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Wildfires and tourist behaviors in Florida

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HIGHLIGHTS

- ► Examined tourist risk perceptions and reactionary behaviors towards wildfires in Florida.
- ► Three segments identified: Conscious Travelers, Cautious Travelers and Courageous Travelers.
- ► Segmentations were robust in predicting their evaluation on risk types and reactionary behaviors.
- ► Findings affirm past studies that highlight the role of risk perception in the destination evaluation process.
- ► Segmentation strategy is useful for Destination Management Organizations for crisis communication.

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ABSTRACT

The impacts of wildfires on tourism have largely been examined with emphasis on economic losses and recovery strategies. Given the limited research from a demand perspective, this study examined tourist risk perceptions and reactionary behaviors toward wildfires in Florida. Data ($N = 771$) was collected among a U.S. sample of non-resident overnight leisure travelers that had visited Florida previously. Three clusters were identified with a larger segment in the middle (Conscious Travelers) of the curve, and higher risk (Cautious Travelers) and lower risk (Courageous Travelers) segments at each end. In addition, the segments formulated a pattern with respect to their perceived levels of risk, threat level of wildfires based on risk types, and travel behavior modifications over specific wildfire situations that could influence future travel behaviors in fire prone destinations. This segmentation strategy is useful for Destination Management Organizations as differential marketing messages could be targeted to each segment during crisis situations.

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1. Introduction

The economics of tourism in Florida is immense as it is the leading industry with 82.6 million visitors who spent more than $60 billion in 2010. In addition, tourism generates 22% of the total sales tax revenues and creates approximately one million in employment (Visit Florida, 2011). Consequently, the effects of any natural disasters have a detrimental impact on the state's economy. Among the various types of natural disasters, tropical storms and hurricanes are a constant threat due to their history of physical, social and economic impacts in Florida (Matyas et al., 2011). However, in the last two decades, wildfires have also created severe negative impacts for residential communities as well as the tourism industry in general. For example, Butry, Mercer, Prestemon, Pye, and Holmes (2001) estimated that the lodging industry experienced gross losses of US$61 million along with US$77.2 million in other business sectors due to the historic fires of 1998, which essentially impacted key residential and tourist regions in the central and the east coast sections of the state.

Both residents and tourists in Florida experience the impact of wildfires, as they are an annual threat similar to hurricanes. In 2011 alone, 5102 wildfires occurred in the state of Florida that burned over 299,991 acres of lands (National Interagency Fire Center, 2012). Although wildfires can occur at all times of the year, the primary wildfire season intercepts the peak summer tourist season and generates a major issue for the tourism demand and supply sectors. Besides the manmade attractions (e.g., theme parks), nature-based settings (e.g., National/State Parks and Forests),

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which are generally affected by wildfires, are popular destinations and account for millions in annual tourist visitation. The gravity of the impact depends on the scale and magnitude of the wildfires but generally results in voluntary or mandatory evacuations, smoke conditions, road and destination closures, and negative media publicity. Such actions typically have an effect on individuals as well as businesses, especially in tourist dependent communities in Florida.

Wildfires are an evolving threat to the tourism industry in the U.S. and globally. As evidence, there is growing attention in the media and the academic community about wildfires and their associated impacts (Armstrong & Ritchie, 2007; Borrie, McCool, & Whitmore, 2006; Brown, Rosenberger, Kline, Hall, & Needham, 2008; Cioccio & Michael, 2007; Cohn, Carroll, & Kumagai, 2006; Davis, Moseley, Jakes, & Nielsen-Pincus, 2011; Englin, Holmes, & Lutz, 2008; Hystad & Keller, 2008; Schroeder & Schneider, 2010; Walters & Clulow, 2010). From a demand perspective, there is a paucity of empirical research with respect to understanding tourist behaviors specific to wildfires (Borrie et al., 2006; Brown et al., 2008; Hendricks, Chavez, & Bricker, 2008; Schroeder & Schneider, 2010; Walters & Clulow, 2010). More specifically, tourists' perceptions of risk with respect to wildfires and evacuation behaviors seems to be lacking. However, recently there has been growing research interest in tourists' general risk perceptions and the role they play in the decision-making process (Floyd, Gibson, Pennington-Gray, & Thapa, 2004; Floyd & Pennington-Gray, 2004; Kozak, Crotts, & Law, 2007; Law, 2006; Lepp & Gibson, 2003, 2008; Matyas et al., 2011; Reisinger & Mavondo, 2005). Hence, such corresponding research can be incorporated to examine tourists' risk perceptions targeted to a specific disaster (e.g., wildfire), instead of general assessments. Recently, Matyas et al. (2011) examined risk perceptions and evacuation decisions of Florida tourists under hurricane threats, which was clearly focused and targeted. It was also one of the first empirical studies to examine risk perceptions and tourist behavior with respect to evacuations in the event of hurricanes making landfall. Examination of specific natural disasters offers quality information to aid development of defined strategies and implementation plans for Destination Management Organizations, which need to be prepared to assist and evacuate tourists (Armstrong & Ritchie, 2007; Pennington-Gray et al., 2010; Pennington-Gray, Thapa, Kaplanidou, Cahyanto, & McLaughlin, 2011; Ritchie, 2009; Walters & Clulow, 2010). The objective of this study was to examine the relationships between tourist risk perceptions and reactionary behaviors within the context of a specific disaster – wildfires in Florida.

2. Related literature

2.1. Risk perception and tourism

Perceived risk in tourism has been examined in numerous studies and is a growing area of study. Tourism products are sensitive to external factors (e.g., disasters and crises), and have been found to intensify the perceptions of risk which subsequently lead to alteration of travel decisions (Floyd et al., 2004; Fuchs & Reichel, 2011; Lepp, Gibson, & Lane, 2011; Matyas et al., 2011; Pizam & Mansfeld, 1996; Quintal, Lee, & Soutar, 2010; Reisinger & Mavondo, 2005; Roehl & Fesenmaier, 1992; Sonmez, 1998; Sonmez & Graefe, 1998a, 1998b). In the tourism literature, perception of risk has been found to vary depending on tourists' characteristics. Roehl and Fesenmaier (1992) classified tourists on the basis of their risk perception as place risk, risk neutral, and functional risk. Among the three groups, the place risk group perceived vacations to be fairly risky while their most recent vacation destination as very risky. Conversely, the risk neutral group did not perceive travel or their destination to be risky. However, the functional risk group perceived more physical and equipment risk than the other two groups. Subsequently, Lepp and Gibson (2003) noted that perception of risk associated with international tourism varied based on tourist's role and preferences for familiarity or novelty. Mass tourists tended to prefer familiarity and travel to less risky destinations while drifters who sought more novel experiences preferred to travel to more risky destinations. Furthermore, tourists' perceptions of risk are influenced by individual lifestyles (Bello & Etzel, 1985; Mitchell & Vassos, 1997), personality (Carr, 2001) and country of origin (Fuchs & Reichel, 2011; Reisinger & Mavondo, 2005; Seddighi, Nuttall, & Theochaous, 2001), which suggests that travel risk perception is affected by individual sociocultural and psychological backgrounds.

