



2019 OUTLOOK

U.S. Healthcare: The Industry That Continues to Beat On

For decades the U.S. healthcare system has been one of the country's largest sectors for public and private spending. Since 2009, the industry has contributed to ~18% of U.S. GDP, and as a result, become an integral part of the U.S. economy. On a ten-year historical basis healthcare expenditure in the U.S., as a percentage of GDP, eclipses the size of all economies worldwide, with the exception of Germany, Japan, and China.

This report will outline, analyze, and provide guidance on the following topics:

- The structure of the U.S. healthcare system;
- Historical events that have shaped the U.S. healthcare system into its current state;
- Weaknesses and opportunities arising from the structure of the U.S. healthcare system;
- Proposed and passed legislation, and their corresponding implications on the current and future state of the U.S. healthcare system;
- The U.S. healthcare industry's four primary verticals, and
- Analysis, and discussion of trends and outlooks for selected sub-verticals identified under each primary vertical.

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Healthcare in the United States: Structure

The U.S. healthcare industry is among one of the most complex and controversial systems in the world today. Critics argue that the system is ineffective at maintaining costs while its proponents point to its ability to create a conducive environment for innovation. Figure A showcases a high-level overview of the U.S. healthcare system.

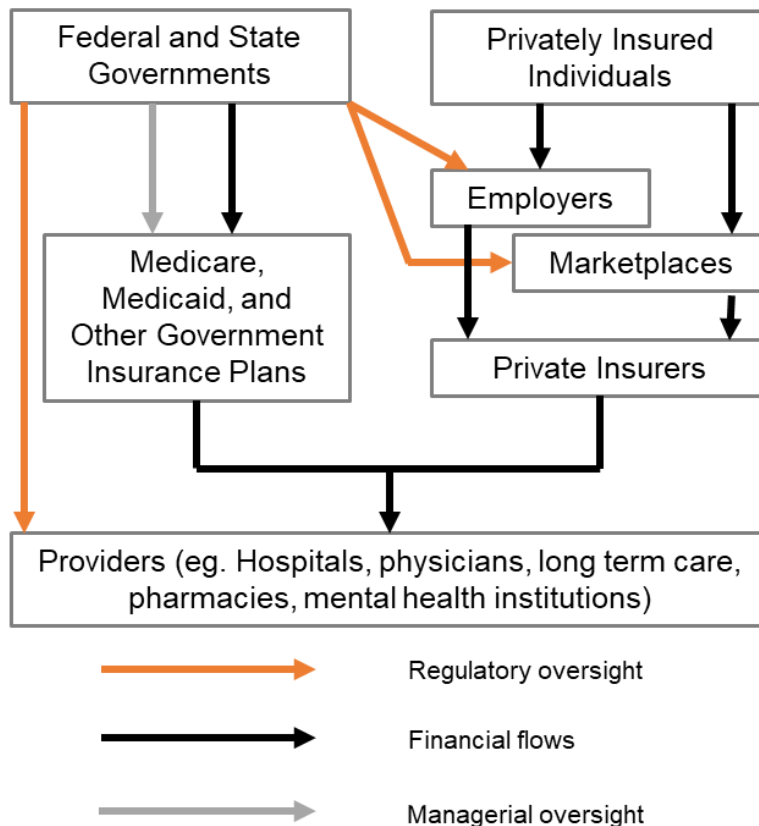
Based on the flow of funds displayed in Figure A, it can be concluded that healthcare spending is primarily supported by government-sponsored programs such as Medicare and Medicaid, both of which are tax-funded. In addition to these programs, spending is also done through private insurance policies and out-of-pocket spending.

Out-of-pocket spending can be characterized under one of three major categories:

- 1. Copayments:** Users pay a fixed percentage of the total treatment cost with insurance covering the balance of the fees, thus reducing excess treatments.
- 2. Deductible:** Users pay a fixed amount, regardless of treatment costs, and have the remainder covered by insurance, consequentially reducing the likelihood of going to a healthcare provider when such isn't warranted.
- 3. Lump-sum:** Users pay the entire cost of an uninsured treatment.

