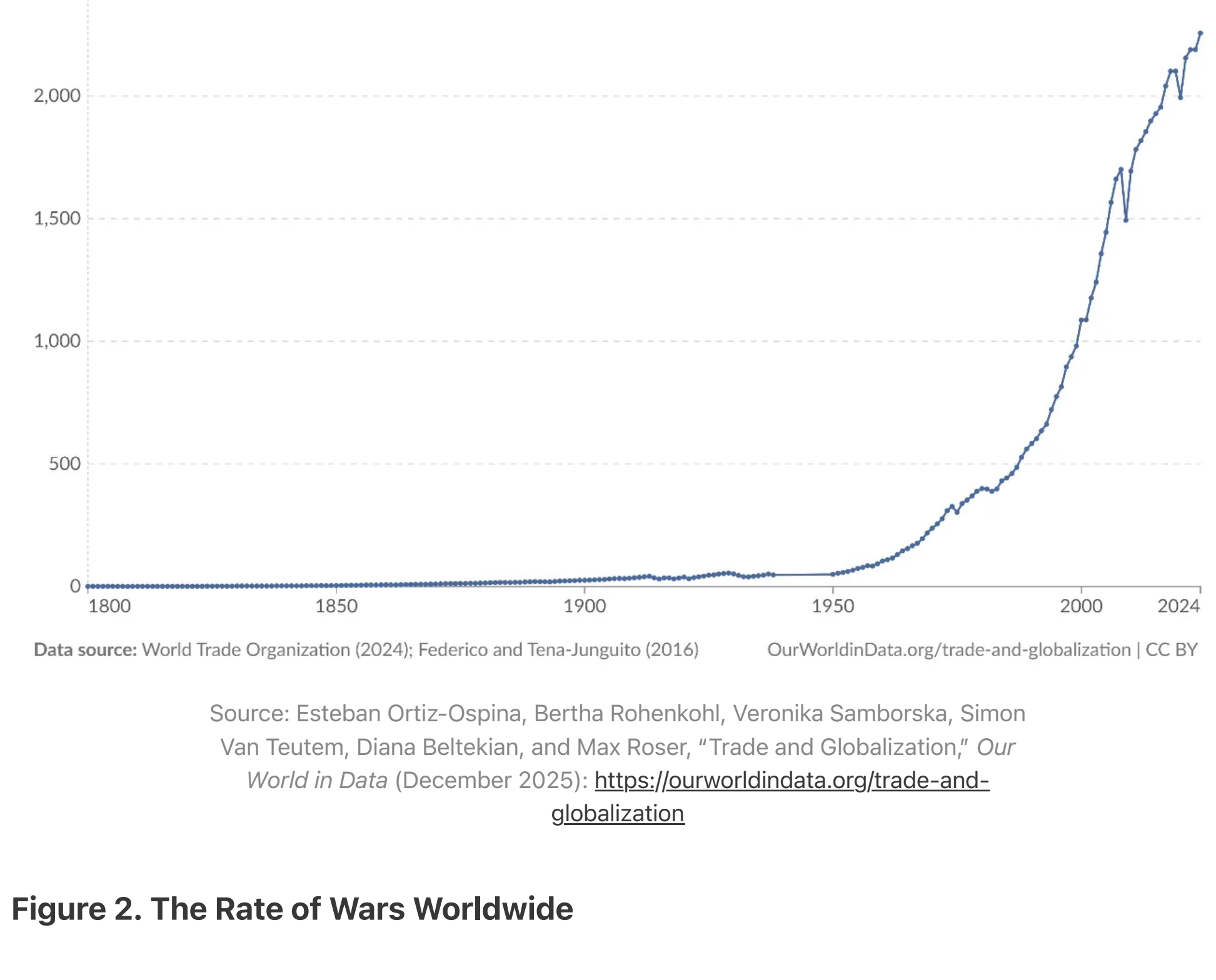
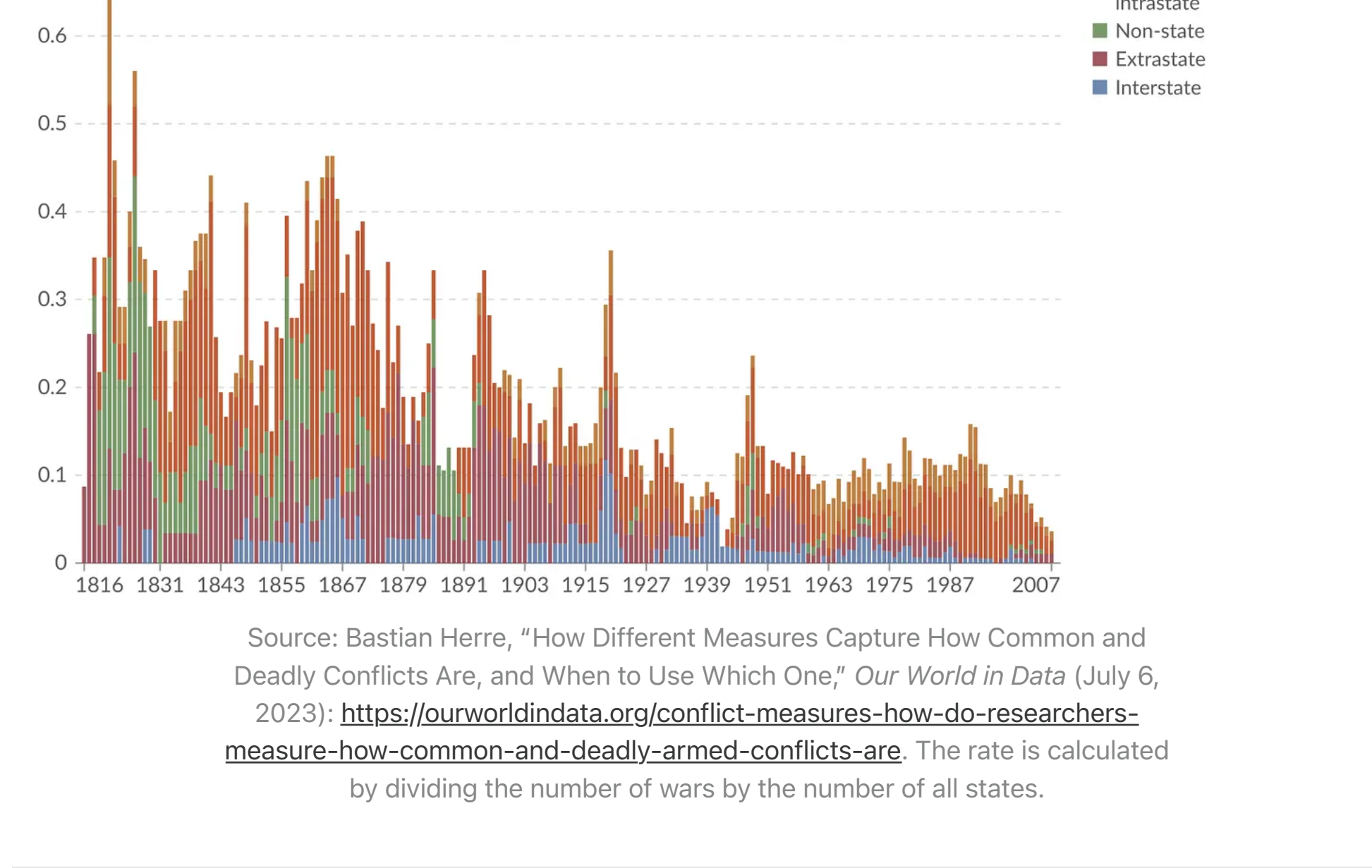


Figure 2. The Rate of Wars Worldwide

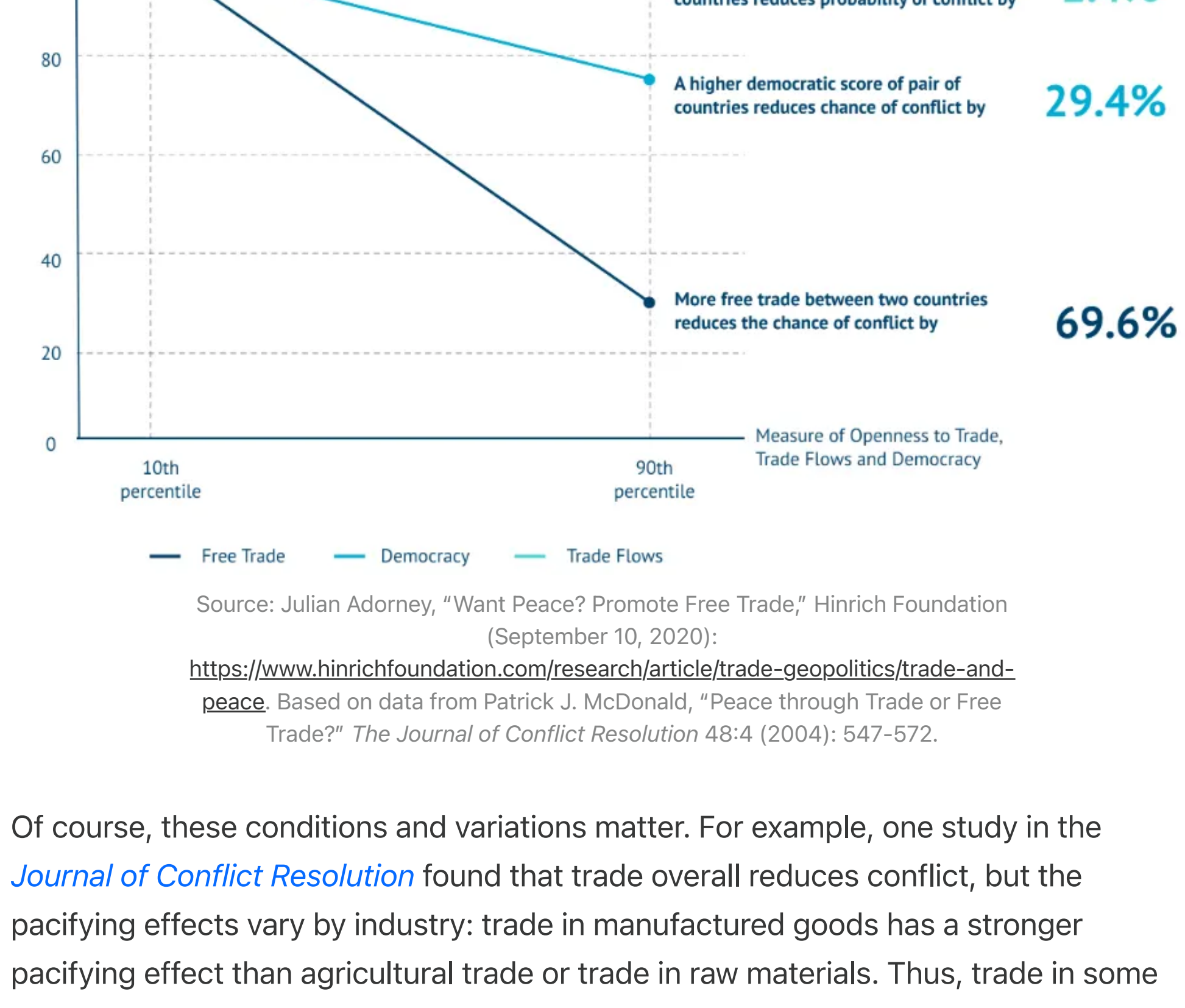


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French economist Frédéric Bastiat [wrote](#) that trade barriers "create isolation, isolation gives rise to hatred, hatred to war, war to invasion." And an [abundance](#)—and I do mean [abundance](#)—of [empirical studies](#) have shown Bastiat to be correct: [trade indeed reduces interstate military conflict](#) (see Figure 3). Other studies further solidify the adversarial relationship between trade and international violence: while trade reduces conflict, [international conflict](#) in turn [reduces trade](#). One pair of scholars [put it succinctly](#): "The positive relationship between economic interdependence and peaceful relationships is so well established that research now focuses on the conditions that cause variations."

