Understanding the Effects of a Tourism Crisis: The Impact of the BP Oil Spill on Regional Lodging Demand

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Abstract
Tourism as one of the most economically important industries is also one of the most vulnerable to crises and disasters. This study is focused on measuring the short-term impact of a recent incidence, the 2010 BP Gulf oil spill, using a systems perspective. Drawing from two datasets measuring the performance of the hotel and vacation rental industries, a major part of the accommodation industry, this study reveals the complex changes that occurred across a region that experienced this man-made disaster. The data clearly shows the complexity of the impact, generating both winners and losers on an industry and geographic basis. In addition, the results underscore the difficulties in determining damages at the macro level that in this case has resulted to date in US$13.5 billion of out of court settlements paid by BP to settle business owner claims. Practical implications and future research avenues are highlighted including the availability of secondary data sources.

Keywords
Gulf Oil Spill, Displacement, Crisis Management

Introduction
Undoubtedly, tourism industries are one of the most economically important set of industries worldwide, yet they are also one of the most susceptible and vulnerable to crises or disasters (Pforr 2009). This is not only because many industries (e.g., accommodation, transport) and subindustries (e.g., hotels, vacation rentals, airlines, rental cars) interact with each other but also because the tourism industry greatly relies and is impacted by many external factors, such as the currency exchange rate, the political situation, discretionary income, the environment, and the weather (Cassedy 1992; Okumus, Altinay, and Arasli 2005; Pforr 2009). The success of tourism in these industries is also directly linked to its ability to offer tourists a perceived safe and pleasant place to visit (Breda and Costa 2006). When crises or disasters take place, tourism industries, the tourists they serve, and the local community are affected (Mansfeld and Pizam 2006) since such events divert tourism flows away from not only a particular destination but also neighboring regions or countries (Cavlek 2002).

Faulkner (2001) notes an increasing number of disasters and crises that affect tourism industries and subindustries, ranging from natural to human-influenced incidents. In recent years, tourism globally has experienced many crises and disasters, including terrorist attacks, political instability, economic recession, biosecurity threats, and natural disasters. In some cases, incidents or crises at an organizational level have triggered environmental disasters (such as the topic of this article, the BP oil spill). Faulkner (2001) and Ritchie (2004) argue that there is a lack of research on the impacts of such events on both tourism industries at a destination and a subindustry level. Further, research on the impacts of such events fail to take a detailed examination into subindustry differences related to the impacts that may be masked by overall destination level or industry data. For instance, research related to the Foot and Mouth Outbreak (Wright 2003) noted an increase in tourist arrivals to England’s South East coastal town of Eastbourne, at the expense of rural tourism. In addition, Enz and Canina (2002) noted that hotels located in five states actually improved their year-to-year performance after September 11, 2001, against the national trend, as they had greater reliance on regional travel and less reliance on air travel.

Previous research has also often ignored the system-related impact of crises and disasters on destinations or specific tourism industries or subindustries. For instance, several authors note the ability of crises or disasters to transform destinations and businesses (Burnett 1998; Faulkner 2001;
Kash and Darling 1998). As Faulkner (2001, p. 137) notes, “crises and disasters have transformational connotations, with each such event having potential positive (e.g., stimulus to innovation, recognition of new markets, etc.), as well as negative outcomes.” In some instances, destinations or specific industry sectors (e.g., accommodation, transport) or subindustries (e.g., hotels, airlines) may benefit because of the displacement of consumers due to changes in their travel patterns, or even the influx of emergency and media personnel in the response and recovery period (Ritchie 2009). Scott, Laws, and Prideaux (2007) argued that destinations are networks of stakeholders that may be reconfigured into more efficient structures following a crisis. In the long term, such destinations, industries, or subindustries may capture the benefits of this displaced demand, heightened media attention, and may even develop new product in some cases (Peters and Pikkemaat 2005; Williams and Ferguson 2005).

Tourism can be conceived as an open system, which is affected by external events often beyond the control of individuals or destinations. Hall (2000) notes that simple linear relationships and casual chains cannot help us understand complex situations in the physical or social sciences (including tourism), while systems thinking can help further the understanding of tourism and its complexity. In addition, most of the tourism crisis management frameworks include an orderly, linear sequence of steps. They are thus not able to adequately explain the impact of crises that are chaotic and dynamic environments, resulting in a very complex management environment during and immediately after a crisis or disaster event (Laws, Prideaux, and Chon 2007; Scott and Laws 2005; Scott, Laws, and Prideaux 2007). Research, as argued earlier, also appears to consider the impact of crises and disasters on tourism at an overall destination level, rather than explore the differences at a specific industry or subindustry level. Therefore, a system-oriented approach to examining the impact and spillover of crises and disasters using an industry (accommodation) and subindustry level (vacation rentals, hotels) across the affected area is needed to view the impacts and effects of the various parts across the system. As Scott and Laws (2005, p. 150) suggest:

An alternative analysis views the crisis situation as set within a wider system and uses this wider system as the unit of analysis. Here the system is seen in dynamic balance. Any effect on one part of the system may have an effect on other parts.

