Greater Phoenix Economic Council

CBRE

Greater Phoenix: An Emerging Bioscience Hub

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This report focuses on a cluster of industries including medical device and medical technology manufacturing, clinical and translational research, biotechnology, genomics, and pharmaceutical manufacturing, among others. The Greater Phoenix region has adopted the term “bioscience” to refer to this cluster. CBRE uses the term “life science.” They are used interchangeably in this report.

Greater Phoenix: An Emerging Bioscience Hub

Greater Phoenix's dedication to fostering innovation, research and development (R&D), collaboration, and expansion in the bioscience sector continues to draw companies in the industry to the metro.

The market's success in this field is largely due to low barriers of entry, a growing population and an entrepreneurial ethos. By continuing to utilize its distinct advantages, Greater Phoenix aims to realize a grand vision of becoming a global front-runner in the bioscience industry.

NATION-LEADING GROWTH

By almost any relevant metric—job and talent supply increases, new business formation, specialized educational pipelines, competitive federal research dollars, or risk capital allocation—Greater Phoenix has been a leading bioscience and life science growth market over the past decade.

TALENT AND EDUCATION

Startups and established bioscience firms alike find Greater Phoenix a desirable place to be. More than 26,000 bioscience employees* are in the region, in addition to the well over 261,000 related jobs in healthcare. Companies in the industry can leverage the growing and talented workforce fueled by the state's three public research universities–Arizona State University, University of Arizona and Northern Arizona University–as well as an extensive community college system. Arizona educational institutions offer programs with an emphasis in biomedical sciences, precision medicine and health professions, providing a diverse demographic of students the opportunity to participate in groundbreaking research, leading-edge patient care and innovative solutions.

BUSINESS CULTURE

The region's business-friendly culture fosters an entrepreneurial spirit, showcased by the fact that over the last decade, Greater Phoenix added new bioscience and life science business locations at a 1.3 times higher rate than the nation. State and local governments support emerging technologies and pioneering policies, allowing businesses to thrive. Early initiatives such as AZAdvances and the Arizona Health Innovation Trust Fund aim to support the creation of jobs, economic growth and the development of scientific discovery, which can become life-enhancing treatments and possible life-saving cures.

**The term bioscience employees reflects CBRE's definition of bioscience/life science industries.*

Greater Phoenix **Bioscience Roots**

Greater Phoenix's history as a bioscience and life sciences market extends back to the middle of the 20th century. One of the most pivotal years in that history was in 2002, when collaboration across public, private, and nonprofit sectors led to the founding of the Translational Genomics Research Institute (TGen) as well as the Flinn Foundation's "Arizona's Bioscience Roadmap." Since then, with continued cross-sector collaboration, the region has risen in prominence as a hub of business creation and attraction, world-class healthcare facilities, talent development and translational closed-loop clinical research in bioscience and the life sciences.

ANNOUNCEMENTS & MARKET ENTRANCES

1943-1987

1943
- Vitalant (formerly known as Blood Systems Inc.)

1962
- Barrow Neurological Institute

1965
- The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), an institute within the National Institutes of Health (NIH)

1973
- Medtronic (formerly known as Micro-Rel)

1987
- Mayo Clinic Hospital

2001-2002

2001
- Proposition 301 goes into effect, which establishes the Technology & Research Initiative Fund to provide funding to Arizona public universities for technology and research-based initiatives.

2002
- Public and private investors partner to fund the creation of the Translational Genomics Research Institute (TGen), which conducts cutting-edge research on the genetic components of diseases. TGen is the initial spark that enables much subsequent bioscience development in the Greater Phoenix region, including the establishment of the Phoenix Bioscience Core (PBC).
- Local philanthropic grantmaking organization the Flinn Foundation commissions Arizona's Bioscience Roadmap, a long-term strategic plan, "with the goal of Arizona becoming globally competitive and a national leader in select areas of the biosciences by 2025." The Flinn Foundation disseminates regular updates and sophisticated reporting on the Roadmap to this day.
- The City of Phoenix establishes the Phoenix Biomedical Campus, later renamed the Phoenix Bioscience Core (PBC), on 30 acres in downtown Phoenix. In the coming decades, it will serve as the region's nexus of research, education, and innovation in the fields of medicine and biosciences.

2004-2010

2004
- Molecular Profiling Institute (TGen and International Genetics Consortium (IGC) spinoff; acquired by Caris Life Sciences)

2005
- GE Healthcare
- Regenesis Biomedical

2006
- Banner Alzheimer's Institute

2007
- W.L. Gore & Associates
- The University of Arizona College of Medicine – Phoenix launches its four-year medical education program.

2008
- Cancer Treatment Centers of America (acquired by City of Hope)

2010
- Celgene (acquired by Bristol Meyers Squibb)

2016-2019

2016
- TGen joins City of Hope.
- Dexcom

2017
- Becton Dickinson
- G.T. Medical Technologies
- CND Life Sciences
- The University of Arizona establishes 245,000 square feet of research space at the Biomedical Sciences Partnership Building in the PBC.

2019
- Bristol Myers Squibb acquires local pharmaceutical manufacturer Celgene for $74B.
- The WearTech Applied Research Center is established in midtown Phoenix. To date, the WearTech Center has helped 22 companies in the wearables/weartech space advance toward commercialization by securing matching funds from the Arizona Commerce Authority.
- BD Peripheral Intervention

2020-2022

2020
- Exact Sciences

2021
- 850 PBC, a 7-floor, 227,000 square foot lab-enabled center "for life science companies to grow and be a part of the Phoenix bio-ecosystem," opens its doors in the PBC.

2022
- The University of Arizona reveals plans for its Center for Advanced Molecular and Immunological Therapies (CAMI), "a hub for precision medicine research, innovation and education" that will be located in the PBC. CAMI will operate out of a 7-story, 200,000 square foot building that will house as many as 40 research groups in GMP-compliant labs.

2023

2023
- Arizona State University announces it will open its headquarters for ASU Health in downtown Phoenix, the centerpiece of which will be the ASU School of Medicine and Advanced Medical Engineering.
- The NIDDK will relocate its Phoenix operations to the 850 PBC building. NIDDK also has its genomics lab on the PBC campus.
- Mayo Clinic submits its zoning application to the City of Phoenix for the Discovery Oasis, an addition to its campus in north Phoenix that will encompass "advanced research and development, medical equipment manufacturing, outpatient treatment facilities and associated tenant amenities within 3.3 million square feet."
- The Phoenix Medical Quarter in midtown Phoenix is designated as a bioscience research hub by Plaza Companies, the city's third such designated area.

Bioscience Companies in Greater Phoenix

Sonora Quest Laboratories™ Regional Presence **3,200 EMPLOYEES** **HQ IN PHOENIX,AZ**	Dexcom® Mesa **1,750 EMPLOYEES** **HQ IN SAN DIEGO, CA**	West® Tempe & Scottsdale **1,380 EMPLOYEES** **HQ IN W. WHITELAND TOWNSHIP, PA**
GORE Creative Technologies Worldwide Phoenix & Tempe **1,300 EMPLOYEES** **HQ IN NEWARK, DE**	Medtronic Tempe **1,100 EMPLOYEES** **HQ IN DUBLIN, IRELAND**	labcorp Regional Presence **1,000 EMPLOYEES** **HQ IN BURLINGTON, NC**
CARIS LIFE SCIENCES Phoenix & Tempe **690 EMPLOYEES** **HQ IN DALLAS/FT. WORTH, TX**	CONFLUENT Scottsdale **600 EMPLOYEES** **HQ IN SCOTTSDALE, AZ**	Bristol Myers Squibb® Phoenix **320 EMPLOYEES** **HQ IN NEW YORK, NY**

tgen part of City of Hope Phoenix **350 EMPLOYEES** **HQ IN PHOENIX, AZ**	Abbott Scottsdale & Casa Grande **280 EMPLOYEES** **HQ IN ABBOT PARK, IL**	stryker® Chandler, Phoenix & Tempe **265 EMPLOYEES** **HQ IN KALAMAZOO, MI**
GE HealthCare Phoenix **200 EMPLOYEES** **HQ IN CHICAGO, IL**	align™ ransforming smiles, changing lives. Tempe **150 EMPLOYEES** **HQ IN TEMPE, AZ**	CardinalHealth Tolleson & Chandler **140 EMPLOYEES** **HQ IN DUBLIN, OH**
NIH National Institutes of Health Turning Discovery Into Health Phoenix **100 EMPLOYEES** **HQ IN BETHESDA, MD**	CRANIAL TECHNOLOGIES Tempe & Phoenix **95 EMPLOYEES** **HQ IN TEMPE, AZ**	REGENESIS® Energy for an Active Life Scottsdale & Phoenix **80 EMPLOYEES** **HQ IN SCOTTSDALE, AZ**
GT Medical™ TECHNOLOGIES Tempe **50 EMPLOYEES** **HQ IN TEMPE, AZ**	CALVIRI. Phoenix & Tempe **25 EMPLOYEES** **HQ IN PHOENIX, AZ**	CND® Life Sciences® Scottsdale **20 EMPLOYEES** **HQ IN SCOTTSDALE, AZ**

Source: Maricopa Association of Governments.

