



CHINA HEALTHTECH LANDSCAPE

FY2018

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ALPHA



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We are pleased to share the Galen Growth Asia FY2018 China HealthTech Landscape report, a unique go-to-reference key trends report on China digital health ecosystem.

No longer experiencing double-digit economic growth, China's economy has settled into a respectable but lower growth rate range between 6 to 7% annually. As the central planners prescribed, the economy is now shifting from quantity growth to higher quality growth.

The increasing willingness to embrace foreign technology, on their terms, combined with the lower bureaucratic barriers, is creating significant opportunities for investment.

China's government expect integrated digital solutions to improve service levels, enhance trust with patients and facilitate communication among professionals for diagnosis and consultation.

More money available to spend on healthcare which is leading the healthcare industry to diversify and offer more opportunities for niche products, services and smaller businesses.

China represents the lion share of HealthTech investment in Asia Pac, raising more than US\$5.6B in 2018, or 85% of total funding in the Asia Pac region. With over 150 deals, China's digital health ecosystem is in rude health.

This report is powered by HealthTech Alpha, a Galen Growth Asia (GGA) solution, the most advanced HealthTech analytics solution in Asia Pac, continuously curated, verified and updated.

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INTRODUCTION TO CHINA



CHINA ECONOMIC DEVELOPMENT

China is in a dramatic transition

- No longer experiencing double-digit economic growth, its economy instead has settled into a respectable but lower growth rate range between 6 - 7% annually. As the central planners prescribed, the Chinese economy has shifted from quantity growth to higher quality growth in recent years. Prior to the early 2010s, China has been long known as the world's low-cost manufacturing site for inexpensive products such as clothing and consumer electronics
- In recent years, however, China has been cultivating its homegrown innovation and technology capacity, as it is no longer simply content with the label of being the world factory in an export-oriented economy. The key strategy for China to achieve this goal is the "Made in China 2025" initiative
- The major goal of this initiative is to transform the Chinese economy to focus on more advanced, high value-added manufacturing sectors such as robotics, aerospace, and energy efficient vehicles.
- China is striving to reinvent itself from CTC (Copy to China) to CFC (Copy from China)

CHINA ECONOMIC DEVELOPMENT

The strategy is meant to elevate productivity growth and the outputs of a high value-added production

- China's grand ambition has borne fruit
- In the summer of 2016, China finished building the world's largest single dish radio telescope, the Five hundred meter Aperture Spherical Telescope (FAST), in Guizhou province
- With its technological prowess, China now boasts about it so called "New Four Inventions of China" – High speed rail, Mobile payment systems, online shopping, and a bike sharing scheme
- China is also developing a 5G network, the next generation of mobile Internet connectivity, which could place it at the forefront of building technologies and setting industry standards. These examples of further demonstrate China's ambitious efforts at a restructuring its economy
- On the policy front, the strategy is meant to elevate productivity growth and the contents of a high value-added production in the economic system in light of a rapidly ageing population and the disappearing population dividends in the Chinese society

CHINA ECONOMIC DEVELOPMENT

China has intensified its efforts towards further internationalisation in service, currency and financing in global markets

- In addition to industrial upgrades in the domestic setting, China has intensified its efforts toward further internationalisation in service, currency and financing in global markets.
- The one belt, one road initiative attempts to bind the domestic and regional development by connecting with international emerging trade ports and markets directly. It drives the economic growth of the cities along its route domestically and globally
- As an example, Zhengzhou (#4 large city in China) in the Henan province, due to its pivotal location, has been a vital transportation node. It's economy has been booming in recent years.
- Foxconn established a plant there in 2011 mainly dedicated to iPhone production and is responsible for the manufacturing of roughly half of the world's iPhones. More and more multinational corporations have set up operations there to take advantage of the logistics and benefits provided by the city.

CHINA KEY METRICS

China's health system directives to address its population health need to accelerate to catch up with its dramatic economic transformation

ECONOMIC	CHINA
GDP Growth (%)	6.7
GDP per capita (\$,000s)	8.1
Population (pax millions)	1379
Unemployment (%)	3.8
Internet Penetration (%)	56
eCommerce Penetration (%)	46
Wearable Penetration (Adults)(%)	23
Social Media Penetration (%)	57
Mobile Phone Penetration (%)	78
Health Insurance Penetration (%)	5
FDI (% of GDP)	2.18
Global VC Funding Share (%)	47

HEALTH	CHINA
# of doctors per 1000	1.8
# of nurses per 1000	2.3
# of hospital beds per 1000	4.2
Birth per 1000 p.a.	12.2
Life expectancy	75.7
Aged Population (65+)(%)	9.5
Health expenditure (GDP %)	5.5
Genomics database (pax millions)	40
CV prevalence	20%
Diabetes prevalence	11%
Pre-diabetic prevalence	31%
Cancer prevalence	6.5%

Source: OECD, WHO, IMF

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CHINA HEALTH
CONTEXT



THE CHINA HEALTH CONTEXT

China possesses an extremely uneven distribution of medical and healthcare resources

- China's health institutions are divided into 3 tiers, each designated for differing grades of diseases and injuries, with insurance covering 95% of the population since 2013
- Sharing records and information across China's tiered healthcare system still needs to be fully developed. The government struggles in this area and needs assistance from experienced companies
- China bears an extremely uneven distribution of medical and healthcare resources. 80% of Chinese reside in regions where medical and healthcare resources are not well developed, and 80% of health resources in China are in big or mid-sized cities
- Expected healthcare spending in 2020 is USD 1.2 trillion (RMB 8 trillion), doubling from 2015. This figure is expected to double again by 2030
- China's population of 60+ year old reached 231M in 2016, creating huge strain on the healthcare system. 70% of elders aged 60+ suffer from at least one chronic disease which requires more care than they are receiving, but have no acute needs for visiting a hospital

THE CHINA HEALTH CONTEXT

The increasing willingness to embrace foreign technology, combined with the lower bureaucratic barriers, is creating significant opportunities for investment

- Private hospitals are attracting an abundance of investment. Combined with the increased willingness to embrace foreign technology, the lower bureaucratic barriers, ability to spend and diversified offerings, private hospitals offer promising B2B opportunities for technology providers
- Dedicated aged care institutions are not as culturally relevant in China, yet their need is increasingly accepted. The huge demand for adequately trained aged care professionals and efficient processes and solutions offers B2B opportunities for technology providers
- Foreign corporates should aim to develop applications for hospitals and other medical institutions by providing solutions that are easy to integrate with Chinese systems. Catering to the online regulations and maintaining the dialogue with patients are amongst the biggest challenges for medical professionals
- Elderly-focused products and services targeting hospitals, health service providers or professionals (B2B) are more likely to show greater adoption

THE CHINA HEALTH CONTEXT

China's millennials are much more open to trying out new solutions originating from western markets and likely to encourage their parents or other relatives to use innovation

- Technologies might also aim to appeal to millennials who are much more open to trying out new solutions from western markets and likely to encourage their parents or other relatives to use innovation that might help maintain their health or screen diseases
- Many elderly Chinese do not have pensions due to the manual nature of their work. Private pension ratio accounts for only 4% of China's GDP
- China's big technology companies involved in health such as the BAT are suitable commercial partnership targets for foreign corporates as they are open to foreign technologies and have scale

CHINA HEALTHCARE: KEY CHALLENGES

Integrated digital solutions are likely to improve the service level, enhance trust with patients and facilitate communication among HCPs for diagnosis and consultation

- Public hospitals are tiered in grades and levels, the highest of which is 3A. The latter are bigger, better equipped and attract the best doctors. Only 4% of China's hospitals are rated 3A
- Extremely uneven distribution of medical and healthcare resources. 80% of Chinese reside in regions where medical and healthcare resources are not well developed, and 80% of health resources in China are in big or medium-sized city
- Strong lack of trust sees patients flock to higher rated hospitals. This often leads urban hospitals are brimming with patients and hamstrung by inefficient Administration.
- Since 2016, China has been attempting to rectify this with various reforms, to little avail. Systems like Beijing's unified appointment registration system (2011) are still compromised by scalpers who will wait days to get an appointment ticket
- Current reform is centered around creating a hierarchical medical system. Huge inefficiencies are caused by patients going to tertiary facility as a first point of contact.

CHINA HEALTHCARE SNAPSHOT: SCALPERS

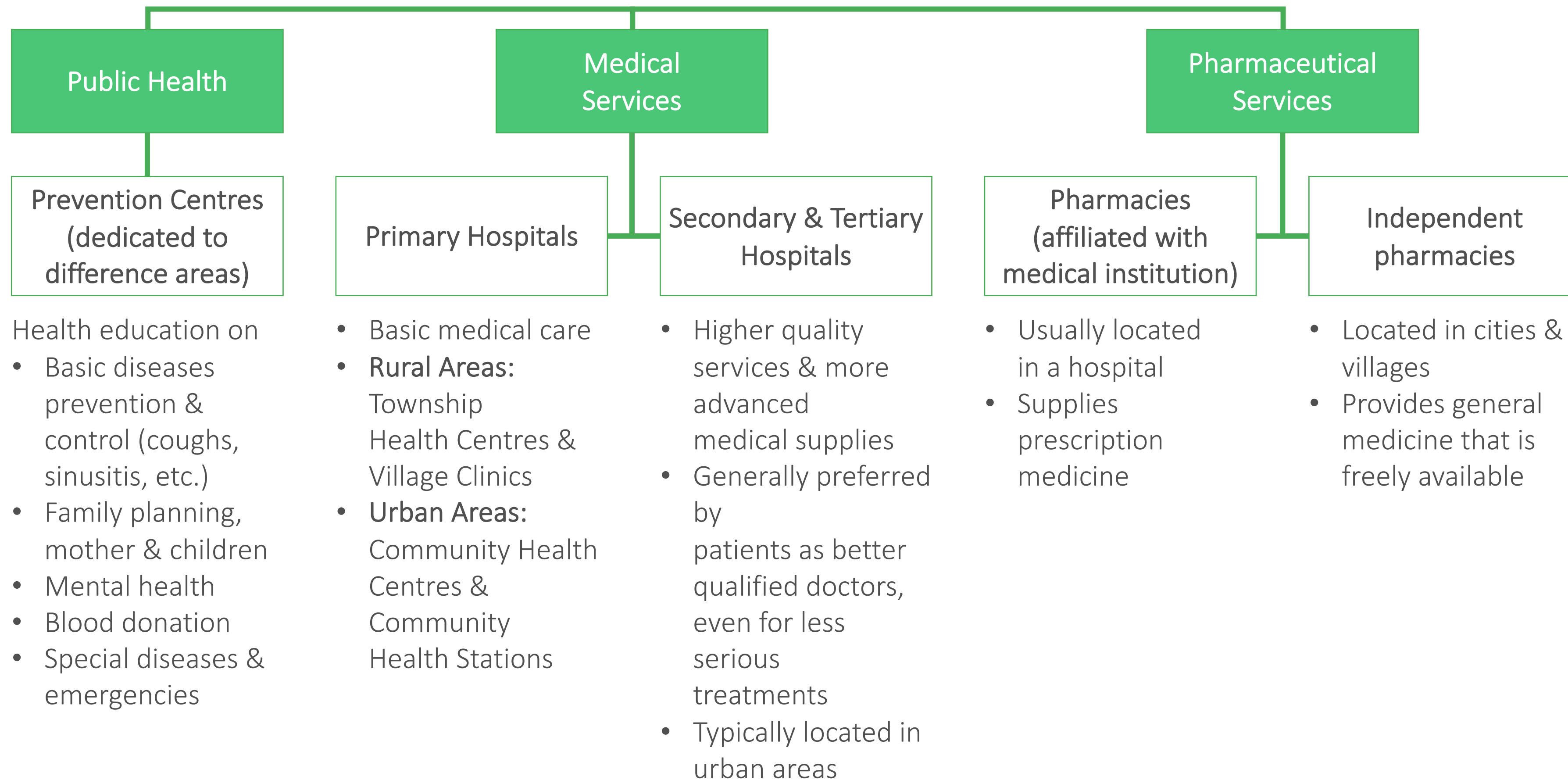
Some Chinese make their living this way charging RMB 850 (~USD 125) per ticket – almost 3x face value



- Often only a quarter of this amount is the income for the professional scalper with the rest of the profit going to hospital insiders will help secure tickets. Tickets from scalpers can get patients in front of a doctor in two days compared with a wait of up to 2 weeks.
- The current lack of general practitioners is key to this – on guidelines that every 10,000 people need three general practitioners, China's supply is short 219,200. The government has set a target of registering every household with a family doctor by 2020.

CHINA HEALTHCARE SYSTEM

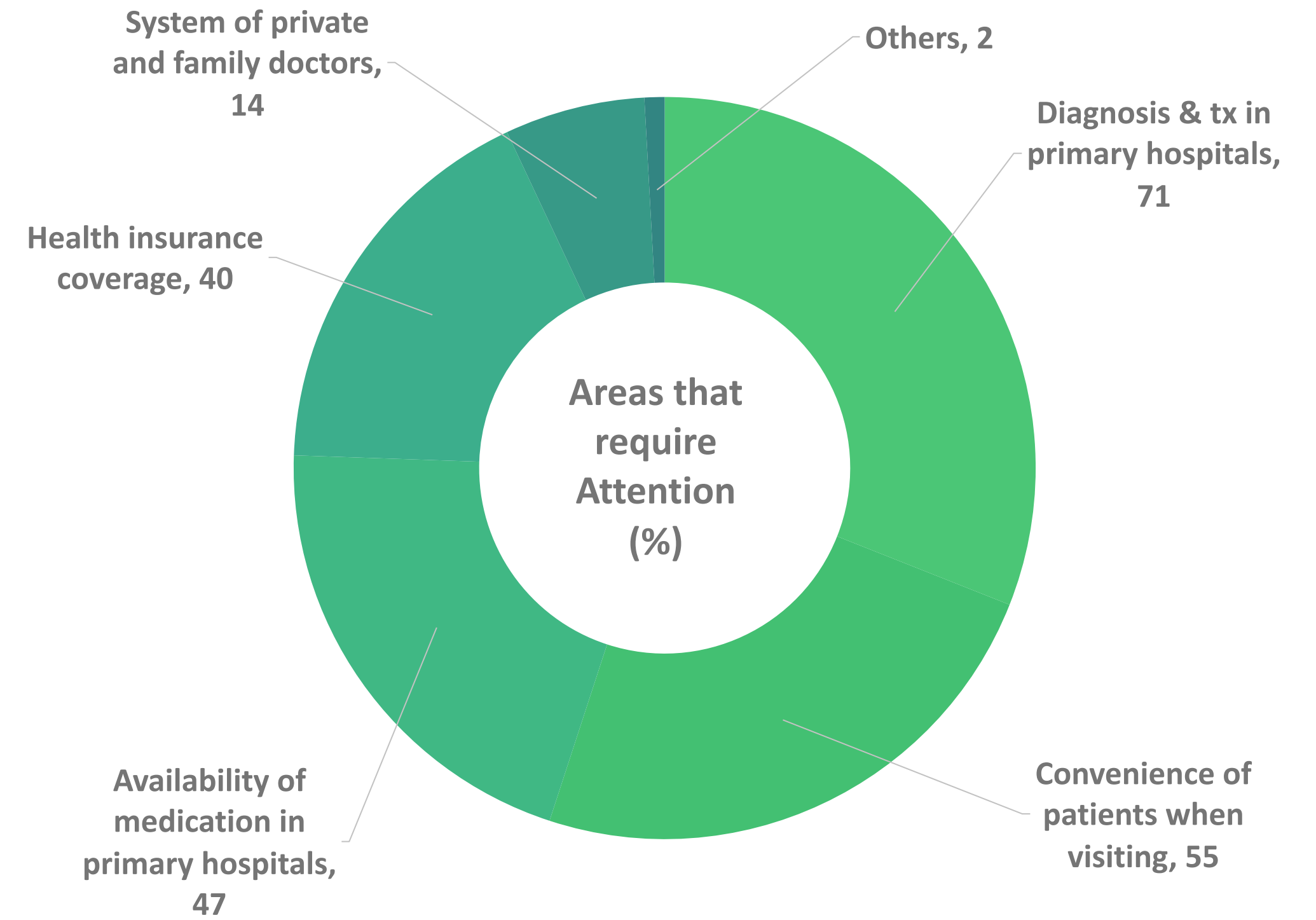
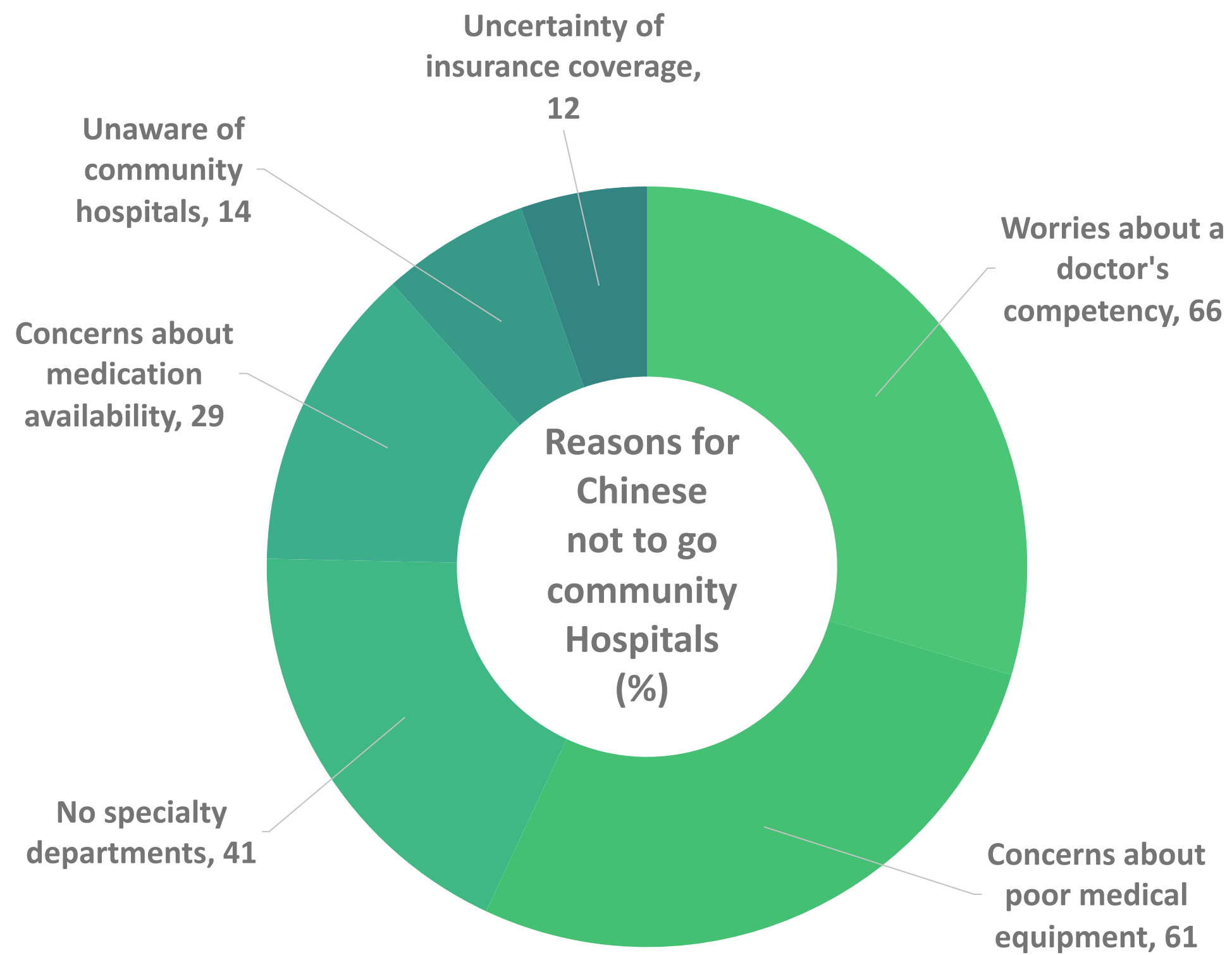
Big data companies are seen as key to the development of a record sharing process across China's tiered healthcare system



In an attempt to make healthcare distribution in China more accessible across regions and to relieve the top hospital from becoming too crowded, a system was introduced in 2006. China's health institutions are divided into three tiers, each designated for differing grade of diseases and injuries. With insurance covering and 95% of the population by 2013,

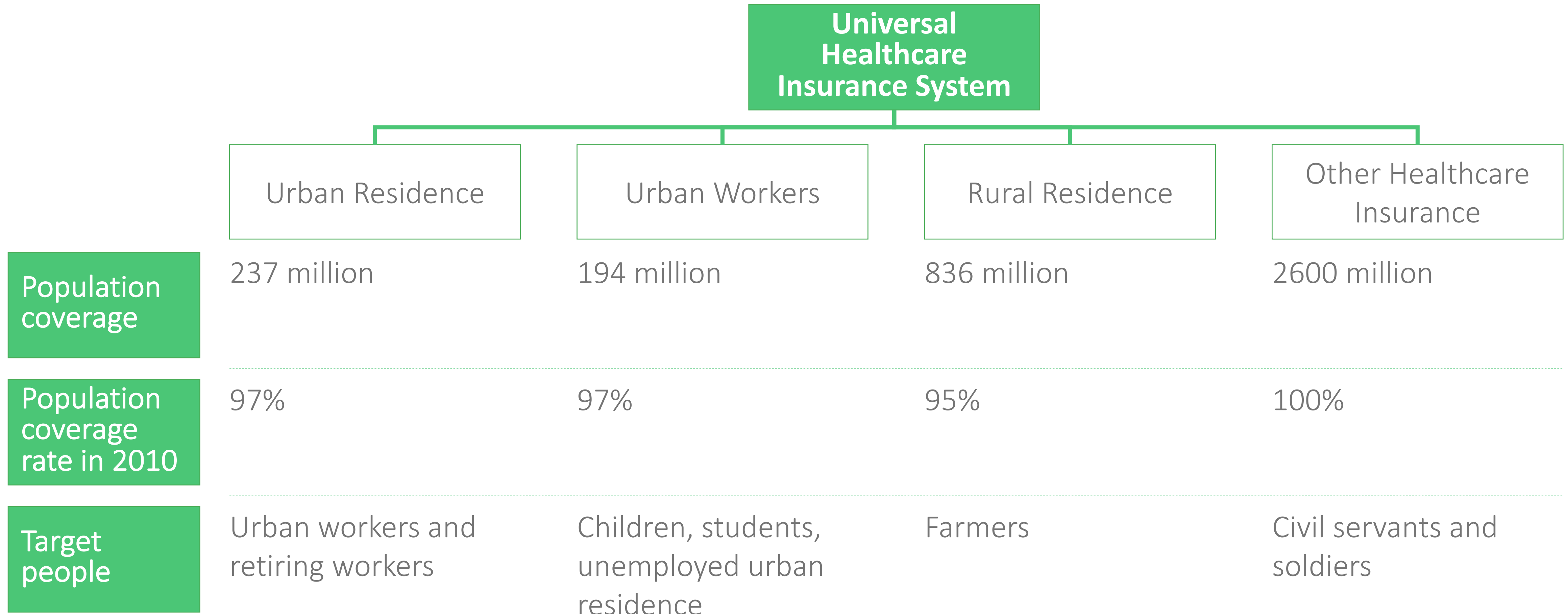
CHINA HEALTHCARE: PATIENT PERCEPTION

Nearly 70% of Chinese patients prefer to visit tertiary hospitals first with only 8% saying they would choose a community hospital for initial diagnosis

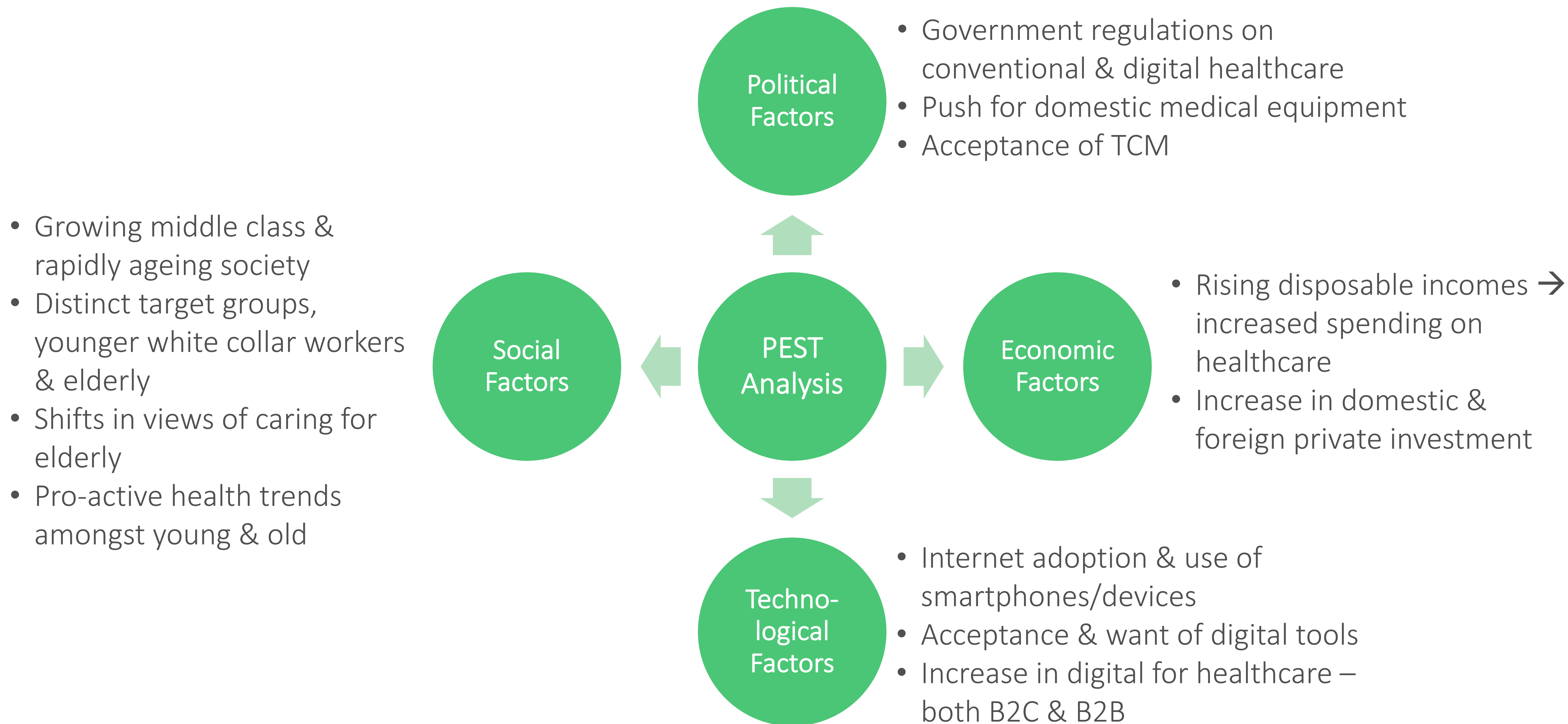


CHINA HEALTHCARE: UNIVERSAL HEALTH INSURANCE

China successfully achieved universal health insurance coverage in 2011, representing the largest expansion of insurance coverage in human history - 95% insured, compared with less than 50% in 2005



CHINA HEALTHCARE: PEST ANALYSIS



CHINA HEALTHCARE: POLITICAL CONTEXT

China's healthcare ambitions are a core pillar to its political strategy

- The Chinese government has the ultimate say over regulations and reforms
- The government has vowed to register every household in China with a family doctor by 2020
 - This is particularly applicable to rural families as they are less likely to visit primary hospitals and due to the lack of general practitioners in China
- China appreciates it has ballooning elderly population that is increasingly under-served by the public health system, so has introduced regulations for private and joint ventures to fill the gap
- China's Cyber Security Law introduced in June 2017 means, amongst other points, that foreign businesses operating in China will need to store data in China, having significant consequences for digital health providers

- Push for domestic medical equipment
- The Chinese government is supporting the rise of domestic medical device makers through supply-side reform. Currently the high end medical device market is dominated by foreign brands ~80-90%
- Current 5-year health plan seeks to have 50% market share for domestically produced high end medical devices in public hospitals by 2020 with 70% share by 2025. The push for domestically produced medical devices is across all sectors
- Tax breaks for Chinese medical devices manufacturers includes R&D (75% for SMEs) and lower lab costs accompanied changes to the regulatory system to foster innovation
- Acceptance of TCM
- In July 2017, a law went into effect which aims to place TCM on equal level with science based Western medicine.

