



2016 Top Markets Report **Health IT** Country Case Study

Singapore

Singapore continues to be a solid Health IT market, particularly among Asian countries. The city-state recently announced plans to expand its National Electronic Health Record system, first developed in 2010 and in existence since 2011. Singapore is also expected to have a sharp increase in its over-60 population over the next 15 years. Besides high expected growth in the over-60 population, Singapore's compact geography, highly urbanized society, high per-capita income and widespread use of mobile phones and Internet are other factors that support strong Health IT usage.

Opportunities exist in Singapore for U.S. companies involved in care coordination for private insurers and physicians and deployment of new mobile applications, but firms involved in developing and integrating health-related systems may find few sales opportunities in Singapore, primarily due to the extensive health insurance system already in place.

Overall Rank

5

Description of Rank and Sub-score Measurements

Singapore scores relatively highly across the metrics used for this Report, highlighted by one of the largest increases of any country (and biggest among the top 20 ranked countries) in the over-60 population between 2015 and 2030. According to the Singaporean government, about 440,000 people in 2015 were over 65, and this figure is expected to reach 900,000 by 2030.ⁱ The accelerated aging of the Singapore population bodes well for greater usage of healthcare services, which are expected to lead to increased use of Health IT in the city-state. Singapore also has the highest GNI/capita (gross net income) of any country, as well as a reasonably high level of mobile phone subscriptions, high GDP/capita (nominal GDP/capita of more than \$53,000 in 2015)ⁱⁱ and its urban (partly by definition) population. This correlates well with other comparative measures, such as Singapore having the top ranking in the World Bank's "Ease of Doing Business" index.ⁱⁱⁱ

Opportunities for U.S. Companies

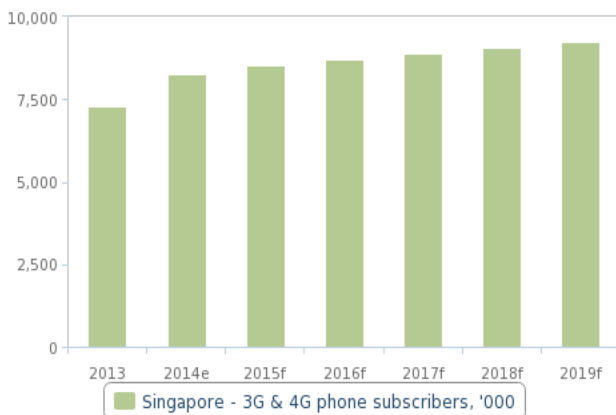
In 2009, Singapore initiated the National Electronic Health Record (NEHR) project, to provide each Singapore citizen with his/her own EHR. Singapore awarded a contract in 2010 to a consortium (Oracle and Accenture from the United States, and Orion Health, based in New Zealand but with offices now in 27 countries) to create and develop the NEHR. In April 2011, the first phase of its USD 144 million NEHR system went live, including a National Health Identification Service (NHIS), summary care records for all individuals, access to discharge records and patient summaries, and data center equipment.^{iv} The project was expected to be completed in June 2012, but is still being rolled out. According to a May 2013 parliamentary response, Singapore's Minister of Health Gan Kim Yong stated that SGD172 million (USD 136 million) had been spent on NEHR phase one to date, and the annual maintenance costs of the system amounted to SGD20 million (USD 15.8 million). The Singapore government is expected to continue to spend money to update and modernize the NEHR. It is worth noting that if a country like Singapore (with a population of 5.5 million)

experiences difficulties in implementing a NEHR, significant delays will be even more likely in countries with larger populations.^v

Singapore represents a strong market for introducing more advanced mobile health and telehealth services for several reasons. Unlike many markets where consumers primarily purchase prepaid mobile phone subscriptions, Singapore has a comparatively high uptake of postpaid subscriptions, which allows users to have larger data plans and ready access to larger, more sophisticated mobile health and telehealth applications. In December 2015 (latest monthly data available), the Infocomm Development Authority (hereafter “Infocomm”) reported that, of the 8.2 million mobile phone subscriptions in service that month, 4.84 million (59 percent) were postpaid subscriptions.^{vi}

Another reason Singapore can contemplate adopting advanced mobile health and telehealth technology is the overwhelming presence and usage of 3G and 4G services. Using Infocomm December 2015 data, 3G represented 3.91 million (47.7 percent) of all mobile phone subscriptions, and 4.08 million (49.6 percent) were 4G. Between June 2014 and December 2015, 4G system usage in Singapore increased by 50 percent, and now exceeds 3G usage. As a result, more than 97 percent of the population using mobile phones has access to these very sophisticated systems. This high ratio is further reflected in forecasts from BMI, growing from 8.3 million in 2014 to 9.2 million by 2019 (see Figure 3).

