

Economic Impact of Wildfire Smoke on Ashland Tourism Industry

Prepared For:

Dennis Slattery & Ashland Chamber of Commerce

By:

Aldene Sumic

Luke Christianson

Arvin Campollo

Submitted in fulfillment of the requirements for BA 428: Applied Business Research

Undergraduate Business Program

School of Business, Southern Oregon University

Under the supervision of

Donna Lane, Associate Professor/ School of Business Chair

December 2013

Executive Summary

Ashland is a community highly dependent upon tourism as a primary driver of the economy. Last summer, the Rogue Valley experienced wildfires that sent smoke billowing into Ashland and interrupted some of the tourist attractions. Most notably was the Oregon Shakespeare Festival (OSF) which had to cancel 4 outdoor performances due to the smoke. The need to estimate the total economic impact of the smoke on the Ashland tourism industry became a primary concern of the client. He asked the undergraduate research students at Southern Oregon University to help develop a survey to estimate the impact. A web-based survey was distributed to 238 Ashland tourism businesses via the Chamber of Commerce. There were 25 respondents to the survey for a response rate of 11%. Some of the most important findings are as follows:

- The respondents estimated they lost \$171,350 over the month of July due to the wildfire smoke.
- Most of the businesses that had a business emergency plan were better prepared to cope with the wildfire smoke and the damages it inflicted upon their businesses.
- Although many business owners are aware of Business Interruption Insurance, most of the respondents (96%) did not utilize it.
- Facebook was the most popular form of social media used to reach out to customers during the month of July.
- There was a significant relationship between the businesses that had a business emergency plan and those that utilized social media, implemented extraordinary measures to combat the wildfire smoke, and their overall level of satisfaction with public health information regarding the smoke over the month of July.

Based on these following conclusions the researchers recommended that an informational pamphlet be developed and distributed to local tourism businesses informing them of the benefits of having a business emergency plan. Although the emergency plan itself does not cause damages to businesses during natural disasters to be lower, it is the greatest indicator of a business being prepared for a natural disaster in our survey. The researchers believe the information should be distributed through multiple media platforms, but most importantly Facebook.

Acknowledgement

We acknowledge and extend our gratitude to the Southern Oregon University's (SOU) School of Business department especially Dr. Donna Lane for providing guidance, advice, and encouragement throughout the term. We also thank Dennis Slattery and the Chamber of Commerce for the opportunity to conduct the research project. Special thanks go to Mark Siders for providing us information about our collected data. Lastly, we would like to thank Deborah d'Este Hofer, SOU Grants Administrator, for exempting us to follow through with the research.

Table of Contents

Executive Summary	i
Acknowledgement	ii
Table of Contents	iii
List of Figures	iv
Chapter 1 (Introduction)	1
Chapter 2 (Review of Literature)	3
Chapter 3 (Research Design & Methodology).....	6
Chapter 4 (Findings of the Survey).....	9
Chapter 5 (Conclusions/Recommendations).....	16
Appendix A (Proposal)	21
Appendix B (IRB).....	23
Appendix C (IRB Approval).....	34
Appendix D (Survey Questions).....	35
Appendix E (Consent Form).....	40
Appendix F (Open Ended-Responses).....	41
Reference List	42

List of Figures

Figure 4.1: Industry of Business Surveyed 1	9
Figure 4.2: Social Media Used 1.....	13
Figure 4.3: Levels of Satisfaction 1	14

Chapter 1 (Introduction)

Background and Need for the Study

The tourism industry is a significant piece of Ashland's total revenues and the summer is the peak season for the industry. Perhaps the biggest attraction in Ashland is the Oregon Shakespeare Festival (OSF). The crowd that OSF draws, help the local restaurants, hotels, and retailers with an increase in customer traffic. When wildfire smoke surrounded Ashland, it affected the city in positive and negative ways. The researchers were interested in learning more about the specific impacts the smoke had on the tourism industry in Ashland. This study was developed with the intention of providing local tourism businesses with helpful tips to reduce the losses they suffer the next time such an event occurs.

Statement of Problem and Research Objectives

The general purpose of this study was to quantify the total amount of economic impact (in dollars) the wildfire smoke imposed on the tourism industry in Ashland during the month of July. Specifically, the researchers focused on the tourism sector of the economy because of its importance to Ashland's total economic activity.

The objectives of the study have been broken down and are as follows:

1. Economic impact the wildfire smoke (in dollars) had on the Ashland tourism industry during the month of July.
2. Identify common variables that were effective and ineffective at reducing the impacts the wildfire smoke had on businesses' total revenues.

3. Recommend new ways to combat the wildfire smoke by learning from other communities' successes and failures with similar problems.
4. Identify which media platforms were most/least utilized by businesses during the month of July to promote business above and beyond their normal behavior.
5. Identify which media platforms had the most/least success in getting tourists to still come to Ashland during the month of July.
6. Understand the degree of feasibility regarding business owner's familiarity with Business Interruption Insurance and whether or not businesses are utilized the service over the month of July.
7. Identify what percentage of respondents that know about the Air Quality Index readings and inform them how they affect tourists' traveling decisions.

Chapter 2 (Review of Literature)

Tourism Industry Analysis

Businesses in the tourism sector are highly dependent on tourists coming to their city wishing to partake in various activities. The peak months for tourist activity in the Rogue Valley occurs in the summer, when the weather is most pleasant and the kids are still not yet back in school. This is particularly true for states with a great amount of outdoor recreation, such as Oregon. “Tourism in Oregon is a \$9.4 Billion industry”; the tourism industry directly creates approximately 91,000 jobs and indirectly creates another 41,000 jobs statewide (<http://industry.traveloregon.com>).

Tourism is especially important for rural counties such as Jackson County. It is one of the top three export-oriented industries in rural Oregon (Oregon Travel Impacts, 2013, p. 43). The study by Dean Runyan Associates for the Oregon Tourism Commission estimates that tourists visiting the Southern Oregon region spent \$916 million in 2012 (Oregon Travel Impacts, p. 45, 2013). This supports 10,100 jobs in the region and generated \$220 million in earnings (Oregon Travel Impacts, p. 45, 2013). Although, the money spent on accommodations was similar to other sectors of the industry, they made a significantly larger amount on their sales than their counterparts. Over \$147 million of the \$220 million in earnings for the region came from lodging accommodations (Oregon Travel Impacts, p. 45, 2013). Although, not all of the region’s tourism spending can be attributed to Ashland, it is still a significant portion of the tourism economy in Southern Oregon.