Figure 3. Trade and the Reduction of Conflict



Of course, these conditions and variations matter. For example, one study in the [Journal of Conflict Resolution](#) found that trade overall reduces conflict, but the pacifying effects vary by industry: trade in manufactured goods has a stronger pacifying effect than agricultural trade or trade in raw materials. Thus, trade in some industries yields more peace than others. Also, [mere membership](#) in the General Agreement on Tariffs and Trade or the World Trade Organization does not appear to reduce conflict. Countries must [actually trade](#).

Civil war is also less likely to break out where trade is present. A [2012 study](#) controlled for a number of variables, including income per capita, growth rates, total population, ethnic fractionalization, and oil exportation. It found that higher levels of economic globalization—including foreign direct investment, portfolio investment, import barriers, tariff rates, and the overall extent of trade—reduce the risk of civil war. A [2016 study](#) demonstrated that secure property rights, high-quality legal institutions, sound money, and free trade lower the probability of civil war. Covering the period between 1970 and 1999, political scientists Katherine Barbieri and Rafael Reuveny [found](#) that international trade, foreign direct investment, and foreign portfolio investment reduce the risk of civil war in all states observed.

As is well known, civil wars are [more likely](#) to take place between different ethnic groups. In many cases, ethnic groups silo themselves off from one another, escalating distrust and hostility toward out-groups. Trade barriers play a role in this siloing. It turns out that barriers to trade entry can produce what economist Saumitra Jha has labeled as [ethnic cronyism](#): a set of "ethnic trading networks" often "based upon personal and community ties." [Jha's analysis](#) of South Asian medieval ports demonstrated that trade and low barriers to trade entry made these areas [five times](#) less prone to religious rioting between Hindus and Muslims in the period from 1850 to 1950. During the same period, these areas were 25 percentage points less likely to experience *any* religious rioting. Between 1950 and 1995, these areas were still less than half as likely to experience ethnic rioting.

Violence does not mean traditional interstate or civil wars alone; it often begins with how states treat their citizens. The closing and centralization of the economy is, to borrow from [economist Don Lavoie](#), the *militarization* of the economy. Militarized central planners tend to wage war on their own citizens. Crucially, trade openness acts as a check on this central power, keeping potentially violent governments at bay.

Barbara Harff, a leading expert in the study of genocide and political mass killings, [examined](#) incidences of genocide between 1955 and 1997. One factor that decreases the risk of political mass murder, she found, is economic interdependence. Political scientist Clair Apodaca [has also shown](#) trade to be "advantageous to guaranteeing human rights," with foreign direct investment being "favorable for human rights." Emilie M. Hafner-Burton of UC San Diego [summarized](#) the state of the scholarship well: "One of the key discoveries of the past few decades is that it is possible to promote human rights by encouraging economic openness and growth through trade and investment... Market-oriented economic development...is correlated with better protections for human rights."

Over two centuries ago, German philosopher [Immanuel Kant wrote](#), "The *spirit of trade* cannot coexist with war, and sooner or later this spirit dominates every people. For among all those powers (or means) that belong to a nation, financial power may be the most reliable in forcing nations to pursue the noble cause of peace[.]" Others echoed this sentiment. "PEACE," [Montesquieu argued](#), "is the natural effect of trade." In [Rights of Man](#), American revolutionary Thomas Paine described commerce as "a pacific system, operating to unite mankind, by rendering nations, as well as individuals, useful to each other...If commerce were permitted to act to the universal extent it is capable of, it would extirpate the system of war, and produce a revolution in the uncivilized state of governments."

These philosophers and revolutionaries were correct. In the end, trade steers us away from war and brutality and toward peaceful cooperation. If we care about a future that is richer, freer, and more humane, then keeping markets open and people connected through trade is one of the surest paths to a more peaceful world.

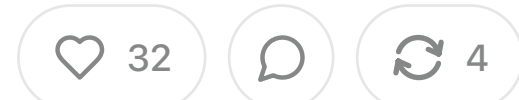
Author: Walker Wright, the manager for Academic Programs at a public policy think tank in Washington, DC, and an adjunct faculty member at Brigham Young University-Idaho. His forthcoming book, *In Trade We Trust: How Commerce Makes Us More Social*, will be published by Bloomsbury.

Doomslayer: Progress Roundup

Swedish economic reforms, a rare antelope recovery, growing the human genetic catalog, and more.

MALCOLM COCHRAN

MAY 17, 2026

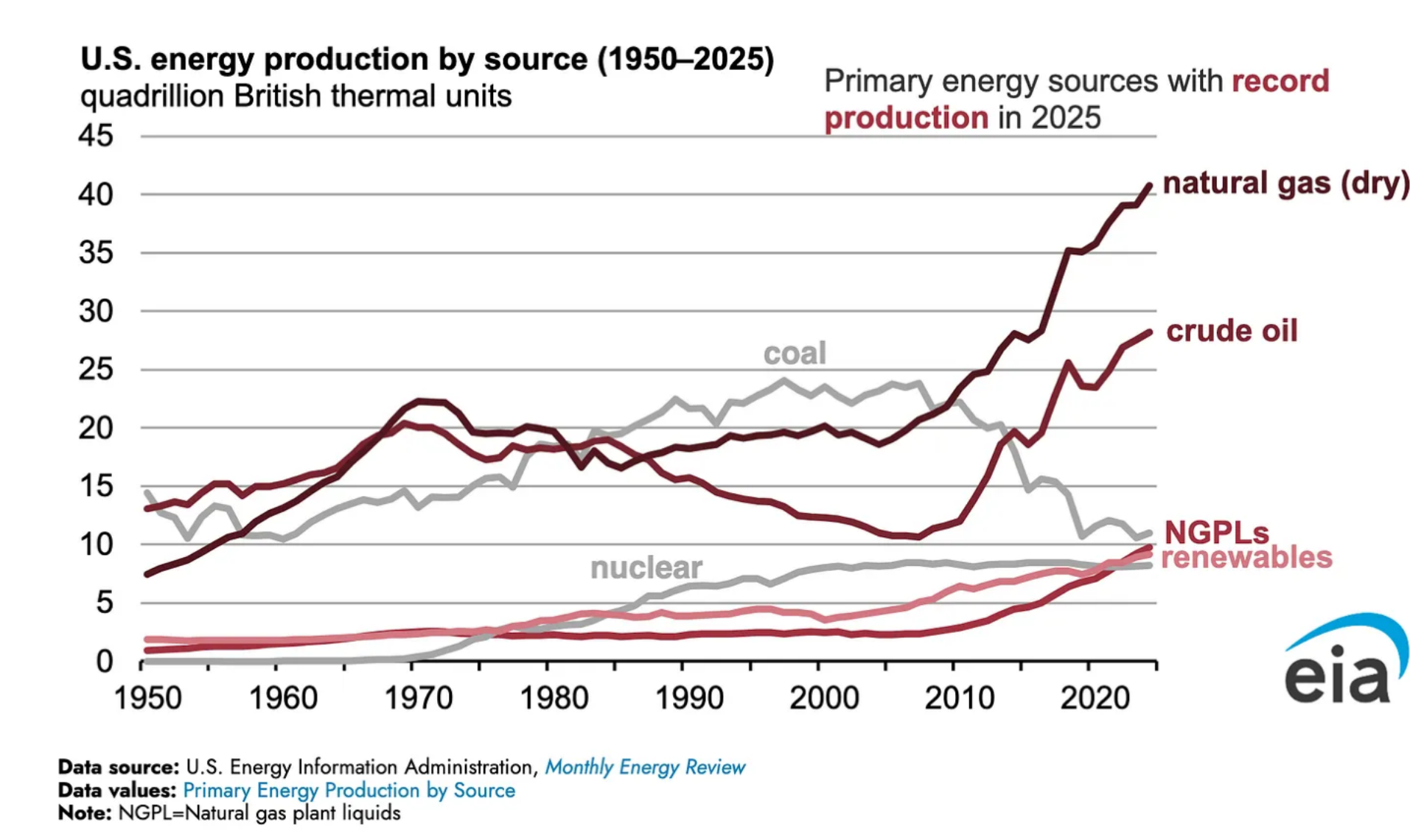


Economics & Development

- **Sweden, long treated as a model of democratic socialism, has spent the past three decades moving toward freer markets.** Following a period of economic stagnation and a financial crisis in the early 1990s, the country cut taxes, restrained public spending, opened parts of education and healthcare to private providers, and generally liberalized the economy. According to reporting from The Wall Street Journal, Sweden's growth prospects now look **unusually strong** by European standards, with projections roughly equal to those of the United States and about twice as high as those of France and Germany.
- **America's productivity growth is recovering** after years of post-financial-crisis stagnation. The Economist reports that US productivity has grown by **about 2 percent a year** over the past five years, up from 1 percent in the 2010s. Reflecting that welcome news, the Federal Reserve recently raised its median estimate of America's long-run GDP growth rate from 1.8 percent to 2 percent.

Energy & Environment

- **The United States set a new energy production record in 2025**, the fourth consecutive year of growth.



- **Mountain bongo antelope are returning to Kenya's forests after nearly disappearing from the wild.** The Associated Press reports that fewer than 100 wild mountain bongos remain, but a breeding program at the Mount Kenya Wildlife Conservancy now maintains a large captive population that is gradually being reintroduced to protected forest habitat.

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Health & Demographics

- **Tunisia has been recognized by the World Health Organization for eliminating trachoma** as a public health problem. Trachoma is a bacterial eye disease that can cause blindness after repeated infections.
- A **four-year evaluation of the RTS,S malaria vaccine pilot** in Ghana, Kenya, and Malawi has found that introducing the vaccine **led to a 13 percent reduction in mortality among eligible children and a 22 percent reduction in severe malaria hospitalizations**, despite incomplete coverage.

