A Red State: An Analysis of Wine Production in Oklahoma
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INTRODUCTION
Although Oklahoma is not typically associated with winemaking, the state stands in the top twenty for number of wineries in the United States. We wanted to discover which climatological and geographical features of Oklahoma contain the most suitable conditions for wine production. We went about this by comparing the conditions that exist at the locations of the various wineries.

DATA
For this project, climatological and geological data was collected from:
- U. S. Geological Survey: land cover data (raster data) collected from LANDSAT in 2011 with a 30x30 meter resolution
- U.S. Department of Agriculture: temperature, precipitation, soil moisture (all three vector data), and elevation (raster data)
- Oklahomawineries.net: the locations of wineries within the state (point data)

METHODS
The following steps were taken in order to overlay the land cover, elevation, temperature, precipitation, and soil moisture data:
1. We only needed data concerning Oklahoma, so we had to extract the necessary data from both by mask.
2. We projected each of the data layers using Albers_Conical_Equal_Area in order to ensure accurate spatial analysis.
3. We transformed temperature, precipitation, and soil moisture data (initially vector data) into raster data.
4. We analyzed the aspects of each of these layers when compared to the point data of the wineries’ locations.

RESULTS
- Average temperatures beneficial for wine production: 52-74 degrees Fahrenheit
- Average annual precipitation conditions beneficial for production: a minimum of approximately 22 inches per year
- The soil should not be excessively moist.
- Wineries typically thrive in elevations of less than 1,000 meters.

PRACTICAL APPLICATIONS
- Our findings show that overall, Oklahoma has favorable conditions for wine production.
- The findings of this research could benefit someone who is considering starting a winery in Oklahoma, in that it shows the locations that are the most suitable for wine production.

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