

Life Sciences in the United Arab Emirates

February 2022



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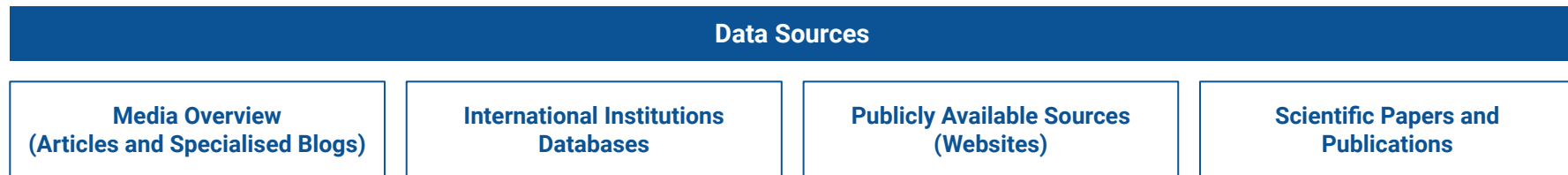
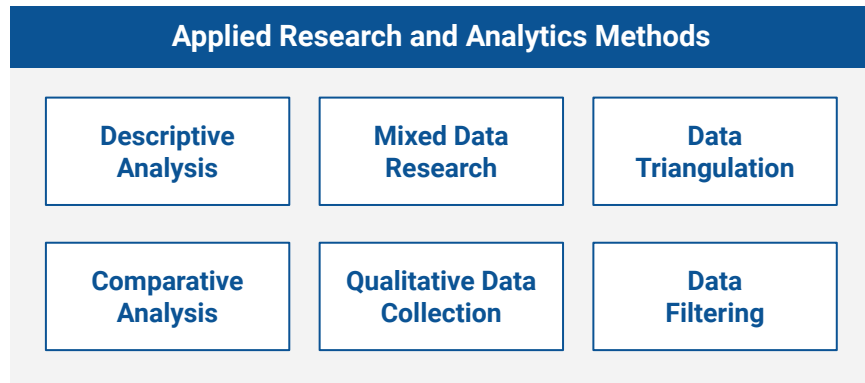
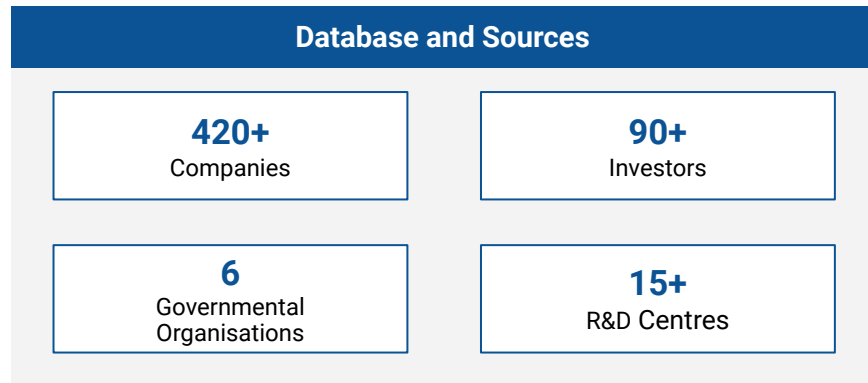
Introduction

This analytical case study reveals **key developments in the Life Sciences Industry in the United Arab Emirates (UAE)**. The study highlights the major UAE players in the Life Sciences field, covering technological trends and advancements, analysis of existing and upcoming government policies, and an overview of underlying economic and financial data.

The report showcases core analytical findings and conclusions through a variety of infographic mindmaps. Its chapters introduce readers to **specific areas of the Life Sciences Industry in the UAE**.

This analytical case study presents a unified framework based on a vast industry database including **420+ companies, 90+ investors, 6 government organisations, and 15+ R&D centres** that operate, interact with, or are involved in the Life Sciences Industry. The key purpose of this report is to support all entities and stakeholders across industries in their strategic decision-making.

Approach



Containing a comprehensive overview of the the Life Sciences Industry, the report relies on various research methods and analytics techniques. It was compiled to give a detailed systematic description of the leading companies, investors, R&D centres, and other organisations related to the Life Sciences Industry in the UAE. The industry provides ample opportunities for innovation in the UAE, which possesses the tools to become a global centre for innovation in the Life Sciences.

Executive Summary

The Life Sciences Industry emerged in the UAE around 25 years ago. Its growth has been primarily driven by the **pharmaceutical and healthcare sectors**. The UAE sets a compelling example for the Life Sciences Industry in the Gulf Cooperation Council region thanks to a national vision of achieving world-class, internationally recognised **healthcare infrastructure**. The UAE government is committed to continuously strategising and improving the quality of **health care and laboratory testing** services in the country.

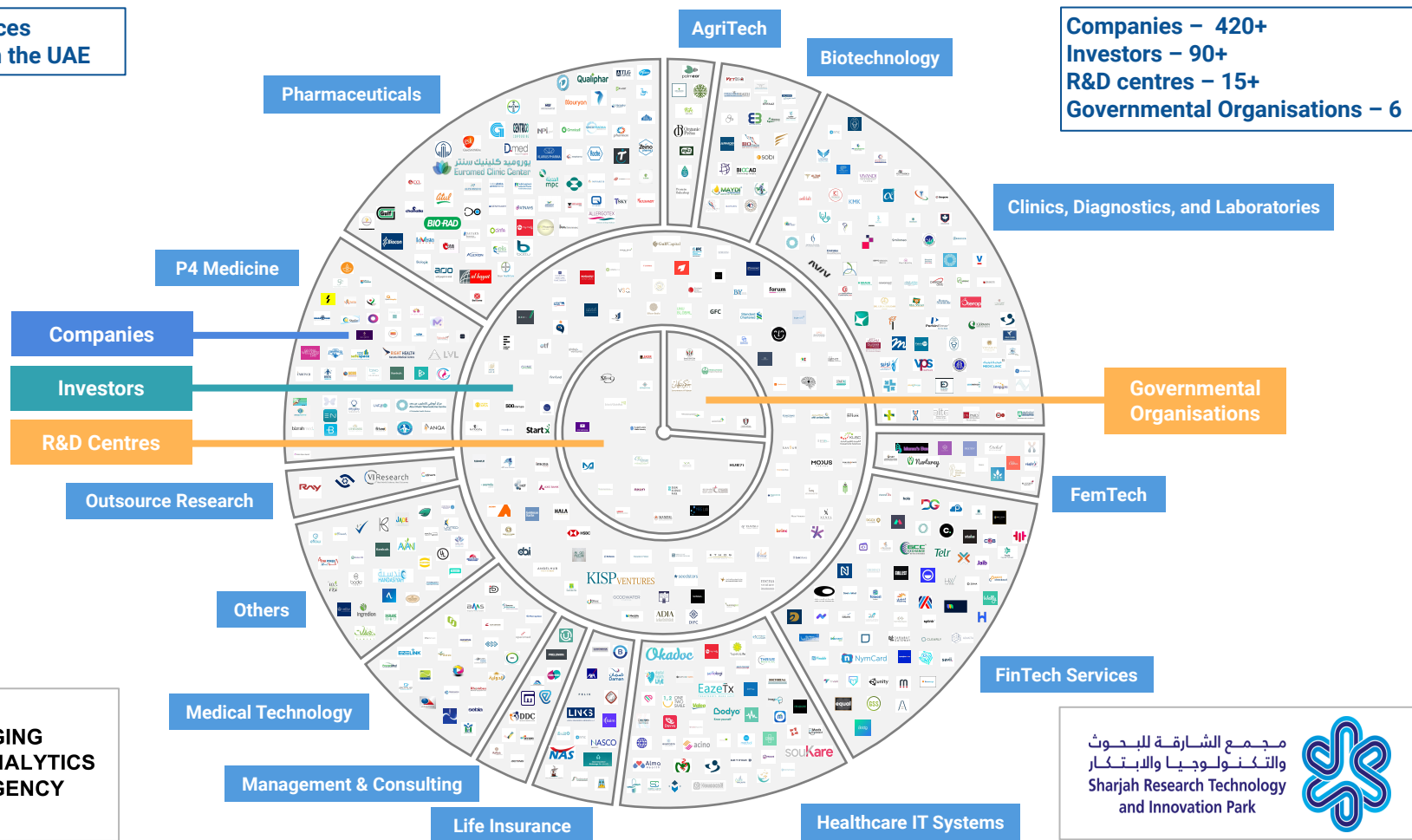
The government is also enacting policies and **programmes** to turn itself into a hub for pharmaceuticals. It is also establishing medical research and development centres across the country. Moreover, the UAE is focusing on drawing **international pharmaceutical companies** to establish and expand their presence in the country. In addition to its **growing domestic market**, the UAE boasts a strategic location and sophisticated **logistics infrastructure**. The nation has also created several **free zones** that have become hubs for the pharmaceutical industry.

The 420+ Life Sciences companies in the UAE were classified into **13 broad categories**, each of which has a unique approach to contribute to the Life Sciences ecosystem.

The UAE's Life Sciences Ecosystem 2021

13	Categories	28	Out of 100 investors are domestic
3.0%	Grey sky scenario CAGR of Longevity market size	8.5%	Blue sky scenario CAGR of Longevity market size
\$23B	Longevity market size in the UAE in 2026 (grey sky scenario)	\$32B	Longevity market size in the UAE in 2026 (blue sky scenario)
3	Long-term government plans	6.2%	CAGR of pharma industry by 2027
\$5.6B	Projected pharma market size of the UAE by 2027	\$5.3B	Projected export of pharma industry in 2027

Life Sciences Industry in the UAE



Global Life Sciences Industry Outlook



Global Life Sciences Industry Outlook

Drivers of Growth

Population ageing

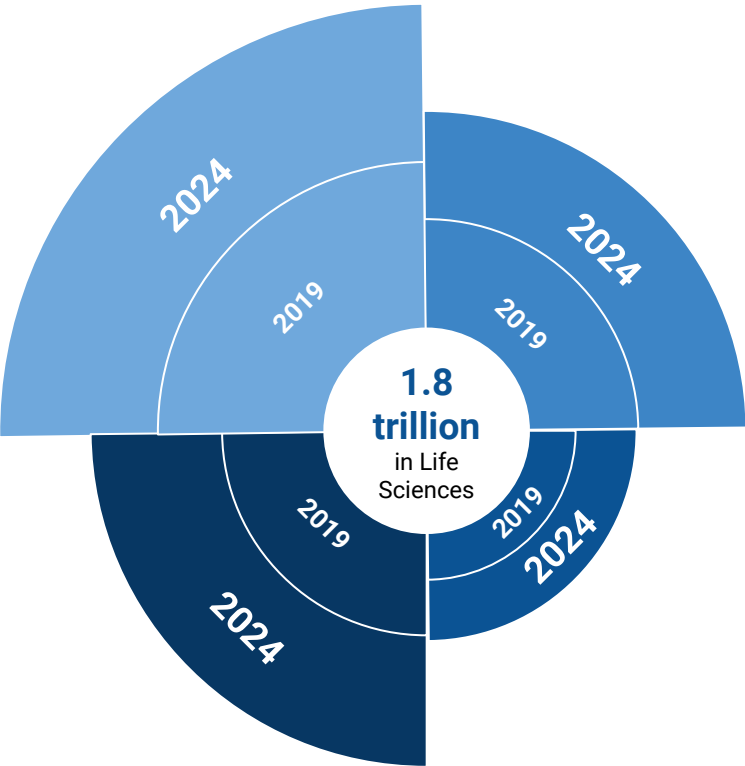
Medical services are in high demand as the world's population ages.

