

Tracking Changes in Australia's Destination Image Patterns Caused by COVID-19

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DOI Link: <http://dx.doi.org/10.6007/IJARBSS/v15-i12/26936>

Published Date: 06 December 2025

Abstract

Destination image is a dynamic construct shaped by multiple factors, including crises. The tourism industry's high vulnerability to crises was starkly demonstrated by the COVID-19 pandemic, which caused prolonged global disruptions to public health, economies, and mobility. These disruptions heightened uncertainty and concerns about destinations' safety, risk, and accessibility. During this period, individuals increasingly turned to social media to share information, emotions, and perceptions related to destinations. Given the dynamic and crisis-sensitive nature of destination image, this study examines how the COVID-19 pandemic reshaped Australia's destination image across three phases—before the pandemic, during border closures, and after reopening—using text mining to analyse large-scale Reddit user-generated content (UGC). Results show that most cognitive image dimensions remained stable, though emphasis increased on transport and travel costs, political and economic issues, and the social environment, while perceptions of natural resources declined during COVID-19. Affective image analysis revealed heightened negativity during border closures, with trust remaining steady. The study contributes theoretically by advancing understanding of destination image as a dynamic construct influenced by large-scale crises, and practically by providing insights for effective crisis communication and destination image management to strengthen future resilience.

Keywords: Destination Image, Text Mining, User-Generated Content, Reddit, Australia, Covid19

Introduction

In the increasingly competitive global tourism industry, destination image is a critical factor influencing travel decisions, satisfaction and loyalty (Arif et al., 2024; Marques et al., 2021). A positive destination image can significantly boost destination competitiveness, increase tourist arrivals and drive economic growth. Conversely, a negative image can deter potential tourists and cause lasting damage to a destination's reputation. Destination image is a dynamic concept that continuously changes over time (Gallarza et al., 2002). A variety of factors influence this change. Among these, crises are a particularly powerful external factor with the potential to rapidly alter perceptions toward destination (Wu & Shimizu, 2020). Crises such as natural disasters, terrorist attacks and health pandemics can have rapid and enduring negative impacts on destination image, which directly influence travel intentions and have broader implications for the overall tourism economy. Given the central role that destination image plays in shaping travel decisions, it is essential to understand how it is affected by such disruptions over time. Despite the critical importance of time in crisis management, as emphasised by (Prideaux and Beirman, 2024), there is a shortage of empirical studies examining how destination image changes during crises (Zhang & Shi, 2025), and only a limited number have explored this issue from a dynamic perspective (Abdillah et al., 2022; Jiang et al., 2022).

Concerns about safety and perceived risk can affect public perceptions toward destinations (Jiang et al., 2022). The uncertainty caused by the crisis led to a surge in media engagement as people sought timely information and updates (Yu et al., 2021). Unlike in the past, when individuals passively relied on radio, TV, and newspapers for crisis information, today they actively participate in the communication process through digital platforms (Xie *et al.*, 2022). Individuals use social media platforms to share and express their concerns, opinions and emotions regarding travel and travel destinations, contributing to a continuous flow of user generated content (UGC). This peer-driven, real-time, and authentic form of public discourse serves as a valuable organic source for capturing how people perceive and respond to destinations during a crisis.

Lee and Park (2023) state that UGC provides extensive real-world data, offering a comprehensive view of destination image attributes. This advantage addresses the limitations of traditional methods like surveys, interviews and focus groups, which often treat destination image as a static concept while overlooking the temporal factor. These methods rely on structured datasets collected at a single time. They are frequently hindered by both researcher and respondent bias and recall bias (Zhang and Shi, 2025), which introduced a complex array of contextual factors that can influence or shift perceptions as situations evolve. To capture the dynamic nature of Wuhan's destination image during and after COVID-19, (Zhang and Shi, 2025) used cross-sequential qualitative data and retrospective questionnaires. The authors highlight the limitations of memory recall bias when capturing past events and advocate for using temporal data through big data technology, such as UGC, to overcome these challenges. Despite the potential of UGC, few scholars have explored the evolving trends of destination image (Dong et al., 2023).

The large-scale and unstructured nature of UGC requires advanced computational tools, such as big data analytics, to extract valuable insights from big data. Text mining, a subset of big data analytics, focuses on processing and analysing textual data. These methods have

demonstrated their ability to efficiently track changes in destination image by uncovering hidden patterns in texts (Lekmiti *et al.*, 2024). However, despite their potential, big data applications for UGC remain underutilised in tourism studies (Meng *et al.*, 2021). This underscores the need for further research that leverages text-mining techniques to better understand the dynamic nature of destination images, particularly during crises.

The COVID-19 pandemic one of history's most devastating global health crises. Its impact has extended across economies, industries, societies, and daily life on an unprecedented scale (Lu & Atadil, 2021; Macnamara, 2021). The COVID-19 has claimed over 7 million lives from 704 million confirmed cases across 229 countries and territories (worldometers, 2024). The pandemic severely disrupted tourism, causing a sharp drop in international travel demand owing to widespread restrictions on individual mobility, including lockdowns and travel restrictions. the decline in international arrivals, with an annual decrease of 72% in 2020 and 69% in 2021 compared with 2019. As a result, tourism direct gross domestic product (GDP) dropped significantly from USD 3.5 trillion to USD 1.7 trillion in 2020, a decline of almost 51% (World Tourism Organization, 2023). These alarming statistics highlight the importance of understanding the impact of COVID-19 on destination image, as crises of such magnitude and duration fundamentally reshape how travellers perceive safety, trust, and the overall attractiveness of destinations.

Based on the above discussion, this study addresses the research problem of tracking changes in destination image patterns caused by COVID-19, as reflected in public discourse through UGC using text-mining techniques, with Australia serving as the case study. This research is among the first to employ temporal data spanning the three phases of the COVID-19 pandemic to explore these evolving patterns. By focusing on these temporal shifts, the study provides an assessment of destination image resilience and preparedness during crises. It also offers practical value for DMOs, policymakers, and tourism businesses by providing timely insights into how destination image patterns change across different stages of a crisis. Such insights enable tourism stakeholders to anticipate emerging concerns, design targeted communication strategies, and strengthen crisis-response and recovery planning for future crises.

Literature review

Destination image conceptualisation

The concept of destination image is a well-established construct in tourism research and has been extensively studied by numerous scholars. A foundational definition of destination image was first proposed by (Hunt, 1971), who describes it as the perception individuals hold of a geographic region in which they do not reside. A common conceptualisation of destination image is that it is a two-component construct, comprising cognitive and affective components, both of which contribute to the formation of the overall destination image (Baloglu and McCleary, 1999; Beerli and Martin, 2004; Stern and Krakover, 1993), see Figure

1

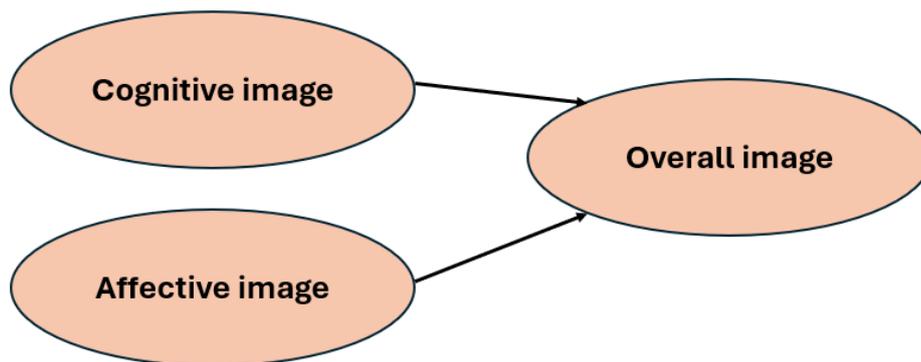


Figure 1: Destination Image conceptualization

Source:(Beerli and Martin, 2004)

The cognitive component represents an individual's beliefs and knowledge about the attributes of a destination (Baloglu and McCleary, 1999; Pike, 2004; Zhang *et al.*, 2014). These attributes can encompass aspects such as natural resources, cultural and historical landmarks, natural, and recreational activities. While, the affective component reflects an individual's emotional reactions and feelings toward a destination (Baloglu and Brinberg, 1997; Shani and Wang, 2011; Zhang *et al.*, 2014). The evaluation and perception of both cognitive and affective form the overall image of a destination (Baloglu and McCleary, 1999).

