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"El saber de mis hijos
hará mi grandeza"

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Food purchasing and consumption habits during the COVID-19 Pandemic.

Hábitos de compra y consumo alimentario en tiempos de COVID-19

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Abstract

During the early months of the health emergency caused by the SARS-CoV-2 virus, non-essential activities in the public, private, and social sectors were suspended throughout the country. As a result, a large portion of the population altered their daily activities, affecting various aspects of people's lives, including those related to eating habits. This study analyzes the shopping and food consumption habits of Mexican consumers during the COVID-19 lockdown. The findings show that 75.7% of participants changed their food consumption habits, particularly regarding dinner and breakfast. Baked goods, followed by fruits and vegetables, showed the greatest increase in consumption. On the other hand, shopping habits changed for 51.7% of consumers, with a greater preference for supermarkets or hypermarkets when making purchases. In choosing where to shop, consumers placed higher importance on hygiene measures as well as the care and protection of employees. Overall, understanding food consumption patterns and shopping habits in a health crisis scenario helps to develop market-oriented strategies that are essential for the survival of commercial establishments.

Key words: Eating habits, dietary habits, Mexican consumers, health awareness health.

JEL code: D11, D12, M31.

Resumen

En los primeros meses de la contingencia sanitaria propiciada por el virus SRAS-CoV-2, en el territorio nacional se suspendieron actividades no esenciales en los sectores público, privado y social. Como consecuencia, buena parte de la población modificó sus actividades diarias, trastocando diversos aspectos de las personas, incluyendo aquellos que tienen que ver con hábitos en la alimentación. En esta investigación se analizan los hábitos de compra y consumo alimentario de los consumidores mexicanos durante el confinamiento por COVID-19. Los hallazgos muestran que el 75.7% de los participantes modificaron sus hábitos de consumo alimentario, particularmente en la cena y desayuno. Productos de repostería, seguido de frutas y verduras fueron los que presentaron un mayor incremento en su consumo. Por otra parte, los hábitos de compra cambiaron para el 51.7% de los consumidores, eligiendo en mayor medida los establecimientos de supermercados o hipermercados para realizar sus compras. En la elección del establecimiento valoran



en mayor medida las medidas de higiene, así como cuidado y protección de los empleados. En general, conocer las pautas de consumo y hábitos de compra alimentario en un escenario de crisis sanitaria, permiten generar estrategias orientadas al mercado que son fundamentales para la subsistencia de los establecimientos comerciales. Palabras claves: Hábitos alimentarios, consumidores mexicanos, escala conciencia hacia la salud.

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Introduction

The presence of the SARS-CoV-2 coronavirus was first reported in Wuhan, China, in December 2019. The disease it causes was declared a pandemic by the World Health Organization on March 11, 2020 (WHO, 2020a). Since then, the number of confirmed cases of COVID-19 has continued to increase, with estimates indicating more than 35 million confirmed cases worldwide by September. The Americas currently account for 53.4% of all confirmed cases, while in Mexico, the 385,000 diagnosed cases represent 2.1% of the global total and 4.4% within Latin America (WHO, 2020b). These figures reveal both the global and national impact of the pandemic in terms of public health. However, its repercussions go beyond health and affect various aspects of people's daily lives.

As of March 30, extraordinary measures were implemented throughout the national territory, which led to the suspension of non-essential activities in the public, private, and social sectors in order to mitigate the spread and transmission of the virus (Secretaría de Salud, 2020).

From that moment, strategies such as "social distancing" and the contingency plan "Stay at Home" were implemented as part of national health policy. For the population, these measures implied restrictions on mobility and movement, drastically limiting coexistence in high-risk areas (enclosed spaces, high-density locations, visits to family and friends, gatherings of any kind, etc.) and non-essential activities (sports, travel, any social, recreational, or leisure-related activities). In other words, it involved an interruption that included the

suspension of certain economic activities and a halt to mass gatherings-along with a strict stay-at-home order, placing the population in an unprecedented scenario of social distancing and confinement.

Despite the measures implemented, the epidemic officially appeared in Mexico for the first time on January 13, 2020, with the first recorded case. By February 24, seven cases had been reported. By the date confinement was declared (March 30), the accumulated total had reached 1,645 confirmed COVID-19 cases, and by early April, the federal government reported 2,268 confirmed cases. From that point on, the trend showed an exponential increase, reaching 62,629 confirmed cumulative cases by May 15, and one month later, 186,178 cases according to reports from the Secretaría de Salud. According to the federal government's official platforms, the highest number of new daily reported cases occurred on July 20, with 8,647 new infections, contributing to a total of 395,713 confirmed cumulative cases (Dirección General de Epidemiología, 2020).

The downward trend in the behavior of the COVID-19 epidemic in Mexico began on July 21, when 366 fewer cases were reported compared to the previous day. However, it is important to highlight that the curve of confirmed cumulative cases continued to rise. Since that date, daily national reports have shown a gradual decline. On September 28, the country reached its lowest daily count at that time, with 1,826 new cases. By then, the total number of confirmed cumulative cases stood at 797,367, and there had been 81,033 deaths caused by the virus, impacting thousands of households across the country (Ibid.).

Although current data on the exact number of people under confinement in Mexico is variable, the Economic Commission for Latin America and the Caribbean (ECLAC, 2020:29) noted that "...nationwide quarantines are more effective in reducing people's mobility. This is confirmed by the majority of countries that implemented such measures, with the exception of Haiti, where mobility was reduced by only about 30%. Other countries where mobility did not decrease as much, despite the measures implemented, include Jamaica and Mexico..."

Citizen mobility changed significantly during the early months of the partial lockdown; however, the months intermediate period- April to June-

saw the most pronounced decrease in mobility. Approximately 43% of the Mexican population (128,649,312.95) reduced their mobility, decreased their presence in public spaces, and eliminated or staggered non-essential activities.

As a consequence of the above, various activities that were previously conducted in person began to be carried out online; some were suspended, and in other cases, activities continued under new conditions and measures such as reduced capacity, controlled schedules, social distancing, among others. In this way, a large part of the population modified their daily activities, leading to changes in consumption habits, purchasing behaviors, and lifestyles.

On the other hand, the national business sector showed marked growth from 2009 to 2019; however, the impact of the measures implemented during the health contingency directly affected business dynamics and employment generation. Out of a total of 1,873,564 companies, 224,296 requested emergency loans or financing, and around 1,115,983 implemented technical stoppages or temporary closures due to the COVID-19 situation (INEGI, 2020a).

In this scenario, companies had to adjust and, in some cases, “reinvent” themselves by adopting new operating models such as remote work, online sales operations, reduced hours, limited customer visits or capacity, and changes in business focus, among others. A large number of companies suffered income losses, making financing the most requested support, and personnel adjustments another common measure. By April, approximately 32.9 million people in the country were unemployed, with 92.9% of that total related to COVID-19-derived actions. Consequently, 65.1% of households experienced a reduction in income (INEGI, 2020b).

Thus, the pandemic exposes a severe economic crisis. Some studies predict an economic contraction of 4.5% and a reduction in GDP ranging from 2.5% to 6.0% for the country in 2020 (Amador et al., 2020; Gaytán, 2020). Basically, as a result of the implemented measures, the economic situation, and in the health context, the various activities carried out by individuals have been clearly affected, one of which is food consumption. Although food retail establishments have continued operating as they are considered essential services, factors such as dining out, food availability and variety, reduced shopping hours, and the new economic situation have conditioned the purchase and consumption of products.