This article sets out to examine the BP oil spill in the Gulf of Mexico in 2010 and its spillover effects on the accommodation industry, specifically the hotel and vacation rental subindustries. The Deepwater Horizon explosion (a.k.a. BP oil spill, Gulf of Mexico oil spill) caused a crude oil spill in the Gulf of Mexico that flowed for three months in 2010. The April 20 explosion of the offshore oil drilling platform was finally capped on July 15 after releasing approximately 4.9 million barrels of crude oil into the Gulf of Mexico. The spill caused damage to marine and wildlife habitats and to the Gulf’s fishing and tourism-related industries. Although there was limited impact on tourism infrastructure, consumer perceptions of impacts and risk changed patterns of demand, which has been found in similar studies of crises and disasters (Armstrong and Ritchie 2007; Kozak, Crotts, and Law 2007; Young and Montgomery 1998). Despite this, the U.S. Travel Association estimates that the economic impact of the oil spill on tourism across the Gulf Coast over a three-year period could exceed approximately $23 billion, in a region that supports more than 400,000 travel industry jobs generating $34 billion in revenue annually (Oxford Economics 2010). At the time of this article’s submission, BP had agreed to pay claims of affected businesses totaling approximately US$13.5 billion dollars.

This article analyzes the impact the oil spill had on the hotel and vacation rental industries, a subindustry of accommodation across the affected regions in the United States. More specifically, the analysis identifies those regions that were negatively impacted as well as those who benefited because of the displacement of tourism demand from one region to another during the months in which the oil was being released into the Gulf of Mexico. Therefore, the article takes a system perspective exploring the complex impact that such incidents can have on specific subindustries of the accommodation industry, focusing on a comparison of the hotel and vacation rental sectors, which have been ignored to date in past research. The article also highlights the utility of secondary sources of data to objectively assess the impact of tourism-related crises and their implications.

**Literature Review**

**Conceptualizing Tourism Crises and Disasters**

Many of the features attributed to crises are equally applicable to disasters (Faulkner 2001), and so confusion can occur with common overlaps between the two where a crisis may occur as a direct result of a disaster or vice versa. Kim and Lee (1998) in their article use the two terms interchangeably while Hills (1998) acknowledge that the boundary between natural and human-induced behavior has blurred. Faulkner (2001) considers the principal distinction between what can be termed a “crisis” and a “disaster” to be the extent to which the situation is attributable to the organization itself, or can be described as originating from outside the organization. Thus, a *crisis* describes a situation “where the root cause of an event is, to some extent, self-inflicted through such problems as inept management structures and practices or a failure to adapt to change,” while a *disaster* can be defined as “where an enterprise (or collection of enterprises in the case of a tourist destination) is confronted with sudden unpredictable catastrophic changes over which it has little control” (Faulkner 2001, p. 136). In a comprehensive review of crisis and disaster definitions, Scott and Law (2005) concur with Faulkner’s...
(20001) definitions. Prideaux, Laws, and Faulkner (2003) also agree and suggest that a crisis is caused by lack of management planning, and therefore could have been anticipated, while a disaster can only be responded to after the event, and human involvement, therefore, can only be reactive.

Faulkner (2001) suggests that crises are able, to some degree, to be controlled and within the influence of managers, whereas disasters are often external and more unpredictable. As Prideaux, Laws, and Faulkner (2003, p. 478) suggest, “disasters can be described as unpredictable catastrophic change that can normally only be responded to after the event, either by deploying contingency plans already in place or through reactive response.” Hills (1998) suggests, from an emergency planning perspective, that disasters are sudden and overwhelming events that occur for a limited duration in a distinct location. Although they may be limited by time and location, it may take a significant amount of time after a disaster to recover while some victims may never fully recover, if they indeed survive.