CHINA HEALTHCARE: SOCIETAL FACTORS

China faces a significant health burden with its 65+ population exceeding 330M, 28% of its children obese by 2030 and approximately 500M Chinese pre-diabetic (2016)

- Tradition of caring for parents in old age
- China has a strong tradition of caring for parents in old age, however urban migration is causing children and parents to live apart
- This growing issue is compounded by the one-child policy. Now there is more pressure on individuals to care for parents whereas in the past this responsibility was shared amongst siblings/relatives
- Aged Care Plans & Targets for 2020
- Implement a national “90-7-3” (90% of elderly cared at home, 7% at community care centres & 3% at nursing home)
 - 90-6-4 for cities like Beijing & Shanghai
- Increase beds from 5M to 8M
- Increase workforce from 1M to 10M
- The scale of the targets set reflects the importance of the needed reform

- Shifts in opinions on elderly care
- Elderly care homes are not as culturally relevant in China as in the West:
 - In 2016, there were 28k aged care institutions for a population of 230M (aged 60+)
- 5% of elderly actively wish to move into elderly homes. However ~70% would understand if their children sent them away
- 43M Chinese older than 65 are widowed, divorced or unmarried. Widely dispersed families contribute to elderly’s solitude, resulting in consistently rising suicide rates amongst the rural elderly population in the past 10 years
- Since 2013, children are required by law to pay frequent visits and provide spiritual and financial support for parents older than 60 years old
 - Bigger cities such as Shanghai announced impacts on children’s credit ratings
 - China's 1.4 billion people are getting "social credit" scores that rate their trustworthiness — and determine their place in society: <http://theweek.com/articles/752442/chinas-black-mirror-moment>

CHINA HEALTHCARE: ECONOMIC FACTORS

More money available to spend on healthcare is leading the healthcare industry to diversify and offer more opportunities for niche products, services and smaller businesses

- Rising disposable incomes means increased spending on healthcare
 - China's upper middle-class income group (\$10k - \$30k) will expand from 7% of the population in 2015 to 20% in 2030. High income individuals (above \$30k) which represent 2.5% of the population in 2015 will grow to 15% by 2030
 - Rising disposable income and the expanding middle class will see increased spending on healthcare and in particular specialty care. Expected healthcare spending in 2020 is US\$1.15B (RMB 8T), doubling from 2015 and expected to double again to \$2.3B (RMB 16T) by 2030
 - Average China household saves 30% of disposable income
 - A prominent reason to save is to cover healthcare costs later in life
 - Dissatisfaction with public services, coupled with increasing means to pay for alternatives is driving new options such as private hospitals and medical tourism
 - As of June 2017, some 7M Chinese have fallen into poverty due to costs related to medical treatment
- Increase in domestic and foreign private investment
 - China's growth and influence on the healthcare industry also means there will be an increase in domestic and private investment
 - Further detail on page/slide 22

CHINA HEALTHCARE: TECHNOLOGICAL FACTORS

The population's adoption of technology to purchase services has seen the country become a global e-commerce powerhouse

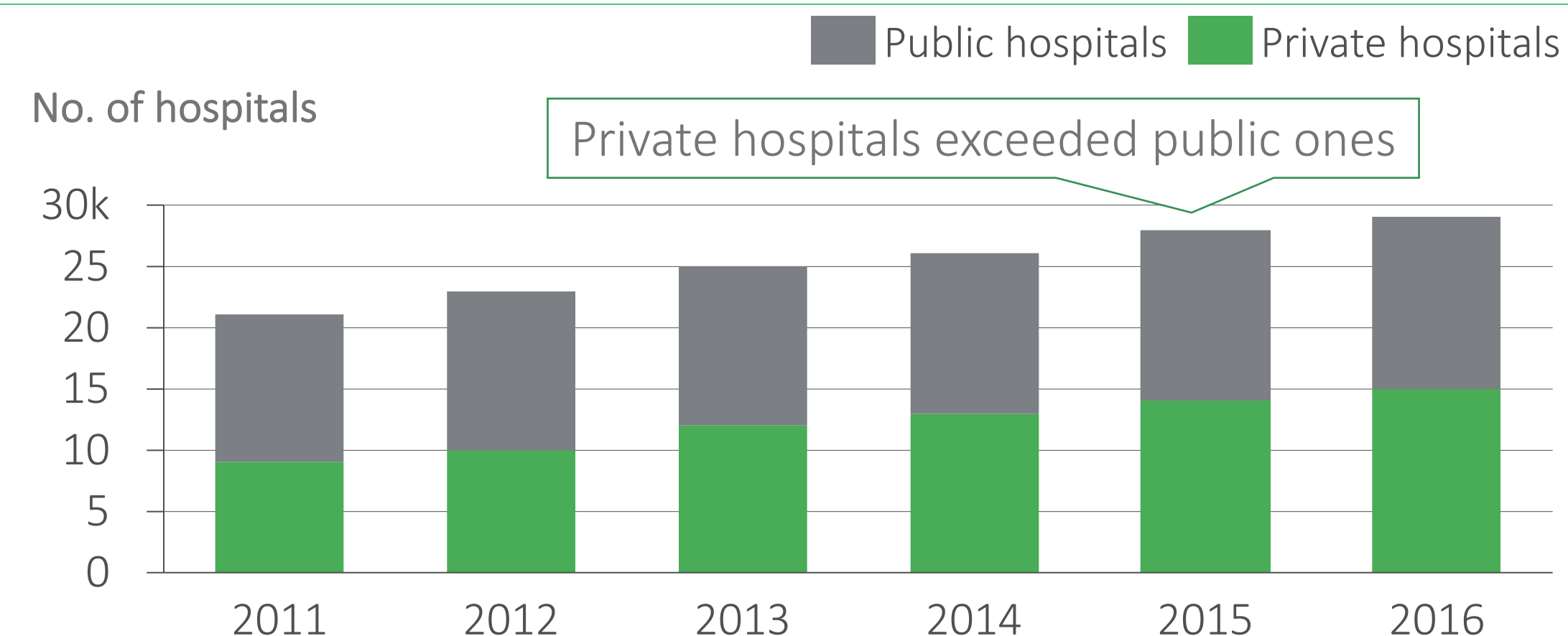
- Internet adoption & use of smartphones / devices
- China has over 690M internet users as at 2017 - ~53% of the population, with internet penetration exceeding 50%
- Technology adoption is most prevalent amongst China's youth: ~76% of internet users are less than 39 years of age
- The majority of internet users (~95%) access it through mobile devices, primarily smartphones
- Chinese consumers now make over 55% of their online purchases on their mobile phones, which is expected to exceed 70% by 2020
- Increase in digital for healthcare for B2C & B2B
- While most companies aside from the BAT are playing catch up on the digital front in China, consumers and employees are incorporating digital into their work lives
- China's mobile healthcare market has grown ~44% from \$430M (RMB 3B) in 2014 to \$625M (RMB 4.3B) in 2015

- Acceptance & want of digital tools/apps
- Chinese are familiar with using their smartphones for services like paying to book a doctor, ordering food, etc.
- Mobile transactions accounted for \$5.5T in 2016
- With 50x more online transactions in China vs the USA, app and services monetisation based on micro-payments is very realistic
- China now has a social credit system that serves as a reputation reference and takes into account a citizen's online activities
- Chinese concerns for digital security are not comparable to Europeans

CHINA HEALTHCARE SNAPSHOT: PRIVATE INVESTMENT

Private investment into the hospital infrastructure in China is growing the number of private hospitals to exceed public ones

- The awareness of China's impending health care need coupled with the government realization of its inability to handle it has created a flurry of spending and private investment. This is the setting of the scene for an increasing number of B2B opportunities.
- Independent medical examinations in China grew 54% between 2010 and 2014 reaching revenues of \$670M (RMB 4.7B). Despite the high growth, private examination providers only cover 2.5% of the market, compared to 35% in the USA. According to the 2017 Philip future health index, China has a lower density of skilled medical professionals compare to 19 other countries with 31.5 per 10,000 people.
- Despite private hospitals accounting for half of the hospital's, there are often smaller facilities so that 80% of medical professionals preferred to be employed in the public sector.
- The better doctors often head to the renowned tier 3 public hospitals due to higher pay rates, better career prospects and several bureaucratic barriers to practicing across multiple facilities.



Sources: Boston Consulting Group, China national health & Family Planning Commission

Note: 2016 data only included data up to November

- In 2015, only 2% of China's doctors applied for permits to work in more than one facility.
- 2017 healthcare reform is launching a plan to lessen these restrictions and make the quality of doctors more even.
- The government's plan to support private hospitals is particularly notable. Public hospital bed per 10,000 patients are planning to increase 9% to 3.3 by 2020 while private hospital beds objective to grow 290% to 1.5 per 10,000



CHINA HEALTH POLICY



HEALTHY CHINA 2030

Building on Healthy China 2020 which centered primarily on chronic disease prevention, China announced Healthy China 2030 in 2016

- In October 2016, after President Xi Jinping and Premier Li Keqiang's relevant theme speech at China National Health and Well-being conference in Beijing,² China National Health and Family Planning Commission issued the Healthy China 2030 Planning Outline,³ the most recent comprehensive framework on the goals and plans of its healthcare reform.
- The strategic theme of Healthy China 2030 is “co-building, sharing and health for all”⁴

- The project aims to achieve key goals by 2030:
- Continuous improvement in people's health conditions
- Raise life expectancy to 79
- Effective control on main health-endangering factors
- Substantial improvement in health service
- Notable expansion in health industry
- Establishment of inclusive health-improving regulatory systems

- Specific actions include:
- Enhancing health education in schools
- Promoting healthy lifestyle and encouraging exercise
- Enhancing universal healthcare access
- Improve service quality of healthcare providers
- Special attention to the elderly, women, children and disabled
- Reforms in health insurance, pharmaceutical and medical instruments systems, etc.^{5,6}

Note: See Annex B for references

HEALTHY CHINA 2030 VISION FRAMEWORK

The strategic theme of Healthy China 2030 is “co-building, sharing and health for all”

Goal				
Put health on the priority list of development to a strategic position; promote the concept of health in the whole process of public policy implementation; enable everyone to be involved health and everyone to share health care services; focus on the health of all the people all their life in China				
HC 2030: China’s vision for healthcare				
1. Health level	2. Health life	3. Health Services and Health Security	4. Environmental Health	5. Health Industry
Principles				
1. Health level	2. Health life	3. Health Services and Health Security	4. Environmental Health	5. Health Industry
The 13 Core Indicators				
A. The average life expectancy B. The mortality rate of infants C. The mortality rate of children below 5 years of age D. The mortality and mortality E. The proportion of those meeting the national physique determination standard among urban and rural residents	A. The level of health literacy among residents B. The number of people taking part in physical exercise	A. Premature mortality as a result of major non-communicable diseases B. The number of registered doctors per 1000 residents and registered nurses per 1000 residents C. The proportion of personal health spending in the total health expenses	A. Good air quality rate if all cities at prefecture level or above B. The rate of surface water quality better than	A. Then total investment scale of health services

HEALTHY CHINA 2020

A program to provide universal healthcare access and treatment for all of China by 2020, mostly by revised policies in nutrition, agriculture, food, and social marketing

- In October 2009, Chen Zhu, head of the Ministry of Health, declared the pursuit of Healthy China 2020, a program to provide universal healthcare access and treatment for all of China by 2020, mostly by revised policies in nutrition, agriculture, food, and social marketing
- Much of the program centers on chronic disease prevention and promoting better lifestyle choices and eating habits. It especially targets public awareness for obesity, physical inactivity, and poor dietary choices
- Healthy China 2020 focuses the most on urban, populous areas that are heavily influenced by globalization and modernity
- Additionally, much of the program is media-run and localized and concentrates on change through the community rather than local laws. Many of the aims of Healthy China 2020 are concentrated to more-urban areas under Western influences. Diet is causing obesity issues, and an influx of modern transportation is negatively affecting urban environments and thus health



CHINA HEALTHTECH CONTEXT



THE CHINA DIGITAL HEALTH CONTEXT

Explosive growth and ground-breaking digital transformations are underway in China's enormous healthcare market

- The modernisation of China's healthcare system continues at a blistering pace in a country containing almost a fifth of the world's population, with demand on the overburdened infrastructure fueled by rising numbers of the ageing, and those with chronic diseases and co-morbidities.
- The UN estimates that within the population of 1.3B, about 83M live with a disability – more than 3x the total population of Australia!
- Over 140M people are aged over 65, a figure projected to grow to 230M by 2030. Of those aged over 50, about 50% of men and 30% of women are smokers.
- Digital solutions are instrumental in accelerating the shift of healthcare in China. China is currently overstretched healthcare system requires the role of technology to alleviate pressure.
- As mobile and Internet based technologies are developed and deployed to improve health care delivery, China's healthcare market is expected to expand from \$3 billion in 2014 to \$111 billion in 2020
- Healthcare in China will be transformed. Every step will be affected: how patients are diagnosed, treated, and managed; how physicians in hospital operate; how pharmaceuticals and medical devices are supplied and used

CHINA DIGITAL HEALTH CONTEXT

Changing regulations around Internet hospitals ensure a safer and more reliable service and along with the need for better service quality in medical care, patients increasingly turned to digital solutions

- Since 2006, China has implemented an hierarchical medical system, to encourage consumers to seek medical attention in primary health (PHC). It is not yet yielding results with PHCs receiving 55% of outpatients in 2016. Meanwhile the percentage of patients are going to tertiary hospitals continues to grow.
 - The Beijing Home Care Services Regulations was introduced in 2016, incentivizing enterprises and social organisations to actively participate in home care services.
 - In 2017, China National Health and Family Planning (NHFPC) set a goal to extend the family doctor services to 85% of Chinese cities (ie 30% of the urban population and 60% of priority groups such as elderly, pregnant women and patients with chronic diseases.)
 - Health and care services are now interwoven with Internet industries, requiring the following documents and licensing qualifications:
 - Internet Drug Information Service Licence
 - Internet Drug Trading Service Licence
 - Internet Healthcare Information Service Licence
- There are 36 Internet hospitals in China, among which 25 can be connected by PC or an app and 11 are being established.
 - 19 are joint ventures of an Internet company, local government and off-line medical institutions, like AliHealth & We Doctor.
 - General stages of service development of internet hospitals:
 - Online registration service
 - Consultation, subscription
 - Internet hospitals, Telemedicine

CHINA GOVERNMENT DIGITAL HEALTH FOCUS

“For the purposes of thoroughly implementing Xi Jinping’s Thought on Socialism with Chinese Characteristics in a New Era and the spirit of the 19th CPC National Congress, boosting the implementation of the Healthy China Strategy, raising the level of modern health care management, optimizing resource allocation, innovating service models, improving service efficiency, reducing service costs, and satisfying the ever-growing needs of the people for health care, according to the Outline of the Plan for "Healthy China 2030" and the Guiding Opinions of the State Council on Actively Advancing the "Internet plus" Action (No. 40 [2015], State Council), with the approval of the State Council, the following opinions on furthering the development of "Internet plus health care are hereby offered.”

Xi Jinping - President of the People's Republic of China

CHINA GOVERNMENT DIGITAL HEALTH FOCUS

China is currently experiencing a revolution in digital healthcare technologies as the government deliberately looks to new technologies to improve healthcare access for all of its citizens

- The Chinese State Council General Office issued a guideline in April 2018 to promote the development of “Internet + medical health” to improve healthcare modernization management, optimize resource distribution, innovate service mode, improve service efficiency, reduce service cost and meet the increasing demand on healthcare
- All regions and relevant departments should, in light of the actual work, timely introduce supporting policies and measures to ensure that all deployments are implemented.
- The central and western regions, rural poverty-stricken areas, and remote frontier regions should adapt to local conditions, actively develop "Internet + medical health", introduce high-quality medical resources, and improve the accessibility of medical and health services.
- The National Health and Health Committee shall, in conjunction with the relevant departments, work in accordance with the tasks, strengthen work guidance and supervision and inspection, and report to the State Council in time for important information

CHINA GOVERNMENT DIGITAL HEALTH FOCUS (1 of 2)

Key elements of the China State Council General Office guidelines issued in April 2018 to promote the development of “Internet + medical health”

- Medical institutions are encouraged to use information technologies, such as the internet, to expand the space and content of healthcare service. Integrated healthcare service covering the whole process of treatment will be constructed. It allows the development of online hospitals that rely on medical institutions
- Healthcare institutions also are encouraged to cooperate with internet companies to enhance the integration of regional healthcare information. Big data analysis can be used to predict epidemic trends, strengthen intelligent monitoring on infectious diseases and improve the response ability to prevent and control serious illnesses and public healthcare emergencies
- The guideline urge accelerating the construction and utilization of the information platform so that people can sign up with a family doctor. The online evaluation and reward mechanism will be explored to improve the services of family doctors and increase the people’s trust in them
- The interconnection of prescription information of healthcare institutions and medicine retail information will be further explored. This can help promote the development of online medicine sales and the logistics of medical supplies
- The integration of medical insurance information will be accelerated, and online payment will be gradually expanded to provide more convenient service for insured people
- Cloud platforms for healthcare education and a training platform will be established, and healthcare workers are encouraged to initiate discussions on rare diseases difficult to diagnose, and serious diseases
- Online platforms of scientific healthcare knowledge also should be established.
- Healthy lifestyles will be promoted to improve people’s ability to manage their health

CHINA GOVERNMENT DIGITAL HEALTH FOCUS (2 of 2)

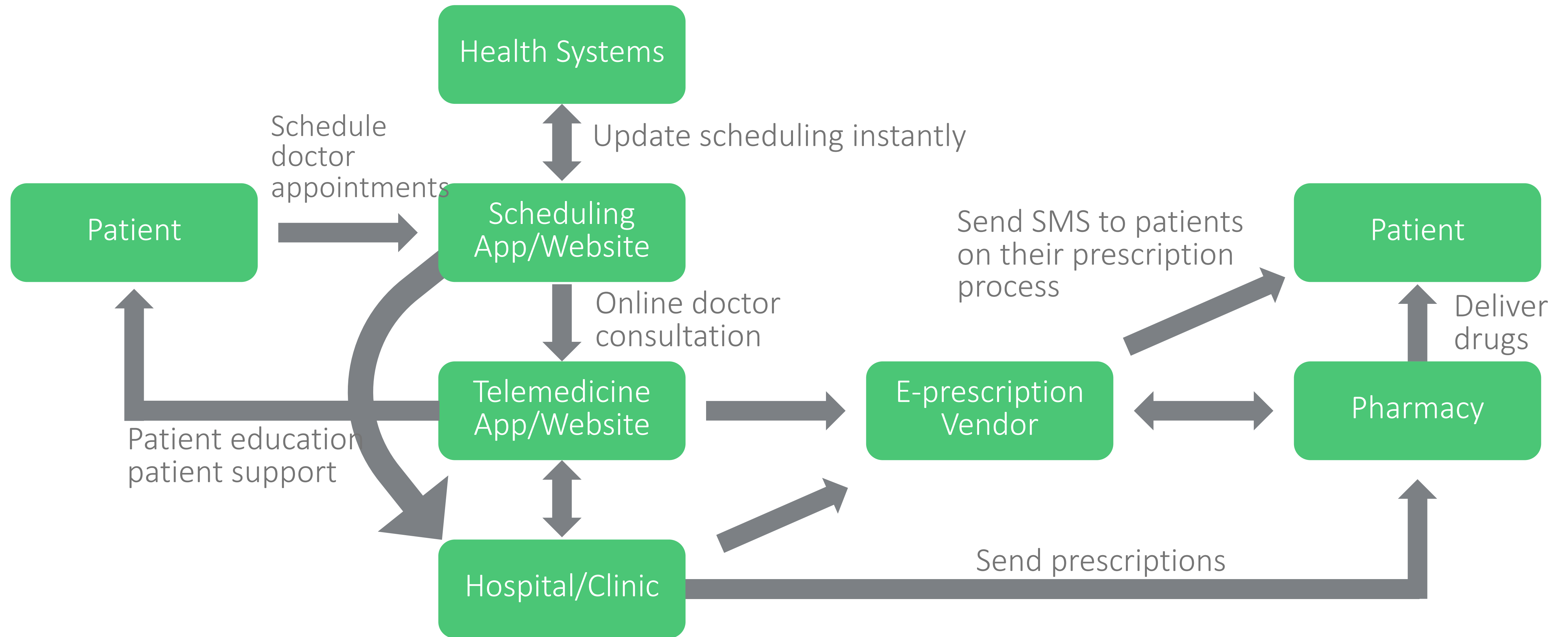
Key elements of the China State Council General Office guidelines issued in April 2018 to promote the development of “Internet + medical health”

- Internet + artificial intelligence (AI) will be promoted to improve healthcare service efficiency and fundamental medical treatment service of traditional Chinese medicine (TCM). Real-time personal healthcare, such as monitoring, evaluation and recognizing diseases, can be realized through portable healthcare devices and artificial intelligence technology
- Regions and related departments should coordinate with each other to construct a united, authoritative and interconnected healthcare information platform covering all people
- The nationwide healthcare data resource catalogs and standard system should be unified and regulated. Basic standards for healthcare, data security, personal information protection and information sharing should be made
- Related laws and regulations for healthcare big data should be formulated.
- Confidentiality rules should be strictly observed. Illegal trading and information disclosure will be punished

- The detailed guidelines can be found at Annex A

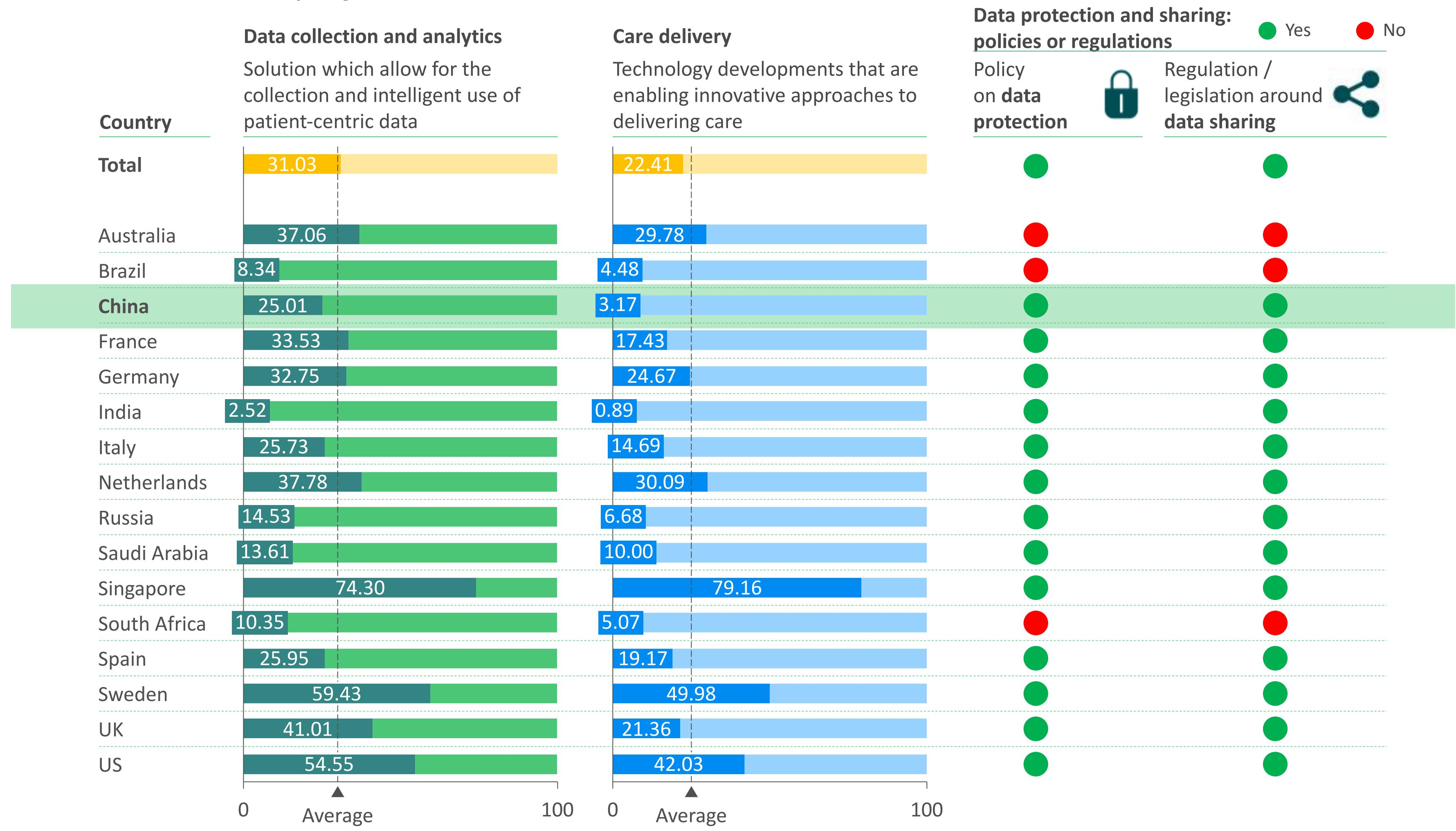
TELEMEDICINE MODEL IN CHINA

Medical institutions are encouraged to use information technologies, such as the internet, to expand the space and content of healthcare service



CHINA NATIONAL DATA STRATEGY

Many countries with high data collection and analytics scores have set clear national goals for the digital and/or remote delivery of healthcare services



Source: Future Health Index

5

CHINA
HEALTHTECH
ECOSYSTEM



HEALTHTECH FUNDING HISTORY

China vs Asia Pac vs USA

- With \$8.1B deployed in 2018, a significant share of global HealthTech funding, aka Digital Health, is being deployed in the USA
- With a CAGR of 50.3% (vs 17.8% in the USA) from 2014 to 2018, Asia Pac shows the strongest funding \$ value growth rate in recent years. In the same period, China grew at an almost identical speed at 48.3% CAGR
- While total funding deployed in the USA only grew \$780M per annum between 2014 and 2018, total funding in Asia Pac and China alone grew by \$1.05B and \$887M per annum, respectively

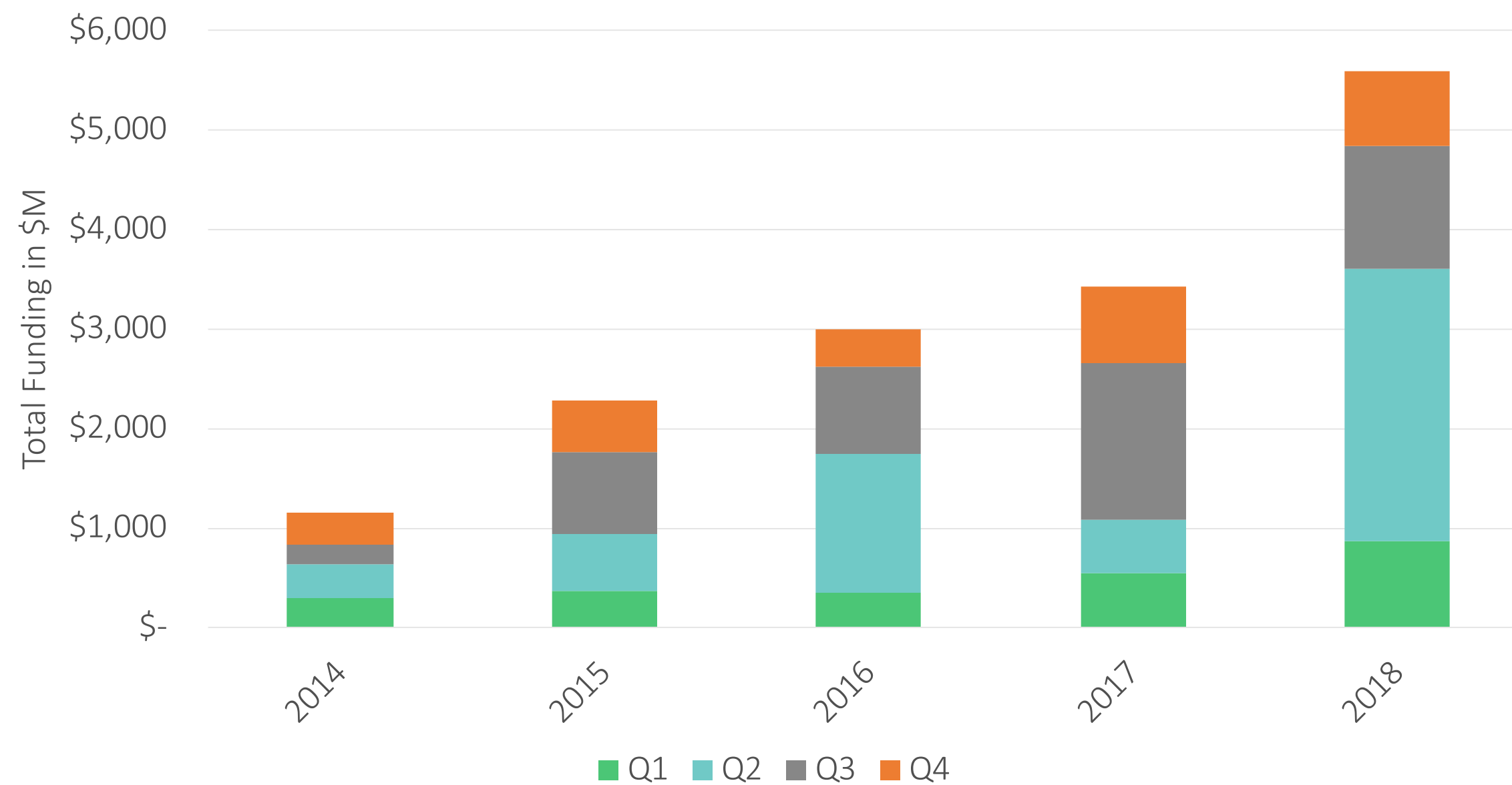


* Note: USA funding sourced from Rock Health; Insufficient European data available to report accurately

