

ABSTRACT

VAN DE VELDE, JAELE DAVITA. Weathering the Storm? How Social Cohesion, Place Attachment, and Risk Perceptions are Influencing Recovery Decisions in Coastal Communities. (Under the direction of Dr. Whitney Knollenberg and Dr. Erin Seekamp).

The United States' coasts are popular holiday and recreational locations, and the tourism industry is booming in these areas. Despite the popularity of these areas, coastal tourism business may be particularly "risky" ventures as these destinations are vulnerable to coastal hazards including hurricanes, storm surges, and flooding. Additionally, climate change is predicted to lead to more severe coastal disasters including stronger hurricanes and rainfall events, increased localized flooding, and rising sea levels. Furthermore, COVID-19 impacted the global tourism industry, including coastal tourism, and resulted in such challenges as travel restrictions, business closure, job loss, reduced to virtually no income, and adapting to health and safety measures. Dealing with coastal hazards on a regular basis and the added COVID-19 pandemic requires resilience from the local tourism business owners in coastal tourism-dependent communities.

Building resilience in tourism-dependent coastal communities is crucial as frequent storms and flooding damage their infrastructure. Not only are residents attached to their homes, community, and/or business, but maintaining and rebuilding tourism infrastructure is imperative as tourism is the main economic driver in these areas. Resilience has traditionally been identified as the ability to bounce back from a catastrophic event, which for disaster-affected communities is interpreted as recovery and a return to normal functioning. However, as coastal hazards are reoccurring and predicted to worsen over time merely bouncing back is not going to be sustainable over time. Resilience in these tourism-dependent coastal communities, therefore, requires bouncing forward, which is defined as being able to prepare for anticipated disasters, adapt to changing conditions, and withstand and recover rapidly from disruptions. Actively planning and preparing for upcoming coastal hazards will help minimize damage to personal property, businesses, and natural resources as well as supporting an efficient recovery. Therefore, bouncing forward will help tourism stakeholders ensure the economic stability that is needed for a more sustainable future.

This study was conducted in Ocracoke and Hatteras, two tourism-dependent coastal communities located on barrier islands of North Carolina's Outer Banks. Being situated on these barrier islands leaves the communities vulnerable to coastal hazards. These communities were chosen due to their economic dependence on tourism and as they were among the hardest hit by Hurricane Dorian in North Carolina in 2019. By analyzing interviews with 26 tourism stakeholders (i.e., business owners, non-resident property owners, and workforce members), this study identified patterns and themes related to social cohesion, place attachment, and risk perception directed towards bounce back and bounce forward recovery decision-making after Hurricane Dorian.

Participants in both communities have deep personal, family, and for some intergenerational ties to the area, as well as a strong dependence on tourism. At the same time, differences between the communities were identified that provided context to the decisions made in each community. We uncovered patterns among groups of participants who tended to make more bounce forward decisions: participants with social cohesion across communities, participants with high levels of risk perceptions, and participants with previous hurricane experiences. Conversely, participants with social cohesion within communities, participants with not high risk perceptions, and participants without prior hurricane experiences tended to make more bounce back decisions. Surprisingly, we did not uncover any clear patterns in the data relating to the type of decisions made related to participants' level of place attachment.

Ultimately, the insights gained from this study can contribute to the development of bounce forward resilience strategies for vulnerable tourism-dependent coastal communities like Ocracoke and Hatteras. By understanding the dynamics of social cohesion, risk perception, and prior hurricane experience, tourism stakeholders can make informed decisions that enhance resilience against recurring coastal hazards and other disturbances.

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Weathering the Storm? How Social Cohesion, Place Attachment, and Risk Perceptions are
Influencing Recovery Decisions in Coastal Communities.

by
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A thesis submitted to the Graduate Faculty of
North Carolina State University
in partial fulfillment of the
requirements for the degree of
Master of Science

Parks, Recreation, and Tourism Management

Raleigh, North Carolina
2023

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BIOGRAPHY

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ACKNOWLEDGMENTS

I would like to thank my advisors Dr. Erin Seekamp and Dr. Whitney Knollenberg. Dr. Erin Seekamp, for always challenging my thinking and pushing me to be a better researcher. Dr. Whitney Knollenberg, for her incredible enthusiasm that encouraged me throughout this process. Thank you both for taking me on halfway through my program and always believing in me, but most importantly making me believe in myself. I would also like to thank Dr. Bethany Cutts, my third committee member, for all her valuable insights and her mentorship. I feel honored to have worked with and learned from these amazing researchers and strong women.

I want to acknowledge my American family, Allen and Joanna, who introduced me to NC State and who have been my family away from home while I have been out here. Our family dinners out on the deck and game nights always made me feel like I was coming home and recharged me after a busy week at work. And my PRTM grad family for being my rock through this experience. Your friendship has made my time in the department such a joy; it always made my day seeing you in the office and our Friday evening get-togethers were the highlight of my week.

And finally thank you to my parents, family and friends at home in the Netherlands. I feel so lucky to have received all your support even when I decided to move across the world, you have been my biggest cheerleaders. Words cannot describe how much I have missed you and appreciate you and your love. I couldn't have done it without your support, patience, and words of encouragement. Heel erg bedankt, ik hou van jullie!

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CHAPTER 1: INTRODUCTION

1.1 Prologue

September 6th, 2019 is a day that will not be forgotten by the people of Ocracoke and Hatteras, two remote, tourism-dependent island communities in North Carolina's Outer Banks. As Hurricane Dorian raged over the islands, the residents were caught off guard by the sudden rise of water, especially in Ocracoke, despite their prior experience with coastal hazards. Many watched as the flood destroyed their beloved homes, businesses, and other valued community structures (Robertson, Fausset, & Bogel-Burroughs, 2019). As the storm receded, it became clear what damage the hurricane had left behind. The hurricane had cut off the only access to the remote communities when flood water sliced through Highway 12 (only road to reach Hatteras and major road in Ocracoke) as sand and water from breaches destroyed and moved the road (Figure 1.1). Additionally, the sands in the shallow sounds shifted, filling in the dredged channels, further cutting off the communities from ferries and other large boats. The first effort of relief support (e.g., emergency supplies, food, cleaning products) were brought over from the mainland via helicopter and distributed through community organizations such as the volunteer fire departments. The shocking aftermath of the hurricane brought people in the communities and across communities together, helping each other recover from the storm (Schwenneker, 2020). But the road to recovery was long and not without obstacles.



Figure 1.1: Superintendent David Hallac standing on a damaged stretch of State Highway 12 on Ocracoke Island (Credit: NPS)

In the midst of recovering from Hurricane Dorian, the COVID-19 pandemic emerged, making the already remote communities even more removed from the mainland and dependent on their own resources. Ferry services often experienced major delays and cancellations due to COVID cases. In a pandemic, the remoteness of the communities is even more highlighted as the closest hospital is a 1.5 hours drive from Hatteras and for Ocracoke an additional hour ferry ride. Furthermore, the tourism dependent communities were left vulnerable as their main source of income was compromised, businesses had to close and access to the islands was restricted to property owners. Within half a year, these communities dealt with two serious disasters that jeopardized their tourism economies and climate change is becoming an increasing threat that can affect coastal areas in a variety of ways. Coastal areas, such as Ocracoke and Hatteras, are sensitive to sea level rise, changes in the frequency and intensity of storms, increases in precipitation, and warmer ocean temperatures. (NOAA, 2019). The islands are at extreme risk of flooding in the next 30 years (Risk Factor, n.d.).

Despite the continued and increasing threats to Ocracoke and Hatteras, residents are staying on the islands and continue rebuilding their homes, businesses, and their community as a whole. This sparked my curiosity in these communities; specifically, I want to understand why community members, who have a stake in tourism, are not relocating to a less vulnerable and remote place where they do not need to deal with flooding and coastal hazards on a regular basis and where their land is not slowly becoming part of the sea. Secondly, how are these places recovering from past disasters and preparing for future events? Specifically, in a tourism context, the COVID-19 pandemic showed that tourism is not always a reliable source of income. Ocracoke and Hatteras rely on tourism which puts them in a precarious situation as their economic success of these communities is reliant upon only a few months of the year (Lee et al., 2008). Fortunately, Ocracoke and Hatteras (and the OBX as a whole) received a large number of visitors after they opened up the islands again in May 2020. Although the arrival of tourists back on the island—and in unprecedented numbers even in the following ‘off seasons’—was good for the economic recovery, many of the locally owned businesses were struggling to find enough employees that were willing to work during these uncertain times or able to find long-term housing on the islands. Not being able to find enough employees resulted in businesses having to cut their hours or even having to close their businesses (Aldridge, 2021). The compounded crisis (Hurricane Dorian & COVID-19) highlights that the tourism industry is fragile and the economy

of Ocracoke and Hatteras can be jeopardized. Additionally, the communities were not prepared for the return and increase of visitors. Therefore, I am interested to see how these communities are recovering from this compounded crisis and see how they are preparing for a future disruption to their tourism industry.

The following concepts will help address my questions and will guide my research: *place attachment*, *social cohesion*, and *risk perceptions* (Figure 1.2). In terms of *place attachment*, residents of Hatteras and Ocracoke have often lived on these islands for generations and have their (family) businesses on the islands, or they relocated after having been vacationing there for years. These connections create bonds that lead to feeling attached to the islands. An Ocracoke County Commissioner best described *social cohesion* by stating after the hurricane: “For the rest of my life I’ll never forget the way the community came together, pulled together, not just the four corners of the village but the wider community, across the sound. It was an absolutely incredible experience to be a part of that kind of generosity and kindness” (Ocracoke Observer, 2020). The *social cohesion* or sense of “togetherness” within these communities appears to be strong with community members helping each other through the tougher times on the islands. Related to *risk perceptions*, the severity of the hurricane came as a surprise, especially to Ocracoke residents despite having endured several other major storms and watching neighboring communities go through several severe hurricanes. As such, I am curious about how their risk perceptions change after hurricane Dorian and if it is affecting future hurricane preparation.

CONCEPT	DEFINITION
Social Cohesion	The strength of relationships and sense of solidarity among individuals in a community and across communities (e.g., Townshend et al., 2015)
Place Attachment	The emotional bonds between an individual and a geographical location, or how strongly someone is connected to a place (e.g., Hernández, Hidalgo, & Ruiz, 2020)
Risk Perception	A subjective judgment of the severity of a risk and possible negative consequences this risk could bring with it (UNISDR, 2013)

Figure 1.2: Social cohesion, place attachment, and risk perception defined

Guided by these three concepts the purpose of this study is to understand the influence of social cohesion, place attachment, and risk perceptions on recovery decisions. Understanding how recovery decisions are made is a first step into creating and fostering resilient communities who are able to prepare for anticipated coastal hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions.

1.2 Positionality Statement

Being from the Netherlands—a country of which a great part is below sea level and has been fighting water for centuries—was taught from a young age how we as a country should protect ourselves from water. As our country is so small there is a sense of urgency to protect the land we do have as there would not be enough space for everyone if we were to lose the land that is below sea level. This knowledge and experience I carry with me has shaped my view on how to prepare for and protect against storms and flooding. It is my expectation, based on events in my home country, that when frequent flooding occurs, the government funds projects to build dikes or restructure the natural environment to guide water away from town/city limits, as well as other solutions that would prevent flooding in the future. I realize that this is a privilege and a well-oiled system that is unique to the Netherlands.

As a researcher, I would be classified as an external-outsider (Banks, 1998) due to the fact that I do not share major similarities and lived experiences with the communities that I am studying. I am from a different country with a different culture and my view on flood recovery is only based on what I have been taught about the efforts that have taken place in the Netherlands, and I have been lucky enough not to endure any flooding myself. As an external-outsider it is crucial to gain an understanding and appreciation for the values, perspectives, and knowledge of the community that I am studying. To gain an understanding into the situation of Ocracoke and Hatteras I have visited the communities to see their natural and built environment and was able to sit in on interviews that the larger research team conducted with the community members. At a separate time, I have driven down to Hatteras village during a minor storm and experienced how the wind can make the road undriveable due to shifting sands. Additionally, I have conducted background research on the communities (e.g., via media outlets and through conversations with researchers who have been involved with the communities for a longer time)

to gain insights into their culture, their history, their experiences with hurricanes and the measures that have been taken to protect them, and the role that the government plays in the coastal hazard recovery processes. Finally, through researcher triangulation I was able to discuss my perceptions and be held accountable for reflecting on the values and perspectives of the community members in this study.

1.3 Introduction

The value of tourism ranges from tangible benefits such as economic contributions, job creation, infrastructure development, and diversification of revenue streams to intangible benefits including empowering local communities, cultural exchange between visitors and locals, and heritage preservation (World Travel and Tourism Council, 2023). In the past decade, before the COVID-19 pandemic, domestic U.S. travel was steadily growing each year (Statista, 2023), reaching 2.3 billion person trips in 2019 (U.S. Travel Association, 2020). The blossoming of the tourism industry started at the end of the Second World War due to several factors, notably due to the increase in car ownership, surging middle-class personal spending, newly established paid vacation benefits for the working class, and the arrival of air travel (Gershon, 2016).

Oceans and coastlines are at the heart of global tourism, as 80% of all tourism takes place in coastal areas (World Resources Institute, 2021). Likewise, the United States' coasts are popular holiday and recreational locations. One of the areas where tourism has blossomed is the North Carolina Outer Banks (OBX), a set of barrier islands in the Atlantic Ocean. With 100+ miles of beaches, roughly 3,000 shipwrecks, explorable by snorkeling or scuba diving, plenty of history, old lighthouses, and an abundance of natural beauty (Outer Banks Visitors Bureau, n.d.).

National Seashores were created at the same time with the expansion of the National Park Service (NPS) beginning in the 1930s. During this period, NPS aimed to protect more natural resources and make them accessible to the public. Cape Hatteras in North Carolina was the first National Seashore driven by the wishes of the locals. The NPS designated Cape Hatteras as a no-development area, preserving the beaches for visitors. In the Outer Banks, 70 miles of shoreline was protected to maintain the scenic beach region of Cape Hatteras and its wildlife, including sea turtles and many species of birds (U.S. National Archives, 2018). Cape Hatteras in the south of the OBX (Figure 1.3) draws tourism for the remote communities Ocracoke (Hyde County) and Hatteras (Dare County) both of which have become fully dependent on tourism.

Although tourism brings many benefits to Ocracoke and Hatteras (e.g., jobs, strengthens local economy), those benefits also yield a set of barriers to overcome. Coastal hazards (e.g., hurricanes) threaten the tourism industry in the OBX, including Ocracoke and Hatteras, by disrupting transportation flows (e.g., road closure, canceled ferry services), changing the visual appeal of the natural areas (e.g., eroded beaches), and destroying infrastructure (e.g., bridges, lodging, restaurants) (Seekamp, Jurjonas, & Bitsura-Meszaros, 2018). As Ocracoke and Hatteras rely on tourism it also puts them in a precarious situation in which the economic success of these communities is reliant upon only a few months of the year (Lee et al., 2008). This is particularly challenging for the workforce as they are having to deal with seasonal unemployment and economic instability. Additionally, the strong tourism industry on these islands is supported by only a small population of residents, Ocracoke has around 800 full-time residents, and Hatteras has 600 (United States Census Bureau, 2020). As tourism has blossomed, the demand for second homes and development of rental apartments sky rocketed housing prices leaving the residents of the communities with a lack of affordable housing. Consequently people are during down jobs in the OBX communities leading to labor shortage which could affect a range of problems for the tourism industry from effecting business hours to quality of service (Tabb, 2021).

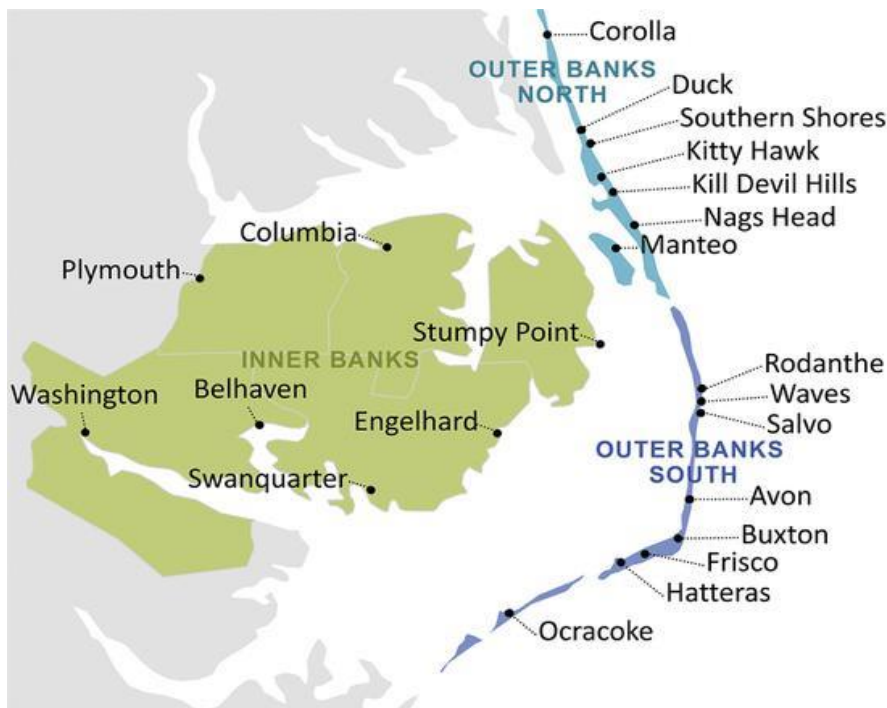


Figure 1.3: North Carolina Inner and Outer Banks (designed by K. Bitsura-Meszaros, 2016)

Although the tourism industry is thriving, both communities are dealing with these workforce capacity constraints, as housing is predominantly used as rental properties, and commuting from the mainland is undesirable given the remoteness of the islands (Knollenberg et al., 2021). Hatteras is reachable via state Highway 12 and is approximately 70 miles from the mainland. However, Highway 12 is often damaged from storm events (i.e., covered in sand, flood waters, or completely breached and demolished), making connecting to the mainland impossible. Ocracoke is even more remote as it is only reachable by ferry, with the shortest duration being 60 minutes from Hatteras Island (and the same challenges of Highway 12) and two other routes from the mainland being 135 (Cedar Island, NC) and 165 (Swan Quarter, NC) minutes (North Carolina Department of Transportation, 2022). Similar to Highway 12, all of the ferry routes are often disrupted due to weather and shifting shoals. This not only affects the possible tourism workforce members to commute to the islands but also makes it difficult for tourists to reach the islands at times.

The OBX barrier islands were created as the ocean waves repeatedly deposit sediment parallel to the shoreline. As wind and waves shift according to weather patterns and local geographic features, these islands constantly move, erode, and grow (NOAA, 2021). The islands have beaches and sand dunes on the side facing the ocean and are separated from the mainland by the Pamlico Sound. These areas are important habitats for (native) plants and wildlife including nesting sea turtles and migratory birds. The OBX islands are critical to protecting mainland coastal communities and ecosystems from extreme weather as they serve as a natural barrier (Dolan, Lins, & Smith, 2016). Dunes and grasses in the marshes on barrier islands absorb wave energy before the wave hits the mainland. This generally means smaller storm surge and less flooding on the NC mainland coast. Yet, being situated on barrier islands leaves the OBX communities, including Ocracoke and Hatteras, particularly vulnerable to coastal hazards (Coastal Resilience, 2022).

The warm waters of the Gulf Stream and colder Labrador Current collide just miles offshore, creating dangerous shoals and rough waters along the North Carolina Coast (Boling, 2016). Natural sand dunes serve as protection for the homes on the OBX islands and a buffer for the mainland North Carolina. However, a majority of the dunes have been damaged due to development and relentless sea-level rise and storm surges (Tucker, 2015). This leaves the residents of the OBX exposed to flooding and erosion by waves and high water driven by coastal

storms, especially because they are being washed over from both ocean and sound sides (Finley, 2018). Waves and currents continually shape this coastal landscape. Much of the change is slow and barely detectable on a daily to yearly basis, but storms have the power to cause significant changes in only a matter of hours. Hurricane Isabel (2003) for example, cut an inlet through Hatteras Island, destroying NC Highway 12 and isolating Hatteras Village (Bechtel, 2005.), and Hurricane Sandy (2012) caused severe beach erosion in Rodanthe leading to the construction of a bridge to keep Hatteras Island and Pea Island connected (NCDOT, n.d.). It takes financial resources and large amounts of sand to keep inlets open, beaches nourished and roads passable as these geologic features are constantly changing. For example, in the past decade, there has been about \$65 million of damage to Highway 12 (Flavelle & Schaff, 2021).

Hurricane Dorian (September 2019) severely damaged the communities (Dare County, 2022), particularly in Ocracoke. The hurricane caused a rapid 7-8 feet sound side flooding in Ocracoke with winds reaching over 90 miles per hour. Most of the island's residents chose not to evacuate as they did not expect this major impact and were trapped on the island as the floodwater rose (WRAL, 2019). Although the impact was not as severe on Hatteras, residents still had to deal with flooding, high winds, and power outages. However, Hurricane Dorian is not the exception; the OBX has to deal with regular storms and hurricanes, and storms have become part of life. Besides seasonal storms, another threat to the coastal communities is climate change-fueled sea level rise. With only 1 foot of sea-level rise, most of Ocracoke and Hatteras will be underwater (NOAA, 2023). Additionally, climate change is predicted to cause more frequent and severe storms, including winter Nor'easters, leading to more recurrent flooding events (EPA, 2023; Fleming et al., 2018; Glavovic, Kelly, Kay, & Travers, 2015).

While dealing with the aftermath of Hurricane Dorian in these communities, the COVID-19 pandemic made its appearance. Six months after the hurricane made landfall and three months after reopening the communities for visitors, the island communities were forced to close their doors again to non-residents including vacation homeowners and tourists in March 2020 (Outer Banks Voice, 2022). The tourism industry in most places ground to a halt and it has been projected that it will take years to reach the same levels of visitation for many destinations (UNCTAD, 2021). Contrary to these general trends, Ocracoke and Hatteras (and the OBX as a whole) received a large number of visitors after they had opened up the islands again (mid/end of May 2020), as visitors were able to attend work and school remotely, and the open natural spaces

on the beach offered a space safe for social distancing (Moore, 2021). A typical summer tourism season was in full swing and continued, as tourists had the ability to travel in the off-season as well as people were not tied to the office or schools.

Although the influx of tourism was positive for the economy, especially after being closed for months, it brought certain adversities as well. For many of the locally owned businesses, it was a struggle to find enough employees that were willing to work during these uncertain times or able to find long-term housing on the islands. Not being able to find enough employees resulted in businesses having to cut their hours or even having to close their businesses (Aldridge, 2021). COVID-19 also brought serious concerns as there is no full time healthcare provider in the communities, if someone were to get seriously ill they would have to drive a long distance to reach the nearest hospital. Additionally, reduced ferry schedules made it hard for tourists and residents to travel to and from the island. Finally, the influx of tourists led to greater negative impacts on the natural and social environment of the communities and caused, among others, large amounts of traffic and long waiting times at restaurants.

Dealing with coastal hazards on a regular basis and the added COVID-19 pandemic requires resilient local tourism stakeholders in Ocracoke and Hatteras. Not only are community members attached to their homes, community, and business (Burley, Jenkins, Laska, & Davis, 2007), but maintaining and rebuilding these tourism infrastructures is imperative as tourism is the main economic driver (Rosselló, Becken & Santana-Gallego, 2020). Resilience has traditionally been identified as the ability to bounce back from a catastrophic event (Berke & Smith, 2009; Cutter et al., 2008), which for disaster-affected communities, is interpreted as recovery and a return to normal functioning. However, as coastal hazards are reoccurring and predicted to worsen over time merely bouncing back is not sustainable over time. Resilience in these tourism-dependent coastal communities requires bouncing forward, being able to prepare for anticipated disasters, adapt to changing conditions, and withstand and recover rapidly from disruptions (National Disaster Recovery Framework, 2016). Actively planning and preparing for upcoming coastal hazards will help minimize damage of personal property, businesses and natural resources and support efficient recovery (NOAA, 2019). Therefore, bouncing forward will help community members and tourism business owners ensure economic stability that is needed for a more sustainable future (UNWTO, 2023) and continue benefiting from the value that tourism is adding to the communities.

Fostering and promoting bounce forward resilience in coastal tourism-dependent communities requires understanding the factors that motivate communities and its members to overcome natural disasters and how these factors are influencing their recovery decisions (Albright & Cow, 2021; Cox & Perry, 2011). While there is a limited examination of tourism-dependent coastal communities, social cohesion, place attachment, and risk perceptions have often been studied in the context of communities recovering from natural disasters, including coastal hazards, and have been used to understanding recovery decision making and linked to resilient communities (e.g., Albright & Cow, 2021; Faulkner, Brown, & Quinn, 2018; Patel & Gleason, 2018; Odiase, Wilkinson, & Neef, 2020).

Social cohesion – the strength of relationships and sense of solidarity among individuals in a community and across communities – is seen as one of the key factors in evaluating the ability of a community to bounce back from a disaster (APA Health Center, 2004; Townshend, Awosoga, Kulig, & Fan, 2015), as it has been linked to higher levels of volunteering and support networks within communities (Vinson, 2004). Furthermore, place attachment in its most basic form is the bond that people have with a place (Hernandez, Hidalgo, & Ruiz, 2020) and increases the willingness of people to act and demand a greater say in place management and recovery initiatives (Burley, Jenkins, Laska, & Davis, 2007). Finally, risk perception is an individual's interpretation or impression of the risk (in this case natural disasters) related to the object perceived as a threat (De Dominicis et al., 2015). In high-risk perception conditions, people tend to be more willing to carry out proactive behaviors (Covello, 2003).

Therefore, the research question this study seeks to answer is: What is the influence of social cohesion, place attachment, and risk perceptions on recovery decisions of tourism stakeholders in coastal communities? To do so, the following objectives guide this research:

1. Understanding how social cohesion, place attachment, and risk perceptions are influencing recovery decisions of tourism stakeholders.
2. Examining the impact of COVID-19 on the recovery of Hurricane Dorian in Ocracoke and Hatteras.
3. Identifying decision making implications for vulnerable coastal communities like Ocracoke and Hatteras.

1.4 Thesis Structure

The research performed within this thesis will be translated into two publications. First, a peer-reviewed article (chapter 2) with the aim to add to the body of knowledge within the tourism and disaster recovery scholarship focusing on tourism-dependent coastal communities and their ability to recover from disasters. The target journal for this peer-reviewed article is *Tourism Management*; therefore, chapter 2 is structured reflecting the guidelines of *Tourism Management*, with consistent formatting and sections including an introduction, literature review, methods, results, discussion, implications, and conclusions.

In addition to the contribution to the tourism literature, the study is translated into actionable findings for tourism stakeholders in the coastal communities in the OBX. These practical implications will be delivered through an extension publication (chapter 3) aimed to provide background on the study site, explain research methods, uncover recovery decisions and highlight the (practical) study findings.

Finally, in addition to this introductory chapter, this thesis will finish with a synthesis (chapter 4) that includes (a) the author's experience with the study, (b) contributions for the tourism scholarship and industry professionals, (c) study improvements, and (d) recommendations for future research.

