

- Science Humor
- Science Quiz
- Short items
- Earthquake!
- Healthspan



To eat a whole cake would be to commit the sin of gluttony. But to eat a whole pie is okay, as the sin of pi is zero.



SCIENTIST: I want you to meet my robot

ME: Wow

SCIENTIST: He has limited functionality. He can't hold a conversation or express emotion

ME: Ok

SCIENTIST: I was talking to the robot

Cuttlefish = not fish Starfish = not fish Jellyfish = not fish Silverfish = not fish Shellfish = not fish

Seahorse = fish

Scientific American Quiz

https://www.scientificamerican.com/game/science-quiz-extinction-encryption-hacks-2025-04-11/

MATT KARL PRESENTS: AI FOR SENIORS

Learn what the AI hype is all about! We'll start by explaining why everyone is so excited about this new technology, then explain where the progress is going. How will it be helpful to you in the future and what can AI do for you today? Discussion examples include ChatGPT, CoPilot, Gemini and showing text image and search creations! Registrations required on Community Apps.

THURS, APR 17 | 2-3PM CATALINA HALL

... In 2023

9

Chance a large asteroid will strike 1 in 32 Earth on December 22, 2032

Year in which U.S. deaths are projected to begin exceeding births

1 in 25

2033

Chance that an American man convicted of a crime was older than
 50 in 1990

1 in 7

 Percentage of Americans who cannot distinguish between right and left 15%

Percentage of U.S. engineers with Ph.D.s who were born abroad 56%

 Minimum number of monthly users of character.ai, a website that offers Algenerated conversation partners

20,000,000Avg 90 minutes per day

Source: Harper's Index Apr 2025

Courtesy of Peter Stiles

Fun facts cont.

Hair from your head, measured as a single strand, grown over an average lifespan of 75 years – Length? 3,500,000 ft (660 miles)

Hair on head – how much produced in a day? 24 meters (80 feet)

Unravel DNA from one human cell -Length?

6.5 ft

If DNA is fishing line stuffed into cell the size of a basketball - Length?

100 km (62 miles) 11

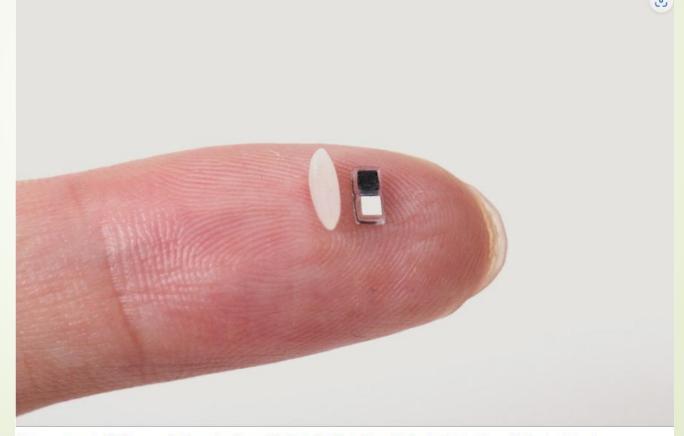
Click here to read story from Scientific American.

APRIL 2, 2025 3 MIN READ

Tiny, Injectable Pacemaker Runs on Light and then Dissolves

This temporary pacemaker, smaller than a grain of rice, could regulate the heart less invasively

BY PAYAL DHAR EDITED BY SARAH LEWIN FRASIER



A temporary pacemaker like this one, smaller than a grain of rice, could be injected into the body to regulate heartbeats. John A. Rogers/Northwestern University

ANIMALS

Male octopuses are usually killed by females after mating. Now, they may have found a way out

MARCH 23, 2025 · 9:06 AM ET

HEARD ON WEEKEND EDITION SUNDAY

By Ryan Benk, Ayesha Rascoe



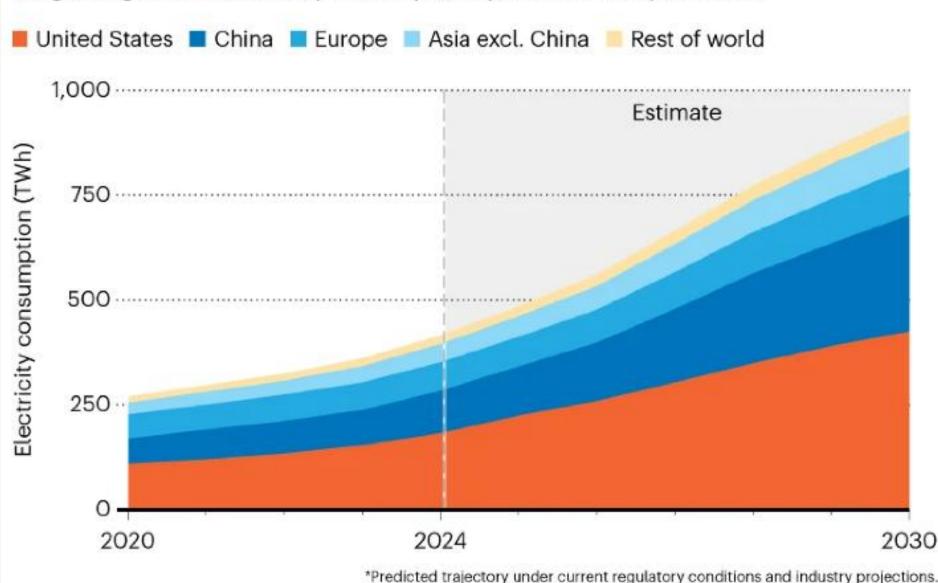
A male blue-lined octopus often becomes their partner's meal after mating but the University of Queensland's Fabio Cortesi tells NPR's Ayesha Rascoe some males have found a way to survive.



onature

DATA-CENTRE ENERGY GROWTH

China and the United States are predicted to account for nearly 80% of the global growth in electricity consumption by data centres up to 2030*.