Company **Spotlights**

Dexcom

LOCATED TO MESA IN 2016
1,750 GREATER PHOENIX EMPLOYEES

Dexcom designs, develops and commercializes continuous glucose monitoring (CGM) systems used by people with diabetes and healthcare providers in the hospital. The company's major products include integrated Dexcom G6 CGM system, Dexcom Share remote monitoring system, Dexcom Real-Time API, Dexcom ONE CGM system, associated software and mobile apps. It provides Dexcom Care training to users of CGM system and other support services. The company offers products to endocrinologists, physicians, diabetes educators and others.

GORE Creative Technologies Worldwide

LOCATED TO PHOENIX IN 2007
1,300 GREATER PHOENIX EMPLOYEES

W.L. Gore & Associates is a global materials science company spanning five continents and thousands of products across industries. The company develops products for medical implants; fabric laminates; and cable, filtration, membrane, venting, fiber technologies, and sealant for diverse industries through its proprietary technologies with the polymer polytetrafluoroethylene (PTFE). Gore caters to aerospace, automotive, chemical processing, computer, telecommunications, electronics, energy, environmental, industrial, manufacturing, military and pharmaceutical, biotechnology, and textile markets.

labcorp

LONGSTANDING PRESENCE IN GREATER PHOENIX
1,000 GREATER PHOENIX EMPLOYEES

Labcorp is a global leader of innovative and comprehensive laboratory services offering general and specialty laboratory testing, bone marrow and human leukocyte antigen (HLA) testing, clinical trials services, drug testing services, deoxyribonucleic acid (DNA) identification services, forensic identity services, insurance health plan services, paternity testing services, patient services, personalized medicine, and hospital services that help doctors, hospitals, pharmaceutical companies, researchers and patients make clear and confident decisions. They provide insights and advance science to improve health and improve lives through unparalleled diagnostics and drug development laboratory capabilities.

CARIS LIFE SCIENCES

LOCATED TO PHOENIX IN 2004
690 GREATER PHOENIX EMPLOYEES

Caris Life Sciences specializes in pathology, molecular profiling, and microvesicle technology for the diagnosis and treatment of cancerous tissues. With a primary focus on cancer, Caris has built a market-leading portfolio of precision medicine tools that have helped more than half a million cancer patients worldwide. Caris' patient impact, as well as molecular knowledge of disease, has significantly vaulted the field of Oncology from an empiric medicine methodology to a precision medicine approach. Caris has also begun research and development activities for cardiovascular disease and is actively building a multi-omic database to fuel the next-generation suite of precision medicine solutions for cardiovascular health. Caris is a spinoff of TGen and the IGC. It was originally called the Molecular Profiling Institute.

CONFLUENT

FOUNDED IN SCOTTSDALE IN 1991
600 GREATER PHOENIX EMPLOYEES

Confluent Medical Technologies applies materials science to MedTech innovation. The company specializes in the expert design, development, and large-scale manufacturing of interventional catheter-based devices and implants. Their key capabilities include Nitinol components and tubing, balloon and complex catheters, high-precision polymer tubing, and implantable textiles, thereby helping patients with advanced technological care for better recovery. Confluent operates in eight state-of-the-art facilities across the United States and Costa Rica and currently employs over 2,000 employees throughout the entire company. The corporate headquarters is located at the Forum in Scottsdale, AZ.

tgen part of City of Hope

FOUNDED IN PHOENIX IN 2002
350 GREATER PHOENIX EMPLOYEES

Translational Genomics Research Institute (TGen) is an Arizona-based non-profit organization that provides groundbreaking research that leads to life changing results. They educate, train and inspire the next generation of researchers and physicians and increase the public's understanding of genomics. Their research focuses on common and complex diseases, including cancer, neurological disorders, infectious diseases, and rare childhood illnesses. The company officially launched in 2002, occupying interim office space provided by Arizona Public Service, while Banner Health System, in partnership with Quest Diagnostics, donated temporary lab space. In March 2005, TGen moved into its state-of-the-art headquarters at the Phoenix Biomedical Core in Downtown Phoenix, AZ. TGen joined cancer treatment and research center City of Hope in 2016.

Source: Maricopa Association of Governments & Company Websites.

GE HealthCare

LOCATED TO PHOENIX IN 2005
200 GREATER PHOENIX EMPLOYEES

GE Healthcare is a provider of transformational medical technologies and services. It specializes in medical imaging, information technologies, medical diagnostics, patient monitoring systems, drug discovery, biopharmaceutical manufacturing technologies, computerized data management, performance improvement, medical equipment and performance services.

CardinalHealth

LOCATED TO CHANDLER IN 2005
140 GREATER PHOENIX EMPLOYEES

Cardinal Health is a distributor of pharmaceuticals, a global manufacturer and distributor of medical and laboratory products, and a provider of performance and data solutions for healthcare facilities. They act as a crucial link between the clinical and operational sides of healthcare, delivering end to end solutions and data driving insights that advance healthcare and improve lives every day.

NIH National Institute of Diabetes and Digestive and Kidney Diseases

LOCATED TO PHOENIX IN 1965 AND 2025 EXPANSION PLANNED
100 GREATER PHOENIX EMPLOYEES

The Phoenix Epidemiology and Clinical Research Branch of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), an institute of the National Institutes of Health (NIH), will occupy CLIA-certified lab space on the seventh floor of the PBC's 850 PBC building starting in 2025. To execute its mission of determining the etiology of type 2 diabetes mellitus and obesity, the NIDDK's Phoenix branch will perform metabolic research with a focus on diabetes and nutrition as an intramural program, in addition to overnight stay studies with human participants using state-of-the-art metabolic chambers. The NIDDK will also maintain its genomics research lab on the PBC campus.

CRANIAL TECHNOLOGIES

FOUNDED IN TEMPE IN 1986
95 GREATER PHOENIX EMPLOYEES

Cranial Technologies has been the world's leading non-surgical treatment provider for plagiocephaly (flat head syndrome) for over 35 years. The company offers a remodeling device and 6-ounce devices which are custom-made, lightweight and made of hypoallergenic materials that ensure safety and comfort, thereby helping parents to reshape their baby's head by capturing their brain growth. To date, they have cared for over 300,000 babies using their proven safe and effective DOC Band cranial orthotic. The DOC Band is the only device supported by clinical studies and over 35 years of documented outcomes. Each of the bands are custom made using state-of-the-art technology and lightweight, hypoallergenic materials that ensure safety and comfort. The corporate headquarters is located at Tempe Business Center II in Tempe. AZ.

REGENESIS® Energy for an Active Life

FOUNDED IN SCOTTSDALE IN 1996
80 GREATER PHOENIX EMPLOYEES

Regenesis is a device company dedicated to improving human welfare through the research, design, manufacture, and sale of energy-based medical products and services that alleviate pain to improve quality of life. The company was founded in 1996 on a technology platform conceived and developed by Dr. Frank George and Dr. Mary Ritz. This technology, called Cell Proliferation Induction, offers non-drug pain management used for the palliative treatment of post-operative pain and edema of soft tissue, enabling doctors to cure post-operative pain and edema in patients effectively. The corporate headquarters is located at Phase 5 of the Chaparral Business Center in Scottsdale, AZ. Its research lab is in the 850 PBC building.

GT Medical™ TECHNOLOGIES

FOUNDED IN TEMPE IN 2017
50 GREATER PHOENIX EMPLOYEES

GT Medical Technologies is a developer of a medical therapeutic technology designed to overcome the limitations of current treatments for recurrent brain tumors. The company's technology features a bioresorbable, conformable, collagen tile and a uniform radiation source that offers advantages over the most common treatment for patients undergoing surgery for recurrent brain tumors, enabling medical practitioners to prevent disease progression and improve the quality of life for their patients. In 2024, GT Medical Technologies acquired assets that make it the only manufacturer of Cesium-131 brachytherapy seeds for cancer treatments.

CND Life Sciences®

FOUNDED IN SCOTTSDALE IN 2017
20 GREATER PHOENIX EMPLOYEES

CND Life Sciences is a developer of a medical diagnostic platform designed to detect key pathological markers in the peripheral nervous system that had been previously out of reach. The company's platform detects, visualizes, and quantifies the presence of abnormal, phosphorylated alpha-synuclein in cutaneous nerve fiber and confirmation of synucleinopathy in patients with suspected Parkinson's disease (PD), enabling medical experts with a convenient, accurate, minimally invasive alternative to aid in the diagnosis of neurodegenerative diseases.

Source: Maricopa Association of Governments & Company Websites.

Regional **Demographics**

Robust population growth across Greater Phoenix is supported by strong net migration. The metro's population has grown from 375,000 people in 1950 to more than five million residents today. Greater Phoenix added an estimated 55,120 residents in 2023, ranking the metro among the top five major U.S. metros in population growth for the year. Looking forward, Greater Phoenix's population is expected to grow at an average annual rate of 1.5 percent over the next eight years, more than double the national rate of growth.

While Greater Phoenix initially made a name for itself as a retirement destination, the metro currently boasts a young population relative to the national median age, with a local median age of 37.4 years. In 2022, 47 percent of in-migrants were between the prime working ages of 18 and 44. This young and growing skilled labor pool offers long-term stability to local employers.