Destination image formation

Destination image is a dynamic concept that evolves over time (Chon, 1990; Gallarza *et al.*, 2002; Selby and Morgan, 1996; Stepchenkova and Eales, 2011). It continuously develops as individuals form perceptions, emotions and beliefs about a place based on information from multiple sources and influencing factors (Baloglu and McCleary, 1999; Crompton, 1979; Croy and Wheeler, 2007; Hernández-Mogollón *et al.*, 2018; Lu and Atadil, 2021). (Echtner and Ritchie, 2003) describe destination image formation as a complex process where tourists mentally construct an image by selectively recalling specific impressions from a broader range of impressions or experiences.

Numerous studies have developed frameworks to explain destination image formation. But mostly focused on two factors of destination image formation by (Beerli and Martin, 2004) : (1) information sources, including induced (e.g. Marketing), organic (e.g. word-of-mouth), and autonomous (e.g. News) forms, as well as primary sources such as previous experience; and (2) personal factors, such as demographics, motivations, and prior vacation experience (see Figure 2)

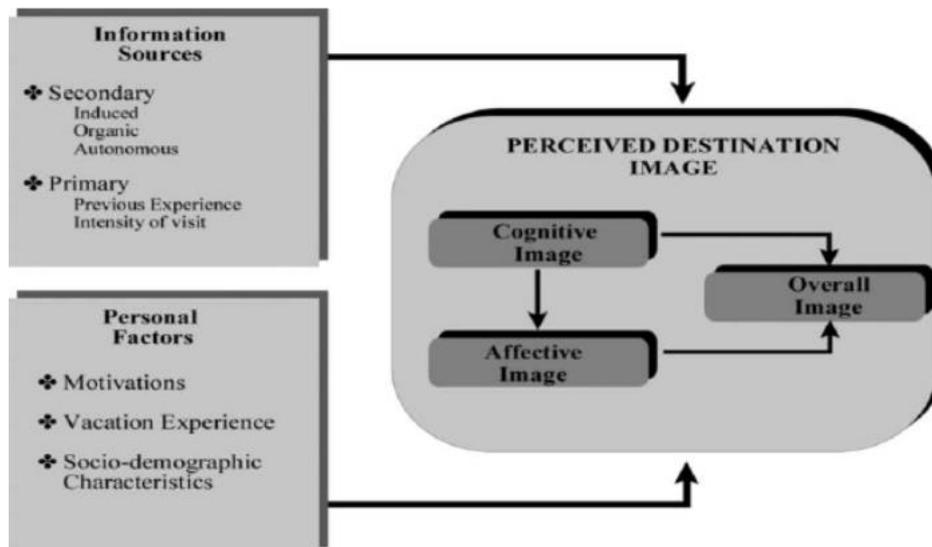


Figure 2. Destination image formation

Source: (Beerli and Martin, 2004).

Despite their significant influence on destination image formation, Destination image formation frameworks do not give much attention to external factors such as events and crisis (Wu and Shimizu, 2020). (Abdillah *et al.*, 2022) and (Jiang *et al.*, 2022) argue that empirical research on the transformation of destination image caused by crises remains relatively limited, with few studies adopting a dynamic perspective. Therefore, examining crises as an influential factor in destination image formation is essential for understanding how individuals' perceptions of destinations evolve in response to disruption and uncertainty. It also enables destination marketers and policymakers to identify key challenges, implement targeted recovery strategies and enhance destination image resilience.

Impact of crisis on destination image

Tourism operates as a service-based industry with primarily experiential offerings (Wu and Shimizu, 2020). This creates challenges for tourists in assessing a destination's attractiveness, as their travel choices are often influenced by perception rather than reality. Crises often heighten perceived risks and alter public perceptions of safety, creating uncertainty about the affected destination (Fuchs *et al.*, 2024; Kozak *et al.*, 2007; Marine-Roig & Huertas, 2020). Similarly, Karl (2018) emphasises that perceived risk is a critical determinant in shaping tourists' travel decisions and behaviour when selecting a destination. Consequently, destinations experiencing crises often face an immediate decline in tourist arrivals and endure long-term reputational damage, emphasising the strong link between crises and destination image.

A crisis can significantly damage a destination's image by undermining essential factors such as safety, trust and accessibility (Chahal & Devi, 2015; Liu & Zheng, 2023; Utari *et al.*, 2024), which are foundational to a destination's attractiveness and competitiveness. As a reflection of this importance, Many studies examined how various types of crises influence destination image.

(Al-Shboul *et al.*, 2023) analyse the impact of financial and epidemic crises on tourism loyalty to Singapore by examining monthly tourist arrivals from 11 countries between 1978 and 2016.

The findings reveal that while Singapore is typically perceived as a long-term attractive destination, crises such as the Asian Financial Crisis (AFC), SARS, Global Financial Crisis (GFC) and H1-N1 shifted loyalty toward a more transitory nature, with tourists viewing Singapore as a short-term transit destination owing to health fears and financial constraints.

The study by Wu and Shimizu (2020) examines the impact of earthquakes in Japan, focusing on their effects on destination image and influence on travel intentions. It highlights significant damage to aspects such as 'nature' and 'infrastructure', with recovery timelines varying based on tourists' origins. Chinese tourists recover cognitive perceptions more quickly, whereas US tourists experience more prolonged impacts. Affective image, encompassing emotional responses such as feelings of safety, relaxation or fear, plays a more significant role than cognitive factors in shaping travel intentions during crises.

Carballo et al. (2021) investigate the impact of terrorism risk perception on destination image across five European cities. It highlights that in cities recently affected by terrorist attacks, such as Paris, London and Madrid, terrorism perception significantly damages both cognitive and affective components of the destination image. Cognitive aspects, including infrastructure, quality of life, and activities, are negatively affected, while affective responses, such as feelings of safety and pleasantness, are diminished. In contrast, cities without major terrorist attacks, such as Rome and Berlin, experience less pronounced effects on both cognitive and affective images, reflecting a lower perceived risk.

Tang (2014) examines the relationship between travel motivation, destination image and satisfaction among international tourists visiting Sichuan after the 2008 Wenchuan earthquake. His study finds that while the disaster minimally affected motivations, tourists were primarily drawn to traditional attractions like the scenery and giant pandas. Positive destination images enhanced motivation, while negative perceptions strongly impacted overall satisfaction.

