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What is mRNA Technology?

mRNA is the technology that Moderna and Pfizer used to develop their coronavirus vaccines. The technology may revolutionize the way diseases are treated – and prevented. Scientists are sequencing HIV, seasonal flu viruses, and certain cancers. These pieces of RNA may be used to teach the body to fight off a virus before it can run rampant throughout the body.

The vaccine approach to the coronavirus uses lipid nanoparticles -- essentially fat bubbles -- to deliver bits of a disease's genetic material into the body, helping the immune system spot the spike proteins they use to enter human cells. Moderna is also working on two HIV vaccine candidates: mRNA-1644 and mRNA-1574. The vaccine has been tested successfully in macaque monkeys, by developing neutralizing antibodies that bind to the proteins that HIV uses to enter cells -- neutralizing the disease before it can spread. Another mRNA test has protected humanized mice against HIV infection.

Meanwhile, phase 1 clinical trials for more effective seasonal flu vaccines will start this year, and additional RNA vaccines are being developed for mononucleosis, types of lymphoma and nasal cancer. Other experimental cancer vaccines will require doctors to extract tumor samples from the patient, sequence the genome and create a specific RNA therapy that will teach the immune system to destroy the cancer cells -- and only the cancer cells. Six of 10 patients in an early trial responded positively to the treatment; in two, the cancer was destroyed, while four others stabilized and had no further cancer progression.

These newly developed therapies also offer promise in fighting a number of autoimmune diseases, including multiple sclerosis, and a recent experiment suggests that mRNA treatment may be used to promote the development of blood vessels. An injection might improve outcomes in people undergoing coronary artery bypass surgery.

Thanks to these new, innovative technologies, it may be possible that there will be fewer deaths, and diseases, in our future.

Source:
https://www.poz.com/article/scientists-working-mrna-vaccines-hiv-flu-cancer

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State Tax: Return on Investment

State governments provide, by taxing its citizens, a variety of services such as police and fire protection, schools, roads / bridges, and a social safety net. But are we getting what we pay for?

A recent study by the WalletHub website asked a team of experts to calculate which states offer the highest return on your tax "investment" -- based on different components of health, safety, economic, education and infrastructure. Among the factors under 'education' were the quality of the school systems and universities, the public high school graduation rates and funding of Pre-K programs. The metrics for 'safety' -- basically police protection -- included the violent crime rate per capita, property crime rate and traffic fatalities. Economic metrics used median household income and the unemployment rate while infrastructure use the average commute time to / from work, parks and recreation opportunities, water quality and highway spending per driver. Health metrics included hospital beds per 1,000 residents, average life expectancy at birth and average health insurance premiums.

On the other end, the study looked at the tax rates of the different states –the "tax investment" that state residents were asked to make in return for the services they received.

The results? New Hampshire finished with the best "taxpayer return on investment" score -- its residents paid the second-lowest amount of per-capita taxes in the country, yet the state had, according to the survey, the 9th best overall government services rank. Next came Florida, whose residents pay the fewest taxes of any state, and receive the 30th best combination of government services. South Dakota came in third: it finished 6th in overall taxes paid, and 21st in government services. Others in the top 10: Virginia (23rd in taxes paid, 3rd in services); Missouri (3rd and 38th); Ohio (12th and 26th); Texas (7th and 35th); Georgia (9th and 34th); Nebraska (24th and 12th); and Tennessee (4th and 41st).

At the bottom of the list, as you might expect, were some of the highest-taxed states. Number 50 was Hawaii, which ranked 49th in taxes paid (in other words, higher than every state but North Dakota), and just 33rd in services. California came in second to last (45th, 37th), followed by New Mexico (37th, 49th), North Dakota (50th, 4th), Delaware (44th, 17th) Nevada (26th, 44th) and New York (43rd, 19th).

The states with the highest rated services were Minnesota (47th, 1st) and Vermont (48th, 2nd). The article further breaks down states with the best

school systems (Massachusetts, Connecticut, and New Jersey), the best hospital systems (Vermont, South Dakota, and Iowa), the lowest violent crime rate (Maine, New Hampshire, and Connecticut), and the lowest percentage of residents living in poverty (New Hampshire, Maryland, and Hawaii). The worst government services "awards" went to Louisiana (50), New Mexico (49), Alaska (48), Mississippi (47), South Carolina (46) and Alabama (45).

Source:
https://wallethub.com/edu/state-taxpayer-roi-report/3283

Population Changes

Recently, the Census Bureau published the official 2020 state population counts. The data, which gets updated every 10 years, will be used in Congressional redistricting efforts this fall, but for now we can see which states are net gainers of seats in the U.S. House of Representatives, and which states have lost seats.

