

Exercise 4

1. In the Winter there is significantly more precipitation near the coast. Precipitation generally decreases the further east you go. In the Summer the coastline is generally colder than the rest of the state. Additionally, Central Oregon is colder than Northern, Southern, and Eastern Oregon in the Summer months.
2. In areas with higher longitude (further east) there is a stronger negative relationship between elevation and temperature than in the west. This relationship becomes much stronger east of longitude line -123 (123W), which roughly coincides with the Cascade Mountains. There are some outliers (there is a positive relationship between elevation and temperature around 124W, 44N), however this relationship appears to be relatively uniform east of the Cascades.
3. By modifying the “number” parameter, we can set the number of shingles. This sets the number of coplots in the grid to the square of the specified parameter. The overlap attribute affects how similar or dissimilar the coplots are. A high overlap (near 1.0) makes each coplot near identical, while a low overlap (near 0.0) makes each coplot completely different.
4. A small amount of shingles does not provide us with enough information to make the coplot useful, since we might miss changes in variable relationships by over-generalizing. Having too many shingles can make it more difficult to notice the differences between relationships in the various coplots. I found that for this dataset, it was easiest to tell how latitude and longitude affected the relationship between elevation and temperature when using somewhere between 16 shingles (number=4) and 36 shingles (number=6).

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5. Cirque elevations tend to be higher in areas of higher latitude. There appear to be two clusters of cirques at longitudes of -122 and -118, which correspond to the Cascades and the Wallowas. This seems to conform to the conceptual model that the “glacial threshold” is lower where it is cool and moist and higher where it is warm and dry, although the two clusters listed above are at relatively high elevations
6. The Strip Plot makes it clear that the elevations of cirques are higher at higher longitudes. The Box-And-Whisker plot supports the idea that there are two main clusters of cirques.
7. Cirques are most prevalent in the Cascades and the Wallowas. The Wallowas have high latitude and longitude, while the Cascades have a lower longitude but are spread out across the state’s latitude. Both areas share high elevations relative to the state. Both areas are also colder on average than much of the state.
8. Latitude has a very weak relationship with cirque elevations. Longitude, on the other hand, has a stronger relationship with cirque elevations. As stated above, there are two clusters of cirques, in the mid-west part of the state at the Cascades, and in the east of the state at the Wallowas. Both regions have higher elevations and are relatively cold. Therefore cirque elevations appear to vary based on the relationship between longitude and elevation.