CHINA HEALTHTECH FUNDING HISTORY (2014 -2018)

2018 closing off with a 63% funding value YoY increase vs 2017

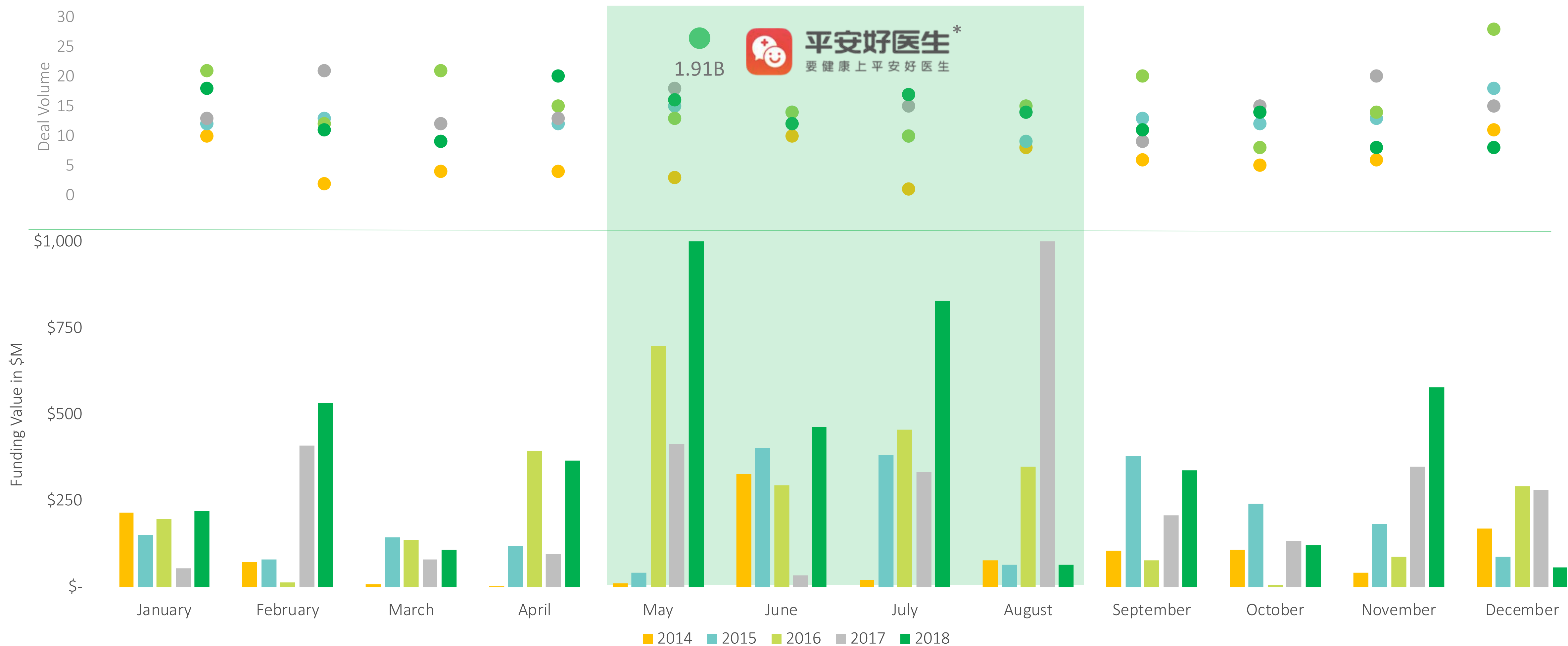
Year	2014	2015	2016	2017	2018
# Deals	70	150	191	177	158



- After a peak in 2016, deal volume decreased versus 2017 with 2018 closed with 158 deals
- Total \$ value in 2018 reached a 5-fold increase compared to 2014, closing the year at \$5.59B.
- YoY \$ value exceeded 2017 total, growing by 63%.
- At lower funding volume, funding reached the highest \$ value in history, driven by a growing average deal value size

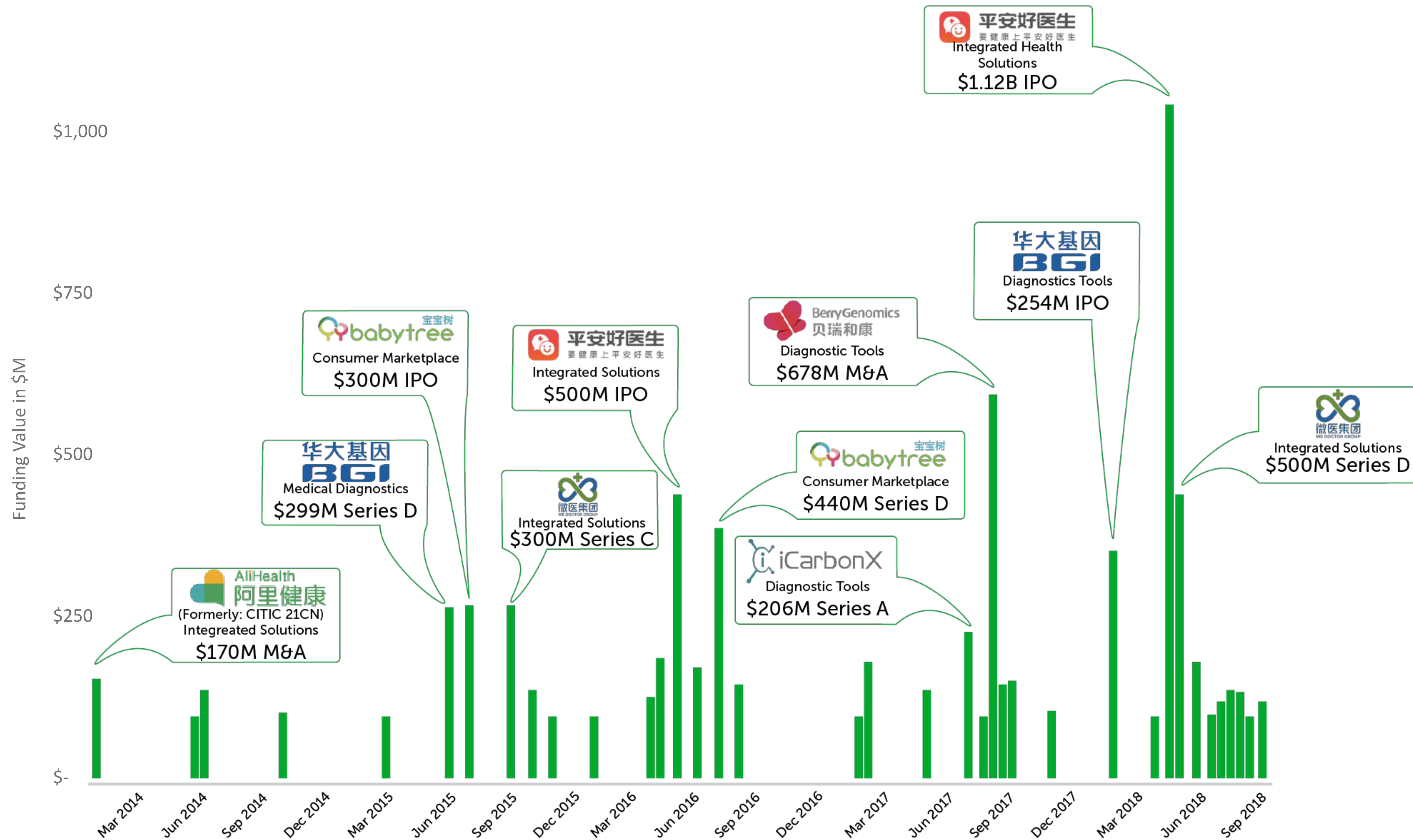
CHINA HEALTHTECH FUNDING: MOM (2014 – 2018)

May to August are the most active investment months for HealthTech in China













* Note: Including the \$1.12B IPO of PingAn Good Doctor, funding in May 2018 would have reached \$1.79B

CHINA MEGA DEAL HISTORY (2014 – 2018)



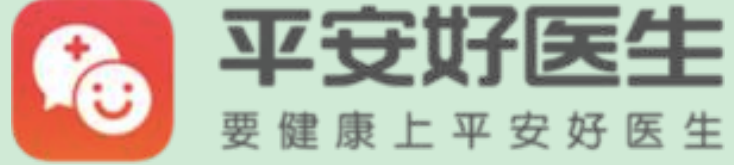




TOP10 CHINA MEGA FUNDING DEALS (2018)

Both Wedoctor and Ping An Good Doctor have established commercial partnerships with Singapore based companies to extend the reach of their solutions into SE Asia

	\$ Value	Stage	HealthTech Category	Lead Investor
 微医集团 WE DOCTOR GROUP	\$500M	Series D	Integrated Health Solutions	AIA Group, New World Development
 平安好医生 要健康上平安好医生	\$400M	Pre-IPO	Integrated Health Solutions	Softbank
 WuXiNextCODE	\$200M	Series C	Genomics Relation Dx	ICBC International
 LinkDoc	\$150M	Series C	Medical Decision Making	China Investment Corporation
 Medlinker	\$150M	Series D	Physician Networks	China Investment Corporation
 药师帮 www.yisbang.cn	\$133M	Series D	Consumer Marketplace	DCM
 健客 买正品药上健客 jianke.com	\$130M	Series B	Consumer Marketplace	GTJA Investment
 keep	\$127M	Series D	Wellness Apps	Goldman Sachs
 全域 ALLCURE	\$103M	Series B	EHR / EMR	CICC
 掌上糖医	\$100M	Series C	Disease Management	Samsung Ventures

TOP CHINA LISTINGS (2017 – 2018)

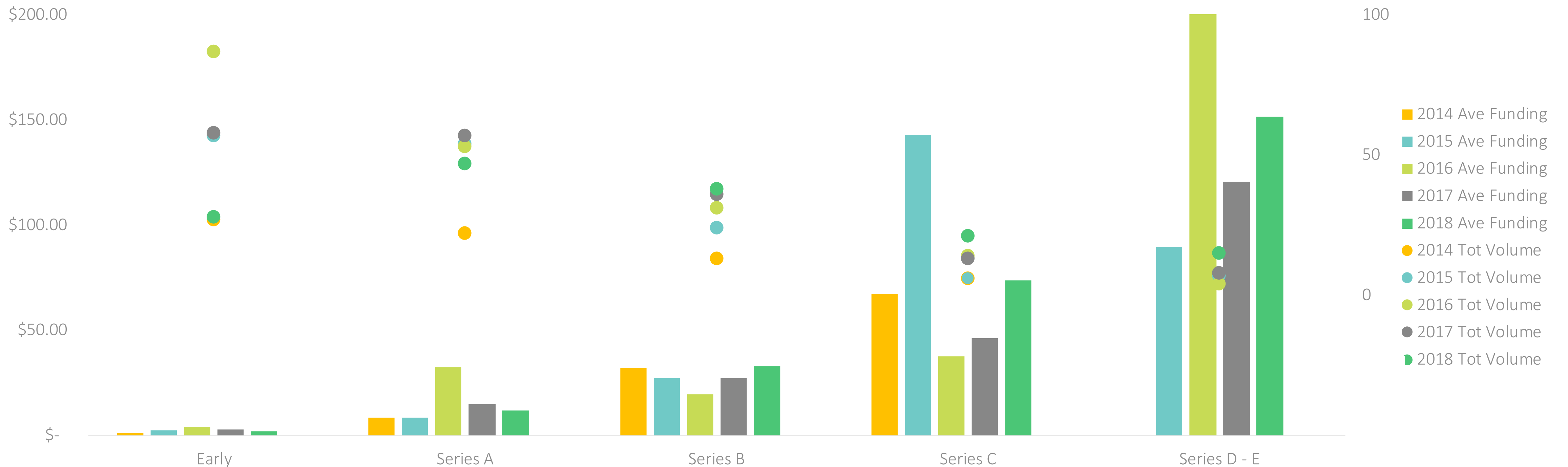
China HealthTech is the first ecosystem in Asia Pac to IPO

Company	Date	Value	TICKER SYMBOL	HealthTech Category
 平安好医生 要健康上平安好医生	2018/5	\$1.12 B	HKG: 1833	Integrated Health Solutions
 babytree 宝宝树	2018/11	\$217 M	1761:HK	Consumer Marketplace
 1药城 互联网药品交易资格: 国A20160004	2018/9	\$100.5 M	NASDAQ:YI	Consumer Marketplace
 BerryGenomics 贝瑞和康	2017/8	\$677 M	SHE: 000710	Diagnosis Tools
 华大基因 BGI	2017/7	\$254 M	SHE: 300676	Diagnosis Tools

YOY AVERAGE DEAL SIZE BY STAGE (2014 – 2018)

Late Stage deals increased to both the highest volume in history and to the second highest \$ value after 2016

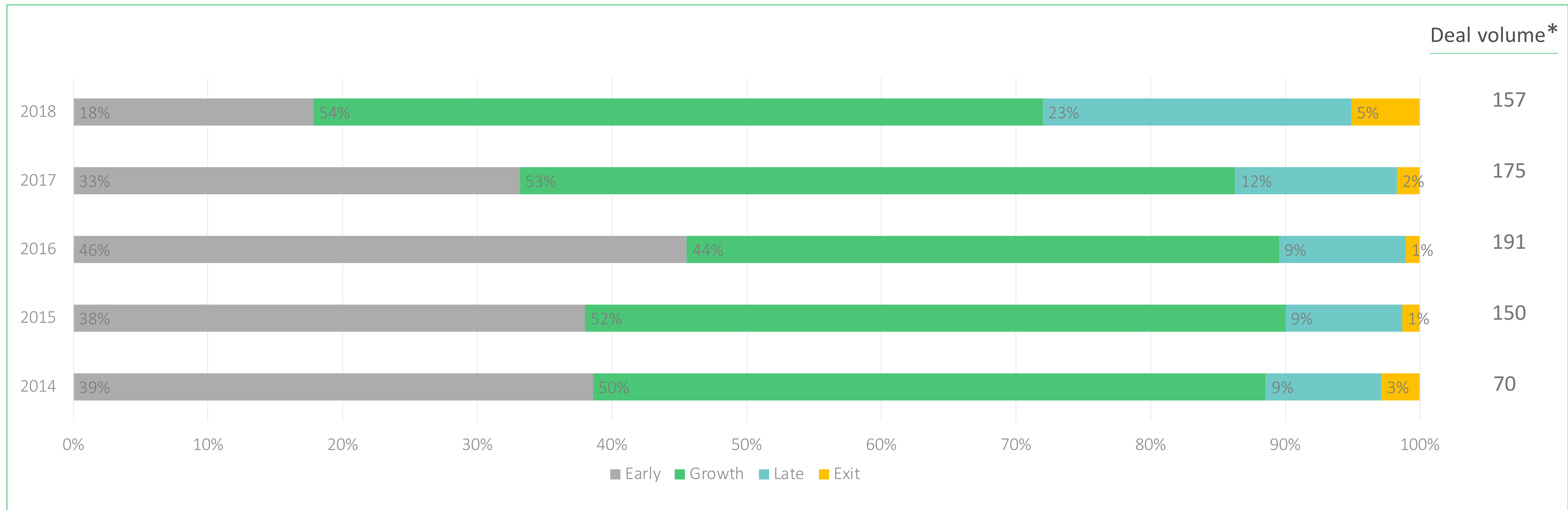
- With only 28 Early Stage deals being deployed in 2018, Early Stage funding volume fell to its lowest since 2014
- By volume, Series B and Late Stage Deals (Series C and beyond) reached the highest volumes, indicating a fast maturing ecosystem in China.
- With Late Stage Deals being deployed, total funding value continues to rise in 2018.



ABSOLUTE DEAL SHARE HISTORY (2014 – 2018)

Early Stage deals continue to loose momentum for the second consecutive year after their peak in 2016

While Growth Stage deals remain at a stable volume share of more than 50% of all deals, Late Stage continue to gain share, now accounting for approximately one quarter



DEAL SIZE DISTRIBUTION (2014 – 2018)

- In 2018, deal size share of <\$1M and deals between \$1M and \$10M dropped to their lowest percentage in the past years
- Investments between \$50M - \$150M rose by 2.3-fold YoY compared to 2017
- The share of Mega deals (>\$150M) remained stable at a combined share of 4% for second consecutive year

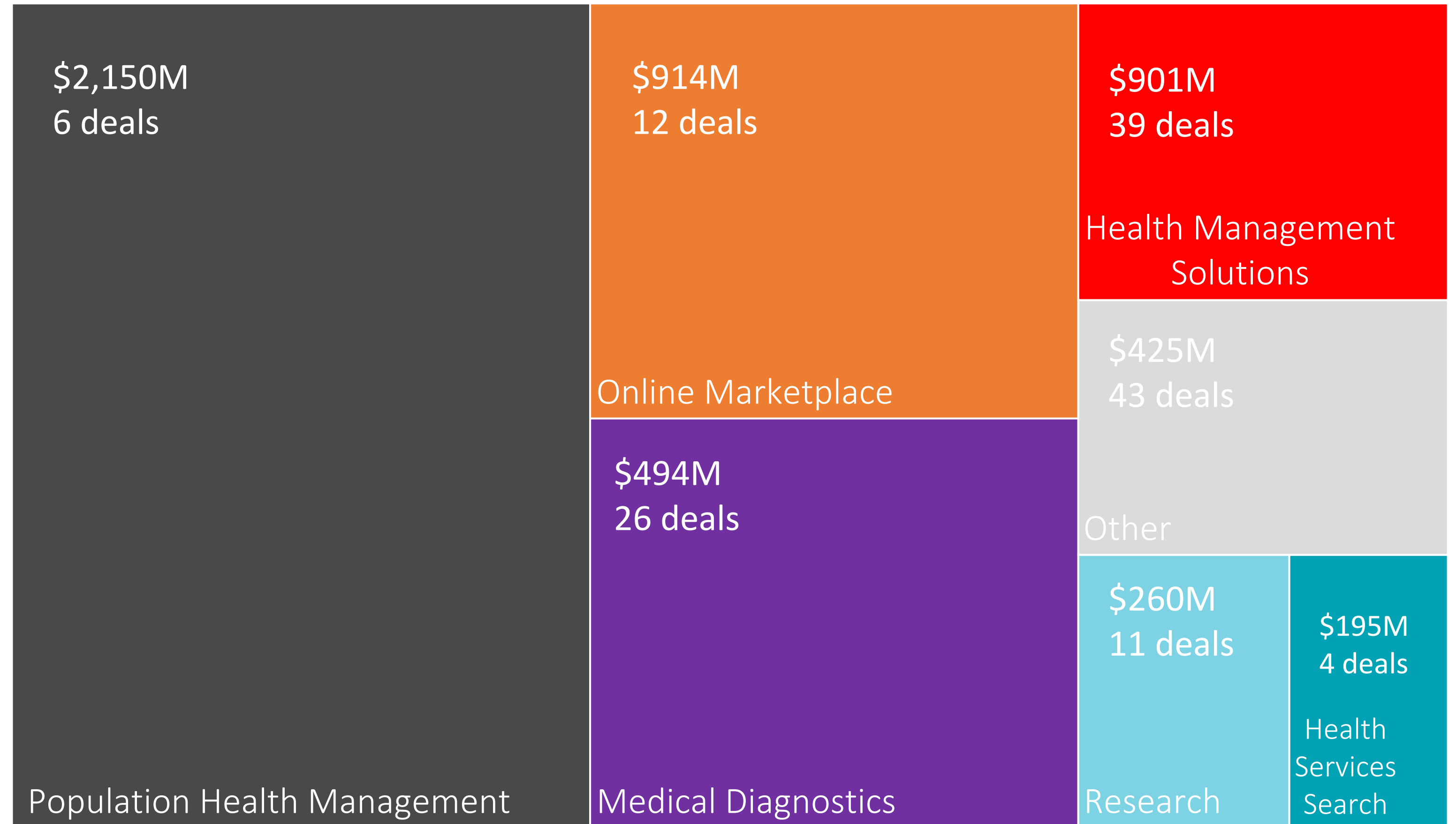
	<1M	>1M	>10M	>50M	>150M	>250M	>500M
2018	1%	20%	20%	14%	2%	1%	1%
2017	6%	29%	22%	6%	2%	1%	1%
2016	13%	24%	18%	5%	1%	1%	1%
2015	11%	30%	20%	5%	0%	2%	0%
2014	14%	33%	16%	10%	1%	0%	0%

* Note: Annual totals do not add up to 100% due to undisclosed deals

MOST ATTRACTIVE HEALTHTECH CATEGORIES FOR INVESTORS

Research, as an HealthTech category, jumps into 5th place by funding value, one of the most significant increases of all the HealthTech categories tracked

- By \$ value, Population Health Management, which includes China heavy weights Ping An Good Doctor and We Doctor, as well as other Integrated Health Solutions, remain in first place
- 2018 has also seen an increasing number of HealthTech ventures in the region building solutions for research purposes. The Research HealthTech category includes a range of solutions, from drug discovery support to clinic trials management














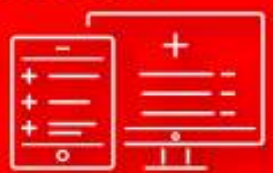













Note: By Value In 2018

Note: See taxonomy slide for more information on our the HealthTech classification

MOST ATTRACTIVE HEALTHTECH CATEGORIES BY VOLUME

H2 2016 – 2018

	H2 2016	H1 2017	H2 2017	H1 2018	H2 2018
1	Medical Diagnostics (1→) 	Medical Diagnostics (1→) 	Medical Diagnostics (1→) 	Medical Diagnostics (1→) 	Medical Diagnostics (1→) 
2	Health Management Solutions (3↑) 	Health Management Solutions (2→) 	Health Management Solutions (2→) 	Online Marketplace (4↑) 	Health Management Solutions (3↑) 
3	Telemedicine (5↑) 	Wellness (5↑) 	Wellness (3→) 	Health Management Solutions (2↓) 	Online Marketplace (2↓) 
4	Health Services Search (4→) 	Online Marketplace (8↑) 	Online Marketplace (4→) 	Population Health Management (8↑) 	Medical Education (10↑) 
5	Wellness (6↑) 	Online Health Communities (9↑) 	Telemedicine (6↑) 	Telemedicine (5→) 	Research (9↑) 

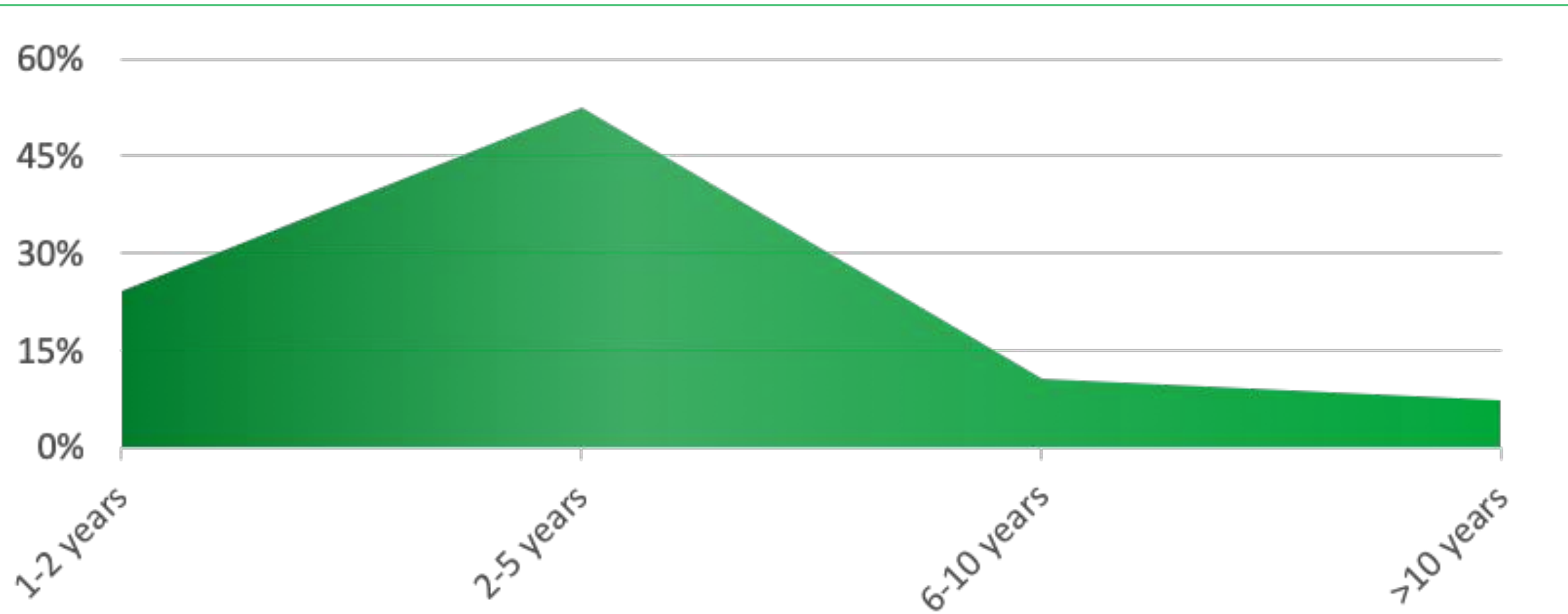
Note: See taxonomy slide for more information on our the HealthTech classification

MOST ACTIVE INVESTORS IN CHINA

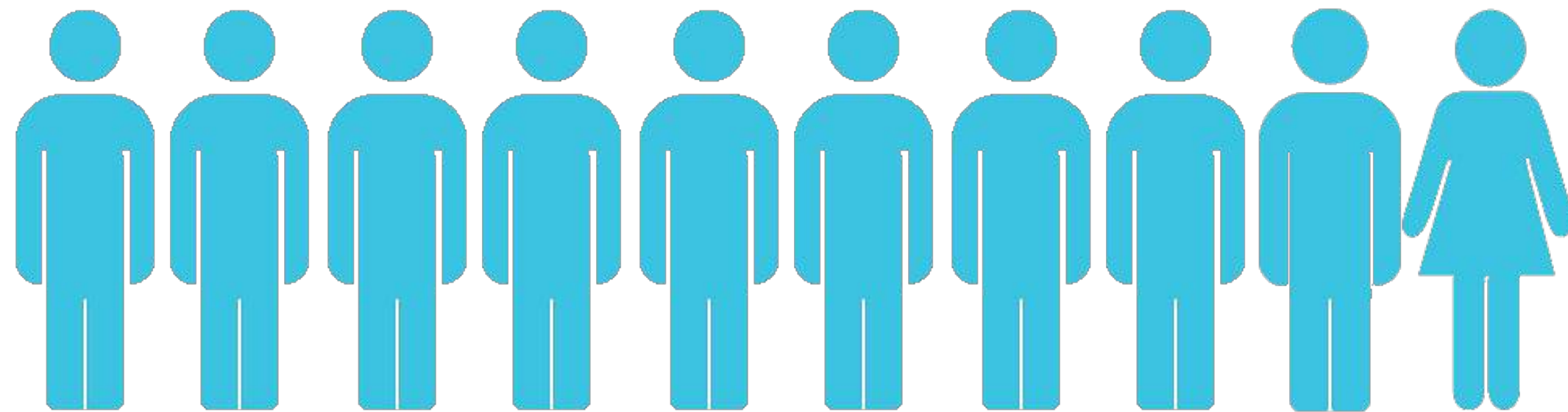
Galen Growth Asia has captured over 800 deals in China from 2012 to 2018 with more than 450 individual investors participating. Out of these, only 8% participated in 5 or more HealthTech related deals

Investor	Location	Number of HealthTech Deals	Preferred Stage	Latest Participation
Matrix Partners China	Beijing	40	Early - Late	Weimai (微脉) Series B
Tencent Holdings	Shenzhen	22	Growth - Late	DXY (丁香园) Series C
Sequoia Capital	Beijing	20	Growth - Late	NuProbe 格微基因 Series A
Softbank China (SBCVC)	Shanghai	19	Growth - Late	Easyhin (妈咪知道) Series C
IDG Capital	Beijing (and others)	15	Late - Exit	Recovery Plus (术康) Series B
Morningside Venture Capital	Shanghai	14	Early	Taimei Technology (太美医疗) Series D
Zhen Fund	Beijing	13	Early	Synyi.ai (森亿智能) Series B
Legend Capital	Beijing	10	Early - Growth	Deepwise (君联资本) Series B
Legend Star	Beijing	9	Early - Growth	Deepwise (君联资本) Series B
Ping An Ventures	Shanghai	8	Growth	Annoroad (安诺优达) Series C

