

# NFL COMBINE CLASSIFICATION ANALYSIS

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*Eric Au*

# THE “UNDERWEAR OLYMPICS”



NFL COMBINE LATEST NEWS NFL DRAFT

## The NFL Scouting Combine is lying to you

Why NFL Combine numbers don't matter nearly as much as people think they do.

By Geoffrey Benedict | @phantaskippy | Mar 5, 2022, 11:00am EST | 28 Comments

- The National Football League (NFL) hosts a showcase to assess a player's physical ability; ie. job interview for the NFL
- [The combine] has shifted to being made a reality TV show, and been shifted away from its original need, it's become less and less valuable ..." - J.C. Tretter, President of the N.F.L. Players Association

(Source: New York Times, March 2022)

- "When displaying their pure athleticism, players can vault up draft boards simply off their 40 yard dash time ..."

(Source: 247Sports, Feb 2020)

# THE GAMEPLAN - BUSINESS UNDERSTANDING



- ✓ **Stakeholders: NY Giants Front Office**
  - Ownership, Coaches, Management, Scouting Staff
- ✓ **Develop a model that determines whether a player was drafted or undrafted using available data provided in the NFL Combine**
- ✓ **How significant are the measurables in determining draft status?**
- ✓ **Which measurables are good indicators of draft status?**

# THE MEASURABLES - THE DATA

Source: Pro-Football Reference (2000 - 2022)



## 40 Yard Dash

Tests player's raw speed as they sprint 40 yards as fast as they can.

# THE MEASURABLES - THE DATA

Source: Pro-Football Reference (2000 - 2022)



## Vertical

Players stand flat-footed and jump as high as they can, touching elevated flags to measure their height

# **THE MEASURABLES - THE DATA**

Source: Pro-Football Reference (2000 - 2022)



## **Bench Press**

Players press a 225-pound barbell as many times as they can.

# THE MEASURABLES - THE DATA

Source: Pro-Football Reference (2000 - 2022)



## Broad Jump

Players start flat-footed and leap forward as far as they can landing balanced and on two feet.

# **THE MEASURABLES - THE DATA**

Source: Pro-Football Reference (2000 - 2022)



## **3 Cone Drill**

Consists of a series of quick five-yard sprints and tight turns, using three cones that form an L-shape as guides

# **THE MEASURABLES - THE DATA**

Source: Pro-Football Reference (2000 - 2022)



## **Shuttle Run**

Running from side-to-side five yards apart before sprinting for the end line.

