



## **Research**

**Current situation of the private medical service industry in Hermosillo, Sonora within the digital economy.**

Elaborated by:

**#TeamMedicMex**

# **Current situation of the private medical service industry in Hermosillo, Sonora within the digital economy.**

## **Abstract**

**By the year of two thousand and nineteen, the private medical service industry growth was concentrated in the border cities of the Sonora state due to the large number of foreign patients and around six hundred thousand Sonora residents or descendants living in the state of Arizona.**

**Hermosillo stands out among the border municipalities, thanks to its internationally certified private hospital infrastructure. However, the absence of post-operative-care as well as external services promoters in Mexico and internationally, combined with a fragmented value chain, have slowed down the growth of the medical industry in the capital.**

**Our society is still in the first stages of digitalization therefore a universally accepted concept of digital economy has yet to be established. There's a gap between the available tools and the implementation in order to optimize the value chain and the customer experience.**

**The current document contextualizes the private medical service industry in Hermosillo, Sonora within the digital economy through documentary research on digital resources. In the matters of politics, economics, social and technological context.**

**In addition, the health crisis forced the digitalization of the commercialization processes in order to accomplish established objectives, thereby positioning the medical service industry as a participant in the digital economy.**

**Keywords: Digital economy, private industry, Health services.**

## **Introduction**

The current context of the private medical services industry in Hermosillo, Sonora, is at a critical point of transformation due to the growing influence of the digital economy. In 2019, the private medical sector in this region experienced a significant increase, especially in the border cities of Sonora, driven by both the arrival of foreign patients and the presence of approximately 600,000 Sonorenses and their descendants residing in the state of Arizona.

Hermosillo stands out among border municipalities thanks to its private hospital infrastructure, which has obtained international quality certifications. However, despite this competitive advantage, the lack of post-operative services and the absence of agents promoting medical services in Mexico and internationally, combined with a fragmented value chain, have slowed down the growth of the medical industry in the capital.

The term "digital economy" is still subject to constantly evolving definitions due to the early stages of digitalization of society. There is an evident gap between the technological tools available and their effective application to optimize the value chain and improve the customer experience in the field of health.

The main objective of this document is to contextualize the private medical services industry in Hermosillo, Sonora, within the framework of the digital economy. This contextualization will be based on a documentary research that will address the political, economic, social, and technological aspects that influence this industry. Additionally, it will explore how the global health crisis has driven the digitalization of business processes, making the medical industry the key in the digital economy.

Problem Statement

The medical sector is going through a digital transformation, but there is a gap between the potential of technological innovations and their effective implementation. This creates the necessity to understand better the current situation and specific challenges Hermosillo medical industry in this transition is facing.

## Methodology

A documentary research method was used. First, reports and reports provided by Deloitte were collected, which provides a comprehensive perspective on the trends, challenges, and opportunities in the national medical industry. In addition, databases, statistics, scientific articles, news articles, interviews with local experts, including the president of the Sonora Medical Services Cluster, were analyzed. This made it possible to collect information on the influx of foreign patients and its economic impact on the Hermosillo region, as well as understand the current challenges facing the medical industry. The study of the Global eCommerce Talent-GDT program was also incorporated, which has the endorsement of the Alibaba Group and is taught at the University of Sonora. This mixed methods research allowed a complete understanding of the current context of the medical industry in the digital era in Hermosillo, Sonora.

## Objective

To analyze the current situation of the private medical services industry in Hermosillo, Sonora, in the digital economy.

## Context of the National Medical Industry

The Sonora-Arizona relationship promotes economic, cultural, and social cooperation between the two states. This treaty covers a wide range of topics, including trade and investment, education and culture, the environment, security, and health.

In terms of health, Sonora has seen growth in its private medical services industry in border cities. Around 600,000 Sonorans and their descendants travel to receive dental treatments as well as the different medical specialties offered, and patients from the United States and Canada have also arrived due to savings, quality and infrastructure.

The Sonora Health Tourism Advisory Council evaluates government policies and programs on health tourism, as well as promotes cooperation between the different sectors of the medical industry. With the support of the public, private, and social sectors, this council provides the state with a key tool. Additionally, promoting cooperation and regulation in key economic sectors is the fintech law (law to regulate financial technology institutions).