In January 2011, the White House oil spill commission released its final report on the causes of the BP oil spill, which blames BP and its partners for making a series of cost-cutting decisions and the lack of a system to ensure well safety. The oil spill therefore could be classified as a crisis that created an environmental disaster that impacted on a number of economic sectors, including tourism and specific industries such as accommodation. However, depending on the unit of analysis and system used to explore the impact, this disaster for tourism-related industries may have been a crisis due to inept planning at a destination or specific industry or organizational level. Miller and Ritchie (2003) suggest that the Foot and Mouth Outbreak started out as a farming crisis and ended up as a disaster for the tourism industry because of the way it was handled.

Crises and disasters illustrate chaotic situations and illustrate the complex interrelationships between human and natural systems (Faulkner 2001). Understanding the relationship between cause and effect and the implications of decisions and actions is a complicated process. Disasters or crises in other industries (e.g., agriculture, natural resources, or manufacturing) could have an impact on the tourism system because of its interdependence and linkage with those industries or negative image associated with a particular destination. An oil spill or biosecurity threat can have a major impact on a tourist destination and enterprises. At an organizational level, triggers can also move a “simple disaster” to a major disaster because of interactive complexity, creating a chain reaction within an open system (Davies and Walters 1998) through “escalation” (Heath 1995; Hills 1998) and the “ripple effect” (Heath 1998; Robert and Lajtha 2002).

Both Ren (2000) and Hills (1998) in the disaster field note the chaotic and nonlinear nature of disasters, which have obvious implications for their management and reduction. Further, Hills (1998) believes that because disasters are nonlinear, suggesting they follow a series of stages to recovery is a weakness as it ignores the complexity and linked nature of crises and disasters. Understanding the complex relationship between cause and effect, and the implications of decisions and actions is difficult, particularly for tourism-related industries including the accommodation industry and its subindustries, including hotel and vacation rentals.

Tourism Accommodation Disaster Management Studies

The increase in the impact of crises and disasters has led to more recent tourism-related research (see, e.g., Evans and Elphick 2005; Fall and Massey 2005; Frisby 2002; Hooper 2002; Pine and McKercher 2004; Stafford and Armoo 2002). A particular focus has been devoted to natural hazards and disasters, including hurricanes (Chandler 2004; Higgins 2005; Soimiez and Backman 1992; Young and Montgomery 1998), flooding and tsunamis (Carlsen 2006; Cheung and Law 2006; De Sausmarez 2005; Faulkner and Vikulov 2001; García et al. 2006; Henderson 2005, 2007; Ichinosawa 2006; Reddy 2005; Sharpley 2005), earthquakes (Huang and Min 2002; Young and Montgomery 1998), and bushfires (Armstrong and Ritchie 2007; Cioccio and Michael 2007; Hystad and Keller 2006, 2008).

Other research has explored biosecurity and disease with an emphasis on the Foot and Mouth Disaster in the United Kingdom (Baxter and Bowen 2004; Coles 2003; Irvine and Anderson 2005; Miller and Ritchie 2003; Ritchie et al. 2003; Rodway-Dyer and Shaw 2005; Sharpley 2000; Williams and Ferguson 2005, 2006) as well as SARS (Severe Acute Respiratory Syndrome), particularly in the Asia-Pacific (see Au, Ramasamy, and Yeung 2005; Chien and Law 2003; Henderson and Ng 2004; Huimin and Wall 2006; Kim, Chun, and Lee 2005; Mc kercher and Chon 2004; Pine and McKercher 2004; Tse, So, and Sin 2006; Wen, Huimin, and Kavanagh 2005; Zeng, Carter, and Lacy 2005). However, limited research has been carried out on environmental disasters, such as oil spills in an accommodation industry context.

Not only is accommodation the largest subsector within the tourism economy, accounting for around one-third of total trip expenditures, it is also an essential ingredient of the tourism experience (Davidson, Timo, and Ying 2010; Sharpley 2000). The accommodation industry is extremely vulnerable to crises and disasters as it operates all year round, and is easily affected by internal and external influences that can influence consumer perceptions and disrupt ongoing operations (Malhotra and Venkatesh 2009).

The accommodation industry, like other industries, is not immune from crises or disasters. From a review of recent crisis-related events affecting tourism industries, the accommodation industry appears to be a popular target of terrorists (Wang and Ritchie 2010). This part of the tourism industry also endures enormous losses from epidemic outbreaks and economic and political turbulence. For example, Stafford, Yu, and Armoo (2002) indicate that the impact of the 9/11
events forced Washington’s hotel and tourism managers to reduce the work schedules or lay off 75,000 employees. Meanwhile, in Southeast Asia, the impact of SARS on the hospitality industry was even more harmful than that of the 9/11 events. As a result of cancellations and postponements because of the SARS outbreak, the Singapore Hotel Association reported revenue losses in excess of $28 million for all Singaporean hotels (Henderson and Ng 2004). Likewise, in Hong Kong, visitor arrivals dropped by 57.9% between April and June 2003, compared to the same time frame in the previous year. In Hong Kong, the occupancy percentage fell to historical lows and hotel revenues decreased dramatically (Lo, Cheung, and Law 2006).