Population Projections

0.4%

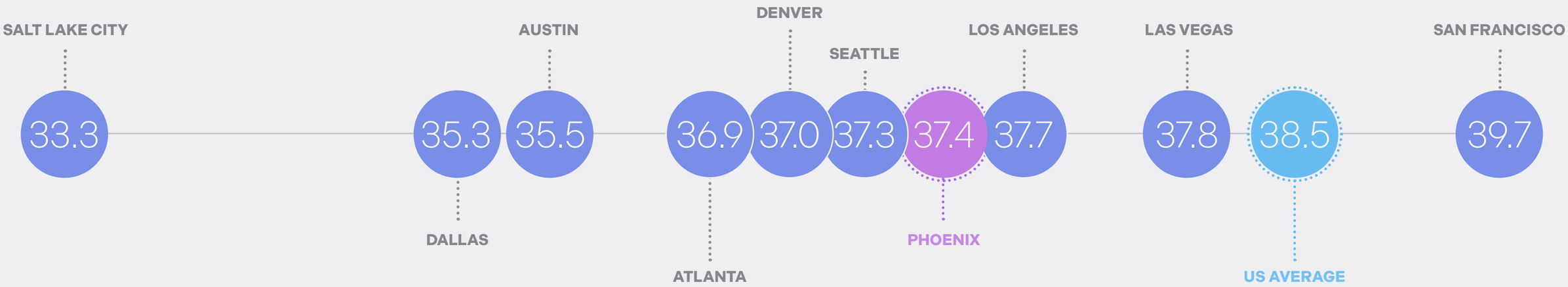
U.S. PROJECTED AVERAGE ANNUAL GROWTH 2022-2030

1.5%

GREATER PHOENIX PROJECTED AVERAGE ANNUAL GROWTH 2022-2030

Between 2020 and 2023, Greater Phoenix netted the 3rd-highest gain in population among all U.S. metros: almost 195,000 people.

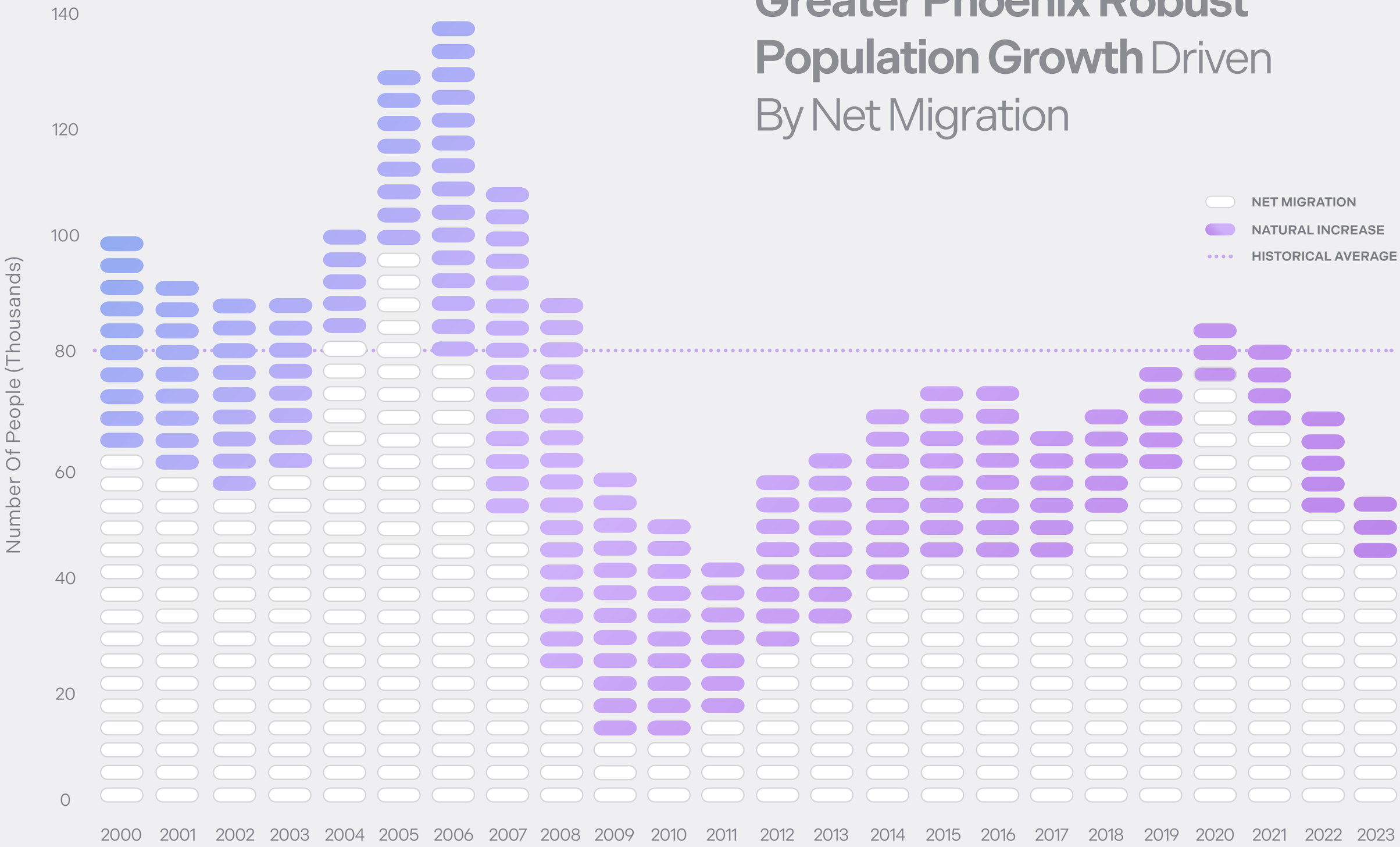
Median Age



Source: American Community Survey (ACS) 2018-2022 5 Year Estimates.

Source: U.S. Census Bureau, Population Division, U.S. Census Metropolitan and Micropolitan Statistical Areas Totals: 2020-2023.

Greater Phoenix Robust Population Growth Driven By Net Migration



Source: US Census Bureau, 2023.

Industries & Employment

As of 2023, Greater Phoenix firms in the bioscience and life science industries employed over 26,600 people. This figure is the result of concerted regional cooperation dating back almost two decades between public, private and nonprofit stakeholders to establish the region as a destination market for the sector.

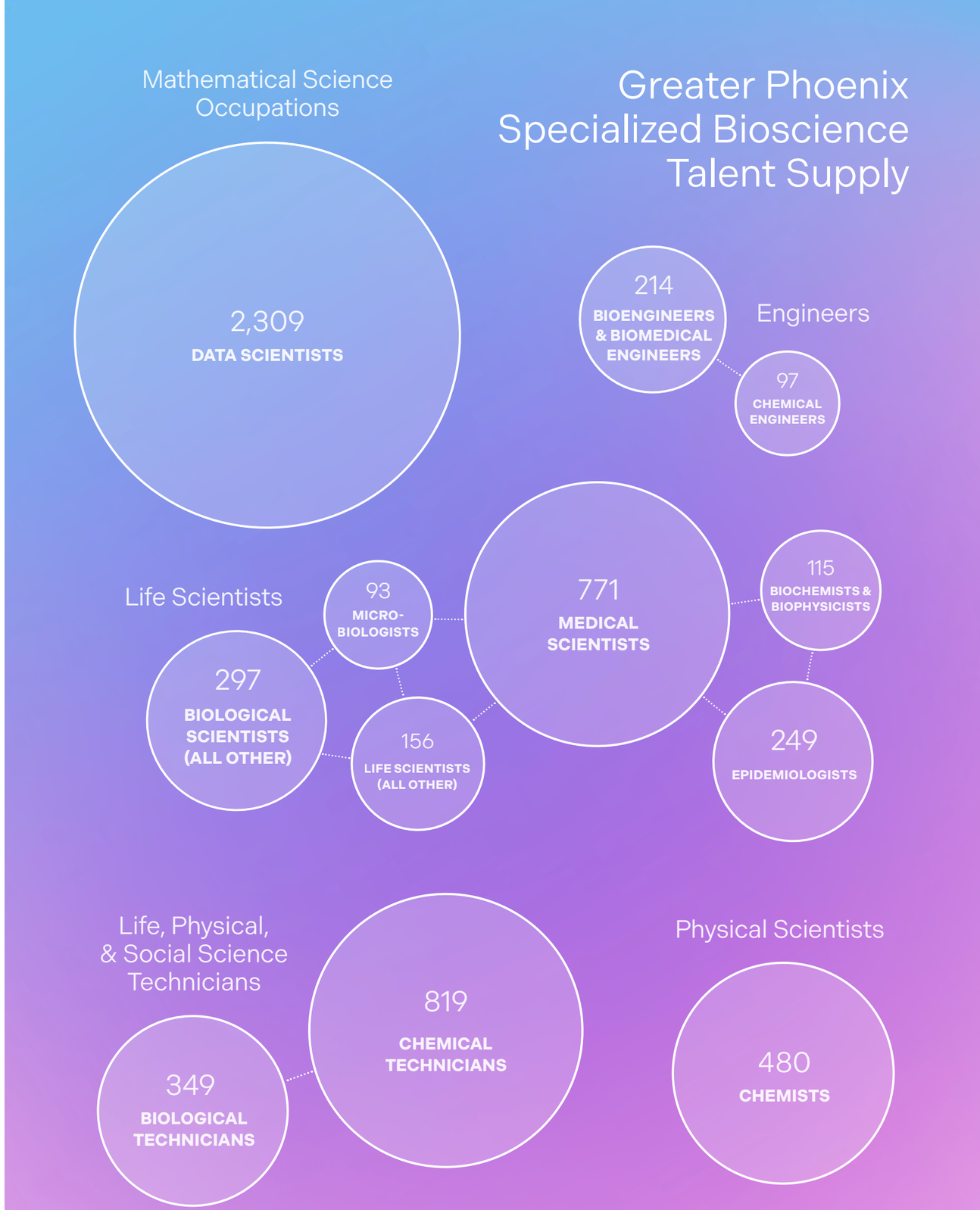
Those plans have been paying off in earnest since the region fully shook off the effects of the Great Recession beginning around 2015, as several rates of growth exceed peer markets across the United States. Of the 40 U.S. metros with bioscience and life science employment of 10,000 jobs or more, Greater Phoenix had the fourth-highest growth rate in bioscience employment between 2015-23 (66 percent), just ahead of Boston and behind San Francisco. During this timeframe, regional bioscience employment grew 2.5 times more than the national level.