Great potoo: The 'tree stump' bird with a haunting growl and can see with its eyes closed

Throughout the night, great potoos emit a loud, moaning growl that has earned the bird a mythical status, with some communities believing the sounds to be children calling for lost parents

Great potoo: The 'tree stump' bird with a haunting growl and can see with its eyes closed | Live Science

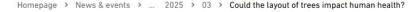


News & events ETH Zurich Studies at ETH Zurich Doctorate Research Industry & Knowledge Transfer Ca

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In brief

- Urban trees enhance residents' well-being.
- Aggregated, connected tree clusters seem to provide greater health benefits than fragmented green spaces at the neighbourhood level.
- More research is needed to understand the precise health effects of tree coverage.



SUSTAINABILITY . RESEARCH

Could the layout of trees impact human health?

A long-term Switzerland-wide study has found that neighbourhoods with numerous, well-arranged trees exhibit lower mortality risks than other areas. The reasons behind this, and the factors that play a role, will require further research.

20.03.2025 by Vanessa Bleich, Corporate Communications

Read - □ - < Share
</p>



Well-designed urban green spaces play a vital role in enhancing the quality of life in cities (Image: Mario / Adobe Stock



China's superfast charging technology is twice as fast as Tesla's — fully recharging EVs in just 6 minutes

BYD's e-platform charges twice as fast as Tesla's superchargers, meaning its cars can travel up to 250 miles on a five-minute charge

Read More

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A whisker away from greatness

It's a bird, It's a plane, It's super rat! No, really. Allow me to introduce you to Ronin. He's making a name for rodents everywhere by saving innocent civilians from hidden explosives — along with his landmine-sniffing pack, of course!

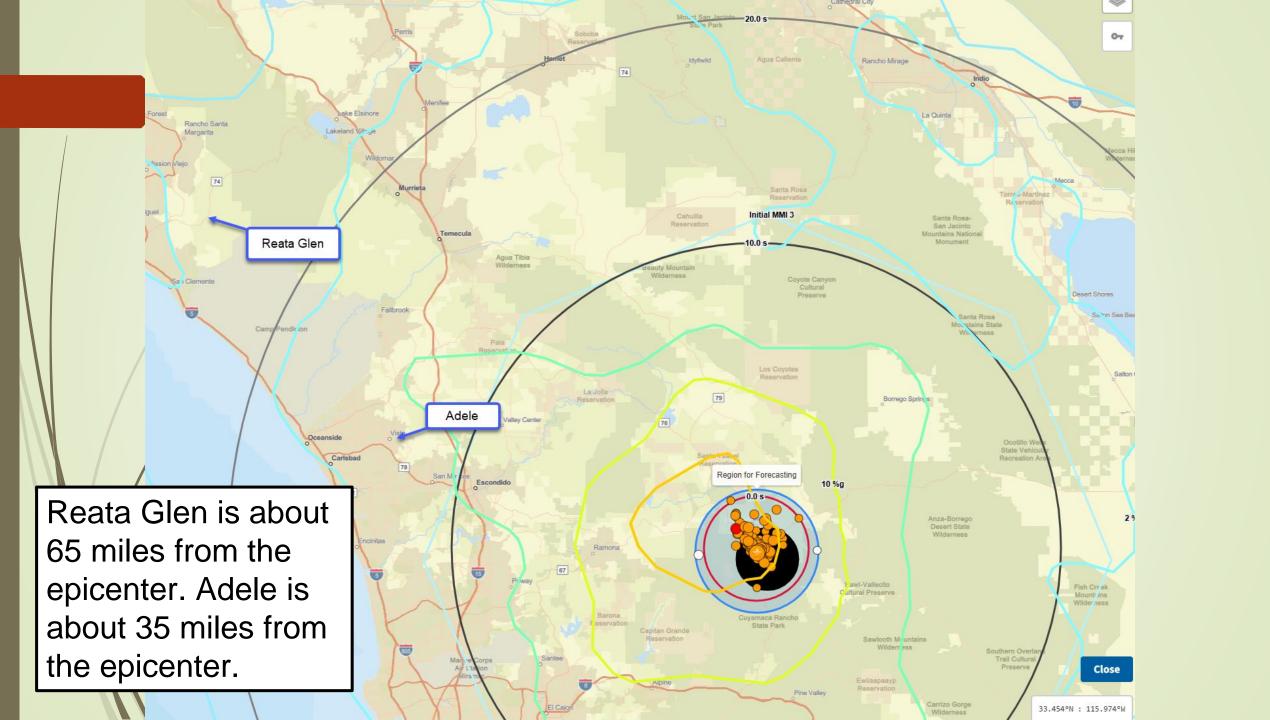
The African giant pouched rat recently set a new world record for the most landmines detected by a rat. Between August 2021 and February 2025, Ronin uncovered 109 landmines and 15 other pieces of unexploded ordnance in a region close to Siem Reap in Cambodia, according to Guinness World Records.

