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## Research Paper

## Heritage as businesses: COVID-19 disruptions to Texas museums, heritage sites, parks, and protected places, and their responses to evolving guidance

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## ABSTRACT

The COVID-19 pandemic disrupted business services across all industries. Conflicting policies at the federal, state, and local levels further compounded business entities' delivery of services. One business often understudied in disasters is museums, heritage sites, parks, and protected places. While these entities carry the hallmarks of business, including business models, operating frameworks, and strategies for profitability, they also serve their own missions to educate while preserving and conserving cultural and environmental resources. In this study, we examine the impact during the first year of the COVID-19 pandemic on Texas museums, heritage sites, parks, and protected places with a focus on the evolving, and often conflicting, government policies. Texas serves as an important case study because it was one of the first states to resume normal business operations under state mandates. We identify through surveys and interviews that the ability of museums, heritage sites, parks, and protected places to adjust to the pandemic were temporally dynamic and highly contingent on sustained revenue streams, COVID-19 restrictions, and outdoor versus indoor programmatic offerings. Specifically, conflicting guidance from different government entities resulted in study participants' concerns related to safety and their lack of choice in removing disease mitigation measures. We also found that earlier crises prepared many entities to survive during the first year of the pandemic and that these entities' return to operations reflect the stages of disaster and crisis recovery. Our findings provide useful information for museums, heritage sites, parks, and protected places to develop disaster risk reduction strategies for future events.

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## 1. Introduction

Museums, heritage sites, parks, and other protected places are all entities that serve the public interest by preserving cultural and environmental resources. Although these entities share common goals of preservation and conservation, they are individual-

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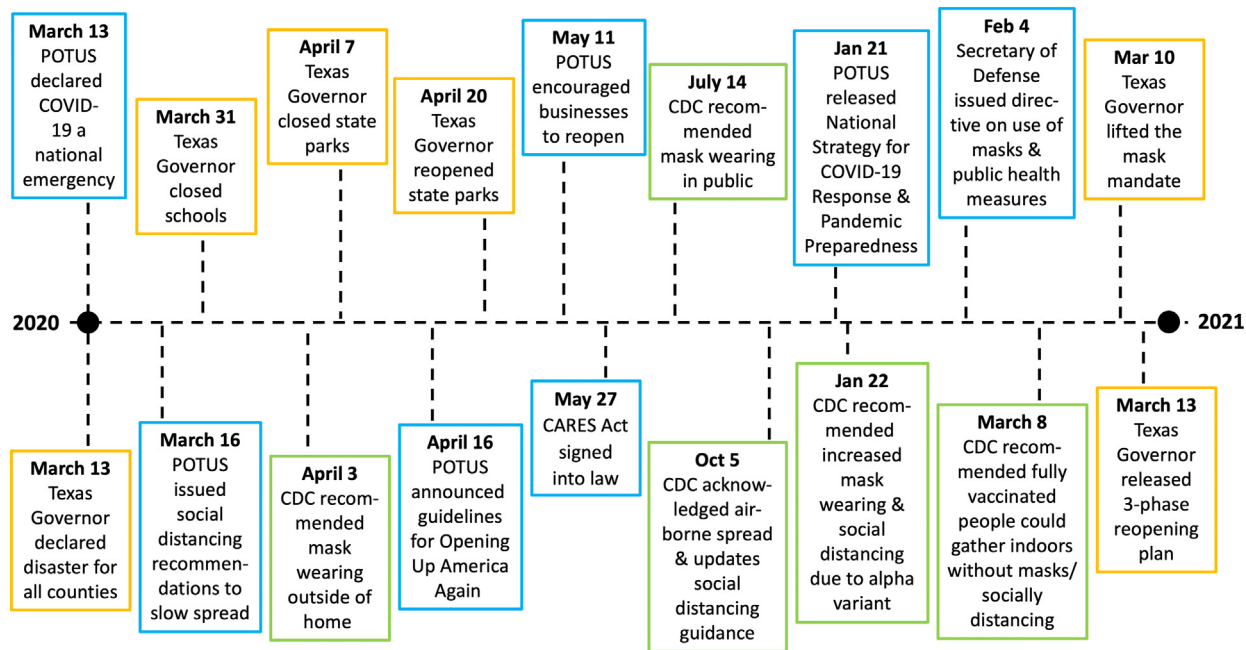
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ized based on their missions. For example, a museum may focus on collecting, preserving, interpreting, and displaying objects of historic significance. A national or state park may conserve environmental resources while offering recreation opportunities to the public. The ways in which these entities achieve their missions, however, are similar. Most accomplish their missions through a combination of research, education, and enjoyable visitor experiences. Yet these entities are also operated as businesses; they create, deliver, and capture value by developing and deploying business models, operating frameworks and strategies for profitability. As businesses, their operations are susceptible to disruption when disasters and crises strike. Like businesses, disasters often result in the closure or partial closure of museums, heritages sites, parks, and protected places, leading to visitor declines (e.g., [Woosnam & Kim, 2014](#)) and financial losses (e.g., [Kim & Marcouiller, 2015](#)). Ensuring their return to operations early in the disaster recovery process is vital due to their role in supporting regional and local economies; however, their unique missions of preservation or conservation further complicate their disaster recovery trajectories. The COVID-19 pandemic serves as an important case study to analyze how the pandemic affected museums, heritage sites, parks, and protected places and how they responded.

Before the pandemic, museums, heritage sites, parks, and protected places already had experience navigating financial crises. For example, many of these entities updated their funding sources to achieve financial stability due to decreases in public funding beginning in the 1980s and, more recently, due to changes in revenue streams during the 2007 to 2009 global financial crisis. Museums are often resilient during economic recessions due to consistency in visitor revenue (e.g., [Ballantyne & Uzzell, 2011](#); [Lindqvist, 2012](#)), yet they must be judicious with available funds to meet their many functions (e.g., [Skinner, Ekelund, & Jackson, 2009](#)). State and federal funding for parks and protected places also declined after the global financial crisis, and many of these entities turned to philanthropy to meet their financial goals (e.g., [Walls, 2014](#)). The COVID-19 pandemic further tested the business operations of these entities and forced them to adjust rapidly as many feared permanent closure ([Samaroudi, Echavarria, & Perry, 2020](#)). The American Alliance of Museums (AAM) estimated that U.S. museums lost \$33 million per day due to the pandemic ([Durkee, 2020](#)). To remain in operation, museums, heritage sites, parks, and protected places adjusted their business practices to combat financial losses while implementing risk reduction strategies.

The rapid global diffusion of the disease along with changes in exposure risk produced evolving policies at the national, state, and local levels. Adding to the already difficult task of adjusting to a pandemic, businesses, including museums, heritage sites, parks, and protected places, also had to respond to these changing—and often conflicting—government guidelines ([Greenblatt, 2020](#); [Lecours et al., 2021](#)). The result was a fragmented public health response where federal, state, and local entities were often in conflict with each other ([Fig. 1](#)). At the federal level, the guidance and recommendations of various offices and agencies were often inconsistent and in contrast to each other. The main voices emerging at the federal level included the U.S. Center for Disease Control and Prevention (CDC), Dr. Anthony Fauci, the Director of the National Institute of Allergy and Infectious Diseases (NIAID), and the President of the United States (POTUS), first the Trump Administration followed by the Biden Administration as of January 20, 2021.

Conflicts between the Trump Administration and the CDC were widely observed. In May 2020, the Associated Press reported that the Trump Administration prevented the CDC from publishing “Guidance for Implementing the Opening Up America Again



**Fig. 1.** Federal and Texas government response to the COVID-19 pandemic from March 2020 to March 2021 that affected museums and protected places. Note: Federal government is represented by blue boxes, the CDC is represented by green boxes, and the state government of Texas is represented by yellow boxes. Data source: CDC, 2023; Friend, 2021.

Framework” (CDC, 2023; Dearen & Stobbe, 2020). In July 2020, the Trump Administration directed hospitals to report data to a private contractor rather than the CDC. In May 2020, President Trump encouraged businesses to reopen during a press briefing, yet the following day, Dr. Fauci testified before Congress cautioning against reopening businesses too quickly (CDC, 2023). That same month, the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) was signed into law by President Trump, which provided small businesses and private nonprofits assistance among other economic stimuli. Yet by the end of May, President Trump announced that the United States was withdrawing from the World Health Organization (WHO), a decision reversed by President Biden as he assumed office in January 2021. Among these tensions, changing risks as new variants emerged, fluctuating rates of disease spread, and the distribution of vaccines also affected federal and state policies.

