

Abstract

Shiven Khurana

Linear Regression Analysis to Predict Relationship between Environmental Factors and Spread of Wildfires with RStudio

There is always a source, a specific climate condition, and a certain temperature to start a wildfire and eventually widespread. The long-term goal is to predict the spread of the fire and take preventive measures before fatal and serious damages to the human life and property happens. In this research project, I considered various environmental factors (independent variables) on the day of the wildfire instance, for example, temperature, wind speed, dew point, and precipitation, to determine a linear model for predicting wildfire spread (dependent variable). By employing statistical analysis on the linear regression model (RStudio), the significance of each factor's effect on the spread of the wildfire was determined. The data for average temperature, high temperature, and dew point is normally distributed and these individual variables seem to show a relationship with the wildfire area, but only high temperature showed a significant relationship (p value of 0.031). The linear regression analysis of combined independent variables refuted my hypothesis that a warm, dry, and windy conditions will have a significant impact on the creation and spread of a wildfire. It appears that a simple linear model will not be an effective form of prediction for spread of wildfires.