

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

Brazil

Brazil's Health IT sector prospects have taken a discernible hit recently, as the Brazilian economy has fallen into recession. The long-term potential for U.S. Health IT companies remains positive: the sector remains in an early development stage; there is little domestic competition; ICT infrastructure is good; and regulations are minimal. There are still important unknowns, as the Brazilian government has not signaled near-term plans to introduce a Health IT deployment strategy. There are significant regional differences in healthcare provision, and an increasing percentage of healthcare services are being offered through the public sector at a time of very tight budget resources. Therefore, it is currently difficult to know what Brazilian government priorities will be for Health IT, but the large potential market for products and services make Brazil a long-term strong prospect for U.S. companies.

Overall Rank

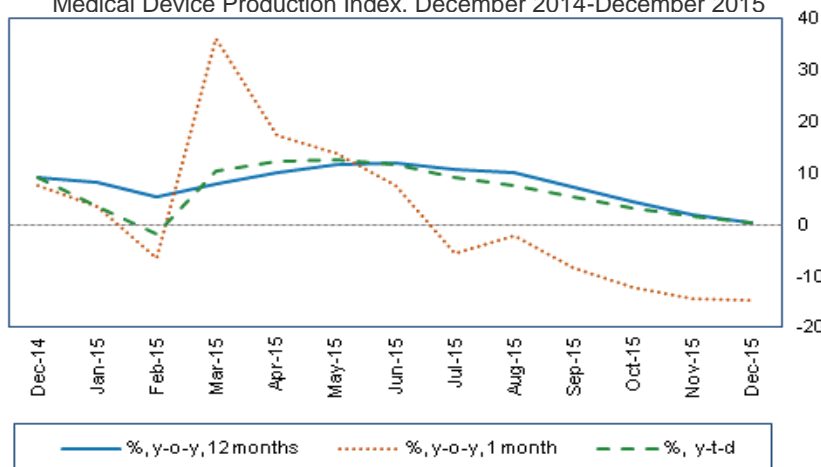
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Description of Rank and Sub-score Measurements

Brazil received a mid-level ranking in the Report due to relatively modest scores on most metrics, combined with low scores on ICT market development and per capita health expenditures.

Brazil, however, has the world's sixth largest GDP, the fourth highest population among the countries ranked and a fairly high growth rate in the over-60 population over the next 15 years, indicating that a huge potential market exists for Health IT products and services. The current Health IT market size is

Figure 14: Domestic Manufacturing Industry Underperforms in H215
Medical Device Production Index. December 2014-December 2015



Source: IBGE, BMI

estimated between \$500 million and \$1 billion, with low levels of dedicated investment and minimal regulations in place, further illustrating the market opportunities available.

Opportunities for U.S. Companies

Determining market opportunities and potential with interested stakeholders (both public and private sector) will be an important aspect of a company's effort to enter the Brazilian market. Most notably, Brazil has no regulations related to Health IT at present, and the government has made little discernible progress in developing a national strategy for the sector. This is both a challenge and opportunity, as Brazil is highly dependent on foreign technology and innovation to jumpstart this sector. Government and private sector stakeholder priorities for the rollout of Health IT are unclear at present.

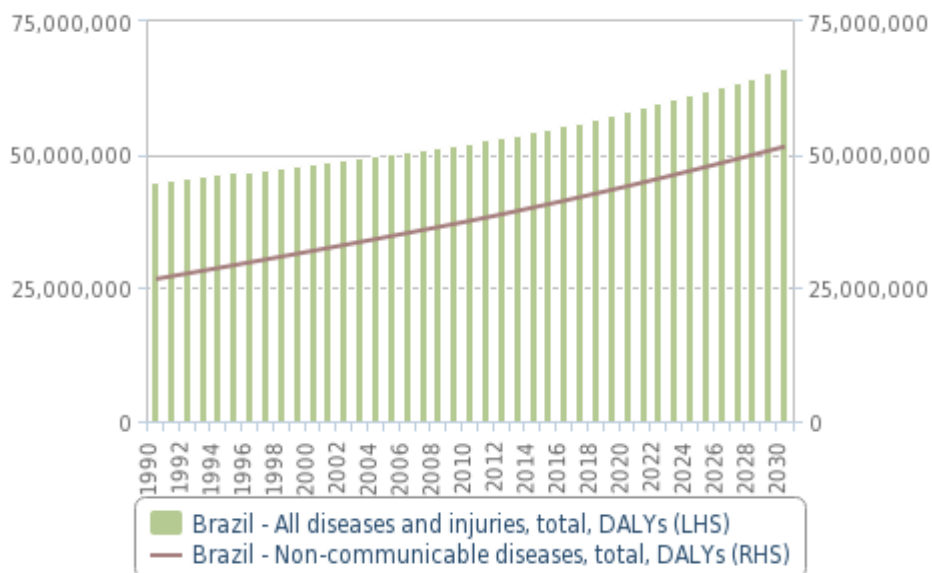
Healthcare spending as a percentage of GDP is expected to remain around 9.6 percent over the coming years,ⁱ even with recessionary pressures in place for the short-term. Brazil has one of the world's highest GDP figures, so a high level of healthcare spending reflects strong long-term