Figure 3: Soaring Subscriptions in Singapore
3G And 4G Phone Subscribers Per 1000 Population

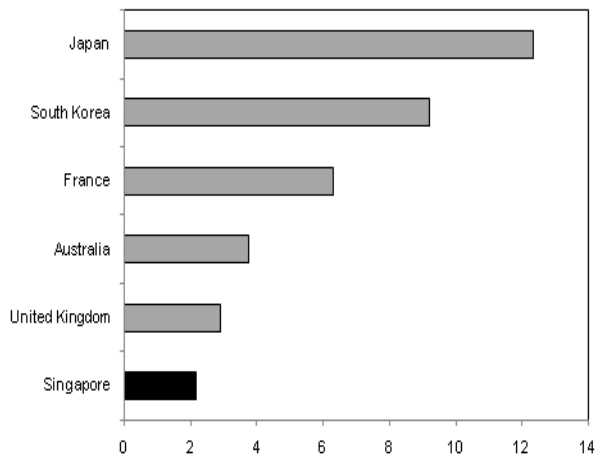


f = BMI forecast. Source: IDA, BMI.

Singapore also has a disease incidence and hospital bed profile where mobile health and telehealth should help address patient treatment issues. Chronic health conditions such as cancer, heart disease and diabetes rank among the top 10 health conditions leading to hospitalization in Singapore, and the rate of hospital readmissions (mostly for these diseases) increased by nearly 16 percent between 2011 and 2013. This situation, combined with Singapore’s fairly low hospital bed availability (only 2.1 hospital beds per 1,000 people, much lower than Japan’s 12.3/1,000 and South Korea’s 9.2/1,000; see Figure 4 below), likely will lead to increased home-based healthcare provision for Singaporean citizens. Low hospital bed availability has occasionally led to shortages in recent years, and the Health Sciences Authority’s plans to add 1,700 acute care beds by 2020^{vii} will be insufficient to meet

Figure 4: Singapore: Behind Developed Peers

Selected Countries: Hospital Beds Per 1000



Source: BMI¹

likely demand. The combination of chronic health conditions and hospital bed capacity limitations should lead to a rebalancing of healthcare provision in Singapore, resulting in strong business opportunities for mobile health and telehealth companies able to provide devices to patients to more effectively manage their conditions at home.

Singapore has been historically frugal with its healthcare spending (4 percent of expenditures went towards healthcare as recently as 2011), but with the expected aging of the population, expenditures are expected to rise over time, potentially reaching 6.5 percent by 2025 (see Figure 5).^{viii} The rapid aging

