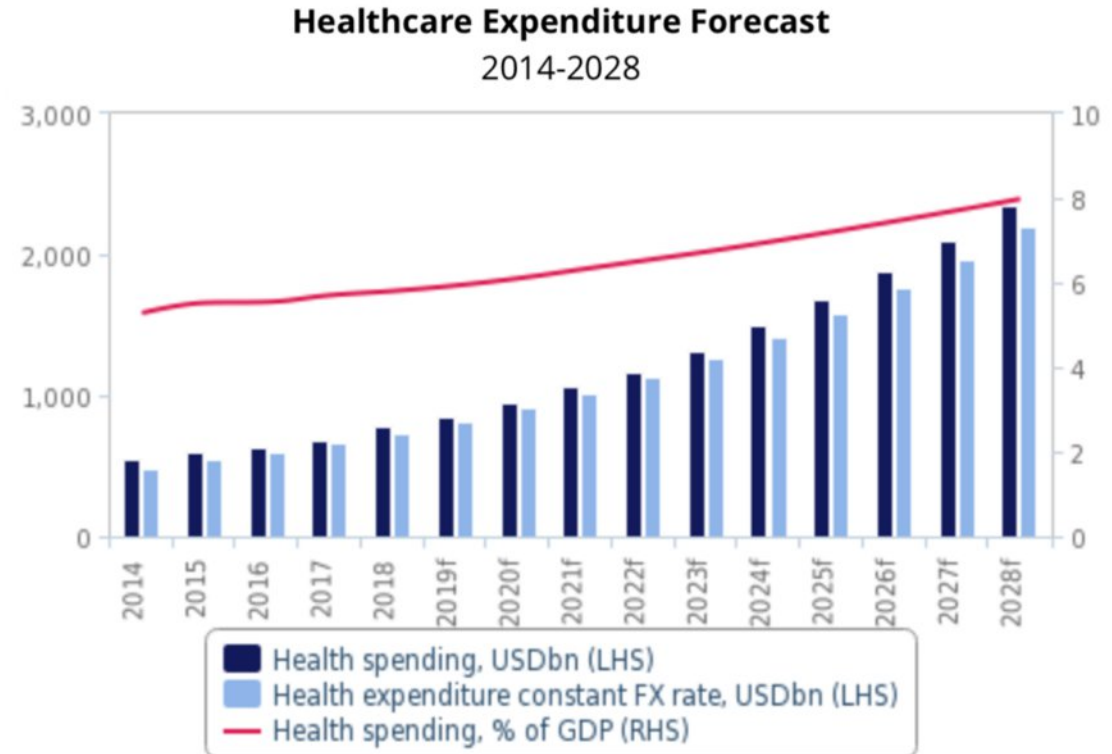


Healthcare in China

Healthcare spending will reach a value of \$853.7bn (11.2% y-o-y) in 2019 but will grow CAGR of 11.3% to \$1,323.8bn by 2023.

Over the long term, healthcare spending is expected to reach CNY15,255.7bn (USD2,347.04bn) in 2028.

Spend will grow at faster rate than GDP for foreseeable future, driven by rapidly ageing population and rising chronic disease burden.



e/f = Fitch Solutions estimate/forecast. Source: World Health Organization (WHO), Fitch Solutions

China's demographic trend is to age rapidly, birth rate dropping

Health Status	2011	2012	2013	2014	2015	2016	CAGR
Population (mn)	1,367.5	1,375.2	1,382.8	1,390.1	1,397.0	1,403.5	0.5
Population growth (%)	0.6	0.6	0.6	0.5	0.5	0.5	-4.0
% of population aged 65+	8.6	8.8	9.0	9.3	9.7	10.1	3.3
Live Births (000s)	17,321.0	17,348.9	17,312.3	17,207.7	17,035.2	16,800.5	-0.6
Per 000 population	12.7	12.6	12.5	12.4	12.2	12.0	-1.1
Deaths (000s)	9,311.7	9,493.5	9,676.7	9,860.2	10,043.9	10,229.3	1.9
Per 000 population	6.8	6.9	7.0	7.1	7.2	7.3	1.4
Infant mortality/000 live births	12.7	12.0	11.4	10.9	10.5	10.3	-4.2
Male life expectancy at birth	74.0	74.2	74.3	74.5	74.6	74.8	0.2
Female life expectancy at birth	77.0	77.2	77.3	77.5	77.7	77.8	0.2

Source: National Statistics, WHO, Fitch Solutions

Healthcare resources in China

Healthcare Resources	2011	2012	2013	2014	2015	2016	CAGR
Hospitals (incl. Chinese Medicine)	21,979	23,170	24,709	25,860	27,587	29,140	5.8
Public	11,360	13,547	13,572	13,527	13,352	12,919	2.6
Private	10,619	9,623	11,137	12,333	14,235	16,221	8.8
Beds (incl. Chinese Medicine)	3,705,100	4,161,500	4,578,600	4,961,200	5,330,600	5,688,900	9.0
Per 000 population	2.7	3.0	3.3	3.6	3.8	4.1	8.4

