

# 2022 MARKET AND ECONOMIC OUTLOOK

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Doylestown, PA | Pittsburgh, PA | Buffalo, NY





# OVERVIEW

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## PREFACE

**“It’s the  
possibility of  
having a dream  
come true that  
makes life  
interesting.”**

- The Alchemist by Paulo Coelho



# BUSINESS TRENDS

- ▶ MOST IMPACTFUL BUSINESS TRENDS OF 2022
- ▶ HYDROGEN
- ▶ SPACE
- ▶ QUANTUM COMPUTING
- ▶ ARTIFICIAL BONES
- ▶ DIRECT AIR CAPTURE
- ▶ BRAIN-COMPUTER INTERFACES

# MOST IMPACTFUL BUSINESS TRENDS OF 2021

Each year Winthrop Partners provides its clients with an annual review of a handful of trends and their impact upon various sectors of the economy.

- ▶ **Hydrogen:** After years of promise with little result, Hydrogen is poised to become a significant source of energy for a variety of industries and transportation vehicles as billions of dollars in R&D and Production Plant construction are coming online to meet the world's changing energy needs.
- ▶ **Space:** Space has become exciting again as its commercialization, exploration, and militarization will attract huge sums of capital..
- ▶ **Quantum Computing:** A computer revolution akin to the original introduction of computers in the early 1960s is about to launch in 2022.
- ▶ **Artificial Bones:** The technology has been developed to create the exact scaffolding to match existing bones. With the addition of calcium antibiotics and the patient's stem cells the body will graft complete living bones including blood vessels over the scaffolding. A boon to orthopedics and perhaps a glance ahead for more complex soft tissue regeneration
- ▶ **Direct Air Capture:** With so many companies pledging to have a carbon neutral footprint, a burgeoning market for companies that can reduce airborne CO2 is coming online in 2022. Profits could be large and consistent for carbon capture companies.
- ▶ **Brain Computer Interfaces:** The confluence of Science's greater understanding of the Brain, the development of small electrodes and increased computational power have allowed for remarkable brain-computer interfaces that address several medical conditions as well as allowing humans to control machines through thought.



# HYDROGEN

The old joke about Hydrogen being the fuel of the future—and will always be—has finally worn thin as massive investment in the technology, ecological concerns and the unique characteristics of Hydrogen are making deeper inroads into the energy sector.

Grey Hydrogen (hydrogen produced by stripping out hydrogen atoms from natural gas) is readily produced today but is not environmentally friendly as the byproducts of the process are released into the atmosphere as greenhouse gasses. Blue hydrogen produced in the same manner as grey hydrogen, but with the greenhouse gasses sequestered in underground caverns is an important steppingstone in the European decarbonization strategy. The gold standard, Green Hydrogen made using the electrolysis of water using renewable energy is the eventual endgame and is being pursued more aggressively in the US. However Green hydrogen is presently about 5-8X the price of natural gas and 3-4x the price of grey hydrogen.

Although hydrogen currently comprises about 1% of the world's fuel supply most energy analysts believe it will comprise about 20% of the world's supply by 2050. Driving this growth is the anticipated bifurcation of the energy market. Much as light vehicles (e.g., SUVs, cars, motorcycles) are propelled by gasoline today while heavier vehicles (e.g., trucks, buses, locomotives, planes, ships, and backup generators) run on Diesel or Kerosene, tomorrow's light vehicles will be battery powered, while heavier vehicles will be powered by hydrogen fuel cells. Additionally heat intensive industries such as the steel, chemical and cement industries, three of the most polluting industries will increasingly convert to hydrogen, as no other renewable fuel source can produce the temperatures of hydrogen. Finally, the fourth leading industrial polluter, the aerospace industry, will begin the long testing phase of hydrogen fuel cells testing in small to mid-sized airplanes.

The vast majority alternative vehicles are powered by electric batteries because electricity is in and electric charging networks are easier to set up and manage. Hydrogen prices need to further decline, and distribution networks need to be built. In the next decade over 100 large scale hydrogen production facilities are slated to be built which will substantially reduce production costs. The cost of green hydrogen is \$28.55- \$48.30 to produce 1 million BTUs of hydrogen versus \$6 for US natural gas, but a just a few years ago the cost differential was more than double.