Despite the importance of the industry and its vulnerability, a recent review of accommodation crisis management literature (Wang and Ritchie 2010) found only 21 published accommodation crisis and disaster management studies across 37 journals. The majority of the accommodation studies (about 81%) were concerned with crisis or disaster response or recovery, and two thirds were qualitative case studies. None examined the impacts of environmental disasters such as oil spills, and none directly explored the spillover effects in the accommodation industry or compared subindustries within the broader accommodation industry, which this article does. Further, none used large secondary data sets to investigate the impacts objectively.

**Disaster Impact and Spillover Effects**

Although there has been a sharp increase in crisis and disaster research in the tourism industry, the majority of the publications dealing with the phenomenon focus on particular crises in specific sectors or on particular geographical locations (Pforr 2009), and many provide statistics and descriptive data on the impact at a destination or specific industry level. However, data at this level may mask micro differences and may not provide any insights into the spillover effects or redistribution of demand in the accommodation tourism system as a result of such incidents. Some geographic regions and sectors of the accommodation industry may actually benefit from a tourism crisis or disaster with crises or disasters diverting tourism flows to neighboring regions or even countries as well as sectors (Cavlek 2002). Thus, destinations or even certain industries or subindustries can be affected positively or negatively.

At a destination level, Bonham, Edmonds, and Mak (2006) illustrated an increase in travel by Americans post-9/11 to Hawaii as a substitute for foreign travel. However, the researchers also note that the United States’ government policy requiring Americans to show passports when returning from Mexico, Canada, and many destinations in the Caribbean could also be responsible for an increase in domestic travel to Hawaii. Other research on the effect of terrorist attacks suggests that the “spillover effect” may taint destinations located in proximity to political instability, while tourists choose safer locations (Soñmez 1998). Wright (2003) noted an increase in tourist arrivals to England’s southeastern coastal town of Eastbourne during the Foot and Mouth Outbreak in England at the expense of rural tourism, while Coles (2003) noted a similar pattern in the southwest of England.

After September 11, 2001, hotels located in five U.S. states actually improved their year-to-year performance in the fourth quarter of that year, against the national trend (Enz and Canina 2002). These states were less populous, had a lower reliance on air travel, and a higher reliance on regional travel by car, and thus were not affected from declining air travel after September 11, 2001. In some cases, tourism businesses may gain advantages from servicing people involved in the recovery and reconstruction efforts and may recover themselves quicker than other sectors. This may be through providing catering or accommodation facilities, with hotels an obvious example (Drabek 2000). As Pottorff and Neal (1994, p. 117) state, “if hotels survive the [disaster] impact their occupancy percentages may increase. The media, insurance adjusters, disaster works, victims, and even researchers converge to the site,” perhaps helping to speed up recovery and resolution. Faulkner and Vikulov (2001) noted that despite a major flood, the Katherine region had nearly 60,000 more guest nights in 1998, compared to 1997. This was attributed to the influx of trade-people drawn to the area in the reconstruction phase over the first two quarters of 1998. The article now turns to examine the focus of this research, the hotel and vacation rental industries (and the impact that the BP oil spill had on demand in both affected and nonaffected areas in the region).

**The Hotel and Vacation Rental Subindustries**

The accommodation industry, also called the lodging industry in North America, includes the more familiar kinds of establishments that have long offered shelter to travelers, such as hotels and motels, and less familiar kinds of accommodation facilities such as inns, lodges, and motor inns and vacation rental accommodations (Dittmer 2002). Consumers who purchase second homes as vacation getaways have been the foundation for many tourism destinations. In the early 1960s to mid-1970s, vacation homes were typically modest affairs in mountain and coastal locations. By the 1980s, all this changed where owners recognized the investment potential in vacation real estate. Today, virtually all resort communities in the United States represent a wide range of accommodations, including hotels, timeshares, and residential, but dominant are the privately owned vacation homes and condominiums.