# THE MEASURABLES - THE DATA

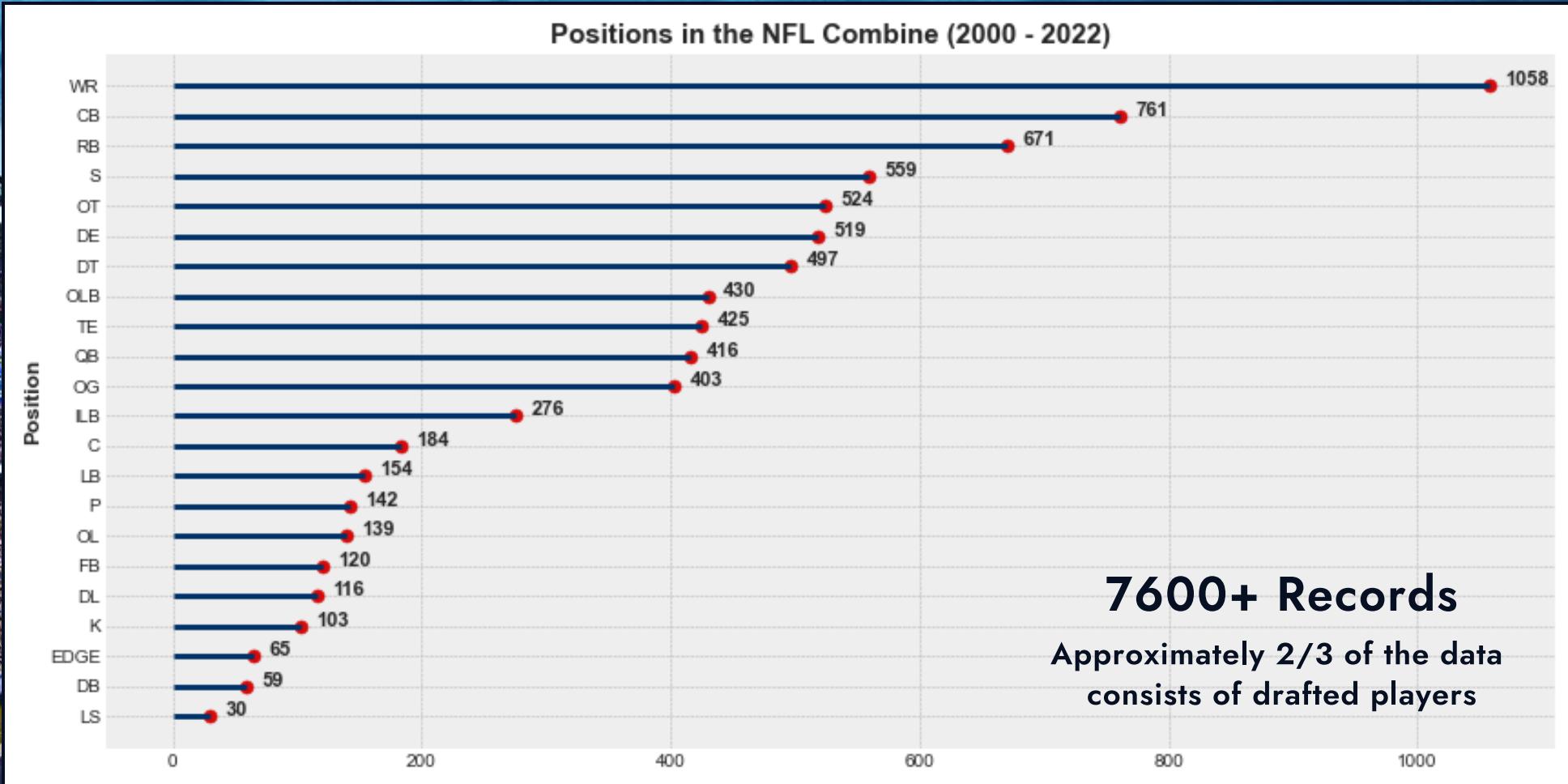
Source: Pro-Football Reference (2000 - 2022)