In addition to these federal policies, local entities, including city and county governments, school districts, and hospital systems, enacted their own restrictions as well. For example, by mid-March 2020, many Texas County Judges began to issue disaster declarations due to the emerging public health emergency, and some Texas cities and counties quickly issued proclamations limiting mass gatherings (e.g., City of Dallas, 2020). Harris County, the most populous county in Texas and third largest in the United States, issued stay-at-home orders starting on March 24, 2020 (City of West University Place, 2023). Similarly, Hidalgo County, the most populous Texas county along the U.S.-Mexico border, issued a stay-at-home order on March 26, 2020 (County of Hidalgo, 2020). These local requirements were followed by a statewide executive order to shelter in place beginning on March 31, 2020. Additionally, many of Texas's school districts decided not to return from the mid-March spring break holiday. School districts across the state chose to remain closed indefinitely with others selecting arbitrary April dates for reopening (e.g., KRGV Channel 5 News, 2020). Travis County, home to metropolitan Austin, issued face-covering requirements starting on April 13, 2020 (Travis County, 2020), while the City of Galveston issued a mask mandate on June 23, 2020 (City of Galveston, 2022). The timeline of mandates and locally instituted policies varied by county but were observed in most counties with large populations.

In some places, local enforcement of federal, state, and local COVID-19 policies and guidelines varied. In Montana, Governor Steve Bullock required indoor face masks early during the pandemic, but in some counties, sheriffs and police chiefs refused to enforce it (Greenblatt, 2020). In other instances, local restrictions from municipalities, hospitals, and school districts required more public safety protocols than state or federal agencies. For example, Austin, Houston, and Dallas school boards approved mask mandates after Texas Governor Greg Abbott removed mask mandates statewide and prohibited mask mandates in state buildings (Texas Tribune Staff, 2021). The lack of enforcement and conflicting messaging from authorities resulted in multiple instances of noncompliance with health guidelines during the first year of the pandemic. These inconsistencies also translated into difficulties for businesses trying to reopen to the public.

Taken together, changing federal, state, and local policies influenced how museums, heritage sites, parks, and protected places responded to and were affected by the pandemic. Given this context, the purpose of this research is to examine the resilience of Texas museums, heritage sites, parks, and protected places during the first year of the COVID-19 pandemic and to understand how conflicting policies influenced these entities' recoveries. To address this overarching objective, we proposed two research questions: (1) What were the primary impacts to these entities during the first year of the pandemic? (2) How did these entities respond to changing governmental guidelines related to the pandemic?

## 2. Resilience and disaster recovery dynamics in tourism, business, and leadership

Definitions of resilience vary by discipline and context. Walker et al. (2004) defined resilience within a social-ecological systems perspective as “the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks” (para. 7). Whereas community-based definitions emphasize collective participation, shared values, and an understanding of the local economy, social dynamics, ecological settings, and built environment. For example, Beatley and Newman (2013) defined resilience as the capability to “protect and enhance quality of life, long-term ecological productivity, and public and personal health” (p. 3,332). Likewise, hazard and disaster scholarship have suggested that resilience is the ability “to rebound from disaster and reduce long-term vulnerability, thus moving toward more sustainable footing” (Colten, Kates, & Laska, 2008, p. 37). These definitions emphasize that a community's resilience reflects its ability “to adapt to change in local and regional social-ecological systems” (Lavy & Zavar, 2023, p. 5). Within the tourism literature, scholars have defined resilience from an industry perspective noting that it is “the capacity of the industry to deal effectively with disasters ... to maintain the stability of the sector” (Buultjens, Ratnayake, & Gnanapala, 2017, p. 84) and to “ensur[e] the flexibility and diversity necessary for innovation and further development” (Luthe & Wyss, 2014, p. 161). Thus, increasing resilience is important in tourist locations, and post-disaster tourism offers opportunities to improve pre-disaster conditions and enhance community resilience (e.g., Korstanje & George, 2022; Séraphin, Korstanje, & Gowreesunkar, 2019). Moreover, tourist attractions, such as parks, heritage sites, and international geoparks, provide a level of resilience to local communities, allowing them to cope with disasters (Briggs, Dowling, & Newsome, 2023). Finally, business-oriented definitions of resilience focus more on maintaining revenue while innovating in response to abrupt change (Fiksel, 2006; Williams & Vorley, 2014), where “a resilient business effectively adjusts its operations, management and marketing strategies to sustain under dramatically changing conditions” (Dahles & Susilowati, 2015, p. 46). Taken together, the linkage between business resiliency and tourism resiliency plays an integral role in disaster recovery processes given the economic importance of both entities.

Prior research indicates that after disaster events, business recovery is uneven and a return to operations is influenced by an array of business characteristics (Lindell, 2013). Businesses with international markets are more resilient and recover more quickly from disasters compared to small businesses that serve regional to local markets (Webb, Tierney, & Dahlhamer, 2002).

Moreover, franchises tend to return to operations faster than independently owned businesses (Marshall & Schrank, 2014). Yet business return and survival are essential to the recovery of the wider community as well as the recovery of regional and local economies (Lee, 2019a, 2019b; Tierney, 2007).

In tourist areas, the return of businesses associated with the tourism industry, such as accommodation, entertainment, food, beverage, and travel, becomes an important component of recovery strategies. The recovery of these businesses after disasters not only provides visitors with important amenities during their stays but also supports regional and local economies. The first year of the pandemic negatively impacted the tourism industry, affecting local, regional, and national economies, including a broad swath of businesses operating in the tourism sector (e.g., Foo, Chin, Tan, & Phuah, 2021). Tourism-dependent businesses, in particular, were found to be especially vulnerable (e.g., Bui, Tzu-Ling Chen, & Wickens, 2021; Ntounis, Parker, Skinner, Steadman, & Warnaby, 2022). Additionally, the decline in tourism due to COVID-19 impacted businesses beyond the tourism sector (e.g., Pham, Dwyer, Su, & Ngo, 2021) and led to employment losses across economic sectors (e.g., Mariolis, Rodousakis, & Soklis, 2021). To overcome these losses, many tourism-oriented businesses shifted their focus to local communities during the pandemic (Bui et al., 2021).

Similarly, museums, heritage sites, parks, and protected places attract people to locations, and thereby support and strengthen regional and local economies. For example, in 2016, U.S. museums contributed an estimated \$50 billion in GDP, 726,200 jobs, and \$12 billion in taxes to federal, state, and local governments (American Alliance of Museums, 2017). Comparably, in 2021, visitors to U.S. national parks spent \$20.5 billion in communities near parks (Thomas, Flyr, & Koontz, 2022). In Texas, approximately 8 million people visit Texas state parks annually, producing \$891 million in economic value and \$18 million in sales tax revenue (Texas Parks and Wildlife Department, 2021).

Because of their impact on local and regional economies from visitor generated revenue, local employment opportunities, and economic growth, these entities also influence community resilience (Kamran, 2022) and bolster disaster recovery efforts. After disasters, changes in the number of visitors to museums, heritage sites, parks, and protected places affect the surrounding communities, particularly when the area economy is dependent on tourism. With fewer visitors to these entities, surrounding businesses lose customers as demand for goods and services decrease (Webb, Tierney, & Dahlhamer, 2000). Moreover, heritage sites, parks, and protected places are often connected to gateway communities, the cities and towns that serve as entry points to these places (Frauman & Banks, 2011). Therefore, changes in visitor numbers impact the economies of gateway communities (Templeton, Goonan, & Fyall, 2021). This is particularly evident in post-disaster settings where the recovery of the protected place is intertwined with the gateway community (Zavar, Lavy, & Hagelman, 2020). During the early months of the COVID-19 pandemic, closure of state and federal parks negatively affected the economy of surrounding communities; however, as parks reopened and local visitors increased, gateway communities also experienced an increased demand for goods and services.

The growing literature on disasters and heritage sites, parks, and protected places indicates that hazard agents also cause significant impacts for these entities. As parks recover from damages to the built infrastructure and work to restore affected environmental resources, attendance rates often decrease after large regional disaster events, such as hurricanes (Kim & Marcouiller, 2015; Woosnam & Kim, 2014). The return of visitors, however, is varied where some parks become overcrowded (Liu & Wang, 2021), while visitors at other parks decline (Rice et al., 2020). Similar patterns were observed during the COVID-19 pandemic.

