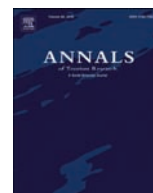




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A review of early COVID-19 research in tourism: Launching the *Annals of Tourism Research's* Curated Collection on coronavirus and tourism¹



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ARTICLE INFO

Article history:

Received 15 June 2021

Received in revised form 21 September 2021

Accepted 25 September 2021

Available online 1 October 2021

Handling editor: Sara Dolnicar

Keywords:

COVID-19

Systematic literature review

Keyword co-frequency analysis

Research contribution

ABSTRACT

The COVID-19 pandemic has brought unparalleled impacts to the global tourism industry, thus inspiring a wave of academic research. This paper presents a review of the early literature on COVID-19 and tourism, representing 249 papers. The analysis revealed five key themes: (1) psychological effects and behavior; (2) responses, strategies, and resilience; (3) sustainable futures; (4) impact monitoring, valuation, and forecasting; and (5) technology adoption. However, this research also raises questions about theoretical contribution, methodologies, and future research potential. This article also launches the *Annals of Tourism Research's* Curated Collection on coronavirus and tourism. The Collection contains all past articles published in *Annals of Tourism Research* on the topic and will continue to grow as new articles are added.

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Introduction

COVID-19 has had an indisputable impact on tourism. Yet, the extent and longevity of this pandemic are yet to be fully grasped. Nevertheless, tourism researchers have strived to capture change as it happens, reflect on the pandemic's importance, and forecast tourism's future. One year into this global crisis presents an opportune time to take stock of the field. To that end, this paper critically reviews the current tourism literature on COVID-19. In so doing, this article also launches the *Annals of Tourism Research's* Curated Collection on COVID-19 and tourism. The Collection will function as a living archive of COVID-19 research in the journal.

In December 2019, global news media began reporting on a novel coronavirus infecting people in Wuhan, the capital city of Hubei province in central China. The World Health Organization (WHO) confirmed that the virus had spread and declared the new coronavirus strain an emerging international public health threat in January 2020. The organization officially named the virus "severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)." Lockdown and quarantine measures were implemented in Wuhan at that time and later extended to all of China—and subsequently the world. In March 2020, WHO declared "coronavirus disease 2019," otherwise called COVID-19, a global pandemic. More than 90% of people worldwide were living under travel restrictions two months later (Asquith, 2020).

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By July 2020, infection rates had slowed, and travel restrictions were eased to varying degrees around the globe. The world witnessed the fluid opening and closing of travel corridors and travel bubbles as infection rates rose and fell (Sharun et al., 2020). However, as September 2020 approached, health professionals began warning of a potential second wave of infections as the northern hemisphere was poised to enter autumn. Cooler temperatures would drive people indoors and coincide with a return to university, with some students traveling long distances. Indeed, infection rates spiked in November. Amid concern about the upcoming holidays, many governments reinstated lockdowns and imposed stricter travel regulations (WHO, 2021). New variants began to be reported around this time as well. Meanwhile, promising news began to circulate regarding vaccine development, leading to an air of optimism around a possible “return to normal” in 2021. In tourism, specifically, additional rhetoric related to a “new normal” and “building back better” began circulating in the industry.

Against this backdrop of pandemic impacts and opportunities, this paper critically reviews the tourism literature related to COVID-19. This differs from other systematic literature reviews and bibliometric analyses, which draw upon a study area's expansion over time because research on COVID-19 has a distinct starting point. Many journal articles on the topic have been published over the last year, with more forthcoming. It is acknowledged that “you cannot step into the same river twice”; the flood of COVID-19 research is constant, as is variance in the pandemic. Nevertheless, one year into this crisis, it reaches a critical mass of research and a suitable point at which to reflect on the field. It is an ideal time to assess key findings and identify gaps to be addressed in future studies.

Towards this objective, 513 papers on COVID-19 and tourism published through January 11, 2021, were reviewed. Each articles' suitability was evaluated following the systematic review method (Pickering & Byrne, 2014), yielding 249 journal articles for analysis. These papers were then read, thematically coded, and subjected to keyword analysis. This review begins with a brief overview of crisis and disaster management. Next the methodology is elaborated, namely thematic analysis and keyword analysis. Then, the major research themes identified are described: (1) psychological effects and behavior; (2) response, strategies, and resilience; (3) a sustainable future; (4) impact monitoring, valuation, and forecasting; and (5) technology adoption. Finally, several prevalent issues in current COVID-19 research are discussed, and areas for future work are outlined. Notably, a lack of theoretical development is a concerning trend in this body of literature, raising questions about the significance of current COVID-19 research for the advancement of tourism theories.

COVID-19: crisis or disaster?

The COVID-19 pandemic is often conceptualized as a type of crisis or disaster. It is thus essential to examine the definition of each term before discussing the state of tourism research on the pandemic. The 21st century has seen increased sensitivity and awareness to crisis and disaster management in the global tourism industry. Although the terms “crisis” and “disaster” are often used interchangeably, some scholars have pointed out differences. Notably, Faulkner (2001) differentiated a disaster from a crisis as follows: a disaster occurs when “an enterprise ... is confronted with sudden, unpredictable catastrophic changes over which it has little control” (p. 136). By contrast, a crisis is at least partially attributable to internal organizational structures. A crisis thus refers here to internal events, whereas a disaster concerns external events.

In terms of COVID-19, a few researchers have argued that it is important to conceptualize the pandemic as a disaster to better understand how external factors (e.g., viral outbreaks) influence tourism (e.g., Hao et al., 2020). Conversely, a large number of researchers maintain that the notions of disaster and crisis are interchangeable in relation to COVID-19's role in tourism (Hall et al., 2020). A large-scale event such as COVID-19 will inevitably trigger internal and external challenges. In this vein, crises and disasters are unexpected occurrences that threaten the operation of tourism-related businesses, compromise destination reputation, and influence traveler confidence (Ritchie & Jiang, 2019). Hence, in this review article, crisis and disaster are treated as interchangeable terms.

Research methodology

Literature search

In order to review the early literature on COVID-19 and tourism, several steps suggested by Pickering and Byrne (2014) were followed for obtaining relevant literature. To begin, search keywords were identified including: “coronavirus tourism,” “pandemics tourism,” “pandemic tourism,” “COVID tourism,” “coronavirus tourist,” “pandemics tourist,” “pandemic tourist,” and “COVID tourist.” These were searched in two major databases – Google Scholar and the Web of Science (WoS) – with results limited to articles published in 2020 and 2021. Different from WoS, which only covers papers from WoS-indexed journals, conference papers, and books, Google Scholar provides records from an array of publications, including non-WoS-indexed journals. Moreover, unlike other databases, Google Scholar can in most cases search for keywords in full-text sources; this parameter improves search efficiency. Google Scholar also quickly indexes publications once they become available online, a process that can take weeks or even months on other traditional databases. This proved useful considering the limited timescale of publications for this review. On WoS, keywords were searched within the “social science journals” category. Search results were also checked from EBSCO and Scopus to ensure no studies in tourism and hospitality management had been inadvertently excluded.

Further refinements included limiting the sample to English publications and assessing the role of COVID-19 in the research presented. Many papers, such as that of Zhang and Yang (2020), only briefly discussed tourism implications in the (post-) COVID-19 era without integrating this context in their research framework. Such articles were removed from the sample.

Importantly, the sample was not limited to tourism and hospitality journals, as social science journals outside of this field offer insight into how COVID-19 and tourism are intertwined with multiple perspectives and contexts. As a result of this screening process in January 2021, the final sample consisted of 249 papers from 76 academic journals in and outside tourism. All were downloaded, and details were entered into a spreadsheet for data management.

Sample description

Table 1 provides a summary of the sample (Pickering & Byrne, 2014) by (1) journal, (2) geographic area of study, (3) unit of analysis, and (4) research methods.

Among the 76 journals featuring papers on COVID-19 and tourism, the top five (based on number of publications) were *International Journal of Hospitality Management*, *Current Issues in Tourism*, *Tourism Geographies*, *Annals of Tourism Research*, and *Anatolia*. These journals represent several highly ranked outlets in tourism and hospitality management per various metrics (Gursoy & Sandstrom, 2016). Aside from traditional tourism and hospitality journals, relevant publications also appeared in journals from disciplines such as general business (e.g., *Journal of Business Research*), geography (e.g., *Dialogues in Human Geography*), public health (e.g., *International Journal of Environmental Research and Public Health*), information systems (e.g., *Journal of Statistics and Management Systems*), sociology (e.g., *International Journal of Sociology and Social Policy*), human development (e.g., *Early Human Development*), public affairs (e.g., *Journal of Public Affairs*), transport (e.g., *Transport Reviews*), and area-specific studies (e.g., *Development Southern Africa*). Additionally, the structure of the publications is noteworthy. Many authors appeared interested in publishing their findings in a timely manner without developing their research into a full-length article; many papers were hence in brief formats, such as research notes or short communications. Therefore, full-length research articles were less common than anticipated. Instead, research notes, commentaries, letters, and other short communications were prominent. In particular, a considerable number of articles were published in formats that did not require external peer reviews, such as letters to editors and commentaries.