In keeping with its ascendance as a U.S. manufacturing hotspot, the region saw explosive employment increases in Pharmaceutical and Medical Manufacturing once it emerged from the Great Recession, experiencing 147 percent growth between 2015-23 — more than six times higher than the national average of 23 percent. This was led by the Medicinal and Botanical Manufacturing, In-Vitro Diagnostic Substance Manufacturing, and Biological Product (Except Diagnostic) Manufacturing industries. Likewise, Greater Phoenix distinguished itself in Medical Equipment and Supplies Manufacturing employment (such as surgical/medical instruments and equipment manufacturing), with jobs in these industries growing at 156 percent compared to 14 percent nationally between 2015 and 2023.

Regional bioscience and life science momentum extends beyond manufacturing. Greater Phoenix is gaining an edge in medical and diagnostic lab work, adding jobs and new businesses at more than double the national growth rate during this time span. Employment increases at regional R&D firms, bolstered by specialties in biotechnology R&D and physical/engineering/life sciences R&D, paced ahead of national growth as well. Importantly for these two competitive, innovation-driven industries, Greater Phoenix has been a nexus of new biotech and life science R&D firm creation. While U.S. payrolled business locations in these industries doubled between 2015 and 2023, the number of such businesses in Greater Phoenix tripled.

SPECIALIZED WORKFORCE

Greater Phoenix has around 6,000 resident workers in the skilled, knowledge-intensive occupations required by the bioscience and life science industries. The number of resident workers with skilled bioscience/life science occupations in Greater Phoenix increased at over 1.5 times the average annual growth rate of the nation between 2015 and 2023 (4.4 percent average annual growth versus 2.8 percent). Greater Phoenix saw robust 150 percent growth among Data Scientists, for example, and its gains in Life Scientist occupations outpaced the nation (25 percent versus 19 percent), with particularly strong upticks among Epidemiologists and Biochemists/Biophysicists relative to national trends. Encouragingly for core work in the physical sciences, Greater Phoenix saw outsized growth among Chemists and managed to add Life/Physical/Social Science Technicians even as the nation lost them during this span.



Education & Talent Pipeline

Each year, institutions in Greater Phoenix produce a growing number of graduates in local bioscience and life science programs.

In the 2021-22 academic year, Greater Phoenix-based educational institutions saw more than 2,100 completions in specialized bioscience degree fields such as bioengineering, immunology/pathology, genetics, and a range of biology subdisciplines; 3,600 total completions were issued in the state of Arizona at degree levels ranging from certificates to doctorates. Between the academic years 2016-17 and 2021-22, completions in bioscience-related fields from Greater Phoenix-based institutions grew by 1.5 times, averaging 8.3 percent year-over-year growth.

Talent produced by the region's bioscience pipeline is in fact even more numerous than this, due to completions at Arizona State University's (ASU) flourishing Digital Immersion programs (though remote, Arizona-based students are one out of every five Digital Immersion learners). ASU's remote bioscience completions increased by 12 times in this span, producing over 1,300 graduates in total. Widening the search to include bioscience, life science and healthcare fields, the annual crop of talent produced by non-distance programs in the region topped 11,400 in 2022 alone, a figure that places the region ahead of markets like Atlanta, San Diego and Seattle. Greater Phoenix's STEM talent pipeline has seen similar growth, with regional STEM completions increasing by 67 percent between 2012 and 2022 versus 33 percent nationally.

With its share of statewide, non-distance bioscience completions growing from 50 percent in 2016-17 to 58 percent in 2021-22, Greater Phoenix is becoming an increasingly important source of talent in Arizona. This is largely attributable to dynamic institutional development and investment over the past few decades. In addition to physician and research talent emerging from six existing local medical schools at the University of Arizona, Mayo Clinic, Creighton, Tufts University Downtown Phoenix, A.T. Still University Osteopathic Medical School, and Midwestern University (and with plans for an ASU medical school announced in 2023), ASU operates a 350,000 square foot Biodesign Institute with 15 research centers. The university offers coursework and degrees in Biomedical Informatics and Diagnostics, Biology and Microbiology, and Applied Biological Sciences. Further, Maricopa County's well-regarded community college network offers two relevant associate degrees: one in Science with an emphasis in Biological Sciences and another in Biotechnology and Molecular Biosciences. The Maricopa County Community College District has also developed pre-med and biology tracks that allow students to seamlessly transfer to ASU.

Arizona State University

#1

RANKED #1 MOST INNOVATIVE UNIVERSITY NINE YEARS IN A ROW

145,655

UNDERGRAD AND GRADUATE STUDENTS

11,974

STUDENTS ENROLLED IN SCHOOL OF LIFE SCIENCE COURSES

$797M

IN ANNUAL RESEARCH EXPENDITURES

ASU'S SCHOOL OF LIFE SCIENCES is shaping a future of innovation through a culture of collaborative research and connected education. Access to cutting-edge faculty labs and interdisciplinary centers and institutes empowers a new generation of leaders, giving them the resources and training they need to change lives.

UNDERGRADUATE DEGREES INCLUDE:

- Biomedicine
- Microbiology
- Genetics, Cell and Developmental Biology
- Human Dimensions of Biology
- Molecular Biosciences and Biosciences Technology

10
UNDERGRADUATE DEGREES

16
GRADUATE DEGREES

6
MINORS AND CERTIFICATES

20
RESEARCH CENTERS

Source: Arizona State University, Fall 2023.

Between 2017-22, bio-specific completions at Greater Phoenix institutions averaged over 8% annual growth.

COMPLETION TYPES

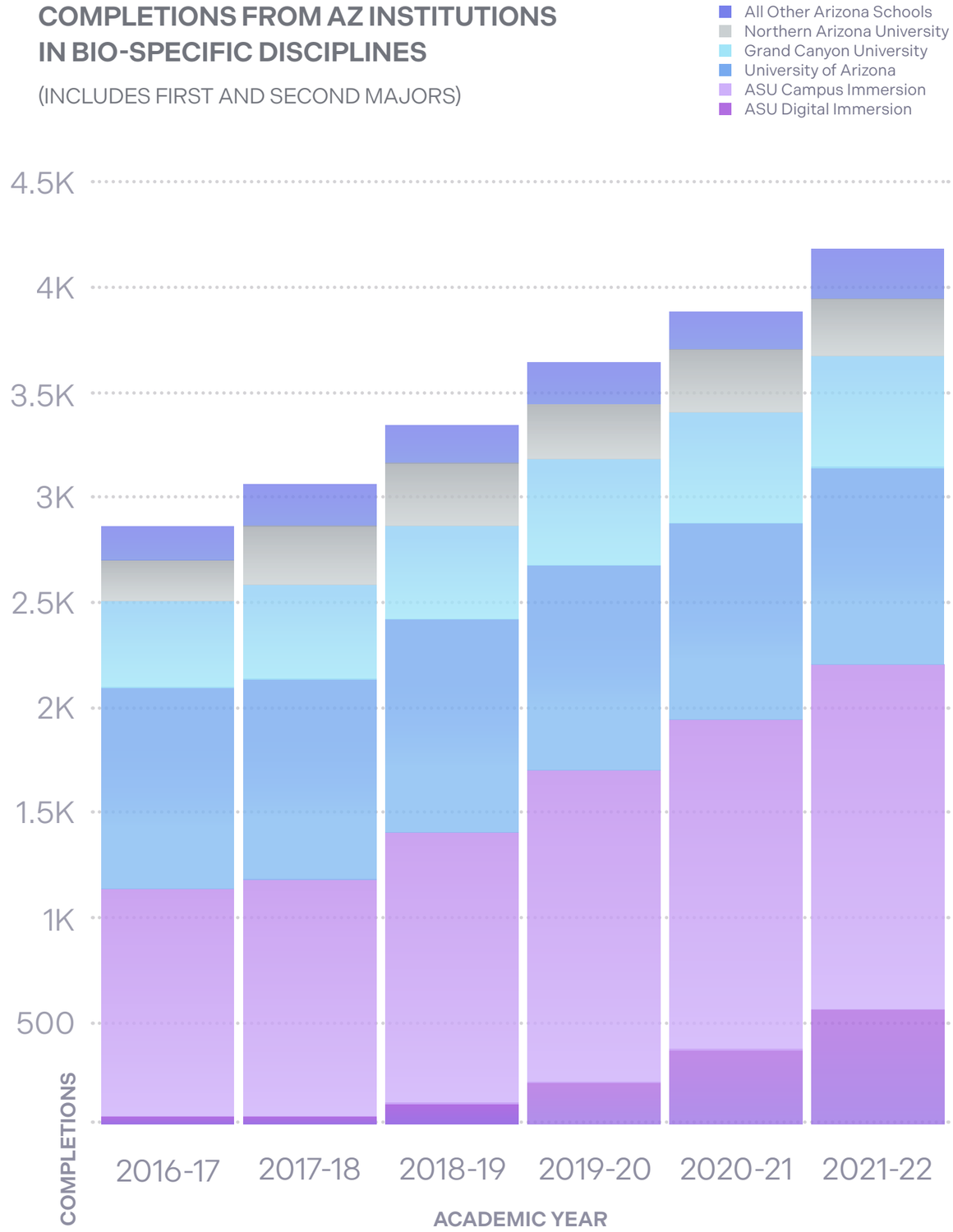
- Certificates Above The Baccalaureate
- Associate's Degree
- Bachelor's Degree
- Master's Degree
- Doctor's Degree - Research/Scholarship
- Doctor's Degree - Professional Practice
- Doctor's Degree - Other

