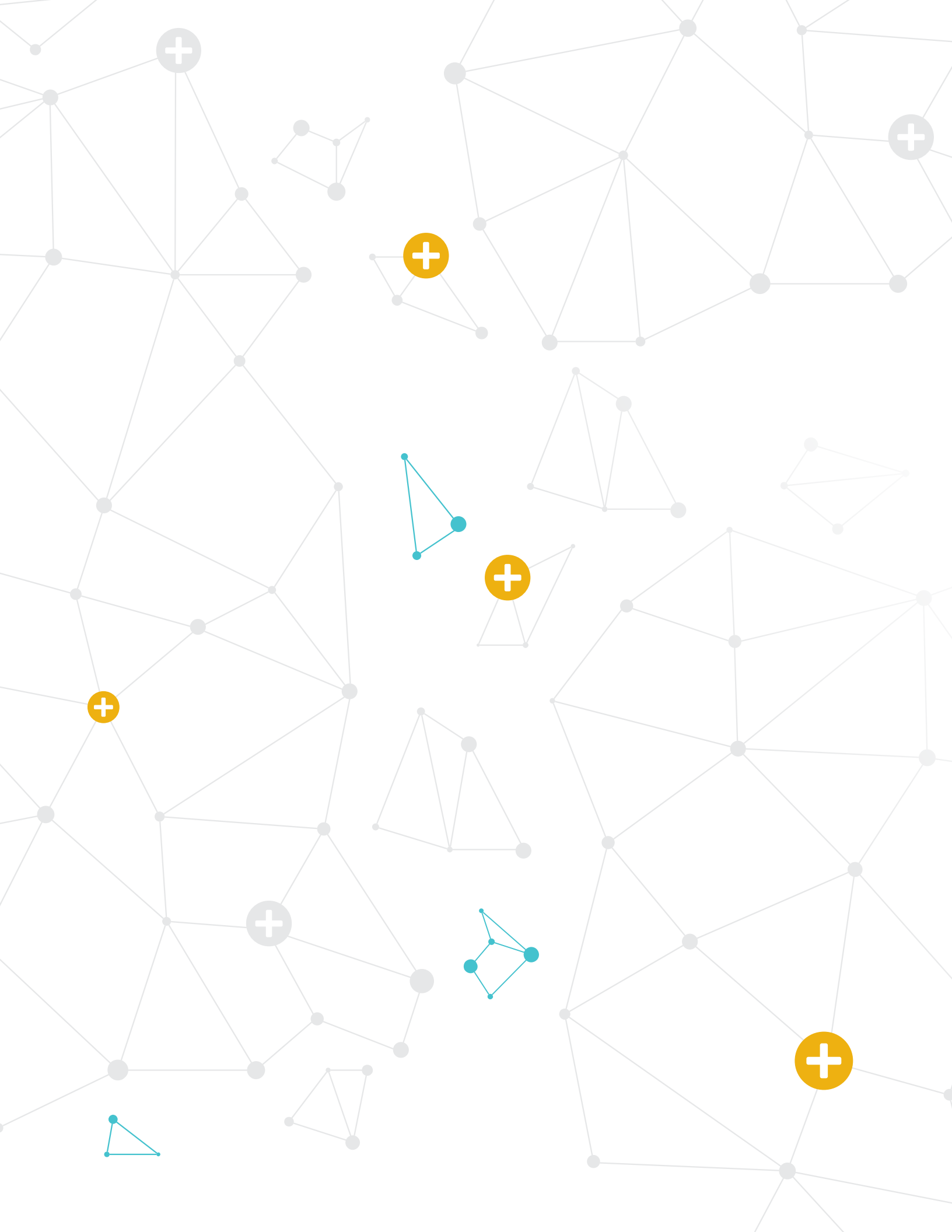
Greater Phoenix
ECONOMIC COUNCIL

HEALTH TECHNOLOGY IN GREATER PHOENIX:

An Emerging Opportunity

MARKET INTELLIGENCE PROGRAM



MARKET INTELLIGENCE PROGRAM

This report, *Health Technology in Greater Phoenix: An Emerging Opportunity*, is a product of the Greater Phoenix Economic Council (GPEC) Market Intelligence Program. Launched in 2012, the program is a collaborative effort with GPEC's 22 cities and towns, Maricopa County, and regional private-sector stakeholders.

Greater Phoenix is the ideal place for healthcare institutions to grow their operations.

The detailed analyses of industry trends enable communities and local economic development professionals to engage industry executives in comprehensive discussions about the opportunities and threats facing the industry.

PREVIOUS REPORTS INCLUDE:

The State of Greater Phoenix's Aerospace and Defense Industry

FEBRUARY 2013

An In-Depth Analysis of the Software Industry in Greater Phoenix

JANUARY 2015

The Microelectronics Cluster in Greater Phoenix

MARCH 2016

The Future of the Aerospace and Defense Industry in Greater Phoenix

JANUARY 2017

HEALTH TECHNOLOGY IN GREATER PHOENIX: An Emerging Opportunity

Healthcare is a key component of the Greater Phoenix economy, representing nearly 220,000 jobs and two of the top 10 private employers in the region.[i] As a major metropolitan area with access to a large population, the region is an ideal place for large healthcare institutions to set up operations that serve the public.

Since 2001 healthcare employment in Greater Phoenix has grown 84% compared to 34% nationally.

The makeup of Greater Phoenix's demographic composition attracts a variety of healthcare resources, and rapid population growth in the region has coincided with additional investments from major national healthcare organizations, including Banner Health, Barrow Neurological Institute, the Cancer Treatment Centers of America, Dignity Health, Honor Health, Maricopa Integrated Health Systems, Mayo Clinic, Phoenix Children's Hospital and Tri-West Healthcare Alliance.

Overall, the national healthcare industry is booming, and Greater Phoenix has been taking advantage. Since 2001, the region's healthcare employment has grown 84% compared to 34% nationally and currently ranks 14th among metros.[i] However, healthcare employment across the nation tracks strongly with population, and the top hospitals tend to locate where there is a large concentration of people.