One of the greatest threats to a successful summer season is wildfires. The peak wildfire season in Southern Oregon also happens to coincide with the peak tourist season. This can lead

to devastating consequences for small business owners. This summer Northern California had to deal with the Rim Fire, one of the largest wildfire in the state's history. The Rim Fire burned 201,894 acres of land and drastically affected tourist towns. In extreme cases such as this, some businesses can be forced to close their doors if the tourists do not come. For at least one cafe owner in Northern California, surviving a down summer season can be easier said than done. "About 90 percent of Mr. Jones's annual revenue comes from summertime tourists en route to Yosemite on Highway 120" (Wollan, 2013). For the sake of comparison, the wildfires that brought smoke to Ashland this summer burned 31,950 acres (www.nwccg.gov/incident/3570 & 3568, 3563).

Regulator Environment

Local and federal funding to fight wildfires are variables that are beyond business owners control. The most intense wildfires that occurred this year were in Northern California. The fires occurred just hours away from Ashland and the Rogue Valley has the potential to experience fires similar in magnitude. It is for this reason the researchers chose data from the Rim Fire to demonstrate the regulator environment involved in fighting wildfires. California set aside \$172 million to fight fires this year (Siders, 2013). The Rim Fire had already cost the state \$20 million at the time the article was published (Siders, 2013). The federal government announced, it would cover up to 75% of the costs associated with fighting the Rim Fire (Siders, 2013). These expenditures help get fires under control faster, which means businesses can get back to business as usual faster.

Many of the circumstances surrounding the cumulative impact of wildfire smoke on the tourism industry in Ashland are out of business owners control. The size of the fire, the

availability of state funding to fight the fires, and the town's geography are all factors that business owners cannot control but nonetheless directly impact the businesses themselves.

Tourism Market

“A vibrant tourism sector and established higher education core form the basis of Ashland's economy.” Although, Southern Oregon University is the backbone of economic impact in Ashland, the Chamber of Commerce recognized the importance of tourism in the industry it made sure to mention tourism first. “Ashland is a town of just over 20,000 residents but a visitor destination for over 300,000 people throughout the year” (Ashland Oregon Chamber of Commerce). The largest draw for tourists to visit Ashland is the Oregon Shakespeare Festival (OSF). “Traditionally, 85% of OSF's audiences journey from outside the Rogue Valley” (Lacy, 2010). In 2013, the OSF sold 405,328 tickets and generated \$19,573,863 in revenue; running at a 87% capacity (Curtin, 2013). Despite the wildfire smoke that blanketed Ashland for three weeks, attendance was up 3.6% compared to 2012 and revenues were up 7.2% from last year (Curtin, 2013). These numbers could have been more encouraging if the wildfires had not made outdoor performances difficult. “The last I heard is that we lost approximately \$200,000 due to four canceled performances,” said OSF spokeswoman Amy Richard (Stiles, 2013).

The OSF is not the only business in town dependent upon tourists. The broad culture in Ashland fosters over 80 restaurants, microbreweries, wineries, numerous galleries, and unique shops (Ashland Chamber of Commerce). These small businesses make up the backbone of the tourism sector in Ashland. Food accounted for \$208 million in sales in Southern Oregon over 2012 (Oregon Travel Impacts, 2013. p. 45). Ashland restaurants benefit from their tremendous reputation in the Rogue Valley and make up a significant portion of those sales.

Chapter 3 (Research Design & Methodology)

Population Surveyed

The population that was the focus of this study was the Ashland tourism businesses. The client provided the researchers with a list of businesses associated with tourism and the researchers discovered there were 238 such businesses. The Ashland Chamber of Commerce sent out an email to each business and asked them to participate in the survey. A follow-up email was sent encouraging the businesses that had not yet participated in the survey to do so.

Research Design

A web-based survey was developed and comprised of 12 questions. The questions were classified into different headings. There were 5 different types of questions the survey asked and they were classified in the following way: 1 was demographic, 8 were quantitative, 1 was qualitative, 1 was based on level of satisfaction, and 1 was open ended. The web-based survey was developed on Qualtrics by the researchers at Southern Oregon University and was distributed by the client. The client forwarded the information to the Ashland Chamber of Commerce who then sent out a memo via email to local Ashland tourism businesses to collect data to see whether the smoke that surrounded the Rogue Valley, due to the wildfires, had an economic impact on businesses. The Ashland Chamber of Commerce provided the researchers with a list of 238 tourism businesses in Ashland.

The client requested the research focus specifically on the Ashland Tourism businesses. The Ashland Chamber of Commerce asked the researchers to develop a survey in order to better understand how the wildfire smoke affected the tourism industry. The Ashland Chamber of Commerce will use the results of the survey to help businesses create a plan for future emergencies. Considering that the nature of the research deals with human subjects, the

researchers completed and submitted a research proposal and review form to the SOU Institutional Review Board (IRB) (see Appendix A and B).

Construction of the Web-based survey

The web-based survey was created using the Qualtrics Survey Software. An email with a link to the web-based survey was sent to the client for them to review. To ensure the questions were clear, the survey was pilot tested 3 different ways. Donna Lane, Ph.D. was the structure expert, the client was the content expert, and 13 peers made sure it was clear and understandable. After the final draft of the survey was approved by the client and IRB, the survey was sent to the client, who then forwarded it to the Ashland Chamber of Commerce. The Ashland Chamber of Commerce sent an email to the 238 tourism businesses in Ashland along with a short memo explaining the purpose of the survey and encouraging the businesses to click the link to the survey and participate. Qualtrics was the application used to tabulate survey responses through links on its website, and also coded all responses from respondents.

Sample Size and Description Method

The Chamber of Commerce distributed the web-based survey to 238 tourism businesses in Ashland and a total of 25 responses were returned given a response rate of 11%. The sample size was large enough to draw useful statistic conclusions and for questions dealing with proportions the Confidence Level of 90% and margin of error of $\pm 9.9\%$ is calculated.

Limitations of Research

There are several limitations to the survey which are detailed below:

- The survey was available for a short amount of time. Not all of the businesses who may have wanted to participate could because the researchers forgot to add more industries on question 1. This may have had a negative effect on the number of responses.

