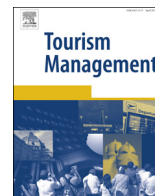




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Bed bugs bite the hospitality industry? A framing analysis of bed bug news coverage



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HIGHLIGHTS

- Conduct a framing analysis of news coverage that is pertinent to the bed bug crisis.
- Explore the role of the hospitality and travel industry in bed bug news coverage.
- Importance of understanding the news impact post-crisis as well as the role and function of news media in tourism crisis management.

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ABSTRACT

News coverage plays an important role in determining individuals' travel decisions and influencing the general tourism market. Bed bug infestation, as a growing crisis in the hospitality and tourism industry, has been featured in news coverage. This study conducted a framing analysis of news coverage that is pertinent to the bed bug crisis and to the hospitality and travel industry. Selected news articles, representing three different destinations, were retrieved from five national newspapers. Results showed that bed bug infestation has been framed as a typical health crisis, with aspects of consequence and seriousness featured. Findings further confirmed the hospitality and travel industry as frequently cited in the bed bug news coverage. A positive correlation existed between the mention of the hospitality and travel industry, and the use of either a thematic frame or the news frame consequence. Based on the findings, implications for tourism crisis management were discussed.

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1. Introduction

Bed bugs (*Cimex lectularius*), as described by the Centers for Diseases Control and Prevention (CDC) (2013), are “small, flat, parasitic insects” that feed exclusively on blood. Though bed bugs are not direct vectors for transmitting infectious disease, they can cause human discomfort and various health problems, including allergic reactions, secondary infections, and emotional stress (Goddard & deShazo, 2009; Harlan, 2006). Recently, this small pest has made a strong comeback due to (1) increased travel to and from places where bed bugs remain common (Romero, Potter, Potter, & Haynes, 2007), (2) an evolution of bed bugs' resistance to pesticides (Romero et al., 2007), and (3) people's lack of knowledge about preventing and controlling bed bugs (CDC & EPA, 2010). In addition to the occurrence of bed bugs in unclean locations and

developing countries, bed bug infestations are now very common in developed countries. The United States has been overwhelmed with bed bug complaints, and the number of reported cases has climbed consistently in the last five years (CDC & EPA, 2010; National Pest Management Association, 2013). A recent national survey shows that bed bugs are found in all 50 states in the US, and vary in prevalence from private residences to public places, such as hotels/motels, airports, and restaurants (National Pest Management Association, 2013). Indeed, as international travel continues to grow, it is impossible for hospitality and tourism establishments to become completely immune from bed bug infestation (NYC Department of Health and Mental Hygiene, 2013).

The hospitality and travel industry takes a leading role in the economy of the United States. It was estimated that in the year 2012 the industry generated US\$2 trillion in total economic output, provided 14.6 million jobs, and yielded a tax revenue of US\$128.8 billion at the federal, state, and local levels (US Travel Association, 2013a). Given the importance of the industry, impacts from any extreme or unexpected events can be devastating (Ritchie, 2004).

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Particularly, a crisis event which is health related can cause harm not only to people but also to the economy (McKercher & Chon, 2004). For example, due to the outbreak of Severe Acute Respiratory Syndrome (SARS) many destinations experienced dramatic declines in revenue and visitor numbers, including Toronto which lost 4.5 million dollars in revenue over the same period the year before and Asia which declined 70% in tourist arrivals in 2004 (McKercher & Chon, 2004; Rosszell, 2003).

Recent epidemics such as H1N1, bird flu, and foot and mouth disease have made health-related crises one of the preeminent concerns of global citizens (McComas, 2006). These concerns are particularly important for the hospitality and travel industry who serve as hosts to global citizens who travel for work and pleasure (Jonas, Mansfeld, Paz, & Potasman, 2011; Kozak, Crotts, & Law, 2007). As occurrences of health-related crises increase, we see a risk in tourists' perceptions of travel (Kozak et al., 2007; Sönmez & Graefe, 1998). As this risk increases, or more risk adverse travelers make decisions not to travel, the entire industry is therefore at risk for decreased arrivals and revenues (Gonzalez-Herrero & Pratt, 1998).

Consequently, the hospitality and travel industry has become more responsive not only to the actual health crisis but also to the impact of the news coverage of the health crisis (Kim & Wong, 2006). The news media serves as one of the primary information sources for the public, and regularly reports on health related issues (Coleman, Thorson, & Wilkins, 2011; Pew Research Center, 2008). However, the media can also elevate the true significance of the health issue. Previous research has found that news coverage surrounding crisis issues can produce unexpected news shocks, which generate negative effects on a tourism destination and lead to economic recession in the tourism sector (Kim & Wong, 2006). The true impact of the crisis may be minimal, but the news media make it a significant concern, such as the case with the recent coverage of the rise in cases of chicken pox and measles in Toronto (Chai, 2014). Therefore, scholars suggest that attention should be paid to the PR function of news media, especially within the area of tourism crisis management (Fall, 2004; Paraskevas & Altinay, 2013; Stacks & Carroll, 2005).

Additionally, researchers note that the crisis message and the manner in which news story is framed, influence tourists, officials, and the entire tourism and hospitality industry (Avraham & Ketter, 2008; Santos, Tainsky, Schmidt, & Shim, 2013). Frames used in the media can represent an image of a tourism destination (Santos, 2004a), reveal the tourism development issues within that destination (Wu, Xue, Morrison, & Leung, 2012), and influence potential tourists' evaluation of the destination (Sparks & Browning, 2011). While frames featured in crisis news coverage not merely shape the public perception towards a crisis issue (Shih, Wijaya, & Brossard, 2008), but also affect people's assessment of the perceived risk of travel and further determine their travel decisions (Sönmez & Graefe, 1998). Understanding media frames in the crisis news coverage that pertinent to the hospitality and travel industry is therefore critical and essential because it can assist the industry in detecting signals of a potential crisis (Paraskevas & Altinay, 2013), protect the destination image and the reputational assets during a crisis (Avraham & Ketter, 2008; Coombs, 2007), and accelerate the recovery process as well as remedy the negative consequences after a crisis (Coombs, 2007; Ritchie, 2004).

Accordingly, a growing body of literature is dedicated to studying the way in which crises are framed in news media. Recognizing that each health issue is unique in nature, and that media framing is dynamic process of reinforcement, scholars address that it is impossible to generalize findings from one single research study to another and that a situational approach is necessary (Shih et al., 2008). Bed bugs have been frequently

reported by news media (Anderson & Leffler, 2008), but empirical research examining messaging by the news media is embryonic. When considering the potential impact of a health-related crisis and the critical role news media played in crisis communication, it is necessary for the tourism and hospitality industry to have a comprehensive understanding of media frames. Given that, this research aimed to fill the knowledge gap by identifying the main frames that have been used in news coverage of bed bugs, and to provide empirical references for practitioners in order to increase their preparedness and to create effective response strategies toward a health-related crisis.