Government-based and private insurance programs compensate healthcare providers by paying the balance of healthcare costs directly to the provider after the patient has been billed.

Figure A. Structure of the U.S. Healthcare System





Healthcare in the United States: Historic Overview of Modern U.S. System

Sep. 23, 1993

Clinton's Health Security Act presented

Jan. 1, 1998

Target date for all state residents to have health coverage under Health Security Act

Dec. 8, 2003

Medicare Modernization Act signed by President Bush

Jan. 1, 2006

Medicare Part D signed into legislation

Mar. 23, 2010

Affordable Care Act signed into law by President Obama

Dec. 31, 2016

Significant decrease in uninsured citizens, from 48mm in 2008, to 27mm by 2016 through Obama

Jan. 1, 2019

Individual Insurance mandate lifted by Supreme Court

Administration

Clinton's Health Security Act: Offered universal access to healthcare through establishing mandatory health insurance laws to reduce financial burden on government.

Bush's Medicare Modernization Act: Introduction of an entitlement benefit of outpatient prescription drugs, in which users pay monthly premium for drug coverage. Policy becomes known as Part D.

Obama's Affordable Care Act: Reduced the high costs of health insurance through subsidies while additionally expanding the Medicaid program.

Trump Administration Plans: Any set changes have been pushed to 2020.

Major Changes & Implications

Government: A price ceiling was implemented on healthcare insurance premiums to reinforce affordability. Government funds were simultaneously allocated to subsidizing health insurance costs for low-income citizens.

Pricing Pressure: Healthcare insurance demand increased following legislation that made it mandatory for all citizens to have. As a result, new entrants entered the market and intense price competition ensued.

Significant Increases in Drug Coverage: By 2016, 90% of Medicare beneficiaries had drug coverage. Prior to the act, there was no outpatient drug benefit.

Private Corporations: The act promoted privatization through prohibiting the federal government from negotiating discounts with drug companies and preventing the government from establishing a formulary. The benefit also provided subsidies to large employers, ensuring that they provided prescription coverage to retired workers.

Higher Individual Taxation: Targeted top income-earners to fund subsidies, ultimately reducing disposable income of wealthier citizens.

Reduced Growth in Healthcare Costs: U.S. healthcare costs grew only by 1.2% between 2015 and 2016, compared to an increase of 4.3% from 2003 to 2004, due to increased healthcare delivery efficiency.

Insurance Companies: Act prohibits insurers from rejecting consumers with medical conditions, leading to continued risk of loss for firms.

Cost Control: No major changes following the passing of AHCA leads to continued stagnancy in healthcare cost growth and reductions in uninsured citizens.

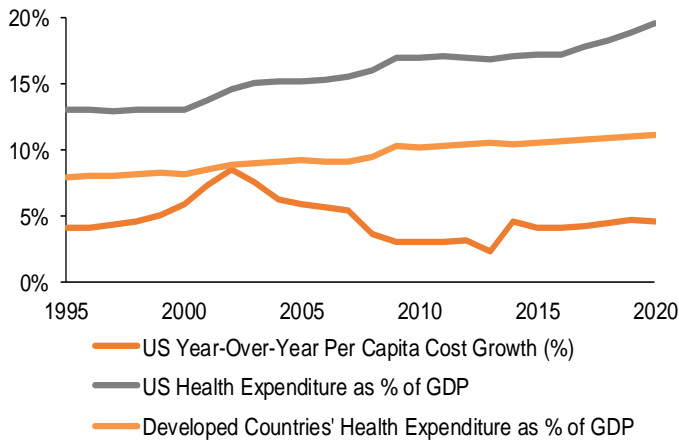
The aggregate effect of passed legislation over the past ~30 years has led to unprecedented expenditure levels, implying substantial opportunity for entrepreneurs, intermediaries and investors



Healthcare in the United States: Weaknesses and Opportunities

The primary weakness of the U.S. healthcare system from the perspective of maximizing care to as many citizens as possible, is that of ineffective cost control. The U.S. healthcare system generally sees an inferior quality of care delivered to an extremely wealthy population at a relatively higher cost, as a percentage of GDP, than any other developed country, as detailed by Figure B.

