A Brief Evaluation of the Health Market in Brazil
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Brazil's health care market is the second largest of the Western hemisphere and corresponds to more than 40% of the total South American market. The system is organized into three major players: public health (cares for 75% of the population, named SUS: Unified Health System, comprises a hierarchical system funded by the government at the levels of federation, states and counties), private health care plans, insurance companies and HMOs – 23% of the population) and private medicine (around 2% of the population). The public health system outsources part of its activities to private medicine according to a fixed system of reimbursements).
Please see http://en.wikipedia.org/wiki/Health_in_Brazil for more details.
Statistics about health in Brazil: http://www.datasus.gov.br (In Portuguese)

General data about the country:
Current estimated Brazilian population: 193,000,000 (2009 estimate) – fifth largest in the world
Total country area: 3,288,000 square miles – fifth largest in the world
Number of states: 23
Number of counties: 5,656
PPP GDP (2009 estimate): 2 trillion dollars (largest economy in the Americas after the US, 9th in the world)
Please see: http://en.wikipedia.org/wiki/Brazil

General data about the health care sector:
Total number of workers in the health care area: 2,800,000
Total number of physicians: 335,000 (2009 estimate)
(highly unequal distribution: 100 cities have 91% of physicians, the State of São Paulo has roughly 50% of them, and the Greater São Paulo area has 80,000 physicians)
Number of medical schools: 180 (more than 100 started less than 10 year ago).
Number of medical students: around 100,000
Physicians graduated every year: 17,000
Number of medical residents: ca. 27,000 in more than 600 hospitals
Colleges and higher education schools in other healthcare areas: more than 800, with 500,000 students

Number of hospitals: ca 8,000
Number of primary care centers, ambulatory centers, diagnostics clinics, etc: around 80,000
Family medicine units: 45,000 in more than 4,000 counties
Health care plans: more than 400
Organized according to five types: medical cooperatives, private HMOs (group medicine),
health insurance, health care plans, and intramural HMOs driven by big companies (self-organized HMOs).

The largest HMO in the country is a medical work cooperative system called UNIMED. It is present in almost 400 cities, reaching 85% of the Brazilian population, it has 64 hospitals, more than 12,000,000 beneficiaries and 80,000 affiliated physicians. In several cities it represents 50% to 80% of the private medical marketshare.

**Pharmaceutical market:** Third largest in the Western hemisphere. All multinational labs and 600+ national labs operate in the country. Regulated by ANVISA (federal agency similar to FDA). Largest funder of educational activities, conferences and publications in medicine (1,5 billion dollars spent yearly).

The city of São Paulo's Department of Health alone is larger than most countries and Brazilian states. It has 67,000 workers, 8,000 physicians, 12,000 registered nurses and nursing assistants, 770 primary health care centers and 23 hospitals. The city has 11,000,000 inhabitants, the largest in Western hemisphere, the fifth largest in the world. Greater São Paulo area has about 16 million inhabitants. Please see: [http://en.wikipedia.org/wiki/S%C3%A3o_Paulo](http://en.wikipedia.org/wiki/S%C3%A3o_Paulo)

It has a continuing education system (São Paulo Saudável Network) comprised of a Public Health School, a HD digital satellite network with almost 800 receiving points, two TV studios, and full Internet support ([http://ead.saude.prefeitura.sp.gov.br](http://ead.saude.prefeitura.sp.gov.br)). The professional education channel has been created by the Edumed Institute, under contract, and supervised by Dr. Renato M.E. Sabbatini. It is believed to be one of the largest in the world. Several other states are assembling similar systems. Please see: [http://en.wikipedia.org/wiki/Rede_S%C3%A3o_Paulo_Saud%C3%A1vel](http://en.wikipedia.org/wiki/Rede_S%C3%A3o_Paulo_Saud%C3%A1vel)

**Professional regulation:** health care professions are regulated and inspected by a governmental maze of Federal Councils, one for each profession (e.g, physicians, nurses, dentists, physical therapists, speech therapists, nutritionists, physical educators, psychologists, pharmacists, biochemists, etc.). For each Federal Council (all based in Brasilia) there are subordinate State Councils and delegates at most of the largest cities. See, for example: [http://www.cfm.org.br](http://www.cfm.org.br) (Federal Council of Medicine).