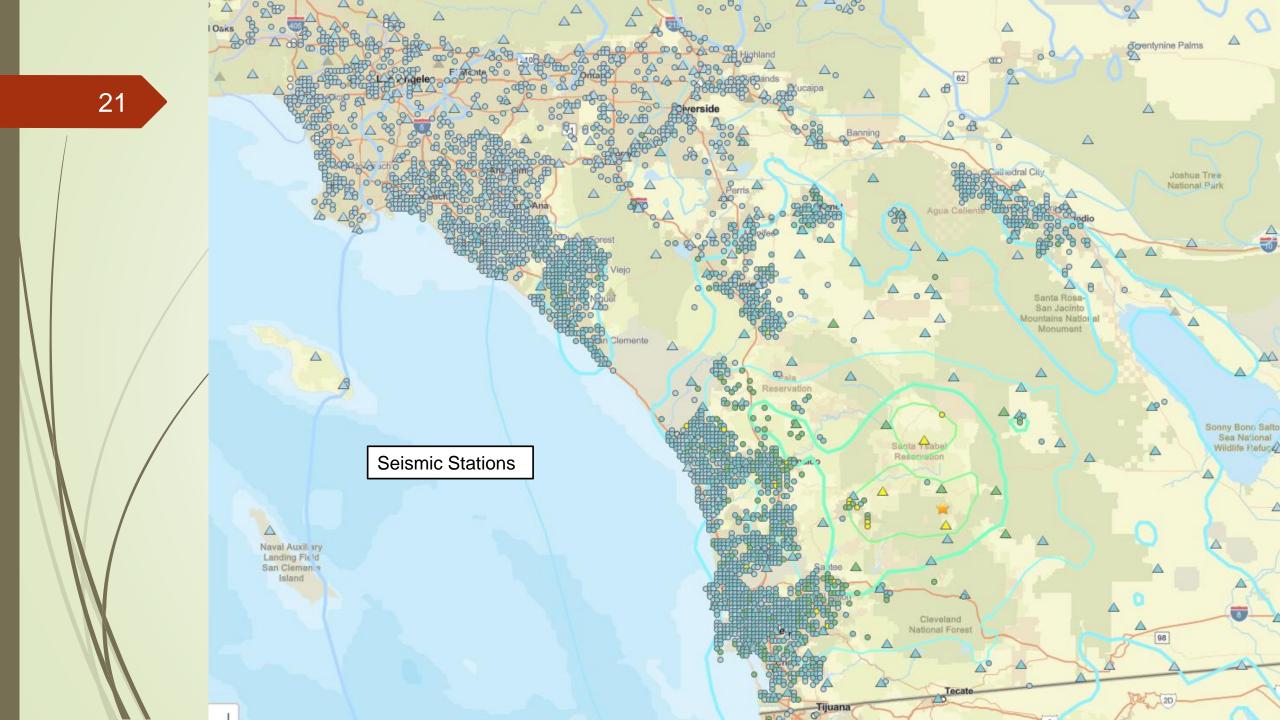
Rats are able to have this type of impact due to their high intelligence, speed and keen sense of smell. They are also too light to trigger landmines.

So, the next time you spot one of these little guys out in the world, I urge you to see how incredibly mighty they actually are.

Yesterday's Earthquake

- Yesterday morning I was watching a presentation on Butterflies and moths by a friend of ours in Upstate New York through Binghamton University's Lyceum program.
- About 10:10 my phone starting making a huge sound and the screen turned bright red.
- It said something about an earthquake and told me to "Drop, take cover, and hang on."
- I got up to tell Barbara when I felt the quake.
- Also, at 10:10 I received an email earthquake alert from my Seismic Eruption program that runs continuously at CBS News in New York City.

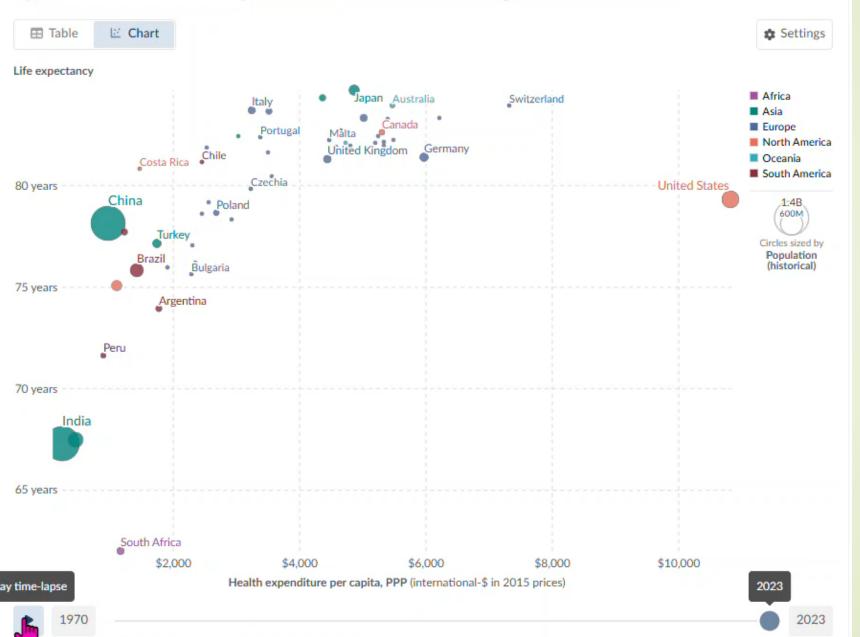




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Our World in Data

The <u>period life expectancy</u> at birth, in a given year. Health expenditure includes all financing schemes and covers all aspects of healthcare. This data is adjusted for inflation and differences in living costs between countries.