Healthcare Personnel	2011	2012	2013	2014	2015	2016	CAGR
Physicians (excl. assistants)	2,020,154	2,138,836	2,285,794	2,374,917	2,508,408	2,651,398	5.6
Per 000 population	1.5	1.6	1.7	1.7	1.8	1.9	5.0
Nurses (registered)	2,244,020	2,496,599	2,783,121	3,004,144	3,241,469	3,507,166	9.3
Per 000 population	1.6	1.8	2.0	2.2	2.3	2.5	8.8
Dentists	136,748	137,520	138,279	139,011	139,703	140,350	0.5
Per 000 population	0.1	0.1	0.1	0.1	0.1	0.1	0.0
Pharmacists	363,993	377,398	395,578	409,595	423,294	439,246	3.8
Per 000 population	0.3	0.3	0.3	0.3	0.3	0.3	3.3

Private hospital/clinic viewpoints

- **Focused on patient experience:** the hospitals and clinics have much better designed patient workflows and physical infrastructures as well as support staff (e.g., social workers, child life spcl) for patients
- **Higher costs than at public hospitals:** additional patient experience comes as a cost that is often multiple times greater than public hospital fees
- **Volumes lower:** since private hospitals and clinics are a new facet of the Chinese healthcare market, they have not had time to build the trust and volumes of patients
- **What do they care about:** brand building and increasing patient volumes and revenues



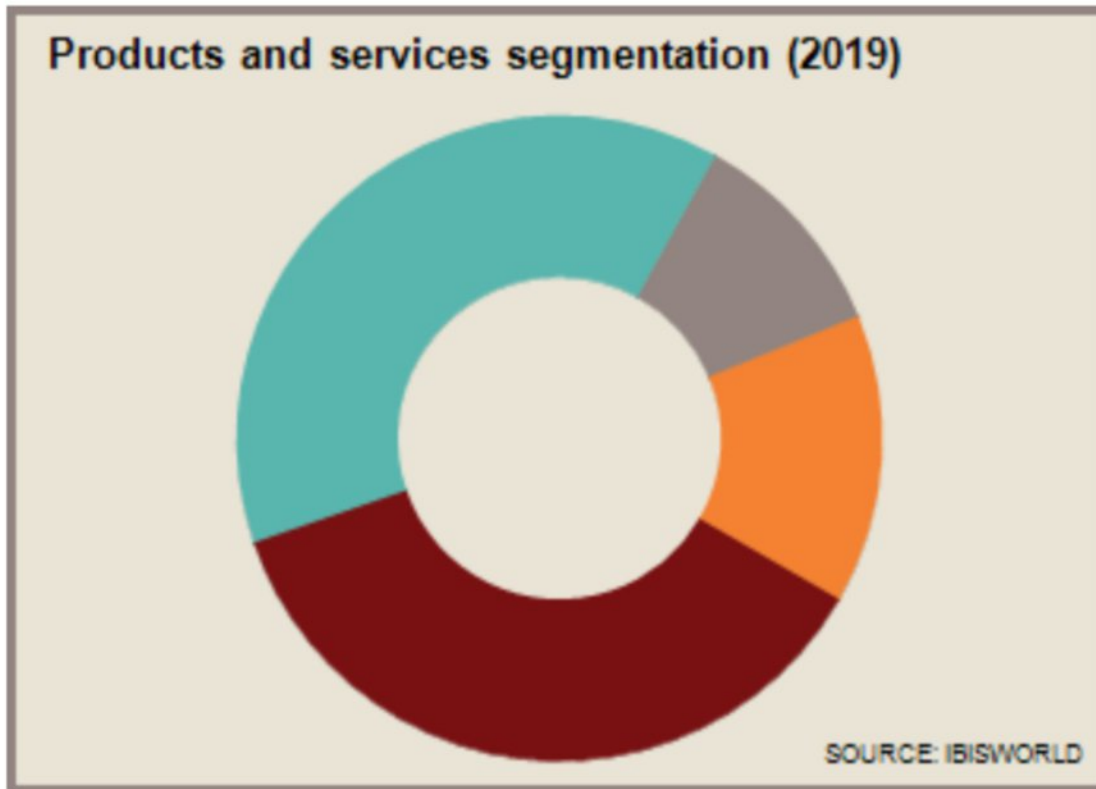
Public hospital viewpoints





- **Large number of patients:** often at the top tier 3 hospitals (theses are the academic medical centers), daily outpatient numbers often are >12,000
- **Lines are long:** patients will get in line at 4 or 5 AM to reserve their spot in line; however, patient encounters rarely last more than 2-3 minutes
- **Patient experience and continuity are lacking:** the hospital may often seem disjointed, with patients needing to walk to stations to get their care; difficult to follow up with one doctor and have continuity
- **Trusted:** despite everything, these are still the trusted brands, and they are also where top doctors seek to go
- **What do they care about:** building prestige and research for their faculty since that is the career path for the doctors



