

Application of a sustainable destination framework to model Mexican heritage destination resilience in times of crisis

Aplicación de un modelo de turismo sostenible para analizar resiliencia ante crisis en destinos mexicanos patrimoniales

Jeremy Heald

Departamento de Economía y Finanzas, División de Ciencias Económico-Administrativo,
Universidad de Guanajuato, Campus Guanajuato, C.P. 36250, Guanajuato, Gto., Mexico.
healdj@ugto.mx, healdj59@gmail.com.

Abstract

The article discusses World Heritage Site Guanajuato, Mexico, a mature destination which suffers sustainability issues concerning water provision, traffic congestion, and refuse collection, the result of chaotic urban growth. Stagnating visitor numbers indicates ageing social infrastructure, dated tourism products, and reputational damage of public insecurity. The research objective is to improve municipal planning by using a resilience framework from the tourism ecology literature to encourage sustainable development. It integrates the results of a 2021 survey of local tourism business opinion and finds Guanajuato's multi-business owners are innovative in crisis, reacting to covid-19 with changes to their products and services. Federal and State government hardly responded. It should widen membership of the municipal Tourist Board and incorporate project evaluators within the local Planning Office to apply a resilience model to address environmental, infrastructural, and tourism challenges.

Keywords: Heritage; tourism; destination; resilience; sustainability.

Resumen

El artículo analiza la ciudad Patrimonio de la Humanidad de Guanajuato, que vive una constante presión ambiental con problemas como abasto de agua, congestión vehicular y recolección de basura, derivados de un crecimiento urbano caótico. Como destino maduro, sufre de infraestructura social obsoleta, productos turísticos anticuados y reputación dañada por la inseguridad pública. El objetivo de esta investigación es mejorar la función de planeación municipal con la aplicación de un modelo de resiliencia proveniente de la literatura de turismo ecológico, complementado con los resultados de un cuestionario de la opinión de proveedores locales aplicado en 2021. Los resultados muestran que los emprendedores que tienen múltiples negocios son innovadores y reaccionaron al covid-19 con cambios a sus productos y servicios, mientras que la reacción gubernamental fue escasa. Se recomienda mejorar la representatividad del Consejo Turístico municipal e incorporar evaluadores de proyectos a la Oficina de Planeación para aplicar un modelo de resiliencia que atienda los desafíos ambientales, infraestructurales y turísticos.

Palabras clave: Patrimonio; turismo; destino; resiliencia; sostenibilidad.

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Introduction

The article proposes a destination sustainability framework (DSF) from the tourism ecology and resilience literature as an integrative approach for evidencing problems and proposing solutions to the development of heritage destination Guanajuato (Calgaro, 2014a). The DSF can complement conventional planning tools such as the Urban Development and Territorial and Ecological Planning Program (Programa Municipal de Desarrollo Urbano y Ordenamiento Ecológico Territorial [PMDUOET], 2019) and the Municipal Development Plan (Periódico Oficial, 2019). Smart destination planning and technology is also required (refer to networks, clusters and technology below). The alternatives for Guanajuato are rejuvenate or decline, so the town needs an agenda for change and innovation which is sustainable environmentally.

Guanajuato is a mature tourism destination which was declared a World Heritage Site in 1988 due to its scenic landscape and to its tangible and intangible heritage inspired by its mining tradition. However, since 2018 the number of visitors has been declining (Observatorio Turístico del Estado de Guanajuato, 2022c), which represents an existential threat to the tourism sector, a key local employer. The tourism sector suffers from a dependence on traditional products, highly seasonal and weekend demand, shortening visits, limited spending by day trippers, and a decline in international visitors (Observatorio Turístico del Estado de Guanajuato, 2022c; Trejoluna & Virgen, 2020). In addition, covid-19 virtually closed the destination in Spring 2020, and a survey of local tourism providers in the summer of 2021 revealed an incomplete recovery. By the end of 2022, the media was reporting a visitor recovery which will probably be confirmed by the authorities during 2023, however, short-term recoveries are no substitute for long-term planning.

The town's infrastructure is under pressure from water supply stress, traffic congestion and poor public transportation, and a disorderly urban image, all of which is the consequence of spontaneous urban expansion. In addition, there is a lack of articulation between tourism service providers, research institutes, and municipal government, which impedes policy design and implementation (Ruiz-Lanuza, 2012).

To complement the DSF, the article reviews the tourism resilience literature in the remainder of the introduction section for models and management tools which can improve destination performance. The materials and methods section presents the DSF and introduces an in-depth survey of local tourism providers applied in 2021 during the covid-19 crisis. Combining the survey with state level tourism statistics and local planning documents, the results section employs the DSF to analyze Guanajuato's exposure and sensitivity. The Discussion section interprets the town's adaptiveness or non-adaptiveness in the context of municipal development and tourism. Finally, the Conclusion discusses the potential of a DSF and resilience management for Guanajuato and other similar heritage destinations.

Literature review

Three areas of literature contribute to the building of resilience models for mature tourism destinations: 1) Networking practice and technology, which can knit the tourism sector together; 2) The visitor experience itself, which integrates the past and present through creative tourism products; and 3) Crisis and disaster management, which adapts the small business and social ecology literature to the subject of tourism resilience.

Networks, clusters and technology

Networks, clusters, and SMART destination technology are essential for integrating hospitality and recreational amenities in heritage destinations, because tourism products integrate service providers and infrastructures, which requires coordination.

Networking is an essential feature of entrepreneurship, which joins up supply chains and marketing mixes by creating relationships (Galkina, 2013). Small-scale enterprises lack contacts throughout the value chain and paradoxically those contacts evolve quickly during start-up growth, which requires on-going change management. The pursuit of improved sales and product mixes forces entrepreneurs into networking both in the sector and the wider community (Anderson *et al.*, 2010; Coulthard & Loos, 2007; De Hoyos-Ruperto *et al.*, 2013; Sheppard & Williams, 2016). Networking is situation specific, as competition for individual visitors transforms into cooperation in tourism products and routes, so firms and destinations both compete and complement (López-Ruiz, 2021).

Business clusters are, among other things, physical manifestations of networks. According to Maxim (2015), drivers of sustainable tourism success include stakeholder cooperation, tourism strategic plans, good public transportation, funding, political will, community support, long-term focus, education in tourism resilience, legislation with incentives and penalties, definition of best practice, and fee charging for overcrowded attractions. Clusters also require interaction between tourism service providers, small businesses in related industries, research institutes, chambers of commerce, and politicians who should function as brokers of the local interest (Fundeanu, 2015). The European Cluster Excellence Initiative launched in 2009 provides a useful format for consolidating clusters, including in tourism (European Secretariat for Cluster Analysis [ESCA], 2022; Yalcinkaya & Güzel, 2019).