New machines and drugs

New remedies are being developed to meet previously unmet health requirements, stimulating additional technological advancements and pharmacological development.

Patient centricity

A shift to customised health care is underway, and platforms that deliver it to patients (literally) at their doorstep are in high demand.



Pharmaceuticals

\$ 871 → 1200



Medical devices

\$ 475 → 595



CROs*

\$ 37 → 55



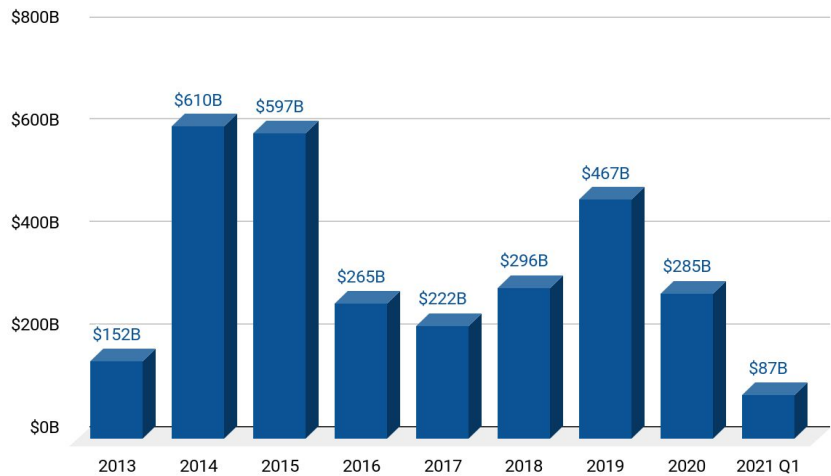
Biotechnology

\$ 453 → 656

*Note: CRO is a company that provides support to the pharmaceutical, biotechnology, and medical device industries in the form of research services outsourced on a contract basis.

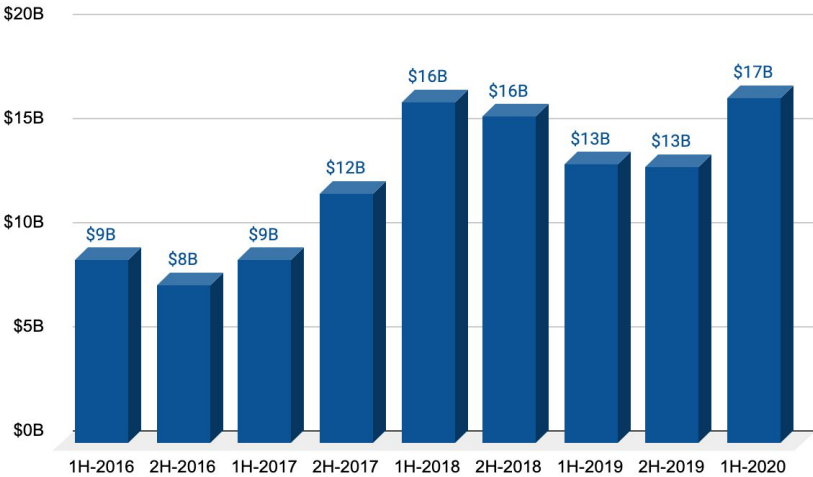
Global Life Sciences Industry Outlook

Total Value of Deals in the Life Sciences Industry Worldwide from 2013 to Q1 2021



In **2020**, deals in the Life Sciences Industry amounted to a **total value of \$285 billion** globally. This graph shows the total value of deals made in the Life Sciences sector worldwide from 2013 to the first quarter of 2021.

Global Funding for Life Sciences-Related Rounds, Series A and Beyond



In the first half of 2020, investors deployed **\$16.55 billion** globally across over 450 deals in BioTech and Life Sciences subsectors. This is considerably higher than the same period in **2019**, when investors put **\$13.4 billion** to work across nearly 600 known funding rounds.

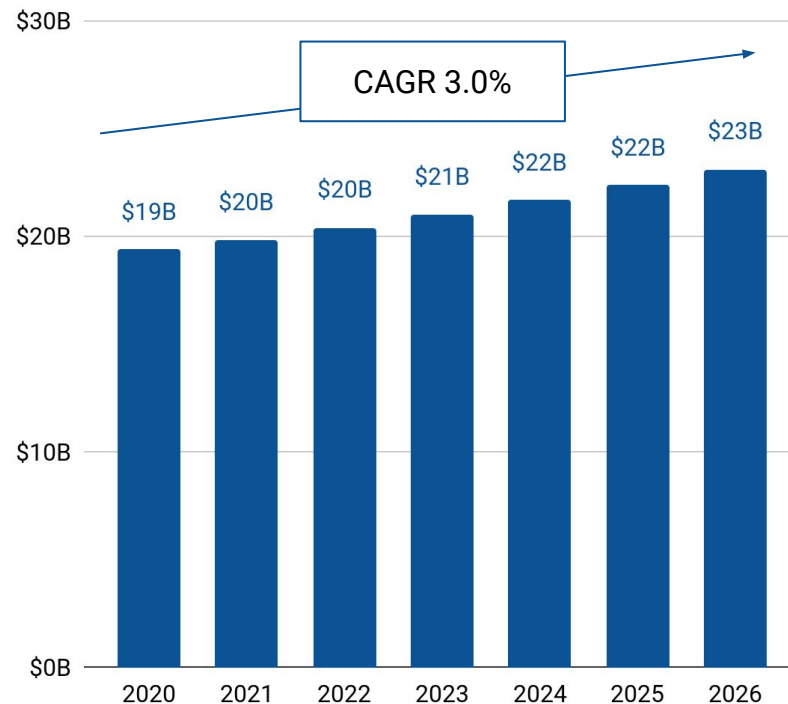
Grey Sky Scenario of the UAE's Longevity Market Size Projection

In 2020, the Longevity market in the UAE was valued at more than **\$19 billion**. It is projected to grow at least as fast as the UAE economy at a **CAGR of (3.0%)** to reach **\$23 billion in 2026**. The main drivers of growth are increasing **domestic demand** and **exports** as well as **government support** for all market players, from Big Pharma corporations to small BioTech startups.

With the full fallout of COVID-19 still unknown, the UAE remains a highly sought-after investment destination for the foreseeable future. A raft of **multinational pharma companies** are placing their regional headquarters in the UAE thanks to the country's stability and openness, its well-developed infrastructure, and its attractiveness to top talent.

As mentioned above, the UAE sets a strong example for the region's Longevity sector due to its national vision of achieving world-class, internationally recognised **healthcare infrastructure**. The country is aiming to become a significant global **hub for pharmaceuticals**, with the key factors contributing to this growth being a patent cliff allowing for mass production of **generic medicines** and an increasing population of **skilled expatriate workers** returning for work opportunities.

The UAE Longevity Market's Forecasted Growth, 2020-2026



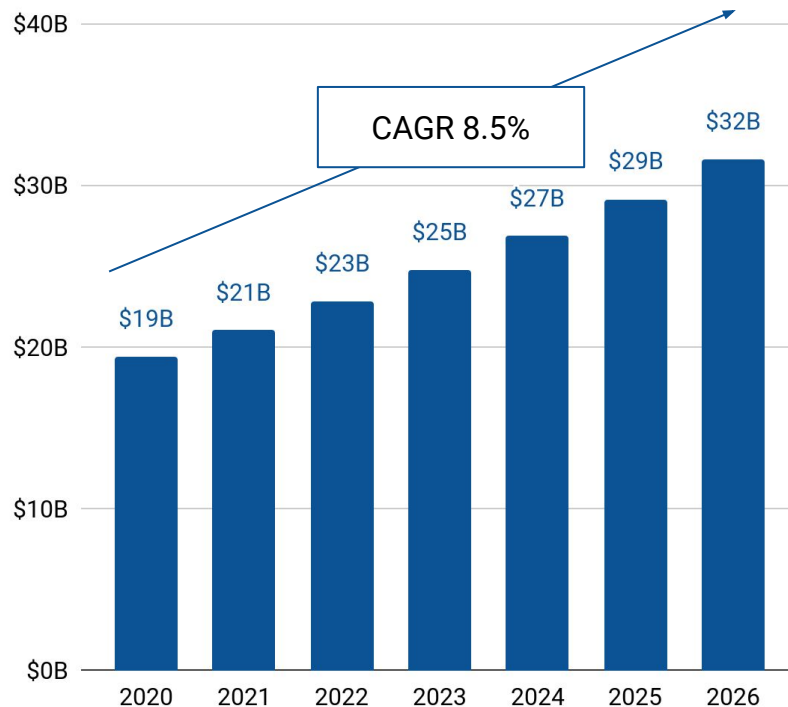
Blue Sky Scenario of the UAE's Longevity Market Size Projection

In 2020, the UAE Longevity market was valued at more than **\$19 billion**. It is projected to grow at a **CAGR of 8.5%** to reach **\$32 billion by 2026**. Besides the main drivers of growth from the baseline scenario, the expected **boosting of growth in the Pharma and BioTech industries** was taken into account in the projected figures.

To achieve **sustainable growth for the pharma** Industry in the UAE, government entities have adopted a series of long-term plans. The **Dubai Industrial Strategy 2030** and the **Abu Dhabi vision 2030**, for instance, portray the pharmaceutical industry as one of the main-priority subsectors for development due to their growth prospects, export potential, and mid-term to long-term economic impact.

The UAE is also focusing on enticing **international pharmaceutical companies** to establish and expand their presence in the country. In addition to its **growing domestic market**, the country boasts a strategic location and sophisticated **logistics infrastructure**, especially with the recent approval of the Dubai Silk Road, which makes it an ideal hub to access the growing regional markets in Africa, Asia, and the Middle East. The UAE has also created several **free zones** that have become hubs for the pharmaceutical industry.

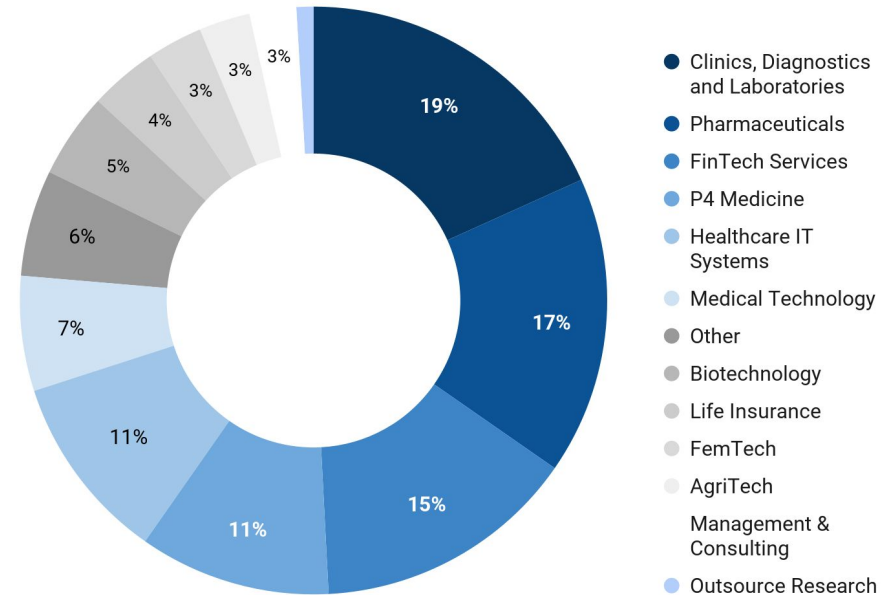
Forecasted Growth of the UAE Longevity Market, 2020-2026



UAE Life Sciences Industry at a Glance

The 420+ **Life Sciences** companies in the UAE were classified into **13 broad categories**, each of which has a unique approach to contribute to the Life Sciences ecosystem. Companies in the **Clinics, Diagnostics, and Laboratories** category (**19%**) offer innovative treatment and deep diagnostics services. **Pharmaceutical** firms (**17%**) are those that deal with pharmaceuticals, drug manufacturing, and distribution. Companies in the **FinTech Services** (**15%**) sector offer financial solutions, business finance, and solutions to fund lifestyle and social care. Companies in the **Healthcare IT System** category (**11%**) offer AI-based health care solutions including remote diagnosis and treatments. Companies in the **P4 Medicine** category (**11%**) provide precise diagnostics and treatment services. The **Other** category (**6%**) includes wellness and fitness companies, mental health, EdTech, and NeuroTech companies. Businesses in the **Medical Technology** category (**6%**) play a critical role in developing medical therapies and innovations to improve outcomes and health care delivery. Companies in the **Biotechnology** category (**5%**) offer products and services that primarily use biotechnology methods for their production, design, or delivery. **Life Insurance** (**4%**) is the focus of InsurTech companies. Companies in the **FemTech** category (**3%**) develop software, diagnostics, products, and services that focusing on women's health. The **AgriTech** category (**3%**) includes all providers of innovation in the agricultural sector. **Management and Consulting** companies (**3%**) assist healthcare companies with managing their data, constructing strategy and solving specific cases. **Outsource Research** companies (**1%**) offer non-core services for clients, in which clients are not specialized.

