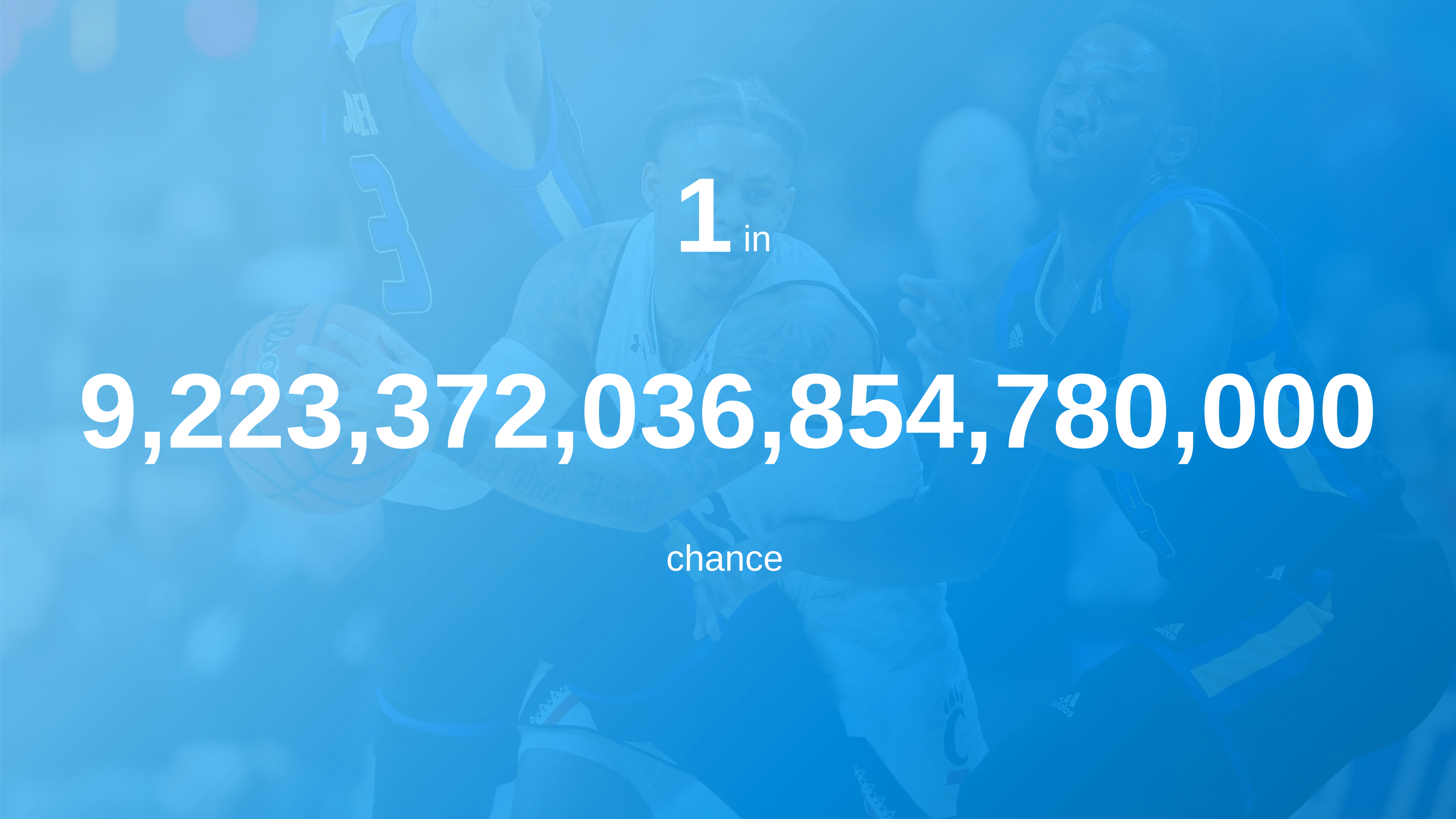
Predictive Analytics in Sports and Business