At the same time, feelings of distress and apprehension which usually affect about 10% of the global population at high levels (Zoccolini, 2014) were intensified by the health crisis. In some cases individually, and in others jointly, economic, social, and environmental factors have led to suffering associated with panic attacks, phobias, anxiety, among others, which can directly impact individuals' eating habits.

On the other hand, the “Stay at Home” strategy has also resulted in more time available for preparing and cooking meals, family bonding, and the preparation of more elaborate dishes. Additionally, some individuals seek healthier diets or attempt to replicate recipes shared through social media and other communication channels.

In any case, it is undeniable that environmental factors have influenced consumers and suggest that individuals' food purchasing and consumption behaviors may have changed. Therefore, the objective of this research is to analyze food purchasing and consumption habits during the COVID-19 pandemic.

Theoretical Framework

Research in the social sciences related to the COVID-19 health emergency is scarce but showing an upward trend. Some of these studies focus on the pandemic's impact on the media system (Casero-Ripollés, 2020); eating behavior (Maraver-Romero, 2020; García-Álvarez et al., 2020; Vergara-Castañeda; Laguna et al., 2020); and the economic and financial crisis (Ortiz et al., 2020; Campos and Esquivel, 2020; Baker et al., 2020; Andersen et al., 2020; Baldwin and Weder di Mauro, 2020, *inter alia*), with preliminary results.

Regarding eating behavior, authors such as Maraver-Romero (2020) suggest that the Mediterranean diet will play an important role in the fight against COVID-19 by boosting the immune system. Laguna et al. (2020) found that Spanish consumers increased their consumption of products such as milk, eggs, fresh vegetables, bread, meats, etc., and reduced purchases of alcohol, ready-to-eat food, desserts, bakery products, instant soups, among others, during the lockdown, relating these changes to health improvement motivators. On the other hand, García Álvarez et al. (2020)



associate a possible increase in tobacco and alcohol consumption as a negative emotional response to the confinement situation.

Regarding Mexican consumer behavior, consumers expect to reduce their frequency of trips, visits to shopping centers, and social events after COVID-19 (McKinsey and Company, 2020). Preference for online stores maintained an upward trend during the contingency months, with a percentage twice as high as at the beginning, positioning it as one of the fastest-growing channels. Likewise, the use of delivery service platforms has also increased, with younger people and those in socioeconomic level C mainly starting to prepare their own meals, while higher socioeconomic levels showed increased use of home delivery services (AtlantiaSearch, 2020). In this regard, the Mexican Association of Online Sales (2020) details that the three main reasons consumers prefer online shopping are: 55% of people do not want to leave their homes due to the contingency, 48% want to avoid crowds in physical stores, and 35% of consumers indicate that they have found more and better offers online.

It is also observed that the high volatility in demand is causing brand switching (Entrepreneur, 2020); 46% of consumers have tried other options, driven by the lack of availability of their usual products, although only 9% will change their preference after the contingency ends (McKinsey and Company, 2020). Contrary to the purchase channel, 72% of people who have purchased or paid for a service online for the first time will continue to use this method after confinement ends (Mexican Association of Online Sales, 2020).

In general, at the national level, research is being conducted from various perspectives; however, studies focusing on food demand remain scarce. Therefore, this research seeks to fill that gap in the literature and provide elements to understand the impact that the health contingency has had on the food purchasing and consumption habits of Mexican consumers.

Methodology

To achieve the general objective, an empirical study was conducted with Mexican consumers. A survey was administered to consumers over 18 years old, using the non-probabilistic snowball sampling

method, which is defined as a technique to locate the research subject where one individual provides the researcher with the name of another, who in turn provides the name of a third person, and so on (Atkinson & Flint, 2001). In other words, sample units are identified through the researcher's direct and indirect networks and the object of study (Baltar & Gorjup, 2012). Using this method, 867 surveys were collected from people residing in Mexico. Data collection took place online via the Google Forms platform from May 17 to May 24, 2020. Prior to administration, several pilot tests were conducted to ensure comprehension of all included items and to identify and resolve any technical difficulties that might arise when responding to the survey.

Data were analyzed using SPSS version 21.0. Descriptive statistics were calculated, employing frequency, mean, and median to compare results among variable groups.

Results and discussion

The research findings show that the largest proportion of the sample, 31.6%, is concentrated in the 18–25 age group, followed by those aged 41–45 with 13.8%. Regarding gender distribution, men represented 31.8% and women 68.2%. In terms of monthly income, 21.5% fall into the category of 5,000–10,000 Mexican pesos per month, which according to the AMAI rule, the participants fall within the Socioeconomic Level (SEL) C and C+ (upper middle) (AMAI, 2018). 58.4% have university studies, while 1.3% have only completed up to secondary school. The largest proportion are government employees (18.0%), followed by private company employees and students, with 22.0% and 23.9%, respectively (Table 1).

Regarding their eating habits, 75.7% of the participants consider that they have modified their dietary habits during the confinement period. Breakfast showed the least changes, remaining the same as usual for 38.1% of participants; lunch experienced partial modifications in 36.1% of respondents, while 40.4% consider having completely changed their dinner habits. These changes may be related to the availability of time to prepare food at home, stopping dining out for dinner, or ordering food delivery (Table 2).

Among the reasons for changes in eating habits,

time is a key factor. Staying at home has led to greater availability to prepare different meals, try recipes, or make dishes that require more time to cook. Although some studies link stress or anxiety caused by confinement to changes in consumption habits, in this research it was the second reason, but its rating is only slightly above average (2.6 on a five-point scale). Reasons related to health improvement, such as dieting to control weight, had a mean score of 2.3, and other health-related reasons scored 2.2, suggesting that individuals are not yet ready to make changes in this regard (Table 3), which is reflected in the foods whose consumption has increased (Figure 1).

The foods whose consumption increased the most include baked goods (13.4%), fruits (12.5%), and vegetables (12.1%), as well as snacks or appetizers (10.4%). It is important to note that both baked goods and snacks can be considered low-nutritional-value foods (Figure 1). In the case of alcoholic beverages, their low consumption (2.2%) is related to the restrictions on the sale and consumption of alcoholic drinks that were implemented in various states across the country.

Regarding food purchasing habits, 51.7% of respondents consider that their habits have changed, and 48.3% report a partial change. During the

Table 1. Socio-demographic and economic characteristics of the sample

Age	%	Educational level	%	Income	%	Occupation	%
18-25	31.6	Primary	0.3	Less than 5,000	22.5	Student	23.9
26-30	10.7	Secondary	1.0	5,000-10,000	21.5	Private company employee	22.0
31-35	9.0	High school	12.0	11,000-15,000	15.6	Government employee	18.0
36-40	6.5	Technical	1.2	16,000-20,000	11.6	Homemaker	9.2
41-45	13.8	University	58.4	21,000-25,000	8.4	Business owner	5.2
46-50	9.6	Master's	18.3	26,000-30,000	5.7	Independent professional	18.3
51-55	8.7	Doctorate	8.3	31,000-35,000	4.5	Currently unemployed	3.3
56-60	7.6	Gender	%	36,000-40,000	3.0		
61-70	2.4	Male	31.8	More than 41,000	7.3		
70 and over	0.1	Female	68.2				

Source: Own elaboration

Table 2. Degree of changes in meals

	Remains the same (%)	Partially modified (%)	Completely modified (%)
Breakfast	38.1	29.5	32.8
Lunch	32.3	36.5	26.8
Dinner	29.6	34.0	40.4

Source: Own elaboration

Table 3. Reasons for changes in eating habits

Items	Mean values	Std. Dev.	Items	Mean values	Std. Dev.
Greater availability of time to prepare meals	3.7	1.442	Others	2.1	1.518
Stress or anxiety	2.6	1.465	Economic situations	2.0	1.256
Diet for weight control	2.3	1.489	Lack of time to cook	1.7	1.220
Health-related reasons	2.2	1.420	Food shortages	1.7	1.120

Source: Own elaboration

contingency period, purchases were made mostly at supermarkets or hypermarkets, with an average score of 4.2 on a 5-point scale. These are followed by neighborhood grocery stores (3.0) and convenience stores (2.9). This may be related to the type of distribution, as these establishments generally have more robust supply chains and, in some cases, offer online sales that facilitate purchasing.