Currently Distribution costs are very expensive. Hydrogen which needs to be compressed down to -253 degrees cannot be distributed through existing pipelines. For instance, the equipment costs for a four-pump gas station costs are about \$85,000 while a single dispenser Hydrogen station costs about \$2,500,000. At present the distribution problem is being addressed in two ways: Decentralized production utilizing short distribution networks or adding nitrogen to produce Ammonia which is readily transferable in existing fossil fuel pipelines. Scientists have recently found a highly efficient way to reconvert ammonia to hydrogen making this distribution method highly viable.

As a result of the above factors, Hydrogen production has increased 1,500% and its increase is only second to solar. Big transportation companies such as Daimler/Freightliner, Toyota, Volvo, Hyundai, and Cummins betting on Hydrogen fuel cells for heavy equipment where the weight and short charge-life of batteries reduce both payload and range to unacceptable levels. Although you may never notice the transition to hydrogen, in the next few years the introduction of hydrogen networks and equipment will become increasingly frequent.

# SPACE

The International space economy was worth \$350 billion in 2016 will be worth \$1 trillion in 2040 as world-wide communications needs explode, technology improves, satellites are mass produced and launch costs plummet.

2022 will be the first year where more people travel to space as paying passengers than government employees, but they will be heading into an increasingly crowded space populated by thousands of new satellites, abandoned booster rocket bodies and the fragments of satellites destroyed by communist bloc governments eager to prove their technological prowess.

Three commercial entities: SpaceX, Blue Origin and Virgin Galactic all initiated their maiden flights in 2021 and are seeking to regularly schedule launches in 2022 and beyond. The cost for these sub-orbital flights are about \$500,000 per person. Orbital flights which travel much higher, cost about between \$20,000,000 and \$50,000,000 per passenger depending on the length of the trip and whether it docks with the Space station for a ten day stay. Although schedules for sub orbital flights have not been firmly established as of now, Blue Origin and Virgin's crafts holds 6 passengers and SpaceX 4. SpaceX plans two orbital flights docking with the space station each carrying 4 tourists and 3 Astronauts. For reference, it costs NASA \$55,000,000 to send an astronaut to space for 6 six months.

SpaceX has begun to launch a constellation of 40,000 small communications satellites to support high speed internet. It began this project in 2019 by launching 60 satellites at a time. Within the next 7 years a further 100,000 non-SpaceX communications satellites will be launched from previously space-faring countries as well as new entrants like Rwanda. SpaceX satellites weigh about 250 pounds and are about the size of a steamer trunk while government satellites can be as large as a city bus. Commercial and quasi-governmental activity will extend to the moon, Mars, and Asteroids in 2023. China has launched and operationalized the Tiante core of the Tiangong space station that will come online in 2022. Materials for planned moon bases will be launched in 2022 and beyond by consortiums of US and Europe (Artemis) and China and Russia. Part of the activity at these bases will be the mining of materials which may be construed as a commercial activity.

Since its beginning, space exploration has always been militarized with secret spy and communications satellites. Space-based nuclear weapons have been prohibited by the Outer Space Treaty of 1967. But terrestrial based weapons and presumably some satellites capable of destroying other satellites have been tested. China and Russia fired missiles at deactivated satellites creating one-third of the 150,000 pieces of observable space debris circling the earth at 17,500 miles per hour and creating celestial havoc. Space based lasers capable of blinding satellites and satellites acting like guided missiles have supposedly been deployed. With communications, navigation, and GPS all reliant on space-based platforms the ability to deny adversaries access to this data will continue to fuel the militarization of space.

Expect Space tourism, commercialized space activities and military space activities to be major areas of investment in 2022 and beyond.

