Modern Geográfia
Vol. 20, Issue 1, 2025: 129–156
DOI: 10.15170/MG.2025.20.01.07

Kiss, Robert[1] – Patev, Plamen[2] – Lan, Kou-Wei[3]

The Impact of COVID-19 on Domestic Travel: The Spatial Changes in Taiwan

ABSTRACT

This paper aims to provide an overview of Taiwanese domestic tourism's spatial changes during the pandemic era. The research examines five years of domestic tourism flow in Taiwan. Based on the Taiwan Centers for Disease Control's (CDC) regular reports, we analyzed 744 data categories grouped into eight clusters: international epidemic, major events, border policy, material preparation, community epidemic prevention, relief/compensation policy, inspection/R&D policy, and medical facility control. We defined six pandemic periods based on these factors to analyze the domestic tourism landscape during these eras. A comparative analysis of monthly travel data from local governments and tourism administrations across various periods was conducted. For analysis, we used Tableau, while Corel Draw was applied to map the spatial distribution of domestic travel. By categorizing Taiwan's geographical areas based on their landscape characteristics and tourism images, we analyzed their domestic tourism performance during this five-year timeframe. The major finding was that domestic tourism significantly benefited from the lockdown situation, generating increased domestic travel and higher industry revenues. The "Bubble period," when effective local health policies enabled safe travel, was particularly successful. Additionally, the post-COVID period's domestic travel and revenues surpassed those of the pre-pandemic era.

Keywords: COVID-19, domestic tourism, spatial distribution, Taiwan, tourism geography

[1] Assistant Professor, Department of International Tourism and Hospitality, International College, I-Shou University, No.1, Sec. 1, Syuecheng Road, Dashu District, Kaohsiung City 84001, Taiwan, R.O.C, Email: robertkiss@isu.edu.tw, https://orcid.org/0000-0003-0209-3004, Tel: +886-7-6577711 (Extension: 8815)

[2] Associate Professor, Department of International Finance, International College, I-Shou University, No.1, Sec. 1, Syuecheng Road, Dashu District, Kaohsiung City 84001, Taiwan, R.O.C, Email: patev@isu.edu.tw, Tel: +886-7-6577711 (Extension: 8767), *Correspondent author*

[3] Assistant Professor, Department of Film and TV, College of Communication and Design, I-Shou University, No.1, Sec. 1, Syuecheng Road, Dashu District, Kaohsiung City 84001, Taiwan, R.O.C, Email: cyborg@isu.edu.tw, https://orcid.org/0009-0003-4774-0946, Tel: +886-7-6577711 (Extension: 8266)

INTRODUCTION

Traveling was a popular leisure activity for Taiwanese people, both internationally and domestically. According to the Taiwan Tourism Bureau (2020a), Taiwanese citizens made almost 170 million domestic trips in 2019; 67% occurred on weekends or holidays. The average length of stay was 1.5 days, and they spent US$75.02 (NT$2,320) per person per trip, reflecting a 5.31% increase compared to 2018 (Appendix A1).

Although the above data showed strong performance, the importance of tourism has a short history but deep roots in the nation's economy (Li et al., 2019). According to Han et al. (2020), tourism planning and recreation played a marginal role in Taiwan during the 1960s-70s and remained less focused until the second half of the 1990s. The country's democratization brought fundamental changes, such as the two-day weekend implemented in 1997, which influenced tourism and recreation, creating opportunities for short trips (Han et al., 2020; Li et al., 2019). That same year marked the official start of collecting tourism data, and the sector developed rapidly, with the „annual average proportion of domestic tourism revenue in Taiwan exceeding 55%" between 1998 and 2016 (Li et al., 2019, p. 949). The same authors found that the domestic tourism cycle was strongly correlated with the economic cycle, operating synchronously.

Further infrastructural improvements included recognizing cultural factors, which have broadened since the millennium. Key developments included improvements in facilities at scenic areas (Li et al., 2019), the preservation of Indigenous tribes' cultural heritage, the restoration of night markets, the establishment of shopping facilities (Chen & Weicht, 2000; Han et al., 2020), and the rejuvenation of hot springs (Lee et al., 2009). Tourism development was not independent of economic and political influences. Chiang (2012) argues that cross-strait relations with Mainland China, Taiwan's primary market, were shaped by various political circumstances. For example, democratization eliminated the need to control outbound travel, and opening to Mainland China in 2008 brought unprecedented benefits to Taiwan's still-nascent tourism sector (Yang & Lo, 2018). However, ongoing political tensions since 2016 led to a ban on tourists from the People's Republic of China traveling to Taiwan (Chen & Weicht, 2020; Yang & Lo, 2018).

To compensate for fewer Mainland Chinese tourists, Taiwan implemented policies to attract visitors from Southeast Asian countries. Since the 1990s, domestic tourism has gained importance as a stable market less exposed to international political and economic fluctuations, with peaks in 1998–1999 and 2010–2016 (Li et al., 2019). Domestic tourism has proven to be an effective tool for stimulating economic growth (Kang et al., 2014), positively impacting hotel companies' performances (Chen, 2010).

Taiwan's tourism destinations and visitors' motivations have been previously studied; however, much research focused on inbound travelers (Hsu et al., 2009; Sung et al., 2016). Wu (2021, p. 12) examined areas such as Penghu, noting that „domestic tourism and consumption cannot make up for the lack of economic income generated by foreign tourists." Nevertheless, Wu (2021) recommended domestic tourism as a way to mitigate losses in the tourism industry. Wang et al. (2022) explored luxury hotel recovery in Chiayi. Hsu et al. (2009) analyzed factors influencing inbound tourists'

destination choices, while others examined Taiwanese outbound travel (Kao et al., 2008) or compared domestic and international island destinations visited by Taiwanese travelers (Park et al., 2010).

Notably, domestic tourism motivation and spatial distribution have received less attention in travel research due to the relatively late recognition of the importance of such data collection. Chan (2022) explored domestic travel by Taiwan's aging population during COVID-19, finding that while many seniors risked exposure to the virus, their spending did not decrease.

Despite the gradual development of Taiwan's tourism sector, the record-breaking year of 2019 ended with the global pandemic originating in Mainland China. This outbreak created an unprecedented global crisis, affecting not just the tourism and hospitality sectors but economies worldwide. The economic shock impacted every country, and this paper aims to compare the pre-, during, and post-COVID-19 periods of spatial changes in Taiwan's domestic travel. While international travel faced severe challenges, domestic travel performed relatively better.

Our research objectives focus on analyzing Taiwan's domestic travel across three phases: pre-, during, and post-COVID-19. The second objective examines the spatial changes in domestic travel, particularly in the absence of international travel and inbound tourists. This includes identifying which counties gained popularity and attracted more visitors and which areas lost their appeal.

LITERATURE REVIEW

COVID-19 and tourism

In 2024, based on the United Nations World Tourism Organization's (UNWTO, 2024) forecast, the COVID-19 pandemic is expected to be over, and international tourism has fully recovered to pre-pandemic levels. However, nearly five years after its devastating outbreak, new virus variants are still present. The global pandemic and its traumatic impacts are most visually indicated by two figures. First, the drastic drop in international tourist arrivals (ITA) in 2020 by 74%, equating to a decrease of 1.1 billion ITA, bringing the industry's performance down to 1990s levels (UNWTO, 2021a). Second, the fall in tourism exports by US$1.3 trillion.

This crisis provided endless opportunities for researchers to examine various aspects of its consequences and spatial proliferation. Connolly et al. (2021) and Ren and Keil (2017) argue that the spread of the disease is partially a consequence of urbanization, globalization, and the movement of people between economic zones. Transportation, the tool enabling the mobility of millions, is another factor in the spread of infectious diseases, as Gosce and Johansson (2018) found in the case of the London Underground. Karl et al. (2014) and Xu et al. (2019) conclude that population density and overcrowding—demographic factors—are significant contributors to the rapid spread of the virus. Hu (2022) claims that while higher population density reduces social distance and facilitates infection, improved „urban planning" that increases social distance reduces the likelihood of transmission. With its extensive connectedness, the modern globalized world effectively provides highways for nearly unlimited viral spread.

This unprecedented decline set the tourism industry back decades. Consequently, COVID-related research over the past five years has addressed all aspects of tourism, travel, and hospitality-related issues. The first wave of studies focused on the immediate impacts of the coronavirus on the industry (Dolnicar & Zare, 2020; Fu, 2020; Gössling et al., 2020; Lin & Chen, 2021), health (Chang & Meyerhoeffer, 2020; Haire et al., 2022; Shigemura et al., 2020), and government policies (Fung et al., 2020; Wu et al., 2021).

El-Meouch et al. (2024) analyzed the economic impacts of COVID-19, particularly structural and territorial effects on the vulnerability of the corporate sector, and concluded that no spatial patterns were identified. Meanwhile, spatial research by Farzanegan et al. (2020) demonstrated that a 1% increase in inbound and outbound tourism correlated with a 1.2% and 1.4% rise in COVID-19 cases, respectively. Yu et al. (2022) examined changes in domestic travelers' mobility during COVID-19 in China, finding that cities closer to the pandemic's epicenter suffered more severe impacts, while those farther away were less affected. This observation aligns with Tobler's First Law of Geography (Yu et al., 2022). These researchers also established periods for their three-year data analysis.

Iirmdu and Donaldson (2024) studied COVID-19 from the perspectives of government policies and risk management, highlighting the critical importance of well-prepared managers and business owners. Others explored the multifaceted impacts of the quarantine hotel system, including its effects on guests, hotel employees, and the business venues themselves (Gkoumas et al., 2023; Grout et al., 2021; Haire et al., 2022).

COVID-19 in Taiwan

The coronavirus' devastating impacts did not spare Taiwan's international travel, tourism, hospitality, and event management sectors (Chang & Kim, 2022; Chen & Weicht, 2020). However, the professional pandemic policy implemented by the Taiwan Centers for Disease Control (CDC) attracted significant attention from researchers due to its effectiveness. This well-prepared policy drew upon lessons from the 2003 SARS outbreak (Chang et al., 2021; Tan et al., 2021; Wong & Yang, 2020). As a result, the luxury travel segment established stringent safety protocols to provide guests with a secure experience (Chang & Kim, 2022).