2015 medical device production and exports. The difficult economic conditions may result in opportunities for U.S. healthcare and Health IT companies with innovative technologies to take advantage of the situation and establish or expand upon their current position in the Brazilian market.

Brazil's private healthcare market, although smaller than the public sector, will also be impacted by the recession. In local currency terms, the private market is expected to grow 7 percent (from 292 billion to 321 billion Brazilian reals) but is expected to drop 6.2 percent in U.S. dollars (from \$87.5 billion to \$82.1 billion). In local currency terms, the future growth rate of the segment is expected to slow from 10.1 percent (from 2010 to 2015) to 7.6 percent (from 2016 to 2020).ⁱⁱ Even with the expected decline in private healthcare participation due to the recession and increasing unemployment (see Figure 15), strategic investments by U.S. firms may be possible (and even desirable) during this turbulent period.

The economic burden of non-communicable diseases in Brazil is set to rise in coming years (see Figure 16), offering benefits for the greater utilization of mobile health and telehealth to better

Figure 16: Increasing Noncommunicable Disease Burden
Brazil: Burden of Disease Projection



opportunities for Health IT investment.

The recession has had a severe impact on Brazilian manufacturers, as evidenced by Figure 14 showing

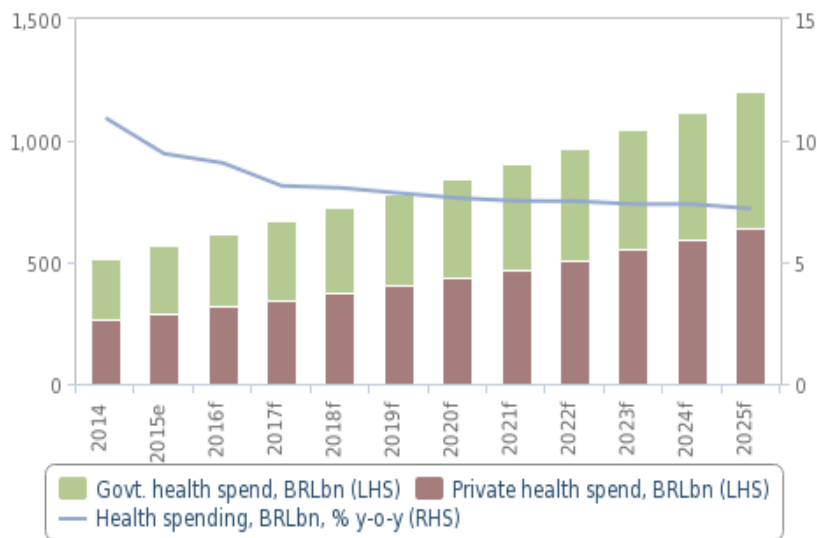
monitor patients remotely and intervene before an acute care episode occurs. For instance, according to the International Diabetes Federation (IDF), Brazil has 11.6 million diabetics, the highest number in

Latin America. The IDF also notes there are 3.2 million undiagnosed cases of diabetes, while diabetes has an 8.7 percent national prevalence among the population. Brazil had approximately 116,383 diabetes-related deaths in 2014, giving

patients using mobile apps, SMS and video streams to cover biometric data around glucose levels and blood pressure. The development of Axismed's service offering will see Telefónica Digital enable the transmission of biometric data through connected

Figure 15: Private Sector Will Contract in Real Terms In 2016

Brazil: Healthcare Expenditure Forecast



f = BMI forecast. Source: BMI/World Health Organization (WHO) ¹

Source: World Health Organization

Brazil the largest number of diabetes-related deaths in Latin America and the sixth highest number in the world, behind India, China, the United States, Indonesia and Russia. According to the IDF, the annual cost of living with diabetes in 2014 was \$1,578.ⁱⁱⁱ

The presence of the Zika virus in Brazil may also result in some opportunities for Health IT companies to develop apps and other interventions to assist patients. Possible diversion of health resources to address the Zika virus may also impact Health IT market development in the near-term.