Together, these studies illustrate the complex and context-specific ways crises affect destination image. Events such as political instability, pandemics, natural disasters, and terrorism reshape perceptions of safety, infrastructure and overall appeal. However, these effects are not uniform, as they vary based on the type and the context of crisis. The studies also highlight the multidimensional nature of crisis impact, disrupting both the cognitive component (e.g. safety, infrastructure) and affective component (e.g. fear, insecurity). Moreover, crises differ in their duration and consequences on destinations—some cause temporary disruptions. In contrast, others lead to long-term shifts that redefine a destination's role in the tourism market, as seen in Singapore's transition from a long-term destination to a short-term transit stop (Al-Shboul et al., 2023). This underscores the importance of considering the temporal factor when examining the effects of crises on destination image, as Prideaux and Beirman (2024) emphasise time's crucial role in crisis and crisis management. Despite this, existing literature often adopts a static approach, capturing the destination image at a specific point in time (Zhang & Shi, 2025), which provides an incomplete picture of the crisis impact and fails to account for its dynamic nature. This highlights the need to examine how destination image patterns evolve across different crisis phases.

Methodology

Case study (Australia)

Often described as a “tourism paradise in Oceania,” Australia attracts travellers with its diverse landscapes, iconic landmarks, and rich cultural heritage (Wei et al., 2021). Its remote geography, absence of land borders, and blend of natural beauty, adventure, and biodiversity enhance its distinct appeal. The country also possesses a sophisticated tourism system supported by advanced marketing and management practices (Wyllie, 2022).

International tourism demand for Australia has grown steadily since the mid-1970s (Khanal et al., 2022), see Figure 3. According to the World Economic Forum, Australia’s global tourism ranking has risen from seventh place in 2017 to sixth in 2021, securing fifth place in 2024 (Woodley, 2024). This ranking is based on 17 factors, including natural resources, tourism infrastructure, sustainability, price competitiveness and labour capacity.

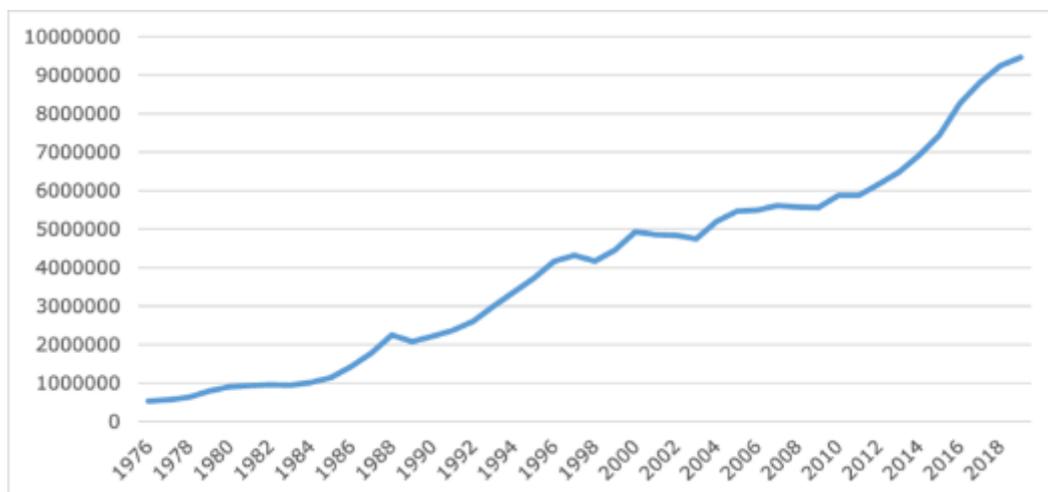


Figure 3: Trends in International Tourist Arrivals in Australia

Source: (Khanal et al., 2022).

Despite Australia’s strong tourism performance and global competitiveness, COVID-19 severely affected Australia’s tourism sector, with visitor arrivals plummeting to 1.8 million in 2020—an 80.7% decrease from the previous year and the lowest since 1987 (Australian Bureau of Statistics, 2020). Between March 2020 and March 2022, international tourism in Australia suffered losses totalling \$81.9 billion (Tourism Research Australia, 2022a).

Australia reported its first COVID-19 case on 25 January 2020 (Reserve Bank of Australia, 2022). As cases increased, the government implemented strict public health measures to control the spread of the virus. These included travel restrictions, the closure of non-essential businesses, stay-at-home orders, social distancing regulations, and quarantine requirements (Reserve Bank of Australia, 2022). While these measures were highly effective in safeguarding public health, they effectively brought Australia’s tourism system to a standstill, disrupting air connectivity, hospitality operations, and destination marketing activities.

The pandemic exposed the vulnerability of even well-developed and institutionally robust tourism economies, highlighting the interdependence between global mobility, policy

response, and destination resilience. Consequently, Australia represents a particularly compelling case study for examining how large-scale crises can reshape destination image.

Time frame

To capture potential changes in destination image patterns caused by the COVID-19 pandemic, the study collected data across three phases: one year before COVID-19, during COVID-19, and one year after the after COVID-19. March 20, 2020, was selected as the start of the 'during COVID-19' period, as it marks the date when Australia closed its borders to all individuals who were not residents or citizens (Australian Government, 2020). While 1 November 2021 was chosen as the beginning of the 'post-COVID-19' period, it corresponds to the staged reopening of international borders (Australian Government, 2022). Therefore, the 'during COVID-19' period spans from 20 March 2020 to 31 October 2021. The study designates the year prior to the border closure as the pre-COVID-19 period (March 19, 2019, to March 19, 2020) and the year following the reopening of borders as the post-pandemic period (1 November 2021 to 1 November 2022). See Figure 4.

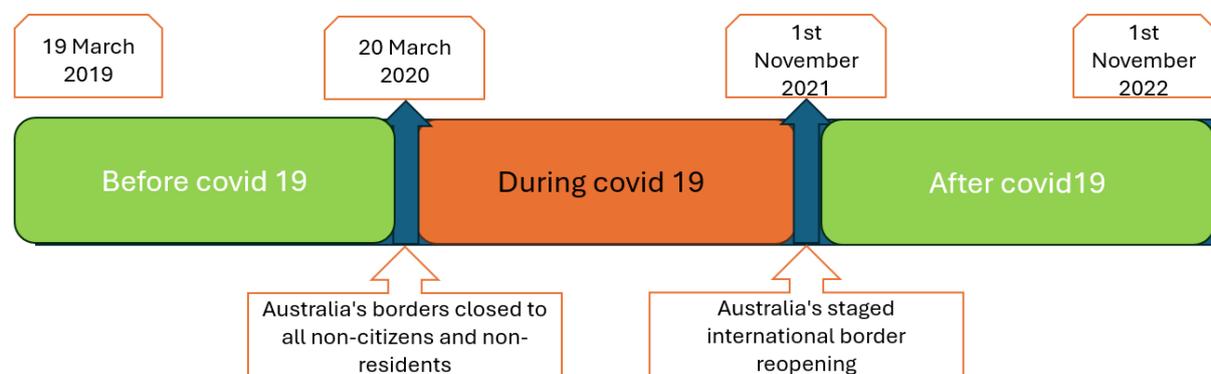


Figure 4: Data Collection Timeline

Data source

This study uses Reddit, a social media platform where users share opinions and content within topic-based communities called *subreddits* (Reddit, 2024). Owing to its organic and authentic discussions, Reddit is recognised as a valuable source of UGC in tourism research. It has been used to examine tourist attitudes, behaviour, crisis impacts, and destination images (Hardt and Glückstad, 2024; Park *et al.*, 2022; Shaheer and Carr, 2022; Xiao *et al.*, 2020).