1 in

9,223,372,036,854,780,000

chance

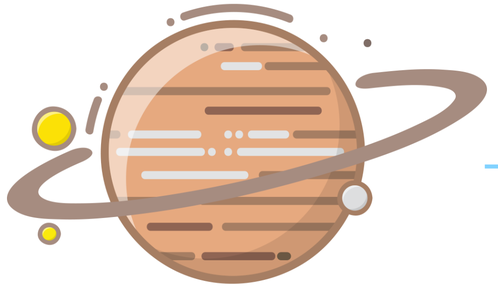
1 in

≈ 750,000,000

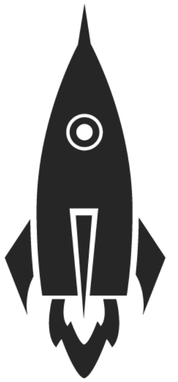
chance

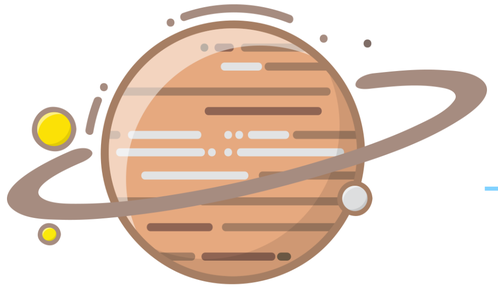
Perfect Bracket Perspective

Odds adjusted to Miles

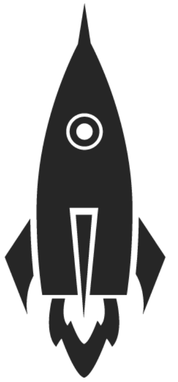


6 Billion Round Trips





1 Trip to Saturn



Paul Bessire Introduction

Paul Bessire
VP Analytics
AMEND Consulting

15 Years
Sports Analytics

- FoxSports.com (‘04-’09)
- CEO, Co-Founder **Prediction Machine** (‘10-’16)
- Taught “Principles of Bracketology” at **UC** and **Ohio State**

Partnerships

- Media: 6,500+ Radio/TV Interviews
- Partnerships with ESPN, CBS, USA Today, Yahoo, WSJ, more…

Cutting-edge
Consulting Work

- **Sports** – Reds, NFL Teams, Pro Football Focus, UC (Football Coach Search, Big 12), VR/AI, Agents
- **Non-sports** – AMEND Clients, UC, Cantor Fitzgerald, General Cable, Virtual Reality

What Sports Analytics Teaches us about Business

Focus on what matters.

Consider the objective.

Process over Results.

Outcomes that have not occurred in the past can be predicted in the future.

What is Analytics?

Using technology and information (data) to make more efficient decisions…

- Information is King
- Objectivity wins over bias
- Automation is key to scale
- Find the “So What”

Buzz Word Bingo

Buzz Words:

- Machine Learning
- Neural Networks
- Data Science
- Artificial Intelligence
- Deep Learning
- Data Mining
- Big Data
- Unstructured Data
- Augmented Analytics
- Natural Language Processing

Any of these words could mean the same thing depending on how and to what they are applied…

Where to Look?

Pricing

Predicting

Scheduling

Business Intelligence

Analytics Solutions

Data/Tech → What? → Why? → So What? → Automation

Seeding a Bracket:

Why not just rank teams according to winning percentage?

How should these teams rank?

Ranking Teams (Blind)

Team	Record	Schedule Rank (out of 353)	Scoring Margin	HS All-Americans (Starters)	Off Eff/Def Eff (ppp for and against)
Eagles	26-4	#147	+13.7	0	#12 Off / #63 Def
Bulldogs	29-5	#5	+15.9	4	#6 Off / #6 Def
Tigers	28-6	#72	+9.5	0	#46 Off / #28 Def
Lions	27-6	#3	+13.1	3	#7 Off / #10 Def
Lancers	30-3	#88	+23.8	1	#1 Off / #16 Def
Bombers	29-3	#26	+16.8	1	#2 Off / #5 Def
Crusaders	25-9	#1	+5.3	3	#34 Off / #15 Def
Panthers	28-6	#6	+13.3	2	#4 Off / #8 Def
Cougars	23-10	#2	+7.6	0	#52 Off / #3 Def
Warriors	27-6	#18	+11.3	4	#13 Off / #12 Def

What Really Matters: Committee vs. IRL

Most Deserving (the committee)