The vacation rental industry is composed of renting these vacation homes to leisure travelers either from the home owner directly (e.g., a rent-by-owner) or through a rental management company who markets and manages the property for a fee paid by the vacation home owners. Owners of these vacation homes have recognized the value of ownership through the potential appreciation of property values coupled with the potential to defray their cost of ownership through earned income from renting of the properties. The vacation rental industry is a worldwide phenomenon (Nicod,
Mungall, and Henwood 2007; Rambonilaza 2006; Nicod, Mungall, and Henwood 2007) but is one that is difficult to quantify. In the United States, for example, there is no source of data that can be used to distinguish a home as being a primary or secondary residence, nor whether the owner rents it to the vacationing public or not. The hotel and vacation rental industry and its market was the focus of this particular study, which is now described next in the method section.

**Method**

Most research in tourism is based on primary data analysis where the authors of the article collect and analyze the data, and there is good reason for this tradition, as it provides the researcher with direct knowledge. However, the use of secondary data has also become a widely used method for data collection. In secondary data analysis, already gathered data are analyzed, with the researcher using the data not being involved in the planning of the research or data collection. Such analysis can be done based on data available in classical statistics (text, graphs and appendices), published articles, company websites, sales and accounting record, marketing research reports, or on the original data source (Church 2001).

Secondary data can be regarded as a useful data source for tourism research, provided data are reliable, valid, and can address the research questions (Churchill 1995; Pizam 1994; Saunders, Lewis, and Thornhill 2000). Reliability relates to the extent to which data can provide consistent results for the purpose of the research. Therefore, it is essential that the data are appropriate to answer the research question under study. The disadvantage of secondary data analysis is that the data might sometimes shed only limited light on issues that need to be covered to achieve the research aim, so it can be recognized that data collected for one purpose may not be relevant or suitable for another purpose (Soñmez 1998). Validity would refer to the degree to which the results of the data analysis accurately reflects the specific concept or predicts the criterion that the researcher is attempting to measure and therefore is concerned with the study’s success at measuring what the researcher sets out to measure (Pizam 1994).

Data for this analysis were acquired from two secondary sources. Each month, Smith Travel Research (STR) collects performance data from more than 43,000 hotels representing more than 5.7 million rooms in the United States. These data are provided by hotel chain headquarters, management companies’ owners, and directly from independent hotels that subsequently use the STR reports to benchmark their performance against the competition on a daily, weekly, and monthly basis. It is the data that allowed for a comparison of hotel performance during the period in which the oil spill occurred compared to the same monthly periods the year prior. All told, this analysis is based on 13,027,792 hotel rooms across the eight regions. These regions represent the coastal counties of six Florida subregions and two multistate regions that corresponded to the zones with a risk of oil spill impact issued by the National Oceanic and Atmospheric Administration (NOAA). As revealed in Figure 1, the eight regions roughly proportion all hotel inventory across the afflicted coastal areas with the exception of the Disney/Central East Florida and Florida Keys/southeast Florida regions.

The vacation rentals industry currently is not tracked by STR, as this industry is organized differently than the hotel industry, making data collection problematic. As privately owned vacation rental homes and condominiums, they can be booked directly from the property owner or through professionally licensed rental management companies. When renting from a rental management company, guests may receive additional benefits and professional services that are not typically offered by single homeowners, including a 24-hour customer service contact, use of resort amenities, concierge services, housekeeping, and partnerships with local vendors. It is these rental management companies that this research could access.

Instant Software is one several property management systems designed for the vacation rental industry. In 2010, the software was used by more than 20,000 rental management companies across North America that combined gave access to occupancy and average daily rates of more than 250,000 vacation homes and condominiums throughout the United States. The data needed to assess the impact of the Gulf oil spill was based on occupancy and revenue reports provided by Instant Software to its subscribers on a monthly basis. The data for these reports were derived from Instant Software’s property management system’s booking engine containing approximately 55,000 vacation rental properties in the eight-region study area (i.e., coastal counties of Florida, Alabama, Mississippi, Louisiana, and Texas). Combined, these units averaged 2.9 sleeping rooms and generated 3,114,773 reservations during the first nine months of 2010. Like the hotel industry (see Figure 1), they are equally distributed across the study regions with the exception of Southwest Florida, which contained a high 39.7% of the sample. Though the data do not represent all vacation rental homes, they provide a realistic appraisal of the professionally managed properties given the dominance of Instant Software in the marketplace.
at the time. It should be noted that Instant Software was purchased by Homeaway, Inc., in October 2010 and ceased issuing such reports in November 2010.

The use of secondary data from two data sources was deemed by the researchers to have a high degree of validity and reliability, as these data sources were the most appropriate to address the research questions related to the Gulf oil spill and compare changes across both the hotel and vacation rental industries. They were also deemed appropriate to examine differences across regions previously described. The large sample size was also deemed to provide highly reliable data enabling the results to be generalized to the population studied.