Table 1 also lists the top five most researched countries/regions in the sample. Studies on the United States and China dominated, accounting for 21.8% and 20.3% of publications, respectively. Fig. 1 depicts the location of researched countries/regions. Europe (especially southern Europe) and Asia (especially East Asia and Southeast Asia) seemed particularly popular. Other geographical regions remain understudied, such as South America, the Middle East, and Africa.

Publications were further classified based on the unit of analysis. *Individual-level studies* considered how COVID-19 has influenced people's perceptions, behavior, psychology, and well-being, including among (potential) tourists, industry employees, and destination residents. This category comprised 37.35% of publications in the sample. Common research topics included tourists' perceived risks of traveling during the pandemic (Nguyen & Coca-Stefaniak, 2020), employees' psychological responses to the pandemic (Chen, 2020), and residents' attitudinal and behavioral changes (Tse & Tung, 2021). *Organization-level studies* evaluated

Table 1
Summary table of literature.

Category	Number of papers	Percentage
Journals of publication		
<i>International Journal of Hospitality Management</i>	33	13.3
<i>Current Issue in Tourism</i>	30	12.0
<i>Tourism Geographies</i>	29	11.7
<i>Annals of Tourism Research</i>	21	8.4
<i>Anatolia</i>	11	4.4
Countries/regions of research		
United States	29	21.8
China	27	20.3
India	9	6.8
Spain	6	4.5
Greece	5	3.8
Italy	5	3.8
Europe	4	3.0
Canada	3	2.3
Macao	3	2.3
South Korea	3	2.3
Unit of analysis		
Individual	93	37.4
Organization	26	10.4
Destination	41	16.5
Industry	89	35.7
Research methods		
Conceptual	121	48.6
Mixed methods	1	0.4
Qualitative	26	10.4
Quantitative	101	40.6

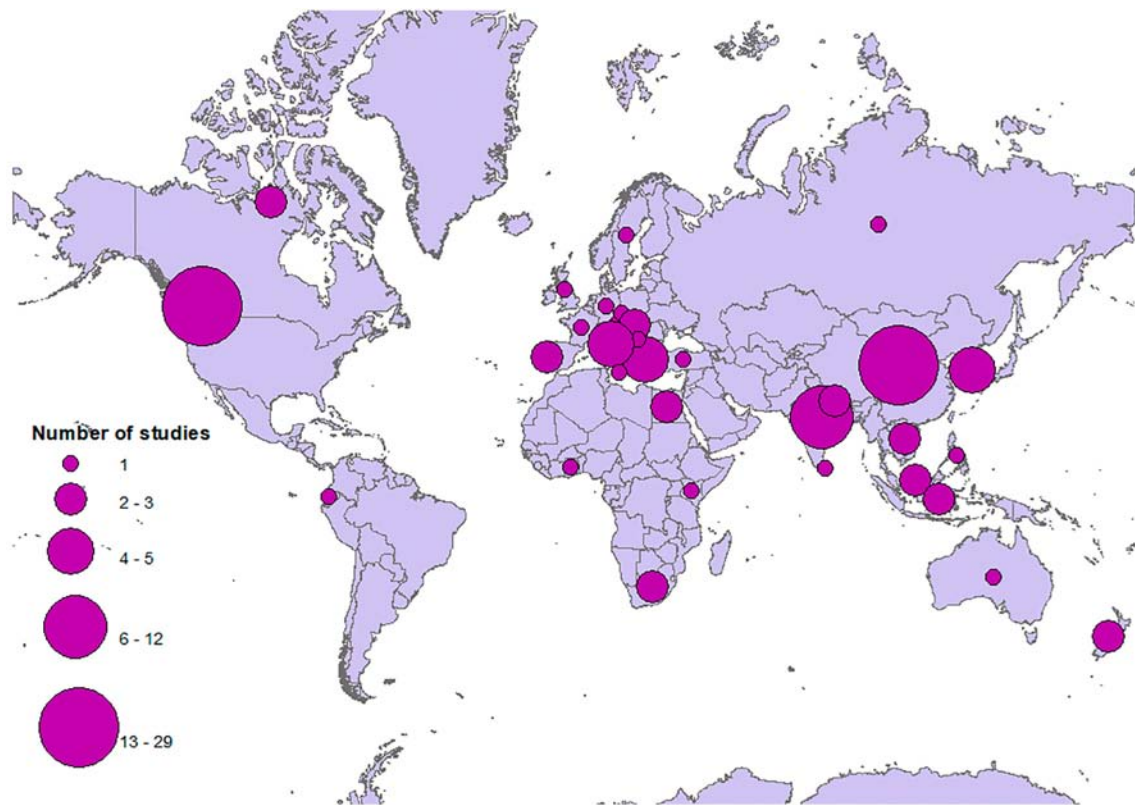


Fig. 1. Map of researched countries/regions.

COVID-19s impact on organizations' operational and financial performance (Sharma & Nicolau, 2020) and examined organizational responses and resilience to the pandemic (Sobaih et al., 2021). Several publications in this category specifically addressed organizational resilience, providing generalizable insight for crisis management. The sample contained 10.44% organization-level studies. *Destination-level studies* accounted for 16.47% of collected publications. These studies evaluated the pandemic's effects on destinations (e.g., cities, regions, and countries) (Yang, Altschuler, Liang, & Li, 2021) and discussed strategies and policies to alleviate its adverse consequences (Collins-Kreiner & Ram, 2020). *Industry/sub-industry-level studies* focused on how the pandemic has influenced the tourism industry and sub-industries such as hotels (Lai & Wong, 2020), home-sharing (Dolnicar & Zare, 2020), airlines (Gallego & Font, 2021), and cruise lines (Choquet & Sam-Lefebvre, 2021). This category represented 35.74% of all publications, and many such papers were conceptual studies.

Regarding research methodologies, nearly half of the chosen publications (48.59%) were conceptual, as evidenced by frequent commentary pieces. Quantitative methods were much more popular than qualitative approaches. Among the sample, 40.56% of papers were quantitative; only 10.44% were qualitative. Favored quantitative methods included surveys, econometric analysis, text analytics, experiments, and forecasting. A large portion of quantitative studies relied on survey data and adopted multivariate statistical analysis (e.g., structural equation modeling) to examine the impacts of COVID-19-related constructs (e.g., perceived risk and uncertainty) on various tourism consequences (e.g., behavioral intention and well-being) (e.g., Nguyen & Coca-Stefaniak, 2020). Econometric analyses were mostly based on secondary sources and included COVID-19-related variables (e.g., lockdown policies and confirmed cases) in econometric models (e.g., Sharma & Nicolau, 2020). Text analytics were utilized to examine textual data from social media, public media, and published reports to uncover related themes, topics, and sentiments (e.g., Lu & Zheng, 2021). Experimental studies were performed to solicit individuals' responses under different pandemic scenarios and to compare patterns across these situations (e.g., Zhang et al., 2020). Given the great uncertainty accompanying the pandemic, tourism forecasting has become vital to projecting tourism-related recovery; many quantitative studies applied assorted models to yield forecasts in the (post-)COVID-19 era (e.g., Škare et al., 2021). Within qualitative research, interviews, case studies, and content analysis were most common. Only one study in the sample used a mixed method, adopting a survey to gather quantitative data and holding interviews to generate qualitative findings (Brizek et al., 2021).

Keyword co-frequency analysis and qualitative thematic analysis

In order to understand the topical areas of tourism research undertaken in the context of the COVID-19 pandemic, keyword co-frequency analysis, a form of content analysis, was performed using Textometrica online software. This process clarified topical

areas of tourism research related to COVID-19 and assisted in devising a structure for presenting the findings. Textometrica is an open-access online tool that analyzes word co-occurrences within discrete text blocks using connected concept analysis through min-max normalization (Lindgren & Palm, 2011). Textometrica then produces visualization maps in which the sizes of nodes signify occurrence frequency, and the thickness of the edge connecting nodes indicates the strength of their co-occurrence.