Technology forms an integral part of destination administration. Gretzel & Scarpino-Johns (2018) model integrates social and tourism infrastructure, technology, data analysis, and governance to obtain a smart tourism experience. A resilient tourism destination uses technology for polycentric governance, civil society coalitions, environmental monitoring of stresses and strains, and engagement with complexity (Gretzel & Scarpino, 2018; Hartman, 2018). Smart destinations also use technology to reinvent themselves by designing new or improving tourism experiences (Yavuz *et al.*, 2018). The smart tourism destinations program operated by Spanish smart tourism promoter Sociedad Mercantil Estatal para la Gestión de la Innovación y las Tecnologías Turísticas (SEGITTUR) seeks to raise awareness, improve tourism experience (mobility, accessibility, and safety), and preserve basic resources used in tourism (water, energy, and heritage) with the aid of tourism technology (González-Reverté, 2019).

Culture, Creativity and Experience

Culture, creativity, and experience are key to heritage tourism success in a competitive multi-destination context, where it is easy to get left behind as tourists seek new and emotional experiences, which can be communicated instantaneously by social media to large audiences.

Experience tourism is fashionable as destinations extend heritage and its appreciation by including the active consumption of tourism activities, both arts-based and recreative (Gordin & Matetskaya, 2012). For example, visitors can appreciate paintings in an exhibition or improve their painting skills in an arts workshop, which means there is a spectrum of appreciation which extends from traditional passive enjoyment to a more hands-on learning experience (Alsos *et al.*, 2014; Gordin & Matetskaya, 2012; Richards, 2011). Destination providers of heritage, arts, and recreation can improve their cultural and creative skills by offering packages of emotional experiences through practitioner groups which unites service providers with clients (Volo, 2021).

Creative groups are often young people who congregate in cheaper accommodation in formally unfashionable postcodes which they rejuvenate using networking, clustering, and smart technology applications (Richards, 2011, 2020). Initiatives include performance arts, cinema, gastronomy, wine routes, walking and cycling associations. An objective of tourism planners is to convert niche consumer markets into mainstream tourism, so the initial creative spark is usually spontaneous and bottom-up although astute investment in social infrastructure by local government enables top-down tourism product consolidation (Richards, 2018, 2020).

A sector-wide transition to experience-based products means that tourism enterprises need to innovate. Product life spans are getting shorter, which requires that newer and better products are developed more frequently. The capacity of firms to adapt to market changes with new products is a challenge in mature destinations with undiversified tourism products because traditionally the hospitality sector is weak in Research and Development (R&D) (Alsos *et al.*, 2014).

Crisis management and resilience

Crisis management and resilience are important for heritage site survival because reinvention is required to reaffirm the relevance of recreational and tourism products for younger generations. Planning needs to predict infrastructure congestion and react to market trends to guide destinations onto relevant and sustainable development paths.

Crisis management is a reaction to shocks, which are linked to wider social-ecological contexts, and force communities and businesses to determine how to best use finite resources in their interventions. Disruptive events continuously destabilize livelihoods, communities, and businesses (Dwyer *et al.*, 2009; Tarlow, 2009). Tourism destination stresses and shocks do not exist in a vacuum and have diverse roots (Bundy *et al.*, 2017; Mekhinc & Cvikl, 2013). Both before and during crises, it is important to understand why actors choose certain actions (or inaction) over others, which requires understanding the cultural and political context. Destination vulnerability drivers include seasonal demand, ecological sensitivity, destructive livelihood dependencies, unequal distribution of power, and reliance on external marketing (Calgaro *et al.*, 2014a).

To cope with shocks at a company level, the literature proposes traditional revenue boosting and cost-cutting options (Alves *et al.*, 2020; Kuckertz *et al.*, 2020; Smallbone *et al.*, 2012). However, a destination crisis requires a coordinated sectorial response. To this end, Boin & Hart (2007) present a stage crisis model for public agency use which includes: 1) sense making, 2) making critical decisions, 3) making meaning (i.e., providing an authoritative account of what is going on which can inspire public confidence), 4) terminating a crisis, and 5) learning.

Tourism destinations need resilience to survive and prosper. Social-ecological systems (SES) integrate individuality, community, and ecology (Berkes *et al.*, 1998; Colding & Barthel, 2019; Folke, 2016; Schluter *et al.*, 2020). An example of a SES is the DSF (Calgaro *et al.*, 2014a). Resilience requires managing firms and eco-systems when they suffer slow or sudden change due to stresses, shocks, and disasters, both natural and human (Cheer & Lew, 2017a, 2017b). Bui *et al.* (2020) propose a multidimensional model of interaction characterized by contrasting forces of bottom-up renewal and top-down remembrance of a previous status quo. Fath *et al.* (2015) present a dynamic model that includes a cycle of: 1) growth, 2) development, 3) collapse, and 4) reorientation. Resilience exists at the level of local identity and culture, in which a sense of belonging, collective memory, and recognition creates intangible culture and heritage, which is vulnerable to destruction, for example, by uncontrolled gentrification processes that displace local communities (Soto *et al.*, 2019).

Finally, mature destinations require resilience to reinvent themselves for new tourism eras. Guillen-Ibarra & Mejía-Morales (2017) discuss sustainability in the context of urban planning, in which bigger may not be sustainable. Fontanari *et al.* (2021) suggest that population growth moves destinations towards their carrying capacities in which the quality of life and the expectations of locals and visitors requires balancing. According to Butler (2006) and Holladay (2018), tourism destinations can locate themselves on a development sustainability continuum between starting out and maturity, in which there are cycles of creative destruction and renewal. Generally, heritage destinations are nearer the end of a cycle and in need of rejuvenation (Trejoluna & Virgen, 2020).

Materials and methods

Tourism is a key sector of many coastal resorts and heritage destination economies; however, its sustainability is at risk due to multiple shocks and hazards that threaten livelihoods. According to Calgaro *et al.* (2014a), not much is known about the complex drivers of destination vulnerability, leading to the application of ineffective resilience-building solutions. For this reason, the DSF was developed as a holistic framework for understanding destination vulnerability and complexity, providing building blocks to understand and cope with insecure human environments. To this end, it integrates ecological, social, and economic issues. It provides a destination resilience tool for policy design and application, which is more functional and focused than traditional municipal development plans.

The DSF was originally applied to a small, developing Thai seaside destination in the aftermath of the Asian Tsunami of 2004 to analyze destination shock dynamics, vulnerability, and resilience. (Calgaro *et al.*, 2014b). Neither the original model nor its application in Thailand specifically identify built heritage, which is an essential part of the sustainability equation of mature, inland Mexican destinations like Guanajuato, so a research contribution of the article is the inclusion of cultural heritage within a DSF.

The DSF (Figure 1) sequences dimensions of exposure, sensitivity, and system adaptiveness, with a detailed breakdown into sub dimensions creating an explicit model, with shocks and stressors entering the system and green adaptive responses or red (non-adaptive) arrows exiting. The elements of place, scale, and time in the model provide a checklist of destination idiosyncrasies.