Since the focus of this study is on destination image, we will concentrate on tourism-related subreddits, as well as subreddits specific to the target destination (Australia). This study has selected the most relevant, active, well-followed, and influential tourism-related subreddits on the Reddit platform, aligning with those identified by Hardt and Glückstad (2024). These include *r/travel*, *r/solotravel*, *r/travelHacks*, *r/travelNoPics*, *r/Flights*, *r/EarthPorn*, *r/Cruise*, *r/campnghiking*, *r/backpacking* and *r/Australia*.

The keywords utilised to identify relevant comments are partially derived from Gedikoglu's (2018), which examines the destination image of Paris through UGC. Building on his keyword set ('holiday', 'tourism', 'travel', 'visit'), additional frequently used terms ('vacation', 'journey', 'tour', and 'trip') were included to ensure broader coverage. The finalised keyword combination employed for the collection of relevant Reddit comments is as follows: ('travel'

OR 'tourism' OR 'trip' OR 'vacation' OR 'journey' OR 'tour' OR 'holiday' OR 'visit') AND Australia. After removing duplicates, this approach resulted in a final sample of 29,738 comments.

Data preprocessing

After data collection, preprocessing is a crucial step in text mining, serving as the foundation to enhance the reliability and accuracy of subsequent analytical techniques (Hickman *et al.*, 2022). Preprocessing involves a systematic series of steps to clean and prepare raw text data to improve its quality, reduce noise, and facilitate the application of text analysis algorithms (Bi *et al.*, 2024).

Analytical Tools

As discussed earlier, destination image is conceptualised as comprising two key components: cognitive and affective. To measure Australia's cognitive image from Reddit comments, the study applied (Beerli and Martin, 2004) nine-dimensional framework, widely validated for capturing detailed cognitive attributes (Hardt & Glückstad, 2024; Lee & Park, 2023). A combined text-mining approach integrated rule-based coding with word embedding. A property dictionary based on (Beerli and Martin, 2004) was expanded using WordNet for synonyms and Word2Vec for contextually similar terms (Lee & Park, 2023). The final list of attributes for each dimension is presented in Table 1.

Table 1

Dimensions/Attributes According to Beerli & Martín 2004 with embedding

Cognitive Dimensions	Attributes
Natural Resources	nature, weather, lake, flora, flower, animal, humidity, humid, mountain, temperature, sun, sunshine, rain, beach, river, reef, sea, reserve, ocean, forest, island, wildlife, fauna, waterfall
General Infrastructure	airports, infrastructure, hospital, roads, port, metro, subway, wifi, taxi, road, bus, uber, facilities, plane, train, tram, ferry, didi, telecommunications, health service, public transport
Tourist Infrastructure	restaurant, tourist information, club, park, bar, food, hotel, resort, motel, hostel, arboretum, airbnb, excursion
Tourist Leisure and Recreation	recreation, golf, trekking, nightlife, leisure, theme park, swimming, shopping, adventure, sports, zoos, diving, fishing, skiing, hunting, water parks, casinos, snorkelling, snorkeling, surfing, kayaking, surf, hiking, camping, backpacking, water park

Culture, History and Art	folklore, gastronomy, historical building, religion, memorial, concert, monument, festival, culture, art, history, museum, architecture, heritage, music, theatre, castle, church, cathedral
Political and Economic Factors	crime, monetary, economic, safety, prices, scam, security, currency, violence, attack, political, danger
Natural Environment	overcrowding, traffic, congestion, clean, crowded, scenery, pollution, landscape, aesthetic
Social Environment	friendly, poor people, language barrier, accent, hospitality, racism, underprivileged, noise
Atmosphere of the Place	good reputation, fashionable, exotic, stress, boring, stylish, enjoyable, luxury, relax, fun, pleasant, interesting, attractive, relaxing, luxurious, stressful

The affective image of Australia is measured using VADER and the NRC Emotion Lexicon. VADER, a sentiment analysis tool suited for social media text, assessed sentiment polarity (ie: positive, negative, neutral) while effectively handling informal language and emojis (Isnan *et al.*, 2023). The NRC Lexicon identified the intensity of eight emotions (joy, sadness, anger, fear, trust, anticipation, surprise, and disgust) (Mohammad and Turney, 2013). Figure 5 provides an overview of methodological framework of the study.

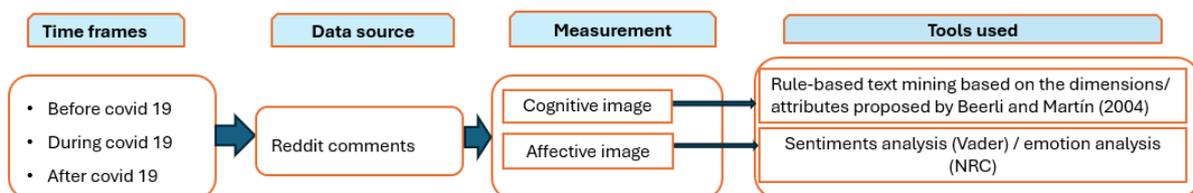


Figure 5: overview of methodological framework

Results and Discussion

Cognitive Component of Destination Image

Table 2 presents the percentage of cognitive dimensions of Australia’s destination image based on Reddit discussions across the three periods; Table 3 shows the most relevant attributes of each dimension. Figure 6 illustrates relative change across the COVID-19 periods. Table 2 shows that natural resources (e.g. beaches, islands, reefs, mountains), general infrastructure (e.g. roads, hospitals, trains, airports) and tourist infrastructure (e.g. hotels, parks, restaurants) come with the highest percentages, collectively accounting for one-third of the total in every period. Following these, political and economic factors (e.g. price, economy, security) were also notable. Culture, history and art (e.g. culture, festival, art) and tourist leisure and recreation (e.g. camping, hiking, adventure) ranked next. Subsequently, the atmosphere of the place (e.g. fun, interesting, boring), natural environment (e.g. security,

traffic, cleanliness) and social environment (e.g. friendliness, hospitality, racism) received the least attention from Reddit users.

Natural resources were the most prominent dimension before COVID-19, accounting for 26.6%. However, this share dropped to 19.9% during the border closure, representing a 25.2% relative decline, the third largest relative change among all dimensions (Figure 6). It then partially recovered to 24.0% after the borders reopened. Attributes such as *beaches*, *islands* and *reefs* were the most frequent, highlighting the importance of marine and coastal environments in shaping perceptions of natural resources. *Weather*, *mountain* and *animal* also ranked highly, reflecting concern about climate and appreciation of Australian scenic beauty and fauna.

Similarly, general infrastructure initially held a substantial share of 22.7%, which slightly decreased to 22.2% during the border closure, before rising to 23.3% after the reopening. Attributes such as *roads*, *trains* and *buses* were consistently mentioned, emphasising the relevance of transportation infrastructure among Reddit users. Additionally, *hospital* surged notably during the border closure, which is understandable given heightened health concerns at the time.

Tourist infrastructure, in contrast, accounted for 14.9% before the border closure and experienced a moderate increase to 17.4% during the closure. This share declined to 15.3% after its reopening. *Hotels*, *hostels*, *food*, *parks*, *restaurants*, *bars* and *cafés* were the most frequently mentioned attributes. Notably, *hotel* experienced a substantial surge in mentions—from 224 occurrences before the closure to 925 during it—likely owing to discourse surrounding mandatory hotel quarantine. This surge may partly explain the temporary rise in this dimension's prominence. Collectively, these attributes indicate accommodation and F&B services remained central to users' perceptions of tourist infrastructure

Political and economic factors accounted for 10.0% before COVID-19, rising to 13.2% during the border closure, representing a relative increase of 32.0%— the largest change among all dimensions (Figure 6) and reflecting heightened concern with governance and economic issues during the crisis. The share declined to 9.6% after the borders reopened, indicating a return to pre-pandemic levels. This increase was likely driven by concerns about government policies and the economic downturn caused by the pandemic. Frequently mentioned attributes included *prices*, *political*, *economy*, *safety* and *security*, suggesting that this dimension was primarily focused on governance discourse, financial aspects and safety measures.