2. Literature review

2.1. The role of news coverage in tourism crisis management

It has been widely acknowledged that media plays an important role in the hospitality and tourism business, where media content has the potential to shape tourists' evaluation of a destination and to influence their selection of tourism products (Sönmez & Graefe, 1998). Indeed, an effective use of media strategy advances the advertising and marketing of tourism products and hospitality services; however, the tourism crisis management function performed by mass media, which is an important toolkit, has been overlooked (Crotts & Mazanec, 2013; Fall, 2004). Crisis events have been frequently reported on mass media and this type of coverage can damage the hospitality and travel industry in many ways, such as disruption of daily operation, impaired reputation of the industry, and increased hesitation of traveling. Cumulatively, an unfavorable destination image as well as revenue reduction in the tourism sector may occur as a result of the crisis media coverage, the lack of attention on this issue, as well as the inefficiency of crisis management practices (Fall, 2004).

News media enjoys an enormous popularity in mass media and serves as a major agent for the public to acquire risk-related information (Avraham & Ketter, 2008). To measure the destination image that featured within news coverage, scholars use two dimensions: one is the quantity, which examines elements such as the number of news reports, the length of news articles, and the section and pages in which the news item is published; the other one is the nature, which focuses on subtle perspectives and addresses the content of the news article (Avraham & Ketter, 2008). However, in order to increase the "story value" and to compete for the scarce spaces in newspaper, journalists have the tendency to cover crisis events selectively, deliberately focusing on serious risks (Kasperson & Kasperson, 1996). Such social amplification process of risks can exert effects on the hospitality and tourism industry, where studies found that the outbreaks of crises, manifested as media events, can lead to destabilization in tourism flow and decrease in tourism income within a destination (Sönmez, Apostolopoulos, & Tarlow, 1999). Thus, it is believed that understanding how a crisis is framed by news media can provide meaningful insights to crisis managers to create appropriate crisis response strategy and to minimize the damages brought by a crisis event (Coombs, 2007). In the field of tourism crisis management, the need for further research in this area has been brought to the frontline as a prominent concern (Crotts & Mazanec, 2013).

2.2. Framing theory

Frames, as described by Goffman (1974), are "schemata of interpretation" (p. 21). Gitlin (1980) elaborated on this definition, and conceptualized frames as "the principles of selection, emphasis and presentation composed of little tacit theories about what exists, what happens and what matters" (p. 6). Consistently, Entman

(1993) suggested that framing involves the process of selection and salience and framing can be defined as.

... to select some aspects of perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation for the item described (p. 52).

The pragmatic utility of a framing approach has been broadly acknowledged since it underlines the “psychological process that people use to examine information, to make judgment and to draw inference about the world around them” (Hallahan, 1999, p. 206). Consequently, framing has been used in a variety of disciplines, such as management and organizational studies, social movement studies, political science and media studies, and mass communication (Hallahan, 1999; Hertog & McLeod, 2001). Acknowledging that the heart of framing lies in “construction of social reality” (Hallahan, 1999, p. 206), some scholars (Hertog & McLeod, 2001) approached framing from a cultural perspective, focusing on the symbolic power of frames and exploring the “excess meaning” among different groups in a population (p. 141).

However, the preponderance of research concerning framing has rendered it a cognitive phenomenon and scholars of mass communication have examined framing as media effects (Scheufele, 1999). From a theoretical perspective, Scheufele (1999) conceptualized framing as a process model. He divided framing into two dimensions—individual frames and media frames. An individual frame explained “how audience make sense of news” (Scheufele, 1999, p. 107); while a media frame referred to “a central organizing idea or story line that provides meaning to an unfolding strip of events ... the frames suggest what the controversy is about, the essence of the issue” (Gamson & Modigliani, 1987, p. 143) (see cited in Scheufele, 1999, p. 106). Despite the theoretical distinctness, these two frames are intertwined in the sense that both of them contribute equally to the framing process and that they can influence each other and result in an opinioned public discourse (Lawrence, 2004; Scheufele, 1999).

From a practical perspective, Tankard (2001) has proposed three types of empirical approaches to media framing. They are “media package,” which mainly looked at how a particular frame was presented in a media message; a multidimensional approach, which suggested that framing should be perceived as a concept that consists of various elements instead of a single interpretation; and the “list of frames” approach, which conceptualize framing as a continuous building process and therefore a strategic agenda can be extracted (p. 99–101).

2.3. Framing analysis in tourism management

In a tourism context, framing analysis enables researchers to obtain a general understanding of media frames that used to portray a tourism destination, to explore the social-cultural element of tourism narratives, and to reveal the interplay of media discourse and tourism practices (Santos, 2004a; Wu et al., 2012). Some studies attempted to depict the framed image of a tourism destination in mass media. For example, Santos (2004a) has content analyzed travel news articles from four U. S newspapers and identified two frames that used to represent Portugal as a tourism destination. Hamid-Turksoy, Kuipers, and Van Zoonen (2014) used a similar approach and examined the destination image of Turkey in the British news coverage. Equipped with a constructive paradigm, some studies used framing analysis to emphasize other elements associated with a tourism destination. For instance, Buzinde and Santos (2008) conducted a textual

analysis of tourism promotional materials and identified main frames that were used to represent the slavery theme within a cultural heritage site. By revealing the media discourse process, they (Buzinde & Santos, 2008) also documented the process of creating collective memory via the means of framing. Using framing analysis, Wu et al. (2012) reported the holiday system reform process in China and indicated the influences of government policies on a tourism destination. Some scholars attempted to express the framing process from an audience's perspective. Santos (2004b), for example, examined college students' perception and interpretation of leisure articles that appeared in newspapers. The results of the study revealed three central themes as well as the role of writers in readers' perception (Santos, 2004b). Rozier-Rich and Santos (2011) further examined how tourists processed the promotional materials and addressed the role of skepticism in travel promotional communication.

A growing body of research has incorporated framing analysis since last decade or so, ranging from perspectives of sociology, linguistics, marketing to policy research. Despite the feature of interdisciplinary, contemporary scholars suggest that future research using the framing analysis should move to a new direction, which emphasizes “issue-specific frames related exclusively to a particular topic” (Santos et al., 2013, p. 67). And now, health crisis has emerged as an important topic in current events, and previous research has observed that health crisis events can produce dramatic impact on the tourism market (Kim & Wong, 2006; McKercher & Chon, 2004). Surprisingly, understanding news frames that are pertinent to health crisis and to the tourism and hospitality industry remains an unexplored territory.

2.4. Framing a bed bug crisis

In the area of crisis communication, the significance of framing analysis has already been recognized; frames have been seen as a powerful mechanism that capable of modifying public perception of a crisis (Coombs, 2007), shaping public opinion (Knight, 1999), and directing public discourse (Coombs, 2007; Knight, 1999). When reporting a crisis event, previous literature noted that a small number of media frames have appeared constantly in the news: conflict, economic, consequence, human interest and morality (Neuman, 1992). With an attribution process, however, two news frames can be further identified, namely, episodic news frame, which focused on individuals or a single event, and thematic news frames, which “placed issues and events in a general context, such as organizational or societal” (An & Gower, 2009, p. 108). A content analysis of crisis news coverage suggested that although all five frames (conflict, economic, consequence, human impact and morality) were present when reporting a crisis event, the usage of a specific frame differed by crisis type, as did the level of attributions (episodic and thematic) (An & Gower, 2009).