Early studies (Chang & Kim, 2022) highlighted Taiwan's strong pandemic response during the initial stages of the crisis. Many papers published shortly after the outbreak analyzed various timeframes and aspects of the pandemic's impact on the tourism industry, often focusing on international travel (Chang & Kim, 2022; Sung et al., 2016).

Some research addressed the health, psychological, and mental effects of lockdowns and quarantine policies. For example, Gkoumas et al. (2022) noted that quarantine hotels were primarily located in major cities with airports, accommodating returning Taiwanese nationals. Those staying in quarantine or lockdown often sought escapes from their confined, stressful environments. Chen et al. (2022) examined the use of suburban parks and forests, identifying them as popular alternatives for Taiwanese residents during lockdowns. They observed a correlation between the pandemic alert level

and park attendance: higher case numbers led to fewer visitors, while controlled outbreaks resulted in increased visitation. Their study also revealed a pattern in travel behavior, with short trips to nearby forests gradually giving way to visits to more distant parks as restrictions eased.

Lee and Jan (2022) explored the impact of the pandemic on indigenous festivals in Taiwan, emphasizing the importance of visitor-local interaction in creating authentic experiences and fostering a deeper understanding of aboriginal cultures.

The tools employed to mitigate the virus's spread included closed borders, bans on public gatherings, the shutdown of tourist attractions, and, in some cases, mobility restrictions (Oxford University, 2020). Government policies also aimed to support the recovery of domestic travel, which has the potential to rebound more quickly than international travel (UNWTO, 2021b). A related report indicated that most major economies generated 70–94% of their tourism-related spending domestically. Arbulú et al. (2021) observed that outbound tourism could often be redirected to domestic destinations. However, they noted that spatial changes in domestic tourism might influence a region's portfolio, market demand volatility, and ability to attract new segments. Negative factors for domestic tourism included reduced disposable income and the heightened risk of contagion during travel.

Our study focuses on the consequences of COVID-19 on Taiwan's tourism industry. The literature suggests that the pandemic and the associated policies significantly influenced the socio-economic development of affected countries. Taiwan executed sophisticated and well-developed policies to safeguard its population and economy, particularly given its proximity to the pandemic's origin (Wu et al., 2021). Analyzing the results of these policies offers valuable insights for future action plans by authorities and businesses. Given the tourism sector's vulnerability to the pandemic, our research centers on three previously underexplored areas:

1. Extended Research Timeframe: Our study spans the full duration of the pandemic, including the last pre-pandemic year (2019) and the first year of recovery (2023).
2. Domestic Tourism Focus: With international travel annulled by lockdowns, travel bans, and other policies, we analyze the domestic tourism perspective.
3. Spatial Changes in Domestic Travel: We investigate the geographic redistribution of domestic tourists during the pandemic, identifying counties and cities that either benefited or struggled during this period.

Our primary goal is to determine whether the pandemic caused lasting shifts in domestic tourism behavior and whether these changes led to a geographical restructuring of the industry. Specifically, we aim to identify regions that capitalized on the turbulence. Based on this, we propose the following hypotheses:

- H1: A quickly implemented and strictly enforced pandemic policy benefits domestic tourism and serves as a model for regions with similar geographic conditions.
- H2: Pre-COVID popular, nature-based tourist destinations performed even better during the pandemic due to increased traveler interest.

The identified periods of Taiwanese tourism during the pandemic

During the pandemic, the Taiwanese Ministry of Health and Welfare (2019) created a website to track nationwide activities, reactions, and preventions. They identified eight factors influencing overall pandemic policies, uploading these daily from 31 December 2019 to 05 May 2023. We examined a total of 744 data categories concerning the pandemic, as listed by the ministry, and evaluated their impacts on domestic travel. The eight factors identified were: international epidemic (74 instances), major events (79 instances), border policy (165 instances), material preparation (89 instances), community epidemic prevention (243 instances), relief/compensation policy (17 instances), inspection/R&D policy (18 instances), and medical facility control (59 instances).

Based on the pandemic policies and decision-making factors implemented by the Taiwanese Ministry of Health and Welfare, we identified six distinct periods[4], each with unique characteristics and impacts on international and domestic tourism.

1. Pre-COVID period (January 1, 2019 – January 31, 2020): This was the last full year without COVID-19, marking the end of a sustained period of growth in domestic tourism. It serves as the baseline for comparing subsequent periods. This period saw the outbreak of the first cases in Wuhan, China. During the Chinese New Year (23–29 January 2020), travelers significantly contributed to the global spread of the virus through imported cases.
2. Gradual closure period (February 1, 2020 – April 30, 2020): The first wave of imported COVID-19 cases prompted swift responses from the CDC, including travel bans (closure of airports and ports), a 14-day quarantine system for non-residents monitored via mobile phone positioning, and social distancing measures. Additional precautions included limits on gatherings, temperature checks at transportation hubs, and more.
3. Bubble period (May 1, 2020 – April 30, 2021): Strict pandemic regulations and an island-wide lockdown contained imported cases at the border, with no local cases reported. This „bubble" environment allowed people to maintain normal lives domestically, albeit without international travel. Domestic travel increased during this period, as non-residents remained unable to enter without a 14-day quarantine.
4. Pandemic period (May 1, 2021 – July 31, 2021): The Delta variant triggered a rapid surge in cases, leading to the immediate closure of leisure and entertainment venues, meeting facilities, lodging, and catering services (only takeout was permitted). Supermarkets implemented crowd control, and gatherings were restricted. Domestic tourism temporarily halted. Taiwan, one of the world's most densely populated countries (656 persons/km², CIA, 2024), successfully slowed COVID-19's spread, with cases decreasing within three months. By mid-July, epidemic alert levels had been lowered, ushering in a new period.
5. Gradual opening period (August 1, 2021 – November 30, 2021): Initial regulatory relaxations reopened outdoor venues (e.g., national parks, amusement parks) and indoor venues (e.g., museums, galleries, cinemas, night markets). These changes boosted domestic tourism to

[4] These periods always began on the first day of a month when significant situations arose.

pre-COVID levels. Despite a temporary setback in May–June 2022 due to rising Omicron variant deaths, quarantine policies were reduced to a 3+4-day duration, maintaining overall growth.

6. Post-COVID period (December 1, 2021 – December 31, 2023): Lifting crowd controls and travel restrictions, coupled with vaccine records, allowed almost unrestricted activities within Taiwan. Hotels and resorts benefited from these measures, achieving higher domestic tourism performance than in the pre-COVID period. By October 2022, borders reopened steadily, eliminating home quarantine for inbound travelers and enabling group tours and free international travel. After 32 months of lockdown, domestic tourism remained robust.

The following sections of this paper present our results based on this categorization. Since the duration of each period varied according to government policies and health events, some periods lasted only a few months. This variability limits the use of deep statistical models for analysis. Instead, we followed the event-driven durations and used average tourist numbers to ensure comparability. These averages effectively describe tourist behavior.

Additionally, seasonality was not considered because the COVID-19 pandemic drastically altered travel patterns in Taiwan. Tourists no longer adhered to seasonal preferences; decisions about when and where to travel were dictated by government policies and personal perceptions of safety. Consequently, tourists planned their travels based on COVID-19 circumstances and conditions during each period.

METHODS

We use secondary database[5] collected from all local governments in Taiwan and the legally registered hotels and the home stay venues, which are then organized by the Tourism Administration (MOTC), a government agency under the Ministry of Transportation and Communications of Taiwan. However, there is a discrepancy related how the central government collects data of the lodging industry on annual basis. According to the Regulations for the Management of Home Stay Facilities, in Taiwan the establishment of home stay facilities shall be limited to certain areas. With the limitations, most areas of the metropolitan cities such as Taipei City and Kaohsiung City are not allowed to have home stays but the demands have been always there. So, the number of tourists who stayed at those illegal home stay facilities and revenues were not included in the government released dataset. In other words, the tourist numbers staying in home stay and tourist revenues were underestimated. This was the reason for using the hotels and homestay data to evaluate tourism performance. Therefore, for further research, the inclusion of other types of data for validation is needed in order to get more precise data and if needed a triangulation for future research.

The data are in Excel with monthly per administrative unit and separated for domestic and international tourists. We calculate and compare the average monthly number of domestic tourists for

[5] The data can be downloaded from https://www.taiwanstay.net.tw, owned by the Tourism Administration (MOTC), the Ministry of Transportation and Communications of Taiwan.

each period: pre-COVID, Gradual closure, Bubble, Pandemic, Gradual opening, and post-COVID. The same is repeated for revenues of the tourism industry, where the data for revenues involves total revenues for hotels and homestays per administrative unit. Total revenues are the sum of room revenues and catering revenues. However, because of the specific statistics, the revenue data involves the revenues from domestic and foreign tourists, and we consider it in our analysis.

The territorial administrative structure of Taiwan consists of counties and cities as regional units, and tourism-related statistical data are collected based on such spatial distribution. Because of that, in this paper, the official administrative division of the country into counties and cities is used with minor corrections[6]. Additionally, we skip the terms "county" or "city" when we present the administrative units and address them as regions. In order to analyze the geographical aspects of the tourism industry, we sorted all territorial administrative units into groups based on their touristic attractions and the specifics of tourism in them:

1. Mountainous East Coast: This group includes Yilan, Hualien, Taitung, and Pingtung, which are connected by the Central Mountain Range and the East Coast Mountain Range, separated by the East Rift Valley. The main natural attraction of Taiwan, the Taroko Gorge, is located here. Although all regions in this group are situated along the long and attractive coastline, there are no beaches except in Pingtung (Kenting). This county is famous for its sandy beaches and resorts. The main attractions of this group are activities related to the mountains and coasts and their scenic views.
2. Islands: In addition to the main island, Taiwan includes several tiny islands—Lianjiang, Kinmen, and Penghu. Their unique natural environments and distinctive local cultures and histories make them exciting destinations, especially for local tourists, as they offer experiences different from those on the main island.
3. Mountains: Chiayi and Nantou are prime examples of this group, distinguished by their unique attractions. Chiayi's Alishan Mountain is a famous high-altitude tea cultivation area, while Nantou boasts Sun Moon Lake, the largest water body in Taiwan. The mountains are also home to indigenous tribes that preserve their ancient cultures for visitors.
4. Big Vibrant Cities: The main historical, cultural, business, and social events occur in these cities: Taipei, Taichung, and Tainan. These cities offer all the elements of vibrant city life, attracting local tourists with their night markets and festivals. Major attractions include Taipei 101, the National Palace Museum, Taichung's temples, and Tainan's historical landmarks.
5. Industrial Cities: This group includes Hsinchu and Taoyuan. These cities are hubs of industrial and transportation activity, hosting the headquarters of major Taiwanese companies, production facilities, research laboratories, and logistics centers. Taoyuan, home to the country's main international airport, serves as the entry point for many travelers. These cities are also home to the Hakka community and its culture.