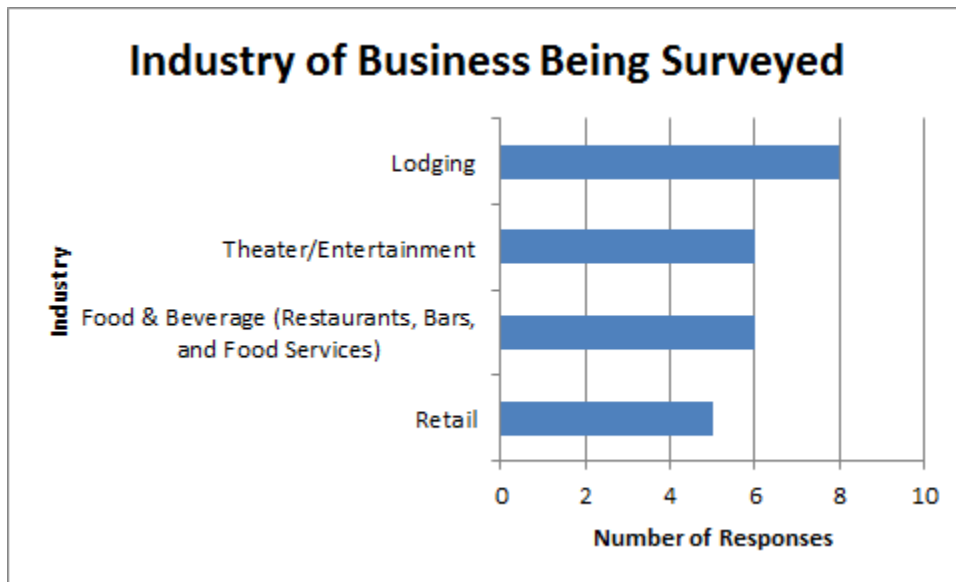
- An email with an attached link to the survey was distributed by the Ashland Chamber of Commerce to 238 businesses. The business owners that do not check their email regularly did not have an opportunity to complete the survey. This could have resulted in a lower response rate.
- The survey asked respondents questions about the wildfire smoke in July. The wildfires occurred at the end of July and lasted through August. Respondents might be confused about which timeframe the researchers were trying to study. As a result, the number of responses may be lower than if this error had not occurred.
- The survey did not include outdoor recreational businesses as an answer to the demographic question regarding which industry the business aligns itself with. The results will not reflect economic impacts imposed on those businesses.

Chapter 4 (Findings of the Survey)

The web-based survey was composed of 12 questions with 4 additional follow-up questions. A link was sent out via email from the Ashland Chamber of Commerce to 238 businesses associated with tourism in Ashland. Of the 16 questions asked including the follow-up questions, 1 question was demographic, 12 were quantitative, 1 was qualitative, 1 was based on level of satisfaction, and 1 was open ended. Of the 243 surveys distributed, 25 were filled out for a response rate of 11 percent.

The 1st question was a demographic question and it identified the industry of the business being surveyed. Of the 25 respondents, 6 (24%) were associated with food and beverage, 8 (32%) were lodging accommodations, 5 (20%) were retail stores, and 6 (24%) were theatre and entertainment related (See Figure 4.1).

Figure 4.1: Industry of Business Surveyed 1



The 2nd question asked whether or not the wildfire smoke affected their business. This was a quantitative question designed towards quantifying the total number of businesses affected by wildfire smoke in Ashland. Of the 25 respondents, 16 (64%) answered yes, 6 (24%)

answered no, and 3 (12%) answered that they were not sure. For those respondents that answered yes to this question, the researchers also asked them to estimate the total losses/gains to their business in dollars. Based on the responses, the total losses declared due to the wildfire smoke in Ashland was \$171,350. This number is based on 16 responses and has not been extrapolated to estimate total losses for the entire industry.

The 3rd question was also a quantitative one. It asked respondents to estimate how many reservations were canceled in July due to wildfire smoke. Of the 25 respondents to the survey, 24 (96%) answered this question. 6 (24%) answered 0 reservations were canceled, 12 (48%) answered between 1-50 reservations canceled, 2 (8%) answered between 51-100 reservations canceled, and 4 (16%) answered 200 or more reservations canceled. A majority (48%) of the respondents lost between 1-50 reservations.

The 4th question quantified the amount of respondents that have an emergency business plan. Of the 25 respondents, 7 (28%) answered yes, 16 (64%) answered no, and 2 (8%) answered that they were not sure. This question ended up being very valuable in the analysis of the industry as it correlated with many other questions which will be addressed in Chapter 5.

The 5th question was a quantitative question. It asked whether or not the respondent was aware of Business Interruption Insurance. Of the 25 respondents, 17 (68%) answered yes, and 8 (32%) answered no.

Part 2 of question 5 was optional and was only answered by those respondents that answered yes to the fifth question. For this reason, the researchers labeled this question as 5B. Of the 17 that answered yes to question 5, 1 (6%) answered yes to utilizing Business Interruption Insurance, 14 (82%) answered no, and 2 (12%) answered that they were not sure. For those respondents answering yes or no to question six the survey guided the respondents to an open

ended element to the question and asked them why they behaved the way they did. The respondent who answered yes utilized the insurance because the fire prevented them from opening. Of the 14 respondents that did not utilize the insurance, 2 (14%) cited the cost as an issue, 1 (7%) cited the time involved as a reason, 2 (14%) did not deem the insurance claim necessary, 2 (14%) respondents said it was too difficult to prove the loss was substantial enough, 1 (7%) said they were in the process of utilizing it, 1 (7%) respondent wanted to keep insurance costs down, 1 (7%) did not need to utilize it, and 1 (7%) respondent said that insurance was unavailable in their industry. This leaves 3 (21%) respondents that answered no that did not fill out the open ended section of the question.

The 6th question was also a quantitative question; however, respondents were allowed to check multiple answers if they applied. It asked the respondent to check all actions that they took to compensate for the wildfire smoke. Of the 25 respondents, 37 answers were generated. The most popular answer to this question was decreased staffing hours, with 7 total responses. Offering rain checks and reduced rates to customers was the 2nd most popular action taken, with 6 responses for each. The 3rd most common answer was other, with 5 total responses. The answer to other allowed respondents to write in their answer and 4 of the 5 that checked other said that they did nothing to compensate for the smoke. Reduced advertising and temporary layoffs had 3 responses each. There were 2 respondents that indicated they purchased additional equipment and 2 respondents answered that they had reduced store hours. Finally, 1 respondent increased advertising, 1 respondent changed store hours, and 1 respondent increased store hours.

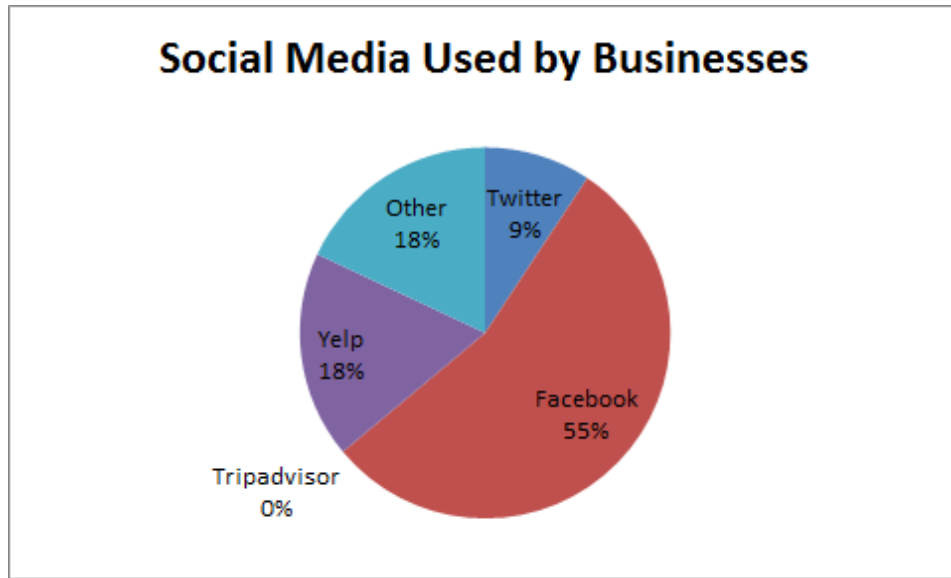
The 7th question was quantitative and asked respondents if they used conventional media they typically wouldn't use if it had not been for the wildfire smoke. Of the 25 respondents, 2 (8%) answered yes, and 23 (92%) answered no.

