**Final Project Proposal**

**MAE 298 (Introduction to Bayesian Statistics for Data-Driven Science and Engineering)**

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For our final project, we would like to use existing data taken from ASME safety valve testing and apply it to predict the number of valves from a new vendor, in a specific service medium, that will fail subsequent testing. We plan on using a multi-level model to make inferences about a specific vendor while also considering the entire population of sampled valves. The dataset under consideration consists of the results of 560 valves from 19 different vendors tested per ASME BPVC Section VIII, taken from an SRS-PEVT Study by ASME. The overall goal of this would be to try to narrow down the minimum amount of purchased valves required to use on a specific system, assuming a specified vendor and specified service medium (e.g. if 10 working valves are required, we would like to predict how many valves are needed to be bought based on the failure data). The tabulated is shown below, for reference.