The biggest gain was in Texas, which will receive two extra seats, giving it 38 in total for the next election. Colorado (now 8), Florida (28), Montana (2), North Carolina (14) and Oregon (6) each gained a seat. Losing seats are California (52), Illinois (17), Michigan (13), Ohio (15), West Virginia (2), Pennsylvania (17) and New York (26).

In some cases, there is a trend -- after the 2000 census, New York and Pennsylvania each lost two seats, and each lost another one after the 2010 tally. During the last 20 years, so-called "frost belt" states like Michigan, Illinois, and Ohio all lost seats, while Florida and Texas have seen the biggest gains.

In the latest census, Alabama, Rhode Island, and Minnesota very narrowly averted a loss, while New York lost its seat by a total of 89 census forms not filled out.

Based on these changes, one might assume a population exodus from states losing Congressional seats. In fact, New York and California increased their resident populations by 6.1% and 4.2% respectively. But Texas and Florida grew more rapidly -- by 16% and 14.6% -- since the 2010 census count. If you're curious which states are gaining and losing population, you can go to this website: https://esrimedia.maps.arcgis.com/apps/instant/minimalist/index.html?appid=f2b8822244dc42b78b8245938340850e, and see different colored dots on each state. The size of the dot indicates the total size of the state's population, and the color shows whether it is growing or declining: green (Texas, Florida, Colorado, Utah, North Dakota, Georgia and South Carolina) indicates rapid growth, pale orange indicates slower growth, and purple (Mississippi, Kansas, Illinois, West Virginia and Michigan) shows which states are losing population.

Sources:
https://cookpolitical.com/analysis/house/redistricting/2020-census-what-reapportionment-numbers-mean

https://www.fastcompany.com/90630117/congressional-seats-by-state-these-maps-show-who-gained-and-lost-after-the-2020-census

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Homeowners Insurance & Dogs: Something to Think About

There are over 63 million U.S. households that own a dog. You may not have known that, when buying homeowners insurance, many insurance companies have a list of dog breeds they will not provide liability coverage for.

When a dog bites or causes other dog-related injuries (think: somebody falls because a dog jumps up on them or the dog causes a bicyclist to fall), it usually is the homeowners insurance policy that pays the victim. The average dog bite claim will cost the insurer just under $45,000 in medical and legal expenses. In 2020, all dog-related injuries cost homeowner insurance companies an estimated $854 million.

Forbes magazine recently compiled a list of banned dog breed lists from 42 different insurance companies. Nearly all companies banned doberman pinschers, pit bulls and rottweilers, and more than 90% banned chow chows and any wolf hybrid. German Shepherds were banned by 45% of the company policies, and you might be surprised to know that great danes were banned on by 17% of insurance companies. Mixed breeds of these dogs and guard dogs were also frequently banned, and if your dog has any prior incident of biting another person or attacking people, then that could result in an amendment to the policy or a decline of coverage. Some insurance companies are now requiring dog owners of certain breeds to sign liability waivers for dog bites.

It's true that only a small number of dogs from these breeds act aggressively. The Animal Defense League, the American Kennel Club, and Best Friends Animal Society point this out in their lobbying efforts. These organizations are seeking a moratorium on "banned breed lists".

Sources:
https://www.forbes.com/advisor/homeowners-insurance/banned-dog-breed-lists/

https://www.iii.org/article/spotlight-on-dog-bite-liability

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Global Stock Market Valuation

A common measure of stock market valuation is the price / earnings (P/E) ratio. The calculation takes a company's price and divides it by its earnings per share. The resulting ratio can be compared throughout history or to other countries.

As of December 31, the P/E ratio of large U.S. stocks (using trailing earnings), was 38.0x, which is much higher than the historical average (although earnings were low due to the pandemic). The stock market in India was even more expensive, with a P/E of 38.4x. Australia's P/E was the highest among developed nations, with a P/E of 43.8x, nudging out France (40.8x) and Canada (38.1x).

That basically means that the U.S. is not alone in having historically high stock market valuations. But not all countries are quite so overvalued. The United Kingdom's large cap stocks (17.6x), Japan's (22.5x), China's (16.4x), Germany's (27.0x) and Russia's stocks (12.2x) can all be bought at relatively more attractive prices.

Another way to measure stock valuations is by the dividend yield. U.S. large cap companies paid a 1.53% dividend yield to their shareholders last year, which is lower than all other major nations except India (1.14%). Companies in Japan (1.89%), France (1.98%), China (2.02%), Australia (2.84%), Germany (2.55%), Spain (2.92%), Canada (2.93%) and the UK (3.77%) are all more generous with their shareholders.

Sources:

https://siblisresearch.com/data/global-dividend-yields/

https://siblisresearch.com/data/pe-ratios-by-country/

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