Theoretical context: for my data, one of the key goals is to see if there are fitness trade-offs associated with triazole antifungal resistance.

Relevant attributes: to quantify growth at different antifungal concentrations, I measure optical density at a specific wavelength after a strain has grown at a concentration for 48 hours. This is a unitless measure because it is the ability of a substance to block or absorb light by taking the base-10 logarithm of the ratio of incident light to transmitted light. **This is a proxy for resistance**. I also use the same measurement for biofilm formation and thermotolerance (growth for these tests is proportional to optical density). **For biofilm, this is a proxy of biomass production**. To quantify hemolysin production, I measure the zone of clearance (cm) and colony diameter (cm) using ImageJ. For both of these, I take the average diameter measured lengthwise and widthwise. The actual value for hemolysin production is the ratio between zone of clearance and colony diameter and is unitless. **This is a proxy of virulent activity**.

Scale type: For determining resistance, the actual categorization is done on a nominal scale (susceptible or resistant). For quantifying resistance, this is done on a ratio scale since concentrations are equally spaced with an absolute zero (0ug/ml means no drug at all). For thermotolerance, this is done on an interval scale since 0°C doesn't represent the absence of heat. Biofilm formation is measured on a ratio scale with consideration that although 0 should indicate no biofilm formation, this actually means no detectable absorbance. Hemolysin production is measured on a ratio scale where 0 indicates no zone of clearance and no colony diameter or no zone of clearance with a measurable colony diameter (more unlikely than the prior). I don't this comparing these will really impact statistical analyses I plan to perform as long as I log transform skewed data appropriately. From some experience already, I have log transformed biofilm and hemolysin data allowing me to make comparable inferences with other traits.

When is a difference important: if I chose to compare hemolysin production between triazole resistant and triazole susceptible isolates, A difference between groups represents a change in relative hemolytic activity, not absolute activity. To be honest, I have not yet thought about a good threshold but I think if group means differ by ≥ 0.5 SD this would be sufficient.