All of the above shows that there are laws, regulations, and organizations working together to promote the growth of the private medical services industry. In the current context of the digital economy, it is essential to understand how data on the distribution of clinics by specialty, hospitals, and the availability of a variety of majors can influence the development and quality of healthcare in the region.

In 2021, the majority of clinics were in the outpatient category, representing 71.9%. This highlights the importance of outpatient care (diagnosis and treatment). In second place, general and family medicine accounted for 22.4%, indicating the importance of primary care. With a participation of 13.6%, hospitalization and support clinics were found, suggesting the need for intensive medical care. Dentistry represented 6.94%, highlighting the presence of dental services. Urology and pediatrics had participations of 3.47% and 2.84%, respectively, suggesting the availability of specialized services in these areas. Finally, surgical services were also shown with 2.52%.

The Hermosillo Economic Development Commission (CFEMH) reports a total of nine private hospitals in the city, including San Jose Hospital, Noroeste Medical Center, San Benito Clinic, Licona Hospital, International Center for Advanced Medicine (CIMA), Sonora State Cancer Hospital, Shriners Hospitals, San Francisco Sanatorium of Hermosillo, and Nova Medical Clinic.

For 2022, Hermosillo registered 63,800 majors in different fields of study, of which 52,100 were related to the topic. Of these, 4.08% corresponded to general nursing and obstetrics,

2.69% to general medicine, 2.21% to dentistry and general dentistry, 1.69% to therapy and rehabilitation, 1.67% to medical diagnosis and treatment technology, and 0.083% to specialty medicine. On the other hand, 3.56% corresponded to business and commerce, 1.93% to marketing, 6.67% to law, 2.43% to software development, and 0.53% to computer science.

## Digital Economy and Its Impact on Healthcare

It is clear that the technological revolution is becoming increasingly tangible due to the changes that are being experienced in the way we interact, live, and work. This fourth industrial revolution "refers to the new waves of innovations that consist of several technologies such as 3D printing, IoT (Internet of Things), AI (artificial intelligence), smart cars, big data, and on-demand economy (shared economy), and may also include smart technology health technologies, renewable energies, and VR (virtual reality)". (UNIDO - Economics of Technological Leapfrogging, 2018)

The concept of the digital economy does not have a widely accepted definition yet, due to the fact that society is in the early stages of digitization and to the fact that the process of establishing standard definitions for new technologies is often slower than the pace of development of the same.

The evolution of processes is essential to remain competitive. While it is an essential activity for the business sector, the health crisis forced the private service industry to digitize business processes to achieve the goals set, which led the private medical industry to become a player in the digital economy.

Therefore, telemedicine was the first key tool to mitigate the effects of isolation and global access to health. To support the above, in Sonora, in 2021, a platform entrepreneurship project called Unividoc was launched by the Tecnológico de Monterrey Campus Sonora, which consists of doctors who attend their patients completely in Spanish via video call with

the aim of simplifying medical care and providing access to the Hispanic community. It won first place in innovation representing Mexico at the Latin American level in the "Enactus Puerto Rico" competition. Enactus is a platform that promotes social entrepreneurship initiatives led by university students, giving them the opportunity to expand their reach internationally. ([enactusmexico.com.mx](http://enactusmexico.com.mx))

TecSalud, the Tecnológico de Monterrey Health System, coexists alongside Unividoc. It integrates innovative clinical, educational, and research services through its medical academic centers. "TecSalud is made up of the School of Medicine and Health Sciences, the TecSalud Foundation, the San José and Zambrano Hellion hospitals, the specialty institutes, and associated institutions. It contributes innovation and professional excellence to healthcare in Mexico, as it has created a cutting-edge academic program in the health sciences, offers an innovative patient-centered healthcare system, and conducts research focused on transforming healthcare in the country." TecSalud reported on April 25, 2023 that it integrated the Joya Medical Group into its Red TecSalud collaboration network, thus raising the total number of private health organizations to ten. According to Jorge Azpiri, director of Development and Expansion Projects at TecSalud, this alliance is a collaboration agreement to enrich and raise the level of private medicine in the country. (<https://www.tecsalud.mx/quienes-somos>)

Currently Hospital Joya has units in San Miguel de Allende, Cancún, Querétaro, Guadalajara, La Peñita, Playa del Carmen, Puerto Vallarta and Nuevo Vallarta; and will soon open in Tulum, Torreón, Los Cabos, Manzanillo and an Oncology Center in Bahía de Banderas, all promising to be among the best hospitals in their region following the protocols and services of excellence that distinguish Hospitales Joya. ”(<https://hospitaljoya.com/quienes-somos/>)

Therefore, the Deloitte report in January 2023, "The Future of Health in Latin America: Hospitals of the Future," tells us that the solutions that were taken during the health emergency must be reconsidered and questioned: Are the necessary processes being

digitized? Was the desired reach achieved? In such a way that the actors in the health industry who seek change will come to redesign their processes around the consumer and digitize the necessary operations.