However, healthcare hubs like Boston, Minneapolis, and St. Louis, for example, have known expertise that attracts patients from around the country and world, increasing the industry's economic impact.

The catalyst for this attraction is innovation. Hospitals in these metros are leaders in particular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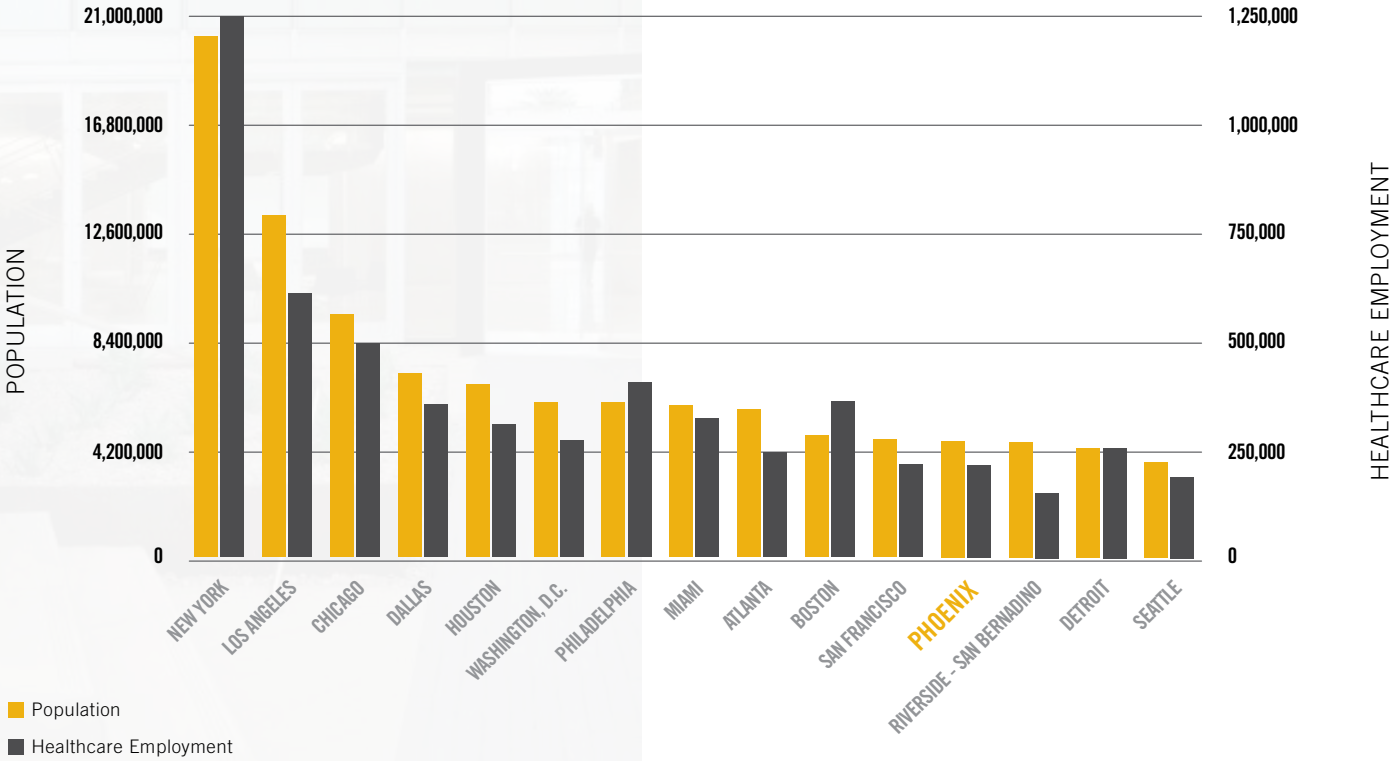
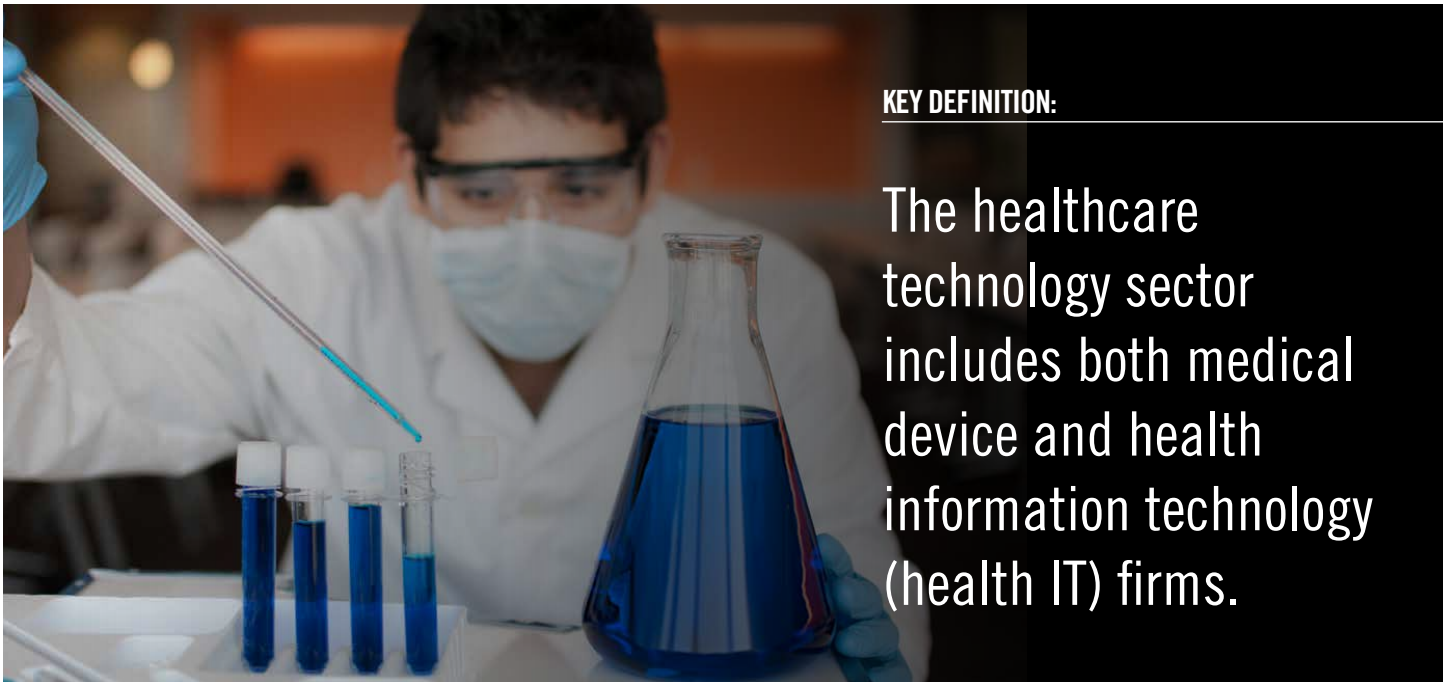
medical fields or specialties and are able to leverage their expertise and pioneer new techniques for care. These regions also have a major focus around healthcare technology or health tech, which consists of medical device and health information technology (health IT) firms.