Chinese hospital revenue sources

Products & Services



	Inpatient services	36.4%
	Medicine and pharmaceutical sales	38.3%
	Other hospital services	10.8%
	Outpatient services	14.5%

Chinese disease factors

- Chronic diseases increasing rapidly due to aging population and Westernized lifestyles
- According to the Chinese Centre for Disease Control and Prevention, ~ 300mn people had chronic conditions in 2016, half were under the age of 65
- ~60% of these chronic conditions were related to unhealthy lifestyles, such as smoking
- There are 46mn obese Chinese adults and 300mn who are overweight, according to a study by the University of Washington's Institute for Health Metrics and Evaluation published in The Lancet
- Chinese CDC puts incidence of diabetes in adults at 11.6%, (114mn patients); that means China has the largest number of diabetics in the world, the highest prevalence in Asia, and higher than in the US
- The incidence of cancer has also significantly increased, with cancer now the leading cause of death -- ahead of heart disease and cerebrovascular disease

Cancer in China

Cancer Cases and Shares in China, by Indication, in 2015
(Thousand, %)

Indication	Cases	Share (%)
Lung	843.0	19.5
Gastric	573.7	13.3
Liver	510.6	11.8
Esophageal	415.6	9.6
Colorectal	377.1	8.7
Breast	291.7	6.7
Cervical	106.8	2.5
Brain CNS	86.5	2.0
Leukemia	82.2	1.9
Thyroid	82.2	1.9
Pancreatic	77.9	1.8
Bladder	69.2	1.6
Uterine Corpus	67.3	1.6
Ovarian	57.5	1.3
Prostate	51.9	1.2
Others	631.9	14.6
Total	4,325.1	100.0

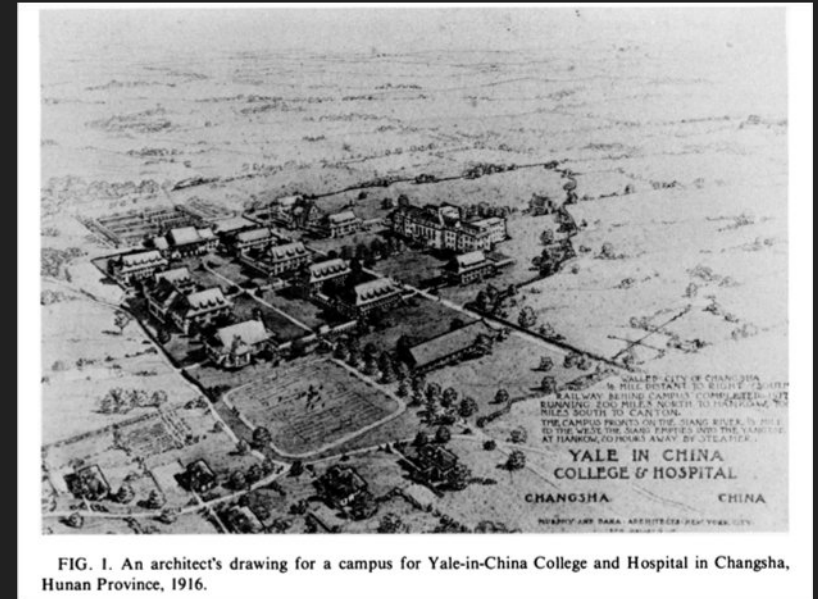
Chinese Market for Cancer Intervention, by Major Segments, Through 2022
(\$ Millions)

Segments	2016	2017	2022	CAGR% 2017-2022
Antitumor drugs	15,557.2	17,578.5	32,438.4	13.0
Surgery	8,869.5	10,120.0	19,485.1	14.0
Adjuvant drugs	5,911.7	6,679.8	12,164.4	12.7
Radiotherapy	5,013.1	5,870.3	12,870.3	17.0
Immunopotentiators	2,559.9	2,892.5	5,291.0	12.8
Diagnosis and detection	2,494.6	2,871.2	5,775.0	15.0
Immunosuppressors	652.1	736.8	1,339.4	12.7
Total	41,058.1	46,749.1	89,363.6	13.8

Source: BCC Research

100 years history of US/China healthcare

The US has been active in China for over a hundred years:



Yale-Hunan Hospital 1916
Xiangya Hospital

Peking Union: China Medical Board (Rockefeller)
1906

Huashan Hospital (Red Cross Hospital)
Between 1913 to 1918, it served as a teaching
hospital of Harvard University

