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Human mobility, hospitality, and tourism industries: a perspective on catastrophes

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Abstract: The coronavirus outbreak has resulted in a significant reduction in peoples' movements, migration and trade at both local and global levels. Lockdowns and travel restrictions all over the world have led to a rapid retrenchment of the world's hospitality and tourism sector. This is not new. Historically, catastrophes impacted human mobility. Drawing from the historical connections between catastrophes, especially health crises, this paper highlights the impacts of catastrophes on the hospitality and tourism industries. This research shows that the relationship between pandemic and tourism is turbulent, and it explores the implications of the current health crisis for the travel industry under the global containment stage.

Keywords: crisis management, hospitality, human mobility, pandemics.

Introduction

The widespread anxiety about the spread of the virus spurred governments to initiate various measures such as shutting public places, schools, colleges, restaurants, and medium to large gatherings. At the core of their response has been the shutting of local, regional, and global transport networks in the hope of containing the pandemic. The Covid-19 outbreak is believed to have started in Wuhan, Hubei Province, China, where a cluster of unknown pneumonia cases was reported in late December 2019 (Surveillances, 2020). The Wuhan Municipal Health Commission issued an alert on December 31, a response team was dispatched, and the World Health Organization was notified of the concerns (Wuhan Municipal Health Commission, 2019; HuiDS, Madani, Ntoumi, Koch, &

Dar, 2020; Wang, Horby, Hayden, & Gao, 2020; World Health Organization, 2020b).

A perspective on catastrophes

According to Fidler (2004), there is a significant relationship between human mobility, globalisation and microbial resilience. Human movement and international trade and travel industries must speed up the process and spread of diseases far and wide. Meanwhile, the continued evolution and resilience of pathogens have provided them with the ability to jump from animals to humans and cause diseases which spread globally.

Epidemics have an economic, social, and psychological impact on people in the form of fear, economic indecision and changing patterns of purchases resulting in a decline

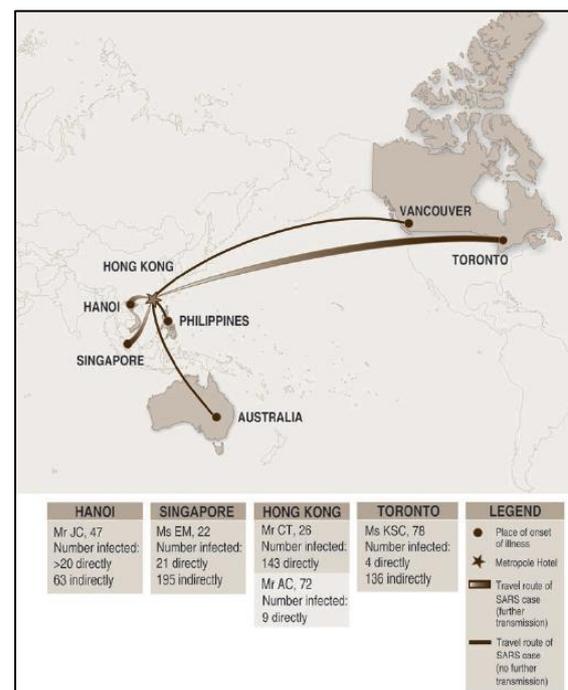
in economic activity and a rise in unemployment (Lee & Warner, 2007). From the foundations of modern economic theory, Adam Smith noted that workers would demand high(er) wages in the event of a shortage of labour supply (Smith, 1776[1904]). Catastrophes such as plagues have historically caused severe morbidity and mortality, hunger famine and a decline in trade (Cohn & Cohn, 2003). Catastrophes are sudden tragic events (Posner, 2004) that 'depict a sudden change in a system's state' (Guastello, 2013, p. 29). They have influenced the rise and fall of empires (McNeill, 1976) and carry the seed of disaster at any time (Lee & Warner, 2007). These catastrophes have left severe and widespread impacts on societies and economies and can be followed by hunger and famine (Cohn & Cohn, 2003).