Greater Phoenix has been growing its workforce in these sectors. Since 2001, medical device employment grew 161%, and employment in all IT grew by 92%, well above the national growth rates.[ii] These sectors represent key areas of focus for further growth in the Greater Phoenix economy, especially as technology becomes a leading driver for the future of healthcare.

POPULATION & HEALTHCARE EMPLOYMENT FOR MAJOR METROS



Source: Population: US Census Bureau 2016; Healthcare Employment: JobsEQ 2016



Photos courtesy of Media Production at the UA College of Medicine – Phoenix

KEY DEFINITION:

The healthcare technology sector includes both medical device and health information technology (health IT) firms.

HEALTHCARE AND RELATED TECHNOLOGY EMPLOYMENT AND GROWTH

	HEALTHCARE [i]		
	2016 Employment	Employment Growth 2001-2016	% Employment Growth 2001-2016
GREATER PHOENIX	**219,587**	**100,405**	**84%**
UNITED STATES	17,471,377	4,459,131	34%

	MEDICAL DEVICE [ii]		
	2016 Employment	Employment Growth 2001-2016	% Employment Growth 2001-2016
GREATER PHOENIX	**2,736**	**1,686**	**161%**
UNITED STATES	349,150	22,420	7%

	INFORMATION TECHNOLOGY [ii]		
	2016 Employment	Employment Growth 2001-2016	% Employment Growth 2001-2016
GREATER PHOENIX	**25,240**	**12,060**	**92%**
UNITED STATES	2,253,022	803,954	55%

Source: JobsEQ, 2016 (annual averages).

The alignment of the healthcare network with existing firms and newcomers in the field of health tech can help to grow this important sector here in the region. There is already momentum with established firms and innovative startups building new products. The next generation of healthcare will rely largely on technology, and there are many opportunities for Greater Phoenix to become a market leader.

METHODOLOGY

This report is based on meetings with 26 health-related companies in the Greater Phoenix region. Interviews were conducted with key individuals in technology roles and took place between January and May 2017.

Companies interviewed covered a large cross section of the healthcare technology sector, including healthcare providers, healthcare insurers, medical device companies, health information technology companies and innovative health-related service providers.

Findings from these interviews followed three general themes: global healthcare trends, technology opportunities and regional recommendations.

KEY DEFINITIONS	
Value-based care (VBC) is a growing healthcare reimbursement model in which providers are paid based on improving overall health outcomes for patients, usually while maintaining or reducing total healthcare costs.	Fee-for-service (FFS) is a traditional healthcare reimbursement model in which providers are paid based on the volume of services they provide regardless of improved health outcomes from those services.

Courtesy of Media Production at the UA College of Medicine – Phoenix

KEY THEME #1

GLOBAL HEALTHCARE TRENDS

An aging population and rising healthcare costs have spurred new models of patient care, including value-based and outcomes-driven care. Healthcare payers still control the pace of innovation in the industry, but consumer access is growing as patients demand more autonomy over their health.

KEY THEME #2

TECHNOLOGY OPPORTUNITIES

Value-based care and other healthcare trends are sparking new innovations in the industry, particularly around health IT, wearables and patient data analytics. The growth in data spurred by these innovations will place an added emphasis on cybersecurity efforts to protect patient information.

REGIONAL RECOMMENDATIONS

#1 Enhance the system for licensing and commercialization of health technology research, expanding the collaboration between universities, entrepreneurs and healthcare providers.

#2 Build a mentorship program for new health tech entrepreneurs, ensuring that successful business leaders remain connected to the ecosystem and provide needed expertise regarding the healthcare industry.

#3 Leverage healthcare assets in the region to grow health technology capital, increasing investments from corporate development arms of existing firms and using established innovators to evaluate new technologies for potential angel investment and venture capital funding.

#4 Produce and attract a quality technical workforce in order to help healthcare technology companies grow and scale in the Greater Phoenix region.

KEY THEME #1

GLOBAL HEALTHCARE TRENDS

An aging population and rising healthcare costs have spurred new models of patient care, including value-based and outcomes-driven care. Healthcare payers still control the pace of innovation in the industry, but consumer access is growing as patients demand more autonomy over their health.

There are several key global healthcare trends shaping healthcare providers and influencing technology needs. Changing demographics, payer systems, and regulations have created new models of care delivery, sparking increased innovation in a somewhat static industry.

The politics of healthcare have been complex for decades, and legislation that could impact this industry remains a leading topic at the federal level. Proposals to significantly overhaul healthcare laws lead to uncertainty, and healthcare providers and technology companies must continually monitor potential changes and analyze the effects on their business models.

Rising healthcare costs have also been a key component of concern for companies across the healthcare sector. The causes and implications of the decades-long increase in healthcare spending are vast.

An aging population has created new challenges for the healthcare industry in the United States, and as older adults require more medical care, US spending on Medicare has grown. In addition, as a large metropolitan area, Greater Phoenix has a large number of Medicaid users, meaning potential changes to Medicaid funding could have a significant effect on some of the region's healthcare providers.