At the same time, there is a clear decline in the use of street markets, gourmet shops, or purchases made directly from producers. These findings align with the study conducted by AtlantiaSearch (2020), which found these channels to be less relevant (Table 4).

When investigating the aspects most considered when purchasing food, hygiene measures stand out with an average score of 4.2, followed closely by employee care and protection, as well as product

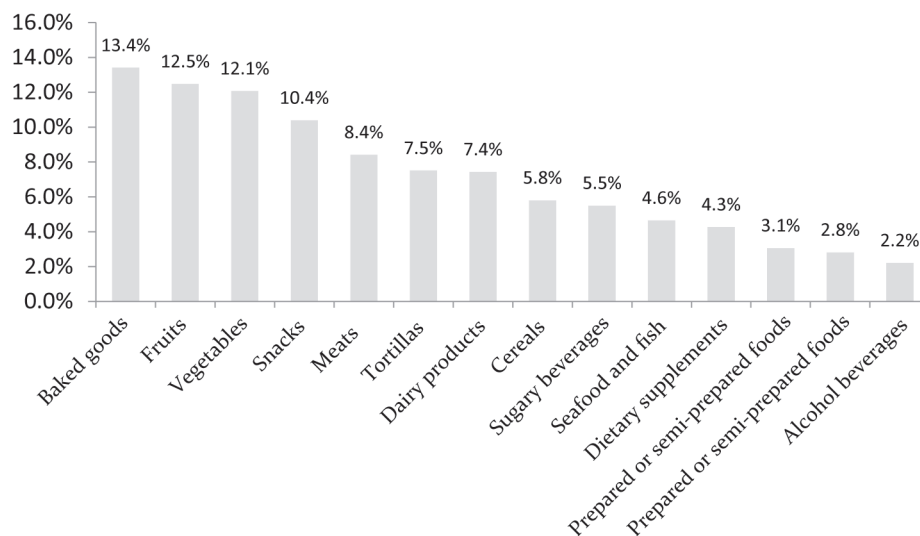
quality, each with a score of 4.1. It is noteworthy that home delivery service and online sales did not rank among the highest average values, which suggests that during a health emergency hygiene is the most valued attribute, even above product prices (Table 5).

Conclusions

The confinement resulting from the COVID-19 health emergency declared in Mexico in March 2020 has impacted the population in various aspects of daily life. The number of confirmed coronavirus cases has continued to rise,

along with measures implemented by governments and individuals. As a result, lifestyles have been affected, leading in some cases to adjustments and

Graph 1. Foods with increased consumption



Source: Own elaboration

Table 4. Purchases by type of establishment

Establishment	Mean value	Std. Dev	Establishment	Mean values	Std. Dev.
Supermarket or hypermarket	4.2	1.263	Directly from the producer	1.6	1.192
Neighborhood grocery store	3.0	1.581	Gourmet stores	1.5	1.010
Convenience store	2.9	1.483	Other	1.4	1.102
Traditional market	2.2	1.516	Street markets	1.3	0.944
Restaurants	1.8	1.156			

Source: Own elaboration

Table 5. Evaluation of aspects in food establishments

Aspects	Mean value	Std. Dev.	Aspects	Mean value	Std. Dev.
Hygiene measures	4.2	1.092	Promotions and discounts	3.5	1.399
Employee care and protection measures	4.1	1.175	Home delivery service	3.3	1.601
Product quality	4.1	1.143	Capacity control	3.3	1.509
Nutritional aspects	3.9	1.167	Pick-up service	3.1	1.565
Location	3.9	1.295	Local or regional origin	3.0	1.487
Prices	3.8	1.323	Recommendations	2.8	1.443
Productos availability (supply)	3.6	1.431	Additional services (e.g. parking)	2.8	1.517
Costumer service and attention	3.5	1.375	Online sales	2.8	1.691

Source: Own elaboration

changes not only in economic, social, psychological, and work-related matters, but also in food purchasing and consumption habits, as well as in health perceptions.

In this context, a study was conducted with Mexican consumers to analyze food purchasing and consumption habits during COVID-19. The findings show that the contingency has led to changes in food purchasing behavior, as more than half of consumers report having modified their habits (51.7%). Purchases from supermarkets and hypermarkets are prioritized over options such as neighborhood grocery stores, markets, and street markets (tianguis), among others. Factors related to hygiene measures, such as safety and protection—have become the most important for consumers when deciding where to purchase food. These priorities make sense considering the recommendations issued by health authorities to the general population, which emphasized hygiene, social distancing, and cleanliness measures. While all establishments may follow these guidelines, the reality is that their ability to respond and the sense of safety conveyed to consumers may vary in favor of large-scale retailers. Contrary to what might be expected, online sales services were not considered a decisive factor during the initial months of the pandemic when choosing where to shop.

At the same time, three-quarters of consumers acknowledge that their eating habits were affected during the health contingency and confinement. These changes were especially noticeable when preparing meals at home, as people had more time available to cook particularly dinner due to being

confined. This trend is associated with economic factors and time restrictions, as well as the closure or limited operation of food establishments, making dining out less feasible. Similarly, though to a lesser extent, changes in diet were attributed to stress or anxiety experienced during the pandemic. The loss of loved ones or illness due to COVID-19, combined with prolonged home confinement, created stressful conditions that influenced individuals' eating behaviors.

In addition to these emotional and psychological factors, economic considerations played a key role. In April alone, 32.9 million people in the country were either unemployed or had suspended work, of whom 92.9% were affected in some way by COVID-19. At the same time, 65.1% of households reported a decrease in income as a consequence of the pandemic (INEGI, 2020b).

It is also important to consider that health conditions can influence a person's eating behavior. In Mexico, the prevalence of chronic degenerative diseases plays a significant role in public health and lifestyle. In 2018, 75% of adults in the country were overweight or obese, and 10% had diabetes, and 18% had hypertension (Álvarez-López et al., 2020). These conditions should ideally influence individuals to pursue healthier diets. While the results show that during the health contingency consumers reported an increase in the consumption of fruits and vegetables—12.5% and 12.1% respectively—the most significant increase was in the consumption of baked goods (13.4%). These findings are noteworthy, as one might expect that consumption of less healthy foods would decrease as an added form of self-care. However, other factors



such as price and availability may also influence the motivation to consume such products.

In general, the national health contingency context has had a direct impact on food purchasing and consumption habits. Without a doubt, consumers are increasingly seeking nutritious food, while also prioritizing product quality.

From a business perspective, identifying consumer behavior patterns and food purchasing habits is essential for the survival of commercial establishments. These businesses can develop strategies that emphasize health, care, and hygiene particularly among small businesses, which have been the most affected during the pandemic. It is important to remember that the continuity of these businesses is vital to the recovery and dynamism of the economy. Therefore, understanding the consumer during times of crisis becomes more than ever a key element for business growth.

From an academic standpoint, unexpected events like the arrival of COVID-19 have made the world's interconnection more evident than ever. Knowledge and learning are essential tools to face the challenges confronting humanity. Specifically, from the perspective of this study, understanding consumer attitudes, motivations, and reactions contributes to a deeper comprehension of the transformations and changes that occur in contexts of insecurity and uncertainty.