**Professional associativism:** There is an hierarchical organization of scientific and class societies in all health care professions. For example, in medicine, there is the Brazilian Medical Association. Under it there are 23 state federated societies (for example, the Medical Association of São Paulo), and then more than 400 county societies (for example the Campinas Society of Medicine and Surgery). In addition there are the affiliated 58 specialty societies (for example, the Brazilian Society of Cardiology), and under them more than 300 local and further specialized societies and associations (for instance, the São Paulo Society of Cardiology, or the Brazilian Society of Hypertension). The whole system is responsible for carrying out Board examinations for certification of medical specialties and issuing federal-wide certificates. For medical specialties there is also, since 2007, the mandatory recertification of physicians according to a CME-credits system similar to the one in existence in the USA. More than 4,000 courses and more than 600 conferences grant credits every year. In total, probably more than 200,000 physicians are involved as members of this giant system (second largest in the hemisphere, after the USA). See for example: [http://www.amb.org.br](http://www.amb.org.br) [http://www.apm.org.br](http://www.apm.org.br)

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For the physician recertification program: http://www.cna-cap.org.br/

Healthcare informatics: very well developed today, it began in the 1970s. In 1986 the Brazilian Society of Health Informatics (SBIS) was created. Today it has more than 800 members, the fifth largest in the world. It became affiliated to the International Medical Informatics Association (IMIA) in 1988 and its country representative. Since 1986, organizes biennial conferences. The 2010 conference will be one of the largest in the world, with more than 700 accepted papers and an expected participation of 800 people. Since 2009 SBIS has created a division of Continued Education in Health Informatics and organizing a number of conventional and distance-based courses. It has established also a Certificate Title of Specialization in Health Informatics and is negotiation with HIMSS (Health Information Management Systems Society) the organization of a chapter in Brazil and the translation of the CPHIM (Certificate Professional in Health Information Management). SBIS has been also the first to establish successfully a Electronic Health Record software certification program (even before the States). Please see: http://www.sbis.org.br and http://sbis.virtual.org.br (educational site).

CBIS 2010 Conference: http://www.sbis.org.br/cbis2010

Telemedicine: is the best developed and largest in LA. There are several private companies operating mainly with telecardiology and teleradiology. The Primary Telehealth System of the Ministry of Health has almost 900 participating spokes, with 10 state-based hubs. There is also the University Telemedicine Network (RUTE), managed by the Ministry of Science and Technology, with 70 university teaching hospitals and a HD videoconferencing network. There is a Brazilian Council of Telemedicine and Telehealth. Please see: http://rute.rnp.br http://www.telessaudebrasil.org.br and http://www.cbtms.org.br

Watch the slideshow: See: http://www.slideshare.net/rsabbatini/telehealth-brazil

Distance education: As a whole, it is very well developed in Brazil, possibly the largest and the best in the Americas after Canada and the USA. It is accepted and regulated by the national General Education Guidelines Law, and implemented at all levels: technical schools, free courses, undergraduate and graduate courses, corporate education. Ca. 500,000 students of distance higher education, at undergrad level, and more than 4,500,000 students in total participate in distance and e-learning. Most of the courses are satellite-based, with internet support, or pure web-based with synchronous asynchronous technologies. A network of more than 7,000 classrooms with class-based satellite transmissions in real time constitute the main infrastructure. Brazil has ca. 600 universities, with 6 million students. Two universities are among the 200 best universities in world, according to two ranks: the University of São Paulo and the State University of Campinas, both state-sponsored public universities in the state of São Paulo, together with more than 100,000 students and dozens of campuses. About 20% of these universities already have Union-accredited formal distance learning programs. See http://www.abed.org.br (In Portuguese)