These challenges have inspired a renewed focus on innovative care models for healthcare providers, highlighting the need for value-based care (VBC). VBC has enormous implications for the entire healthcare industry as it represents a fundamental change from the existing fee-for-service (FFS) model, targeting outcomes rather than payments.

Healthcare providers will be responsible for not only providing healthcare services, but ensuring that those services work to improve a patient's overall health. As such, this system moves away from one that incentivizes patient volume at the expense of patient care.

There are several mechanisms through which this system takes place, resulting in new, unique business opportunities. Accountable Care Organizations (ACO) and Shared Savings Programs (SSP) work with Medicare, Medicaid and other payers to monitor a group of patients and can be reimbursed for cost reductions.

Care coordination can involve tracking a group of patients with similar, often chronic, conditions and ensuring the group is regularly interacting with healthcare providers. Other key tenets of increasing health outcomes include providing yearly wellness visits and hospital follow ups.

The complex algorithms involved with VBC place an added emphasis on patient data and analytics. Much of the new healthcare technology being developed today involves collecting, storing and analyzing patient information. Patient data analytics, a new and growing industry, will be a key component of healthcare in the next decade.

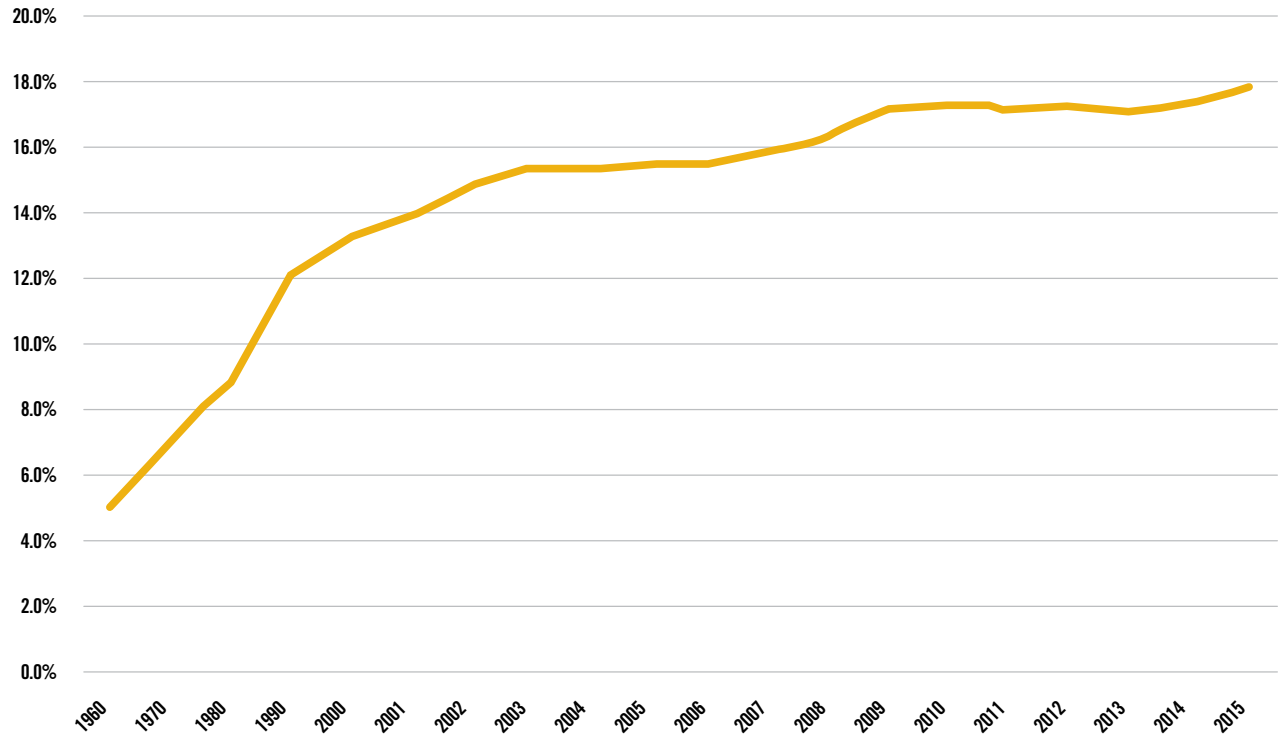
Providers are adapting to this new care model, but for patients, this change creates more opportunities for consumer control. In healthcare, unlike many consumer services, patients typically have limited autonomy in selecting providers and sometimes even treatment options. Changing payer models puts an emphasis on increasing consumer access in all levels of healthcare, and new technologies will continue to expand options for patients.

As patients pay more for healthcare, they demand more control over their care options. Technology has allowed customers to shop for the best or most cost-efficient option for many products and services. This type of consumer control has not been as common in the healthcare sector, but as patients prioritize cost and access, innovation will open up new avenues for consumers to choose their care.

The healthcare industry is naturally risk averse, with the "Do No Harm" ethos and the Hippocratic Oath placing additional measures on companies to prove safety, cost effectiveness, and reliability of new products in development. The healthcare industry is still largely dependent on insurance providers and payers to spur change in technology and business models, as innovation needs to be covered by insurance in order to be adopted.

For technology companies, the healthcare industry represents a growing market, but a difficult one. Navigating the complex system of providers and payers, and varying business models, can be difficult for those without experience or knowledge of the sector. For those companies that can get a foot in the door, there is opportunity.

NATIONAL HEALTH EXPENDITURES AS A PERCENT OF GROSS DOMESTIC PRODUCTS



Source: Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Statistics Group; U.S. Department of Commerce, Bureau of Economic Analysis; and U.S. Bureau of the Census.

KEY THEME #2

TECHNOLOGY OPPORTUNITIES

Value-based care and other healthcare trends are sparking new innovations in the industry, particularly around health IT, wearables, and patient data analytics. The growth in data spurred by these innovations will place an added emphasis on cybersecurity efforts to protect patient information.

Technology has long been the basis of improved healthcare services and is the cornerstone of increasing health outcomes for the entire population. The industry has been at times slow to adopt new innovation, yet remains at the cutting edge of human discovery and adaptation.