HEALTHSPAN

- My April Scientific American magazine arrived with a supplemental magazine:
 - ► HEALTHSPAN: The Science of Aging well.
 - How Al is redefining longevity
 - New research for disease prevention
 - Pioneering Healthspan doctors

You can download this supplement from:

https://www.scientificamerican.com/custom-media/healthspan/ There is no firewall!

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BY JEREMY A. ABBATE

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People are living longer than ever, but often with chronic disease. Scientists are finding new ways to slow aging and deliver lifelong, robust health

BY DAVID H. FREEDMAN

INFOGRAPHIC

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Data on "years lived with disability" quantify the effects of disease

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GORDON LITHGOW

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Biomarkers of aging are revealing important insights into health and longevity

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As we grow older, one system after another loses Its youthful speed, efficiency and effectiveness

BY KATIE PEEK

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BY FRANCESCA E. DUNCAN

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No matter your genetic risk, you can add years of good health BY KATIE PEEK

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Peter Attia's best-selling book and podcasts have made him a popular source of practical advice for people who want to remain healthy longer

BY ADAM PIORE

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High-quality sleep can help hold off the chronic diseases of old age BY KATIE PEEK

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Researchers are building artificial intelligence that may one day help us live our healthiest lives

BY SCOTT PENBERTHY

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Artificial intelligence trained on millions of pathology slides may improve the ability to diagnose cancer early on

BY DAVID H. FREEDMAN

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A virtual dermatology clinic uses Al to increase access to timely care BY ESTHER LANDHUIS

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Powerful new models promise to accelerate the process of drug discovery

BY MIKE MAY

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A five-year-old today has an extremely good chance of living to 90 and beyond. To cope, we need an economic and cultural revolution aimed at changing how we age

BY ANDREW J. SCOTT

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To take full advantage of the latest science of wellness, the U.S. will have to address many social inequities that jeopardize people's health

BY ROBERT LEE KILPATRICK

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Oral health care is shaping up to be a key component of the effort to increase healthspans

BY LISA SIMON

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How one woman fashioned a long life of activity and social attachments

BY NEENAH ELLIS

SCIENTIFIC AMERICAN



This series was created for Google, the Buck Institute, Optispan and Phenome Health by Scientific American Custom Media, a division separate from the magazine's board of editors.

The Conditions that Shorten Our Healthspans

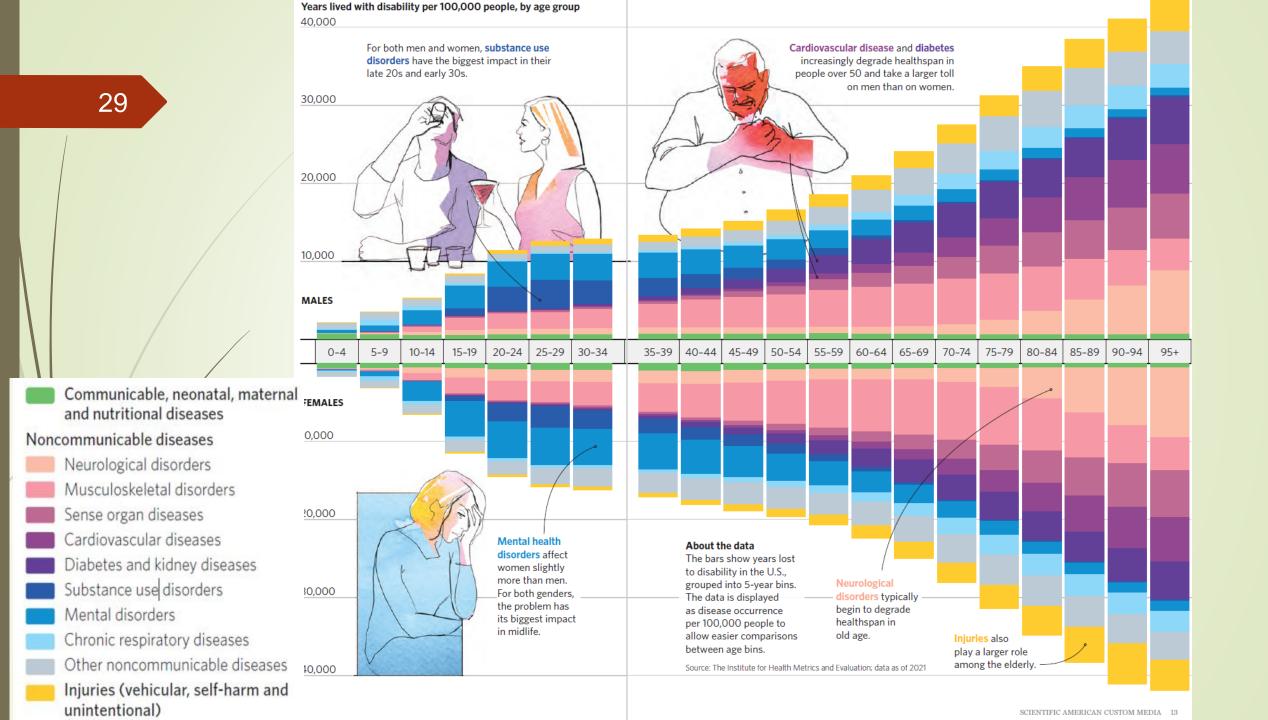
Communicable, neonatal, maternal and nutritional diseases

Noncommunicable diseases

- Neurological disorders
- Musculoskeletal disorders
- Sense organ diseases
- Cardiovascular diseases
- Diabetes and kidney diseases
- Substance use disorders
- Mental disorders
- Chronic respiratory diseases
- Other noncommunicable diseases
- Injuries (vehicular, self-harm and unintentional)

These items are the keys used in the next slide.

