



Brain Chips

Did you know that computers are already reading minds?

Neuroscientists at the BrainGate consortium made history in 2012, when they inserted a chip in the mind of a person with an amputated arm, allowing him to control a robotic arm with his brain. In 2017, the team developed a thought-to-text system that allowed monkeys to “think” at a computer and have the computer transcribe their thoughts at the rate of 12 words per minute. Later the same year, a similar chip was installed in several people suffering from severe paralysis, allowing them to type on a computer screen at a rate of about eight words a minute.

That was the precursor to installing two sensors, each about the size of a baby aspirin, each with 100 hair-fine electrodes, into the brain of a man who had suffered a spinal cord injury that left him paralyzed below the shoulders. The sensors picked up his neural signals, which were processed by a computer to decode his brain activity, allowing him to write words on the computer screen at the record-breaking speed of 16 words a minute—about three-quarters of the speed that people achieve when typing on their smartphones. He used the ‘greater than’ symbol on his mental typewriter to denote spaces between words.

Neuroscience still has a way to go before we are reading each others’ minds. The new mental interface requires a specialized high-performance computer, and a technician to set up the brain-computer interface and run the software. And, of course, it requires brain surgery to insert the sensory devices. But scientists believe that we are on the edge of creating a version of the technology that would be always available to the user who wanted to type, control the computer, perhaps even neurologically communicate with others who have a similar chip. Pets with a similar insertion (remember the monkey) might be able to have more personal communication connections with their adopted families.

Source:

<https://gizmodo.com/using-just-his-thoughts-paralyzed-man-texts-at-a-record-1846877072?utm>



Lost Trees

The loss of trees is one of many factors contributing to the global warming crisis. Trees produce oxygen, trap climate-changing greenhouse gases and prevent floods. It is said that in the Middle Ages, a trip across Europe was always and everywhere in the shade, because the continent was basically a forest with a few towns and roads connecting through it.

Recently, the LawnStarter website undertook a survey of all 50 U.S. states and the District of Columbia, to assess which states have lost the most trees in the past year. They used the “tree cover” definition provided by Global Forest Watch as “all vegetation greater than 5 meters in height,” noting that tree cover loss might have been the result of timber harvesting, the conversion of natural forest to residential development, or wildfires.

The states that lost the most tree cover, as a percentage of the total, last year, in order, were California (wildfires), Oregon (wildfires and logging), Colorado (wildfires) Arizona and, interestingly, Rhode Island. Over the past ten years, the biggest losers were, respectively, California, Oregon, Colorado, Maine and Michigan.

The states which best preserved their tree cover last year, were South Dakota, Alaska, Florida, Nevada and Wyoming. Over the last 10 years, the states that lost the lowest percentage of their tree cover were Arizona, New Mexico, Wyoming, Texas and Georgia.

The report notes that in 2020 alone, wildfires destroyed over 4 million acres of trees in California—an area bigger than Connecticut—and this accounted for 40% of the total acres burned across the U.S. And it said that the prominence of coastal states at the top of the deforestation rankings was not an accident; coastal states are twice as developed as the rest of the U.S. The study’s researchers recommended that anyone reading this consider planting tree species that are native to your area, playing a small part in the much greater effort to repopulate our arboreal cover.

Source:

<https://www.lawnstarter.com/blog/studies/states-lost-most-tree-cover/>



The U.S. Economy by State

It is common knowledge that the U.S. economy is the largest in the world. But, we may not realize the magnitude of the size difference. A recent graphic published by the GZero organization gives a pretty good hint.

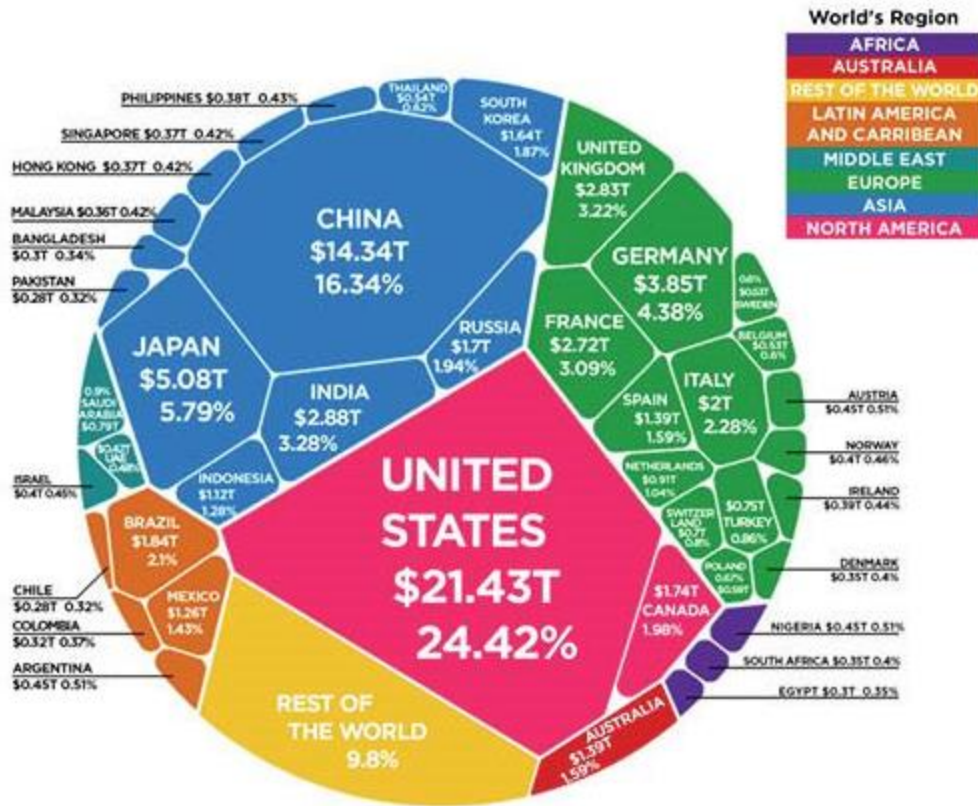
Look at the map and notice that North Dakota -- one of the smallest states in the U.S. in terms of economic activity (total population: 762,000, roughly the same as Denver, CO), has a state GDP the size of the nation of Latvia. Nearby Minnesota's economy equals all of Ireland's, and Wisconsin's equals Israel's. The Texas economy, all by itself, is as large as Canada's, as is New York's. California's economic activity amounts to roughly the same as the United Kingdom's—the fifth largest economy in the world. Even little Rhode Island has a country-sized GDP, about the size of Senegal's.