The interconnectedness between countries and regions due to the transport network and infrastructure development has facilitated both global trade and tourism industries (Hussain, 2019). The intensity of trade and mass travel globally has in the recent past raised global concerns about the outbreak of infectious diseases (World Health Organization, 2016). Contemporary economic development and dependency on international trade required increased mobility of people, goods, and services. For instance, the super spreader of the SARS virus, in 2003, was linked to the stay of one person (Dr Liu Jianlun) in Metropole Hotel, in Hong Kong. Then people who got the virus from him at the hotel travelled internationally, and the infection spread outside mainland China to other places, as observed in Figure 1 (World Health Organization, 2006). Then people who got the virus from him at the hotel travelled internationally, and the infection spread outside mainland China to other places (World Health Organization, 2006).

Biological catastrophes are not bound to geographic location(s) and physical boundaries. In this sense, Lee and Warner

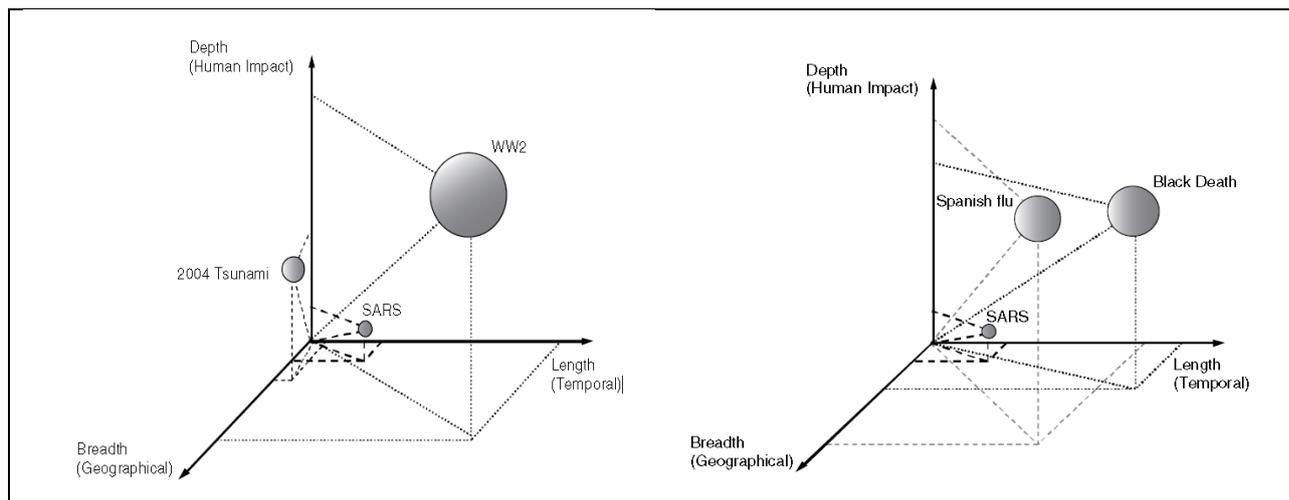
(2007) studied the impacts using a three-dimensional model using length (temporal), breadth (geographic) and depth (human impact) of a shock to illustrate the relationships between human-made and natural catastrophes. Natural catastrophes include earthquakes and floods, and human-made disasters include wars and terrorism fallouts (see Figure 2), and literature has identified debate over the significant impact of one over the other. As observed in Figure 2, the duration of natural-based catastrophes is shorter as compared to human-based disasters, but the consequences are more severe. Because of the nature of disasters such as epidemics or pandemics, the implications may be very lengthy (temporal), depth (human impact), and breadth (geographic location), and are primarily dependent on mobility.

Figure 1. The spread of the virus from the Metropole Hotel.



Source: World Health Organization (2006).

Figure 2. A taxonomy of catastrophic events (left) and epidemics (right).



Source: Lee and Warner (2007).

Contagious diseases throughout history

A pandemic is “an outbreak of a disease that occurs over a wide geographic area and affects an exceptionally high proportion of the population” (World Health organization, 2010). The historical record shows that since the beginning of civilisation, highly contagious and acute respiratory diseases have affected humanity (Honigsbaum, 2016). Human history reports that infectious diseases are a significant threat to human societies and have wracked the course of the world by causing economic distress and long-lasting miseries (Cipolla, 1994; Lee & Warner, 2007).

The most common contagious disease in history was the (bacterial) plague, which caused devastation in 430 BC (Athenian plague) and 542 AD (Justinianic plague) (Lee & Warner, 2007). Karl Marx reported on the 'Black Death,' which devastated socio-economic structures (Marx, [1867]1977) and was followed by hunger, famine and a decline in trade in the West (Cohn & Cohn, 2003; Herlihy, 1997). Samuel Pepys reported that the mortality rate of the 'Black Death' was 1:5, which affected both labour

demand and the supply of goods and services (Pepys, [1660-1669]1993).