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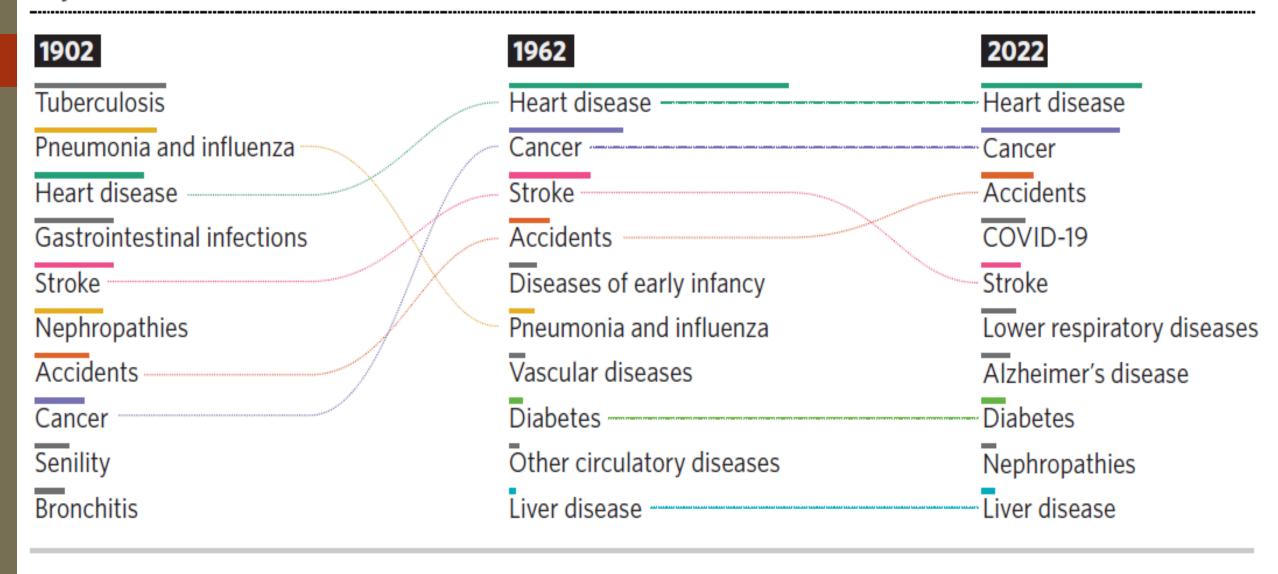


What do you think was the leading cause of death in:

022

Tuberculosis
Heart Disease
Heart Disease

Top Causes of Death in the U.S.



10 50

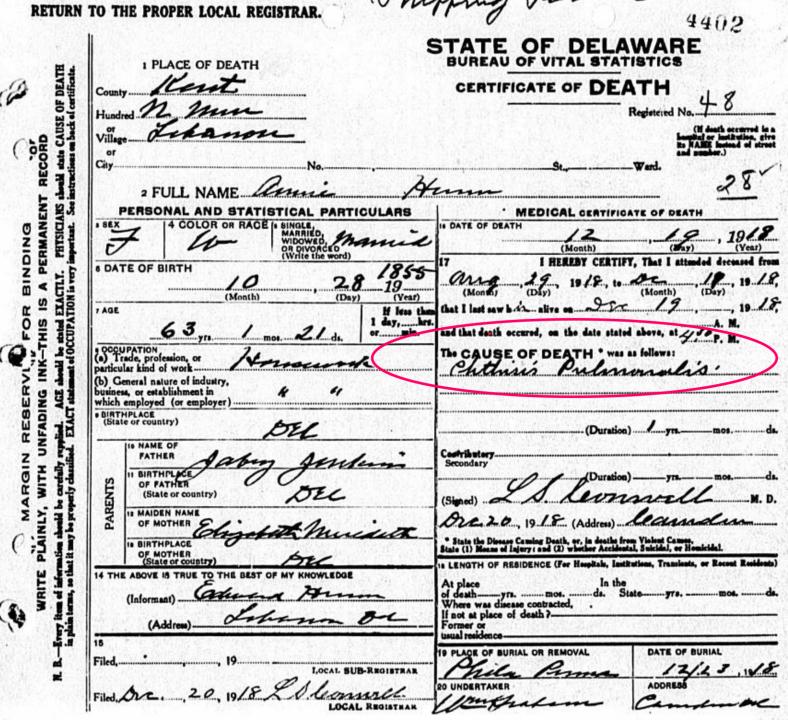
- Bars show annual death rate per 100,000 people.
- Colors track causes that appear more than once.