Telecommunications and Internet infrastructure: The most extensive in all Latin America, spans the whole country. Brazil has 160 million cell phone lines, 28 million Internet users, the 3G mobile technology (voice and data) is going to cover 80% of all municipalities until 2012. It is the Latin American country with the largest number of internet domains and wideband has 4 million subscribers and is available in more than 1,000 cities. Brazil has an active program of Digital HD TV, which uses the Japanese
standard, covering about 100 cities presently and with all major TV channels transmitting in this format. HD cable and satellite TV is widespread. Ca 80% of physicians and of university students are Internet users. Electronic government is very sophisticated and widespread. Ca. 98% of IRS submissions were made via Internet, and Brazil is the only country in the world with 100% elections with electronic voting machines. Local, federal and state tax collection systems are moving to be 100% electronic in the next 2 years. There are several academic IP networks, the main one being the National Research and Education Network, with gigabits/sec backbones, and hundreds of thousands of connection points and more than one million users. It is interconnected via special peering services to the academic networks in North America, using a high capacity submarine cable system.

In summary, Brazil, as the B of the emerging high-power economies of BRIC, has a special status, since it is the only country with culture, economy, religion, ethnic composition and political system very similar and tuned to the USA. Besides, there is a small time zone difference. Part of western Brazil is inside the same time zone as the USA Eastern states. Brazil is the largest cultural and economical partner of the USA and Canada in the Americas.

Currently, the Brazilian market for health and education is undergoing swift and massive changes. American holding companies in these areas are in a frenzy of acquisitions. At least three large university education groups have acquired considerable assets in Brazil, as well as clinical laboratories, pharmaceutical labs and hospital chains.

The reasons: the country is Western-style democracy, with press freedom and respect to human rights, it is politically stable, with a dynamic and diversified economy, a stable and predictable currency exchange situation, with unimpeded money flows from/to foreign countries and growing educational and health systems. Returns on investments are among the largest in the world. The legal situation vis-a-vis the respect to international patents and intellectual property has improved dramatically, increasing the assurance of foreign investments. Brazil has withstood very well the global economic crisis and has a robust trade surplus and large financial reserves.

In our view, the time is ripe for American universities with distance education programs to enter Brazil in force.

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Services Provided the Edumed Institute for Education in Medicine and Health

History: founded 2000 as a joint initiative of the Brazilian Medical Association and the State University of Campinas, funded by private companies and government research funding agencies. It commands edumed.net, a distance education consortium of 22 universities, scientific societies and research institutes. Founders: Dr Renato M.E. Sabbatini, PhD and Dr. Silvia Helena Cardoso, PhD, researchers at the State University of Campinas, and a group of professors of several universities.

Location: Based in the city of Campinas, an industrial county of 1,200,000 inhabitants located 65 miles north of São Paulo City. It is the Brazilian Silicon Valley, due to the large concentration of high-tech and automobile industries, such as Motorola, IBM, Dell, Texas Instruments, Lucent, Samsung, Solecron, British Telecom, Nortel, Honda, etc. The Campinas region has an GDP PPP of 24 billion dollars and is the 9th industrial GP in the country. Please see: http://en.wikipedia.org/wiki/Campinas

Edumed is in the process of establishing a network of remote classrooms, initially in the cities of São Paulo City, Ribeirão Preto, Brasilia, Recife (State of Pernambuco, in the northeast), Porto Alegre (in the southernmost state of Rio Grande do Sul), and Porto Velho (Amazonian state of Rondonia, in the Northern region).

Juridical Status: The Edumed institute is a not-for-profit, research, development & education private research center, accredited by the Ministry of Science and Technology.