Health is a human-centered industry, and the interaction between humans and technology remains a key obstacle to the adoption of new innovations. Patient protection and privacy will continue to be a priority for new products being developed as healthcare providers tend to use technology companies with vetted and proven track records. New innovators, however, sometimes struggle to break into the market.

The industry's transition to value-based care has opened up several key avenues for innovation, and companies in Greater Phoenix are tapping into these new markets.

Despite this, the industry's transition to value-based care has opened up several key avenues for innovation, and companies in Greater Phoenix are tapping into these new markets. Health IT is a developing sector in the region and an important piece of next-generation healthcare. Growth in this sector was originally spurred by legislation at the federal level that mandates or encourages the use of electronic health records (EHR).

For large hospitals, there are only a few major EHR companies controlling the market, but the mass adoption of these record systems has created an industry of smaller firms targeting niche markets. In Greater Phoenix, WebPT provides EHR management for physical therapy practices, HybridChart focuses on specialists doing clinical rounds at hospitals, and Edaris is a records system used in urgent care centers.

EHR companies that can customize their tools for specific companies are able to gain a greater advantage in the EHR market. Additionally, ensuring the ability for these records to integrate with larger hospital network systems has been a key to growth, as specialists and private practice physicians have increasingly been acquired by major healthcare organizations.

For smaller firms, integration may be the key to adoption for their systems, but it remains a complex problem in the industry overall. Companies that control larger shares of the market have little incentive to make their systems easy for exchanging health records.

Health Information Exchanges (HIE) can help with this issue, but adoption in the region has been low. Increasing the amount of information exchanged through Arizona's HIE, Health Current (formerly Arizona Health-e Connection) is vital to increasing value-based care in the region and state. This system better allows ACOs and care coordinators to monitor patient information when they cross between different healthcare providers.

The exchange of patient information also allows for another growing trend in healthcare: patient data analytics. Insurance companies have long analyzed patient information in order to predict risk and set rates, but value-based care necessitates this analysis to predict health outcomes and assess the best treatment options.

Population health management involves analyzing the full spectrum of patient information to

ELECTRONIC HEALTH RECORDS LEGISLATION

The Health Information Technology for Economic and Clinical Health Act (HITECH) was a key piece of the American Recovery and Reinvestment Act of 2009, the economic stimulus package passed at the height of the recession. HITECH invested $19.2 billion in health IT. The legislation authorized $17.2 billion in incentives for the use of electronic health records and an additional $2 billion in grants and loans. The bill funded the Office of the National Coordinator for Health Information Technology and set a goal for complete adoption of EHR by 2014.[iii]

The Patient Protection and Affordable Care Act of 2010 mandated quality care improvements and incentivized new care delivery models. These reporting requirements under these programs helped to push more physicians and hospitals towards increased EHR adoption.[iv]

HEALTH INFORMATION EXCHANGES

Health Information Exchanges (HIEs) are the means by which electronic health information is shared between different providers. The use of HIEs allows for the compilation of a complete record of health data on an individual patient that goes beyond the information collected by one provider and can help avoid duplicate treatments, reduce hospital readmissions, and increase the overall quality of care. The Office of the National Coordinator for Health Information Technology monitors a nationwide strategy to establish statewide HIE agreements. These programs offer funding and resources to healthcare providers that join state HIEs.[v]

Health Current, Arizona's HIE, was formed in 2007 and has worked on several statewide strategies to grow HIE and EHR use in Arizona. Originally, focused on Medicaid providers, the HIE now integrates physical and behavior health information. They have 319 active participants, representing 8 million patients.[vi]

Courtesy of Media Production at the UA College of Medicine – Phoenix

identify groups of patients with similar conditions that could benefit from coordinated care across different providers.

Additionally, the integration of physical and behavioral health information offers a missing link in a patient's information, and connecting consumers with appropriate social and non-medical programs and services based on analytics of patient information can add further value. Companies like Health BI, Solera Health, and Catalytic Health Partners are pioneering this type of analysis in Greater Phoenix.

Predictive analytics has long been used in other industries, but healthcare adoption has been a sensitive topic due to privacy issues. Growing concerns regarding the security of patient information places increased burden on those managing and storing this information.

Cybersecurity has become a key growth sector in healthcare, and companies must navigate complex regulations surrounding protected health information. Greater Phoenix has become a growth market for cybersecurity firms, and the healthcare provider network provides a large customer base for these companies. Patient data protection will be a growing area of potential focus for cybersecurity operations.

Growth in the use of wearables may also provide another source of vital information in the future. Internet-connected sensors in medical devices can collect data on patients and send that information to cloud storage. Smartphone applications can provide consumers with a snapshot of this data in real time. This is part of a rapidly growing industry umbrella known as the internet of things (IoT), in which Greater Phoenix is becoming a technology leader and branded as *The Connected Place*.

IoT has the opportunity to radically change the healthcare industry.