Results

The Impact on Tourism

During the first nine months of 2010, there was much headwind facing the U.S. economy. Unemployment rates were high and going up, and the commercial banking industry and stock market remained volatile as the U.S. economy was attempting to emerge from what is often called the Great Recession that began in late 2007. Adding an additional blow to the economy was the Gulf oil spill and the resulting impact of the media coverage, particularly on the Gulf Coast communities. Figure 2 provides an example of the negative publicity these Gulf Coast communities were receiving as they approached the popular summer vacation season.

Figure 3 is a map publicized two days after the explosion by the National Oceanic and Atmospheric Administration (NOAA) highlighting where the explosion took place and the probability of shoreline deposits of the toxic crude oil. All coastal counties of U.S. states in the Gulf region as well as the east coast of Florida were warned of the potential because of the prevailing ocean currents of the region. It is worth noting that Southwest Florida and the southwest coast of Texas had the lowest probabilities (<1%), whereas Northwest Florida to the southeast coast of Louisiana had the highest (81%-100%). Moreover, it is important to note that in hindsight the oil spill largely lingered off shore. Landings that occurred were along the coast of Louisiana as well as several barrier islands in Mississippi, Alabama, and Northwest Florida.
The lodging industry is one of the most visible and important sectors in the tourism economy and can account for one-third of tourists’ direct spending (Davidson, Timo, and Ying 2010; Sharpley 2000). Figure 4 represents the total hotel demand across the potentially afflicted coastal counties in each of these regions for the first nine months of 2010. Specifically, demand in 2010 is compared against the same time periods in 2009 and reported as percentage changes in total hotel demand for each region by month.

A close examination reveals that during the first three months of 2010, hotel demand was up more often than down over the same three months in 2009. Specifically, across the coastal counties in these eight regions there were 21 occurrences where hotel demand was up compared to three occurrences (12.5%) where demand was down. Hotel bookings in the Texas–Louisiana region began in 2010 down 20.2% in January and down 13.6% in February followed by gains in March to 2.5% over the same months in 2009. Across all the regions, the first three months of 2010 were positive at 1.5% for January, 2.7% in February, and 10.0% in March. Excluding the Texas–Louisiana region, demand was up in these regions over 2009 4.6% in January, 5.1% in February, and 11% in March.

The oil spill began on April 20, 2010, and eventually capped on July 15. Over the six-month period from April to September, hotel demand was greater than 2009 with 45 gains versus three declines (6.2%). The three declines occurred in July and were experienced by Northwest Florida (–0.9%), Southwest Florida (–0.6%), and Texas–Louisiana (–2.3%). A close inspection of the trends in Figure 4 reveals that hotel demand improved during the oil spill for three regions (Northeast Florida, Disney/Central East Florida, and Texas–Louisiana). On the other hand, the remaining five regions—though up over 2009—showed a softening of hotel demand during the months of these oil spills. These five regions were in the region that had the highest probability of shoreline deposits of the toxic crude oil (see Figure 3).
Figure 5 plots changes in hotel revenue across the nine-month period by the eight coastal regions. In this data set, changes in hotel demand were significantly related to changes in hotel revenue (adjusted $R^2 = 0.239, p < .001$). However, a close examination of the chart reveals that revenue was down more often than up across the first three months (14 out of 24 months) across the regions. Hotel revenue was particularly down for Central West Florida (–11.5%) and Texas–Louisiana (–19.7%) compared to the other six regions, which collectively averaged modest gains in revenue (0.8%). Once the oil spill began, hotel revenue improved for all but Northwest Florida, with an average improvement of 8.2%. The data showed significant gains in hotel revenue for Alabama–Mississippi over 2009, with a 32.6% increase.

A much different picture was experienced by the vacation rental industry (see Figure 6). During the first three months of 2010, across all eight regions there were 14 (58.3%) occurrences where demand was down over the same period in 2009, and 10 occurrences when demand was up. Across all eight regions, vacation rental bookings were down 6.5% in January, down 5.1% in February, but up 5.5% in March. The poorest performing regions during this period were Central West Florida (–15.7%), Southwest Florida (–16.0%), and Northeast Florida (–0.3%). During the next six months, demand for vacation rentals remained in decline. The hardest-hit regions were Alabama–Mississippi (–29.0%), Southwest Florida (–16.7%), Northwest Florida (10.7%), Disney/Central East Florida (–10.0%), and Central West Florida (–7.5%). Northeast Florida, which had the lowest probability of shoreline deposits from the oil spill vacation rental bookings, grew an average of 17.5% during the same period.