Science & Technology

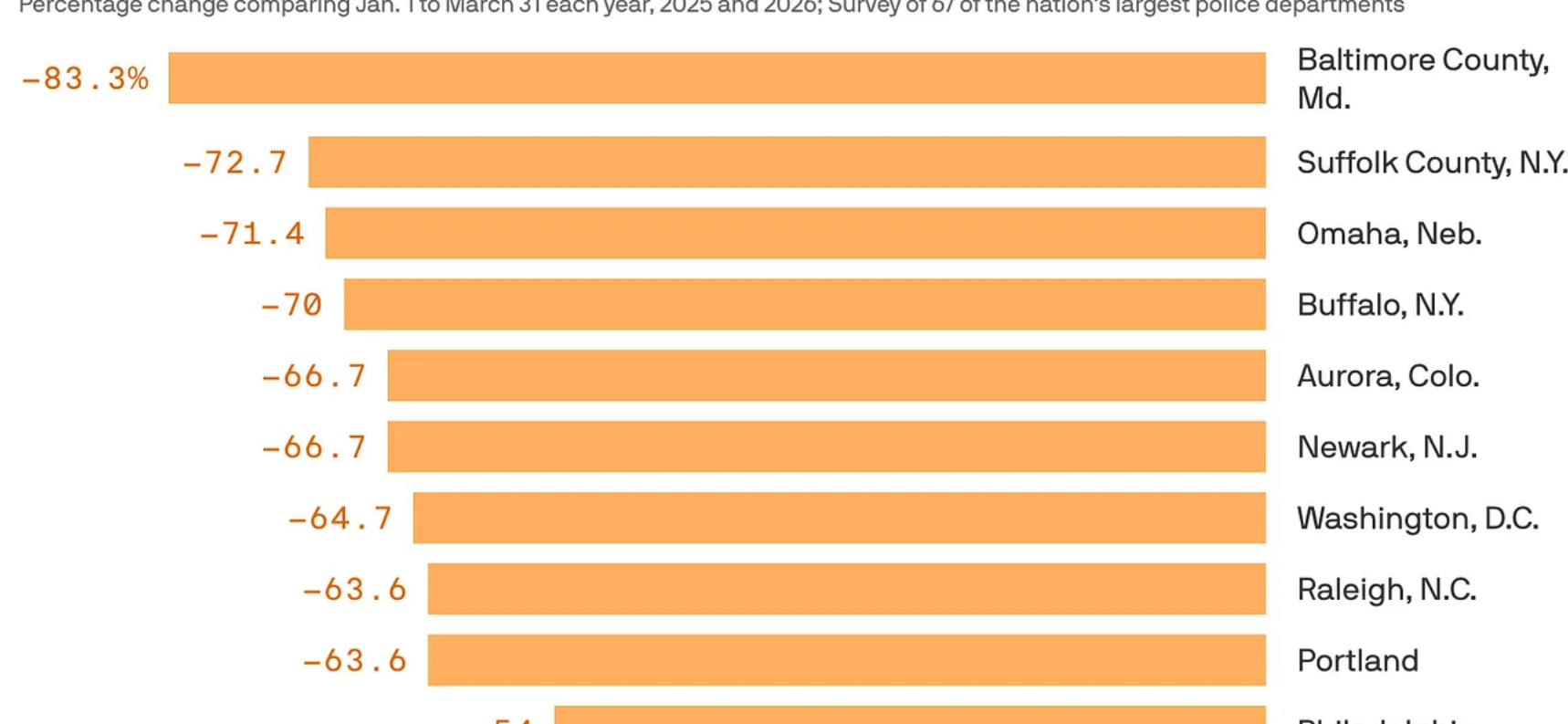
- Ramp, a corporate payments platform, has been tracking AI spending from its clients since 2023. In its **April 2026 AI Index**, the company reported that **more than half of the businesses on its platform paid for AI tools in March**, up from 35 percent a year earlier.
- **Atoco, a company building machines that harvest atmospheric water, recently showed Bloomberg its latest prototype** ahead of a planned commercial debut. The company was founded by Omar Yaghi, a Nobel Prize-winning chemist whose work helped pioneer **metal-organic frameworks**, which the device uses to pull drinking water from the air. Atoco says the machine can produce up to 4,000 liters a day, and while it will be more expensive than desalinated water, it could be useful inland or in places without reliable water infrastructure. The company is also developing a version that produces less water but runs on ambient sunlight.
- **India's Department of Biotechnology is funding a major effort to catalog the country's genetic variation.** So far, the agency has sequenced the genomes of 9,768 people and identified 44 million genetic variants that were absent from global scientific databases. The initiative aims to eventually sequence one million genomes, which would greatly expand the genetic map researchers use to study disease, ancestry, and human biology.
- **The FCC has loosened rules that constrained low-Earth-orbit internet satellites** by limiting the strength of the signals they could send to customers on the ground. Under the new rules, satellite networks such as Starlink could use up to eight satellites to serve a given area and frequency band simultaneously, up from one under the old limits, allowing the networks to serve more users at once and potentially improve internet speeds.

Violence & Coercion

- **Crime continues to fall across the United States.** According to **data from 67 major police departments**, homicides were down 17.7 percent in the first three months of 2026 compared with the same period in 2025. The same comparison shows a 20.4 percent decline in robberies, a 7.2 percent drop in rapes, and a 4.8 percent fall in aggravated assaults, continuing the post-pandemic drop in violent crime.

Areas with the largest drops in homicide rates

Percentage change comparing Jan. 1 to March 31 each year, 2025 and 2026; Survey of 67 of the nation's largest police departments



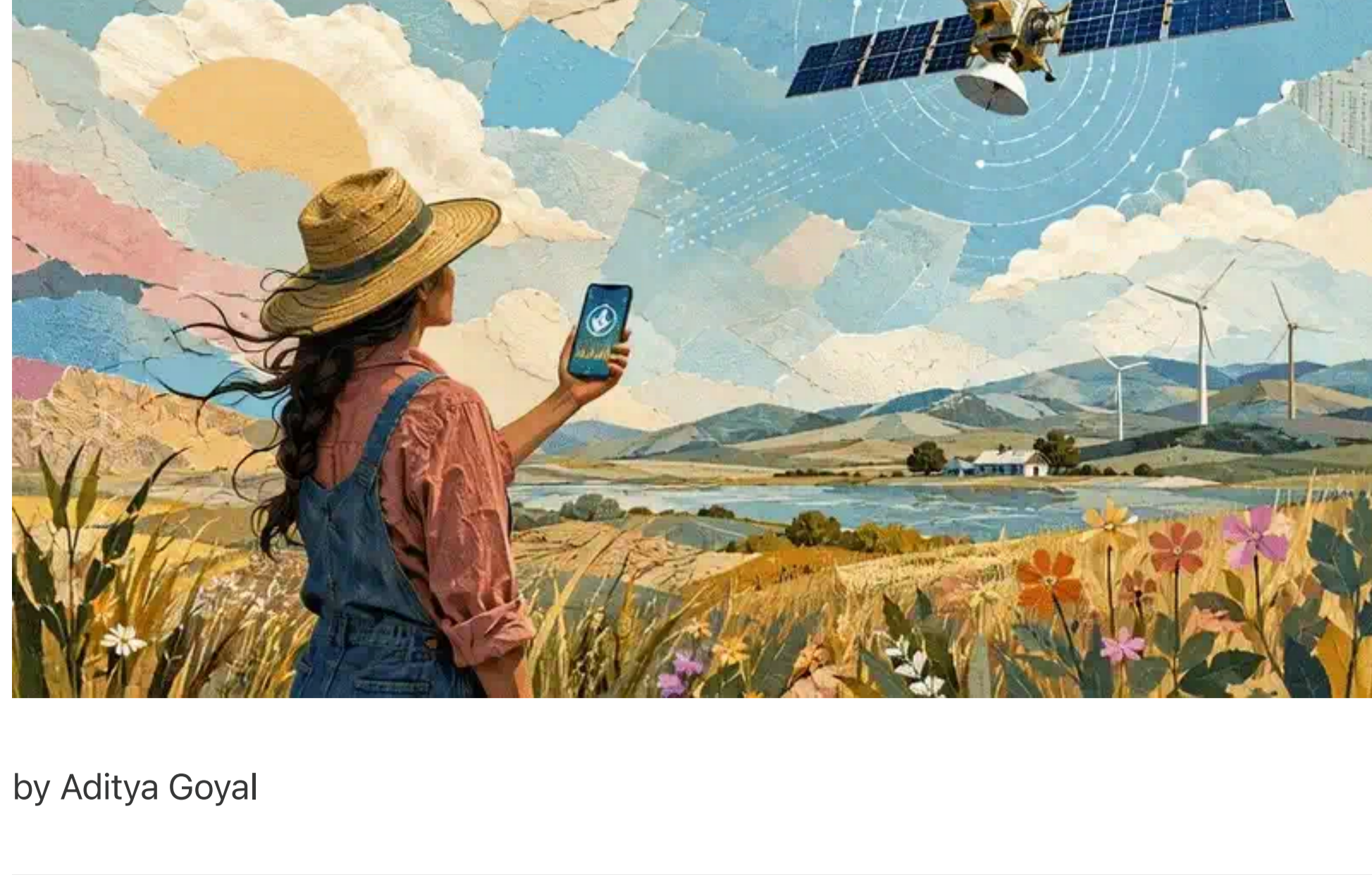
Data: [Major Cities Chiefs Association \(MCCA\)](#); Chart: Russell Contreras/Axios

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From Blind Spots to Bright Spots: How AI Is Giving the Planet Eyes to See

How a graduate student and first-time founder is building an AI platform to democratize environmental intelligence.

HUMAN PROGRESS
MAY 21, 2026



by Aditya Goyal

Somewhere right now, an oil slick is spreading across a coastline that no one is watching. A patch of rainforest the size of a football field is being cleared while the nearest ranger sleeps fifty miles away. A lake is quietly choking on algal bloom, its water drawn by thousands of families who have no idea what is in their glasses. These are not hypotheticals. They are the daily consequences of a world that generates [a lot of pollution](#), but monitors barely a fraction of the ecosystems that suffer damage.

Consider the numbers. More than [3 billion people](#) rely on water whose quality is completely unknown due to a lack of monitoring. [More than 80 percent](#) of the ocean remains unobserved. A landmark 2025 study in *Science Advances* revealed that only [0.001 percent](#) of the deep seafloor has ever been visually surveyed. That amounts to an observed area roughly the size of Rhode Island, despite the deep ocean covering two-thirds of our planet. Sub-Saharan Africa has just [one air quality monitor per 15.9 million people](#), compared to roughly one per 100,000 in Europe. Humanity has spent billions launching satellites that photograph every square meter of Earth's surface, yet we lack the capacity to meaningfully analyze most of what they capture.

That is the paradox of our age: we are drowning in Earth-observation data but starving for environmental intelligence. It is a paradox I set out to solve. Earlier this year, from my apartment in Fargo, North Dakota, I launched [CleanSentinels](#), an AI-powered environmental intelligence platform that deploys specialized "sentinels" to detect pollution, deforestation, oil spills, coral bleaching, and other ecological threats from uploaded images. Think of each sentinel as a tireless expert whose sole job is to analyze a photograph (whether satellite imagery, drone footage, or even a snapshot from your phone) and tell you exactly what's wrong and how severe it is.

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Blue Sentinel monitors water pollution, detecting everything from plastic debris to algal blooms. Green Sentinel watches forests for illegal logging and disease. Brown Sentinel analyzes soil degradation. Black Sentinel detects oil spills and industrial runoff. Teal Sentinel assesses coral-reef health. Three more (Gray for air quality, Red for wildfires, and Yellow for hazardous waste) are coming soon. Together, they represent what I believe is the next great democratization: putting environmental-monitoring capabilities that once required million-dollar infrastructure into the hands of anyone with an internet connection.

The raw ingredients for planetary-scale environmental monitoring already exist. NASA's Earth-science data archive [surpassed 123 petabytes in 2024](#) and is projected to reach 600 petabytes by 2030. The Copernicus program hosts [more than 80 petabytes](#) of freely available Sentinel satellite data, totaling 100 million individual products, all of them open-access. Google Earth Engine [holds more than 90 petabytes](#) of analysis-ready imagery and continues to grow at roughly a petabyte per month. The Landsat archive alone has seen more than [200 petabytes downloaded](#) since it became freely available in 2008.

The bottleneck was never the data. It was the analysis. Allen AI's [Skylight ocean-surveillance platform](#) illustrates the gap perfectly: a single day's worth of ocean-monitoring satellite imagery would take a human analyst 800 hours to review. Skylight's AI does it in eight. That is the kind of compression that transforms monitoring from a luxury into a utility, and it is the principle at the heart of CleanSentinels.