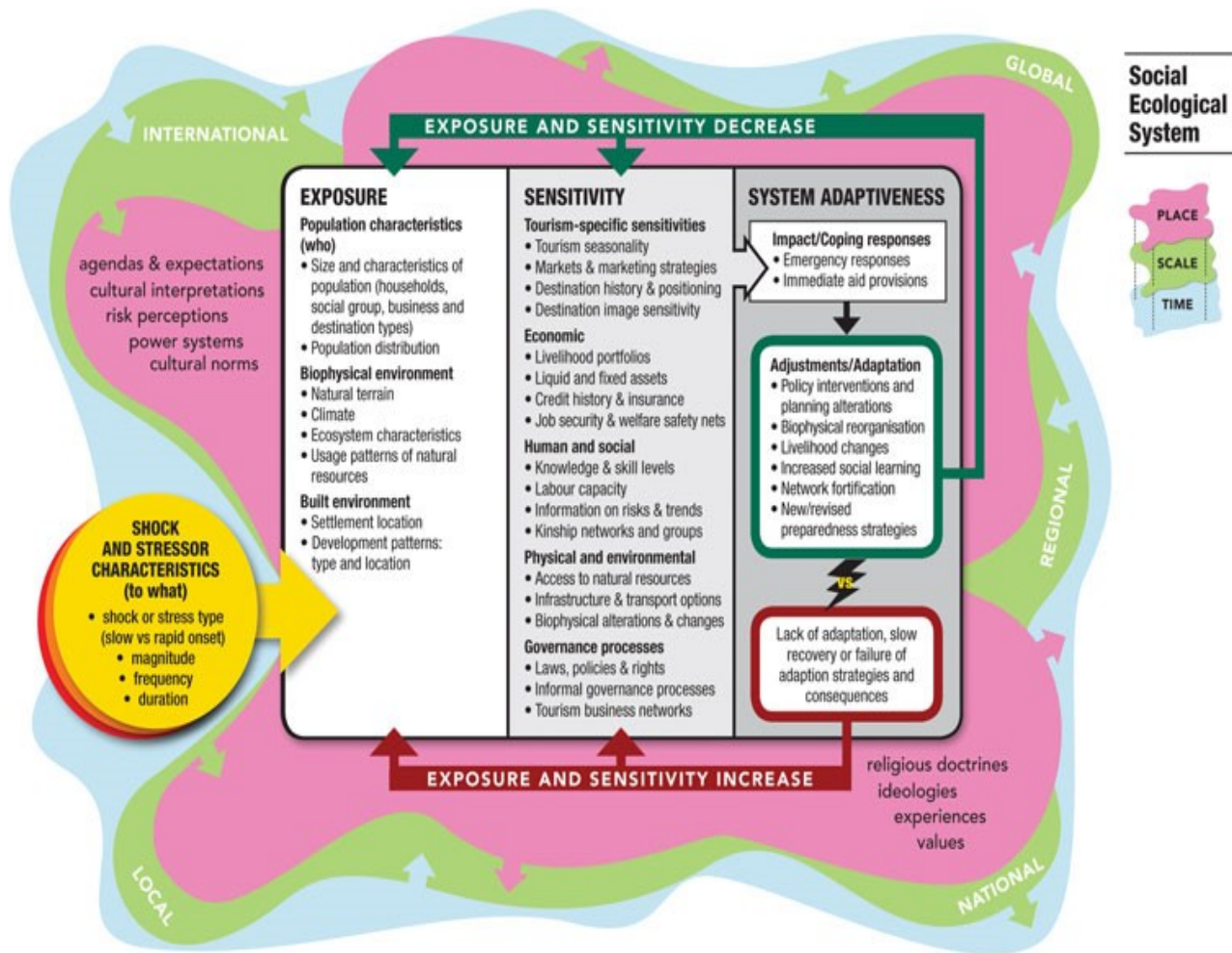


Figure 1. Destination Sustainability Framework (DSF).
Source: Calgaro *et al.* (2014a).

Apart from the resilience management models presented in the introduction, the article methodology integrates two additional elements: official documents, including visitor profiles, tourism service provider inventories, and municipal development plans; and a tourism opinion profile obtained from the application of a detailed survey to a heterogeneous sample of 101 Guanajuato tourism business owners in the summer of 2021 during the covid-19 crisis.

The business owner survey examined in the results and discussion sections explores resilience issues presented in the introduction, including networks, technology, crisis management and resilience, but it also includes business success factors (Haber & Reichel, 2005; Hallak *et al.*, 2015; Lundberg & Fredman, 2012) and best business practice as interpreted by the official ENAMIN-2012 and ENAPROCE-2018 surveys of small and microenterprises designed by the National Institute of Statistics and Geography (Instituto Nacional de Estadística y Geografía [INEGI], 2012, 2018).

The in-depth questionnaire contains 92 questions which examine: 1) business owner profiles including beliefs and habits, 2) business operations, and 3) owner reactions and innovativeness concerning the covid-19 crisis.

Due to difficulties with conventional sample selection using tourism association leaders and official phone directories, a sample of 101 tourism business owners was compiled through visits to business premises and sharing contacts after completing interviews, with subsequent calls via the WhatsApp chat feature. The questionnaire was uploaded in Google Forms to professionalize the interview experience and was applied in-person and by appointment to ensure completion.

Interviews were conducted with accommodation, food and drink, and event and excursion providers who operate in the main hospitality hubs of the town center, Paseo de la Presa, San Javier, Marfil, and near the town's principal highway exit. The sample included 65 microenterprises (up to 10 employees), 31 small enterprises (11 to 50 employees), and five medium-sized businesses (51 to 100 employees), although the latter are mostly multisite operations that pool employees for fiscal purposes. Because 81% of interviewees operate more than one business and 18% over five, the sample probably covers over half of the destination's hospitality experience.

The analysis which follows adheres very closely to the DSF, with a full itemization of the model's sub-dimensions (refer to the bullet points in Figure 1) representing stressors and shocks, exposure and sensitivity in the results section, and system adaptiveness (or non-adaption) in the discussion section.

Results

Results discusses shocks and stressor characteristics, which feed into two internal dimensions of the DSF, destination exposure and sensitivity.

Shock and Stressor Characteristics

Shocks

For Guanajuato and other destinations, the major recent shock has been the covid-19 pandemic, which impacted from spring 2020 up to the present. Visitor numbers reduced to a third of pre-covid-19 levels (refer to impact/coping responses below), and the resident university student population disappeared. The Swine flu pandemic was a precursor shock which temporarily reduced tourism during 2009 but from which the sector recovered rapidly. A further issue has been the wave of narcotraffic-related crime assailing the country since the 2000s and the State of Guanajuato since 2015, which damages the reputation of the town by name association. Evidently, narco-related violence has both shock and stressor elements, as it is endemic but headlines unexpectedly.