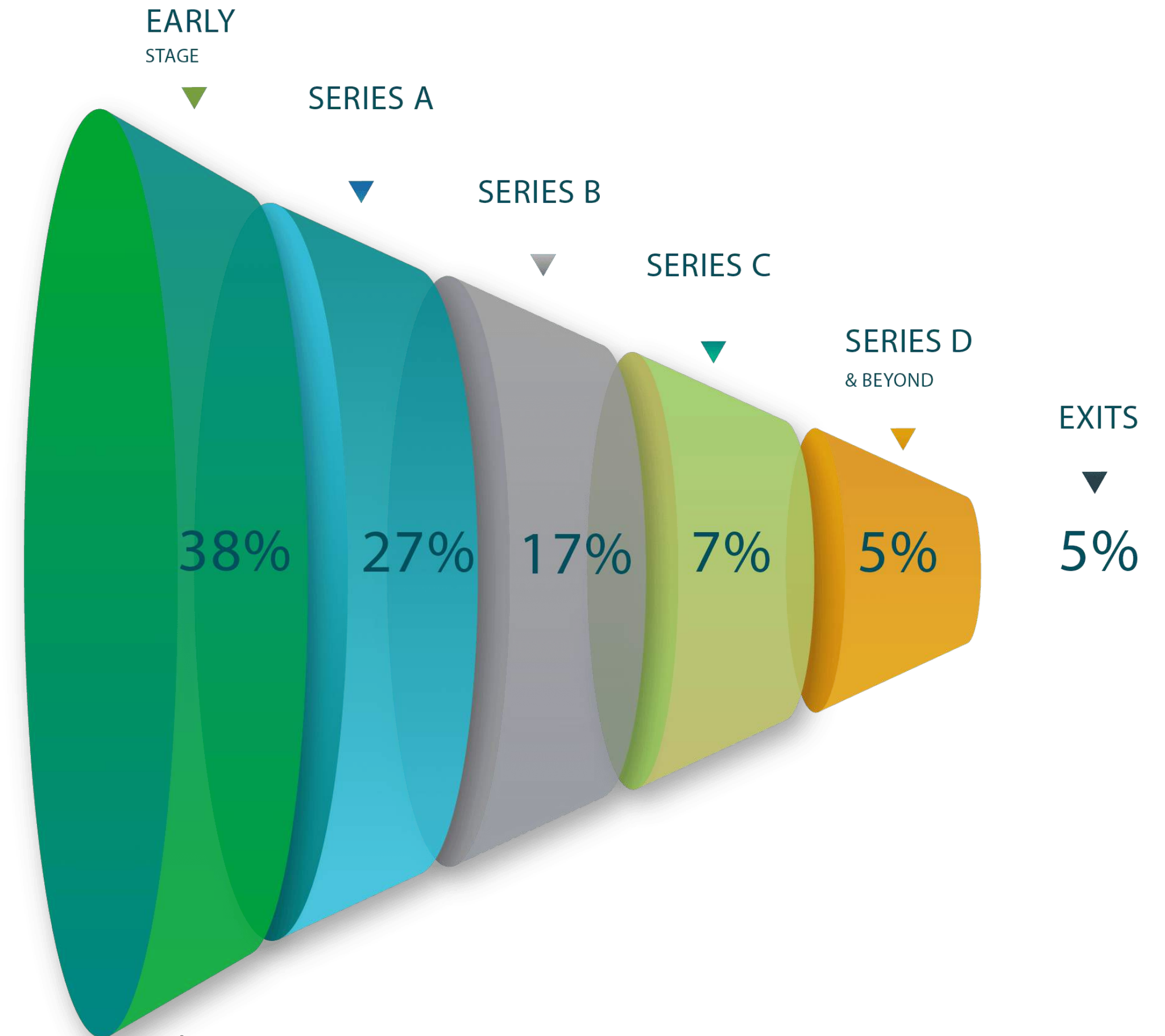
CHINA HEALTHTECH VENTURE KEY FACTS



The majority of all HealthTech ventures is 2-5 years in operation with its peak on incorporation in 2015



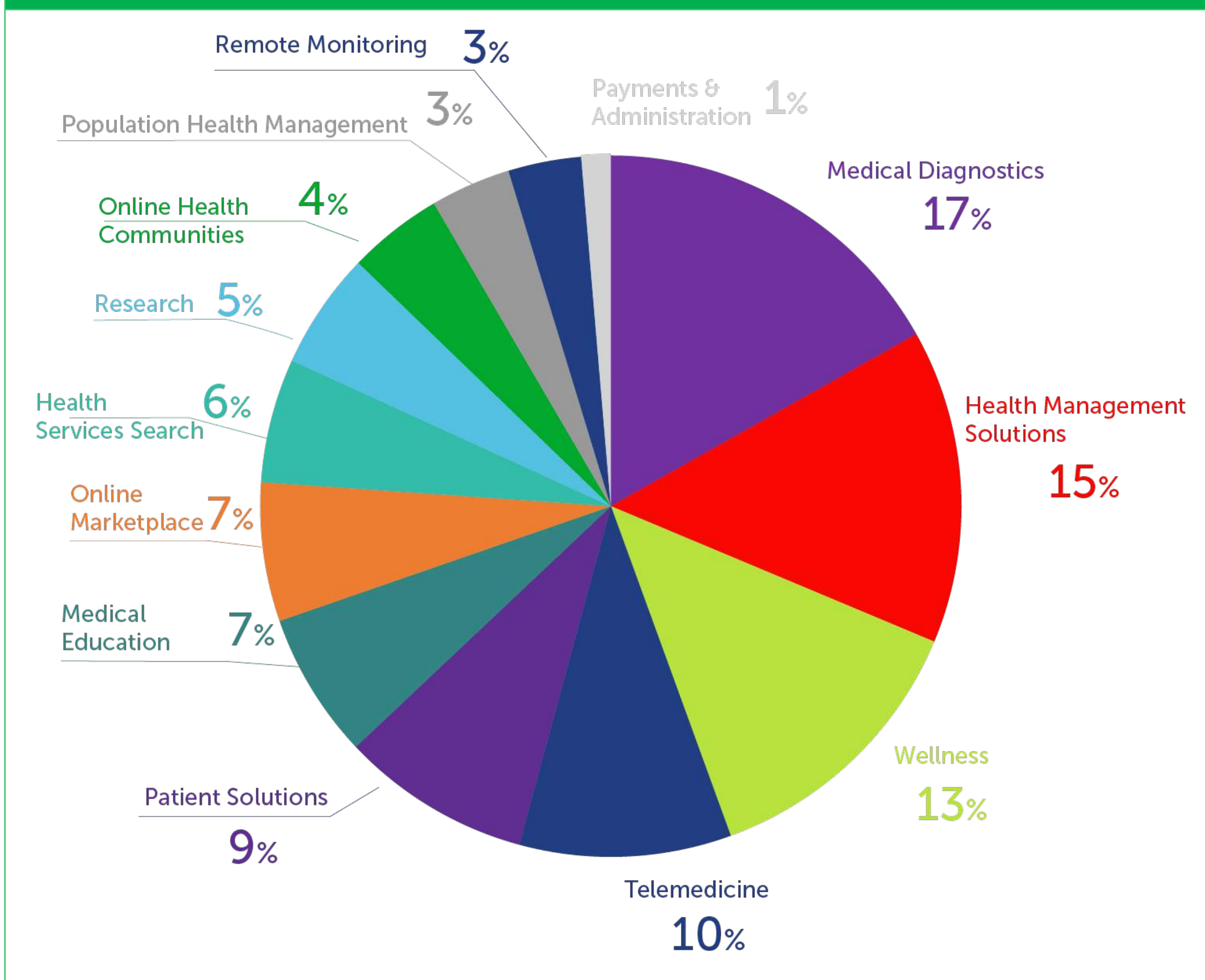
Of all known HealthTech ventures in China, only 9% have Female founders



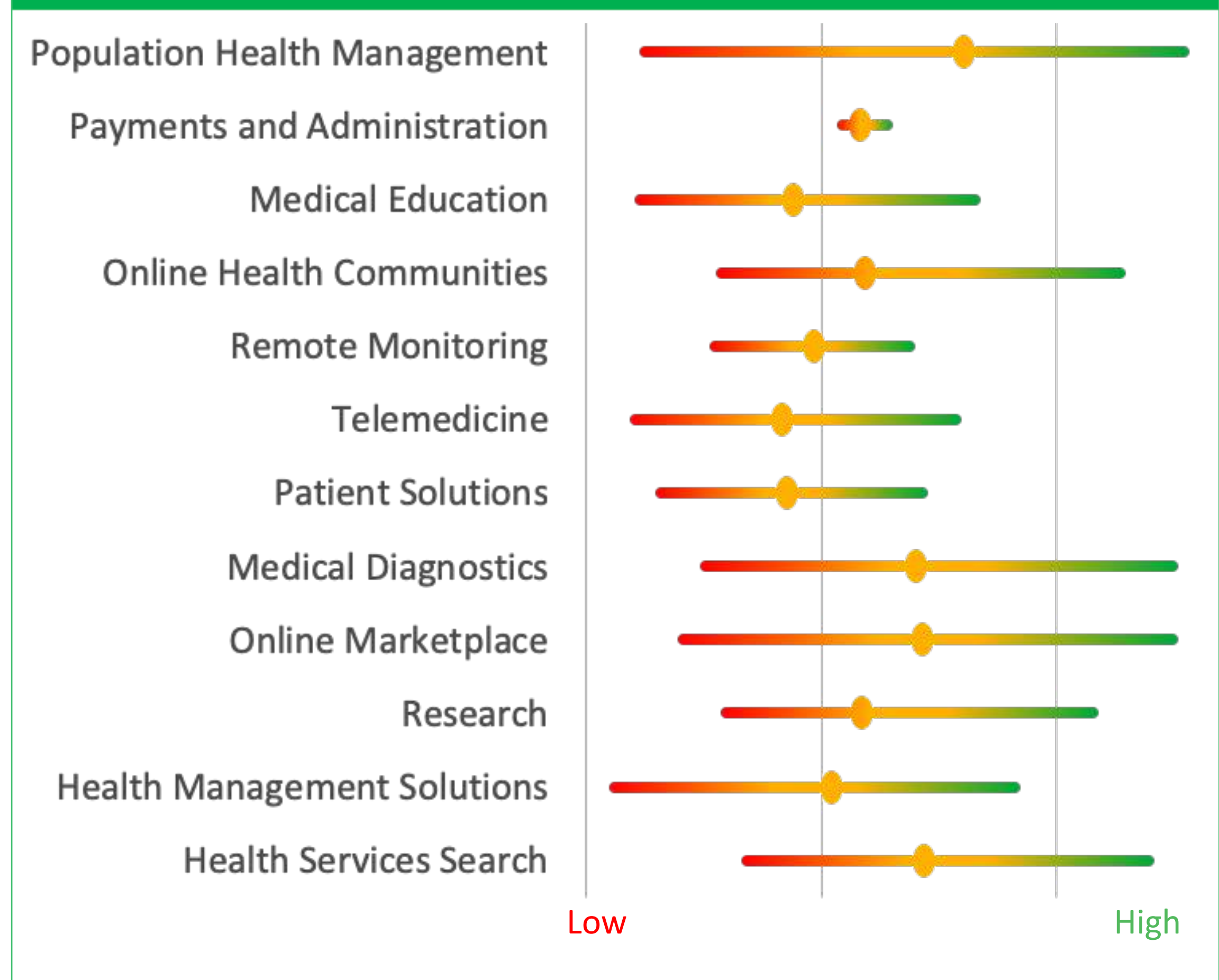
More than 1/3 of all HealthTech ventures in China are still in early stage. However, Series A and Series B funding rounds have been the most prominent in 2018

CHINA HEALTHTECH VENTURE KEY FACTS

China HealthTech Category Ecosystem Share



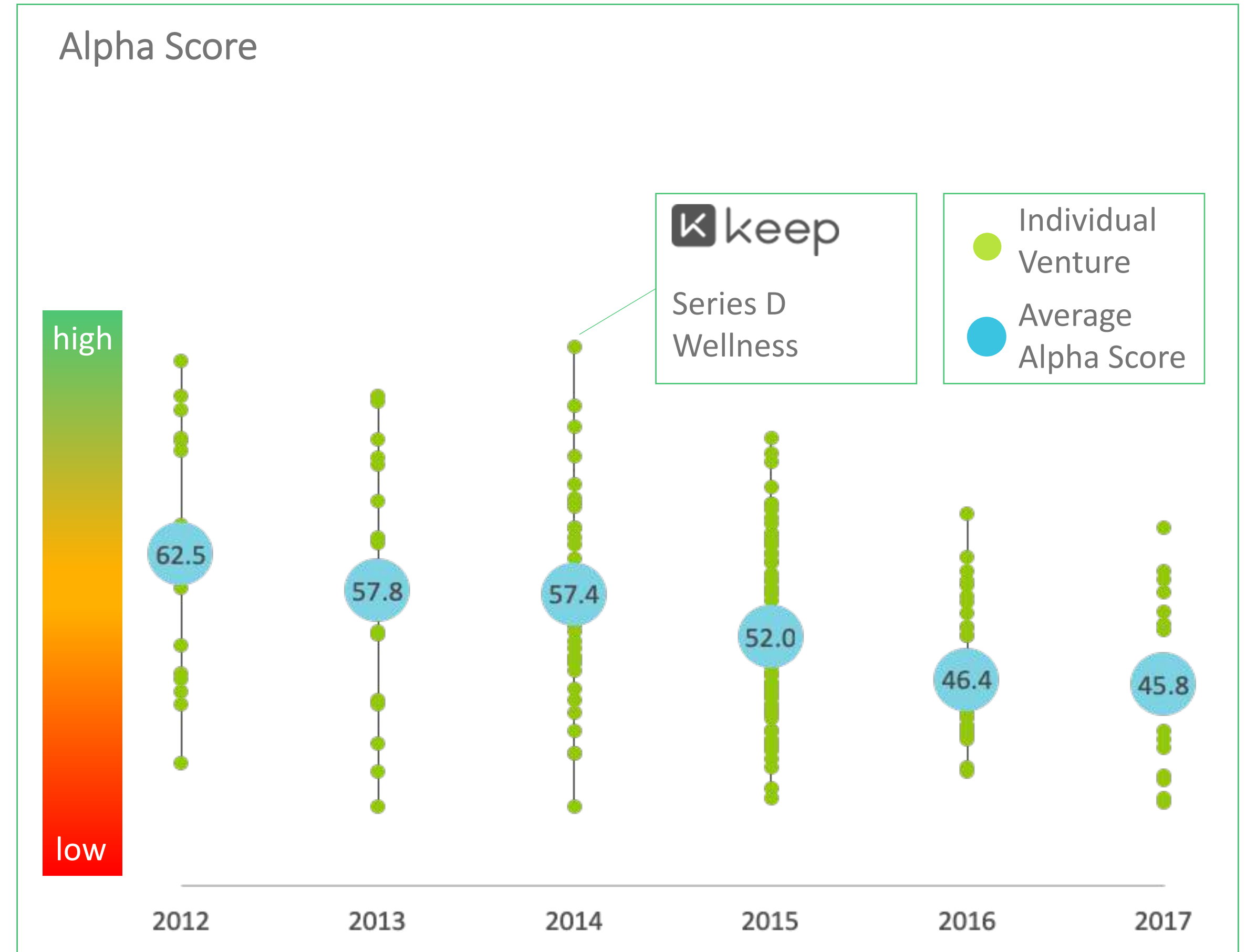
China HealthTech Category Maturity



CHINA HEALTHTECH MATURITY

By Category and Venture Incorporation

	Lowest	Average	Highest
Health Services Search	42.2	60.5	84.9
Health Management Solutions	28.0	51.6	70.5
Research	39.9	48.9	78.9
Online Marketplace	35.3	59.7	87.3
Medical Diagnostics	37.7	57.5	87.3
Patient Solutions	33.0	45.2	60.8
Telemedicine	30.2	46.0	64.4
Remote Monitoring	38.8	49.3	59.3
Online Health Communities	39.4	55.8	81.7
Medical Education	30.8	48.8	66.4
Payments and Administration	52.2	54.2	57.1
Population Health Management	31.3	65.2	88.6

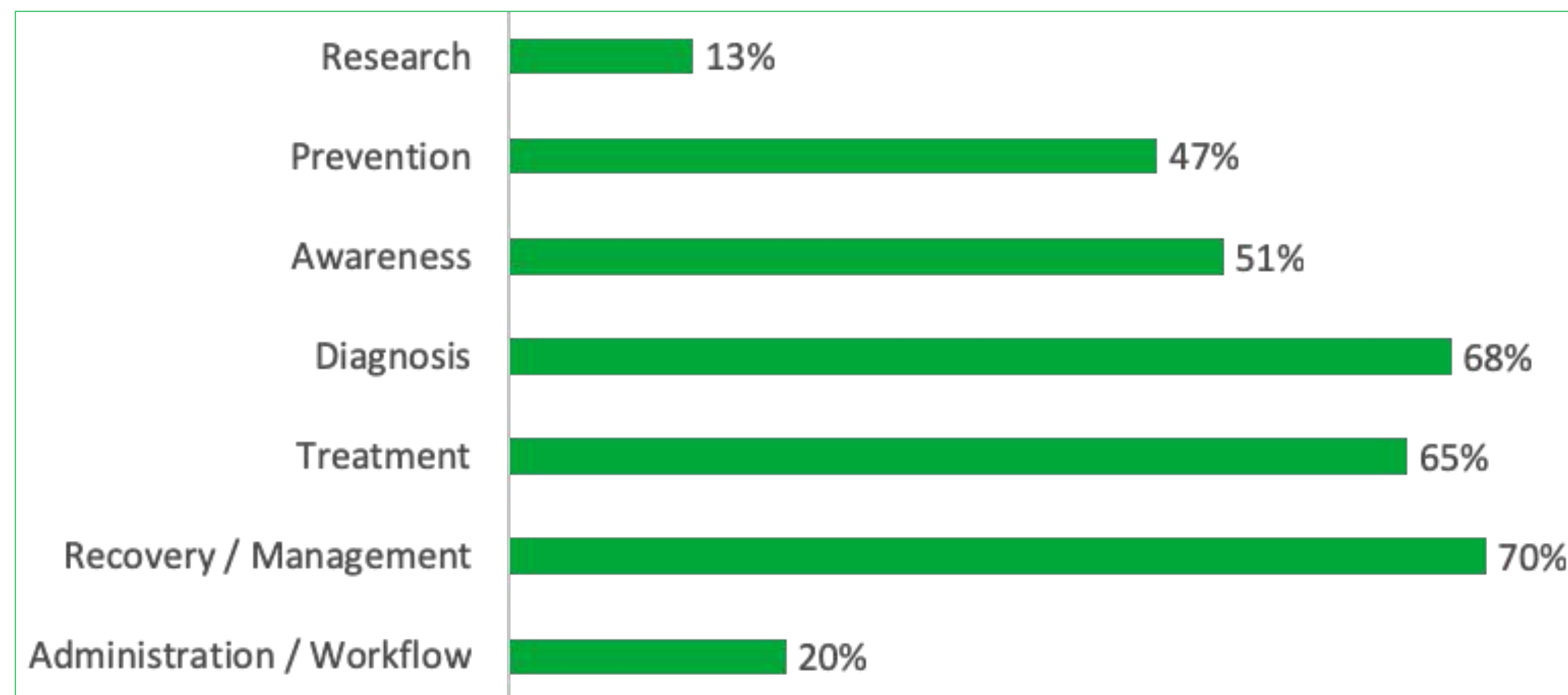


* For more information on the Alpha Composite Score, please refer to the Analytics Page

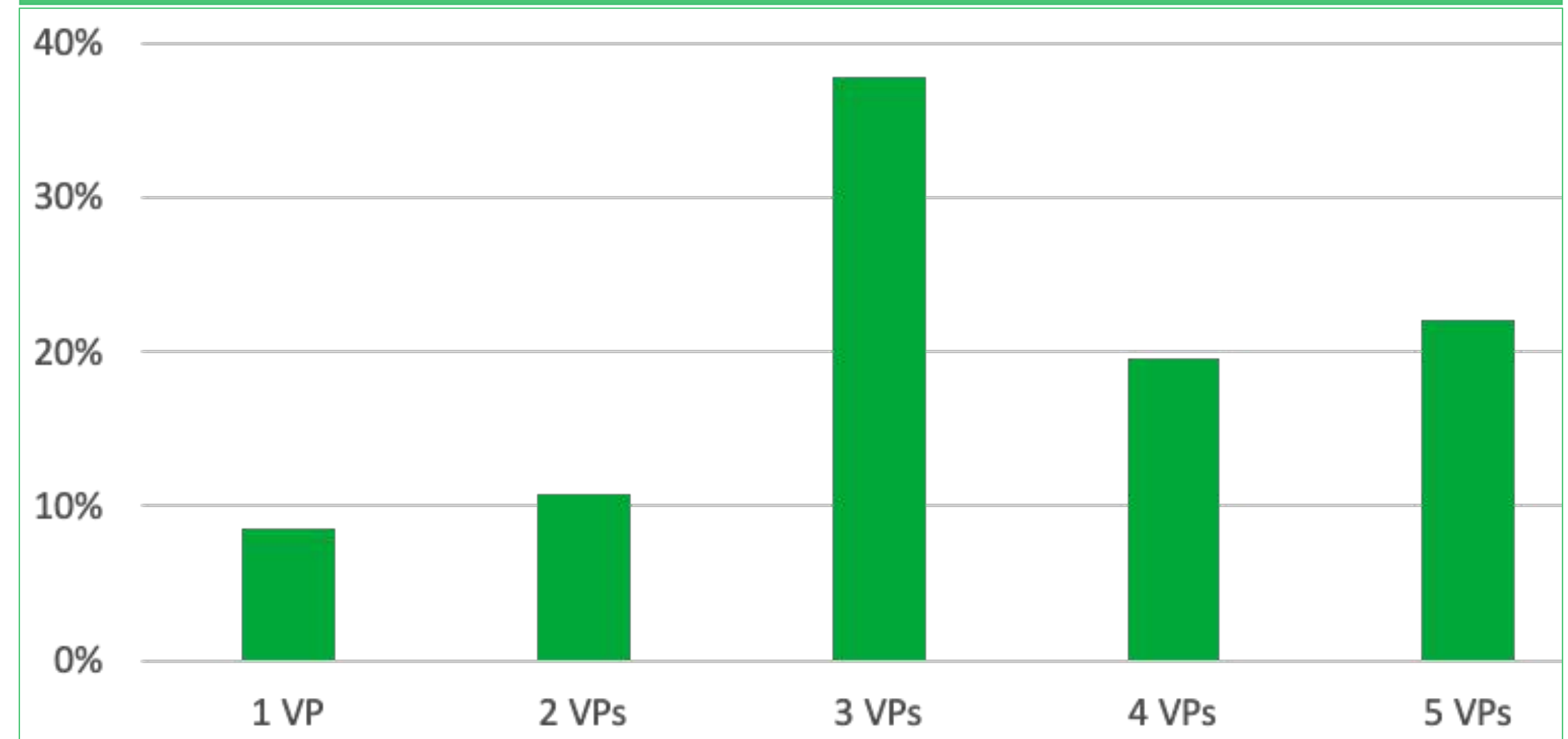
DISTRIBUTION OF HEALTH VALUE PROPOSITIONS IN CHINA

- With nearly 50% of its population aged between 25 and 54, where life expectancy climbed from 67 in 1980 to 76 in 2017, and low birth rates in recent years, China shows a similar development as Japan 20 years ago and is already today preparing for an ageing society
- The Health Value Propositions (HVP) Diagnosis, Treatment and Recovery / Management, support both clinicians in their decision making and caregivers, are being covered each by more than 60% of all HealthTech ventures in China.
- While 79% of all ventures in China cover 3 or more Health Value Propositions in their product, with the combination of the above mentioned HVPs, Diagnosis, Treatment and Recovery / Management, are covered by 23% of all HealthTech Ventures in China

Share of Unique Health Value Propositions



Share of the Amount of Value Propositions Solved

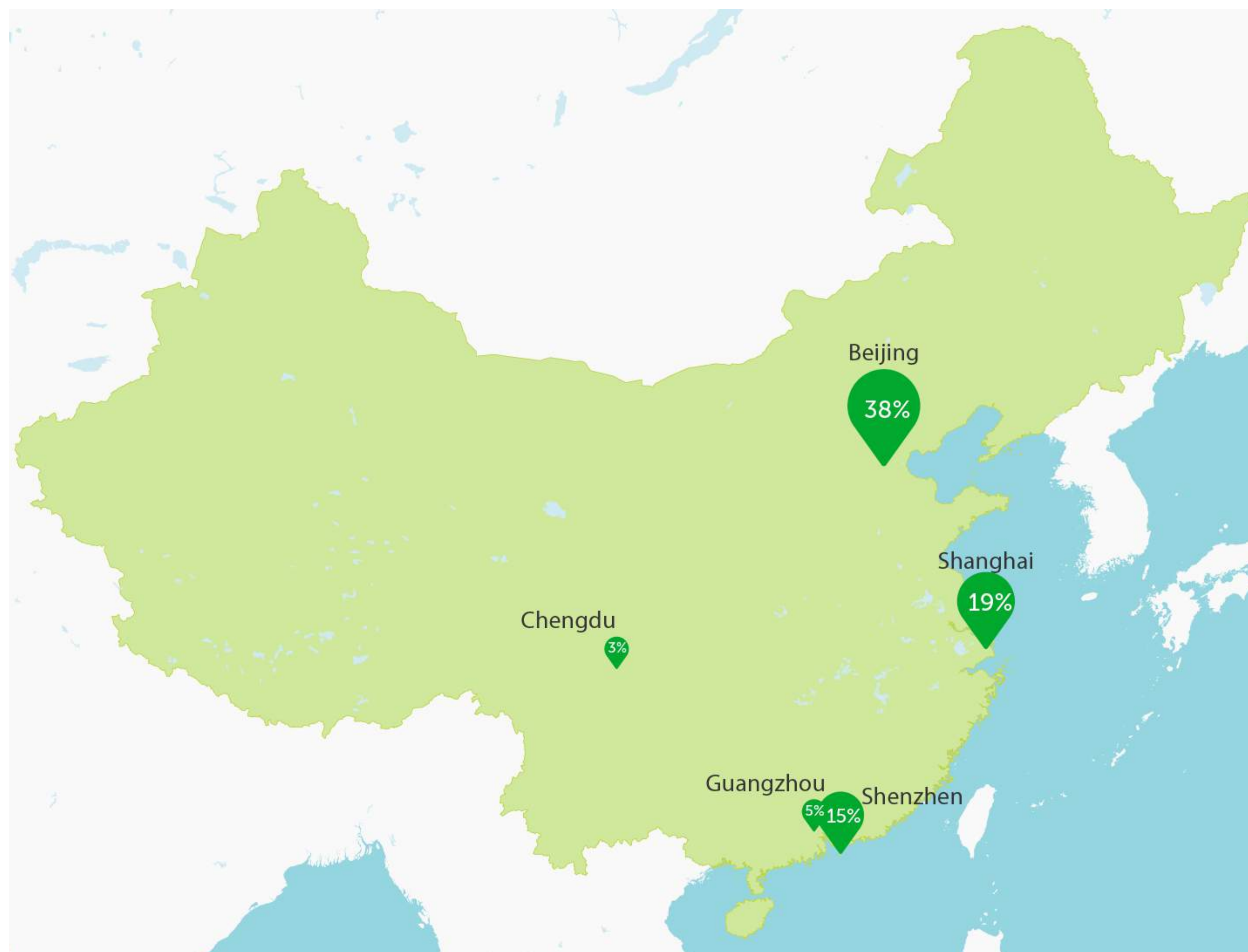


CHINA HEALTHTECH ACCELERATORS

No dedicated HealthTech accelerator exists in China

Name	Location	Vertical Focus	# of HC Investments	Launch Year	Cohorts p.a.	Cohort Size	Programme Length (m)	Startup Nationality	Key Investment Terms	Funding / AUM
StartupBootCamp DH Scale	Chengdu	DH / FinTech / FoodTech	?	2017	2	9	3	Global	\$20k / no fee / no equity	\$15M / ThinkZone Fund
ChinAccelerator	Shanghai	eCommerce	4	2010	2		3+3	Global	\$80k / 6% equity	\$400M / SOSV
Legend Star	Beijing	Multi	3	2008						RMB 2.5B
Y Combinator China	Shanghai		0	2019				USA / China	TBC (\$120k)	TBC
InnoSpring	Shanghai	Biomedicine / Mfg / Smart Bldg		2013					\$100k / 5-8%	\$200M
Explorer Accelerator	Shenyang	Healthcare / IoT / AI / Robotics		2018				China		
TheXNode	Shanghai	Multi		2015			2		0%	
Plug and Play China	Zhengzhou	Multi		2013						
Sinovation Ventures	Beijing	Multi		2009				USA / China		\$2B
Microsoft Accelerator	Beijing	Multi	5	2017			4 - 6			
HAX	Shenzhen	Biotech / IoT / Healthcare	~45	2011			6 - 12		\$100k-250k	SOSV

