To Do List

- Write better code
  - Separate the calculations from the plotting - The two plotting functions that I made are *very similar* and really should have been plotted with the same plotting function
  - Make a system for saving data sets to files (pickle)
  - Make a different data generating method which randomly samples from the set so that you can make n bigger
  - Develop a better automated file management system (I want to make *many* plots at once, not just one)
  - Write code for calculations for labeled tabloids (could probably compute more by hand first so that I have a systematic way of thinking of these computations - or not...)
- Actually look at results - initially looking at patterns, it seems like there are many interesting patterns in the number of orbits of S_n for each partition which could be interesting to investigate.
  - $\lambda = 1^k(n-k)$ seems to always have the same multiplicity regardless of defect.
  - Look at relationship between $n = m$ and $m = n - 1$ for module decomposition.
  - Double check plots where $n \neq m$ using a dimension check with the size of the orbits, the number of orbits in the complete decomposition of the module, and the size of the module (maybe include size of orbit in plot table for convenience)
  - For $n = 9, m = 9$, there are a set of partitions which don't have the same multiplicity in the individual defect spaces, but in the full preference list module they have the same total multiplicity. See $n = m = 9$, $\lambda = 126, 1^36, 135, 234, 1^54, 2^33$ for an example. Also $\lambda = 18, 27, 36, 45, 1^72$ (that's all of the 2 part partitions). I wonder if there is a nice way of seeing this through the structure of the overall module.
- Read papers (particularly Aker)

The tail end of this week has been a lot of writing code. Today I made many pretty plots :)