During the first months of the pandemic in the United States, as in many other countries, national and local governments encouraged social distancing, and even authorized stay-at-home orders to reduce disease spread. As part of these efforts, many public parks closed during the early months of the pandemic (Geng, Innes, Wu, & Wang, 2021; Slater, Christiana, & Gustat, 2020). While disruptive to parks and protected places, the closures also provided opportunities for site managers to assess and adjust their practices and operations prior to reopening. In Sri Lanka, for example, the initial closure served as a reprieve for some parks and protected places that were over visited prior to the pandemic (Perera et al., 2023). The closure of protected places to visitors also allowed managers to identify more sustainable practices for nature-based tourism (Perera et al., 2023). Yet stay-at-home orders negatively impacted people's mental health (e.g., Adams-Prassl, Boneva, Golin, & Rauh, 2022). Once stay-at-home orders were lifted and knowledge of virus spread improved, demand for use of outdoor spaces including heritage sites, parks, and protected places increased as the pandemic continued and people remained isolated (Geng et al., 2021; Liu & Wang, 2021; Ugolini et al., 2020).

In the United States, some states and municipalities reopened public parks in late April 2020 (Sadiq, Kapucu, & Hu, 2020). As entities reopened, many operated with restricted visitation and limited services (Samaroudi et al., 2020). These parks quickly became a refuge for people seeking to leave their home yet remain socially distanced. People visited parks to improve their mental health and wellbeing, which the pandemic negatively affected (Cheng et al., 2022). For instance, the number of visitors to Utah's national parks remained lower than pre-COVID levels in the initial reopening phase; yet visitation quickly increased at a rate that exceeded pre-pandemic levels, generating reports of overcrowded parks and natural heritage sites (Liu & Wang, 2021; Templeton et al., 2021). Similarly, in Texas's Big Bend National Park, visitor numbers increased when the park reopened, surpassing previous attendance records after record-setting lows in 2020 (Morales, 2021). Texas state parks also reported dramatic increases in visitors (McElroy, 2021).

Still, for many parks and protected places, maintaining regular operations while mitigating risk, staffing shortages, and adjusting to evolving guidelines from federal and state authorities proved challenging (Miller-Rushing et al., 2021). Moreover, the increase in visitors also caused new challenges for park managers. For example, after the Indonesian Government lifted closure restrictions, parks experienced over-tourism issues, including increased litter, damaged ecological assets, increased congestion, and diminished air quality (Cahyadi & Newsome, 2021). Meanwhile, museums across the United States experienced visitor declines (American Alliance of Museums, 2021) with many implementing digital strategies to maintain their relevance to the

public (Noehrer, Gilmore, Jay, & Yehudi, 2021). To survive, the pandemic forced many museums, heritage sites, parks, and protected places to adjust their business models, to be flexible and nimble as they navigated the pandemic, to adapt to new information on disease spread, and to follow the latest interventions, guidelines, and protocols (Tamima, Zavar, Lavy, & Schumann, 2023). Particularly, these entities had to respond to variable and changing funding streams to support their missions.

Additionally, there is a growing body of work that identifies how leadership and governance during disaster response and short-term recovery activities affect the long-term recovery of communities. Leaders and government entities significantly shape the extent of loss communities experience during disaster events (Col, 2007; Sjöstedt & Povitkina, 2017). In most disaster events, leaders demonstrate a mix of successes and failures as they navigate these complex settings (Kapucu & Van Wart, 2008). Governance failures can occur in stable governance systems as observed in the often-cited example of Hurricane Katrina's impact on New Orleans, Louisiana (Tierney, 2012). Failures, however, are more common in societies that have weak or poor governance systems, such as seen following the 2010 Haiti earthquake.

While central governments fund activities and craft policies related to disaster management (U.S. Department of the Interior, 2023), the role of local governments is critical at each stage of the disaster lifecycle: preparedness, response, recovery, and mitigation. In the aftermath of an event, local communities are first on the scene to aid victims and initiate response activities including arranging shelter options, providing mass care, and conducting search and rescue efforts. Yet, as Col (2007) identifies, local governments are only effective in their efforts when supported by higher levels of government.

The literature also identifies several practices of strong crises leadership including the visibility of leaders, regular communication between government levels, transparency to the public, and consistency (Grossman, 2020). In an evaluation of the 2004 Aceh earthquake and tsunami in the Indian Ocean and the 2011 Fukushima nuclear disaster in Japan, scholars have noted a disparity between leadership theory (referring to the actions perceived as necessary during a disaster event) and practice (referring to the actions that occurred during a disaster event), especially those related to effective communication and coordination of resources (Mahmud, Mohammad, & Abdullah, 2020). Better preparation by increasing national capacity can help improve resource coordination during a disaster while daily briefings and press releases can improve communication.

Further complicating disaster governance are public expectations. In general, many citizens in stable governance systems expect their government to shield them from crises so the disaster event itself comes as a shock that can impart public trust in the ability of the government to protect its citizenry (Boin & Hart, 2003). During disaster events, including the COVID-19 pandemic, citizens expect governments to enact policy that minimizes the impact of the crises on the public (Zarei et al., 2021). However, past experiences with government affect individual's expectations of the capacity and intent of the government to respond during a crisis event (Chamlee-Wright & Storr, 2010). In the initial stages of the COVID-19 pandemic, Perlstein and Verboord (2021) found that public perception of government leaders in Northern European countries, where government trust is considered high, remained positive when leaders remained visible and delivered efficient and extensive crisis intervention strategies. These public perceptions of disaster governance and support for leaders influenced how the public viewed their risk and their ability to mitigate the spread of COVID-19 (Shao & Hao, 2021). Moreover, others have highlighted that open and transparent sharing of information is critical to recovery efforts (Yeh, 2021). Yet, when intervention strategies are not viewed as well-coordinated, transparent, and consistent, problems arise. For instance, many policymakers in the United States implemented stay-at-home orders at the onset of the pandemic. These policies allowed some businesses to operate as usual because they provided what authorities deemed essential services. The designation of essential services, however, varied by location, leading to confusing and conflicting policies that made it difficult for businesses and consumers to plan accordingly (Storr, Haeffele, Lofthouse, & Grube, 2021).

### 3. Material and methods

#### 3.1. Study area

Texas has over 1,000 local history museums (Texas Historical Commission, 2023), 96 state parks, historic sites, and natural areas (TPWD, 2023), 14 U.S. National Park Service units, including two national parks (U.S. National Park Service, 2020), and 21 national wildlife refuges (U.S. Fish and Wildlife Service, n.d.). Many of these entities closed as a result of the pandemic in March and April 2020; however, the timing of closures and re-openings varied by entity type. Texas was one of the first states to return to full business operations, which included the re-opening of the state's parks system after two weeks on April 20, 2020. Federal entities, however, started suspending public programs and closing visitor's centers as early as March 19, 2020 and many remained closed well into June 2020 (e.g., Laguna Atascosa National Wildlife Refuge, 2020). Texas's Big Bend National Park closed on April 4, 2020 and reopened on June 1, 2020 before closing again on July 1, 2020 due to COVID-19 infection rates (Morales, 2020). The state's many privately-run museums closed by mid-March 2020 and had varying reopening dates throughout the summer (e.g., Livengood, 2020). The early push by state leaders to reopen Texas's public parks and protected places and the diffusion of these efforts to other entities, provides an important case to understand how these entities responded to the pandemic while adhering to the evolving and often contradictory national, state, and local COVID-19 guidelines for businesses.

#### 3.2. Methods

To examine the impact of COVID-19 on Texas museums, heritage sites, parks, and protected places, we employed a mixed-methods strategy with an online survey and follow-up interviews (Creswell & Creswell, 2017). We surveyed senior leadership

of Texas museums, heritage sites, parks, and protected places beginning on March 24, 2021. We sent the survey via an online survey platform (Qualtrics, Provo, Utah) to a list of contacts compiled through internet searches for key personnel as well as distributed the survey to park superintendents through the Texas Parks and Wildlife Department (TPWD) and to nature centers through the Association of Nature Center Administrators (ANCA) list serve for its Texas members. In addition to TPWD and ANCA, the survey was sent to 562 entities with unique email addresses. Two reminder emails were sent, and the survey closed after 10 weeks. The survey included a mix of closed and open response questions related to the entity's operational status, COVID-19 interventions, past and current revenue, as well as employee and visitor impacts.

The survey asked for participants to volunteer for follow-up interviews, and 20 semi-structured interviews were conducted in May and June of 2021. The interviews, which lasted 30 to 60 min, asked participants about impacts of the pandemic, implementation of risk reduction strategies, and response to different government COVID-19-related policies. The interviews also provided details and in-depth context for understanding survey responses. We audio-recorded and transcribed the interviews verbatim; except in one instance where detailed notes were taken in place of audio-recording at the request of the participant. All participants provided their informed consent to participate in this study.