All of the above suggests that telemedicine, websites, or digital marketing is just one variable of this great equation called the digital economy. The decision now comes from the consumer, which will modify the industry in the future.

In such a way that platform-based business models have been disruptive in different industries, as well as in services, to the point of accelerating the exchange of information and generating economies of scale. Therefore, a digital platform-based business ecosystem is an action that must be transitioned to allow for the redesign of strategies that are now primarily based on the customer experience.

Sonora has implemented key programs to drive the development of the digital economy and encourage the adoption of advanced technologies. This includes the promotion of the STEM (Science, Technology, Engineering, and Mathematics) program by the state government and the Secretary of Education and Culture (SEC). This initiative aims to nurture skills and knowledge in students, enabling them to develop an innovative outlook.

<https://www.sonora.gob.mx/gobierno/acciones/dependencias/entrega-sec-material-didactico-parapotenciar-habilidades-stem-en-alumnado-de-secundaria>). The University of Sonora, has diligently worked to offer comprehensive training and educational programs tailored to the digital economy, e-commerce, data science, artificial intelligence, and the Internet of Things. To achieve this, In 2020, the University of Sonora introduced two postgraduate programs in data science and artificial intelligence: the first one by the Department of Mathematics and the second one by the Department of Industrial Engineering concentrating also the Internet of Things. <https://internacionalizacion.unison.mx/convocan-a-empresas-al-proyecto-aldeasdigitales-sonora>)



Furthermore, the commitment to the development of a robust digital ecosystem is reflected at the national level through the collaboration between the Federal Institute of Telecommunications (IFT) and the National Commission for the Protection and Defense of Financial Services Users (CONDUSEF). Both institutions work together in critical areas such as cybersecurity and the reliability of financial services, which strengthens the digital infrastructure in the country and ensures the protection of user data. (Global Connectivity Report 2022, P.115)

A tangible example of collaboration between institutions is the creation of the "Soy Usuario" (I Am a User) platform by the IFT and PROFECO. This platform allows consumers to file complaints against telecommunications service providers and receive prompt and efficient responses, reinforcing confidence in digital services.

The IFT's action plan for the period 2021-2025 is centered on developing a digital ecosystem with a holistic and collaborative vision. This strategy aims to leverage Mexico's extensive connectivity, where 78.6% of the population has internet access, 73.4% use social media, and 96.5% have an active mobile connection. These figures demonstrate a high level of technological penetration among the Mexican population, suggesting significant potential for growth and innovation in the digital economy, supported by inter-institutional collaboration in Sonora and at the national level.

Hermosillo, Sonora, is gradually advancing in its integration into a digital ecosystem within the context of the private medical services industry in the digital economy, which could enhance its growth in the field of Medical Tourism.

In September of two thousand nineteen, Deloitte, in its financial advisory division, generated a report titled "Market Opportunities and Perspectives for Medical Tourism in Mexico." This report was based on the collection of opinions and strategic proposals from various stakeholders, such as representatives from the public sector in health tourism and the

promotion of Mexico, hotel groups, private hospitals, clinics, laboratories, travel agencies, as well as leaders in health tourism clusters and retirement communities (Deloitte, 2019). According to this report, medical tourism is divided into three segments: Wellness Tourism, Retirement Tourism, and Medical Tourism. The latter refers to all individuals who visit a city to undergo a surgical procedure. This service is provided by conventional healthcare professionals, such as doctors, specialists, nurses, among others, and can encompass diagnoses, medical treatments, or surgical procedures.

In the methodology section, Deloitte mentions: "Most governments do not have clear statistics collection processes for Medical Tourism, and hospitals have not published verified figures on the subject. In this regard, industry size statistics show significant variations depending on the definition and measurement criteria used by each source" (Deloitte, 2019).