Figure 7 plots changes in revenue for the vacation rental industry by month across the eight coastal regions. Similar to the hotel data, changes in demand for vacation rentals was significantly related to changes in rental revenue (adjusted $R^2 = 0.389, p < .001$). Revenue was down more often than up.
across the first three months (11 of 24 months) across the regions. However, the region as a whole edged out modest improvements in revenue (0.6% gains) with the exception of Central West Florida and Southwest Florida, which reported declines of 10.3% and 11.3%, respectively. Once the oil spill began, vacation rental revenue declined more sharply down by an average of 7.9%. Alabama-Mississippi suffered the most severe declines in revenue (–38.5%) followed by Southwest Florida (–19.8%), Disney/Central East Florida (–12.0%), and Northwest Florida (–11.5%). On the other hand, Northeast Florida followed by the Keys/Southeast Florida showed gains in vacation rental revenues at 12.3% and 7.1%, respectively, over 2009 measures.

Subsequently, the same data sets allowed for an assessment of regional differences of each sector’s performance across the nine-month period. This allowed for a broader multistate comparison of the afflicted and nonafflicted regions. For parsimony, the U.S. states and territories were grouped in one of 10 regional groupings used by the vacation rental industry in reporting regional trends (Figure 8). Regions 4 and 6 contain states that experienced the highest potential of shoreline impact from the oil spill.

Figure 9 summarizes the percentage change in demand for both the hotel and vacation rental industries for the six-month period when oil slicks were present in the data set. A close inspection of the multistate regions revealed that both lodging industries performed better in 2010 as compared to 2009. Region 4, which contains Florida, Alabama, and

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**Figure 8.** U.S. regional groupings.

**Figure 9.** Regional differences in demand by lodging sector April-September 2010 versus same period in 2009.
Note: Regions 2 and 7 contained insufficient data to estimate the region’s vacation rental performance and so were eliminated.
Source: Smith Travel Research, Instant Software 2010.
Louisiana, had the lowest increases in vacation rental demand (0.5%). On the other hand, Northeast Florida outperformed its region (region 4) and the United States as a whole in both lodging sectors. Central West Florida and the Keys/Southeast Florida outperformed its region and nation in the hotel industry but not in the vacation rental industry. The data indicate that the hotel industry across the affected coastal regions performed reasonably well to better than expected during the oil spill when compared to its multistate region and the United States as a whole. However, the vacation rental industry lagged significantly behind their overall regions as well as regions across the United States. The only exceptions were Northeast Florida and the Keys/Southeast Florida.

**Discussion and Conclusion**

As argued in this article, there have been a growing number of crises and disasters affecting the tourism industries, giving rise to a need to better understand the impact of such events. Although research related to this topic has grown over the last 10 years, studies are still mainly descriptive and rely on qualitative research or small quantitative studies (Ritchie 2009), especially when focused on the accommodation industry (Wang and Ritchie 2010). In addition, research has often failed to take a systems approach to examine the more complex changes or spillover effects at a destination, industry (accommodation) or even subindustry (hotel and vacation rental industry) levels. This study has attempted to address these shortcomings through the use of secondary data sets. In using secondary data, this study has provided a better understanding of the impact of the Gulf oil spill on the accommodation industry as a whole, as well as comparisons between the hotel and the vacation rental industries, and between regions in the affected area.

This study has attempted to assess the impact of the 2010 Gulf oil spill across the U.S. coastal regions with the greatest predicted risk of oil spill contact. More specifically, two valid and reliable sources of secondary data were assessed to allow year-on-year comparisons of commercial lodging performance in the region. Though the data should not be construed to be census data from all hotels and vacation rentals in the region, the database was substantial, allowing for an objective assessment of the performance of the more professionally managed properties in the region.

A number of insights can be drawn from this study’s results that provide insights into the disaster in question. First, the publishing by NOAA of a map that predicted the probability of toxic oil spill impacts was well intended and overall reasonably accurate. The regions NOAA determined had the highest probability of impact probability (81%-100%) did indeed experience oil deposits that washed ashore. However, regions that had a relatively low to moderate impact probability like Southwest Florida (<1%) showed dramatic declines in lodging demand, which we contend can be attributed in part to the disaster. An interesting legal and policy issue evokes from this finding is, who is responsible for this business loss. Is it BP and its contractors who caused the disaster even though the oil spill never came close to affecting the region’s shoreline? Or does the responsibility fall on NOAA, whose warnings were taken out of context by the news media and vacationing public?