Sources: The Economist, Fragmentation Grenade; The Economist, "Goodbye Darkness, My Old Friend"; The Economist, "Several Ambitious Space Missions Will Blass Off in 2022"; The Economist, Ten Trends to Watch; Wall Street Journal, "How to Get Around on the Moon"

# QUANTUM COMPUTING

Traditional computers work on a “binary open circuit/ closed circuit” or “0/1” basis. All code is translated into a 0 or 1 which ultimately limits the speed of present-day computers. Quantum computing replaces the binary on/off 0/1 roadblock using quantum mechanics where there are theoretically infinite quantum states in between 0 and 1. These states are called Qubits. When the first rudimentary Quantum computers are commercialized within the next year or two it will open a new era in computing akin to the impact of the original computer revolution in the 1960s. When advanced versions come online within the next 10 years, these devices will almost instantly impact medicine, chemistry, physics, finance, meteorology, energy, and artificial intelligence. Quantum Computing will render asunder the existing fields of cryptography, encryption, and firewalls which unless addressed prior to quantum computing’s roll-out will endanger the money supply, power grids and virtually all online activity.

Steadily evolving prototype quantum computers have been in the labs since the 1990’s but achieving and maintaining a quantum state as well as developing self-correction features has been problematic. Currently Quantum computers run at an anemic 20-200 Qubits in a quantum state that lasts for 100 operations. For Quantum computers to perform a feat such as the real time breaking of encryption such as Elliptic Curve Digital Signature Algorithm (“ECDSA”) which protects cryptocurrencies. Quantum Computers will likely require 10,000 Qubits and a quantum state that survives several million operations. Scientists expect a 10X expansion of qubits and the duration of quantum state every 3-5 years. At this rate of improvement, it will take 10 to 15 years for Quantum computers to break ECDSA assuming all advances have been publicized.

Presently China claims to have the fastest Quantum computer and maintains a large lead in quantum technology patents (China 3100, US 1510, Japan 700, S. Korea 250). Much of China’s lead has been the result of repatriation of Chinese graduate students from U.S. universities or through theft. Corporate leaders in Quantum Technology patents in the US include IBM 230 patents, Microsoft 150, D-Wave Systems (CA) 110, Google 100, Intel 37, NTT(JA) 25. Beginning in 2018 the US, through DARPA, has tripled government spending on Quantum research to over \$200 Million per year. China reportedly spends \$100 Million per year. Because of national and corporate security concerns patents are not always being sought, with scientists preferring that their advances remain in the realm of black arts making it difficult to assess progress. However, two quantum computer companies went public in the US this year: IonQ went public in early October 2021 with a valuation of \$2B. Rigetti also went public via a SPAC in late October and has a market cap of \$1.5B. Both are US companies.

Although 2022 will likely mark the start of commercial Quantum Computing expect investment in this area to build rapidly particularly as this technology begins to transform other sectors of the economy.

Sources: Financial Times, “Quantum Computing Comes Out of Shadows Into Public Markets”; FT Alphaville, “Money’s Quantum Time Bomb”; Nikkei-Asia, “China Emerges as Quantum Tech Leader While Biden Vows to Catch Up”



# ARTIFICIAL BONES

Over the last few years there has been a revolution occurring in Orthopedics. First with small artificial bones replacing damaged bones in patient's hands and feet. These non-biodegradable artificial bones were made of calcium compounds that were shaped by the surgeon before implantation. Now nano level scanning and 3D printing technologies are creating bone scaffolding that allows live bone tissue to graft onto and eventually replace the scaffolding.

The scaffolding material is a mix of 90% Hydroxapatite (Calcium Mineral) with a 10% biocompatible and biodegradable polymer which when 3D printed creates a web-like scaffolding that is porous on the nano, micro and macro level allowing cells and blood vessels to infiltrate the structure. Antibiotics can be implanted into the structure to reduce the possibility of infection. Ultimately the artificial structure bio-degrades leaving living and growing bone which is particularly helpful for children who's bones are not fully grown.

State of the art techniques now produce the bone scaffolding in the lab. First the surgeon scans the existing bone with an extremely detailed (down to the nano level, in this case, the individual protein) scan called a Bio-thermal scanning probe lithography (bio-tsPL) which produces a 3D picture that is then used to produce a 3D printed version of the bone scaffold in the lab. The scaffold is then sent to the surgeon who implants the structure along with the patient's stem cells which react with the calcium to produce the requisite bone cells. It is estimated that a substantial regeneration of bone begins after 8 weeks. Although a relatively rare operation at present, it is expected that the widespread use of 3D Bone implants will soon occur.