Figure B. U.S. v. World HC Expenditure



Paying physicians across the spectrum of healthcare providers by the number of services performed can be highly profitable for doctors but incentivizes them to perform more care than necessary, thereby overloading the system and reducing the overall quality of care to society. There has been limited momentum in regards to bundled or diagnosis-related group-based payments. Although it does encourage providers to treat each patient as effectively as possible, it has been met with resistance from many U.S. providers due to the reduced earnings potential.

Another key issue that has led to excessive health care costs is the lack of choices available. More specifically, think of the choice a patient must make if they need care urgently outside of typical walk-in clinic hours but would

be a low-priority patient in an emergency room: they must choose between remaining at home, concerned with their condition, or going to a hospital, where they will wait for hours and then consume precious resources that would be better allocated elsewhere. The lack of an intermediate step between these choices strains hospitals and could be met with a combination of technology-based offerings, community-based semi-urgent care centers, and other alternatives.

Finally, there is a mismatch of demand and supply specific to some types of healthcare providers. As life expectancies continue to rise, it is estimated that 70% of 65-year-olds are expected to need long-term care at some point in their lives. In the U.S., such a consideration has become markedly important given the aging population of the country, albeit at a less severe magnitude in comparison to other developed countries such as Japan.

Regardless, a consequence of such has been the massive growth in demand for long-term care facilities in the U.S. With a current supply shortage currently manifesting itself, pricing for these services has skyrocketed, as the supply required to balance fundamentals needs multiple years to be constructed, staffed, and stocked with the appropriate people, supplies, and devices. This supply shortage issue has been exacerbated for consumers in terms of affordability, given the substantially low percentage of the U.S. population that purchases long-term care insurance since it is generally more expensive to attain insurance that covers it. Few people recognize the need for long-term care early enough to get an insurance plan at an affordable rate, leaving them unable to afford it later in their lives.



Healthcare in the United States: Passed & Proposed Legislation & Implications

Legislation	Jurisd. Level	Stage	Summary
The Affordable Care Act (“ACA”)	Federal	Passed (2010)	ACA aims to make healthcare more affordable for more people. The law provides consumers with subsidies for households below the federal poverty level.
The Patient CARE Act	Federal	Proposed (2016)	The act encourages individuals to find the best health plan for their needs by eliminating mandates, restrictions and reducing fees associated with ACA.
American Health Care Act (“AHCA”)	Federal	Passed (2017)	The act partially repeals ACA mandates and fees while still providing insurance to lower-income households under a different tax-provision system.

Passed Legislation 1: Under the Obama Administration, the Affordable Care Act (ACA) was enacted with the proposed goal of ensuring that every American would have access to affordable, high quality healthcare. Under current administration, the ACA is expected to be drastically altered or replaced altogether.

Implications: Increased coverage and reduced cost for specified preventive items and services, recommended immunizations, and recommended preventive care and screenings for women and children have boosted demand for proactive medical products and services, as well as for the products of companies who manufacture basic medical devices.

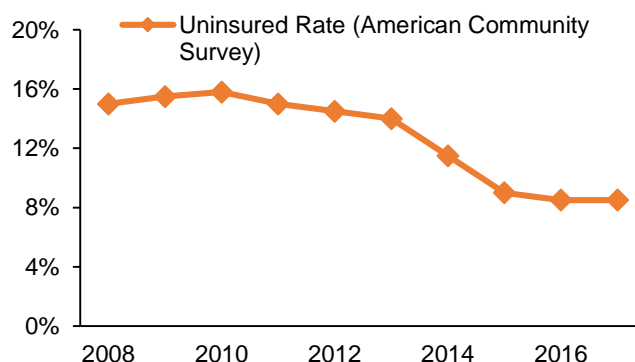
Proposed Legislation 2: The Patient CARE Act proposed in 2016 aimed to repeal ACA policy, benefits, taxes, and fees to allow Americans to choose their own healthcare plans. The policy continues to support low-income individuals by allowing these individuals to purchase insurance through tax credits.

Implications: The CARE Act would reduce government spending – however, the act would increase government deficit by an estimated \$17 billion. The act would also increase the number of uninsured individuals in the U.S.