References

- Albright, E. A., & Crow, D. A. (2021). Capacity Building toward Resilience: How Communities Recover, Learn, and Change in the Aftermath of Extreme Events. *Policy Studies Journal*, 49(1), 89-122. doi:10.1111/psj.12364
- Aldridge, B. (2021, April 28). *Help wanted on Outer Banks: Tourists are there — but workers aren't, businesses say*. Retrieved from The News & Observer: <https://www.newsobserver.com/news/state/north-carolina/article250980854.html>
- APA Health Center. (2004). The road to resilience.
- Banks, J. A. (1998). The Lives and Values of Researchers: Implication for Educating Citizens in a Multicultural Society. *Educational Researcher*, 27(9), 4-17.
- Bechtel, R. (2005). *When the Ground Moves – A Citizen's Guide to Geologic Hazards in North Carolina*. NC Geological Survey Informational Circular 32.
- Berke, P., & Smith, G. (2009). *Hazard Mitigation, Planning, and Disaster Resiliency: Challenges and Strategic Choices for the 21st Century*. Amsterdam: IOS Press.
- Boling, C. (2016, April 3). *When these two meet... The Graveyard of the Atlantic*. Retrieved from WNCT9: <https://www.wnct.com/news/when-these-two-meet-the-graveyard-of-the-atlantic/#:~:text=The%20Labrador%20Current%20and%20Gulf,%E2%80%9CGraveyard%20of%20the%20Atlantic%E2%80%9D>.
- Burley, D., Jenkins, P., Laska, S., & Davis, T. (2007). Place Attachment and Environmental Change in Coastal Louisiana. *Organization & Environment*, 20(3), 347-366. doi:10.1177/1086026607305739
- Coastal Resilience. (n.d.). *North Carolina*. Retrieved 2022, from Coastal Resilience: <https://coastalresilience.org/project/north-carolina/>
- Covello, V. T. (2003). Best practices in public health risk and crisis communication. *Journal of Health Communication Research*, 8, 5-8. doi:10.1080/10810730305705.
- Cox, R. S., & Perry, K.-M. E. (2011). Like a Fish Out of Water: Reconsidering Disaster Recovery and the Role of Place and Social Capital in Community Disaster Resilience. *American Journal of Community Psychology*, 48, 395-411. doi:10.1007/s10464-011-9427-0

- Cutter, S. L., Barnes, L., Berry, M., Burton, C., Evans, E., Tate, E., & Webb, J. (2008). A place-based model for understanding community resilience to natural disasters. *Global Environmental Change, 18*(4), 598-606. doi:10.1016/j.gloenvcha.2008.07.013
- De Dominicis, S., Fornara, F., Cancellieri, U. G., Twigger-Ross, C., & Bonaiuto, M. (2015). We are at risk, and so what? Place attachment, environmental risk perceptions and preventive coping behaviors. *Journal of Environmental Psychology, 43*, 66-78. doi:10.1016/j.jenvp.2015.05.010
- Dolan, R., Lins, H. F., & Smith, J. J. (2016). *The Outer Banks of North Carolina*. Reston, VA : U.S. Geological Survey.
- EPA. (2023, January 19). *Climate Change in Coastal Communities*. Retrieved from United States Environmental Protection Agency: <https://www.epa.gov/cre/climate-change-coastal-communities#:~:text=The%20effects%20of%20climate%20change,many%20such%20indicators%20of%20change>.
- Faulkner, L., Brown, K., & Quinn, T. (2018). Analyzing community resilience as an emergent property of dynamic social-ecological systems. *Ecology and Society, 23*(1). doi:10.5751/ES-09784-230124
- Finley, B. (2018, September 11). *AP Explains: Why North Carolina is vulnerable to hurricanes*. Retrieved from AP News: <https://apnews.com/article/nc-state-wire-us-news-sc-state-wire-north-carolina-hurricanes-8a25dab47f1a4dd7bf0f9b5b59a9d722>
- Flavelle, C., & Schaff, E. (2021, March 14). *Tiny Town, Big Decision: What Are We Willing to Pay to Fight the Rising Sea?* . Retrieved from The New York Times: <https://www.nytimes.com/2021/03/14/climate/outer-banks-tax-climate-change.html>
- Fleming, E., Payne, J., Sweet, W. V., Craghan, M., Haines, J., Hart, J. F., . . . Sutton-Grier, A. (2018). Coastal Effects. In D. R. Reidmiller, C. W. Avery, D. R. Easterling, K. E. Kunkel, K. L. Lewis, T. K. Maycock, & B. C. Stewart, *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* (pp. 322–352). Washington, DC, USA: U.S. Global Change Research Program. doi:10.7930/NCA4.2018.CH8
- Gershon, L. (2016, June 13). *How American Tourism Began*. Retrieved from JSTOR Daily: <https://daily.jstor.org/how-tourism-began/>

- Glavovic, B., Kelly, M., Kay, R., & Travers, A. (2015). *Climate Change and the Coast: Building Resilient Communities*. London: CRC Press. doi:10.1201/b18053
- Hernández, B., Hidalgo, C., & Ruiz, C. (2020). Theoretical and methodological aspects of research on place attachment. In L. Manzo, & P. Devine-Wright, *Place Attachment: advances in theory, methods and applications* (pp. 95-110). New York, NY: Routledge. doi:10.4324/9780429274442
- Knollenberg, W., Brune, S., Harrison, J., & Savage, A. E. (2021). Identifying a community capital investment portfolio to sustain a tourism workforce. *Journal of Sustainable Tourism*. doi:10.1080/09669582.2021.1890094
- Lee, C., Bergin-Seers, S., Galloway, G., O'Mahony, B., & McMurray, A. (2008). *Seasonality in the Tourism Industry*. Gold Coast, Queensland: CRC.
- National Disaster Recovery Framework. (2016). *National Disaster Recovery Framework*. Washington D.C.: Homeland Security. Retrieved from https://www.fema.gov/sites/default/files/2020-06/national_disaster_recovery_framework_2nd.pdf
- National Oceanic and Atmospheric Administration. (2021, August 13). *Climate change impacts*. Retrieved from National Oceanic and Atmospheric Administration: <https://www.noaa.gov/education/resource-collections/climate/climate-change-impacts>
- National Oceanic and Atmospheric Administration. (n.d.). *Sea Level Rise*. Retrieved 2022, from Sea Level Rise Viewer: <https://coast.noaa.gov/slr/#/layer/slr/0/-8428112.708386296/4171866.7117870483/9/satellite/none/0.8/2050/interHigh/midAccretion>
- NCDOT. (2022, August 5). *N.C. 12 Rodanthe Bridge*. Retrieved from North Carolina Department of Transportation: <https://www.ncdot.gov/projects/nc-12-rodanthe/Pages/default.aspx>
- NOAA. (2019, September 22). *The Power of Preparedness*. Retrieved from Office of Response and Restoration: <https://blog.response.restoration.noaa.gov/power-preparedness>
- NOAA. (2021, January 4). *What is a barrier island?* Retrieved from National Ocean Service: <https://oceanservice.noaa.gov/facts/barrier-islands.html#:~:text=A%20barrier%20island%20is%20a,sediment%20parallel%20to%20the%20shoreline.>

- North Carolina Department of Transportation. (n.d.). *Ferry Schedule*. Retrieved from North Carolina Department of Transportation: <https://www.ncdot.gov/travel-maps/ferry-tickets-services/routes/Pages/default.aspx>
- Ocracoke Observer. (2020, March 27). *Ocracoke rebuilds while under COVID-19 quarantine*. Retrieved from Ocracoke Observer: <https://ocracokeobserver.com/2020/03/27/ocracoke-rebuilds-while-under-covid-19-quarantine/>
- Odiase, O., Wilkinson, S., & Neef, A. (2020). South African community in Auckland: Natural hazards and the resilience to a potential disaster event. *Disaster Prevention and Management, 29*(3), 390-404. doi:10.1108/DPM-02-2019-0052
- Outer Banks Voice . (2022, October 4). *Two years later, an ongoing legal battle over Dare County's COVID closure*. Retrieved from The Outer Banks Voice : <https://www.outerbanksvoice.com/2022/10/04/two-years-later-an-ongoing-legal-battle-over-dare-countys-covid-closure/>
- Patel, R. B., & Gleason, K. M. (2018). The association between social cohesion and community resilience in two urban slums of Port au Prince, Haiti. *International Journal of Disaster Risk Reduction, 27*, 161-167. doi:10.1016/j.ijdr.2017.10.003
- Risk Factor. (n.d.). *Does Hatteras have risk?* Retrieved from Flood Factor: https://riskfactor.com/city/hatteras-nc/3730100_fsid/flood
- Robertson, C., Fausset, R., & Bogel-Burroughs, N. (2019, September 9). *'I'll Just Have to Restart Everything': Ocracoke Island Is Hit Hard by Dorian*. Retrieved from The New York Times: <https://www.nytimes.com/2019/09/06/us/hurricane-dorian-outer-banks-north-carolina.html>
- Rosselló, J., Becken, S., & Santana-Gallego, M. (2020). The effects of natural disasters on international tourism : a global analysis. *Tourism Management, 79*. doi:10.1016/j.tourman.2020.104080
- Schwenneker, D. (2020, June 10). *Here's what Ocracoke Island looks like 9 months after catastrophic flooding*. Retrieved from ABC 11 Eyewitness News: <https://abc11.com/ocracoke-island-2020-hurricane-season-dorian/6233072/>
- Seekamp, E. L., Jurjonas, M., & Bitsura-Meszaros, K. (2018). *Coastal Hazards and Tourism: Exploring Outer Banks Visitors' Responses to Storm-Related Impacts*. Raleigh: NC State Extension. Retrieved from <https://content.ces.ncsu.edu/coastal-hazards-and-tourism>

- Statista. (2023, January 13). *Number of international tourist arrivals worldwide from 2005 to 2021, by region*. Retrieved from Statista:
<https://www.statista.com/statistics/186743/international-tourist-arrivals-worldwide-by-region-since-2010/>
- Tabb, K. (2021, April 16). *Making a dent in the OBX housing crunch?* Retrieved from The Outer Banks Voice: <https://www.outerbanksvoice.com/2021/04/16/making-a-dent-in-the-obx-housing-crunch/>
- The Outer Banks Visitors Bureau. (n.d.). *Outer Banks Islands*. Retrieved 2022, from The Outer Banks of North Carolina: <https://www.outerbanks.org/plan-your-trip/the-islands/>
- Townshend, I., Awosoga, O., Kulig, J., & Fan, H. (2015). Social cohesion and resilience across communities that have experienced a disaster. *Natural Hazards*, 76, 913-938.
doi:10.1007/s11069-014-1526-4
- Tucker, J. (2015, September 18). *The History of the Outer Banks Dunes*. Retrieved from Our State: <https://www.ourstate.com/history-of-the-outer-banks-dunes/>
- U.S. National Archives. (2018, August 31). *America's National Seashores*. Retrieved from National Archives: Pieces of History:
<https://prologue.blogs.archives.gov/2018/08/31/americas-national-seashores/>
- U.S. Travel Association. (2020, March). *U.S. TRAVEL AND TOURISM OVERVIEW (2019)*. Retrieved from U.S. Travel Association:
https://www.ustravel.org/system/files/media_root/document/Research_Fact-Sheet_US-Travel-and-Tourism-Overview.pdf
- UNCTAD. (2021, August 3). *We urgently need to kickstart tourism's recovery but COVID-19 crisis offers an opportunity to rethink it*. Retrieved from United Nations Conference on Trade and Development: <https://unctad.org/news/we-urgently-need-kickstart-tourisms-recovery-covid-19-crisis-offers-opportunity-rethink-it>
- UNISDR. (2013). *Global assessment report on disaster risk reduction*. Retrieved from United Nations Office for Disaster Risk Reduction: <https://www.undrr.org/publication/global-assessment-report-disaster-risk-reduction-2013>
- United States Census Bureau. (2020). *Explore Census Data*. Retrieved from United States Census Bureau: <https://data.census.gov/cedsci/>

- UNWTO. (2023). *Sustainable Development*. Retrieved from World Tourism Organization:
<https://www.unwto.org/sustainable-development>
- Vinson, T. (2004). *Community adversity and resilience: the distribution of social disadvantage in Victoria and New South Wales and the mediating role of social cohesion*. Richmond: Jesuit Social Services.
- World Resources Institute. (2021, May 25). *Building a Sustainable Coastal and Marine Tourism Economy*. Retrieved from World Resources Institute:
<https://www.wri.org/events/2021/5/building-sustainable-coastal-and-marine-tourism-economy>
- World Travel and Tourism Council. (2023, January 6). *8 ways Responsible Tourism benefits local communities*. Retrieved from World Travel and Tourism Council:
<https://travelhub.wttc.org/blog/8-ways-responsible-tourism-benefits-local-communities>
- WRAL. (2019, September 6). *Dispatches from Dorian coverage: Ocracoke flooded, Hatteras battered, but other coastal areas returning to normal*. Retrieved from WRAL NEWS:
<https://www.wral.com/hurricane-dorian-flooded-ocracoke-battered-hatteras-but-other-coastal-areas-returning-to-normal/18613042/>

CHAPTER 2: PEER-REVIEWED MANUSCRIPT

2.1 Introduction

Tourism contributes towards the growth and development of a destination by providing a range of opportunities, from tangible benefits (e.g., job creation, tax receipts, direct revenues, diversification of revenue streams, and infrastructure development) to intangible benefits (e.g., cultural exchange between visitors and locals, empowering local communities, and heritage preservation) (World Travel and Tourism Council, 2021). In the years before the COVID-19 pandemic, domestic travel in the United States was steadily growing each year (Statista, 2023), reaching 2.3 billion person trips in 2019 (U.S. Travel Association, 2020). Oceans and coastlines are at the heart of global tourism, as 80% of all tourism takes place in coastal areas (World Resources Institute, 2021). Likewise, the United States' coasts are popular holiday and recreational locations. Coastal beaches, wetlands, fisheries, aesthetic landscapes, and the facilities and attractions in the touristic environment provide an extensive list of opportunities for visitors, local residents, and entrepreneurs. Just like all forms of tourism are a matter of supply and demand, coastal tourism is a business for those who make a living by developing accommodations and attractions, and by providing touristic and recreational products and services (Miller & Hadley, 2021).

Despite the popularity of coastal tourism destinations, coastal tourism business may be particularly “risky” ventures as these destinations are vulnerable to coastal hazards including hurricanes, tropical storms, and flooding, such as in the southeast of the United States (Fleming et al., 2018, NOAA, 2023). Additionally, climate change is expected to lead to more severe coastal disasters including stronger hurricane and rainfall events, increased localized flooding, and rising sea levels (EPA, 2023; Fleming et al., 2018). Furthermore, COVID-19 impacted the global tourism industry, including coastal tourism, and resulted in travel restrictions, business closure, job loss, reduced to virtually no income, adapting to health and safety measures, etc. (OECD, 2020). Dealing with coastal hazards on a regular basis and the added COVID-19 pandemic requires resilience from the local tourism business owners in coastal tourism-dependent communities.

Building resilience in tourism-dependent coastal communities is crucial as frequent storms and flooding damage their infrastructure. Not only are community members attached to

their homes, community, and business (Burley, Jenkins, Laska, & Davis, 2007), but maintaining and rebuilding these tourism infrastructures is imperative as tourism is the main economic driver (Rosselló, Becken & Santana-Gallegoa, 2020). Resilience has traditionally been identified as the ability to bounce back from a catastrophic event (Berke & Smith, 2009; Cutter et al., 2008), which for disaster-affected communities, is interpreted as recovery and a return to normal functioning. However, as coastal hazard are reoccurring and predicted to worsen over time merely bouncing back is not sustainable over time. Resilience in these tourism-dependent coastal communities requires bouncing forward, being able to prepare for anticipated disasters, adapt to changing conditions, and withstand and recover rapidly from disruptions (National Disaster Recovery Framework, 2016). Actively planning and preparing for upcoming coastal hazards will help minimize damage of personal property, businesses and natural resources and support efficient recovery (NOAA, 2019). Therefore, bouncing forward will help community members and tourism business owners ensure economic stability that is needed for a more sustainable future (UNWTO, 2023).

Fostering and promoting bounce forward resilience in coastal tourism-dependent communities requires understanding the factors that motivate communities and its members to overcome natural disasters and how these factors are influencing their recovery decisions (Albright & Cow, 2021; Cox & Perry, 2011). While there is a limited examination of tourism-dependent coastal communities, social cohesion, place attachment, and risk perceptions have often been studied in the context of communities recovering from natural disasters, including coastal hazards, and have been used to understanding recovery decision making and linked to resilient communities (e.g., Albright & Cow, 2021; Faulkner, Brown, & Quinn, 2018; Patel & Gleason, 2018; Odiase, Wilkinson, & Neef, 2020).

This study adds to the community resilience body of knowledge by both holistically exploring social cohesion, place attachment, and risk perceptions in the context of recovery decision making processes and examining how these concepts influence bounce back and bounce forward decisions. Furthermore, this study's tourism-dependent coastal communities' context will help advance tourism disaster recovery literature, which has not extensively addressed social cohesion, place attachment, risk perceptions, and recovery decisions specifically from a tourism stakeholder perspective. Therefore, this study will address the following gaps: (a) identifying recovery decisions of tourism stakeholders in tourism dependent coastal communities, (b)

bringing social cohesion, place attachment into tourism recovery literature together to gain a deeper understanding of the decision making process, and (c) uncovering how social cohesion, place attachment, and risk perceptions are influencing bounce back and bounce forward decisions.

2.2 Literature Review

Disasters tend to disrupt the systems in which tourism is embedded (Shondell Miller, 2008). Tourism destinations perceived as having an abundance of natural beauty are often located in vulnerable areas such as coastal or mountainous regions that are exposed to natural disasters (Becken, Mahon, Rennie, & Shakeela, 2014; Hall et al., 2019; Ritchie, 2008). A growing body of research is seeking to understand tourism industry preparedness and response to, and recovery from, these disasters. The post-disaster setting provides an opportunity to evaluate the suitability of emergency preparedness and response strategies for businesses and to apply the lessons learned into forward planning and preparedness (e.g. Becken & Hughey, 2013; Calgaro, Lloyd, & Dominey-Howes, 2014; Lew, 2014; Orchiston & Higham, 2016; Scott, Laws, & Prideaux, 2008). Accordingly, considerable research has focused on disaster recovery in terms of planning (e.g. Ritchie, 2004; Scott, Laws, & Prideaux, 2008), communication management tactics (Orchiston & Higham, 2016), recovery marketing strategies (Armstrong & Ritchie, 2008; Walters & Mair, 2012; Walters, Mair, & Lim, 2016), informal and formal emergency management structures responsible for post-disaster response and recovery (Becken & Hughey, 2013; Bird, Gisladdottir, & Dominey-Howes, 2010; Hall et al., 2019; Ritchie & Jiang, 2019), and visitor travel information seeking and decision making (Sharifpour, Walters, Ritchie, & Winter, 2014; Trumbo et al., 2016; Williams & Baláž, 2015).

The majority of this research suggests that tourism businesses are relatively unprepared for natural disasters (e.g. Becken & Hughey, 2013; Hystad & Keller, 2008; Orchiston, 2013). This is particularly evident amongst smaller tourism businesses that often lack knowledge, collaborative networks or experience with natural disasters to strengthen their resilience (Becken & Hughey, 2013; Ciocco & Michael, 2007; Hystad & Keller, 2008; Orchiston, 2013). Furthermore, small tourism business typically tend to prioritize managing day-to-day issues over preparedness planning (Becken et al., 2014; Ciocco & Michael, 2007; Ritchie, 2008). Consequently, tourism business managers have been found to be reactive, ‘bouncing back’ rather

than pro-actively planning and preparing for such events (Cioccio & Michael, 2007; Ritchie, 2008), as they are confident in their own resilience and ability to cope with any disaster coming their way (Espiner & Becken, 2014; Wang & Ritchie, 2012). Where tourism disaster plans do exist, they tend to focus on recovery marketing to bring tourists back to the destination, rather than strategies and plans to minimize risks (Scott, Laws, & Prideaux, 2008; Walters, Mair, & Lim, 2016). Therefore, there is a need for long-term disaster preparedness planning in destinations that are dependent on small tourism businesses (Richie & Liang, 2019). By bringing social cohesion, place attachment, and risk perceptions into tourism recovery literature, we aim to gain a greater understanding how these tourism stakeholders' recovery decision making process and contribute to the body of knowledge that can support tourism stakeholders in coastal communities to build a sustainable future through bounce forward resilience.

2.2.1 Social Cohesion

Social cohesion refers to the degree of social connectedness and solidarity between different community groups within a society, as well as the level of trust and connectedness between individuals and across community groups (Fan, Jiang, & Mostafavi, 2020; Ludin, Rohaizat, & Arbon, 2019; Townshend, Awosoga, Kulig, Fan, 2015). As social cohesion has gained popularity both in the academic and policy discourse, a multitude of definitions have been established in the past decades. In a recent attempt to propose a unified definition, Sonseca, Lukosch, & Brazier (2019) defined social cohesion as “the ongoing process of developing well-being, sense of belonging, and voluntary social participation of the members of society, while developing communities that tolerate and promote a multiplicity of values and cultures, and granting at the same time equal rights and opportunities in society” (p. 246). In this study, we draw from this definition and recognize that the essential features of social cohesion are (a) the quality of social relations (including social networks, trust, acceptance of diversity, and participation) (e.g., Larsen, 2013, Klein, 2013; Myeong & Seo, 2016) (b) identification with the social entity and feelings of belonging (e.g., Schiefer & van der Noll, 2017), and (c) orientation towards the common good (sense of responsibility, solidarity, compliance to social order) (e.g., Green, Janmaat, & Han, 2009).

In the existing literature, there is a growing body of research on the role of social cohesion during and after a disaster and was identified as a primary resource for communities to

draw upon during a crisis (e.g., Binder, Baker, & Barile, 2015; Fan, Jiang, & Mostafavi, 2020; Gongora-Svartzman & Ramirez-Marquez, 2021; Ludin, Rohaizat, & Arbon, 2018; Patel & Gleason, 2018; Townshend et al., 2015). The global COVID-19 pandemic has sparked even greater interest in social cohesion and the ability of a community to overcome crises and build resilience (e.g., Borkowska & Laurence, 2021; Jewett, Mah, Howell, & Larsen, 2021; Kim, 2022; Lalot et al., 2022; Mannarini et al., 2021). Strong cohesive communities allow individuals to receive warnings, undertake disaster preparation, locate shelter and supplies, and obtain immediate aid and initial recovery assistance (Hawkins & Maurer, 2010; Heller et al., 2005). Higher levels of social cohesion can translate into greater levels of trust and more widely shared norms among residents. Feelings of mutual trust and dependence increased awareness of disaster management and volunteer opportunities and responsibilities, which in turn support disaster preparedness (Hausman, Hanlon, & Seals, 2007; Meyer, 2018), collective response and recovery (Brunie, 2010), adaptation, and collective decision making for risk and recovery (Adger, 2010; Binder, Baker, & Barile, 2015). For example, in a study of two communities dealing with the impacts of a hurricane Binder et al. (2015) found that residents' perceptions of their *broader community* were most influential in deciding whether to relocate after the hurricane. This finding indicates that, while the decision to relocate is made independently by each individual or household, this choice is tied to the decisions of one's neighbors in a very real way.

2.2.2 Place Attachment

Place attachment describes how bonded people are to a particular place (Low & Altman, 1992; Hernandez, Hidalgo, & Ruiz, 2020), reflecting an individual's 'psychological locality' (Scannell & Gifford, 2010) and deep emotional connection to a particular location (Manzo, 2005; Williams & Vaske, 2003). Place attachment is a multidimensional construct, with place identity and place dependence being the two traditional dimensions measured (Williams et al., 1992). Place identity is an emotional attachment to a place, whereas place dependence is a functional attachment (Williams & Vaske, 2003). In place identity, an individual perceives a connection between a particular place and their own personal identity, therefore, creating the emotional attachment (Prohansky, 1978; Stedman, 2002). On the other hand, place dependence is a functional attachment to a place because of its features (e.g., landscape, ecological, cultural, location) that support desired activities and goals (Williams & Vaske, 2003). Place dependence is usually

determined by evaluating a place against other alternatives for certain activities or goals (Williams et al., 1992; Yuksel, Yuksel, & Bilim, 2010). Place attachment gives meaning to people's life and defines people's identities (Guiliani, Ferrara, & Barabotti, 2003), as the place becomes an integral component of an individual's sense of self, it offers the chance to create expressions of oneself (Manzo, 2005). It has been argued that feeling attached to a meaningful place fulfills one of the fundamental human needs (e.g., Ariccio, Lema-Blanco, & Bonaiuto, 2021; Scannell & Gifford, 2017; Tuan, 1974).

Studies on place attachment in tourism have often been used to advance our understanding of tourist behavior and psychology (e.g., Chen, Dwyer, & Firth, 2018; Lee & Kyle, 2014; Hosany et al., 2017), including destination loyalty (e.g., Lee et al., 2012; Patwardhan et al., 2020) and tourists' pro-environmental behaviors (e.g., Tonge, Ryan, Moore, & Beckley, 2015; Qu, Xu, & Lyu, 2019). Few studies have also examined the role of place attachment from a resident perspective in tourism destinations. Recent research has used place attachment to evaluate residents' behavior towards and perception of destination management and development (Chen & Dwyer, 2018; Guo, Zhang, Zhang, & Zheng, 2018; Gu & Ryan, 2008; Song & Soopramanien, 2019). For example, Chen and Dwyer (2018) found that place expectation motivates residents' proactive participation in regional tourism development. Tourism activity itself can be seen as an expression of place attachment. Place attachment may, therefore, not only be a motivator, but also a success factor for tourism activity (Hallak, Brown, & Lindsay, 2013). Similarly, Bonaiuto, Carrus, Martolla, and Bonnes (2002) found that individuals who have some type of business or economic investment in a place display higher levels of place attachment. Furthermore, it is suggested that stakeholders' proactive involvement and participation in the development and functioning of a sustainable and resilient tourism industry may be influenced by the relationships between them and the place or the destination (Chen & Dwyer, 2018; Chen, Dwyer, & Firth, 2015, 2018). Yet, these scholars suggest that more research is needed to fully understand these links (Dwyer, Chen, & Lee, 2019).

Studies examining the impact of place attachment on how people respond to and recover from disasters have often focused on how place attachment shapes adjustments made by survivors after an event, their behaviors in post-disaster recovery, or perceived risk from future events. When considering post-disaster adjustments, the literature indicates that individuals with high levels of place attachment suffer increased levels of distress after a disaster (Cox &

Perry, 2011) and will resist change and work to re-establish place as they knew it before the event (Adams, 2016; Hauer, Hardy, Mishra, & Pipping, 2019), suggesting that people with high level of place attachment make more bounce back decisions. However, other studies would argue for the opposite, where individuals with high levels of place attachment tend to adopt a bounce forward attitude. For example, in an exploration of two coastal communities in Cornwall, United Kingdom, researchers found that place attachment was an important component of community resilience, serving as a foundation for the development of cooperative behaviors (Faulkner, Brown, & Quinn, 2018). Additionally, it was found that residents with elevated levels of place attachments want more influence over recovery priorities and have extensive considerable local knowledge that communities can leverage to ensure recovery efforts protect valued community structures and cultural and natural resources (Clarke Murphy, & Lorenzoni, 2018).