For this review, Textometrica was used in conjunction with qualitative thematic analysis (see also Fellenor et al., 2018). This resulted in an iterative process in which the researchers used the initial output from Textometrica analysis to discern potential themes in keywords, which could then be combined or separated to illustrate trends in the chosen research articles. All author-provided keywords for the 224 papers in the sample were first imported into Microsoft Excel (some publications, such as research notes and commentaries, had no keywords so these were created). The first step involved cleaning for uniformity (i.e., US spelling). This step also included the removal of common denominator terms such as “COVID,” “pandemic,” “tourism,” and so on, as these were the search criteria for the sample and overshadowed topical research areas. Further, multiple word concepts were joined to reduce redundancy from Textometrica and to highlight their frequent co-occurrence (e.g., “mental health” = *MentalHealth*; “climate change” = *ClimateChange*; “social media” = *SocialMedia*).

Next, consistency of terminology and topical representation was refined. To further reduce redundancy, similar terms were combined. For example, all mentions of “social distancing,” “physical distancing,” “distant service,” and so on were merged into

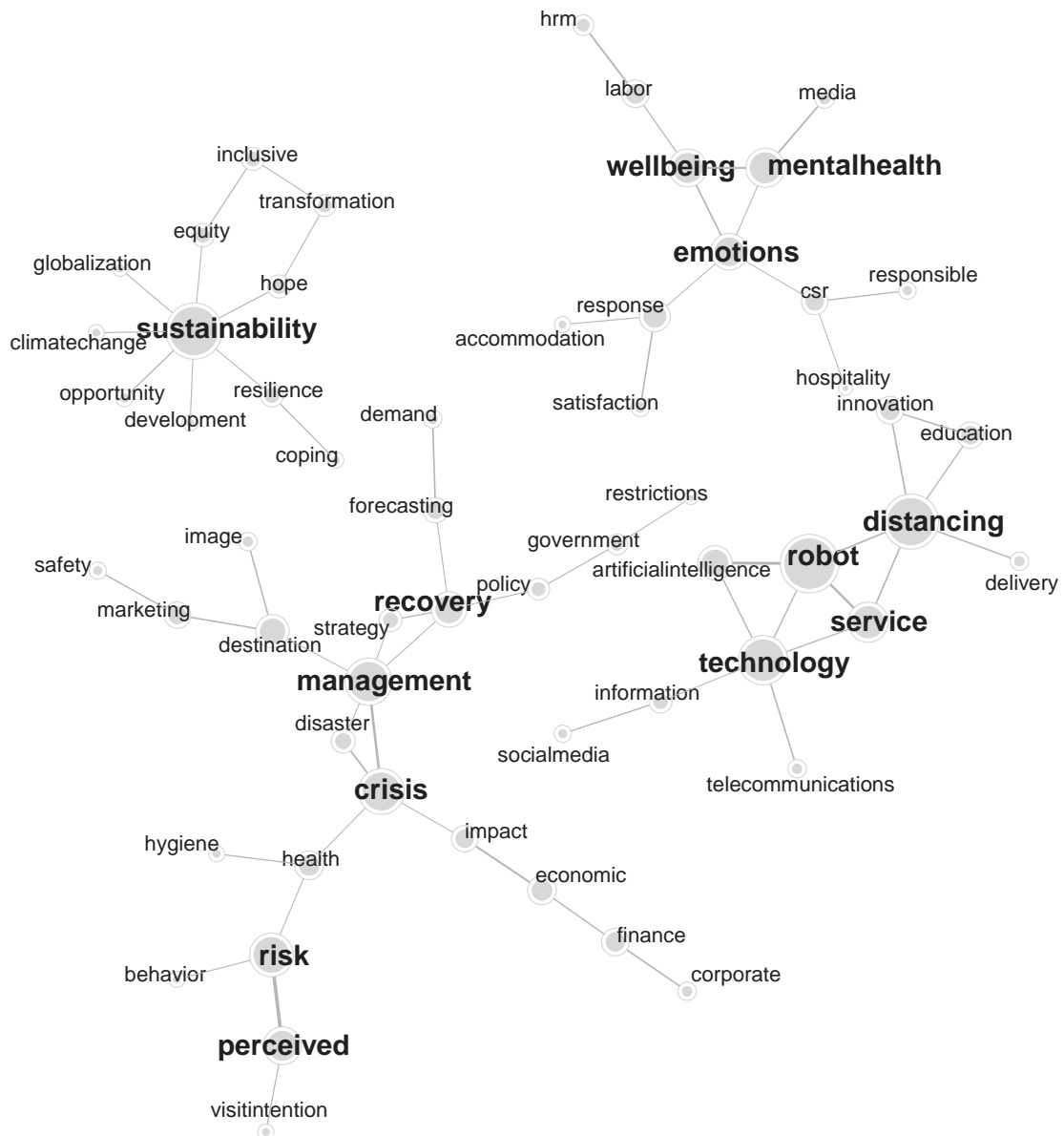


Fig. 2. Keyword co-frequency visualization.

simply *Distancing*. Then, the Textometrica output was employed to assist in the construction of themes to capture related terms that individually appeared infrequently in the sample but collectively represented a notable topic. For example, the theme of *Equity* encompassed the topics of equity, rights, values, justice, inequalities, discrimination, and so on. Similarly, the *Emotions* theme reflected stress, loneliness, anxiety, fear, and nostalgia, while *Hygiene* included hygiene, cleanliness, sanitation, and cleaning, among others.

After several rounds of Textometrica analysis and revisiting the keywords, the final visualization was created (Fig. 2). This map was built from a keyword frequency range of 2–34 (min-max) across 91 distinct terms, leading to a co-occurrence range of 2–16 (min-max). In this case, 62 co-occurrences were mapped thus representing the strongest frequencies in the sample. This map informed the arrangement of topical areas discussed in the findings.

Findings: major research themes

Psychological effects and behavior

Within the keyword co-frequency analysis, two areas related to the psychological effects of the pandemic prevail in the sample. First, the themes of *Well-being*, *Mental Health*, and *Emotions* form the central nodes of a cluster in the upper right quadrant of Fig. 2. Second, in the lower left quadrant, another important aspect of psychological consequences and travel behavior can be observed: *Risk* is most strongly connected to *Perceived*, which is subsequently connected to *Visit Intention* while also linking to *Behavior* and *Health*.

When considering psychological effects and individuals' behavior during crises and disasters, the notions of risk, threat, and uncertainty heavily influence people's mental states and emotions (Ritchie & Jiang, 2019). Psychologists argue that fear is a common response to a pandemic (Van Bavel et al., 2020). COVID-19-related research on psychological effects and behavior thus largely focuses on how people feel and respond to risk, its implications for behavior, and its impacts on tourism businesses' operations.

Risk perceptions

Risk is strongly associated with various types of crises and disasters (Williams & Baláž, 2015). It thus comes as no surprise that risk perceptions were prominent in the literature. Many early commentaries attributed the decline in tourist numbers to global travel restrictions as well as to tourists' growing attention to risk, hygiene-related safety, and cleanliness. For example, Bae and Chang (2021) examine tourists' cognitive and affective risk perceptions in relation to behavior and conclude that travelers preferred "untact" tourism in South Korea due to travel restrictions and social distancing. Additionally, the pandemic's long duration has offered opportunities to closely examine tourists' behavior during crises and disasters, a topic that was previously overlooked. For example, Zhang et al. (2020) conceptualize risk as a shared emotion that mediates tourists' responses to disadvantaged price inequality during the pandemic. Rather than simply describing the pandemic's impact on individuals, Zheng et al. (2021) take a further step and contend that "travel fear" can evoke different coping strategies, thereby increasing tourists' psychological resilience and cautious travel behavior. More generally, Cai and Leung (2020) investigate how the interplay of a construal mindset and message frames affects consumers' purchase intentions around online food deliveries during the pandemic. They also explore the moderating effects of risk propensity.

Many studies delved into how incoming tourists will influence residents' risk perceptions during the COVID-19 era. A protective mindset to mitigate perceived risk from "outsiders" (i.e., tourists) in local communities appears common in the COVID-19 literature. Topics include residents' discrimination against tourists (e.g., Tse and Tung, 2021), being unwelcoming towards certain tourists (e.g., cruise tourists) (e.g., Renaud, 2020), and being sympathetic towards international travelers (Thyne et al., 2020). The pandemic also triggered reflections on research pertaining to risk and tourism-related diseases: Chen et al. (2021) analyze 115 articles related to the risk of tourism-related diseases and observe the absence of a theoretical framework for studies on disease risk management.