Passed Legislation 3: The Trump administration ran on the platform to repeal “Obamacare”, also known as the ACA. In 2017, the American Health Care Act (AHCA), nicknamed “Trumpcare”, was introduced and later passed with modifications. The ACHA acts as an alternative to the ACA, making several changes to the original act, but not repealing it completely.

Implications: The ACHA is expected to decrease the number of health-insured Americans, ultimately reducing the aggregate use of healthcare services. However, it is expected to act in favour for the 65+ age demographic. Figure C, however, shows that uninsured rates continue to decline, suggesting that these policies have yet to cause an immediate effect.

Figure C. Uninsured Rates in the U.S.





Healthcare in the United States: Industry Verticals

The U.S. healthcare industry provides a variety of products and services to residents and patients in need. The industry can be broadly classified into four sub-verticals: 1) Pharmaceuticals, 2) Managed Healthcare, Medical Services & Medical Insurance, 3) Medical Devices & Equipment, and 4) Healthcare Services & Facilities.

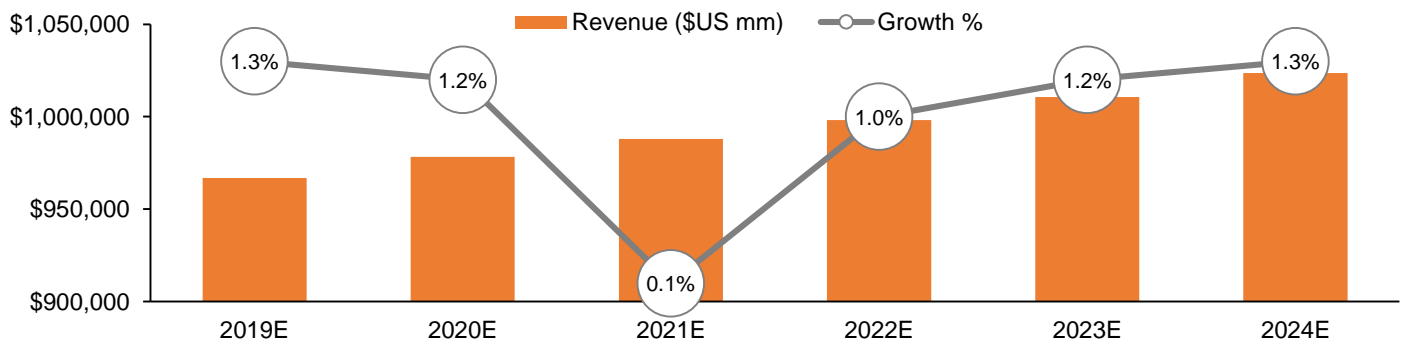
1) Pharmaceuticals

- Develops, produces, and markets drugs or other pharmaceutical products licensed for use as medications, and was valued at \$446 billion in 2016.
- Subject to a variety of regulations regarding patenting, testing, and ensuring the safety of the industry’s products.
- Sub-verticals include over-the-counter (OTC) drugs & drug stores, prescription drugs, biopharmaceutical drugs, generic drugs, among many others.

2) Managed Healthcare, Medical Services & Medical Insurance

- This segment includes companies that provide medical insurance or various services to patients and other industry players.


Figure D. U.S. Medical Insurance Industry Projected Growth





3) Medical Devices & Equipment


- Companies within this sub-vertical are consistently at the forefront of medical technology innovations and offer their products across the spectrum of equipment and hospital supplies.
- The market is worth roughly \$156 billion in the United States and \$350 billion globally.