Likewise, the literature has also noted that perception of risk varies and is dependent on the type of risk perceived. Tsaur, Tzeng, and Wang (1997) examined risk perceptions of six group package tour itineraries with a focus on physical risk and equipment risk. Results demonstrated that the level of perceived risk associated with types of risk varied. Correspondingly, Sonmez and Graefe (1998a) examined risk perception with four subscales. In the first stage, respondents were requested to rate their perception of risk/safety regarding fifty countries. In the second stage, respondents were presented ten types of risk and asked which of them they associate with international tourism, and to what extent. In the third stage, respondents were asked about their level of agreement with fifteen statements with regard to risk associated with international travels. In the final stage, respondents were presented semantic differential scales used to determine international travel attitudes. In the analysis, responses were standardized to generate a risk index.

Similarly, Sonmez and Graefe (1998b) identified types of risks associated with international travel and the overall degree of safety felt during travel; and how perceived risks affect the likelihood of travel or avoidance of diverse geographical regions in the future. To measure risk perceptions, Sonmez and Graefe (1998b) illustrated ten types of risks and asked respondents the extent to which they associated each type of risk with international travel based on a 6-point Likert scale. The types of risk were equipment/functional risk, financial risk, satisfaction risk, social risk, terrorism and time risk. The results implied that perceived risk was found to be a robust predictor of the likelihood of avoidance. Essentially, Sonmez and Graefe's (1998a,b) work demonstrated that the more respondents perceived the destination to be risky, the greater the likelihood they would avoid that respective destination.

With regards to the relationship between perceived risk and intention to travel, scholars have consistently found that when a potential traveler is exposed to risks, there are several possible alternative outcomes. The individual can still pursue a travel plan without any modifications, pursue travel plan to the same destination with some modifications such as, shortening length of stay, changing destination to a safer one that offers similar attractions, canceling travel, or seeking additional information to continue with travel plans (Chandler, 1991; Englander, 1991; Kozak et al., 2007; Reisinger & Mavondo, 2005). For instance, when a destination is perceived to be too risky beyond the individual's risk tolerance level, it may become undesirable (Crompton, 1992), and therefore can be eliminated from the selection process (Sonmez & Graefe, 1998a). In Maser and Weiermair's (1998) study, they examined travel risks associated with diseases, crimes, natural disasters, hygiene problems, transportations, cultures and language barriers, and uncertainty related to destination specific laws and regulations. One notable finding of the study was the significant connection between perceived risk, information search and

decision making process. Overall, the higher the perceived risk, the more information tourists would seek with rationality in their decision-making process.

2.2. Wildfires and tourism

Over the last few years, the impacts of risks associated with natural disasters such as wildfires have gained interest among scholars (Armstrong & Ritchie, 2007; Borrie et al., 2006; Brown et al., 2008; Cohn et al., 2006; Davis et al., 2011; Hendricks et al., 2008; Hystad & Keller, 2008; Schroeder & Schneider, 2010; Walters & Clulow, 2010). Wildfires have been considered to be an increasing issue for tourist destinations, with extensive economic consequences for host communities. In Florida, in recent years drought conditions have led to wildfires affecting large parts of the state, leading to smoke conditions closing interstate highways and causing air quality alerts (Albright, 1998; Davis, 1998; Farrington, 2001). These conditions have become increasingly perilous for visitors as well as for Destination Management Organizations.

The impact of smoke from wildfires has been documented since the 1920's at the early stage of tourism in Florida (Carter, 1975; Derr, 1989). In 1998, Florida's tourism industry was dramatically affected as nearly 500,000 forest acres burned. These acres were largely located in 18 northeastern counties and triggered a forced evacuation from many tourist destinations such as Daytona Beach (Hays, 1998). Due to the risk associated with potential fire, fireworks were forbidden statewide during the month of July, with an exception for Disneyworld. The mandatory evacuations, smoke conditions, road closures and negative media contributed to the economic aftermath in tourist-dependent communities.

Since 1998, the number of fires has increased but fewer acres have burned in Florida. However, although the number of fires decreased in 2001, a substantial increase of acres was lost (Florida Department of Forestry, 2002). In 2011, a total of 627,169 acres of lands was lost, out of this, 299,991 acres were attributed to wildfires while 327,178 acres were attributed to prescribed fires (National Interagency Fire Center, 2012). The frequency and the increased numbers of fires and lost acres are of concern to the industry, as sustained negative economic impacts do not bode well for Florida as tourism is its major economic generator.

The impact of fire on tourism and consequent economic losses is also apparent in western portions of the United States. In Montana, for instance, about 20 million acres of land were closed as a result of wildfires in 2000 owing to public safety concerns. As a response, several tourism operators voluntarily closed while other operators experienced a decline in tourism revenues (Wilkinson, 2000). Likewise, in Idaho tourism-related businesses were severely impacted by the closure of natural areas and facilities at popular tourism destinations particularly the Salmon River (Yeh, 2000). Similar measures and outcomes were experienced due to wildfires in Colorado with the closure of Mesa Verde National Park, a tourist attraction located in a tourism-dependent community. Effects of wildfires have been seen throughout in California, Arizona, Nevada, New Mexico, Texas, Washington, and Utah (Ruggless, 2000). In California, the impacts of the 2008 summer wildfires were detrimental for residential and tourism-dependent rural communities such as in Trinity County. The tourism industry was largely based on family-owned outdoor recreation enterprises (e.g., rafting, hiking, boating, fishing, wildlife viewing, and camping services), which were substantially impacted resulting in closure of numerous businesses due to economic losses (Davis et al., 2011). More recently, the sustained wildfires during the peak 2012 summer season in Colorado intensely impacted tourist mobility and decreased economic impacts in tourism-dependent mountain communities (Anas, 2012). Overall, in 2011, there were 74,126 fires that burned 8,711,367 acres throughout the country, a substantial increase from 2010 (71,971 fires and 3,422,724 acres burned) (National Interagency Fire Center, 2012).

Obviously, wildfires are an increasing concern for tourist destinations and host communities. As the wildfire season coincides with the peak tourist season, it compounds economic difficulties, particularly for nature-based operators and suppliers who rely on tourist businesses during the summer months (Anas, 2012; Davis et al., 2011). The gravity of wildfire situations are further propagated by the media, which in turn discourages potential visitors who may choose alternate destinations, causing a loss of income to the original destination. Nevertheless, destination and state promotion agencies have been assertive in rendering positive spins through press releases and the Internet in order to offset the negative burning image. For instance, the Colorado Tourism Office website offers current updates of wildfires and information about affected regions (Anas, 2012). Other states like Arizona have infused financial funds for marketing campaigns to lure back tourists in order to overcome the economic losses in tourism. Overall, promotional agencies in various fire-affected states have been aggressive with new marketing campaigns and press releases to make tourists aware that their respective states are still open for business.