Well-being and mental health

Many negative emotions are associated with the COVID-19 outbreak and can affect people's well-being and mental health. These are also associated with risk perception studies, particularly when social distancing and travel restrictions coincide with isolation and loneliness. While such emotions affect mental health and well-being, few studies have examined tourists' emotional responses and coping strategies related to (non-)travel during the pandemic. One exception came from Buckley and Westaway (2020), who argue that walking-in-nature tourism products for women have psychotherapeutic benefits.

Others investigate the roles of employees' feelings, emotions, and well-being under the stress of COVID-19. Mao, He, Morrison, & Andres Coca-Stefaniak (2021) suggest that the risks and challenges of the pandemic can be more effectively addressed through joint efforts from companies and staff. They also examine the effects of tourism-related CSR on employees' psychological capital during times of crisis, claiming that CSR positively influences employees' self-efficacy, hope, resilience, and optimism. In acknowledging the importance of safety procedures in mitigating customers' risk perceptions, Hu et al. (2021) explore how organizations can carefully comply with safety measures in the hospitality industry to facilitate employee compliance and enhance employees' well-being.

Motivation and behavioral intention

Motivation and behavioral intention are integral aspects of consumer psychology and underlie individuals' perceptions, emotions, and ultimate behavior. Motivation-related tourism research has often involved discussions of risk, threats, and uncertainty regarding crises and disasters. The motivations behind many tourist activities were previously rooted in sociality and the interaction of people and places. However, as social distancing, quarantines, and global travel restrictions become increasingly embedded in everyday life, the ways tourists interact with people and places through travel are being altered and in turn shaping behavioral intentions. Tourism commentaries describe these risk-related motivations. For example, [Bhati, Mohammadi, Agarwal, Kamble, & Donough-Tan \(2021\)](#) discuss health-protective motivations and behavior. [Rachmawati and Shishido \(2020\)](#) address travelers' motivations to travel abroad amid COVID-19. A few empirical studies explore specific motives during the pandemic: [Kock et al. \(2020\)](#) apply evolutionary psychology to underline disease avoidance as the main tourist motivation during the pandemic. Relatedly, [Huang & Liu \(2020\)](#) assess the effectiveness of corporate social responsibility (CSR) marketing in terms of COVID-19-inspired altruism on past tourists' donation intentions.

Responses, strategies, and resilience: organization and government

As discussed above, the COVID-19 pandemic relates to both crisis and/or disaster management perspectives. Prominent themes in the keyword co-occurrence analysis, as shown in the left central portion of [Fig. 2](#), include *Crisis*—a frequently used concept in relation to *Management* that also connects with *Health* and *Impact*, specifically economic impact. *Management* represents a large and central node, connecting to *Destination*, *Strategy*, and *Recovery*, which subsequently links to *Policy*. Relatedly, the theme of *Resilience* occasionally appears in studies on destination management and recovery strategies; however, this theme is more often used in relation to future sustainability.

Businesses and governments are increasingly recognizing resilience as a crisis/disaster management tool that helps them respond to pandemic-related challenges. Resilience suggests that destination recovery depends on destinations' ability to adapt to external disturbances ([Cochrane, 2010](#)). Tourism resilience also applies beyond destinations, including to organizations, communities, and other stakeholders ([Filimonau et al., 2020](#)). Unsurprisingly, resilience is something of a buzzword in COVID-19 research. [Sharma, Thomas, and Paul \(2021\)](#) propose a resilience-based framework for revitalizing the global tourism industry and moving towards a sustainable future. This section reviews organizational and government responses, where resilience is often embedded within these responses to facilitate recovery from various angles.

Governments

Governments across different nations have been working diligently to aid the industry and support various initiatives guiding a return to "normal." The success or failure of tourism is largely a function of political and administrative action ([Richter, 1989](#)). The resilience of organizations and destinations during the pandemic is accordingly contingent on government responses and policy. Social distancing, travel restrictions, and quarantines emerge in nearly all discussions of COVID-19, including tourism. Hence, many tourism studies have considered government responses to COVID-19 and argue for proactive government interventions to boost the economy (e.g., [Hall et al., 2020](#); [Sharma, Shin, et al., 2021](#)). Some commentaries reveal how governments have implemented innovative strategies during the pandemic (e.g., [Choi et al., 2021](#); [Collins-Kreiner & Ram, 2020](#)). For example, [Collins-Kreiner and Ram \(2020\)](#) review national tourism strategies in seven countries during the pandemic and find that only a small proportion of UNWTO recommendations were fully implemented. Others discuss an indigenous-informed approach to enact socially sensible pandemic policies (e.g., [Carr, 2020](#)).

With respect to destination resilience, the aim is to bolster destination stakeholders' resilience to better manage future disasters. Governments often play a supportive and coordinating role. [Fong et al. \(2021\)](#) demonstrate that a host community could predict a swift tourism recovery if members perceived their government as controlling the pandemic well. Similarly, the increasing affective rate among cruise ships motivated [Choquet and Sam-Lefebvre \(2021\)](#) to analyze the legal framework for coastal governments to manage health-related risks and argue for inter-country cooperation to overcome pandemic conflicts. Others assume a destination marketing perspective to explore COVID-19s effects on destination image and the implications for destination management ([Ahmad, Jamaludin, Zuraimi, & Valeri, 2021](#)). However, detailed empirical analysis of the public sector is relatively limited, including in terms of policy implications for tourism businesses. Lessons on how to better manage future disasters, especially from a government perspective, must continue to be learned.

Organizational responses

As the pandemic has affected tourism on an unprecedented scale, many innovations have been developed to build business resilience. Non-technological responses are profiled here; innovative technological responses will be introduced later. In comparing crisis management practices in hotels between the initial and pandemic stages of COVID-19, [Lai and Wong \(2020\)](#) examine shifts in hotel managers' mentalities and their responses to COVID-19. Building emotional connections with tourists has also been deemed essential to pandemic-related marketing ([Chen, 2020](#)). [Ratten \(2020a\)](#) reviews the potential integration between crisis management and entrepreneurship from cultural, social, and lifestyle entrepreneurship perspectives.

Effective leadership is crucial during crises such as COVID-19. Leadership can bring individuals together in addition to modeling expected behavior during a pandemic. [Im et al. \(2021\)](#) analyze hospitality CEOs' letters to understand how leaders strove to respond to the pandemic. [Alonso et al. \(2020\)](#) discuss coping strategies for hospitality managers facing the pandemic to foster business resilience. Others have explored how managers chose to oversee relationships in the tourism supply chain

(e.g., González-Torres et al., 2021). The ongoing nature of the pandemic has offered opportunities for comparative studies as well: Lai and Wong (2020) compare crisis management practices in the hotel industry between the initial and pandemic stages of COVID-19.

Upon reflecting on the pandemic's impacts, some researchers have called for stronger integration of organizations' CSR to promote resilience against future disruptions. Ou et al. (2021) illustrate the co-evolution of crisis for restaurant chains and their stakeholders, noting the importance of collaborating for recovery. Qiu, Park, et al. (2020) suggest that community-related CSR in particular has a rapid positive effect on businesses' financial recovery during COVID-19.

Sustainable futures

In the upper left quadrant of Fig. 2, *Sustainability* is a large central node housing many themes in COVID-19 research, including *Climate Change*, *Equity*, *Hope*, *Resilience*, and *Opportunity*. The theme of *Sustainability* thus serves as a catch-all to elevate many research areas in the context of the pandemic. Indeed, COVID-19 studies of sustainability often implore scholars to rethink their understanding of sustainability, to situate this concept within an ever-changing world, and to imagine an innovative and sustainable future. This research examines questions related to power dynamics, the ex/inclusivity of current socioeconomic and political systems, and why the pandemic might present an opportunity for systemic change. The themes *Transformation* and *Hope* also apply to sustainability-related tourism studies, linked with the themes *Inclusive* and *Equity* as shown in Fig. 2.