Stressors

There are also several slow-motion stressors, most notably water deficiencies, which have several causes including a relatively dry climate (PMDUOET, 2019). Historical mining-related deforestation has created the denuded mountains surrounding Guanajuato with hydrological effects (refer to biophysical environment below), while mining contamination of aquifers with heavy metals is a permanent threat. More recently, new housing projects continue to oversaturate the water sanitation system and pollute the river Guanajuato, which drains the area.

A second stressor is traffic congestion, exacerbated during weekdays by government employees who commute to offices in the State capital from surrounding towns. Weekend, festival, and vacation congestion is tourism related. Transportation is complicated by a mountainous landscape, limited access routes, antiquated, overloaded buses which are large for narrow town center streets, and chaotic parking in the underground tunnel system.

A third stressor is a disorderly urban image with inadequate refuse collection and fly-tipping. A common denominator of most of the stressors is constant population growth (refer to population characteristics below) (PMDUOET, 2019).

Exposure

Population characteristics – Size, population distribution

The municipality of Guanajuato has 195 000 inhabitants (2020), a large increase from 119 000 in 1990 (INEGI, 2022). A key characteristic is a transient university student population from surrounding municipalities which returned in 2022 after covid-19 and occupies private rented accommodation of questionable quality in the absence of halls of residence.

The municipality's population was initially concentrated in the gorges of the old town, but recent urban growth to the southwest is joining up the formally separated communities of Marfil, Santa Teresa, Yerba Buena, and others, creating a "new" Guanajuato.

Biophysical Environment – Natural Terrain, Climate, Ecosystem Characteristics and Usage Patterns of Natural Resources

The municipality is mountainous to the north, reaching forested altitudes of over 2700 meters. The surrounds of the town are scarred by mine workings and tailings from colonial exploitation, while the area of recent urban expansion to the southwest is located on plains and rolling hills at just below 2000 meters.

The climate is warm-temperate and dry most of the year, with mean temperatures between 14 °C and 22 °C and a yearly average rainfall of under 700 mm, which is highly concentrated between June and September.

The ecosystem suffers deforestation and soil erosion, which started with the Spanish colonialists who denuded surrounding mountains of forest cover for mine shaft props. There has not been a concerted effort to reforest the municipality, a problem exacerbated by widespread, uncontrolled livestock grazing and charcoal production in the forested mountains, examples of destructive livelihood dependencies (refer to crisis management and resilience in the introduction).

Built Environment – Settlement Location, Development Patterns: Type and Location

The historic town extends downstream from San Javier (northeast) along steep gorges to Marfil (further south), with mining ex-haciendas dating from the 17th and 18th centuries providing reminders of metal refining activity along the route. Architectural features include 18th century baroque churches, buildings, and fortifications. The PMDUOET (2019) lists 121 historical monuments, including ex-haciendas, mining archaeology, temples, and street buildings in an updated list provided by the National Institute of Anthropology and History (INAH, from its Spanish acronym) in 2017. The tunnel system of underground streets (*La Subterránea*) and the high *Panorámica* road which surrounds the old town were both inaugurated in the 1960s (Ruiz-Lanuza, 2012). The *Panorámica* has unintentionally enabled informal housing to extend up mountain slopes creating problems for water provision and drainage.

Ineffective town planning has allowed the proliferation of poorly connected housing estates to the southwest, while in the center a potential problem of tourism growth is the displacement of locals through gentrification, a problem identified in other destinations (refer to crisis management and resilience in the introduction). The principal tourism cluster is located in the town center although it extends to old mansions and ex-haciendas in the suburbs of La Presa de la Olla, San Javier, and Marfil. Commercial visitors use hotels near the highway exit to the southwest.

Sensitivity

Tourism-Specific – Tourism Seasonality, Marketing and Marketing Strategies, Destination History and Positioning, and Destination Image Sensitivity

Tourism demand is concentrated at weekends, festivals, and school vacations, involving regional day trippers and out-of-state tourists who stay an average of only 1.26 nights (Observatorio Turístico del Estado de Guanajuato, 2022c).

Federal Secretariat of Tourism (Sectur, from its Spanish acronym) operates most destination marketing, while the Secretariat of Tourism Development of Guanajuato (Sedetur, from its Spanish acronym) depends on federal contributions, and the municipal Department of Tourism and Economic Development's budget is tiny, which is an indication of destination vulnerability (refer to crisis management and resilience in the introduction).

The 2021 survey of entrepreneurs (described in materials and methods section) found that business marketing is mainly digitalized, which concurs with previous sector studies (Mejía, 2015). Sales strategies use on-line web pages, Google Maps and search engines, Trip Advisor, Facebook, Instagram, and WhatsApp, while hotels use on-line travel agents (refer to networks, clusters and technology in the introduction)

Guanajuato was founded in 1549 during the construction of a route between the mining area of Zacatecas to the north and Mexico City to the south, which revealed the presence of silver. Small scale mining started soon after but became important in the 17th century with the establishment of mines and metal refining haciendas. The Spanish colonizers declared Guanajuato a city in 1741 which motivated the construction of streets, churches, civic buildings, and fortifications, and by 1810 the population had grown to 90 000. Guanajuato played an important role in the fight for independence and in 1824 became a state with the town of the same name as its capital. Several hotels and hostels were established in the 19th and early 20th century for commercial visitors and students, both in the center as well as more peripheral locations of La Presa de la Olla and San Javier; however, the growth of Guanajuato as a tourism destination started after the Second World War. The university theatre group founded the *Entremeses Cervantino* in 1953, renamed *Festival Internacional Cervantino* in 1972, which has become one of the largest arts festivals in Latin America (Ruiz-Lanuza, 2012).

Experts believe that the town has insufficiently diversified its tourism products although there are reportedly 30 circuits and routes in and around town, which include mines, scenic landscapes, temples, museums, stone-paved squares and streets, restaurants, bars, and shops (Trejoluna & Virgen, 2020). The principal income generator out of 20 municipal tourism installations is the Mummies Museum (*Museo de las Momias*), which opened in 1970. It offers a macabre spectacle of mummies unearthed from the nearby Santa Paula municipal cemetery to over half a million yearly visitors (Ruiz-Lanuza, 2012). As from 2021, the Guanajuato International Film Festival (GIFF) no longer exhibits in the town due to a disagreement between festival management and local government, which has not helped the destination's reputation as an arts venue. Guanajuato has not managed to fully position itself as a renowned destination for weddings and romance, unlike its neighbor San Miguel de Allende.