Wildfires have received substantial attention in the media, leading to a level of indisputable concern among the public. Fire-related research has principally utilized samples from the western region of the country targeting residential communities and visitors to national parks and wilderness areas. Likewise, empirical research has primarily examined specific issues such as public attitudes, knowledge, perceptions, and social acceptability of wildland fire and fire management techniques and actions (i.e., prescribed burning, timber harvesting, mechanical thinning, clear-cutting) (Absher & Vaske, 2007; Bright, Manfredo, Fishbein, & Bath, 1993; Cortner, Gardner, & Taylor, 1990; Davis et al., 2011; Knotek, Watson, Borrie, Whitmore, & Turner, 2008; Manfredo, Fishbein, Haas, & Watson, 1990; McCool & Stankey, 1986; Taylor et al., 1986; Winter, Vogt, & Fried, 2002). Given the nature of existing research regarding the effects of wildfires, there is a paucity of research in understanding the public from other regions of the country. The southeast states such as Florida are an area where wildland fire plays an essential role in the daily lives of residents and potentially millions of tourists. The few studies (Butry et al., 2001; Jacobson, Monroe, & Marynowski, 2001; Johnson et al., 2011; Loomis, Bair, & González-Cában, 2001; Winter et al., 2002) that have been conducted in Florida have all utilized resident samples, and therefore a focus on visitors is still lacking.

Florida's economy mostly depends on tourism. Recreational and leisure travelers, and the businesses that rely on and support the needs of visitors, are also severely affected. While the displacement of tourists and the negative economic impact to the tourism industry due to wildfires has been widely reported in the popular media, empirical studies about tourists and evacuation behaviors are lacking. Most studies in tourism related to the effect of wildfires are prescriptive in nature, i.e., the impact of the wildfires to the tourism industry and recovery strategies. Given the limited research with respect to the impact of wildfires on travel behaviors, Hystad and Keller (2008) advocated the need to assess the specific risks from travelers' perspectives. Hence, the purpose of this study was to understand different segments of travelers and their perceptions of travel risk with respect to wildfires. More specifically, to examine: 1) segment profiles and perceived types of risks; 2) perceived level of risk associated with wildfires in various states; and 3) potential travel behavior modifications due to specific wildfire situations.

3. Methods

3.1. Data collection

Data were collected among a U.S. sample of non-resident overnight leisure travelers (18 years and older) that had previously visited Florida. The household sample was derived from a National Market Facts mail panel that is owned by a national consulting firm. The firm has one of the largest consumer travel databases, and a new sample is drawn from a pool of over 500,000 households each year. For this study, households were stratified demographically to match U.S. Census data. Also, the sample was screened to target tourists that had visited destinations/counties that had been previously impacted by wildfires. Based on the criteria, a useable sample ($N = 1160$) was generated and a mailback questionnaire was sent to the head of household with a follow-up reminder (Dillman, Smyth, & Christian, 2009) to increase response rate. A total of 771 surveys were returned for a response rate of 66.5%. Out of 771 returned surveys, 716 were totally completed and used for this study.

3.2. Data measurements

The survey included questions related to risk perceptions, attitudes toward wildfires, travel use patterns, demographics, and other travel behavior items. In this study, four major aspects were defined. First, risk perceptions about travel safety, destination decisions and the impact of wildfires were operationalized with 12 statements based on a 5-point Likert scale (strongly disagree to strongly agree). Second, respondents were asked to rate the level of risk they perceived to be associated with eight risk types (natural disaster, physical, crime, terrorism, financial, health, fire, and social) that could affect their future decisions about traveling to Florida. The items for each risk type were measured on a 6-point Likert scale (none to very high risk). Third, respondents were asked to rate their perceived level of risk associated with wildfires that could affect future decisions about traveling to 11 states which are generally impacted by wildfires. These items were measured on a 5-point Likert type scale (very safe to very unsafe). All items within each construct were adapted for wildfire situations from the relevant literature on risk perceptions (Floyd et al., 2004; Moutinho, 1987; Roehl & Fesenmaier, 1992; Sonmez & Graefe, 1998a). Fourth, respondents were asked about their reactionary behaviors when confronted with 10 wildfire-related situations. Each situation was measured with 5 options: cancel trip, change destination, change activity, no change, and don't know.

3.3. Data analysis

Data analysis was conducted in multiple phases. First, a descriptive analysis was conducted to check the normality of each variable, and to examine the profile of respondents. Second, respondents were clustered into categories of risk sensitivity associated with wildfires at or near their travel destination in Florida. Hierarchical cluster analysis was used to identify the number of clusters by agglomeration schedule on the cluster analysis. Subsequently, *K*-means cluster analysis was used to classify the samples based on respondents' sensitivity to risk associated with wildfires in Florida. The *K*-means cluster method is commonly used in tourist segmentation research (Park & Yoon, 2009). In addition, the *K*-means clustering method produces results that are less receptive to outliers in the data, the distance measure used and the inclusion of irrelevant variables (Hair, Black, Babin, & Tatham, 2005).

Third, segment characteristics were delineated by various univariate and multivariate statistical procedures. Specifically, based on the identified clusters, the differences of perceived risk types and level of risk in terms of threat of wildfires in various states were assessed by ANOVA and Chi-square analysis. These analyses typically entail cluster analysis for the purpose of validating and profiling (Formica & Uysal, 1998; Madrigal & Kahle, 1994; May, Bastian, Taylor, & Whipple, 2001; Park & Yoon, 2009). ANOVA was used to identify whether there were any differences among the clusters as measured by a comparison of mean ratings. In addition, discriminant analysis was also employed to examine which travel risk perception items were influencing factors, as well as to assess the accuracy level of classification of segment membership.

Finally, Chi-square analysis was employed to explore the differences between the clusters in terms of categorical variables – differences of risk types, the level of risk in terms of threat of wildfires in various states, and reactionary behaviors on specific wildfire-related situations. To do so, missing data were not included in the calculation of Chi-square. Some of the analytical statistical methods were replicated from Floyd and Pennington-Gray (2004) based on their work on profiling risk perceptions of tourists. The PSAW 18 software was used to conduct the statistical analysis for this study.

4. Results

4.1. Profile of respondents

The majority were Caucasian (82%), followed by African-American (10%) and Hispanic (8%) households. The household annual income of over $75,000 was representative of 43.1%, while 24.8% reported between $50,000 and $74,999. Household composition consisted of four or more adults (29.8%); 75.7% were married, and 82.2% owned their home. Females represented 77% of the sample, and 41 U.S. states were represented with larger segments from New York, Pennsylvania, Georgia, Texas and Maryland.

With respect to travel patterns to Florida, 90.1% were repeat visitors; 38.3% had visited between 2 and 4 times in the past 5 years, and 58.9% had spent between 4 and 9 days during their last trip. Visitors traveled to 40 out of 67 counties during their most recent trip with the Orlando area in Orange County as their main destination followed by other major destinations (Tampa-St. Petersburg region, Ft. Lauderdale, Miami, Sarasota, the Keys, Ft. Myers, and Palm Beach). Visits occurred year-round with almost half (48.1%) between December and March. Visitors primarily arrived by commercial airlines (57.3%), though several arrived by personal vehicles (34.4%). The majority of the travel party was family members (74.4%), and ranged from 2 to 5 (72.5%) people. The primary reason to travel to Florida was to visit friends or relatives (36.2%), theme parks (20.0%), and the beach (11.1%). Additionally, 44.2% reported to have visited a nature-based setting (e.g., Community/City Park, State Park, National Park, National Forest, and National Wildlife Refuge).