Major investors in the telecommunications market recognize the Health IT potential in Brazil, particularly for telehealth. For instance, Telefónica Digital, the digital development arm of regional company Telefónica, acquired Brazilian chronic care management company Axismed in February 2013. The acquisition allowed Telefónica's Vivo unit to provide Health Monitoring services that also have Outpatient Care and Self Care applications to 180,000 Axismed patients by integrating Axismed into Vivo's infrastructure to contact and monitor

devices in patients' homes.^{iv}

The U.S. Commercial Service Brazil has promoted and organized two U.S. Health IT trade missions to Brazil that comprised a series of activities that put participants in contact with Brazilian thought leaders; government officials from federal, state and municipal levels; high level private hospitals; roundtables with medical associations; health insurance plans; laboratories; networking receptions and speakers/moderators on panels to discuss the transformation of healthcare through Health IT. In 2014 and 2015, 22 different U.S. companies joined programs in Sao Paulo, Porto Alegre and Rio de Janeiro. An ITA-organized Health IT trade mission to Brazil has been announced and will take place September 26 to 30, 2016. A link to the mission flyer can be found here: http://export.gov/brazil/build/groups/public/@eg_br/documents/webcontent/eg_br_098336.pdf.

Recent research by PwC suggested that the health app market in Brazil would reach \$46.6 million by 2015, while the GSMA trade association reported that mobile health projects would benefit 45.7

million Brazilians and save the healthcare market \$14.1 billion in care costs.^v

Legislative changes allowing increased foreign investment into Brazil's health system will aid the country's pharmaceuticals and healthcare market development as Brazil's economy becomes more open to external funding. In January 2015, the Brazilian government began enforcing the new Brazilian Health Sector Law, known formally as Brazilian Federal Law 13,097/2015. The Brazilian Health Sector Law upheld an amendment to the Brazilian Federal Law 8,080/1990, which will "...allow for foreign investment, direct or indirect, including the acquisition of control, in activities related to the health sector, which includes investments in hospitals, clinics, laboratories, etc." The amendment aims to attract new foreign investment within the healthcare sector.

As one of the world's largest emerging markets, encouraging foreign investment could further improve Brazil as an attractive and profitable destination over the long-term. Moreover, new financial investment will significantly contribute to the country's sector developments aimed at improving infrastructure and service provision by boosting the flow of capital through the market.

Private Health Investment

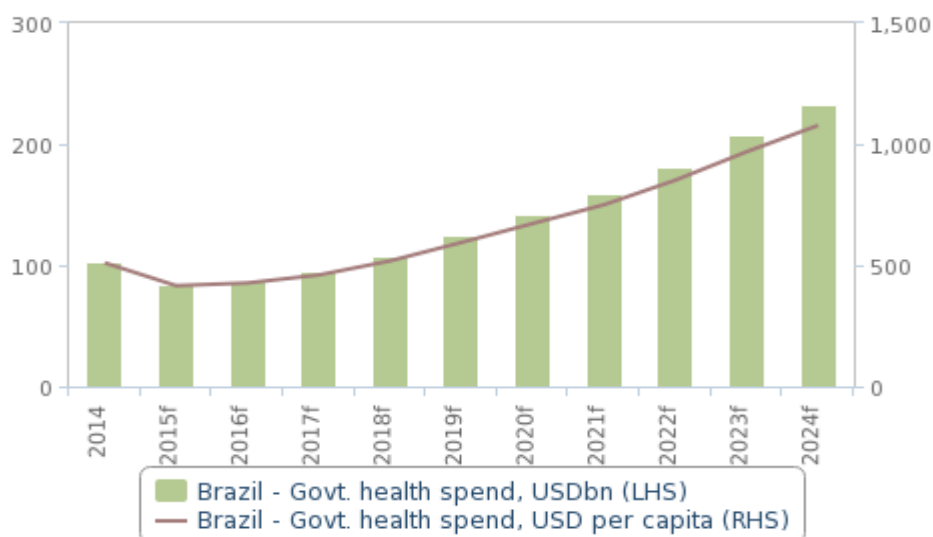
Foreign investment in private health insurance, which has been legal since 1998, has already seen significant growth in recent years. In 2012, U.S. healthcare company United Health Group acquired 90 percent of Amil, Brazil's largest private health insurance provider. The acquisition was valued at \$4.3 billion. Brazil's expanded allowance of foreign investment into its health sector will continue to bolster market value through increased and diversified capital.^{vi} In December 2015, United Health announced that it would purchase Hospital Samaritano in Sao Paulo for a reported \$350 million, adding to United's 31 hospitals in Brazil.^{vii} In connection with the transaction, the company's Chief Financial Officer noted that "We're becoming more of a healthcare delivery business in Brazil with an insurance arm."^{viii}