2.2.3 Risk Perceptions

Risk is the “potential loss of life, injury, or destroyed or damaged assets which could occur to a system, society or a community in a specific period of time, determined probabilistically as a function of hazard, exposure, vulnerability and capacity” (UNISDR, 2017, p.10). An individual's risk perception is their awareness and intuitive judgment of risks and the array of negative consequences that the risk could bring with it (Bubeck, Botzen, & Aerts, 2012; Becker, Aerts, & Huitema, 2014; UNISDR, 2013). Risk perceptions have generally been conceptualized as consisting of two components, one's assessment of a natural hazard and one's vulnerability. The assessment of a natural hazard generally has to do with physical attributes including the availability of shelter, the structural integrity of safety mechanisms (e.g., dykes), and distance to the expected area of impact (Patterson, Weil, & Patel, 2010). Vulnerability has been defined as the “capacity to anticipate, cope with, resist and recover from the impact of a natural hazard” (Blaikie et al. 1994). Furthermore, Dash & Gladwin (2005) exhibit that risk perceptions comprise a variety of elements that vary for individuals and communities, including socioeconomic factors, previous experiences, trust in authorities, storm knowledge, home characteristics, and information systems and dissemination.

Understanding natural hazard risk perceptions is increasingly being recognized by researchers, urban planners, and government agencies as a critical element of risk assessment and decision-making in situations of distress (Rodriguez et al., 2007). Risk management (at the

individual, community, and policy level) is important in a post-disaster context as the perceptions of and choices about risk shape how individuals, groups, and organizations behave; how they respond to the post-disaster rebuilding process; and how they prepare for possible future disasters (Burnside, Miller, & Rivera, 2007; Twigg, 2004; 2013). In this study, risk perceptions are conceptualized in this study following Reser, Bradley, Glendon, Ellul, and Callaghan (2012) as those perceptions that are specifically directed to information processing and sensemaking related to disasters as an external threat, phenomenon, or situation.

To the best of our knowledge, there is still no consensus about what exactly encourages people to carry out preventive behaviors to cope with the environmental risk. Simply informing people of risk is not enough to motivate them to change their usual behavior (Schultz, 2011). That said, people tend to overestimate risk immediately following a hazard event (Baan & Klijn, 2004) and, in high-risk perception conditions, people tend to be more willing (and tend) to carry out proactive behaviors (Bollettino et al., 2020; Covello, 2003; Ng, 2023). However, Penning-Rowsell (2003) showed that worry decreases quickly and, after a few years, hazard risk returns to being underestimated.

Within the context of tourism, researchers have examined perceived risk in destinations all over the world for man-made and natural disasters including terrorism (e.g., Wolff & Larsen, 2014), hurricanes (e.g., Forster et al., 2012), climate change (e.g., Curnock et al., 2019), political instability (e.g., Kapuściński & Richards, 2016) and on risks regarding food safety (Larsen et al., 2011) and health, specifically with the emergence of the COVID-19 pandemic (e.g., Godovykh, Pizam, & Bahja, 2021; Neuburger & Egger, 2021). This body of research is often led by studying the tourist perspective to understand travel-related decisions such as travel motivations (e.g., Yang, Sharif, & Khoo-Lattimore, 2015) and revisit intention (e.g., Hasan, Ismail, & Islam, 2017). Attention is beginning to focus on the tourism stakeholder perspective, particularly in dealing with coastal hazards. For example, Pandy & Rogerson (2021a) found that these tourism stakeholders are concerned about the tourist's experiences at their beaches with the increase of extreme weather events in a study on risk perceptions of tourism stakeholders in South African coastal communities. Furthermore, these researchers identified that potential losses associated with climate change on beach or coastal environments as one of tourism stakeholders' largest concerns (Pandy & Rogerson, 2018; 2021b). In a study of coastal risk perceptions of full-time residents and second home owners in the tourism-dependent coastal counties of Brunswick,

Currituck, and Pender in North Carolina, it was found that age, place attachment, and sustainable actions have positive relationships with full time residents' risk perceptions, whereas length of owning a property has a negative relationship with residents' risk perceptions (Hao, Eulie, & Weide, 2020).

2.2.4 Recovery Decisions

Research in post-disaster communities highlight that community members adopt an array of approaches to deal with natural disasters (e.g., Binder et al., 2015; Burley et al., 2007; Chamlee-Wright & Storr, 2009; 2011; Cox & Perry, 2011). Pre-disaster decision making includes evacuation to temporary housing versus 'sitting out the storm' at home. When deciding not to evacuate, access to water, food, and shelter are pressing issues. Post-disaster decisions range from deciding to move away to rebuilding what has been damaged together with informal assistance (e.g., family and friends) or waiting for assistance from outside companies (e.g., contractors). Rebuilding a house/business after a disaster requires technical knowledge and ability, tools, building materials, and (outside) labor. Additionally, these efforts are dependent on whether a (disaster) insurance policy has been taken out by the individual community member and whether emergency funding (e.g., through FEMA) or hurricane relief (e.g., through Salvation Army) are available. Finally, long-term recovery decisions include demanding a greater say in place management (Burley et al., 2007) and lobbying for mitigation measures (Binder et al., 2015).

Within tourism literature, researchers have uncovered several post-disaster responses which have been divided into three phases by Scott et al. (2008); (1) recovery of damaged infrastructure; (2) marketing responses; (3) adaptations to the system. Several studies highlight the importance of crisis knowledge management (Blackman, Kennedy, & Ritchie, 2011; Paraskevas, Altinay, McLean, & Cooper, 2013) to improve destination recovery and resilience to future events, and in communicating to all relevant stakeholders during a crisis (Orchiston & Higham, 2016). Destination Management Organizations (DMOs) play a particular important role in this acting as a critical information conduit to all relevant tourism stakeholders before, during and after a disaster (Blackman et al., 2011). Furthermore, recovery marketing is found to be a critical step in the response to a disaster, a process towards re-establishing tourism activities in

the post-disaster environment, particularly in tourism-reliant communities (Walters & Mair, 2012).

2.2.5 Conceptual Model

Based on the literature review, we developed a conceptual framework to illustrate the relationship between social cohesion, place attachment, and risk perspectives and their influence on recovery decisions (Figure 2.1). Literature shows that a natural disaster (e.g., hurricane) has a direct impact on (1) social cohesion as it has the ability to bring a community together; (2) place attachment which can either be positive (e.g., fragility enhances the idea of the uniqueness of the place; Burley et al., 2007) or negative (e.g., a place has been altered to the extent it is unrecognizable; Cox & Perry, 2011); and (3) risk perceptions as a disaster increases an individual’s perception of risk (e.g., Bonaiuto et al., 2016; Cox & Perry, 2011).

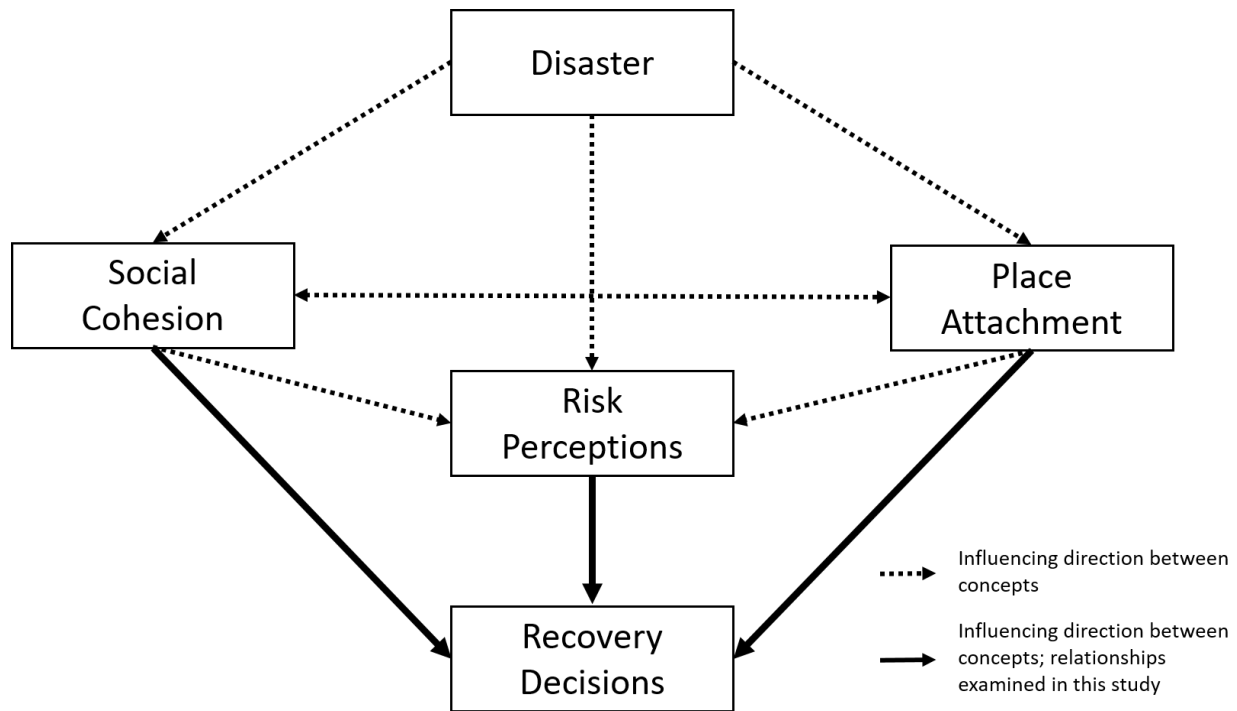


Figure 2.1: Conceptual model: the relationship between social cohesion, place attachment, and risk perspectives and their influence on disaster recovery decisions

Social cohesion has been found to influence place attachment (e.g., Chamlee-Wright & Storr, 2009), risk perceptions (Norgaard, 2011), and recovery decisions (e.g., Townshend,

Awosoga, Kulig, & Fan, 2015). Social cohesion has been found to influence recovery decisions as it can encourage members to remain in vulnerable locations because they have a false sense of security or desire to maintain community solidarity. Cohesive communities also have been found to act in exclusionary manners with respect to non-community members ('outsiders'), as they attempt to monopolize resources and information for their own members (Patterson, Weil, & Patel, 2008), this influences the recovery of individuals that are not seen as part of the community. On the other hand, social cohesion in communities stimulates members to look out for each other after a disaster and 'go the extra mile' to help one another (Cox & Perry, 2011). Additionally, comfort can be found in acting as a group after a disaster (Binder, Baker, & Barile, 2015). Often in small, tight-knit communities, collective thinking patterns or cognitive traditions frame how and whether individuals, groups, or societies think about climate change and climatic events and how they perceive climate change/events as being relevant to their everyday life, including perceived risk (Norgaard, 2011).

Place attachment, influences social cohesion (Weijs-Perrée, van den Berg, Arentze, & Kemperman, 2017), risk perceptions (Bonaiuto et al., 2016), and recovery decisions (Burley et al., 2007; Chamlee-Wright & Storr, 2009; Kyle, Graefe, Manning, & Bacon, 2004; Vorkinn & Riese, 2001). Pretty, Chipuer, & Bramston (2003), in a study of place attachment among residents of two remote rural towns in Australia, found that "attached residents" are more committed to a town and are therefore more inclined to stay when making recovery decisions. Attachment to a place increases levels of horizontal social cohesion as it prompts civic activity among individuals, attached residents choose to become involved in activities that support their local community (Lewicka, 2005). Furthermore, place attachment has generally been associated with heightened risk perceptions due to greater awareness and concerns (e.g., Bird, Gísladottir, & Dominey-Howes, 2011, Burley et al., 2007; Gallina and Williams (2014). However, other studies demonstrated the opposite and found that higher levels of place attachment can lower risk perceptions and awareness due to feelings of safety that this emotional bond can provide (e.g., Armas, 2006; Donovan, Suryanto, & Utami, 2012), similar to the effect that social cohesion can have on risk perceptions.

Risk perceptions have been found to influence recovery decisions specifically related to long-term sustainable recovery (e.g., Binder et al., 2015; Bonaiuto et al., 2016; Chan, 2021). In a study after Hurricane Sandy, Binder et al. (2015) observed that residents of Oakwood Beach

(NY, United States of America) were shocked by the major damage that the hurricane brought, as they did not experience something to this extent before, and lost their feeling of safety. Due to their heightened perceived risk, the residents were motivated to lobby for mitigation measures. Finally, attachment to places, perceiving them as under threat, and perceptions that fellow community members are willing to engage in environmentally sustainable behaviors have been associated with an increased likelihood of residents demanding a greater say in place management (Burley et al., 2007).

To summarize, according to the above cited literature, natural disasters (e.g., hurricanes) have an impact on communities in which tourism is embedded. These natural disasters influence the social cohesion within these communities, and the individuals' attachment to the place and risk perceptions. Furthermore, social cohesion and place attachment influence each other as well as risk perceptions. Finally, social cohesion, place attachment and risk perceptions influence the recovery decisions that are made by the community and the local tourism stakeholders (*see figure 4*). Uncovering the relationships between social cohesion, place attachment, risk perceptions is outside the scope of this research; however, it is important recognize that the concepts are interconnect with each other. To further understand the recovery process in tourism-dependent coastal communities, this study uses interviews with tourism stakeholders within two remote tourism-dependent Outer Banks communities (Ocracoke & Hatteras) to gain in depth knowledge on the relationship of social cohesion, place attachment and risk perceptions and their impact on recovery decisions, specifically related to Hurricane Dorian (2019) and COVID-19.

2.3 Research Methods

2.3.1 Research Approach

This study followed an interpretivist epistemological approach, recognizing the unique lived experiences and insights of the community members in Ocracoke and Hatteras, two remote, tourism-dependent island communities in North Carolina's Outer Banks. The researchers follow the paradigm believing that knowledge is created through language as a guide to understanding how people interpret and interact with their environment (Sylvester, 2015). In a collaboration between the researchers and study participants, knowledge has been created that further expands the scientific understanding of disaster recovery in tourism-dependent coastal communities (Phillimore & Goodson, 2000). Due to the nature of this paradigm, a qualitative research

approach is appropriate in which the interaction (i.e., semi-structured interviews) will generate knowledge (Merriam, 2015). These interactions will form an understanding of the recovery decisions of tourism stakeholders in Ocracoke and Hatteras, influenced by their attachment to the place, the social cohesion in their community, and their risk perceptions. The in-depth, semi-structured interviews provide the participants the space to elaborate on their answers and allow for the researchers to ask follow-up questions as matters came up that were relevant to the study (Fryer, Mackintosh, Stanley, & Crichton, 2012; Jimenez, Hudson, Lima, & Crabtree, 2019).

2.3.2 Study Sites

Coastal tourism has become a primary economic driver in the North Carolina Outer Banks (OBX), a set of barrier islands in the Atlantic Ocean (Figure 2.2). With 100+ miles of beaches, roughly 3,000 shipwrecks, explorable by snorkeling or scuba diving, plenty of history, lighthouses, and an abundance of natural beauty (Outer Banks, 2022), the OBX is a beloved tourism destination that received 4+ million tourists in 2021 (NPS, 2022). The communities of Ocracoke (Hyde County) and Hatteras (Dare County) are popular remote tourism-dependent communities in the southern OBX and were selected as study sites given their remoteness, vulnerability to coastal hazards, and tourism dependence.

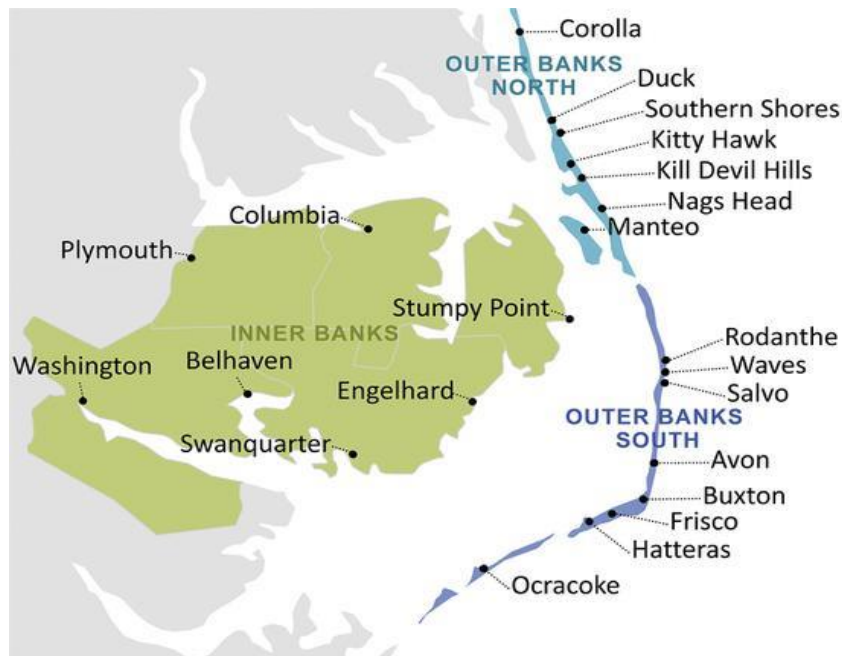


Figure 2.2: North Carolina Inner and Outer Banks (designed by K. Bitsura-Meszáros, 2016)

Although tourism is thriving and brings many benefits to these communities (e.g., jobs, visitor spending in communities), those benefits also yield many barriers. As Ocracoke and Hatteras rely on tourism it puts them in a precarious situation in which the economic success of these communities is reliant upon only a few months of the year (Lee et al., 2008). Additionally, the strong tourism industry on these islands is supported by only a small population of residents, Ocracoke has around 800 full-time residents, and Hatteras has 600 (United States Census Bureau, 2020). Both communities are dealing with workforce capacity constraints, as housing is predominantly used as rental properties, and commuting from the mainland is undesirable given the remoteness of the islands (Knollenberg et al., 2021). Hatteras is accessed via state highway 12 and is approximately 70 miles from the mainland. The highway, however, is often not passable as water and sand due to weather conditions disrupt the road, making connecting to the mainland impossible. Ocracoke is even more remote as it is only reachable by ferry, with the shortest duration being 60 minutes from Hatteras Island and two other routes from the mainland being 135 and 165 minutes (North Carolina Department of Transportation, n.d.). Similar to Highway 12, all of the ferry routes are often disrupted due to weather and shifting shoals. This not only affects the possible tourism workforce members to commute to the islands but also makes it difficult for tourists to reach the islands at times.

The OBX islands play an important role in protecting the mainland against storms and tides as they serve as a natural barrier (Dolan, Lins, & Smith, 2016). Yet, being situated on barrier islands leaves the OBX communities, including Ocracoke and Hatteras, particularly vulnerable to coastal hazards (Coastal Resilience, 2022). Hurricane Dorian (September 2019) was the most recent hurricane to severely damage the communities (Dare County, 2022), particularly in Ocracoke. The hurricane caused a rapid 7-8 feet sound side flood in Ocracoke with winds reaching over 90 miles per hour. Most of the island's residents chose not to evacuate as they did not expect this major impact and were trapped on the island as the floodwater rose (WRAL, 2019). Hurricane Dorian, however, is not the exception; the OBX has to deal with regular storms and hurricanes, and storms have become part of life. Besides seasonal storms, another threat to the coastal communities is climate-change-fueled sea level rise. With only 1 foot of sea-level rise, most of Ocracoke and Hatteras will be underwater (NOAA, 2023). Besides sea level rise, climate change also causes more frequent and severe storms, including winter

Noreasters, leading to more recurrent flooding events (EPA, 2023; Flemming et al., 2018; Glavovic, Kelly, Kay, & Travers, 2015).

While recovering from Hurricane Dorian these communities had to deal with the rise of the COVID-19 pandemic, putting them in a unique compounded crisis. Three months after reopening following the hurricane, the island communities closed their doors again to non-residents including homeowners and tourists (Outer Banks Voice, 2022). The tourism industry in most places ground to a halt and it has been projected that it will take years to reach the same levels of visitation for many destinations (UNCTAD, 2021). Ocracoke and Hatteras (and the OBX as a whole) received substantial visitation after the islands reopened (again) in May 2020. Although the arrival of tourists back on the island was good for the economic recovery, many of the locally owned businesses were struggling to find enough employees that were willing to work during these uncertain times or able to find long-term housing on the islands. Not being able to find enough employees resulted in businesses having to cut their hours or even having to close their businesses (Aldridge, 2021). COVID-19 also brought serious concern as there is no full time healthcare provider in the communities; if someone—resident or visitor—were to get seriously ill, they would have to travel (by boat and/or car) a long distance to reach the nearest hospital. Additionally, reduced ferry schedules made it hard for tourists and residents to travel to and from the island. Finally, the influx of tourists led to greater negative impacts on the natural and social environment of the communities and caused, among others, large amounts of traffic and long waiting times at restaurants.

2.3.3 Data Generation

This study is part of a larger qualitative research project on the Ocracoke and Hatteras communities regarding post-hurricane decision-making narratives from diverse stakeholders. In 2020 and early 2021, the research team conducted 52 interviews (20 in Hatteras and 29 in Ocracoke) with (tourism) business owners, non-resident property owners, workforce members, community leaders, and 3 state-level disaster/emergency managers. The sampling of interview participants started with three key contacts that the research team knew from previous research in these communities (one in Ocracoke, one in Hatteras, and one at a state-level recovery and resilience office). After these initial interviews were completed, a list of recommended interviewees was generated from chain referral sampling (Merriam, 2015). As chain referral

sampling continued, purposive sampling (Verhoeven, 2015) was integrated to ensure targeted stakeholder groups were reached (e.g., tourism business owners, tourism business employees, local leaders, and people involved in recovery efforts) and ensure a fair distribution of participants across the communities.

Three different interview protocols were created to guide the semi-structured interviews. Protocols were created for tourism stakeholders, community leaders, and disaster/emergency managers and were divided into four sections: (1) background information and community characteristics/perceptions, (2) prior hurricane experience and risk perceptions, (3) impacts and recovery decisions, and (4) wrap-up, final comments. The original research plan focused on hurricane Dorian; however, with the emergence of the COVID-19 pandemic, the interview protocol was adapted to also account for the impacts of the pandemic on the communities and the compounding influences of the pandemic on recovery decisions. The interviews were held and recorded (with the interviewee's permission) over Zoom given the pandemic-related health concerns and travel restrictions. Interview lengths averaged 59 minutes, with a range of 18 to 152 minutes. The interviews were transcribed with the use of these Zoom recordings and edited for accuracy.

For the purpose of this study, a subset of the interviews were selected for analysis. This subset includes everyone that has a direct stake in tourism, including the business owners, non-resident property owners, and workforce members to specifically focus on the recovery decision of tourism stakeholders. Therefore, the interviews with community leaders and emergency managers were omitted as they are not directly dependent on the income of tourism and, as such, these individuals likely make different recovery decisions after a natural disaster. This selection resulted in 12 interviews from Hatteras and 14 from Ocracoke.

2.3.4 Data Analysis

The transcribed interviews were uploaded in NVivo12 to support the coding and the organization of the data. Data were thematically analyzed (Braun & Clark, 2006) manually using open and axial coding. Open coding provided meaning to the dataset by inductively identifying concepts and allowing themes to emerge in relation to the research question. Axial coding supported the deductive classification of the themes to relate to constructs of the guiding theoretical framework (i.e., place attachment, social cohesion, risk perceptions, and recovery decisions) (Verhoeven,

2015). We categorized the recovery decisions into bounce back decisions (i.e., decisions focused on recovering as quickly as possible to normal functioning) and bounce forward decisions (i.e., decisions focused on preparing for anticipated disasters, adapting to changing situations, and withstanding disruption). Additionally, data generated were compared between different stakeholder classifications to gain a deeper understanding of our participants and to identify what factors influence bounce back and bounce forward decision making. The classifications were community (Ocracoke or Hatteras), stakeholder type (business owner, non-resident property owner, or workforce member), length of residence (newcomer, multiple generations, or islander), social cohesion (within community or across communities), place attachment (baseline or elevated), and risk perceptions (not high or high) (Table 2.1).

Table 2.1: Classification groups

CLASSIFICATION	DESCRIPTION
Community	
Ocracoke	Participants that live or own a home in Ocracoke
Hatteras	Participants that live or own a home in Hatteras
Stakeholder type	
Business owner	Participants that own a business, either a tourism business (e.g., motel) or a business which livelihood depends on the tourist in the community (e.g., supermarket).
Non-resident property owner	Participants who own a second home in the community and do not live in the community full time. They typically rent out their second home to tourists for income generation.
Workforce member	Participants that work in a business that is focused on tourism and/or depends on tourism.
Length of residency	
Newcomer	Participants that are newcomers to the community who are the first generation to live or own a home in the community.
Multiple generations	Participants whose family has been in the community for 2-3 generations.
Islander	Participants whose family has been in the community for over 3 generations.
Social cohesion	
Within community	Participants expressing strong relationships with other residents in the community in which they reside.
Across communities	Participants expressing strong relationships with residents from different communities in the OBX other than their own community.
Place Attachment	
Baseline	Participants expressing only place dependence.
Elevated	Participants expressing multiple elements of place identity and place dependence.
Risk perceptions	
Not high	Participants that are not aware of the variety of risk (e.g., future hurricanes, sea-level rise) threatening their community and tourism industry or don't take these risks serious.
High	Participants that are aware of the variety of risk (e.g., future hurricanes, sea-level rise) threatening their community and tourism industry and take these risks serious.

The case classifications allowed us to compare the type of recovery decision (i.e., bounce back, bounce forward) against the different classifications (e.g., baseline attachment, elevated attachment) by means of 'Matrix Coding' in NVivo12. The 'Matrix Coding Tables' provided by

NVivo12 helped identify the number of participants in a classification that made a bounce back or bounce forward decision. We created coding density tables to compare and find patterns among the different classifications and type of decision made.

To illustrate the process of the coding density table creation, we will provide the process of social cohesion as an example. The number of participants with cohesion *across community* or *within community* that made a type of decision are displayed in Table 2.2 (for more detailed data displays see Appendix A, Tables A1.1-A4.2). For example, 15 participants with cohesion *within community* made a bounce back decision; of those 15 participants, 7 participants made a bounce back decision that was focused towards the community.

Table 2.2: Number of participants that made decisions in relation to social cohesion

	Across Communities (n=10)	Within Community (n=16)
Bounce Back	4	15
Business	1	5
Community	3	7
Personal	2	13
Bounce Forward	8	14
Business	6	3
Community	2	0
Personal	6	13

To account for the different group sizes [i.e., across community (n=10), within community (n=16)] we calculated the proportions for each type of decision in each group (Table 2.3).

Table 2.3: Proportion of participants that made decisions in relation to social cohesion

	Across Communities	Within Community
Bounce Back	0.4	0.94
Business	0.1	0.31
Community	0.3	0.44
Personal	0.2	0.81
Bounce Forward	0.8	0.88
Business	0.6	0.19
Community	0.2	0.00
Personal	0.6	0.81

Finally, a coding density table was created to reflect the proportion of participants that made recovery decisions by assigning asterisks to ranges of proportions (Table 2.4); each asterisk reflects a range in coding density and not the actual numbers of data. Then we present decision densities to compare cohesion *across communities* with *within community* (Table 2.5).