Culture, history and art accounted for 9.2% before COVID-19, rising slightly to 9.6% during the border closure, and then dipping marginally to 9.5% after reopening. Key attributes such as *culture*, *history*, *festivals* and *museums* were frequently mentioned, highlighting a steady interest in cultural experiences.

Tourist leisure and recreation accounted for 6.8% before the pandemic, dipped slightly to 6.6% during the border closure, and rose to 7.3% after reopening. Commonly discussed

attributes included *camping, shopping, hiking, zoos, backpacking* and *diving*, highlighting Australia's image as a destination for outdoor and adventure-based experiences.

The atmosphere of places accounted for 4.9% mentions before COVID-19, increased to 5.6% during the border closure, and slightly declined to 5.5% after reopening. Attributes such as *fun* and *interesting* were the most dominant, while mentions of *boring* were comparatively infrequent. Additionally, many of the top 10 keywords—*luxury, pleasant, attractive, relaxing* and *peaceful*—were positively valenced. This pattern suggests a largely positive and enjoyable perception of the destination's atmosphere across all periods.

The natural environment dimension remained stable, accounting for 2.9% before COVID-19, dipping slightly to 2.8% during the border closure, and further to 2.7% after reopening. Dominant attributes included *traffic, cleanliness, scenery and landscapes*, while terms like *crowded* appeared less frequently. This suggests concerns about transport flow and congestion, likely in larger cities, alongside an appreciation for cleanliness and scenic surroundings.

The social environment dimension showed a slight upward trend, accounting for 2.0% before COVID-19, rising to 2.6% during the border closure—a 30.0% relative increase, the second-largest among all dimensions—and reaching 2.8% after reopening. *Friendly* was the most mentioned attribute across the three periods, indicating a positive perception of local interactions for the majority, followed by *racism, hospitality* and *accent*. Before the border closure, there was a notable difference between the occurrences of *friendly* (117) and *racism* (55). However, there was a significant surge in mentions of *racism* during the border closure period, reaching 154 compared with 157 for *friendly*. Mentions of *racism* remained high even after the borders reopened (147 occurrences). Overall, this suggests that while positive perceptions of local friendliness were dominant, especially before COVID-19, concerns about racism became significantly more visible during the pandemic and persisted even after reopening.

Table 2

Cognitive Dimensions by Occurrences and Percentage (Pre-COVID-19, During Border Closure, After Reopening)

Dimension	Pre-COVID-19 occurrence (%)	During border closure occurrence (%)	After border reopening occurrence (%)
Natural Resources	4026 (26.6%)	3910 (19.9%)	3970 (24.0%)
General Infrastructure	3431 (22.7%)	4362 (22.2%)	3864 (23.3%)
Tourist Infrastructure	2260 (14.9%)	3429 (17.4%)	2530 (15.3%)
Political and Economic Factors	1510 (10.0%)	2605 (13.2%)	1593 (9.6%)
Culture, History and Art	1392 (9.2%)	1891 (9.6%)	1580 (9.5%)
Tourist Leisure and Recreation	1032 (6.8%)	1292 (6.6%)	1203 (7.3%)
Atmosphere of the Place	740 (4.9%)	1096 (5.6%)	903 (5.5%)
Natural Environment	434 (2.9%)	556 (2.8%)	445 (2.7%)
Social Environment	306 (2.0%)	521 (2.6%)	464 (2.8%)

Table 3

Most Frequent Attributes for Each Dimension for Each Period

Dimension	Five most frequent attributes pre-COVID-19	Five most frequent attributes during border closure	Five most frequent attributes post-border reopening
Natural resources	Beach (799), Island (658), Reef (298), Mountain (275), Weather (261), Animal (220)	Beach (802), Island (604), Reef (298), Sea (247), Weather (241), Mountain (231)	Beach (806), Island (526), Weather (303), Reef (299), Mountain (295), Animal (205)
General infrastructure	Road (795), Train (504), Bus (380), Airport (318), Hospital (217), Bridge (198)	Road (970), Hospital (498), Train (461), Airport (451), Plane (373), Bus (345)	Road (862), Train (497), Airport (435), Bus (322), Hospital (300), Plane (271)
Tourist infrastructure	Food (597), Park (444), Hostel (409), Hotel (224), Bar (195), <i>Café</i> (180)	Hotel (925), Food (780), Park (487), Hostel (418), Restaurant (253), <i>Café</i> (216)	Food (674), Park (467), Hotel (359), Hostel (255), Bar (208), Restaurant (205)
Tourist leisure and recreation	Camping (121), Hiking (116), Zoo (116), Adventure (106), Shopping (95), <i>Diving</i> (89)	Shopping (186), Camping (177), Hiking (124), Backpacking (124), Adventure (96), <i>Diving</i> (91)	Camping (142), Zoo (140), Hiking (123), Shopping (112), Adventure (95), <i>Diving</i> (90)
Culture, history and art	Culture (363), History (251), Festival (120), Museum (118), Church (110)	Culture (557), History (400), Music (196), Art (136), Museum (130)	Culture (566), History (268), Museum (176), Music (121), Art (113)
Political and economic factors	Price (406), Political (227), Economic (189), Security (148), Safety (133), Crime (116)	Price (696), Economic (398), Political (366), Security (291), Crime (224), Government (199)	Price (549), Political (204), Security (181), Crime (162), Safety (136), Economic (121)
Natural environment	Traffic (139), Clean (73), Landscape (61), Scenery (59), Crowded:55	Traffic (185), Landscape (109), Clean (102), Crowded:56, Scenery (48)	Traffic (159), Clean (77), Landscape (65), Scenery (57), Crowded (42)
Social environment	Friendly (117), Racism (55), Hospitality (51), Accent (34), Noise (27)	Friendly (157), Racism (154), Hospitality (86), Accent (53), Noise (34)	Friendly (147), Racism (129), Accent (71), Hospitality (60), Noise (35)
Atmosphere of the place	Fun (272), Interesting (168), Boring (69), Luxury (46), Stress (33), Pleasant (28)	Fun (338), Interesting (300), Boring (101), Luxury (78), Stress (66), Pleasant (59)	Fun (320), Interesting (221), Boring (93), Stress (43), Luxury (42), Pleasant (37)