4.2. Segmenting tourists

Tourist segmentation based on risk perceptions can be a useful tool that enables tourism organizations to identify effective risk communication strategies. To this end, a cluster analysis was conducted based on 12 travel risk perceptions within the context of wildfires. Since the *a priori* number of segments was not known, a hierarchical cluster analysis was employed. The data were analyzed by using a hierarchical clustering procedure with Euclidean distance as a similarity measure between cases. Since the objective was to assess the relative importance ratings of the 12 risk perceptions with respect to wildfires, the Ward method was used to maximize within-Cluster homogeneity. This procedure utilized a cluster algorithm that frequently produces stable and interpretable results (Hair et al.,

Table 1
Cluster analysis summary.

Travel risk perceptions	Cluster I Conscious Travelers ($n = 300$)	Cluster II Cautious Travelers ($n = 181$)	Cluster III Courageous Travelers ($n = 235$)	*F*-ratio	Sig. level*
Safety is the deciding factor when I'm considering which destination in Florida to travel to.	2.72	3.60	2.10	120.56	.001
When I'm evaluating destinations to travel, wildfires are not a factor.	3.58	2.92	4.31	122.86	.001
Safety is the most important attribute that destinations in Florida can offer.	3.03	3.50	2.72	44.75	.001
I will only travel to Florida if I believe it is safe from wildfires.	2.29	3.17	1.39	338.72	.001
The possibility of wildfires in Florida discourages me from traveling there.	1.85	2.76	1.19	393.18	.001
When I am trying to decide between destinations in Florida and other States, I would choose the one which does not have active wildfires.	2.20	3.28	1.14	335.43	.001
If a particular destination in Florida has experienced wildfires in the past, I will not travel there.	1.87	2.71	1.25	310.54	.001
I'd like to travel to Florida but negative news about wildfires discourages me.	1.79	2.65	1.16	350.14	.001
Wildfires in Florida have never influenced my decision to travel there.	3.87	3.51	4.87	141.97	.001
Other people's negative experiences with wildfires in Florida do not influence my decision to travel.	3.58	3.30	4.64	143.06	.001
Safety is not an important consideration when I'm evaluating different destinations in Florida to travel to.[a]	3.10	3.17	4.66	191.84	.001
I would not let wildfires keep me from traveling to my final destination in Florida.[a]	1.67	1.38	2.31	56.15	.001

Note: Risk perceptions were measured on a 5-point Likert scale (1 = strongly disagree and 5 = strongly agree).
*Significant at .05 level.
[a] Reverse coded.

2005). Furthermore, this method was found to produce the most meaningful, interpretable and distinguishable cluster solution in this study, when compared to other solution algorithms.

The procedure resulted in three-cluster solutions that were supported by the criterion of the relative increase of the agglomeration coefficient and the dendrogram. The results of an ANOVA test revealed that all 12 travel risk perception items contributed to differentiating the three-cluster solution ($p < .05$). Similarly, Scheffe tests indicated that statistically significant differences were found between clusters, and therefore provided evidence that distinct clusters had been identified and accordingly labeled as: *Conscious Travelers*, *Cautious Travelers*, and *Courageous Travelers* (see Table 1).

Two canonical discriminant functions were calculated by using discriminant analysis on all 12 risk perception items. The direct procedure involved using all 12 items simultaneously was chosen. The resulting discriminant functions were subject to a Chi-square test to determine the significance of the functions. A Wilk's lambda test and a univariate *F*-test were also employed to determine the significance of functions. Two canonical discriminant functions were significant, which suggested that the models explained a significant relationship between functions and the particular dependent variable (Table 2). In addition, standardized structural coefficients were used to decipher the function. Principally, standard coefficients represent the relative contribution of the associated items to the discriminant function. Standardized canonical discriminant function coefficients (Table 3) indicated that the item "safety is the deciding factor when I'm considering which destination in Florida to travel to" was the strongest predictor for Function 1, while the item "Other people's negative experiences with wildfires in Florida do not influence my decision to travel" was the strongest predictor for Function 2.

The classification matrix of respondents (Table 4) was used to determine how successfully the discriminant function could work.

Table 2
Summary of discriminant analysis results.

Function	Eigenvalue	% of variance	Canonical correlation	Wilks lambda	Chi-square	df	Sig. level*
1	5.06	97.9	.91	.15	1346.50	24	.001
2	.11	2.1	.31	.90	71.49	11	.001

*Significant at .05 level.

Almost all (95.5%) of the 771 grouped cases were correctly classified, signifying a very high accuracy rate. Specifically *Conscious Travelers* (93.3%), *Cautious Travelers* (97.2%) and *Courageous Traveler* (96.6%) were correctly classified into their respective groups. In order to further identify the profile of the three clusters, each cluster was cross-examined with external variables – risk types (see Table 5), levels of risk in terms of threat of wildfires in several states (see Table 6), and reactionary behaviors related to wildfires (see Table 7).

4.3. Conscious Travelers

When compared to the other segments, *Conscious Travelers* (42%) were willing to travel but were conscientious about wildfire situations. This group was likely to comprehensively evaluate wildfire

Table 3
Standardized canonical discriminant function coefficients.

Travel risk perceptions	Function 1	Function 2
Safety is the deciding factor when I'm considering which destination in Florida to travel to.	.365	.348
When I'm evaluating destinations to travel, wildfires are not a factor.	−.278	−.158
Safety is the most important attribute that destinations in Florida can offer.	.007	.113
I will only travel to Florida if I believe it is safe from wildfires.	.281	−.199
The possibility of wildfires in Florida discourages me from traveling there.	.231	.294
When I am trying to decide between destinations in Florida and other States, I would choose the one which does not have active wildfires.	.357	.167
If a particular destination in Florida has experienced wildfires in the past, I will not travel there.	.289	.051
I'd like to travel to Florida but negative news about wildfires discourages me.	.243	.139
Wildfires in Florida have never influenced my decision to travel there.	−.216	.286
Other people's negative experiences with wildfires in Florida do not influence my decision to travel.	−.304	.472
Safety is not an important consideration when I'm evaluating different destinations in Florida to travel to.*	−.215	.230
I would not let wildfires keep me from traveling to my final destination in Florida.*	.098	−.442

* Reverse coded.

Table 4
Evaluation of cluster formation by classification results.

Cluster case	Predicted group membership			
	Conscious Travelers	Cautious Travelers	Courageous Travelers	Total
Conscious Travelers	280 (93.3%)	4 (1.3%)	16 (5.3%)	300 (100%)
Cautious Travelers	5 (2.8%)	176 (97.2%)	0	181 (100%)
Courageous Travelers	8 (3.4%)	0	227 (96.6%)	235 (100%)

Note: 95.4% of original grouped cases correctly classified.

situations and associated risks prior to travel to Florida. This was the largest segment based on perception of risk associated with wildfires. This group perceived medium level of risk that could affect their future travel decision to Florida for all 8 risk types as well as perceived threat level of wildfires that could affect future decisions about traveling to 11 other states. With regard to socio-demographics, there was no significant difference in terms of gender and income between this and the other two segments. The significant difference was found in education whereby female-head of the household represented 22.5% of the members to have attained college degrees, while 13.5% attained a post graduate degree. Also, a significant difference was found in marital status, in which 63.6% of the members were married, while 13.1% were never married.