Part 2 of question seven was only answered by respondents that answered yes to that question. Of the 2 respondents that answered yes, 1 respondent used the newspaper to advertise while 1 person answered other to the question. The fill in response the answer for other explained that they used their own website to promote their business by offering discounts and citing news coverage.

The 8th question asked whether the respondents used any form of social media to promote their business that they typically would not have used if it were not for the wildfire smoke. Of the 25 respondents, 6 (24%) answered yes and 19 (76%) answered no.

Part 2 of question 8 was only to be answered by those respondents that answered yes to the previous question. It is another quantitative question. Of the 6 respondents that answered yes to the previous question, 1 (17%) respondent used Twitter, 6 (100%) respondents used Facebook, 2 (34%) used Yelp, and 2 (34%) used other. For respondents that answered other, there was 1 (17%) response for Google+ and 1 (17%) response for LinkedIn. The 6 respondents that used Facebook resulted in a 100% response rate for reaching customers via the social media platform (See Figure 4.2 on the following page).

Figure 4.2: Social Media Used 1



The 9th question asked whether or not respondents did anything out of the ordinary to combat the wildfire smoke. It was a quantitative question with a yes, no, or not sure option of responding. Of the 25 respondents, 9 (36%) answered yes and 16 (64%) answered no while no respondents answered that they were not sure.






Part 2 of question 9 was only answered by those respondents that answered yes to the previous question. Respondents were allowed to check all boxes that apply to the actions they took. This generated multiple responses from some respondents. Of the 9 respondents that answered yes to the previous question, they generated 17 responses. The responses included 5 that indicated they used additional fans, 4 answered that they used air filters, 7 answered that they increased air conditioning use, and 1 responded that they used particulate respirators.

The 10th question was also quantitative in nature. The researchers asked respondents whether or not they were aware that Ashland has an Air Quality Index (AQI) in order to assess air quality. Of the 25 respondents to the survey, 24 (96%) responded to this question. The

results were that 19 (79%) answered yes, 2 (8%) answered no, and 3 (12.5%) answered that they did not know what the AQI is.

The 11th question was based on overall level of satisfaction. It asked respondents to estimate their overall level of satisfaction with public health information during the month of July. Of the 25 respondents, 4 (16%) answered that they were extremely satisfied, 11 (44%) answered that they were somewhat satisfied, 7 (28%) answered neutral, 2 (8%) answered that they were somewhat dissatisfied, and 1 (4%) answered that they were extremely dissatisfied (See Figure 4.3).

Figure 4.3: Levels of Satisfaction 1

#	Answer		Response	%
1	Extremely Satisfied		4	16%
2	Somewhat Satisfied		11	44%
3	Neutral		7	28%
4	Somewhat Dissatisfied		2	8%
5	Extremely Dissatisfied		1	4%
	Total		25	100%

The 12th question was an open ended question. It asked respondents to pinpoint the single greatest variable in their business most affected by the wildfire smoke in July. Of the 25 respondents in the survey, 20 (80%) answered this question. Since they are open ended questions each respondent had a different answer to this question. However, the researchers attempted to group responses into common categories. Two respondents mentioned that the wildfire smoke occurred in August, rather than July so they did not feel the survey was valid. Some respondents cited a lack of tourists on the streets, some respondents answered that people not wanting to be outside was the greatest impact on their business. A couple

respondents cited that they lost some reservations while others replied that the amount of reservations that were just never booked was the greatest contributing factor.

There was a significant correlation between the businesses that had a business emergency plan and their awareness of Business Interruption Insurance. Of the 25 respondents 68% percent answered that they were aware of Business Interruption Insurance, however, only 28% of respondents answered that they had a business emergency plan. This presents an opportunity to inform local tourism businesses of the benefits of both a business emergency plan and Business Interruption Insurance. The media platform that is chosen to distribute this information will determine the effectiveness of the researchers' ability to reach Ashland tourism businesses.

Chapter 5 (Conclusions/Recommendations)

Introduction

In this chapter the researchers will interpret the raw data and draw conclusions. Based on these conclusions the researchers will imply what these results mean for the industry as well as recommend ways to dampen the economic impact of wildfire smoke on Ashland tourism businesses.

Implications

The survey generated some expected results, as well as some unexpected results. The researchers were able to draw some conclusions about what the data meant for Ashland tourism businesses during the month of July.

For example, there was a significant correlation (p-value: .008) between the use of conventional media for advertising and businesses that experienced canceled reservations over July 2013. Only 2 respondents (8%) utilized conventional media forms but 6 (24%) respondents used social media to promote their businesses during the month. Every respondent that indicated they used social media used Facebook to reach their customers. This would lead the researchers to recommend Facebook as one of the platforms for distributing information to local tourism businesses.

There was a significant relationship between the businesses that had emergency plans and their utilization of conventional media (p-value: .000), social media (p-value: .000), extraordinary measures to combat wildfire smoke (p-value: .000), and their overall level of satisfaction with public health information p-value: .000). This leads the researchers to conclude that businesses with emergency plans utilized the available resources more often than businesses

without emergency plans. The benefits of informing tourism businesses of the benefits of a business emergency plan seem to lead to other positive results in other areas of the survey.

Research Objectives

The main goal of this research was to determine whether or not the smoke caused by wildfires in Southern Oregon affected the local tourism businesses in Ashland in a positive or negative way economically speaking. The web-based survey estimates that \$171,350 was lost by the 25 respondents. There were some limitations indicated previously that affected the quality of the responses.

The researchers' secondary objective was to figure out ways to inform businesses how to cope with wildfire smoke more effectively the next time such a natural disaster occurs. The researchers would like to see a pamphlet developed that can be distributed over multiple media platforms. The goal of the pamphlet would be help the local businesses most dependent on tourists be better prepared for natural disasters, especially wildfires.