Challenges in the Market

Although Health IT opportunities exist, companies should be aware of several factors when doing business in Brazil.

The most immediate is an economic recession, which Brazil entered in 2015 and is expected to last at least through 2016. Real GDP declined by 3.1 percent in 2015 and is forecast to drop another 3.4 percent in 2016.^{ix} In November 2015, the Brazilian government budget proposal sent to Congress proposed cutting healthcare spending by \$6.4 billion

Figure 17: Growing Demand
Brazil: Public Healthcare Market Forecast



f = BMI forecast. Source: World Health Organization (WHO), BMI¹

in 2016 to \$29 billion from an originally proposed level of \$35.3 billion. The originally proposed 9.6 percent increase (over the 2015 level of \$32.2 billion) will instead be a 10 percent cut. Long-term health expenditure trends, however, are still positive, as evidenced by the March 2016 decision by Brazil's Chamber of Deputies to increase federal healthcare expenditure to \$38 billion by 2023.^x

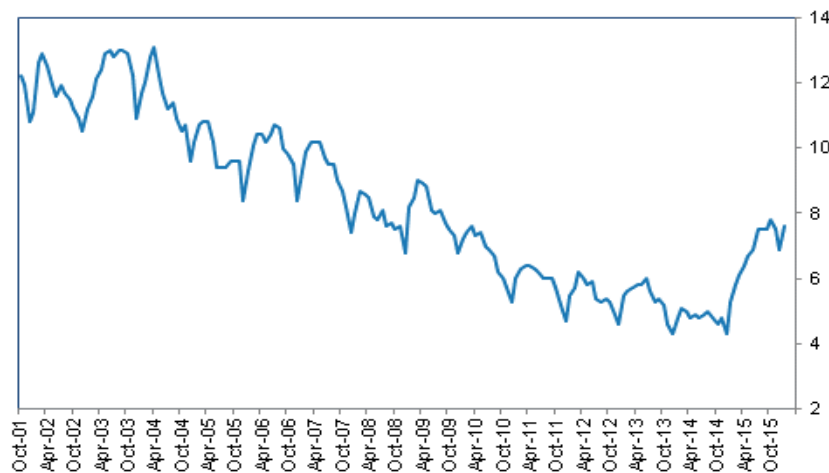
The 2015 healthcare cuts are part of a larger reduction in the public sector budget of 6.3 percent, or \$23 billion. Despite limited spending, the Brazilian government announced its commitment to two health programs: Mais Medicos, which is used to recruit and increase the presence of doctors, and Farmacia Popular, a federal program aimed at ensuring easy access to pharmaceuticals. Those were the only two programs granted financial guarantees.^{xi} The proposed budget cuts are expected to adversely impact the health situation and important healthcare programs in Brazil, and are also expected to aggravate the underfunding of the sector and satisfaction of Brazilians with the country's healthcare services.^{xii}

In November 2015, the budget situation resulted in Marcelo Castro, the Minister of Health, delaying transfer of 50 percent of funds for care in emergency rooms, surgeries and examinations to hospitals and programs (such as People's Pharmacy) from November 2015 until January 2016. Castro further noted the health funding calculation model approved by the Congress in 2015 should result in a deficit of at least \$1.99 billion in resources in 2016.^{xiii}

Another indication of the difficult financial situation faced by the Ministry of Health is their debt burden to suppliers and service providers, which reached \$236.91 million in late 2015, more than half of the \$426 million total that the state owes all its creditors, according to a financial monitoring system survey. The government's debt to the PróSaúde service, responsible for the management of a network of eight major health facilities, was particularly significant, at \$72.65 million.^{xiv} Combining these factors together, it would not be a wise strategy for U.S. companies to approach the Brazilian public health system with the idea of new investments in the short or medium-term.