4) Healthcare Services & Facilities

 **Hospitals** provide medical, diagnostic, and treatment services to inpatients, and also provide outpatient services.

 **Ambulatory** services provide direct and indirect healthcare services to ambulatory patients.

 **Nursing Facilities** provide residential care with nursing, supervisory, and other care as required by patients.

 **Medical Professionals** include practitioners, chiropractors, social workers, psychologists, among others.

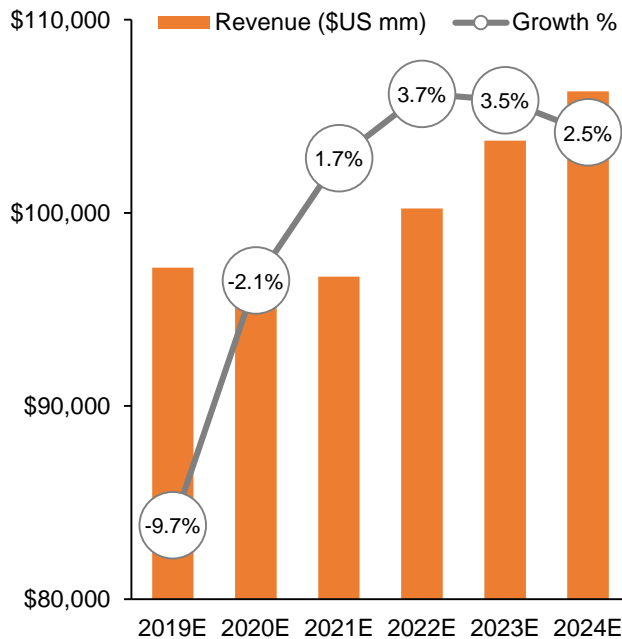


Sub-Vertical: Pharmaceuticals

Biotechnology

Biotechnology companies use living organisms or molecular and cellular techniques to provide products and services for human needs. The industry is heavily reliant on investment as R&D costs to introduce products and to remain competitive are high. Over the next five years, growth is expected to slow from the torrid pace experienced the five years prior to 2019, due to government and regulation volatility.

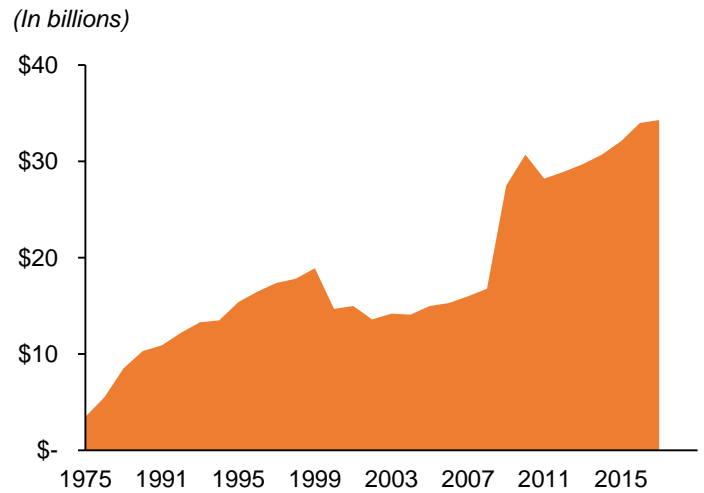
Figure E. U.S. Biotech Industry Revenue Growth Projections



OTC & Drug Stores

The North American drug store industry includes businesses that offer over-the-counter (OTC) medications, toiletries, beauty items, and consumable goods. In the United States, the OTC market has exhibited growth in line with the general economy, while the Canadian industry has realized outpaced growth due to increasing drug prices and higher healthcare expenditures. While this trend may be fortuitous for businesses, the Canadian government has imposed price restrictions on medications to cut costs for consumers, ultimately driving the Canadian industry's growth outlook to fall closer to GDP growth.

Figure F. U.S. OTC Medication Retail Sales



Buyer	Target	Completion Date	Transaction Size
DIPLOMAT	tnh	June 1 st , 2016	\$75 million (~8.3x 2015A Adjusted EBITDA)
CVS Health.	PHARMACY	December 16 th , 2015	\$1.9 billion
CVS Health.	Omnicare	August 18 th , 2015	\$11.3 billion (\$98/Share In Cash)



Sub-Vertical: Managed Healthcare

Due to the highly regulated nature of the healthcare sector, rising costs have led companies to pass these price increases down to consumers, ultimately leading to the creation of the managed healthcare sector. These businesses can take multiple forms including:

- Health Maintenance Organizations (HMO)
- Preferred Provider Organizations (PPO)
- Exclusive Provider Organizations (EPO)

Health Maintenance Organizations

Health maintenance organizations are healthcare insurance companies that have their own network of doctors, hospitals, and other healthcare providers who have agreed to accept payment at a certain level for any service that they provide. Through this approach, HMOs can maintain lower costs for its members. On a comparative basis, these plans tend to charge lower monthly premiums, but provide a minimal level of basic medical care. Additionally, HMOs require their members to designate a Primary Care Physician (PCP). This individual will act as each member's main touchpoint when it comes to any health-related problem, and will refer further healthcare services to the member if necessary.