What makes this moment possible is a convergence of collapsing costs that would have seemed fantastical a decade ago. CubeSats now cost [roughly \\$500,000](#) to build and launch, a thousand-fold reduction from the \$500 million price tag of a traditional Earth-observation satellite. [GPS evolved from](#) a \$5 billion military program into a \$1.50 chip in nearly every smartphone. [Satellite imagery has shifted](#) from classified intelligence to free and open access, with Sentinel-2 providing 10-meter-resolution data to anyone on the planet at no cost. And AI inference prices have plummeted at a pace that outstrips even Moore's Law: the cost of GPT-3.5-level intelligence fell 280-fold [in just two years](#), from \$20 to \$0.07 per million tokens.

That trajectory follows [Wright's Law](#), the empirical observation that costs decline predictably as cumulative production scales. The Santa Fe Institute has validated this pattern across 62 technologies. Solar panels decline by roughly 20 percent in cost with every doubling of manufacturing capacity. DNA sequencing fell from [\\$100 million per genome to roughly \\$200](#) — a 500,000-fold collapse. Environmental AI is riding the same curve. The question is no longer whether AI-powered monitoring will become ubiquitous, but how quickly.

If the technological case for AI-powered monitoring is compelling, the economic case is self-evident. The Deepwater Horizon disaster cost an estimated [\\$65 billion in direct costs](#), with academic analyses placing the true figure closer to \$145 billion. The [Flint, Michigan water crisis](#) showed how a water quality problem that went undetected for 18 months ultimately cost more than \$1 billion in remediation. Those are powerful reminders of what earlier monitoring might have prevented.

The pattern is consistent across domains. Research shows that a one-hour reduction in wildfire response time reduces the frequency of large fires [by 16 percent](#). The January 2025 Los Angeles wildfires, the costliest in American history, caused up to \$250 billion in economic losses. Global deforestation costs between [\\$2 trillion and 5 trillion](#) per year in lost ecosystem services. Coral reefs provide \$150 billion annually through tourism, fisheries, and coastal protection. Every hour of delayed detection risks turning a containable incident into a catastrophe. Every dollar spent on early-warning systems returns [up to ten dollars](#) in prevented losses.

The monitoring gap represents an enormous opportunity. Of the 76,000 water bodies reported globally, [only 1 percent](#) were located in the world's poorest countries. Africa's air-pollution death rate is [155 per 100,000 people](#), nearly double the global average — yet the continent has [only 156 ground-level air-quality monitoring stations](#) for 1.4 billion people. Even in the United States, studies show that low-cost air-sensor coverage [remains uneven across communities](#), meaning the areas that would benefit most from monitoring often receive the least coverage.

That is why democratization matters. When monitoring requires \$100,000 instruments and PhD-trained operators, only wealthy nations and institutions can afford to watch. When it requires only a smartphone and an AI sentinel, the calculus changes entirely. With [7.4 billion](#) smartphone subscriptions worldwide, nearly 80 percent of the global population now carries a GPS-enabled, high-resolution camera. The potential sensor network already exists. What was missing was the intelligence layer. That is what CleanSentinels provides.

Pessimists argue that the scale of environmental destruction outpaces any technology's ability to keep up. But critics once said the same about acid rain, the ozone hole, and the Cuyahoga River catching fire. The historical record tells a different story. Since 1970, the United States has reduced combined emissions of six major air pollutants by [78 percent while GDP has quadrupled](#). The bald eagle population recovered from [417 nesting pairs to more than 316,000 individual eagles](#). The global rate of net forest loss has [more than halved](#) since the 1990s, and [36 countries](#) are now gaining more tree cover than they lose.

Each of these victories followed the same pattern: first we learned to see the problem, then we learned to measure it, and then we solved it. CleanSentinels is not the only platform operating in this space, nor should it be. [Google's FireSat constellation](#) is detecting wildfires too small for current satellites to identify. [NASA and IBM's Prithvi foundation model](#) is helping make geospatial AI open source. [Global Forest Watch's GLAD alerts](#) have compressed deforestation detection from months to days. What unites these efforts is a shared conviction: that environmental monitoring should not be a privilege of the wealthy, but a right of the exposed.

From Fargo, I see the contours of a future in which every coastline has a Blue Sentinel watching for oil spills, every forest has a Green Sentinel watching for chainsaws, and every community, regardless of income or geography, has the tools to see, measure, and demand action against the threats in its environment. The same trajectory that transformed GPS from a military secret into a free utility in every pocket, and satellite imagery from classified vaults into open data, is now reshaping environmental intelligence.

We already possess the satellites, the data, the AI, and the smartphones. What we have lacked is the connective tissue that transforms raw pixels into actionable knowledge, and the determination to make that knowledge universal. The planet has always been speaking to us. We are finally building the tools to listen. That is human progress at its finest.

Author: Aditya Goyal, a graduate student pursuing an MS in environmental engineering and a PhD in materials and nanotechnology at North Dakota State University. Outside his academic research, he independently founded [CleanSentinels](#), an AI-powered environmental intelligence platform.

Was COVID Also an Inequality Pandemic?

COVID slowed but couldn't stop the fall in global inequality.

CHELSEA OLIVIA FOLLETT
MAY 23, 2026

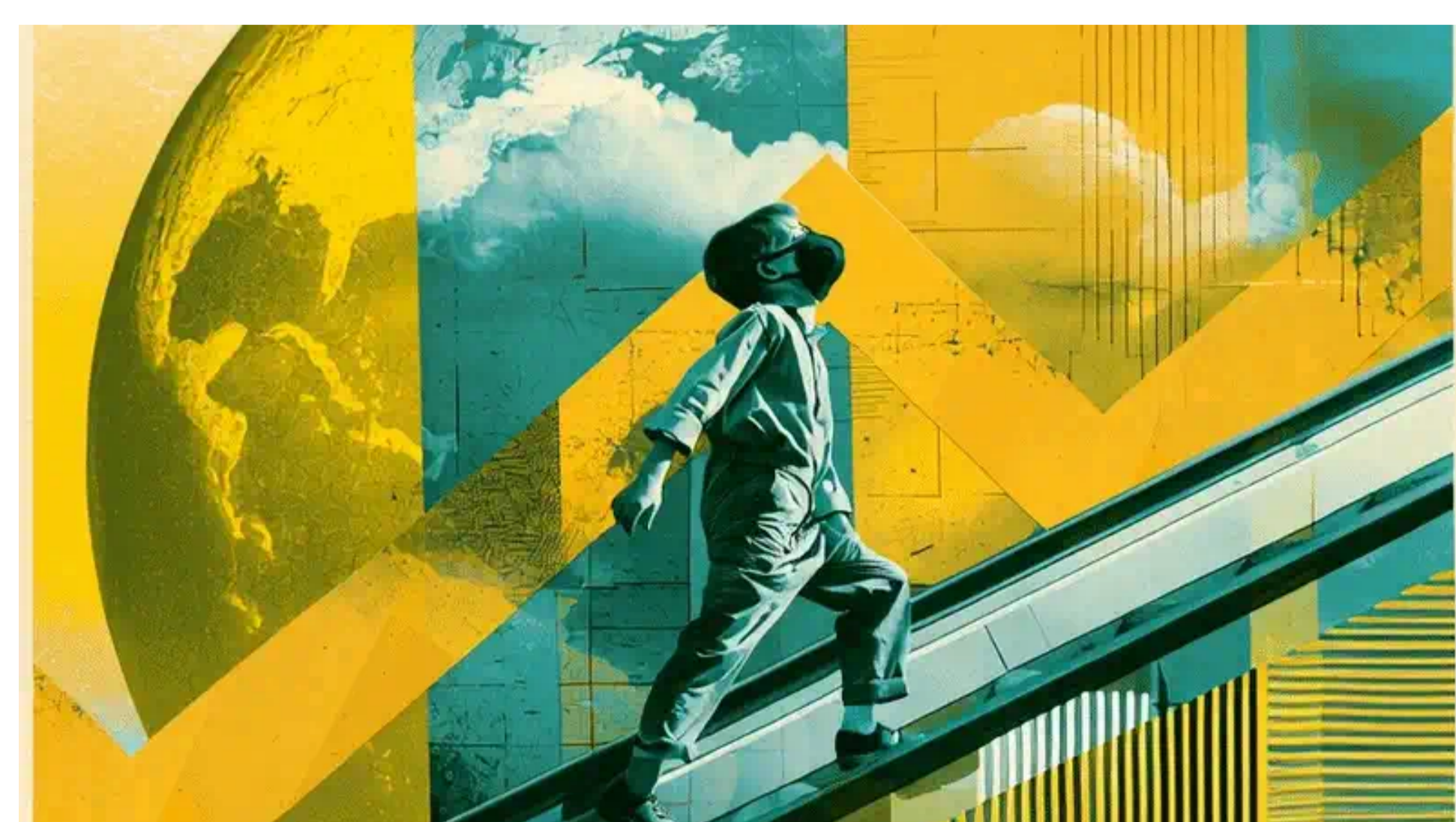
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"Our managing editor Chelsea Follett demonstrates that COVID-19 slowed, but did not reverse, the long-term decline in global inequality."

- Human Progress



Affordability fears, talk of a “K-shaped” economy, and claims of a new Gilded Age have pushed inequality to the center of today’s policy debates. Calls for a worldwide wealth tax and other unprecedented measures are not treated as radical but as inevitable—across academia, non-profits, the press, and international organizations, including the United Nations.

The COVID-19 pandemic seemed to clinch the case. As economies contracted and progress in poorer countries stalled, it was easy to assume that decades of convergence between developed and developing countries had come to an end. The authors of one Oxfam paper, for example, proclaimed during the pandemic that “unparalleled action [is] needed to combat unprecedented inequality in the wake of COVID-19.”

New research suggests a more nuanced reality. The updated Inequality of Human Progress Index assesses how the pandemic affected progress toward a more prosperous and equal world.

The pandemic clearly slowed improvement in global living standards and interrupted the pace at which countries were becoming more equal. It did not, however, cancel out the long-term, positive trends. Even under the strain of COVID-19, its attendant lockdowns, and other forceful policy responses, global inequality across key measures of well-being remained lower than it was a generation ago.

The index looks beyond income alone. It measures inequality across eight dimensions that shape everyday life, including lifespan, child survival, nutrition, education, internet access, environmental safety, income, and political freedom. The index, which I co-authored with George Mason University economist Vincent Geloso, seeks to offer a fuller view of gaps in global development, taking into account more aspects of human well-being than any prior index of inequality.

The data show a substantial decline in global inequality over the past three decades as rising prosperity allowed poor countries to narrow gaps with rich ones. That pattern held through 2019. During the pandemic years of 2020 and 2021, progress slowed sharply and, in some areas, stalled or modestly reversed. Yet the earlier gains were not erased.

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This distinction is important. COVID-19 was a severe shock. Life expectancy fell worldwide. School closures disrupted education. Economic activity and international trade declined, with especially devastating effects on low-income countries. The index reflects these setbacks. Inequality stopped falling at its earlier pace and, in some measures, edged upward slightly after years of progress. Still, the overall level of global inequality remained far below where it stood in the 1990s.

In a few areas, improvement continued even during the crisis. Internet access expanded rapidly, especially in poorer countries, reducing inequality in access to information to its lowest level on record. Faster regulatory approvals amid the pandemic helped bring more people online. In Kenya, for example, Alphabet’s high-altitude internet balloons were finally cleared in 2020, allowing rural areas to gain internet access for the first time. The project had been stalled in regulatory review for nearly two years before the crisis prompted action.