[6] For better clarity, we: (1) unite New Taipei City and Keelung City in one unit New Taipei, (2) unite Chiayi County and Chiayi City in one unit Chiayi, (3) Hsinchu County and Hsinchu City in one unit Hsinchu.

6. Small Cities: This group includes Changhua, Miaoli, and Yunlin. These cities lack specific tourist attractions, though they have some sites of regional importance. Generally, the number of tourists here is relatively low.

We faced difficulties classifying two regions: New Taipei and Kaohsiung.

- Kaohsiung: While Kaohsiung could be classified as an industrial city due to its industry and status as the country's largest port, it also has the characteristics of a vibrant city with an active cultural and event life and several important historical sites. Additionally, the region has vast mountain areas with a diverse aboriginal culture, which, combined with its mountainous environment, creates notable tourist attractions. Overall, Kaohsiung exhibits characteristics of both an industrial city and a vibrant city, with some elements of a mountain region.
- New Taipei: This administrative unit is somewhat unique. On the one hand, it can be considered part of Taipei but lacks the capital city's specific characteristics. On the other hand, New Taipei includes extensive mountain areas and coastlines, which serve as main day-trip destinations. Additionally, the region is known for its mineral springs and well-developed bath resorts. Due to this diversity, New Taipei can be classified as a combination of vibrant cities and mountains with some elements of an industrial city.

We are aware that this classification may have some deficiencies. However, as our focus is on the geographical aspects of tourism, we assume that these classifications can help us better understand the processes in the industry during COVID.

Our method is based on comparing average items. Although the duration of each analyzed period differs, we are confident that the average monthly numbers of tourists or revenues for each period are fully comparable due to the lack of seasonality during the COVID period. Since the pandemic-related governmental database is not transferable to statistical programs, we use TABLEAU for data analysis and figure preparation, and Corel Draw for map creation.

RESULTS

The general trend of the domestic tourism industry in Taiwan

The pre-COVID year 2019 was successful for the tourism industry in Taiwan. The average number of domestic tourists varies between 2.950 million and 3.650 million per month, with the average for the period of 3.302 million (Appendix A2). This data shows that number of domestic tourists is relatively stable during the year. The seasonal variations are insignificant and result from calendar holidays in the country (Figure 1) and the traveling during the main holidays such as Lunar New Year, Dragon Boat Festival, or Mid-Autumn Festival. When measures against the pandemic started to be introduced in late January and early February 2020, the number of tourists fell. Although the first measures were directed more towards foreign tourists, which resulted in the full closure of the country for them, they naturally influenced the behavior and lifestyle of residents, including their decisions about traveling. No restrictions for domestic traveling had been introduced, yet the common anxiety and feeling of fear

sharply dissuaded people from traveling inside the country. The number of domestic tourists started plummeting in February, and in April, it reached 1.743 million, half of the monthly average. These numbers present an important characteristic of the decision-making process of Taiwanese tourists. Even without introducing any sufficient restrictions, travelers quickly changed their behavior led by the following factors: a) fear, b) common social anxiety, c) responsibility for the safety of their life and the lives of other people, and d) experience from previous pandemic-like events in the country like SARS (residents just knew what must be done to prevent the spreading of the disease). That reaction resulted in a dramatic change in the number of domestic tourists.

In April, it became clear that the measures launched by the CDC and other national and local authorities were successful, and the country managed to develop a nationwide bubble. Because of the country's almost full closure to foreigners, the disease's spread has been strictly controlled. However, that measure eliminated traveling abroad. Without the opportunity to travel abroad and under a safe environment established inside the country by the bubble, the tourists quickly changed their travel behavior. Being in a situation of not traveling abroad, residents found that they were free to travel inside the country—something which was almost impossible to do in other countries during that period. The number of domestic tourists started to increase in May and, during the summer of 2020, surpassed the pre-COVID level. In August, the number of tourists reached 5 million, which had been kept until April 2021. The average monthly number of tourists for the Bubble period was 3.842 million, 16% higher than in the pre-COVID period (Appendix A2) These numbers indicate that the bubble policy was successful and protected the tourism industry from collapse.

This conclusion is confirmed additionally with the revenues (Table 1). It presents the total revenues for the tourism industry (rooms and catering) during the COVID period. The data does not distinguish revenues from foreign and domestic tourists. It shows that the revenues during the Bubble period declined. However, during that period, the number of foreign tourists declined by more than 89% (from 1.676 million to about 0.182 million on average per month), and the total number of tourists decreased by 19%. Hence, the revenues from domestic tourists increased sufficiently. Although the total number of tourists declined by 19%, the revenues declined only by 14% (Appendix A3). Therefore, the data shows that the Bubble period was extremely successful for the domestic tourism industry. The industry suffered lightly from the pandemic during this period. It is clear that all measures taken by the CDC and its authorities were efficient and successfully managed to protect the sector, while other countries experienced almost complete closure.

After losing strict control over the spread of the disease, the country entered into three months of total lockdown. It resulted in a dramatic, sharp decline in the number of domestic tourists, and in June 2021, it reached an absolute minimum of 0.745 million tourists. A gradual partial reopening followed this period. During this period, the number of tourists started gradually increasing, and in October, it surpassed the pre-COVID level. In such a way, when the policy of removing all restrictions was introduced in December 2021, the domestic tourism industry was already fully restored.

The post-COVID period is characterized by a stable number of tourists of 3.816 million on average. During this period, every month, the industry experienced more than 3.302 million tourists (pre-CO-

VID level). Only for three months (April, May and June 2022) the number of domestic tourists was lower.

Figure 1. Number of domestic tourists in Taiwan per month for the period 01 January 2019–31 December 2023

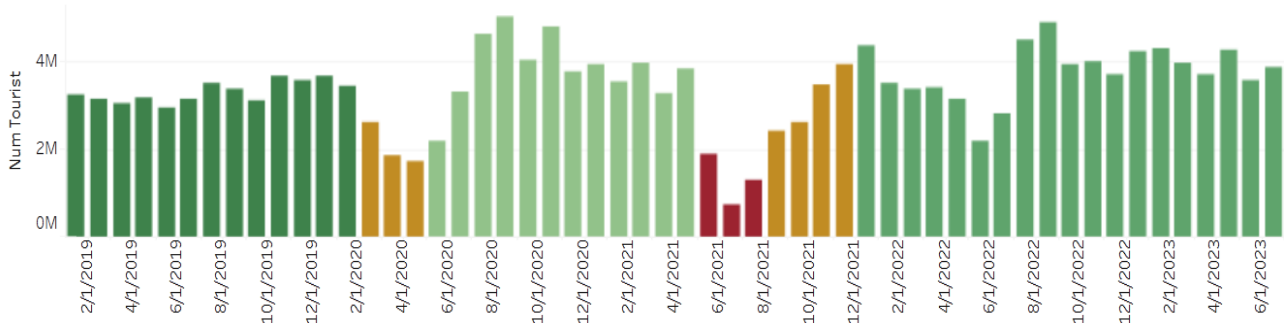


Table 1. Change in the number of tourists and revenues of the tourism industry (average per month in millions)

Periods/Types of tourist	Pre-COVID	Bubble	Post-COVID	Bubble to pre-COVID	Post-COVID to Bubble change	Post-COVID to pre-COVID change
Domestic tourists	3.302	3.842	3.815	16%	-1%	16%
Foreign tourists	1.676	0.183	0.64	-89%	250%	-62%
Total tourists	4.978	4.025	4.455	-19%	11%	-11%
Revenues	6.002	5.150	6.773	-14%	32%	13%

Source: https://www.taiwanstay.net.tw Tourism Administration (MOTC), a government agency under the Ministry of Transportation and Communications of Taiwan

The reason for that was an unusual number of cases. Even with those three months, the average number of tourists was almost the same as during the Bubble period–3.815 million, only minus 27 thousand, less than 1% less. This means that after a challenging but short lockdown period, the industry managed to keep its improvement during the Bubble period level. This tendency is even more vital when revenues are analyzed. Although the number of foreign tourists increased by 250% (but still has not been restored to the pre-COVID level), the revenues from the industry increased by 32% compared to the Bubble period. This indicates that even without enough international tourists, the industry not only keeps the high number of domestic tourists from the Bubble period but also sufficiently increases its revenues.

Overall, from the numbers about the influence of COVID over the tourism industry nationwide, it can be concluded that the policies undertaken by the authorities were business protecting and not only successfully prevented the tourism industry from collapse but provided more or less normal conditions for it to continue their operations in the almost standard way. It turns out that the "Bubble policy" was not only protective but also provided the industry with new opportunities. That is why the number of tourists was kept at the pre-COVID level during the Bubble period and even increased. Therefore, the "Bubble policy" by diverting tourists who usually travel abroad to domestic destinations created good growth opportunities for the tourism industry.

However, that success during the Bubble period was not temporary. It enabled the industry to be restored rapidly and steadily, even after some turbulent months of lockdown. Only in three months did the tourism sector enter the post-COVID period and manage to reach the highest level achieved during the bubble. Although the number of international tourists still has not reached pre-COVID, the industry's revenues are higher. With 11% fewer total tourists, the industry produces 13% higher revenues than pre-COVID era.

From these numbers, we can conclude that how the country handled COVID was one successful story for the tourism industry overall, not only domestic one, because, in the end, even without the total number of tourists restored, the industry managed to increase its revenues. This is the general economic aspect of the analysis. However, COVID did change not only the number of tourists and revenue but also the geographical distribution of the tourists. In the next section, the geographical aspects of changes in tourism are analyzed.