### 3.3. Data analysis

We analyzed survey responses using descriptive statistics for the closed response questions with SPSS (Version 29; IBM Corp., 2022) and content analysis for the open response questions (Krippendorff, 2013). We deductively coded the interviews in ATLAS.ti (Version 22.0.6.0) for themes related to government policy at all levels of government and interventions taken in response to the COVID-19 pandemic (Saldaña, 2015). Specifically, we coded for federal, state, and local mandates, local enforcement of those mandates, entities' response to mandates, government leaders, the Center for Disease Control (CDC), or other public health official's guidelines, references to the science of the pandemic, and public response to evolving safety procedures. To ensure reliability of the coding, a code book was first developed using pre-identified terms. Sample coding was conducted against five randomly selected interview transcripts, and then the code book was subsequently modified. To reduce issues related to intercoder reliability, one author conducted all coding of transcripts and a second author reviewed themes to reduce potential for bias of interpretation. By using multiple sources for data collection and integrating interview data with survey data, we increased the validity of our findings (Leung, 2015).

## 4. Results

We collected a total of 99 responses (from our direct email and from TPWD and ANCA), of which 96 were fully answered and there were more than 80% answered, resulting in a 13.3% response rate. Respondents were distributed across the state, including from Texas's most populous counties (Fig. 2). We received responses from 47 parks or protected places, which included national and state parks and natural heritage sites; national wildlife refuges; and private, nonprofit, and county- and city-managed nature centers; and 52 responses from museums, which included private, nonprofit, and county- and city-managed art, history, and science museums as well as historic houses and cultural heritage sites (Table 1). As of March 2021, most entities were open (80.8%); however, more museums remained closed (26.9%) than parks or protected places (10.6%). We first examined the disruptions caused by the COVID-19 pandemic to these entities business operations and then detailed how these entities responded to and were affected by evolving governmental policies.

### 4.1. Impact of COVID-19 on business operations

Results showed that risk reduction responded to the COVID-19 pandemic resulted in a range of impacts on the business operations of museums, heritage sites, parks and protected places. Most survey participants indicated that their facilities closed (90%) due to the pandemic and that many reopened (68%) within 90 days of closure. The earliest close date among participants was March 7, 2020, with a last close date of April 11, 2020 (Fig. 3). Most entities (63.6%) that were open as of March 2021 also indicated that they had fully returned to daily operations. Yet parks and protected places returned to operation, or reopened, quicker than museums. It was important to recognize that other compounding disaster events, including statewide severe winter weather and tropical storms, also caused closures during the first year of the pandemic, further exacerbating the strain on entities' business operations.

Over the first year of the pandemic, state and local mandates restricted operational capacity of businesses, which included how many people were permitted inside (Svitek, 2020). The restrictions varied geographically and temporally based on infection rates. For example, in September 2020, the Texas Governor opened business operation capacity to 75% except for three areas, the Rio Grande Valley, Laredo, and Victoria, that all experienced high infection rates. Survey responses reflected these variances in restrictions, specifically on the number of visitors to their sites following reopening. Museums (42.1%) were more likely to restrict visitor numbers than parks or protected places (33.3%); this was in part due to indoor versus outdoor venues. Museums (34.2%) also indicated operating under reduced hours compared to parks or protected places (14.3%). Museums (55.3%) likewise indicated that offering reduced programming compared to parks and protected places (45.2%). Whereas two parks indicated that they increased programming and hours during the first year of the pandemic to meet demand.

In response to state and local mandates, as well as CDC guidance, respondents reported implementing a range of interventions to reduce disease spread. Masks for employees, increased cleaning frequency, reduced public programming, and sign installation

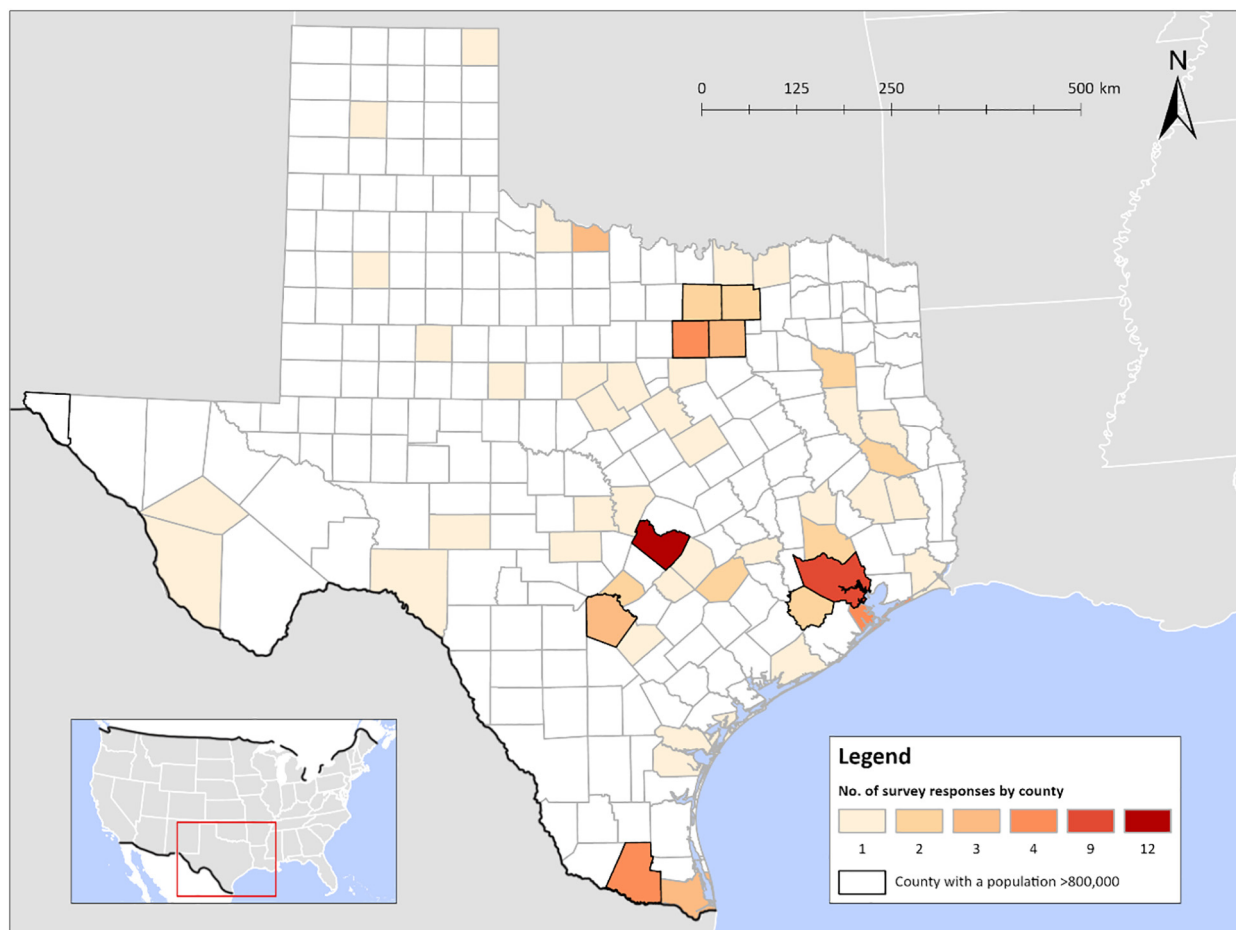


Fig. 2. Survey responses by county including counties with a population greater than 800,000.

focused on social distancing, and reducing contact were among those most frequently mentioned as risk reduction strategies to protect visitors, staff, and volunteers (Fig. 4). Other survey participants reported implementing changes to business operations. For example, one respondent explained they “staggered [worker’s] schedules to reduce number of staff on site.” Another required “volunteers...to go through a covid safety orientation” and “instituted a touchless admissions process through a(n outside) window instead of [people coming] through [the] admissions building.” This touchless system “also made online admissions possible through the website.” This was one example of how online technology was used to reduce risk for in-person visits. Despite the range of interventions reported, some sites remained closed to reduce the spread. For example, one respondent explained that they “won[t] open back up to public till all staff have [been] vaccin[ated].”