When communicating a health-related crisis, researchers (Shih et al., 2008) have expanded the original typology and added health-related frames to include frames of consequence, uncertainty, action, reassurance, conflict and new evidence. A consistency of these six frames was observed when comparing news coverage reporting avian flu, mad cow disease and West Nile virus (Shih et al., 2008). Another study (Liu & Kim, 2011) also demonstrated the validity of this typology through content analyzing different organizations' media framing of 2009 H1N1 pandemic. In addition to the content of a health-related news story, previous studies (Chapman, 2001; Coleman et al., 2011; Iyengar, 1994) suggested that understanding whether the issue was framed as episodic or thematic was extremely significant. The attention to this area was highlighted because the type of message framing (episodic/thematic) could influence public's perception of a health

issue, determine the urgency of a health problem within society, and further drive individuals' health behavior (Coleman et al. 2011).

2.5. Research questions

Based on a synthesis of previous literature and guided by framing theory, the following research questions were addressed in the present study:

RQ1. How are bed bugs framed in news coverage?

RQ1a. What is the frequency of different episodic or thematic frames in bed bug-related news coverage?

RQ1b. What is the frequency of different news frames in bed bug-related news coverage in terms of consequence, uncertainty, action, reassurance, conflict, and new evidence?

RQ2. How are bed bugs framed differently according to different newspapers?

RQ2a. Is there any difference in the usage of attribution frames between different newspapers when reporting a bed bug related story?

RQ2b. Is there any difference in the usage of news frames between different newspapers when reporting a bed bug related story?

RQ3. To what extent is the hospitality and tourism industry mentioned in bed bug related news coverage?

RQ3a. How often is the hospitality and tourism industry mentioned in bed bug related news coverage?

RQ3b. Is there any difference in mentioning the hospitality and tourism industry in bed bug related news coverage between different newspapers?

RQ3b. Is there any relationship between the mention of the hospitality and tourism industry and the usage of attribution frames and news frames?

3. Methods

3.1. Research design

Framing analysis was adopted as the primary analytical method. The adequateness of framing analysis lies in the inseparable relationship between news discourse and framing. Newspapers have long been regarded as one of the “most prominent discursive sites” that allows researchers to understand framing and its underlying mechanism (D'Angelo & Kuypers, 2009, p. 1). Framing analysis has become distinguished from other theoretical approaches, since it acknowledges the symbolic power of news text, follows the “assumption of the rule-governed nature of text formation,” and emphasizes the cognitive impact of audiences' producing and consuming news content (Pan & Kosicki, 1993, p. 58). Consequently, it is believed that the use of framing analysis in this study can help researchers obtain a general understanding of media discourse concerning bed bugs, and further explore the potential impact on the hospitality and travel industry (D'Angelo & Kuypers, 2009; Hertog & McLeod, 2001; Pan & Kosicki, 1993).

The present study was exploratory in nature and was intended to explore the potential impacts of bed bug news coverage on the hospitality and travel industry. Cities of New York City (NYC), Washington D. C. (DC), and Los Angeles (LA) were selected as the primary study sites – they were all listed as the most bed bug-plagued regions in the United States (National Pest Management Association, 2013), as well as one of the most visited U.S. tourism destinations for both domestic and international travelers (Office of Tourism and Travel Industries, 2013; US Travel Association, 2013b). Thus, five newspapers (*Wall Street Journal*, *New York Times*, *USA Today*, *Washington Post*, and *Los Angeles Times*) that publish in these

areas were included for the analysis. In addition to the regional representativeness, all of the selected newspapers are circulated on a daily basis and enjoyed the largest of readerships within the entire nation (Pew Research Centre, 2013).

Specifically, a quantitative framing analysis was employed in this study aiming at examining the language use in the news text, investigating the emphasis of the news discourse, and revealing the similarities and differences of the frame prominence in various news articles (Hertog & McLeod, 2001). A descriptive analysis was conducted to reflect the overall trend of the bed bug news coverage and frequency counts were employed to unveil the significance of the frames. In addition, comparisons were made between different newspapers for the presence of frames, and a series of Phi Coefficient tests were employed to investigate the relationship between the mention of hospitality and travel industry and the appearance of a news frame.

3.2. Sample

The news stories came from a keyword search of *Access World News* and *ProQuest* databases. Using the keywords “bed bug,” “bed bugs,” “bedbug,” or “bedbugs” appearing in the headline, researchers retrieved news articles published in the selected newspapers—*Wall Street Journal*, *USA Today*, *New York Times*, *Los Angeles Times*, and *Washington Post*. The time frame adopted in this study was between Jan 1, 2003—when a previous study (Anderson & Leffler, 2008) observed a dramatic increase in bed bug news coverage, and October 8, 2013—when the data collection was completed. Excluding duplicate news articles, the search yielded a sample of 88 articles.

3.3. Coding scheme

The unit of analysis for this study was the news article. The coding instrument consisted of basic information about the article, the appearance of an attribution frame, the mention of the hospitality and tourism industry, and the presence of a health-crisis related frame. The basic information included the published date, news organization, published section, and word count of the story. With respect to the attribution frames, previous literature (An & Gower, 2009; Chapman, 2001) has identified two categories: (1) *Episodic*—if the news story only reported one single incident and being personal or victim focused; and (2) *Thematic*—if the news has covered multiple events, discussed the topic as a broad problem and/or associated it with a social issue. Further, the mention of the hospitality and travel industry was coded with its appearance in a news story. Acknowledging that bed bug infestation has become a challenge for public health (CDC & EPA, 2010), and that bed bug infestation can be crisis in nature, a typology of health-crisis related frames (Liu & Kim, 2011; Shih et al., 2008) was adopted as the primary coding scheme for news frames.

However, results of a preliminary analysis indicated that a new category emerged when coding the health-crisis related news frames. And a closer examination of the content has led to the decision that “seriousness” was added to the original coding scheme. As a result, a new typology of health-crisis related frames was used to guide the coding, and frames of *Consequence*, *Uncertainty*, *Action*, *Reassurance*, *Conflict*, *New Evidence* and *Seriousness* were included (Table 1).

3.4. Inter-coder reliability

Two trained coders completed the coding process independently—one researcher coded the entire sample while a second coder coded 17 random selected articles, which is about 19% of the sample. Scott's Pi test was used to assess the inter-coder reliability

Table 1
Coding scheme and inter-coder reliability.