Sources: Northwestern Medicine, "Building Better Bones with 3D Printing"; National Institute for Material Science, "New Technique Makes Artificial Bones More Natural"; NYU Tandon School of Engineering, "Artificial Bones Created in Petri Dish"; Singularity Hub, "Custom-Made Bones Are Being 3D Printed in a Lab Then Implanted in People"

# DIRECT AIR CAPTURE

Almost every company now wants to claim carbon neutrality as soon as possible. For some companies, like service orientated businesses the transition will be relatively easy, say by purchasing electricity that is produced using renewable energy, but for companies that manufacture of move physical items the transition will be difficult or impossible to do on their own. For these types of companies to achieve carbon neutrality they will have to purchase carbon credits from sources engaged in activities that reduce atmospheric carbon levels. Presently there are two major ways to reduce atmospheric CO2 reforestation and Direct Air Capture ("DAC").

It requires about 46 mature trees to eliminate a ton of CO2 annually. A large-scale DAC plant will be able to remove 1,000,000 tons annually, the equivalent of 46 million new mature trees. Some scientists estimate that to stop global temperatures from rising 1.5 degrees 20 billion tons of CO2 will need to be removed from the atmosphere annually by the year 2050

Small proof of concept DAC plants (removing several thousand tons of CO2 per year have been running for years, but in 2022 the first large scale DAC plant will begin construction in Texas' Permian Basin. A Joint venture involving Occidental Petroleum, Carbon Engineering and Rasheen Capital Management will build and manage this facility and, if successful, they will license the technology to others. DAC plants will earn money in two ways Tax credits of \$50 (and possibly \$85) and the private sale at auction of offset units between polluters and reclaimers. Current purchasers include Microsoft, Stripe, Shopify and SwissRe. Further government investment is forthcoming. As part of the Infrastructure Investment and Jobs Act passed in August 2021, \$9 Billion was allocated for the construction of 4 DAC hubs in the US.

There are two processes for DAC, the first uses filters and a vacuum extraction process followed by the sequestration of the captured CO2 in underground caverns like salt domes and oil wells. The Second and more promising technology mimics photosynthesis in trees. Air intake systems pass air through chemical solutions that remove CO2. The liquid is then heated to high temperatures to release the CO2. At this point the cleansed liquid is returned to be reused and the captured CO2 is compressed and sequestered. The carbon footprint of the energy that DAC plants use to remove airborne CO2 will be netted against the removed CO2 creating an impetus for these plants to use green energy sources like hydrothermal energy.

With so much CO2 being targeted for removal it appears that DAC will be a great business model that creates annuity like revenue streams for years to come.

# BRAIN-COMPUTER INTERFACE

Brain-Computer Interfaces (“BCI”) are focused on two segments: Neuroprosthetics and the ability the brain to directly control machines, without the physical constraints of the body. Neuroprosthetics are implantable devices wired to specific regions of the brain used to overcome the loss of hearing, sight and limbs. Other Neuroprosthetics include implantable devices that help control Epilepsy and Bipolar Depression. The direct control of machines by the brain using non-invasive caps is in its nascent stages, but laboratory experiments have shown that humans can control drones and other mechanical devices simply by thought.

Using the analogy of a brain to a cell tower the closer one gets to the cell tower the better the reception. The interfaces work the best when the sensors are as close to the part of the brain generating the activity, the farther away the sensors are the weaker and more distorted the signal becomes. There is a high correlation between the accuracy of the sensor and the invasiveness of the sensor’s placement. External sensors embedded in a bathing-cap-like devices that the users wear is inefficient compared to sensors embedded in the human brain.