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RESEARCH

Afflictions and opportunities of alternative tourism in the Sonora, Arizona, and New Mexico region during the COVID-19 pandemic

Afecciones y oportunidades del turismo alternativo en la región Sonora, Arizona y Nuevo México durante la pandemia de COVID-19

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Abstract

The coronavirus pandemic has had an impact on the world economy, with the tourism sector being one of the most affected sectors, due to its fall in the number of foreign visitors, income, employment and entry of foreign currency to the country. The objective of this research is to study the global overview, with emphasis on the Sonora, Arizona and New Mexico region, as well as a possible tourist reactivation based on practices focused on ecological tourism. By reviewing the literature on the subject, it is concluded that it is necessary to support new complementary options to mass tourism such as ecotourism and alternative tourism that are based on mostly outdoor activities, which meet the specifications to be carried out with social distancing and prevention in the face of health contingency. In particular, it is proposed to promote avitourism or birdwatching tourism, a practice already established in the United States before the pandemic and that we consider has great potential as an alternative and complementary activity to traditional tourism.

Key words: Coronavirus, ecotourism, alternative tourism

Resumen

La pandemia por coronavirus ha repercutido en la economía mundial, siendo el sector turístico uno de los sectores más afectados, por su caída en el número de visitantes extranjeros, el ingreso, empleo y entrada de divisas al país. El objeto de la investigación es estudiar las afecciones por la pandemia en el turismo mundial, haciendo énfasis en la región de Sonora, Arizona y Nuevo México, así como una posible reactivación turística de la región a partir de prácticas enfocadas al turismo ecológico. Mediante la revisión de literatura sobre el tema, se concluye que es necesario apoyar nuevas opciones complementarias al turismo de masas tales como el ecoturismo y el turismo alternativo que se basan en actividades mayormente al aire libre, que cumplen con las especificaciones para realizarse con distanciamiento social y prevención ante la contingencia sanitaria. Particularmente, se propone el impulso al aviturismo o turismo de observación de aves, una práctica ya posicionada en Estados Unidos antes de la pandemia y que consideramos tiene un gran potencial como actividad alternativa y complementaria al turismo tradicional.

Palabras clave: Coronavirus, ecoturismo, turismo alternativo



Introduction

Following the global health concerns raised by the World Health Organization's declaration of the COVID-19 pandemic in March 2020 and the subsequent collapse of the world economy, the tourism industry has clearly entered a "before and after" era, being one of the most affected sectors. Amid the uncertainty brought by the current situation, it is essential to find alternatives that enable a tourism recovery adapted to post-pandemic needs—focusing on ecological awareness and contact with nature, which in turn supports the well-being and safety of both service providers and tourists. The aim of this analysis is, on one hand, to study the impact that the pandemic has had on global tourist mobility due to the preventive measures adopted by many countries, such as border closures. It emphasizes the case of the Sonora, Arizona, and New Mexico region. On the other hand, it proposes alternative tourism—specifically birdwatching—as a viable option to contribute to the recovery of tourism in the state of Sonora, based on the economic impact this activity has in the United States. The structure of this research consists of five sections: following the introduction, traditional and alternative tourism are defined; the third section discusses tourism during the COVID-19 pandemic and its effects; then, birdwatching is introduced and analyzed as an ecological and wellness-oriented alternative for the development of the state of Sonora. The study concludes with the main findings.

1. Notable sites of interest

Traditional tourism generally takes place during vacation periods with the main purpose of rest or leisure. It is practiced on a massive scale, with major cities and beaches as the most common destinations. Visitors are typically consumer-oriented and demand sophisticated services. The main activities include visits to museums, parks, temples, archaeological sites, among others.

In response to the growing need for environmental care and a closer relationship with nature, ecotourism or alternative tourism has emerged. This category includes a variety of activities such as hiking, mountain biking, stargazing, and the focus of this study: birdwatching. Ecotourism has arisen as an alternative to traditional tourism considering

today's social demands for environmental awareness and a renewed connection with nature, according to the Secretaría de Turismo (Sectur, 2004).

It is a tourism trend aimed at enabling travel where tourists engage in recreational activities that involve contact with nature and the cultural expressions of rural, indigenous, and urban communities, while respecting the natural, cultural, and historical heritage of the places they visit. It assumes that organizers are aware of natural, social, and community values, and that tourists seek interaction with the local population. This type of tourism includes activities that reveal its core features in their very names: cultural tourism, rural tourism, ecotourism, adventure tourism, hunting tourism, among others. Antonina I, e Ibáñez R. (2012), p.18-21.

Ecotourism appeals to both domestic and international travelers, making it a promising area for growth—especially as it stimulates national tourism supply, preserves traditions, and encourages the creation of locally unique products such as handicrafts.

Ornithological tourism—also known as bird tourism, birdwatching tourism, or avitourism—involves traveling from one's place of origin to a specific site with the goal of observing local bird species in their natural habitat (Rivera, 2006).

López (2008) defines it as a type of travel motivated by leisure activities related to ornithology, such as the detection, identification, or observation of birds, with the goal of connecting with nature to fulfill needs related to learning, affiliation, achievement, and/or personal recognition.

The fundamental activities associated with birdwatching tourism include: (a) travel—from the place of origin to a destination typically rich in birdlife; (b) species detection—the identification of birds living in their natural environments; (c) identification—as the clear distinction of species is what sets a birdwatcher apart from a general nature enthusiast; and (d) observation—since for some, detection and identification are not enough, as they prefer to calmly watch birds, take notes, photographs, record sounds, etc Jones & Buckley (2001), as cited in Sosa J., Vargas A., & Rodríguez I. (2013). *Diseño y ejecución de un programa de capacitación para guías aviturísticos en el municipio de Alamos, Sonora*. P.65.

The rise of birdwatching as a leisure activity is due to several factors: changing consumer behaviors driven by diverse motivations that prompt individuals to seek unique rather than common experiences; an increase in visits to natural areas, supported by business consolidation, a continuous rise in visitor numbers, and high rates of repeat tourism; growing awareness of environmental conservation; and the expansion of related industries, such as the sale of birdwatching equipment, publication of field guides and specialized magazines, birdwatching fairs, and festivals (López, 2008). Today's birdwatching tourist typically uses binoculars or telescopes for detailed observation and accurate species identification. They also use field guides as essential tools for this purpose. Many birdwatchers record their sightings in field notebooks, and proudly maintain a lifelist—a personal record of all the species they have observed over time, which they continually update as they add “new species” to their list (Gómez & Alvarado, 2010).

According to López (2008), birdwatching tourism is a paradigmatic example of the unstoppable evolution the tourism industry has undergone in recent decades. This market is highly specialized, with the natural environment and its resources serving as the main stage for a wide range of leisure activities.

2. Tourism in the face of the SARS-CoV-2 Pandemic

This section of the document includes a detailed review of scholarly articles, newspapers, official websites of the World Tourism Organization (UNWTO) and the World Health Organization (WHO), as well as official news sources reporting on the behavior of tourism during the coronavirus pandemic. The goal is to understand the current global tourism landscape, with a focus on the Sonora, Arizona, and New Mexico region, and to explore the implementation of alternative tourism or ecotourism as part of a tourism recovery strategy for the area.