Not all the data were encouraging. Inequality in political liberty ticked up during the pandemic as many countries took a turn toward greater authoritarianism. Even with the long-term shift toward electoral democracy intact, the setback shows the importance of protecting political liberty during emergencies.

For all the turmoil, the damage across different measures of well-being was thankfully limited.

These findings complicate popular claims that the world is experiencing a runaway increase in inequality. Calls for a global wealth tax, massive new aid commitments, or other significant expansions of state redistribution often rest on the premise that trade and free enterprise have failed to deliver shared gains. The data suggest otherwise.

If anything, the pandemic highlighted how sensitive progress can be to disruptions in markets. Countries with greater economic freedom generally proved more resilient. In contrast, prolonged lockdowns and restrictions often imposed heavy costs on poorer populations, particularly in countries where remote work and online schooling were not viable options for most people.

The broader lesson is that global convergence is neither automatic nor guaranteed, but instead depends on certain conditions such as undisturbed markets, even as long-term progress has proven more robust than critics often assume.

Mistaken narratives about global inequality have real consequences. They shape public opinion and influence policymakers to embrace sweeping interventions. A more accurate assessment of recent history suggests a need for caution.

COVID-19 tested the global economy in ways few events in modern history have. It slowed human progress and exposed vulnerabilities. At the same time, it demonstrated the durability of the long-term trend toward lower global inequality. Preserving and strengthening the policies and institutions that made that progress possible, including economic and political freedoms, remains a better bet than assuming they have already failed. The gains of recent decades have left the world both better off and more equal.

This article was published in the Orange County Register on 2/1/2026.

Doomsayer: Progress Roundup

The end of obesity, an AI-derived math proof, energy market adaptation, and more.

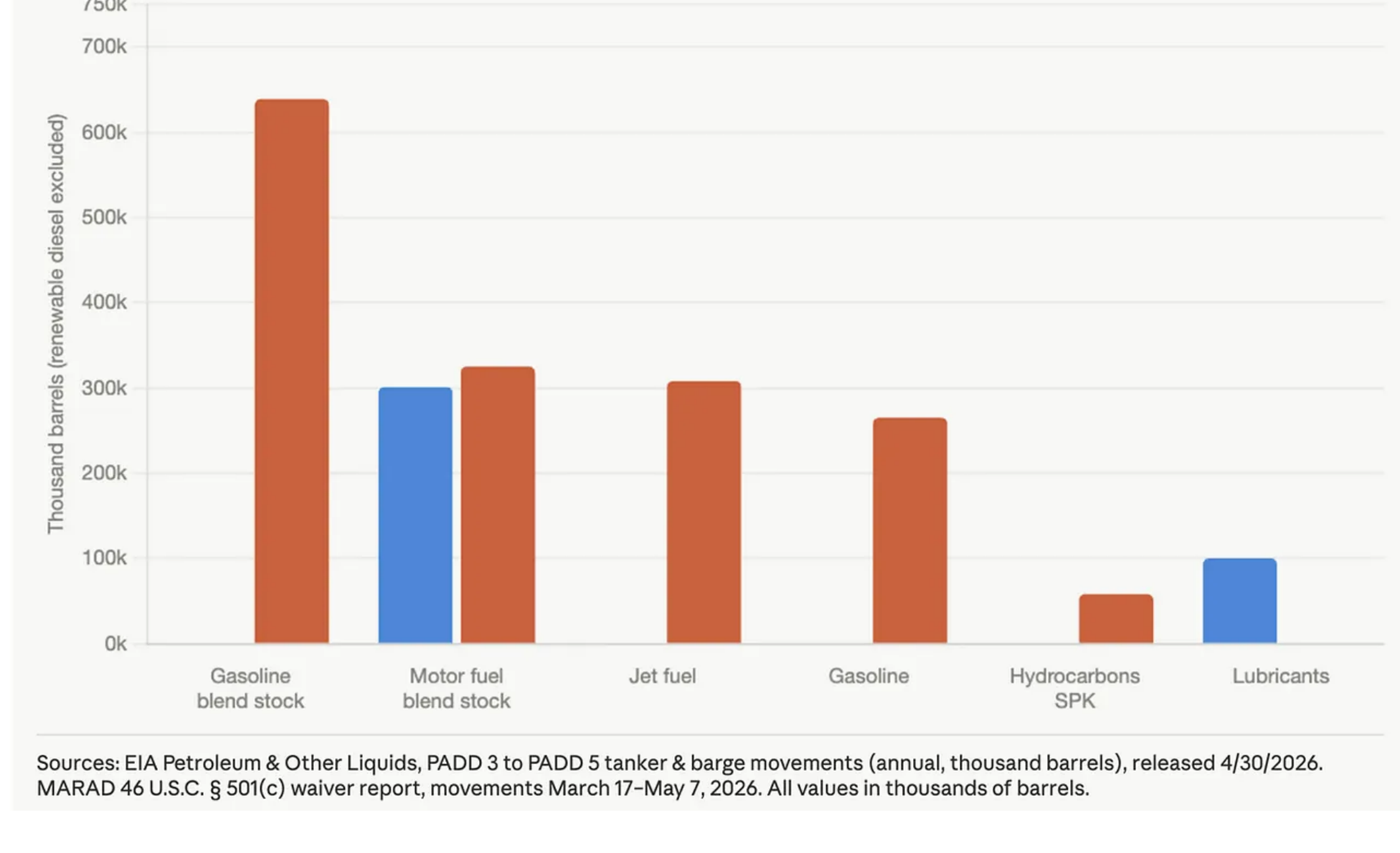
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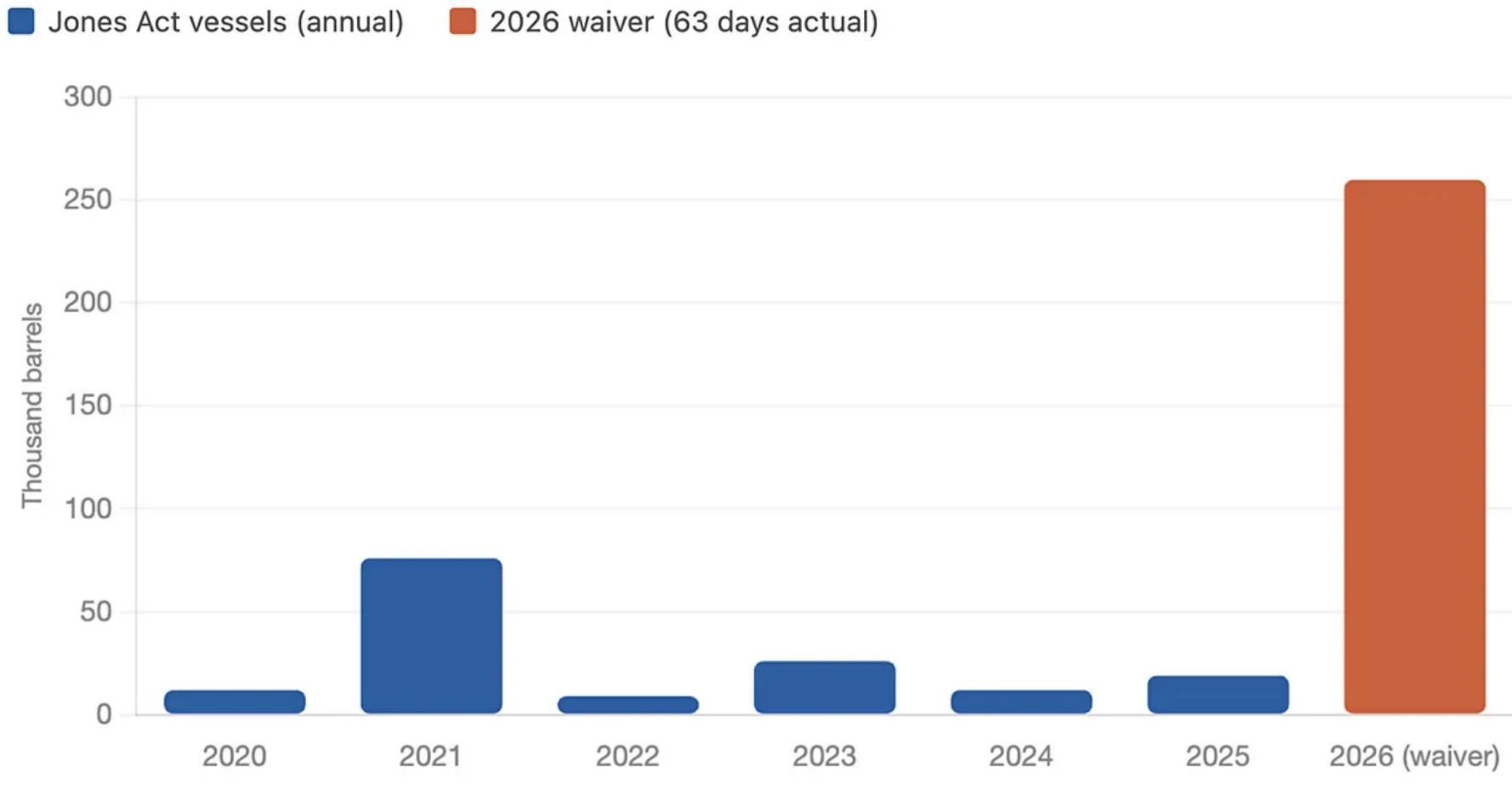
Economics & Development

- **President Trump's decision to waive the Jones Act**, a century-old law that restricts domestic shipping to US-built, US-flagged, and US-crewed vessels, is **generating valuable information** about the costs of maritime protectionism. Because compliant tankers are scarce and expensive, the law often makes it uneconomical to ship petroleum products by sea between US ports. Removing that constraint revealed how much trade the law had been suppressing. In the first 50 days after the waiver took effect, foreign-flagged tankers moved record quantities of petroleum products between the Gulf Coast and the West Coast. They also carried propane to Puerto Rico, where the Jones Act typically makes domestic shipments so expensive that buyers rely on foreign imports from as far afield as Chile. A better world is possible!



Puerto Rico — Propane deliveries from US mainland

Annual Jones Act vessel volumes (2020–25) vs. 2026 Jones Act waiver (63 days actual)



2026 waiver data: single voyage by M/V Clipper Posh / M/V Active, Houston TX → Tallaboa/San Juan, Apr 20, 2026 (259,680 barrels confirmed). Waiver issued Mar 17, 2026 under 46 U.S.C. § 501(c) in connection with Operation Epic Fury. Historical data is annual full-year totals.
Sources: EIA, US Petroleum Exports to Puerto Rico (2020–25); MARAD 46 U.S.C. § 501(c) waiver completion report (2026).

Education

- **Harvard faculty have agreed to cap the share of A grades** to 20 percent to control grade inflation. It's not a perfect fix, as all lower grades, including A minuses, remain uncapped, but it's a step in the right direction.

Energy & Environment

Conservation and biodiversity:

- **Journalists are increasingly using satellite imagery and machine learning to detect illegal resource extraction in remote rainforests**, where on-the-ground investigations can be difficult and dangerous. The Pulitzer Center and the nonprofit Earth Genome have used these tools to create systems that monitor the Amazon and tropical forests in Africa, flagging suspicious changes for reporters to investigate.
- **A small population of critically endangered Raffles' banded langurs is recovering in the treetops of Singapore**, growing from 40 individuals in 2011 to at least 80 today. The recovery has been aided by citizen scientists, who have tracked the monkeys for years and helped conservationists identify good locations for rope bridges and food trees.