Item	Definition	Scott's Pi
Attribution Frame		
Episodic	The article only reported one single incidence and being personal or victim focused	0.881
Thematic	The article has reported multiple events, discussed the topic as a broad problem and/or associated it with a social issue	0.882
Health-Crisis Related Frame		
Consequence	The article has discussed the consequence (damage) of bed bug infestation	0.820
Uncertainty	The article has reported different aspects of bed bug infestation, such as the cause, the cure and the possible spread	0.875
Action	The article has reported actions against bed bug infestation	0.866
Reassurance	The article has expressed the idea that public should not be worried about bed bugs	0.875
Conflict	The article has focused on the differences in opinions and disagreements among news source	0.875
New Evidence	The articles has reported new findings of research effects of new evidence that help advance the understanding of bed bugs	0.875
Seriousness	The article has phrased bed bug infestation as a serious issue	1
Mention of Hospitality and Travel Industry	The article has mentioned the hospitality and travel industry in the report	1

and the results indicated that the reliability value of each variable varied from 0.82 to 1 (Table 1), which are all above an acceptance level of 0.80 (Riffe, Lacy, & Fico, 2005).

4. Results

4.1. Descriptive analysis

The final sample consisted of 88 news articles. The average length of sample articles were 703 words, with the longest story containing 1777 words and the shortest, 34 words. As shown in Table 2, most of the selected articles (80.7%, $n = 71$) can be categorized as news, followed by feature articles (10.2%, $n = 9$), and editorial/commentary articles (9.1%, $n = 8$). The majority of the sample articles (61.4%, $n = 54$) were published by the *Wall Street Journal* (27.3%, $n = 24$), *New York Times* (25.0%, $n = 22$), and *USA Today* (9.1%, $n = 8$); all of which were newspapers from NYC. About one-fifth (20.5%, $n = 18$) of the sample articles were published by the *Washington Post*. And the rest (18.2%, $n = 16$) were published by the *Los Angeles Times*. In addition, approximately one-third (33.3%, $n = 29$) of the selected articles were published in the Regional News/Metropolitan section, and about one fifth (19.3%, $n = 17$) were published in the National News section. The rest of them were published in a diversity of sections, such as Business/Finance section (15.9%, $n = 14$), Opinion Editorial section (9.1%, $n = 8$), Front section (6.8%, $n = 6$), Life/Style section (6.8%, $n = 6$), Health/Science section (5.7%, $n = 5$), and Travel section (3.4%, $n = 3$).

As shown in Fig. 1, about half (44.3%, $n = 39$) of the news articles were published in the year 2010. The quantity of news articles concerning the bed bug infestation increased steadily from 2003 to 2006; but the number of news articles fluctuated between 2007 and 2009, as well as during the period of 2011–2013.

Table 2
General characteristics of sample articles.

	Frequency	Percentage
Document type		
News	71	80.7
Feature	9	10.2
Editorial/Commentary	8	9.1
Source		
Wall Street Journal	24	27.3
New York Times	22	25.0
USA Today	8	9.1
Washington Post	18	20.5
Los Angeles Times	16	18.2
Section		
Regional News/Metropolitans	29	33.0
National News	17	19.3
Business/Finance	14	15.9
Opinion/Editorial	8	9.1
Front Section	6	6.8
Life/Style	6	6.8
Health/Science	5	5.7
Travel	3	3.4

4.2. Frames

RQ1: How are bed bugs framed in news coverage?

4.2.1. Attribution frames

The first set of research questions examined the most frequently used frames in news coverage surrounding bed bugs. As shown in Table 3, approximately forty-seven percent of the sample articles (46.6%, $n = 41$) were identified as episodic articles, which mainly reported a single incident that was related to bed bugs. Various types of properties were reported as bed bug attacked, such as residential apartments, retail stores, cinemas, hotels, office buildings and schools. In addition to a forced disclosure, all these infested properties were requested to have a professional examination, which, according to a news article, was “a complicated, laborious process requiring customized strategies and multiple visits.”

More than half (53.4%, $n = 47$) of the sample articles were identified as thematic news stories, which covered multiple events and tended to frame a bed bug news story at an aggregated level. A *Wall Street Journal* article, entitled “The bedbug invasion: City's problem with bedbugs getting itchier,” best exemplified a thematic news story. It not merely reported the exploding bed bug crisis in New York City, and depicted the emotional stress associated with the bed bug plague among New Yorkers, but also addressed the seriousness of bed bug infestation as a national issue, as it commented, “bedbugs are in every state and that there is no regional hot spot for infestation ... Fairly evenly across the country, people are having experiences with bedbugs.”

4.2.2. Health-crisis related frames

Consequence. When examining the presence of health-related frames, consequence (75.0%, $n = 66$) has been identified as a dominant frame. The sample articles generally discussed different outcomes brought by bed bugs, varying from individual suffering, such as allergic reactions, secondary infection, and psychological effects; company loss, such as business closure, lawsuits, and reputation damage; to a broader sense of influence such as social stigma. For instance, one *New York Times* article illustrated the stigma effect of bed bugs, reporting that.

Beyond the bites and the itching, the bother and the expense, victims of the nation's most recent plague are finding that an invisible scourge awaits them in the form of bedbug stigma. Friends begin to keep their distance. Invitations are rescinded.

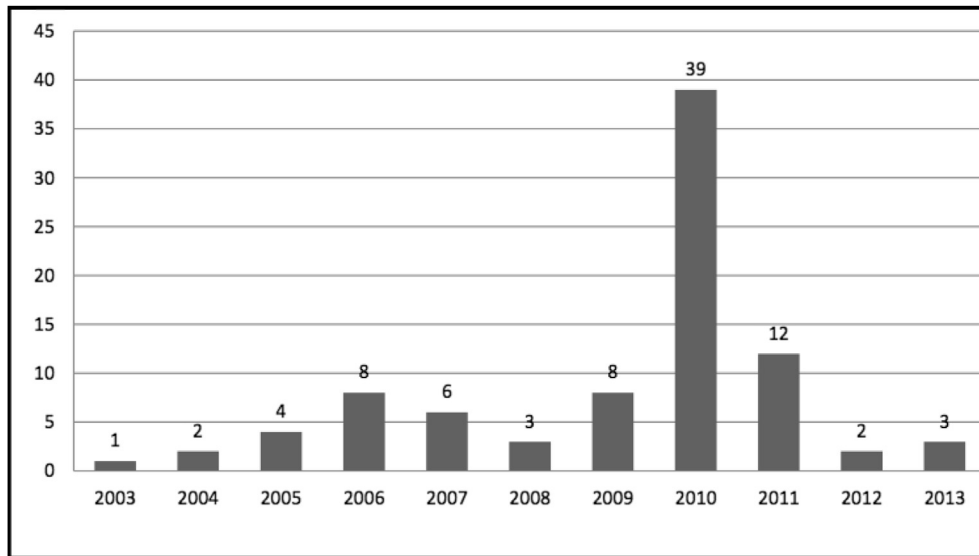


Figure 1. Number of bed bug news articles over time ($N = 88$).

... Fear and suspicion are creeping into the social fabric wherever bedbugs are turning up, which is almost everywhere.