Table 2.4: Asterisks representing proportions of participants

0.01-0.2	*
0.21-0.4	**
0.41-0.6	***
0.61-0.8	****
0.81-1.0	*****

Table 2.5: Coding density (adjusted for group size) illustrating decisions made by individuals in relation to social cohesion

	Across Communities	Within Community
Bounce Back	**	*****
Business	*	**
Community	**	***
Personal	*	*****
Bounce Forward	****	*****
Business	***	*
Community	*	
Personal	***	*****

Note: * indicates the coding density, neither reflects the actual numbers of data nor accounts for the number of decisions made by individuals.

2.3.5 Data Quality

To ensure trustworthiness in the study, rigorous data quality measures were employed. We used peer debriefing and review of the interview protocol design and coding process, as well as held frequent data interpretation debriefing sessions with project collaborators, to enhance the study's credibility (Merriam, 2015). Additionally, a wide variety of participants accounted for triangulation in data sources (Shenton, 2004). We addressed transferability by including two communities with different circumstances to make comparisons and highlight similarities that can be developed into hypotheses for further research in different coastal communities (Henderson, 2006). We enhanced the dependability of the study by documenting the research design and interview protocols and by taking notes to capture what was done in the interviews, thought processes, and changes in the original plan to allow for the study to be repeated. Furthermore, at all stages of the research, the effectiveness of decisions, strategies and result of changes were evaluated by the larger research team (Shenton, 2004). To establish confirmability, we created a decision audit trail (e.g., NVivo 12 memos, notes) to demonstrate the researcher's thought processes in the research design and implementation and data analysis which was continuously reviewed by the larger research team to eliminate personal biases and ensure that the themes emerged in the data are based on the participant's insights (Henderson, 2006; Shenton, 2004). Furthermore, data for this study were analyzed by someone who was not involved in the interview process (i.e., will have a less biased view) (Verhoeven, 2015).

2.4 Results

Our sample included 26 interview participants (12 from Hatteras, 14 from Ocracoke). The Hatteras sample included 11 business owners and 1 workforce member. Unfortunately, we were unable to include any non-resident property owners in our sample from Hatteras due to lack of key contacts within this groups. Of the 12 participants in Hatteras, 4 were *newcomers* to the community, 2 participants have been there for *multiple generations*, and 6 were considered *islanders* as their family has been there for 3+ generations. The Ocracoke sample included 8 business owners, 1 workforce member, and 5 non-resident property owners. The Ocracoke participants included 10 *newcomers*, 1 participant whose family has been there for *multiple generations*, and 3 *islanders* (see Table 2.6 for an overview of the sample).

Table 2.6: Interview participants sample

	Hatteras	Ocracoke
Total participants	12	14
Stakeholder type		
Business owner	11	8
Workforce member	1	1
Non-resident property owner	0	5
Length of residency		
Newcomer	4	10
Multiple generations	2	1
Islanders	6	3
Social cohesion		
Across communities	9	1
Within community	3	13
Place Attachment		
Elevated	9	6
Baseline	3	8
Risk Perceptions		
High	12	7
Not High	0	7

Furthermore, we assigned our participants to different categories within social cohesion, place attachment, and risk perceptions (Table 6). Related to social cohesion, we found that within our total sample 10 interview participants (9 in Hatteras and 1 in Ocracoke) were connected *across communities* and 16 interview participants (3 in Hatteras and 13 in Ocracoke) were connected *within the community* that they reside in. Additionally, for place attachment, we found that 15 interview participants (9 from Hatteras and 6 from Ocracoke) presented *elevated* levels of place attachment and 11 interview participants (3 from Hatteras and 8 from Ocracoke) presented *baseline* levels of risk perceptions. Finally, within our sample we found that 19 individuals (12 from Hatteras and 7 from Ocracoke) presented *high* levels of risk perceptions and 7 individuals (all from Ocracoke) presented *not high* levels of risk perceptions.

2.4.1 Recovery Decisions

Participants discussed an array of decisions that they made after Hurricane Dorian and we categorized these decisions in ‘*bounce back*’ and ‘*bounce forward*’. Additionally, we looked at

whether these decisions were personal (e.g., raising house) or focused towards their business (e.g., keep business open longer) or community (e.g., help neighbors clean up). The personal and business bounce back decisions that our participants made were often led by a need to “return to normal” (e.g., wanting to recover quickly, to open their business back up as soon as possible, and to make their house livable again).

So, you know, and normally it's like okay, we'll be open. Oh, it's, Friday. They'll let the tourists back on a week from Sunday. So what do we've got to get it all done in that time period. And even with this storm. I got caught up a little bit in that with '...okay it's September 6th we got to be up and running in two weeks.' You know when we were two weeks from that point, you could stand on the rafters or the floor joists in the shop and look at the dirt. You know, I mean, there was, it was completely gutted so the whole mindset of hurry up and clean up tourists are coming back on (O3).

Specific recovery decisions, such as ‘rebuilding’ and ‘keeping business open’, were often made quickly and with the idea that to just move forward and not dwell in the past. The different stakeholder groups appeared to be very supportive of each other in the immediate recovery as they were trying to help each other where possible (e.g., non-resident property owner shared their houses with full time residents whose home was destroyed), as were residents of Hatteras in supporting Ocracoke residents who were taken by surprise by the extensiveness of storm damage (e.g., residents from Hatteras going over to Ocracoke with tractors and trailers to help clean up).

Bounce forward decisions made by our participants included a great amount of future hurricane preparedness decisions that would protect themselves (i.e., evacuate) and their personal property (e.g., take vehicles out of potential flooding zone), decrease potential damage (e.g., protecting house with sandbags, boarding windows) and promote an efficient recovery (e.g., get insurance). Pre-hurricane decisions are also seen in business decision making in terms of protecting tourists through evacuation and securing inventory. One of the participants said:

I think the biggest time saver is preparation, not rebuilding. The biggest preventive of all is preventive maintenance (H19).

Participants additionally made bounce forward decisions thinking about the long-term sustainability of their business (e.g., take business online, develop an adaptive business plan), home (e.g., raise house), and community (e.g., lobby to keep community closed for tourists

longer). In fact, one of the major bounce forward decisions made was raising houses by putting houses on stilts, lifting the house off the ground so that it is less likely to get flooded (Table 2.7).

Table 2.7: Type of decision with accompanying quote and interpretation

Decision Type	Stakeholder Quote	Interpretation and Context
Bounce Back Business	<i>The biggest thing is just being open ... I don't know how many people would actually open under those circumstances. That's the biggest thing is really that we are here for the people and that's what my Dad instilled in me. I mean, from day one. And that's what we're here for. And that's what we did. I mean, so really, that's my main thing is we just needed to be open for folks (O8).</i>	Business owners felt the need to recover quickly in order to serve their community.
Bounce Back Community	<i>What we did was just offer our home to anyone that needed a home during that because there were so many people that didn't have a place to stay so that's all and we thought the best thing we could do is stay out of the way (O27).</i>	Non-resident property owners found ways to support the community by offering their houses, helping to clean up, and bringing food.
Bounce Back Personal	<i>Well... you know, of course, we all worry about what's to come. Hopefully, there won't be another one, but in all likelihood, there will be so sure there's trepidation. But, you know, we set ourselves up with proper insurance and just move forward. I don't think there's much to do about that (O22).</i>	Some participants did not want to dwell too long on the impacts of the hurricane and had a 'just move forward' mindset, back to business as usual.
Bounce Forward Business	<i>I did online sales through social media. And, you know, spent an extra week away because it. There was no power on the island, no internet. Well, there was power, but no internet and where I was, I would make sales and so I adapted by using the Internet to keep my business, kind of going... enough cash flow that I could stay open (H2).</i>	With the realization that coastal hazards are going to disrupt business more often in the future, some business owners are developing business plans that are able to be sustainable in the changing weather conditions.
Bounce Forward Community	<i>So we begged them to not open, and this is even after Dorian, and I mean I flat out called everybody I could and told them the same thing. I said, "Look, you've got to give us another 24- 48 hours. You've got to give us another 48 hours, please." You know, stop traffic at the south end of Frisco and have them turn around. And they did it for one day (H17).</i>	The community felt like they were not yet ready to receive tourists; therefore, several of the community members asked the county to stay closed to tourists longer.
Bounce Forward Personal	<i>But then what we're facing is now we know the level, the House is not sustainable and so we're on the list to have it raised 10 feet instead of just three feet. The house was fixed from the damage from Dorian, but we're waiting to have it elevated now and it's taking a long time to get that process done (O28).</i>	After the hurricane, participants in Ocracoke talked about raising their houses so that they would not get flooded again in the next hurricane.

2.4.2 Social Cohesion

The findings related to social cohesion are based on the self-perceived social cohesion of the study participants. That is, social cohesion was measured based on individuals' perceptions of their own social connectedness in the community or across communities rather than a measurement of objective social cohesion at the community level. Two main themes emerged in the interviews with regards to the self-perceived social cohesion of our study participants: (1) crisis brings togetherness and (2) generational ties may mask genuine cohesion. First, is the notion that a crisis brings people in the community and across communities in the Outer Banks together to help each other recover, and in some cases even enables community members to overcome differences by working towards a communal goal. For example, one participant in Hatteras mentioned:

I think there were a lot of people that were upset with each other leading up to that storm. When it hit they were completely cut off, they didn't have water for like a month or two, so they had to depend on each other. So I think when things get really heavy, you see a clear picture of what life really is and you could essentially focus on, what do we need to do to get through this and then essentially you put everything aside to just try to help each other out (H15).

Often after storms Ocracoke and Hatteras are cut off from outside help due to their remote location in the Outer Banks, which means they have to depend on each other to be able to recover. Some participants in Hatteras talk about a shared sense of ownership and how they take pride in not depending on outsiders and working as a community to overcome crises.

What we have is we have a community wide sense of ownership, caring, know-how, experience, I could go on and on with all these great descriptors. But when you put those together, we have problem solvers. We have fixers, you know, we don't have people who are laying around waiting for the county to come fix their issues... we live in a community full of people who are gonna always rise to the occasion (H14).

It appears that participants from both communities perceived themselves as cohesive in the sense that they describe that a willingness to help each other out in time of need and that they are prepared to work together to overcome crises. However, within the second theme, the question arises of whether the generational ties are masking genuine community cohesion. Both

communities are small with less than 1,000 residents and they share how this means that they are “community minded people” (H19) that all look out for each other as one big family.

Nonetheless, in contrast to the general perception of community cohesion, newcomers and non-resident property owners appear to have a difficult time feeling part of the ‘inner circle’ of the community consisting of multiple generation residents. Newcomers expressed feelings such as “he will never be a native (H1)” and “it’s a tough place to live (O6)”, and one participants in Ocracoke explains:

[Resident] who's, you know, is a full time resident but isn't from there and they certainly like a lot of small communities that discriminate you know if you weren't actually born there you're a foreigner (O27).

The participants that have been in the communities for multiple generations expressed that they hold the expectation that the newcomers adapt to the life of the long-term residents.

If somebody moves in and they can adapt to our existing way of life they feel welcomed and comfortable, connected. If somebody moves in and they identify all these issues they think need to change that is not what most of the locals think they're never going to feel connected (H2).

To a greater extend islanders appear to be skeptical of the non-resident property owners in the community and make it clear that they are not part of the community, as described by the following participant:

We handle situations with our non-resident property owners and that high level of service, they get, they are accustomed to calling 911 over everything, even their batteries in their smoke detectors. That is an unequivocal fact. I mean, these people call us at midnight for an adult male with a sunburn (H14).

The skepticism from the islanders does not go unnoticed by the non-resident property owners, as one participant mentioned:

So you do feel a little bit like a part of the community, but then there is what I call the locals enclave where there are some that don't really care that much for us [non-resident property owners] (O26).

In exploring the relationship between self-perceived social cohesion and recovery decisions, we uncovered a pattern that people that described personal connections *across communities* tend to make bounce forward recovery decisions, whereas people that only identified connections *within the community* tend to make more bounce backward recovery decisions (Table 2.8). Within these patterns, participants showing self-perceived cohesion *within community* tend to make more bounce back decisions. Yet, it is noteworthy that participants showing self-perceived cohesion *within community* do make a fair amount of bounce forward decisions. These bounce forward decisions mostly consist of ‘raising houses’, as all participants that decided to raise their house after Dorian showed self-perceived *within community* cohesion.

Table 2.8: Coding density (adjusted for group size) illustrating decisions made by individuals in relation to social cohesion

	Across Communities	Within Community
Bounce Back	**	*****
Business	*	**
Community	**	***
Personal	*	*****
Bounce Forward	*****	*****
Business	***	*
Community	*	
Personal	***	*****

Note: * indicates the coding density, neither reflects the actual numbers of data nor accounts for the number of decisions made by individuals.

2.4.3 Place Attachment

From the data, three themes emerged with regards to place attachment: (1) family history, (2) location, and (3) unique community bond. First, there are families in these communities that have been living there for generations, some going back to the European settlers in the Outer Bank. These generational ties to the place make them feel attached. One of the participants paints the picture of the family connection and how this is all they have ever known:

... my family's been here for 500 years. What else do I know? I grew up here. What do you want me to do?... I don't know anything else. This is my home,

and this is my community. And, you know, my friends, and I very rarely see somebody that I don't know on the street, and we sit on our front porches when people stop and visit. A lot of people don't have that, they don't have a clue about what we have (H18).

The second theme is related to the physical elements of the community. Participants expressed how they feel attached to the remoteness of the communities, to the natural beauty (e.g., beaches and national park), the uniqueness of the communities in the sense that there are no chain facilities, and finally the connection to the ocean (e.g., surfing, source for food).

"I came and I fell in love with the island, it was everything I was looking for; Community, environment, laid back seashores, I love you know beachcombing. That would have been about maybe '93 I think, about '93 was the first time I'd ever heard of this place. I've been a bit of a drifter for quite some time and the environment it's, I love being the only person on the beach for miles around and yet hearing about every other one of my friends having exactly that same experience on the same day in such a small place. But it gives an opportunity for sparseness which I love. It's wonderful." (O29)

The final theme that emerged is the unique community bond within the communities. Here the social cohesion within the community became the reason why participants feel strongly attached to the 'place'. Some non-resident property owners mentioned that they specifically bought a home in Ocracoke because of the unique community bond. For example one participant mentioned:

We're more oriented really to the mountains, not the beach so much, but this community draws you in, and I think it's unique and different than any other place it's wonderful (O25).

Additionally, residents that live in the community full-time talked about how they are attached to the unique bond they have created as community members.

Ocracoke, it's, it's a very small tight knit community. Most people recognize one another in passing... So you really know the community members pretty well. Um, and I guess that's probably the connection. I wouldn't say it's so much the place, even though we surf. We go on the water, I mean we love the

natural part of Ocracoke, but it's the relationships and the neighborly feel you have that kind of makes me love to live here (O3).

We were unable to uncover any clear patterns between place attachment and the type of decision being made (i.e., bounce back versus bounce forward) (see Table 2.9). The lack of a clear pattern could be accounted for by the type of participants within our study. Specifically, very participant held a similar (and relatively high) baseline of attachment to the community/place, and as such, none of the participants presented a lack of attachment. The participants suggested that this has to do with the remoteness of the communities and the unique circumstances they have living in these communities. Simply put, without a form of attachment to the place and community, it is difficult to live in Ocracoke or Hatteras, as explained by one of the participants:

You guys are going to get here and you'll go for three months with no restaurants open, you're not going to be able to go to dinner, you know, there's no movie theater, we get a nor'easter and the road is closed for a week, where we don't get mail. And if you're sick if you've got bad health problems.... And that's something that a lot of people need to be concerned with is just being able to get out of here because if it's a good Nor'easter and its blowing, they can't fly you out, and you can't get out because there is too much water on the road... But that's just part of life here. It's an adventure living here (H18).

Table 2.9: Coding density (adjusted for group size) illustrating decisions made by individuals in relation to place attachment

	Elevated	Baseline
Bounce Back	*****	*****
Business	*	**
Community	**	**
Personal	***	*****
Bounce Forward	*****	*****
Business	**	**
Community	*	*
Personal	*****	*****

Note: * indicates the coding density, neither reflects the actual numbers of data nor accounts for the number of decisions made by individuals.

2.4.4 Risk Perceptions

Three main themes emerged in the risk perceptions of the interview participants: (1) reflections of the severity of hurricane Dorian, (2) increasing vulnerability, and (3) concern for the economic wellbeing. First, individuals expressed risk perceptions in relation to the impact and severity of Hurricane Dorian. In Ocracoke this message was very similar across participants; Dorian was the worst hurricane ever experienced, they had never dealt with a hurricane to this extent before. For example, participant O13 mentioned:

Oh it surpassed all that there is no comparison, really.... If I had to compare it, you know, the other ones were minor compared to what Dorian was, Dorian actually was very major.

In Hatteras there was more of a division, as some individuals perceived Dorian as not being too bad, while others felt it was still devastating but just had less impact on Hatteras than Ocracoke. For example, one participant even described Dorian as “a piece of cake” (H11), while others expressed that they were just better prepared and knew better how to handle a Hurricane and, therefore, the impact was less severe.

Secondly, there appears to be a general worry that storms are getting more severe and that they will occur more often. Some individuals recognized climate change as a catalyst for these severe weather events. For example, one participant mentioned:

And, you know, everybody acknowledges and is aware there's going to be future events. So it's just and we are, I think, in ways better prepared to deal with it. Um, you know, Dorian, was an eye opener and I think with what's going on with climate change that the severity and regularity of this is going to get worse and worse. You know, people acknowledge that (O1).

The idea that Dorian woke up Ocracoke is shared across interviews, as community members did not expect anything to this extent to happen to their community. Historically, Ocracoke has been fortunate to be sheltered from severe hurricane impacts. Therefore, Dorian served as ‘wake-up call’ for several of the Ocracoke participants to grasp the extent of vulnerability of their community for future storms and hurricanes. Our interview participants also recognized their vulnerability concerning their remoteness and being situated on the barrier islands. For example,

some participants expressed the concern of continued erosion and land loss with the climate change fueled sea-level rise. Furthermore, the access to the islands was viewed as threatened; the road will more frequently be washed away, and there is a worry that there will be an inlet created that cuts off Hatteras village from the rest of Hatteras Island.

...as sea level rises we're going to lose some of the long strands on the outer banks and we're going to end up with what's basically a series of islands, you know, like Nags Head, Hatteras, Ocracoke, you know and they'll be accessible between the different tides, basically just large islands (O28).

Finally, the participants express concerns about their tourism economies dealing with these frequent hurricanes/storms. Individuals expressed the financial stress and worry dealing with constant recovery efforts. In addition, as their economy is dependent on tourists, they worry about tourists being able to access their communities:

It's the tourism flow from the north with day trippers and the rental season. Yeah, that is the most tenuous part is that folks have been predicting it is not sustainable over the next 40 years or whatever so that amount of economic engine coming from the North, if that was cut off, it would significantly change the way but Ocracoke functions (O6).

Exploring risk perceptions relating to recovery decisions we uncovered a pattern that people with *high* levels of risk perceptions tend to make more bounce forward recovery decisions (Table 2.10) than those with *not high* levels of risk perceptions, who typically make more bounce back recovery decisions. Participants in both groups (i.e., *high* risk perceptions, *not high* risk perceptions) made bounce back and bounce forward decisions, therefore, the pattern does not appear as strong. Participants with *high* risk perceptions, however, made multiple bounce forward decisions in the personal and business category, whereas, participants with *not high* risk perceptions did not make multiple bounce forward decisions in different categories, making the pattern we have uncovered stronger (i.e., people with *high* risk perceptions tend to make more bounce forward recovery decisions than those with *not high* risk perceptions). The bounce forward decisions made by participants with *not high* risk perceptions were largely raising their house (which was possible with insurance/relief funding after Hurricane Dorian) and extending business hours to serve the communities and financially help employees.

Table 2.10: Coding density (adjusted for group size) illustrating decisions made by individuals in relation to risk perceptions

	High	Not High
Bounce Back	****	*****
Business	*	***
Community	**	*****
Personal	****	*****
Bounce Forward	*****	*****
Business	**	**
Community	*	
Personal	****	***

Note: * indicates the coding density, neither reflects the actual numbers of data nor accounts for the number of decisions made by individuals.

2.4.5 COVID-19

The unique compounded crisis experienced by the communities (i.e., Hurricane Dorian and COVID-19) meant that we had to take into account the impact that COVID-19 had on the recovery from Hurricane Dorian and we discovered several general patterns within the communities. With the emergence of the pandemic, access to the islands was restricted to full-time residents. This sparked some initial panic among our interview participants as they had just reopened businesses following initial Hurricane Dorian recovery efforts, and they were counting on the tourists to make up for the economic losses experienced from the hurricane and the months of closure after this event. However, this also gave some of the participants the opportunity to spend more time on the structural recovery of the homes and businesses.

Well, for me personally, the activities that I do with [community organization] have kind of taken the back burner. And that has given me more time to work on the house, and in that sense COVID coming along has actually been helpful to my schedule because it's kind of changed the rules in a way that I wouldn't have thought would have been possible (O6).

After 2-3 months of restricted access, the communities were able to reopen again right before the summer season. Masses of tourists came to the communities resulting in an exceptionally good tourism season. Two reasons were identified by the participants for the influx

of tourists: (1) the communities have a large group of returning tourists that are attached to the islands and want to support the recovery of the communities, and (2) the communities attracted a new group of tourists as the remoteness of the communities served as a favorable pandemic holiday location. As work and school was all online, people had more freedom to travel to Ocracoke and Hatteras. This also meant that the fall season was busier than any prior fall season and businesses were able to extend their opening past Thanksgiving. The influx of tourists and the expansion of “high” tourism seasons that these communities had boosted their financial recovery from hurricane Dorian. One participant in Ocracoke mentioned:

This may sound weird, but it's been incredibly, incredibly beneficial. In the sense that people have felt like Ocracoke is a safe place to travel. So we've had a record season this year (O1).

Nonetheless, COVID-19 also complicated the recovery from Hurricane Dorian as it became more difficult to get labor and supplies needed for the infrastructure recovery and building materials became more expensive. Additionally, the number of non-resident property owners in the communities significantly increased during the pandemic leaving the full-time residents with several concerns. Some of our full-time resident participants mentioned that they were scared that the non-resident property owners would bring COVID-19 in the communities. As Ocracoke and Hatteras are so far removed, access to a hospital was a big concern in the pandemic. Furthermore, heading into the hurricane season, with so many new property owners on the islands, there were concerns about the preparedness of these newcomers to deal with hurricanes and it was expected that the newcomers would be a burden when dealing with any future hurricane.

I think that is a bit eyebrow raising from an emergency response standpoint to consider you could have several thousand more people here who have never been through a hurricane, and I'll give you an example. Very early on in this conversation we talked about level of service and expectations. So if you live in Fairfax, Virginia, right, your fire department provides a very high level of service. And that is what you were accustomed to. Now you're fortunate enough to own a home on Hatteras Island. And you decide to be a ding dong and stay through a hurricane that level of service is going to look different to people are accustomed to that. Does that make sense? (H14).

2.4.6 Community Specific Recovery Decisions

Comparing the recovery decisions between the different communities we found a pattern in that the interview participants from Ocracoke tend to make more bounce back decisions and the participants from Hatteras tend to make more bounce forward decisions (Table 2.11).

Table 2.11: Coding density (adjusted for group size) illustrating decisions made by individuals in relation to the communities of Ocracoke and Hatteras

	Ocracoke	Hatteras
Bounce Back	*****	***
Business	**	*
Community	***	**
Personal	*****	**
Bounce Forward	*****	*****
Business	**	***
Community		*
Personal	*****	*****

Note: * indicates the coding density, neither reflects the actual numbers of data nor accounts for the number of decisions made by individuals.

We suspect this is likely due to the experience Hatteras has with previous hurricanes, like Hurricane Isabel in 2003 that isolated Hatteras from the mainland via Highway 12 for two months and Hurricane Matthew in 2016 that had record breaking storm surge, whereas Ocracoke had never experienced the degree of destruction and flooding prior to Hurricane Dorian. To paint a picture of the experiences with the previous hurricanes, one of Hatteras participant explained the situation after Hurricane Isabel:

Yeah, I mean it when it, when it takes out part of your buildings physically or like in Isabel's case it cut an inlet between Frisco and Hatteras. And they were having to take the kids from Hatteras to this school in Buxton on a fishing boat. That's real. And it takes time to fill in an inlet and put your infrastructure back together. Put the road back down. Run the waterline back down. I mean, fix the phone lines, get the grocery stores back, the post office (HI).

One theme that emerged is the perception that past hurricanes help you prepare for the next hurricane. A decision that illustrates this preparedness and that stands out, is raising their

house, which is a bounce forward decision made by mostly Ocracoke interview participants. The participants in Hatteras explained that after Hurricane Matthew (2016) many of their homes were flooded and with insurance money and with the support from FEMA many communities raised their houses. Therefore, during Hurricane Dorian most of the houses were spared from flooding and as a result also did not have to be raised (again).

Dorian was essentially a piece of cake being a year or so prior to that we had Matthew which finally initiated me raising my house and Matthew was second time water have been in my house since 1949. And again, Dorian would have probably flooded us to, you know. But thankfully we finally raised her up so. So again, we saw it coming, it has been close. Yeah, I definitely think it's one of those things where, you know, you go through a real bad one. Or couple real bad ones and then you figure it out (H11).

As Ocracoke did not have the same experience with Matthew or other hurricanes to the extent of Hatteras, Ocracoke residents did not likely perceive the need to raise their houses until after Dorian. The hurricane preparedness is also clearly seen in the business decisions made by the participants in Hatteras, in terms of protecting their financial and physical assets (e.g., securing inventory, make business flood proof) and as well as being more focused on the well-being of the tourists (e.g., evacuation, clear communication):

Again, I have been in the hospitality business, I've told them [tourists] you know I'd get them out of there early and I said, 'Look, first off, you don't want to get stuck in the traffic.' I said, 'Secondly, I don't, I don't want to keep your money and have to worry about your life being lost.' I give them their money back, even if they have a reservation. I try to be straightforward. To me, it scares me what could happen. And you know, I think people and they're putting the dollar before the well-being of their guests and that concerns me. There's about a 50/50 chance some look at it like I do, or others will say, 'Well, they ran them off and it cost me \$20,000.' I guarantee you can get it back. But you won't get it back if you kill them (H11).

2.5 Discussion

This study sought to explore how social cohesion, place attachment, and risk perceptions are impacting the decisions made by tourism stakeholders in coastal communities in recovery from a

hurricane. The two tourism-dependent communities in this study, Ocracoke and Hatteras, were chosen due to their economic dependence on tourism and as they were among the hardest hit by Hurricane Dorian in North Carolina and are both vulnerable to reoccurring coastal hazards. Participants in both communities have deep personal, family, and intergenerational ties to the area, as well as a strong dependence on tourism. At the same time, differences between the communities were identified that provided context to the decisions made in each community. We uncovered patterns among groups of participants who tended to make more bounce forward decisions: participants with self-perceived cohesion across community, participants with high levels of risk perceptions, and participants from Hatteras. Conversely, participants with self-perceived cohesion within communities, participants with not high risk perceptions, and participants from Ocracoke tended to make more bounce back decisions. For place attachment we did not uncover any clear patterns in the data relating to the type of decisions made.

