Bracketology's Black Box: Can We Predict the Selection Sunday Committee?

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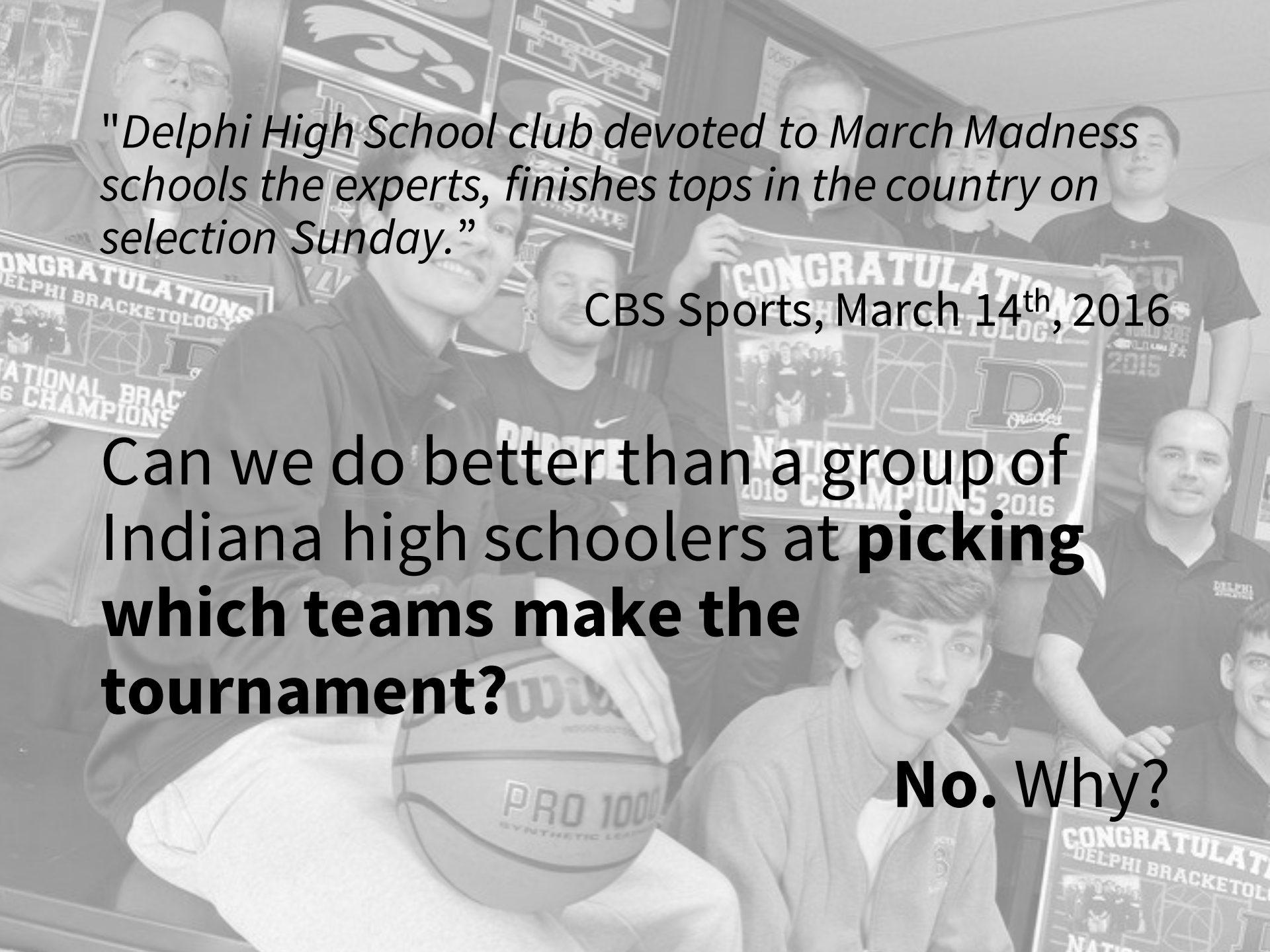


"Delphi High School club devoted to March Madness schools the experts, finishes tops in the country on selection Sunday."

CBS Sports, March 14th, 2016

Can we do better than a group of Indiana high schoolers at **picking which teams make the tournament?**

No. Why?