Positioning Guanajuato requires a discussion of both the regional and national tourism context. Guanajuato is often compared to close neighbor San Miguel, which is similar in size and WHS profile (Rodríguez, 2018). San Miguel has a more gentrified reputation as a residence for rich North American and Mexican second homers and, as of 2023, has been named "best small city in the world" or "best small city outside the USA" six times by readers of travel and media group Condé Nast. Guanajuato has a smaller expat population but has no accolades from Condé Nast, and its visitors are popularly typified as *mochileros* or backpackers, which identifies a younger cohort with lower relative spending power. Guanajuato also has a youthful atmosphere as a university town. The official Sedetur visitor profiles of both towns are surprisingly similar (Table 1) because they do not capture San Miguel's semi-permanent foreign residents. According to data from the last normal pre-covid year (i.e., 2019), Guanajuato has 50% more visitors than San Miguel de Allende, although more of them are in-state and spend less, so destination revenue is inferior.

Table 1. Guanajuato visitor profile.

Year	Visitors (millions)		Origin (%)		
	Total	Overnight	State	National	International
2019	2.400	0.864	74	15	11
2019 SMA	1.600	0.547	52	34	14
2020	0.828	0.288	82	17	1
Year	Hotels #	Rooms #	Days	Day spend (\$)	Total destination spend (\$ millions)
2019	146	3755	1.26	1742	6045
2019 SMA	167	2842	1.37	2407	6682
2020	157	3835	1.23	1520	2002

Note: San Miguel statistics shaded in gray.

Source: Observatorio Turístico del Estado de Guanajuato (2022c).

Guanajuato State not only offers heritage tourism in Guanajuato and San Miguel but also in six small towns within the federal Magic Towns (*Pueblos Mágicos*) program. Dolores Hidalgo, "cradle" of Mexican independence from Spain, lies between the two towns, meaning that visitors can visit all three destinations on the same day. The other *Pueblos Mágicos* may not be close or renowned enough to create successful routes and synergies with Guanajuato.

Mexico has a particularly rich natural and cultural asset base, with numerous large beach resorts (including Cancun and Los Cabos), 35 WHS, and 132 *Pueblos Mágicos* (Sectur, 2022; UNESCO, 2022). According to the travel and tourism competitiveness index (TTCI), Mexico scores very highly on natural resources (1st out of 140 countries) and natural and cultural resources (5th) (Calderwood & Soshkin, 2019). It is a competitive environment for Guanajuato, and success is far from guaranteed. A nationwide tourism strategy is needed to better connect Guanajuato with the coastal resorts and include it in cultural tourism packages.

Economic - Livelihood Portfolios, Liquid and Fixed Assets, Credit History and Insurance, Job Security and Welfare Safety Networks

The municipality of Guanajuato is neither industrial nor agricultural due to its predominantly mountainous landscape. The average wage is 8.7% below the State average, so it is not particularly prosperous, and the town contains poor neighborhoods (PMDUOET, 2019). Key employers include retail commerce (7000 jobs), hospitality, food and drink provision (4250), mining (1700), state and municipal government offices (1300), and educational institutes (900) (PMDUOET, 2019, based on INEGI 2015 statistics). Some retail commerce in the town center caters mainly to visitors. According to the Observatorio Turístico del Estado de Guanajuato (2022b), Guanajuato has 157 registered accommodation providers and 196 food and drink establishments and has been overtaken by its neighbor San Miguel in terms of tourism businesses and attractions. There were 26 five-star hotels in Guanajuato and 62 in San Miguel (Observatorio Turístico del Estado de Guanajuato, 2022a). Independent data from the Boutique Hotel (2022) lists 11 such installations in Guanajuato, compared to 29 in San Miguel, confirming the more popular profile of Guanajuato compared with its more up-market neighbor.

The Guanajuato tourism sector has proved resilient in the sense that it survives although between 2018 and 2021 growth had stagnated. The 2021 survey of entrepreneurs found that the average tourism operator is independent (of tourism chains), has been in business for 10 years, and manages an average of 2.9 businesses, enabling up or down-scaling according to business conditions.

82% of interviewees of the tourism survey use their own investment resources and 14% family loans, while only 17% used bank debt and 6% government programs, citing high bank interest rates and commissions, intermittent program availability, and aversion to risk. Most small, independent tourism businesses avoid insurance too, as demand volatility (the key risk) is uninsurable.

Hospitality requires real estate, buildings, gardens, furniture and fittings, vehicles, and specialized facilities of various types. Fixed assets are hugely expensive unless inherited, while renting requires less investment but eats up monthly profit, which can destroy businesses particularly in non-prime sites. A third of the tourism providers interviewed in the 2021 survey rent their premises from landlords. So, tourism is risky due high fixed costs including staffing, coupled with variable and seasonal demand. Also, as a service, its production cannot be inventoried.

Concerning job security, owners interviewed in the 2021 survey stressed solidarity with trained staff and a reluctance to fire workers during covid-19, which would impede recovery. As a developing country, the Mexican state offers limited welfare support for the unemployed (Coneval, 2022).

Human and Social - Knowledge & Skill Levels, Labor Capacity, Information on Risks and Trends, Kinship Networks and Groups

The survey found that tourism business owners are young middle-aged (two thirds are men), they are predominantly university educated, and they are locals or born out of state, mainly in Mexico City.

Firms employ an average of 16 workers with a medium of 6. Most hotels and many restaurants have trained staff, although official data is incomplete as there is no classification of hospitality quality insignias by municipality. There is a widely recognized need to consolidate official certifications (*distintivos*) in hygiene, service quality, ecologically friendly installations, etc. (Trejoluna & Virgen, 2020).

Some information on trends is provided by Sectur (at federal level) and Sedetur (at state level), although the weakness of sector associations impedes further dissemination.

Concerning kinship networks, prime hotel and restaurant sites are owned by a limited number of politically active, local families whose tourism businesses are typically administered by extended family members. At the opposite extreme, there are between 350 and 700 commission-based informal *promotores* who flag down visitors in the principal accesses to the town and guide them to the hotels, restaurants, and shops which pay them commissions upwards of 10% on sales (Ruiz-Lanuza, 2012). The practice has been spreading income to lower income family groups for decades, although the cost to the destination's reputation is unknown.

Physical and Environmental - Access to Natural Resources, Biophysical Alterations and Changes, Biophysical Alterations and Changes

The mountainous surrounds provide potential for ecological and adventure tourism although the activity has grown slowly. A notable investment promoted by Sedetur-Guanajuato is a 16-kilometer mountain route which opened in 2014 and connects ex-mining Mystery Villages (*Pueblos del Misterio*), from La Valenciana, a mining settlement above Guanajuato, to El Cubilete, a much-visited shrine (Cristo Rey), and finally Silao, an industrial municipality in the neighboring El Bajío region. Along the route and located next to the ex-mining village of Sangre de Cristo, there is a hotel, museum (exhibiting a collection of Guanajuato mummies), and vineyard; however, a lack of integration between tourism providers and government means visitor numbers disappoint. More traditional is the mountain village of Santa Rosa, above and behind La Valenciana, which is a twenty-minute drive from Guanajuato and offers restaurants, crafts, and a forested landscape apt for recreation and adventure sports, including hiking, cycling, rappel, and camping.