Even though some sensors are as small as a grain of sand, few people are willing to risk brain surgery to implant sensors and have an external port on their skull just for the gratification of operating a machine. However, if you have lost your hearing, you may be willing to undergo surgery for a Cochlear implant. An individual who lost a limb or is partially paralyzed similarly may elect an implant to control an artificial limb or bypass severed nerves. Individuals with Parkinson’s Disease have greatly benefited by BCIs. While interfaces for sight and severed nerves are at early stages, other implantable devices for hearing loss. Parkinson’s Disease, Bipolar Depression and Epilepsy are frequently implanted today. In fact, more than 300,000 cochlear implants have been implanted to date. As brain function becomes better understood, the sensors become more efficient and computing technology improves, there will be many more people availing themselves of Neuroprosthetics in coming years.

External brain interfaces have improved dramatically and are expected to continue to do so in coming years as external sensors become more sensitive and attuned to specific areas of the brain while more powerful computers will be better able to decode the signals. A potential blockbuster use of noninvasive BCIs worn as caps or headbands is in the Metaverse where a person could control an avatar without the need of a handheld controller.

Despite the potential downside risks such as malfunctions, the upside benefits of these internal and external interfaces will continue to rapidly improve in the next few years and companies as diverse as Medtronics, Sony, Microsoft, and Electronic Arts will capitalize on the evolution.



# BUSINESS TRENDS' IMPACT ON MARKET SECTORS

SECTOR		Hydrogen	Space	Quantum Computing	Artificial Bones	Direct Air Capture	Brain-Computer Interfaces
Consumer Discretionary	3	1	3	1	4	1	
Consumer Staples	3	1	3	1	4	1	
Energy	5	1	4	1	5	3	
Financials	3	3	5	2	4	2	
Health Care	2	3	5	5	4	5	
Industrials	5	3	4	2	5	3	
Information Technology	2	4	5	2	3	5	
Basic Materials	5	4	3	2	2	2	
Real Estate	4	1	3	2	3	2	
Communication Services	2	5	5	2	2	5	
Utilities	5	2	3	2	5	2	
(5 = High Impact 1 = Low Impact )							
Business Trends 2022							



# MARKET AND SECTOR PERFORMANCE

- ▶ YTD SECTOR PERFORMANCE
- ▶ ANALYSTS' OUTLOOK ON THE 2022 S&P 500



# YTD SECTOR PERFORMANCE (12/23/2021)

	1 Day	5 Day	1 Month	3 Month	YTD	1 Year	3 Year	5 Year	10 Year
<u>Sector Name</u>									
<u>04:14 PM ET 12/23/2021</u>									<u>12/22/2021</u>
<u>Consumer Discretionary (.GSPD)</u>	1.73%	-0.23%	-5.31%	10.33%	21.64%	23.87%	114.58%	138.24%	--
<u>Industrials (.GSPI)</u>	0.33%	-1.06%	-2.59%	4.65%	15.96%	16.80%	65.89%	59.21%	--
<u>Materials (.GSPM)</u>	0.77%	-0.06%	-0.77%	10.40%	20.64%	22.15%	80.44%	73.27%	--
<u>Communication Services (.GSPL)</u>	0.78%	0.56%	-2.61%	-2.17%	20.66%	22.48%	100.43%	52.47%	--
<u>Information Technology (.GSPT)</u>	1.33%	-0.89%	0.61%	12.93%	31.98%	34.18%	190.87%	267.99%	--
<u>Financials (.GSPF)</u>	0.49%	-0.53%	-0.75%	5.76%	31.10%	34.52%	69.47%	63.80%	--
<u>Health Care (.GSPA)</u>	1.17%	0.85%	4.60%	5.62%	22.28%	24.54%	68.99%	103.33%	306.64%
<u>Consumer Staples (.GSPS)</u>	0.52%	-0.71%	4.47%	7.41%	12.54%	13.78%	51.89%	46.41%	--
<u>Energy (.GSPE)</u>	0.58%	0.63%	1.47%	16.31%	46.07%	45.09%	0.70%	-25.38%	-18.75%
<u>Utilities (.GSPU)</u>	0.40%	-0.76%	4.07%	6.26%	11.10%	14.19%	29.68%	43.81%	--
<u>Real Estate (.GSPRE)</u>	0.95%	0.97%	4.44%	8.46%	37.93%	41.06%	63.24%	67.08%	--
<u>S&amp;P 500® Index (.SPX)</u>	1.02%	-0.28%	-0.03%	7.86%	25.04%	27.11%	94.34%	107.34%	277.62%