2.5.1 Social Cohesion

This study adds to the existing literature in confirming and highlighting the importance of social cohesion in resilient communities (e.g., Albright & Cow, 2021; Bergstrand & Meyer, 2020; Fan, Jiang, & Mostafavi, 2020). In both Ocracoke and Hatteras, we found participants held a strong self-perceived sense of togetherness within each community in dealing with coastal hazards. The participants shared that they had to look out for each other especially because of their remoteness they were dependent on one another. For example, residents went to check up on their neighbors and offered aid and initial recovery assistance (e.g., cutting trees) as soon as it was possible. This finding is similar to other studies who found that social cohesion encourages social participation and community engagement, which has been found to be an essential element of disaster-resilient communities as participants help each other recovery (e.g., Binder et al., 2015; Boon, 2014; Patel & Gleason, 2018). Social cohesion has also been found to translate into greater levels of trust (e.g., Hausman, Hanlon, & Seals, 2007), information sharing (e.g., Boon, 2014), and collective response and recovery (e.g., Binder et al., 2015; Brunie, 2010), which is similar to this study's findings. Both Ocracoke and Hatteras had set up central gathering points where community members found shelter and food and where they could ask for help and share information on how to recover. The participants also expressed that they trusted storm and recovery information more from residents in their own communities more so than outside

information. However, newcomers in the community have expressed that they do not experience the same level of social cohesion as the residents with multigenerational ties. These findings are in line with Patterson, Weil, & Patel (2010) who found that groups may act in an exclusionary manner with respect to non-group members as they may attempt to monopolize recovery resources and information for their own members and exclude others. Resilient communities, therefore, present strong cohesion between all groups within a community.

This study adds to the theoretical understanding of the influence of social cohesion on recovery decisions as it not only looks at the depth of the cohesion (e.g., willingness to help each other) (e.g., Ludin, Rohaizat, & Arbon, 2019; Patel & Gleason, 2018; Townshend et al., 2015) but also introduces the type of connections (i.e., within community and across communities). Looking at *across community* cohesion in hurricane recovery provides a new perspective on how decisions are made as we found that our participants who self-perceived *across community* cohesion tend to make more bounce forward decisions. Future studies should include this type of cohesion to better understand how across community connections supports more sustainable (i.e., bounce forward decisions) resilience in dealing with coastal hazards.

2.5.2 Place Attachment

Similar to other studies (e.g., Chamlee-Wright & Storr, 2009; Codjoe, Nyamedor, Sward, & Dovie, 2017; DeWaard, Curtis, & Fussell, 2016; Koubi, Spilker, Schaffer, & Bernauer, 2016; Swapan & Sadeque, 2021), we found that because participants were attached to the community in which they live and did not consider moving away after hurricane Dorian. However, there is no consensus yet on how place attachment impacts recovery decisions and resilience in post disaster communities. Some studies suggest that high level of place attachment leads to proactive protective behavior of the place (e.g., Clarke Murphy, & Lorenzoni, 2018; Faulkner, Brown, & Quinn, 2018), while other studies found that individuals with high levels of place attachment resist change and work to re-establish place as they knew it before the event (Adams, 2016; Hauer et al., 2019). This study adds to this ambiguity as we did not uncover any clear patterns in the data relating to the level of attachment to the place and bounce back versus bounce forward decision making. The lack of a clear pattern in this study may be attributed to the fact that our participants all presented strong attachment to the community. Some participants displayed stronger attachment than other but considering most participants have been in the communities

for generations and others had to overcome barriers (e.g., remoteness) to living in these communities a baseline of attachment was prevalent. Future research should include participants without a strong attachment to the place (e.g., new nonresident property owners) to be able to understand whether the level of place attachment impacts bounce back versus bounce forward decisions.

Previous research suggests that the absence of a consensus regarding the impact of place attachment on recovery decisions could also be explained by the mediating effect of place attachment between risk perceptions and recovery decisions (e.g., Greer et al., 2020). Studies found that individuals living in areas at risk to hazards with high levels of place attachment underestimate or downplay hazard risk which reduces the likelihood of adopting protective measures (i.e., bounce forward decision making), and detached residents perceive future hazards as more threatening (Armaş, 2006; De Dominicis et al., 2015). These findings were reinforced by a meta-analysis of the literature in which Bonaiuto et al. (2016) found that individuals with high levels of place attachment are generally aware of risks but often underestimate their potential impacts. Furthermore, in a survey exploring individual perceptions of economic, social and environmental risks, Bernardo (2013) found that place attachment increased risk perceptions regarding high probability events while decreasing risk perceptions related to low probability events. This exhibits the need for further research to quantitatively measure perceptions of risk probability (e.g., frequency of hurricane intervals) in hopes of better understanding the mediating role that place attachment plays between risk perceptions and recovery decisions and how that impacts bounce back and bounce forward decision making.

2.5.3 Risk Perceptions

Previous studies have often studied risk perceptions in relation to disaster preparedness, research has demonstrated that individuals' subjective evaluation of natural hazards is an important factor in their disaster preparedness (Brenkert-Smith, Champ, & Flores, 2012; Lo, 2013; Martin, Martin, & Kent, 2009). However, the direct link between risk perception and disaster preparedness has not been consistently reported in the literature (e.g., Bollettino et al., 2020; Ng, 2023; Wachinger, Renn, Begg, & Kuhlicke, 2013) This study adds to this body of knowledge as we found that participants with high levels of risk perceptions did show higher levels of preparedness. High levels of preparedness contributes to individual and community resilience

and facilitate an improved response to a disaster, thereby, reducing adverse impacts (Paton, McClure, & Bürgelt, 2006). Where most studies use self-assessment scales of preparedness to understand the perceived level of preparedness from participants (e.g., Yong, Lemyre, Pinsent, & Krewski, 2017), this study adds to understanding what specific decisions make up the preparedness of tourism stakeholders dealing with coastal hazards (e.g., mitigating flooding impacts). We assessed both the preparedness decision making of our participants related to their personal lives as well as the responsibilities they fulfill in the tourism industry. Previous research suggests that business preparedness is influenced by the perceptions of risk and motivation to prepare amongst owners or managers (Orchiston, 2013; Wang & Ritchie, 2012); however, smaller businesses often show poor levels of disaster planning, which is likely a result of a lack of awareness of planning methods and inadequate resourcing within small-scale tourism businesses (Ritchie, Bentley, Koruth, & Wang, 2011). This study found that the tourism stakeholders with high levels of risk perceptions exhibited higher levels of business preparedness and business bounce forward decision making (e.g., sell tourist souvenirs online).

2.5.4 Difference in Communities

Ocracoke and Hatteras have both experienced a number of coastal hazards in the past, though important differences emerged from the data regarding the nature of those disasters and, in turn, the ways in which each community responded to the challenges they faced during Hurricane Dorian. Even though Ocracoke has lived through numerous hurricanes as the Outer Banks is prone to seasonal storms, the impacts were never as severe as with Hurricane Dorian. Hatteras. On the other hand, Hatteras had recently dealt with a major damage from Hurricane Matthew in 2016 and most residents in Hatteras were able to raise their house after that event. Additionally, experiences with other major hurricanes—such as Emily (1993), Isabel (2003), and Irene (2011)—pushed residents in Hatteras to create strategies for dealing with hurricanes both at home (e.g., securing vehicles, anti-flood measures) and in the tourism business (e.g., securing inventory, taking business online). There seemed to be a consensus that ‘previous hurricanes prepare you for the next one;’ therefore, it appears that repeating hazard events may motivate individuals to make bounce forward decisions, as bounce back decisions over time are not sustainable when it is apparent that a next hurricane is likely to occur in the foreseeable future. Binder et al. (2015) found similar results in a study of two communities in New York City that

were heavily damaged by Hurricane Sandy (2012). In the community with prior hazard experience, residents largely chose to adapt to changing circumstances, which in their case meant relocating out of an area that was no longer viewed as livable. Relocation is a form of adaptation and, therefore, a bounce forward decision. Conversely, the primary focus of the community without prior hurricane experience was on rebuilding and reestablishing their community as they knew it, therefore, making more bounce back decisions.

It is important to highlight that all participants in Hatteras display *high* levels of risk perceptions and previous studies show that direct experiences with previous disasters have a positive effect on risk perceptions and reinforces precautionary behavior (Grothmann & Reuswig, 2006; Ng, 2023 Siegrist & Árvai, 2020). Personal exposure to the disaster event (e.g., flooding) can offer an illustration of the threat and demonstrates the potential for future risk, as was documented in this study. Hence, experience of a natural hazard leads to a higher risk perception in most cases. For example, Miceli, Sotgiu, and Settanni (2008) documented that risk perception was positively correlated with personal memories of having experienced damage in an earlier flood in Italy. Similarly, Ruin, Gaillard, and Lutoff (2007) found that individuals without direct flood experience tended to underestimate danger, whereas individuals with direct flood experience tend to overestimate danger.

2.5.5 Compounded Disasters and Other Limitations

This study took place in the height of the COVID-19 pandemic as Ocracoke and Hatteras had to deal with a unique compounded crisis (i.e., Hurricane Dorian and COVID-19 pandemic). Participants have expressed both positive (e.g., extended time to recover) and negative (e.g., difficulty getting supply and labor) impacts of the pandemic on the recovery of Hurricane Dorian with the biggest impact being the influx of tourists in the communities after the first round of lockdown. The pandemic also accentuated the remoteness of Ocracoke and Hatteras, making the two communities even more removed from the mainland. This amplified health risks of residents, as they are so far removed from the nearest hospital, while also amplifying their economic risks to continued tourism business closures. As the COVID-19 had an impact on the recovery process of the tourism stakeholders in Ocracoke and Hatteras, this study should be replicated in a non-COVID setting to focus merely on the recovery from coastal hazards which are likely to continue impacting these coastal communities.

This study is limited in the sample as it included 5 non-resident property owners all of whom all had their property in Ocracoke and only two tourism workforce members. Future research is needed to explore the nuances of these subgroups' recovery decisions with a larger sample from multiple communities, particularly in relation to the theoretical constructs explored in this study. Future studies at the community scale should also strive to include a more balanced sample to be able to compare the different groups within the tourism stakeholders to extend the understanding of how different stakeholders in tourism dependent coastal communities are making decisions in dealing with coastal hazards.

The sample was further limited as a large group of residents from Ocracoke was left out of the study. According to the U.S. census data (2020), about 30% of residents in Ocracoke are Latinx and our interview participants confirm that the Latinx population plays an important role in the community and in serving the tourism industry. Past studies have suggested that members of minority groups are likely to make different recovery decisions as they often have limited social and financial power (EPA, 2021; Morrow-Jones & Morrow-Jones, 1991). Therefore, future studies in Ocracoke and other communities with minority populations should strive to more intentionally include these subgroups to gain a more holistic understanding of the recovery process of all community members.

This study was part of a larger study in Ocracoke and Hatteras on decision making and information gathering in relation to hurricanes. The interview protocol was, therefore, not specifically designed to answer this research question. Additionally, this study was limited as we solely looked at the individual concepts (i.e., social cohesion, place attachment, and risk perceptions) and how they are impacting recovery decisions; yet, previous research shows that social cohesion, place attachment and risk perceptions are interconnected with each other and that they play mediating roles in the recovery decisions made by individuals dealing with natural hazards. Further research should design interview protocols that are directed towards social cohesion, place attachment, and risk perceptions, to more explicitly understand the intersections between these constructs and on bounce back versus bounce forward recovery decisions.

2.6 Theoretical and Managerial Implications

This study contributes to the theoretical understanding of decision making processes in tourism-dependent coastal communities in dealing with hurricanes. There is still a limited understanding

on tourism stakeholder disaster recovery decision making and therefore, this study lays a foundation in identifying the recovery decisions that are made from three different groups of tourism stakeholders; business owners, non-resident property owners, and workforce members. Additionally, we adopted social cohesion, place attachment, and risk perceptions into one study to gain a holistic understanding of the recovery decision making process. We applied a different perspective to looking at social cohesion in the recovery process by not only looking at the strength of self-perceived cohesion within the community but also by including perceptions of across community connections. Across community cohesion presented itself to be valuable when studying recovery decisions which invites future research to adopt this approach to continue to explore the impact of this type of cohesion on the recovery decisions. Finally, we introduced categorizing the recovery decisions into bounce back decision and bounce forward decisions in combination with social cohesion, place attachment, and risk perceptions which helps determine the type of resilience in a community and predicting the long-term sustainability of the tourism industry.

2.6.1 Conceptual Postulations

While some studies have started to implement side by side comparison of bounce back and bounce forward decision making processes (e.g., Chelleri & Baravikova, 2021; Muñoz-Erickson et al., 2021), this research lays the foundation into understanding what personal and community characteristics influence bounce back or bounce forward making specifically in tourism-dependent communities dealing with coastal hazards. We found that social cohesion, risk perceptions, and previous hurricane experience impact decision making tendencies. We propose two models illustrating the factors impacting bounce back decision making (Figure 2.3) and bounce forward decision making (Figure 2.4). Previous research suggests the impact of place attachment on decision making tendencies (e.g., Hauer et al., 2019; Swapan & Sadeque, 2021); however, this requires further exploration. Future research should focus on exploring the relationships between social cohesion, place attachment, risk perceptions, and previous hurricane experiences in relation to the decision making tendencies of tourism stakeholders, as well as testing these models in quantitative studies.

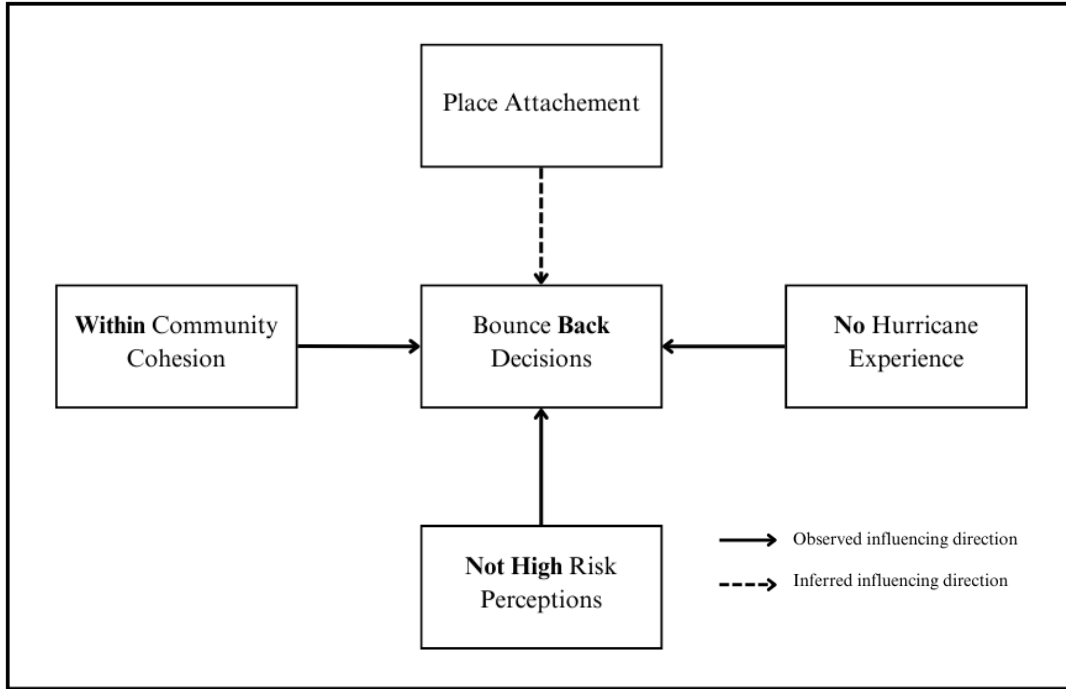


Figure 2.3: Factors impacting bounce back decision making

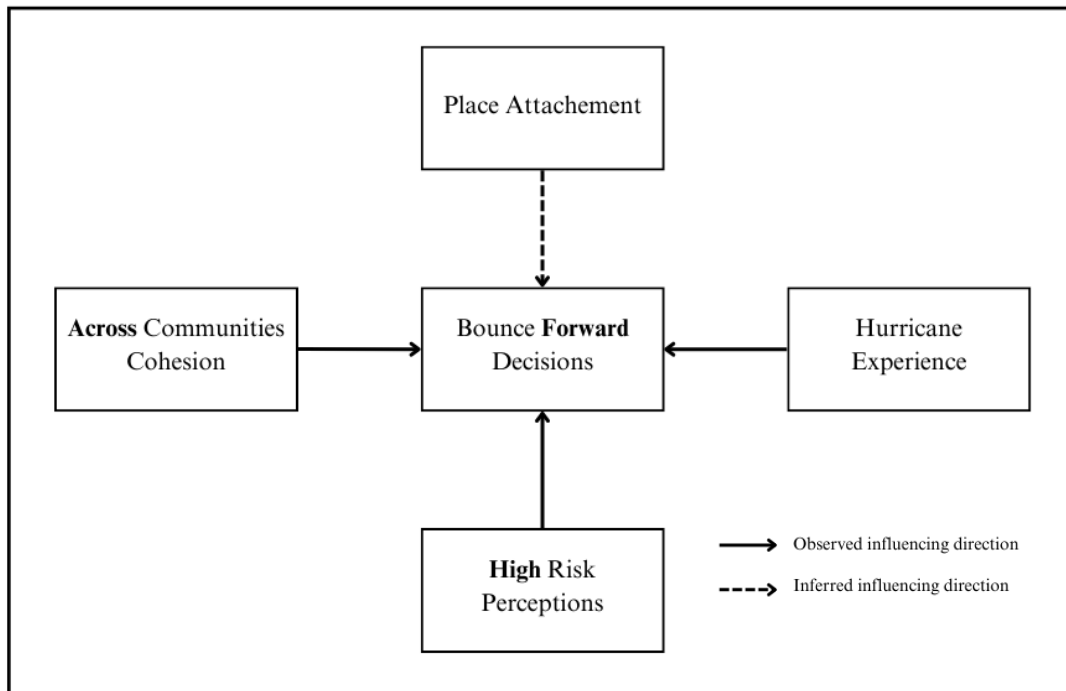


Figure 2.4: Factors impacting bounce forward decision making

2.6.2 Opportunities for Destination Management Organizations

This study highlights the importance for tourism stakeholders in vulnerable coastal communities to create strong networks within the community and across communities. Destination Management Organizations (DMOs) should play a key role in bringing all tourism stakeholders together to form these tourism networks across the region to support the resilience and long-term sustainability of the tourism industry. Traditionally DMOs mostly focused on destination marketing, consequently forgoing important opportunities to create the capacity to build destination resilience through pooling of resources and continuous knowledge exchange across organizational boundaries (Gretzel, Fesenmaier, Formica, & O'Leary, 2006). Blackman, Kennedy, & Ritchie (2011) called out this need for DMOs as knowledge mediators, particularly in crisis communications and recovery activities. Additionally, Becken and Hughey (2013) suggest that DMOs are important players in managing crises as DMOs possess extensive knowledge of local tourism infrastructure and resources and have established communication channels and media relations. Accordingly, DMOs have the ability to play a critical role in facilitating collaboration between tourism businesses and the national and local authorities and emergency services (Pforr & Hosie, 2009; Beirman, 2010).

NC Coast Host is a regional DMO in Eastern North Carolina that has established connections with chambers of commerce, convention and visitor bureaus, attractions, accommodations, historic sites and other tourism-related businesses, resulting in a strong network of tourism stakeholders (NC Coast Host, 2022). Their focus has historically been on increasing economic growth by promoting travel and tourism in North Carolina's coastal region. However, due to the potential for coastal hazards to disrupt and threaten the heavily tourism-dependent economy of North Carolina coastal communities, the region would benefit from DMOs such as NC Coast Host bringing tourism stakeholders together to support their resilience and a sustainable future.

This study found that embracing connections with all tourism stakeholders within the communities, including non-resident property owners, will help ensure that resources (e.g., supplies, help with clean up, temporary housing) for an efficient recovery and building resilience are accessible for the entire tourism industry. Additionally, establishing and fostering across community connections with tourism stakeholders will support the transfer of knowledge (e.g., how to set up a central disaster response station, risk communication to tourists, insurance

process) from communities that have more experience and preexisting systems in place to deal with these coastal hazards. Finally, we found that people with *high* risk perceptions tend to make more bounce forward decisions, therefore, it is important that tourism stakeholders have *high* risk perceptions. Tourism networks can help identify and document all perceived risks (e.g., sea-level rise, more frequent and severe hurricanes/storms) and the impact these risks can have on the tourism industry (e.g., tourists not being able to reach the community to a breach in Highway 12). Additionally, DMOs could facilitate conversation around these risks to increase risk awareness among all tourism stakeholders.

2.7 Conclusion

The rush to return to normal as soon as possible (i.e., bounce back) following a disaster makes sense intuitively. There is a pragmatic urgency for rebuilding homes and infrastructure to ensure that those displaced by a disaster have shelter and safety and that the community is able to restore the basic functioning of society. For coastal tourism-dependent communities such as Ocracoke and Hatteras, this means getting the tourists back into the community as soon as possible to restart their major economic driver, which can translate to making less sustainable (i.e., more bounce back recovery decisions). At the same, the reoccurrence of these coastal hazards, the worsening effects of climate change, and the emergence of a global pandemic reveal the vulnerability of the tourism industry, which highlights the importance of making more bounce forward decisions to ensure long term sustainability of the tourism-dependent coastal communities. Future coastal hazards are inevitable; however, bounce forward decisions help mitigate the impact of these hazards. This research—through our exploration of the influences of perceived types of social cohesion, levels of place attachment, and degree of future risk on types of recovery decisions—further our understanding of resilience (i.e., bounce forward decision making) in vulnerable tourism-dependent communities.

References

- Adams, H. (2016). Why populations persist: mobility, place attachment and climate change. *Population and Environment*, 37, 429–448. doi:10.1007/s11111-015-0246-3
- Adger, W. N. (2010). Social capital, collective action, and adaptation to climate change. *Der Klimawandel: Sozialwissenschaftliche Perspektiven*, 327-345. doi:10.1007/978-3-531-92258-4_19
- Albright, E. A., & Crow, D. A. (2021). Capacity Building toward Resilience: How Communities Recover, Learn, and Change in the Aftermath of Extreme Events. *Policy Studies Journal*, 49(1), 89-122. doi:10.1111/psj.12364
- Aldridge, B. (2021, April 28). *Help wanted on Outer Banks: Tourists are there — but workers aren't, businesses say*. Retrieved from The News & Observer: <https://www.newsobserver.com/news/state/north-carolina/article250980854.html>
- Ariccio, S., Lema-Blanco, I., & Bonaiuto, M. (2021). Place attachment satisfies psychological needs in the context of environmental risk coping: Experimental evidence of a link between self-determination theory and person-place relationship effects. *Journal of Environmental Psychology*, 78. doi:10.1016/j.jenvp.2021.101716
- Armaş, I. (2006). Earthquake Risk Perception in Bucharest, Romania. *Risk Analysis*, 26(5), 1223-1234. doi:10.1111/j.1539-6924.2006.00810.x
- Armstrong, K. E., & Ritchie, B. W. (2008). The Heart Recovery Marketing Campaign; Destination Recovery After a Major Bushfire in Australia's National Capital. *Journal of Travel & Tourism Marketing*, 23(2-4), 175-189. doi:10.1300/J073v23n02_14
- Baan, P. J., & Klijn, F. (2004). Flood risk perception and implications for flood risk management in the Netherlands. *International Journal of River Basin Management*, 2(2), 113-122. doi:10.1080/15715124.2004.9635226
- Becken, S., & Hughey, K. F. (2013). Linking tourism into emergency management structures to enhance disaster risk reduction. *Tourism Management*, 36, 77-85. doi:10.1016/j.tourman.2012.11.006
- Becken, S., Mahon, R., Rennie, H. G., & Shakeela, A. (2014). The tourism disaster vulnerability framework: an application to tourism in small island destinations. *Natural Hazards*, 71, 955-972. doi:10.1007/s11069-013-0946-x

- Becken, S., Mahon, R., Rennie, H. G., & Shakeela, A. (2014). The tourism disaster vulnerability framework: an application to tourism in small island destinations. *Natural Hazards, 71*, 955–972. doi:10.1007/s11069-013-0946-x
- Becker, G., Aerts, J. C., & Huitema, D. (2014). Influence of flood risk perception and other factors on risk-reducing behaviour: a survey of municipalities along the Rhine. *Environmental Policy Analysis, 7*(1), 16-30. doi:10.1111/jfr3.12025
- Beirman, D. (2010). Crisis, Recovery and Risk Management. In J. Liburd, & D. Edwards, *Understanding the sustainable development of tourism* (pp. 205-224). Woodeaton, Oxford: Goodfellow Publishers Limited.
- Bergstrand, K., & Mayer, B. (2020). “The Community Helped Me:” Community Cohesion and Environmental Concerns in Personal Assessments of Post-Disaster Recovery. *Society & Natural Resources, 33*(3), 386-405. doi:10.1080/08941920.2019.1709002
- Berke, P., & Smith, G. (2009). *Hazard Mitigation, Planning, and Disaster Resiliency: Challenges and Strategic Choices for the 21st Century*. Amsterdam: IOS Press.
- Bernardo, F. (2013). Impact of place attachment on risk perception: Exploring the multidimensionality of risk and the scale of risk. *Estudios de Psicología, 34*, 323–329. doi:10.1174/021093913808349253
- Binder, S. B., Baker, C. K., & Barile, J. P. (2015). Rebuild or Relocate? Resilience and Postdisaster Decision-Making After Hurricane Sandy. *American Journal of Community Psychology, 56*, 180-196. doi: 10.1007/s10464-015-9737-x
- Bird, D. K., Gisladdottir, G., & Dominey-Howes, D. (2010). Volcanic risk and tourism in southern Iceland: Implications for hazard, risk and emergency response education and training. *Journal of Volcanology and Geothermal Research, 189*(1-2), 33-48. doi:10.1016/j.jvolgeores.2009.09.020
- Blackman, D., Kennedy, M., & Ritchie, B. (2011). Knowledge management: the missing link in DMO crisis management? *Current Issues in Tourism, 14*(4), 337-354. doi:10.1080/13683500.2010.489637
- Blaikie, P., Cannon, T., Davis, I., & Wisner, B. (1994). *At Risk: Natural Hazards, People's Vulnerability and Disasters*. London: Routledge. doi:10.4324/9780203974575