The pandemic caused by the SARS-CoV-2 virus—commonly known as the 2019 coronavirus or COVID-19—led to the paralysis of most economic activities worldwide. Various studies projected that advanced economies would shrink by 7% in 2020. Global trade was also expected to decline by 13%, a

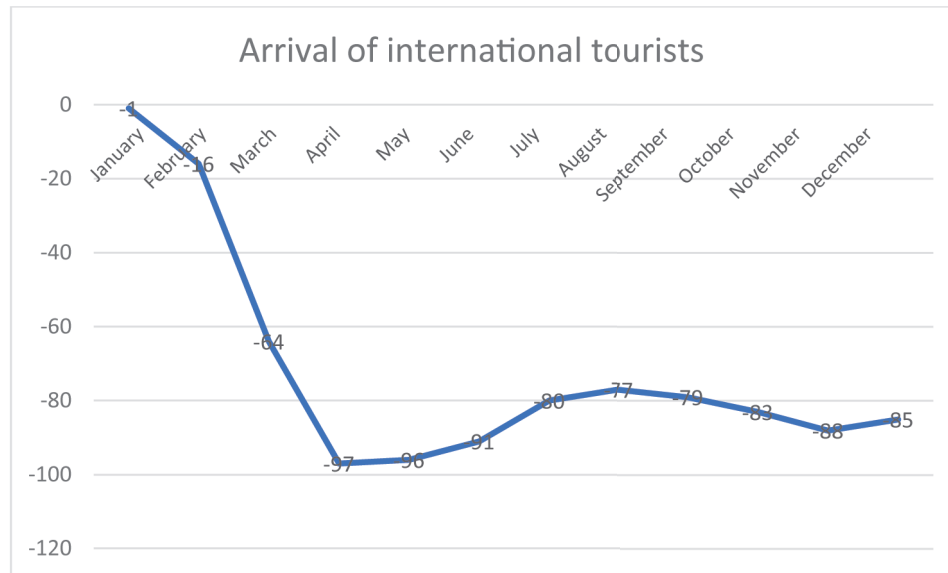
drop greater than that experienced during World War II (Vidya & Prabheesh, 2020). According to the World Bank (2020), the global economy contracted by 4.3%, a figure that, while severe, was slightly more optimistic than earlier projections from the first months of the health emergency. The economy was expected to expand by 4.1% in 2021, assuming an effective global distribution of vaccines throughout the year. Among the most affected sectors was the tourism industry, as international travel restrictions were imposed beginning in March 2020. These measures were implemented in response to the transmission of the virus by asymptomatic individuals—people capable of spreading COVID-19 before realizing they were infected and before taking steps such as self-isolation, maintaining physical distance in public, or covering their mouths and noses to reduce transmission via talking, coughing, or sneezing. Due to very limited testing in many countries—and complete lack of testing in others—asymptomatic and unaware transmission is believed to have played a substantial role in the spread of the virus (Li et al., 2020). As an unprecedented global event, the coronavirus pandemic has had and will continue to have numerous consequences for international tourism.

Figure 1 presents an analysis of the decline in international tourist arrivals throughout 2020, showing a total reduction of 850 million to 1.1 billion arrivals, a loss of up to \$1.2 trillion in export revenues, and the elimination of 100 to 120 million jobs in the sector.

According to Stefan Gössling, Daniel Scott, and C. Michael Hall's perspective on future pandemics (2020), there are reasons to reconsider global economic value chains and the specific role of tourism as both a vector and a victim in the emergence of pandemics. Although it is difficult to predict tourism behavior during a health crisis, estimates can be made about what might have happened if the actual monthly decline in arrivals—compared to 2019—had followed scenarios of 50%, 70%, and 78% less impact due to travel restrictions imposed by countries. This analysis begins from April 2020 onward.

The pandemic has affected the American continent more severely, with the United States being the country with the highest number of COVID-19 cases worldwide. As of 2020, the country had recorded over 27.1 million infections and more than 465,000

Figure 1. International tourist arrivals in 2020



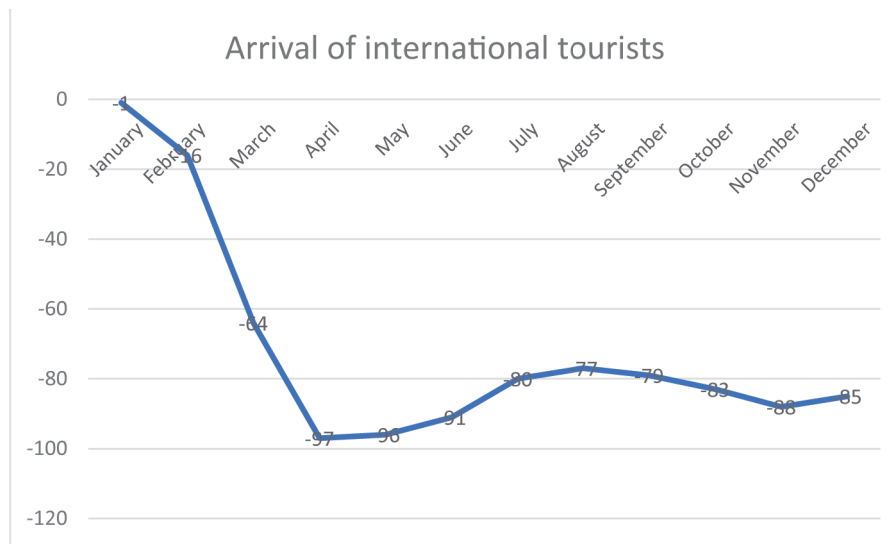
Source: World Tourism Organization UNWTO).

deaths, according to the World Health Organization (2020). This situation directly impacted economic activities shared with Mexico; before the pandemic, tourism in Mexico represented nearly 10% of the national GDP, according to the Asociación de Secretarios de Turismo, placing Mexico among the top 10 most visited countries globally. According to the most recent report by the Centro de Investigación y Competitividad Turística Anáhuac CICOTUR (2020), international tourism revenues in Mexico decreased by approximately 55.3%, which translates to a loss of 13.6 billion USD compared to 2019. The number of international tourist arrivals dropped by 20.6 million (-45.9%); non-border tourist arrivals decreased by 13 million (-54.4%); air tourist arrivals fell by 11.2 million (-57.4%); and land tourist arrivals declined by 1.6 million (-39.7%). Paradoxically, in the worst year for tourism, Mexico rose to the top three in the global ranking of tourist arrivals (having placed seventh in both 2018 and 2019). This was due, in part, to the partial maintenance of tourist flows from the United States, which has significant weight due to border travel (47.2% of international tourist arrivals in 2019), and because of Mexico's strong dependence on the North American travel market, which accounted for around 80% of its international arrivals in the same year, including border crossings (CICOTUR, 2020).

In the United States, the contraction of travel due to the pandemic represented a loss of \$355 billion

USD, equivalent to a 31% decline in tourism activity (Lock, 2020). In the case of the Sonora, Arizona, and New Mexico region—one of the most significant cross-border regions between Mexico and the United States—mobility between the three states has been affected by the decision to restrict non-essential travel by Mexican nationals into the U.S., as a containment measure during the pandemic. At the same time—and even before the onset of the pandemic—efforts have been made to foster cooperation in tourism-related matters, promoting integration among the three states through entities such as the Arizona-Sonora Comisión, and the Sonora-New Mexico Comisión. Both commissions work on tourism with the purpose of promoting and encouraging the flow of visitors among the three states, as well as showcasing the region's attractions to the world, while also fostering investment to expand and improve tourism services in the region (Oficina de Enlace y Cooperación Internacional, 2020).