Preferred Provider Organizations

Preferred provider organizations operate with a

'preferred' network of providers in a given region. With this plan, members do not need to select a PCP, and additionally do not require PCP referrals to receive further healthcare services. With this service type, PPO companies will pay a portion of the member's medical expenses, but use ranging discount rates to direct their clients towards the company's preferred network of healthcare establishments. This provides members with the ability to pursue medical treatment outside of a defined network of businesses, but will face higher costs if they choose to go beyond the preferred network. These healthcare plans typically fall on the expensive end of the spectrum when compared to EPOs and HMOs.

Exclusive Provider Organizations

An exclusive provider organization acts as a hybrid between the offering provided by a PPO and the offering provided by an HMO. EPOs provide optionality and premiums that fall between the PPO and HMO models. Like a PPO, members can receive specialty healthcare services without a referral from a PCP, but similar to HMOs, members will pay out-of-pocket if they pursue treatments outside of the pre-defined network. People who prefer to see specialists with a PCP referral will typically use an EPO healthcare plan.

Company	Market Cap (US\$mm)	Headquarters	Business Model
Molina Healthcare	\$9,229	Long Beach, California	Provides health care insurance plans to individuals receiving government assistance, such as Medicare.
Triple-S Management	\$529	San Juan, Puerto Rico	Insurance company providing products in health, life, property and contingency segments.



Sub-Vertical: Medical Devices & Equipment

Intravenous (IV) Solution Manufacturing

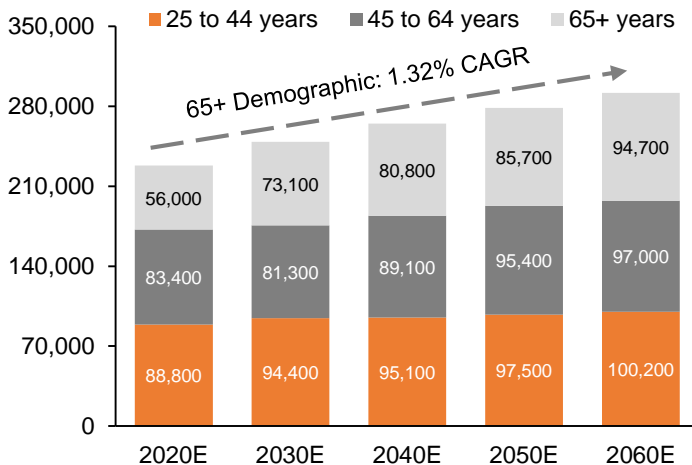
Intravenous (IV) fluid therapy is the provision of IV fluids such as saline, lactated ringers, sugared water, and electrolytes to patients who are unable to meet their nutrient needs orally. Naturally, the therapy is directed more towards patients requiring intensive care and constant monitoring.

Figure G. Major Players in IV Manufacturing

Company	2018 Revenue (\$mm)
Becton Dickinson & Co.	\$17,062
Baxter International Inc.	\$11,127
Smiths Group	\$4,295
ICU Medical	\$1,400

Additionally, the success of this specific industry correlates strongly with the proportion of old-age individuals within the general population due to their high susceptibility to disease. The growth of the 65+ age demographic in the U.S. population provides a predictive outlook for the IV Manufacturing industry.