Services already provided by the Edumed Institute:

1. Development of research projects in health, education and information technology
2. Development of software in health and education, such as electronic health records and computerized physician order systems, Picture Archiving and Communication Systems (PACS), decision support systems based on logical rules, artificial neural networks, multivariate statistics
3. Software localization services and translation to Portuguese and Spanish of manuals, books, courseware, etc.
4. Technical and educational consultancy services in distance education systems, telemedicine and telehealth, hospital and clinical automation, software certification
5. Planning, coordination and production services for courseware, video and audio recordings and transmission (via satellite or internet), Learning Management Systems (LMS) and Content Management Systems (CMS), electronic publications (e-books and e-journals), specialized website development, deployment and hosting
7. National and international videoconferencing services using group videoconferencing dedicated devices, IP videoconferencing, webconferencing hosting and organization, video and audio webstreaming services, secure, high performance datacenter organization and management, scientific computing
8. Programs involving municipal, state and federal government in the areas of Digital...
Cities, telehealth, implementation of Community Health Information Networks, IP radio and TV, and others

The Institute has its own distance learning offers (http://ead.edumed.org.br) using the Moodle LMS platform, with several areas of national excellence: Neurosciences, Information and Telecommunication Technologies in Health and in Education, Occupational Health.

Examples of Edumed course titles:

- **Neurosciences:**
  - Introduction to Behavioral Neurosciences
  - Introduction to Biofeedback
  - Neurobiology of Memory
  - Introduction to the History of Neurosciences
  - Pain Medicine
  - Certificate Course in the Behavioral Neurosciences

- **IT in Health and Education**
  - Introduction to Health Informatics (with SBIS)
  - Health Informatics Journal Club (with SBIS)
  - Seminars in Health Informatics (with SBIS)
  - Capacity Building in SBIS Certification Project for Electronic Health Records Systems
  - Advanced Internet and Literature Search in Medicine
  - Capacity Building in Distance Education in Health
  - Introduction to Distance Education in Higher Learning
  - Applied Biostatistics in Clinical Research
  - Planning for a Career of Success in Medicine

- **Occupational Health**
  - Post-Graduate Technical Course on Distance Hygiene
  - Review Topics in Occupational Medicine

**Technologies used by Edumed:**

- Satellite TV transmission (MPEG4 H.264)
- On demand high resolution video and audio streaming (videocasts and podcasts)
- Interactive digital HDTV
- Web-based learning management systems (Moodle platform)
- Realtime webconferencing (video, audio, slides and video/audio/chat) interaction
- E-learning, programmed on-line learning
- Graphical and quantitative animation
- Realtime dedicated and group videoconferencing (landline- and satellite-based)

The Edumed Institute is particularly interested in establishing collaboration and partnership with North American universities and its distance education subsidiaries, in order to offer American generated and certified courses for the Brazilian and Latin American markets, particularly in the areas of health sciences, education, information technology and
business sciences. We are able to localize, translate, adapt, add local content, set up and maintain and service the infrastructure, market and sell the courses.

Dr Renato M.E. Sabbatini's Positioning in the Health Care Technologies area:

- One of the earlier pioneers (1969) of medical informatics and telemedicine (1987) in Brazil and Latin America
- Professor and researcher of Medical Informatics and Telemedicine from 1981 to present (29 years)
- Founded and was editor-in-chief of the first journals of Health Informatics in Latin America; Revista Brasileira de Informática em Saúde, Revista Informática Médica, Revista Informática Médica, Revista Intermed.
- Created the first physical presence course in the area (1981), the first graduate course (1987) and undergraduate curricula of medical informatics in a medical school (1985), organized the first SBIS annual conference (1986) and several other firsts (medical education applications, dental informatics, nursing informatics, physical education informatics).
- Director of Medical Informatics of the Brazilian Medical Association (1996-2000), helped to plan and to establish the Brazilian Physician Specialist Recertification Program, based on CME credits
- Coordinator of the Special Interest Group on Distance Education in Health of the Brazilian Association of Distance Education (ABED)
- Main consultant in the establishment of the São Paulo Saudável Network
- Main consultant to several universities with the aim of implementing distance learning programs, via satellite and internet

See on-line CV at http://renato.sabbatini.com