With restricted operational capacity due to risk reduction policies, most participants reported decreases in revenue during the first year of the pandemic. Museums (89%) were more likely to indicate a decrease in revenue compared to parks or protected places (55%). Yet some entities’ revenues increased with parks or protected places (14%) more likely to indicate increased revenue compared to museums (2%). Donations remained the top revenue generator during the first year of the pandemic compared to the prior fiscal year (Fig. 5); however, museums (64%) reported a larger decrease in donations compared to parks or protected places (38%). Prior to the pandemic, private events and programming were among the top three revenue generating streams

**Table 1**  
Survey respondents’ operational statuses as of March 2021.

Status	Park or protected place		Museum		Total	
Closed	5	10.6%	14	26.9%	19	19.2%
Open	42	89.4%	38	73.1%	80	80.8%
Total	47	100.0%	52	100.0%	99	100.0%

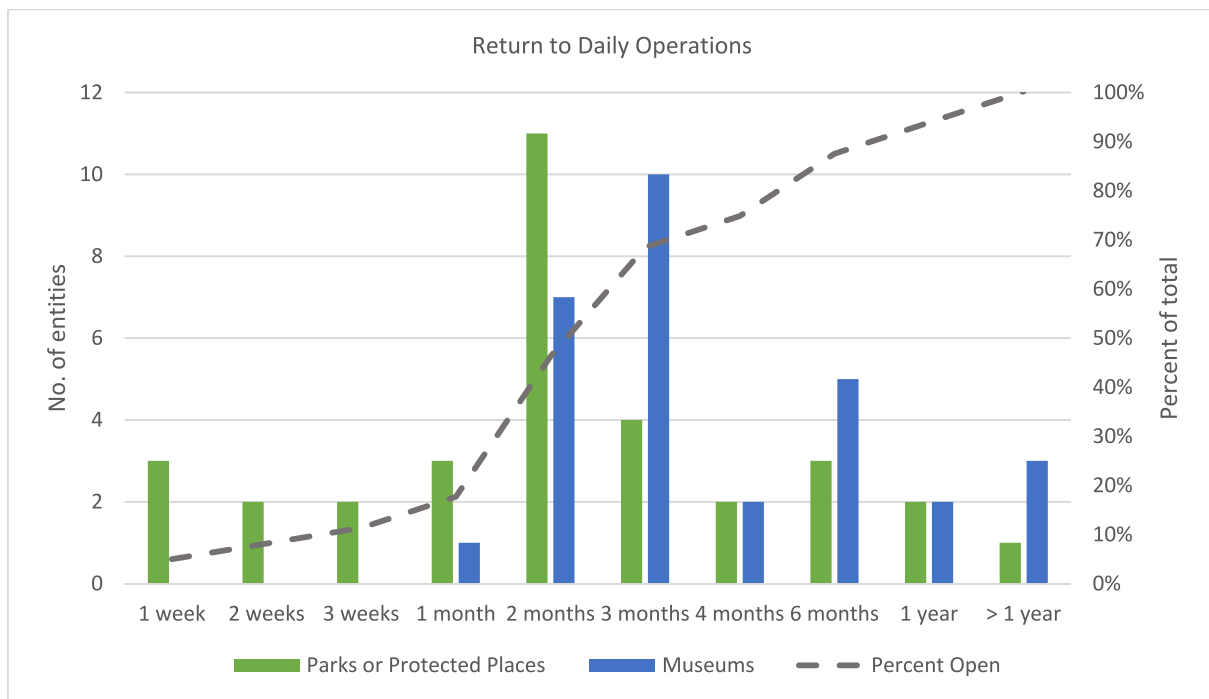


Fig. 3. Time indicated by survey participants for parks or protected places and museums to return to daily operations following initial closure for the COVID-19 pandemic.

for museums, yet COVID-19 guidelines forced museums to suspend much of their programming and cancel private events altogether. To make up for this revenue shortfall, museums relied mostly on visitor-generated revenue and supplemental federal funding opportunities. Changes in revenue streams were not as pronounced for parks or protected places. They lost revenue from decreased visitors and programming but recovered some of the loss from foundations linked to the entities and through federal funding opportunities. Less than half of respondents indicated (43%) receiving funds from the CARES Act. Funds received ranged from \$3,000 to \$665,000 (mean = \$131,000) with a high of \$3.3 million.

Many survey participants suggested that the pandemic generated financial strain on their regular visitors, resulting in their inability to donate as they had previously. For example, “people are out of work, so memberships are down,” “fewer donations [due to] increased financial hardship for visitors,” and “less disposable income/charitable giving during pandemic.” A participant explained the prioritization of donations, “Those who were able to donate, focused their giving towards organizations that provide

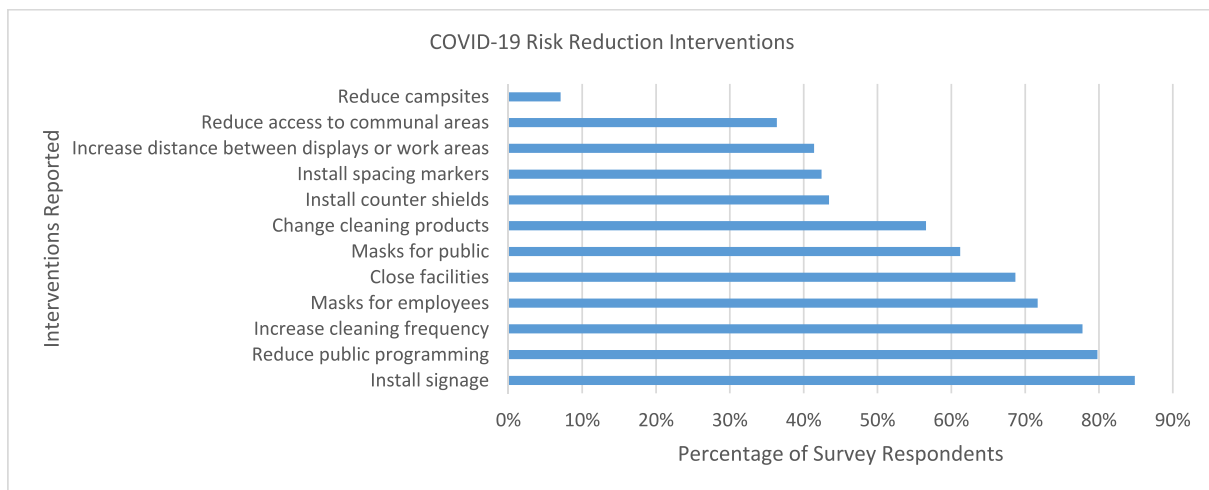
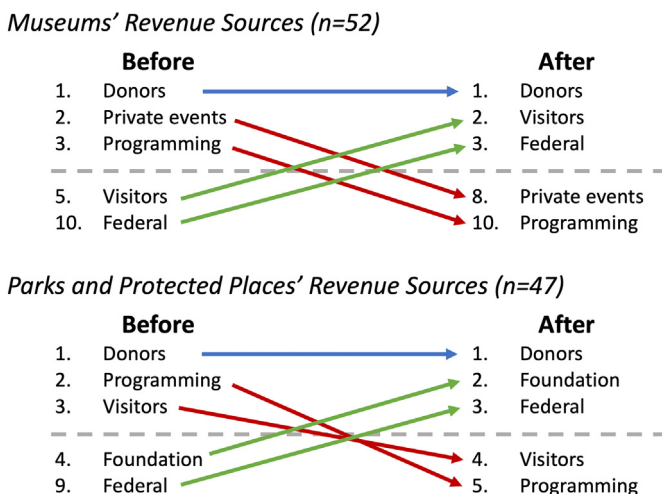


Fig. 4. COVID-19 risk reduction interventions reported by survey respondents.





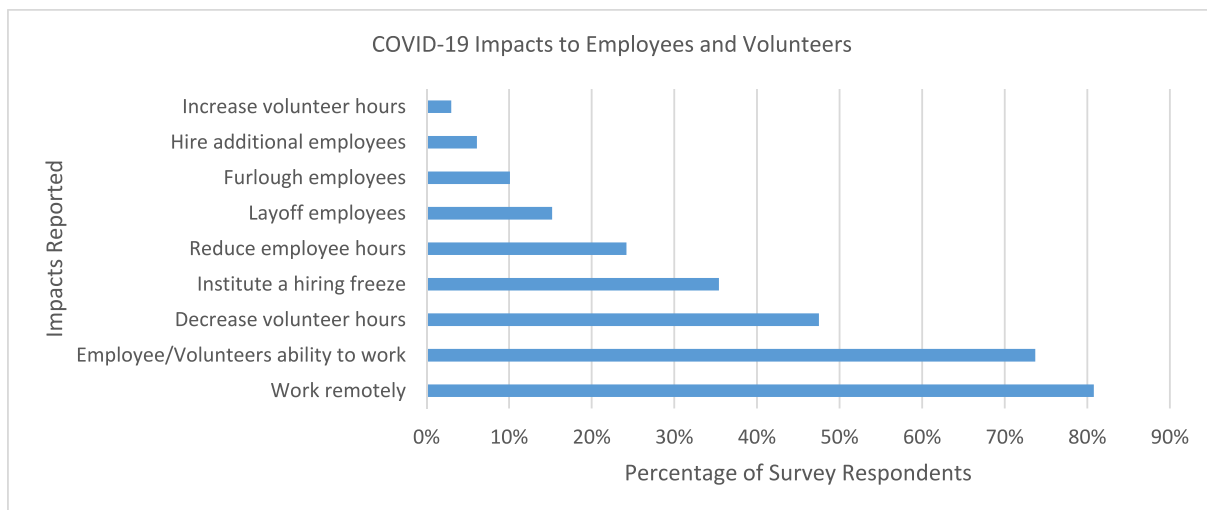
**Fig. 5.** Changes in the top three revenue generating streams with their numbered ranks identified before and after the start of the COVID-19 pandemic by survey respondents.  
 Note: Arrows indicate the following changes from the fiscal year prior to the pandemic. Blue arrows indicate no change, red arrows indicate a decrease, and green arrows indicate an increase.