Figure H. U.S. Population by Age Group (000's)



Healthcare Staff Recruitment Agencies

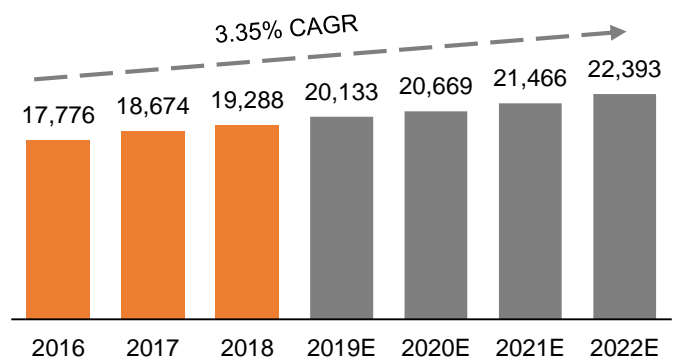
The growing demand for healthcare professionals has led to the creation of healthcare staff recruitment agencies. These firms are tasked with connecting prospective employees to a myriad of institutions. The types of staffing varies between full-time placement to temporary work, in substitution of permanent healthcare professionals or staff.

Figure I. Major Recruitment Agencies

Company	2018 Revenue (\$mm)
AMN Healthcare Services	\$2,136
CHG Healthcare Services	\$1,400
Cross Country Healthcare	\$817
Jackson Healthcare	\$765

The growth of this industry is heavily predicated on the success of the healthcare industry as a whole. Fortunately, the increased focus on health, as well as the aging population in the U.S. provides a strong platform for continued growth in the sector. Consequently, demand for the services of healthcare staff agencies is expected to continue climbing, with annual revenues estimated to increase at a 3.35% CAGR from 2016 to 2022.

Figure J. U.S. Healthcare Staff Recruitment Agencies Revenue (\$mm)





Sub-Vertical: Healthcare Services & Facilities

Urgent Care Centers

An urgent care center is a category within walk-in clinics that focuses on the delivery of ambulatory services. This means that these centers primarily treat injuries or illnesses that require immediate care but are not sufficiently serious that the patient must be transported to an emergency department (ED). The industry has experienced tremendous growth since its inception in the 1970s, with many centers being self-owned by physicians.

Figure K. Shortage of Primary Care Physicians

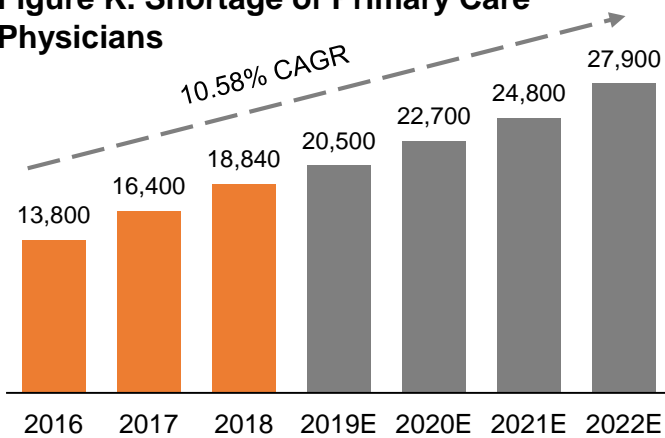
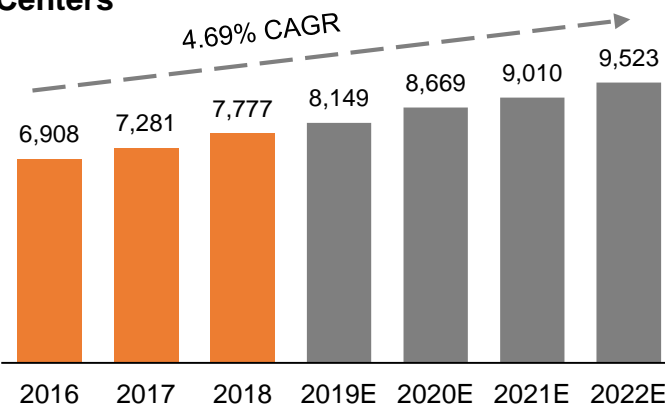