100 200

Data from the National Center for Health Statistics

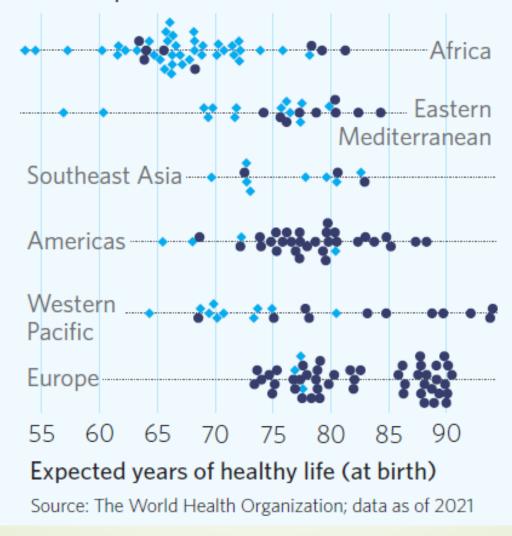
I was told she died of the flu in the Spanish Flu epidemic of 1918.

Her death certificate shows that she died of **Phthisis Pulmonalis**, also known as **Pulmonary Tuberculosis**, which is a chronic infectious disease caused by the bacterium Mycobacterium tuberculosis.



Healthy life expectancy at birth

Healthspan is also a matter of geography. Residents of wealthier countries (*circles*) tend to have longer heathspans than those in poorer countries (*diamonds*).



- The effort to keep aging at bay focuses not on merely adding years to people's lives, but on making those extra years healthy ones.
- In the U.S., the average person can expect to experience nearly 13 years of relatively poor health in late life, compared to fewer than 11 years in 1990. This is because people are living longer but not better.

Lifelong Lobstering

n June 6, 1920, Virginia
Oliver was born in
Rockland, Maine. When
she was eight, Oliver
joined the family business with her lobster-catching father and brother. It became a lifelong passion.

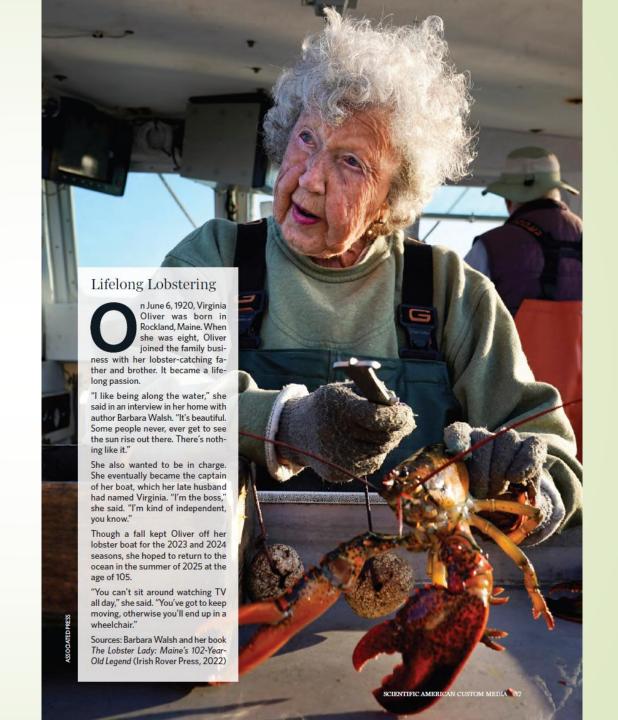
"I like being along the water," she said in an interview in her home with author Barbara Walsh. "It's beautiful. Some people never, ever get to see the sun rise out there. There's nothing like it."

She also wanted to be in charge. She eventually became the captain of her boat, which her late husband had named Virginia. "I'm the boss," she said. "I'm kind of independent, you know."

Though a fall kept Oliver off her lobster boat for the 2023 and 2024 seasons, she hoped to return to the ocean in the summer of 2025 at the age of 105.

"You can't sit around watching TV all day," she said. "You've got to keep moving, otherwise you'll end up in a wheelchair."

Sources: Barbara Walsh and her book The Lobster Lady: Maine's 102-Year-Old Legend (Irish Rover Press, 2022)

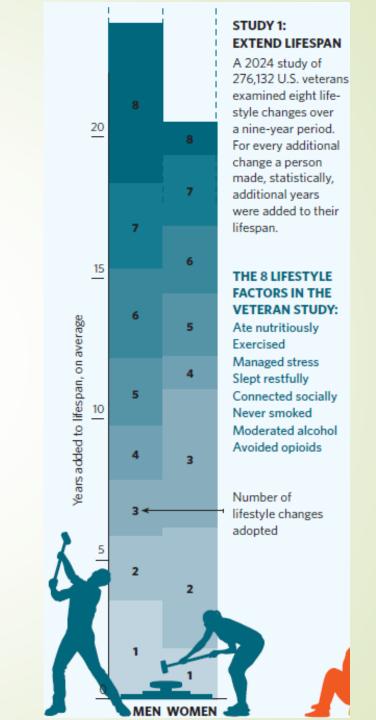


Lifestyle

- Lifestyle plays an outsized role in preventive health.
- Diet, exercise, sleep, stress and social support are all key factors.