In 2018, the estimated size of the industry in Mexico ranged from 8 to 8.8 billion dollars, of which 2.7 to 3.5 billion corresponded to direct contributions to the tourism sector by tourists and day-trippers (Deloitte, 2019). In 2021, the industry's value in Mexico reached \$6,750 million dollars (El Financiero, 2021). It is known that approximately 77% of medical tourists come from the southern states of the United States, and there are no precise data regarding the origin of the remaining 23%. However, Google Trends shows that, in addition to the United States, countries such as Canada, the United Kingdom, India, and Malaysia have a high volume of searches related to surgeries in Mexico (Deloitte, 2019)

A cluster or sector group is defined as a set of agencies, organizations, and institutions that work together to achieve common goals and meet the needs of a specific sector (Adapted from WHO). According to a cluster maturity scheme in the Deloitte report, Mexico is in phase one, where the main objective is individual coordination of strategies with limited impact among the parties involved. The desired achievement is to reach phase four, in which synergies are generated through the innovation of activities supporting regional and market development.

The Sonoran cluster proposes the creation of a binational network for medical tourism and wellness that positions the Sonora-Arizona mega-region as a competitive tourist destination regionally and internationally. However, this proposal is not included in the development plans.

In an interview with Grupo Healy, Jorge Yaza, Deloitte's Senior Partner in Hospitality, Tourism, and Real Estate for Spanish Latin America, suggests that, over a ten-year period, the state of Sonora could transform into a magnet for health tourism in its various forms, including medical tourism, wellness tourism, and retirement tourism. This attraction is primarily aimed at US and Canadian citizens who face limitations in their insurance coverage in their home countries. Despite the challenges posed by the Covid-19 pandemic in various areas of tourism, including health, affordable costs stand out, especially in specialties such as cardiology, plastic surgery, ophthalmology, oncology, and dentistry. Mexico and Brazil lead the industry in Latin America, thanks to the wide range of procedures and compliance with international standards, and recovery is anticipated to begin in 2024. The long-term vision focuses on the potential of Baja California and Sonora as destinations for families seeking comprehensive healthcare and wellness solutions in all three modalities.

In Hermosillo, Sonora, initiatives involving partnerships with American hospitals are already in the works, opening up opportunities for health tourism. The next four years are considered a period of recovery for the sector, given the significant impact of the pandemic. However, there is a promising horizon as comparative advantages for Canadian and American citizens are increasingly highlighted.

Between 2025 and 2030, the State of Sonora could further develop medical and wellness tourism, especially targeting retired Americans and Canadians in places like San Carlos, Puerto Peñasco, and Álamos. Jorge Yarza underscores that there is a significant opportunity to address the needs of these demographics by providing both comfort and high-quality medical care.

Despite the pandemic's impact, affordable costs stand out, particularly in specialties such as cardiology, plastic surgery, ophthalmology, oncology, and dentistry. Mexico and Brazil lead the industry in Latin America, thanks to their wide range of procedures and adherence to international standards.

Based on the results obtained from collaborative work in the Laboratories, Deloitte has generated 10 initiatives to tap into the described markets:

Establishment of a centralized entity responsible for regulating, coordinating, and formalizing medical cluster groups organized by specialty and geographic location.

Development of action plans inspired by international best practices, tailored to Mexico's needs, with the aim of establishing efficient channels for healthcare, facilitation, and management in Medical Tourism.

Creation of a strategic plan with a horizon extending to 2030, clearly defining the functions, responsibilities, goals, and specific action lines for Medical Tourism, involving both the government and various sector stakeholders.

Promotion of the creation of a National Development Fund for Medical Tourism, aimed at fostering the formation of clusters in the country's top fifteen areas.

Establishment of a systematic data collection mechanism on a regular basis to build a comprehensive, reliable, and up-to-date information system on the Medical Tourism industry in Mexico.

Design and execution of a promotional campaign to position Mexico on the international stage of Medical Tourism, highlighting its competitive advantages in terms of cost, quality, efficiency in treatment times, and the warmth provided to patients.

Implementation of a coordination plan to assess the existing installed capacity in order to develop highly competitive specialty-based clusters, taking into account aspects such as available human capital, academic centers, and hospitals.

Offering training programs for doctors, nurses, and facilitators by creating academic centers within clusters focused on language instruction and improving skills for interacting with foreign patients.