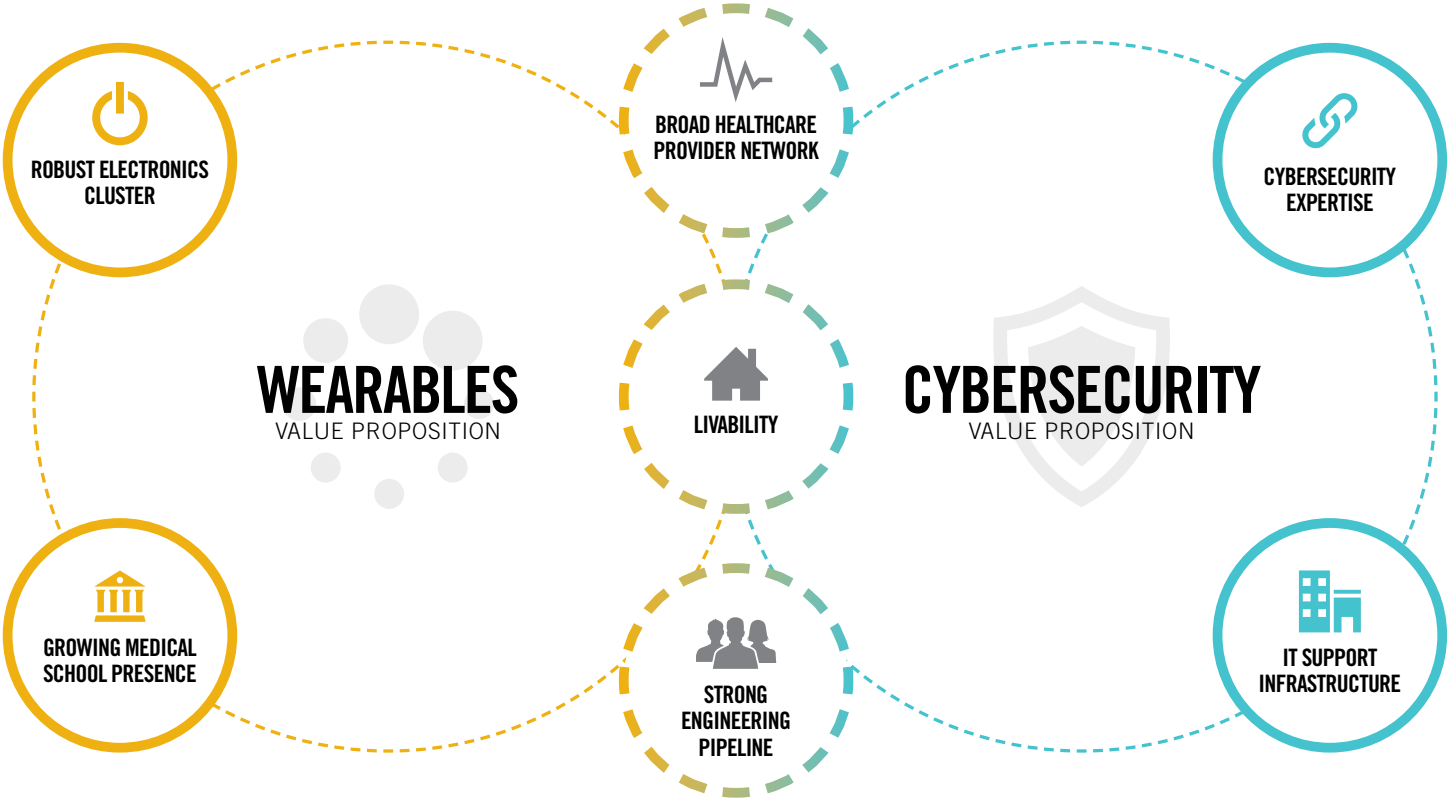
Dexcom, which recently opened a manufacturing facility in Greater Phoenix, makes a continuous glucose monitor that helps patients manage diabetes. Currently, their product is being used by patients with Type 1 diabetes, but in the future, this type of technology can combine with data on lifestyle habits to predict a vast array of health outcomes.

These technologies aim to improve consumer experience around health. Improving the accuracy of provider information, connecting users with providers and care coordinators through mobile applications, and making data easily accessible on these platforms are all ways in which providers and insurance companies are trying to increase customer engagement.

Some of these efforts fall into the growing sector of telehealth, which connects patients to providers through telecommunications systems. This technology can reduce healthcare costs by saving patients time and money in unnecessary doctor visits and providing critical access to rural regions.

These growth sectors around healthcare all use technology in new and different ways, but all place an emphasis on patient control, access to information, and improved outcomes. As the healthcare sector pushes forward with VBC and more patient-centric care, the need for new technologies that help connect patients with providers and health information will grow.

THE CONNECTED PLACE: ALIGNING GREATER PHOENIX'S INTERNET OF THINGS ASSETS



REGIONAL RECOMMENDATIONS

Greater Phoenix is well placed to capitalize on these trends in health technology, but the region faces challenges to growth in this industry. The large healthcare provider network is the cornerstone of innovation in this sector. The Flinn Foundation's Bioscience Roadmap released in 2002 provided a strategic plan for growing bioscience innovation in Arizona, but more work needs to be done to establish connections between the various entities capable of producing this innovation.

There are a number of resources for health tech entrepreneurs in the Greater Phoenix region, but networking these resources under one organization would help strengthen the innovation ecosystem and allow entrepreneurs to license new technology, find mentors, secure funding, and scale their workforce all in one place.

RECOMMENDATION #1:

Enhance the system for licensing and commercialization of health technology research, expanding the collaboration between universities, entrepreneurs and healthcare providers.

One of the key challenges in Greater Phoenix is the lack of research-focused healthcare institutions. Many of the major healthcare providers in the region are community health organizations that focus on care rather than research and innovation. This trend is changing with Mayo Clinic expansions and the new Mayo Medical school campus in the region. Additionally, the University of Arizona's new Phoenix medical school and the university's partnership with Banner Health are working to establish the right connections to foster increased research production.

Fostering this research is just one key step, however. Research produced at universities or hospitals does not always lead to a product that can be commercialized. Navigating the gap between early-stage research and product development is vital to growing the health tech market in the region.

Mayo Clinic works to develop technology in-house, for example, but also partners with companies with technical knowledge that need help navigating the healthcare sector. This model allows entrepreneurs to gain access to a difficult market.

Other healthcare organizations in the region are also looking to collaborate with innovators. Dignity Health's Innovation Group and Trinnovate Ventures (a subsidiary of Blue Cross Blue Shield) support, partner and invest in the development of new technologies.

Tech transfer programs at Arizona State University and the University of Arizona license technology developed at the universities to companies and individuals looking to turn that technology into a sellable product. These programs are important for health tech in the region as much of the major innovation in the sector takes place in the university or healthcare provider networks. Evaluating best practice examples of university tech transfer programs can enhance the existing programs in Arizona and increase access to innovative intellectual property and research in the state's universities.

There are several different models for successful research collaborations in other markets. In Boston, The Consortia for Improving Medicine with Innovation and Technology (CIMIT) brings together academic and medical institutions to create commercially viable products in the health technology space.