Later, at the beginning of the twentieth century, the (viral) Spanish flu (1918-1919) spread after the First World War and as it ran its course killed more than all casualties of the First World War (Beveridge, 1977). According to Honigsbaum (2016), the Spanish flu killed about 50 million people and is estimated to have infected one-fifth of the global population (Lee & Warner, 2007). The aetiology of the Spanish flu (1918-1919), was propelled by improved interconnectivity across the globe such as in the Royal Navy which set the precedent for widespread transmission to various corners of the world (Lee & Warner, 2007). Such catastrophes have far-reaching impacts on society and the economy, and, as a consequence, on tourism, as explained below.

Impacts of catastrophes on tourism

In the 20th century, viruses resulted in three pandemics: Spanish flu [(A(H1N1)] (1918-1919) caused 50 million deaths; Asian flu [(A(H2N2)] (1957-1958) caused 70,000 deaths; and Hong Kong flu [(A(H3N2)]

(1968-1969), which caused 34,000 deaths (Centers for Disease Control and Prevention, 2006). The new twenty-first century (since 2000) brought several pandemics again, resulting in COVID-19 the most harmful to the world's hospitality and tourism industries, as it is discussed in the next section.

The potential of an exogenous shock presents high risks to economies (Fernandes, 2020). In the current case, the rapid spread of infection forced governments to limit people movements, migration and public interactions of all forms resulting in a profound impact on the supply and demand of tourism and hospitality services (Ferguson et al., 2020; Fernandes, 2020; Gössling, Scott, & Hall, 2020; Lee & Warner, 2007). Tour operators, restaurants, retail shops, and entertainment venues were (are currently) shut down to minimise human-to-human contact and contain virus spread. Also, many countries closed their borders

(ECDC, 2020; Ferguson et al., 2020; Fernandes, 2020; Gössling et al., 2020; Kraemer et al., 2020; Lapointe, 2020; Lee & McKibbin, 2004; Lee et al., 2003; Mallapaty, 2020; Moriarty, 2020; UNWTO, 2020a). As a consequence, the cutbacks on the international transportation industry (cruise ships and flights) impacted the tourism industry severely (Barua, 2020; Gössling et al., 2020; Lee & Warner, 2007; Moriarty, 2020). The fear of the rapid spread of the virus halted every segment of the tourism industry, including airlines, cruises, accommodation, activities and leisure, and gastronomic and restaurant services. However, the effects on tourism also relied on political decisions, where some countries managed the crisis better than others (Blackall, 2020). The careful examination of the global travel patterns, specifically air travel, can give us a significant picture of international transportation in the form of aeroplanes. This tells a straightforward story of the spread of the diseases (see Figure 3).

Figure 3. Mapping the World's Biggest Airlines.



Source: James (2012).

In any case, world economies are deeply dependent on hospitality and tourism, which represent more than ten percent of the global gross domestic product (World Travel & Tourism Council, 2020). Tourism

is a form of export activity which requires an effective form of human contact, derived from human mobility, at national and international scales. These factors underscore its capacity to assist in the

spread of infections. Furthermore, by its nature, a tourist needs to travel to a destination which requires transportation of some sort, e.g. aeroplane, cruise ships, trains, buses and private passenger cars. Because of the nature of the hospitality and tourism industry and the probability of proximity between humans, this results in an increase in the risk of infections through human-to-human contact (Fernandes, 2020; Gössling et al., 2020; UNWTO, 2020a, 2020b).

Case of SARS

Historically the world in general and China, in particular, have experienced plagues for centuries, causing millions of fatalities (Benedict, 1988, 1993, 1996). In 2003, a similar epidemic appeared in East Asia, known as ‘Severe Acute Respiratory Syndrome’ (SARS), which killed 916 people globally (Lee & Warner, 2007). SARS emerged as a significant contagious disease of the 21st century which caused leading social disruption and fear among humanity (World Health Organization, 2006). While SARS was not a big killer, its ability to transmit rapidly caused multiple outbreaks in the community (Xu et al., 2004). It acutely affected healthcare workers, including doctors, and nurses, and drove the public healthcare system to a critical situation (World Health Organization, 2006).