With respect to travel behaviors in reaction to specific wildfires related situations, this segment was more likely to cancel the trip when there is two-hour traffic back up due to fire detours than other segments (48%). However, this segment was likely to not change their travel plan (44.7%) when there were automobile accidents due to smoke. Interestingly, this segment was also most likely to change their activities when there was a threat of road closures (45.5%); reports of health problems from smoke and ash (45.3%); smoke from current fire in destination area (45.3%); multiple fires in the state but not in the vacation region (54.5%); and when there were prescribed controlled fires in their vacation region (46.2%).

4.4. Cautious Travelers

The *Cautious Travelers* (25%) were very safety-oriented and risk averse. They were only willing to travel if their destination was safe from wildfires. Compared to other segments, this segment was most likely to perceive the highest level of risk that could affect their future decisions about traveling to Florida for all 8 risk types. This segment was also most likely to perceive the highest threat level of wildfires that could affect future decisions about traveling to 11 States. In terms of education, 31% had high school degree or less, 19.8% graduated from college and 12% were post graduates. Also, 69.3% were married and 10.6% were never married.

This segment was more likely to modify their travel behaviors when there is smell of burned wood in the air, as 46.2% would cancel their trip, 47.4% would change the destination, and 40.7% would change activities. Likewise, they would more likely cancel their trip when health problems from smoke and ash are reported (36.2%) and during high fire danger conditions (39.8%). This segment would also be more likely to cancel their trip (53.8%), and change destination (78.3%) when there are multiple fires in the state but not in their vacation region. Similarly, they would be most likely to cancel their trip (62.1%), and change destination (35.7%) when there are prescribed controlled fires in their vacation region. It is also important to note that this segment would be influenced by negative news from the media about wildfires in Florida, and would most likely modify their travel behaviors more than the other two segments.

Table 6
Differences by level of risk in terms of threat of wildfires and clusters.

U.S. States	Conscious Travelers	Cautious Travelers	Courageous Travelers	*F*-ratio	Sig. level*
Level of risk in Arizona	3.04	3.55	2.76	11.35	.001
Level of risk in California	3.23	3.64	2.96	12.10	.001
Level of risk in Colorado	3.03	3.31	2.78	5.48	.004
Level of risk in Florida	2.79	3.30	2.45	20.33	.001
Level of risk in Georgia	3.01	3.21	2.62	7.07	.001
Level of risk in Montana	3.20	3.27	3.06	4.64	.010
Level of risk in New Mexico	3.20	3.56	2.87	8.52	.001
Level of risk in Tennessee	2.98	3.20	2.67	5.22	.006
Level of risk in Texas	3.12	3.45	2.77	8.60	.001
Level of risk in Washington	3.12	3.38	2.87	4.55	.011
Level of risk in Wyoming	3.24	3.49	2.95	5.18	.006

Note: Items were measured on a 5-point Likert scale (1-very safe to 5-very unsafe).
*Significant at .05 level.

4.5. Courageous Travelers

The *Courageous Travelers* (33%) were willing to travel regardless of wildfire situations. This segment did not perceive much threat with respect to safety and wildfires issues in Florida and other states. This segment was more likely to not be married (44.8%), and had the highest percentage of female households that had post-graduate degrees (44.7%). This segment was also least likely to modify their travel behaviors in reaction to specific wildfire related situations. For instance, in the situation where health problems from smoke ash are reported, this segment had the highest percentage of those who indicated that they would not change their plan (48.7%) Likewise, when negative news from the media are reported about wildfires in Florida, this segment had the lowest percentage among the three options (cancel trip, change destination and change activity), which suggests relative resistance.

5. Discussion

The examination of past Florida visitors with respect to segmentation based on their perception of travel risk in response to

Table 5
Differences by risk types and clusters.

Risk types	Conscious Travelers	Cautious Travelers	Courageous Travelers	*F*-ratio	Sig. level*
Risk of hurricane, floods, tornadoes, etc. (Natural Disaster Risk)	2.89	3.70	2.40	46.06	.001
Risk of the possibly of an accident (Physical Risk)	2.27	2.89	1.87	46.93	.001
Risk of being a crime victim (Crime Risk)	.41	2.95	2.05	32.10	.001
Risk of being involved with a terrorist act (Terrorism Risk)	2.47	3.09	2.01	40.29	.001
Risk of losing money due to cancellations (Financial Risk)	2.46	2.90	2.13	21.75	.001
Risk of becoming sick while traveling (Health Risk)	2.39	2.88	2.07	29.68	.001
Risk of out of control wildfires (Fire Risk)	2.16	2.88	1.73	62.56	.001
Risk of friends/family/associates disapproving of vacation choices or activities (Social Risk)	1.64	1.88	1.41	13.46	.001

Note: Items that comprise each risk statement were measured on a 6-point Likert scale (1-none to 6-very high risk).
*Significant at .05 level.

Table 7
Modifications of travel behavior in reaction to specific wildfires related situations.

Situation	Cluster	Cancel trip	Change destination	Change activity	No change	Don't know	Chi-square	Sig. level*
Two-hour traffic back-ups due to fire detours	1	12 (48%)	79 (36.4%)	92 (42.2%)	72 (44.7%)	43 (47.3%)	26.649	.001
	2	8 (32%)	72 (33.2%)	50 (22.9%)	22 (13.7%)	27 (29.7%)		
	3	5 (20%)	66 (30.4%)	76 (34.9%)	67 (41.6%)	21 (23.1%)		
Automobile accidents due to smoke	1	12 (35.3%)	100 (38.5%)	67 (39.9%)	74 (46.8%)	44 (48.4%)	27.411	.001
	2	11 (32.4%)	86 (33.1%)	41 (24.4%)	19 (12.1%)	23 (25.2%)		
	3	11 (32.4%)	74 (28.5%)	60 (35.7%)	64 (41.1%)	24 (26.4%)		
Threat of road closures	1	13 (37.1%)	97 (37%)	81 (45.5%)	64 (42.1%)	42 (50%)	21.588	.006
	2	13 (37.1%)	83 (31.8%)	35 (19.7%)	26 (17.1%)	21 (25%)		
	3	9 (25.8%)	81 (31.2%)	62 (34.8%)	62 (40.8%)	21 (25%)		
Smell of burned wood in the air	1	4 (30.8%)	29 (30.5%)	35 (31%)	202 (46.7%)	26 (48.1%)	77.245	.001
	2	6 (46.1%)	45 (47.4%)	46 (40.7%)	62 (14.3%)	19 (35.2%)		
	3	3 (23.1%)	21 (22.1%)	32 (28.3%)	169 (39%)	9 (16.7%)		
Health problems from smoke and ash reported	1	32 (34%)	87 (38.5%)	78 (44.3%)	50 (42.7%)	50 (51.6%)	39.189	.001
	2	34 (36.2%)	72 (31.9%)	38 (21.6%)	10 (8.6%)	24 (24.7%)		
	3	28 (29.8%)	67 (29.6%)	60 (34.1%)	57 (48.7%)	23 (23.7%)		
High fire danger conditions	1	37 (34.3%)	94 (40%)	49 (44.2%)	77 (43%)	41 (53.2%)	30.628	.001
	2	43 (39.8%)	70 (29.8%)	21 (18.9%)	29 (16.2%)	16 (20.8%)		
	3	28 (25.9%)	71 (30.2%)	41 (36.9%)	73 (40.8%)	20 (26%)		
Smoke from current fire in destination area	1	22 (36.1%)	95 (35.4%)	72 (45.3%)	58 (46%)	49 (51.6%)	42.326	.001
	2	22 (36.1%)	92 (34.3%)	29 (18.2%)	12 (9.5%)	23 (24.2%)		
	3	17 (27.8%)	81 (30.3%)	58 (36.5%)	56 (44.5%)	23 (24.2%)		
Multiple fires in the State but not in your vacation region	1	4 (30.8%)	2 (8.7%)	6 (54.5%)	268 (43.5%)	18 (37.5%)	64.817	.001
	2	7 (53.8%)	18 (78.3%)	4 (36.4%)	128 (20.7%)	23 (47.9%)		
	3	2 (15.4%)	3 (13.0%)	1 (9.1%)	221 (35.8%)	7 (14.6%)		
Prescribed controlled fires in your vacation region	1	5 (17.2%)	53 (34.4%)	43 (46.2%)	139 (43.6%)	58 (50.4%)	61.388	.001
	2	18 (62.1%)	55 (35.7%)	22 (23.7%)	48 (15.0%)	35 (30.4%)		
	3	6 (20.7%)	46 (29.9%)	28 (30.1%)	132 (41.4%)	22 (19.2%)		
Negative news from the media about wildfires in Florida	1	6 (21.4%)	15 (27.3%)	11 (40.7%)	202 (43.6%)	65 (46.1%)	113.996	.001
	2	19 (67.9%)	30 (54.5%)	11 (40.7%)	66 (14.3%)	54 (38.3%)		
	3	3 (10.7%)	10 (18.2%)	5 (18.5%)	195 (42.1%)	22 (15.6%)		