Conclusions

The results of the survey were, for the most part, what the researchers expected them to be. There was a significant economic impact (-\$177,350) on local tourism businesses associated with the Southern Oregon wildfires this past summer. The businesses that were most prepared and utilized the most resources available to them also had business emergency plans. One somewhat surprising conclusion was that many of the tourism businesses that had Business Interruption Insurance did not utilize it over this past summer. Perhaps the wildfire was not severe enough for them to justify filing a claim, but it surprised the researchers because a disproportionate amount of their yearly revenues occur over the summer season. Facebook is the media platform of choice for reaching customers during adverse situations. In the future the

researchers would like to see this survey conducted again while fixing the limitations indicated earlier. This could generate different response rates as well as different conclusions and recommendations for Ashland tourism businesses in the future.

Recommendations

Businesses with emergency plans seemed to be better prepared to cope with the wildfire smoke when compared to those without plans. The researchers would recommend the distribution of information on the benefits of having a business emergency plan over multiple platforms with a goal of dampening the economic impact of wildfire smoke on tourism businesses in Ashland.

Summary

The following chapter has been organized into bullet point highlights as follows:

- Implications
 - Businesses that had a business emergency plan were also aware of Business Interruption Insurance.
 - Conventional media did not lead to lower rates of reservation cancellations.
 - Social media was utilized more often than conventional media and 100% of respondents that used social media used Facebook.
 - Businesses that had business emergency plans were also more likely to utilize conventional media, social media, use extensive measures to combat the smoke, and were generally more satisfied with public health information over the month of July.

- Objectives
 - Determine the economic impact of wildfire smoke on the Ashland tourism businesses.
 - Figure out ways to reach and inform businesses how to cope with wildfire smoke more effectively.
- Recommendations
 - Encourage more businesses to have a business emergency plan.
 - Reach out to businesses over multiple media platforms, particularly Facebook.
- Suggestions for further studies
 - Include outdoor recreation as a response option to the 1st question of the survey
 - Change the questions to acknowledge the fires occurred in August rather than July.
 - Distribute the survey over multiple media platforms, particularly Facebook.
 - Make the question asking respondents to estimate the total economic loss (in dollars) more clear. Include a way for them to identify if the economic impact was positive or negative.

Suggestions for further research Studies

Although, the research has provided beneficial results, there are several modifications that could be made to improve the study. The researchers' suggestions for future studies are as follows:

The 1st recommendation the researchers had was in response to the 1st question of the survey regarding which industry the respondent considers itself most closely aligned with. A couple respondents indicated at the end of the survey that they were associated with the outdoor

recreation industry and they had hoped the survey would include that in the demographic question. It is the researchers' recommendation that outdoor recreation be included in future research on the topic.

A 2nd recommendation for future researchers on this topic is to consider changing the scale for the number of reservations canceled. Almost half (48%) of respondents indicated that they had lost between 1-50 reservations over the month of July. A scale that focuses on that target range could be more effective at estimating the total number of reservations lost.

There were many questions in the survey that asked respondents to estimate the impact of the wildfire smoke on their business during the month of July. There were 2 respondents who pointed out that the wildfires started in late July, so the impacts on businesses didn't actually occur until the month of August. Unfortunately, the researchers realized this error after the survey had already been distributed and they were unable to redistribute an amended version. The researchers would recommend using August as the month to survey respondents on in the future.

The survey was distributed solely via email. In the future, the researchers would recommend using multiple platforms to distribute the survey with the hope that it will generate a higher response rate. Facebook appears to be the platform of choice for respondents using social media.

The researchers asked respondents to estimate the economic impact of the wildfire smoke on their business but they did not leave respondents an option to indicate whether the impact was positive or negative. Although the research concludes that most of the estimates impacted businesses negatively, the researchers ultimately cannot make that assumption and a more transparent question is needed to generate more clear results.

Appendix A (Proposal)

SOUTHERN OREGON UNIVERSITY

School of Business
1250 Siskiyou Blvd.
Ashland, OR 97520

May 11, 2017

School of Business
1250 Siskiyou Blvd.
Ashland, OR 97520

Dear Dennis Slattery:

The purpose of this letter is to verify that we intend to pursue the Southern Oregon University School of Business Consulting project that we discussed in our recent meeting. We would also like to explain our understanding of the tasks that we are expected to accomplish. As you well know, we are required to bring the following statement concerning the nature of the student consulting engagement that we are embarking upon to your attention:

“This research project is made possible under the cooperative agreement between Southern Oregon University and the school of Business. The analysis, recommendations, and final report that will be provided are based on provisions of that agreement. The report that you will receive should contain views and opinions of the School of Business student team based on discussions, observations, investigations and analysis on the topic of this research project.”

Based on our discussion with you on Wednesday, October 2, 2013, we intend to accomplish the following tasks in the process of completing this consulting engagement:

Provide primary data of how the envelopment of smoke in the Rogue Valley affected the local businesses in Ashland in a positive or negative way. Our data would include money gains and losses, number of customers throughout the 2-3 weeks of smoke, and the solution to how businesses can maintain service through bad times.

We would survey all the local Bed and Breakfasts, Restaurants, and Inns in Ashland to see whether the smoke affected their business. Also giving them options of solutions that they might initiate in the near future.

We intend to develop a useful, factual report that will assist you in taking your project to the next level. Although our emphasis will be on the above tasks, we may undertake additional, relevant tasks if time allows. Our goal is to provide you with both a written and oral report on or before the end of the Fall 2013 term.

Thank you for giving us the opportunity to apply our knowledge and skills in an actual business environment. We are looking forward to an interesting and challenging assignment.

Sincerely,

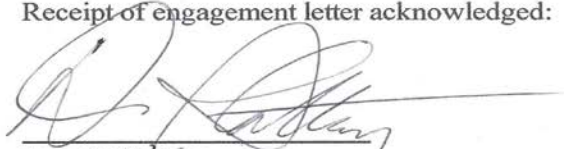

Aldene Sumic
Student Consultant


Luke Christianson
Student Consultant


Donna Lane
Faculty


Arvin Campollo
Student Consultant

Receipt of engagement letter acknowledged:


Dennis Slattery
Client

Appendix B (IRB)

SOUTHERN
OREGON
UNIVERSITY

**INSTITUTIONAL REVIEW BOARD (IRB)
REVIEW REQUEST
FOR PROJECTS USING HUMAN SUBJECTS**

Investigators are responsible for ensuring that the rights and welfare of human subjects participating in research activities are protected, and that methods used and information provided to gain subject consent are appropriate to the research.