Comparison of the domestic tourists' geographical distribution between Bubble and Pre-COVID periods

After the first shock in February 2020 and consequent measures taken by the CDC in May 2020, the country entered a strange stage of economic development that we can describe as a "Bubble economy". This economy was characterized by almost a full cut of inbound and outbound movement of people. Inbound traffic of people was practically forbidden for foreigners and heavily restricted for local people by a series of strict requirements such as:

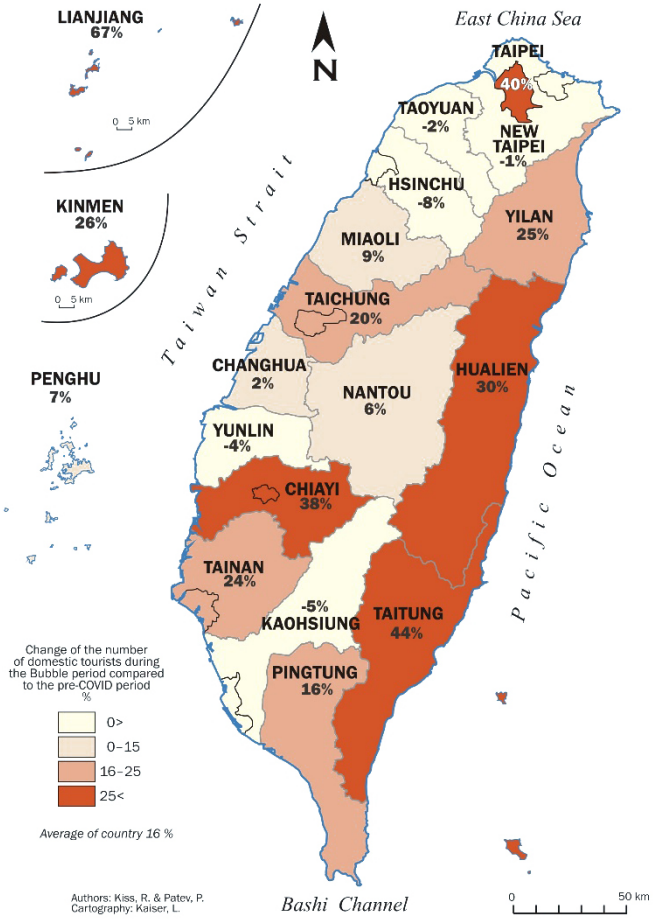
- obligatory COVID test upon arrival,
- obligatory stay in quarantine hotels,
- pre-organized strictly controlled movement between entry point and quarantine hotels,
- special designation of some hotels as quarantine hotels and detailed regulations of their activities.

These measures created a perfect bubble in which the local economy continued to function domestically. However, almost all contact with the outside world had to be conducted distantly without direct human contact. This "Bubble economy" led to the collapse of inbound and outbound international tourism. However, the safety inside the bubble provided an excellent opportunity for local sectors not dependent on face-to-face contact with people. Domestic tourism was one of these, and the tourism industry quickly adjusted to the new situation. The factors for that were: (a) strong support from local and national authorities and (b) experience in previous periods when, based on political decisions, Mainland Chinese tourists sharply decreased, and the whole industry had to switch either to other inbound tourist markets or to domestic markets. As seen in Appendix A2, the average number of domestic tourists increased during the Bubble period compared with pre-COVID period by 16%. Although this growth does not cover the loss of foreign tourists, the drop in the industry's revenues was only minus 14%, and the tourism sector managed to adjust to changes in the economic environment. The industry had to shift dramatically and be oriented entirely to domestic tourism.

Naturally, this shift in the tourism industry towards domestic tourists leads to changes in all influencing factors because these tourists have different expectations, behaviors, financial status, and, most importantly, motivations for traveling. These factors led to the reorganization of the tourism industry in every aspect. One of these aspects is the object of current research—the geographical distribution of domestic tourists.

The number of domestic tourists by county shows a significant change in the geographical pattern in the tourism industry. Three main tendencies can be observed during this period, and they are presented in Figure 2.

Figure 2. The comparison of domestic tourism during the Bubble period with the pre-COVID era



The first observation is a sufficient increase in the number of tourists to traditional nature destinations such as the Mountainous East Coast, islands, and mountains. Most provided growth between 25% and 67% (Yilan, Hualien, and Taitung as East Coast; Kinmen and Lianjiang as small islands; and Chiayi as mountain region). Obviously, the tourists were looking for relaxation outside, surrounded by nature, in a non-overcrowded environment. In this group, we observe three exclusions—Pingtung, Nantou, and Penghu. The growth of domestic tourists was between 6% and 16%; although the growth is not insignificant, it is less than for other regions. The explanation for this can be found in the characteristics of tourist infrastructure in these regions. The accommodating venues there are more concentrated, resort-oriented, and closely located. Tourists were looking for a more intimate, more

isolating, more crowd-free environment during this period, and because of that, they preferred the other regions in this group.

The second observation is that vibrant cities, offering diverse lifestyles, historical attractions, and entertainment opportunities in urban environments, thrived during the Bubble period. The increase of tourists for Tainan was 24%, for Taichung 20%, and for Taipei city 40%.

Third observation is that industrial cities were the poor-performing areas during the Bubble period. They could not benefit from increasing domestic tourism and kept slightly lower levels of tourists than the pre-COVID period—Hsinchu -8% and Taoyuan -2%. These results are understandable as business tourists are the primary type of tourists during regular times. Strangely, Kaohsiung is also in this group of negatively influenced cities—the decrease in tourists here was -5%. The result is a surprise as Kaohsiung is not a typical industrial city and offers other attractions as mountains or vibrant cities do. The local government was not able to provide policies attracting domestic tourists. One of the factors leading to this situation is that many of the hotels in these three cities were dedicated as quarantine hotels for arrivals from abroad. Local tourists were not allowed to be accommodated in such hotels, which led to less capacity for domestic tourism.

Fourth observation is that the most of the small cities kept the number of their tourists relatively stable, with Changhua growth of +2%, Miaoli growth of +9%, and some decreasing in Yunlin (-4%). The industry in these counties continued their regular but small number of tourists (around 50–60 thousand per month).

As an overall conclusion for the geographical distribution of domestic tourists during the Bubble period, traditional tourist destinations with the main attractions of nature and vibrant city life managed to attract more visitors than in the pre-COVID period. COVID-19 allowed local attractions to attract tourists who would have visited overseas countries. Restricted by traveling abroad, tourists found the attractiveness of the local destinations.

Comparison of the domestic tourists' geographical distribution between the Pandemic and pre-COVID periods

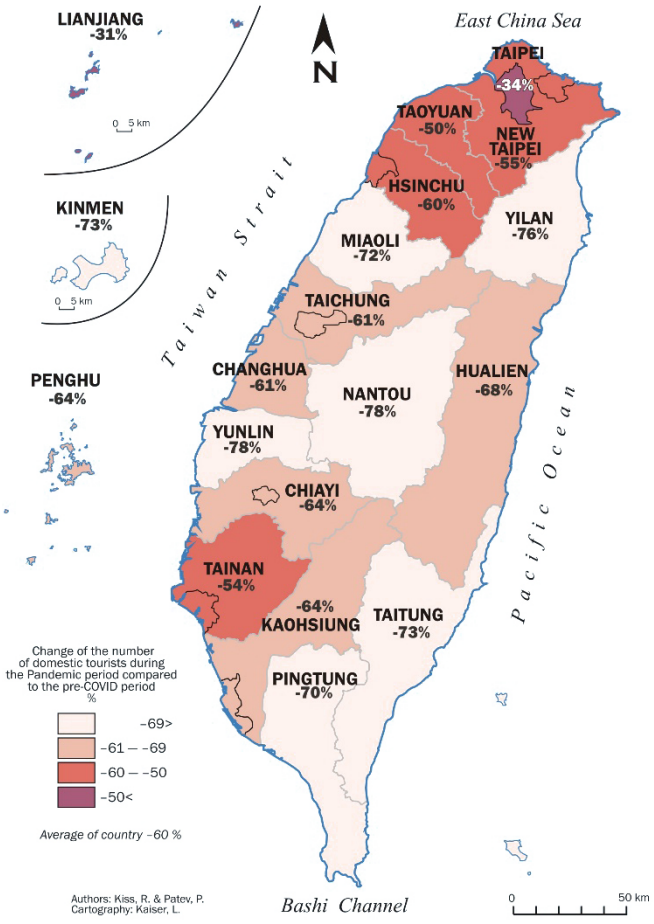
The present subchapter compares domestic tourism during the Pandemic period with the pre-COVID era. After the Bubble period's successful pandemic prevention, the contagious Delta variant reached the locked-down country more than one year later than outside Taiwan. The national average drawback of domestic tourism was -60%; however, it influenced the counties and cities differently. To measure these areas, we also defined four categories based on the rate of decrease: two worse than the country's average, making the worst performing areas, and two with the average or better performances, marking as the minor "losers."

The major counties with the worst results during this period were those areas that provided scenic natural environments for the escape from big cities, such as the mountainous Nantou, the East (Yilan, Taitung, Hualien), as the previous popularity declined in the lockdown. The islands (Kinmen, Penghu, except Lianjiang) also mislay their visitors due to the travel bans, as their accessibilities mainly were by

air or sea. The relatively small cities/counties (Yunlin, Miaoli, Changhua) not playing an outstanding role in tourism also lost their visitors, as hotels were closed and not even quarantine hotels were set up in these areas. Strangely, Kaohsiung and Taichung are Taiwan's third and second largest cities, and the former buzzing centers were also underperforming (Figure 3).

On the other hand, the other not well-performing areas were the vibrant cities (Taipei, New Taipei, Tainan), and their relatively more minor loss can be explained by the fact that quite a few of their hotels turned to quarantine hotels and they were still able to run their special and donated operation. Meanwhile, the industrial centers (Hsinchu, Taoyuan) were less influenced earlier by domestic tourism, so their previous performance was not that high. Surprisingly, Lianjian, among the islands, had relatively good resilience during the Pandemic because domestic flights and vessels were still operating. However, its role and size in domestic tourism are not at the Penghu or Kinmen's level.