Seriousness. Seriousness was another frame (72.7%, $n = 64$) that featured in selected news articles repeatedly and unexpectedly. The sample articles tended to present the seriousness of bed bug infestation in three ways. Taking a medical perspective, the first focus concentrated on the serious outcome produced by bed bugs on personal health. For example, one news article quoted a doctor's accounts of his patients' pain from being attacked by bed bugs as "sacrificing themselves because they are literally being eaten as they sleep." Second, the selected articles attempted to emphasize the catastrophic nature of bed bug infestation, using metaphors. One news article in the *New York Times* quoted a doctor, commenting that, "It [bed bug infestation] really is like H1N1 Everybody is concerned about it, wondering if they'll be next". And another lady was also quoted, saying that "It's [bed bug infestation] like terrorism Just cross your fingers and keep going." Third, by citing and listing numbers, the sample articles tried to depict the prevalence of bed bug plague comprehensively. For instance, one news article reported the intense condition of New York City as "the city just declared war on bed bugs, citing a 2000% rise in complaints since 2005." Another news article used industry data to demonstrate the growing trend of bed bug infestation, as it said, "Western Exterminator Co., which serves California, reported a 240% increase in bedbug work from 2000 to 2006. Isotech Pest Management Inc.

Table 3
Frames in bed bug news articles.

	Frequency	Percentage
Attribution Frame		
Episodic	41	46.6
Thematic	47	53.4
Health-Crisis Related Frame		
Consequence	66	75.0
Seriousness	64	72.7
Uncertainty	38	43.2
Action	33	37.5
Reassurance	33	37.5
New Evidence	29	33.0
Conflict	28	31.8

in Pomona is conducting about 1000 inspections a month – 700% more than last year."

Uncertainty. A handful of the included articles (43.2%, $n = 38$) discussed the uncertainty aspect of bed bugs. According to the sample articles, it was known that, "the only way to get rid of bed bugs is extermination by a professional"; but "entomologists say it is unclear why the pest have made a comeback." Despite that a variety of solutions have been offered in these news reports, such as heat treatment, snowy spray, and sniffing dogs, remedying the bed bug issue was still challenging. In one article featured in the *Wall Street Journal*, an entomology professor commented: "We don't have any easy method of elimination, ... We are looking for the silver bullet."

Action and reassurance. With 33 stories each, action and reassurance (37.5%, $n = 33$), were frames that frequently presented in bed bug news coverage. The action frame included stories that highlighted actual measures aimed at combating the bed bug problem, such as a company taking necessary steps to eradicate the bed bug problem, EPA holding a national bed bug summit, and government establishing bed bug related policies. The reassurance frame was characterized by stories expressing the idea that the public should not be worried about this issue. These two frames were closely tied because actions could always deliver a sense of relief to the general public. For instance, one article in the *New York Times* said that holding a bed bug summit is a great opportunity in which "the two-day conference brought together the Centers for Disease Control and Prevention, the Pentagon, state and Federal housing officials, experts, and exterminators to help fight the invasion." Similarly, another news article in the *Los Angeles Times* explicated a sense of ecstasy and gladness: "Fortunately, the Federal government is on the case."

New evidence and conflict. About one-third (33.3%, $n = 29$) of the sample articles did report new findings and research efforts advancing our knowledge of bed bugs, such as bed bugs' increased biochemical defenses against common pesticides, evolved biological characteristics, and some possible treatments eliminating a bed bug problem. Meanwhile a small amount of articles (31.8%, $n = 28$) have expressed contradictory viewpoints, arguing whether bed bug infestation should be defined as a major public health threat like other health epidemics. The connection between these two frames was obvious, in that lacking a clear consensus about bed bugs not

only confined our understanding of this issue, but also limited the opportunity to conduct advanced research in this area. As one *Washington Post* article commented, “research on the public health effects of the bugs has not received much support because even though their bites can provoke allergic reactions, unlike ticks and mosquitoes they are not known to spread disease.” And as a result, “some researchers say they fear that the federal bureaucracy can’t move fast enough to address the growing infestations. Supports on the public health effects of the bugs have not received much support ...”

4.3. *Frames used by different newspapers*

RQ2. *How are bed bugs framed differently according to different newspapers?*

The second set of research questions concerned the usage of the frames by newspapers when reporting bed bug related stories. Based on location, three groups of media were categorized: New York City (NYC), which included news articles that were published in the *Wall Street Journal*, *New York Times* and *USA Today*; Washington D. C. (DC), which contained news articles that were published in the *Washington Post*; and Los Angeles (LA), which covered news articles that were published in the *Los Angeles Times*. As shown in *Table 4*, frequencies were counted to report the usage of news frames and chi-square analyses were employed to explore whether the usage of news frames differed by newspaper.

Comparing the newspapers of different regions, significant differences were found for the frequency of using episodic ($\chi^2 = (2, n = 88) = 7.95, p < 0.05$) and thematic frames ($\chi^2 = (2, n = 88) = 7.95, p < .05$). The episodic frame was more frequently used by newspapers from DC (66.7%, $n = 12$), but less frequently employed by newspapers from NYC (48.1%, $n = 35$) and LA (18.8%, $n = 3$). In contrast, the thematic frame was more commonly used by newspapers from LA (81.2%, $n = 13$), than newspapers from NYC (51.9%, $n = 28$) and DC (33.3%, $n = 6$).

Further, no significant differences were noted on newspapers’ use of health-crisis frames; and both consequence and seriousness were dominant frames that have been identified in the analyzed newspaper stories. Such a notion led to the finding that, despite the regional differences, similar news frames have been consistently and constantly used by newspapers to phrase bed bugs in their coverage.

4.4. *The mention of hospitality and travel industry in bed bug news coverage*

RQ3. *To what extent is the hospitality and tourism industry mentioned in bed bug related news coverage?*

Table 4
Comparison of the usage of news frames by newspaper.

Newspapers	Total	NYC (N = 54)		DC (N = 18)		LA (N = 16)		χ^2
		n	%	n	%	n	%	
Attribution Frame								
Episodic	41	26	48.1	12	66.7	3	18.8	7.95*
Thematic	47	28	51.9	6	33.3	13	81.2	7.95*
Health-Crisis Frame								
Consequence	66	41	75.9	14	77.8	11	68.8	0.43
Seriousness	64	37	68.5	14	77.8	13	81.2	1.30
Uncertainty	38	20	63.0	8	44.4	8	50.0	2.26
Action	33	17	68.5	8	44.4	8	50.0	4.12
Reassurance	33	22	41.5	6	33.3	5	31.2	0.75
Conflict	28	17	31.5	3	16.7	8	50.0	4.34
New Evidence	29	20	37.0	4	22.2	5	31.2	1.37

Note: * $p < 0.05$.

The third set of research questions examined the presence of hospitality and travel industry in news stories concerning bed bugs. As shown in *Table 5*, more than half ($n = 49, 55.7\%$) of the sample articles did mention the hospitality and travel industry in their reports, but no significant differences were found in the frequency of mentioning hospitality and travel among different newspapers.