All research activities involving the use of human beings as research subjects (participants) must be reviewed and approved by the Southern Oregon University Institutional Review Board (IRB), unless the IRB chair determines that the research falls into one or more of the categories of exemption established by federal regulation. These categories include research conducted in commonly accepted educational settings involving normal educational practices such as research on regular and special education instructional strategies, research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods. Also exempt is research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior. However, each category of exemption contains specific exceptions. Please note that only the IRB may make the determination if the research qualifies for exemption under Title 45 CFR 46.101.

Investigators may not solicit subject participation or begin data collection until they have received approval or written concurrence that research has been determined to be exempt from the Institutional Review Board.

Application forms are available on the Internet at [Research & Human Subjects Clearance](#). The form may be downloaded and completed but must be submitted in hard copy due to signature requirements. If you have **questions** about the IRB application form or about the review process, contact:

**Deborah d'Este Hofer
Grants Administration
Churchill #205**

Phone: 552-8662 /E-mail: hofer@sou.edu

INSTITUTIONAL REVIEW BOARD (IRB)

The Institutional Review Board generally meets on an ad hoc basis as proposals are submitted for review. Applicants must allow 2 weeks for the review process.

A notice of the IRB's action will be sent to the researcher(s). It is the responsibility of the researcher(s) to see that the form is given to any agency which may require it.

Title 45 Code of Federal Regulations Part 46 (45 CFR 46) Protection of Human Subjects specifies federal regulations for the conduct of research involving human subjects. See especially sections 46.102 Definitions, 46.116 General Requirements for Informed Consent, and 46.117 Documentation of Informed Consent. The document is available at <http://ohrp.osophs.dhhs.gov/humansubjects/guidance/45cfr46.htm>. See references throughout this application to 45 CFR 46.

INSTRUCTIONS:

Your responses to the 21 questions in the summary sheets that follow are basic to the Institutional Review Board's determination about the protection of the rights and welfare of human subjects in your research. Your responses should be clear, complete, and easy to understand.

Place your typewritten response immediately under each question (not on a separate sheet). It is important that you answer every question. If you believe that a question does not apply to your research, enter a response such as "N/A" or "does not apply."

Copies of the following must be included with this form:

1. The cover letter and script that will be used to inform subjects of the nature of the research.
2. The informed consent template the subject(s) will sign.
3. Copies of surveys, instruments or measures, questionnaires, interview schedules, focus group questions and/or other materials used to collect data.

Submit one complete hard copy and one digital copy (via e-mail or disk) to:

**Institutional Review Board
Grants Administration
Churchill #205
Atten: Deborah d'Este Hofer**

<p>Title Page</p> <hr/> <p><i>Review Form for Projects Using Human Subjects</i></p> <hr/> <p style="text-align: center;">Southern Oregon University Grants & Human Subjects Administration #205</p>	<p style="color: blue;">For office use only</p> <p>PROTOCOL/FIS</p> <p>NUMBER:</p>
--	--

<p>► Research Project Title</p>	<p>The Economic Impact of Wildfire Smoke on the Ashland Tourism Industry</p>
--	---

<p>► Principal Investigator</p> <p>University Relationship:</p> <p><input checked="" type="checkbox"/> Professor</p> <p><input type="checkbox"/> Associate Professor</p> <p><input type="checkbox"/> Assistant Professor</p>	<p>Name (first, middle initial, last):</p> <p>Donna Lane</p>	<p>Phone:</p>
	<p>Department:</p> <p>Business</p>	<p>E-mail:</p> <p>LaneD@sou.edu</p>

<input type="checkbox"/> Instructor <input type="checkbox"/> Other. Please specify. ("Other" categories may require prior approval.)	Signature: Date: X	Fax:
---	---------------------------------	------

<p>► Co-Investigator</p> <p>University Relationship:</p> <input type="checkbox"/> Faculty <input type="checkbox"/> Staff <input type="checkbox"/> Graduate Student <input checked="" type="checkbox"/> Undergraduate Student <input type="checkbox"/> Other. Please specify.	Name (first, middle initial, last): Arvin Campollo	Phone:
	Department:	E-mail: Campolloa@sou.edu
	Signature: _____ Date: _____	Fax:

<p>► Co-Investigator</p> <p>University Relationship:</p> <p><input type="checkbox"/> Faculty</p> <p><input type="checkbox"/> Staff</p> <p><input type="checkbox"/> Graduate Student</p> <p><input checked="" type="checkbox"/> Undergraduate Student</p> <p><input type="checkbox"/> Other. Please specify.</p>	<p>Name (first, middle initial, last):</p> <p>Luke Christianson</p>	<p>Phone:</p>
	<p>Department:</p>	<p>E-mail:</p> <p>Christilu@sou.edu</p>
	<p>Signature: _____</p> <p>Date: _____</p>	<p>Fax:</p>

<p>► Co-Investigator</p> <p>University Relationship:</p> <p><input type="checkbox"/> Faculty</p> <p><input type="checkbox"/> Staff</p> <p><input type="checkbox"/> Graduate Student</p> <p><input checked="" type="checkbox"/> Undergraduate Student</p> <p><input type="checkbox"/> Other. Please specify.</p>	<p>Name (first, middle initial, last):</p> <p>Aldene Sumic</p>	<p>Phone:</p>
	<p>Department:</p>	<p>E-mail:</p> <p>Sumica@sou.edu</p>
	<p>Signature: _____</p> <p>Date: _____</p>	<p>Fax:</p>

Application Questions
Please type your responses.

INTRODUCTION TO THE PROPOSED RESEARCH

1. Provide the **date** when you propose to begin research and the date when you anticipate that research will be completed.

Proposed start date: **09/30/2013**

Anticipated completion date: **12/11/2013**

2. Indicate any source(s) of **funding** for the proposed research i.e., department funds or grants.

DESCRIPTION OF THE PROPOSED RESEARCH

3. Provide a brief (1 page or less) description of the **purpose** of your research.

This survey is designed with an attempt to quantify the total economic loss/benefit to the tourism industry of Ashland during the wildfire smoke in the month of July.

4. Indicate the **setting or location(s)** where research will be conducted. Attach letters of support or agreement, as necessary, showing that you have permission to conduct research at that location.

The research will be conducted by Southern Oregon University undergraduates through an online survey in cooperation with the Ashland Chamber of Commerce.

5. Describe any **potential problems** of ethics using human subjects (painful stimulation, deception, coercion, embarrassment, lack of confidentiality, lack of full disclosure, lack of feedback for subjects, etc.).

There shouldn't be many potential problems in this research. It is a voluntary survey where responses are kept confidential and the participant may stop at any time.

6. Does the proposed research require that you **deceive** participants in any way?

No, deception will not be utilized in this study.

Yes No

7. If your response is “yes,” describe the type of **deception** you will use, indicate why it is necessary for this study, and provide a copy of the debriefing script.

8. What is required of subjects?

All we ask of our participants is that they take the time to complete our survey.

