CONCEPT:

Sabermetrics

"the search for objective knowledge about baseball"[1] through in-depth statistical analysis

DATA:

PITCHf/x®

Inning-by-inning, pitch-by-pitch data scraped from http://gd2.mlb.com/components/game/mlb/[2, 3, 4]. Includes batter & pitcher IDs, results, pitch type, pitch speed, & more. Covers regular and playoff seasons (April–November), 2008–2015.

Research Topic 1:
Batter performance vs. off-speed pitching

"Off-speed pitch" –– non-fastballs (curveball, slider, &c.)
Partitioning batters by performance
Predicting batter performance by pitch type

Research Topic 2:
Handedness

Handedness of pitcher vs. handedness of batter considered meaningful
    "LOOGY"
Magnitude of effect
    How much better does a pitcher have to be to mitigate handedness effect?

Research Topic 3:
Designated Hitter

AL has it, NL does not
What is the effect on pitchers?
    AL pitchers generally better?
    Does having to also bat affect choice of pitch types?
    Pitchers who change leagues

[1] http://sabr.org/sabermetrics
[2] http://www.sportvision.com/baseball/pitchfx%C2%AE
[3] Scraper repo: https://github.com/swizzard/voros
[4] Project repo: https://github.com/swizzard/pitch_analysis