Distribution of UAE Life Sciences Companies by Category



UAE Life Sciences Industry at a Glance: Companies

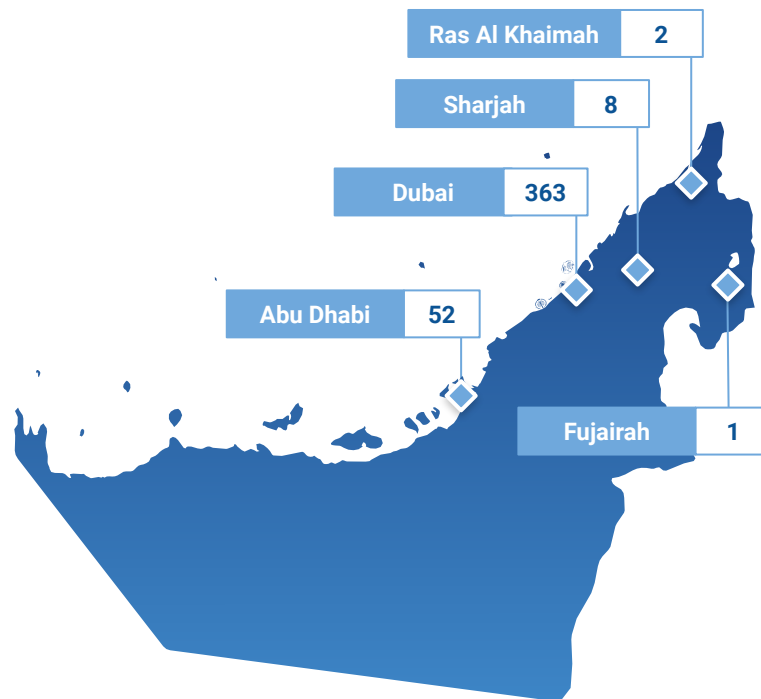
The majority of Life Sciences companies in the UAE are located in the Emirate of Dubai.

The government of Dubai supports innovations and establishes new Life Sciences initiatives on an ongoing basis. For instance, **Dubai Science Park** is a creative environment that fosters development in the medical, wellness and pharma sectors, with medicine, perfumery, and F&B labs manufacturing products locally.

The creation of a robust and resilient health care industry is a key priority for the UAE. One of the most promising methods to achieve this is by increasing research and development (R&D).

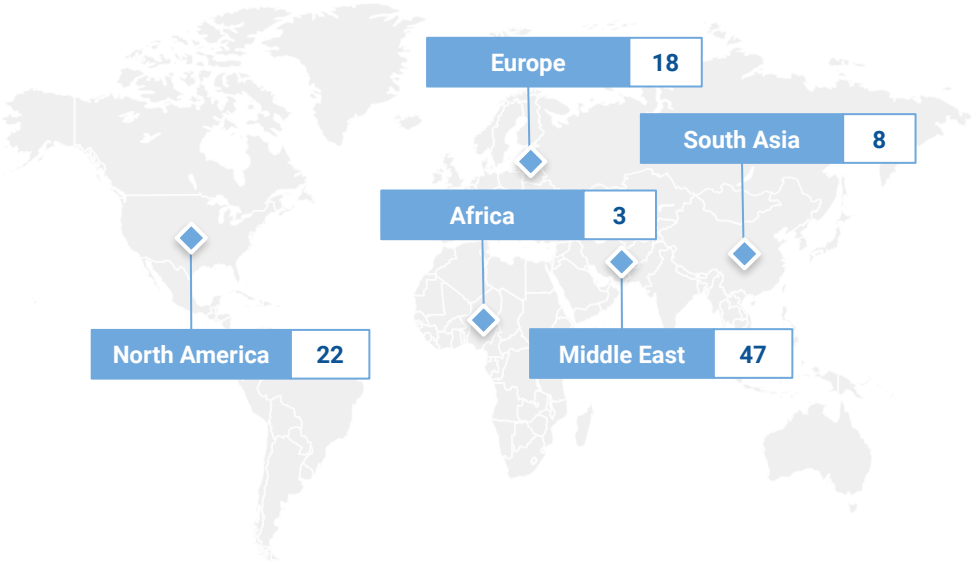
Dubai welcomes many next-gen medicine and health care companies to business districts which provide an ecosystem for medical innovation. **As the region's Healthtech Industry grows, so will the community of science-backed startups.** It will consolidate Dubai's position as a global hub for biotechnology and Life Sciences.

Distribution of UAE Life Sciences-Focused Companies by Emirate

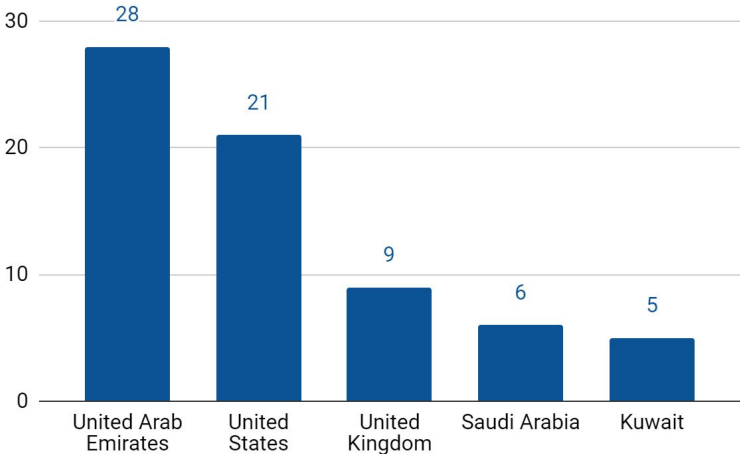


UAE Life Sciences Industry at a Glance: Investors

Distribution of Investors by Region



Top 5 Countries by Number of Investors



Most investors are from the **Middle East region - 47 investors**. More than a half of them are domestic investors, **originating from the UAE**. Neighboring gulf countries such as Saudi Arabia and Kuwait are also among the top 5 investors in Life Sciences in the UAE. **The second country** by number of investments is **the US**. **The third region** by number of investments is **Europe**, with more the half of the investors form **the UK**.

UAE Government Initiatives for Life Sciences Development





The Sharjah Research, Technology, and Innovation Park (SRTI Park)

is envisaged as a home for knowledge-intensive businesses. By leveraging the intellectual, academic, and business capabilities of the local ecosystem, the Park hopes to attract leading companies.

The Park will also provide a platform for **research into water technologies, renewable energy, environmental technology, digitisation, production design and architecture, and transport and logistics**. By providing this platform for innovative start-ups and established companies to enter or expand in the region, the Park has the potential to position Sharjah as a regional and global leader in innovation and job creation. **The SRTI Park is helping Sharjah to align with and make a big contribution to the UAE Vision 2021.**

Innovation forms a key part of the pillar 'United in Knowledge' of the UAE Vision 2021, which focuses on building the UAE into a competitive economy. One of the Key Performance Indicators (KPIs) of this pillar is the Global Innovation Index (GII), an annual ranking of countries by their capacity for and success in innovation. The UAE progressed by six ranks in the 2017 GI, ranking 35th globally and leading among all Arab countries, cementing its status as a leading and innovative country.

Focus Sectors of The SRTI Park



Water
Technology



Transport
& Logistics



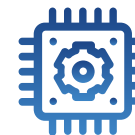
Production,
Design
& Architecture



Renewable
Energy

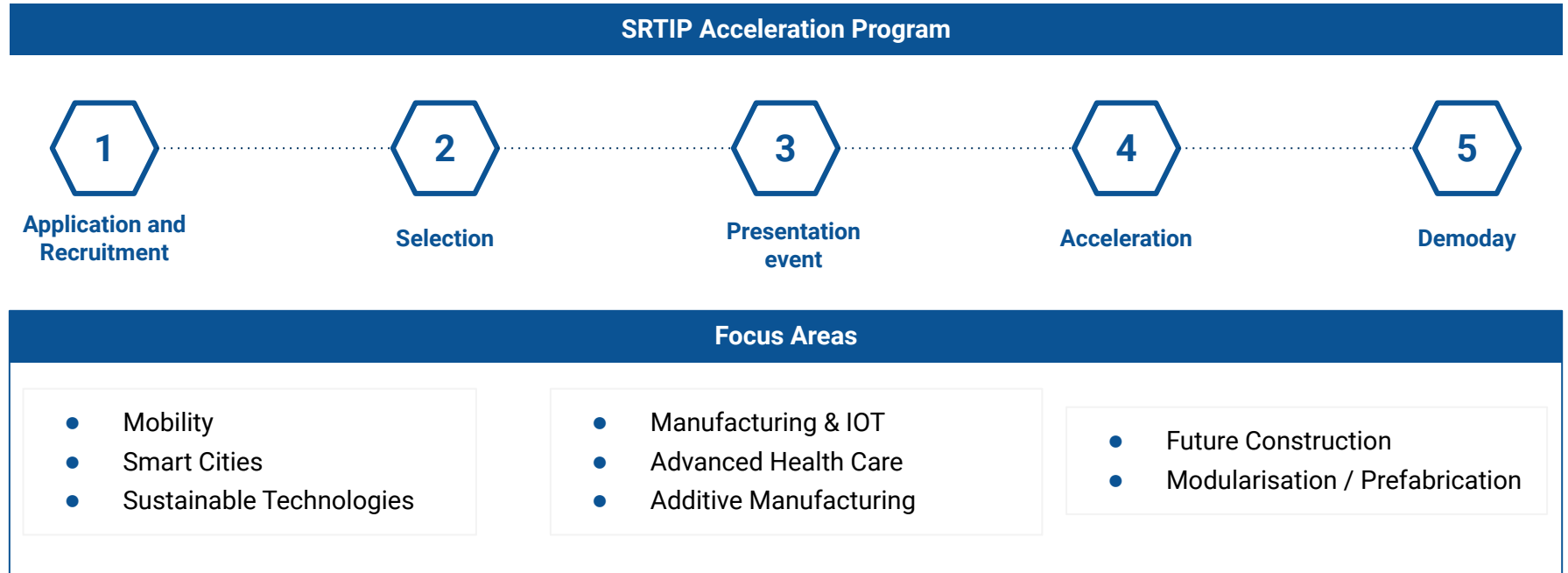


Environmental
Technology



Digitisation

The **SRTIP Acceleration Program** is aimed at supporting start-ups and growth-driven companies in the region. It is an industry-specific programme **focused on bringing companies from across the MENA region closer to realising the full potential of the 4th Industrial Revolution**. The Park enables local and regional entrepreneurs as well as global start-ups to scale up their businesses through education, mentorship, and financing provided by the SRTI Park ecosystem and network.