Sustainability

Sustainability has long been a core tenet of tourism industry ambitions. It has inspired rigorous research and heated debate around the term's meaning, principles, and benchmarks. Thus, it is unsurprising that this topic appears repeatedly in the COVID-19 literature. In the earliest days of the pandemic, when flights were canceled, work-from-home orders were issued, and borders closed, many people around the world observed improvements in air quality and reductions in noise pollution. These immediate changes inspired Cooper and Alderman (2020) to assert that the industry must take triple bottom line sustainability more seriously. A reduction in greenhouse gases is essential to the future of the planet, but in advocating a triple bottom line approach, they also remind this must be balanced alongside the maintenance of resilient local economies (see also Jones & Comfort, 2020; Newsome, 2020). Galvani et al. (2020) take this stance a step further by arguing that, to achieve sustainability, the concept must be valued in individuals' everyday lives, who then embody its principles in their own businesses and political decisions (see also Corbisiero & La Rocca, 2020).

While overtourism was among the trendiest topics pre-COVID, the consequences of the pandemic have led some to reflect on the longevity of the phenomenon. Similar to the line of thinking that the cessation of travel presents an opportunity for introducing more sustainable systems at the destination level (Swai Koski, 2020), researchers of overtourism highlight the importance of curbing the impacts of too many tourists for destination infrastructure and building back community resilience (see Koh, 2020). The previous pervasiveness of overtourism has been complemented by a series of articles on undertourism and destinations' socioeconomic dependency on tourism (Romagosa, 2020). Considering this discussion around the need for change to support future sustainability, what practical implications can be drawn from the literature? Much of what has been written to date is largely descriptive and conceptual. While important for inspiring conversation and future studies, this level of abstraction leaves stakeholders with few actionable ideas.

The more common approach in this literature has been to argue that the current thinking about sustainability is simply insufficient: scholars must rethink their conceptualizations and theoretical assumptions. Higgins-Desbiolles (2020) states that more responsible approaches will not be enough to drive this "reset" forward. Instead, tourism stakeholders need a community-centered framework that prioritizes the rights and aspirations of destination communities with specific attention to tourism as a public good (Higgins-Desbiolles, 2020). Carr (2020) recommends that turning to indigenous knowledge (e.g., the Maori) for resilient solutions is paramount. Doing so will enable practitioners to attend to the social needs and cultural values that are critical for building a "more positive global society." Similarly, Everingham and Chassagne (2020) propose an alternative to the neoliberal, capitalist, neocolonial framing of tourism through a "Buen Vivir" approach, which espouses a degrowth strategy emphasizing social and environmental well-being.

Inclusivity

In addition to the cluster of literature on rethinking sustainability models and frameworks, there is also a critical mass of tourism scholarship highlighting the significance of greater inclusivity to sustainable tourism futures. In particular, Tomassini and Cavagnaro (2020) suggest that a return to Massey's (2005) theorization of power geometry sheds light on the inequalities of the pandemic's effects. In critiquing neoliberal capitalism, Massey (2005) presented an understanding of space as a multi-relational network of power dynamics. Applying this perspective, Tomassini and Cavagnaro (2020) argue that the imbalance in power relations held by the global tourism industry has rendered local relations fragile in the face of the pandemic, thereby necessitating a refocus on local-level wellbeing, safety, security, and a (re-) activation of local networks. Relatedly, Ratten (2020b) contends that the COVID-19 crisis has opened destination communities to stronger dialogue on social policy and support for value co-creation through local entrepreneurship. An example of such value co-creation is explored by Pardo & Ladeiras (2020) project "Tourism in flight mode: Thinking together through post Covid-19 tourism", which was a digital platform for participants to offer potential tourism recovery products.

Hopeful and transformative approaches

Rather than a natural phenomenon, there has been a strong response among political ecologists to affirm COVID-19 as a socio-economic disaster. Denaturalizing the pandemic, argues Mostafanezhad (2020), opens an opportunity for hopeful scholarship. Rather than human or natural “error,” the crisis is an opportunity to shed light on structural inequalities and work towards a more just society. This hopeful perspective can be found among several COVID-19 publications.

Hopeful scholarship, according to Pernecky (2020), has evolved out of the moral imperatives of sustainability and the acceptance that researchers are value-driven producers of knowledge with an eye towards a more inclusive, equitable, and sustainable society. Pernecky (2020) identifies several types of hopeful research—critical hope, hope-as-utopia, transformative hope, radical hope, and pragmatic hope—and contends that the pandemic, as a moment of crisis, has evoked a renewed sense of care, mindfulness, and anti-consumerism. More specifically, Crossley (2020) identifies a reaction of “ecological grief” as society witnessed lower air pollution, animals’ reclamation of urban spaces, and collective reflection on social media-driven lifestyles. This ecological grief, she argues, suggests a greater interest in environmental healing, which ties into broader agendas of hopeful tourism.

Hopeful tourism shares some commonalities with transformative and regenerative tourism, more broadly. Rowen (2020) recommends incorporating the creative, pro-social aspects of transformational festival culture, often associated with events such as Burning Man, with tourism post-COVID. The resulting transformational tourism would push beyond responsible and sustainable practices, to encourage the breakdown of host-guest divides through a shared sense of humanity which prioritize participatory action and civic responsibility. Ateljevic (2020) and Cave & Dredge (2020) expand upon this notion by advocating for regenerative tourism. Ateljevic (2020) identifies a “silent revolution” driven by public good and conscious citizenship, in which personal (inner) transformation is being reflected outward in everyday practices. Yet, in conceptualizing regenerative tourism, Cave and Dredge (2020), focus more on the complexity of the economics, suggesting not for complete dismantling of capitalism but rather diverse economies – the co-existence of capitalism, alternative capitalism, and non-capitalist agendas – as offering more opportunities and therefore more resilience to destination communities.

Impact monitoring, valuation, and forecasting

As the pandemic has brought unprecedented challenges to the global tourism industry, timely impact monitoring and valuation are vital for decision-making at different levels. These activities constitute a prominent area of interest across much of the sample, as seen in the lower central area of Fig. 2: *Impact* connects with *Crisis* and *Economic*. Centrally in Fig. 2, *Forecasting* and *Demand* each connect to *Recovery*. Some studies present a comprehensive overview of COVID-19s potential effects on tourism. Using a tourism systems approach, Bausch, Gartner, & Ortanderl (2021) develop an impact grid to understand the pandemic’s consequences on tourism among subjects (e.g., tourists and locals) and objects (e.g., destinations and intermediaries). This tool can help practitioners better monitor and evaluate the effects of policies and interventions on the tourism system. Sigala (2020) details the impact of COVID-19 on tourism from the perspectives of three major tourism stakeholders (i.e., tourism demand, tourism operators, and destinations and policymakers) at the pandemic’s response, recovery, and reset stages. The author argues that innovative and explanatory research serve different stakeholders’ needs. Yang, Altschuler, Liang, & Li (2021) devise a COVID19tourism index to monitor the pandemic’s impact on the global tourism industry, including five sub-indices to track COVID-19s effects on different aspects of tourism activities. Using this tool, destinations can evaluate their recovery status, produce rigorous forecasts, and benchmark themselves against possible competitors.

Economic impact analysis

Economic impact analysis can help identify economic losses associated with the pandemic and how these losses affect interconnected economic sectors and parties. Traditional economic impact analysis tools, such as econometric analysis and macro-economic models, have been applied to calibrate COVID-19s economic impact across regions. Huang et al. (2020) use econometric analysis to examine the effects of the pandemic and intervention policies on the US labor supply in tourism-related industries. Business closures result in a decline in employment and small business operations in the hospitality industry. Khan et al. (2021) model the impact of COVID-19 on employment patterns in tourism-related sectors in the US; museums and historical places, performing arts, and sports appear most vulnerable. Other econometric studies evaluate consequences based on stock market data from tourism-related firms. For example, Sharma and Nicolau (2020) assess the pandemic’s impact by estimating how the infection and fatality rates influence US stock returns of tourism-related industries; cruise lines were most substantially affected. Kaczmarek et al. (2021) gather stock market data from tourism-related companies across 52 countries, revealing that low-valuation, limited-leverage, and high-investment companies are less influenced than others. Moreover, firms in countries upholding certain closure policies are more resilient to the negative effects of COVID-19. In terms of macro-economic modeling, Yang, Zhang, and Chen (2020) develop a dynamic stochastic general equilibrium model to understand COVID-19s impact as an external economic shock. Policies subsidizing tourism consumption were useful in alleviating associated consequences.

Non-economic impact analysis

In addition to economic impact modeling, several studies calibrate the socio-cultural effects of the pandemic. Qiu, Li, and Li (2020) estimate residents’ willingness to pay for pandemic risk reduction and calibrate the social costs of pandemic risk resulting from tourism activity in three major Chinese cities. Likewise, Yang & Wong (2020) examine tourists’ decline in social well-being

following perceived discrimination due to COVID-19. This effect was further moderated by COVID-19-related anxiety and social media use.