To further investigate the relationship between news frames and the presence of hospitality and travel, Phi’s coefficient tests were conducted. This is a measure of association for two variables, and the value ranges from -1 to $+1$, where -1 indicates a perfect disagreement and $+1$ indicates a perfect agreement between the variables. Interestingly, the results (*Table 5*) indicated that the component of hospitality and travel was more likely to be presented in thematic news stories ($\Phi = 0.27, p < 0.05$), and was less likely associated with an episodic news reports ($\Phi = -0.27, p < 0.05$). Another significant correlation was noticed between the news frame consequence and the presence of hospitality and travel ($\Phi = 0.28, p < 0.01$), implying that the newspapers of NYC, Washington D. C. and Los Angeles, were prone to feature hospitality and travel when discussing and referencing the consequences caused by bed bugs in their news coverage.

5. **Discussions**

The purpose of this study is to examine media frames surrounding the bed bug infestation, a growing crisis in the hospitality and travel industry, and to explore the role of hospitality and travel industry within this set of news coverage. Results of the descriptive analysis indicated that the news articles included in this study persist a scope that beyond tourism and travel. The diverse nature is revealed through the different sections in which the sample articles were published and the various ways of media discourse in which the bed bug infestation was portrayed. Interestingly, the majority of the bed bug articles can be categorized as metropolitan or national news, which acts as an indicator of urgent social issues, receives large amount of public attention, and covers events that have symbolic meanings for a destination (Coleman et al., 2011; Kasperson & Kasperson, 1996; Sönmez et al., 1999).

Our first set of research questions concerned about the media frames that used by journalists to report the bed bug crisis and the second set of research questions compared the usage of media

Table 5
Results of Chi-Square and Phi coefficient tests.

Newspaper	Frequency of mentioning the hospitality and travel industry				χ^2
	Yes (N = 49)		No (N = 39)		
	n	%	N	%	
NYC	29	59.1	25	64.1	0.22
DC	11	22.4	7	17.9	0.27
LA	9	18.4	7	17.9	0.03
Attribution frame					Φ
Episodic	17	34.7	24	61.5	-0.27*
Thematic	32	65.3	15	38.5	0.27*
Health-crisis related frame					
Consequence	42	85.7	24	61.5	0.28**
Seriousness	37	75.5	27	69.2	0.07
Uncertainty	25	51.0	25	64.1	-0.13
Action	27	55.1	26	66.7	-0.12
Reassurance	17	34.7	16	41.0	-0.06
Conflict	16	32.7	12	30.8	0.02
New evidence	15	30.6	14	35.9	-0.05

Note: ** $p < 0.01$, * $p < 0.05$.

frames by different newspapers. Regardless of the specific news media, the primary findings shows that the selected news articles framed bed bug infestation as a typical health crisis, consistently using frames of consequence, uncertainty, action, reassurance, new evidence and conflict (An & Gower, 2009). Although a similar framing typology has been observed, the predominance of consequence frame and the emergence of the new frame seriousness suggest that the selected news articles display their keen awareness on substantive aspects of the bed bug infestation, especially on its potential risks. This implies that the actual risks that are associated with bed bugs might be attenuated within the social context (Kasperson & Kasperson, 1996). Intriguingly, previous research notes that action frame has always been associated with the frame of consequence, because the public expects to receive effective crisis response either from the government or from the relevant organizations (Liu & Kim, 2011; Shih et al., 2008). Such decreased focus on action may account for the emergence of the new frame seriousness, since intensive attention has been displayed on the outcome of the crisis instead of effective actions that combat the problem. Thus, the notion of seriousness cannot be merely taken as a superficial element that added to the news value; instead, it suggests the society may receive an incorrect message, generate a misperception of bed bug crisis, and therefore exaggerate the severity (Kasperson & Kasperson, 1996).

Additionally, this study notices the differences that exist between different newspapers in terms of the use of episodic and thematic frames. By offering a specific example or particular case, the use of episodic frame is more frequently associated with individuals and tend to generate the emotional response from the audience, such as sympathy, empathy and the sense of understanding; while the thematic frame is normally positioned with in a broader context and under this circumstance audiences are more likely to attribute the responsibility of the issue at an aggregated level (Liu & Kim, 2011). The type of newspaper may account for the differentiation of using thematic and episodic frames, but noticeably, readers may tend to ascribe the responsibility of a bed bug infestation to an organization, to the industry, or to the government.

The third set of research questions was concerned with the mention of the hospitality and travel industry in the bed bug related news coverage. Findings of this study confirm hospitality and travel industry as frequently cited in the bed bug news coverage. This in part can be explained by the fact that international travel has been blamed as one of the main reasons causing the bed bug resurgence and that hotels are one of the most common locations where people encounter bed bugs (Harlan, 2006; National Pest Management Association, 2013). However, this finding is alarming for the hospitality and travel industry. Tourists, who are equipped with limited knowledge of bed bug infestation and insufficient information of a new destination, rely on news media for information (Sönmez et al., 1999). During a crisis event, tourists construct their risk perception on a subjective base (Sönmez & Graefe, 1998; Sönmez et al., 1999). When exposed to news coverage that consistently frames bed bug infestation as a typical health epidemic and repeatedly refers to the hospitality and travel industry, it is natural for them to perceive bed bug infestation as a threat to their health and place the bed bug issue at the frontline of their concerns.

Further, this study shows that the mention of the hospitality and travel industry is related to the use of either the thematic or the consequence news frame. The use of thematic frame acts as a strong indicative of the social amplification process of risks, and the use of consequence frame demonstrates the focus of public attention. In terms of the rippling effects, individuals, who are aware of the negative consequences of bed bug infestation, may interpret the incident as a serious social issue that specifically links to the tourism sector (Kasperson & Kasperson, 1996). Similarly, tourists

may regard bed bug infestation as a salient issue and therefore generate an increased level of perceived risk (Sönmez et al., 1999). Meanwhile such an assumption can also pose a reputational threat to the hospitality organization and even stigmatize the whole destination as bed bug infested (Coombs, 2007). Consequently, a short-term outcome may be reflected as tourists' tendency of avoiding a destination, and a long-term outcome may be manifested as a distorted destination image that embedded with the public cognitively (Kozak et al., 2007; Sönmez & Sirakaya, 2002).

6. Implications for tourism crisis management

According to Ritchie (2004, 2008), one of the best practices in tourism crisis management is to prevent a crisis's occurrence. Mass media, which bridges the communication gap between the industry and the potential customers, can act as one of the core detectors for the industry to diagnose a potential crisis (Paraskevas & Altinay, 2013; Stacks & Carroll, 2005). As an essential step, crisis managers should pay attention to media content and monitor the media discourse surrounding crisis issues that are important to the hospitality and travel industry. Such an attempt not only can help practitioners acquire an understanding of public concerns that may influence people's decision on consuming tourism products, but also can benefit the company in establishing public relation campaigns that cope with specific crises in advance and building positive brand images with a long-term perspective (Stacks & Carroll, 2005).