It started with a suspected pneumonia case of middle-aged woman sent to the hospital in Foshan, Guangdong Province in Southern China (Abraham, 2007). As mentioned earlier, Dr Liu Jianlun, who worked in the same hospital, visited Hong Kong and stayed in the Metropole Hotel, and became responsible for spreading the virus outside mainland China (World Health Organization, 2006). He was admitted to the hospital and died from respiratory failure (Tomlinson & Cockram, 2003). Flight CA112 (from Hongkong to

Beijing) was responsible for transmitting diseases internationally through air travel which initially infected at least 22 passengers and two crew members (World Health Organization, 2006).

Based on the evidence and to minimise the spread of the disease, air travel was reduced, and thermal sensors were installed at the airports to screen passengers’ health status (Lee & Warner, 2007). Despite modern technology, the oldest technique was found very useful: isolate and quarantine sick people to slow down and progressively stop the spreading of the virus (Cipolla, 1981). On July 5, 2003, the World Health Organization announced the containment of the outbreak, which prevented the first potential pandemic of the 21st century (World Health Organization, 2006). However, the epidemic caused significant shocks to the stock markets, economic growth, commerce and trade and tourism. According to an estimate, due to limited travel to affected areas (Asian countries), SARS caused a loss of about \$10 billion (USD) to airlines (World Health Organization, 2006), and the global economic loss was estimated at USD 820-1,300 million (Lee & Warner, 2007).

The fear was that with 1.6 million people travelling around the globe (in 2003), the virus could quickly spread all over the World (World Health Organization, 2006). SARS was the first epidemic of the 21st century which reminded humanity of the Spanish flu of 1918-1919, but was fortunately not as devastating (Abraham, 2004; Oxford, Bossuyt, & Lambkin, 2003), both in terms of transmission and mortality rates. However, the epidemic resulted in the significance of joint action against a common threat by mobilising awareness campaigns through global media outlets and focusing on prevention and research towards the development of vaccines and curative drugs and other health options (World Health Organization, 2006).

The international community felt a need to invest in response capacities to address outbreaks in the future and improve capabilities to achieve better outcomes (World Health Organization, 2016). The efforts resulted in the design of ‘An R&D Blueprint for action to prevent epidemics: Plan of Action’ (World Health Organization, 2016). The SARS epidemic enhanced global health coordination for the first time (Seno & Reyes, 2004) and also challenged the tourism industry in Asia (McKercher & Chon, 2004). A review of past experiences and pressing requirements for greater preparedness highlighted the need to conduct research and response strategies for the future epidemic to save precious lives by developing vaccines and medicines. In particular, the plan of action aimed “to reduce the time between the declaration of a public health emergency of international concerns and the availability of effective tests, vaccines and medicines that can be used to save lives and avert crisis” (World Health Organization, 2016, p. 14).

While SARS had a global reach, its deepest impact was primarily limited to Asia. SARS crippled economic systems by causing shocks to the international trade and travel industry in twelve countries in the Western Pacific regions which together had more than 95% of SARS cases (World Health Organization, 2006). SARS demonstrated how effective contemporary travel forms are when diseases spread in one region of the globe and can travel to the other end of the world in a matter of hours. As observed earlier, infectious disease has existed at all times, but “with the increase of global travel and trade, new infections can spread rapidly across countries and continents” (Furze, 2020). The super spreader of the SARS virus was a typical example. For example, the infectious disease spread through contaminated elevator buttons was responsible for spreading the virus outside mainland China to Canada, the United States, Germany,

Ireland, and Thailand (Tomlinson & Cockram, 2003). Within a month case, the number grew from 55 to 3,000 individuals in 20 countries (Lee & Warner, 2007). The increase in travel directly influences the spread of pandemics.

Case of COVID-19

Epidemic traceability

Knowing the global connectivity, the traceability and mobility of COVID-19 around the globe have been a challenging phenomenon since its early explosion in China. Non-pharmaceutical interventions have affected local, regional, national and international economies, including trickledown negative impacts on travel and transportation, accommodation, food and beverages and tourism activities, and in consequence the whole hospitality and tourism value chain. Global border closures and the introduction of quarantine periods have discouraged both domestic and international tourism along with various economic activities globally (see, for example, Prideaux, Thompson, & Pabel, 2020). Google search reports have been a fantastic tool to monitor the changing pattern of people’s behaviour with a decline in retail, recreation, transit stations and workplace activities whereas, there has been increased activity in residential hubs as shown in Table 1.