Tourism forecasting

Scholars also levy tourism forecasting to project tourism recovery based on the patterns and evolution of pandemic-related impacts. Polyzos, Samitas, & Spyridou (2021) employ a deep learning artificial neural network model to estimate such effects and predict the recovery of tourist arrivals. They also incorporate historical insights from the 2003 SARS epidemic into their model. Fotiadis et al. (2021) apply a neural network and a generalized additive model to generate various tourism demand forecasts. According to the results, the pandemic will regress global tourism growth by as much as 15 years. Škare et al. (2021) use a heterogeneous PSVAR model to forecast global tourism demand; COVID-19s impact is captured as both a common shock and idiosyncratic shock. Findings indicate a loss of 4.1–12.8 trillion USD in GDP contributed by travel and tourism.

Technology adoption

The right side of Fig. 2 presents several large thematic nodes, all related to the effects of *Distancing* on *Education* and *Innovation* as well as *Robot*, *Technology*, *Service*, and *Artificial Intelligence*. Technology plays a core role in tourism resilience. It has especially offered solutions to various direct and indirect COVID-19-related issues in the global tourism industry amid the pandemic (Gretzel et al., 2020).

Technology for service innovation

Technology connects people (potential tourists and tourism employees) and settings in novel ways (Fennell, 2021; Kwok & Koh, 2021). With high demand from customers and organizations, some technologies have enjoyed greater popularity during the pandemic, such as virtual tours (Fennell, 2021), service robotics (Zhao & Bacao, 2020), drone delivery services (Kim et al., 2021), and mobile payment (Khanra et al., 2021). In particular, COVID-19-related travel restrictions accelerated the penetration of extended reality, which is expected to provide personalized experiences to overcome physical travel impediments (Kwok & Koh, 2021). Fennell (2021) provides a sample virtual surrogate ecotourism experience—a personalized, interactive, real-time tour—which affords tourists experiences in vulnerable destinations and minimizes the environmental impacts of travel. At the organizational level, Mizrachi and Gretzel (2020) discuss how travel tech companies can help the tourism industry combat COVID-19: hygiene, traffic control, and immediate communication technologies are needed in the short term, while technological foundations that integrate different technologies hold promise as long-run solutions. Lau (2020) reviews new technologies adopted in China's tourism sector during the pandemic; examples include live-stream promotions, facial check-in with AI temperature checks, and service robots. Privacy protection is highlighted as a major concern when using new technology to collect user information. At the destination level, Choi et al. (2021) explore government innovation related to smart technologies, such as a self-quarantine app and coronavirus tracing app, that could support tourism's resilience during the outbreak.

Several empirical studies address users' adoption of various technologies during the pandemic. Zhao and Bacao (2020) identify satisfaction, perceived task-technology fit, trust, effort expectancy, and social influence as main determinants of customers' intentions to continue using food delivery apps during the pandemic. Wan, Chan, & Luo (2021) confirm that consumers' perceptions of lower interpersonal interaction with robotic services would reduce their perceived infection risk, ultimately leading to higher visit intentions. Customers may prefer robotic services during the pandemic; however, these services are not always technically and financially feasible for businesses to implement based on firms' resource availability, demand type, and value chains. Seyitoğlu and Ivanov (2020) develop a conceptual framework for service delivery system design and offer guidelines to facilitate hospitality and tourism firms' decisions about three service systems: robotic service, human-based service, and mixed service.

Technology and remote education

The pandemic has disrupted tourism education as well. Stay-at-home orders and social distancing forced many educational settings to move online, which has implications for students' learning experiences. As remote education became a prominent alternative during the pandemic, many articles consider how technology can be embraced to deliver better education and keep students engaged in a virtual setting. Tiwari, Séraphin, & Chowdhary (2020) find that as tourism educators and students became familiar with distance-learning technologies, online teaching was increasingly accepted. However, in developing countries with poor telecommunication infrastructure, remote education introduced major challenges. Tuma et al. (2020) examine the use of Zoom as a synchronous tourism teaching modality and point out various digital engagement strategies when using this technology. Qiu, Li, and Li (2020) compare the advantages and disadvantages of three online teaching approaches based on distinct technologies: a basic model with a small private online course, an advanced model for synchronous online broadcasting, and an expansion model with MOOC resources.

Discussion

Theoretical contributions amid the COVID-19 pandemic

Following the analysis of 249 articles related to tourism and the pandemic, several theoretical concerns underpin this literature. COVID-19 represents a crisis or disaster that functions as more than simply a research context Section 0. Rather than

uncovering the conceptual basis for a specific topic, the COVID-19 literature to date has offered numerous opportunities to ponder how the pandemic has shaped the conceptual foundations of many topics in the field. As one of the most impactful events to have hit global society, COVID-19 has borne enormous effects on the tourism industry. However, to what extent will this event change the industry? Can COVID-19 research inspire meaningful theoretical contributions and advance the field? These questions need to be addressed.

Similar to existing research agendas and commentaries related to crises/disasters or to COVID-19 (e.g., Ritchie & Jiang, 2019; Zenker & Kock, 2020), the influx of pandemic-related tourism literature raises questions about corresponding theoretical contributions. According to Tribe (1997), the interdisciplinary nature of tourism has led to the absence of a specific disciplinary approach in this domain. Fragmented disciplinarity thus persists. To seize publication opportunities, many descriptive articles and commentaries have been published quickly—some within less than a week. While such papers may illuminate gaps in knowledge about COVID-19 in a tourism context, they have arguably made the field more fragmented than ever. Few engage with “good theory,” which is arguably internally consistent, risky, and abstract (Smith et al., 2013; Wacker, 1998).

To address this, it is important to revisit some core ideas regarding theoretical contributions and the role of the research context. Many social science scholars struggle to generate new theories and instead aim to improve upon existing frameworks. What constitutes a value-added contribution to theory development? Whetten (1989) posed this same question and posited that scholars should not focus simply on adding variables to existing models. Instead, uncovering relationships among theoretical constructs can be more meaningful than incorporating additional variables. Relatedly, “trivial or obvious predictions are not marks of good theory” (Smith et al., 2013, p. 878). Unexpected findings that current theories cannot explain or that challenge existing rationales are particularly insightful. Theory-building research seeks to find similarities across many different domains to increase its abstraction level and its importance (Wacker, 1998). Corley and Gioia (2011, p. 17) similarly argue that “contribution arises when theory reveals what we otherwise had not seen, known, or conceived” (p. 17). Originality is indeed an important criterion for article publication in top-ranked academic journals. As such, applying an available model to a new context and indicating that it applies as expected is not instructive in itself. Yet many current COVID-19 publications fall into this category. For example, much research has shown that minimizing disease or risk perceptions will influence travel behavior—yet these findings are already well-established in other crisis or disaster literature.

Neither Whetten (1989) nor Corley and Gioia (2011) overlook the importance of the research setting with respect to theoretical contributions; put simply, meaning is derived from context. In this vein, Rousseau and Fried (2001, p. 1) contend that “contextualizing entails linking observations to a set of relevant facts, events, or points of view that make possible research and theory that form part of a larger whole” (p. 1). Here, contextualization refers not only to environmental factors but also (and perhaps more) to the nature of the focal setting, which can alter the meaning of theories or concepts. The COVID-19 pandemic represents a salient context. Contextualization is therefore necessary, but scholars should aim for novel theoretical contributions rather than merely applying available models to the pandemic with little incremental value. A few studies have sought to do so: for instance, in contextualizing identity theory amid the pandemic, Zhang, Wang, & Rickly (2021) stated that COVID-19 has challenged the fundamental desire for social interaction in international tourism. This shift towards non-interaction is further linked with identity-based changes.

War over tourism: “new normal” vs. “back to normal”

It is widely recognized that COVID-19 will change the state of tourism knowledge as well as the tourism industry itself (Sigala, 2020). A binary discussion between industry recovery and reform has begun (e.g., Higgins-Desbiolles, 2021). On one hand, destinations and tourism businesses have been searching for, developing, and internalizing innovative ways to expedite the industry's full recovery. Early COVID-19 researchers investigated various topics to facilitate post-pandemic recovery, including travelers' perceptions and behavior; industry professionals' efforts to ensure safety, capitalize on technological developments, and adopt effective managerial approaches; and host communities' attitudes towards incoming tourists. Resilience and an eagerness to return to “normal” have continued to make headlines in the media. Most tourism-related coverage on getting “back to normal” has featured potential revenue-boosting strategies.