Many practitioners now limit themselves to the marketing and advertising function of mass media, without recognizing the capability of mass media as a tourism crisis management strategy (Fall, 2004). An effective crisis management plan requires both internal and external crisis communication, where internal communication refers to maintaining smooth crisis information flow within a hospitality organization, and external communication largely demands an adequate use of mass media (Ritchie, 2008). An implementation of crisis communication strategy via news media therefore becomes important. Particularly, scholars suggest that three aspects need to be stressed, namely, media source, message, and target audience (Avraham & Ketter, 2008). First, it is the hospitality organization's responsibility to ensure that transparent and open conversations and dialogues are maintained during the special times of crisis. To satisfy the public's need of crisis related information, crisis managers need to guarantee that the media source is under control and the crisis situation is communicated appropriately. Second, it is imperative for the hospitality organizations to employ a proper crisis response that matches the crisis situation (Coombs, 2007). For example, a recent study notices that tourists, who were attacked bed bugs in hotel rooms during their stay in the New York City, expected corrective actions as a suitable response from the hotel end (Liu, Pennington-Gray, Donohoe, Omodior, in press). In light of this, to repair the brand image and remedy the negative outcomes following a bed bug crisis, hospitality practitioners in the future should address their actions combating the bed bug issue in response to potential customers' concerns. Third, and of equal importance, crisis managers should strive to learn about their market and locate the target audience (Avraham & Ketter, 2008). Practitioners need to conduct exhaustive market analysis on a regular basis, which can help them profile current customers as well as segment the potential market.

As an emerging trend, it is noticeable that multiple media platforms are involved in the crisis communication process. Several studies (e.g. Sigala, 2011) have documented tourists' use of social media during the times of crisis and recently an empirical study reveals that contemporary tourists also use social media to express their concerns towards a health related crisis (Liu et al., in press).

This not only corresponds to the finding of the current study, but also suggests that additional attention should be paid to the framing function of new media. Thus, to craft an effective crisis communication plan for various hospitality establishments, it is not merely enough to have a general crisis management plan, but to also have a crisis response strategy which is appropriate to the crisis situation, timely, and consistent across all media platforms (Coombs, 2007; Ritchie, 2008).

7. Limitations and future research

The present study was not without drawbacks. The limited sample size is a main concern. But given the representativeness of the sample articles and the sharp increase in the volume of news reporting bed bug infestation among the nation (Anderson & Leffler, 2008), findings of this study are still meaningful. Meanwhile, to establish a more comprehensive understanding, future research should attempt to cover a wider diversity of news media and to include a larger sample size. Another concern has been due to the fact that the current study has displayed its main focus on media frames, while Scheufele (1999) suggested that framing is a dynamic process in which both media and the audience was involved and intertwined. Results of our analysis confirm that the media frames surrounding bed bugs follow the general crisis literature. Based on such findings, future research can take a step further and to examine the interaction with audience frames, especially on how bed bug media coverage may influence tourists' risk perception and their subsequent travel decisions.

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References

- Am, S. K., & Gower, K. K. (2009). How do the news media frame crises? A content analysis of crisis news coverage. *Public Relations Review*, 35(2), 107–112.
- Anderson, A. L., & Leffler, K. (2008). Bedbug infestations in the news: a picture of an emerging public health problem in the United States. *Journal of Environmental Health*, 70(9), 24–28.
- Avraham, E., & Ketter, E. (2008). *Media strategies for marketing places in crisis: Improving the image of cities, countries, and tourist destinations*. London: Routledge.
- Buzinde, C. N., & Santos, C. A. (2008). Representations of slavery. *Annals of Tourism Research*, 35(2), 469–488.
- Centers for Diseases Control and Prevention. (2013). *Parasites - Bed bugs*. Retrieved from <http://www.cdc.gov/parasites/bedbugs/faqs.html> Accessed 24.09.13.
- Centers for Disease Control and Prevention and U.S. Environmental Protection Agency. (2010). [public releases], *Joint statement on bed bug control in the United States from the U.S. Centers for Disease Control and Prevention (CDC) and the U.S. Environmental Protection Agency (EPA)*. Retrieved from http://www.cdc.gov/nceh/ehs/publications/bed_bugs_cdc-epa_statement.htm Accessed 24.09.13.
- Chai, C. (2014, March 25). *Anti-vaccination movement means preventable diseases making a comeback*. *Global news*. Available at <http://globalnews.ca/news/1229059/anti-vaccination-movement-means-entirely-preventable-diseases-are-making-a-comeback/> Accessed 31.08.14.
- Chapman, S. (2001). Advocacy in public health: roles and challenges. *International Journal of Epidemiology*, 30, 1226–1232.
- Coleman, R., Thorson, E., & Wilkins, L. (2011). Testing the effect of framing and sourcing in health news stories. *Journal of Health Communication*, 16(9), 941–954.
- Coombs, W. T. (2007). Protecting organization reputations during a crisis: the development and application of situational crisis communication theory. *Corporate Reputation Review*, 10(3), 163–176.
- Crotts, J. C., & Mazanec, J. A. (2013). Diagnosing the impact of an event on hotel demand: the case of the BP oil spill. *Tourism Management Perspectives*, 8, 60–67.
- D'Angelo, P., & Kuypers, J. A. (2009). *Doing news framing analysis: Empirical and theoretical perspectives*. New York: Routledge.
- Entman, R. M. (1993). Framing: toward clarification of a fractured paradigm. *Journal of Communication*, 43(4), 51–58.
- Fall, L. T. (2004). The increasing role of public relations as a crisis management function: an empirical examination of communication restructuring efforts among destination organisation managers in the wake of 11th September, 2001. *Journal of Vacation Marketing*, 10(3), 238–252.
- Goddard, J., & deShazo. (2009). Bed bugs (*Cimex lectularius*) and clinical consequences of their Bites. *The Journal of the American Medical Association*, 301(13), 1358–1366.
- Goffman, E. (1974). *Frame analysis: An essay on the organization of experience*. New York: Harvard University Press.
- Gonzalez-Herrero, A., & Pratt, C. B. (1998). Marketing crises in tourism: communication strategies in the United States and Spain. *Public Relations Review*, 24(1), 83–97.
- Gitlin, T. (1980). *The whole world is watching: Mass media in the making and unmaking of the new left*. Berkeley: University of California Press.
- Hallahan, K. (1999). Seven models of framing: Implications for public relations. *Journal of Public Relations Research*, 11(3), 205–242.
- Hamid-Turksoy, N., Kuipers, G., & Van Zoonen, L. (2014). "Try A Taste of Turkey" An analysis of Turkey's representation in British newspapers' travel sections. *Journalism Studies*, 15(6), 743–758.
- Harlan, H. J. (2006). Bed bugs 101: the basics of *Cimex lectularius*. *American Entomologist*, 52(2), 99–101.
- Hertog, J., & McLeod, D. (2001). A multiperspectival approach to framing analysis: a field guide. In S. Reese, O. Gandy, & A. Grant (Eds.), *Framing public life: Perspectives on media and our understanding of the social world* (pp. 139–161). New Jersey: Erlbaum.
- Iyengar, S. (1994). *Is anyone responsible? How television frames political issues*. Chicago: University of Chicago Press.
- Jonas, A., Mansfeld, Y., Paz, S., & Potasman, I. (2011). Determinants of health risk perception among low-risk-taking tourists traveling to developing countries. *Journal of Travel Research*, 50(1), 87–99.
- Kasperson, R. E., & Kasperson, J. X. (1996). The social amplification and attenuation of risk. *The Annals of the American Academy of Political and Social Science*, 95–105.
- Kim, S. S., & Wong, K. K. (2006). Effects of news shock on inbound tourist demand volatility in Korea. *Journal of Travel Research*, 44(4), 457–466.
- Knight, M. G. (1999). Getting past the impasse: framing as a tool for public relations. *Public Relations Review*, 25(3), 381–398.
- Kozak, M., Crotts, J. C., & Law, R. (2007). The impact of the perception of risk on international travellers. *International Journal of Tourism Research*, 9(4), 233–242.
- Lawrence, R. G. (2004). Framing obesity the evolution of news discourse on a public health issue. *The Harvard International Journal of Press/Politics*, 9(3), 56–75.
- Liu, B. F., & Kim, S. (2011). How organizations framed the 2009 H1N1 pandemic via social and traditional media: Implications for US health communicators. *Public Relations Review*, 37(3), 233–244.
- Liu, B., Pennington-Gray, L., Donohoe, H., & Oghenekaro, O. (2014). New York City bed bug crisis as framed by tourists on TripAdvisor. *Tourism Analysis* (in press).
- McComas, K. A. (2006). Defining moments in risk communication research: 1996–2005. *Journal of Health Communication*, 11(1), 75–91.
- McKercher, B., & Chon, K. (2004). The over-reaction to SARS and the collapse of Asian tourism. *Annals of Tourism Research*, 31(3), 716–719.
- National Pest Management Association. (2013). *New bed bug survey shows problem is not waning; bed bug awareness week calls for attention*. Retrieved from <http://www.pestworld.org/news-and-views/press-releases/press-releases/new-bed-bug-survey-shows-problem-is-not-waning-bed-bug-awareness-week-calls-for-attention/> Accessed 24.09.13.
- Neuman, W. R. (1992). *Common knowledge: News and the construction of political meaning*. Chicago: University of Chicago Press.
- NYC Department of Health and Mental Hygiene. (2013). *Stop bedbugs in hotels safely*. Available at <http://www.nyc.gov/html/doh/bedbugs/downloads/pdf/bed-bugs-hotel.pdf> Accessed 16.06.14.
- Office of Travel and Tourism Industries. (2013). *Overseas visitation estimates for U.S. states, cities, and census regions: 2012*. Retrieved from http://travel.trade.gov/outreachpages/download_data_table/2012_states_and_cities.pdf Accessed 01.12.13.
- Pan, Z., & Kosicki, G. M. (1993). Framing analysis: an approach to news discourse. *Political communication*, 10(1), 55–75.
- Paraskevas, A., & Altinay, L. (2013). Signal detection as the first line of defense in tourism crisis management. *Tourism Management*, 34, 158–171.
- Pew Research Center. (2008). *Health news coverage in the U.S. Media*. Retrieved from <http://www.journalism.org/node/13770> Accessed 24.09.13.
- Pew Research Center. (2013). *The state of the news media 2013: An annual report on American journalism*. Retrieved from <http://stateofthemediamedia.org/2013/newspapers-stabilizing-but-still-threatened/newspapers-by-the-numbers/> Accessed 01.12.13.
- Riffe, D., Lacy, S., & Fico, F. G. (2005). *Analyzing media messages: Using quantitative content analysis in research*. New York: Routledge.
- Ritchie, B. W. (2004). Chaos, crises and disasters: a strategic approach to crisis management in the tourism industry. *Tourism Management*, 25(6), 669–683.
- Ritchie, B. (2008). Tourism disaster planning and management: from response and recovery to reduction and readiness. *Current Issues in Tourism*, 11(4), 315–348.
- Romero, A., Potter, M. F., Potter, D. A., & Haynes, K. F. (2007). Insecticide resistance in the bed bug: a factor in the pest's sudden resurgence? *Journal of Medical Entomology*, 44(2), 175–178.
- Roszell, M. (2003). *SARS and its impact on tourism in Toronto*. Retrieved from http://hotel-online.com/News/PR2003_2nd/May03_CanadianReview.html Accessed 16.08.14.