Source: Fidelity Investments



# ANALYSTS' OUTLOOK ON THE 2022 S&P 500\*\*

Analyst	Organization	S&P Target for 12/31/2022	Implied G(L) [S&P @ 4736 12/21/2020]
Dubravko Lakos-Bujas	J.P.Morgan	5050	6.60%
David Kostin	Goldman Sachs	5110	7.90%
Craig Johnson	Piper Sandler	5150	8.74%
Sean Darby	Jefferies	5070	7.00%
Jonathan Golub	Credit Suisse	5200	9.80%
Binky Chada	Deutsche Bank	5000	5.57%
Mike Wilson	Morgan Stanley	4400	-7.09%
Savita Subramanian	Bank of America	4600	-2.87%
Shawn Snyder	Citi Group	4900	3.46%
Jean Marie	Barclays	4800	1.35%

\*\*Winthrop Partners does not make market predictions and this poll does not necessarily reflect our outlook.

# SECTOR REVIEWS

▶ SECTOR OVERVIEWS



# SECTOR OVERVIEWS

## SECTOR: COMMUNICATIONS SERVICES

GROUP: SENSITIVE

2022 PROJECTED EARNINGS GROWTH\*: 7.4%

### MOST IMPACTFUL TRENDS:

1. BRAIN-COMPUTER INTERFACES
2. SPACE
3. QUANTUM COMPUTING

## SECTOR: CONSUMER DISCRETIONARY

GROUP: CYCLICAL

2022 PROJECTED EARNINGS GROWTH\*: 32.2%

### MOST IMPACTFUL TRENDS:

1. DIRECT AIR CAPTURE
2. HYDROGEN
3. QUANTUM COMPUTING

## SECTOR: CONSUMER STAPLES

GROUP: DEFENSIVE

2022 PROJECTED EARNINGS GROWTH\*: 5.9%

### MOST IMPACTFUL TRENDS:

1. DIRECT AIR CAPTURE
2. HYDROGEN
3. QUANTUM COMPUTING

## COMMUNICATION SERVICES SECTOR OF THE S&P 500

From telephone access to high-speed internet, the Communication Services sector of the economy keeps us all connected. At present, the Communication Services sector is made up of five industries:

1. Diversified Telecommunication Services
2. Wireless Telecommunication Services
3. Entertainment
4. Media
5. Interactive Media & Services

As of January 25, 2019, the total value of all Communication Services stocks in the United States came to \$2.68 trillion, or 10.33% of the market. The communications industry includes stocks such as AT&T and Verizon.

## CONSUMER DISCRETIONARY SECTOR OF THE S&P 500

The Consumer Discretionary sector consists of businesses that have demands that rise or fall based on general economic conditions such as manufacturers of washers and dryers, sporting goods, cars, and engagement rings. At present, the Consumer Discretionary sector contains 11 industries.

1. Automobile Components Industry
2. Automobile Industry
3. Distributors Industry
4. Diversified Consumer Services Industry
5. Hotels, Restaurants & Leisure Industry
6. Household Durables Industry
7. Leisure Products Industry
8. Multiline Retail Industry
9. Specialty Retail Industry
10. Textile, Apparel & Luxury Goods Industry
11. Internet & Direct Marketing

On January 25, 2019, the total value of all Consumer Discretionary stocks in the U.S. was \$2.62 trillion, or 10.11% of the market. Examples of CD stocks include Apple, Disney, and Starbucks.

## CONSUMER STAPLES SECTOR OF THE S&P 500

The Consumer Staples sector consists of businesses that sell the necessities of life, ranging from bleach and laundry detergent to toothpaste and packaged food. At present, the Consumer Staples sector contains six industries.