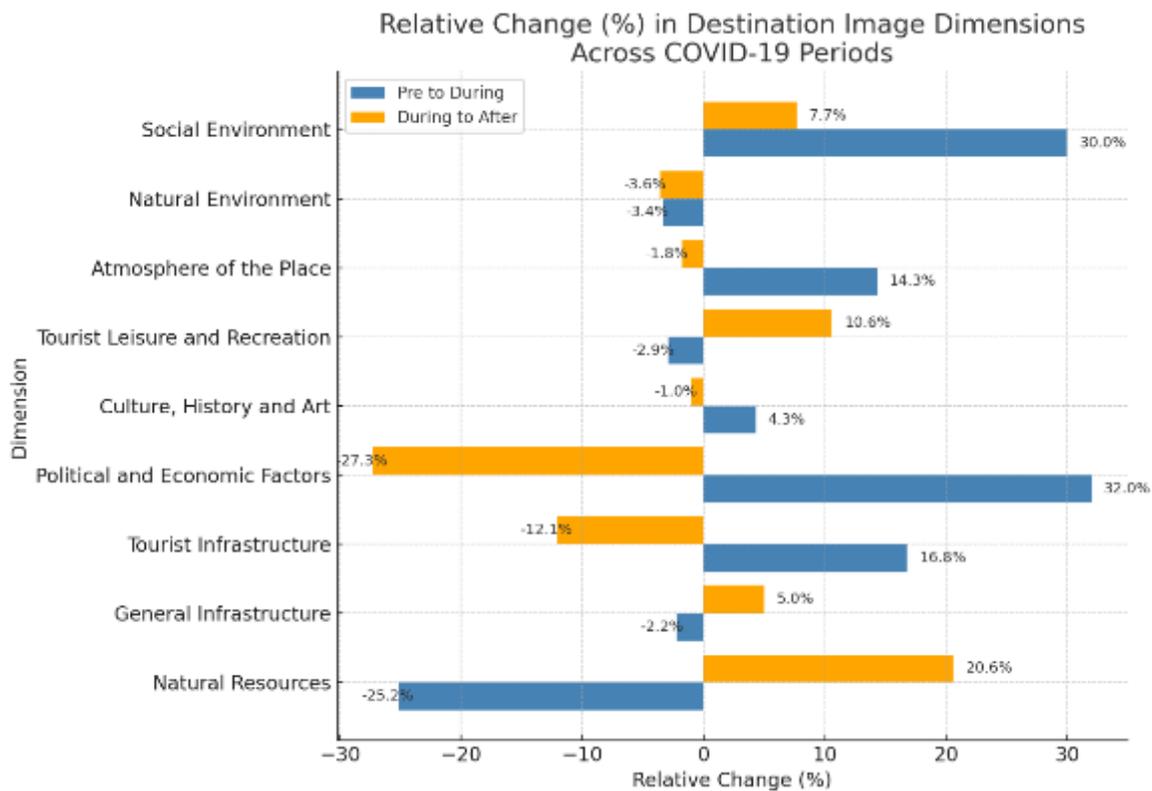


Figure 6: Relative Change (%) in Destination Image Dimensions Across COVID-19 Periods

Discussion of Cognitive Destination Image

The analysis of Reddit discussions reveals that Australia's cognitive destination image was consistently shaped by core dimensions, including natural resources, general infrastructure and tourist infrastructure, which dominated perceptions across all periods. These findings align with (Wei et al., 2021), who also identified these three dimensions as the most salient in the perceptions of Chinese tourists. The results highlight Australia's strong nature-based appeal, with beaches, islands and reefs standing out. At the same time, travellers expressed ongoing concerns about accessibility, especially transport (trains, buses, planes, airports) and healthcare (hospitals). Accommodation and leisure facilities—such as hotels, parks and restaurants—also played a key role in shaping overall impressions of the country.

While absolute change shows that COVID-19 did not significantly disrupt the overall proportion of most cognitive dimensions across periods, relative change provides a clearer picture of proportional shifts. It primarily shows an increase in political and economic factors and the social environment, alongside a decrease in natural resources. Other dimensions showed only minor or negligible relative changes across the period.

Political and economic factors showed a notable rise during the border closure, with related attributes reflecting increased discussion of government policies and economic stability. The frequent mention of 'price' across all the periods indicates strong concern about travel costs, likely centred on the expense of flight tickets, as highlighted in the previous section. This aligns with (James, 2022), who notes that Australia's geographic isolation contributes to high airfare prices, reinforcing travel cost as a significant concern to travel to Australia. Notably, prices became even higher during COVID-19 due to limited flight availability and operational challenges, further amplifying tourists' sensitivity to travel expenses (9NEWS, 2021).

For the social environment dimension, the perception of a 'friendly' atmosphere consistently ranked highly across all three periods, reflecting sustained hospitality and warmth from local residents. This aligns with (Michael et al., 2018), who identified friendliness as a key element of Australia's cognitive among Emirati tourists. However, discussion around this dimension intensified during the border closure, driven by a significant rise in racism-related discourse. This is consistent with global reports showing that COVID-19 fuelled xenophobia and racism, particularly targeting people of Chinese and Asian backgrounds (Elias et al., 2021; Reny and Barreto, 2022). In the Australian tourism context, James (2022) also found that working holiday makers in Australia experienced heightened racism, particularly in the early stages of the pandemic. This shift will likely contribute to a less welcoming and more hostile image of the destination.

Conversely, natural resources—Australia's key tourism asset—saw the largest relative decline during the border closure, reflecting the effect of the drop in international tourists because of the restriction. Despite this decline, natural resources remained the second most prominent dimension, suggesting sustained domestic interest in local natural experiences during the pandemic.

The tourist infrastructure dimension also showed a considerable increase in relative change during the border closure, although this was less pronounced than in the other dimensions mentioned above. This rise was driven by increased discussion around 'hotels,' which were closely linked to the specific circumstances of the period, particularly COVID-19 safety and hygiene protocols for accommodation (e.g. quarantine). Notably, continued interest in this dimension, along with natural resources and tourist leisure and recreation, suggests that tourism-related activity persisted during the border closure, indicating signs of domestic tourism during this period.

Affective Component of Destination Image

As discussed earlier, the affective image was assessed using two complementary methods: sentiment analysis, which identified the proportions of positive, negative, and neutral sentiments, and emotion analysis, which examined the distribution of eight basic emotions.

Pre-COVID-19 Sentiment

Figure 7 presents the sentiment distribution for 7,571 comments during the pre-COVID-19 period. Positive sentiments accounted for 67.6% (5,123 comments), indicating favourable perceptions or experiences. Negative sentiments comprised 27.9% (2,112 comments), reflecting criticisms, dissatisfaction or concerns. Neutral sentiments comprised 4.5% (336 comments), representing balanced or indifferent opinions. These results suggest a predominantly positive perception of Australia as a destination during this period.

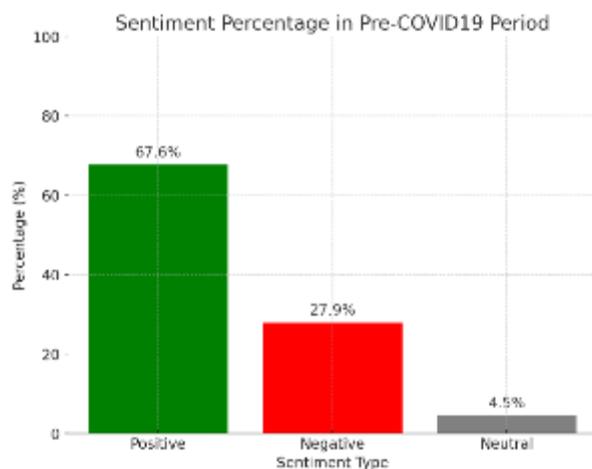


Figure 7: Sentiment Distribution in the Pre-COVID-19 Period

During the Border Closure

During the border closure period, sentiment distribution shifted significantly compared with the pre-COVID-19 period, based on 13,157 comments. Positive sentiment declined by 27.2% (from 67.6% to 49.2%, 6,477 comments), see Figure 8, reflecting a decrease in travel confidence. Negative sentiment increased by 38.0% (from 27.9% to 38.5%, 5,064 comments) (See Table 4), driven by fear and sadness about the situation, frustration over mobility restrictions and border closures. Meanwhile, neutral sentiment surged by 173.3% (from 4.5% to 12.3%, 1,616 comments), indicating heightened uncertainty and mixed reactions as individuals remained uncertain about future developments.