In the first quarter of 2020, the state of Sonora showed an increase in tourism-related job creation compared to the same quarter of the previous year, according to the Secretaría de Turismo (2020). The Sonora state government has presented a tourism reactivation plan, which estimates that recovery will come primarily from the arrival of tourists from the neighboring states of Arizona and New Mexico, due to their geographic proximity. This was confirmed

Figure 2. Different scenarios for international tourism recovery

Source: Own elaboration based on data from World Tourism Organization (UNWTO)

by Luis Núñez Noriega, coordinator of the Tourism Promotion Commission, who also announced the implementation of a Training Program on Biosecurity Protocols for the reactivation of the tourism sector. This program is supported by the State Health Department, the Universidad de Sonora, and CIAD, which developed the materials and will deliver the training sessions virtually. The goal of the program is to ensure that tourists feel confident that the destinations they visit in the state will have highly trained staff capable of attending to their needs and minimizing the risk of infection.

The government of Arizona reports some figures regarding the impact of the coronavirus on tourism through the Tourism AZ portal (2020), showing a 64% decrease in passenger air traffic and a 48.5% decline in visits to its national parks. The government of New Mexico has issued a series of recommendations for domestic tourists—that is, U.S. residents—with travel restrictions depending on the risk level of each state based on confirmed COVID-19 cases, classifying them as low risk or high risk. According to the U.S. Travel Association, in 2016 more than 19.15 million Mexicans traveled to the United States, mostly to states bordering Mexico, making Mexico the world's leading country of origin for tourists to this destination, followed by Canada with 19.048 million visitors. Between 2015 and 2016, Canadian travelers decreased by 8%, while Mexican travelers increased by 4%. This trend indicates a

sustained growth in tourism exchange between Mexico and the United States. The main activities Mexican tourists engage in while in the U.S. include shopping, visiting tourist attractions, going to theme parks, attending concerts, and touring art galleries and museums. As mentioned earlier, restrictions remain in place on border crossings from Mexico to the United States—a measure implemented by the U.S. government starting March 21, which is still in effect. According to the U.S. Embassy and Consulate in Mexico, the United States temporarily limits land border crossings with Canada and Mexico to “essential travel” only, defining essential travelers as U.S. citizens and permanent residents returning to the U.S., individuals traveling for medical reasons (such as receiving treatment), those attending educational institutions, individuals traveling for work (e.g., agricultural workers who cross between the U.S., Canada, and Mexico), among others. However, according to Reportur.mx (2020), a study conducted by Despegar, a tourism company based in Argentina, found that 41% of Mexicans who had the opportunity to travel abroad between September and December 2020 would choose the United States as their destination for their first post-pandemic trip. The main reason for travel was to visit family and friends, reaffirming that the U.S. remains the preferred international destination for Mexicans. Meanwhile, Mexico has not implemented border restrictions to limit the entry of U.S. citizens during the pandemic period.



Tourism is a factor that increases the risk of future pandemics, both because of the global mobility of tourists and the significant greenhouse gas emissions generated by this activity. This has led to the adoption of new tourism practices such as ecotourism, which are suitable for current tourism recovery efforts. From Valverde's perspective (2017), tourism reactivation comprises three main stages

1. Stage 1 or Analysis: involves diagnosing the local reality where tourism reactivation will take place, identifying the strengths, weaknesses, opportunities, and threats of the locality.
2. Stage 2 or Strategy Development: based on the information gathered, strategies are developed to position the community's tourist attractions and offer visitors a true tourism experience.
3. Stage 3 or Control Methods: it is important to establish methods to measure the effectiveness of the implemented strategies to ensure the proper development of cultural tourism reactivation.

Given the current situation, it is crucial to have tourism reactivation plans that guarantee the well-being of tourists and service providers. Joint efforts to revive tourism will be driven by the implementation of more sustainable practices through ecotourism or alternative tourism, which can be adapted to social distancing measures, as most of these activities take place outdoors. This counters the crowding typical of mass tourism.

The focus on job creation through ecotourism as a means to recover employment after the pandemic appears optimistic. In the United States, one of the most important tourism activities is birdwatching ecotourism. In 2019, birdwatching was considered a multibillion-dollar business: it was estimated that over \$800 billion were spent annually on outdoor recreation activities in the country, with birdwatching generating \$41 billion in economic benefits and more than 20 million Americans taking trips specifically for birdwatching (Withrow, 2019). In recent months, birdwatching has become a favorable activity in a global economy devastated by the pandemic. Sales in the U.S. of bird feed and products to attract birds to gardens increased by 50% during lockdown months, supporting small businesses involved in the construction of feeders and seed sales, and encouraging people to connect with nature while travel restrictions remain in place (Dhanesha, 2020).

The states of Sonora, Arizona, and New Mexico share many similarities, which suggests that Sonora can adopt the operational model of birdwatching tourism from Arizona and New Mexico, where this activity is significant and relevant to their economies, promoting regional tourism development and seeking positive impacts across the three states.

3. Birdwatching tourism as an ecological, sustainable, and well-being alternative for regional development in Sonora

Arizona and New Mexico have a more developed birdwatching tourism sector, as many people engage in the activity and there are places such as recreational parks, national parks, and specialized public and private spaces for bird observation that allow for frequent practice of the activity. In Mexico, the economic impact of this activity is not yet widely recognized, and there are few public spaces dedicated to ecotourism recreation. A study conducted in Pennsylvania, United States, on the conservation of the Black-backed Oriole showed that birdwatching of this species generated \$223,000 in tourism revenue, approximately \$3,000 daily over 67 days (Corey et al., 2017). This confirms the value that some American birdwatchers assign to spotting rare species, dedicating significant time and economic resources during their bird-motivated trips.

In the last decade, binational cooperation efforts have promoted birdwatching tourism in the region, such as the Mexico Birding Trail program, which provides training for locals as birdwatching guides, while also focusing on the conservation of areas, flora, and fauna. On the Sonoran side, in 2019 the first Congreso Regional del Noroeste de Guía y Touroperadores was held in San Carlos. Among the topics addressed were: The Importance of Tourism Competitiveness and the Role of the Instituto de Competitividad Turística (ICTUR); Tourism Marketing in Arizona; Inclusive Tourism in Mexico; Birdwatching as an Economic Alternative for Ecotourism along the Sonora River, among others. In this context, birdwatching activities are beginning to gain prominence within the region's tourism offerings. (Comisión del Fomento al Turismo, 2020).

3.1 México Birding Trail

México Birding Trail, is a program implemented by the Sonoran Joint Venture¹ to promote ecotourism in Mexico, helping birdwatchers plan trips that directly contribute to conservation efforts. The program was implemented in the state of Sonora in 2017, when Pronatura Noroeste² and SJV received funding from the Ley de Conservación de Aves Migratorias Neotropicales and the Programa Internacional del Servicio Forestal de los Estados Unidos to develop a program and train residents of communities located in or near important conservation sites to become bird guides. The goal is to provide incentives for site conservation and support residents of these areas so they can supplement their income.

The training program includes five levels of certification, aiming for trainees to achieve excellence in the following skill areas:

Bird identification: guides must demonstrate excellence in identifying birds of the region.

Professional skill development and volunteer services: guides must participate in opportunities to improve their bird-guiding skills.

Bird-guiding experience: guides must demonstrate hands-on experience in birdwatching trips.

Interpretation of natural and cultural history: los guías deben demostrar sus conocimientos y habilidades de interpretación.

Bilingual ability: guides must demonstrate bilingual competence.

The program was implemented in Álamos, Sonora, and yielded highly favorable results, as the individuals who received the training achieved at least level 4—level 5 being the highest—in all skill categories, demonstrating their capability to be responsible and trustworthy tour guides (México Birding Trail, 2020).