- Rozier-Rich, S., & Santos, C. A. (2011). Processing promotional travel narratives. *Tourism Management*, 32(2), 394–405.
- Santos, C. A. (2004a). Framing Portugal: representational dynamics. *Annals of Tourism Research*, 31(1), 122–138.
- Santos, C. A. (2004b). Perception and interpretation of leisure travel articles. *Leisure Sciences*, 26(4), 393–410.
- Santos, C. A., Tainsky, S., Schmidt, K. A., & Shim, C. (2013). Framing the octagon: an analysis of News-Media coverage of mixed martial arts. *International Journal of Sport Communication*, 6(1), 66–86.
- Scheufele, D. A. (1999). Framing as a theory of media effects. *Journal of Communication*, 49(1), 103–122.
- Shih, T. J., Wijaya, R., & Brossard, D. (2008). Media coverage of public health epidemics: linking framing and issue attention cycle toward an integrated theory of print news coverage of epidemics. *Mass Communication & Society*, 11(2), 141–160.
- Sigala, M. (2011). Social media and crisis management in tourism: applications and implications for research. *Information Technology & Tourism*, 13(4), 269–283.
- Sparks, B. A., & Browning, V. (2011). The impact of online reviews on hotel booking intentions and perception of trust. *Tourism Management*, 32(6), 1310–1323.
- Sönmez, S. F., Apostolopoulos, Y., & Tarlow, P. (1999). Tourism in crisis: managing the effects of terrorism. *Journal of Travel Research*, 38(1), 13–18.
- Sönmez, S. F., & Graefe, A. R. (1998). Influence of terrorism risk on foreign tourism decisions. *Annals of Tourism Research*, 25(1), 112–144.
- Sönmez, S., & Sirakaya, E. (2002). A distorted destination image? The case of Turkey. *Journal of Travel Research*, 41(2), 185–196.
- Stacks, D. W., & Carroll, T. B. (2005). Travel-tourism public relations: one step forward, two steps back? *Journal of Hospitality & Leisure Marketing*, 12(1–2), 3–8.
- Tankard, J. W. (2001). The empirical approach to the study of media framing. In S. Reese, O. Gandy, & A. Grant (Eds.), *Framing public life: Perspectives on media and our understanding of the social world* (pp. 95–106). New Jersey: Erlbaum.
- US Travel Association. (2013a). *Travel answer sheet*. Retrieved from http://www.ustravel.org/sites/default/files/page/2009/09/US_Travel_AnswerSheet_June_2014.pdf Accessed 16.08.14.
- US Travel Association. (2013b). *Destination travel insights- domestic visitors*. Retrieved from http://www.ustravel.org/sites/default/files/alt_1/2011/05/DTL_Domestic_Sample_2013.pdf Accessed 01.12.13.
- Wu, B., Xue, L., Morrison, A. M., & Leung, X. Y. (2012). Frame analysis on golden week policy reform in China. *Annals of Tourism Research*, 39(2), 842–862.



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