CHINA HEALTHTECH ECOSYSTEM SHARE BY INNOVATION NODES



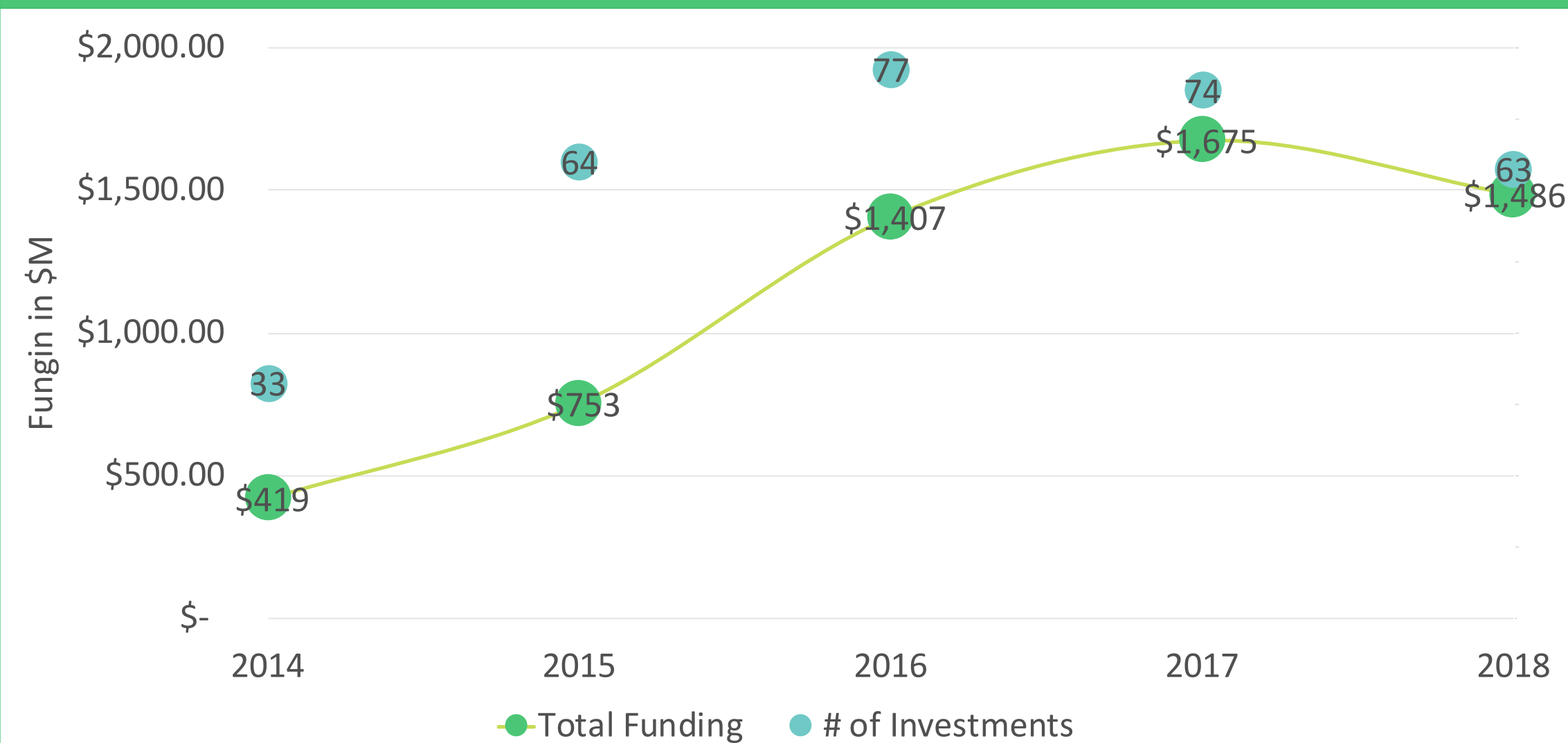
- 80% of all HealthTech ventures in China are headquartered in 5 key cities in China
- 20% of startups are in other cities, including Changsha, Zhejiang or Qingdao
- Beijing is home to more than 1/3 of all startups followed by Shanghai with close to 1/5 of all Chinese ventures
- Being China's first Special Economic Zone (SEZ) and its close range to Hong Kong, Shenzhen and a growing number of investors, Shenzhen is home to 15% of all Chinese HealthTech Ventures

* The share in the balloon represents the total share of HealthTech ventures vs all HealthTech ventures in China. The average deal size excludes undisclosed deals

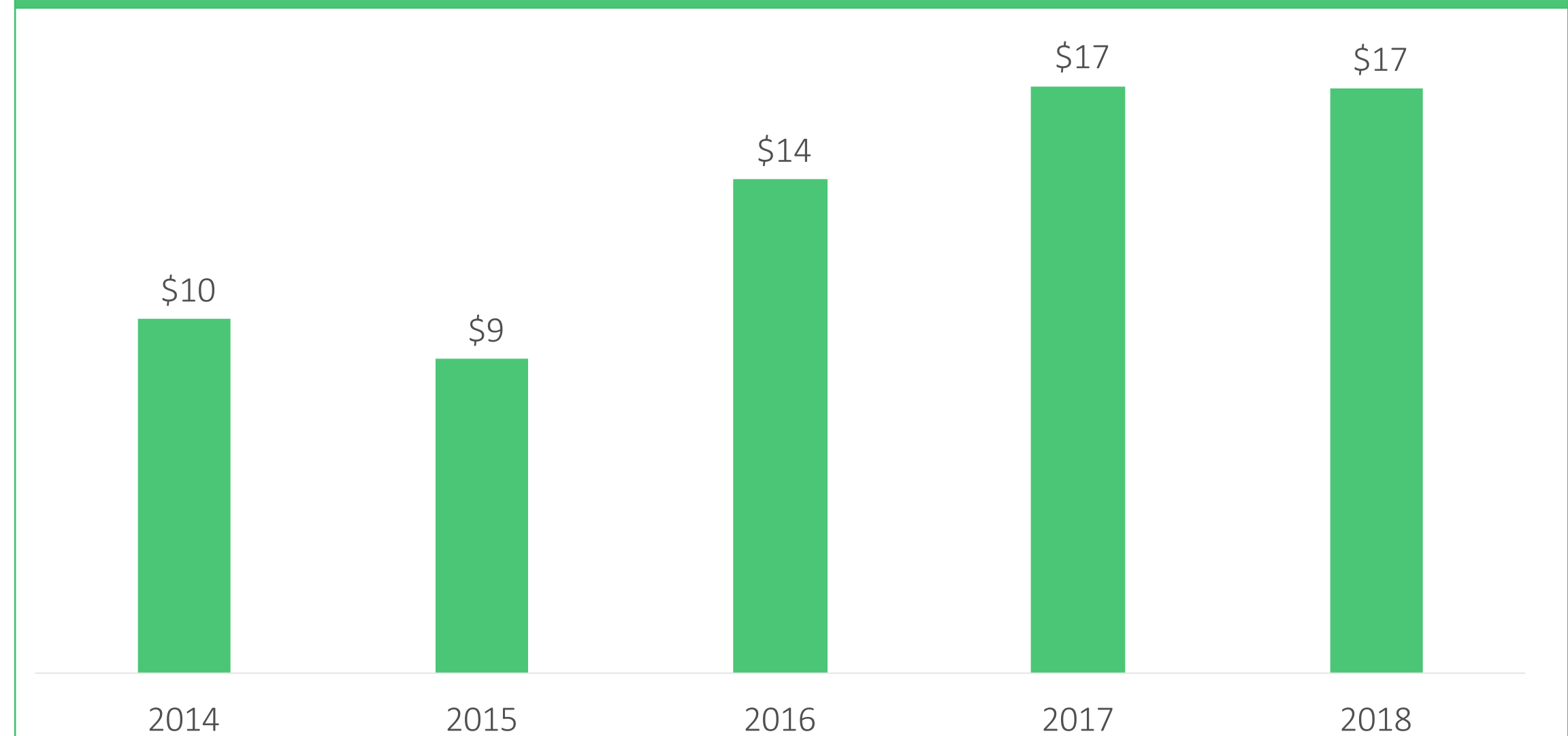
INNOVATION NODE DEEP DIVE: BEIJING

- Funding in Beijing has reached its zenith in 2017 with approximately \$1.7B invested, majorly driven by the \$678M IPO of Berry Genomics (贝瑞和康).
- Including the IPO of Babytree (1761:HK) in November 2018, average funding value size remained stable at \$17M vs 2017.
- While the average funding value size remains stable on a high level, deal volume dropped to its lowest since 2015 with on average only 15.75 deals being deployed per quarter. In comparison, 2016 saw an average quarterly deployment of 19.25 deals

Funding history 2014 – 2018

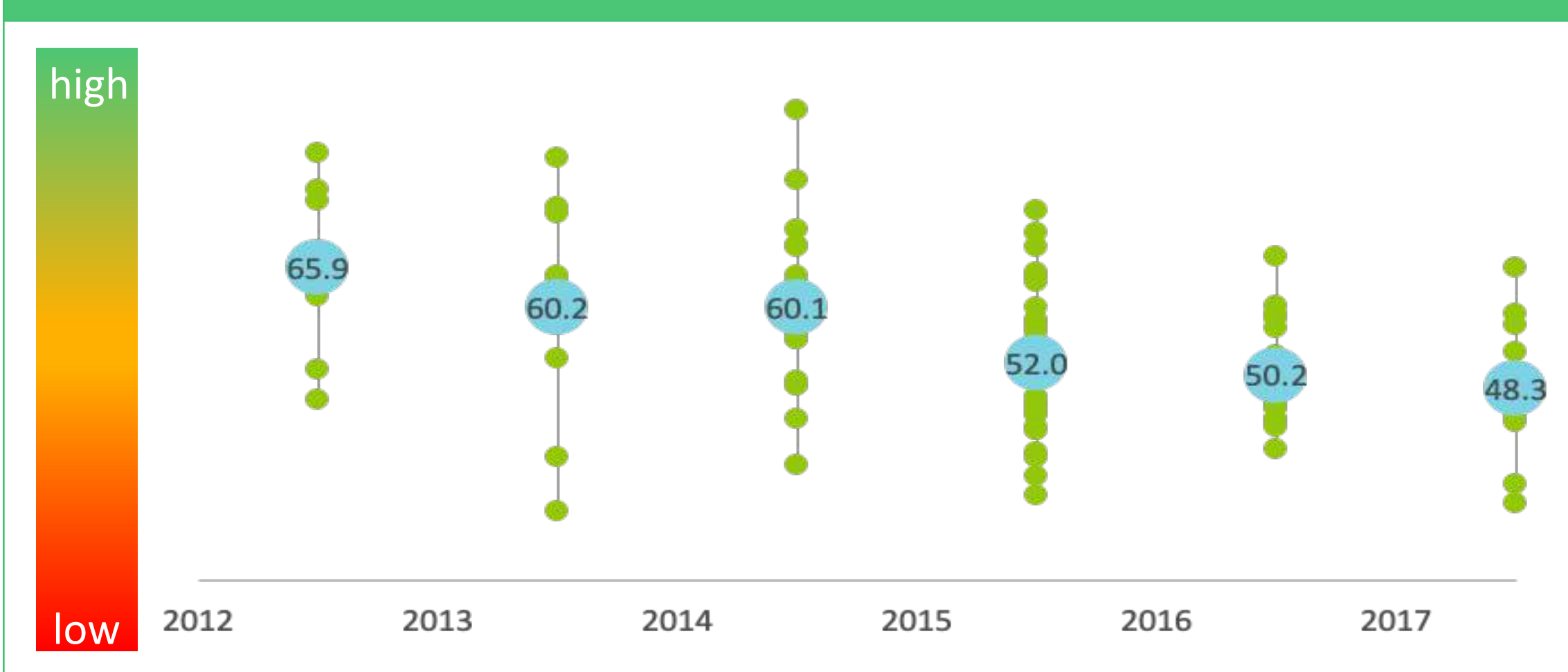


Average funding value 2014 – 2018

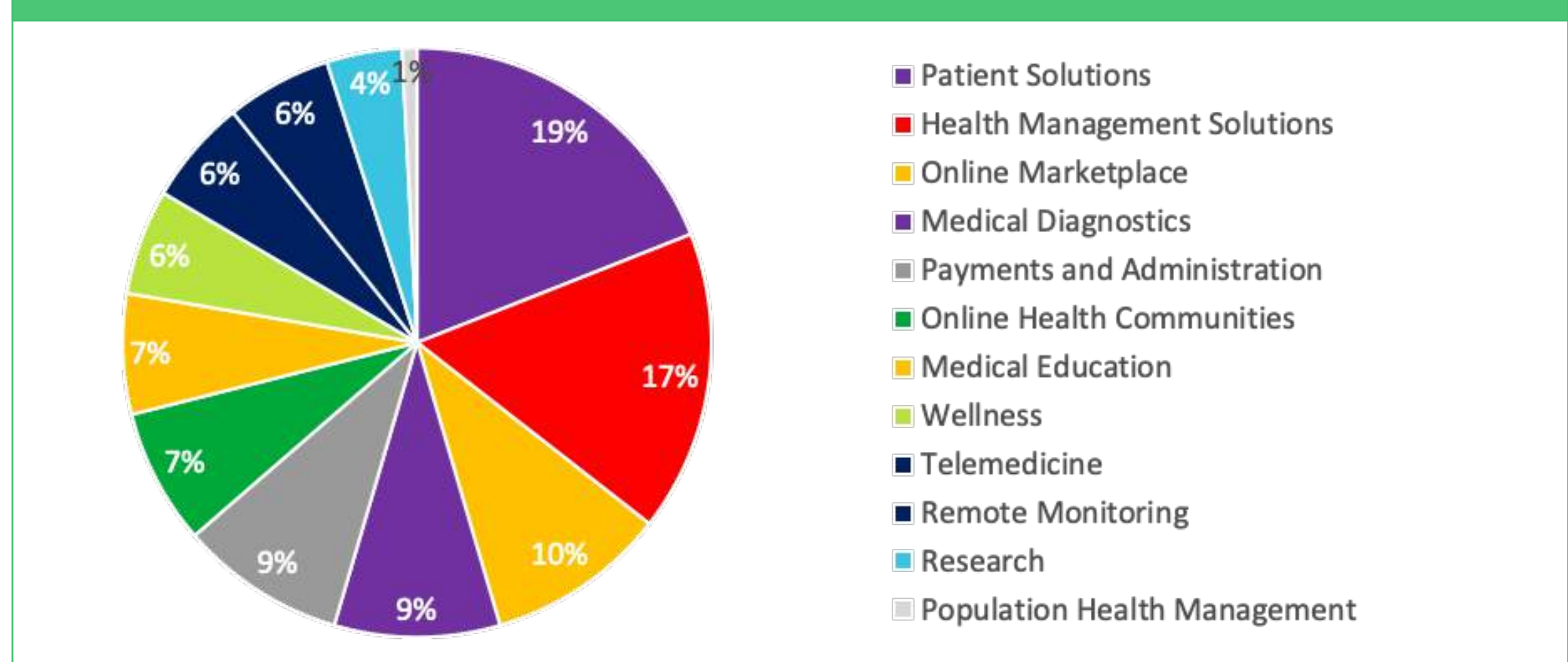


INNOVATION NODE DEEP DIVE: BEIJING

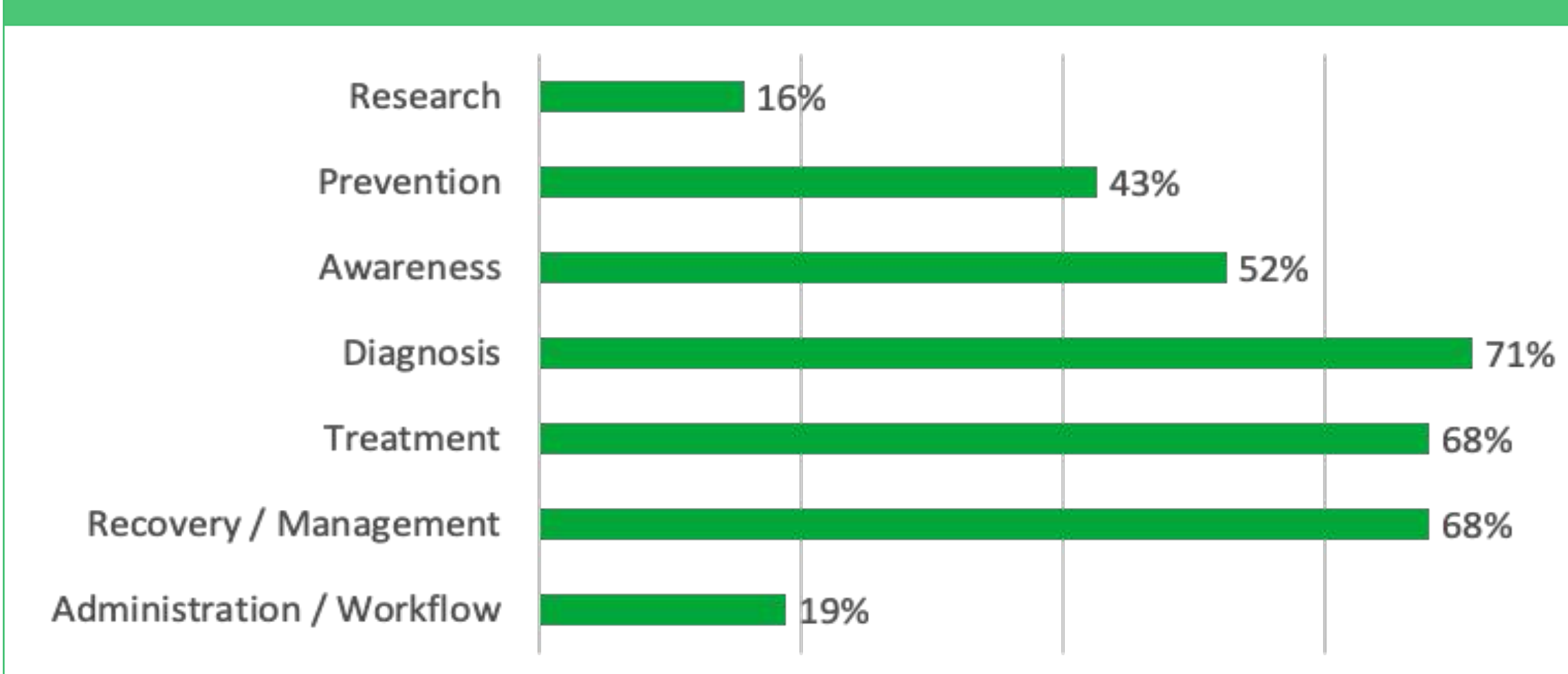
Beijing HealthTech Venture Maturity



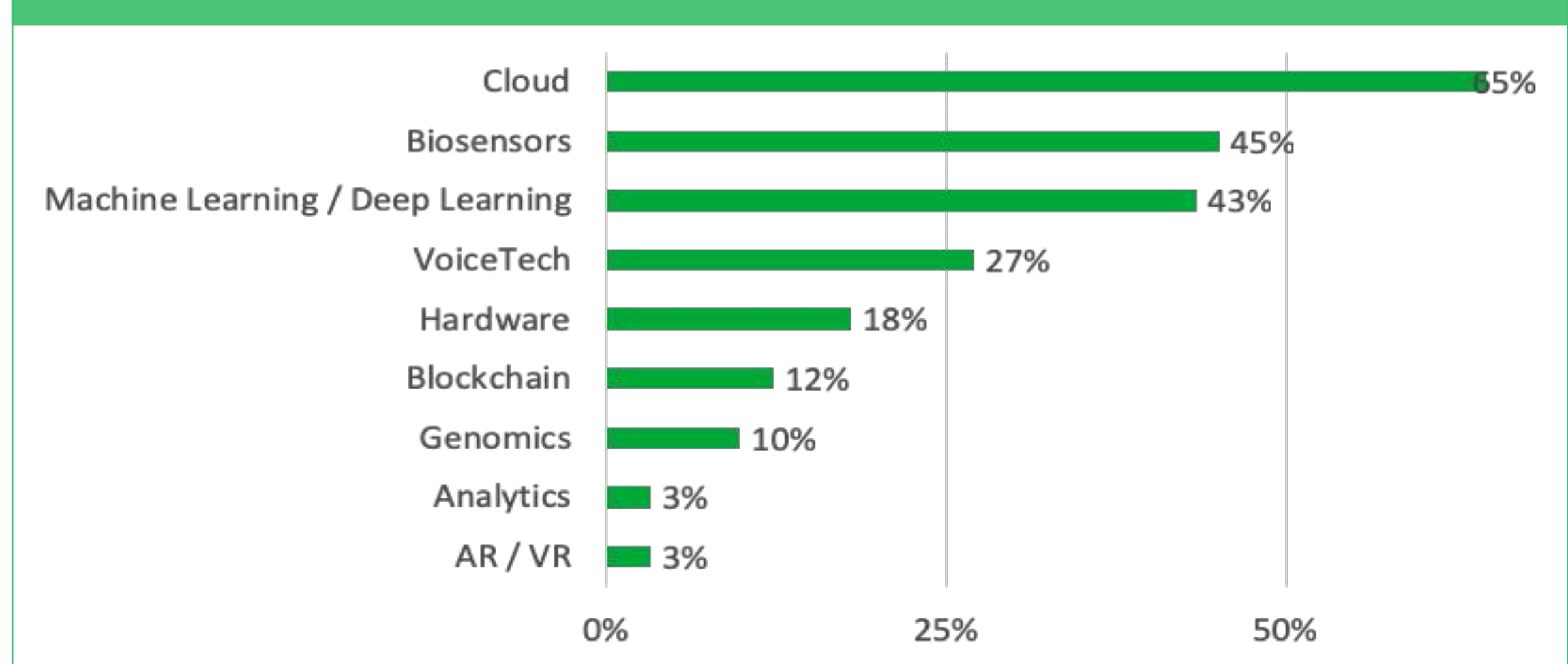
Beijing HealthTech Category Distribution



Share of Unique Value Propositions



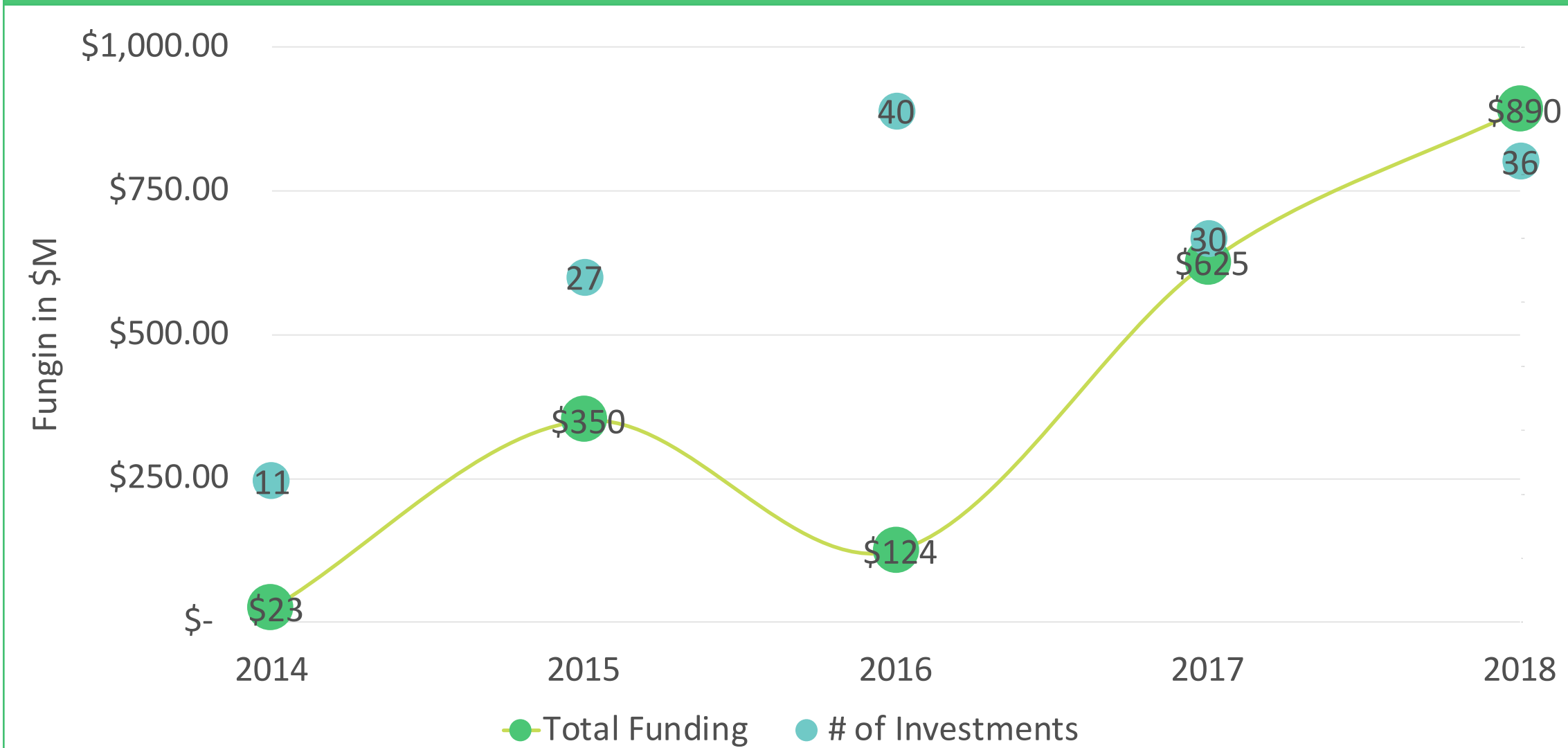
Share of Unique Technology



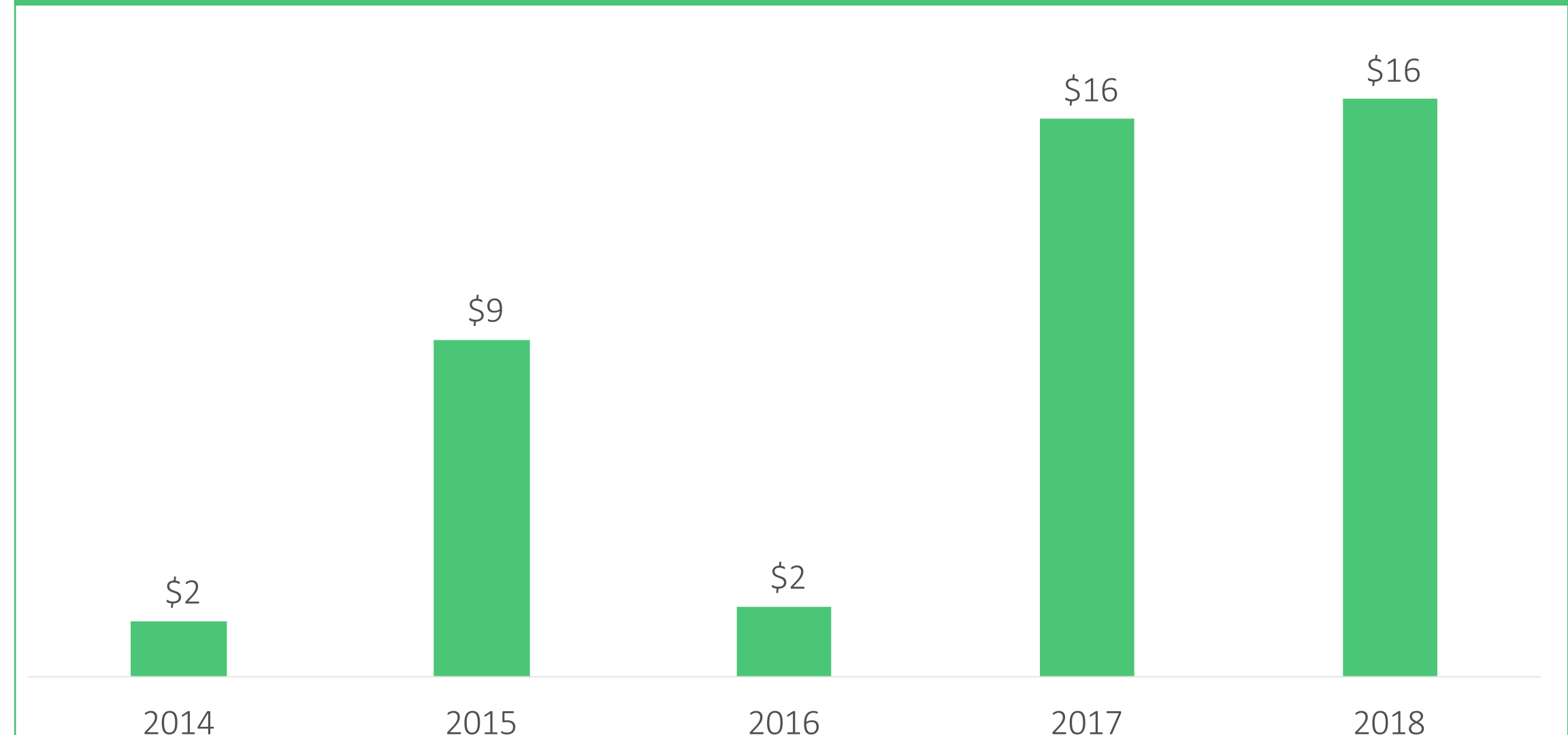
INNOVATION NODE DEEP DIVE: SHANGHAI

- Unlike Beijing, Shanghai shows a much more juvenile ecosystem. With 36 deals deployed in 2018, deal flow reached its second highest volume and an average quarterly deal deployment of 9 deals, up 28% vs 2017.
- Compared to 2017, the average funding value in 2018 remains stable at \$16M, only \$1M behind Beijing. However, by total value, 2018 exceeded 2017 full year funding by \$265M (+42.5%).
- After a low in 2016, average funding size in Shanghai plateaued in 2018 at higher total value invested, showing a flourishing HealthTech node in China