- Bollettino, V., Alcayna-Stevens, T., Sharma, M., Dy, P., Pham, P., & Vinck, P. (2020). Public perception of climate change and disaster preparedness: Evidence from the Philippines. *Climate Risk Management, 30*. doi:10.1016/j.crm.2020.100250
- Bollettino, V., Alcayna-Stevens, T., Sharma, M., Dy, P., Pham, P., & Vinck, P. (2020). Public perception of climate change and disaster preparedness: Evidence from the Philippines. *Climate Risk Management, 30*. doi:10.1016/j.crm.2020.100250
- Bonaiuto, M., Alves, S., De Dominicis, S., & Petruccelli, I. (2016). Place attachment and natural hazard risk: Research review and agenda. *Journal of Environmental Psychology, 48*, 33-53. doi:10.1016/j.jenvp.2016.07.007
- Bonaiuto, M., Carrus, G., Martorella, H., & Bonnes, M. (2002). Local identity processes and environmental attitudes in land use changes: The case of natural protected areas. *Journal of Economic Psychology, 23*(5), 631–653. doi:10.1016/S0167-4870(02)00121-6
- Boon, H. J. (2014). Disaster resilience in a flood-impacted rural Australian town. *Natural Hazards, 71*, 683-701. doi:10.1007/s11069-013-0935-0
- Borkowska, M., & Laurence, J. (2021). Coming together or coming apart? Changes in social cohesion during the Covid-19 pandemic in England. *European Societies, 23*, S618–S636. doi:10.1080/14616696.2020.1833067
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research In Psychology, 3*(2), 77-101. doi:10.1191/1478088706qp063oa
- Brenkert-Smith, H., Champ, P. A., & Flores, N. (2012). Trying Not to Get Burned: Understanding Homeowners' Wildfire Risk–Mitigation Behaviors. *Environmental Management, 50*, 1139-1151. doi:10.1007/s00267-012-9949-8
- Brunie, A. (2010). Household Awareness of What to Do in a Disaster: A Social Capital Approach. *International Journal of Mass Emergencies and Disasters, 28*(1), 59–86. doi:10.1177/028072701002800103
- Bubeck, P., Botzen, W. J., & Aerts, J. C. (2012). A review of risk perceptions and other factors that influence flood mitigation behavior. *Risk Analysis, 32*(9), 1481-1495. doi:10.1111/j.1539-6924.2011.01783.x
- Burley, D., Jenkins, P., Laska, S., & Davis, T. (2007). Place Attachment and Environmental Change in Coastal Louisiana. *Organization & Environment, 20*(3), 347-366. doi:10.1177/1086026607305739

- Burnside, R., Miller, D. S., & Rivera, J. D. (2007). The impact of information and risk perception on the hurricane evacuation decision-making of greater New Orleans residents. *Sociological Spectrum*, 27(6), 727-740. doi:10.1080/02732170701534226
- Calgaro, E., Lloyd, K., & Dominey-Howes, D. (2014). From vulnerability to transformation: a framework for assessing the vulnerability and resilience of tourism destinations. *Journal of Sustainable Tourism*, 22(3), 341-360. doi:10.1080/09669582.2013.826229
- Chamlee-Write, E., & Storr, V. H. (2009). “There’s no place like New Orleans”: Sense of Place and Community Recovery in the Ninth Ward after Hurricane Katrina. *Journal of Urban Affairs*, 31(5), 615-634. doi:10.1111/j.1467-9906.2009.00479.x
- Chelleri, L., & Baravikova, A. (2021). Understandings of urban resilience meanings and principles across Europe. *Cities*, 108. doi:10.1016/j.cities.2020.102985
- Chen, N., & Dwyer, L. (2018). Residents’ place satisfaction and place attachment on destination brand-building behaviors: Conceptual and empirical differentiation. *Journal of Travel Research*, 57(8), 1026–1041. doi:10.1177/0047287517729760
- Chen, N., Dwyer, L., & Firth, T. (2015). Factors influencing Chinese students’ behavior in promoting Australia as a destination for Chinese outbound travel. *Journal of Travel & Tourism Marketing*, 32(4), 366–381. doi:10.1080/10548408.2014.897299
- Chen, N., Dwyer, L., & Firth, T. (2018). Residents’ place attachment and word-of-mouth behaviours: A tale of two cities. *Journal of Hospitality and Tourism Management*, 36, 1-11. doi:10.1016/j.jhtm.2018.05.001
- Cioccio, L., & Michael, E. J. (2007). Hazard or Disaster: Tourism Management for the Inevitable in Northeast Victoria. *Tourism Management*, 28(1), 1-11. doi:10.1016/j.tourman.2005.07.015
- Clarke, D., Murphy, C., & Lorenzoni, I. (2018). Place attachment, disruption and transformative adaptation. *Journal of Environmental Psychology*, 55, 81-89. doi:10.1016/j.jenvp.2017.12.006
- Coastal Resilience. (n.d.). *North Carolina*. Retrieved 2022, from Coastal Resilience: <https://coastalresilience.org/project/north-carolina/>
- Codjoe, S. N., Nyamedor, F. H., Sward, J., & Dovie, D. B. (2017). Environmental hazard and migration intentions in a coastal area in Ghana: a case of sea flooding. *Population and Environment*, 39, 128–146. doi:10.1007/s11111-017-0284-0

- Covello, V. T. (2003). Best Practices in Public Health Risk and Crisis Communication. *Journal of Health Communication*, 8(1), 5-8. doi:10.1080/713851971
- Cox, R. S., & Perry, K.-M. E. (2011). Like a Fish Out of Water: Reconsidering Disaster Recovery and the Role of Place and Social Capital in Community Disaster Resilience. *American Journal of Community Psychology*, 48, 395-411. doi:10.1007/s10464-011-9427-0
- Curnock, M. I., Marshall, N. A., Thiault, L., Heron, S. F., Hoey, J., Williams, G., . . . Goldberg, J. (2019). Shifts in tourists' sentiments and climate risk perceptions following mass coral bleaching of the Great Barrier Reef. *Nature Climate Change*, 9, 535-541. doi:10.1038/s41558-019-0504-y
- Cutter, S. L., Barnes, L., Berry, M., Burton, C., Evans, E., Tate, E., & Webb, J. (2008). A place-based model for understanding community resilience to natural disasters. *Global Environmental Change*, 18(4), 598-606. doi:10.1016/j.gloenvcha.2008.07.013
- Dash, N., & Gladwin, H. (2005). Evacuation decision making and behavioral responses: individual and household. *Hurricane Forecast Socioeconomic Workshop*, (pp. 1-23). Pomona, California.
- De Dominicis, S., Fornara, F., Cancellieri, U. G., Twigger-Ross, C., & Bonaiuto, M. (2015). We are at risk, and so what? Place attachment, environmental risk perceptions and preventive coping behaviors. *Journal of Environmental Psychology*, 43, 66-78. doi:10.1016/j.jenvp.2015.05.010
- DeWaard, J., Curtis, K. J., & Fussell, E. (2016). Population recovery in New Orleans after Hurricane Katrina: exploring the potential role of stage migration in migration systems. *Population and Environment*, 37, 449-463. doi:10.1007/s11111-015-0250-7
- Dolan, R., Lins, H. F., & Smith, J. J. (2016). *The Outer Banks of North Carolina*. Reston, VA : U.S. Geological Survey.
- Donovan, K., Suryanto, A., & Utami, P. (2012). Mapping cultural vulnerability in volcanic regions: The practical application of social volcanology at Mt Merapi, Indonesia. *Environmental Hazards*, 303-323.
- Dwyer, L., Chen, N., & Lee, J. (2019). The role of place attachment in tourism research. *Journal of Travel & Tourism Marketing*, 36(5), 645-652. doi:10.1080/10548408.2019.1612824

- EPA. (2021). *Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts*. Washington D.C.: U.S. Environmental Protection Agency.
- EPA. (2023, January 19). *Climate Change in Coastal Communities*. Retrieved from United States Environmental Protection Agency: <https://www.epa.gov/cre/climate-change-coastal-communities#:~:text=The%20effects%20of%20climate%20change,many%20such%20in%20dicators%20of%20change>.
- Espiner, S., & Becken, S. (2014). Tourist towns on the edge: conceptualising vulnerability and resilience in a protected area tourism system. *Journal of Sustainable Tourism*, 22, 646-665. doi:10.1080/09669582.2013.855222
- Fan, C., Jiang, Y., & Mostafavi, A. (2020). Emergent social cohesion for coping with community disruptions in disasters. *Journal of the Royal Society Interface*, 17. doi:10.1098/rsif.2019.0778
- Fan, C., Jiang, Y., & Mostafavi, A. (2020). Emergent social cohesion for coping with community disruptions in disasters. *Journal of the Royal Society Interface*, 7. doi:10.1098/rsif.2019.0778
- Faulkner, L., Brown, K., & Quinn, T. (2018). Analyzing community resilience as an emergent property of dynamic social-ecological systems. *Ecology and Society*, 23(1). doi:10.5751/ES-09784-230124
- Fleming, E., Payne, J., Sweet, W. V., Craghan, M., Haines, J., Hart, J. F., . . . Sutton-Grier, A. (2018). Coastal Effects. In D. R. Reidmiller, C. W. Avery, D. R. Easterling, K. E. Kunkel, K. L. Lewis, T. K. Maycock, & B. C. Stewart, *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* (pp. 322–352). Washington, DC, USA: U.S. Global Change Research Program. doi:10.7930/NCA4.2018.CH8
- Fonseca, X., Lukosch, S., & Brazier, F. (2019). Social cohesion revisited: a new definition and how to characterize it. *Innovation: The European Journal of Social Science*, 32(2), 231-253. doi:10.1080/13511610.2018.1497480
- Forster, J., Schuhmann, P. W., Lake, I. R., & Watkinson, A. R. (2012). The influence of hurricane risk on tourist destination choice in the Caribbean. *Climatic Change*, 114, 745–768. doi:10.1007/s10584-012-0433-5

- Freyer, C., Mackintosh, S., Stanley, M., & Crichton, J. (2012). Qualitative studies using in-depth interviews with older people from multiple language groups: methodological systematic review. *Journal of Advanced Nursing*, 68(1), 22-35. doi:10.1111/j.1365-2648.2011.05719.x
- Giuliani, M. V., Ferrara, F., & Barabotti, S. (2003). One attachment or more? In G. Moser, E. Pol, Y. Bernard, M. Bonnes, J. A. Corraliza, & M. V. Giuliani, *People, places and sustainability: 21st century metropolis* (pp. 111-122). Göttingen: Hogrefe & Huber.
- Glavovic, B., Kelly, M., Kay, R., & Travers, A. (2015). *Climate Change and the Coast: Building Resilient Communities*. London: CRC Press. doi:10.1201/b18053
- Godovykh, M., Pizam, A., & Bahja, F. (2021). Antecedents and outcomes of health risk perceptions in tourism, following the COVID-19 pandemic. *Tourism Review*, 76(4), 737-748. doi:10.1108/TR-06-2020-0257
- Gongora-Svartzman, G., & Ramirez-Marquez, J. E. (2022). Social Cohesion: Mitigating Societal Risk in Case Studies of Digital Media in Hurricanes Harvey, Irma, and Maria. *Risk Analysis*, 42(8), 1686-1703. doi:10.1111/risa.13820
- Green, A., Janmaat, J. G., & Han, C. (2009). *Regimes of Social Cohesion*. London, UK: Centre for Learning and Life Chances in Knowledge Economies and Societies.
- Greer, A., Binder, S. B., Thiel, A., Jamali, M., & Nejat, A. (2020). Place attachment in disaster studies: measurement and the case of the 2013 Moore tornado. *Population and Environment*, 41, 306-329. doi:10.1007/s11111-019-00332-7
- Gretzel, U., Fesenmaier, D. R., Formica, S., & O'Leary, J. (2006). Searching for the Future: Challenges Faced by Destination Marketing Organizations. *Journal of Travel Research*, 45, 116-126. doi:10.1177/0047287506291598
- Grothmann, T., & Reusswig, F. (2006). People at Risk of Flooding: Why Some Residents Take Precautionary Action While Others Do Not. *Natural Hazards*, 38, 101-120. doi:10.1007/s11069-005-8604-6
- Gu, H., & Ryan, C. (2008). Place attachment, identity and community impacts of tourism – The case of a Beijing Hutong. *Tourism Management*, 29(4), 637–647. doi:10.1016/j.tourman.2007.06.006

- Guo, Y., Zhang, J., Zhang, Y., & Zheng, C. (2018). Catalyst or Barrier? The Influence of Place Attachment on Perceived Community Resilience in Tourism Destinations. *Sustainability*, *10*(7). doi:10.3390/su10072347
- Hallak, R., Brown, G., & Lindsay, N. J. (2013). Examining tourism SME owners' place attachment, support for community and business performance: the role of the enlightened self-interest model. *Journal of Sustainable Tourism*, *21*(5), 658-678. doi:10.1080/09669582.2012.709861
- Hao, H., Eulie, D., & Weido, A. (2020). An Integrative Approach to Assessing Property Owner Perceptions and Modeled Risk to Coastal Hazards. *ISPRS International Journal of Geo-Information*, *9*(4). doi:10.3390/ijgi9040275
- Hasan, K., Ismail, A. R., & Islam, F. (2017). Tourist risk perceptions and revisit intention: A critical review of literature. *Cogent Business & Management*, *4*(1). doi:10.1080/23311975.2017.1412874
- Hauer, M. E., Hardy, D. R., Mishra, D. R., & Pipping, J. S. (2019). No landward movement: examining 80 years of population migration and shoreline change in Louisiana. *Population and Environment volume*, 369–387. doi:10.1007/s11111-019-00315-8
- Hausman, A. J., Hanlon, A., & Seals, B. (2007). Social capital as a mediating factor in emergency preparedness and concerns about terrorism. *Journal of Community Psychology*, *35*(8), 1073-1083. doi:10.1002/jcop.20203
- Hawkins, R. L., & Maurer, K. (2010). Bonding, bridging and linking: How social capital operated in New Orleans following Hurricane Katrina. *British Journal of Social Work*, *40*(6), 1777-1793. doi:10.1093/bjsw/bcp087
- Heller, K., Alexander, D. B., Gatz, M., Knight, B. G., & Rose, T. (2005). Social and Personal Factors as Predictors of Earthquake Preparation: The Role of Support Provision, Network Discussion, Negative Affect, Age, and Education. *Journal of Applied Social Psychology*, *35*(2), 399-422. doi:10.1111/j.1559-1816.2005.tb02127.x
- Henderson, K. A. (2006). *Dimensions of Choice: Qualitative Approaches to Parks, Recreation, Tourism, Sport, and Leisure Research*. State College, PA, USA: Venture Publishing.
- Hernández, B., Hidalgo, C., & Ruiz, C. (2020). Theoretical and methodological aspects of research on place attachment. In L. Manzo, & P. Devine-Wright, *Place Attachment:*

- advances in theory, methods and applications* (pp. 95-110). New York, NY: Routledge.
doi:10.4324/9780429274442
- Hosany, S., Prayag, G., Van Der Veen, R., Huang, S., & Deesilatham, S. (2017). Mediating effects of place attachment and satisfaction on the relationship between tourists' emotions and intention to recommend. *Journal of Travel Research, 56*(8), 1079-1093.
doi:10.1177/0047287516678088
- Hosie, P., & Pforr, C. (2009). *Crisis Management in the Tourism Industry*. Farnham, Surrey: Ashgate Publishing Limited.
- Hystad, P. W., & Keller, P. C. (2008). Towards a destination tourism disaster management framework: Long-term lessons from a forest fire disaster. *Tourism Management, 29*(1), 151-162. doi:10.1016/j.tourman.2007.02.017
- Jewett, R. L., Mah, S. M., Howell, N., & Larsen, M. M. (2021). Social Cohesion and Community Resilience During COVID-19 and Pandemics: A Rapid Scoping Review to Inform the United Nations Research Roadmap for COVID-19 Recovery. *International Journal of Health Services, 51*(3), 325-336. doi:10.1177/0020731421997092
- Jimenez, M. E., Hudson, S. V., Lima, D., & Crabtree, B. (2019). Engaging a Community Leader to Enhance Preparation for In-Depth Interviews With Community Members. *Qualitative Health Research, 29*(2), 270-278. doi:10.1177/1049732318792848
- Kapuściński, G., & Richards, B. (2016). News framing effects on destination risk perception. *Tourism Management, 57*, 234-244. doi:10.1016/j.tourman.2016.06.017
- Klein, C. (2013). Social Capital or Social Cohesion: What Matters For Subjective Well-Being? *Social Indicators Research, 110*, 891–911. doi:10.1007/s11205-011-9963-x
- Knollenberg, W., Brune, S., Harrison, J., & Savage, A. E. (2021). Identifying a community capital investment portfolio to sustain a tourism workforce. *Journal of Sustainable Tourism*. doi:10.1080/09669582.2021.1890094
- Koubi, V., Spilker, G., Schaffer, L., & Bernauer, T. (2016). Environmental Stressors and Migration: Evidence from Vietnam. *World Development, 79*, 197-210.
doi:10.1016/j.worlddev.2015.11.016
- Kyle, G., Graefe, A., Manning, R., & Bacon, J. (2004). Effect of Activity Involvement and Place Attachment on Recreationists' Perceptions of Setting Density. *Journal of Leisure Research, 36*(2), 209-231. doi:10.1080/00222216.2004.11950020

- Lalot, F., Abrams, D., Broadwood, J., Hayon, K. D., & Platts-Dunn, I. (2022). The social cohesion investment: Communities that invested in integration programmes are showing greater social cohesion in the midst of the COVID-19 pandemic. *Journal of Community & Applied Social Psychology*, 32(3), 536-554. doi:10.1002/casp.2522
- Larsen, C. A. (2013). *The Rise and Fall of Social Cohesion; The Construction and Deconstruction of Social Trust in the US, UK, Sweden and Denmark*. Aalborg : Oxford University Press.
- Larsen, S., Øgaard, T., & Brun, W. (2011). Backpackers and mainstreamers: Realities and Myths. *Annals of Tourism Research*, 38(2), 690-707. doi:10.1016/j.annals.2011.01.003
- Lee, C., Bergin-Seers, S., Galloway, G., O'Mahony, B., & McMurray, A. (2008). *Seasonality in the Tourism Industry*. Gold Coast, Queensland: CRC.
- Lee, J., & Kyle, G. (2014). Segmenting Festival Visitors Using Psychological Commitment. *Journal of Travel Research*, 53(3), 656-669. doi:10.1177/0047287513513168
- Lee, J., Kyle, G., & Scott, D. (2012). The mediating effect of place attachment on the relationship between festival satisfaction and loyalty to the festival hosting destination. *Journal of Travel Research*, 51(6), 754-767. doi:10.1177/0047287512437859
- Lew, A. A. (2014). Scale, change and resilience in community tourism planning. *Tourism Geographies*, 16(1), 14-22.
- Lo, A. Y. (2013). The role of social norms in climate adaptation: Mediating risk perception and flood insurance purchase. *Global Environmental Change*, 1249-1257.
- Low, S. M., & Altman, I. (1992). Place Attachment. In I. Altman, & S. M. Low, *Place Attachment. Human Behavior and Environment* (pp. 1-12). Boston, MA: Springer.
- Ludin, S. M., Rohaizat, M., & Arbon, P. (2019). The association between social cohesion and community disaster resilience: A cross-sectional study. *Health and Social Care*, 27(3), 621-631. doi:10.1111/hsc.12674
- Mannarini, T., Rizzo, M., Brodsky, A., Buckingham, S., Zhao, J., Rochira, A., & Fedi, A. (2022). The potential of psychological connectedness: Mitigating the impacts of COVID-19 through sense of community and community resilience. *Journal of Community Psychology*, 50(5), 2273-2289. doi:10.1002/jcop.22775
- Manzo, L. C. (2005). For better or worse: Exploring multiple dimensions of place meaning. *Journal of Environmental Psychology*, 25(1), 67-86. doi:10.1016/j.jenvp.2005.01.002

- Martin, W. E., Martin, I. M., & Brian, K. (2009). The role of risk perceptions in the risk mitigation process: The case of wildfire in high risk communities. *Journal of Environmental Management*, 91(2), 489-498. doi:10.1016/j.jenvman.2009.09.007
- Merriam, S. B. (2015). *Qualitative research: a guide to design and implementation*. Jossey-Bass.
- Meyer, M. A. (2018). Social Capital in Disaster Research. *Handbook of Disaster Research*, 263–286. doi:10.1007/978-3-319-63254-4_14
- Miceli, R., Sotgiu, I., & Settanni, M. (2008). Disaster preparedness and perception of flood risk: A study in an alpine valley in Italy. *Journal of Environmental Psychology*, 28(2), 164-173. doi:10.1016/j.jenvp.2007.10.006
- Miller, D. S. (2008). Disaster tourism and disaster landscape attractions after Hurricane Katrina: An auto-ethnographic journey. *International Journal of Culture, Tourism and Hospitality Research*, 2(2), 115-131. doi:10.1108/17506180810880692
- Miller, M. L., & Hadley, N. P. (2005). Tourism and Coastal Development. In M. L. Schwartz, *Encyclopedia of Coastal Science. Encyclopedia of Earth Science Series*. (pp. 1002-1009). Dordrecht: Springer.
- Morrow-Jones, H. A., & Morrow-Jones, C. R. (1991). Mobility due to natural disaster: theoretical considerations and preliminary analyses. *Disasters*, 15(2), 126-132. doi:10.1111/j.1467-7717.1991.tb00441.x
- Muñoz-Erickson, T. A., Meerow, S., Hobbins, R., Cook, E., Iwaniec, D. M., Berbés-Blázquez, M., . . . Robles-Morua, A. (2021). Beyond bouncing back? Comparing and contesting urban resilience frames in US and Latin American contexts. *Landscape and Urban Planning*, 214. doi:10.1016/j.landurbplan.2021.104173
- Myeong, S., & Seo, H. (2016). Which Type of Social Capital Matters for Building Trust in Government? Looking for a New Type of Social Capital in the Governance Era. *Sustainability*, 8(4). doi:10.3390/su8040322
- National Disaster Recovery Framework. (2016). *National Disaster Recovery Framework*. Washington D.C.: Homeland Security. Retrieved from https://www.fema.gov/sites/default/files/2020-06/national_disaster_recovery_framework_2nd.pdf
- National Oceanic and Atmospheric Administration. (n.d.). *Sea Level Rise*. Retrieved 2022, from Sea Level Rise Viewer: <https://coast.noaa.gov/slr/#/layer/slr/0/->

8428112.708386296/4171866.7117870483/9/satellite/none/0.8/2050/interHigh/midAccretion

- NC Coast Host. (2022). *Membership Information*. Retrieved from North Carolina Coast Host: <https://www.coasthost-nc.com/membership-information-2/>
- Neuburger, L., & Egger, R. (2021). Travel risk perception and travel behaviour during the COVID-19 pandemic 2020: a case study of the DACH region. *Current Issues in Tourism*, 24, 1003-1016. doi:10.1080/13683500.2020.1803807
- Ng, S. L. (2022). Effects of Risk Perception on Disaster Preparedness Toward Typhoons: An Application of the Extended Theory of Planned Behavior. *International Journal of Disaster Risk Science*, 13, 100–113. doi:10.1007/s13753-022-00398-2
- Ng, S. L. (2023). Effects of Risk Perception on Disaster Preparedness Toward Typhoons: An Application of the Extended Theory of Planned Behavior. *International Journal of Disaster Risk Science*, 13, 100-113. doi:10.1007/s13753-022-00398-2
- NOAA. (2019, September 22). *The Power of Preparedness*. Retrieved from Office of Response and Restoration: <https://blog.response.restoration.noaa.gov/power-preparedness>
- North Carolina Department of Transportation. (n.d.). *Ferry Schedule*. Retrieved from North Carolina Department of Transportation: <https://www.ncdot.gov/travel-maps/ferry-tickets-services/routes/Pages/default.aspx>
- Odiase, O., Wilkinson, S., & Neef, A. (2020). South African community in Auckland: Natural hazards and the resilience to a potential disaster event. *Disaster Prevention and Management*, 29(3), 390-404. doi:10.1108/DPM-02-2019-0052
- OECD. (2020). *Chapter 3. Rethinking tourism success for sustainable growth*. Retrieved from OECD iLibrary: <https://www.oecd-ilibrary.org/sites/82b46508-en/index.html?itemId=/content/component/82b46508-en>
- Orchiston, C. (2013). Tourism business preparedness, resilience and disaster planning in a region of high seismic risk: the case of the Southern Alps, New Zealand. *Current Issues in Tourism*, 16(5), 477-797. doi:10.1080/13683500.2012.741115
- Orchiston, C., & Higham, J. E. (2016). Knowledge management and tourism recovery (de)marketing: the Christchurch earthquakes 2010–2011. *Current Issues in Tourism*, 19(1), 64-84. doi:10.1080/13683500.2014.990424

- Outer Banks Voice . (2022, October 4). *Two years later, an ongoing legal battle over Dare County's COVID closure*. Retrieved from The Outer Banks Voice :
<https://www.outerbanksvoice.com/2022/10/04/two-years-later-an-ongoing-legal-battle-over-dare-countys-covid-closure/>
- Pandy, W. R., & Rogerson, C. M. (2018). Tourism and Climate Change: Stakeholder Perceptions of At Risk Tourism Segments in South Africa. *EuroEconomica*, 37(2).
- Pandy, W. R., & Rogerson, C. M. (2021a). Coastal Tourism and Climate Change: Risk Perceptions of Tourism Stakeholder in South Africa's Garden Route. *Geo Journal of Tourism and Geosites*, 37(3), 730-739. doi:10.30892/gtg.37301-703
- Pandy, W. R., & Rogerson, C. M. (2021b). Tourism and climate change in South Africa: An exploratory analysis of stakeholder perceptions of at risk tourism marget segments. *Euroeconomica*, 37, 98-112. doi:10.30892/gtg.35224-671
- Paraskevas, A., Altinay, L., McLean, J., & Cooper, C. (2013). Crisis Knowledge in Tourism: Types, Flows and Governance. *Annals of Tourism Research*, 41, 130-152.
doi:10.1016/j.annals.2012.12.005
- Patel, R. B., & Gleason, K. M. (2018). The association between social cohesion and community resilience in two urban slums of Port au Prince, Haiti. *International Journal of Disaster Risk Reduction*, 27, 161-167. doi:10.1016/j.ijdr.2017.10.003
- Paton, D., McClure, J., & Bürgelt, P. T. (2006). Natural hazard resilience: The role of individual and household preparedness. In D. Paton, & D. M. Johnston, *Disaster resilience: An integrated approach* (pp. 105-127). Springfield, IL: Charles C Thomas Publisher.
- Patterson, O., Weil, F., & Patel, K. (2010). The Role of Community in Disaster Response: Conceptual Models. *Population Research and Policy Review*, 29, 127-141.
doi:10.1007/s11113-009-9133-x
- Patwardhan, V., Ribeiro, M. A., Payini, V., Woosnam , K. M., Mallya, J., & Gopalakrishnan, P. (2020). Visitors' place attachment and destination loyalty: Examining the roles of emotional solidarity and perceived safety. *Journal of Travel Research*, 59(1), 3-21.
doi:10.1177/0047287518824157
- Phillimore, J., & Goodson, L. (2000). *Qualitative Research in Tourism: Ontologies, Epistemologies and Methodologies*. New York, NY: Routledge.