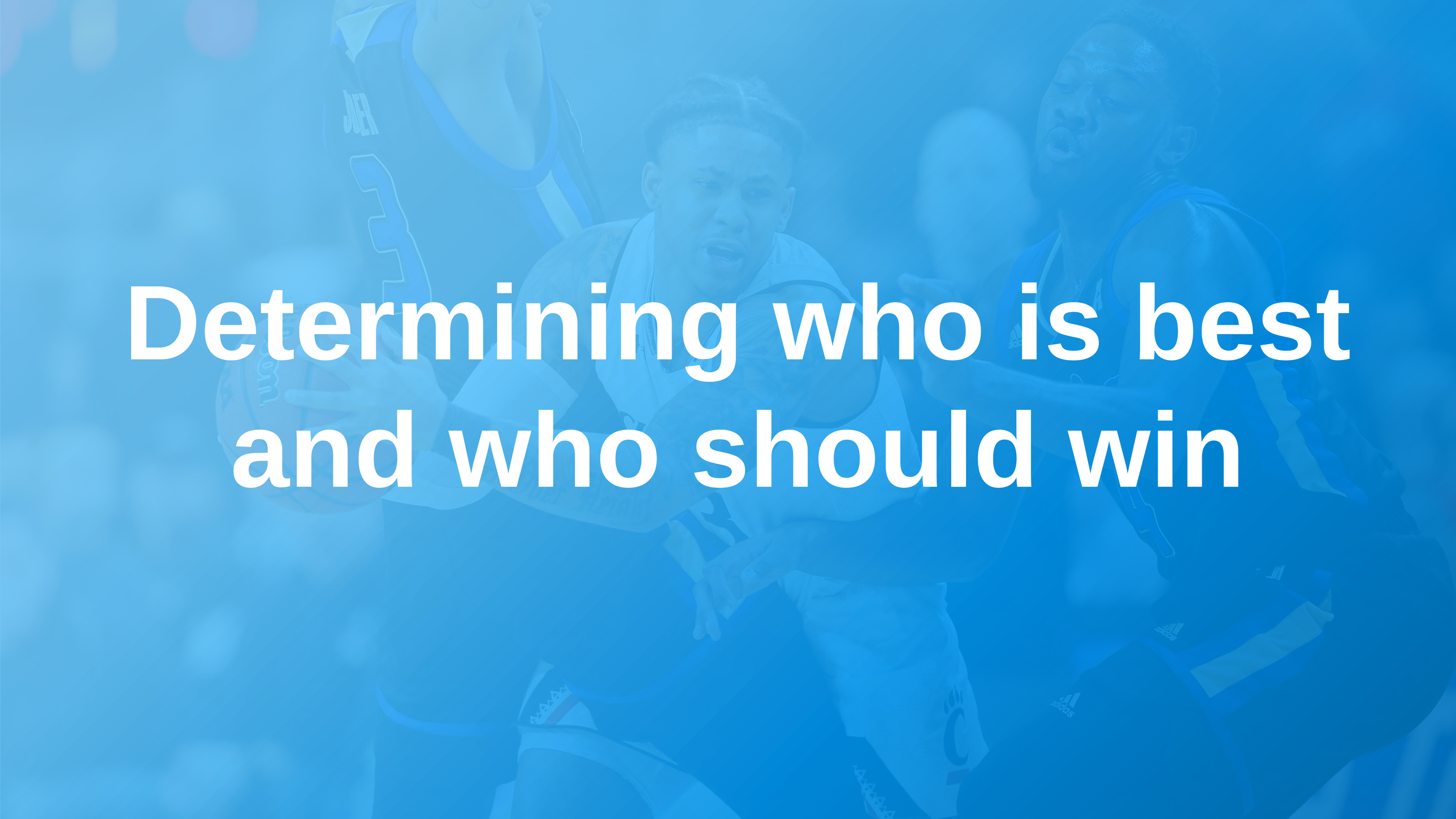
- Record
- Strength of Schedule
- Travel/Intrigue
- Seeding Rules
- The NET (NCAA Evaluation Tool)
- Subjectivity

Results

Best (a pool entry)

- Talent/Health
- Style/Coaching
- Experience/History
- Matchups/Path
- Efficiency (per play)
- Objectivity

Process



Determining who is best and who should win

Explaining Basketball: Knowing What Matters

Possessions can only end in one of three ways:

1. A field goal attempt
2. A foul
3. A turnover

- Offensive Rebounds can extend/restart possessions

Four Factors

1. **Effective FG%** = (FGM + 0.5 * 3FGM) / FGA
2. **TO%** = Turnovers / Possessions
3. **OReb%** = Offensive Rebounds / Missed Field Goals
4. **FT Rate** = Free Throws Attempted / Field Goals Attempted

Explains > 99% of what happens in basketball game

Best team usually best all around in 4 factors

Upsets when one team elite in 1+

Explaining Basketball: Strategy

Anatomy of an Upset*:

- Slow tempo
- Elite trait (forcing turnovers, offensive boards or shooting threes)
- Major scheme advantage
- A superstar

* Opposite is true for tournament favorite

Game Theory in Larger Pool:

- Differentiation
- Take chances
- Diversify
- Be intentional
- Consider the goal and league structure

Other Sports Applications: Simulation

Roster Construction: How Much?

- Value by team: roster, role, ballpark, budget
- Weighing best fit (long-term) vs. best stats (short-term)
- Likelihood of hitting incentives

Roster Construction: Who?

- Translating college to pro stats (Aaron Donald Example)
- Trade/FA Impact
- Fantasy sports and gambling – gain an edge

In-Game Decision Making

- Baseball – Bunting, IBB, Hit and Run, Shift
- Football – 4th down, 2 pt, Play Call Mix
- Soccer – Pace, Possession, Attack

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Thank you!

Questions?

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