*Significant at .05 level.

wildfires yielded useful results for Destination Management Organizations in the state. There appears to be a normal distribution of tourists, with a larger segment in the middle (*Conscious Travelers*) of the curve and higher risk (*Cautious Travelers*) and lower risk (*Courageous Travelers*) segments at each end. In addition, these three types of traveler profiles appear to form a pattern with respect to their perceived levels of risk based on risk types, as well as threat level of wildfires that could influence future travel behaviors in fire prone destinations. For instance, the findings indicate that Conscious Travelers are more likely to change destination when health problems from smoke and ash reported than the other two groups. Courageous Travelers on the other hand are less likely to change the destination when health problems from smoke and ash reported. The findings affirm past studies that highlight the role of risk perception in the destination evaluation process (Armstrong & Ritchie, 2007; Fuchs & Reichel, 2011; Reisinger & Mavondo, 2005; Walters & Clulow, 2010).

It is also important to note that while there was clear distinction in term of risk perception over wildfires, the actual behavioral modification was not. There was variation among segments in their responses toward specific situations that resulted from wildfires. Only in one situation (multiple fires in the state but not in your vacation region), all three segments showed the highest percentage of members who would not change their travel plans. One possible explanation of this variation is related to the severity of a specific condition. As situations that were used in this study were varied based on severity levels, it was understandable that travel behavioral modifications was also mixed. This suggests that tourists travel modification behaviors resulted from internal factors, i.e., their individual perception of risks over the hazard as well as their evaluation of the severity of situations ensuing from the hazard. The negotiation between these two would dictate their behavioral responses (Kozak et al., 2007; Roehl & Fesenmaier, 1992).

Overall, the sample and associated demographics and general travel behaviors were consistent with previous research (Visit Florida, 2011). One possible area of less than ideal representation was gender since the respondents were 77% female. However, while household family vacations tend to be joint decisions by both spouses (Litvin, Xu, & Kang, 2004), it has been suggested that wives are more likely to play a dominant role in the information search stage (Mottiar & Quinn, 2004; Wang, Hsiehb, Yehc, & Tsai, 2004; Zalatan, 1998); selection of a destination (Zalatan, 1998); selection of a travel agent, and finally making reservations (Mottiar & Quinn, 2004). Basically, women in a household are likely to be gatekeepers with respect to family vacation decision choice (Mottiar & Quinn, 2004). Therefore, this over weighting of women may more closely reflect the decision makers for travel decisions than an equal gender split sample. However, it may also constitute a limitation with respect to oversampling of females.

The respondents were overwhelmingly repeat visitors (90.1%) that reported multiple visits to various regions of the state. It seems the repeat visitors are distinct (based on cluster profiles), and would consequently react differently based on their perceptions in the event of wildfires in Florida. It is also important to note that first time visitors might yield different risk perceptions that lead to different behavior modifications due to unfamiliarity with the state. Given their nature and characteristics, if these segments could be isolated, different marketing messages could be targeted for each segment during crises situations. The utility of market segmentation in tourism marketing has been extensively employed, and has also been evident in risk perception related research (Floyd & Pennington-Gray, 2004; Lepp & Gibson, 2008). In the event of wildfires, it is extremely important for Destination Management Organizations to be proactive in implementation of their respective crisis management plan (Pennington-Gray et al., 2010, 2011). A couple of procedures might be implemented to minimize the potential impacts; this may include but would not be limited to engagement with the Emergency Management Unit, Department of Health, Fire Department, and state tourism organization. We also recommend that Destination Management

Organizations provide accurate resources for visitors and the media in a timely manner from official sources, such as information about area closures. It is also important to address issues individually, and to ensure all information is communicated with clarity.

The impacts of wildfire are further pronounced due to the role of the media, as destination substitutability is likely among potential visitors based on risk perceptions. This is relatively true for Cautious Travelers. Hence, it is prudent to utilize the media and information technology to effectively communicate with the public (Armstrong & Ritchie, 2007; Pennington-Gray et al., 2011; Ritchie, 2009; Walters & Clulow, 2010). With the emerging trend of the use of social media in the event of a crisis, Destination Management Organizations can also recommend visitors subscribe or to follow social media to receive regular updates regarding the scale of wildfires. In addition, as media often tends to sensationalize the effects of a crisis, it is pivotal for DMOs to have measures in place to monitor the media and respond to inaccurate statements.

6. Conclusion

This study was intended to segment visitors in Florida based on their perception of risk towards wildfire. The findings indicated three types of travelers: *Conscious Travelers*, *Cautious Travelers* and *Courageous Travelers*. Results also identified that such segmentations were relatively robust in predicting their evaluation of various risk types, and the level of risk in term of threat of wildfires in 11 states. However, some variations were noted when the segments were compared based on the travel behavior modification over several specific wildfire-related situations. This suggested the complexity of predicting actual behaviors on specific situations.

Since most respondents were repeat travelers, additional research needs to be conducted with first time travelers in order to fully capture the variation of risk perception and travel behavior modifications. First time travelers may yield higher perceptions of risk in relation to wildfires in Florida as a result of unfamiliarity with the destination. In addition, this study did not specifically measure the level of familiarity with wildfires, as indicated by the level of individual awareness regarding wildfires. As familiarity with wildfires may mediate the perception of risk associated with wildfires among tourists, future research is needed to incorporate the familiarity element in the measurement of risk perception.