Figure L. Number of U.S. Urgent Care Centers

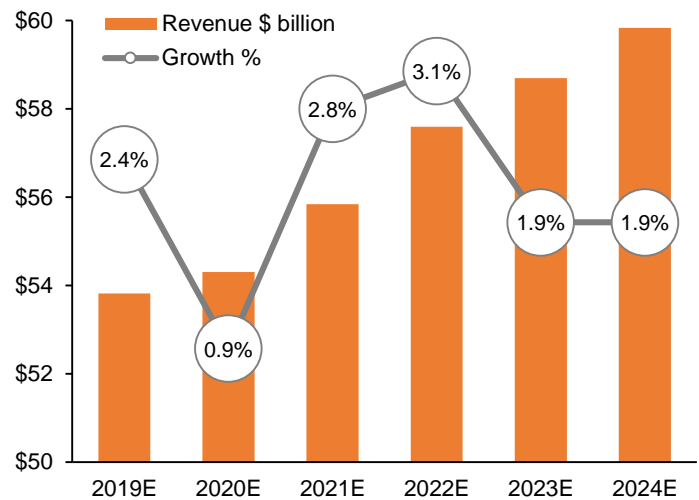


Medical and Diagnostic Laboratories

Players in this industry provide analytic services to identify or determine the nature and cause of a disease or injury through an

evaluation of a patient's history and data. Typically, these services are provided to healthcare providers or patients upon referral from health practitioners. The industry saw \$52.6 billion in revenue in 2018 and is projected to grow at 2.2% annually to 2023. The medical and diagnostic laboratories industry has benefited from a trend in healthcare, which comprises of the shift from curative care to detection, prevention, and personalized care in recent years. This trend, in addition to an aging American population, has stimulated demand for this industry's services.

Figure M. U.S. Medical and Diagnostic Laboratories Industry Revenue Growth Projections



Ophthalmic Goods

The ophthalmic goods industry in the United States produces goods including eyeglass frames and lenses, contact lenses, sunglasses, protective eyewear, and other optical products. Performance in the industry is largely driven by external factors including an aging population, federal funding for Medicare, the number of residents with private health insurance, and per capita disposable income.

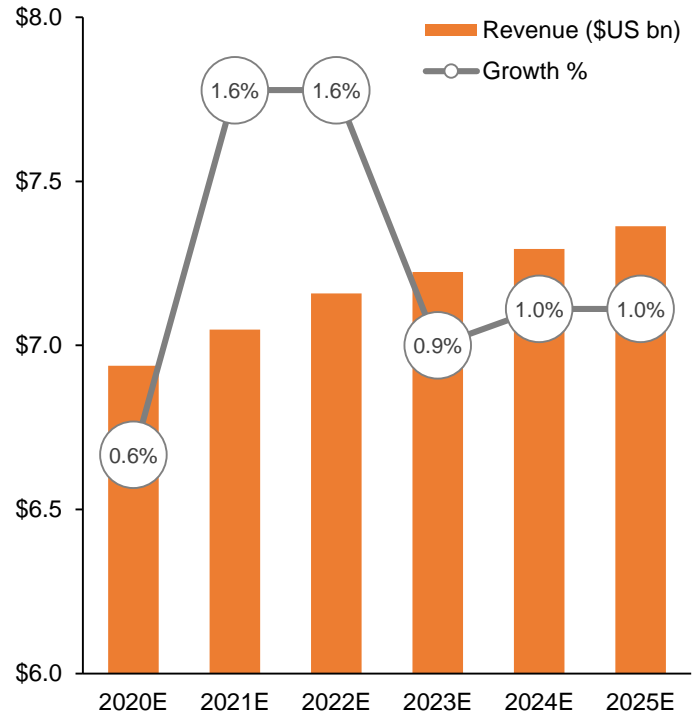


Sub-Vertical: Healthcare Services & Facilities

Ophthalmic Goods (cont'd)

The Vision Council of America estimates that 75% of adults use some form of vision correction. Coupling this with an aging U.S. population, there is reason to expect strong demand moving forward. Federal funding for Medicare also directly influences spending in this space as increased coverage raises the likelihood of consumers purchasing new glasses, contact lenses, and other eyecare products. In addition, increases in the number of citizens with privatized health care boosts the replacement rate of prescription eyewear. Lastly, an increase in per capita disposable income is another driver of the industry as it enables people to spend more on nonessential, higher-margin luxury products such as sunglasses and contact lenses.

Figure N. U.S. Ophthalmic Industry Revenue Growth Projections





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