FIELDS

- Biomedical/Medical Engineering
- Biochemical Engineering
- Biological/Biosystems Engineering
- Biology General
- Biochemistry Biophysics and Molecular Biology
- Botany/Plant Biology
- Cell/Cellular Biology and Anatomical Sciences
- Microbiological Sciences and Immunology
- Zoology/Animal Biology
- Genetics
- Physiology Pathology and Related Sciences
- Pharmacology and Toxicology
- Biomathematics Bioinformatics and Computational Biology
- Biotechnology
- Ecology Evolution Systematics and Population Biology
- Molecular Medicine
- Neurobiology and Neurosciences
- Biological and Biomedical Sciences Other
- Biological and Physical Sciences
- Biopsychology
- Human Biology
- Biology Technician/Biotechnology Laboratory Technician

COMPLETIONS FROM AZ INSTITUTIONS IN BIO-SPECIFIC DISCIPLINES

(INCLUDES FIRST AND SECOND MAJORS)



Source: Integrated Postsecondary Education Data System.

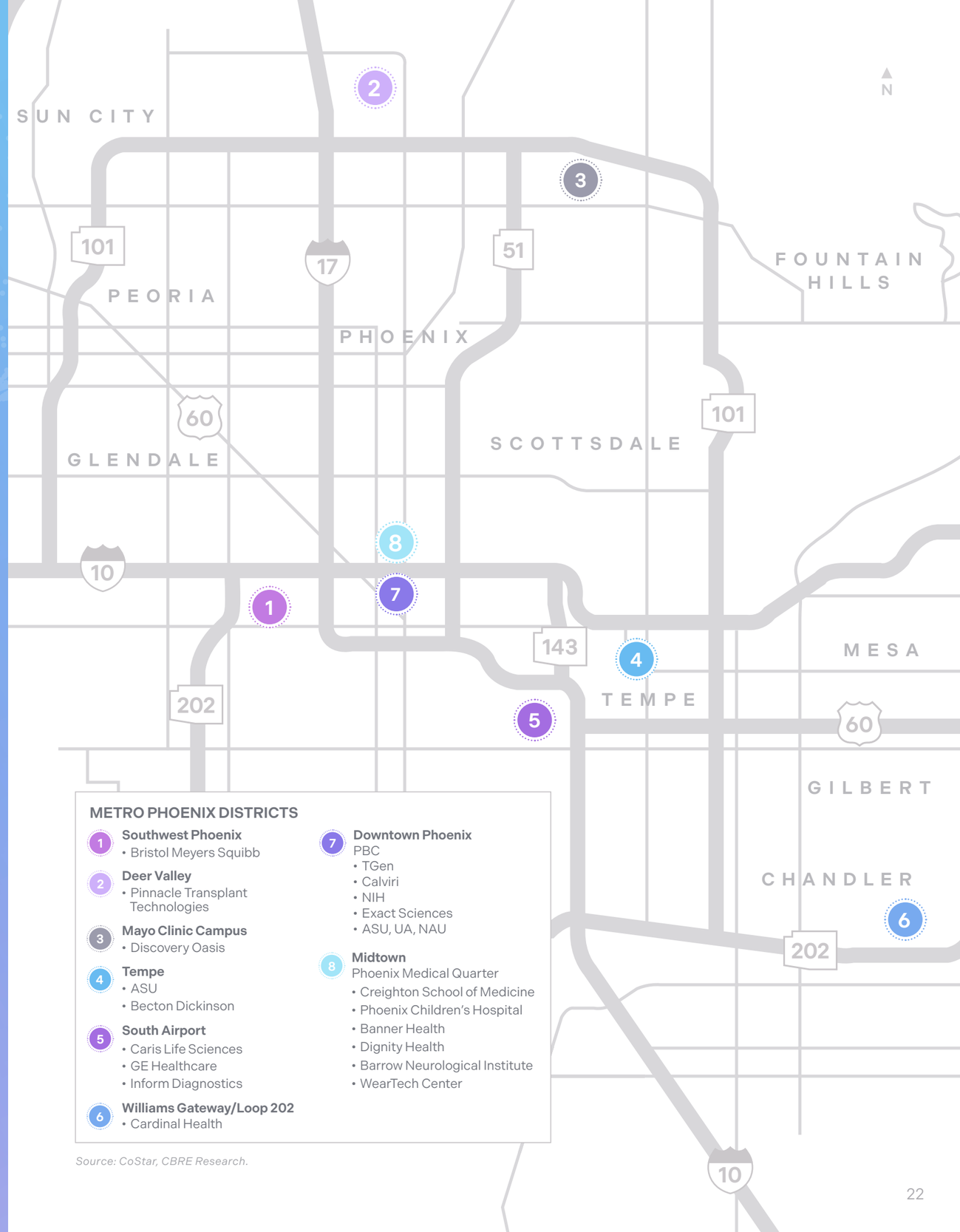
Emerging **Bioscience Corridors**

As of Q1 2024, there is roughly 2.5 million square feet of existing life sciences space throughout Greater Phoenix. Just over 360,000 square feet of this space remains available for lease entering April, amounting to a vacancy rate of 14.6 percent.

One of the most notable projects in Greater Phoenix is the PBC. Home to tenants such as Calviri, the National Institutes of Health, Exact Sciences, Translational Genomics Research Institute and all three of Arizona's public research universities. The PBC is a 30-acre life sciences innovation district in the heart of Downtown Phoenix that serves as an integral piece of the statewide life sciences initiative as the faculty contributes significantly to biomedical discoveries, the quality of health care for Arizona residents and the expansion and diversification of the state's economy. This hub currently has 1.7 million square feet of space dedicated to Research, Academic and Clinic facilities and has more than 6 million square feet of planned additions.

Another significant area is the recently designated Phoenix Medical Quarter in Midtown. The nucleus of this hub is located in Park Central, a former shopping destination that has now evolved into a dynamic center for bioscience, education and research. Organizations such as Creighton University School of Medicine, Phoenix Children's Hospital, Banner Health, Dignity Health (home of the Norton Thoracic Institute) and Barrow Neurological Institute (home of the Ivy Brain Tumor Center) all occupy space within this bioscience corridor. There is also a large cluster of bioscience firms south of Sky Harbor Airport. This area houses tenants such as Caris Life Sciences, GE Healthcare, Inform Diagnostics, Reference Medicine and Schott, with most of these firms occupying space in the Cotton Center Building Park.

Meanwhile in North Phoenix, Mayo Clinic is planning an addition to its campus called Discovery Oasis. Covering an area of 218 acres which will include wet and dry lab space, biomanufacturing facilities and flexible office space, this project will support intensified research, clinical expansion and the development of innovative clinical approaches to medicine and healthcare through the Mayo Clinic and ASU MedTech Accelerator.



METRO PHOENIX DISTRICTS

1. **Southwest Phoenix**
   - Bristol Meyers Squibb
2. **Deer Valley**
   - Pinnacle Transplant Technologies
3. **Mayo Clinic Campus**
   - Discovery Oasis
4. **Tempe**
   - ASU
   - Becton Dickinson
5. **South Airport**
   - Caris Life Sciences
   - GE Healthcare
   - Inform Diagnostics
6. **Williams Gateway/Loop 202**
   - Cardinal Health
7. **Downtown Phoenix**
   PBC
   - TGen
   - Calviri
   - NIH
   - Exact Sciences
   - ASU, UA, NAU
8. **Midtown**
   Phoenix Medical Quarter
   - Creighton School of Medicine
   - Phoenix Children's Hospital
   - Banner Health
   - Dignity Health
   - Barrow Neurological Institute
   - WearTech Center

Source: CoStar, CBRE Research.