LIFESTYLE FACTORS IN THE VETERAN STUDY

- Ate nutritiously
- Exercised
- Managed stress
- Slept restfully
- Connected socially
- Never smoked
- Moderated alcohol
- Avoided opioids



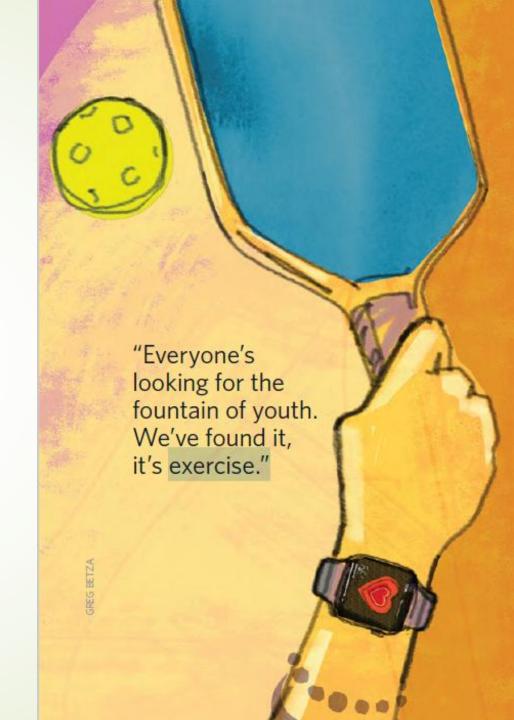
Exercise

- Adding or adjusting exercise may be an especially effective way to stretch healthspan, according to Keith Diaz, an associate professor at Columbia University Medical Center, and director of the Cardiology Division's Exercise Testing Laboratory.
- Diaz has run studies that show exercise can set back biological age by up to 30 years.
- "The benefits go through every system," he says.
- "Just replacing 30 minutes of sitting with light-intensity exercise lowers the risk of death by 35 percent."
- "People who are older when they start exercising still get a payoff in improved health, including longevity and healthspan."

The racket sports are all good exercises.

However, there are lots of injuries from Pickleball.

Here, at Reata Glen we have three Pickleball courts.
Residents playing Pickleball are encouraged to wear court shoes and not, for example, running shoes while playing.



Crossword Puzzles

- 30 minutes before class today, I received an email from National Geographic asking the question, "Do working crossword puzzles really keep you brain sharp?"
- The conclusion is that lots of sharp, older people do crossword puzzles but there is no evidence that the crossword puzzles caused this.
- Conclusion:
- In the end, there's nothing wrong with doing crossword puzzles. And the scientific evidence shows they're far from cognitively bankrupt and even provide some beneficial mental stimulation. However, truly reducing your risk for dementia requires a multipronged approach that should always include plenty of consistent exercise. A strategy like this will likely offer far greater protection against cognitive decline than a single puzzle ever could.

Anti-Aging

- Drugs known to slow aging in animals might well safely do the same for humans.
- One of them, metformin, has already been approved by the FDA for testing as an anti-aging drug.
- Others are being taken by hundreds of people outside official trials.
- The key is to help people live into 90s and in good health

- Researchers are finding ways to gather and enlist vast streams of personal health data to help keep people sharp and active well beyond their 70s.
- "The idea that you can be in your 90s and be mentally agile and physically robust is perfectly realistic," says Leroy Hood, a biologist from the California Institute of Technology and University of Washington.
- He helped pioneer the genomics revolution and is now CEO of the health-related nonprofit Phenome Health, as well as co-founder of the Institute for Systems Biology. (He's 86.)

- LIFESPAN: The number of years we live.
- ► HEALTHSPAN: The years of life that remain free of serious disease.
- From the article: "We don't want to extend the period of decrepitude, that's just making people sick for longer. Our goal is to extend lifespan while having the health of someone 20 years younger."

- Biological Age: the age your body says you are, as distinct from your calendar age.
- The lower a person's biological age is relative to chronological age, the better they are aging.
- It was found that biological age was correlated with wellness, suggesting that it may be a more accurate indicator of health status than chronological age.
- They can calculate the ages specific to each organ.

- GENOME: An individual's genetic makeup
- PHENOME: The collection of all the dynamic characteristics of an individual's biology.

A Return to Holistic Medicine

- The power of artificial intelligence to analyze data on genomes and phenomes is driving a shift to prevention and personalized care
- By sequencing each patient's genome, a doctor can obtain advance warning of disease risks and information on the relative efficacy of different treatments.
- By routinely gathering tens of thousands of signals on a patient's physiology, behaviors and environmental exposures, the doctor can come to a deep understanding of a patient's phenome—the collection of all the dynamic characteristics of an individual's biology.

My question: Where do the data come from?

- The article spent very little time on how the data are collected.
- It seems to me that the AI would have to be integrated with the patient's online chart.
- In addition, it would have to be in communication with the patient's physician. For example, it might tell the physician what tests to order up.
- There was passing mention in the article about wearables for collecting the data such as a glucose monitor.

Google AI Search: "Tell me about the Apple iPhone AI that gives health outlooks."