Figure 3. The comparison of domestic tourism during the Pandemic period with the pre-COVID era



In conclusion, the pandemic period was short in Taiwan due to the well-educated and prepared residents who obeyed their government and accepted and followed the regulations to stop the disease (Chang & Kim, 2022). However, this was the most challenging period for the industry, as a lack of foreign tourists and domestic travelers had to stay at home, too. During this critical period, the Taiwanese government set budgets to subsidize the strongly hit industry stakeholders and kept their employees' payments manageable (Taiwanese Ministry of Health and Welfare, 2019). Although employees were

leaving their jobs, hotels had enough staff to restart their operations after the gradual lifting of the bans.

Comparison of the domestic tourists' geographical distribution between the post-COVID to the pre-COVID era

One of the unique aspects of the COVID-focused research was that we could compare two periods when international travel was available, although we focused only on domestic tourism. The pre-COVID period was the last full year the industry had before the pandemic, and the post-COVID one embraced more than two years of stable performance, including the year 2023, which was already representing similarities to 2019. This comparison shows how countries benefited or not in the long term from the COVID-19 pandemic. It is important to emphasize that the borders opened in mid-October 2022, and since international travel has increased significantly. The first part of this period was only for domestic travel, and the second was for domestic and international (inbound and outbound). However, "domestic travel in Taiwan remained strong last year despite more Taiwanese vacationing abroad," and it went "up by 24% compared to 2019" (Taipei Times, 2024, p. 3). The post-COVID period's national average was 16% better after the pandemic than before, which is surprising, especially considering that only six destinations were executed better than the average.

The most popular areas were the vibrant cities, such as Taipei, Tainan, and Taichung, where easing pandemic regulations gradually allowed people to use more entertainment and services. Hence, domestic travelers rediscovered the vividity of such settlements (Figure 4).

Beyond them, the exploration of Yilan on the East Coast is the closest mountainous and coastal destination to the capital. Chiayi got its popularity from its major attraction, Alishan. Interestingly, the three tourist islands performed differently, and out of them, Lianjinag had the best performance gained from the lockdown and became a more popular domestic destination.

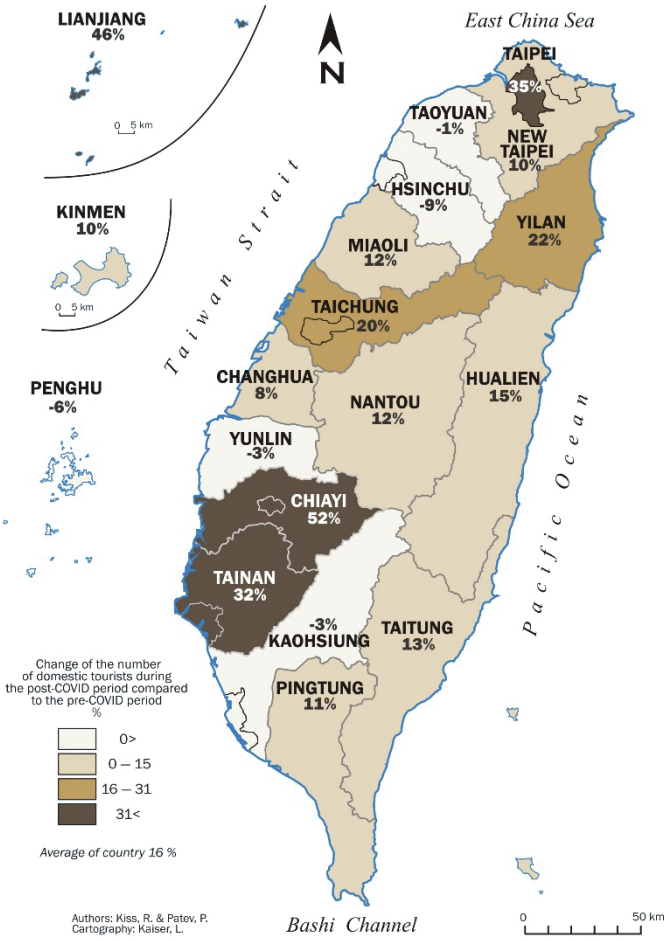
The next group of counties were those that still performed better than before the pandemic; their improvement was positive but remained below the average but above zero. These counties were the East Coast, Hualien, and Taitung, the closest to the average, followed by the mountainous destination Nantou, the only landlocked county with Sun Moon Lake. This group involves smaller cities like Miaoli, Changhua, and Pingtung. New Taipei, because of its strange characteristics as a city, has a lower increase than the country's average. These geographical results mean that Hypothesis 2—pre-COVID popular, nature-based tourist destinations performed even better during the pandemic due to increased traveler interest—has also been accepted.

The last group includes those counties that performed worse after the pandemic than before in domestic tourism. Such counties were the industrial cities, like Taoyuan (hosting the largest international airport in the country), and Hsinchu (one of the semiconductor cities), Yunlin, as a smaller, not particularly touristic county. However, the remaining two areas were both surprising. Kaohsiung, which should be a vibrant city, started its transformation to a tourism and service sector center from

its industrial and port image. The largest island, Penghu, also showed a fallback in its post-COVID performance compared to its pre-COVID one.

Despite the majority of the COVID-related Taiwanese papers, our results are surprising as, purely by observing the development of domestic tourism, we see positive growth during the last five years. However, only some typical and formerly good-performing tourist destinations increased their capabilities to the best. The reason behind the limited and uneven development of tourism could be that domestic hotel operators are still facing challenges, such as labor shortages and the rise of energy prices (+11 % in the first half of 2023) (Taipei Times, 2024). Therefore, hotels focused on providing quality service (Chang & Kim, 2022) and preparing attractive travel packages for diversified segments, from families to high-end and business travelers (Taipei Times, 2024).

Figure 4. The comparison of the domestic tourism post-COVID period with the pre-COVID era

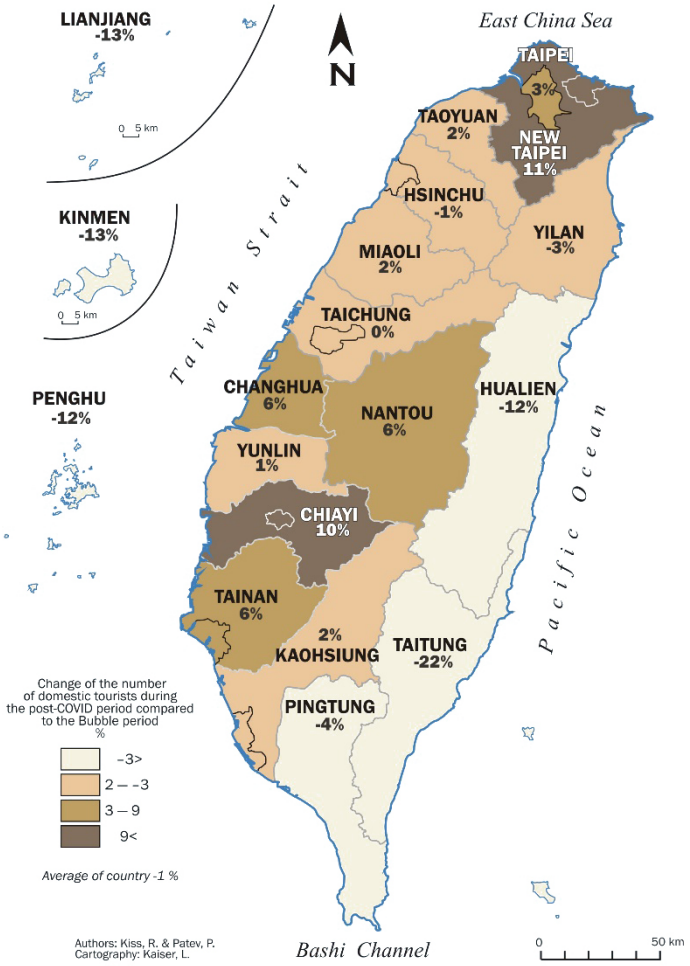


Comparison of the domestic tourists' geographical distribution between post-COVID and the Bubble period

It was shown that during the Bubble period, the number of tourists increased compared to the pre-COVID era, and the main tourist destinations—mountainous coasts and islands were among the most beneficial. The Bubble period allowed these regions to attract new types of tourists and affirm

themselves as good travel destinations during the average non-pandemic time. In order to check if these regions managed to establish themselves sustainably among tourists, a comparison between the number of tourists during the post-COVID and the Bubble period can be presented (Figure 5).

Figure 5. The comparison of domestic tourism during the post-COVID period with the Bubble period



Our first conclusion is that nationwide, it is observed that the number of domestic tourists during the post-COVID period has been kept at the same level as during the Bubble period. This number is an indicator that, obviously, the tourism industry managed successfully to benefit from the opportunities provided by the Bubble period for expansion of the domestic market. However, we observe significant differences when we look at the regional level and the geographical distribution of the tourists.

Secondly, we observe that the regions that experienced the highest increase during the Bubble period show a decrease in the average number of tourists post-COVID. For example, for all of the islands (Kinmen, Lianjiang, and Penghu), a decline in the -12% to -13% range has been observed. The same situation is valid for two mountainous coast counties, Taitung and Hualien, which have -44% and -12%, respectively. In this group, we can also involve Pingtung -4% and Yilan (-3%), where the decline is not so sharp but still presents the same tendency. From these data, we concluded that those traditional destinations providing crowd-free access to the nation were the first choice for tourists to escape from the COVID-19 environment during the Bubble period. However, after post-COVID

normalization, tourists returned to their traveling pattern. The main reason is that the Taiwanese prefer going abroad when all countries' borders are open in the post-COVID era.

Third, the small, industrial, and vibrant cities managed to keep the number of tourists around the level of the Bubble period (between -3% and -6%).

As a fourth conclusion, we can outline the positive cases in two regions: New Taipei and Chiayi. The New Taipei region has not experienced growth during the Bubble period and has kept the level of tourists around the pre-COVID level. During post-COVID, though, the increase in domestic tourists is +11%. The region does not have characteristics that can allow it to be classified in some of the destinations observed in this study. New Taipei is a vibrant city in a mountainous region, providing access to mountains, cultural and natural attractions, and a spa. This variety attracts additional tourists after the COVID-19 period. Tourists have started valuing the urban–suburban area around Taipei as an excellent destination to travel not only for one-day excursions but also overnight.