Phoenix Bioscience Core

Notable College Campuses and Companies in the PBC

850 N 5th Street

ASU · BACVAX · exodigm · Medi Life Healthcare Solutions · REGENESIS Energy for an Active Life

NIH National Institutes of Health *Turning Discovery Into Health* · ElectraTect · Sense Neuro Diagnostics · WEXFORD SCIENCE+TECHNOLOGY · LabForce CEI

CALVIRI. · CRYSTAL SONIC · LENOSS MEDICAL · METABOLIC TERRAIN INSTITUTE OF HEALTH · Theriome The Science of You

VENTURE CAFÉ > PHOENIX

475 N 5th Street

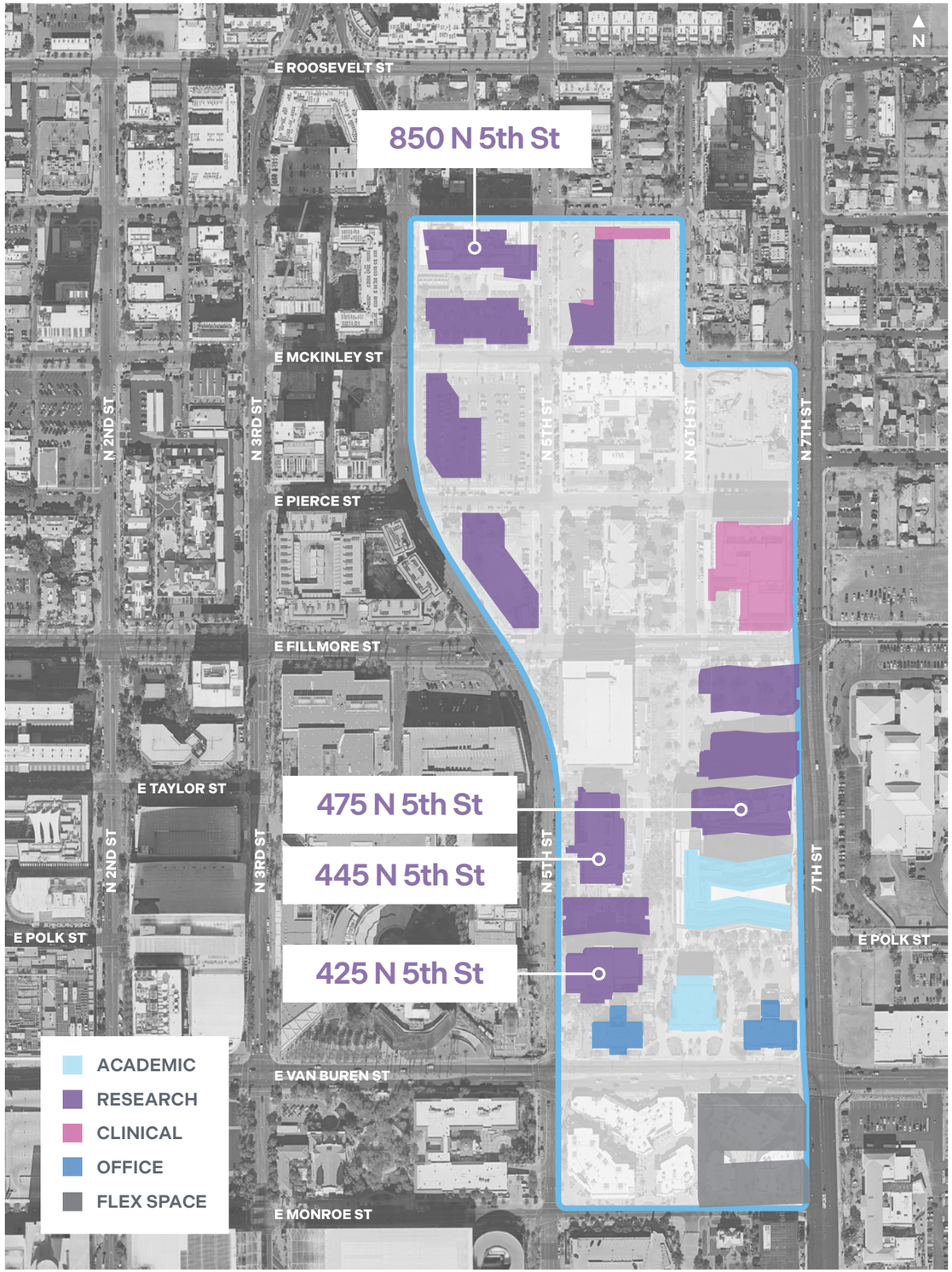
THE UNIVERSITY OF ARIZONA COLLEGE OF MEDICINE PHOENIX Center for Applied NanoBioscience & Medicine · Faknostics · Phoenix Children's · VA U.S. Department of Veterans Affairs

425 N 5th Street

ASU College of Health Solutions Arizona State University · College of Medicine Phoenix

445 N 5th Street

EXACT SCIENCES · Ordinatrix Precision Translational Proteomics · NIH National Institute of Diabetes and Digestive and Kidney Diseases · tgen part of City of Hope · International Genomics Consortium



Source: City of Phoenix.

Operational Cost Comparison

Companies in the bioscience or life science industries will find a highly competitive operating cost environment in Greater Phoenix, in addition to the abundant talent working in the region and graduating from local institutions.

The region distinguishes itself with skilled but affordable labor, reasonable utility costs, and a property tax system that has been structured to minimize the burden of doing business in Arizona.

TOPLINE ASSUMPTIONS

$25 Million
PERSONAL PROPERTY INVESTMENT

250,000 SF
INDUSTRIAL MANUFACTURING (LEASE)

Utilities Per Month
ELECTRIC: 1,000KW/400,000KWH
WATER: 50,000CF, 2 METER
WASTEWATER: 50,000CF, 2 METER

392
JOBS

DETAILED WORKFORCE ASSUMPTIONS

OCCUPATIONS	EMPLOYMENT
Medical and Clinical Laboratory Technicians	212
Inspectors, Testers, Samplers, and Weighers	55
Laborers and Material Movers, Hand	51
Packers and Packagers, Hand	51
Shipping, Receiving, and Traffic Clerks	6
Biochemists and Biophysicists	5
General and Operations Managers	5
Biomedical Engineers	3
Logisticians	2
Industrial Production Managers	1
Human Resources Specialists	1
TOTAL	**392**

OPERATING COSTS

METRO	EMPLOYEE PAYROLL	FRINGE & MANDATED BENEFITS	UTILITIES	REAL ESTATE PAYMENTS*	PROPERTY TAX	TOTAL OPERATING COST	INDEX
PHOENIX	**$22,705,800**	**$5,181,732**	**$506,759**	**$2,700,000**	**$11,496**	**$31,105,787**	**100.0%**
ATLANTA	$23,352,714	$5,508,269	$549,110	$2,152,500	$399,700	$31,962,293	102.8%
BOSTON	$27,468,811	$6,417,355	$2,415,733	$3,362,500	$617,000	$40,281,399	129.5%
HOUSTON	$24,251,386	$5,559,841	$683,379	$1,800,000	$566,215	$32,860,821	105.6%
NASHVILLE	$22,863,721	$5,243,514	$715,932	$1,910,000	$244,050	$30,977,217	99.6%
NEW YORK**	$27,422,393	$6,758,897	$1,064,192	$4,370,000	$0	$39,615,482	127.4%
RALEIGH	$22,760,108	$5,339,925	$481,197	$2,400,000	$253,125	$31,234,355	100.4%
SAN DIEGO	$26,544,121	$7,608,153	$1,903,601	$4,170,000	$293,500	$40,519,375	130.3%
SAN FRANCISCO	$31,578,620	$9,041,354	$1,328,897	$6,990,000	$465,000	$49,403,871	158.8%

Source: Applied Economics Metrocomp Tool, January 2024.
**The leasing term includes real property tax.*
***There is no personal property tax in New York.*

Venture Capital **Funding**

The Arizona life sciences industry has reached new heights over the past several years.

As more startups and tech companies are deciding to set up their operations in the state, Arizona has seen a jump in life sciences interest. Since 2019 there have been 88 deals accounting for roughly $623.3 million in venture capital funding. Although VC funding took a dip in 2022, the amount of investment in 2023 rebounded substantially, as bioscience companies raised $195.9 million during the year. This growth trend highlights the thriving ecosystem of quality bioscience startups in the state of Arizona.

The state has launched early key initiatives such as AZAdvances, a program that works with Arizona researchers and early-stage companies to develop discoveries and advance health innovations by providing entrepreneurial support and seed funding that is needed to accelerate the process. Resources providing support on the path to commercialization, coupled with the state's rapidly growing population and talent pool, make Arizona a desirable location for innovators and entrepreneurs.

Total Funding

Source: PitchBook Data, Inc., 2024 (Pharmaceuticals and Biotechnology and Healthcare Devices and Supplies Industry Groups).

Chris Yoo, Ph.D.
General Partner
Xcellerant Ventures

XCELLERANT VENTURES

We are seeing a tremendous opportunity to invest early in scalable companies in the local Healthcare and Life Sciences industry, a fact that reflects both the quality and the quantity of innovative startups originating from local research institutions as well as seasoned entrepreneurs attracted to the region's emerging ecosystem.

The fact that 40 percent of our portfolio is from Arizona indicates the rapid maturation of the ecosystem into increasingly viable, innovation-driven startups in our industry vertical. While 2010 was a high year for investments, we believe the [totality] of investments in 2023 has been in more companies that have more experienced entrepreneurs at the helm with significantly better chances of producing superior returns on invested capital.

Moreover, high-skilled jobs created by these growing startups is decelerating the emigration of locally educated talent, and accelerating the immigration of new economy workers who bring diverse background and cross-industry skillsets.

Finally, the fact that a majority of our LPs are from Arizona also indicates an increasingly sophisticated investor base that is investing in Healthcare and Life Sciences, a key ingredient for a sustainable growing industry.

Arizona Venture Capital Funding

$623.3 Million

in total life sciences venture capital funding, comprising 88 Arizona companies over the past five years.

In 2023, Greater Phoenix placed

41st

in a PitchBook ranking of global VC ecosystems

Xcellerant Ventures is among the newest VC firms in Arizona

It focuses on early stage HealthTech, MedTech and TechBio startups

40% of its portfolio is from Arizona

Source: PitchBook Data, Inc. 2024.

