Sam Bacon
Lab 18: SURF Presentations

The NFL Combine's effectiveness in predicting future player success in the National Football League
Thomas Loflin
Mathematics and Statistics

This research sought to determine whether there is a relationship between NFL combine performance and draft order/future success. The researchers gathered combine data on quarterback performances on the combine's "main events" between 2005 and 2015. They used a Singular Value Decomposition on the scores for the five events and looked to see if there was any significant correlation between the standardized data and draft order (whether they were drafted in the first 6 rounds). The Principal Component Analysis showed that the 40-yard dash and vertical jump data were unnecessary, so they were replaced with height and weight. The researchers concluded that this updated data set did have some predictive power on draft order.

From a data mining perspective, I think that the researchers took the correct approach to this problem. The Singular Value Decomposition and Principal Component Analysis allowed them to eliminate unnecessary attributes and replace them with more relevant ones. It would be interesting to implement a K-means clustering model to see if there are any notable groupings that appear from the data. Also, the research only talks about using the combine data to predict draft order, but all NFL fans know that draft order does not always determine NFL success. The researchers could extend this project by looking at NFL-related metrics, such as TD passes, TD-INT ratio, length of career, etc. But as I said before, the researchers definitely incorporated some effective data mining techniques to help answer their research questions.

Analyzing the Effects of a Revised Curriculum in a Content Course for Middle & Secondary Mathematics
Lexi Uknis
Mathematics and Statistics

The purpose of this research was to determine whether the current textbooks for Elon's preparatory math content course (MTH 308) are adequate texts. Lexi and Dr. Trocki wanted to determine how the textbooks and curriculum "affect prospective teachers' understanding of mathematical concepts" as well as how these understandings vary across members of the course. They analyzed the qualitative data (which was collected in the form of bi-weekly journal entries) and visualized the results using a mind map. The researchers concluded that students had difficulties with concepts such as Zardozian math and that in-class collaboration and activities that foster critical thinking would likely increase overall understanding.

There are multiple ways that this analysis could be augmented with data mining techniques. The researchers collected bi-weekly journals from students in MTH 308. We could tokenize these journal entries and calculate TF-IDF scores for each one. This would allow us to identify the most frequently discussed topics and also examine similarities between the different journals. It might also be useful to use sentiment analysis to compare the subjectivity and

polarity of the journal responses. The poster stated that the researchers intentionally decided to value all feedback equally, but I believe it is also important to look at what topics occurred the most throughout the data.