The critical element which makes it harder to trace the origin of an epidemic is the tracking, movement and management, of a suitable tourist destination (Chantre-Astaiza et al., 2019). With the advancement of recent technology from providers such as Google Maps, human traceability has achieved a significant milestone where aggregate data, based on people’s Google search results, shows individual movements to reflect community mobility in response to COVID-19 lockdowns.

Table 1. Mobility changes due to COVID-19 lockdown restrictions.

Country	COVID-19 Cases	Retail and Recreation	Grocery and Pharmacy	Transit Stations	Workplaces	Parks	Residential
United States	1,721,750	-22%	-1%	-37%	-41%	+31%	+15%
Brazil	438,238	-51%	-7%	-49%	-31%	-43%	+17%
United Kingdom	270,508	-64%	-16%	-58%	-59%	+51%	+23%
Spain	237,906	-58%	-18%	-53%	-48%	-7%	+19%
Italy	23,732	-37%	-15%	-46%	-37%	+0%	+15%

Source: Based on data extracted from Johns Hopkins (2020) and Google LLC (2020).

A global economic repercussion

It is premature to estimate the real impact of COVID-19 as we are in the middle of the crisis, and some countries are only in their early stages of infection while others appear early in recovery. However, the pandemic will result in large-scale job loss in the production and consumption market of goods and services (United Nations, 2020). According to the United Nations (2020), due to COVID-19, ninety percent of the global economy is facing some sort of lockdown. The global economy is estimated to lose nearly \$8.5 trillion in output which in turn will exacerbate poverty and inequality (estimated to cost 34.3 million people to fall below extreme poverty in 2020 (United Nations, 2020).

The case of COVID-19 is complex because of various uncertainties. China accounts for 15.5% share of the global economy (Silver, 2020). China is the leading supplier to many countries around the world, and shocks to the Chinese economy were strongly felt globally, and as a consequence, it is estimated that global trade is going to fall below 32% due to COVID-19 (Fernandes, 2020). This will require further scrutiny country by country, because the spread of the virus is

experienced differently, and it is also dependent upon political management (Hale et al., 2020) which contributes to a variety of economic impacts. Overall, Fan, Jamison, and Summers (2018) estimated a loss of 0.6% in global income as a result of moderate, severe influenza, which may result in 720,000 deaths. However, the situation of COVID-19 seems to be much more complex as scientists are still to understand the behaviours of the virus and its ultimate spread mortality and consequence on human mobility and supply chains.

The first Global Risk report 2006 ranked infectious disease as the third global risk (World Economic Forum, 2006), and in the recent survey report, it was listed tenth in terms of its impact (World Economic Forum, 2020). According to the International Labour Organization (2020), as of April 22, 2020, 130 million full-time jobs have been lost in the first quarter of 2020, which is equivalent to 4.3 per cent of the global workforce.

According to the World Economic Situation and Prospects report (United Nations, 2020), the world economy is estimated to shrink by 3.2 percent in 2020, and international tourist arrivals are

expected to experience a 60-80% annual decrease in 2020 (UNWTO, 2020b), as discussed below. Due to strict lockdown measures, global economic activity around the globe was slowed down. According to the United Nations (2020), the economies will start opening up in the second half of the year, and economic activity will begin to pick up. However, the current situation is threatening this recovery (Our World in Data, 2020), since many countries face the second wave of the pandemic and may have to impose lockdowns which may be extended to 2021.

Impacts on the hospitality and tourism industry

The hospitality and tourism industry is defined by the physical movement of the people from a tourist-generating region to a destination(s). Hospitality and tourism is a significant components of global mobility, and with the advancement of technology, the human ability to travel globally has improved consistently over the past 50-60 years with a relatively lower cost (Karlen, 1995; Stephenson, 2002; Walters, Meslé, & Hall, 2018).

In March 2020 World Tourism Organization estimated a 1-3% decline in international tourist arrival and later, on March 26, the organisation forecasted a decrease of 20-30% loss in international tourism arrival (UNWTO, 2020b). However, in a recent report, the World Tourism Organization projected a decline of 58-78% in foreign tourist arrival, putting 120 million direct tourism-related jobs at risk (UNWTO, 2020a). The scenarios reflected three possible options of tourism recovery based on their optimistic and unpredictable opening of international borders and relaxation in travel restrictions.