Arizona Venture Capital Funding Spotlight 2019-2023

GT Medical Technologies	$71M
Visiongate	$36.6M
Nectero Medical	$26.5M
CyMedica Orthopedics	$25.9M
Aqualung Therapeutics	$24.6M
inVector CNS breakthroughs... It's time to deliver.	$20.1M
Journey Medical Corporation *Subsidiary of Fortress Biotech, Inc.*	$18.9M
neolight	$16.1M
nevoa	$15.1M
Paradigm *Aquired by Exact Sciences in 2020*	$15M

Source: PitchBook, 2024. Data from 2019-2023.

Arizona Venture Capital by Funding Type 2019–2023

- Therapeutic Devices | **$148.6 MILLION**
- Pharmaceuticals | **$142.5 MILLION**
- Biotechnology | **$96.4 MILLION**
- Diagnostic Equipment | **$81.5 MILLION**
- Drug Discovery | **$54.4 MILLION**
- Other Devices & Supplies | **$37.3 MILLION**
- Other Pharmaceuticals & Biotechnology | **$20.5 MILLION**
- Monitoring Equipment | **$20.0 MILLION**
- Drug Delivery | **$12.6 MILLION**
- Surgical Devices | **$6.1 MILLION**
- Medical Supplies | **$3.0 MILLION**
- Discovery Tools (Healthcare) | **$400,000**

Source: PitchBook Data, Inc., 2024 (Pharmaceuticals and Biotechnology and Healthcare Devices and Supplies Industry Groups).

National Institutes of Health Funding

The state of Arizona has also seen a notable rise in funding from the National Institutes of Health (NIH) for medical research. The amount of NIH funding has improved each year since 2019, reaching $364.2 million in 2023, ranking Arizona 25th among all US states.

Additionally, this marks a nearly 39 percent increase in funding relative to 2019, which is a testament to the robust growth in Arizona's healthcare and biosciences sectors during this time frame.

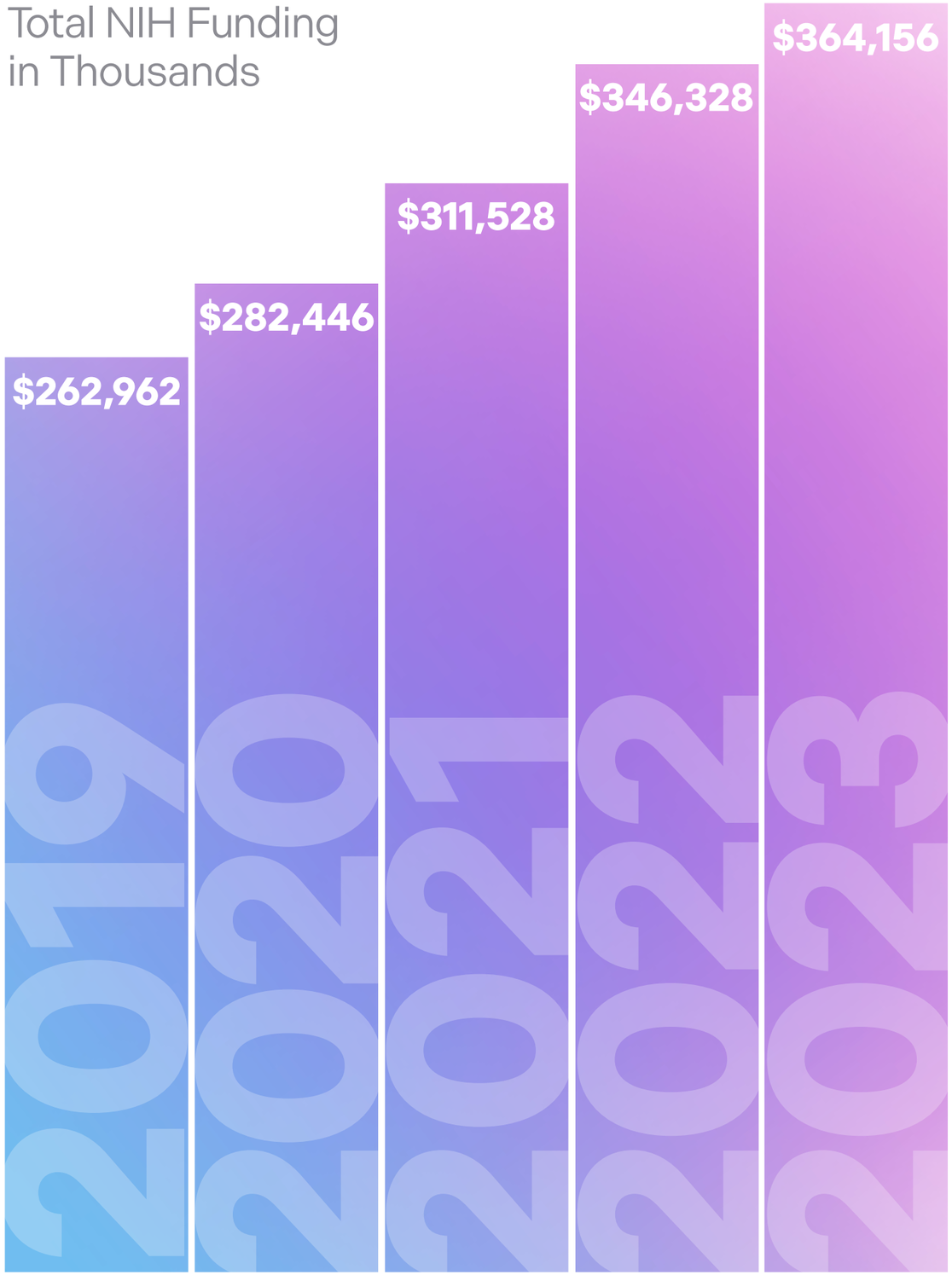
Among the 198 institutions receiving NIH funding in Arizona since 2019, the University of Arizona was the top recipient, with $846.7 million in awards. Arizona State University ranked second in the state with $289.5 million in NIH awards.

With all three of Arizona's public universities pouring additional resources into healthcare and biosciences, it is likely NIH funding for local institutions will continue to rise in the coming years as these sectors continue to grow across the state.

TOP NIH FUNDED INSTITUTIONS IN ARIZONA (2019-2023)

The University of Arizona	$846.7 MILLION
Arizona State University	$289.5 MILLION
Mayo Clinic	$86.4 MILLION
St. Joseph's Hospital and Medical Center, A Dignity Health Member	$64.1 MILLION
Northern Arizona University	$59.8 MILLION
Banner Health	$59.5 MILLION
tgen, part of City of Hope	$25.2 MILLION
PathogenDx, Setting the standard in DNA testing	$10.4 MILLION
Inter Tribal Council of Arizona, Inc, 21 Tribal Nations	$7.9 MILLION
Biosensing Instrument	$5.9 MILLION

Total NIH Funding in Thousands

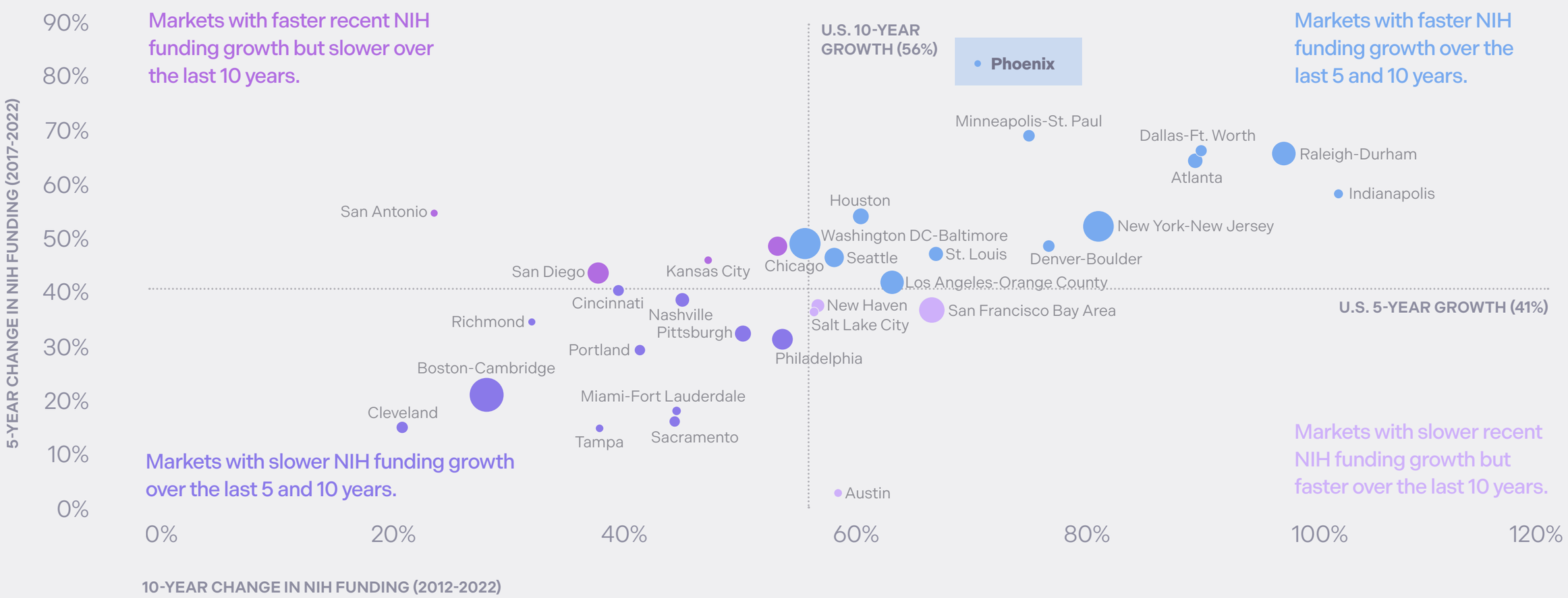


Source: PitchBook Data, Inc. 2024.

