

To: Dr. Erika Paterson  
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Subject: Proposal for Analyzing the Variation Trend of Human-Caused Forest Fire Distribution within the Okanagan Basin

### **Introduction**

Forest fires have brought significant impact to both wildlife and human beings over time. Not surprisingly, a certain amount of forest fires is caused by human beings themselves. These kinds of disasters have made and will continue to make tremendous losses on lives, economics, and natural resources. Analyzing the variation trend of human-caused forest fire distribution provides information about how these forest fire occurred that related to the activities of human society. And the outcome of this analysis can be used to predict the potential hotspot of the forest fire and reduce the possibility that it happens.

### **Statement of Problem**

Every single year, forest fire occurred tons of times within the Okanagan basin. The reason that caused the fire can be either the climate or the human activities. The human-caused forest fires are easier to prevent and manage. In this case, the Government of British Columbia needs information to inspect and manage the wildfire. By identifying the relationship between variation trend of forest fire location and human activities, it might help to avoid a certain amount of forest fire under this category. By discussing the relative types of human activities to the forest fire, the action that needs to be taken for the next step for the wildfire management can be much clarified for the Government of BC.

### **Proposed Solution**

One of the potential solutions is to analysis and compare the spatial patterns of human-caused forest fire on the map within the study area from data collected in previous years. This result will mainly be achieved by using ArcGIS tools. By comparing the output pattern of forest fire distribution on maps across years, a movement trend of it can be demonstrated. Followed by this outcome, the intensity of the relationship between the surrounded human activities and the human-caused forest fire can be discussed. The goal of this research is to provide information to help the Government of BC to better manage the wildfire within the study area and letting the public to know how to avoid causing a wildfire.

## **Scope**

Aiming to analysis the variation trend of human-caused forest fire distribution within the Okanagan basin area, the included researching topics within this area will be as followed:

1. How many forest fires occurred within the Okanagan basin in total areas across years?
2. What is the distribution of forest fires caused by climate and human activities?
3. How the numbers of forest fires caused by human activities changed across years?
4. How the density of forest fires caused by human activities changed across years?
5. How the distribution of forest fires caused by human activities changed across years?
6. How the human living area in high density moved across years?
7. What types of human activities can be the major causes to the forest fire?
8. What is the relationship between the variation trend of distribution of forest fires caused by human activities and movement of human living area across years?
9. What can we do to lower the possibility of the occurrence of human-caused forest fire according to the result?

## **Methods**

- **Primary Research**

Field observations and inspections will be processed and aiming to track what types of human activities are the potential causes to the forest fire. In addition, the field data will be used to identify the relationship between the risk of fire and the popularity of human activities (such as camping and hiking) around the forest area. Environmental data such as temperature, moisture content, elevation and so on, will be collected for background referencing. A certain of locations with highly representative conditions will be included in the field inspection.

- **Secondary Research**

Data and information included in this study are census information within the study area, a subset of landscape units, a subset of current and historic forest fire location and their related information provided by Government of British Columbia. The main software to be used to analysis the dataset is the ArcGIS tools. Certain of results will be demonstrate as exported maps and diagrams.

- **Combination**

By analyzing the exported map with the census and field inspected data, the

relationship between them can be discussed.

### **My Qualifications**

I have completed the GISC 381 course in UBC Okanagan campus in the end of April 2020, which is mainly focus on the application of ArcGIS tools on geological data analyzing. Since I am majoring in Earth and Environmental Science in UBC and will become a fourth-year student in the upcoming September, I have gained a certain of experience on project researching related to environmental issues.

### **Conclusion**

By way of conclusion, the occurrence of human-caused forest fire has a high potential to be reduced after demonstrating the variation trend of their distribution. Actions can be taken based on the result of this research. For people who are living in Okanagan basin, we have the responsibility to protect our natural resources and make this area a better living place for both human beings and wildlife. The research will help the Government of British Columbia to manage the wildfire within the study area and provide related information to the public. Hence, losses on wildlife and natural resources can be limited. I am looking forward to having your approval so that the research process can be triggered.