Returning to the social infrastructure problems of water, transport, and urban image mentioned in the introduction, the hydrology issue is becoming critical and includes deforestation, soil erosion, wildfires, silted-up reservoirs, and water extracted in ever greater quantities from deep wells downstream from the town. The State of Guanajuato has a known hydrological deficit although there is no official data on the collection capacity of the capital, which is fortunately located at the foot of mountains. Overloaded municipal drainage systems due to new housing, both formal and informal, means that drains smell particularly in hot weather. Despite regeneration projects for the ex-hacienda area of Marfil, the banks of the Río Guanajuato remain largely unusable for recreational purposes.

Transportation in a mountainous environment is evidently complicated, but planning has not managed to pedestrianize the center. Beyond the center, bus routes have been supplemented with smaller sprinter models for hilly routes, but congestion remains chronic. The small number of streets in the central gorges insinuates an environmentally friendly solution, such as a tramway. There is no plan to implement cycle lanes, a cancelled project of a previous administration, despite a state-wide mobility initiative (*Ley de Movilidad*) which promotes bicycle use (Periódico Oficial del Gobierno del Estado de Guanajuato, 2016).

The disorderly, urban image has various components. Due to the mountainous town center, main streets connect housing via steep, narrow pedestrian alleyways (*callejones*) which are in constant need of repair, and in which visitor safety is difficult to enforce. Refuse collection is problematic due to the use of non-specialist vehicles which collect refuse from open-air containers. There is no separation of materials for recycling at collection points, and the municipal tip, on the southern outskirts of the town, is an open-air environmental and fire hazard (PMDUOET, 2019). The scenic and touristic *Panorámica* route deteriorates due to abandoned viewpoints, widespread fly-tipping, and unlawful residential building which blocks views of the town (Heald & Rodríguez-Guerrero, 2014).

Governance Processes - Laws, Policies and Rights, Informal Governance Processes, Tourism Business Networks

Mexico's political system is decentralized into federal, state, and municipal levels, and Guanajuato has local government with federally stipulated three-year mandates, extendible to six, in which political parties compete to appoint the mayor (*Presidente Municipal*), although there is also multiparty supervision via town councilors (*regidores*) (Fernández-Ruiz, 2010).

Informal governance is pervasive in Mexico, ranked poorly at 124 out of 180 countries on the corruption perception index (Transparency International, 2022). Influential families often dominate municipal government, which concentrates business benefits in fewer hands. The inefficient local bus service has been commissioned out to the same local families for decades. There has been abuse of housing and land-use regulations, and a sensitive issue was a hilltop hotel extension project overlooking Guanajuato town center (*Casa Colorada*), which was suspended in 2015 by the official protector of México's heritage, INAH. A recent 2022 building permit enabled a residential extension which spoils the view from the most famous viewpoint of the town next to the Pipila statue. The town appears unable to prevent undesirable urban projects despite the local office of the International Council on Monuments and Sites (ICOMOS).

There are several associations for hoteliers, restaurateurs, excursion transporters, nature and adventure tourism providers, and heritage event spaces. Two-thirds of the interviewees of the tourism 2021 sector survey are members of an association, although a common sentiment is that the tourism sector is poorly integrated. The municipal Tourism Board (*Consejo de Promoción Turística*) was inaugurated by the municipal Mayor in 2020 with partial representation of the key hospitality sectors, including the Office of Conventions and Visitors (OCV). The Tourism Board was reinstalled in 2022, ensuring continuity; however, the town has had nothing as effective as San Miguel de Allende's Tourist Board, which had operated as a public-private integrator of the tourism sector since its foundation in 2005, before being disbanded in December 2021 after local elections. Evidently, municipal Tourism Boards are vulnerable to political interference.

Discussion

The discussion registers Guanajuato's initial impact and coping responses to covid-19, before analyzing the town's adjustments/adaption responses (located on the green arrow of the DSF), or lack of them (located on the red arrow).

System Adaptiveness. Impact/Coping Responses - Emergency Responses, Immediate Aid Provisions

As a consequence of covid-19, 97% of the survey interviewees reported a decline in sales of an average of 83% in the worst months of spring 2020, although by summer 2021 they had recovered 60% of their 2019 revenue. Hoteliers and excursion providers were worst hit, while food and drink establishments were partially insulated by their local customer base, and event providers managed to move pre-paid work to later dates.

Emergency responses included the following. Half of the interviewees introduced new or improved products and services and incorporated new customer profiles (for example, take-away or home delivery services). Half of the entrepreneurs extended their networks of contacts and two-thirds intensified their digital activities in marketing and sales. 70% involved themselves and their employees in improving their skills, although much of that was mandatory covid training. 60% made reductions principally of peripheral staff to enable rapid upscaling in an anticipated recovery. A quarter of businesses reduced subcontracted work. Nearly a half of them reduced inventories, a third contracted new suppliers (some eliminating old ones), and a fifth renegotiated supplier contracts and lengthened creditor periods. A third used the opportunity to redecorate their installations and a fifth bought new machinery and equipment ready for an up-grade. Concerning finances, two-thirds depleted their personal savings, a third reluctantly took on debt, both bank and private.

During the pandemic, the average business in the sample made between 15 and 16 business reactions or changes to installations, products and services, marketing, work routines, staff, operations, and finance. An idea of this diversity is captured in Figure 2, and it indicates quick thinking, innovative behavior.

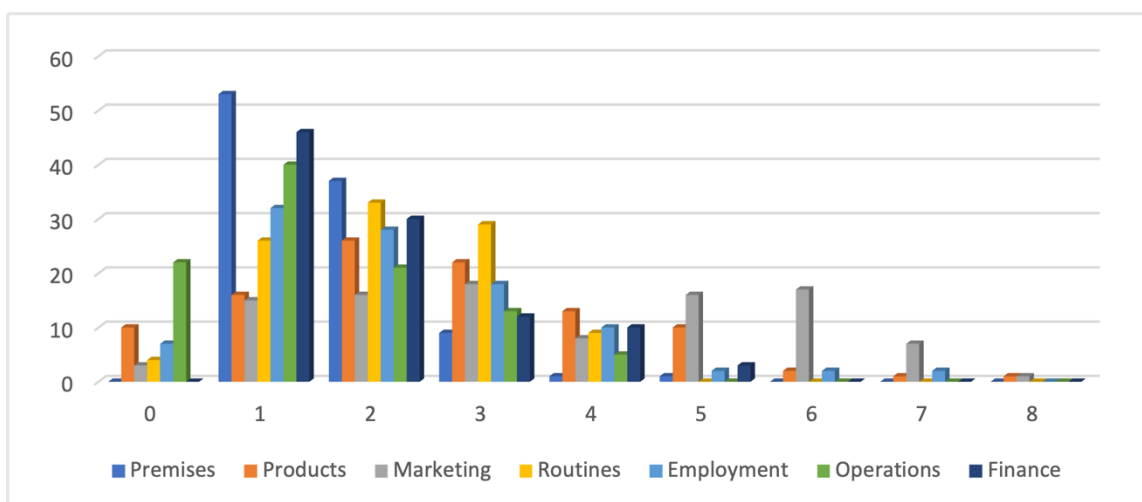


Figure 2. Business owner covid-19 crisis reactions.
Source: Author's own elaboration from survey application.