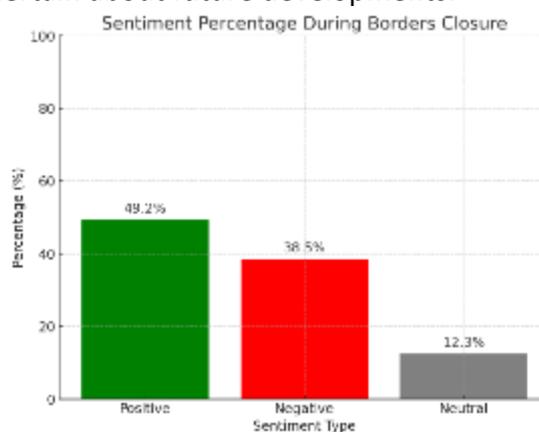


Figure 8: Sentiment Distribution During Border Closure

Post-border reopening, sentiment shifted positively, reflecting renewed travel confidence. Positive sentiment rose by 26.2% (from 49.2% to 62.1%, 5,596 comments), while negative sentiment dropped by 29.1% (from 38.5% to 27.3%, 2,459 comments), indicating reduced frustration as restrictions eased (Table 4). Neutral sentiment declined by 13.8% (from 12.3% to 10.6%, 955 comments), suggesting lingering but decreasing uncertainty. This trend highlights a recovery in Australia's destination image, indicating an overall improvement in traveller perceptions as tourism resumed.

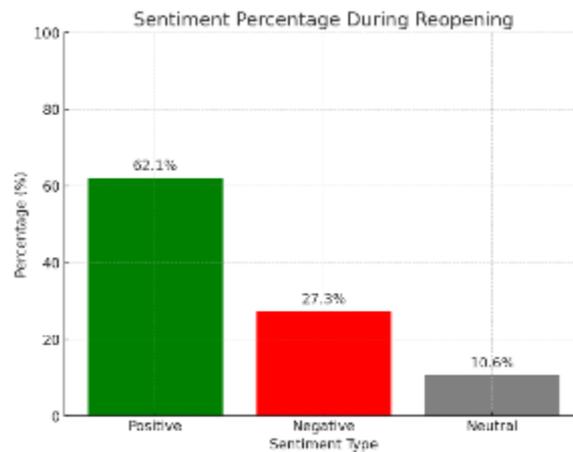


Figure 9: Sentiment Distribution Post-Border Reopening

Table 4

Comparison of Sentiment Types (%) Across the Three Periods

Period	Positive Sentiment	Negative Sentiment	Neutral Sentiment
Pre-COVID-19	67.60%	27.90%	4.50%
During border closure	49.2% (↓ 27.2%)	38.5% (↑ 38.0%)	12.3% (↑ 173.3%)
Post-border reopening	62.1% (↑ 26.2%)	27.3% (↓ 29.1%)	10.6% (↓ 13.8%)

Change of Emotions within Reddit Discussion

Figures 10,11 and 12 present an analysis of emotions across the three periods of Reddit discussions, illustrating how the eight emotions (anger, anticipation, disgust, fear, joy, sadness, surprise, and trust) are distributed per percentage in each period. Figure 13 shows the relative changes in these emotions across the three phases. The emotions of trust, joy, surprise and anticipation are considered positive, while disgust, fear, sadness, and anger are classified as negative (Feizollah et al., 2021).

Before the pandemic (Figure 10), the three dominant emotions associated with Australia were trust (20.6%), suggesting it was perceived as a reliable destination; anticipation (19.2%), reflecting eagerness, excitement, and curiosity about experiences; and joy (13.9%), representing happiness and satisfaction with the destination. Together, these emotions accounted for 53.7% of the total. Fear (12.8%) and sadness (10.2%) were moderate, likely linked to the late 2019–2020 bushfires. Anger (9.1%) and disgust (5.8%) were the lowest. These results indicate a generally positive and stable destination image, with visitors expecting rewarding and enjoyable travel experiences.

During border closures (Figure 11), negative emotions increased overall. Fear rose to 14.3% (+11.7%), reflecting heightened anxiety about travel risks and health concerns, while joy declined to 12.6% (-9.3%). Similarly, sadness increased to 11.3% (+10.7%), highlighting a more negative emotional climate (e.g. rising death cases). Meanwhile, anger slightly rose to 9.3% (+2.20%) and disgust increased to 6.2% (+6.9%), suggesting mild frustration. However, trust (20.0%) and anticipation (18.5%) remained relatively stable, indicating that Australia was perceived as a reliable destination despite COVID-19 conditions.

During the post-border reopening period (Figure 12), positive emotions remained dominant. Trust kept at the top as usual, anticipation rose to 19.7% (+6.49%), and joy rebounded to 14.1% (+11.90%), surpassing the pre-COVID-19 level. Negative emotions declined overall. Fear dropped to 12.3% (-13.99%), reflecting reduced anxiety, while sadness decreased to 10.4% (-7.96%). Anger (8.8%, -5.38%) and disgust (5.8%, -6.45%) also declined. Overall, positive emotions improved, with trust and joy leading the recovery.

Despite the challenges posed by border closures, Australia’s destination image remained largely resilient, with trust continuing to dominate emotional perceptions. As emotions such as fear and sadness temporarily increased, they did not undermine the long-term perception of Australia as a safe and reliable place to visit (they even became higher).