Energy and infrastructure:

- **The Hormuz crisis is straining global energy markets, but also showing the resilience of the system.** *The Economist* notes that, despite the loss of 14 percent of global petroleum output, crude oil prices have so far **stayed far below** the extreme levels that **some analysts predicted**. One reason for that development is that exports from outside the Gulf have surged, particularly from the US, where crude oil exports recently hit a **record-high 6.5 million** barrels per day.
- There are also signs of longer-term adaptation to oil supply risks. **A second pipeline in the UAE, expected to begin operating next year, would bypass the Strait and potentially double the country's non-Strait export capacity** to 3.6 million barrels per day. And worldwide, electric vehicles are adding a **small but growing buffer** against future oil shocks.
- **West Africa is making progress toward a regional power grid.** A World Bank-financed program has built **more than 4,000 kilometers of high-voltage transmission lines** connecting the grids of 15 countries. Eight percent of the region's electricity is now traded across borders, helping improve reliability and reduce costs.

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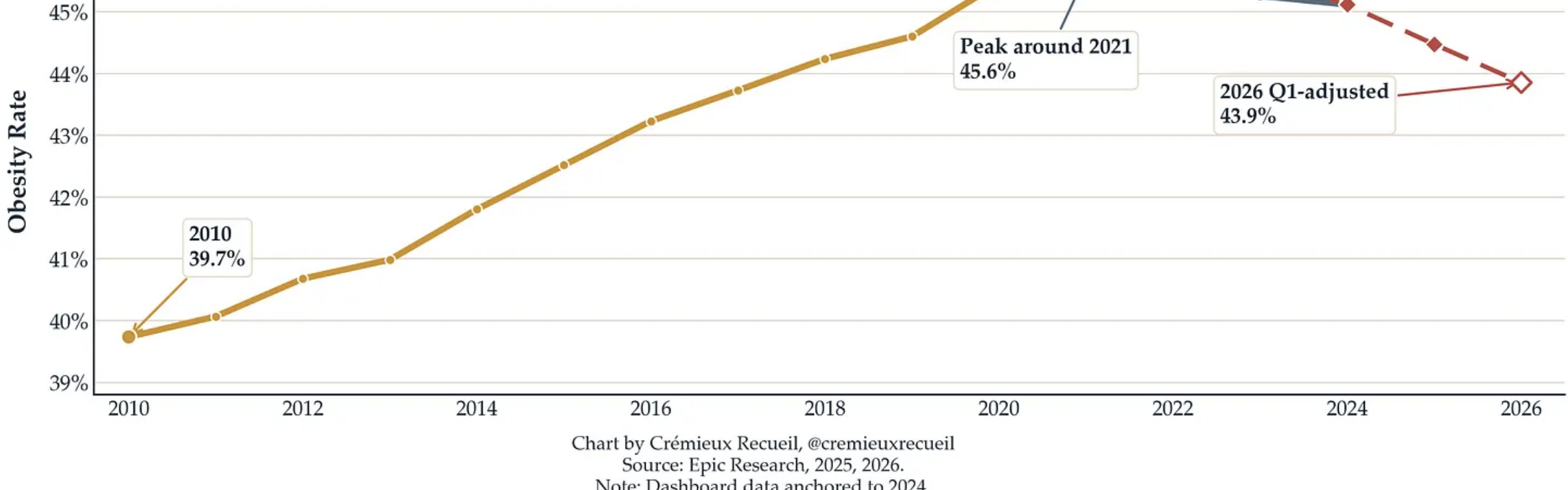
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Health & Demographics

- Eli Lilly has announced the **main results** of a phase 3 trial for retatrutide, its **new GLP-1-based weight loss drug**. In the trial, obese adults without diabetes lost an average of 28 percent of their body weight on the highest dose, broadly confirming an **earlier result** Lilly reported in December. That exceeds the results of the pivotal obesity trials for semaglutide (Wegovy) and tirzepatide (Zepbound), which produced average body-weight losses of roughly **15 percent** and **21 percent**, respectively.
- **There's more evidence that the US obesity rate has entered a sustained decline.** Recent data released by Epic, an electronic health records company, indicate that the obesity rate has been **falling since 2021**. The increasing uptake of GLP-1 weight loss drugs is one plausible explanation.

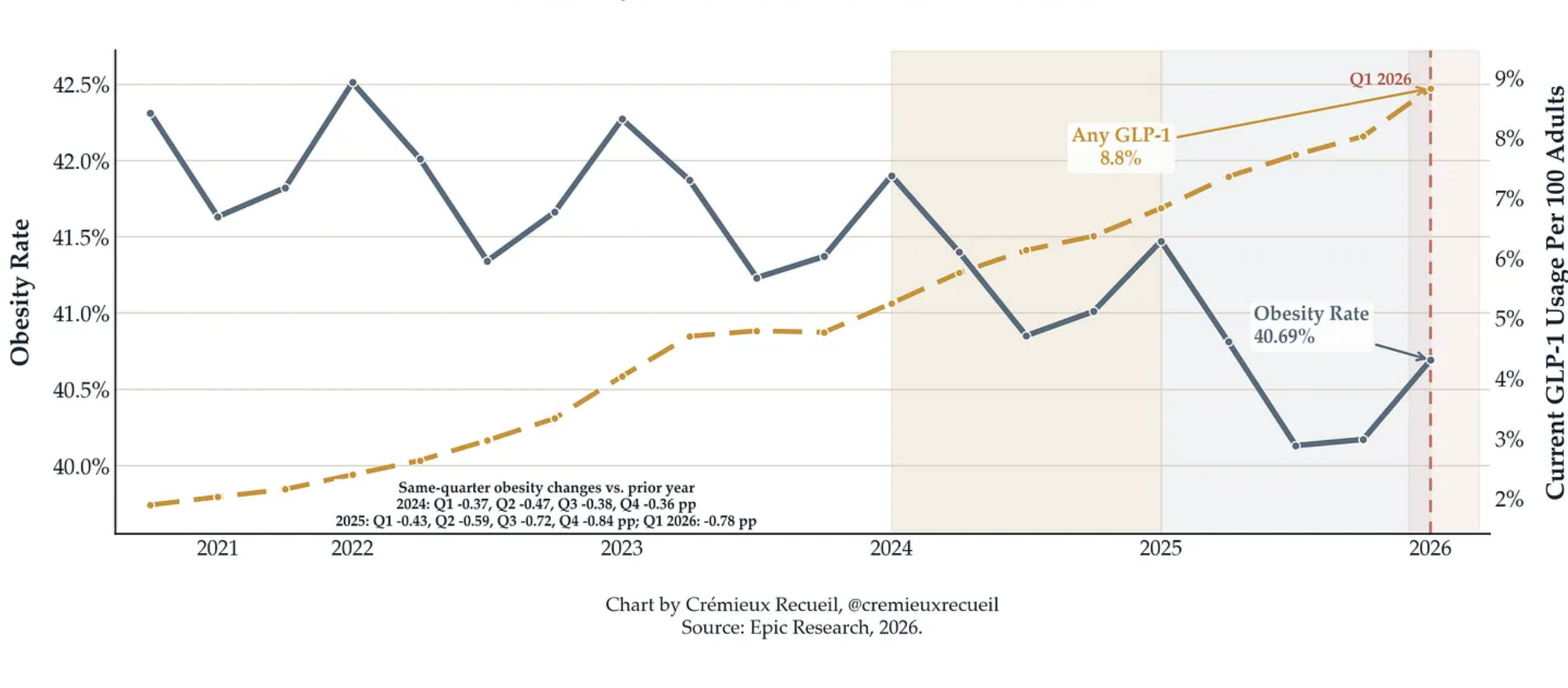
Adult Obesity's Rise Has Reversed

Results From Epic's Massive Cosmos Dataset, Representing 304 Million Patient Records



The Obesity Rate Has Been Falling as GLP-1 Use Has Been Rising

Data From Epic's BMI and GLP-1 Trackers, c. 2021-Q1 2026



- **Four recent observational studies have found that people taking GLP-1 drugs tend to have better cancer outcomes**, including lower rates of tumor progression and mortality, as well as lower rates of breast cancer diagnosis. The studies do not attempt to show causation; they are simply promising observations and signals for further research.
- A **new analysis of Global Burden of Disease data** across 204 countries and territories found that, **from 1990 to 2021, the global age-adjusted prevalence of substance use disorders fell by 16.9 percent.**
- The US has made commercial airline travel extraordinarily safe. The harder, albeit smaller problem is general aviation—think small aircraft, helicopters, and private jets—where the fatal accident rate is roughly two orders of magnitude higher. However, **even this riskier part of aviation seems to be getting safer.** According to the Federal Aviation Administration, there were **0.68 fatal general aviation accidents** for every 100,000 hours of flight time in 2024, the lowest rate since the agency began tracking its current series in 2009, and likely the lowest rate in US history.

Science & Technology

- **Waymo continues to expand its robotaxi service.** The company says it has begun growing its service area in Miami, with expansions in Austin, Atlanta, Houston, and the San Francisco Bay Area close behind. Over the next few weeks, Waymo expects to cover more than 1,400 square miles across 11 cities.
- **An OpenAI general-purpose reasoning model has produced a counterexample disproving a long-standing conjecture posed by the mathematician Paul Erdős.** Unlike **earlier AI-related progress** on Erdős problems, where human mathematicians used AI tools largely as research assistants, the core conceptual work behind this new result appears to have originated from the model itself.
- **Humanity has not lost the ability to create magnificent stone structures.** Around the world, **modern Hindu temples** are being built with load-bearing stone, intricate hand carving, and design principles inherited from ancient architectural texts.

The Works in Progress Newsletter

Modern Hindu Temples

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The System That Feeds Us

Jan Dutkiewicz joins Adam Omary to discuss the triumphs and tradeoffs of the industrial food system.

ADAM OMARY
MAY 26, 2026

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The industrial food system is often treated as a symbol of everything people distrust about modernity: too processed, too corporate, too artificial, and too detached from land and labor.

That critique obscures one of the greatest achievements in human history: modern food production has made food cheaper, safer, more abundant, and more varied than ever before.

In this episode of The Human Progress Podcast, Adam Omary speaks with political scientist Jan Dutkiewicz about his new book *Feed the People: Why Industrial Food Is Good and How We Can Make It Even Better*. They discuss the great achievements of the industrial food system, the panic over processed foods, nostalgia for preindustrial agriculture, and how to make food healthier and more sustainable without giving up the system that feeds us.

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

I'm pleased to be joined today by Jan Dutkiewicz, an assistant professor of Political Science at the Pratt Institute and co-author of *Feed the People: Why Industrial Food Is Good and How We Can Make It Even Better*.

You open the book with this food paradox. What is the paradox?

The paradox is that the American food system has never been better, and it's never been worse.

The American food system is incredibly abundant. It produces delicious and potentially very nutritious foods at scale within a relatively strong regulatory state. But there are problems. The way we produce food has large environmental externalities, it's not always great for labor, and it's not always optimally distributed.

The point of the book is to see how we can address those externalities while leaning into the things about our food system that work.

You got on our radar through your article in *The Free Press*, "In Defense of Processed Foods."

Processed foods have been a subject of major controversy recently, particularly with our health secretary, Robert F. Kennedy, Jr., and the broader Make America Healthy Again movement. But processed foods, you argue, aren't the evil that they're made out to be.

The fact that foods are processed doesn't tell us much about them. It doesn't tell us what's been processed. It doesn't tell us how it's been processed. It tells us nothing about nutrition. So, the fact that food processing has become a synonym for unhealthfulness has created a lot of confusion.