9. *What happens to subjects (include a description of any instruments used)?*

No subjects will be submitted to any activities besides a voluntary Internet survey.

BENEFITS AND RISKS

10. Describe the **potential benefits** of conducting this research. List the benefits to the participants themselves, contributions to the field of knowledge, and benefits to society as a whole. If the research participants will not receive any direct benefits from participating in this study, indicate this in your response.

The Ashland Chamber of Commerce could use the information yielded from this survey and inform businesses how to be better prepared the next time wildfire smoke fills the city. It will also attempt to quantify, in dollars, the total economic

loss/benefit of wildfire smoke, as well as possibly uncovering some externalities previously not considered.

11. Describe any potential risks that a research participant may become **upset or distressed** as a result of their participation in this study. When appropriate, provide a list of community agencies or counseling services so that participants can be directed to assistance as needed.

The subjects of this research have a very small risk of becoming upset or distressed by participating in our study. As previously stated, the survey is voluntary, the responses will be kept completely confidential, and the participant may stop at any time they want.

PARTICIPANTS

12. Indicate the total **number of participants** you require, and your sampling procedure.

All the Tourism Businesses in Ashland will be asked to participate: Approximately 200 businesses

13. Describe **the type and source of subjects** required (i.e., single parents at SOU, psychology classes, hysterectomy patients at Rogue Valley Medical Center, fifth graders at Walker Elementary School, etc.).

All the Tourism Businesses in Ashland will be asked to participate: Approximately 200 businesses

14. Provide an estimate of the **amount of time** that will be requested from each person who participates in this research study (number of sessions, amount of time per session, and duration or period of time over which the research will take place).

The survey should take between 4-6 minutes to complete and it is the only time we ask of our participants.

INFORMED CONSENT PROCEDURES

15. Describe what you have done to make sure your subjects are **fully informed** about their role in the research, that their confidentiality will be maintained, and that their participation is **voluntary**, and that they can withdraw at any time without penalty.

We added a consent form on the top page of our survey to tell our subjects that this is totally voluntary, the information will remain confidential, and they can stop at any time. Also, to ensure their privacy, responses will come to the researchers with no identifying information attached.

16. Describe any **incentives, inducements, or reimbursements** (e.g. extra credit, research credit, cash payment, raffle, gift) that will be offered to the participants. Indicate whether participants will receive the incentives if they withdraw before the study has been completed.

Unfortunately, we do not have any incentives to offer our participants.

CONFIDENTIALITY OF THE DATA

17. Indicate the **intended use** of your data. Check all that apply.

- | | |
|---|--|
| <input type="checkbox"/> Thesis | <input type="checkbox"/> Publication/journal article |
| <input checked="" type="checkbox"/> Capstone | <input checked="" type="checkbox"/> Results released to participants/parents |
| <input type="checkbox"/> Undergraduate honors project | <input type="checkbox"/> Results released to employer or school |
| <input type="checkbox"/> Conferences/presentations | <input type="checkbox"/> Results released to agency or
organization |
| <input type="checkbox"/> Other. Describe below. | |

18. Describe the steps you will take to insure the **confidentiality** of the data. Indicate how you will safeguard data that includes identifying or potentially identifying information (e.g. coding). Indicate when identifiers will be separated or removed from the data.

The information participants voluntarily provide will be kept confidential. There will be no identifying information (i.e. names, addresses, etc.) that could be linked back to the participants. Survey responses will be completely anonymous and the researchers will have no way of identifying who each survey belongs to.

19. Indicate where and how you will **store** the data and how long you plan to retain it. (Research proposals that involve any type of use of human subjects must be retained for 3 years.) Describe how you will dispose of it (e.g. erasure of tapes, shredding of data).

Our survey data will be stored on the Qualtrics database while we are still in class. Afterwards, it will be held in the SOU School of Business for three years.

20. Will results of this research be **made available to the subjects involved?**

Yes No

21. If so, how and when?

The approximate date of when the study's findings will be available is still yet to be determined. A rough estimate would be June of 2014. The Ashland Chamber of Commerce will release the information to all Ashland businesses. The manner in which the information will be distributed is still to be determined.

Appendix C (IRB Approval)



October 28, 2013

TO: Dr. Donna Lane
Mr. Arvin Campollo
Mr. Luke Christianson
Ms. Aldene Sumic

RE: Project #1314032
The Economic Impact of Wildfire Smoke on the Ashland Tourism Industry

Dear Dr. Lane, Mr. Campollo, Mr. Christianson, and Ms. Sumic,

The above-referenced project was reviewed by Southern Oregon University's Institutional Review Board (SOU/IRB) in accordance with the Code of Federal Regulations on the Protection of Human Subjects (45 CFR 46). As presented, your proposal is in compliance with SOU Federal Wide Assurance and DHHS Regulations for the Protection of Human Subjects. The study has been classified as exempt and approved.

This approval is limited to the activities described in the Review Request form and extends to performance of these activities at the sites identified.

Date of IRB review and approval: 10/28/2013
Approval Valid until: Complete
SOU Federal Wide Assurance: FWA 0009361

IRB approval does not constitute funding or other institutional required approvals. Should your study involve other review committees such as Conflict of Interest (COI), Occupational Safety Advisory, and/or Chemical Hygiene Committees, it is the researcher's responsibility to ensure that all approvals are in place prior to conducting research involving human subjects or their related specimens.

No procedural changes or document modifications may be made without prior review and approval. Any unanticipated problems and/or adverse events involving risks to participants must be reported to the IRB c/o Deborah d'Este Hofer #106 Churchill Hall, 541.552.8662.

We wish you the best of luck in your project.

Deborah d'Este Hofer MM

Deborah d'Este Hofer MM
IRB Administrator

Grants & Sponsored Programs
1250 Siskiyou Boulevard
Ashland, Oregon 97520-5045
T: 541.552.8662
F: 541.552.6115

Appendix D (Survey Questions)

Economic Impact of Wildfire Smoke on Ashland Tourism Industry

This survey is being administered by students of the School of Business at Southern Oregon University in the Business Research class. The survey will be distributed by the Ashland Chamber of Commerce to tourism businesses. The survey is completely voluntary, your responses will be kept confidential, and you can stop at anytime. To ensure your privacy, your responses to the survey will go to the co-researchers at SOU without any identifying information attached. The survey is 12 questions long and will take approximately 4-5 minutes to complete. Please complete this survey by November 6th, 2013. If you have any questions please contact Dr. Donna Lane at laned@sou.edu. Thank you for your time and valuable responses.

1) What industry do you consider your business to be most closely aligned with?

- Food & Beverage (Restaurants, Bars, and Food Services)
- Lodging
- Retail
- Theater/Entertainment

2) Did the wildfire smoke affect your business during the month of July?