3.2 Scientific birdwatching tourism

The documentation of birds south of the United States border, specifically in Sonora, has captivated many naturalists, scientists, and birdwatchers from the U.S. These observers have shown great interest in the diversity of birds constituted by

tropical and subtropical species that reach their northern limit not far from the border with the United States (Villaseñor et al. 2010). This has led to an increase in the influx of visitors to the state of Sonora from different parts of the United States and other countries around the world, for scientific purposes. Among the bird research projects in the state of Sonora is the one recently carried out with support from the Sonoran Joint Venture (SJV) by the Great Basin Bird Observatory, a nonprofit, scientific organization dedicated to promoting bird conservation. Its members conducted a series of workshops at the Universidad de Sonora and the Universidad Estatal de Sonora to train biologists, students, government partners, tour guides, and NGOs in bird identification and Cuicacoche monitoring methods (SJV, 2020). As previously mentioned, scientific interest in bird species in the state of Sonora began long ago; according to Van Rossem (1945), the earliest records of birdwatchers arriving in the state date back to 1835, when the first specimen collection for research purposes was documented.

Figure 3 shows how, between the first and second decades of the 1990s, there was a surge in bird specimen collections in the state of Sonora, during which 4,250 species were collected. It is important to mention that the proper and ethical handling of collected species can preserve them for a long time and continue to yield relevant data through further study.

Figure 4 shows how the collections of bird species gathered in Sonora are distributed among museums and research sites located mainly in the United States, but also in Canada and Germany. The number of people engaged in scientific tourism in the state of Sonora is not as high as that of traditional tourism, but it is certainly significant and should be considered. Part of the responsibility of foreign individuals conducting scientific research in Sonora involves sharing knowledge and working with local scientific communities, as well as supporting the broader community by consuming food and lodging services, hiring local guides familiar with the sites, among others (Ryan Terrill, 2020)³.

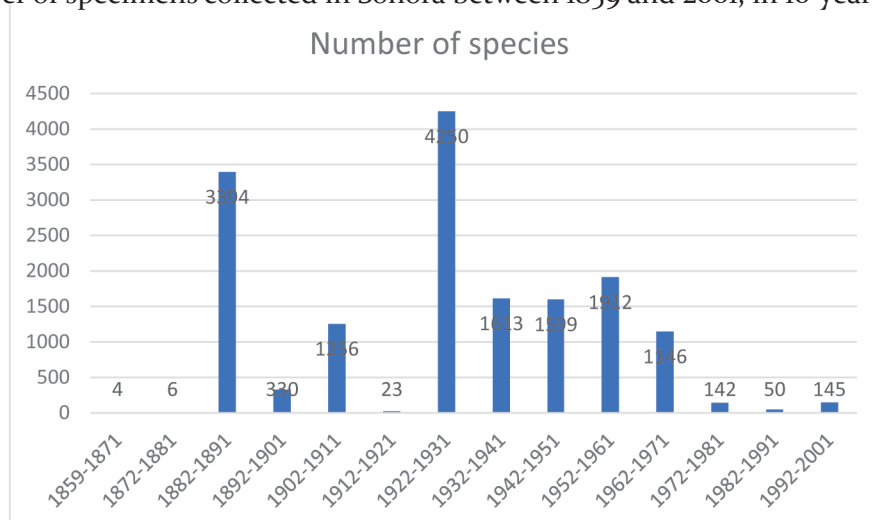
3.3 Birdwatching tourism opportunity in Sonora

¹ The Sonoran Joint Venture (SJV) is a partnership of various organizations and individuals from across the southwestern United States and northwestern Mexico who share a common commitment to the conservation of all bird species and habitats within this range.

² Pronatura Noroeste A.C. is a Mexican organization that links nature conservation with community development.

³ Personal communication with Ryan S. Terrill, Moore Lab of Zoology Occidental College, Postdoctoral Researcher, September 23, 2020.

Figure 3. Number of specimens collected in Sonora between 1859 and 2001, in 10-year intervals



Source: Villaseñor et al. (2010)

Figure 4. Museums and research institutions that hold species collected in Sonora

Institution	Number of specimens	Institution	Number of specimens
Museum of Comparative Zoology, Harvard University, Cambridge, MA	4109	Royal Ontario Museum, Toronto	78
University of California, Los Angeles, CA	3258	Bell Museum of Natural History, University of Minnesota, St. Paul, MN	70
Louisiana State University, Museum of Zoology, Baton Rouge, LA	1049	Cornell University Museum of Vertebrates, Ithaca, New York, NY	62
University of Kansas, Natural History Museum, Lawrence, KS	743	Museo de las aves de México, Saltillo, México	58
San Diego Natural History Museum, San Diego, CA	700	Academy of Natural Sciences of Philadelphia, PA	48
Museum of Vertebrate Zoology, Berkeley, CA	659	Universidad Autónoma de Baja California, Ensenada, México	26
University of Michigan, Museum of Zoology, Detroit MI	651	Peabody Museum, Yale University, New Haven, CT	20
Moore Laboratory of Zoology, Occidental College, Los Angeles CA	639	Sistema Nacional de Información sobre Biodiversidad, México	13
Western Foundation of Vertebrate Zoology, Camarillo CA	496	Museum Für Natukunde, Humboldt- Universität Zu Berlin, Germany	12
University of Arizona, AZ	483	Natuurhistorische Museum, Linden, Netherlands	9
Field Museum of Natural History, Chicago IL	466	Florida Museum of Natural History, Gainesville, FL	5
Delaware Museum of Natural History, Greenville DE	460	Burke Museum, University of Washington, Seattle, WA	5
United States National Museum of Natural History, Washington, D.C.	437	Denver Museum of Natural History, Denver, CO	4
British Museum (Natural History), Lodon	311	Zoologische Forschungsinstitut and Museum Alexander Koeing, Germany	4
Los Angeles County Museum of Natural History, Los Angeles CA	263	Übersee, Museum Bremen, Germany	3
American Museum of Natural History, New York, NY	239	Instituto de Historia Natural y Ecología, Chiapas, México	2
Southwestern College, Chula Vista, CA	197	Senckenberg Naturmuseum, Frankfurt, Germany	1
Museo de Zoología, Facultad de Ciencias, UNAM, México	125	University of British Columbia, Museum of Zoology, Vancouver	1
Canadian Museum of Nature, Otawwa, Ontario	120	Zoological Museum, Moscow State University	1
Carnegie Museum of Natural History, Pittsburgh, PA	99	Museum Mensch Und Natur, Munich	1
California Academy of Sciences, San Francisco, CA	81		

Source: Based on data from Atlas de aves de México by Villaseñor et al. (20

To develop this activity, the state of Sonora needs to implement training programs to provide birdwatching services and excellent customer service to offer the best possible experiences. For several years, a shift in perspective toward outdoor activities has been observed in the state, since the emergence of groups engaged in cycling, mountain biking, climbing, slacklining, and an increasing number of people interested in hiking mountains, among other activities, is becoming more frequent. This may be due to the proximity of the border, since the practice of these types of activities in the United States motivates Sonorans to engage in them in their own state, which favors the development

of birdwatching tourism in Sonora. Although the number of people who currently engage in birdwatching in Sonora is very small compared to the neighboring states of Arizona and New Mexico, the fact that more people are joining and sharing this activity increases the likelihood that people from other places will also become interested in this form of Sonoran tourism. Although there are already visitors who enter the state purely for birdwatching purposes, whether from the scientific community or the general public, it is of utmost importance to work with the corresponding authorities to improve safety in the state so that more foreigners can visit Sonora and enjoy their stay. Another important point is involving the community in the knowledge

and care of natural spaces, to maintain habitats in good condition both for biodiversity and as sites of tourist interest. Awareness of the existence of protected natural areas and the recovery of such areas, as has been achieved with Estero El Soldado—where there is a visitor center and several activities to do such as kayaking—could increase the arrival of tourists to other parts of Sonora, such as the area of San Miguel de Horcasitas in Río El Cajón, which has the characteristics to be a suitable space if promoted as a recreational site. In addition to being a site that presents a diversity of species that many birdwatchers would be willing to visit, it provides employment opportunities in services, tour guides, souvenirs, revenues from site visits, among others (Carlos González, 2020)⁴.