However, due to the absence of a vaccine and a proper treatment, physical distancing measures will be now set in place to remain

for a more extended period. This will harm the hospitality and tourism industry, along with the tourism transport industries. Both industries need to rapidly adapt to the new rules and norms. For instance, aeroplanes will need to impose physical distance measures of passenger seating which reduces the aeroplane flying capacity by at least 50% even when the aircraft is full (Air New Zealand, 2020; Lapointe, 2020). This will result in a significant reduction in revenue passenger kilometres (RPK). According to an estimated revenue, passenger kilometres are expected to decline by -38% (Pearce, 2020) with an obvious increase in flights which will tamper with global demand. This is also applied, for example, to restaurant services and other tourist activities.

Post COVID-19 tourism market is going to be different (see, for example, Higgins-Desbiolles, 2020; Nepal, 2020). The tourism product is perishable that is it cannot be retained and sold at a later date “unlike other business sectors, tourism revenue is permanently lost because unsold capacity – for instance in accommodation – cannot be marketed in subsequent years, with corresponding implications for employment in the sector” (Gössling et al., 2020, p. 2). Many tourists were restrained in the global tourism system, and cruise ships are a typical example. At least 26 cruise ships were affected by COVID-19 (as of March 26, 2020) and ten remained at sea and were unable to dock at any port in the world (Gössling et al., 2020; Mallapaty, 2020). Cruise ships, once believed to be one of the safest ways to travel, became a trap for thousands of passengers who struggled to return home (Cordesmeier & Papathanassis, 2011). Similarly, because of the increased contact between passengers, cruise ships have become particularly visible as a vector in spreading diseases globally, and many ports did not allow them to disembark highlighting the sector’s specific vulnerability to pandemics (Moriarty, 2020). There now remains some

considerable doubt as to whether the cruise sector can afford to ever recover to its previous capacity.

To the present non-pharmaceutical interventions (NPIs) remain the most effective technique in containing the pandemic. According to Ferguson et al. (2020), the two effective strategies to face the pandemic disease can be mitigation (slowing down the epidemic spread) and suppression (reducing case numbers). Both strategies largely rely on quarantine periods and a reduction of travel as effective containment measures. Also, both strategies need to be in place until a vaccine is developed, which may take up to 1.5 years or more (Gallagher, 2020). There are cases around the globe (for example, China, South Korea, Italy, or Spain) which has shown that suppression is possible but that is not the long-term solution as we have seen new cases in various parts of the world with the second wave of disease spread once the lockdown measures were relaxed (Xu & Li, 2020).

Conclusion

The unprecedented outcomes of the current pandemic and its impact on tourism-related livelihoods, and the sustainability of the tourism industry are in question. With increased population densities, urbanisation, and mobilities, there remains a growing risk of pandemics. For the present pandemic to date, we do not have a vaccine, and this results in a delay in hospitality and tourism recovery. There is a possibility that international tourism may not even resume for another year or even longer. Current trends show that tourism cannot only be seen as a useful economic activity for the economic development of a destination, but rather as an extra economic activity to top-up existing development strategies. The restrictions on physical distancing hint that tourism numbers are going to stay low, and will take time to

recover the impressive numbers of tourists travelling globally. Such conditions are also going to have a significant impact on global transportation. Airlines are already struggling, which may potentially make some airlines bankrupt. The reduced airbus fleet will eventually increase worldwide airfares, and this will flow through to fewer people who will be able to travel.

At the moment, much of hospitality and tourism research is focused on market trends. The strategies are based on the supply and demand of tourists and revenue being generated or lost, and on tourists' choices and expectations in a 'normal' situation - in the absence of shocks. The reality is we, now, live in a 'different' world. Post-COVID tourism is not going to be the same as previously. The potential impact of the fear of pandemics is significant in altering tourism behaviours and questioning the dominant tourism planning paradigms – also dependent upon the elasticity of tourism demand –. With the current situation, governments are discouraging, and people are avoiding travelling because of health risks and continued estimations of economic crisis. That said, this will also result in a growth of domestic tourism, which is anticipated to recover first (see Gössling, Scott, & Hall, 2020). This urges further research that analyses a context still featured by the crisis.

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