In 2014, the Brazilian public health market was valued at \$103 billion, accounting for 48 percent of total health expenditure. By 2024, this figure is estimated to rise to \$233 billion, accounting for 54 percent of total market spending and equating to a compound annual growth rate (CAGR) of 8.5 percent in U.S. dollar terms.^{xv} Continued engagement and outreach to Brazilian government officials to meet their Health IT needs should remain a critical part of a U.S. company's long-term strategy in Brazil because of the large size of the public sector, even if negotiation on per-unit amounts might currently yield small profit margins. Once the short-term challenges abate, Brazilian public sector officials will likely augment purchases of Health IT products and services to meet their long-term needs. This also means that the private sector will account for a sizable amount of medical spending in Brazil, which

Figure 18: Sharp Uptick in Unemployment



Source: Bloomberg¹

according to World Bank data requires nearly 60 percent of out-of-pocket spending by individuals.

Two government agencies will play leading roles in the development of Health IT in Brazil. DataSUS, in the Ministry of Health, is the department of informatics for the Healthcare Public System (SUS) that supplies information systems and informatics support to all divisions of SUS, including planning, operation, coordination, and consulting services to maintain the national databank. The Telesau de Brasil Redes is a national program designed to improve

SUS's quality of healthcare assistance and basic care, integrating education and services to promote tele-assistance and tele-education.

BMI estimates that, over the next 10 years, per capita public health spending will grow from \$821 to \$1,403 (see Figure 17).^{xvi} It is worth noting that a 2014 Datafolha poll indicated that 92 percent of Brazilians use the public health system, making the 2015 proposed budget cuts far-reaching among the Brazilian population.^{xvii}

In addition, because the unemployment rate has jumped sharply recently (7.6 percent in January 2016 from 6.9 percent in December 2015; see Figure 18), more citizens have moved into the public healthcare system since they have lost their jobs, putting significant pressure on the public system at a time of reduced spending, likely leading to some cost containment measures.^{xviii} According to the Institute of Supplementary Health Studies (IESS), the costs of Brazil's private health plans increased by 12.2 percent in 2015, which is the biggest rise recorded. Between June 2014 and June 2015, the cost of healthcare services increased by 17.1 percent, mainly due to increasing hospital expenditures. In addition, the health insurance market lost more than 450,000 users in 2015 due to the country's growing unemployment rate.^{xix} Although the rate and level of Health IT expenditures has likely declined in the short-term, this may be an opportune time for U.S. companies to promote the advantages of digital health to Brazilian officials so that they can more efficiently spend their future public system funding.

There are significant regional differences in healthcare spending in Brazil, leading to variation in both existing and needed healthcare infrastructure, as well as disease conditions and available services.

Brazil has five major regions: north, north-east, central-west, south-east and south. Each region is made up of several states offering diverse investment opportunities. The north region is home to states which have both the lowest (Para', \$288) and highest (Acre, \$618) regional per capita healthcare expenditure, clearly demonstrating that, even within regions, sizable differences can exist in health expenditures and resulting market potential. In addition, there is a wealth inequity split between the north and south, as north and northeast regions have generally lower household income compared to the south and southeast regions.

The south-east region is home to São Paulo and Rio de Janeiro. Both represent significant market opportunities, as the two cities account for approximately 40 percent of Brazil's total population as well as boasting higher than average per capita spending for healthcare. The national average for per capita spending is \$457, with above average per capita spending in the north (\$506), central-west (\$497), and south-east (\$463) regions. Below average per capita spending is found in the south (\$447) and north-east (\$374) regions. Companies interested in investing in Brazil should be aware of these regional differences as they develop their export strategies.^{xx}

Almost 92 percent of Brazilians had access to 3G mobile connections in mid-2015, particularly in the south and south-east regions (where coverage is close to 100 percent), but availability in the central-west, north and north-east regions of Brazil remains below 85 percent, similar to 2014. In addition, Brazil has had an extremely slow rollout of 4G LTE (Long Term Evolution) services, reaching only 7.7 million 4G LTE mobile connections as of January 2015, according to figures from the country's telecoms regulator Agência Nacional de Telecomunicações (Anatel). As of January 2015, 147 municipalities, including the 23 state capitals and the Federal District, have 4G LTE, covering 41.8 percent of the country's population. Compared to other countries, as of January 2015, Brazil 4G has relatively low capacity and is not of high quality,^{xxi} and due to the focus on providing service to specific municipalities, coverage can be rather intermittent outside of the upgraded areas.