Growth and Momentum in NIH Funding Among Major U.S. Markets

Although NIH funding in Greater Phoenix has not yet reached the levels of other primary bioscience markets, the metro ranks first in NIH funding growth over the past five years among all markets with at least $100 million in annual funding in 2022, recording an increase of more than 80 percent during this time frame.

Greater Phoenix also ranks among the top 10 markets in NIH funding growth over the past 10 years. These figures highlight the metro's strong momentum in the biosciences industry.



Source: National Institutes of Health, CBRE Research, Q4 2023. Note: Major markets with more than $100 million in annual NIH Funding in 2022.

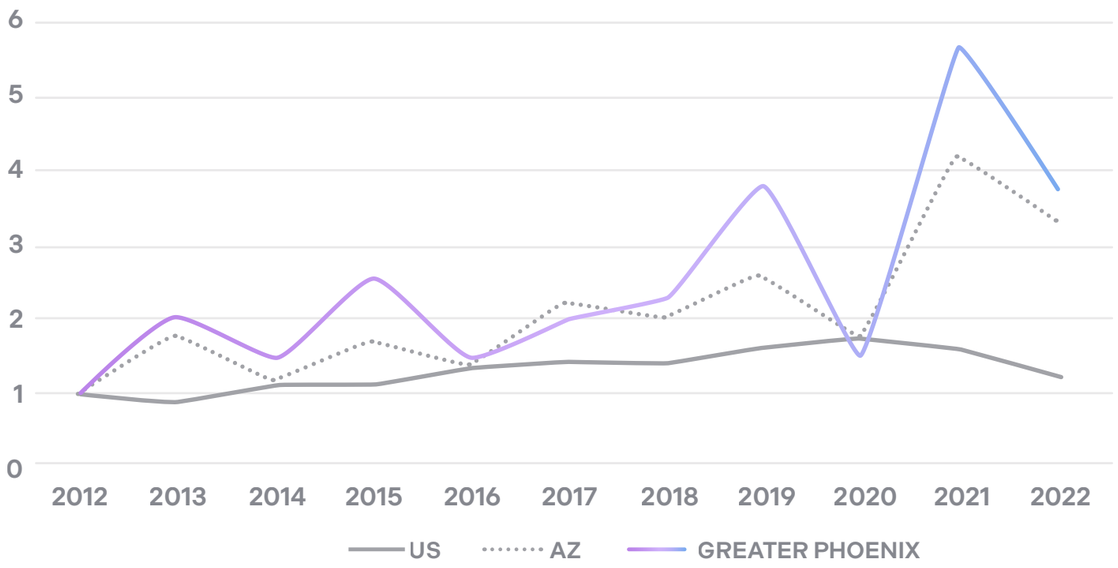
Small Business Technology
Transfers and Funding

The federal government's Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs offer competitive grants that provide capital, institutional research partnerships, and pathways to commercialization for the nation's small businesses and startups working at the leading edge of technology.

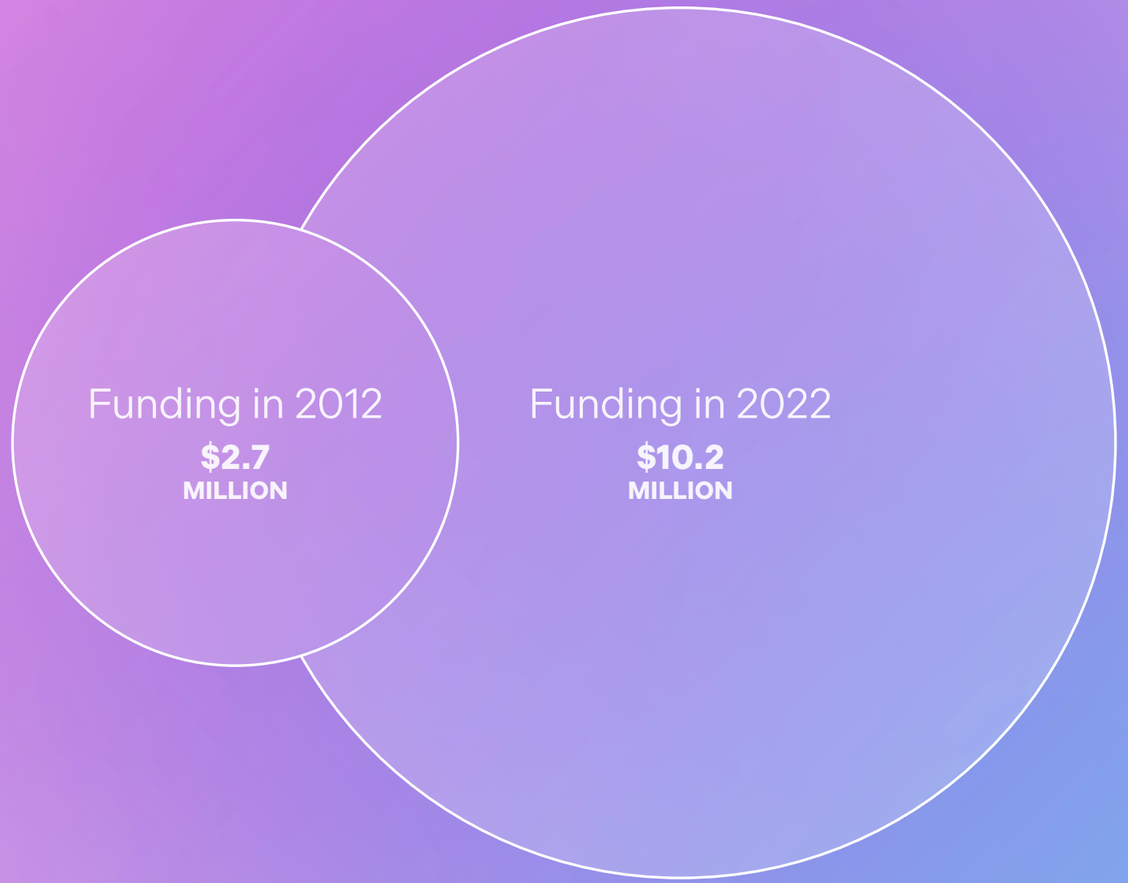
SBIR/STTR funding to Greater Phoenix businesses developing bioscience technology has grown tremendously in the past decade, increasing from $2.7M to $10.2M between 2012 and 2022 (the latest year with complete data) — a growth rate of 277 percent, compared to a 21 percent growth rate nationally. Grant dollars to Greater Phoenix bioscience startups experienced 25 percent median year-over-year growth in this span, compared to 10 percent for Arizona and five percent for the nation. The region's and state's firms have distinguished themselves as increasingly competitive in the past half-decade, even as SBIR/STTR funding to bioscience firms nationwide has been decreasing since 2020. Local bioscience startups that secured SBIR/STTR funding recently on their journey to commercialization include Calviri (2019) and CND Life Sciences (2020 & 2022).

Growth of SBIR-STTR Bioscience Funding

Indexed to 2012



Source: U.S. Small Business Administration, Small Business Innovation Research (SBIR).



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Regional Healthcare **Assets** & Clinical Trials

Greater Phoenix has an expansive and mature healthcare ecosystem, whose world-class providers announced over $4B in capital investments between 2019 and 2023.

Local healthcare providers Banner Health, HonorHealth, Dignity Health, and Mayo Clinic are four out of the 10 largest private sector employers in Greater Phoenix. The region's hospitals, institutions, and firms participate as sponsors or collaborators in an average of nearly 600 clinical trials annually registered with the National Institutes of Health. Regional standouts in translational research include the City of Hope and Mayo Clinic in oncology and precision/regenerative medicines. In the field of neurology, the Barrow Neurological Institute was recently chosen as the inaugural site for Elon Musk's Neuralink PRIME study, and its Ivy Brain Tumor Center announced promising findings from a trial studying the effects of kinase inhibitors on newly diagnosed glioblastoma.

A network of research-oriented regional healthcare assets is important to the development of a closed-loop bioscience ecosystem. Many medtech and bioscience firms, from startups to well-established incumbents, need access to healthcare partners that are actively running clinical trials to validate and test their products or technologies. Positive proof-of-concept clinical trials open the gateway to commercialization and expedite go-to-market time. Eventually, healthcare assets like large hospital systems become the bioscience companies' recurring customers, a fact which underscores the importance of in-market access to clinical research and trial activity that can support and complement bioscience technology development in a metro region.

Regional **Case Study**

CND Life Sciences®

When CND Life Sciences in Scottsdale, Arizona developed a first-of-its-kind skin test to detect diseases like Parkinson's or dementia, its diagnostic required clinical validation. Immediately after initial trials, the cutaneous neurodiagnostic test detecting notable biomarkers was adopted by both Mayo Clinic and Banner Health, resulting in an increased cohort of participants, and therefore more data for CND Life Sciences to further refine the diagnostic.

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