- Pretty, G. H., Chipuer, H. M., & Bramston, P. (2003). Sense of place amongst adolescents and adults in two rural Australian towns: The discriminating features of place attachment, sense of community and place dependence in relation to place identity. *Journal of Environmental Psychology, 23*(3), 273-287. doi:10.1016/S0272-4944(02)00079-8
- Proshansky, H. M. (1978). The City and Self-Identity. *Environment and Behavior, 10*(2), 147–169. doi:10.1177/0013916578102002
- Qu, Y., Xu, F., & Lyu, X. (2019). Motivational place attachment dimensions and the pro-environmental behaviour intention of mass tourists: A moderated mediation model. *Current Issues in Tourism, 22*(2), 197–217. doi:10.1080/13683500.2017.1399988
- Reser, J. P., Bradley, G. L., Gellon, A. I., Ellul, M. C., & Callaghan, R. (2012). *Public Risk Perceptions, Understandings and Responses to Climate Change in*. Griffith University: National Climate Change Adaptation Research Facility Australia and Great Britain.
- Ritchie, B. (2008). Tourism Disaster Planning and Management: From Response and Recovery to Reduction and Readiness. *Current Issues in Tourism, 11*(4), 315-348. doi:10.1080/13683500802140372
- Ritchie, B. W. (2004). Chaos, crises and disasters: a strategic approach to crisis management in the tourism industry. *Tourism Management, 25*(6), 669-683. doi:10.1016/j.tourman.2003.09.004
- Ritchie, B. W., & Jiang, Y. (2019). A review of research on tourism risk, crisis and disaster management: Launching the annals of tourism research curated collection on tourism risk, crisis and disaster management. *Annals of Tourism Research, 79*. doi:10.1016/j.annals.2019.102812
- Ritchie, B. W., Bentley, G., Koruth, T., & Wang, J. (2011). Proactive Crisis Planning: Lessons for the Accommodation Industry. *Scandinavian Journal of Hospitality and Tourism, 11*(3), 367-386. doi:10.1080/15022250.2011.600591
- Roderiguez, H., Diaz, W., Santos, J. M., & Aguirre, B. E. (2007). Communicating Risk and Uncertainty: Science, Technology, and Disasters at the Crossroads. In H. Rodríguez, E. L. Quarantelli, & R. R. Dynes, *Handbook of Disaster Research. Handbooks of Sociology and Social Research* (pp. 476–488). New York, NY: Springer.

- Rosselló, J., Becken, S., & Santana-Gallego, M. (2020). The effects of natural disasters on international tourism : a global analysis. *Tourism Management*, 79.
doi:10.1016/j.tourman.2020.104080
- Ruin, I., Gaillard, J.-C., & Lutoff, C. (2007). How to get there? Assessing motorists' flash flood risk perception on daily itineraries. *Environmental Hazards*, 7(3), 235-244.
doi:0.1016/j.envhaz.2007.07.005
- Scannell, L., & Gifford, R. (2010). Defining place attachment: A tripartite organizing framework. *Journal of Environmental Psychology*, 30(1), 1-10.
doi:10.1016/j.jenvp.2009.09.006
- Schiefer, D., & van der Noll, J. (2017). The Essentials of Social Cohesion: A Literature Review. *Social Indicators Research*, 132, 579–603. doi:10.1007/s11205-016-1314-5
- Schultz, W. (2011). Potential Vulnerabilities of Neuronal Reward, Risk, and Decision Mechanisms to Addictive Drugs. *Neuron*, 69(4), 603-617.
doi:10.1016/j.neuron.2011.02.014
- Scott, N., Laws, E., & Prideaux, B. (2008). Tourism Crises and Marketing Recovery Strategies. *Journal of Travel & Tourism Marketing*, 23(2-4), 1-13. doi:10.1300/J073v23n02_01
- Sharifpour, M., Walters, G., Ritchie, B., & Winter, C. (2014). Investigating the Role of Prior Knowledge in Tourist Decision Making. *Journal of Travel Research*, 53(3), 307-322.
doi:10.1177/0047287513500390
- Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, 22, 63–75. doi:10.3233/EFI-2004-22201
- Siegrist, M., & Árvai, J. (2020). Risk Perception: Reflections on 40 Years of Research. *Risk Analysis*, 40(1), 2191-2206. doi:10.1111/risa.13599
- Song, Z., & Soopramanien, D. (2019). Types of place attachment and pro-environmental behaviors of urban residents in Beijing. *Cities*, 84, 112–120.
doi:10.1016/j.cities.2018.07.012
- Statista. (2023, January 13). *Number of international tourist arrivals worldwide from 2005 to 2021, by region*. Retrieved from Statista:
<https://www.statista.com/statistics/186743/international-tourist-arrivals-worldwide-by-region-since-2010/>

- Stedman, R. C. (2002). Toward a Social Psychology of Place: Predicting Behavior from Place-Based Cognitions, Attitude, and Identity. *Environment and Behavior*, 34(5), 561–581. doi:10.1177/0013916502034005001
- Swapan, M. S., & Sadeque, S. (2021). Place attachment in natural hazard-prone areas and decision to relocate: Research review and agenda for developing countries. *International Journal of Disaster Risk Reduction*, 52. doi:10.1016/j.ijdr.2020.101937
- The Outer Banks Visitors Bureau. (n.d.). *Outer Banks Islands*. Retrieved 2022, from The Outer Banks of North Carolina: <https://www.outerbanks.org/plan-your-trip/the-islands/>
- Tonge, J., Ryan, M. M., Moore, S. A., & Beckley, L. E. (2015). The effect of place attachment on pro-environment behavioral intentions of visitors to coastal natural area tourist destinations. *Journal of Travel Research*, 54(6), 730–743. doi:10.1177/0047287514533010
- Townshend, I., Awosoga, O., Kulig, J., & Fan, H. (2015). Social cohesion and resilience across communities that have experienced a disaster. *Natural Hazards*, 76, 913-938. doi:10.1007/s11069-014-1526-4
- Tuan, Y. (1974). *Topophilia: A study of environmental perception, attitudes, and values*. Englewood Cliffs, N.J.: Prentice Hall.
- Twigg, J. (2004). *Disaster risk reduction: mitigation and preparedness in development and emergency programming*. London: Humanitarian Practice Network at ODI.
- Twigg, J. (2013). Risk Perception, Public Education and Disaster Risk Management. *Cities at Risk*, 33, 171-182. doi:10.1007/978-94-007-6184-1_10
- U.S. Travel Association. (2020, March). *U.S. TRAVEL AND TOURISM OVERVIEW (2019)*. Retrieved from U.S. Travel Association: https://www.ustravel.org/system/files/media_root/document/Research_Fact-Sheet_US-Travel-and-Tourism-Overview.pdf
- UNCTAD. (2021, August 3). *We urgently need to kickstart tourism's recovery but COVID-19 crisis offers an opportunity to rethink it*. Retrieved from United Nations Conference on Trade and Development: <https://unctad.org/news/we-urgently-need-kickstart-tourisms-recovery-covid-19-crisis-offers-opportunity-rethink-it>

- UNISDR. (2013). *Global assessment report on disaster risk reduction*. Retrieved from United Nations Office for Disaster Risk Reduction: <https://www.undrr.org/publication/global-assessment-report-disaster-risk-reduction-2013>
- UNISDR. (2017). *National Disaster Risk Assessment*. UNISDR. Retrieved from https://www.unisdr.org/files/globalplatform/591f213cf2fbe52828_wordsintoactionguideline.nationaldi.pdf
- United States Census Bureau. (2020). *Explore Census Data*. Retrieved from United States Census Bureau: <https://data.census.gov/cedsci/>
- UNWTO. (2023). *Sustainable Development*. Retrieved from World Tourism Organization: <https://www.unwto.org/sustainable-development>
- Verhoeven, N. (2015). *Doing research: the hows and whys of applied research* (4th Edition ed.). Amsterdam: Boom Lemma Uitgevers.
- Vorkinn, M., & Riese, H. (2001). Environmental concern in a local context: the significance of place attachment. *Environment and Behavior*, 33, 249-263.
- Wachinger, G., Renn, O., Begg, C., & Kuhlicke, C. (2013). The Risk Perception Paradox—Implications for Governance and Communication of Natural Hazards. *Risk Analysis*, 33(6), 1049-1065. doi:10.1111/j.1539-6924.2012.01942.x
- Walters, G., & Mair, J. (2012). The Effectiveness of Post-Disaster Recovery Marketing Messages—The Case of the 2009 Australian Bushfires. *Journal of Travel & Tourism Marketing*, 29(1), 87-103. doi:10.1080/10548408.2012.638565
- Walters, G., Mair, J., & Lim, J. (2016). Sensationalist media reporting of disastrous events: Implications for tourism. *Journal of Hospitality and Tourism Management*, 28, 3-10. doi:10.1016/j.jhtm.2016.04.008
- Wang, J., & Ritchie, B. W. (2012). Understanding accommodation managers' crisis planning intention: An application of the theory of planned behaviour. *Tourism Management*, 33(5), 1057-1067. doi:10.1016/j.tourman.2011.12.006
- Weijts-Perrée, M., van den Berg, P., Arentze, T., & Kemperman, A. (2017). Social networks, social satisfaction and place attachment in the neighborhood. *Region*, 4(3), 133-151. doi:10.18335/region.v4i3.194

- Williams, D. R., Patterson, M. E., Roggenbuck, J. W., & Watson, A. E. (1992). Beyond the commodity metaphor: Examining emotional and symbolic attachment to place. *Leisure Sciences, 14*(1), 29-46. doi:10.1080/01490409209513155
- Williams, A. M., & Baláž, V. (2015). Tourism Risk and Uncertainty: Theoretical Reflections. *Journal of Travel Research, 54*(3), 271–287. doi:10.1177/0047287514523334
- Williams, D. R., & Vaske, J. J. (2003). The Measurement of Place Attachment: Validity and Generalizability of a Psychometric Approach. *Forest Science, 49*(6), 830-840.
- Wolff, K., & Larsen, S. (2014). Can terrorism make us feel safer? Risk perceptions and worries before and after the July 22nd attacks. *Annals of Tourism Research, 44*, 200-209. doi:10.1016/j.annals.2013.10.003
- Wolff, K., Larsen, S., & Øgaard, T. (2019). How to define and measure risk perceptions. *Annals of Tourism Research, 79*. doi:10.1016/j.annals.2019.102759
- World Resources Institute. (2021, May 25). *Building a Sustainable Coastal and Marine Tourism Economy*. Retrieved from World Resources Institute: <https://www.wri.org/events/2021/5/building-sustainable-coastal-and-marine-tourism-economy>
- World Travel & Tourism Council. (2021). *Travel and Tourism as a Catalyst for Social Impact*. World Travel & Tourism Council.
- WRAL. (2019, September 6). *Dispatches from Dorian coverage: Ocracoke flooded, Hatteras battered, but other coastal areas returning to normal*. Retrieved from WRAL NEWS: <https://www.wral.com/hurricane-dorian-flooded-ocracoke-battered-hatteras-but-other-coastal-areas-returning-to-normal/18613042/>
- Yang, E. C., Sharif, S. P., & Khoo-Lattimore, C. (2015). Tourists' risk perception of risky destinations: The case of Sabah's eastern coast. *Tourism and Hospitality Research, 15*(3), 206–221. doi:10.1177/146735841555760
- Yong, A. G., Lemyre, L., Pinsent, C., & Krewki, D. (2017). Risk Perception and Disaster Preparedness in Immigrants and Canadian-Born Adults: Analysis of a National Survey on Similarities and Differences. *Risk Analysis, 37*(12), 2321-2333. doi:10.1111/risa.12797
- Yuksel, A., Yuksel, F., & Bilim, Y. (2010). Destination attachment: Effects on customer satisfaction and cognitive, affective and conative loyalty. *Tourism Management, 31*(2), 274-284. doi:10.1016/j.tourman.2009.03.007

CHAPTER 3: EXTENSION REPORT

Coastal Resilience: Bouncing forward to a sustainable future in the OBX

3.1 Why Bounce Forward Resilience in Tourism-Dependent Communities in the OBX?

The North Carolina Outer Banks (OBX) (Figure 3.1), has long been a popular tourist destination and continues to grow. The barrier islands attract visitors with its beaches, lighthouses, state parks, and shipwreck diving sites, and people come to enjoy the remoteness and ‘sun and sand’ activities¹. Cape Hatteras National Seashore, in the south of the OBX, draws tourism for the remote communities Ocracoke (Hyde County) and Hatteras (Dare County) both of which have economies driven by tourism. Coastal hazards (e.g., storms, flooding, sea-level rise, and erosion), however, are threatening the sun filled beach holidays and therefore, the tourism industry in Ocracoke and Hatteras and the whole of the OBX.



Figure 3.1: North Carolina Inner and Outer Banks (designed by K. Bitsura-Meszáros, 2016)

OBX communities, such as the villages of Ocracoke and Hatteras, are particularly vulnerable to coastal hazards due to their geographic location in the Atlantic Ocean. These communities regularly contend with hurricanes, flooding, and high winds. In fact, storms have become part of life for multi-generational residents, newcomers, non-resident property owners, and tourists. For example, Hurricane Dorian (September 2019) severely impacted the communities of Ocracoke and Hatteras, particularly in Ocracoke where the storm caused a rapid 7-8 feet sound-side flooding in Ocracoke with winds reaching over 90 miles per hour. Most of the island's residents chose not to evacuate as they did not anticipate major impacts and were trapped on the island as the floodwater roseⁱⁱ. Although the damages were not as severe on Hatteras, residents still had to deal with flooding, high winds, power outages, and transportation disruptions (closure of Highway 12). Besides hurricanes, winter storms (Nor'easters) and sea level rise are increasing the prevalence of nuisance flooding (e.g., sunny day or King Tide flooding), and climate change is predicted to cause more frequent and severe storms, leading to more recurrent flooding eventsⁱⁱⁱ.

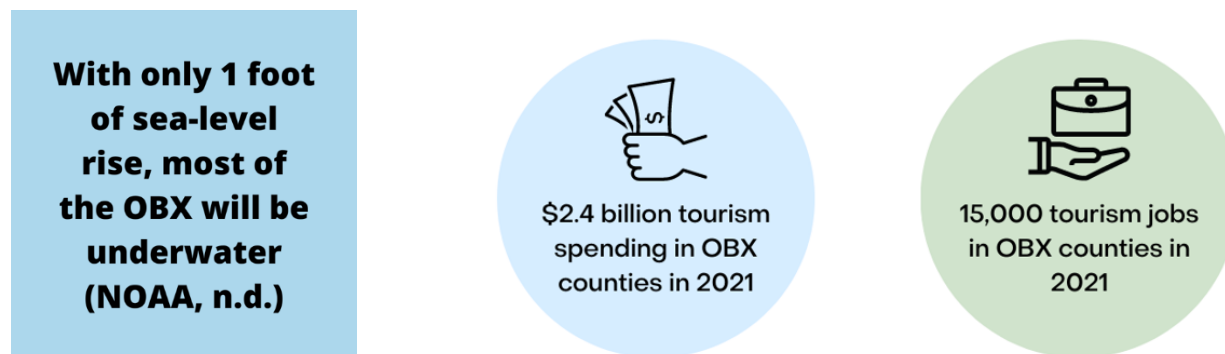


Figure 3.2: Sea level rise in the OBX

Figure 3.3: Tourism spending and tourism jobs in the OBX (Visit North Carolina, 2022)

Coastal hazards threaten the tourism industry in the OBX by disrupting transportation flows (e.g., road closure, canceled ferry services), changing the visual appeal of the natural areas (e.g., eroded beaches), and destroying infrastructure (e.g., bridges, lodging, restaurants)ⁱ (Figure 3.3). A disruption in the tourism industry is problematic, as OBX communities depend on tourism as their main economic driver (Figure 3.2). Small-scale tourism businesses are keystones in these communities, serving as the primary employers and revenue generators. Therefore, tourism industry recovery decisions underlie resilience for all community members.



Figure 3.4: Superintendent David Hallac standing on a damaged stretch of State Highway 12 on Ocracoke Island (Credit: NPS)

Resilience has traditionally been identified as the ability to *bounce back* from a catastrophic event^{iv v}, which for disaster-affected communities, is interpreted as recovery and a return to normal functioning. However, we argue that resilience requires more than *bouncing back*, it requires *bouncing forward*; in other words, *bouncing forward* means being able to prepare for anticipated disasters, adapt to changing conditions, and withstand and recover rapidly from disruptions^{vi}. Actively planning and preparing for upcoming coastal hazards will help minimize damage of personal property, businesses and natural resources and support efficient recovery^{vii}. Therefore, *bouncing forward* will help community members and tourism business owners ensure economic stability that is needed for a more sustainable future.

Fostering and promoting *bounce forward* resilience in coastal tourism-dependent communities requires understanding the factors that motivate communities and its members to overcome natural disasters and how these factors are influencing their recovery decisions^{viii ix}. Previous research indicates social cohesion, place attachment, and risk perceptions (Figure 3.4) play an important role in the recovery decision making process^{x xi}. Therefore, we examined how social cohesion, place attachment, and risk perceptions are impacting the *bounce back versus bounce forward* recovery decisions of tourism stakeholders in the OBX following Hurricane Dorian.




CONCEPT	DEFINITION	RELATION TO RESILIENT COMMUNITIES
 Social Cohesion	The strength of relationships and sense of solidarity among individuals in a community and across communities ^{xi}	Cohesive communities allow individuals to receive warnings, undertake disaster preparation, locate shelter and supplies, and obtain immediate aid and initial recovery assistance ^{xiv}
 Place Attachment	The emotional bonds between an individual and a geographical location, or how strongly someone is connected to a place ^{xii}	Place attachment increases peoples' willingness to act and demand a greater say in place management and recovery initiatives ^{xv}
 Risk Perception	A subjective judgment of the severity of a risk and possible negative consequences this risk could bring with it ^{xiii}	People with heightened risk perceptions tend to be more willing to carry out proactive behaviors (e.g. applying flood mitigation measures) ^{xvi}

Figure 3.5: Social cohesion, place attachment, and risk perception defined and why it is important for resilient communities

3.2 Overview

To better understand how social cohesion, place attachment, and risk perceptions influenced recovery decisions in Ocracoke and Hatteras we answered the following questions by interviewing tourism stakeholders:

1. What recovery decisions did tourism stakeholders in Ocracoke and Hatteras make after Hurricane Dorian?
2. What are the links between perceptions of social cohesion and recovery decisions?
3. What are the links between perceptions of place attachment and recovery decisions?
4. What are the links between risk perceptions and recovery decisions?
5. What are the differences in recovery decisions made by tourism stakeholders in the two communities (i.e., Ocracoke and Hatteras)?

The answer to these questions revealed recommendations for tourism stakeholders in the OBX to sustain the tourism industry while dealing with coastal hazards.

3.3 Methods

We interviewed 26 tourism stakeholders in the tourism-dependent communities of Ocracoke (n=12) and Hatteras (n=14) about their Hurricane Dorian recovery decisions. These stakeholders represented (tourism) business owners (n=19), non-resident property owners (n=5), and workforce members (n=2). The participants were asked about their length of residency, social cohesion in the community, their attachment to the place, and their risk perceptions. After interviews were coded and thematically analyzed, participants were categorized as: (a) newcomer (< 2 generations), multiple generations (2-3 generations), or islander (3+ generations) length of residence; (b) *within* or *across* community cohesion; (c) *baseline* or *elevated* attachment to the place; and (d) *not high* or *high* levels of risk perceptions (Table 3.1). Additionally, the stakeholders' *bounce back* and *bounce forward* were coded and we examined whether these decisions were personal (e.g., raising house) or focused towards their business (e.g., keep business open longer) or community (e.g., help neighbors clean up). The research team participated in debriefing sessions together to discuss the themes and synthesize the results.

Table 3.12: Sample

	Hatteras	Ocracoke
Total participants	12	14
Stakeholder type		
Business owner	11	8
Workforce member	1	1
Non-resident property owner	0	5
Length of residency		
Newcomer (< 2 generations)	4	10
Multiple generations (2-3 generations)	2	1
Islanders (3+ generations)	6	3
Social cohesion		
Across communities	9	1
Within community	3	13
Place Attachment		
Elevated	9	6
Baseline	3	8
Risk Perceptions		
High	12	7
Not High	0	7

3.4 Tourism Stakeholder Recovery Decisions

The personal and business *bounce back* decisions that our participants made were often led by a need to “return to normal” (e.g., wanting to recover quickly, to open their business back up as soon as possible, and to make their house livable again). Specific *bounce back* recovery decisions, such as rebuilding and keeping businesses open, were often made quickly and with the idea that to just move forward and not dwell in the past. The different stakeholder groups appeared to be very supportive of each other in the immediate recovery as they were trying to help each other where possible (e.g., non-resident property owner shared their houses with full time residents whose home was destroyed), as were residents of Hatteras in supporting Ocracoke residents who were taken by surprise by the extensiveness of storm damage (e.g., residents from Hatteras going over to Ocracoke with tractors and trailers to help clean up) (Figure 3.5).




Recovery Decisions: Bounce Back		
DECISION TYPE	STAKEHOLDER QUOTE	INTERPRETATION AND CONTEXT
 Business	<p><i>The biggest thing is just being open.. I don't know how many people would actually open under those circumstances. That's the biggest thing is really that we are here for the people and that's what my Dad instilled in me. And that's what we're here for. And that's what we did. I mean, so really, that's my main thing is we just needed to be open for folks (Ocracoke Business Owner).</i></p>	<p>Business owners felt the need to recover quickly in order to serve their community.</p>
 Community	<p><i>What we did was just offer our home to anyone that needed a home during that because there were so many people that didn't have a place to stay so that's all and we thought the best thing we could do is stay out of the way (Ocracoke Non-Resident Property Owner).</i></p>	<p>Non-resident property owners found ways to support the community by offering their houses, helping to clean up, and bringing food.</p>
 Personal	<p><i>Well.. you know, of course, we all worry about what's to come. Hopefully, there won't be another one, but in all likelihood, there will be so sure there's trepidation. But, you know, we set ourselves up with proper insurance and just move forward. I don't think there's much to do about that (Ocracoke Business Owner).</i></p>	<p>Some participants did not want to dwell too long on the impacts of the hurricane and had a 'just move forward' mindset, back to business as usual.</p>

Figure 3.6: Bounce back decision making types with accompanying quote

Bounce forward decisions made by our participants included actions that would protect themselves (i.e., evacuate) and their personal property (e.g., take vehicles out of potential flooding zone), decrease potential damage (e.g., protecting house with sandbags, boarding windows) and promote an efficient recovery (e.g., get insurance). Pre-hurricane decisions are also seen in business decision making in terms of protecting tourists through evacuation and securing inventory. Participants additionally made *bounce forward* decisions thinking about the long-term sustainability of their business (e.g., take business online, develop an adaptive business plan), home (e.g., raise house), and community (e.g., lobby to keep community closed for tourists longer) (Figure 3.6).




Recovery Decisions: Bounce Forward		
DECISION TYPE	STAKEHOLDER QUOTE	INTERPRETATION AND CONTEXT
 Business	<p><i>I did online sales through social media. And, you know, spent an extra week away because it. There was no power on the island, no internet. Well, there was power, but no internet and where I was, I would make sales and so I adapted by using the Internet to keep my business, kind of going... enough cash flow that I could stay open (Hatteras Business Owner).</i></p>	<p>With the realization that coastal hazards are going to disrupt business more often in the future, some business owners are developing business plans that are able to be sustainable in the changing weather conditions.</p>
 Community	<p><i>So we begged them to not open, and this is even after Dorian, and I mean I flat out called everybody I could and told them the same thing. I said, 'Look, you've got to give us another 24- 48 hours. You've got to give us another 48 hours, please.' You know, stop traffic at the south end of Frisco and have them turn around. And they did it for one day (Hatteras Business Owner).</i></p>	<p>The community felt like they were not yet ready to receive tourists; therefore, several of the community members asked the county to stay closed to tourists longer.</p>
 Personal	<p><i>But then what we're facing is now we know the level, the House is not sustainable and so we're on the list to have it raised 10 feet instead of just three feet. The house was fixed from the damage from Dorian, but we're waiting to have it elevated now and it's taking a long time to get that process done (Ocracoke Non-Resident Property Owner).</i></p>	<p>After the hurricane, participants in Ocracoke talked about raising their houses so that they would not get flooded again in the next hurricane.</p>

Figure 3.7: Bounce forward decision making types with accompanying quote

3.5 Key Findings

This study examined social cohesion, place attachment, and risk perceptions to understand what influences tourism stakeholders to make *bounce forward* recovery decision making. We uncovered the following patterns (Figure 3.7):

1. Participants that showed high levels of cohesion across different communities in the OBX tended to make more *bounce forward* decisions than participants with only cohesion within their own community.
2. Participants with high levels of risk perceptions tended to make more *bounce forward* decisions than participants with low levels of risk perceptions.
3. Place attachment did not have a strong impact on the recovery decisions as our participants all had a comparable baseline level of place attachment.
4. Participants with prior hurricane experiences tended to make more *bounce forward* decisions than participants without or with minimum prior hurricane experience.

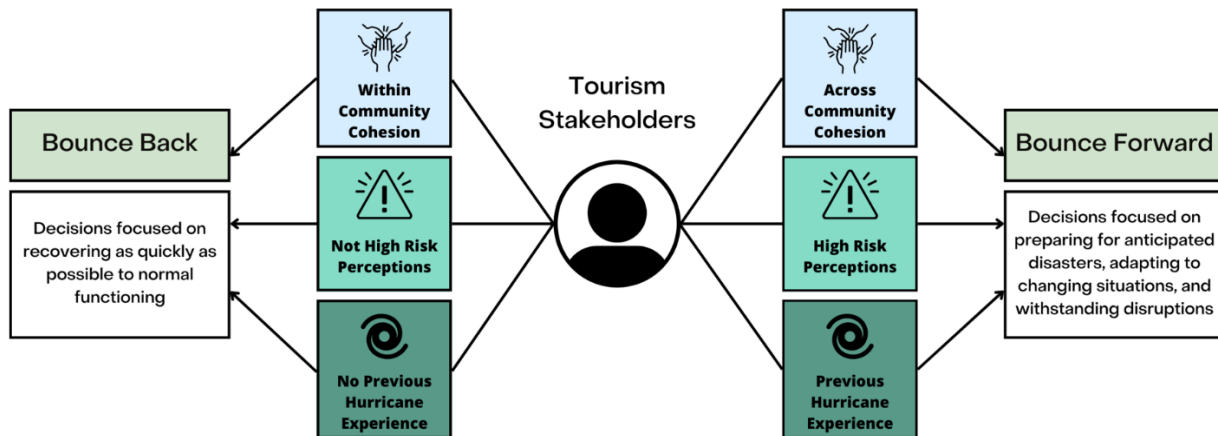


Figure 3.8: Tourism stakeholder recovery decision making process

3.6 Advancing Bounce Forward Resilience in the Outer Banks

We conducted this study to better understand recovery decisions made by tourism stakeholders in the OBX and how *bounce forward* resilience can be supported in these communities in dealing with coastal hazards. Encouraging more *bounce forward* decision making by OBX tourism stakeholders will help the communities like Ocracoke and Hatteras build a more sustainable future given the reoccurring coastal hazards. To support bounce forward decision making in the tourism industry, it is recommended that tourism stakeholders work together to:

1. Establish and foster connections with all tourism stakeholders *within* communities in the Outer Banks including non-resident property owners, to ensure that resources (e.g., supplies, help with clean up, temporary housing) for efficient recovery and building resilience are accessible for the entire tourism industry.
2. Expand relationships among tourism stakeholders *across* communities in the Outer Banks to support the transfer of knowledge (e.g., how to set up a central disaster response station, risk communication to tourists, insurance process) from communities that have more experience and already have systems in place to deal with these coastal hazards.
3. Identify and document all perceived risks (e.g., sea-level rise, more frequent and severe hurricanes/storms) and the impact these risks can have on the tourism industry (e.g., tourists not being able to reach the community to a breach in Highway 12). Additionally, facilitate conversation around these risks to increase risk awareness among all tourism stakeholders.