One thing I really want people to take away from the book is that the category of "ultra-processed foods" is super new. It comes from a Brazilian public health schema that emerged in the late 2000s called Nova, which is just the Portuguese word for "new." Basically, these public health researchers wanted to create an epidemiological tool to assess the average diet quality of a given population to correlate health outcomes with dietary patterns.

The way they decided to do that was to create four categories of food. Unprocessed foods are Nova 1. Basic household ingredients like salt, sugar, honey, and oil are Nova 2. Nova 3 are foods that you could create in your kitchen by combining ingredients from 1 and 2, such as pasta, tinned marinara sauce, and what have you. And then you get this category called Nova 4, or ultra-processed foods, which consists of anything that you can't make in your kitchen, such as foods that use industrial processes to do things like extract or isolate parts of food.

They then decided that ultra-processed foods were a primary driver of morbidity, which is true if you conflate all ultra-processed foods with junk food. But that category also includes things like plant-based burgers, baby formula, highly processed vegetables and fruits, and protein shakes. So, the category is really not fit for purpose. We should be focused on the nutrient quality of individual foods, not on how much they have been processed.

Historically, food processing has actually massively improved nutrition. The ability to isolate vitamins and put them into foods allowed us to address malnutrition problems that once affected huge populations. In the early 1900s, something like 70 percent of all children in New York City public schools suffered from rickets, which is a vitamin D deficiency. When the United States drafted for World War I, as many as 30 percent of all drafted men were rejected from service because of physical unfitness, in part due to malnutrition. Pellagra, which is caused by vitamin B3 deficiency, killed hundreds of thousands of people in the South. So early food science and processing—adding iodine to salt, enriching bread, pasteurizing and enriching milk—saved countless lives.

Today, we look back to the past with rose-tinted glasses and say things like "Well, I don't necessarily want the packaged product. I want things that come from a real farm, from the soil." In reality, when food production was scattered, small-scale, and poorly regulated, before modern science, transportation technology, and processing, nutrition outcomes for the average American were much worse.

Across the 20th century, there were all of these massive developments. You mentioned improvements in food safety. There have also been large improvements in raw agricultural output. What's the rough timeline of these developments?

As we enter the 20th century, you've got the birth of the industrialization of food processing and food transport with the introduction of long-distance and refrigerated rail, and the centralization of storage in places like Chicago. Following that, you've got the rise of superior petrochemical-based fertilizers, superior pesticides and herbicides, and better irrigation technologies. Then, we had the birth of modern plant science. At first, this consists of very meticulous crossbreeding. The famous example is Norman Borlaug's development of dwarf wheat, which was a more robust and higher-yielding variety of wheat designed to benefit from the industrial systems I just described: fertilizer, pesticides, herbicides, and high levels of irrigation. From there, we become more proficient at crossbreeding plants and eventually genetically modifying them to achieve particular ends.

Thanks to all this innovation, we've seen tremendous increases in yields per acre for staple crops. For the first time in human history, we produce more calories and protein than the average person needs, which is an incredible achievement. Many civilizations before ours have been brought down by a few bad harvests. Now, we have a food system that is relatively robust. There can be shocks, but the shocks don't short-circuit the entire system.

The COVID pandemic was a good example of that.

Exactly. Other than in a few key industries—for instance, meat production, because meat processing is so labor-intensive—global food production was not seriously disrupted.

Of course, there are still areas in the world that face food insecurity. How much of the excess calories is concentrated, say, in wealthy countries like the United States, where we might see a lot of food waste?

Food waste is very tricky. The largest share of food waste is household food waste; people throwing out food that's going bad or that they no longer want. Addressing household food waste at the policy level is very difficult. I will say, though, that if you're thinking about food waste in the sense of poor use of calories and protein within the food system, the elephant in the room is meat production. The average animal that we eat will consume far more calories and protein over its lifetime than it actually yields.

There's an interesting tension between two concepts you introduce in the book: the meat austerity view you just articulated, and what you call democratic hedonism, or pursuing food because it is pleasurable.

Many people might be willing to pay more and tolerate the waste because meat is tasty.

This is a fundamental question. So much food discourse shies away from the basic pleasures people get from eating. The Michael Pollans and Wendell Berrys of the world basically say that if you enjoy an industrial diet, you're suffering from false food consciousness, and you would be far happier eating heirloom tomatoes from the farmer's market. Well, that's an empirical question, and I think lots of people genuinely prefer burgers and Doritos.

People who make arguments for veganism from an ethical standpoint will say, well, the pleasure you get from meat should not outweigh the suffering of animals. But even if you buy that argument—and I personally buy that argument—it hasn't done a lot to minimize meat consumption.

We think that a central principle of making a better food system is providing people with food that they enjoy, and that reforms to the food system should maintain access to that pleasure even as we address negative externalities. We spend a chapter directly focusing on the meat question. All peer-reviewed research points to the fact that people in high-consuming countries like the United States need to eat less meat if we're to have a more sustainable food system. How do you do that? Well, you can tell people to eat less meat, but I think that giving alternative proteins another chance or long-term investment in cellular agriculture could potentially achieve that goal while preserving the pleasure people get from food.

Throughout your book, I kept coming back to these interesting psychological issues at play with how we approach food.

There's been a lot of discussion about evolutionary mismatch, particularly when it comes to the obesity crisis. We have an innate taste for high-fat, high-sugar foods that were rare in our ancestral environments, and now, when they're hyper-plentiful, it's easy to go overboard. You don't usually see the same evolutionary logic applied to meat. It makes sense that ancestrally, even for hunter-gatherers, meat would be relatively rarer and account for, in most societies, only a minority of total calories.

I think that's absolutely right. Part of our abundant food system is that there's an abundance of things that we probably should eat less of. There are some well-tested policies, such as sugar taxes, that could marginally increase the cost of things we know are bad for us. We can try to steer diets to be healthier or more resource-efficient.

There's another elephant in the room, which is that, in the United States, unhealthy foods are often subsidized indirectly through subsidies and SNAP benefits.

In the United States, unlike in Europe, farmers don't get direct cash handouts. Subsidies are mostly indirect in the form of things like crop insurance. The government supports cheaper crop insurance, especially crops that can be produced at large scale, like wheat, corn, and soy. I think it would be a good idea to get rid of subsidies for any food that isn't used for human consumption. If something gets burned for ethanol or ground down for animal feed, it shouldn't be subsidized because it doesn't advance nutrition or lead to more efficient land use. I also think that, to the extent that there are farm-level subsidies, they should apply to any crop for human consumption, including crops grown in smaller quantities.

We also need to think about subsidies that send signals to producers. When it comes to government spending, those come from SNAP and school lunches.

School lunches are a much-maligned part of the American foodscape, but in the wake of the Obama administration, school lunches have actually become relatively healthy. What gets reimbursed by school lunches is an incentive to producers, and under the new guidelines, a lot of that is actually fruits and veggies, which is great.

SNAP has been attacked because it doesn't restrict what you can spend money on. Somewhere around 10 percent of SNAP money gets used for soda. The argument in favor of doing away with soda from SNAP is that the government is basically subsidizing the Coca-Cola Corporation and incentivizing poor nutritional outcomes. On the other side, food security activists will say that the point of SNAP is to address food insecurity by stretching household budgets, and if you remove soda from SNAP, people receiving SNAP will probably still buy soda, they'll just use the scarce funds that SNAP is meant to protect. That's an empirical question that should be tested.

How would you say the USDA is currently performing?

I am reticent to talk about what's happening because it's in such flux. Earlier, we would have said, well, surely they're going to crack down on glyphosate. Instead, they're supporting glyphosate production. It's very mercurial.

I will say that a big part of public health related to the food system isn't the content of what people eat, but the regulation of food production. A lot of that is being hacked away. Most recently, there was a [really good piece in Vox](#) by Kenny Torella about the push to simultaneously increase line speeds at chicken slaughterhouses and also reduce oversight for things like products tainted with salmonella.

When it comes to the new nutritional guidelines, I think it's more show than substantive difference, other than the foregrounding of red meat and protein. If you look at the rest of those guidelines, they're still saying Americans should eat more fruit, veggies, and whole grains.

Occasionally, you see a high-profile case of a contaminated ingredient in a large production chain. Maybe it's contrarian, but when I see that kind of news, I feel pleasantly surprised. Every single day, we're feeding millions of people across the whole country, and only rarely, maybe once a year or less, do we see high-profile incidents of something going wrong.

Absolutely. The fact that a tainted food scandal makes the news shows you how rare it is. And again, it's because the industrial principles we have in our food system create food that is remarkably safe.

It shocks me sometimes the extent to which people critique the modern food system when you can go to the average supermarket and get a bounty of food for a relatively low price and not worry about whether or not it will make you sick.

It's valid to critique the environmental impact of food production and to seek to reduce it. It's valid to try to address remaining food insecurity. I just think that once we identify those problems, we have to think about ways to address them at scale. In much American food writing, even people who identify the problems correctly point towards these anachronistic, non-scalable solutions. So rather than saying, for instance, that addressing food insecurity just means more SNAP benefits or better school lunches, they'll start talking about how every school lunch needs to contain regeneratively fed beef.

Similarly with individual diets, there's this obsession with bodily purity and supplements. A few years ago, it was gluten. Now there's the question of protein and processing. And these things shift with the tides. What I find unfortunate is that these neuroses tend to push people away from fantastic technological innovations. We see this in the complete reticence to eat genetically modified organisms, even though many genetically modified organisms are very beneficial technologies.

The rainbow papaya in Hawaii was genetically modified to protect it from the ringspot virus, which threatened the state's entire crop of papayas. All the genetic modification does is make it possible to grow papaya in Hawaii. That papaya is delicious and healthy. Arctic apples from Washington state have been genetically modified to not oxidize as quickly, which reduces food waste and keeps them crunchy and looking good after they've been sliced up.

You also see this with critiques of plant-based meats like Impossible Burgers. People will panic about their ingredient lists, completely missing the fact that all this processing is pretty benign, and that peer-reviewed research shows that a soy-based Impossible Burger is actually heart-healthier than a red meat burger. So, a lot of this has to do with scaremongering, which takes advantage of both relatively low levels of scientific literacy and this idea that food should be pure and come from the land.

There's also an argument that in the effort to make produce bigger and higher yielding, the nutrient density has gone down. How do we think about that tradeoff?

We should talk about that on a product-by-product basis. I don't think we see that tradeoff in staple crops. The wheat we get, if we eat it as whole wheat, is super nutritious. We do see some minor variation in the quality of nutrients between small-scale and large-scale production of produce. Many people will also say they prefer the taste of the farmer's market tomato to the hothouse tomato at Trader Joe's.

I have nothing against people going to the farmer's market, but we can't pretend that these perceived losses of flavor or a tiny bit of nutrition outweigh the fact that it's only large-scale industrial production that makes produce, meat, and staple crops widely available at any time of year.

Read the full transcript

Screens Aren't Destroying Young Minds. I Should Know.