Implementation of a program aimed at expanding medical certifications in hospitals, clinics, and among healthcare professionals.

Development of a robust proposal with the objective of negotiating agreements with insurance companies and other market entry opportunities in the field of Medical Tourism.

On August 19th, in El Financiero, a series of fundamental points for venturing into Medical Tourism in Mexico were revealed by Norma Canales, an economist and financial expert who serves as the Director of Business Incubation and Acceleration. These points include:

It is essential to develop a sales strategy with a strong focus on international promotion.	Establishing international customer support that understands and can communicate in the patient's language is imperative.
Obtaining international accreditations and ensuring that infrastructure and specialized equipment meet recognized standards, such as the Joint Commission International, is crucial.	Building knowledge and strong relationships with international insurance companies is essential to streamline the healthcare process for patients.
Establishing strategic alliances with hotels, transportation services, and dining options for patients and their companions, providing comprehensive services, is key.	

Furthermore, Canales emphasized the importance of implementing technological platforms, artificial intelligence, and digitization to serve international patients. She also highlighted the need to provide biopsychosocial services, meaning holistic care that extends beyond purely surgical aspects, including recovery therapies, psychological support, and nutritional counseling. These services can be delivered and monitored through telemedicine platforms (El Financiero, 2019).

## Conclusions

### Hermosillo, Sonora: A Strategic Hub for Health Tourism

Hermosillo, Sonora, like Tijuana and Ciudad Juárez, is actively investing in and developing its private medical industry to promote health tourism. With both national and international

certifications in place, there is room for further improvement in terms of enhancing its offerings and fostering innovation. The city's geographical location plays a pivotal role, facilitating close ties with Arizona and hosting a community of foreigners.

#### Boosting Medical Research and Technology

The establishment of a digital ecosystem in Sonora is expected to significantly contribute to the advancement of the medical sector. This will involve providing innovative platforms tailored to the needs of future generations. One such initiative is the creation of a digital platform called TmedicMex, which will help users easily locate hospitals and healthcare providers specializing in various medical fields such as general and family medicine, dentistry, urology, oncology, pediatrics, and more. Additionally, it will provide essential tools to medical service providers, enabling them to expand and enhance their services. The primary goal of this project is to harness the advantages of the digital economy to drive healthcare in the region and, more importantly, enhance the overall patient experience. This could become a key distinguishing factor in attracting international patients seeking high-quality healthcare.

#### Emphasis on Primary Care and a Strong Legal Framework

Research conducted on patient healthcare indicates a significant role played by general and family clinics in providing primary healthcare services. Additionally, the Health Tourism Advisory Board in the state of Sonora evaluates government policies and programs related to health tourism, while also promoting collaboration across various sectors of the medical industry. With support from the public, private, and social sectors, this board offers the state a valuable tool. Furthermore, the presence of the Fintech law provides legal legitimacy and security for financial transactions within platforms like TmedicMex, thus creating a regulatory framework.

#### Reliable Medical Infrastructure

Concerning medical infrastructure, Hermosillo proudly boasts nine nationally certified hospitals, reinforcing its commitment to delivering excellent healthcare services and solidifying its position as a trustworthy destination for health tourism. This existing

infrastructure serves as a strong foundation for future industry growth and the ability to cater to a wide range of medical needs.

#### Collaboration and Key Investments for Digital Transformation

Nonetheless, achieving a truly transformative impact on the medical industry in the digital era necessitates close collaboration and substantial investments from governmental bodies, healthcare service providers, educational institutions, and other key stakeholders. These combined efforts are essential for realizing the vision of the future of healthcare in Latin America. This vision includes the implementation of state-of-the-art hospitals and the creation of a cutting-edge digital medical ecosystem in Hermosillo, Sonora. Prioritizing innovation and technology will be crucial for further elevating the quality of healthcare and consolidating Hermosillo's status as a leading destination for health tourism in the digital economy.

Hermosillo, Sonora, possesses the potential and determination to become a renowned health tourism destination in the digital age. Its strategic location, focus on technology, commitment to quality primary care, and reliable medical infrastructure serve as the cornerstones of this promising future. However, achieving excellence in healthcare requires robust collaboration and ongoing investment from all stakeholders involved. The vision of a brighter healthcare future in Hermosillo is within reach and promises benefits for both local and international patients alike.

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