References

- ⁱ Seekamp, E. L., Jurjonas, M., & Bitsura-Meszaros, K. (2018). *Coastal Hazards and Tourism: Exploring Outer Banks Visitors' Responses to Storm-Related Impacts*. Raleigh: NC State Extension. Retrieved from <https://content.ces.ncsu.edu/coastal-hazards-and-tourism>
- ⁱⁱ WRAL. (2019, September 6). *Dispatches from Dorian coverage: Ocracoke flooded, Hatteras battered, but other coastal areas returning to normal*. Retrieved from WRAL NEWS: <https://www.wral.com/hurricane-dorian-flooded-ocracoke-battered-hatteras-but-other-coastal-areas-returning-to-normal/18613042/>
- ⁱⁱⁱ Glavovic, B., Kelly, M., Kay, R., & Travers, A. (2015). *Climate Change and the Coast: Building Resilient Communities*. London: CRC Press. doi:10.1201/b18053
- ^{iv} Berke, P., & Smith, G. (2009). *Hazard Mitigation, Planning, and Disaster Resiliency: Challenges and Strategic Choices for the 21st Century*. Amsterdam: IOS Press.
- ^v Cutter, S. L., Barnes, L., Berry, M., Burton, C., Evans, E., Tate, E., & Webb, J. (2008). A place-based model for understanding community resilience to natural disasters. *Global Environmental Change, 18*(4), 598-606. doi:10.1016/j.gloenvcha.2008.07.013
- ^{vi} National Disaster. (2016). *National Disaster*. Washington D.C.: Homeland Security. Retrieved from https://www.fema.gov/sites/default/files/2020-06/national_disaster_recovery_framework_2nd.pdf
- ^{vii} NOAA. (2019, September 22). *The Power of Preparedness*. Retrieved from Office of Response and Restoration: <https://blog.response.restoration.noaa.gov/power-preparedness>
- ^{viii} Albright, E. A., & Crow, D. A. (2021). Capacity Building toward Resilience: How Communities Recover, Learn, and Change in the Aftermath of Extreme Events. *Policy Studies Journal, 49*(1), 89-122. doi:10.1111/psj.12364
- ^{ix} Cox, R. S., & Perry, K.-M. E. (2011). Like a Fish Out of Water: Reconsidering Disaster Recovery and the Role of Place and Social Capital in Community Disaster Resilience. *American Journal of Community Psychology, 48*, 395-411. doi:10.1007/s10464-011-9427-0
- ^x Bonaiuto, M., Carrus, G., Martorella, H., & Bonnes, M. (2002). Local identity processes and environmental attitudes in land use changes: The case of natural protected areas. *Journal of Economic Psychology, 23*(5), 631-653. doi:10.1016/S0167-4870(02)00121-6

- ^{xi} Townshend, I., Awosoga, O., Kulig, J., & Fan, H. (2015). Social cohesion and resilience across communities that have experienced a disaster. *Natural Hazards*, 76, 913-938.
doi:10.1007/s11069-014-1526-4
- ^{xii} Hernández, B., Hidalgo, C., & Ruiz, C. (2020). Theoretical and methodological aspects of research on place attachment. In L. Manzo, & P. Devine-Wright, *Place Attachment: advances in theory, methods and applications* (pp. 95-110). New York, NY: Routledge.
doi:10.4324/9780429274442
- ^{xiii} UNISDR. (2013). *Global assessment report on disaster risk reduction* . Retrieved from United Nations Office for Disaster Risk Reduction:
<https://www.undrr.org/publication/global-assessment-report-disaster-risk-reduction-2013>
- ^{xiv} Hawkins, R. L., & Maurer, K. (2010). Bonding, bridging and linking: How social capital operated in New Orleans following Hurricane Katrina. *British Journal of Social Work*, 40(6), 1777–1793. doi:doi.org/10.1093/bjsw/bcp087
- ^{xv} Burley, D., Jenkins, P., Laska, S., & Davis, T. (2007). Place Attachment and Environmental Change in Coastal Louisiana. *Organization & Environment*, 20(3), 347-366.
doi:10.1177/1086026607305739
- ^{xvi} Covello, V. T. (2003). Best practices in public health risk and crisis communication. *Journal of Health Communication Research*, 8, 5-8. doi:10.1080/10810730305705.

CHAPTER 4: SYNTHESIS

When I first learned about the study in Ocracoke and Hatteras I was captivated by the communities' stories. On one hand, I was impressed by the immense strength these communities drew upon in dealing with reoccurring hurricanes and other coastal hazards; it seemed like nothing could stop them and together they could overcome anything. On the other hand, I was wondering why the community members decided to remain in a location that was so vulnerable and does not appear to be sustainable in the future. Especially, coming from the Netherlands where the urgency to protect the country from water has resulted in an intricate system of protective measures, it scares me that the Outer Banks (OBX) is relatively unprotected from the ocean putting residents at risk. I questioned if the attachment to the place (both through the emotional connection and the dependence on the community) would be enough for the community members to offset the risks that come with living on these barrier islands. Maybe the concept of place attachment and the deep-rooted desire to remain in only location does not come as natural to me. Even though I have loved the places I have lived in, after a while I always feel the urgency to move and discover a new place. I could not imagine feeling so strongly attached to a place that moving away would not be a consideration. It made it that much more intriguing for me to learn about the bond that people in Ocracoke and Hatteras have to the community. I loved how the interviews revealed what residents feel makes these communities so special. These stories included how families were fishermen for generations and they depended on the ocean, how everyone in the community feels like family, and how being the only person on the beach for miles is the best feeling in the world. Through the interviews I gained a picture of what life is like in the OBX, and for a little while I felt part of their community and I started to see why you would not want to leave a special place like that. So if leaving is not an option, how can we help Ocracoke and Hatteras be resilient in dealing with this reoccurring coastal hazards?

Contributions

Tourism destinations—particularly those with an abundance of natural beauty—often have to contend with natural hazards (e.g., hurricanes, flooding) as they are often located in vulnerable locations, such as coastal areas. Therefore, many communities that depend on nature-based tourism are required to be resilient in dealing with disasters while maintaining economic

stability. Research, however, suggests that tourism businesses are relatively unprepared for natural disasters. This is particularly evident amongst smaller tourism businesses that often lack knowledge, collaborative networks, or experience with natural disasters to strengthen their resilience (Becken & Hughey, 2013; Ciocco & Michael, 2007; Hystad & Keller, 2008; Orchiston, 2013). There is a clear need to build more resilience in tourism-dependent communities that are supported by these small tourism businesses. In this study we have argued that resilience does not only require tourism stakeholders being able to bounce back but also to bounce forward and build that sustainable future. Especially in the wake of the COVID-19 pandemic, which stressed the fragility of the tourism industry, the ability to prepare for potential disasters and adapt to changing situations becomes critical.

This study contributes to the theoretical understanding of decision-making processes in tourism-dependent coastal communities, specifically in the context of disasters like hurricanes. As there is still a limited understanding on disaster recovery from a tourism stakeholder perspective, this study lays a foundation by identifying recovery decisions. Social cohesion, place attachment, and risk perceptions were utilized to gain a holistic understanding of this recovery decision making process. This study applied a different perspective to looking at social cohesion in the recovery process by not only looking at the strength of the cohesion within the community but also by including its strength across community connections. Across community cohesion presented itself to be valuable when studying recovery decisions, which suggests future researchers adopt this approach to continue to explore the impact of multiple types of cohesion on the recovery decisions. Finally, I introduced categorizing the recovery decisions into bounce back decision and bounce forward decisions in combination with social cohesion, place attachment, and risk perceptions. This approach uniquely helps determine the type of resilience in a community and give insights into ways to support the long-term sustainability of the tourism-dependent communities.

The theoretical contributions of this study are important but eventually what matters is that this study can actually help the tourism dependent communities in the OBX and other similar coastal communities. This study highlights the need for the tourism stakeholders (often small business owners, workforce members, and non-resident property owners) to create a strong cohesive

network not only within the community but also across the different communities in the region that are all dealing with the same coastal hazards. In the immediate recovery from a disaster, strong networks provide access to resources and knowledge for all tourism stakeholders, including help with clean up and rebuilding, and accommodation for the people that cannot stay in their homes, as well as sharing insights on how to handle the insurance process or communicating with tourists. Building resilience goes beyond an efficient recovery and includes actively preparing for upcoming disasters and—though not uncovered in this study—seriously considering retreat or relocation given the actualization of climate change impacts (e.g., stronger storms, more frequent storm intervals, sea level rise, sunny day flooding). This starts with being able to identify potential risks (e.g., sea-level rise, more frequent and severe hurricanes), then designing a plan around what will help protect both homes and businesses against those potential risks. As this study found increased risk perceptions supports bounce forward decision making, identifying potential risk is critical for tourism stakeholders. Here the tourism stakeholder network can play a key role again in facilitating more conversation about climate science-informed risk probabilities and the impacts those risks can have on their tourism industry, which may amplify risk awareness—and, thus, bounce forward decision making—among more tourism stakeholders.

Study improvements

I started my masters at NC State University because I wanted to expand my knowledge of and contribute to a sustainable tourism industry, and this study definitely accomplished that. I am thankful that I got to work on such a special and important project for my thesis. In a perfect world if I were able to design a similar study, I would want to do some things differently to make an even bigger impact. Starting off with the sample, I would try to get a more even distribution of different types of tourism stakeholders. Our largest stakeholder group were the business owners (n=19); while their recovery is incredibly important for the resilience of the whole community, other voices need to be heard as well. For example, we did not have any non-resident property owners from Hatteras, and we only had two workforce members in our sample. To explore the nuances of these subgroups' recovery decisions with a larger sample from the workforce and non-resident property owners in Hatteras is needed. With a more balanced sample I would be able to compare the different groups within the tourism stakeholders to extend the

understanding of how different stakeholders in tourism dependent coastal communities are making decisions in dealing with coastal hazards.

Additionally, in a perfect world, the Latinx population in Ocracoke would have been included in our sample, to understand their unique lived experiences. According to the U.S. census data (2020), about 30% of residents in Ocracoke are Latinx and our interview participants confirm that the Latinx population plays an important role in the community and in serving the tourism industry. Past studies have suggested that members of minority groups are likely to make different recovery decisions as they often have limited social and financial power (EPA, 2021; Morrow-Jones & Morrow-Jones, 1991). Therefore, the question rises how did the Latinx population in Ocracoke recover from Hurricane Dorian, what recover decisions did they make? I would be also interested in understanding their social cohesion in the community and across communities, whether they feel the same strength of cohesion as the other residents in Ocracoke or if they feel mostly connected with the Latinx population. Specifically, as this study highlights the important of social cohesion within the community and across communities for bounce forward recovery. Newcomers to the communities (both Ocracoke and Hatteras) expressed having a hard time feeling fully incorporated in the communities, so I wonder how the Latinx community in Ocracoke feels and if they are able to access the resources (through social connectedness) that are needed in an efficient recovery.

Furthermore, as this study was part of a larger study the interview questions were not focused on specifically answering the research questions for this study. For example, one of the questions to assess both the social cohesion and place attachment was: “What makes this community unique compared to others in the area?” This question however was interpreted in different ways by the participants and some of the participants answered based on what they think makes the community special for the tourists. This led that in the analysis I was not always able to uncover what the community meant to the participants. Furthermore, the interview protocol did not explicitly state questions regarding the social cohesion within the community or across communities therefore, it was up to the participants to bring it up in other questions. Other times the questions regarding social cohesion and place attachments were omitted due to time constraints. If I were to design a similar study, I would write the interview protocol to match the

research question and the constructs (i.e., social cohesion, place attachment, and risk perceptions) to focus on uncovering the impact of social cohesion, place attachment, and risk perceptions on bounce back and bounce forwards recovery decisions.

Emerging ideas

During the thesis defense discussion with the committee several ideas emerged that were worth mentioning in this section. First, a reflection on the sample. As we interviewed participants that were living/owned a home in Hatteras and Ocracoke at the time of the interviews, we omitted residents that moved away after Hurricane Dorian. Our interview participants, specifically in Ocracoke, mentioned that several community members, including business owners, who moved away after the hurricane. The study results, therefore, did not capture recovery responses related to individuals that decided to make a significant bounce forward decision (i.e. adaptation) of leaving the communities and what their motivations were for that decision. It would be valuable to understand what their recovery process looked like and what their levels of social cohesion, place attachment, and risk perceptions were. In particular, as we did not uncover any patterns related to place attachment, I wonder if their place attachment was more detached than our interview participants making moving away an option for them.

Furthermore, we need to highlight the leading role that local (tourism) business owners play during the recovery of coastal hazards. The interviews revealed that business owners feel responsible for the wellbeing of the community members and their employees. They expressed that they felt the need to keep their business going or open up as soon as possible after the hurricane to serve the community members (e.g., access to local grocery store) and maintain the jobs of their employees to support their livelihoods. Subsequently, these local (tourism) business owners greatly influence the economic success of the community by leading the charge for revitalization after the hurricane. The multifaceted responsibilities of business owners may encourage them to make quick decisions after a hurricane leading to more bounce back decisions to keep the community going.

Future research

This study laid an important foundation in understanding the recovery decision making process of tourism stakeholders in small tourism dependent communities dealing with coastal hazards. Specifically, as we looked at how social cohesion, place attachment, and risk perceptions are impacting recovery decisions, we uncovered some meaningful relationships (e.g., across community cohesion supports bounce forward decision making). Future research can build upon this study's findings and uncover the relationships *between* these concepts (e.g., social cohesion, place attachment, risk perceptions) in relation to bounce back and bounce forward decision making. Additionally, as we found that previous hurricane experience impacts bounce forward decision making, future research should include hurricane experience and the mediating role risk perceptions hold between hurricane experience and decision making. A next step in research should also be to perform quantitative studies to statistically test the relationships and continue refining the conceptual model for understanding tourism stakeholder decision making processes that was presented in this thesis. This study marks a new future of building resilient tourism dependent coastal communities by encouraging bounce forward decision making, and I look forward to seeing how research develops around this topic and how academia can further support these communities.

References

- Becken, S., & Hughey, K. (2013). Linking tourism into emergency management structures to enhance disaster risk reduction. *Tourism Management, 36*, 77-85.
doi:10.1016/j.tourman.2012.11.006
- Cioccio, L., & Michael, E. J. (2007). Hazard or Disaster: Tourism Management for the Inevitable in Northeast Victoria. *Tourism Management, 28*(1), 1-11.
doi:10.1016/j.tourman.2005.07.015
- EPA. (2021). *Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts*. Washington D.C.: U.S. Environmental Protection Agency.
- Hystad, P. W., & Keller, P. C. (2008). Towards a destination tourism disaster management framework: Long-term lessons from a forest fire disaster. *Tourism Management, 29*(1), 151-162. doi:10.1016/j.tourman.2007.02.017
- Morrow-Jones, H. A., & Morrow-Jones, C. R. (1991). Mobility due to natural disaster: theoretical considerations and preliminary analyses. *Disasters, 15*(2), 126-132.
doi:10.1111/j.1467-7717.1991.tb00441.x
- Orchiston, C. (2013). Tourism business preparedness, resilience and disaster planning in a region of high seismic risk: the case of the Southern Alps, New Zealand. *Current Issues in Tourism, 16*(5), 477-797. doi:10.1080/13683500.2012.741115

APPENDIX

Appendix A: Coding Tables

Table A.1: Coding table illustrating bounce back decisions made by individuals in relation to social cohesion

	Social Cohesion	Across communities	Within community
1 : Decisions	0	0	0
2 : Bounce Back	19	4	15
3 : Business	6	1	5
4 : Back to business attitude	1	0	1
5 : Choose anyone to rebuild	1	0	1
6 : Didnt cancel reservations quickly	1	0	1
7 : give money back	1	1	0
8 : Home and business at same time	1	0	1
9 : Home and business at same time (2)	1	0	1
10 : Move quickly	2	0	2
11 : Not raise business	1	0	1
12 : Open as soon as possible	2	0	2
13 : Put inventory in pods	1	0	1
14 : Rebuild business	2	0	2
15 : Community	10	3	7
16 : Find temporary housing for community members	1	0	1
17 : Fire house central hub for recovery	3	1	2
18 : Help Ocracoke	1	1	0
19 : Helping each other out	5	1	4
20 : Let NRPO back on island	2	0	2
21 : NRPO offer house to residents (2)	1	0	1
22 : NRPO put islanders first	1	0	1
23 : People choose local	3	1	2
24 : Personal	15	2	13
25 : Choose anyone to rebuild	1	0	1
26 : don't move	4	0	4
27 : Home and business at same time	1	0	1
28 : Immediately assess damage	1	0	1
29 : Just move forward	3	1	2
30 : Learn as you go	2	1	1
31 : Move quickly	3	0	3
32 : No insurance	7	1	6
33 : NRPO ask friends to check house	1	0	1
34 : NRPO sneak on island	1	0	1
35 : Rebuild home	1	0	1

Table A.2: Coding table illustrating bounce forward decisions made by individuals in relation to social cohesion

	Social Cohesion	Across communities	Within community
36 : Bounce Forward	22	8	14
37 : Business	9	6	3
38 : Clear communication to tourists	1	1	0
39 : Develop adaptive businessplan	1	0	1
40 : Documentation to help future recovery	1	1	0
41 : Extended opening times	2	0	2
42 : get insurance	1	0	1
43 : Keep employees going	1	1	0
44 : Make business hurricane proof	1	1	0
45 : Online Business	1	1	0
46 : Outside construction company	1	0	1
47 : Pre; evacuate tourists	3	2	1
48 : Pre; secure inventory	3	3	0
49 : Preserve cash	1	0	1
50 : Raising business	1	1	0
51 : Community	2	2	0
52 : Changing buiding codes	1	1	0
53 : Keep island closed longer	1	1	0
54 : Personal	19	6	13
55 : Deciding whether to move	2	0	2
56 : Move house	1	0	1
57 : No putting more money into house	0	0	0
58 : Pre; Anti flood measures	3	2	1
59 : Pre; Evacuate	5	2	3
60 : Pre; hurricane prep instructions for renters	1	0	1
61 : pre; protect belongings	7	3	4
62 : Pre; secure vehicles	3	1	2
63 : Prepare for next hurricane	1	0	1
64 : raising house	7	0	7

Table A.3: Coding table illustrating bounce back decisions made by individuals in relation to place attachment

	Place Attachment	Elevated	Baseline
1 : Decisions	0	0	0
2 : Bounce Back	0	11	8
3 : Business	6	3	3
4 : Back to business attitude	1	0	1
5 : Choose anyone to rebuild	1	0	1
6 : Didnt cancel reservations quickly	1	0	1
7 : give money back	1	1	0
8 : Home and business at same time	1	0	1
9 : Move quickly	2	0	2
10 : Not raise business	1	1	0
11 : Open as soon as possible	2	1	1
12 : Put inventory in pods	1	1	0
13 : Rebuild business	2	2	0
14 : Community	10	6	4
15 : Find temporary housing for community members	1	0	1
16 : Fire house central hub for recovery	3	2	1
17 : Help Ocracoke	1	1	0
18 : Helping each other out	5	3	2
19 : Let NRPO back on island	2	1	1
20 : NRPO offer house to residents (2)	1	0	1
21 : NRPO put islanders first	1	1	0
22 : People choose local	3	1	2
23 : Personal	15	8	7
24 : Choose anyone to rebuild	1	0	1
25 : don't move	4	3	1
26 : Home and business at same time	1	0	1
27 : Immediately assess damage	1	1	0
28 : Just move forward	3	1	2
29 : Learn as you go	2	1	1
30 : Move quickly	3	1	2
31 : No insurance	7	4	3
32 : NRPO ask friends to check house	1	1	0
33 : NRPO sneak on island	1	0	1
34 : Rebuild home	1	1	0

Table A.4: Coding table illustrating bounce forward decisions made by individuals in relation to place attachment

	Place Attachment	Elevated	Baseline
35 : Bounce Forward		13	9
36 : Business		6	3
37 : Clear communication to tourists	1	1	0
38 : Develop adaptive businessplan	1	0	1
39 : Documentation to help future recovery	1	1	0
40 : Extended opening times	2	1	1
41 : get insurance	1	0	1
42 : Keep employees going	1	1	0
43 : Make business hurricane proof	1	0	1
44 : Online Business	1	1	0
45 : Outside construction company	1	0	1
46 : Pre; evacuate tourists	2	2	0
47 : Pre; secure inventory	3	2	1
48 : Preserve cash	1	0	1
49 : Raising business	1	1	0
50 : Community	2	1	1
51 : Changing buiding codes	1	1	0
52 : Keep island closed longer	1	0	1
53 : Personal	30	11	8
54 : Deciding whether to move	2	1	1
55 : Move house	1	0	1
56 : No putting more money into house	0	0	0
57 : Pre; Anti flood measures	3	2	1
58 : Pre; Evacuate	5	5	0
59 : Pre; hurricane prep instructions for renters	1	0	1
60 : pre; protect belongings	7	3	4
61 : Pre; secure vehicles	3	3	0
62 : Prepare for next hurricane	1	0	1
63 : raising house	7	5	2

Table A.5: Coding table illustrating bounce back decisions made by individuals in relation to risk perceptions

	Risk Perceptions	High	Not high
1 : Decisions	0	0	0
2 : Bounce Back	19	12	7
3 : Business	6	3	3
4 : Back to business attitude	1	0	1
5 : Choose anyone to rebuild	1	0	1
6 : Didnt cancel reservations quickly	1	1	0
7 : give money back	1	1	0
8 : Home and business at same time	1	0	1
9 : Move quickly	2	1	1
10 : Not raise business	1	0	1
11 : Open as soon as possible	2	0	2
12 : Put inventory in pods	1	1	0
13 : Rebuild business	2	1	1
14 : Community	10	5	5
15 : Find temporary housing for community members	1	0	1
16 : Fire house central hub for recovery	3	1	2
17 : Help Ocracoke	1	1	0
18 : Helping each other out	5	2	3
19 : Let NRPO back on island	2	1	1
20 : NRPO offer house to residents (2)	1	0	1
21 : NRPO put islanders first	1	1	0
22 : People choose local	3	1	2
23 : Personal	15	10	5
24 : Choose anyone to rebuild	1	0	1
25 : don't move	4	3	1
26 : Home and business at same time	1	0	1
27 : Immediately assess damage	1	0	1
28 : Just move forward	3	1	2
29 : Learn as you go	2	1	1
30 : Move quickly	3	1	2
31 : No insurance	7	3	4
32 : NRPO ask friends to check house	1	0	1
33 : NRPO sneak on island	1	1	0
34 : Rebuild home	1	1	0

Table A.6: Coding table illustrating bounce forward decisions made by individuals in relation to risk perceptions

	Risk Perceptions	High	Not high
35 : Bounce Forward	22	17	5
36 : Business	9	7	2
37 : Clear communication to tourists	1	1	0
38 : Develop adaptive businessplan	1	1	0
39 : Documentation to help future recovery	1	1	0
40 : Extended opening times	2	0	2
41 : get insurance	1	0	1
42 : Keep employees going	1	1	0
43 : Make business hurricane proof	1	1	0
44 : Online Business	1	1	0
45 : Outside construction company	1	0	1
46 : Pre; evacuate tourists	2	2	0
47 : Pre; secure inventory	3	3	0
48 : Preserve cash	1	1	0
49 : Raising business	1	1	0
50 : Community	2	2	0
51 : Changing buiding codes	1	1	0
52 : Keep island closed longer	1	1	0
53 : Personal	19	15	4
54 : Deciding whether to move	2	2	0
55 : Move house	1	1	0
57 : Pre; Anti flood measures	3	3	0
58 : Pre; Evacuate	5	4	1
59 : Pre; hurricane prep instructions for renters	1	1	0
60 : pre; protect belongings	7	6	1
61 : Pre; secure vehicles	3	3	0
62 : Prepare for next hurricane	1	1	0
63 : raising house	7	4	3

Table A.7: Coding table illustrating bounce back decisions made by individuals in relation to communities of Ocracoke and Hatteras

	Community	Ocracoke	Hatteras
1 : Decisions	0	0	0
2 : Bounce Back	0	13	6
3 : Business	13	5	1
4 : Back to business attitude	1	1	0
5 : Choose anyone to rebuild	1	1	0
6 : Didnt cancel reservations quickly	1	1	0
7 : give money back	1	0	1
8 : Home and business at same time	1	1	0
9 : Move quickly	2	2	0
10 : Not raise business	1	1	0
11 : Open as soon as possible	2	2	0
12 : Put inventory in pods	1	1	0
13 : Rebuild business	2	2	0
14 : Community	17	7	3
15 : Find temporary housing for community members	1	1	0
16 : Fire house central hub for recovery	3	2	1
17 : Help Ocracoke	1	0	1
18 : Helping each other out	5	4	1
19 : Let NRPO back on island	2	2	0
20 : NRPO offer house to residents (2)	1	1	0
21 : NRPO put islanders first	1	1	0
22 : People choose local	3	2	1
23 : Personal	25	11	4
24 : Choose anyone to rebuild	1	1	0
25 : don't move	4	2	2
26 : Home and business at same time	1	1	0
27 : Immediately assess damage	1	1	0
28 : Just move forward	3	2	1
29 : Learn as you go	2	1	1
30 : Move quickly	3	3	0
31 : No insurance	7	6	1
32 : NRPO ask friends to check house	1	1	0
33 : NRPO sneak on island	1	1	0
34 : Rebuild home	1	1	0

Table A.8: Coding table illustrating bounce forward decisions made by individuals in relation to communities of Ocracoke and Hatteras

	Community	Ocracoke	Hatteras
35 : Bounce Forward	0	11	11
36 : Business	17	3	6
37 : Clear communication to tourists	1	0	1
38 : Develop adaptive businessplan	1	1	0
39 : Documentation to help future recovery	1	0	1
40 : Extended opening times	2	2	0
41 : get insurance	1	1	0
42 : Keep employees going	1	0	1
43 : Make business hurricane proof	1	0	1
44 : Online Business	1	0	1
45 : Outside construction company	1	1	0
46 : Pre; evacuate tourists	2	0	2
47 : Pre; secure inventory	3	0	3
48 : Preserve cash	1	1	0
49 : Raising business	1	0	1
50 : Community	2	0	2
51 : Changing buiding codes	1	0	1
52 : Keep island closed longer	1	0	1
53 : Personal	30	10	9
54 : Deciding whether to move	2	2	0
55 : Move house	1	1	0
56 : No putting more money into house	0	0	0
57 : Pre; Anti flood measures	3	0	3
58 : Pre; Evacuate	5	1	4
59 : Pre; hurricane prep instructions for renters	1	1	0
60 : pre; protect belongings	7	2	5
61 : Pre; secure vehicles	3	0	3
62 : Prepare for next hurricane	1	1	0
63 : raising house	7	6	1