While Florida is typically associated with natural disasters such as hurricanes, wildfires have not garnered much attention in comparison to western states. This exploratory research is likely the only study to date to examine wildfires and tourist behaviors in Florida. However, additional research needs to be conducted to build on this study especially with respect to reactionary and evacuation behaviors. Also studies can be formulated and empirically examined in other wildfire-prone states such as California, Colorado, Montana, Wyoming, Arizona, New Mexico and Washington. Similar to Florida, these states have active tourism industries that are essential to their respective economies. More importantly, nature-based tourism is a key staple within each state, and unfortunately most experience wildfires on a regular basis. Hence, there is a need to examine the impact of wildfires with a broader geographical scale to provide a comprehensive understanding of tourist decision making process and evacuation behaviors.

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References

Absher, J., & Vaske, J. (2007). Modelling public support for wildland fire policy. In K. Reynolds, A. Thomson, M. Kohl, M. Shannon, D. Ray, & K. Rennolls (Eds.), *Sustainable forestry: From monitoring and modelling to knowledge management and policy science* (pp. 159–170). Cambridge, MA: CABI.

Albright, M. (1998, August 4). Fires took a toll on Florida tourism. *St. Petersburg Times*, A1.

Anas, B. (2012). *Colorado tourism industry hoping to overcome effects of summer's fires*. Retrieved on 07.07.12 from WorldWide Web. http://www.dailycamera.com/boulder-county-news/ci_20977902/colorado-tourism-hoping-overcome-effects-fires.

Armstrong, K., & Ritchie, B. (2007). The heart recovery marketing campaign: destination recovery after a major bushfire in Australia's national capital. *Journal of Travel & Tourism Marketing, 23*(2/3/4), 175–189.

Bello, D., & Etzel, M. (1985). The role of novelty in the pleasure travel experience. *Journal of Travel Research, 24*(1), 20–26.

Borrie, W., McCool, S., & Whitmore, J. (2006). Wildland fire effects on visits and visitors to the Bob Marshall Wilderness Complex. *International Journal of Wilderness, 12*(1), 32–35.

Bright, A., Manfredo, M., Fishbein, M., & Bath, A. (1993). Application of the theory of reasoned action to the National Park Service's controlled burn policy. *Journal of Leisure Research, 25*(3), 263–280.

Brown, R., Rosenberger, R., Kline, J., Hall, T., & Needham, M. (2008). Visitor preferences for managing wilderness recreation after wildfire. *Journal of Forestry, 106*(1), 9–16.

Butry, D., Mercer, D., Prestemon, J., Pye, J., & Holmes, T. (2001). What is the price of catastrophic wildfire? *Journal of Forestry, 99*(11), 9–17.

Carr, N. (2001). An exploratory study of gendered differences in young tourists' perception of danger within London. *Tourism Management, 22*(5), 565–570.

Carter, L. (1975). *The Florida experience: Land and water policy in a growth state*. Baltimore, MD: Johns Hopkins University Press.

Chandler, J. (1991). How safe are our airports? *Travel and Leisure, 21*(5), 94–100.

Cioccio, L., & Michael, E. (2007). Hazard or disaster: tourism management for the inevitable in Northeast Victoria. *Tourism Management, 28*(1), 1–11.

Cohn, P., Carroll, M., & Kumagai, Y. (2006). Evacuation behavior during wildfires: results of three case studies. *Western Journal of Applied Forestry, 21*(1), 39–48.

Cortner, H., Gardner, P., & Taylor, J. (1990). Fire hazards at the urban-wildland interface: what the public expects. *Environmental Management, 14*(1), 57–62.

Crompton, J. (1992). Structure of vacation destination choice sets. *Annals of Tourism Research, 19*(3), 424–434.

Davis, R. (1998, July 12). Fires along east coast divert tourists west. *St. Petersburg Times*, 14.

Davis, J., Moseley, C., Jakes, P., & Nielsen-Pincus, M. (2011). *The lost summer: Community experiences of large wildfires in Trinity County, California*. Retrieved on 07.07.12 from WorldWide Web. http://ewp.uoregon.edu/sites/ewp.uoregon.edu/files/WP_30.pdf.

Derr, M. (1989). *Some kind of paradise*. New York, NY: Morrow.

Dillman, D., Smyth, J., & Christian, L. M. (2009). *Internet, mail and mixed-mode surveys: The tailored design method*. Hoboken, NJ: Wiley.

Englander, D. (1991). What you need to know to fly safely now. *Money, 29*(3), 156.

Englin, J., Holmes, T., & Lutz, J. (2008). Wildfire and the economic value of wilderness recreation. In T. Holmes, J. Prestemon, & K. Abt (Eds.), *The economics of forest disturbances: Wildfires, storms, and invasive species* (pp. 191–208). The Netherlands: Springer.

Farrington, B. (2001, May 28). *Central, north Florida fires continue to blaze*. Tallahassee Democrat.

Florida Department of Forestry. (2002). *Florida fire statistics for 1981–2002*. Forest Protection Bureau.

Floyd, M., Gibson, H., Pennington-Gray, L., & Thapa, B. (2004). The effect of risk perceptions on intentions to travel in the aftermath of September 11, 2001. *Journal of Travel & Tourism Marketing, 15*(2–3), 19–38.

Floyd, M., & Pennington-Gray, L. (2004). Profiling risk perception of tourists. *Annals of Tourism Research, 31*(4), 1051–1054.

Formica, S., & Uysal, M. (1998). Market segmentation of an international cultural-historic event in Italy. *Journal of Travel Research, 36*(4), 16–24.

Fuchs, G., & Reichel, A. (2011). An exploratory inquiry into destination risk perceptions and risk reduction strategies of first time vs. repeat visitors to a highly volatile destination. *Tourism Management, 32*(2), 266–276.

Hair, J., Black, W., Babin, B., & Tatham, R. (2005). *Multivariate data analysis*. Upper Saddle River, NJ: Prentice Hall.

Hays, J. (1998, July 20). Operators seek relief from raging Florida fires. *Nation's Restaurant News, 32*, 1–6.

Hendricks, W., Chavez, D., & Bricker, K. (2008). Place attachment and recreational constraints relating to fire management. In D. Chavez, J. Absher, & P. Winter (Eds.), *Fire social science research from the Pacific Southwest research station: Studies supported by the national fire plan funds* (pp. 21–31). Albany, California: Pacific Southwest Research Station, Gen. Tech. Rep. PSWGTR-209 USDA-Forest Service.

Hystad, P., & Keller, P. (2008). Towards a destination tourism disaster management framework: long-term lessons from a forest fire disaster. *Tourism Management, 39*(1), 151–162.