The Guanajuato State government provided covid-19 relief credit for payrolls and delays in income tax payments, but in the opinion of the business owners interviewed, it was too small-scale to be significant, although they used it. The federal government did not provide specific covid-19 relief for businesses and even phased out established microcredit programs at the end of 2021. So, while the individual business owner reaction to the crisis was strong, the official response was minimal (Mondragón-Cervantes & Arely-Villa, 2022).

Adjustments/Adaption- Policy Interventions and Planning Alternatives, Biophysical Reorganization, Livelihood Changes, Increased Social Learning, Network Fortification, New/Revised Preparedness Strategies

Adaption has carried out by the business sector and a walk round the town reveals a substantial number of start-ups since 2022, occupying vacated premises of businesses which failed when the 2020 pandemic hit. They are part of the creative destruction and renewal process accelerating in periods of crisis, as seasoned business owners and some newcomers try their luck with new initiatives.

Existing policy and planning initiatives remain long term aspirations rather than interventions. By the end of 2022, the municipal government had reactivated the main pre covid-19 events and local festivities and inaugurated new ones of local rather than national impact, which are welcome opportunities for the sector but not destination changers.

The PMDUOET (2019) and PMD-2040 (Periódico Oficial, 2019) cover more than tourism, although municipal programs with sustainability orientations impact the sector. The PMD-2040 (Periódico Oficial, 2019) presents a vision for the historic center, suburbs, and rural surrounds; however, the tourism analysis is incomplete and is referred to as a medium-term sustainable tourism program. Potentially interesting programs include artisan production, popular culture, street art, and transportation, the last of which foresees a traffic-free historic center. The general idea is to diversify tourism to include specialist products, but the projects are calls to action rather than solutions to diagnosed problems. The discussion concerning culture, creativity, and experience in the introduction identifies the need for destinations to redefine and support creative orientations, by integrating new generations of artists, hospitality, and recreation providers (Richards, 2018). A proposed new Mummies Museum, complete with shopping center, was cancelled in 2022 due to opposition from INAH because of its commercial rather than cultural orientation.

As to the future, the PMDUOET (2019) provides a list of potential interventions as does an older Sector/Sedetur-Guanajuato report (Heald & Rodriguez-Guerrero, 2014), which both require updating with a sustainability focus and evaluation by a multidisciplinary, semi-autonomous investment center preferably located in IMPLAN. Despite official intentions, as of 2022, IMPLAN does not employ a team of project evaluators due to budget limitations. It should also promote financing and management solutions such as public-private partnerships and civil association models.

As a small to medium sized town, a project evaluation center might seem a luxury; however, larger neighboring cities such as León do have the institutional capacity through their planning institutes to put together project portfolios and compete more successfully for the established funds, both public and private, at state, federal, and international levels.

Returning to the issues of water, transport, and urban image (refer to results section), a key issue of biophysical reorganization is water conservation, although the interventions proposed in the PMDUOET (2019) form an eclectic list rather than a future vision. They include connecting remaining rural communities to water supplies, increasing the collection of run-off water, repairing leaky pipelines, recovering the Río Guanajuato around the ex-haciendas of Marfil (however not specifically for recreational use as previously planned), and increasing sewage treatment capacity further downstream.

Transportation congestion can be improved by removing federal and state Government office employment out of the historic center, which has been official policy but proceeds slowly. Plans to make the center pedestrian-only require extensions to the subterranean road network and perhaps new peripheral car parks with tunnel walkway accesses.

Concerning solid waste, an improved refuse collection service and a rehabilitated open-air tip facility are also identified projects without timeframes.

The government should promote livelihood changes for a small number of subsistence peasants (*campesinos*) by providing income generating options to take the place of uncontrolled animal grazing and charcoal production. That would enable a reforestation initiative in the uplands above the town. There should also be a reemployment program for the informal *promotores* (refer to kinship networks and groups above) who guide unsuspecting tourists to hotels, restaurants, and shops for commissions.

With respect to increased social learning, the local population might be more supportive of tourism if it participated more in income generation. The municipal administration can embrace programs for rural and city center community participation in conservation and tourism activities, perhaps reviving a disactivated municipal program called Model Community (*Barrio Modelo*) (Heald & Rodriguez-Guerrero, 2014; PMDUOET, 2019).

Network fortification requires a unified voice for the tourism sector, and the municipal government's Tourism Board is a step in that direction. The Board should integrate research institutions and civil associations as well as the key tourism sector groups. It should also authorize smart destination planning and technology (refer to the introduction) for tourism administration and oversee destination marketing based on locally defined criteria, reducing reliance on federal Sector campaigns (refer to marketing and marketing strategies above).

Lack of Adaption, Slow Recovery or Failure of Adaption Strategies and Consequences

Adaption failures, indicated on the red arrow of the DSF, can convert adverse tendencies into crises. The PMDUOET (2019) identifies some unfavorable trends concerning visitor stays, foreign tourists, and mining operations, which indicates how much Guanajuato requires a sustainable development agenda to reshape future trends.

Visitor stays are destined to shorten from 1.8 nights in 2010 to 0.97 (less than a night) by 2040, which would have a knock-on effect on spending (Figure 3).

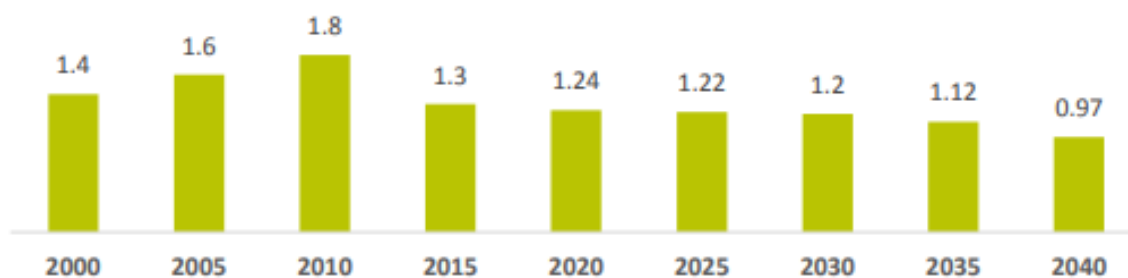


Figure 3. Average visitor stay in days 2000 to 2040.
Source: Programa Municipal de Desarrollo Urbano y Ordenamiento Ecológico Territorial (PMDUOET) (2019).