1. Beverages Industry
2. Food & Staples Retailing Industry
3. Food Products Industry
4. Household Products Industry
5. Personal Products Industry
6. Tobacco Industry

As of January 25, 2019, the total value of all Consumer Staples stocks in the United States came to \$1.86 trillion, or about 7.18% of the market. Companies include Procter & Gamble and Kroger.



# SECTOR OVERVIEWS

## SECTOR: ENERGY

GROUP: SENSITIVE

2022 PROJECTED EARNINGS GROWTH\*: 22.8%

### MOST IMPACTFUL TRENDS:

1. HYDROGEN
2. DIRECT AIR CAPTURE
3. QUANTUM COMPUTING

## SECTOR: FINANCIALS

GROUP: CYCLICAL

2022 PROJECTED EARNINGS GROWTH\*: 8.9%

### MOST IMPACTFUL TRENDS:

1. QUANTUM COMPUTING
2. DIRECT AIR CAPTURE
3. SPACE

## SECTOR: HEALTH CARE

GROUP: DEFENSIVE

2022 PROJECTED EARNINGS GROWTH\*: 6.1%

### MOST IMPACTFUL TRENDS:

1. BRAIN-COMPUTER INTERFACE
2. ARTIFICIAL BONES
3. QUANTUM COMPUTING

### ENERGY SECTOR OF THE S&P 500

The Energy Sector consists of businesses that source, drill, extract, and refine the raw commodities we need to keep the country going, such as oil and gas. At present, the energy sector contains two industries.

1. Energy Equipment & Services Industry
2. Oil, Gas & Consumable Fuels Industry

As of January 25, 2019, the total value of all energy stocks in the United States came to \$1.43 trillion, or about 5.51% of the market. Falling energy prices have made energy stocks a declining part of the S&P 500 in recent years. Major energy stocks include Exxon Mobil, Chevron, and Halliburton.

### FINANCIALS SECTOR OF THE S&P 500

The Financial Sector consists of banks, insurance companies, credit card issuers, and a host of other money-centric enterprises that keep the debits and credits of the economy flowing. At present, the Financial Sector contains seven industries.

1. Banking Industry
2. Capital Markets Industry
3. Consumer Finance Industry
4. Diversified Financial Services Industry
5. Insurance Industry
6. Mortgage Real Estate Investment Trusts (REITs) Industry
7. Thrifts & Mortgage Finance Industry

As of January 25, 2019, the total value of all financial stocks in the U.S. came to \$3.54 trillion, or about 13.63% of the market. JP Morgan Chase, Goldman Sachs, and Bank of America are all examples of financial stocks.

### HEALTH CARE SECTOR OF THE S&P 500

The Health Care sector consists of drug companies, medical supply companies, and other scientific-based operations that are concerned with improving and healing human life. At present, the Health Care sector contains six industries.

1. Biotechnology Industry
2. Health Care Equipment & Supplies Industry
3. Health Care Providers & Services Industry
4. Health Care Technology Industry
5. Life Sciences Tools & Services Industry
6. Pharmaceuticals Industry

As of January 25, 2019, the total value of all Health Care stocks in the United States came to \$3.95 trillion, or about 15.21% of the market. Examples of health care stocks include Johnson & Johnson, Gilead, and Pfizer.



# SECTOR OVERVIEWS

## SECTOR: INDUSTRIALS

GROUP: SENSITIVE

2022 PROJECTED EARNINGS GROWTH\*: 35.9%

### MOST IMPACTFUL TRENDS:

1. HYDROGEN
2. DIRECT AIR CAPTURE
3. QUANTUM COMPUTING

## SECTOR: INFORMATION TECHNOLOGY

GROUP: SENSITIVE

2022 PROJECTED EARNINGS GROWTH\*: 9.8%

### MOST IMPACTFUL TRENDS:

1. QUANTUM COMPUTING
2. BRAIN-COMPUTER INTERFACE
3. SPACE

## SECTOR: MATERIALS

GROUP: CYCLICAL

2022 PROJECTED EARNINGS GROWTH\*: 3.3%

### MOST IMPACTFUL TRENDS:

1. HYDROGEN
2. SPACE
3. QUANTUM COMPUTING

## INDUSTRIALS SECTOR OF THE S&P 500

The Industrial Sector comprises railroads and airlines to military weapons and industrial conglomerates. At present, the industrial sector contains fourteen industries.