- Yes, please estimate the revenue impact to your business(in dollars)
- No
- Not Sure

3) How many reservations/customers were lost at your place of business in the month of July?

- 0
- 1-50
- 51-100
- 101-150
- 151-200
- 200+

4) Do you have a business emergency plan? (In case of Earthquakes, wildfires, floods, etc.)

- Yes
- No
- Not Sure

5) Are you aware of Business Interruption Insurance? (i.e. A form of insurance coverage that replaces business income lost as a result of an event that interrupts the operations of the business, such as fire or a natural disaster)

- Yes
- No
- Not Sure

5B) If you answered yes to question 5, did you utilize Business Interruption Insurance?

- Yes, why?
- No, why not?
- Not Sure
- N/A

6) What actions, if any, did you take to compensate for the smoke in the month of July? Please check all that apply.

- Reduce prices
- Increased prices
- Changed hours of operation
- Temporary layoffs
- Reduced store hours
- Increased store hours

- Decreased staffing hours
- Increased staffing hours
- Purchased additional equipment (fans, air filters, etc.)
- Rainchecks
- Reduced advertising
- Additional advertising
- Other

7) Did you use any form of conventional media to promote business during the month of July that you normally would not utilize?

- Yes
- No
- Not Sure

7B) If you answered yes to question 7, please check all that apply.

- Radio Advertisements
- Television Advertisements
- Newspaper Advertisements
- Traditional Internet Travel Websites (Expedia, Orbitz, Kayak, etc.)
- Other
- N/A

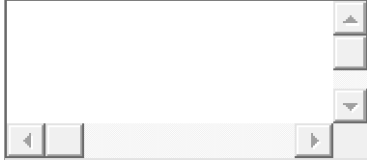
8) Did you use any form of social media to promote business during the month of July that you normally would not utilize?

- Yes
- No
- Not Sure

8B) If you answered yes to question 8, please check all that apply.

- Twitter

12) What was the single greatest variable in your business most affected by the wildfire smoke in the month of July?



Thank you for taking the time to respond to this survey.

Survey Powered By [Qualtrics](#)

Appendix E (Consent Form)

This survey is being administered by students of the School of Business at Southern Oregon University in the Business Research class. The survey will be distributed by the Ashland Chamber of Commerce to tourism businesses. The survey is completely voluntary, your responses will be kept confidential, and you can stop at any time. To ensure your privacy, your responses to the survey will go to the co-researchers at SOU without any identifying information attached. This survey is 13 questions long and will take approximately 4-5 minutes to complete. Please complete this survey by November 6th, 2013. If you have any questions please contact Dr. Donna Lane at laned@sou.edu. Thank you for your time and valuable responses.

Appendix F (Open Ended-Responses)

- Less customers walking the downtown streets.
- Reservations cancelled due to OSF cancellations and Britt decision to move opening concert to Medford HS
- Number of customers/sales
- Loss of revenue
- Rentals, lessons and tours on Stand Up Paddleboards
- Unknown. Our business is inherently variable so no what to tell whether smoke was responsible.
- Outdoor dining
- Inability to sit outside
- While we only had 2 sets of guests cancel their reservation, we cannot know how many future reservations we lost for rest of the summer. The telephone literally stopped ringing when the smoke started. We can't be sure how many guests decided to go elsewhere because of the poor air quality in the Valley.
- Our business is taking people outside. No one wanted to go outside.
- Cancellation due to the smoke.
- Actually, the smoke was in Ashland in the beginning of August, not July. It started the very last couple of days in July but ran through the first half of August. The first couple of days of the fire didn't register with our customers until it got really bad in August.
The smoke did not affect our rafting business at all. We were actually up 18% over the same time in Aug 2012
- Many people stayed inside and read all their books, so we had an increase in business both during and immediately after the smoke
- Number of visitors and the number of people that were willing to sit outside for food and wine.
- Lost one reservation -- not as bad as other B&Bs. As soon as OSF sent out email to their patrons, the phones stopped ringing. I mean really any phone calls were guests who had already booked and they were calling to check on the air quality. It's hard to quantify how much lodging business was lost, because the last minute bookings just did not happen. There was also a lag or delay -- the air quality improved sooner than phones started to ring again.
- Because the impact of the smoke from the wildire(s) had its greatest impact (reduced air quality) in Ashland during the month of August, I am puzzled by the number of questions in this survey that pertain to the month of July. If there is a follow-up and/or additional survey that pertains to the month of August, we would be more than happy to issue an additional response.
- Lack of customers in the city
- People did not book who might have otherwise.
- We operate a rafting company so people didn't want to sit in the smoke and recreate.
- Customers did not come out and vendor count was also down.

Reference List

Curtin, Barbara. *Shakespeare Festival ends season with gains in revenue, attendance*. 11/05/13. Accessed on 11/05/13 via:
<http://community.statesmanjournal.com/blogs/midvalleyarts/2013/11/05/shakespeare-festival-ends-season-with-gains-in-revenue-attendance/>

Lacy, Jacq. *Oregon Shakespeare Festival shatters records for attendance and revenue*. Oregon Business. 11/02/10. Accessed 11/05/13 via:
<http://www.oregonbusiness.com/the-latest/4360-oregon-shakespeare-festival-shatters-records-for-attendance-and-revenue>

Oregon Travel Impacts 1991-2012. Dean Runyan Associates. Prepared for Oregon Tourism Commission. April 2013. Accessed on 11/05/13 via:
http://www.deanrunyan.com/doc_library/ORImp.pdf

Siders, David. *California costs run up as Rim Fire rages*. The Sacramento Bee. 08/27/13. Last modified 09/04/13. Accessed on 11/05/13
via: <http://www.sacbee.com/2013/08/27/5683408/california-costs-run-up-as-rim.html>

Ashland Chamber of Commerce. Accessed 11/05/13
via: <http://www.ashlandchamber.com/Page.asp?NavID=441>

<http://industry.traveloregon.com>

Big Windy Complex
<http://inciweb.nwcg.gov/incident/3570/>

Brimstone Fire
<http://inciweb.nwcg.gov/incident/3568/>

Labrador Fire
<http://inciweb.nwcg.gov/incident/3563/>

Wollan, M. *Wildfire Chokes Off Tourist Towns' Livelihood*. *New York Times*. 08/30/13. Accessed 10/16/13
via: <http://bi.galegroup.com/essentials/article/GALE|A341297571/28e5a36c54bb9d6ea63f8660e7bedcd3?u=s8391082>

Stiles, Greg. Region's tourism takes hit from fires, smoke. *Mail Tribune Medford*. 08/16/13. Accessed 10/15/13 via:
<http://bi.galegroup.com/essentials/article/GALE|A339794835/6e0bb3b49f1b7810e5613e1854030590?u=s8391082>