As of September 2015, Brazil had 275 million active mobile telephone lines, covering 91.1 percent of the

Brazilian population, according to SindiTelebrasil. 56.3 percent of households claimed that mobile phones were their only form of telecommunication.^{xxii} Until there is wider availability of 4G service, less advanced mobile health and telehealth technologies would seem to be more appropriate for the Brazilian market.

There are also some limitations on the availability of IT professionals to help implement a Health IT system in Brazil. It is estimated that Brazil's IT workforce totals around 250,000, lower both nominally and as a percentage of overall population than other Latin American countries, such as Mexico.^{xxiii} Not all of these professionals are working in the health sector, which may also constrain the expansion of Health IT in Brazil.

ⁱ "Brazil - Impeachment Would Hurt Private Healthcare Market Growth," BMI Daily Sector Alert—Medical Devices, April 6, 2016.

ⁱⁱ "Brazil - Private Healthcare Spending Forecast Revised Downwards," BMI Daily Sector Alert—Pharmaceuticals and Healthcare, January 15, 2016.

ⁱⁱⁱ Brazil—Economic Burden from Chronic Conditions to Rise; BMI, February 17, 2015.

^{iv} "Telefonica Digital Acquires Controlling Stake in Axismed, It's First Move Into e-Health Solutions," <http://techcrunch.com/2013/02/04/telefonica-digital-acquires-controlling-stake-in-axismed-its-first-move-into-e-health-solutions/>, February 4, 2013.

^v Industry Trends and Developments--Telecom, Brazil—Q3 2014; BMI, June 27, 2014.

^{vi} "Brazil - New Legislation Will Boost Foreign Investment;" BMI, February 10, 2015.

^{vii} "Brazil - UnitedHealth To Acquire Hospital Samaritano," BMI Medical Device Alert, December 9, 2015.

^{viii} "Brazil - UnitedHealth Eyes Expansion Through Acquisition," BMI Medical Device Alert, December 14, 2015.

^{ix} "Brazil - Tight Fiscal Framework Will Reduce Medical Market Growth," BMI Daily Sector Alert—Medical Devices, March 10, 2016.

^x "Brazil - Impeachment Would Hurt Private Healthcare Market Growth," BMI Daily Sector Alert—Medical Devices, April 6, 2016.

^{xi} "Brazil - Market Growth Outlook Dampened By Diminishing Public Sector Support," BMI Daily Sector Alert—Pharmaceuticals and Healthcare, November 9, 2015.

^{xii} "Brazil - Government Proposes Cut To Healthcare Spending," BMI Daily Sector Alert—Medical Devices, November 23, 2015.

^{xxiii} "Brazil - Funding Transfer to Health Facilities Delayed," BMI Daily Sector Alert—Medical Devices, November 16, 2015.

^{xiv} "Brazil - Health Debt Reaches BRL890mn," BMI Daily Sector Alert—Medical Devices, December 7, 2015.

^{xv} "Brazil - Budget Cuts Will Constrict Healthcare Market Appeal," BMI Daily Sector Alert—Pharmaceuticals and Healthcare, August 5, 2015.

^{xvi} "Brazil - Impeachment Would Hurt Private Healthcare Market Growth," BMI Daily Sector Alert—Medical Devices, April 6, 2016.

^{xvii} "Brazil - Budget Cuts Will Constrict Healthcare Market Appeal," BMI Daily Sector Alert—Pharmaceuticals and Healthcare, August 5, 2015.

^{xviii} "Brazil - Tight Fiscal Framework Will Reduce Medical Market Growth," BMI Daily Sector Alert—Medical Devices, March 10, 2016.

^{xix} "Brazil - Private Healthcare Spending Forecast Revised Downwards," BMI Daily Sector Alert—Pharmaceuticals and Healthcare, January 15, 2016.

^{xx} Brazil – "Healthcare Market Will Grow Amid Shifting Political Landscape;" BMI—February 13, 2015

^{xxi} Marcelo Teixeira, "The State of 4G in Brazil," <http://techinbrazil.com/the-state-of-4g-in-brazil>, March 13, 2015.

^{xxii} Lise Alves, "Brazilians Disconnecting Their Mobile Telephone Lines," <http://riotimesonline.com>, November 25, 2015.

^{xxiii} Mexico IT/Computer Market Overview, Q2 2015, BMI, February 20, 2015