In baseball, a pitcher's success is heavily determined on the outcomes of a batted ball, and a swing and miss. Finding ways to increase success can come in many forms, velocity, spin rate, horizontal, and vertical break all play a key role.

I used data from Baseball Savant (https://baseballsavant.mlb.com/) from the 2019, 2021 and the shortened 2020 season. All pitchers used had a minimum batters faced of 200 for the 2019 and 2021 data and in the 2020 data minimum of 75 batters faced due to a shortened season, pitch types used were 4 seam fastball, slider, curveball, changeup, and cutter. The variables of interest are all occurrences of batted ball outcomes and metrics such as evit velocity, launch angle, barrel percentage, poor/weak contact, in and out of strikezone swing and swing and miss, expected batting average, expected slugging percentage, expected on base plus slugging percentage. Expected means each batted ball is assigned an xBA based on how often comparable balls, in terms of exit velocity, launch angle and, on certain types of batted balls, Sprint Speed -- have become hits since Statcast was implemented Major League wide in 2015 (https://www.mlb.com/glossary/statcast/expected-batting-average). Imputation included 0 for pitch types that are not in that particular pitcher's arsenal.

The model I selected was an unsupervised cluster.