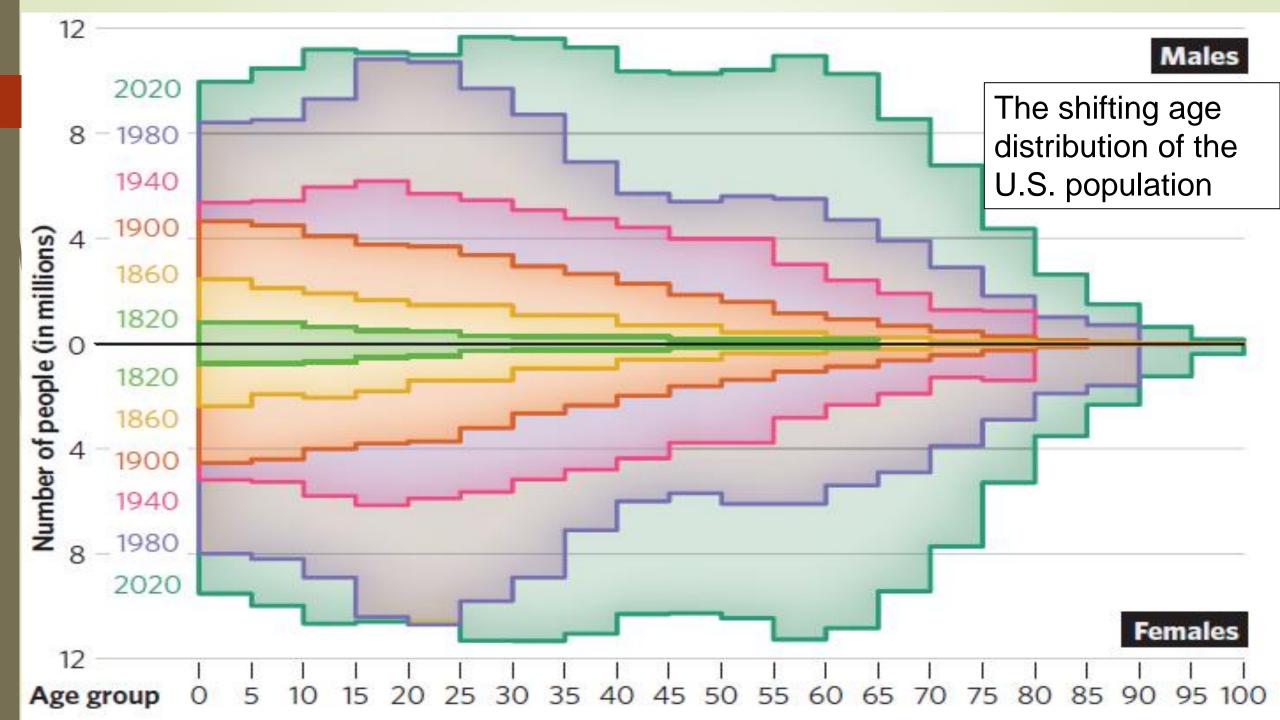
Al Mode is experimental and can make mistakes. Learn more

Apple is reportedly working on a significant revamp of its Health app, incorporating AI to provide users with more proactive and personalized health insights and recommendations. This initiative, sometimes unofficially referred to as "Health+", is expected to offer features similar to having an "AI doctor" or "health coach" within the app.

- By sequencing each patient's genome, a doctor can obtain advance warning of disease risks and information on the relative efficacy of different treatments.
- By routinely gathering tens of thousands of signals on a patient's physiology, behaviors and environmental exposures, the doctor can come to a deep understanding of a patient's **phenome** the collection of all the dynamic characteristics of an individual's biology.

Example of Lifestyle Interventions

- Those with genes that confer a high risk for high LDL cholesterol (a proxy for heart disease) can only bring it down by using drugs such as statins.
- In contrast, for those with low-risk LDL genes, diet and exercise can suffice.
- This raises the possibility that treatments should vary from one person to the next depending on their genetic profiles.



The Doctors of Medicine 3.0

- Many doctors are testing patients to find their biological age.
- Medicine 2.0 is based on letting things break and then try to fix.
- Medicine 3.0's main emphasis is on prevention.
- A lot has been learned about aging. These doctors are applying that knowledge.
- Testing, testing, testing.
- For example, DEXA can measure the amount of fat, lean tissue, and bone in the body.
- Using AI, the results of tests are compared with lots and lots of testing data.

- Once they assess their patients, almost all doctors who practice Medicine 3.0 begin with the basics, focusing on optimizing their diets, sleep habits, stress-reduction techniques and emotional wellbeing.
- There is nothing speculative about the benefits of these interventions—primary care doctors often give the same advice.
- The difference is that Medicine 3.0 doctors put an emphasis on these steps to prevent disease.
- They often suggest their patients use unregulated supplements.
- Probiotics and phytonutrients are known to be good for the body, but there is a lack of clinical data to establish that, if taken as supplements, they will survive the human digestion system and liver metabolism.
- Many people have hormonal imbalances caused by aging. Hormone replacement therapy can make a big difference.

- More controversially, some doctors prescribe experimental medicines designed to hack the biology of aging such as:
 Rapamycin, metformin, and drugs aimed at modulating nicotinamide adenine dimucleotide (NAD), an organic molecule that plays a key role in cellular metabolism and energy production.
- Rapamycin is widely prescribed off-label. The drug is approved as an anti-cancer therapy and to inhibit organ rejection in transplant patients.
- Metformin, a diabetes drug used to lower blood sugar, may also protect cells from damage caused by unstable molecules known as free radicals and beneficial effects on blood vessel health that could extend life.

The article on Medicine 3.0 ends with this statement:

Medicine 3.0 doctors do agree on one therapy, which has zero side effects: placebo. "You can make a reasoned argument that if people take these things and suddenly feel better, even if it's not the active ingredient in the supplement," says Kaeberlein. "Is that a bad thing? I don't know. I mean, if it helps, it helps, right?"

Next Session: Tuesday May 20, 2:00 p.m. 56