care, food, and supplies for people in need, which is completely understandable. In times of crisis, people need food, medicine, and shelter.” However, not all study participants experienced declined donations as one museum described,

“We're delighted at the increase but unsure of the cause. We wonder if it's because folks are feeling more generous to entities that provide a place of respite during the pandemic or if it's because we are currently offering a discounted rate to all of our visitors so they feel more inclined to give.”

Other sites also mentioned that “visitors were grateful they had a place to go.” For many participants, they viewed their sites as vital to the mental health and well-being of their communities and therefore, supported them financially when able.

Participants suggested that changes in employees and volunteers impacted their business operations during the first year of the pandemic; however, there was little difference among respondents from museums and parks or protected places regarding the effects of the pandemic on their employees and volunteers. Most respondents indicated that the pandemic affected employees' and volunteers' ability to work (74%; Fig. 6). Many respondents indicated that employees were able to work remotely (81%), and less than half of survey respondents (37%) indicated losing employees during the first year of the pandemic due to layoffs, hiring freezes, or furloughs. Those reliant on volunteers, however, indicated that they struggled without them. For example, many participants explained their facilities depend on volunteers. Throughout the first year of the pandemic, they had to



**Fig. 6.** COVID-19 impacts on employees and volunteers reported by survey respondents.

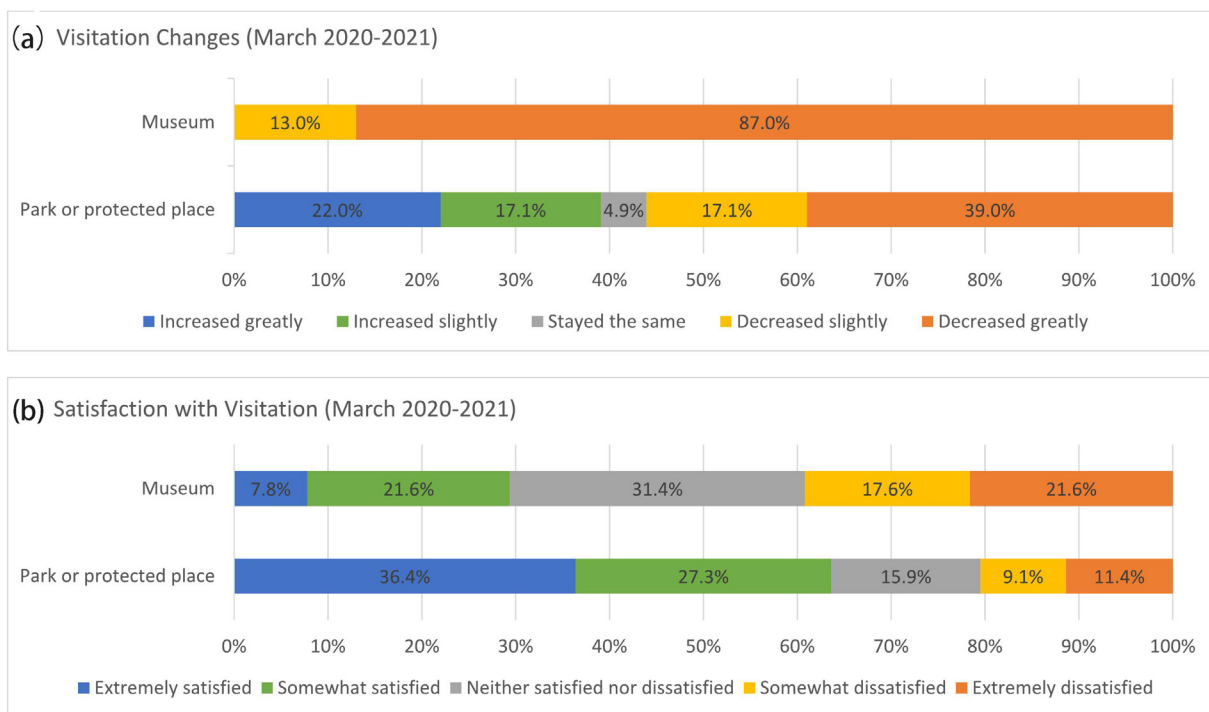


Fig. 7. Percentage of survey respondents that indicated how visitors to their sites changed (a) and their satisfaction with changes in visitors during the first year of the pandemic (b).

reduce volunteer hours or discontinue them altogether due to capacity restrictions and stay-at-home orders, which impacted their ability to return to daily operations and deliver quality programming.

When asked about the impacts of the pandemic on visitors to their sites, respondents from museums noted that the number of visitors decreased greatly (87%) with no respondent indicating that visitor numbers stayed the same or increased (Fig. 7a). Some participants from parks or protected places also noted visitors decreased greatly (39%), but others indicated that visitors increased slightly (17.1%) or increased greatly (22%) during the first year of the pandemic. Because of this, respondents from parks or protected places were more likely to be either somewhat satisfied (36.4%) or extremely satisfied (27.3%) with visitor numbers compared to respondents from museums (21.6% and 7.8%, respectively; Fig. 7b). Overall, respondents noted an increase in first time, out of town, and local visitors but a decrease in school groups.

Finally, most respondents from both museums (64%) and parks or protected places (76%) offered online programs or virtual access to their collections. These offerings came through a variety of formats (Fig. 8). Virtual programs (e.g., classes, workshops,

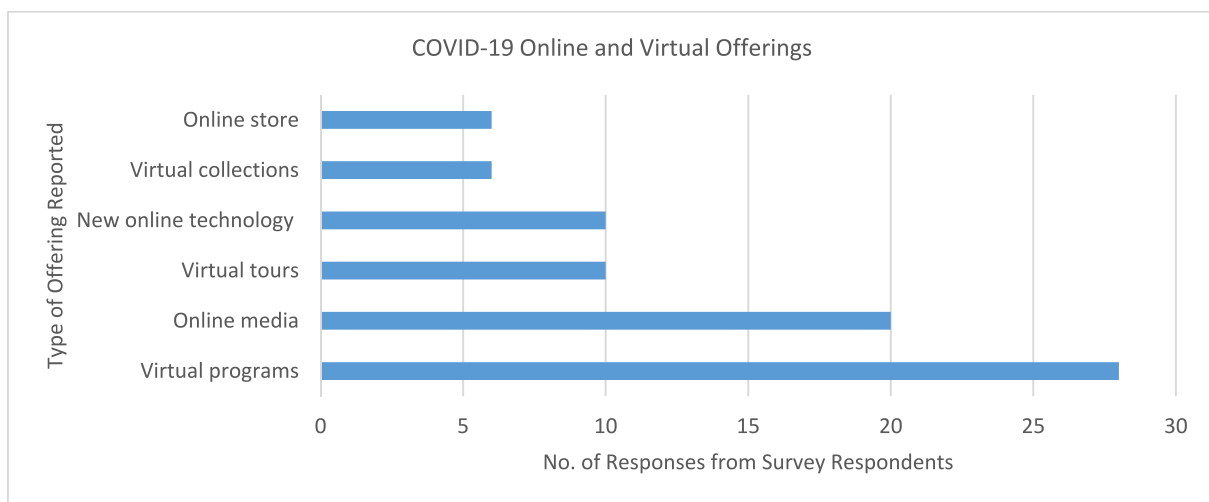


Fig. 8. Number of responses by survey respondents indicating online and virtual offerings by type.

and story times) were the most frequently mentioned offerings followed by the distribution of content and videos through online media platforms, including the social media sites like YouTube and Facebook. Respondents indicated that they converted many of their in-person programs to online and virtual offerings. Some entities also moved the contents of their stores online to help recover lost revenue due to a lack of in-person visitors.