In total, the United States makes up 24.42% of the world's aggregate economic activity, rivaled only by China (16.34%), with number 3 Japan (5.79%) a very distant third. Another perspective, this time putting countries on a circular “globe” with the size of their economies represented by area, shows not just the economic size of individual countries but also different global regions.

Every US state shown as a country with similar GDP



Gross Domestic Product (GDP) by Country 2019





Social Security and Inflation

Since 1975, the Social Security Administration has adjusted benefit payments to account for inflation. The goal is to have what recipients receive to keep pace with inflation. For the past decade, these inflation adjustments have been modest, as you can see in the chart. In 2009, 2010 and 2015, there was no increase, and many of the other raises were 2% or less.

The Social Security Administration has announced that the benefit Social Security recipients receive will increase by 5.9% in 2022. That will be the largest one-year increase since high-inflation days of the early 1980's.

Social Security increases are tied to the CPI-W, the Consumer Price Index for Urban Wage Earners and Clerical Workers. Some economists believe that the CPI-W tends to undercount the cost of living increases that many people experience, and that is especially true for seniors, whose budget is more closely tied to housing and health care costs, and less to food, apparel, transportation and recreation.

A new bill in Congress, the Fair COLA for Seniors Act of 2021, proposes to change Social Security's measure of inflation from CPI-W to CPI-E, the Consumer Price Index for the Elderly, which the Bureau of Labor Statistics has been calculating since 1985. This shift, endorsed by the Biden Administration, would have resulted in a 1.4% upward adjustment last year (vs. the 1.3% figure used by the Social Security Administration), a 1.9% increase in 2020 (vs. 1.6%), 2.8% in 2019 (vs. 2.6%), 2.1% in 2018 (vs. 2.0%), and a much bigger increase in 2017, from 0.3% up to 1.5%. Comparing the two measures of inflation over time, economists estimate that over 25 years, the CPI-E cost adjustments would push benefits 5% higher than the existing CPI-W index increase calculation that we use today.

Social Security Cost-Of-Living Adjustments

Year	COLA	Year	COLA	Year	COLA
1975	8.0	1995	2.6	2015	0.0
1976	6.4	1996	2.9	2016	0.3
1977	5.9	1997	2.1	2017	2.0
1978	6.5	1998	1.3	2018	2.8
1979	9.9	1999 ^a	2.5	2019	1.6
1980	14.3	2000	3.5	2020	1.3
1981	11.2	2001	2.6		
1982	7.4	2002	1.4		
1983	3.5	2003	2.1		
1984	3.5	2004	2.7		
1985	3.1	2005	4.1		
1986	1.3	2006	3.3		
1987	4.2	2007	2.3		
1988	4.0	2008	5.8		
1989	4.7	2009	0.0		
1990	5.4	2010	0.0		
1991	3.7	2011	3.6		
1992	3.0	2012	1.7		
1993	2.6	2013	1.5		
1994	2.8	2014	1.7		

Sources:

<https://www.ssa.gov/oact/cola/colaseries.html>

<https://www.cnbc.com/2021/07/14/social-security-cost-of-living-increase-for-2022-may-be-largest-in-decades.html>

<https://www.ssa.gov/policy/docs/ssb/v67n3/v67n3p73.html>



FAFSA Changes Benefit Grandparent 529s

FAFSA stands for the Free Application for Federal Student Aid. It is the main form used by universities and colleges that determines a student's eligibility to receive financial aid. To simplify, there is a formula that assesses the income and assets of both parents and students. This formula is used to calculate a families Expected Family Contribution or EFC.

For example, if a parent owns a 529 for their child, assets in the 529 will reduce a student's financial aid eligibility by approximately 5.64%. Sometimes, a grandparent owns a 529 for their grandchild. However, grandparent-owned 529s use a different calculation approach than parent owned 529s.

While the grandparent is not included on the FAFSFA form, any withdrawals from the grandparent-owned 529 used to pay for college expenses must be listed as untaxed income to the student. In the FAFSA calculation, student income is assessed at around 50%. In other words, if a grandparent uses \$10,000 from their 529 for their grandchild Sally to pay for college expense, that has the impact of reducing Sally's financial aid eligibility by about \$5,000. Ouch!

But here is the good news. Upcoming calculation changes to the FAFSA mean students will no longer be required to report any cash support they receive – including from grandparent owned 529s. ***In other words, grandparent owned 529s will not be counted at all and will not reduce a student's financial aid eligibility.*** These changes do not apply until the new FAFSA form is released on October 1, 2022.

It should also be noted that a few mostly elite private colleges use an additional form to assess a student's financial aid eligibility – known as the CSS Profile. As of this writing, we do not know if the FAFSA changes will have any impact on the CSS Profile.