CIMIT works to identify unmet needs in healthcare and potential technology innovations that could address those needs. The collaboration between different institutions ensures that new technologies are supported with the right resources to go from research and development to commercial product. CIMIT's success relies on its ability to tap a wide variety of organizations, creating the type of collaboration that elevates all of Boston's healthcare industry.[vii]

The collaboration between different institutions ensures that new technologies are supported with the right resources to go from research and development to commercial product.

Leaders in Greater Phoenix should analyze and evaluate these different models to understand what systems could work in the region. The result could lead to providing innovators with the expertise from both the healthcare system and academic institutions. Additionally, it would allow new healthcare products to be vetted and tested in clinical settings, certifying their commercial viability.

RECOMMENDATION #2:

Build a mentorship program for new health tech entrepreneurs, ensuring that successful business leaders remain connected to the ecosystem and provide needed expertise regarding the healthcare industry.

The health tech industry in the Greater Phoenix region is young and entrepreneurial. There are many new and evolving startups in this space. These firms need outside support to help them navigate the intricate healthcare sector.

The complex nature of regulations and payer systems in healthcare makes it difficult for new firms to break into the industry. Developing a sustainable business model is vital to success, but can be difficult for those with strong technical skills, but who lack the business knowledge and experience growing a company. Companies with a diverse background of leaders, including technical, legal, and business-minded individuals, are better poised for growth.

Developing a mentorship program in Greater Phoenix would help foster the existing talent in the region, connect successful entrepreneurs with community resources and help grow a regional brand around health technology innovation.

Connecting newcomers with business leaders in the community that have already had success would allow for the spread of industry knowledge needed to further grow this industry in Greater Phoenix. Both Arizona State University and the University of Arizona have multidisciplinary programs aimed at encouraging and supporting young entrepreneurs, but programs that focus on the unique resource needs of those in the health tech sector would help support this industry's growth.
The Stanford Biodesign Innovation Fellowship offers a best practice example of mentorship that could be implemented here. The year-long program offers innovators in the health technology field the opportunity to network with mentors in a wide variety of areas, gaining knowledge in product development, intellectual property, regulation, finance, marketing, and other fields.

Although fellows design and develop a project throughout the program, the goal is not to produce new products but to provide innovators with the understanding of the product development process and allow them to gain experience and knowledge that they can use to create successful technologies in the future.[viii]

In San Diego, CONNECT provides resources to startups and mid-market companies, matching them with the appropriate leaders for mentoring and the right investors for funding. The organization provides an accelerator program for entrepreneurs, offers higher-level programming for more established firms, and advocates for policy changes aimed at supporting innovation and entrepreneurship.[ix]

In Orange County, California, OCTANe matches new technology developers with resources needed to advance their company and product, including business plan refinement, marketing, finance, legal, supply chain, overall strategic advice, and many other assets.[x]

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Courtesy of Media Production at the UA College of Medicine – Phoenix

RECOMMENDATION #3:

Leverage healthcare assets in the region to grow health technology capital, increasing investments from corporate development arms of existing firms and using established innovators to evaluate new technologies for potential angel and venture capital funding.

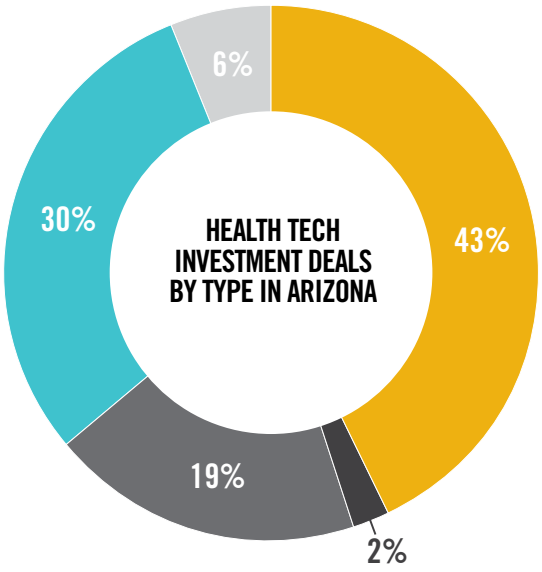
Securing venture capital (VC) and angel investment in the region is a challenge for many entrepreneurs in the health technology sector. Often, the investment amounts are small, causing companies to seek multiple investors that reduce their ownership or control of their firm.

According to Pitchbook, a comprehensive database of private equity and venture capital funding, angel investment in Arizona accounted for 43% of the investment deals in health tech companies from 2012 through May of 2017. However, this represented only 14% of the total investment funding in these companies over the same time period. Of the 56 angel investments, 27 were for less than $500,000. This is compared to venture capital funding – particularly later stage funding – where only 39 deals make up 62% of all funding. Seed stage VC funding for health tech companies in the region is almost nonexistent with only eight deals in the last five years.[xi]

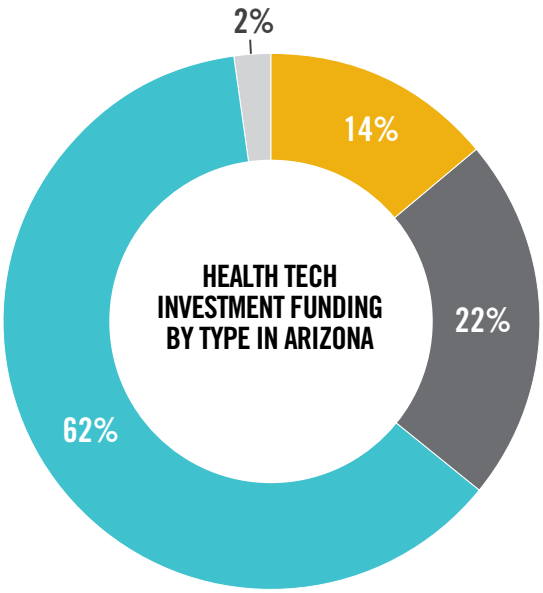
This highlights the difficulty many new entrepreneurs experience when trying to find the funding necessary to get their products off the ground. Angel investment deals tend to be smaller, and larger venture capital funding is harder to secure for companies that are past the early or seed stages. This can be a hindrance for new companies looking to get started in the market, as well as for those companies looking to grow.