Jacobson, S., Monroe, M., & Marynowski, S. (2001). Fire at the wildland interface: the influence of experience and mass media on public knowledge, attitudes, and behavioral intentions. *Wildlife Society Bulletin, 29*(3), 1–9.
Johnson, C., Poudyal, N., Goodrick, S., Bowker, J., Malone, S., & Gan, J. (2011). Wildland fire risk and social vulnerability in the southeastern United States: an exploratory spatial data analysis approach. *Forest Policy and Economics, 13*(1), 24–36.
Knotek, K., Watson, A., Borrie, W., Whitmore, J., & Turner, D. (2008). Recreation visitor attitudes towards management-ignited prescribed fires in the Bob Marshall Wilderness Complex, Montana. *Journal of Leisure Research, 40*(4), 608–618.
Kozak, M., Crotts, J. C., & Law, R. (2007). The impact of the perception of risk on international travelers. *International Journal of Tourism Research, 9*(4), 233–242.
Law, R. (2006). The perceived impact of risks on travel decisions. *International Journal of Tourism Research, 8*(4), 289–300.
Lepp, A., & Gibson, H. (2003). Tourist roles, perceived risk and international tourism. *Annals of Tourism Research, 30*(3), 606–624.
Lepp, A., & Gibson, H. (2008). Sensation seeking and tourism: tourist role, perception of risk and destination choice. *Tourism Management, 29*(4), 740–750.
Lepp, A., Gibson, H., & Lane, C. (2011). Image and perceived risk: a study of Uganda and its official tourism website. *Tourism Management, 32*(3), 675–684.
Litvin, S., Xu, G., & Kang, S. (2004). Spousal vacation-buying decision making revisited across time and place. *Journal of Travel Research, 43*(4), 193–198.
Loomis, J., Bair, L., & González-Cában, A. (2001). Prescribed fire and public support: knowledge gained, attitudes changed in Florida. *Journal of Forestry, 99*(11), 18–48.
Madrigal, R., & Kahle, L. (1994). Predicting vacation activity preferences on the basis of value system segmentation. *Journal of Travel Research, 13*(3), 22–28.
Manfredo, M., Fishbein, M., Haas, G., & Watson, A. (1990). Attitudes toward prescribed fire policies. *Journal of Forestry, 99*(7), 19–23.
Maser, B., & Weiermair, K. (1998). Travel decision-making: from the vintage point of perceived risk and information preferences. *Journal of Travel & Tourism Marketing, 7*(4), 107–121.
Matyas, C., Srinivasan, S., Cahyanto, I., Thapa, B., Pennington-Gray, L., & Villegas, J. (2011). Risk perception and evacuation decisions of Florida tourists under hurricane threats: a stated preference analysis. *Natural Hazards, 59*(2), 871–890.
May, J., Bastian, C., Taylor, D., & Whipple, G. (2001). Market segmentation of Wyoming snowmobilers. *Journal of Travel Research, 39*(3), 292–301.
McCool, S., & Stankey, G. (1986). *Visitor attitudes toward wilderness fire management policy: 1971–84*. Research Paper INT-357 USDA-Forest Service. Ogden, UT: Intermountain Research Station.
Mitchell, V. W., & Vassos, V. (1997). Perceived risk and risk reduction in holiday purchases: a cross cultural and gender analysis. *Journal of European Marketing, 6*(3), 47–80.
Mottiar, Z., & Quinn, D. (2004). Couple dynamics in household tourism decision making: women as the gatekeepers? *Journal of Vacation Marketing, 10*(2), 149–160.
Moutinho, L. (1987). Consumer behavior in tourism. *European Journal of Marketing, 21*(10), 5–44.
National Interagency Fire Center. (2012). *Wildland fire statistics*. Retrieved on 07.07.12 from WorldWide Web. http://www.nifc.gov/stats/wildlandfirestats.html.
Park, D., & Yoon, Y. (2009). Segmentation by motivation in rural tourism: a Korean case study. *Tourism Management, 30*(1), 99–108.
Pennington-Gray, L., Cahyanto, I., Thapa, B., McLaughlin, E., Willming, C., & Blair, S. (2010). Destination Management Organizations and tourism crisis management plans in Florida. *Tourism Review International, 13*(3), 247–261.
Pennington-Gray, L., Thapa, B., Kaplanidou, K., Cahyanto, I., & McLaughlin, E. (2011). Crisis planning and preparedness in the United States tourism industry. *Cornell Hospitality Quarterly, 52*(3), 312–320.
Pizam, A., & Mansfeld, Y. (Eds.), (1996). *Tourism, crime and international security issues*. Chichester: John Wiley and Sons.
Quintal, V., Lee, J., & Soutar, G. (2010). Risk, uncertainty and the theory of planned behavior: a tourism example. *Tourism Management, 31*(6), 797–805.
Reisinger, Y., & Mavondo, F. (2005). Travel anxiety and intentions to travel internationally: implications of travel risk perception. *Journal of Travel Research, 43*(3), 212–225.
Ritchie, B. (2009). *Crisis and disaster management for tourism*. Bristol, UK: Channel View.
Roehl, W., & Fesenmaier, D. (1992). Risk perceptions and pleasure travel: an exploratory analysis. *Journal of Travel Research, 30*(4), 17–26.
Ruggless, R. (2000, August 7). Wildfires, fuel costs and strong American dollar burn tourism in Western states. *Nation's Restaurant News, 34*, 1–2.
Schroeder, S., & Schneider, I. (2010). Wildland fire and the wilderness visitor experience. *International Journal of Wilderness, 16*(1), 20–25.
Seddighi, H., Nuttall, M., & Theochaous, A. (2001). Does cultural background of tourists influence the destination choice? An empirical study with special references to political instability. *Tourism Management, 22*(2), 181–191.
Sonmez, S. (1998). Tourism, terrorism, and political instability. *Annals of Tourism Research, 25*(2), 416–456.
Sonmez, S., & Graefe, A. (1998a). Influence of terrorism risk on foreign tourism decisions. *Annals of Tourism Research, 25*(1), 112–144.
Sonmez, S., & Graefe, A. (1998b). Determining future travel behavior from past travel experience and perceptions of risk and safety. *Journal of Travel Research, 37*(4), 171–177.
Taylor, J., Cortner, H., Gardner, P., Daniel, T., Zwolinski, M., & Carpenter, E. (1986). Recreation and fire management: public concerns, attitudes, and perceptions. *Leisure Sciences, 8*(2), 167–187.
Tsaur, S., Tzeng, G., & Wang, K. (1997). Evaluating tourist risks from fuzzy perspectives. *Annals of Tourism Research, 24*(4), 796–812.
Visit Florida. (2011). *Visit Florida research*. Retrieved on 07.11.11 from WorldWide Web. http://www.visitflorida.org/.
Walters, G., & Clulow, V. (2010). The tourism market's response to the 2009 black Saturday bushfires: the case of Gippsland. *Journal of Travel & Tourism Marketing, 27*(8), 844–857.
Wang, K., Hsiehb, A., Yehc, Y., & Tsai, C. (2004). Who is the decision-maker: the parents or the child ingroup package tours? *Tourism Management, 25*(2), 183–194.
Wilkinson, T. (2000, August 29). Restless west laments fire closures. *The Christian Science Monitor*, 1.
Winter, G., Vogt, C., & Fried, J. (2002). Fuel treatments at the wildland-urban interface: common concerns in diverse regions. *Journal of Forestry, 100*(1), 15–21.
Yeh, A. (2000, September 11). Burning money: a break in the blazes, but costs keep soaring. *U.S. News and World Report*, 48.
Zalatan, A. (1998). Wives' involvement in tourism decision processes. *Annals of Tourism Research, 25*(4), 890–903.

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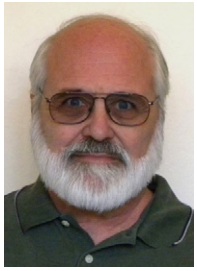

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