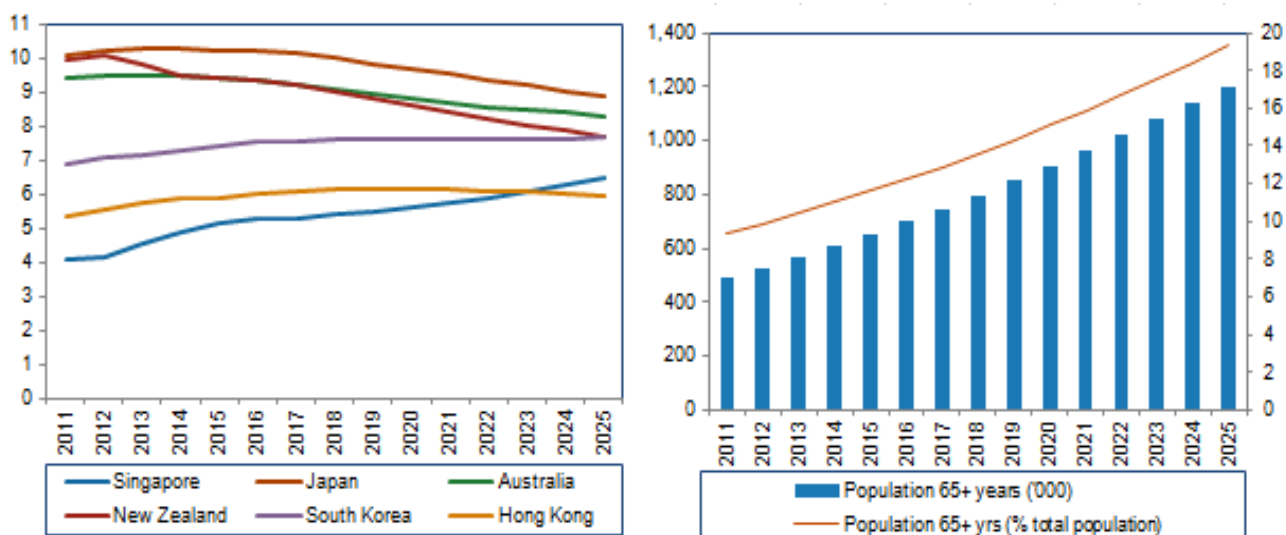
of the Singaporean population (see figures above)^{ix} is likely to increase use of healthcare products and services, creating market opportunities for Health IT companies. Interestingly, elderly Singaporeans may be more receptive to the use of digital health solutions than generally believed, as a recent survey showed that more than 70 percent of older Singaporeans expect to use these technologies in the future,^x further highlighting the opportunities for the Health IT sector. Consistent with these intentions, in October 2015, the Singaporean government announced an investment of almost \$2.1 billion in “smart technology” targeted for senior citizens, including active aging hubs in new housing

Internet connections in Singapore during December 2015 were wireless broadband).^{xii}

Public healthcare providers have also begun the transition towards home-based care, such as the Tan Tock Seng Hospital's Virtual Hospital initiative. Under this scheme, a manager is assigned to monitor patients who have a history of hospital re-admissions and act as a link to primary care physicians. As of December 2014, the model served 284 patients over a two-year period. According to the hospital's analysis, comparisons of inpatient length of stay and emergency department attendance over six months showed a reduction of

Figure 5: Spending Efficiency Will Remain Despite Ageing Population

Healthcare Expenditure Percentage of GDP (LHS), Singapore's Pensionable Population ('000) and As a Percentage of Total Population (RHS), 2011-2025



Source: WHO, World Bank, UN, BMI

developments for care and rehabilitation, telehealth investment and use of automation.^{xi}

Some home-based outpatient mobile health and telehealth initiatives already exist. For instance, five of Singapore's six public hospitals currently use a transitional healthcare model involving sending medical staff to patient's homes to ensure adherence to medication. This presents an example where telehealth initiatives can improve healthcare delivery and alleviate the strain on human resources in hospitals.

The widespread availability of wireless broadband services should also lead to greater deployment of telehealth services in the home (87.7 percent of

26 percent and 34 percent, respectively.^{xiii}

Small and medium-sized U.S. Health IT companies could benefit from a partnership between Philips and EDBI, Singapore's Economic Development Board's investment arm, announced in January 2016^{xiv} that would use Singapore's developed market status to help companies enter the rest of Southeast Asia. The partnership plans to invest in “select, high potential digital health companies working in population health management ... (including) telehealth, telemonitoring and other healthcare informatics solutions that apply differential care strategies to meet the needs of targeted patient groups.”^{xv} EDBI plans to use its connections with health sector stakeholders to raise

the awareness of innovative health solutions throughout the rest of Southeast Asia, while Philips will provide mentoring services to these new-to-market companies. Some of these new products and services could also be sold to Singaporean citizens.

In October 2014, Singapore announced the creation of a Smart Nation Programme Office (“Office”), focusing on development of infrastructure and innovative ways of connecting people and “things.” This initiative appears to include health as one area of focus. As the Office’s priorities and projects continue to evolve and develop, those related to healthcare and Health IT, which incorporate innovative technologies, might find a receptive audience.