Ministry of Industry and Advanced Technology



وزارة الصناعة
والتكنولوجيا المتقدمة
MINISTRY OF INDUSTRY
& ADVANCED TECHNOLOGY

The UAE Ministry of Industry and Advanced Technology (MoIAT), which was established in July 2020, intends to enhance the country's industrial sector and increase its contribution to national GDP. The MoIAT creates laws and policies to create a world-class industrial development framework to attract foreign direct investment (FDI) and bright minds, increase in-country value (ICV), foster entrepreneurship, create jobs, upskill local talent, and increase exports of 'Made in the Emirates' products. The MoIAT's strategy is the broadest and most comprehensive plan for growing the UAE's industrial sector and strengthening its role in economic growth. The strategy bears the name Operation 300Bn, based on its ultimate goal of raising the industrial sector's contribution to GDP from AED 133 billion to AED 300 billion by 2031.

The ministry specialises in 11 vital industries, including the following:

- Food, beverage, and agricultural technology
- Pharmaceuticals
- Electrical equipment and electronics
- Advanced manufacturing
- Medical technology
- Space technology

Projects



The National In-Country Value Program (ICV) intends to help the MoIAT enhance the industrial sector's performance and long-term viability.



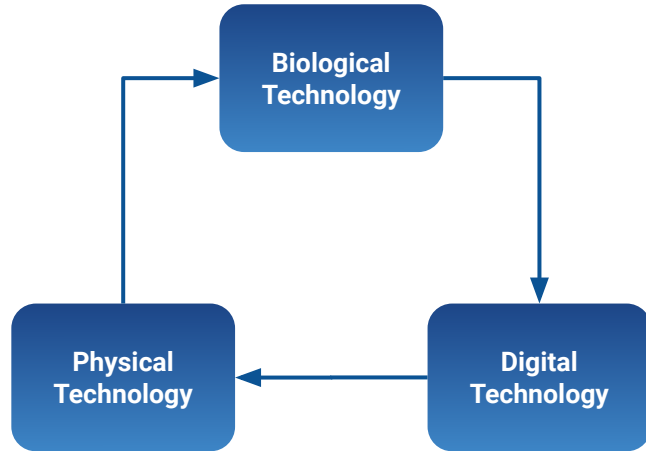
'Make it in the Emirates' is an open invitation to investors, innovators, and developers to contribute to the UAE's industry and advanced technology strategy, Operation 300Bn.



The 4th Industrial Revolution Program aims to transform the UAE's industrial base into a globally competitive, productive, and sustainable sector at the cutting edge of the 4th Industrial Revolution.

The UAE's 4th Industrial Revolution

4th Industrial Revolution



The 4th Industrial Revolution is a technological revolution that merges physical, digital, and biological technologies to deliver new and unprecedented products and services in emerging sectors.

The UAE's future is marked by the 4th Industrial Revolution, which is an important and influential milestone. It presents both extraordinary potential and a number of concerns that must be handled and effectively utilized. As a result, the UAE is speeding up its attempts to become the world's first open lab for experimenting with and embracing 4th Industrial Revolution technologies at a rapid pace.

The UAE's Fourth Industrial Revolution Strategy, the first of its type in the world, was created to give policymakers a practical framework for embracing advanced technologies and transforming future obstacles into opportunities that can benefit the country's population.

Characteristics of the 4th Industrial Revolution

1

Speed: Exponential and unprecedented advancements.

2

Impact: A large-scale and comprehensive transformation in all systems.

3

Scope: The 4th Industrial Revolution will affect all current and future sectors.

Dubai Industrial Strategy 2030

As the Dubai Plan 2021 begins its implementation phase, the government of Dubai has devised an Industrial Strategy for the emirate alongside other conventional sectors of economy such as commerce, logistics, financial services, and tourism. The strategy **aims to turn Dubai into a 'global hub for knowledge-based, innovative, and sustainable industrial activities'** by improving industrial coherence and integrating this industrial hub with other economic sectors, particularly strategic ones, and by creating a favorable investment environment through a series of initiatives and incentives. These will help to expand and strengthen selected industries while also attracting new ones with competitive skills.

Six industrial subsectors will be targeted:

- Aerospace
- Maritime
- **Pharmaceuticals & Medical Equipment**
- Aluminum & Fabricated Metals
- Fast Moving Consumable Goods (FMCG)
- Machinery & Equipment

Strategic Objectives

Growth Engine



Increase total GDP and value-added of manufacturing

Innovation-Based



Enhance depth of knowledge and innovation

Home for Global Business



Become the preferred manufacturing platform for global business

Environmentally Sustainable



Promote eco-friendly and energy-efficient manufacturing

Adopting Islamic Standards



Become a centre for the global Islamic products market

Abu Dhabi Economic Vision 2030

In 2016, **the government of Abu Dhabi** announced a long-term plan for the transformation of the emirate's economy, including a gradual reduction in its reliance on the oil sector as a source of economic activity and a stronger focus on knowledge-based industries in the future. Entitled '**Abu Dhabi Economic Vision 2030**', the plan identifies the following as the government's immediate economic priorities:



Building an open, efficient, effective, and globally integrated business environment;



Adopting a disciplined fiscal policy that is responsive to economic cycles;



Establishing a resilient monetary and financial market environment with manageable levels of inflation;



Driving significant improvement in the efficiency of the labour market;



Developing a sufficient and resilient infrastructure capable of supporting anticipated economic growth;



Developing a highly skilled, highly productive workforce; and



Enabling financial markets to become the key financiers of economic sectors and projects.

The following sectors will be the engines of economic growth and diversification of the emirate's following areas:

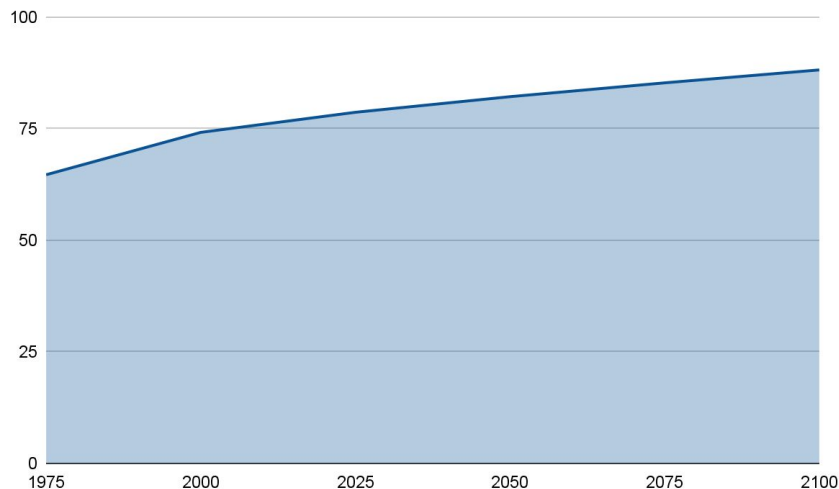
- Energy – Oil and Gas
- Petrochemicals
- Metals
- Aviation, Aerospace, and Defence
- **Pharmaceuticals, Biotechnology, and Life Sciences**
- Tourism
- **Health Care Equipment and Services**
- Transportation, Trade, and Logistics
- Education
- Media
- Financial Services
- Telecommunication Services

UAE Initiatives on Public Health Advancement



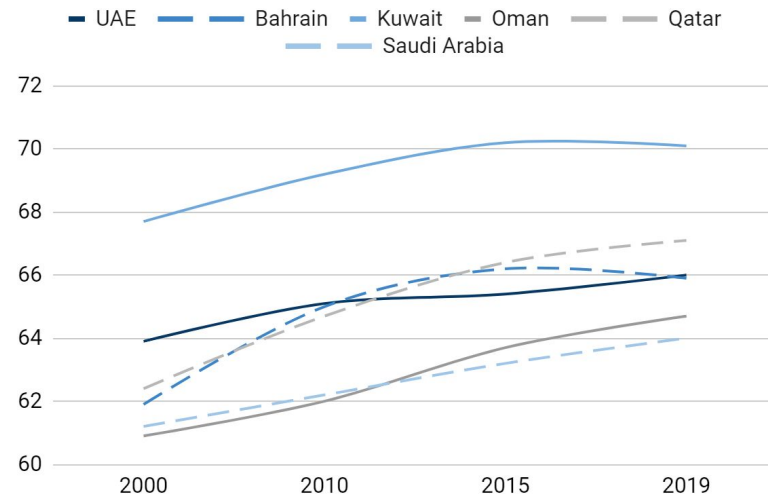
Life Expectancy in the UAE

Life Expectancy in the UAE, 1975-2100



In **2020**, life expectancy at birth for the UAE was **78.12 years**. Life expectancy at birth of United Arab Emirates is expected to increase to **88.2 years by 2100**.

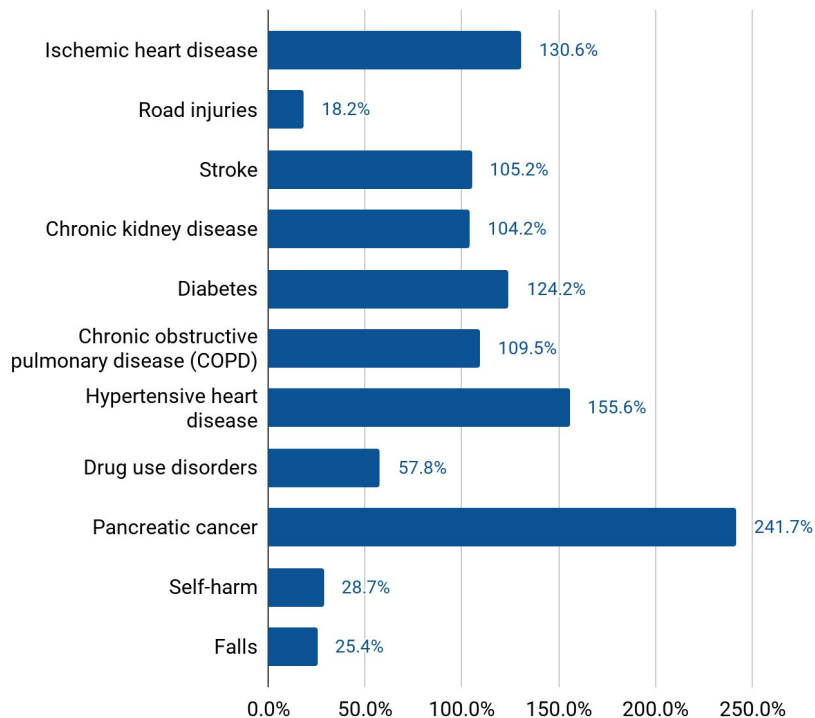
HALE at Birth for Both Sexes in the Gulf Cooperation Region



Between 2000 and 2019, the average number of expected healthy years in the UAE rose from **63.9** to **66**. HALE in the country **has a stable upward trend**.

Life Expectancy Growth Zones

Top 10 Causes of Death and Disability (DALYs) in 2019 and % Change 2009–2019, All Ages Combined



Overview of Proposed PPP projects in Service Enhancement and Improvement

Cardiology

The Cardiology Centre of Excellence (CoE) is the first health care PPP project to be implemented in the Emirate of Dubai and aims to provide world-class cardiology services in partnership with the private sector.