On the other hand, researchers have more often treated COVID-19 as a chance to rethink the current tourism paradigm and argue for a transformative and sustainable future (Sigala, 2020). In this vein, a sustainable “new normal” with limits on how the industry can operate ongoing forward has been prioritized. The cessation of tourism has also revealed the environmental impacts of travel, thus inspiring many questions: will a sustainable approach be a part of industry resilience in the post-pandemic period? Has COVID-19 eliminated some unsustainable practices? It will likely be necessary to strike a balance via holistic approaches. One-size-fits-all approaches and mutually exclusive mindsets are more likely to stagnate rather than promote tourism's resilience. This may be a global industry, but it operates in diverse places and contexts.

More broadly, the questioning of “normality” in the industry and its future state has opened up dialogues of hopeful and transformative tourism. Such perspectives are often informed by critical theories and shed light on the inequities of the global tourism industry, which is in itself a worthwhile endeavor. Yet, in advocating for a “new normal” in the wake of COVID-19, few offer a clear path forward for the industry. Besides technological advances that might foster environmental sustainability, the publications are built on impractical assumptions and limited empirical evidence. COVID-19 has brought new awareness to vulnerable populations, inclusivity, and diversity, but social justice is an ever-shifting landscape of new movements and ideals that change more quickly than the tourism industry. Scholars must take care not to conflate the pandemic with evolving societal values. It is

recommended that such scholarship be more reflective of the role of the pandemic in transformative tourism rather than aiming for transformation as an outcome of the pandemic.

Research methods

Among quantitative studies, several methodological aspects of COVID-19-related tourism management research merit discussion. First and foremost, given the ad hoc nature of many cross-sectional empirical studies, quantitative results only reflect circumstances in the early or middle stage of the pandemic with comparatively little insight into future scenarios. Longitudinal studies, in which data are examined at multiple time points (see Lee et al., 2019), can reveal time-varying impacts over different crisis stages to project the industry's responses and evolution. Such work can therefore produce more reliable and generalizable results. Second, many tourist behavior studies rely heavily on measures of behavioral intention, a subjective evaluation, to scrutinize the impact of COVID-19. However, this construct can suffer from notable biases in the form of various COVID-19-related constraints (e.g., mobility limitations and affordability). As a result, behavioral intention is a poor proxy for actual behavior (Kock et al., 2020). Third, with the growing availability of secondary data related to the pandemic, econometric models prevail in the sample. Yet, many fail to provide rigorous causality inferences, yielding less reliable results regarding the causality between variables. For example, Granger causality (Uzuner & Ghosh, 2021) can only offer findings related to Granger-type causality instead of authentic causality. Also, a clearer understanding of the structural form of economic equations can help specify the reduced form model and identify potential instrumental variables to alleviate endogeneity. Fourth, online platform-based experiments, especially from Amazon Mechanical Turk, dominate experimental studies in the sample. However, the validity of these results can be compromised by the presence of "professional online respondents" as well as other challenges related to internal, construct, and external validity issues (Aguinis et al., 2020). Field experiments do not receive sufficient attention despite showing promise in COVID-19-related studies which manipulate interventions in real-life settings (Viglia & Dolnicar, 2020).

Only a small number of papers in the sample adopt qualitative approaches to COVID-19 tourism research, and these are largely descriptive. Further, they tend to reflect on what has been done instead of exploring precisely *why*. Despite being popular in tourism studies more broadly, visual and critical approaches are largely absent within pandemic tourism research. Specifically, visual imagery and geographic imaginaries could be altered by the pandemic, and critical discourse analysis or critical incident techniques would be appropriate methods to provide a reflexive understanding of the pandemic.

Mixed methods employ a combination of qualitative and quantitative approaches. A recent systematic review of mixed methods research in tourism demonstrates that scholars have often adopted sequential mixed methods rather than concurrent ones (Khoo-Lattimore et al., 2019). Only one paper in the sample adopted mixed methods, and it is suggested that this is a result of the greater time constraints related to undertaking mixed or multi-study research. Specifically, Brizek et al. (2021) apply the traditional sequential mixed method approach by performing a survey followed by qualitative interviews to supplement their qualitative findings. In addition, Khoo-Lattimore et al. (2019) propose mixed method considerations, arguing that researchers should identify ways to offer comprehensive views on topics related to the pandemic. Multi-method/multi-study research includes more than one study in a single paper and often involves multiple methodologies, which appear particularly promising in COVID-19-related works (e.g., Gallego & Font, 2021; Kock et al., 2020). The pandemic has introduced nuanced and dynamic impacts on the global tourism industry. Compared with a single-study investigation, multi-study research strengthens findings' applicability (and replicability) and reinforces the theory-method interplay (Hochwarter Wayne et al., 2011). Moreover, multi-study research can rectify the methodological weaknesses associated with a single research method while enhancing generalizability.

A particularly striking methodological observation is the prevalence of descriptive commentaries in the sample. A large proportion of these were published in the early days of the pandemic in response to specific calls for commentaries with quick turnaround times that did not employ peer reviews. The authors often labeled their commentaries as "conceptual"—but are all non-empirical studies conceptual? Xin et al. (2013) assert that conceptual research focuses on the systematic clarification of concepts. In other words, such studies trace a concept's origins and development while addressing its current use, specification, and differentiation. Based on this definition, review papers are not necessarily conceptual, while some empirical work can be deemed conceptual. However, many self-claimed conceptual papers or short commentaries in the sample are descriptive. They offer limited insight into concepts' historical development and particularly how COVID-19 has influenced these ideas. The sample includes papers discussing the pandemic's impact on food tourism, natural tourism, adventure tourism, mountain tourism, and so forth. However, this emphasis on potential effects is overwhelmingly speculative.

Additionally, papers use the pandemic to advocate for possible research agendas, but in so doing, few provide a historical and contemporary discussion of these ideas and the relevance of COVID-19 for advancing them. Thus, it is worth asking whether such articles are in fact commentaries? Defining commentaries in *Annals of Tourism Research*, Schweinsberg (2019) argues that most commentaries represent feedback on a newly published article to avoid knowledge stasis. Additionally, *Annals of Tourism Research* publishes Research Notes, which highlight the specific theoretical or methodological potential for the field, often accompanied by preliminary findings and a possible research agenda. In *Journal of Travel Research*, commentaries can be submitted as Letters to the Editor that consider research-based problems. No matter how conceptual research and commentaries are defined, the contribution to the field of study remains paramount. COVID-19 has unequivocally affected the state of tourism research, which makes framing its significance to theoretical and/or methodological development ever more important.

Future areas of study

Psychological effects and behavior

An imbalance exists in the literature regarding the pandemic's psychological effects on tourism stakeholders. Many studies have focused on perceptions and motivation stimulated by risk, threats, and fear (Sembada & Kalantari, 2021), with scant effort devoted to integrating specific aspects of tourists' risk perceptions and well-being. Several potentially important features of cognition and affect have thus been overlooked, most notably uncertainty, isolation, stress, and anxiety. A topic to consider is one's understanding of self and group identity through tourism (Zhang, Wang, & Rickly, 2021): how might economic, sociopolitical, and cultural uncertainty brought on by the pandemic influence one's understanding of the self and others? Such questions do not only involve changes in how people view and treat others but also how others view and treat them. This research focus extends beyond the host-guest relationship to address fundamental questions of how socially constructed boundaries between "us" and "them" based on social classifications such as gender, culture, and race/ethnicity are influenced by the pandemic and the re-opening of tourism. These lines of inquiry also have strong ethical ramifications which could also contribute to the moral turn in tourism and associated research.

Crises and disasters generally underscore the importance of motives for affiliation, acceptance, and belonging (e.g., Collins, 2012). Commentaries about research agendas have expressed similar thoughts (e.g., Zenker & Kock, 2020); however, no empirical research has yet supported such claims. Furthermore, conflicting events have occurred locally and globally, casting doubt on the roles of these motives during the pandemic. Future empirical research might therefore consider such concepts amid COVID-19, as findings can also shed light on the collective and social resilience that has emerged through shared memories of this crisis.

Response, strategies, and resilience

The crisis and disaster management literature suggests that governments play essential roles in all stages of crisis management, from planning to recovery and prevention. Many scholars focus on how governments can enhance destination resilience and facilitate destination recovery. Cooperation, financial support, and updated information are clearly needed when the public sector faces a crisis (Ritchie & Jang, 2019). However, it is necessary to determine how tourism stakeholders can improve their planning for and prevention of future crises and disasters. Multilevel governance during times of crisis is relatively unfamiliar, as are its implications for local, national, and internal policy. How the government interacts with the public and private sectors to issue effective policies is important to understand as well. Besides practical measures, the result indicates growing attention to the involvement of the government and private sector in terms of sustainable development. COVID-19 presents an unprecedented opportunity to (re)consider how societies operate and are governed. A long-term analysis of such efforts is thus needed.