Funding history 2014 – 2018



Average funding value 2014 – 2018

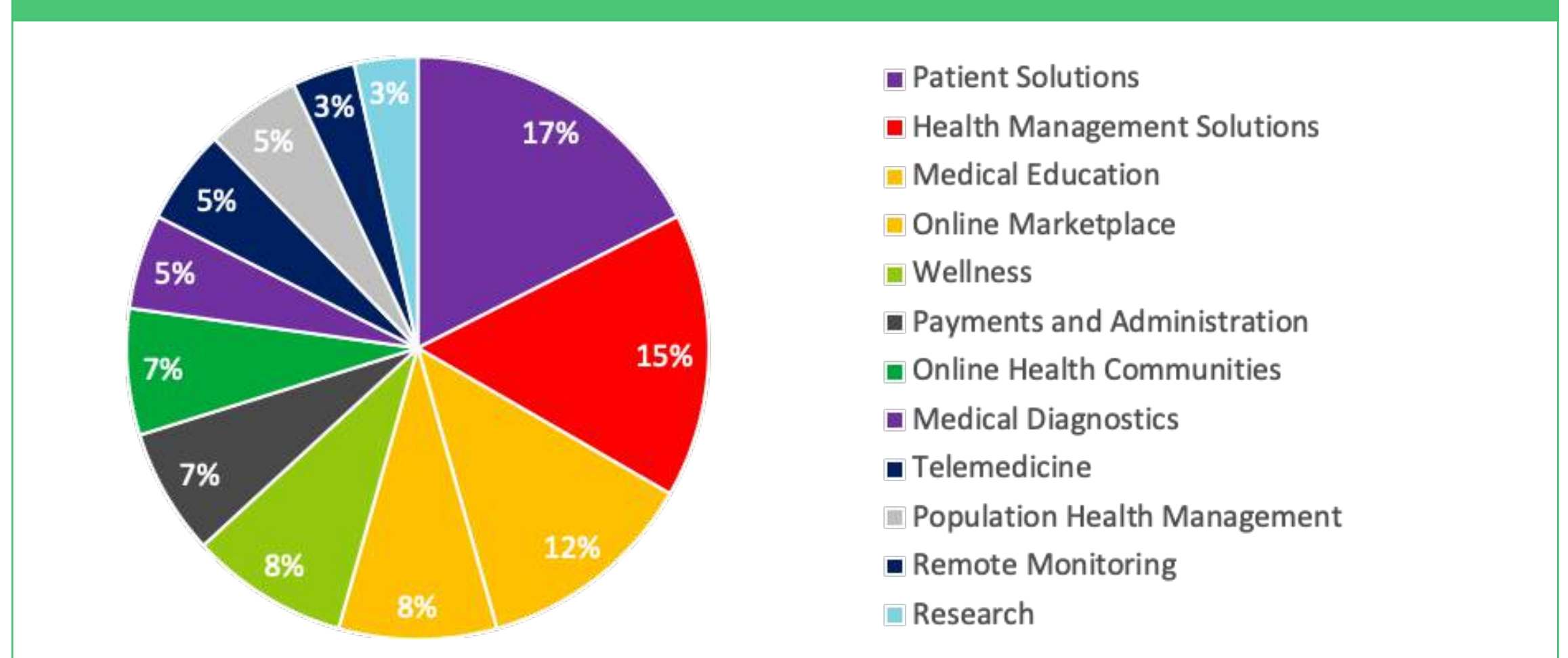


INNOVATION NODE DEEP DIVE: SHANGHAI

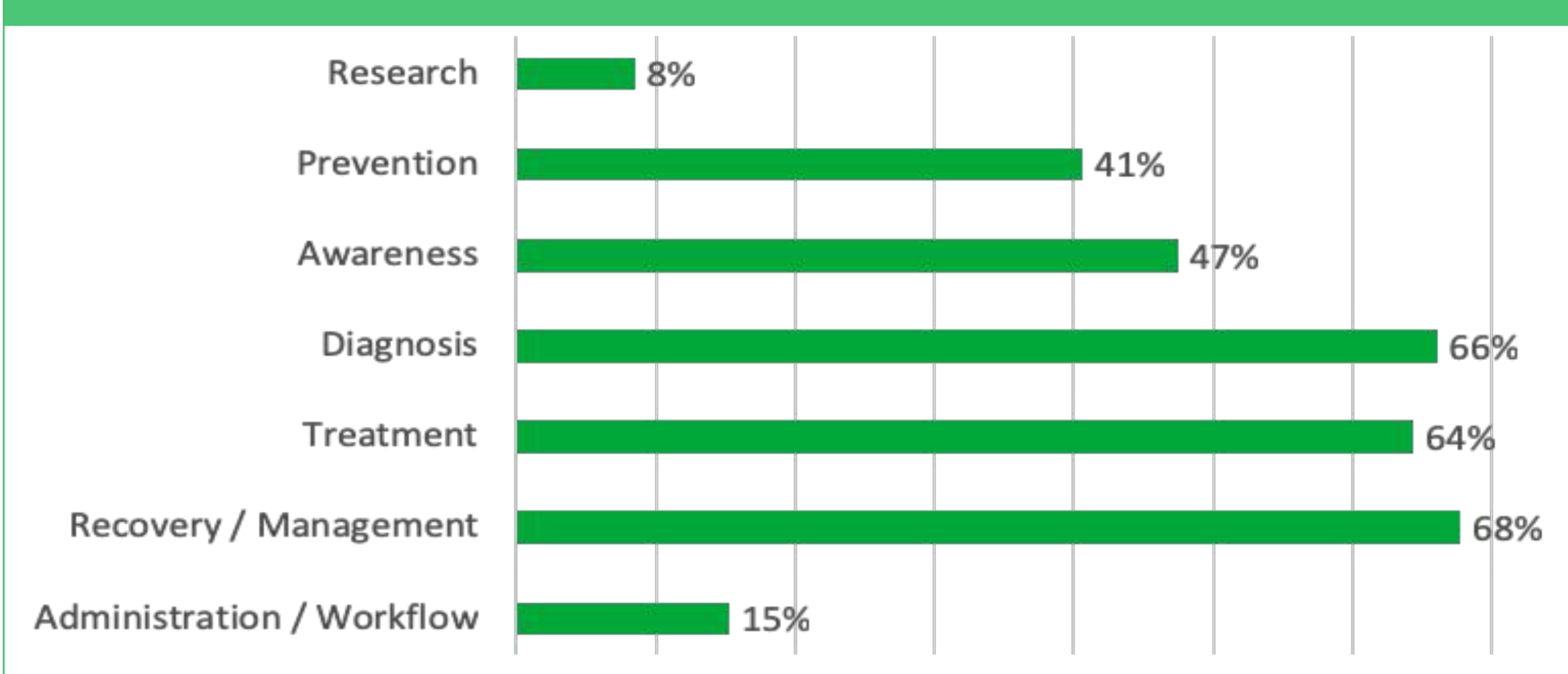
Shanghai HealthTech Venture Maturity



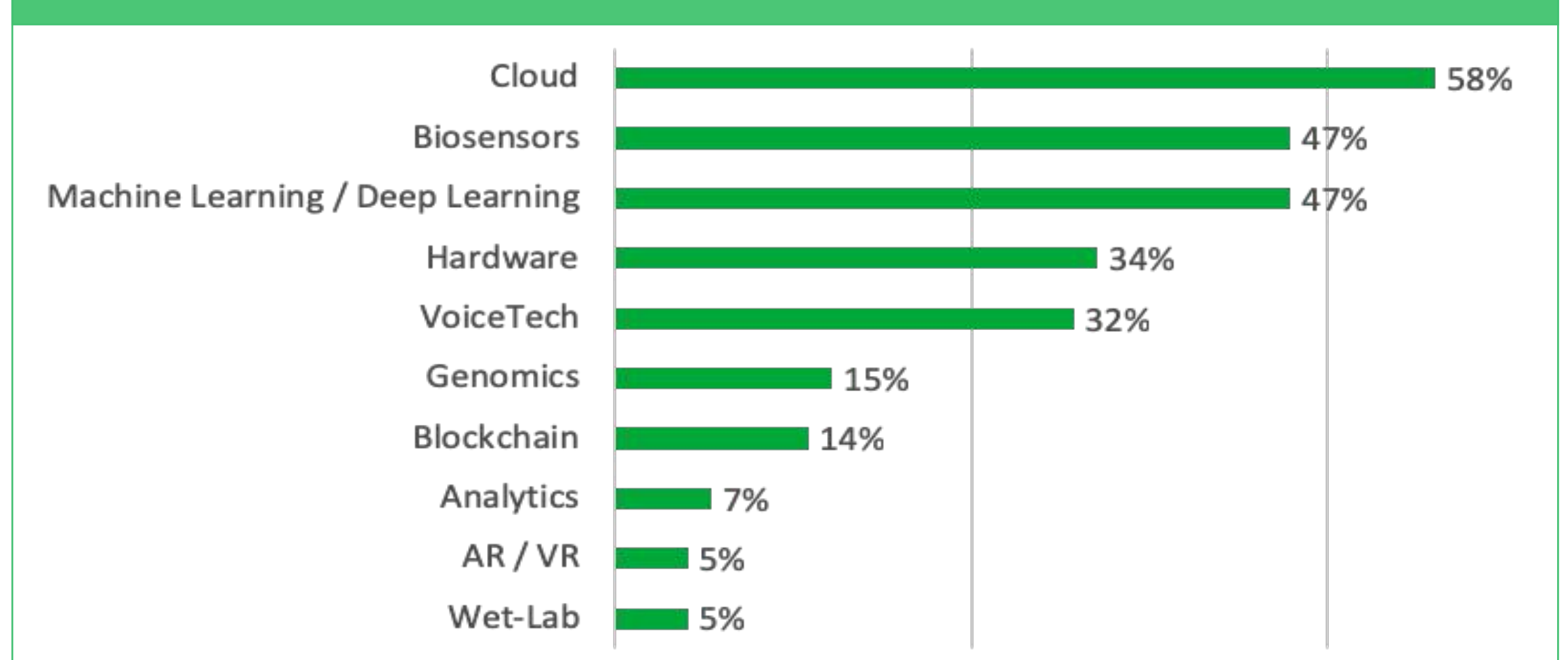
Shanghai HealthTech Category Distribution



Share of Unique Value Propositions



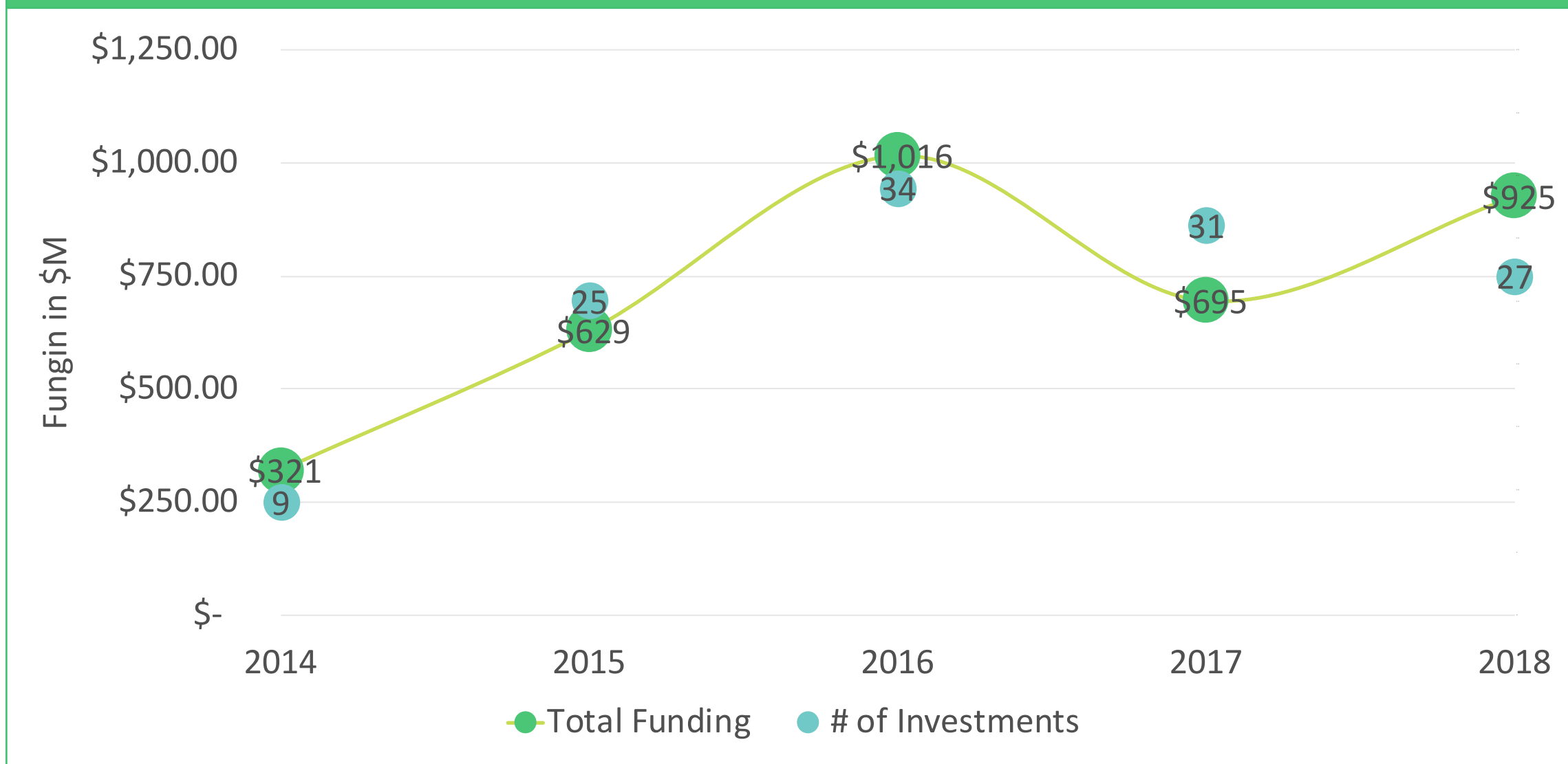
Share of Unique Technology



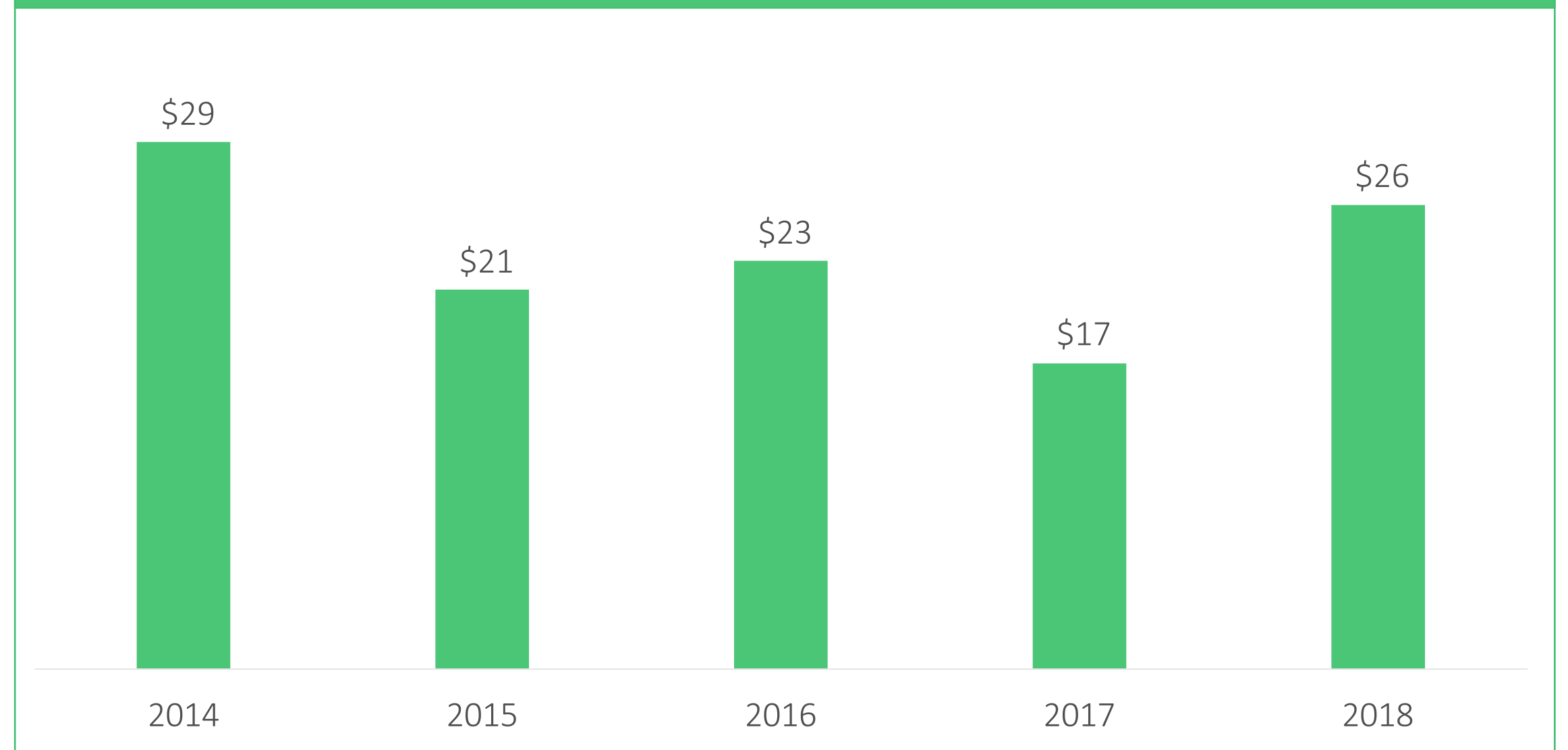
INNOVATION NODE DEEP DIVE: SHENZHEN / GUANGZHOU

- By average value deal, Shenzhen / Guangzhou show the value that exceeds Beijing by 53% and Shanghai by 62% in 2018.
- With 27 deals deployed in 2018, total deal volume in Shenzhen / Guangzhou continued to loose for a second year in a row. This represents 25% less deals compared to Shanghai and 57% less compared to Beijing.
- Total funding in 2018 reached \$925M (excluding Ping An Good Doctors' IPO), exceeding 2017's funding by 33%.

Funding history 2014 – 2018



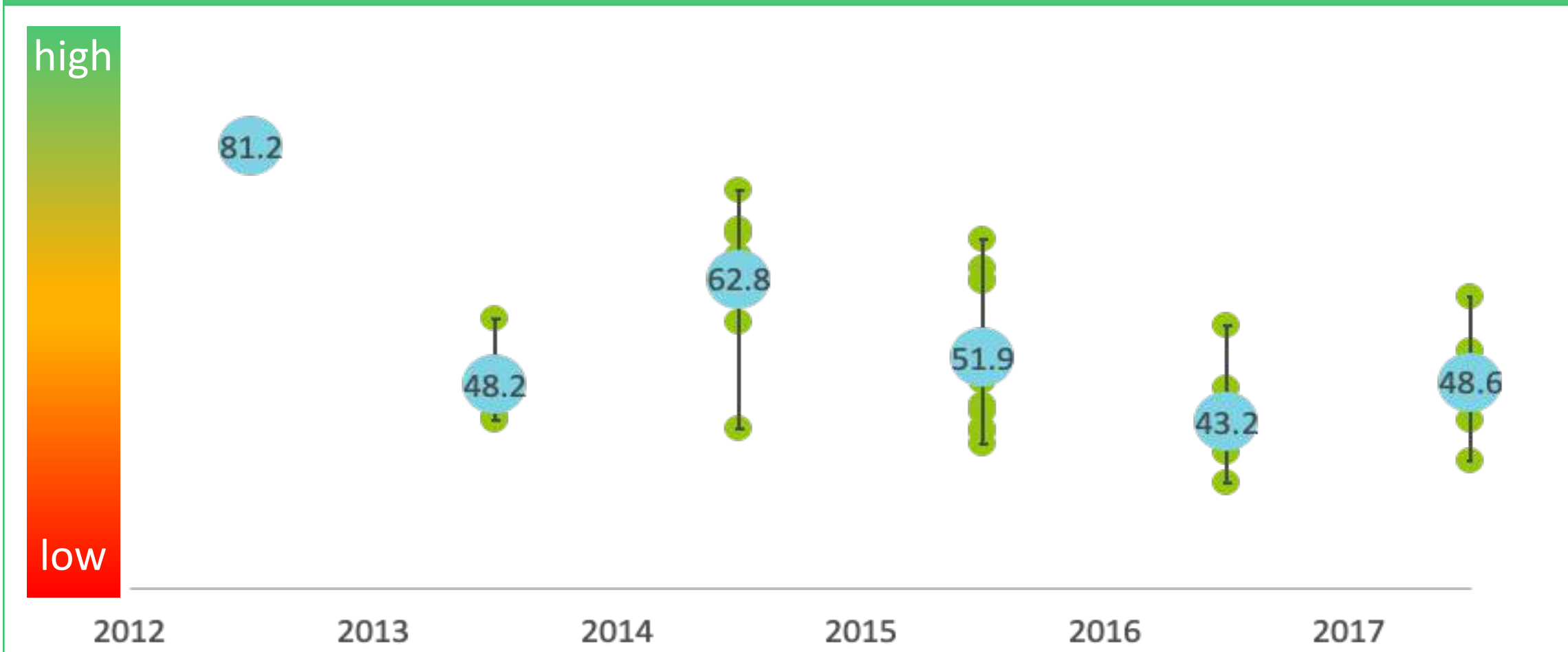
Average funding value 2014 – 2018



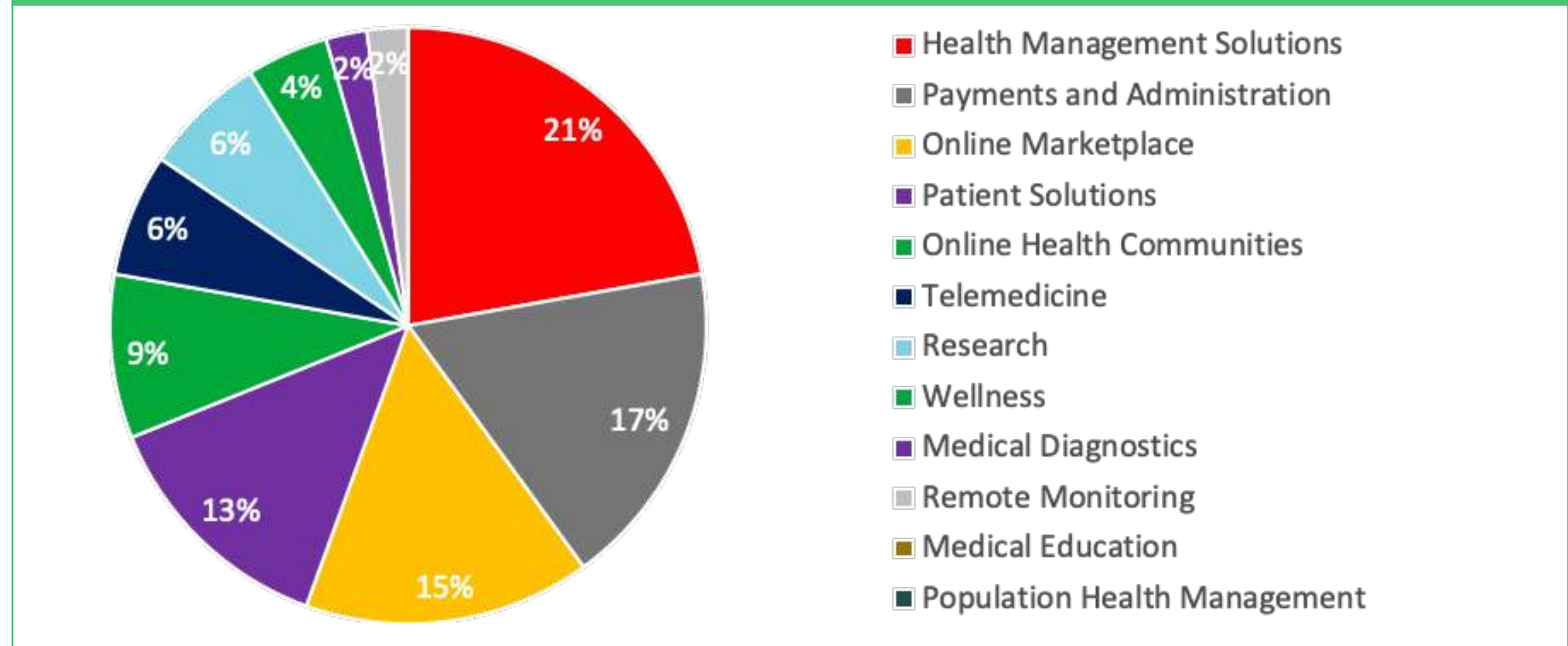
*Note: The funding information exclude the Ping An Good Doctor IPO

INNOVATION NODE DEEP DIVE: SHENZHEN

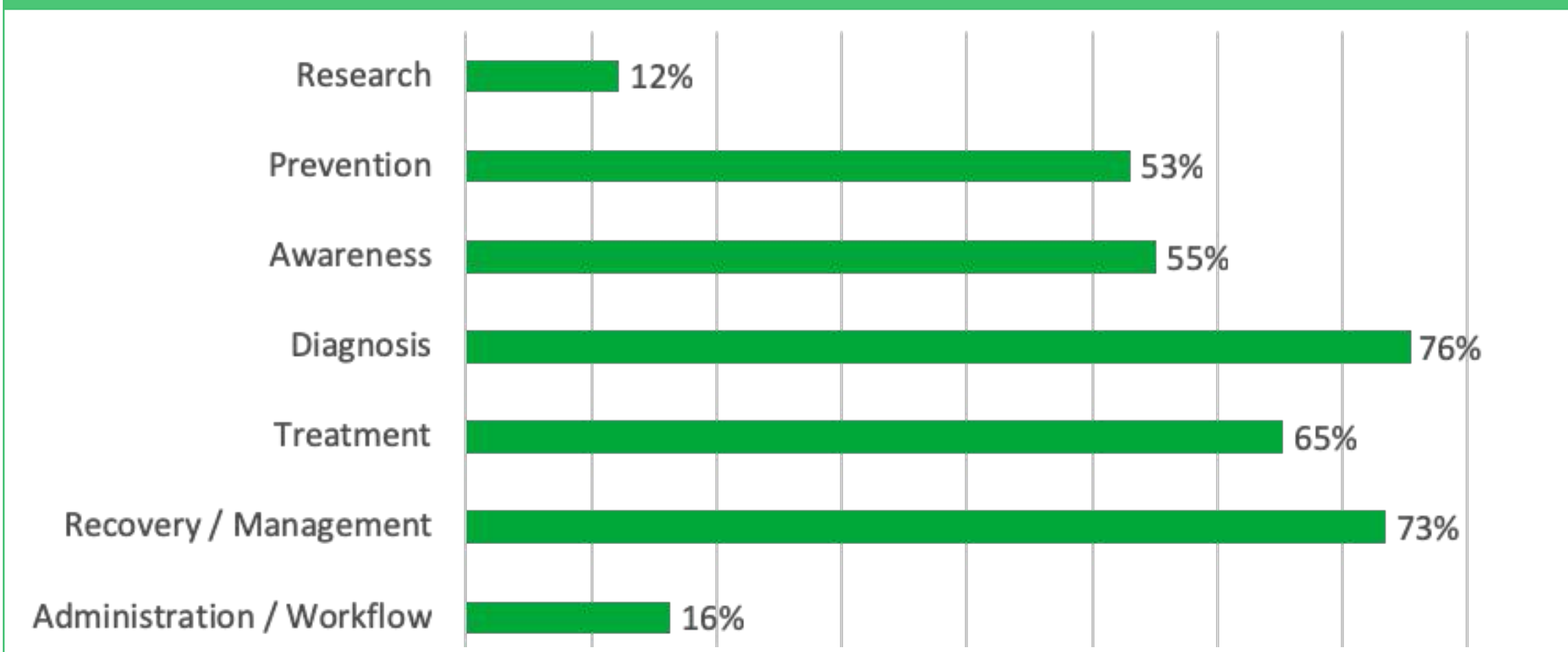
Shenzhen HealthTech Venture Maturity



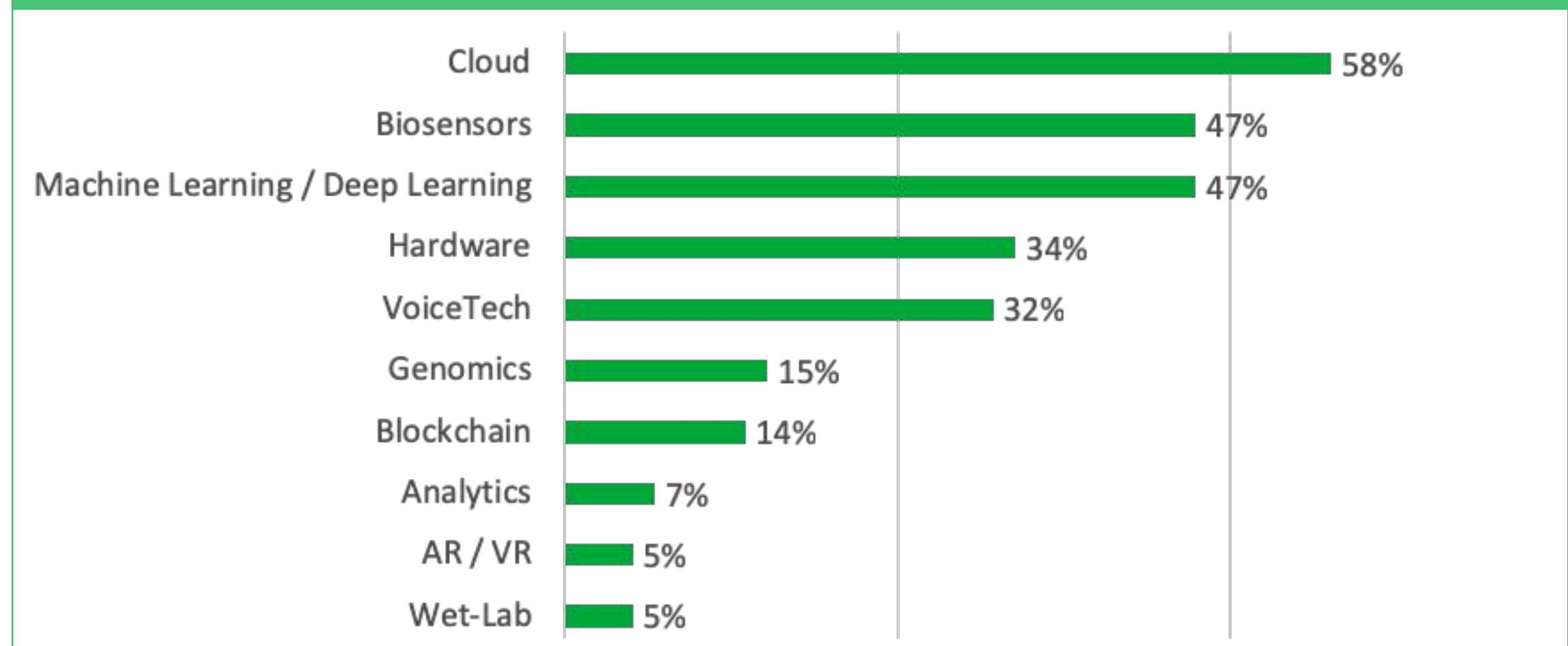
Shenzhen HealthTech Category Distribution