Imaging Diagnostics

DHA is keen to improve utilisation of equipment, quality and efficiency of services, and training of staff.

Dialysis

An operating agreement for managed services model to manage dialysis services for patients in Dubai.

Spine

An operating agreement for managed services model to manage spine services for patients in Dubai.

Diabetes

Service enhancement and improving access to care for diabetic patients.

Long-Term Care

Concession model or operator agreement for managed services model to manage LTC services for patients in Dubai.

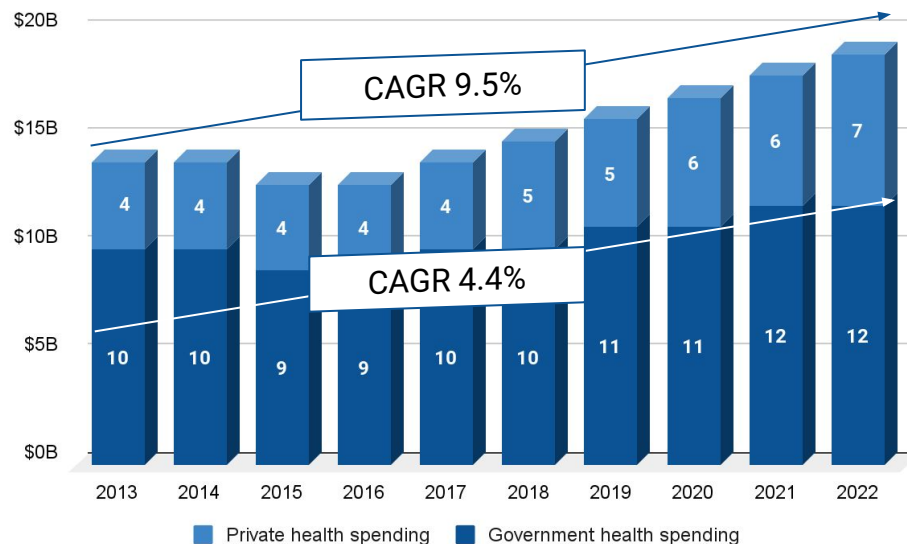
Health Care Expenditure in the UAE

In the United Arab Emirates, the number of hospitals has expanded significantly **from 107 in 2013 to over 140 in 2019**. As of 2019, there were roughly 14,000 hospital beds available. The UAE government was the principal investor in these hospitals, which is typical of GCC spending practices. In 2019, government spending accounted for almost 69% of the country's \$16 billion in health care expenditure. However, between 2018 and 2022, private sector health care spending is expected to expand at a 9.5% compound annual growth rate (CAGR), which is much greater than the 4.4% CAGR of the government's contribution.

The 9.5% CAGR is mainly driven by:

- The rise of public-private partnerships (PPPs) and public support for them;
- Increasing demand for health care and hospital beds due to an ageing population; and
- The privatisation of hospitals, clinics, and mandatory medical insurance, especially in Dubai and Abu Dhabi, which will likely encourage spending and contribute to a health system with a higher degree of integration between providers and insurers.

Dynamics of Health Care Expenditure in the UAE



The Department of Health – Abu Dhabi (DoH) regulates the health care industry in the Emirate of Abu Dhabi and guarantees that the community receives excellent treatment by monitoring the population's health. The DoH runs programmes to raise awareness of the importance of healthy living standards among Abu Dhabi residents. It also regulates the scope of services, premiums, and reimbursement rates of the emirate's health system.

AI Lab by the DoH

The AI Lab is a safe haven for co-creation, allowing Abu Dhabi residents to create and test new ideas that are infused with cutting-edge technology and linked with the city's goals for technology and innovation..

Pillars of the AI and Innovation Strategic Lab

Wellness and prevention

Management of chronic diseases

Clinical care

Regulatory management

Research and Innovation Center

The Department of Health has established a number of important targets to support the goal of enhancing Abu Dhabi citizens' well-being via access to integrated, innovative, high-quality, and cost-effective health care. It will be impossible to attain a healthy Abu Dhabi community unless innovation and research are at the forefront of the city's everyday operations.

Core activities:

Medical research and development

Innovation services

Drugs and medical products

Research Hero

Organisations and researchers who are interested in conducting human **subject research in certain specific areas** are encouraged to apply directly to DoH Medical Research Team:

Clinical trials

Multi-centres

Genomics

Processing of medical data outside the UAE

Research sponsored by pharmaceutical companies

Academic-sponsored research

The Artificial Intelligence (AI) Lab by the DoH aims to foster a new culture, new mindset, and new ways of working for innovators in health care. It provides a medium for fuelling innovation and coaching idea-owners and innovation teams in bringing their ideas to fruition. It is a collaborative initiative realised through a partnership between academic institutions, technology leaders, innovation-driven enterprises, and government entities.

My Health Coach

My Health Coach is a UAE-specific wellness platform that leverages the power of AI to drive improved standards in preventative care. This first-of-its-kind health and wellness app is designed in Arabic and tailored to the needs of residents of Abu Dhabi at all levels of fitness.

Cognitive virtual assistant

The DoH was looking to enhance its online presence for users seeking information on the licensing process.

Its proposed AI-based solution is designed to handle customer queries, requests, and inquiries (in accordance with DoH standards and processes) via a virtual assistant guiding them through the process, handing over to a human agent only when necessary.

Working Principles



Adaptability:
inspection and
Feedback



Sustainability



Responsibility



Simplicity



Transparency



Relentlessly
innovate

Abu Dhabi Stem Cells Center (ADSCC), the first of its type in the UAE, is a specialty health care centre in Abu Dhabi that focuses on cell therapy and regenerative medicine procedures as well as conducting cutting-edge stem cell research in the area. It was established in March 2019 to satisfy an increasing need for highly specialized medical services and treatments. Its areas of specialisation include immunology, hematology, clinical stem cell treatment, molecular biology, immunotherapy, orthopedics, and urology.

Partnership



National Institute of
Allergy and
Infectious Diseases

Abu Dhabi Stem Cells Center has signed a research agreement with the USA's **National Institute of Allergy and Infectious Diseases** to develop treatments for metabolic, infectious, and immunological diseases.

ADSCC offers a variety of basic and specialized outpatient treatments as well as regenerative medicine and novel treatment options.








Unique Services:

- Regenerative Medicine
- Bone Marrow Transplantation
- Car-T Cells
- Extracorporeal Photopheresis
- Gene Therapy

Under the **National Policy for Senior Emiratis**, adults aged over 60 in the UAE will be referred to as 'Senior Emiratis' in recognition of their experience and dedication to the UAE. The National Policy for Senior Emiratis is based on an integrated care system to ensure that seniors remain active and continue to enjoy access to government services.

National Policy for Senior Emiratis

The policy focuses on **7 main components**:

-  Healthcare
-  community involvement and an active life
-  effective civic participation
-  infrastructure and transportation
-  financial stability
-  safety and security
-  quality of future life



Services for Senior Citizens – Community Development Authority

According to the Dubai Statistics Center, senior citizens make up nearly 6.6% of the total Emirati population in Dubai. This percentage is expected to rise gradually due to the emirate's steadily increasing life expectancy and the continued development of its health care services.

Services for senior citizens:

Thukher Card (a senior citizen privilege card)

Thukher Social Club (social activities for seniors)

Home Care Program – **Weleef**

Training Senior Citizens Caregivers

Intergenerational Communication

Sharjah's Age-Friendly City Initiatives



Sharjah is one of the seven emirates that make up the UAE. It is the first Arab city among 414 major cities from around the world – and one of just two Middle Eastern cities – to join the World Health Organization's Global Network of Age-Friendly Cities and Communities. **The 24 Sharjah government entities** are successfully implementing **189 strategic initiatives** and activities that they launched **under the 2017-20 Strategic Plan**. This makes Sharjah the first age-friendly city in the Arab world.

Examples of the 189 Age-Friendly Initiatives

Age-Friendly Housing

The goal is to provide a list of age-sensitive technical standards and regulations for housing construction and maintenance.

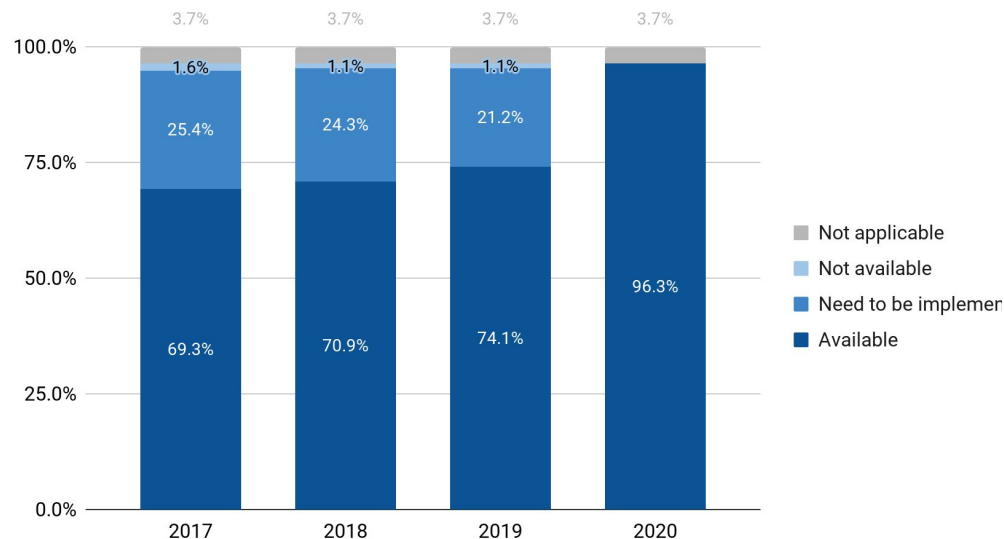
Community Responsibility

Under this initiative, people aged over 60 are eligible for additional perks, regardless of their nationality or emirate of residence.

Age-Friendly Public Places

This initiative has been launched ahead of time to provide lighting in places frequented by the elderly.

Evaluation of Fulfillment of Age-Friendly Standards in Sharjah, %



*Note: Some of the age-friendly city standards are not applicable in Sharjah (3.7%). The rest were implemented on time, by the end of 2020.

Sharjah's 'Medicine Distribution' Initiative



The Sharjah Social Services Department's Home Care Department has provided medicines and medical supplies to the homes of the elderly and disabled in order to safeguard them and their families from the risks of visiting hospitals or health facilities.

This programme aims to lower the risk of contracting COVID-19 and regulate the virus's transmission. The Department not only distributes the medications, but also virtually completely instructs the recipients on how to use them, store them, give them at what times, and preserve them. The effort is mostly supported by city funding.