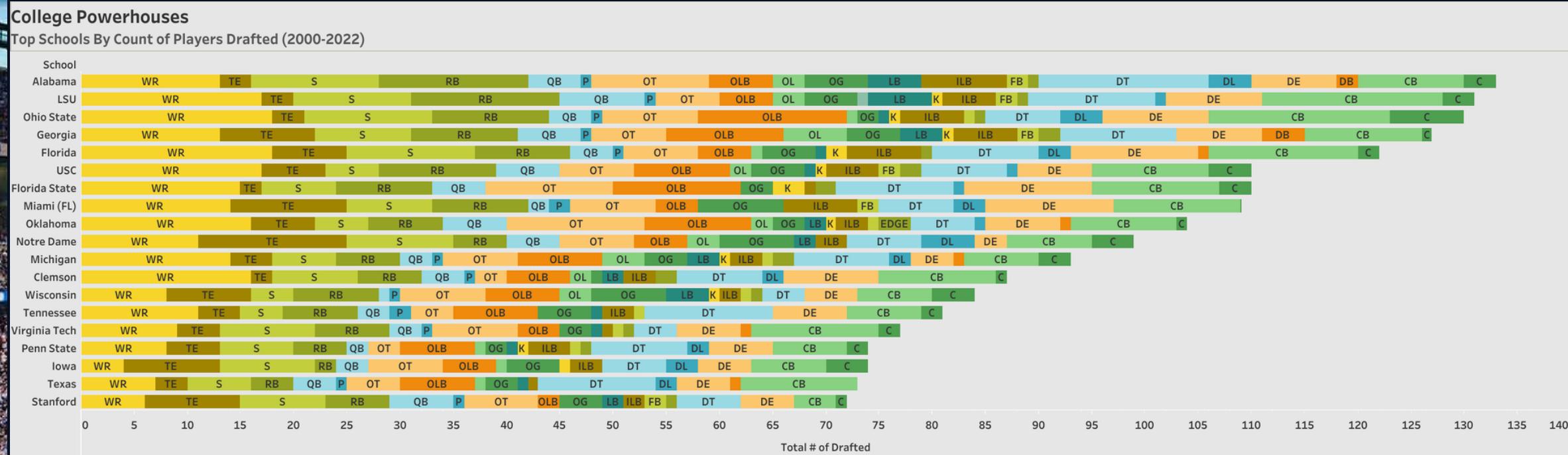
## Misc. Information

- Position (Offense, Defense, Special Teams)
- School
- Drafted/Undrafted
- Year

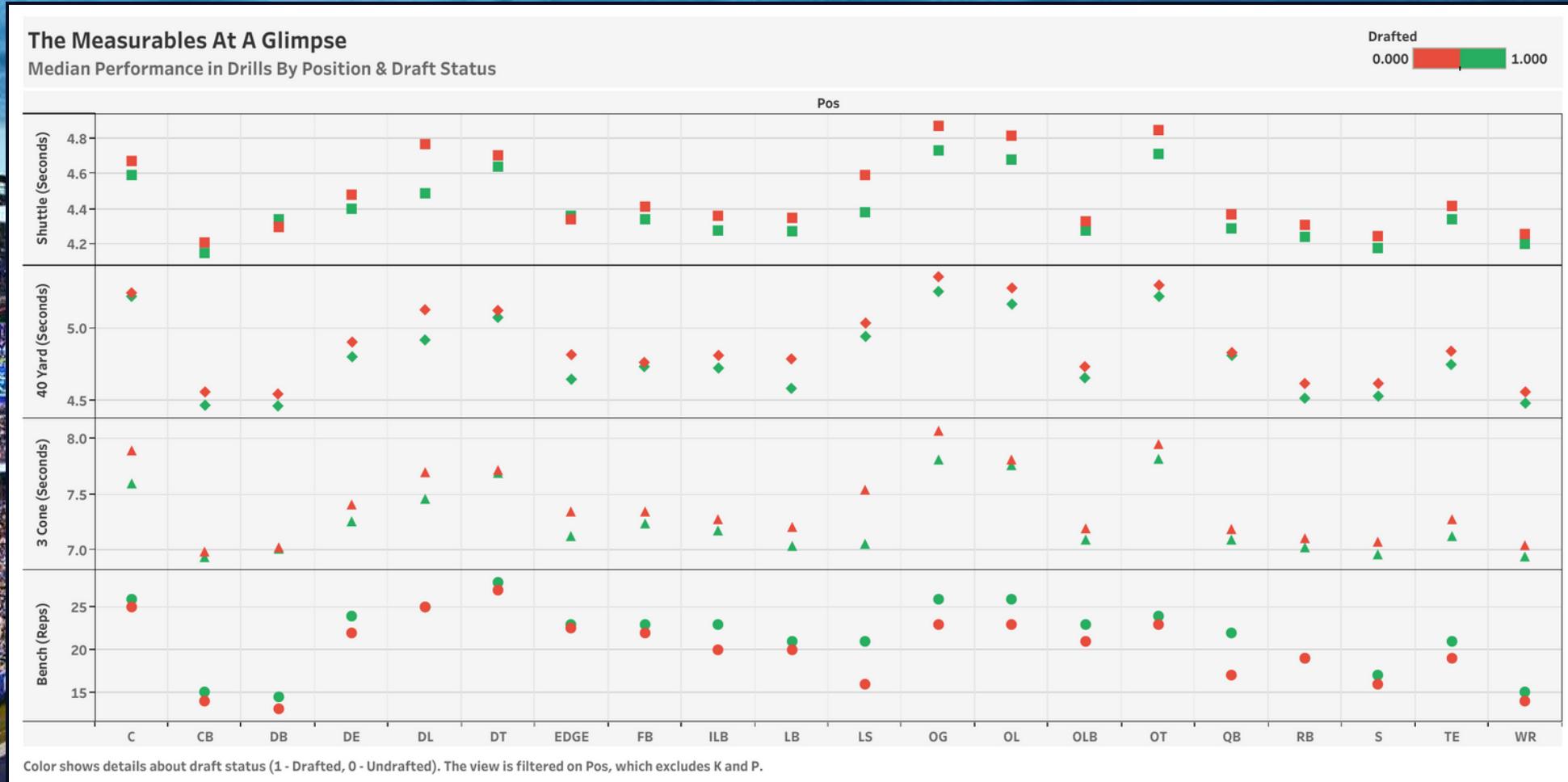
# THE FIELD - DATA VISUALIZATION

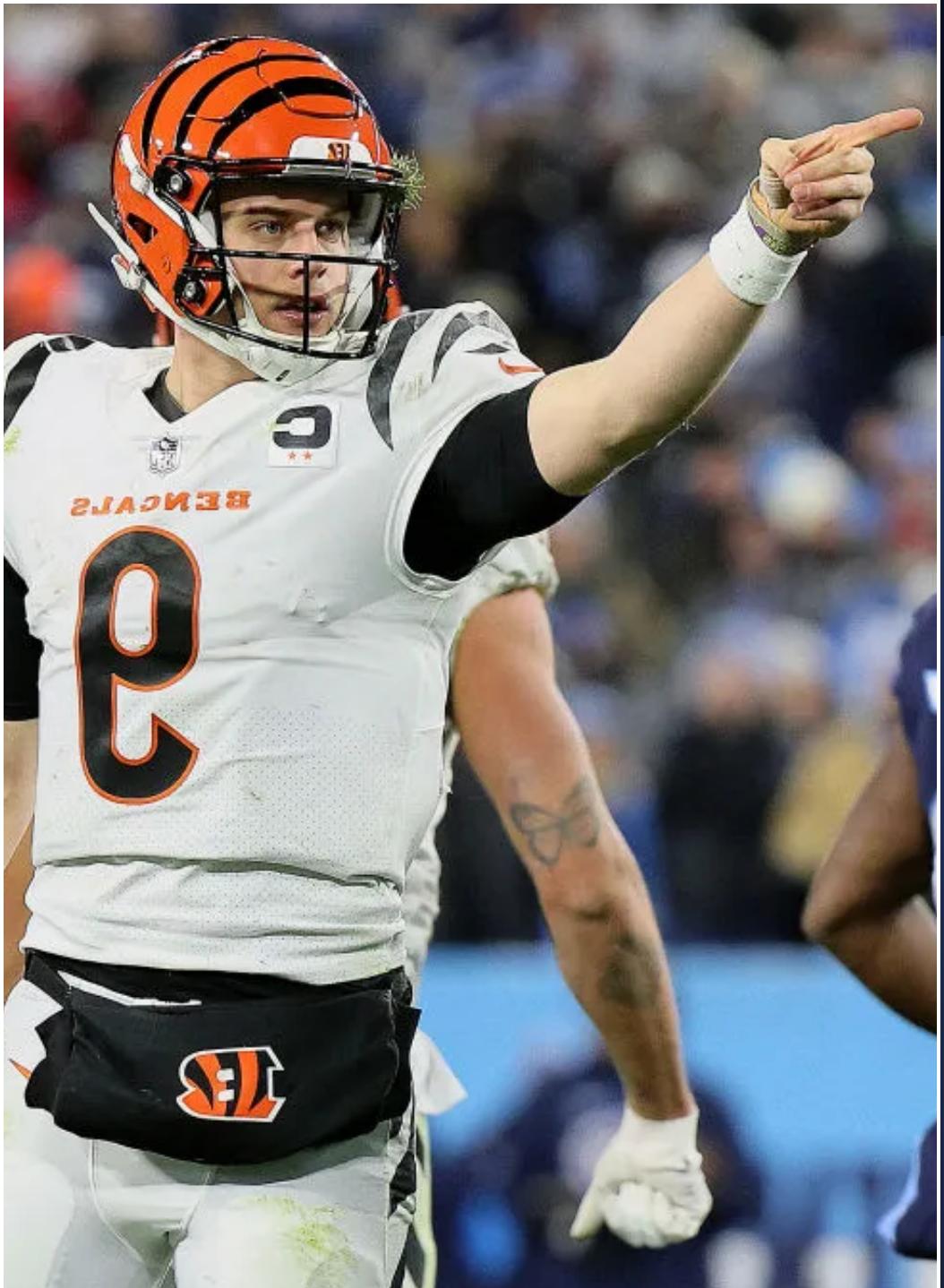


# THE FIELD - DATA VISUALIZATION



# THE FIELD - DATA VISUALIZATION





# THE DRIVE - DATA MODELING

## 1 Data Processing

- 25% of data held out for testing

## 2 Iterative Modeling Approach

- 10 models explored

## 3 Final Model

# THE PICK IS IN - RESULTS



## Classification Model: "XGBOOST"

New models are added to correct the errors made by existing models (ie. "boosting")



## F1 Score: 80%

Finds a balanced accuracy between players that were classified as Drafted AND Undrafted.