Share of Unique Value Propositions



Share of Unique Technology

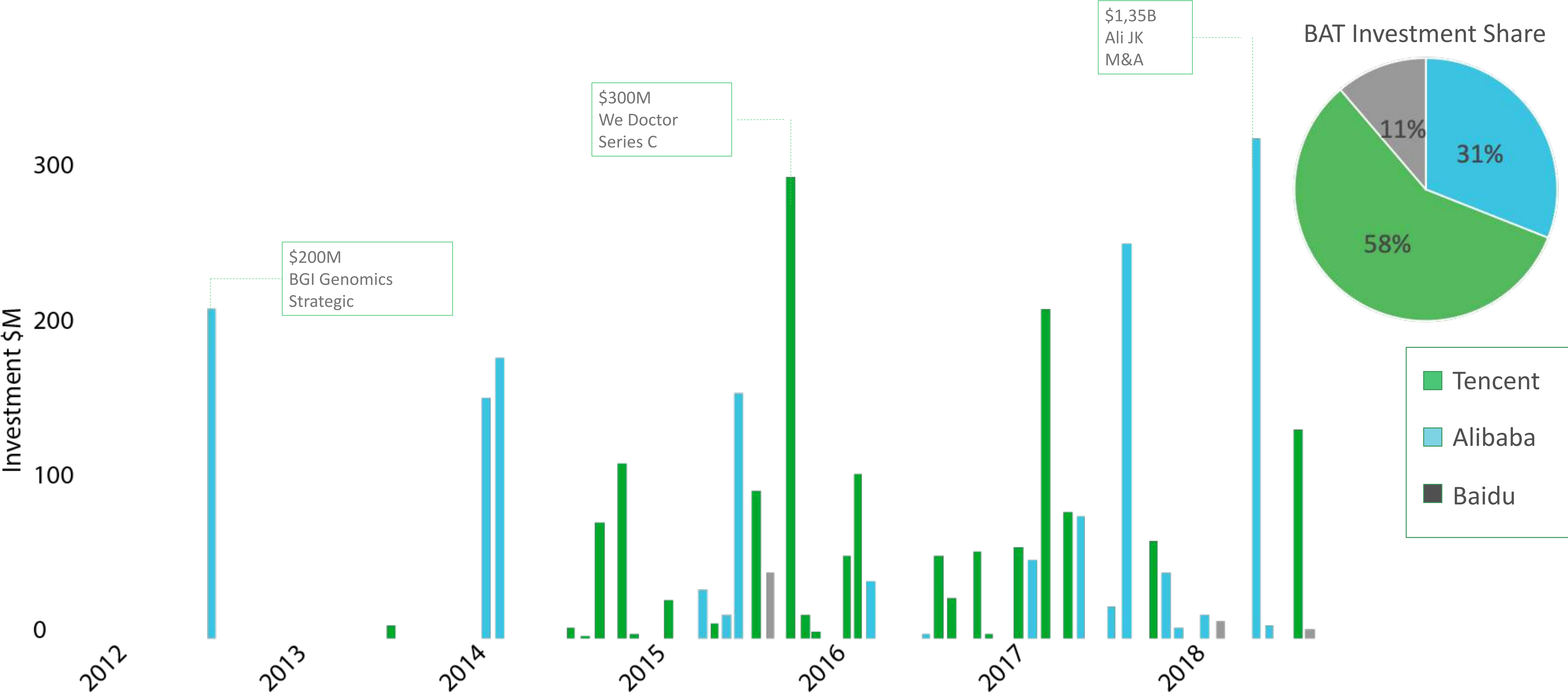




**BAT
DEEPPDIVE**



BAT INVESTMENT HISTORY IN HEALTHTECH



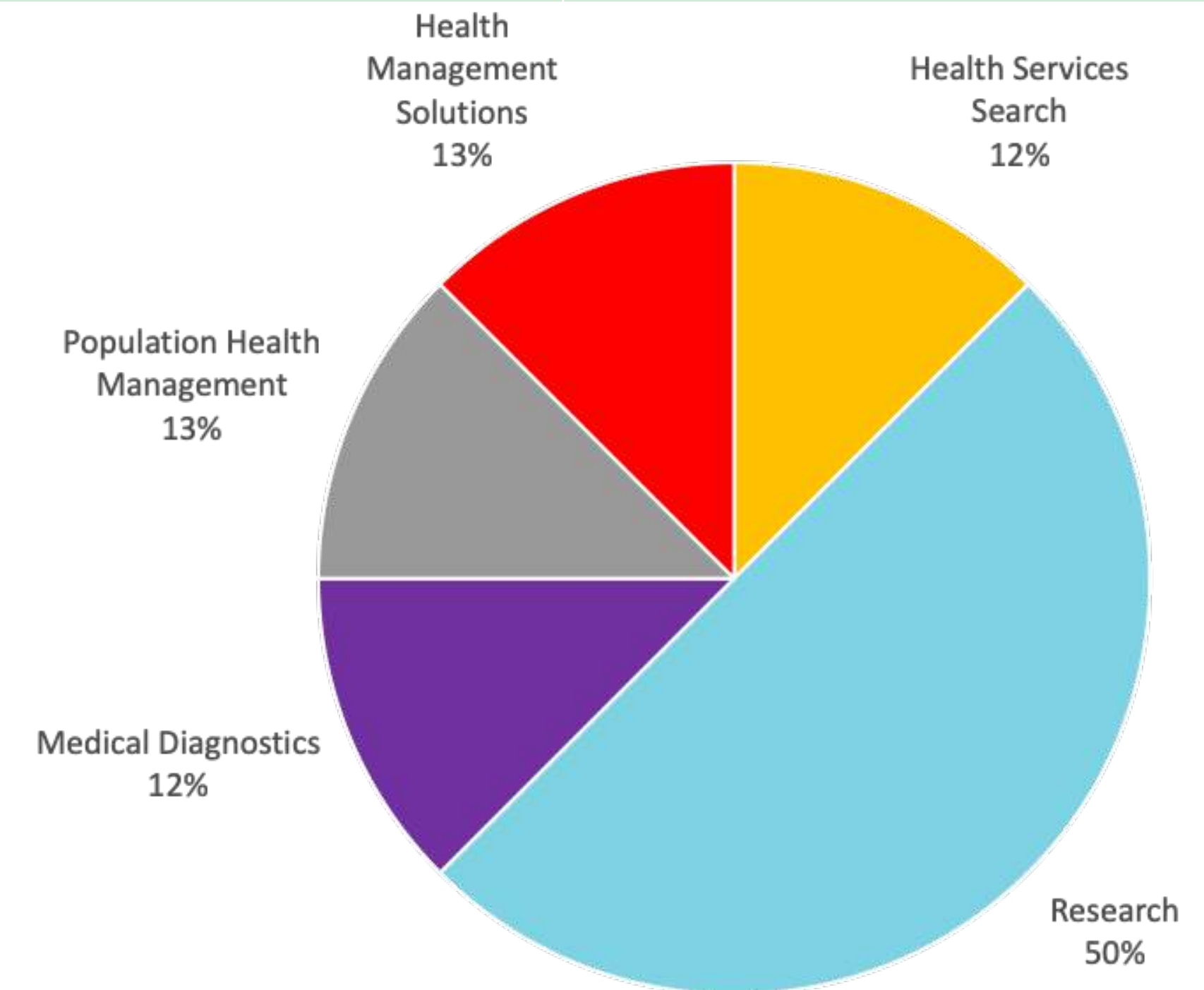
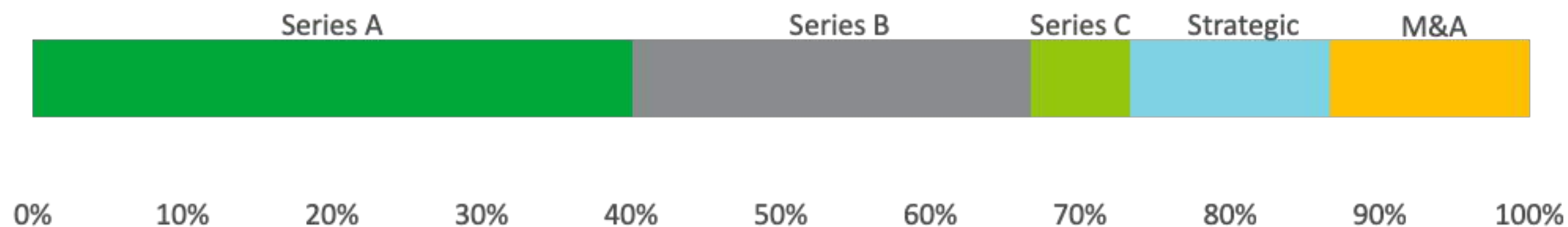
BAIDU HEALTHTECH INVESTMENT TRENDS

- Since 2015, Baidu has been involved in **8** HealthTech focused funding rounds.
- Baidu is either deploying funding via its dedicated venture arm **Baidu Ventures (BV)** which started operating in 2016 or invests directly.
- Of 138 deals closed by Baidu **5** were HealthTech focused. Of 48 deals closed by Baidu Ventures **3** were HealthTech focused.
- 4 of 8 deals closed were primarily focused on **Research**, and each one deal focused on Medical Diagnostics, Population Health Management, Health Management Solutions and Health Services Search.
- Notably, all of the ventures invested utilize **Artificial Intelligence and Machine Learning** as a technologies.
- 3 of 4 ventures invested in China mainland are incorporated in Beijing and one in Chengdu.
- Baidu primarily participates in **Early and Growth Stage** rounds.



Country	Investment Volume Share
China	62.5%
Singapore	12.5%
USA	25%

China Mainland Funding Distribution By Stage



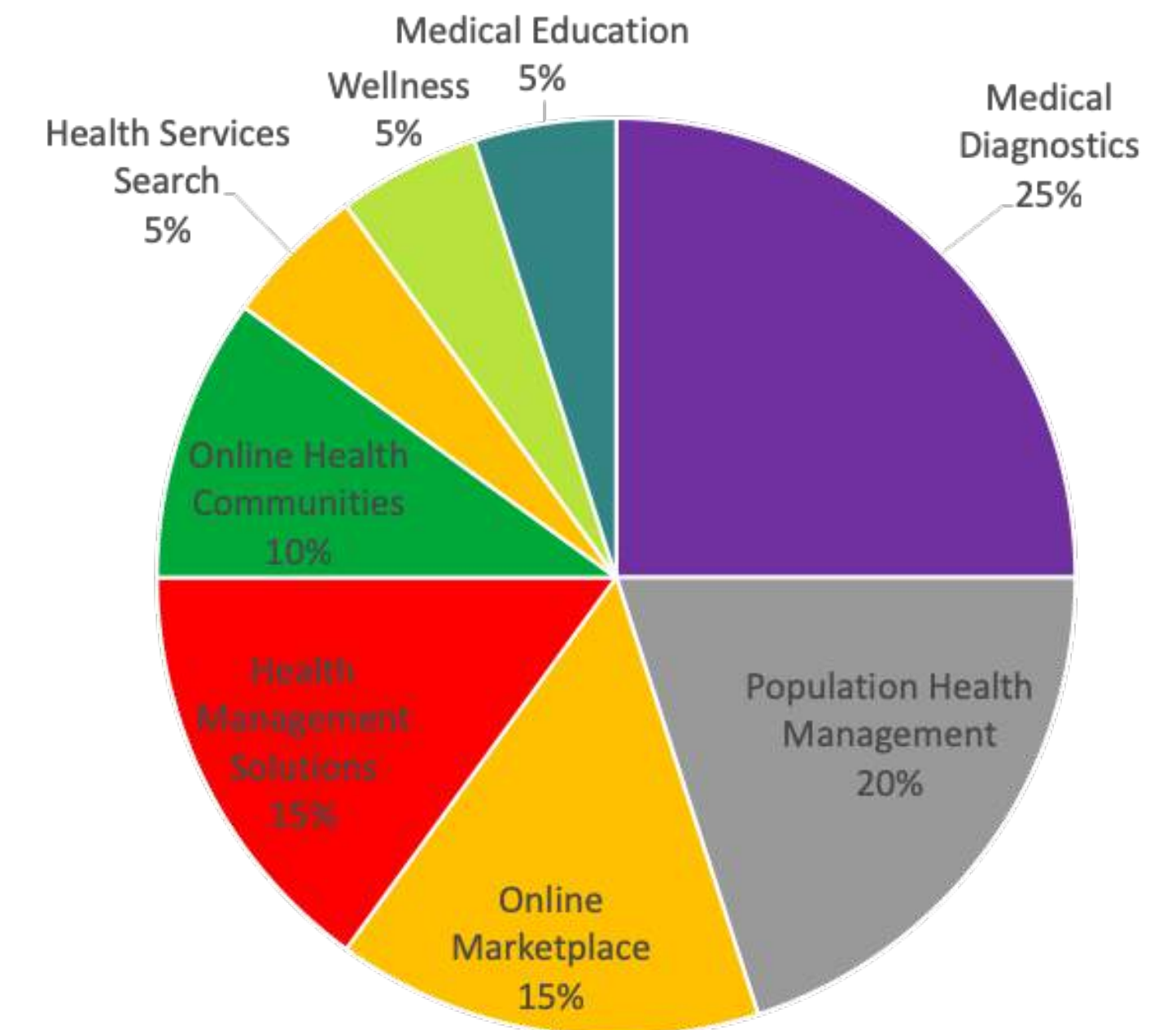
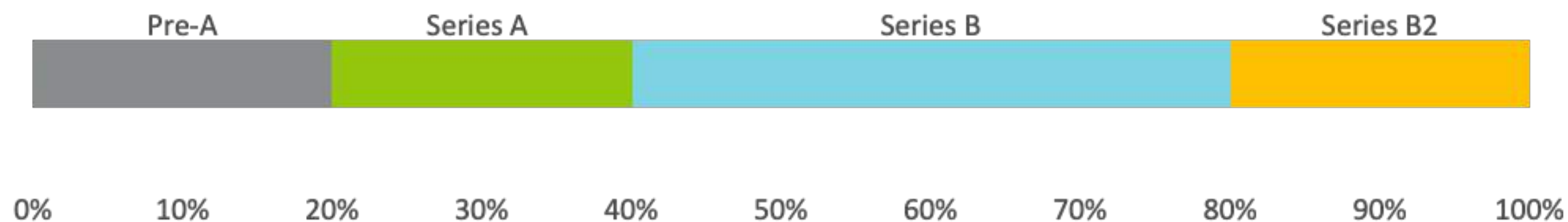
ALIBABA HEALTHTECH INVESTMENT TRENDS

- Since 2011, Alibaba has been involved in 22 HealthTech focused funding rounds and acquisitions.
- Each 5 deals were closed by Alibaba, and Ali Health, 12 deals were closed by Jack Ma's YF Capital.
- 48% of all China mainland deals are closed in Beijing, followed by Shenzhen with 19% and Hangzhou with 15%.
- While the largest share of all deals are Growth stage, Alibaba has been acquiring ventures since 2014 with Citic21cn being its first acquisition that got renamed to AliHealth.
- Recently YF Capital has acquired UK based LivaNova for \$190 million and Italy-based Esaote for \$275 million.
- In China mainland 41% of all deals are closed in Beijing followed by Shanghai and Shenzhen (both 24%).



Country	Investment Volume Share
China	77%
Hong Kong	9%
Taiwan	5%
Others	9%

China Mainland Funding Distribution By Stage



TENCENT HEALTHTECH INVESTMENT TRENDS

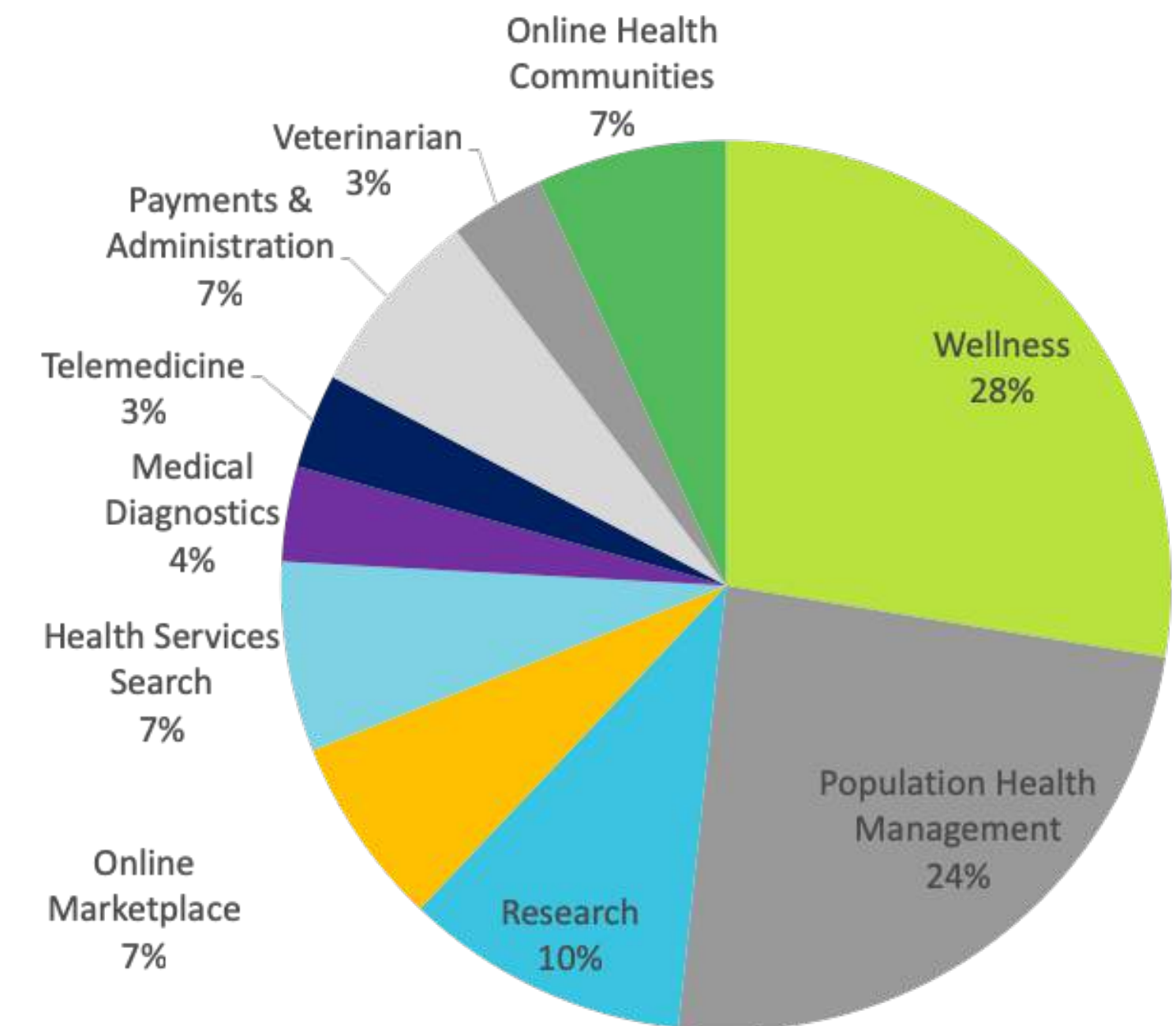
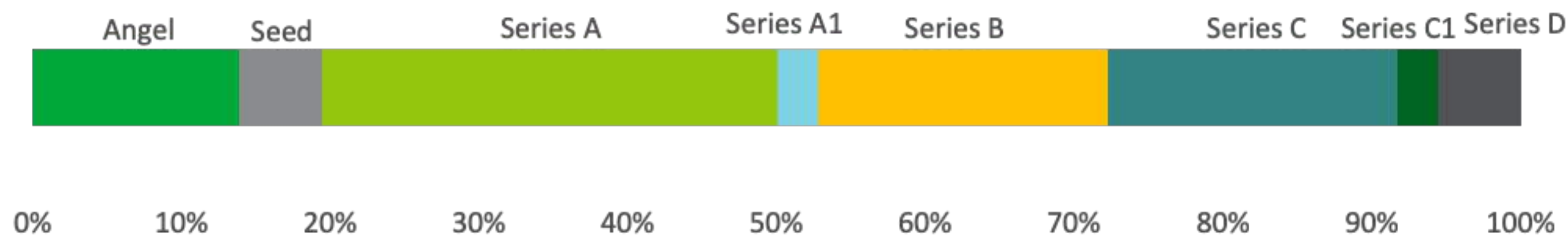
- Since 2013, Tencent has been involved in 41 HealthTech focused funding rounds.
- While 36 deals were closed as part of its Win-Win Industry Fund, 5 deals were closed by Tencent Holdings.
- 48% of all China mainland deals are closed in Beijing, followed by Shenzhen with 19% and Hangzhou with 15%.
- With more than 70% of deal volume HealthTech share, Tencent mainly focusses on early and growth stage investments with Series A seeing the highest participation.



Tencent Win-Win Industry Fund
腾讯产业共赢基金

Country	Investment Volume Share
China	66%
USA	29%
India	5%

China Mainland Funding Distribution By Stage





CHINA
HEALTHTECH
OFFICIAL
GUIDELINES



IMPROVE THE "INTERNET + HEALTH CARE" SERVICE SYSTEM

Develop "Internet +" health care services

- Medical institutions shall be encouraged to apply the Internet and other information technologies to expand the space and content of health care services and build an online and offline integrated health care model covering the whole process of health care
- The development of Internet hospitals depending on health care institutions shall be allowed. Health care institutions may use Internet hospital as their secondary name and, based on physical hospitals, use Internet technology to provide safe and appropriate health care services, allowing online subsequent visits for some common diseases and chronic diseases. After acquiring documents on the medical records of patients, physicians shall be allowed to write prescriptions online for some common diseases and chronic diseases
- Health care institutions and qualified third-party institutions shall be supported in setting up Internet information platforms to provide telemedicine, health consultation, and health management services so as to promote the effective communication among hospitals, medical personnel, and patients. (The National Health Commission and the National Development and Reform Commission shall be responsible. The authority first mentioned shall take the lead and the same shall apply hereinafter)
- Health care consortia shall actively use Internet technology to expedite the realization of the connection of medical resources from bottom to top, the interconnection and sharing of information, and efficient business synergy, facilitate services such as appointments for diagnosis and treatment, two-way referrals, and telemedicine, advance "primary check-up and higher-level diagnosis," and promote the development of an orderly hierarchical diagnosis and treatment pattern

IMPROVE THE "INTERNET + HEALTH CARE" SERVICE SYSTEM

Develop "Internet +" health care services

- The higher-level health care institutions under health care consortia shall be encouraged to use artificial intelligence and other technical means to provide remote consultation, remote electrocardiograph diagnosis, remote imaging diagnosis, and other services oriented to the primary level and promote the real-time access to, mutual recognition, and sharing of examination and diagnostic analysis results among the health care institutions under health care consortia. Telemedicine services shall be promoted in covering all the medical consortia and county-level hospitals across the country and gradually extending to community health care service institutions, township health care centres and village clinics so as to enhance the capabilities and efficiency of primary health care services. (The National Health Commission, the National Development and Reform Commission, the Ministry of Finance, and the State Administration of Traditional Chinese Medicine shall be responsible)
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IMPROVE THE "INTERNET + HEALTH CARE" SERVICE SYSTEM

Innovating "Internet +" public health services

- The online access to and well-regulated use of the electronic health records of residents shall be boosted. Hypertension and diabetes, among others, shall be brought into focus in strengthening the online service and management with respect to the chronic diseases in the elderly. With children under the National Immunization Program as priority service targets, existing preventive vaccination information platforms shall be consolidated to optimize preventive vaccination services. The use of wearable devices to obtain vital signs data shall be encouraged, and pregnant women shall be provided with health monitoring and management services. The information management, follow-up assessment, and classification intervention of patients with severe mental disorders shall be intensified. (The National Health Commission shall be responsible)

- Health care institutions shall be encouraged to cooperate with Internet enterprises, strengthen the consolidation of regional health care information resources, and explore the application of big data technology analysis methods such as crowd flow and climate change to predict the epidemic trends in diseases, strengthen the intelligent monitoring of infectious diseases and other diseases, and enhance the capabilities to prevent and control major diseases and tackle outbreaks of public health events. (The National Health Commission shall be responsible)

IMPROVE THE "INTERNET + HEALTH CARE" SERVICE SYSTEM

Optimizing "Internet +" contracting in family doctor services

- The building and application of intelligent information platforms for contracting in family doctor services shall be accelerated, the technical support of higher-level hospitals for primary level shall be strengthened, an online evaluation, assessment and incentive mechanism shall be explored, the capacity of services of the family doctor team shall be enhanced, the quality and efficiency of contracting in services shall be heightened, and the trust of the people in family doctors shall be augmented. (The National Health Commission, the National Development and Reform Commission, the Ministry of Finance, and the State Administration of Traditional Chinese Medicine shall be responsible)
- Online contracting in services shall be encouraged, contracting residents shall be provided with online health consultations, appointments and referrals, follow-up of chronic diseases, health management, extension of prescriptions, and other services, the transformation of family doctor service models shall be advanced, and the people experience with contracting in service shall be improved. (The National Health Commission shall be responsible)

IMPROVE THE "INTERNET + HEALTH CARE" SERVICE SYSTEM

Improving the "Internet +" drug supply guarantee services

- After prescriptions for common diseases and chronic diseases written online are reviewed by pharmacists, health care institutions and drug distribution enterprises may commission delivery from qualified third-party institutions. The interconnection and real-time sharing of the prescription information of health care institutions and retail drug consumption information shall be explored, and the well-regulated development of online drug sales and medical logistic distribution, among others, shall be furthered. (The National Health Commission, the State Administration of Market Regulation, and the State Drug Administration shall be responsible)

- The National Health Information Platform shall be depended on to strengthen the collection of Internet-based multi-source information on short drugs and collaborative application of supply business so as to enhance selection and other capabilities in relation to basic drugs catalogs and encouraged generic drugs catalogs. (The National Health Commission, the Ministry of Industry and Information Technology, the State Administration of Market Regulation, and the State Drug Administration shall be responsible)

IMPROVE THE "INTERNET + HEALTH CARE" SERVICE SYSTEM

Promote the "Internet +" health insurance settlement services

- Accelerate the integration of medical insurance information system, realize the sharing of medical insurance data and related departments' data, gradually expand the online payment function, promote “one-stop” settlement, and provide more convenient services for insured personnel. (Responsible for the National Health Insurance Administration, the Ministry of Human Resources and Social Security, and the National Health and Health Commission)
- Continue to expand the scope of networked designated medical institutions, and gradually integrate more primary medical institutions into direct settlement of medical treatment in different places. Further improve the direct settlement of hospitalization expenses for migrant workers and the majority of “double-creative” personnel across provinces. (Responsible by the National Health Insurance Agency)
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IMPROVE THE "INTERNET + HEALTH CARE" SERVICE SYSTEM

Strengthen "Internet +" medical education and popular science services

- Encourage the establishment of a medical health education training cloud platform to provide a variety of medical online courses and medical education. To build a networked, digital, personalized, and lifelong medical education and training system, and encourage medical workers to carry out research and exchanges on incurable diseases and major diseases, and improve business quality. (Responsible for the National Health and Wellness Committee, the Ministry of Education, and the Ministry of Human Resources and Social Security)
- Implement the "Continuous Medical Education + Appropriate Technology Promotion" initiative, focusing on the needs of health and poverty alleviation, focusing on grassroots and poverty-stricken areas, and popularizing practical and appropriate technologies through distance education. (Responsible for the National Health and Health Commission, the Ministry of Human Resources and Social Security, and the State Administration of Traditional Chinese Medicine)
- Establish a network popular science platform, use the Internet to provide accurate education of health science knowledge, popularize healthy lifestyles, and improve residents' self-health management ability and health literacy. (National Health and Health Commission, China Association for Science and Technology)

IMPROVE THE "INTERNET + HEALTH CARE" SERVICE SYSTEM

Promote the "Internet +" artificial intelligence application service.