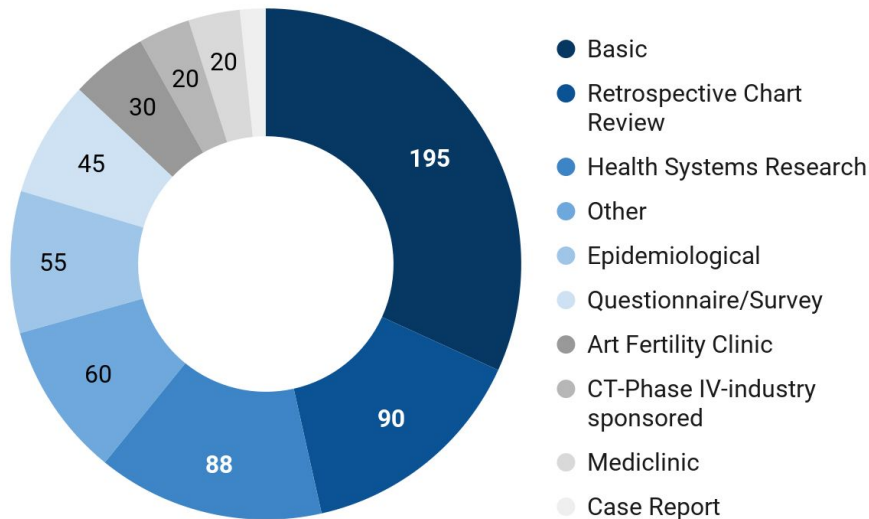
The initiative is aimed at:

- Elderly people
- Disabled people
- People with weak immune systems
- People with chronic diseases

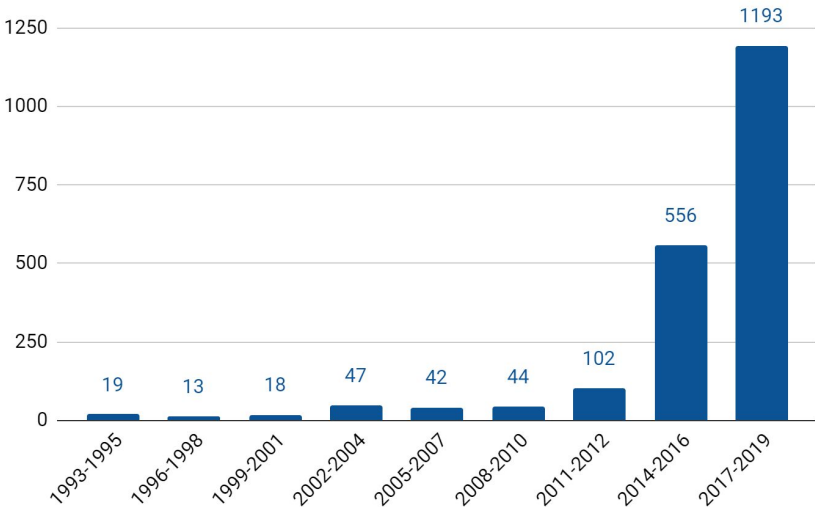
As of April 12, 2020, the **Home Care Department** had revealed that within 5 days, medicines were delivered to around **1,072** elderly and disabled people from home care affiliates.

The Ministry of Health of Abu Dhabi has developed a list of core targets to support the goal of increasing residents' well-being through prevention of diseases and access to integrated, innovative, high-quality, and cost-effective health care. Genomic medicine is a cutting-edge genomics programme that involves analysing an individual's genome to better understand their genetics and provide precise diagnosis and treatment, thus applying the principles of Precision Medicine.

Research Activities by Research Type in the UAE, 2020



Number of Medical Research Publications in Abu Dhabi, 1993-2019



Abu Dhabi Genome Project

The Genome Program, a nationwide effort that would employ large-scale genomic data to improve the public's health and well-being, was announced by the Abu Dhabi Department of Health in 2019.

This ground-breaking initiative seeks to be the first of its kind in the world, providing citizens with their own **high-quality genome as a baseline and incorporating genetic data into health care management**. This will be accomplished by generating the highest-quality, most comprehensive genome data using modern sequencing techniques. **Group 42's Artemis**, based in Abu Dhabi, is one of the world's top supercomputers, and it will be used to analyze massive amounts of data and develop new insights.

Due to the lack of a high-quality Emirati reference genome, understanding the genetic variation of the UAE's Arab population is challenging. This program will supplement existing data by creating a reference genome tailored to UAE citizens and facilitating large-scale scientific discovery. The Genome Program's goal is to improve health management and establish Abu Dhabi as a centre for omics-driven research and innovation.

Objectives of the Emirati Genome Programme

Advanced prevention

Predicting susceptibility to certain diseases through complete genome analysis and the development of a treatment and preventive plan for the community based on the results of the genetic tests.

Educational progress

Creating a reference genetic map for UAE citizens and identifying hereditary diseases and genetic mutation among the population.

Advanced diagnostics

Developing diagnostics, treatment, and preventive plans based on the results of complete genome analysis, paving the way towards a disease-free society.

Better Health Care Plans

Providing treatment plans for healthcare professionals based on the results of genome analysis.

Clinical Research Promotion and Development

The clinical research sector in the UAE is now thriving, with numerous pharmaceutical companies engaging in studies involving the Middle East's population as a patient pool. Phase III and Phase IV studies, as well as observational studies, are the most common types of research in the UAE. Although clinical research is not new in the UAE, Phase III and Phase IV trials are still controversial due to the ethical considerations of conducting human trials; hence, observational studies are seen as less difficult to undertake in this country.

Dubai Health Authority

The Dubai Health Authority's Medical Research Committee (MRC) serves as an institutional review board. The MRC's main goals are to protect research participants' mental and physical well-being, rights, dignity, and safety; to facilitate ethical research through efficient and effective review processes; to promote ethical standards in human research; and to review research in accordance with the DHA code of ethics and ICHGCP guidelines.

Abu Dhabi Health Authority

To manage the regulation of research on human subjects in Abu Dhabi, the Abu Dhabi Health Authority (HAAD) has created research rules, standards, and a governance structure. The governing organization formed by HAAD to oversee health research is the Abu Dhabi Health Research Council (HRC). The Medical Research Section of HAAD, on the other hand, is charged with ensuring ethical research practices and the protection of human subjects.

Clinical research is expected to make a substantial impact in the UAE soon. Many pharmaceutical companies, universities, and sponsors are already considering this country because of its large patient pool and well-organized regulatory filings.

The Cardiology Centre of Excellence (CCoE)

Objectives of the Cardiology CoE



International best practice based on evidence, with a focus on screening and early detection



Integrated care continuum and one-stop-shop approach



Clinical connections, research, and technology breakthroughs are all available to physicians



Focus on physician training, development, and education in Dubai



To support remote patient monitoring, the system must be flexible and adaptable



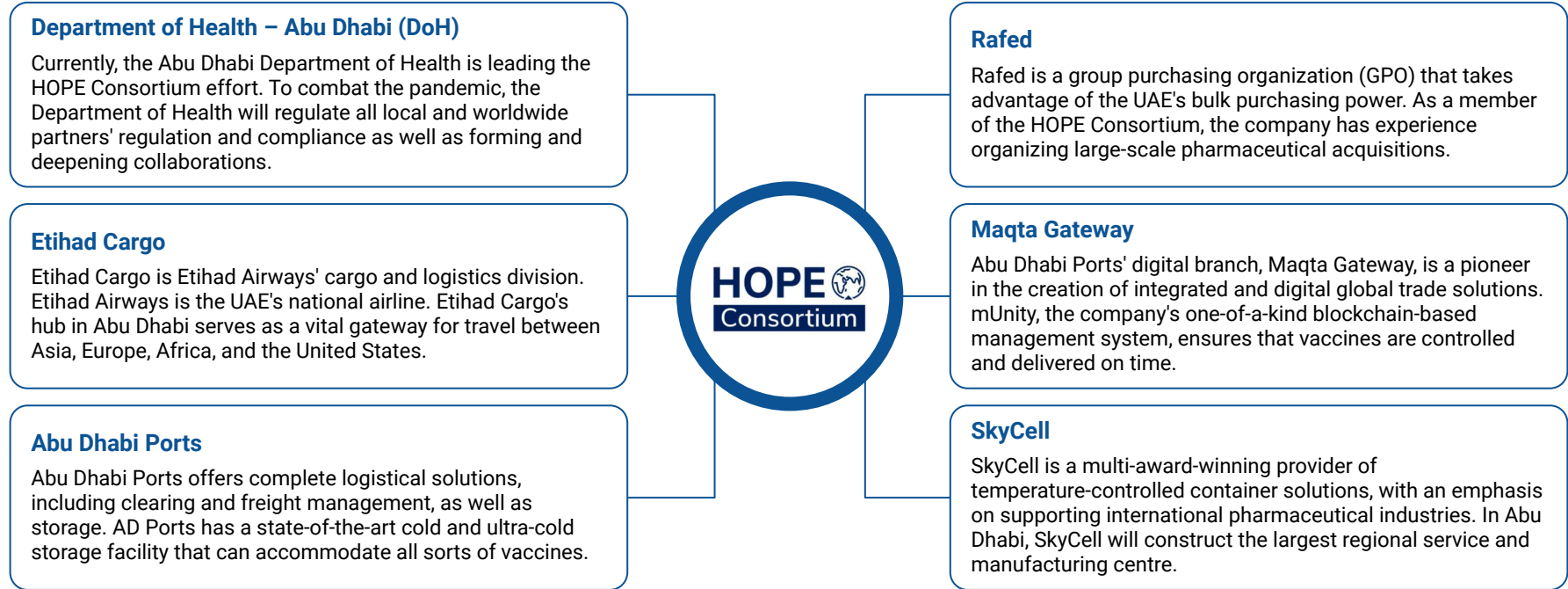
Costs that are stable and predictable, with access to financially disadvantaged groups



Highlights of CCoE and PPP Model

Responsibility	Selected PPP Model – DBFM (Design, Build, Finance, Maintain)
Revenues	DHA
Capex	Private sector
Opex	Private sector (excl. clinical salaries paid by DHA)
Clinical Staff	Selected medical and nursing positions by DHA (40-50% of clinical staff), clinical affiliation partner to support recruitment and development
Non-Clinical Staff	Private sector is free to recruit and deploy staff for suited positions
Availability Payment	Reflects capex and opex incurred by PPP Co, along with cost of funding (debt and equity)

The HOPE Consortium and COVID-19 Vaccines Distribution



The HOPE Partnership brings together major companies to create an end-to-end solution to distribute COVID-19 vaccinations globally, spearheaded by the Department of Health – Abu Dhabi, which pioneered the development of the emirate-wide consortium.

Dubai Health Strategy 2021

The Dubai Health Strategy, which was created to be compatible with the Dubai Plan 2021, intends to make Dubai a global leader in health care services. A wide range of players from the Dubai health ecosystem, **including both the public and private sectors**, were involved in the strategy formulation process.

It was also influenced by the perspectives of a variety of community groups – more than 10,000 DHA employees shared their thoughts and ideas on the local health sector in Dubai.

By 2021, the Strategy will have implemented 15 major programmes and over 100 strategic initiatives.

15

Strategic
Programmes

100+

Strategic
Initiatives

Main Approaches



Health and
lifestyle



Smart health care
and governance



Excellence in
providing service

Strategic Objectives:

1

Introduce a value-based, comprehensive, integrated, high-quality service and delivery system to help Dubai become a global medical destination.

2

Direct resources to guarantee that the people of Dubai live in a healthy and safe environment.

3

Encourage public and private collaboration in health care.

4

Promote innovation throughout the healthcare system.

5

Revamp the governance structure of the DHA.

6

Establish an efficient decision support system by ensuring an integrated data platform.

The UAE Healthy Future Study

In the United Arab Emirates, the prevalence of noncommunicable diseases such as obesity, diabetes, and cardiovascular disease is rapidly increasing. The UAE Healthy Future study is a prospective cohort that aims to see if there are any relationships between risk factors and illnesses in Emiratis.

