Research and Development Departments in MLB

My Background

- B.Math (2019) and M.Sc. (2021) from Carleton University in Statistics

- Master's degree was centered around working my the men's and women's basketball teams

- Baseball Operations Analyst with the Chicago White Sox 2021–2023

- Data Scientist for the Toronto Blue Jays 2023–Present

Table of contents
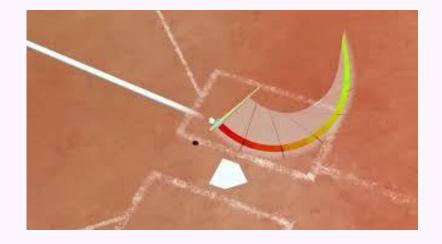
What does a Baseball Data Scientist do?

Highest level, we use data to try to extract insight about baseball teams and their personnel to try make better informed decisions about how to improve our team's relative standing.

Projects

- Catcher blocking evaluation metrics

- Waiver wire player evaluation

- Batter and pitcher in-game biomechanics pipeline creation

- Free agent contact estimates

- Defensive player projections

- Bat tracking metric projection

Cutting edge in-game data

- 30 Hz joint tracking of everyone on the field
- 300 Hz bat tracking
- 300 Hz joint tracking of batter and pitcher for biomechanics research

R+D Department Structure

Baseball Teams

Baseball Operations

- President and/or GM

- Assistant General Managers

- Directors

- Managers

- Analysts/Developers

Analyst/Data Scientist
- Pro
- Amatuer
- International

Developers
- Front-end
- Back-end
- Full stack

Analyst Responsibilities

- Player evaluation metrics of individual skills and overall talent to make player personnel decisions. Includes present and future time scales to estimate
  - Draft
  - International signings
  - Trades
  - Free Agents
  - Waivers
- Input on team's strategic plan to navigate the season and offseason most effectively.
- Technical evaluation to communicate to coaches and player development staff.
- Staying up-to-date with industry tools, tech, methods, etc. and integrate the best of into the team's work.

Pursuing the Job

Expectations and Requirements for Analysts

- English proficiency

- A STEM bachelor's degree or higher

- R or Python proficiency and basic SQL querying ability

- Passion for a game like hobby

- A portfolio of projects demonstrating the above

- Professionalism

- Work long hours especially around seasonal events such the draft, trade deadline, and free agency

- Some teams expect strong attendance record at the games

Job Selection Process

- Resume should reflect the job postings in the industry.
  - See https://www.fangraphs.com/blog-roll?category=Job+Postings and https://www.teamworkonline.com/jobs-in-sports?employment_opportunity_search%5Bquery%5D=baseball&commit=Search
  - Sometimes there will be a written question to submit an answer to as well.
- Technical exercise(s)
  - First questions will be statistical reasoning e.g. Bayes theorem application, statistical truths which subvert intuition.
  - Modelling question with test data.
- Interview(s)
  - In-person or online but typically multiple with numerous people across the organization
  - Sometimes multiple rounds, but sometime all at once within a day or two.

Rejection

- 30 teams, 1 in Canada, and millions of people who love the sport.
  - The odds of any given job posting aren't good, but
    DO NOT GET DISCOURAGED

- Keep applying and always ask the team each time how you can improve your candidacy for next time.

- After I got to my first technical exercise I still applied to at least 20 positions over the next 4 years before I got a job in baseball

Success!

If you do get the job

- Develop connections across the organization

- Learn the history of the game and the business

- Take advantage of the cool things the job lets you do

- Don't forget the job is indeed still a job

- Try to make the organization a better place to work

- Get good at something burgeoning or under considered by your team

Q+A