#### 4.2. Interviews

Interview participants reported varied experiences when operating their businesses while navigating evolving federal, state, and local policies related to the COVID-19 pandemic. Several themes emerged from the interviews including adhering to conflicting policies, enforcement issues, choice or the lack of choice, and the indirect effects of COVID-related policies on museums and parks or protected places operations.

In the interviews, there were more references to state policies and their impacts than federal policies or CDC recommendations, followed by local mandates. Every interview participant described their entities experiences to the Texas Governor regarding the lifting the mask mandate and opening capacity on March 10, 2020. One museum manager explained that “we’ve just slowly been gaining more and more visitors” and another echoed a similar experience saying, “we have had quite a few... new visitors.” Most reported returning to more normal, pre-pandemic operations with enhanced cleaning procedures. For example, a protected place manager explained,

“the governor has... lifted the mask mandate... for all... university or government buildings so... there are no mask mandates in place anymore for indoor or outdoor spaces... we still have hand sanitizers out... we’ve talked about removing them, but we feel that they still give people comfort, so we do still have them out.”

Others explained that they kept some risk reduction strategies in place. A public garden manager stated, “we are operating as normal... almost like normal... like we were before the pandemic. The only thing that’s different... we still have the timed entry in place and limited number of people per hour and we have not opened our indoor spaces to the public yet.”

Most of the federal references were explanations about how the entities responded to changing CDC guidance. For example, a museum director informed us that “with the recent CDC revisions, our full capacity is much more than we ever have actually in the museum.” A park official commented that “as the CDC guidance change[d]...we’re actually taking all the signage down that requires face masks in public buildings.” Similarly, one nature center director explained that “we recently...updated our COVID policies. We’ve been updating them all along the way from the CDC guidelines.” This nature center also anonymously surveyed their staff to understand their comfort levels with the new CDC guidance, which recommended that fully vaccinated people did not need to mask indoors. Based on staff’s response, the nature center decided “it’s up to the person who...wants to wear it or not wear it,” the participant stated, while mentioning that during a training the day before, “there were twenty-some of us in the room, and I’d say...five ...were wearing the mask...the whole day. So, it’s just...whatever they’re comfortable with.” During our observation, we noted the emphasis on staff comfort, with some staff adopting more stringent regulations than those recommended by the CDC.

A minority of study participants emphasized state and local level mandates rather than following guidance at the federal level. A nature center manager explained that “the city as a whole, was taking a pretty... restrictive stance because they wanted to... try to keep as many people safe as possible.” While a museum director explained that they “said no masks” when the state repealed the mask mandate. Tensions and inconsistencies, however, emerged when the Governor’s office and CDC recommendations did not align. A park manager described how the state parks tried to be consistent across all entities in their system,

“We tried to be consistent across the state... as much as possible. People don’t like going from one park to another... and finding that the rules are different for them at different parks... most of [the guidance], was... just to adhere to the state and federal guidance. Whatever came out of the governor’s office and whatever came out of CDC.”

As state parks, they legally had to follow state policies, whereas CDC recommendations served as guidelines that lacked enforcement.

With the conflicting guidance from the CDC and the Governor’s office, several interview participants reported difficulty enforcing CDC recommendations or even local and state policies among visitors during the first year of the pandemic. When asked about the museum’s response to the state’s repeal of the mask mandate, one museum participant explained that “half the people around here... weren’t following [the mask mandate] anyway, so... I don’t think much has changed... Here, people are going to do what they want anyway... We live in a lawless area.” Another participant explained,

“Because we’re in rural Texas... Well, my staff and I all understand it and support the science that exists, and continued wearing masks after the mandate was lifted. We didn’t make any kind of public statement... because we...didn’t want to make ourselves the center of any anti-mask theory and in rural Texas, there’s...a lot of that.”

Several entities focused on the role of choice related to COVID-19 mitigation measures. For example, one nature center manager described, “When the Governor...mandated that schools cannot require a mask to be worn after... June 4<sup>th</sup>... Our closest school district... voted that evening... to remove masks. Now you can still wear them if you'd like to.” Yet many interview participants voiced feeling uncomfortable about their lack of choice as the state removed mask mandates and opened businesses to full customer capacities and operations. One nature center manager explained that “Our organization has been...put in a position that...we don't have a choice but to open more” due to the state policies. While another nature center manager stated that “We're ready to move past this [COVID-19], but last thing I want to do is to... put anybody at risk, our employees, or visitors, or students. But... I'll be honest... the governor is driving that conversation, and so now people think that there's no need [for wearing mask].” Still another nature center manager, who often hosted school field trips prior to the COVID-19 pandemic, expressed concern about the repeal of state mitigation policies. They expressed feeling pressured to resume their programs at full capacity, even though their staff did not feel safe.

“So now we're already seeing, we've got schools... booking people this summer [for programs at the nature center]... so part of our reaction is we don't know what to expect when students walk through the door. Majority of them... are probably not going to have masks on. So... we're just kind of... working through that... Is that how we get back to normal capacity? And then how do we do it in a way that's still welcoming? ... And with everything happening, especially within the state... it's almost like we don't have a choice. I'll just be honest, it feels like that... you know, if you want to protect yourself, go get a vaccine. If you don't, then wear a mask, and if you don't want to wear a mask, don't bother me.”

Most interview participants spoke about the impact of school districts' COVID-19 policies that restricted field trips. Specifically, participants recounted the loss of school visitors and revenue associated with educational field trips. A museum director explained that “schools weren't allowing kids to do tours or anything like that.” A nature center manager described the drastic change in visitors as they went “from serving 18,000 [school-aged] participants to 1,200” and lost a year's worth of service fees from those school districts. Some participants, however, were able to make up for the lost revenue from increased general admission. A nature center manager stated that “normally we would have... a couple thousand school kids coming through in May, but we recouped a lot of that through general visitation.”

Local mandates had other indirect effects on museums and parks or protected places. Interview participants, in particular, spoke about the impact of stay-at-home orders which varied in length and extent by county. A participant explained that the lack of visitors staying in area hotels made it difficult to fund their routine activities. “The... nature preserve is funded completely through hotel-motel tax that comes to the city... When the pandemic began, we were very nervous about that because we're like, okay, you know, no one is gonna be coming... staying in a hotel with the stay-at-home order.” Other participants reported that while they hosted fewer visitors traveling from outside their area, local visitation dramatically increased, potentially creating stronger local support for the protected place as people visited them for the first time.

## 5. Discussion

The timely recovery of museums, heritage sites, parks, and protected places from disaster events contributes to the recovery of the broader community while supporting regional and local economies. The extent to which disaster events, such as the COVID-19 pandemic, impact these entities and shape how they respond to them. Their prior preparation determines the duration until they can return to normal operations. Yet their recovery trajectories are also shaped by policies and guidelines implemented in the aftermath of the disaster and by leaders' responses to the event. In this study, we documented the impacts of the COVID-19 pandemic on museums, heritage sites, parks, and protected places, and examined how these entities responded to the pandemic and conflicting guidance from federal, state, and local authorities. We found that the pandemic had numerous impacts on these entities and contradictory COVID-19 guidelines and policies disrupted their recovery efforts. From these findings, we discussed how previous changes prepared many entities to survive during the first year of the pandemic and how these entities' return to operations reflected the stages of disaster and crisis recovery.

Globally, beginning in the 1980s, museums, heritage sites, parks, and protected places experienced changes in revenue streams as public funding for these entities declined (e.g., Lindqvist, 2012; Walls, 2014). The 2007 to 2009 global financial crisis led to additional budget cuts for museums, heritage sites, parks, and protected places. For example, funding for local parks and recreation departments in the United States fell by \$5 billion from 2007–2008 to 2013–2014, and more than 14,000 full-time positions were lost (Pitas, Barrett, & Mowen, 2017). Because of these impacts, museums, heritage sites, parks, and protected places had to shift their sources of funding. Parks and protected places relied on philanthropic support in the form of donations, conservancies, foundations, and public-private partnerships (Walls, 2014). Museum funding also depended on donations, but they also worked to increase visitor numbers to generate more revenue from general admission and fee-based special exhibits (Ballantyne & Uzzell, 2011). Because museums have focused on increasing visitor numbers, they were better sheltered from economic crises (Lindqvist, 2012) yet more vulnerable to the disruptions brought by the COVID-19 pandemic.