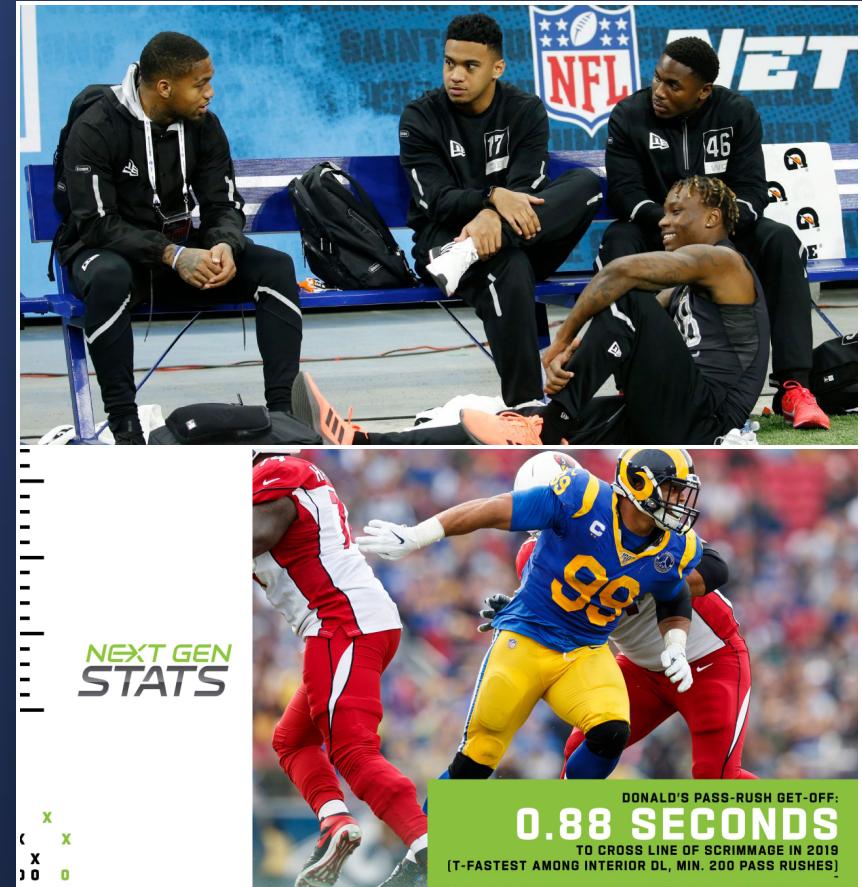


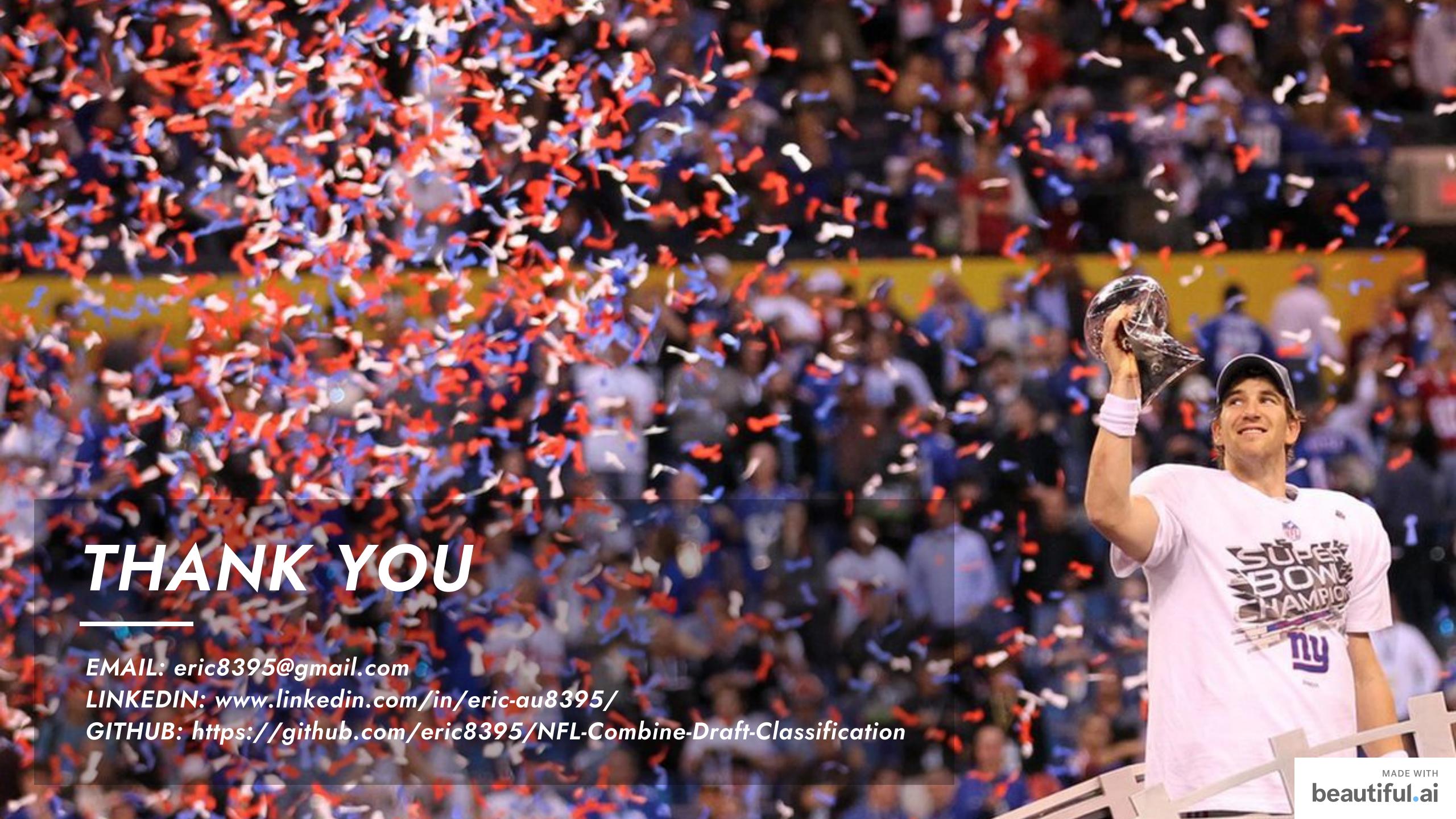
## Best Feature Classifiers:

- Combine Drills: 40 Yard, Bench
- Weight, Height
- Positions: OLB, RB, OT
- Schools: Notre Dame, Ohio State, Boston Col.

# CONCLUSIONS & RECOMMENDATIONS

- Combine data alone can predict drafted players well...but could be better
  - Additional data needed to explain for inaccuracies
  - College performance
- Holistic Assessment (Other factors)
  - Football skill-set
  - Player intangibles, character, work ethic, etc.
- Collect more data at the collegiate level
  - Partnerships with colleges and data collection agencies (NFL Next Gen Stats)





**THANK YOU**

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GITHUB: <https://github.com/eric8395/NFL-Combine-Draft-Classification>