Through mentorship, some entrepreneurs may be able to find innovative revenue streams that could mitigate their need for funding. However, some products require upfront investment. Investors in the region may not be aware of the complexities of the healthcare industry and which young firms have sustainable business models. Leveraging expertise in the region in evaluating new products could lessen some of the risk for investors and help them decide which products are worth more substantial investments. Increasing corporate involvement in funding in the region, whether solely for product evaluation or actual investment, will enhance the connection between healthcare organizations and the Greater Phoenix innovation ecosystem.

Additional efforts should be made to secure more venture capital funding in the region. Showcasing the region's growth in key areas of health technology will help to establish Greater Phoenix as a key market for investment.



ANGEL	43%
FOUNDERS, FRIENDS & FAMILY FUNDING	2%
EARLY STAGE VC	19%
LATER STAGE VC	30%
SEED ROUND	6%



ANGEL	14%
FOUNDERS, FRIENDS AND FAMILY FUNDING	<1%
EARLY STAGE VC	22%
LATER STAGE VC	62%
SEED ROUND	2%

Source: Pitchbook Data Inc 2012 - 5/31/2017

ANGEL INVESTOR

A high net worth individual making independent investments in firms.

VENTURE CAPITAL (VC) FUND

A fund managed by a professional investor who manages investments in firms. Funds are consolidated from multiple sources, including corporations, pensions, foundations, and individuals.

SEED STAGE FUNDING

The initial investments in a firm used to support the business in the early stages of product and technology development.

Courtesy of Media Production at the UA College of Medicine – Phoenix

RECOMMENDATION #4:

Produce and attract a quality technical workforce in order to help healthcare technology companies grow and scale in the Greater Phoenix region.

Success stories are vital to growing an entrepreneurial ecosystem in the region. Companies that succeed here provide knowledge and expertise to new firms and also provide external branding for Greater Phoenix as a tech hub.

The challenge for many successful technology firms in both medical devices and health IT is workforce. Without an existing brand, health tech companies that succeed and want to scale have trouble finding experts in the field. Many must look outside of the region to attract the talent they need.

An adequate technical workforce is necessary to keep thriving firms in the region and allow new firms to grow. Fostering existing talent in the community will not only help firms find workers here, but it will help cultivate the tech ecosystem, making it easier to attract high-level individuals to the market.

Information technology, specifically cybersecurity, is becoming a growing technical field in the state, with focused programs from Arizona State University, the University of Arizona, Grand Canyon University, the University of Advancing Technology, Maricopa Community Colleges and Embry-Riddle Aeronautical University.

Leveraging these programs to advance IT expertise and ensuring these programs align with healthcare needs in this space will help elevate the region's reputation. Currently, connecting the technical talents in the region with healthcare knowledge is a challenge, due to the interdisciplinary nature of the health technology field.

Greater Phoenix is growing its healthcare expertise with the University of Arizona School of Medicine Phoenix campus, the Mayo Clinic Medical School campus in Scottsdale, the new Creighton Medical School Phoenix campus in partnership with Dignity Health St. Joseph's Hospital and the Glendale campus of Midwestern University. The partnership between Arizona State University and the Mayo Clinic is growing, with an existing Science of Healthcare Delivery certificate program and plans for a Health Solutions Innovation Center near the Phoenix Mayo Clinic hospital. This partnership highlights increased regional collaboration, but continued efforts should be made to promote connections between software and hardware engineering academic programs and the medical programs in the region.

CONCLUSION

The healthcare industry in the United States is at a critical point in its evolution. As healthcare costs grow, consumers and regulators are pushing for better outcomes. The ongoing transition to value-based care empowers patients as they require more control over their health.

Health technology can provide the tools to increase the quality of care that patients receive. Through evolving health IT programs, patients can access their information through smartphone applications and connect with doctors in real time.

Health IT allows providers and insurers to collect more data, expanding opportunities for patient analytics and population health management; a tool that can help predict outcomes and produce more quality care. Wearables that continuously monitor health information will further this trend, providing more detailed data on individual habits that can help patients make better decisions. All of this information will increase the need for data security to protect patient information.

These trends create several opportunities for the Greater Phoenix region. In order to capitalize, the region must invest in technology development, entrepreneurship and a talented workforce. By tackling some of the challenges that keep new and existing firms from growing in the region, Greater Phoenix can become a leader in innovative health technology, changing the way business is done while also making the world healthier.

ENDNOTES:

[i] JobsEQ, 2016 (annual averages). (Healthcare includes Ambulatory Health Care Services, Hospitals and Nursing and Residential Care Facilities); MAG Employer Database

[ii] JobsEQ, 2016 (annual averages). (Medical Device Manufacturing includes Electromedical and Electrotherapeutic Apparatus Manufacturing, Analytical Laboratory Instrument Manufacturing, Irradiation Apparatus Manufacturing, Surgical and Medical Instrument Manufacturing, Surgical Appliance and Supplies Manufacturing, and Dental Equipment and Supplies Manufacturing. Information Technology includes Software Publishers, Custom Computer Programming Services, and Computer Systems Design Services and is not limited to healthcare related employment in these sectors due to availability of data.)

[iii] Steinbrook, Robert. "Health Care and the American Recovery and Reinvestment Act," The New England Journal of Medicine. March 12, 2009.

[iv] American College of Emergency Physicians, "Health Information Technology," http://biodesign.stanford.edu/programs/fellowships/innovation-fellowships.html.

[v] HealthIt.gov, "Health Information Exchange," https://www.healthit.gov/HIE.

[vi] Health Current, "History," https://healthcurrent.org/about-us/missionhistory/; Health Current, "Health Current Statistics," https://healthcurrent.org/hie/network-by-the-numbers/.

[vii] CIMIT, "About", http://www.cimit.org/about .

[viii] Stanford Byers Center for Design, Biodesign Innovation Fellowship, http://biodesign.stanford.edu/programs/fellowships/innovation-fellowships.html.

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