Another opportunity is the creation of institutions like the Audubon Society in the United States, whose mission is to conserve and restore natural ecosystems, focusing on birds, other living beings, and their habitats, for the benefit of humanity and the planet's biodiversity, as well as providing information to tourists about recreational sites for birdwatching purposes.

3.4 Birdwatching tourism as a bridge for tourism integration

As has been previously stated, there are various governmental and private institutions in the United States that finance and promote multinational research in the state of Sonora, as well as the willingness to offer training to local people for the development of birdwatching tourism in the state. It is of utmost priority to maintain good relations with these institutions and for the Sonoran tourism department to also provide support so that this activity, which combines conservation, ecology, and tourism, can develop in an integral manner, involving the community and providing social and economic benefits to Sonora.

Table 1. Birdwatching sites of interest, number of observers, and number of species observed for the states of Sonora, Arizona, and New Mexico

State	Species	Observers	Birdwatching sites of interest
Arizona	560	27100	2118
Nuevo México	558	14900	1201
Sonora	517	1312	213

Source: Based on data from eBird

Table 1 provides a summary of birdwatching sites of interest, the number of observers, and the number of species observed for the states of Sonora, Arizona, and New Mexico, showing that the state leading birdwatching activity in the region is Arizona, with approximately 27,100 observers, followed by New Mexico with a little more than half of Arizona's number with 14,900, and then Sonora with approximately 1,312 people who engage in birdwatching. Although the number of people who practice birdwatching in the state of Sonora is relatively low, there are signs that this activity could increase its attendance. Additionally, it is important to highlight that the records on the eBird platform made in the three states do not correspond solely to local people, but also include visitors to the region's sites of interest for birdwatching tourism purposes. Table 2 provides a summary of the top 15 birdwatching sites of interest for the states of the region, revealing a significant difference in the United States, since most sites of interest are located in recreational areas, national parks, and places dedicated to conservation, as well as some sites adapted exclusively for birdwatching activities. This contrasts with the Sonoran situation, as Sonora does not have exclusive recreational areas for birdwatching activities and has few sites where recreational activities can be carried out. Another important point to highlight is that Sonora does not give the same relevance to conservation sites as the other states. The state has two reserves: Reserva de la Biosfera Alto Golfo de California y Delta del Río Colorado and Reserva de la Biosfera El Pinacate y Gran Desierto de Altar, as well as two flora and fauna protection areas in Bavispe and in the Sierra de Álamos-Río Cuchujaqui (Comisión de Áreas Naturales Protegidas CONANP, 2020). It also has state protection areas such as the Abelardo L. Rodríguez dam, Cañón del Diablo, and Estero El Soldado.

Conclusions

It is a fact that the tourism sector has been severely affected during the coronavirus pandemic and that the uncertainty about when a vaccine will be available to guarantee a tourist and economic recovery has led countries to impose significant restrictions to ensure the wellbeing of people, putting many tourism jobs at risk. The commitment to a tourism recovery with a focus on ecological awareness, sustainability, and

⁴ Personal communication with Biol. Carlos González Sánchez, temporary technician at Great Basin Bird Observatory and tour guide at Solipaso Tours, November 22, 2020.

Table 2. Top 15 birdwatching sites of interest for the states of Sonora, Arizona, and Mexico

Notable sites of interest						
Top 15	Sonora	Species	Arizona	Species	Nuevo México	Species
1	Arroyo mentidero y Río Cuchijaqui	248	Patagonia Lake State Park	322	Bosque del Apache NWR	376
2	Puerto Peñasco	248	Riparian Preserve at Gilbert Water Ranch	316	Bitter Lake NWR	342
3	Reserva Monte Mojino-Rancho el Guayabo	242	Willcox- Lake Coshise and Twin Lakes Golf Course	313	Carlsbad Caverns NP-Rattlesnake Springs	321
4	Estero el Soldado	236	Sweetwater Wetlands	308	Río Grande Nature Center SP	319
5	Yécora	232	Whitewater Draw Wa	306	Caballo Lake SP- Percha Recreation Area	314
6	Estación de campo Navopatia	228	San Bernardino NWR	298	Las Vegas NWR	292
7	El Golfo de Santa Clara	225	San Pedro RNCA- San Pedro House and trails	297	Bosque del Apache NWR- South Loop	286
8	San Carlos	222	Glendale Recharge Ponds	291	Bosque del Apache NWR- Visitor Center	285
9	Las Cabras, Álamos	216	Boyce Thompson Arboretum	281	Maxwell NWR	277
10	El Pedregal Nature Lodge and Retreat Center	212	Patagonia Lake SP- Birding Trail	280	Melrose Woods	275
11	Estanque de aguas residuales, Puerto Peñasco	206	Pena Blanca Lake	279	Ute Lake SP- North Area	268
12	Bahía Yávaros	201	Hassayampa River Preserve	278	Mesilla Valley Bosque SP	265
13	Estero Santa Cruz	201	Kino Springs	275	Summer Lake SP	364
14	Reserva Monte Mojino	196	Watson Lake and Riparian Preserve	271	Washington Ranch	263
15	Onavas	192	De Anza Trail-Tubac	270	Caballo Lake SP- Riverside Recreation Area	262

Source: Based on data from eBird.

wellbeing has led to the consideration of a change in perspective. Efforts such as training programs to provide tourism services adapted to the new normal, which offer tourists an experience that provides them with security, are the beginning of a change that could help recover many jobs lost during these months. The Sonora, Arizona, and New Mexico region is under border restrictions for the entry of Mexicans into the United States, who represent a very important part of tourism in the neighboring country, especially in the southern states such as Arizona and New Mexico, leaving open the question of when the reopening will allow Mexicans to also contribute to the U.S. economy by making purchases and traveling. On the other hand, it is expected that Sonora's tourism reactivation will begin with the arrival of Americans mainly from Arizona and New Mexico, who enjoy ecotourism activities and are the most frequent practitioners of activities such as birdwatching, a practice that is not yet developed in the state of Sonora but has great potential as one of the alternative tourism options that could help in the reactivation and job generation in tourism.

Although tourism reactivation is happening gradually, the current outlook still holds much uncertainty about the future of tourism worldwide, as many countries have experienced new outbreaks of coronavirus positive cases, which has led various countries to reimpose necessary restrictions to curb the spread of the disease. Given the absence of a vaccine that guarantees the wellbeing and safety of people, it is of utmost importance that regions such as Sonora, Arizona, and New Mexico join efforts to carry out a tourism reactivation with a more ecological, sustainable, and conscious focus that allows the gradual growth of this activity as a recovery measure amid the current health contingency.

As an alternative, we propose the development of

a strategic tourism reactivation plan that includes alternative tourism activities, in which we consider that ecological, sustainable, and wellbeing tourism can become an area of strong tourism potential. Within this alternative tourism approach, we consider birdwatching tourism a promising area, where the state of Sonora has natural advantages to expand and diversify tourism activity.

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