Second, the data clearly show the complexity of the impact, with both winners and losers from the disaster identified in the data presented in this article. Overall, the hotel industry weathered the impact much better than the vacation rental industry. Across most of the regions, the hotel demand actually improved during the months of the oil spill, particularly the coastline communities of Alabama and Mississippi. No doubt, the afflicted areas benefited from the cleanup crews and news media that chose hotels as their preferred accommodation. This confirms other studies that showed an increase in demand (Drabek 2000; Enz and Canina 2002; Faulkner and Vikulov 2001) and suggests that the influx of workers related to the disaster can help speed up response and recovery activities (Pottorf and Neal 1994). However, gains in hotel demand mirrored gains in regions of the United States that were not afflicted. Moreover, the replacement of hotel demand from vacationers who chose to cancel their reservations or simply stayed away from hotels from the influx of people who came to work with oil-removal efforts is arguably a poor substitute at the community level. According to Jim Hutchinson, the Assistant Secretary for the Louisiana Office of Tourism, “Because of the oil slick, the hotels are completely full of people dealing with that problem,” he said. “They’re certainly not coming here as tourists. People aren’t sport fishing, they aren’t buying fuel at the marinas, they aren’t staying at the little hotels on the coast and eating at the restaurants” (Associated Press 2010). As this quote suggests, the impacts may change expenditure patterns and questions may exist over whether displaced leisure and business travelers will return. As Faulkner (2001) and Ritchie (2009) suggest, disasters and crises can have transformational connotations, which can be negative and/or positive in both the short and long term.

More troubling for the leisure market was the dramatic decrease in demand for vacation rentals. Although there was evidence in the data that disaster crews were being housed in vacation rentals, this demand was not sufficient to counterbalance the loss of demand from leisure travelers. As undisclosed out-of-court settlements conclude between BP and its contractors and plaintiffs, no doubt vacation rental managers had a stronger case than hotel managers’ in documenting losses and arguing for compensation.

The data clearly show that winners and losers were also present at the regional level. Specifically, performance data from Northeast Florida’s hotel and vacation rental industries showed strong gains once the oil spill occurred, indicating a displacement effect of demand away from the Gulf Coast to the Atlantic Coast. Northeast Florida outperformed all other regions in the afflicted areas as well as the nation as a whole.
even though the first three months prior to the disaster were down. Other studies have indicated substitution effects as a result of crises, with some destinations benefiting from other’s misfortunes (Bonham, Edmonds, and Mak 2006; Cavlek 2002; Coles 2003). However, questions remain as to how long this geographical redistribution will last and what DMOs can do to either keep the increased demand or increase efforts to retrieve lost market share back from Northeast Florida.

As a result of this study, a number of potential research avenues have been identified. First, there is merit in examining the system-related impacts at a regional and industry-specific level to better understand the tourism-related implications of disasters and crises. Future research should move beyond macro descriptive studies to look at regional and sector-level differences and displacement across such regions, industries, and subindustries. Second, this study is a snapshot during a particular period of time. Future research should be longitudinal to examine displacement effects over time comparing destinations and the hotel and vacation market industries. In particular, it would be interesting to track changes in key markets in the Gulf area based on trip purpose (leisure, business) as well as geographical proximity to the crisis or disaster across both hotels and the vacation rental market. Third, future research should attempt to quantify the economic implications of the resulting market changes in the influx of cleanup crews and media outlets. For instance, although these workers may have helped offset losses from the leisure market in hotels, their spending patterns and contribution to the economy may be vastly different to the leisure or business markets. This may not be so important for hotel operators, but could be an important issue for a tourism community that is trying to recover from a disaster or crisis. In an increasingly competitive tourism market, losing market share may be difficult for some communities to regain, even with a heightened (but perhaps negative) level of media awareness and attention. Better understanding the demand-related impacts of crises and disasters could be informed by literature that assesses changes to demand as a result of events and festivals. Such studies attempt to distinguish demand between general tourist activity and specific event-related impacts by using economic impact models to account for such changes (Tyrell and Johnston 2001). Computer General Equilibrium modeling could also be used in future studies to model demand changes and assess the economic impact of crises and disasters, as it has been used previously to assess the impact due to specific events or shocks (Dwyer, Forsyth, and Spurr 2004).

Lastly, it is our hope that this research highlights the utility of secondary data useful in tourism research. Smith Travel Research makes available to academic researchers their substantial database at a reduced cost that can be used to assess hotel performance at various regional levels. In addition, as consumers and the lodging industry gravitate toward internet-based booking engines, these sales channels become an enormous source of data to assess consumer demand. Though these sales channels are limited in the data that can be shared and do not see themselves as data-brokers, the potential is there that their data are useful in addressing fundamental tourism issues.

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