1. Aerospace & Defense Industry
2. Air Freight & Logistics Industry
3. Airlines Industry
4. Building Products Industry
5. Commercial Services & Supplies Industry
6. Construction & Engineering Industry
7. Electrical Equipment Industry
8. Industrial Conglomerates Industry
9. Machinery Industry
10. Marine Industry
11. Professional Services Industry
12. Road & Rail Industry
13. Trading Companies & Distributors Industry
14. Transportation Infrastructure Industry

On January 25, 2019, the value of all Industrial Stocks in the United States came to \$2.42 trillion, or about 9.33% of the market. Major industrial stocks include Lockheed Martin and CSX.

## INFORMATION TECHNOLOGY SECTOR OF THE S&P 500

The Information Technology (IT) sector is home to the hardware, software, computer equipment, and IT services operations. From microprocessors to printers, operating systems to cell phone handsets, recent advances in technology have turned IT into a giant part of the domestic and global economies. At present, the Information Technology sector contains six industries.

1. Communications Equipment Industry
2. Electronic Equipment, Instruments & Components Industry
3. IT Services Industry
4. Semiconductors & Semiconductor Equipment Industry
5. Software Industry
6. Technology Hardware, Storage & Peripherals Industry

As of January 25, 2019, the total value of all Information Technology stocks in the United States came to \$5.15 trillion, or about 19.85% of the market. It is the largest sector in the S&P 500. Top IT stocks include Microsoft and Alphabet.

## MATERIALS SECTOR OF THE S&P 500

The building blocks that supply the other sectors with the raw materials it needs to conduct business, the material sector manufacturers, logs, and mines everything from precious metals, paper, and chemicals to shipping containers, wood pulp, and industrial ore. At present, the Material Sector contains five industries.

1. Chemicals Industry
2. Construction Materials Industry
3. Containers & Packaging Industry
4. Metals & Mining Industry
5. Paper & Forest Products Industry

As of January 25, 2019, the total value of all Materials stocks in the United States came to \$703 Billion, or about 2.71% of the market. Major materials stocks include Dupont, Ecolab, and International Paper.



# SECTOR OVERVIEWS

## SECTOR: REAL ESTATE

GROUP: CYCLICAL

2022 PROJECTED EARNINGS GROWTH\*: 7.1%

### MOST IMPACTFUL TRENDS:

1. HYDROGEN
2. QUANTUM COMPUTING
3. DIRECT AIR CAPTURE

## SECTOR: UTILITIES

GROUP: DEFENSIVE

2022 PROJECTED EARNINGS GROWTH\*: 5.9%

### MOST IMPACTFUL TRENDS:

1. HYDROGEN
2. DIRECT AIR CAPTURE
3. QUANTUM COMPUTING

## REAL ESTATE SECTOR OF THE S&P 500

The Real Estate sector includes all Real Estate Investment Trusts (REITs) with the exception of Mortgage REITs which are housed under the financial sector. The sector also includes companies that manage and develop properties. At present, the Real Estate sector is made up of two industries:

1. Equity Real Estate Investment Trusts
2. Real Estate Management & Development

As of January 25, 2019, the total value of all Real Estate stocks in the United States came to \$768 Billion, or 2.96% of the market. The real estate industry includes stocks such as American Tower, Simon Property Group and Prologis.

## UTILITIES SECTOR OF THE S&P 500

The Utilities Sector of the economy is home to Electric, Gas and Water utilities. At present, the utilities sector is made up of five industries.

1. Electric Utilities Industry
2. Gas Utilities Industry
3. Independent Power and Renewable Electricity Producers Industry
4. Multi-Utilities Industry
5. Water Utilities Industry

As of January 25, 2019, the total value of all Utilities stocks in the United States came to \$825 Billion, or about 3.18% of the market. Utilities stocks include many local electricity and water companies including Exelon and Dominion Resources.



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