In terms of corporate responses and strategies, many studies involve large hospitality corporations. Business resilience, capacity building, and coping strategies among small- and medium-sized tourism businesses, which account for a large percentage of the industry's supply side, remain underexplored. Management scholars can uncover foundational management skills and strategies to cope with future crises and disasters upon reflecting on and synthesizing lessons learned from COVID-19.

Sustainable, inclusive futures

Intellectually, COVID-19 has presented an opportunity to consider tourism from a new perspective. It has revealed broader societal vulnerabilities along with those specific to tourism. However, most COVID-19 research related to sustainable tourism futures has been advocacy-driven and is more speculative than empirical. This leaves many questions to be addressed in subsequent work. In particular, it would be worthwhile to revisit destinations or specific tourism enterprises to determine how, and to what degree, inclusivity measures have been incorporated following the pandemic. What has prompted or impeded these initiatives' implementation and their longevity? Relatedly, longitudinal studies on the effectiveness of inclusivity and/or diversification measures around post-COVID-19 resilience or regeneration would offer revelatory information on future market potential. More importantly, when (or if) COVID-19 fades from prominence as a force of change in the industry, how do researchers untangle these ideals from the pandemic and continue to advance them in the industry?

Impact monitoring, valuation, and forecasting

Although impact estimates can aid decision makers in allocating resources for tourism recovery, scenario analysis or simulation in impact modeling can usually produce more actionable guidance to formulate strategies and policies combating the pandemic. Different impact valuation models can provide varied impact estimates with distinct structures and assumptions (Pham et al., 2021). Researchers must then compare model estimates and evaluate the benefits and drawbacks of each. Furthermore, although some commentary papers discuss the environmental impact of COVID-19, rigorous environmental valuation analysis has yet to be undertaken. Environmental impact models (e.g., ecological footprint analysis and carbon footprint analysis) are recommended to better evaluate the pandemic's environmental effects on the tourism system. Empirical studies have considered the prediction accuracy of tourism forecasting models (Fotiadis et al., 2021; Zhang, Song, et al., 2021); nevertheless, it is crucial to assess potentially effective predictors of tourism demand (e.g., digital footprints, travel sentiments, and vaccination rates) during times of great uncertainty.

Technology adoption

Many conceptual and empirical papers have put forth short-term solutions for pandemic concerns (Sharma, Shin, et al., 2021). Only a few have pondered the longer-term paradigm shift regarding technology adoption. More comprehensive frameworks are

needed to map the development of the technology landscape in tourism. Although the critical circumstances of the pandemic have spurred the adoption of new and existing technologies, the enduring effects of this uptake would be intriguing to consider. Many empirical studies on tourism technology feature ad hoc research questions based on emerging technology, providing limited insight into a given technology based on stakeholders' needs. Additional studies might better illuminate the direction of technology design by assessing demand from tourists and industrial professionals at the individual and organization levels. Technology is merely a tool; its success in tourism is contingent on the social and business environment (Dwivedi et al., 2020). As a result, more studies are needed to better understand how to build an environment conducive to organizational technology adoption—including how this adoption can promote resilience in various ways.

Multi- and interdisciplinary studies

Tourism studies constitute a scientific object characterized by fragmented knowledge from a number of disciplines, such as management, geography, marketing, economics, sociology, psychology, environmental sciences, and regional studies (Tribe, 1997). Descriptive analysis confirms this multidisciplinary nature within COVID-19 tourism research. The complexity of tourism provides opportunities for collaboration across disciplines. According to Okumus et al. (2018), collaboration across domains generates new epistemologies and methodologies. Cross-disciplinary cooperation also fosters creativity and innovation by synthesizing distinct perspectives. The COVID-19 pandemic brought an intense shift in the landscape of tourism demand and supply. Knowledge from different disciplines is hence required to clarify interrelated aspects of tourism. Multi- and interdisciplinary approaches can both be useful in this regard. Whereas multidisciplinary approaches explore research questions from two or more discipline-specific points of view, interdisciplinary methods marry two or more disciplines dynamically (Darbellay & Stock, 2012). For example, when researchers discuss resilience in response to crises such as COVID-19, numerous factors can apply from social, economic, geographic, environmental, and anthropological perspectives (Prayag, 2020). Also, in the context of a global pandemic, knowledge from epidemiology and public health informs individuals' sense of safety and risk—each of which is integral to tourism demand and supply. Therefore, cross-disciplinary dialogue, particularly between tourism and other disciplines, can better contextualize theories, methods, and models to delineate linkages between COVID-19 and tourism. Results can also provide useful recommendations for industry professionals and other stakeholders.

Research relevance and translational research

Tourism research has long been criticized for being overly theoretical and for lacking utility for industry stakeholders (Baum, 2019; Vong, 2017). The same issue can be observed in COVID-19-related research, such that a limited number of studies provide actionable insights to industrial practitioners and other stakeholders. Khan (2019) identifies several gaps between academic research and practice. Some have become particularly noticeable during the pandemic, such as the failure of research to provide timely information along with a communication lag between academia and industry. Certain implications can be influential in helping stakeholders better weather the COVID-19 crisis: best practices in (online) marketing strategies, government policies on alleviating negative consequences, and safety guidelines that can protect tourists without detracting from their experiences. Apart from providing immediate industry solutions, Baum (2019) highlights the importance of broader research impacts that can alter individuals' behavior, practices, resource use, or policies. To enhance relevance and impact, more dialogue between academia and industry is needed to plan mutually beneficial projects and maintain a cooperative relationship (Khan, 2019).

Conclusion

This paper introduces the Curated Collection of *Annals of Tourism Research* on coronavirus and tourism. The review has assessed 249 academic journal articles related to tourism and the COVID-19 pandemic that were published during the first year of the pandemic. It has aimed to take account of the major topics of research and reflect on future research opportunities. However, it is also acknowledged that the significance of COVID-19 to the industry and tourism scholarship will take years to fully comprehend. As a result, it is no surprise that many academic journals have begun requesting that authors reflect on the pandemic's effects on their research. However, there are also instances in which the value of pre-COVID data is questioned. So while the findings detailed above highlight that the pandemic is being incorporated into nearly every topic in the field, we must take caution to not let COVID-19 be the only lens through which we consider tourism research. Rhetoric around the pandemic ushering in a "new normal" for the industry should be countered with questions as to its longevity. All trends have a shelf life; what endures in academia are theoretical and methodological contributions. A lack of theoretical engagement is among the most notable and unfortunate trends from this review. It inspires the questions: What is new about COVID-19 research in tourism studies? What innovation can be gleaned from this flurry of research that can advance the field?

The fact that the answers to these questions are quite limited may be in large part an issue of timing. This review examined academic publications produced in the first year of the pandemic. Considering the time investments required to produce rich data, the sample simply would not have included such work. Indeed, the sample is in large measure comprised of commentaries and short communications. This is followed by quantitative research that used more accessible data sets. Qualitative research is rare in the sample, and mixed methods are only employed in one paper. Nevertheless, researchers are expected to contextualize their work in terms of theoretical and/or methodological contribution, and this review suggests that to date, such contributions are few. Nevertheless, there remain many opportunities for future research related to: psychological effects and behavior; response,

strategies, and resilience; sustainable, inclusive futures; impact monitoring, valuation, and forecasting; technology adoption; multi- and interdisciplinary studies; and translational research.

Finally, some additional limitations that may temper the generalizability of the review are noteworthy. Related to the above point, COVID-19 research that has been inspired by latter pandemic developments has received limited representation in the sample. For example, research has recently started to examine how vaccination facilitates tourism recovery (Wang, Kunasekaran, & Rasoolimanesh, 2021); this topic was barely covered in the literature in the sample. Further, this review focused exclusively on English-language studies to the neglect of those in other languages, such as Chinese, French, and Russian. This creates an opportunity for future reviews to assess geographic trends in the production of COVID-19 research.

CRediT authorship contribution statement

Yang Yang: Conceptualization, Data curation, Writing – original draft. **Carol X. Zhang:** Conceptualization, Data curation, Writing – original draft. **Jillian M. Rickly:** Formal analysis, Visualization, Writing – original draft.

Declaration of competing interest

None.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.annals.2021.103313>.

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