Chiayi definitely can be regarded as the main winner from the Bubble period. This region not only attracted an increased number of tourists during this time but continues to experience growth of tourists during the post-COVID period. Therefore, this mountainous region with one of the leading Taiwanese natural tourist attractions Alishan, established itself as a desirable destination during the pandemic to grasp opportunities provided by the prevention policy of CDC and other institutions and to sustain its position among the other tourist regions.

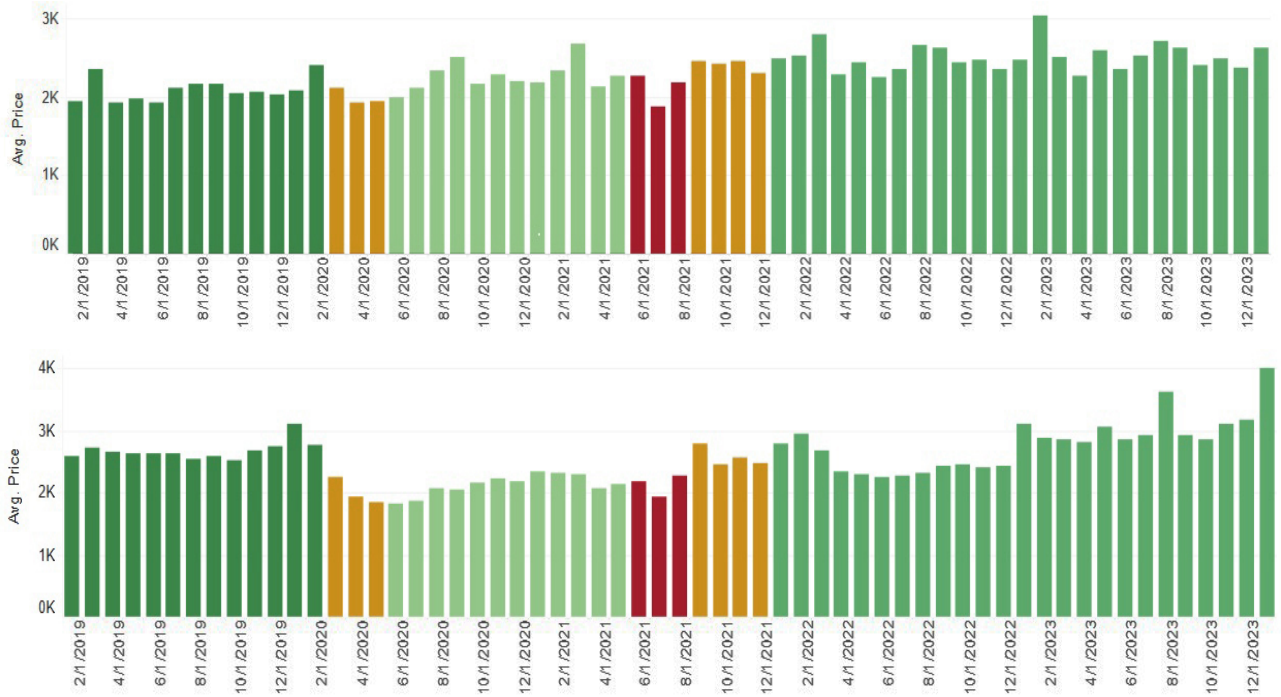
Analysis of revenues

The analysis of the tourism industry's revenues provides additional insight into the geographical dimension of tourism development in Taiwan during the pandemic and the impact of health-protecting policies introduced during this period on tourists' travel behavior.

When comparing the industry's average monthly revenues across regions during the Bubble period with those from the pre-COVID era, it is evident that the "Bubble economy" allowed the tourism sector to operate without dramatic distress. The regions that attracted more domestic tourists—such as the mountainous East Coast, mountainous areas, and islands—also experienced the highest growth in revenues. According to Appendix A3, revenue increases were notable in the islands (Lianjiang 66%, Penghu 26%, and Kinmen 13%) and along the East Coast (Yilan 35%, Taitung 30%, Pingtung 16%, and Hualien 12%). These regions attracted the most domestic tourists during the Bubble period.

For vibrant cities like Taichung and Tainan, revenues increased less than the number of tourists, indicating that although these cities saw a rise in visitors, tourist spending declined (with Taipei City being an extreme case). In Taipei, the number of tourists increased by 40%, but the tourism industry's revenues shrank by 56%, the most significant drop during the Bubble period among all regions. Several factors explain this phenomenon. First, Taipei City lost international tourists, who typically spend more (Appendix A1). Second, domestic tourists reduced their spending on hotels and catering due to the unstable situation. Third, to address the pandemic's challenges, the industry was compelled to lower prices to accommodate budget-conscious domestic tourists (Figure 6)

Figure 6. Average Hotel Prices During All COVID Periods (a: Taiwan, b: Taipei City)



New Taipei experienced similar outcomes. The number of tourists decreased by only 1%, yet revenues fell by 30%. In other categories—small and industrial cities—changes in revenues were more proportional to changes in the number of tourists.

Post-COVID analysis of tourism revenues reinforces the conclusions drawn based on domestic tourist numbers (Figure 7). Regions that generated higher revenues from tourism in the post-COVID period compared to pre-COVID levels include the mountainous East Coast: Pingtung (49%), Yilan (47%), Taitung (23%), and Hualien (23%). Although these regions did not experience a dramatic increase in the number of tourists, higher revenues highlight the success of the industry.

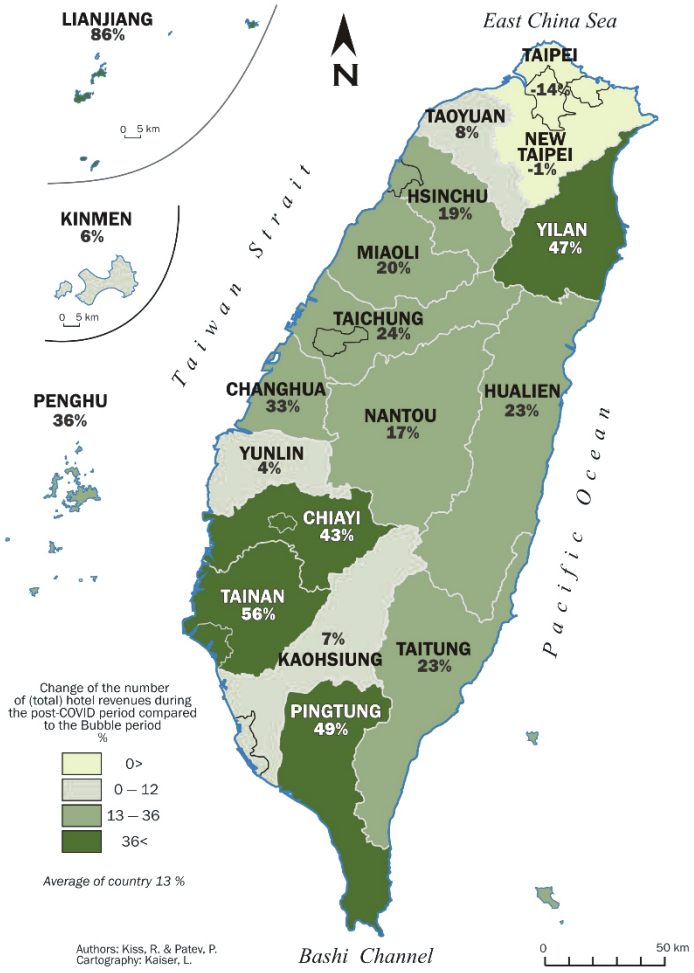
Similarly, vibrant cities such as Tainan and Taichung saw significant revenue increases of 56% and 25%, respectively. These cities have positioned themselves as exciting destinations where local tourists are willing to spend more time and money. Another notable example is Kaohsiung, which, despite not reaching its pre-COVID tourist numbers, managed to increase tourism revenues by 7%.

Conversely, the tourism sector in Taipei and New Taipei was negatively affected during the COVID-19 era. Although both regions attracted more tourists, revenues remain below pre-COVID levels, with declines of 14% and 1%, respectively. COVID altered the industry's characteristics in these cities, leading to less expensive and reduced service offerings. Managers should take these changes into account when planning future strategies and marketing efforts.

Overall, the data indicates that the domestic tourism industry benefited from the pandemic. While the total number of tourists (domestic and international) has not yet returned to pre-COVID levels, revenues have risen by 13% (Appendix A3), largely driven by domestic tourists. The Eastern Coast benefited the most, but the standout success was Chiayi. This region experienced a dramatic 52% increase in tourist numbers and a 43% growth in revenues. Chiayi has established itself as a competitive

tourist destination, offering services at reasonable prices. Attractions like Sun Moon Lake and other natural sites in Chiayi now compete successfully with traditional destinations such as Taroko Gorge in Hualien and the beaches of Kenting in Pingtung.

Figure 7. Total Hotel Revenues Post-COVID vs. Bubble Period



Regions that capitalize on their unique attributes and adapt to evolving tourist preferences are likely to thrive in the changing domestic tourism landscape. However, the industry faces ongoing challenges, including a labor shortage, rising minimum wages, and increased energy costs (Taipei Times, 2024). Future strategies should prioritize enhancing visitor experiences, diversifying attractions, and addressing the specific needs of domestic tourists to foster a resilient and sustainable tourism industry in Taiwan.

CONCLUSIONS

The main conclusion of the paper is that a negative event such as COVID-19 can be beneficial for the tourism industry if policies are wisely implemented and followed by locals. However, it may alter the geographical popularity of destinations, and for some, it could bring further post-event developments.

Another major takeaway from Taiwan's pandemic policies was that islands with strict, hermetic lockdowns could create their own bubbles, allowing regular life to continue. Similar outcomes were observed in New Zealand and, initially, in Japan. This could serve as an example for other countries with a similar geographical context. The empirical lessons of this paper suggest that, during lockdowns, islands where people adhere to strict governmental regulations can maintain the pandemic at a low scale, enabling normal life for locals. This also suggests that Hypothesis 1—a quickly implemented and strictly enforced pandemic policy benefits domestic tourism and serves as a model for regions with similar geographic conditions—has been accepted.