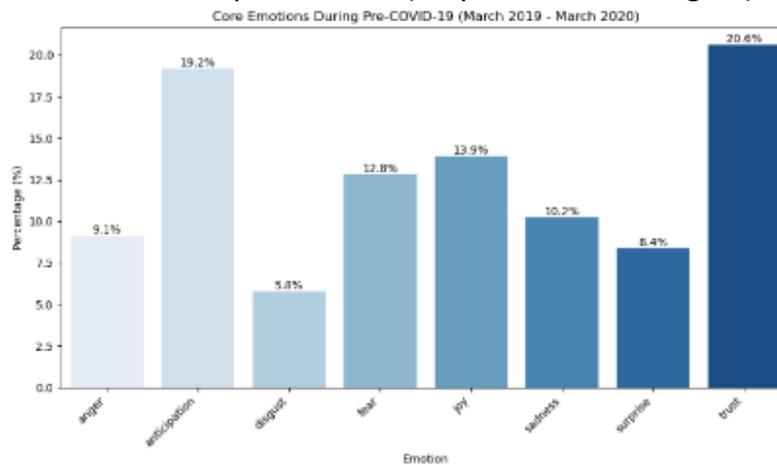


Figure 10: Emotions Distribution in Reddit Discussion Pre-COVID-19

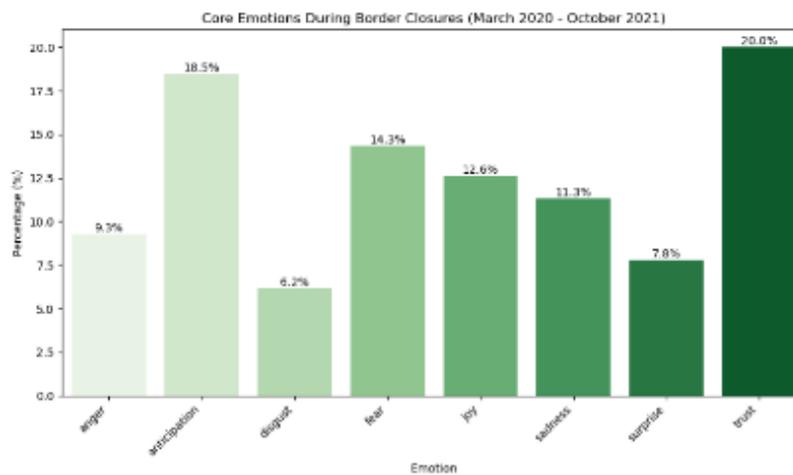


Figure 11: Emotion Distribution in Reddit Discussion during Border Closures

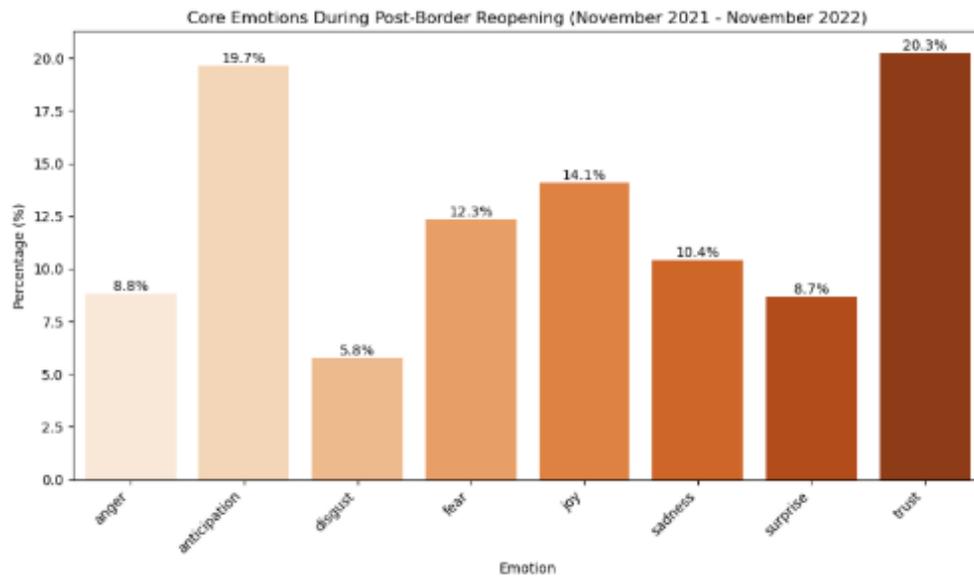


Figure 12: Emotion Distribution in Reddit Discussion Post-Borders Reopening

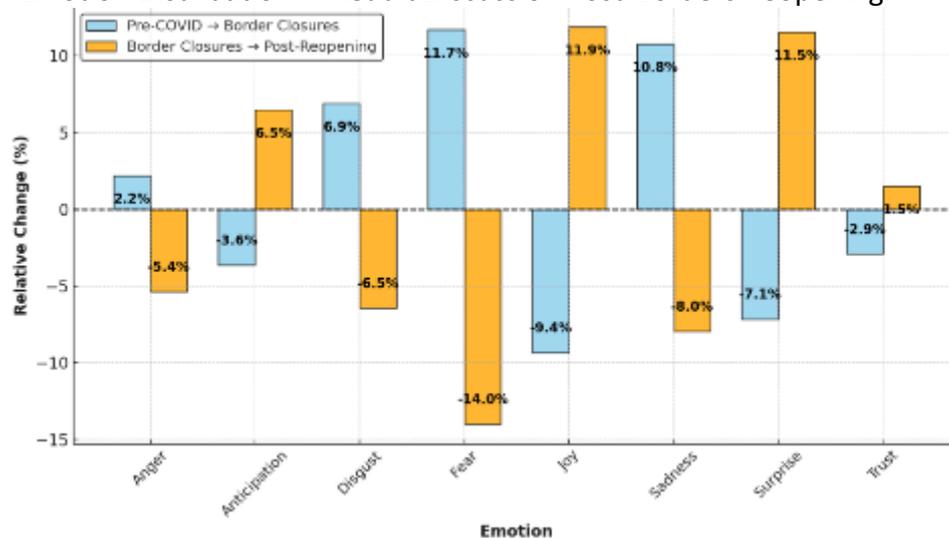


Figure 13: Relative Change in Emotions Across Phases

Discussion of Affective Destination Image of Australia

The analysis of Reddit discussions on sentiment and emotions indicates that Australia’s destination image was generally positive and favourable. While border closures led to temporary setbacks due to perceived risks and travel restrictions. This is evident from the prevalence of positive comments and emotions such as ‘joy’ and ‘trust’, particularly before and after COVID-19. Australia has consistently maintained high and stable levels of ‘trust’ emotion, despite the severe disruptions caused by the COVID-19 pandemic. This reflects strong individual confidence in Australia as a travel destination, positioning it as reliable and dependable.

The easing of lockdowns and the revival of domestic tourism during COVID-19 helped mitigate negative sentiment and enhance positive perceptions toward Australia by restoring tourist confidence. Additionally, government measures supporting tourism businesses, such as hotels, parks, and attractions, may have contributed to keeping the destination accessible and sustaining tourism activities for local visitors (Tourism Research Australia, 2022b).

Contribution of the Study*Theoretical Contribution*

This study advances destination image research by incorporating a temporal factor, tracking how destination image patterns change across three distinct phases of the crisis (COVID-19), rather than treating the image as static. It extends existing frameworks (e.g., Beerli & Martín, 2004) through a data-driven, emergent approach, enabling destination attributes, sentiments, and emotions to emerge organically from unsolicited user-generated content (UGC), rather than relying on predefined measurements used in traditional methods. This study also provides a customised destination image framework tailored to Australia, rather than applying a standard, one-size-fits-all framework commonly used across destinations.

Practical Contribution

The study identifies Australia's strengths (e.g. natural resources, safety, trustworthiness) and weaknesses (e.g. racism concerns, traffic, travel costs), offering a clear evidence base for DMOs to refine branding, improve communication and enhance visitor experiences. It provides crisis-management insights by showing how public sentiment and emotions shifted through different pandemic phases, helping authorities evaluate the impact of their policies and messaging. The findings highlight the need to address social and cultural concerns, promote inclusivity, and enhance communication during crises. They also reinforce the strategic importance of domestic tourism in times of crisis.

Conclusion

The primary objective of this paper is to investigate how Australia's destination image patterns changed across three phases of the COVID-19 pandemic (i.e. before the pandemic, during border closures, and after reopening) based on public discourse. The study employed a text-mining approach to analyse Reddit UGC. The study found that most destination image dimensions remained stable across the three periods, except for increases during the pandemic in transport and travel costs, political and economic factors, and the social environment, along with a decline in natural resources. Affective image patterns showed a rise in negative emotions such as fear, sadness, and anger, while trust remained consistent across all phases. This research has added new insights to the tourism literature by incorporating a temporal dimension and identifying latent destination image patterns from organic public discourse across three distinct phases of the COVID-19 pandemic using text mining. The study also supports practitioners and policymakers by identifying the strengths and weaknesses of Australia's destination image and evaluating the effectiveness of their response strategies. Additionally, it provides a practical framework for crisis communication and destination image management to inform future crisis preparedness and response efforts.

Future Research and Limitations

While this study provides valuable insights, several limitations should be acknowledged. From a contextual perspective, it focuses on a single-country case (Australia), limiting generalisability. Comparative research across different destinations could clarify whether the observed image changes are globally consistent or context-specific. Moreover, distinguishing between inbound and domestic tourists would provide a clearer understanding of divergent perceptions and motivations. From a data perspective, the analysis relies solely on Reddit user-generated content (UGC). A multi-platform and multilingual approach—incorporating data from travel blogs and non-English-speaking markets such as China, Australia's second-

largest tourism source—would enhance the validity and cross-market understanding of future research.

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