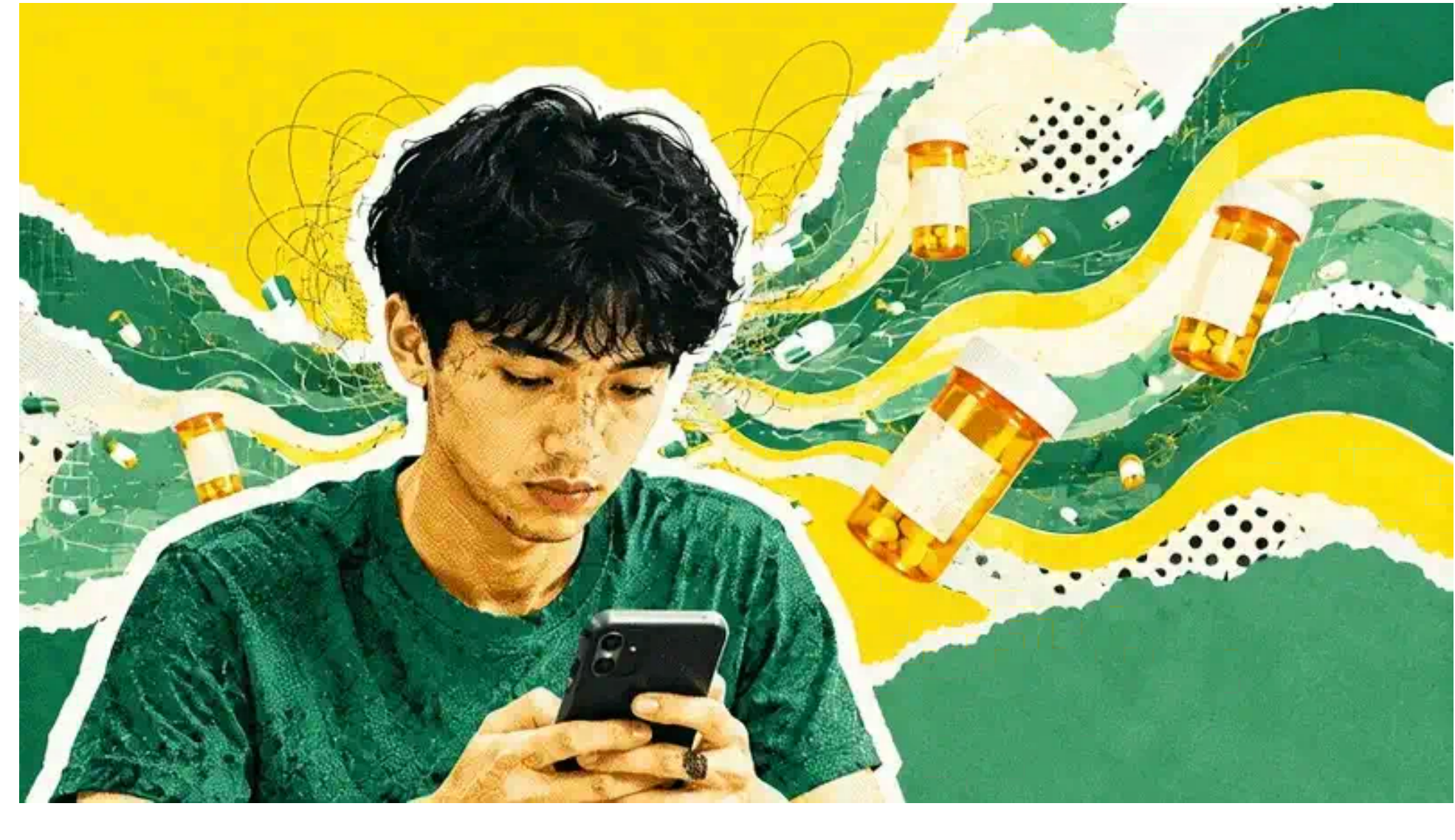
Laws restricting phone use won't solve the root causes of adolescent anxiety.

ADAM OMARY

MAY 29, 2026

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As a member of Gen Z, I have studied the effects of social media on adolescent mental health from a perspective most psychology researchers lack: I grew up under its influence.

Between ages 12 and 17, I was obese, socially isolated and addicted to the fantasy video game RuneScape. I was home-schooled, lived with just my mother and rarely went outside. I logged over 10,000 hours in that game alone, nearly a third of my waking life during those years.

That doesn't include countless additional hours I spent on other video games, television and, of course, social media. I made friends through online chatrooms and pen pal websites because I had none in real life. I averaged well over 10 hours a day on devices.

If ever there were a case study for the claim that screens destroy young minds, I would seem to fit it. And yet here I am as a 26-year-old developmental psychologist with a doctorate from Harvard. I am in good mental and physical health, with deep friendships online and off.

Maybe I'm the exception. Or maybe the harms are overblown.

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Jonathan Haidt's best-selling book "The Anxious Generation" argues that smartphones and social media have "rewired" childhood and caused an epidemic of mental illness. The book has helped inspire social media [restrictions in Australia](#) and several American states, and shaped how a generation of parents thinks about technology.

Restricting screen time and social media access are reasonable aspirations for child-rearing. But as a matter of public policy, the case for regulation rests on a scientific foundation far weaker than its proponents claim.

Haidt's argument relies on the observation that adolescent mental health indicators worsened around 2010, when smartphones and social media apps popular with young people — such as Instagram and Snapchat — started becoming widespread. But correlation is not causation, and research suggests that some of the supposed mental health crisis is an [epidemic of overdiagnosis](#). Wealthy Western democracies with the highest smartphone adoption rates have also seen [expanded access](#) to psychiatric services and a cultural shift toward identifying and labeling psychological distress, as Abigail Shrier argues in her 2024 book "Bad Therapy."

Meanwhile, youth have been doing better on many other outcomes: [less crime](#), [less smoking](#), [less drug use](#), [fewer teen pregnancies](#) and [fewer high school dropouts](#). If social media were truly "rewiring" the adolescent brain, we would expect the damage to be more consistent than a selective worsening on some measures and improvement on others.

Many studies have reported on how social media use is associated with mental health problems among the young. However, a [2024 analysis](#) in JAMA Pediatrics of 143 studies featuring data from over 1 million adolescents worldwide found that links between social media use and poor mental health among youth were small, inconsistent across studies and drawn mostly from nonclinical community samples.

One reason studies report mixed findings is that many fail to account for factors such as personality traits and social support that independently predict heavy screen use and mental distress. For example, social media use may be associated with anxiety and loneliness, not because it causes them, but because socially anxious individuals are more likely to seek out connections online. Statistically controlling for such factors often [accounts for](#) the relationship between social media and mental health.

I am not dismissing the possibility that some children are harmed by some content in some contexts. Many in my generation have had online exposure to graphic, violent and sexual imagery that no child should encounter. But the blanket claim that social media use drives generational mental illness does not align with the evidence.

Screens didn't cause my problems. They were coping mechanisms for preexisting problems: loneliness, family instability, social anxiety, an absent father. The variables that predict youth mental health are not hours spent on social media but social support, resilience and a sense of belonging. To help struggling adolescents, the evidence points toward strengthening those capacities, not confiscating phones.

During my most isolated years, online connections were the only positive relationships I had. Internet forums helped me navigate college applications and taught me about calorie-counting, which sparked a weight-loss journey that changed my life. Even in RuneScape, I built discipline and goal-setting habits that I later transferred to academics and research.

Concerns about social media are well-intentioned. But sincerity is not proof. The dramatic assertions that children's lives would be transformed by reducing social media exposure are more akin to moral panics over past technologies and obsessions — from radio to comic books to video games — fueled by weak social science and strong public emotion. In the United States, according to data from the [Centers for Disease Control and Prevention](#), youth mental health has been improving recently, despite no change in access to social media. The simplest explanation might be that social media is not as harmful as people think.

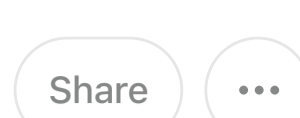
This article was originally [published](#) at the Washington Post on 4/12/2026.

Doomslayer: Progress Roundup

Bumper turtle-hatching season, a cholesterol-lowering gene therapy, a massive protein database, and more.

MALCOLM COCHRAN

MAY 31, 2026



Economics & Development

- **Global jet fuel supply chains are adapting to wartime turmoil.** In April, the head of the International Energy Agency [warned](#) that Europe had “maybe six weeks or so (of) jet fuel left” if oil supplies remained disrupted by the Iran war. Instead, imports from the United States, India, and Nigeria, drawn by higher prices in Europe, have [staved off shortages](#) so far.
- According to a [recent industry report](#), **US home internet has become much faster and cheaper over the past decade.** Inflation-adjusted prices for popular broadband plans are down 43.6 percent since 2014, while average download speeds have improved by 145 percent.
- Competition between online retailers is making our lives even more convenient. In certain locations, [Amazon](#) and [Walmart](#) are now offering **30-minute delivery** for a set of everyday goods.

Energy & Environment

Conservation and biodiversity:

- **A mother puma with three kittens was recently spotted in Minnesota**, the first evidence in over a century of pumas breeding in the state.
- Florida’s wildlife agency reports that there are **82 percent more loggerhead sea turtle nests in the state this year** compared to the same period of 2025, the latest good news in a [broader story of sea turtle recovery](#).
- **Biologists have discovered a thriving deep-sea coral reef off the coast of Argentina.** The scientists are still measuring the extent of the reef, but it may turn out to be one of the largest cold-water reefs in the world.
- **Deforestation in Brazil’s Atlantic forest**—the large coastal biome home to Rio de Janeiro and São Paulo—**fell to its lowest level in at least 40 years in 2025**, according to an NGO report.
- Ecologists in Namibia are testing whether satellite-linked animal tags can be used to [detect sudden changes in wildlife behavior](#). By studying how the animals react to simulated hunting threats, they hope to train **algorithms to recognize “animal panic” from satellite data and alert rangers to poaching incidents.**

Energy and infrastructure:

- **The number of homes in the UK with air conditioning has doubled over the past three years**, reaching an estimated 4 million.
- As part of Tuvalu’s ongoing coastal adaptation work, **engineers have reportedly expanded the land area of Fongafale, the country’s most populous islet, by more than 10 percent.**¹

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Health & Demographics

- **A gene therapy from Verve Therapeutics sharply reduced LDL cholesterol, a major causal risk factor for heart disease, in an early human trial.** The treatment, which turns off the PCSK9 gene, lowered LDL cholesterol by 62 percent at the highest-tested dose. Drugs that block PCSK9 are a well-tested method of lowering cholesterol, but this new treatment aims to achieve the same effect with a one-time infusion.
- **The FDA has approved the first treatment for chronic hepatitis D**, a rare but dangerous liver infection that previously had no approved treatment options.

Science & Technology

- **Emergency services dispatchers in Snohomish County, Washington, are using an AI system to triage non-emergency calls** in an effort to reduce wait times and prioritize callers with urgent problems.
- **Biohub, a biomedical research nonprofit, has released an AI-generated database of more than one billion predicted protein structures.** For context, AlphaFold, the best-known AI protein-prediction system, includes a public database of 214 million predicted structures. Biohub says its much larger database could help scientists compare obscure proteins and generate new leads for medicine and drug design.
- Chinese researchers have sent **human embryo models into space to study how microgravity and radiation affect early human development.** The models are lab-grown stem-cell structures that mimic early embryo development, but cannot grow into viable fetuses.
- **The Ocean Census**, an international research project dedicated to accelerating the discovery of marine life, claims to have **identified 1,121 likely new marine species in a single year, well above the usual pace of discovery.** Much of the acceleration seems to have come from better coordination; [728 of the species](#) were identified by researchers analyzing existing collections, and the Ocean Census also credits a [new database](#) that centralizes records of potential new species while they await formal scientific description, a process that typically takes over a decade.

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¹ ABC Australia reports that an engineer claimed the project has increased “Tuvalu’s landmass by more than 10 per cent,” but given the [scale and location](#) of the reclamation work, he was likely referring to the islet of Fongafale, not the entire country.