The paper provided a five-year comprehensive analysis of Taiwan's spatial and temporal domestic tourism patterns. This examination divided the data into six periods based on the CDC's 744 categories of pandemic regulations. Despite the dramatic collapse of international tourism caused by lockdowns, border closures, and international travel bans, this situation presented an excellent opportunity to boost domestic travel. With international travel restricted, domestic tourism became the sole option for fulfilling travel needs, and governments recognized the necessity of keeping the industry operational.

Taiwan's lockdown created a safe bubble for locals, isolating them from the world's severe pandemic challenges and allowing them to continue their daily lives. This bubble led to a significant development: the tourism sector saw a 16% increase in domestic visitors compared to the pre-COVID period, particularly in regions offering natural attractions such as the mountainous East Coast, islands, and other mountainous areas. Although the pandemic introduced crises familiar internationally, its impact on Taiwan was brief, and the rebound in domestic tourism was swift.

As Taiwan transitioned into the post-COVID era, results indicated that the domestic tourism sector not only recovered but thrived, delivering higher revenues than pre-pandemic levels despite ongoing challenges in international tourism. A notable 16% improvement in national tourism metrics compared to pre-COVID levels highlights this growth. Vibrant cities such as Taipei, Tainan, and Taichung played crucial roles in this boom, benefiting from eased regulations and renewed interest in urban experiences.

Interestingly, while traditional tourist sectors struggled, regions such as Chiayi emerged as frontrunners, reflecting a shift in tourist preferences toward nature and experiential travel. This shift underscores a sustainable trajectory in domestic tourism growth. Post-pandemic, there is an opportunity for continuous innovation in tourism practices to adapt to changing consumer behaviors. As Taiwan continues to navigate the post-COVID landscape, leveraging the lessons learned during the pandemic and capitalizing on the strengths of domestic tourism will be essential for sustaining economic growth in this sector.

The pandemic reshaped the geographic distribution of domestic tourism in Taiwan. Traditional nature destinations and vibrant urban centers experienced an influx of visitors. At the same time, industrial cities like Hsinchu and Taoyuan struggled to attract domestic tourists, as their primary clientele consisted of business travelers. Kaohsiung also experienced unexpected declines, indicating a need for local governments to develop policies that effectively attract domestic tourists.

Additionally, revenue analysis revealed that regions with the highest domestic tourist increases during the Bubble period saw significant revenue growth. Lianjiang, Penghu, and Kinmen experienced

revenue increases of 66%, 26%, and 13%, respectively. In contrast, urban centers like Taipei and New Taipei reported substantial revenue declines despite attracting more tourists, reflecting a shift in tourist spending toward more affordable options.

Overall, this study illustrates the transformative impact of the pandemic on Taiwan's domestic tourism sector. While the initial shock of COVID-19 disrupted traditional tourism patterns, the subsequent Bubble period and post-COVID results revealed new opportunities for growth and development. The analysis underscores the importance of adaptability within the tourism sector. Regions that leveraged the pandemic as an opportunity to redefine their offerings, such as Chiayi, are now well-positioned for sustained growth. Conversely, cities that failed to innovate or diversify their attractions face challenges in regaining their pre-COVID market positions. Future research could focus on analyzing, in greater detail, how government subsidies for the industry were implemented and their effectiveness in different geographic areas of Taiwan.

REFERENCES

Arbulú, I., Razumova, M., Rey-Maquieira, J., & Sastre, F. (2021). Can domestic tourism relieve the COVID-19 tourist industry crisis? The case of Spain. *Journal of Destination Marketing & Management, 20,* 100568. https://doi.org/10.1016/j.jdmm.2021.100568

Chan, C-T. (2022). The Impact of COVID on Domestic Tourism by Older People in Taiwan. *Frontiers in Public Health, 10*, 885632. https://doi.org/10.3389/fpubh.2022.885632

Chang, H-H., & Kim, M-R. (2022). COVID-19 Public Health Strategy Implementation for the Hospitality Industry in Taiwan. *Academica Turistica, 15*(1), 149 –161. https://doi.org/10.26493/2335-4194.15.149-161

Chang, H-H., & Meyerhoeffer, C. D. (2020). COVID-19 and the demand for online food shopping services: Empirical evidence from Taiwan. *American Journal of Agricultural Economics*, *103*, 448–465. https://doi.org/10.1111/ajae.12170

Chang, M-C, Kahn, R., Li, Y-A., Lee, C-S., Buckee, C. O., & Chang, H-H. (2021). Variation in human mobility and its impact on the risk of future COVID-19 outbreaks in Taiwan. *BMC Public Health, 21*, 226. https://doi.org/10.1186/s12889-021-10260-7

Chen, I-T., & Weicht, K. (2020). Tourism Development and Rural Tourism in Taiwan: A Literature Review. In *Destination Management and Marketing* (pp. 643–663). IGI Global. https://doi.org/10.4018/978-1-7998-2469-5.ch036

Chen, M-H. (2010). The economy, tourism growth and corporate performance in the Taiwanese hotel industry. *Tourism Management. 31*, 665–675. https://doi.org/10.1016/j.tourman.2009.07.011

Chen, Y-C., Tsai, F.C., Tsai, M-J., & Liu, W-Y. (2022). Recreational Visit to Suburban Forests during the COVID-19 Pandemic: A Case Study of Taiwan. *Forests, 13,* 1181. https://doi.org/10.3390/f13081181

Chiang, M-C. (2012). Tourism Development Across the Taiwan Strait. *East Asia 29*(3) https://doi.org/10.1007/s12140-012-9178-z

CIA (2024). *The World Factbook*. https://www.cia.gov/the-world-factbook/countries/taiwan

Connolly, C., Keil, R., & Ali, H. S. (2021). Extended urbanisation and the spatialities of infectious disease: Demographic change, infrastructure and governance. *Urban Studies. 58*, 245–263. https://doi.org/10.1177/0042098020910873

Dolnicar, S., & Zare, S. (2020). COVID19 and Airbnb—Disrupting the disruptor. *Annals of Tourism Research,* 102961. https://doi.org/10.1016/j.annals.2020.102961

El-Meouch, N. M., Mate, É., Trocsany, A., Pirisi, G., & Alpek, L. (2024). The Structural and Territorial Impact of the Coronavirus Crisis on the Vulnerability of the Hungarian Corporate Sector. *Modern Geográfia, 19*(1), 147–174. https://doi.org/10.15170/MG.2024.19.01.09

Farzanegan, M. R., Gholipour, H. F., Feizi, M., Nunkoo, R., & Andargoli, A. E. (2020). International tourism and outbreak of coronavirus (COVID-19): A cross-country analysis. *Journal of Travel Research, 60*(3), 687–692. https://doi.org/10.1177/0047287520931593

Fu, Y-K., (2020). The impact and recovering strategies of the COVID-19 pandemic: Lessons from Taiwan's hospitality industry. *Cogent Social Sciences, 6*(1). https://doi.org/10.1080/23311886.2020.1829806

Fung, C., Tsui, B., & Hon, A. H. Y. (2020) Crisis management: a case study of disease outbreak in the Metropark Hotel group, *Asia Pacific Journal of Tourism Research, 25*(10), 1062–1070. https://doi.org/10.1080/10941665.2020.1784245

Gkoumas, A., Kiss, R., & Heeren, K. (2023). The hotel quarantine experience: Travel diaries of compulsory confinement, *Journal of Qualitative Research in Tourism*, *4*(1), 16–35. https://doi.org/10.4337/jqrt.2023.01.02

Gosce, L., & Johansson, A. (2018). Analysing the link between public transport use and airborne transmission: Mobility and contagion in the London underground. *Environmental Health, 17*(1), 84. https://doi.org/10.1186/s12940-018-0427-5

Gössling, S., Scott, D., & Hall, C. M. (2020). Pandemics, tourism and global change: A rapid assessment of COVID-19. *Journal of Sustainable Tourism, 29*(1), 1–20. https://doi.org/10.1080/09669582.2020.1758708

Grout, L. M., Katar, A., Ouakrim, D. A., Summers, J.A., Kvalsvig, A., Baker, M.G., Blakely, T., & Wilson, N. (2021). Estimating the failure risk of hotel-based quarantine for preventing COVID-19 outbreaks in Australia and New Zealand. *Medical Journal of Australia, 215(*7), 320–324. https://doi.org/10.1101/2021.02.17.21251946

Han, G., Hunter, W. C., & Ng, P. (2020). Charting recreation and tourism geography in Taiwan: a review of the literature 1946–2016. *Current Issues in Tourism, 23*(15), 1900–1913. https://doi.org/10.1080/13683500.2019.1684460

Haire, B, Gilbert, G. L, Kaldor, J. M., Hendrickx, D., Dawson, A., & Williams, J. H. (2022). Experiences of risk in Australian hotel quarantine: a qualitative study, *BMC Public Health, 22,* 953. https://doi.org/10.1186/s12889-022-13339-x

Hsu, T-K., Tsai, Y-F., Wu, H-H. (2009). The preference analysis for tourist choice of destination: A case study of Taiwan. *Tourism Management, 30*, 288–297. https://doi.org/10.1016/j.tourman.2008.07.011

Hu, C-P. (2022). The COVID-19 Epidemic spreading effects. *Sustainability 14*, 9750. https://doi.org/10.3390/su14159750

Iirmdu, T. O., & Donaldson, R. (2024). Risk management strategies: An empirical analysis of strategies employed by tourism business managers in Plateau State, Nigeria during the COVID-19 pandemic. *Modern Geográfia, 19*(1), 81–98. https://doi.org/10.15170/MG.2024.19.01.05

Kang, S., Kim, J., & Nicholls, S. (2014). National tourism policy and spatial patterns of domestic tourism in South Korea. *Journal of Travel Research, 53*(6), 791–804. https://doi.org/10.1177/0047287514522875

Kao, M. C., Patterson, I., Scott, N., & Li, C. K. (2008). Motivations and satisfactions of Taiwanese tourists who visit Australia. *Journal of Travel & Tourism Marketing, 24*(1), 17–33. https://doi.org/10.1300/J073v24n01_02

Karl, S., Halder, N., Kelso, J. K., Ritchie, S.A., & Milne, G. J. (2014). A spatial simulation model for dengue virus infection in urban areas. *BMC Infectious Diseases, 14*(1), 447. https://doi.org/10.1186/1471-2334-14-447