Scope:

- Primarily interested in the risk factors for obesity, diabetes, and cardiovascular disease
- Both proximal (e.g. smoking, obesity, hypertension) and distant (i.e., socioeconomic) determinants
- Genetics, epigenetics, and microbiome

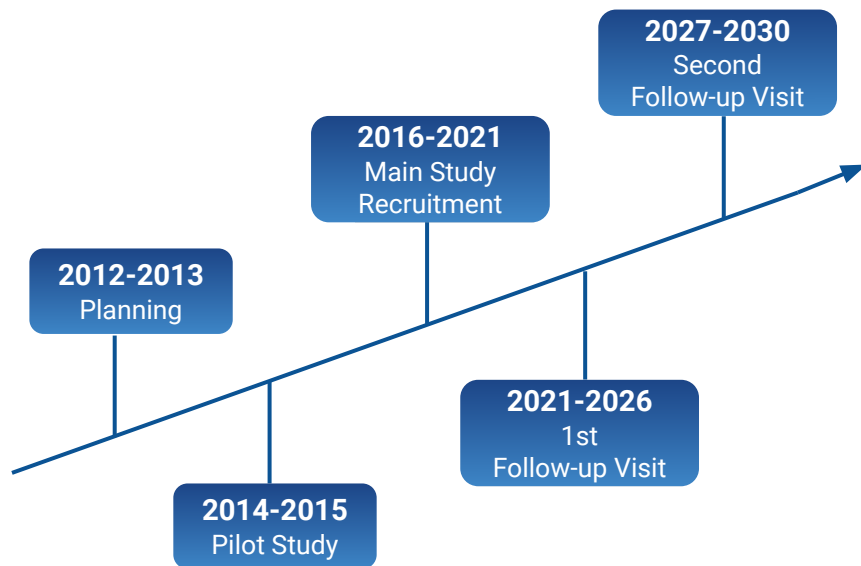
Sample:

- Population-based recruitment of healthy volunteers
- 20,000 participants, aged 18-40
- 5,000 participants recruited to date
- Link to electronic health records for key outcomes agreed
- Follow-up visits every 4 years.

Approach:

- Questionnaire, anthropometric measures, and biological samples
- More accurate measures of diet and physical activity using new technologies

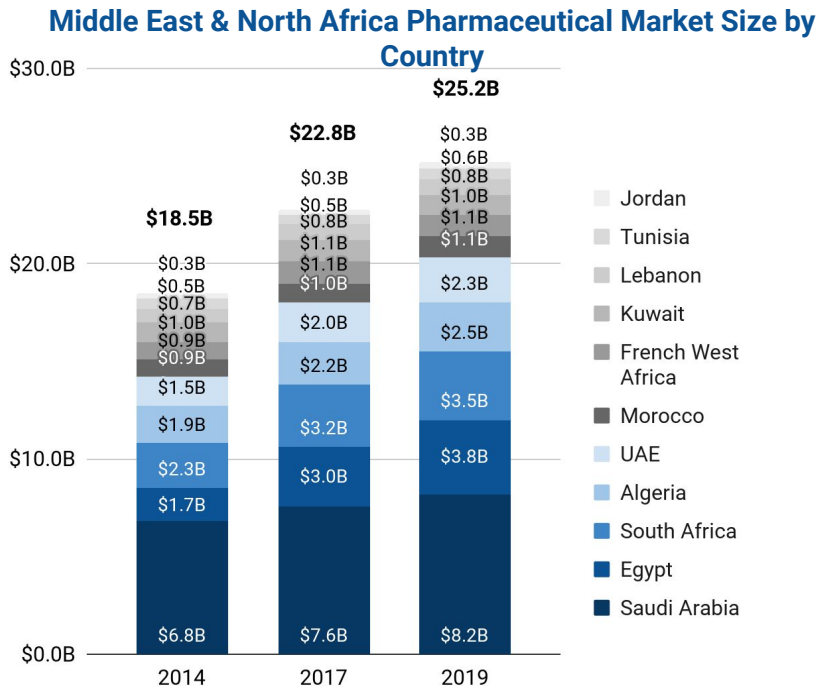
Study Timeline



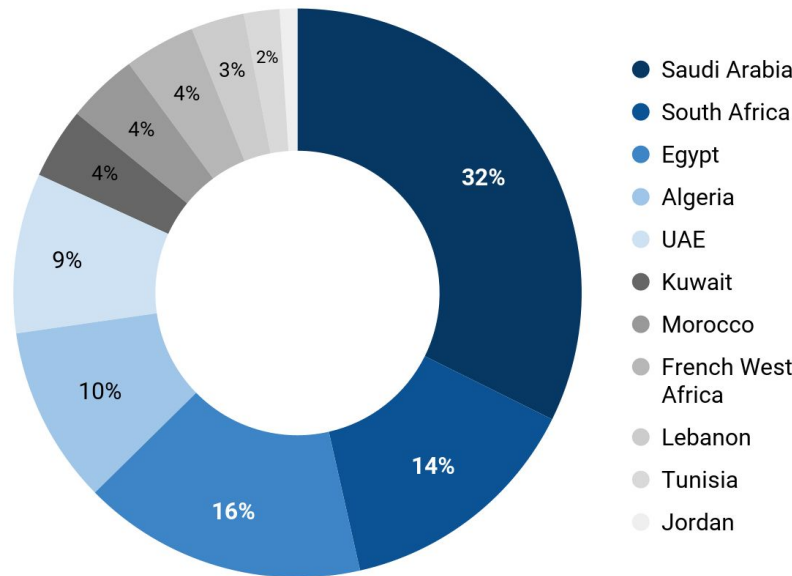
Pharmaceutical Industry in the UAE



Middle East and North Africa Pharmaceutical Market



Share of MENA Pharmaceutical Market by Country, Q1 2019



Since 2014, the Middle East and Africa pharmaceutical market size has increased by 36.2%, reaching \$25.2B in 2019. The CAGR of the total market is +5.3% per year. Meanwhile, the UAE market has grown faster than the average, with CAGR a 6.3%. In 2019, the UAE constituted 9% of the market.

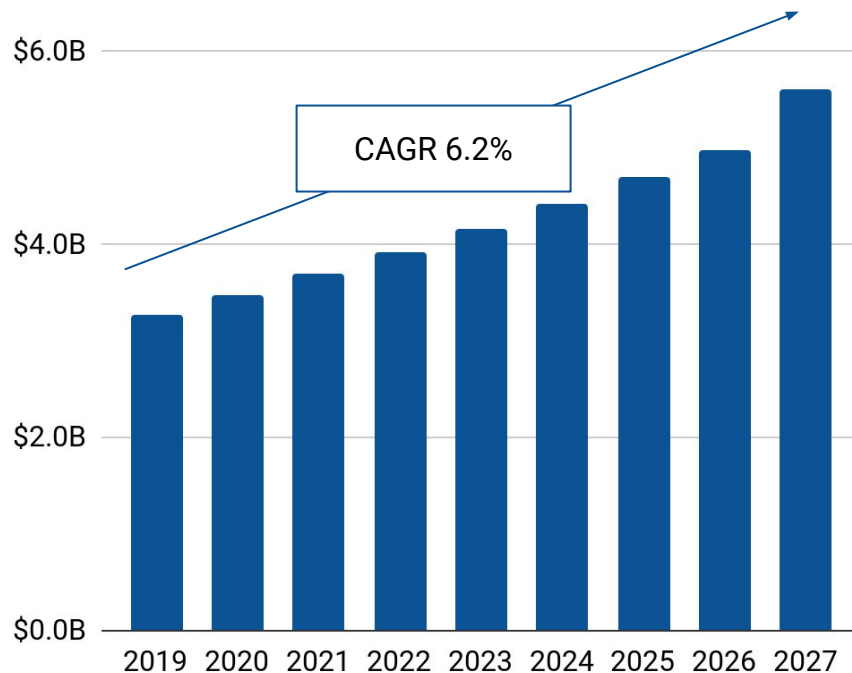
The UAE Pharmaceutical Industry Outlook

The pharmaceutical industry in the UAE is projected to grow at a CAGR of 6.2% to reach \$5.6 billion in 2027. The industry could grow by 82.3% over the next 9 years. The drivers of this growth will be the **localisation of production** and **increasing demand** for **generic drugs**.

The UAE government, like many other Middle Eastern pharmaceutical markets, will push for the local production of generic drugs as part of a campaign to lower medical costs and enhance supply and delivery. While the UAE has had **generic substitution policies in place since 2018**, the country will increasingly rely on foreign investment and partnerships to meet rising local demand and maintain its position as a regional manufacturing and distribution powerhouse.

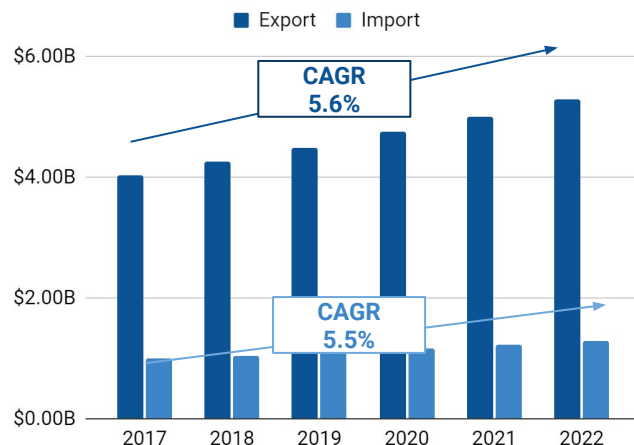
Long-term, progressive reforms will expand drugmaker access to the UAE. In 2017, the Ministry of Health and Prevention began registering generic drugs for sale in the UAE that looked to infringe on patents on new medications, in violation of Ministerial Decree 404. The UAE, on the other hand, adopted Decree 321 in September 2020 to remedy these flaws. As a result, the data exclusivity period in the UAE is established at 8 years from the date of marketing authorisation, but generic medication companies can file for marketing permission within the first two years after the data exclusivity period expires. **The UAE has been placed on the Pharmaceutical Research and Manufacturers of America's Out-Of-Cycle Review 2021 until Decree 321 is fully implemented.**

Forecasted Growth of the UAE Pharma Industry, 2019-2027



Establishing the UAE as a Pharma Hub

UAE Pharma Export and Import, 2017-2022



Steps for Establishing the UAE as a Pharma Hub

DuBiotech Free Economic Zone

Generic Substitution Policies

Fast-Track Registration System

Decreasing Costs of Medicine

Export Orientation

State Support

The UAE pharma industry appears to be following a similar path to the rest of the region. It is rapidly developing to suit the changing requirements of a growing population, which, according to World Bank predictions, is likely to reach about **11.1 million by 2030**. Because of its future growth prospects, export potential, and mid- to long-term economic impact, UAE government entities have adopted a series of long-term plans to achieve sustainable growth for this industry. The Dubai Industrial Strategy 2030 and the Abu Dhabi Vision 2030, for example, consider the development of the pharmaceutical industry to be of high priority. In 2019, Dubai-based Life Pharma signed a 10-year contract to manufacture billions of tablets in Jebel Ali for export to Canada, ushering in a new era of medication manufacturing.

The UAE's Free Zones

The United Arab Emirates is focusing its efforts on attracting global pharmaceutical companies to set up shop and expand their operations in the country. Dubai Healthcare City, Dubai Science Park, and Jebel Ali Free Zone are just a few of the free zones that have become centres for the pharmaceutical industry in the UAE.

DP World's flagship free zone, Jebel Ali Free Zone (Jafza), is a vital part of the DP World UAE Region integrated business centre. The Free Zone has evolved into a trade catalyst and a smart business community that provides unrivalled market access and growth prospects.

Jafza in numbers:

- 8,000 companies in 2020 from over 100 countries.
- Nearly 100 Global Fortune 500 enterprises.
- More than 135,000 jobs.
- 23.9% of Dubai's foreign direct investment.

Key Sectors:

- Logistics
- Food and Agricultural Commodities
- Retail and E-Commerce
- Petrochemicals

Dubai Healthcare City (DHCC) is the world's first free zone ecosystem supporting health care and wellness right in the heart of the Middle East's most progressive business and tourism destination.