- Develop a clinical diagnosis and treatment decision support system based on artificial intelligence, and carry out intelligent medical image recognition, pathological typing and multidisciplinary consultation, and application of intelligent speech technology under various medical health scenarios to improve the efficiency of medical services. Support the application of TCM syndrome differentiation and treatment intelligent assistant system, and improve the ability of basic Chinese medicine diagnosis and treatment services. Carry out mobile medical demonstration based on artificial intelligence technology and medical health intelligent equipment, real-time monitoring and evaluation of personal health, disease early warning, chronic disease screening, and active intervention. (The National Development and Reform Commission, the Ministry of Science and Technology, the Ministry of Industry and Information Technology, the National Health and Health Commission, and the State Administration of Traditional Chinese Medicine are responsible for the division of responsibilities)
- Strengthen the integration and application of clinical and scientific research data, support the development of medical health-related artificial intelligence technology, medical robots, large medical equipment, emergency rescue medical equipment, biological three-dimensional printing technology and wearable equipment. Comply with the development trend of industrial Internet innovation, improve the digital and intelligent manufacturing level of medical and health equipment, and promote industrial upgrading. (The National Development and Reform Commission, the Ministry of Industry and Information Technology, the Ministry of Science and Technology, the National Health and Health Commission, etc. are responsible for the division of responsibilities)

IMPROVE THE "INTERNET + MEDICAL HEALTH" SUPPORT SYSTEM

Accelerate the realization of the sharing of medical and health information

- All regions and relevant departments should coordinate and promote the construction of a unified national authority, interconnected and universal health information platform, and gradually realize the interconnection and communication with the national data sharing and exchange platform to strengthen population, public health, medical services, medical insurance, and drug supply. Data collection such as integrated management, smooth data sharing channels between departments, regions and industries, and promote the sharing of health information for all. (Responsible for the National Development and Reform Commission, the Ministry of Industry and Information Technology, the Ministry of Public Security, the Ministry of Human Resources and Social Security, the National Health and Health Commission, the State Administration of Markets, the National Medical Security Bureau, and the provincial governments.)
- Accelerate the construction of basic resource information database, and improve the database of all members of the population, electronic health records, electronic medical records. Vigorously improve the application level of informationization in medical institutions, hospitals at the second level or above should improve the functions of hospital information platforms, integrate various system resources in the hospital, and improve hospital management efficiency. Third-level hospitals must realize the sharing of hospital medical service information by 2020, and conditional hospitals should be realized as soon as possible. (Responsible by the National Health and Wellness Committee)
- Improve the grading diagnosis and treatment information system based on Internet and big data technology, and promote the realization of the sharing of electronic health records, electronic medical records, inspection and inspection results, and authorized use among medical and health institutions at different levels. Support the construction of information software and hardware for grassroots medical and health institutions in the poor and poor areas. (Responsible by the National Health and Health Commission, the National Development and Reform Commission, and the Ministry of Finance)

IMPROVE THE "INTERNET + MEDICAL HEALTH" SUPPORT SYSTEM

Improve the standard system of "Internet + medical health"

- Improve the unified and standardized national medical health data resource catalogue and standard system. Strengthen the standard management of "Internet + medical health" standards, formulate basic standards such as medical services, data security, personal information protection, information sharing, and comprehensively push the medical record on the front page of the medical record, disease classification and code, surgical operation classification and code, medical terms The term "four unifications". (Responsible by the National Health and Health Commission and the State Administration of Markets)
- Accelerate the application of national hospital information-ization construction standards and norms, strengthen the provincial integrated regional platform and hospital information platform function guidelines, the promotion and application of data standards, unified data interfaces, and provide support for information sharing. (Responsible by the National Health and Health Commission and the State Administration of Markets)

IMPROVE THE "INTERNET + MEDICAL HEALTH" SUPPORT SYSTEM

Improve the level of hospital management and convenience services

- Focus on the growing needs of the masses, use information technology, optimize service processes, improve service efficiency, and improve the matching of medical service supply and demand. By 2020, hospitals at the second level or above generally provide online services such as scheduled appointments, intelligent medical guidance, waiting reminders, inspection results, inter-diagnosis, and mobile payments. Conditional medical and health institutions can carry out services such as mobile care, online monitoring of vital signs, intelligent medical image recognition, and home monitoring. (Responsible by the National Health and Wellness Commission and the State Administration of Traditional Chinese Medicine)
- Support medical inspection agencies, medical and health institutions, and Internet companies to develop medical health services such as disease prevention, inspection and testing. Promote the pre-hospital emergency vehicle monitoring system to connect with the regional or hospital information platform, and do a good job in sharing patient information, remote first aid guidance, and first aid preparation in the hospital to improve first aid performance. Promote the "smart Chinese pharmacy" to improve the level of pharmacy services such as Chinese medicine decoction pieces and prescription preparations. (Responsible for the National Health and Wellness Commission, the Ministry of Industry and Information Technology, and the State Administration of Traditional Chinese Medicine)

IMPROVE THE "INTERNET + MEDICAL HEALTH" SUPPORT SYSTEM

Enhance the infrastructure support capacity of medical institutions

- Improve the "Internet + medical health" service security level, promote the construction of medical and health service system, scientific layout, rational allocation, implementation of regional central hospital medical testing equipment configuration support project, the state will provide appropriate support to poor areas in the central and western regions. Accelerate the standardization of grassroots medical and health institutions and improve the ability of grassroots equipment support. (Responsible by the National Health and Health Commission, the National Development and Reform Commission, and the Ministry of Finance)
- Focus on supporting high-speed broadband networks to generally cover medical institutions at all levels in urban and rural areas, conduct in-depth pilots of universal telecommunications services, and promote the extension of fiber-optic broadband networks to rural medical institutions. Promote telecom enterprises to accelerate the pace of broadband network evolution and upgrade, deploy high-capacity fiber-optic broadband networks, and provide high-speed network access. Improve the coverage of mobile broadband networks and support the development of emergency telemedicine for emergency vehicles. (Ministry of Industry and Information Technology, National Health and Health Committee is responsible for division of responsibilities)
- Facing the needs of telemedicine and medical information sharing, encourage telecom enterprises to provide high-quality Internet private lines, virtual private networks (VPNs) and other network access services to medical institutions, promote the construction of telemedicine private networks, and guarantee the quality of medical-related data transmission services. Support medical institutions to choose to use high-speed and high-reliability network access services. (Ministry of Industry and Information Technology, National Health and Health Committee is responsible for division of responsibilities)

IMPROVE THE "INTERNET + MEDICAL HEALTH" SUPPORT SYSTEM

Timely formulate and improve relevant supporting policies

- Adapt to the development of “Internet + medical health” and further improve the medical insurance payment policy. Gradually integrate qualified Internet medical treatment services into the scope of medical insurance payment, establish a cost sharing mechanism, facilitate the people to seek medical treatment nearby, and promote the effective use of quality medical resources. Improve the Internet medical treatment charging policy, strengthen the use of management, promote the formation of a reasonable interest distribution mechanism, and support the sustainable development of Internet medical services. (Responsible by the National Health Insurance Agency)
- Improve the doctor's multi-point practice policy and encourage practicing physicians to carry out "Internet + medical health" services. (Responsible by the National Health and Wellness Committee)

STRENGTHEN INDUSTRY SUPERVISION AND SECURITY

Strengthen medical quality supervision

- Introduce management measures to regulate Internet diagnosis and treatment behaviors, clarify the bottom line of supervision, improve the standards for access to relevant institutions, minimize access restrictions, strengthen post-event supervision, and ensure the quality and safety of medical and health services. Promote the construction of a network credibility system, accelerate the construction of nationally-identified medical and health personnel and medical and health institutions, credible medical digital identity, electronic real-name authentication, data access control information systems, innovative regulatory mechanisms, and enhance regulatory capabilities. Establish a medical responsibility sharing mechanism and implement online informed consent notification to prevent and resolve medical risks. (Responsible by the National Health and Health Commission, the National Network Office, the Ministry of Industry and Information Technology, and the Ministry of Public Security)
- Third-party organizations such as the Internet Medical Health Service Platform shall ensure that the qualifications of the service personnel are in compliance with relevant regulations and are responsible for the services provided. The data generated by the “Internet + Medical Health” service should be traced throughout the process, and can be inquired and traceable to meet the regulatory needs of the industry. (Responsible for the National Health and Health Commission, the National Network Office, the Ministry of Industry and Information Technology, the Ministry of Public Security, and the State Administration of Market Supervision)

STRENGTHEN INDUSTRY SUPERVISION AND SECURITY

Safeguarding data and information security

- Study and formulate regulations for the identification, opening, circulation, trading and property rights protection of health care big data. Strictly implement information security and health medical data confidentiality regulations, establish and improve personal privacy information protection system, strictly manage patient information, user data, genetic data, etc., and punish illegally trading and leaking information according to laws and regulations. (Responsible by the National Health and Health Commission, the National Network Office, the Ministry of Industry and Information Technology, and the Ministry of Public Security)
- Strengthen the information protection of medical and health institutions, Internet medical and health service platforms, intelligent medical equipment, key information infrastructure and data application services, and regularly conduct information security hazard investigation, monitoring and early warning. Sensitive data such as patient information should be stored in the territory. If it is necessary to provide it abroad, it should conduct a safety assessment in accordance with relevant regulations. (Responsible for the National Health and Wellness Commission, the National Network Office, and the Ministry of Industry and Information Technology)



KEY
INFORMATION



REPORT LEXICON OF KEY TERMS

Funding related terms

- Early Stage: Includes Angel, Seed, Pre-A funding events
- Growth Stage: Includes Series A, Series B and all Bridge rounds to Series A and Series B events
- Late Stage: Includes all Series C and above events, including Bridge rounds to any stage later than Series C.
- Exit: Includes Initial Public Offerings (IPOs), mergers or acquisition (M&A)

Other terms

- YoY Year-over-year
- QoQ Quarter-over-quarter
- MoM Month on Month
- YTD Year-to-date
- CAGR Compound Annual Growth Rate
- Alpha Score GGA's proprietary composite score measuring the maturity of a HealthTech venture

REPORT SPECIFIC REFERENCES

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METHODOLOGY

What we define as HealthTech

- HealthTech defines the intersection between healthcare and technology and is also sometimes referred to as digital health
- HealthTech does not include Biotech, such as protein research or pharmaceuticals, and also does not include MedTech, such as devices that are implanted into the body

What information do we track

- Galen Growth Asia tracks a comprehensive inventory of key data points ranging from company demographics to funding and valuation on an evolving and curated list of HealthTech ventures drawn from all markets in Asia Pacific

Where do we source our information

- Galen Growth Asia collates its data from primary research, public domain sources (press releases and news) and from its unique network. The information is both disclosed and undisclosed by nature

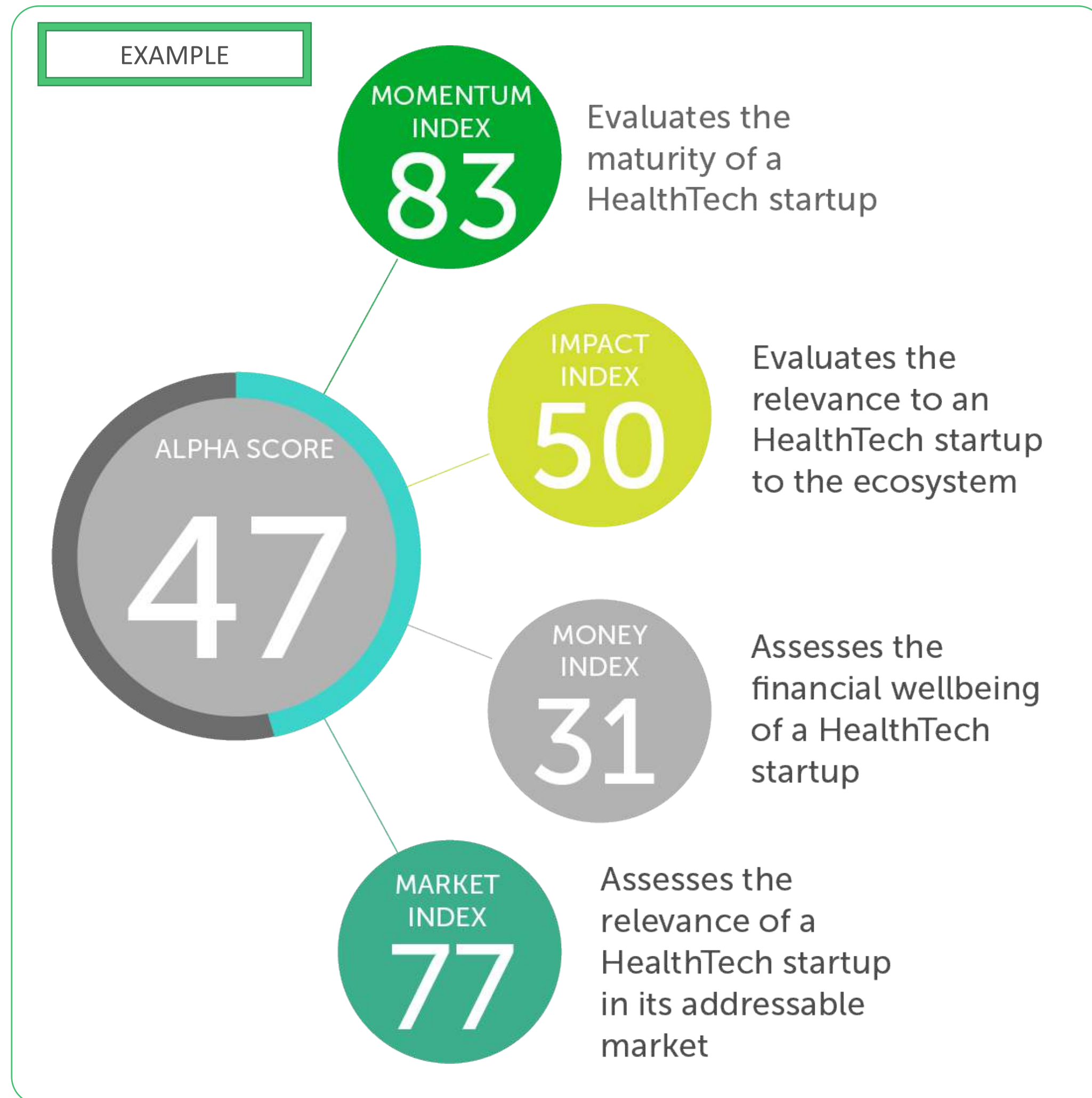
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- This report is provided for informational purposes and was prepared in good faith on the basis of public information available at the time of publication without independent verification
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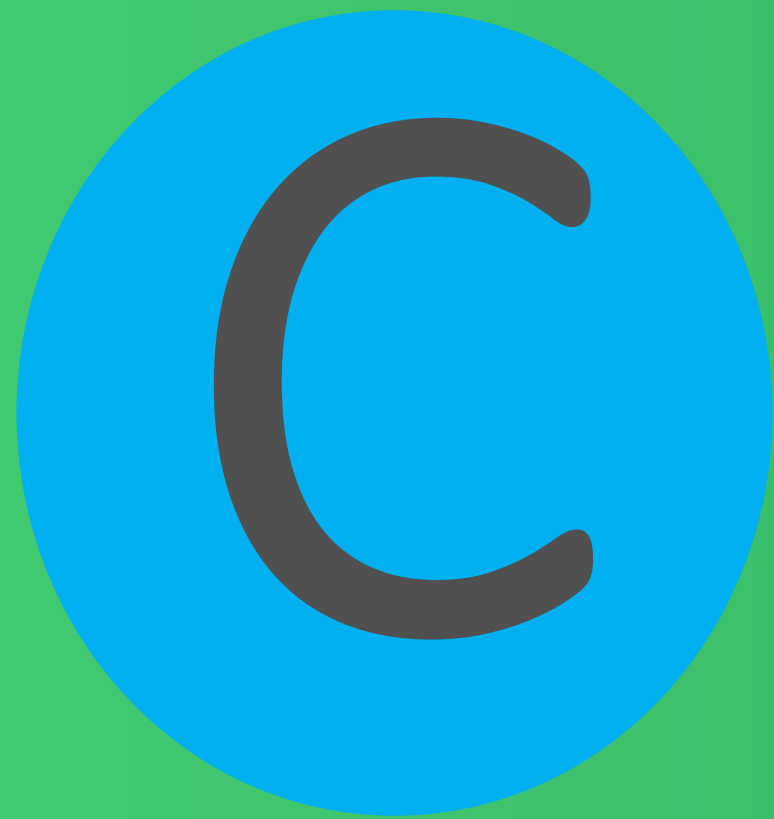
HEALTHTECH TAXONOMY



ALPHA SCORE: MATURITY COMPOSITE SCORING



- The first of-a-kind analytics platform dedicated to HealthTech with the sole mission of fostering greater transparency and better decision making in the sector
- The Alpha Score is a composite score which is based on our own unique algorithm and leverages and analyses the multiple data points for each startup. This creates a maturity ranking which provides an informed assessment of each startup
- There are **four distinct and independent** Alpha Indices that are synthesised into one final Alpha Score as follows:
 - **Momentum index:** measures the performance and fitness of a HealthTech venture business model relative to itself and ecosystem peers
 - **Market index:** measures the relevance of a venture to its ecosystem by assessing and comparing the health of the category and sub-category in which a HealthTech venture competes and how it measures up
 - **Money index:** quantifies the “investability” of a venture, in other words the financial strength and wellbeing of a HealthTech venture based on its financial history, and investor quality
 - **Impact index:** Evaluates the degree to which an HealthTech venture and its solution(s) is solving healthcare pain points



ABOUT GALEN
GROWTH ASIA



OUR VALUE PROPOSITION

Galen Growth Asia is the leading, exclusively HealthTech focused, research, analytics and advisory firm in Asia Pac serving Fortune 500 companies and global investors

Our Mission

Founded in late 2015 by Singapore based HealthTech innovators, Galen Growth Asia (GGA), is at the epicentre of HealthTech innovation, aka digital health, currently a \$75+B startup ecosystem

GGA has built a portfolio of solutions which enables it to be the catalyst of direct collaboration between enterprises, startups and investors to prototype, evaluate and implement HealthTech solutions to solve healthcare system pain points and create significant financial and social value in the region

We partner with enterprise, investors and startups to accelerate and deepen their understanding of this exciting ecosystem. We offer client specific analytics and advisory solutions to help them find the right options and scale their innovation plans

We Fast Track HealthTech Strategies

Accelerate Strategies

By leveraging its thought leadership, research, data and unique ecosystem network, GGA is in the enviable position of assisting enterprise, investors and startups ventures to accelerate the design and execution their HealthTech growth strategies

Discover Solutions

GGA has built the most advance HealthTech ventures analytics platform allowing it and its clients to scan, screen and develop valuable insights. Through its rich network and this unique database, GGA is the leading authority in the Asia Pacific HealthTech ecosystem

Engage Innovators

GGA has established the most comprehensive and relevant network of HealthTech startups and innovators across the region which includes entrepreneurs, investors, enterprise innovation teams, and many other key stakeholder groups allowing innovators to embed within the ecosystem faster

OUR BUSINESS MODEL

HealthTech Acceleration

Specialist Digital Health Advisory to Enterprise, Investors & Startups

Design: The Why & The What – Fast track the design of a client’s digital health strategy incl. alignment of internal stakeholders

Execution: The How & The Who – Construct & kick-off the strategy execution plan incl. identification of suitable startups for potential partnership

HealthTech Alpha

The **Moneyball of Digital Health!** Analytics beyond the financials, continuously curated & updated

Asia HealthTech’s most advanced ecosystem **analytics platform**, used by investors, enterprise and startups, giving access to **unique insights on the thousands of digital health startups to make better informed decisions**

Asia HealthTech Council

The Open Innovation HealthTech Council **propels the ambitions of innovation leaders** through their **peer-to-peer** collaborative and reflective practices to build and enable the future of healthcare in Asia. An enterprise-to-enterprise Innovation Lab!

It is tailored to provide timely insights to help each member to accelerate the delivery of their digital health strategies, make timely decisions and be recognised as innovation champion





HealthTech Tribe

Asia’s only dedicated annual **HealthTech Summit**: The Summit for the most innovative minds in Asia HealthTech: **Investor Day** and **Enterprise Day**, culminating in the much coveted **Most Innovative HealthTech Startup in Asia Award**.

Quarterly HealthTech Deal Flow events – **connecting the ecosystem movers and shakers** – by invitation only

HEALTHTECH ALPHA

GGA has built the most advanced digital health analytics platform, HealthTech Alpha, which tracks important information and data points, beyond funding events, vital to making the right decisions

					Remarks
No. of HT ventures captured	2000+	300+	1000+	1400	
No. of HT deals captured	1700	300+		1450	
Total funding tracked (since 2010)	US\$30B	US\$2B		US\$10B	
No. of investors captured	1400+	350+			
Funding Deal & Financial Profiling					
Investors	Yes	Yes	Yes	Yes	eg. Sequoia
Stage	Yes	Yes	Yes	Yes	eg. Series A
Valuation	Yes	Yes	No	No	
Future Valuation	Yes	Yes	No	No	
Financial Statements	No	Yes	No	Yes	eg. P&L
Business Model Profiling					
Commercial Partnerships	Yes	No	No	No	eg. Lilly
Value Proposition Mapping	Yes	No	No	No	eg. Patient Acquisition
TA Mapping	Yes	No	No	No	eg. Oncology
HT Capability Categorisation	Yes	No	No	No	eg. Telemedicine
Enabling Tech Classification	Yes	No	No	Yes	eg. Biosensors
Geographic Mapping	Yes	Yes	Yes	Yes	eg. Jakarta, Indonesia
Other					
Management Team	Yes	Yes	Yes	Yes	eg. CEO Name
Incorporation Status	Yes	Yes	Yes	Yes	
Contact Details	No	Yes	No	Yes	HTA protects privacy of the team
Venure Indices					
Social Media	No	Yes	Yes	No	eg. Website traffic
Biz Maturity	Yes	No	No	Yes	eg. Operating model momentum

OUR THOUGHT LEADERSHIP

GGA has established itself as the go-to reference for data, key trends and analysis of the Asia Pac digital health ecosystem through its consistent and timely reporting



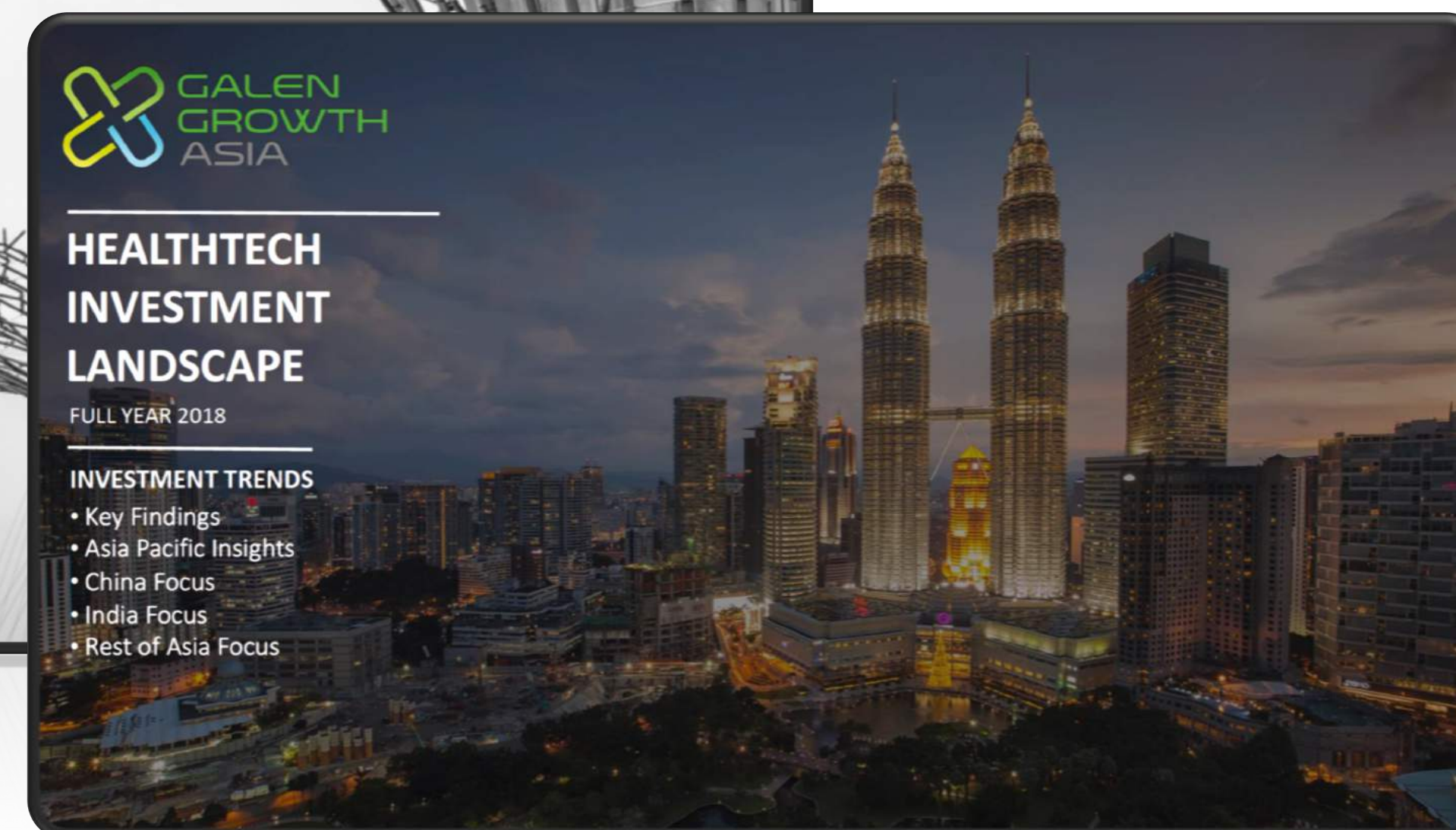
H1 2017



FY 2017



H1 2018



FY 2018

ASIA OPEN INNOVATION HEALTHTECH COUNCIL

The only regional HealthTech peer-2-peer think tank where enterprise leaders co-build the future of HealthTech in Asia and become visible champions of digital health innovation

HealthTech is maturing into a horizontal discipline cutting through numerous sectors driven by new entrants.

The GGA Open Innovation HealthTech Council propels the ambitions of innovation leaders, from each sector implicated in HealthTech, through their peer-to-peer collaborative and reflective practices to transform healthcare in Asia.

The Council provides a platform for leading companies to engage with healthcare providers, payers, academic institutions, technology organisations, and healthcare manufacturers. It enables innovation leaders to share, learn, level set and solve key strategic challenges together.

The Council membership is unique and tailored to provide timely insights to help each member accelerate the delivery of their digital health strategies, make timely decisions and be recognised as innovation champion.

Trusted by Global Healthcare Strategics



THE ASIA HT SUMMIT

In its 4th consecutive year, GGA will host Asia's only dedicated HealthTech Summit where the most promising startup CxOs meet the investors and corporations making a difference in the ecosystem


The Summit for
The Most Innovative Minds
in Asia HealthTech

2018 HEALTHTECH INVESTOR SUMMIT+
12 November


2018 HEALTHTECH CEO SUMMIT+
13 November

SOLD OUT

EARLY BIRD

 50 HealthTech CEOs from 12 countries

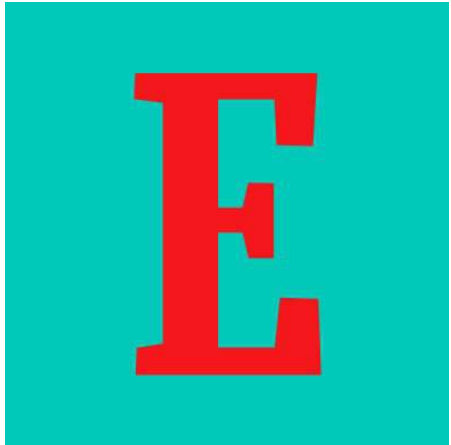
 250 key stakeholders from the HealthTech ecosystem in Asia

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