Lee, C-F., Ou, W-M., & Huang, H-I. (2009). A Study of Destination Attractiveness through Domestic Visitors' Perspectives: The Case of Taiwan's Hot Springs Tourism Sector. *Asia Pacific Journal of Tourism Research, 14*(1), 17–38. https://doi.org/10.1080/10941660902727991

Lee, T.H., & Jan, F-H. (2022). How does tourism image affect visitor perceptions of a festival's identity? Influence analysis of three aboriginal festivals in Taiwan. *Journal of Destination Marketing & Management, 24*, 100704. https://doi.org/10.1016/j.jdmm.2022.100704

Li, W-W., Ma, X-L., & Yu, H. (2019). Is the domestic tourism cycle synchronized with the economic cycle? Evidence from Mainland China and Taiwan *Asia Pacific Journal of Tourism Research, 24*(9), 944–964. https://doi.org/10.1080/10941665.2019.1653332

Lin, Y-C., & Chen, C-M. (2021). How do hotel characteristics moderate the impact of COVID-19 on hotel performance? Evidence from Taiwan. *Current Issues in Tourism, 25*(8), 1192–1197. https://doi.org/10.1080/13683500.2021.1910213

Oxford University. (2020). Oxford coronavirus government response tracker (OxCGRT). https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker

Park, S. H., Hsieh, C-M., & McNally, R. (2010). Motivations and Marketing Drivers of Taiwanese Island Tourists: Comparing Across Penghu, Taiwan and Phuket, Thailand. *Asia Pacific Journal of Tourism Research, 15*(3), 305–317. https://doi.org/10.1080/10941665.2010.503622

Ren, X., & Keil, R. (2017). *The Globalizing Cities Reader*. Routledge

Shigemura, J., Ursano, R. J., Morganstein, J. C., Kurosawa, M., & Benedek, D. M. (2020). Public responses to the novel 2019 coronavirus (2019-nCoV) in Japan: mental health consequences and target populations. *Psychiatry and Clinical Neuroscience.* 1–9. https://doi.org/10.1111/pcn.12988

Sung, Y-K., Chang, K-C. & Sung, Y-F. (2016). Market Segmentation of International Tourists Based on Motivation to Travel: A Case Study of Taiwan. *Asia Pacific Journal of Tourism Research, 21*(8), 862–882. https://doi.org/10.1080/10941665.2015.1080175

Taipei Times. (2024). *Domestic travel up 24% compared with 2019.* Retrieved March 18, 2024, from https://www.taipeitimes.com/News/taiwan/archives/2024/03/18/2003815101

Tan, T. W., Tan, H. L., Chang, M. N., Lin, W. S., & Chang, C. M. (2021). Effectiveness of Epidemic Preventive Policies and Hospital Strategies in Combating COVID-19 Outbreak in Taiwan. *International Journal of Environmental Research and Public Health, 18*, 3456. http://doi.org/10.3390/ijerph18073456

Taiwanese Ministry of Health and Welfare. (2019). *Timeline of key decisions for COVID-19 epidemic prevention*. https://covid19.mohw.gov.tw/ch/sp-timeline0-205.html

Taiwan Tourism Bureau. (2020a). *2019 Visitor Arrivals by Residence.* https://admin.taiwan.net.tw/english/info/FilePage?a=17879

Taiwan Tourism Bureau. (2020b). *2019 Survey of Travel by R.O.C. Citizens.* https://admin.taiwan.net.tw/english/info/FilePage?a=18142

UNTWO. (2024). *International tourism reached 97% of pre-pandemic levels in the first quarter of 2024*. https://www.unwto.org/taxonomy/term/347

UNWTO. (2021a). *COVID-19 and Tourism.* https://www.unwto.org/covid-19-and-tourism-2020

UNWTO. (2021b). *UNWTO briefing note – Tourism and COVID-19 (Issue 3). Understanding domestic tourism and seizing its opportunities.* https://www.e-unwto.org/doi/book/10.18111/9789284422111

Wang, C.-N.; Tran, K.-M.; Huang, C.-C., Wang, Y.-H., & Dang, T.-T. (2022). Supporting luxury hotel recovered in times of COVID-19 by applying TRIZ method: A case study in Taiwan. *Systems, 10,* 33. https://doi.org/10.3390/systems10020033

Wong, I. A., & Yang, F. X. (2020). A quarantined lodging stay: the buffering effect of service quality, In*ternational Journal of Hospitality Management, 91*, 102655. https://doi.org/10.1016/j.ijhm.2020.102655

Wu, C-H. (2021). Study on the current impact on island tourism development under COVID-19 epidemic environment and infection risk: A case study of Penghu. *Sustainability, 13*, 10711. https://doi.org/10.3390/su131910711

Wu, L-F., Achyldurdyyeva, J., Jou, W-P., Foung, W-T., & Jaw, B-S. (2021). Relief, recovery and revitalization measures for tourism and hospitality industry during Covid-19 pandemic: Case study from Taiwan. *SAGE Open,* 1–16. https://doi.org/10.1177/21582440211040805

Xu, B., Tian, H., Sabel, C. E., & Xu, B. (2019). Impacts of road traffic network and socioeconomic factors on the diffusion of 2009 pandemic influenza A (H1N1) in Mainland China. *International*

Journal of Environmental Research and Public Health, 16(7), 1223. https://doi.org/10.3390/ijerph16071223

Yang, C-H., & Lo, P-L. (2018). How the influx of Chinese tourists affects national tourism behaviors: Evidence from Taiwan. *International Journal of Tourism Research, 20*(5), 543–553. https://doi.org/10.1002/jtr.2204

Yu. L., Zhao, P-J., Tang, J-Q., & Pang, L. (2022). Changes in tourist mobility after COVID-19 outbreaks. *Annals of Tourism Research, 98*, 103522. https://doi.org/10.1016/j.annals.2022.103522

APPENDIX

Appendix A1. Taiwanese international and domestic travels in 2019

	Number of travels (million)	Length of stay (days)	Average expenditure/ person/day (US$)
Inbound	11.86	6.2	1215
Outbound	17.10	7.8	1546
Domestic	169.27	1.5	75

Source: Taiwan Tourism Bureau, 2020a, 2020b

Appendix A2. Number of Domestic Tourists by Counties/Cities of Taiwan (average per month in each period)

Counties/ Cities	Pre-Covid	Bubble		Pandemic		Post-Covid		
	Average	Average	Change to pre-Covid	Average	Change to pre-Covid	Average	Change to Bubble	Change to pre-Covid
Changhua	47 047	47 773	2%	18 561	-61%	50 872	6%	8%
Chiayi	144 631	199 428	38%	52 148	-64%	219 470	10%	52%
Hsinchu	108 677	99 932	-8%	44 005	-60%	99 224	-1%	-9%
Hualien	186 523	242 096	30%	60 469	-68%	213 765	-12%	15%
Kaohsiung	460 260	435 806	-5%	165 715	-64%	444 735	2%	-3%
Kinmen	31 360	39 489	26%	8 338	-73%	34 352	-13%	10%
Lianjiang	1 754	2 937	67%	1 218	-31%	2 566	-13%	46%
Miaoli	52 233	57 085	9%	14 665	-72%	58 255	2%	12%
Nantou	145 266	153 984	6%	32 178	-78%	162 768	6%	12%
New Taipei	250 191	247 194	-1%	113 258	-55%	274 453	11%	10%
Penghu	55 234	58 933	7%	19 856	-64%	51 962	-12%	-6%
Pingtung	106 041	122 471	15%	31 700	-70%	117 429	-4%	11%
Taichung	453 893	545 245	20%	177 101	-61%	545 010	0%	20%
Tainan	249 916	311 078	24%	114 523	-54%	330 928	6%	32%
Taipei	388 819	543 381	40%	257 882	-34%	526 390	-3%	35%
Taitung	151 512	218 811	44%	40 829	-73%	170 651	-22%	13%
Taoyuan	189 509	184 860	-2%	95 653	-50%	188 300	2%	-1%
Yilan	218 813	274 220	25%	52 800	-76%	266 303	-3%	22%
Yunlin	59 898	57 432	-4%	13 394	-78%	57 940	1%	-3%
Country	**3 301 577**	**3 842 153**	**16%**	**1 314 291**	**-60%**	**3 815 373**	-1%	**16%**

Source: https://www.taiwanstay.net.tw Tourism Administration (MOTC), a government agency under the Ministry of Transportation and Communications of Taiwan

Appendix A3. Total revenues from tourism (average per month in TWD in each period)

Counties/ Cities	Pre-Covid	Bubble	Change to pre-Covid	Post-Covid	Change to pre-Covid
Changhua	58 200 148	63 892 491	10%	77 258 916	33%
Chiayi	178 313 526	196 699 454	10%	254 416 747	43%
Hsinchu	157 587 788	153 843 431	-2%	187 047 794	19%
Hualien	286 972 121	320 388 037	12%	352 628 916	23%
Kaohsiung	538 678 363	444 802 981	-17%	573 789 479	7%
Kinmen	58 380 449	65 699 835	13%	61 725 598	6%
Lianjiang	12 293 893	20 453 289	66%	22 813 776	86%
Miaoli	89 601 027	100 032 488	12%	107 276 401	20%
Nantou	238 124 957	241 555 806	1%	277 526 528	17%
New Taipei	452 539 787	318 993 717	-30%	446 155 085	-1%
Penghu	94 850 059	119 370 700	26%	129 076 308	36%
Pingtung	200 757 922	233 667 253	16%	298 457 506	49%
Taichung	660 727 624	653 343 537	-1%	821 147 019	24%
Tainan	330 293 114	384 678 135	16%	516 345 351	56%
Taipei	1 725 834 327	758 098 788	-56%	1 487 877 507	-14%
Taitung	227 412 893	296 532 952	30%	279 187 320	23%
Taoyuan	279 705 322	246 247 574	-12%	301 335 258	8%
Yilan	352 672 120	476 010 164	35%	516 919 597	47%
Yunlin	59 308 333	55 685 202	-6%	61 952 019	4%
Country	**6 002 253 772**	**5 149 995 834**	**-14%**	**6 772 937 125**	**13%**

Source: https://www.taiwanstay.net.tw Tourism Administration (MOTC), a government agency under the Ministry of Transportation and Communications of Taiwan