DHCC comprises 2 phases:

Phase 1 – health care and medical education (4.1 million square feet).

Phase 2 – wellness (19 million square feet, opens in February 2022).

Healthcare Professionals
4,425

Hospitals
5

Recreational Facilities
36

Clinical Facilities
168

Dubai Biotechnology and Research Park



The Dubai Biotechnology and Research Park, the region's first science-focused corporate community, established the UAE as a destination for human, plant, material, environmental, and energy sciences research and development, prototyping, creativity, and innovation.

The Park is a supportive environment for growth in the medical, wellness, and pharmaceutical industries, with local medicine, perfumery, and food and beverage labs producing products. In addition to a lively community that provides a supportive ecology for its residents, the neighborhood's robust infrastructure and collaborative atmosphere enable success.

3,600+
Business
professionals

350
Partners

The Ministry of Health and Prevention, Pfizer, Medtronic, Olympus, and Mettler Toledo are among the prominent local and international institutions that call the Dubai Biotechnology and Research Park home.



Medtronic

OLYMPUS



Many of these firms have been instrumental in the UAE's efforts to limit COVID-19's impact, with firms like Alliance Global distributing hundreds of thousands of PCR test kits across the UAE, as well as the Middle East, Africa, and Central Asia.

Fast-Track Registration System

Expedited Registration

The UAE's Ministry of Health and Prevention (MOHAP) announced a resolution in January 2018 that would enable for the fast-track registration of innovative and orphan pharmaceuticals. Orphan medications are described as 'drugs that are used for the treatment, diagnosis, or prevention of uncommon disorders', and innovative pharmaceuticals are defined as 'drugs that contain a completely or partially unique active component and whose owner has a patent'. The Ministry's Drug Registration Committee reviews a new drug application within 15 working days of submission and makes a decision to approve or reject the application within 10 working days of the date of evaluation in the fast-track process.

Fast Registration of Innovative Drugs

The Ministry of Health and Prevention has urged pharmaceutical companies to provide drugs to the UAE before they are licensed in their home nations. It has requested that pharmaceutical companies seek marketing approval in order to provide the UAE health sector with more drugs. This helps to improve patient care while also encouraging medical tourism. 'During the two years preceding the end of the protection term for the novel product, local firms can begin production methods and request for marketing clearance for similar items,' said Dr. Amin Al Amiri, assistant undersecretary for Public Health Policy and Licensing.

Opportunities for Clinical Trials

The Department of Health – Abu Dhabi (DoH), the Emirate of Abu Dhabi's health care regulator, has highlighted the benefits of Abu Dhabi as a location for clinical research trials, including the facilities available to pharmaceutical companies and the highly accelerated review timelines of just 8 to 15 days. These are some of the world's quickest timelines today. The DoH also emphasizes how the emirate is committed to providing world-class research facilities and safeguarding valuable intellectual property.

Innovative drugs recently invented and already used in the UAE:

Sotrovimab (2021) – a monoclonal antibody with activity against SARS-CoV-2

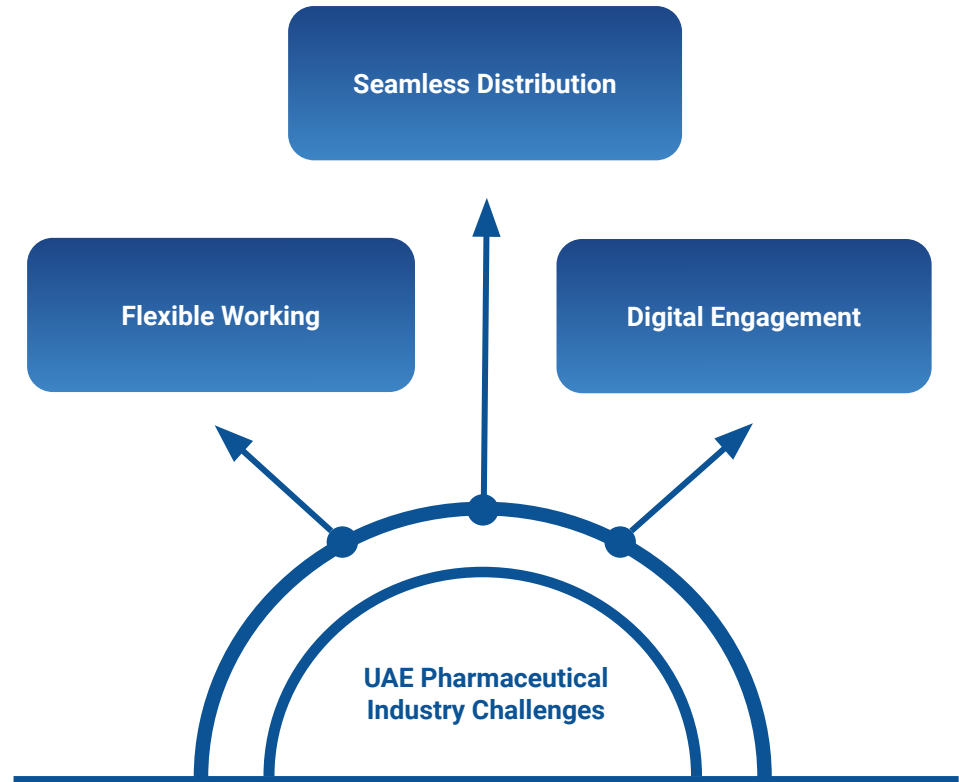
Sotorasib (2020) – an anti-cancer medication used to treat non-small-cell lung cancer

The UAE Pharmaceutical Industry and COVID-19

The year 2020 was the most transformative in the pharmaceutical industry's history. To adapt to the uncertainties of COVID-19, the global pharmaceutical sector was obliged to analyze, rethink, and reconfigure operations in a matter of months.

Dozens of fresh opportunities have surfaced in the UAE, the **Middle East's major pharmaceutical hub**. **More than 80% of the World Health Organization's global medical COVID-19 response** was distributed **through Dubai's International Humanitarian City**, resulting in a massive surge in pharma exports and re-exports from the emirate in 2020. Similarly, Abu Dhabi announced in March 2021 that China's Sinopharm vaccine would be produced in the UAE, boosting local manufacturing.

However, while the pandemic has opened up new business opportunities, it has also brought **a number of obstacles and challenges**: First, how **to digitalise and continue to serve consumers** and key stakeholders in the face of significant travel disruption. Second, how **to distribute medication** when international supply lines are badly interrupted. Third, how **to promote flexibility** in the workplace to meet the rapidly changing needs of industry workers all around the world.



Key Points



In 2020, the market size of the Longevity Industry in the UAE was **more than \$19 billion**. In the grey sky scenario, it is projected to grow at least at least as fast as the UAE economy (3.0%) at a **CAGR of (3.0%)** to reach **\$23 billion in 2026**. The main drivers of this growth will be rising **domestic demand**, **increasing exports** and **strong government support** for all market players, from Big Pharma corporations to small BioTech startups. The blue sky scenario project a CAGR of **8.5%**, leading to a Longevity market size of **\$32 billion in 2026**. Besides the main drivers of growth from the baseline scenario, overall expected **boosting growth of Pharma and BioTech industries** were taken into account.



The **4th Industrial Revolution** marks a significant milestone in the future of the United Arab Emirates. It offers both unprecedented **opportunities** and several **challenges** that must be competently addressed. For this reason, the UAE is stepping up its efforts **to become a Pharm hub** and the world's **first open lab for experimenting** and adopting the technologies of the 4th Industrial Revolution.



The **420+ Life Science companies** in the UAE were classified into **11 broad categories**: Clinics, Diagnostics and Laboratories, Pharmaceuticals, FinTech Services, Healthcare IT Systems, P4 Medicine, Medical Technology, Biotechnology, Life Insurance, FemTech, Management & Consulting, and Other. Other categories include Geroscience, Gene Therapy, Geroscience, Space Medicine, and Biomarkers for Longevity.



The locomotives of the growth of the Life Sciences Industry are the **Clinics and Pharmaceuticals subsectors**. The UAE is focusing on drawing **international pharmaceutical companies** to establish and expand their presence in the country. In addition to its **growing domestic market**, the UAE boasts a strategic location and sophisticated **logistics infrastructure**, especially with the recent approval of the Dubai Silk Road, which makes it an ideal hub to access growing regional markets in Africa, Asia, and the Middle East. The UAE has also created several **free zones** across the country that have become hubs for the pharmaceutical industry.



To achieve sustainable growth in the UAE, government entities have adopted a series of **long-term plans**. The **Dubai Health Strategy** has been designed to turn Dubai into a **global leader in the delivery of healthcare**. The **Dubai Industrial Strategy** aims to make Dubai 'an **international hub for knowledge-based innovation and sustainable Industrial activities**'. In 2016 the government of Abu Dhabi announced a long-term plan for the transformation of the emirate's economy called '**Abu Dhabi Economic Vision 2030**'. The plan includes a gradual reduction in reliance on the oil sector as a source of economic activity and a stronger focus on knowledge-based industries in the future.

Upcoming Longevity Events in the UAE

Date	Name	Location	Description
15-16 Feb 2022	International Conference on Life Sciences	Dubai	International attendee workshops, lectures, and symposia are included in Life Sciences-2022, as well as a specialized registration area, a coffee break, and a gala lunch.
22-23 Feb 2022	International Conference on Life Sciences and Technology	Dubai	The International Research Conference is a federated organization dedicated to bringing a varied range of intellectual events together through presentation within the conference program.
23-24 Feb 2022	International Conference on Research in Life-Sciences & Healthcare	Dubai	The International Conference on Research in Life Sciences and Healthcare seeks to bring together top academic scientists, researchers, and research scholars from across the world to exchange and share their knowledge and research findings on all areas of health care and the life sciences.
22-23 Mar 2022	International Conference on Biomedical and Biological Engineering	Dubai	The goal of the International Conference on Biomedical and Biological Engineering is to connect top academic scientists, researchers, and scholars to share their experiences and findings on all domains of Life Sciences, Biomedical Engineering, and Biological Engineering.

About Aging Analytics Agency

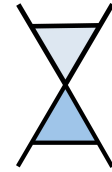
Aging Analytics Agency is the world's premier provider of industry analytics on Longevity, Precision Preventive Medicine, the economics of ageing, and the convergence of technologies such as AI, blockchain, and digital health and their impact on the health care industry.

About Deep Knowledge Analytics

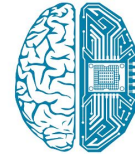
Deep Knowledge Analytics is a DeepTech-focused agency, an analytical subsidiary of **Deep Knowledge Group**, that produces advanced analytics on DeepTech and frontier-technology industries. It uses sophisticated multi-dimensional frameworks and algorithmic methods that combine hundreds of specially designed and specifically weighted metrics and parameters to deliver sophisticated market intelligence and pragmatic forecasting and tangible industry benchmarking.

About Sharjah Research, Technology, and Innovation Park

Established in 2016 by royal decree of H.H. Sheikh Sultan Bin Muhammad Al Qasimi, Ruler of Sharjah, United Arab Emirates, **Sharjah Research, Technology and Innovation Park Free Zone (SRTIP)** aims to develop and manage an innovation ecosystem that promotes Research and Development and supports enterprise activities and the triple helix collaboration of industry, government and academia.



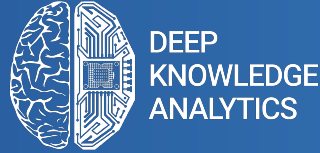
**AGING
ANALYTICS
AGENCY**



**DEEP
KNOWLEDGE
ANALYTICS**

مجمع الشارقة للبحوث
والتكنولوجيا والابتكار
Sharjah Research Technology
and Innovation Park





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