Further evidence of Singapore’s interest in Health IT can be found in the city-state’s 2016 Budget document, when the Finance Minister announced a new entity called “SG-Innovate.” He said that “SG-Innovate will match budding entrepreneurs with mentors, introduce them to venture capital firms, help them to access talent in research institutes and open up new markets...(including) new and emerging sectors such as...Digital Health....”^{xvi}

Singapore has also hosted several Health IT industry conferences, further highlighting local interest in the sector.

Challenges in the Market

U.S. health insurance companies have few opportunities to set up operations in Singapore, as the subsidized, multi-layer government-operated system has existed for many years to serve Singapore citizens. Singapore has a universal healthcare system with several distinctive insurance programs: one uses large government subsidies to support patients with acute care needs, and is augmented by a compulsory individual medical health savings account (where employers and citizens each contribute). Three other components of the system are: 1) a low-cost catastrophic medical insurance scheme that spreads the risk pool across the entire population; 2) optional private insurance plans (usually purchased by middle- and upper-income residents) to permit access to private facilities; and 3) a medical endowment fund that supports those Singaporeans who do not have funds available to contribute to the other systems.

U.S. healthcare stakeholders have expressed interest in greater transparency regarding Ministry of Health (MOH) policies. To date, these concerns have not been related to Health IT. Given that the oversight of Health IT is divided between MOH and Infocomm, any lack of clarity and transparency related to policies and procedures (both within and between agencies) could pose challenges for Health IT companies interested in doing business in Singapore.

ⁱ Ng, Kelly, “Singapore Feeling Impact of Rapidly Ageing Population,” Today Online (Singapore), July 1, 2015; “Budget 2016 Debate Round-Up Speech,” Singapore Minister for Finance Heng Swee Keat, April 6, 2016, p. 53; http://www.singaporebudget.gov.sg/budget_2016/BudgetDebateRound-UpSpeech.aspx.

ⁱⁱ IMF estimate, 2015.

ⁱⁱⁱ World Bank/IBRD, “GDP Per Capita (Current US\$),” 2014; obtained from

<http://data.worldbank.org/indicator/NY.GDP.PCAP.CD>.
^{iv} “Singapore’s Journey to Build a National Electronic Health Record System,” Accenture, 2012; <http://www.accenture.com/SiteCollectionDocuments/PDF/Accenture-Singapore-Journey-to-Build-National-Electronic-Health-Record-System.pdf#zoom=50>.

^v Business Monitor International: Industry Trend Analysis - Uptake Of eHealth Increases In Asia Pacific; July 22, 2013.

^{vi} <https://www.ida.gov.sg/Tech-Scene-News/Facts-and-Figures/Telecommunications/Statistics-on-Telecom-Services/Statistics-on-Telecom-Services-for-2015-Jul-Dec>.

^{vii} “Singapore - Healthcare Infrastructure Investment Plans Outlined By Government,” BMI’s Daily Sector Alert - Pharmaceuticals & Healthcare, March 17, 2015.

^{viii} “Philips/EDBI Driving Forward Asian Digital Health,” BMI’s Daily Sector Alert - Medical Devices, January 15, 2016.

^{ix} See footnote 80.

^x Ibid.

^{xi} “Singapore - Smart Technology To Address Healthcare Challenges,” BMI’s Daily Sector Alert - Medical Devices, October 5, 2015.

^{xii} <https://www.ida.gov.sg/Tech-Scene-News/Facts-and-Figures/Telecommunications/Statistics-on-Telecom-Services/Statistics-on-Telecom-Services-for-2015-Jul-Dec>

^{xiii} “Industry Trend Analysis - Healthcare Transition To Provide Telecare Opportunities,” BMI’s Daily Sector Alert - Pharmaceuticals & Healthcare, January 7, 2015.

^{xiv} “Philips/EDBI Driving Forward Asian Digital Health,” BMI’s Daily Sector Alert - Medical Devices, January 15, 2016.

^{xv} Ibid.

^{xvi} “Budget 2016 Debate Round-Up Speech,” Singapore Minister for Finance Heng Swee Keat, April 6, 2016; p. 35; http://www.singaporebudget.gov.sg/budget_2016/BudgetDebateRound-UpSpeech.aspx.