Although different from economic crises, disaster events can cause similar impacts to national, regional, and local economies, creating financial problems for businesses as they recover. Long and protracted global disaster events, such as the COVID-19 pandemic, also cause widespread economic impacts, and the difficulties created by the pandemic tested the financial resiliency of these entities. Our results indicate that donations remained the primary source of funding for the surveyed museums and

parks or protected places during the pandemic. This support was critical for their survival and consistent with the existing literature on how these entities weathered the global financial crises. However, for museums, visitor funding was less important before the pandemic than during the first year of it. For parks and protected places, programming and visitors were important sources of revenue prior to the pandemic; however, foundation support proved vital to parks or protected places during the first year of the pandemic. These results suggest that prior changes to funding streams to endure financial crises helped support these entities during the first year of the pandemic.

During this time, Texas museums, heritage sites, parks, and protected places operated in a state of recovery consistent with other disaster and crisis events. In the aftermath of every disaster and crisis, communities initiate reconstruction activities that seek to return to pre-event and normal operations (Kates, Colten, Laska, & Leatherman, 2006; Kates & Pijawka, 1977). These timelines for recovery vary depending on the scale and magnitude of the event. Despite the distinct timelines of the COVID-19 pandemic compared to short-notice disasters such as earthquakes and flash floods, the response efforts followed similar timelines. In the immediate response, the focus is on public health and providing emergency care operations (Kates et al., 2006; Kates & Pijawka, 1977). In the following weeks, emphasis was given to reestablishing critical facilities including businesses. In the months afterwards, focus shifted to rebuilding local economies through businesses revitalization and financial support while promoting long-term risk reduction strategies. We observed these recovery activities and timelines for museums, heritage sites, parks, and protected places during the COVID-19 pandemic. Because most participants experienced mandated closures after the declaration of a public emergency, the reopening timetables mirrored experiences in other disaster contexts. In many disaster contexts, early returners are those entities with minimal damage to their structures, intact distribution systems, and financial support in the form of insurance or savings (Sydnor, Niehm, Lee, Marshall, & Schrank, 2017). Whereas we observed parks and protected places as early returners because they could more easily offer social distancing in outdoor environments. Most museums, however, had more obstacles to overcome as many of their exhibits were indoors and they already depended on donor support and lacked the financial support from foundations that public parks and protected places enjoyed.

Regardless of entity type, the COVID-19 pandemic disrupted business operations for all museums, heritage sites, parks, and protected places in Texas. The loss of revenue, visitors, and staff/volunteers affected their ability to maintain operations, or even to reopen after the initial closures. Similarly, Lee (2019b) found that staff shortages impacted the ability of businesses to reopen and maintain operations one year after 2017's Hurricane Harvey hit the Texas Gulf Coast. Disaster recovery research tends to focus on the rebuilding of houses and reopening of businesses as key to reconstruction efforts (e.g., Marshall & Schrank, 2014), while less work emphasizes the role of museums, heritage sites, parks, and protected places as integral to the recovery of place and community (Huang, 2018; Schumann, 2013; Woosnam & Kim, 2014). Not only do these entities protect cultural and environmental resources, but also contribute to regional and local economies as tourist attractions (Zavar et al., 2020). Recognizing museums, heritage sites, parks, and protected places as businesses, researchers and practitioners alike can better understand how disaster-induced disruptions holistically affect communities and their recoveries.

Finally, the disruptions wrought by the pandemic were further complicated by evolving policies and guidelines. Participants in our study underscored how conflicting federal, state, and local policies complicated their business recoveries and their ability to sustain operations. Recent research has detailed how the COVID-19 pandemic amplified contentious intergovernmental relations in the United States between the states and federal government, a phenomenon termed conflictual federalism (Mallinson, 2020). Despite the conflicts, cooperative agreements did emerge between some states, but these coordinating groups were often in contention to federal policy. Inconsistent government policy, as experienced by the participants in our study, further stagnates local recovery efforts and can erode public trust (Col, 2007), creating divisive communities. These divisive communities, characterized by uncertainty and government distrust, are often termed corrosive communities and are more commonly experienced in the aftermath of technological, or humanmade, disasters (Picou, Marshall, & Gill, 2004). The experience of the participants in our study depicts a corrosive environment where entities often struggle to adhere to conflicting government policies while navigating the public's distrust of risk reduction strategies. Furthermore, decades of research demonstrate that corrosive communities hinder their recovery (Cope, Slack, Jackson, & Parks, 2020). Also hindering recovery is the reliance on traditional hierarchical governance to inform policy rather than new modes that embrace power-sharing, multi-level integration, and decentralization of approaches (Hall, 2011). For Texas museums, heritage sites, parks, and protected places, the evolving and conflicting policies and associated public opinions further challenge their ability to maintain business operations while serving their missions of conserving and preserving resources for their communities.

## 6. Conclusions

The findings of this research illustrate the impacts of the COVID-19 pandemic on the business operations of Texas museums, heritage sites, parks, and protected places as well as their responses to conflicting guidance during the first year of the pandemic. Governmental policies influence crisis management and recovery. Transparent, consistent, and direct messaging have been shown to be the most effective. Yet Texas museums, heritage sites, parks, and protected places voiced a range of experiences in response to conflicting guidance during the first year of the COVID-19 pandemic. Despite the variability in COVID-19 guidelines and policies, museums, heritage sites, parks, and protected places were confronted with the very real need to continue their business operations in the face of an evolving global pandemic. Overall, their ability to adjust to the pandemic during the first year was temporally dynamic and highly contingent on changing revenue streams and COVID-19 restrictions. Specifically, museums were slower to return to operations. COVID-19 guidelines inhibited museum re-openings and their business operations. They reduced the number of program offerings, decreased hours of operation, and curtailed private events. Yet despite decreases in visitors,

museums witnessed changes in revenue streams with visitor revenue and federal funding helping make up a portion of revenue lost from private events and programming. Parks and protected places, on the other hand, were faster to return to operations. Demand for outdoor recreation led to increases in park visitation during the first year of the pandemic. This resulted in less reduction in programming and hours of operation for these entities. Parks and protected places also suffered from disruptions to their revenue streams with foundation and federal funding making up for lost revenue from programming and visitors. Moreover, interview participants suggested that state regulations often removed entity's agency and stripped away their choice in how to operate or which risk reduction measures to enforce. The conflictual federalism at times generated division, resulting in a corrosive community that hindered the operations of museums, heritage sites, parks, and protected places. This was most obvious in interviews where participants described issues with enforcement of mitigation policies at study participants' sites.

Adjustments to funding sources after the global financial crisis seemed to help museums, heritage sites, parks, and protected places return to operations during the first year of the pandemic, but the pandemic also presented challenges that these entities had not faced before. These challenges spurred innovation and reconfiguration of their business operations. Museums, heritage sites, parks, and protected places instituted work from home options and converted in-person programs to online and virtual formats. Online and virtual programs were highly attended and broadened the audiences of many entities. Parks and protected places also had increased visitor demand with many first-time visitors because of pandemic-related guidance on disease spread. This change in public behavior presents a unique opportunity for future resilience.

The adaptations made by Texas heritage sites, parks, and protected places in response to the pandemic provide a framework for resilience. Museums, heritage sites, parks, and protected places should continue online and virtual programs and capitalize on new and first-time visitors as a way to continue their recoveries from the pandemic. Implementing strategies to build on and extend virtual programming while making efforts to retain new visitors would also serve as a long-term approach to creating a more resilient business model to respond to future crises. By offering enriching and memorable virtual and in-person experiences, museums, heritage sites, parks, and protected places have the opportunity to convert newcomers into lifelong visitors and future donors.

In this study, we also argued that museums, heritage sites, parks, and protected places operated as business entities while fulfilling their missions and discussed how their past preparations and adaptability coupled with technological integration allowed many of them to continue operations during the first year of the pandemic under conflicting policies. We encourage future research to consider their role in community recovery from disasters and crises. Additional scholarship is needed to understand how these entities recover longitudinally as this study focuses on the first year of the pandemic. While this study is based in the United States, additional work is needed to understand how the experiences of these study participants align or differ in other geographic contexts with differing pandemic policies.

### Ethical statement

This study was approved by the University of North Texas's Institutional Review Board (IRB-20-544), ensuring its compliance with guidelines and standards for ethical research. All participants provided their informed consent to participate in this study.

### CRedit authorship contribution statement

**Brendan L. Lavy:** Conceptualization, Data curation, Formal analysis, Methodology, Visualization, Writing – original draft, Writing – review & editing. **Elyse Zavar:** Conceptualization, Data curation, Formal analysis, Methodology, Visualization, Writing – original draft, Writing – review & editing. **Salvesila Tamima:** Data curation, Formal analysis, Writing – review & editing.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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