Meanwhile, foreign visitors, who generally spend more than other categories, are projected to disappear, while the number of regional day trippers may increase (Figure 4).

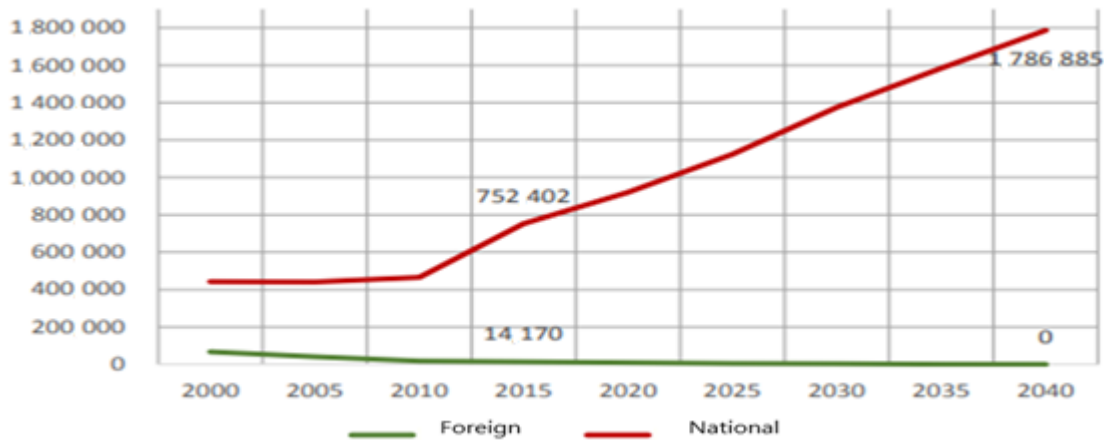


Figure 4. Projections for visitors to Guanajuato 2000 to 2040.
Source: Programa Municipal de Desarrollo Urbano y Ordenamiento Ecológico Territorial (PMDUOET) (2019).

On the other hand, local mining production is forecast to double, with a number of new mining operations in the pipeline. Silver mining has been a growth industry in recent years due to attractive prices. Mining is of course the origin of Guanajuato, and mining architecture is a key reason the town was designated a WHS; however, in terms of environmental sustainability, local government needs to calculate how the growth of mining, mostly in Canadian hands, competes for water and other local resources.

Tourism decline for Guanajuato would be unacceptable as the town has a vocation for education and heritage tourism. Supporting tourism development without sacrificing local interests and the environment in the face of population growth is a complex balancing act. On the other hand, urban growth must also be managed to prevent the crowding-out of established tourism vocations, which provide employment and recreational options for residents as well as visitors.

Conclusions

The conclusions discuss key results and both municipal and national policy implications.

Key results – The generation of a DSF is an initial attempt to integrate the dynamics of growth, tourism development, and ecological sustainability within a planning model which can be used by local government. Together with the application of smart destination planning and technology, a resilience framework can propose solutions for a mature heritage destination with problems of traditional tourism products and aging social infrastructure, including water, transportation, and solid waste disposal. There are also alarming trends reported in the town's Development Plan concerning shortening visits and declining foreign tourists which are not inevitable with an improved and diversified visitor experience.

The questionnaire applied to the tourism sector in Guanajuato reports resourceful business owners who use technology extensively and endeavored to innovate themselves out of the covid-19 crisis. They introduced new and improved products and services by experimenting with premises, marketing, routines, employment, operations, and financing. The average owner made between 15 and 16 changes to their businesses. Even before the crisis they were innovating intensively by opening new businesses, given that 81% of owners have more than one business and 18% are serial entrepreneurs with more than five, with a survey average of 2.9.

Municipal policy implications – Local businesses need public policy support to push the destination to a higher level via improved municipal planning, better social infrastructure, and enlarged tourism product variety, moving the destination along the green-colored arrow towards a decrease in ecological exposure and sensitivity. Unfortunately, the politics of destination development and change in Guanajuato has been spontaneous and haphazard rather than planned and systemic. A common denominator of heritage destinations like Guanajuato is population growth and chaotic urban expansion, making the relevant feedback loop in the DSF model the red-colored arrow of destination cumulative exposure and sensitivity increase.

Recovery from covid-19 and destination rejuvenation requires continuous intervention via the integration of tourism service providers, research institutes, civil associations and politicians within a strong associative framework, including an evaluation center to rival those of larger competing cities and tourism destinations. Existing structures such as the local Tourism Board (*Consejo de Promoción Turística*), inaugurated in 2020, and the Planning Office (IMPLAN Guanajuato), which has been operating since 2010, are auspicious developments which can be harnessed to promote development.

A local Tourism Board can provide sector support if it can widen participation to include all tourism provider sectors, civil associations, and research institutes. A Planning Office, if it could find the resources to employ a team of project evaluators, would be capable of designing projects and programs for the sustainable management of water, transportation, and solid waste, as well as the development of tourism, culture and recreation products for residents, day trippers and tourists as the three complement each other with contrasting daily, weekly, and seasonal demands. An advantage of the DSF is that it focusses on destination resilience, which makes it more effective for sustainable tourism planning than traditional municipal development plans.

National policy implications - All heritage tourism destinations are unique, but they can be systemically analyzed with a framework which emphasizes interconnected issues of sustainability and growth. Resilience is an obvious starting point in Mexico as sector interests compete for resources in municipalities with growing residential and visitor populations. If culture, recreation, and entertainment are essential parts of life, then destination facilities and activities must benefit residents and visitors in terms of employment, production, and consumption in order to achieve both civil society and tourism objectives. Mexico has over 150 officially recognized heritage destinations between WHS and federally designated *Pueblos Mágicos* (Sectur, 2022; UNESCO, 2022), most of which could benefit from a DSF to safeguard program membership by improving destination resilience through sustainable development.

Visitors are permanent features of heritage towns and cities, especially as tourism is now defined as a human necessity rather than a luxury, and importantly, a source of destination employment (Richards, 2018). In other words, it is an empirical fact that the motivation to learn, discover, experience, and consume tangible and intangible cultural and creative attractions is an essential part of modern life (McCabe & Diekmann, 2015). Fortunately, Mexico's numerous heritage destinations can potentially spread visitor loads, but most will need creative reinvention using smart destination planning to design appropriate mixes of events, cultural and recreational products, by respecting destination carrying capacities during busy weekends and vacation periods (González-Reverté, 2019).

Summarizing, the DSF used in the article provides a succinct visualization of tourism and development risks in a dynamic framework with a suggested checklist of considerations (or sub-dimensions) which could be adapted for the context of Mexican heritage destinations. Ultimately, the key to the rejuvenation of mature destinations requires implementing projects generated with the participation of established providers using fresh ideas emanating from younger generations of entrepreneurs, artists, and creators.

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Conflicts of interest

There are no conflicts of interest.

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