Selection Sunday

32 teams get automatic bids as conference champions

36 teams are selected for "at-large" berths through…

an initial ballot

multiple rounds where progressively fewer votes are needed to get a berth

The committee follows rules for **seeding** teams

Selection Criteria: Our Best Guess

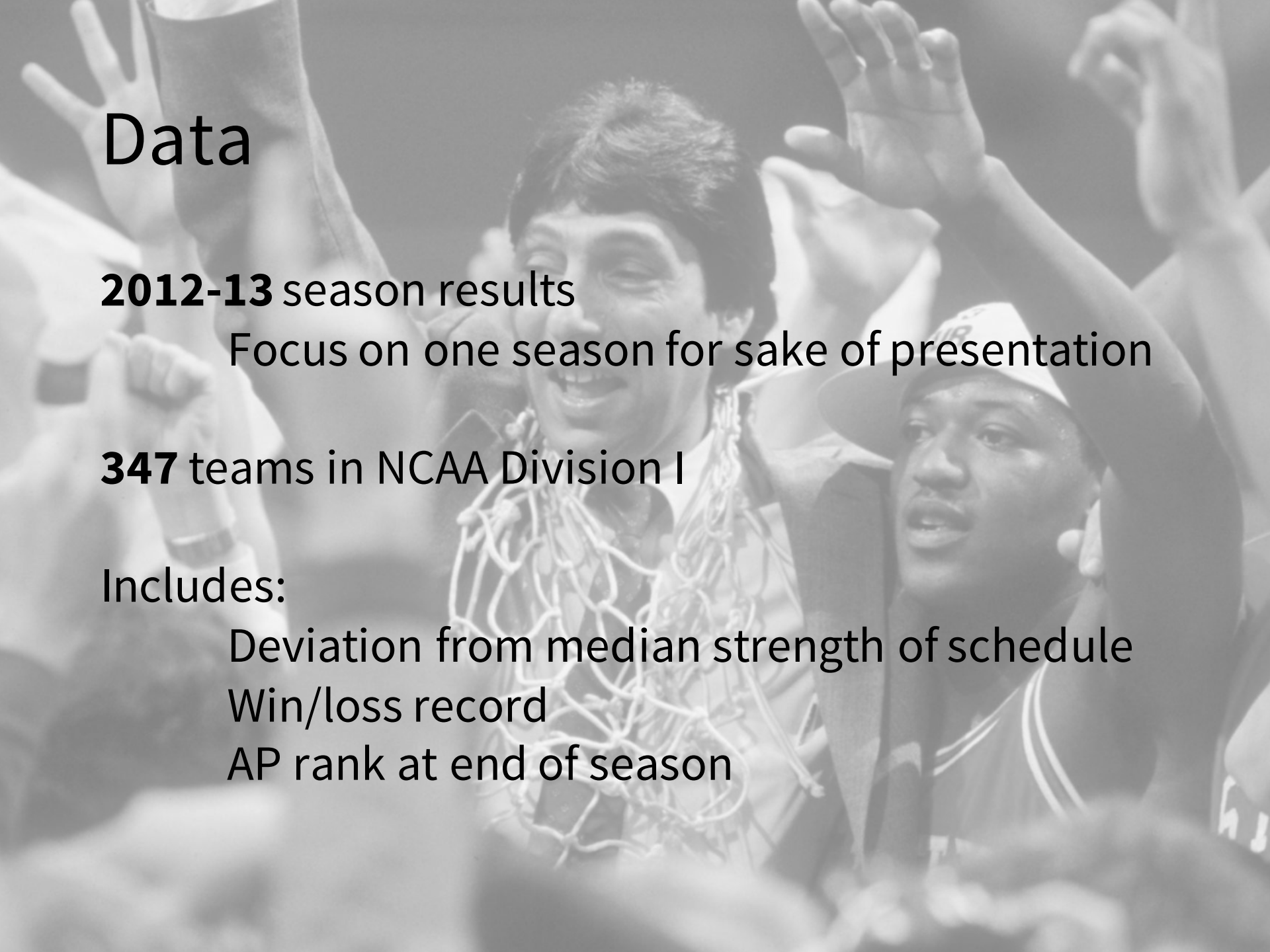
Quality wins matter more than losses to good teams

"Ratings Percentage Index:"

0.25(your winning percentage) + 0.5(average opponents' winning percentage) + 0.25(your average opponents' opponents' winning percentage)

Strength of conference isn't considered separately from strength of schedule

Geography matters most in tournament placement



Data

2012-13 season results

Focus on one season for sake of presentation

347 teams in NCAA Division I

Includes:

Deviation from median strength of schedule

Win/loss record

AP rank at end of season

Methodology

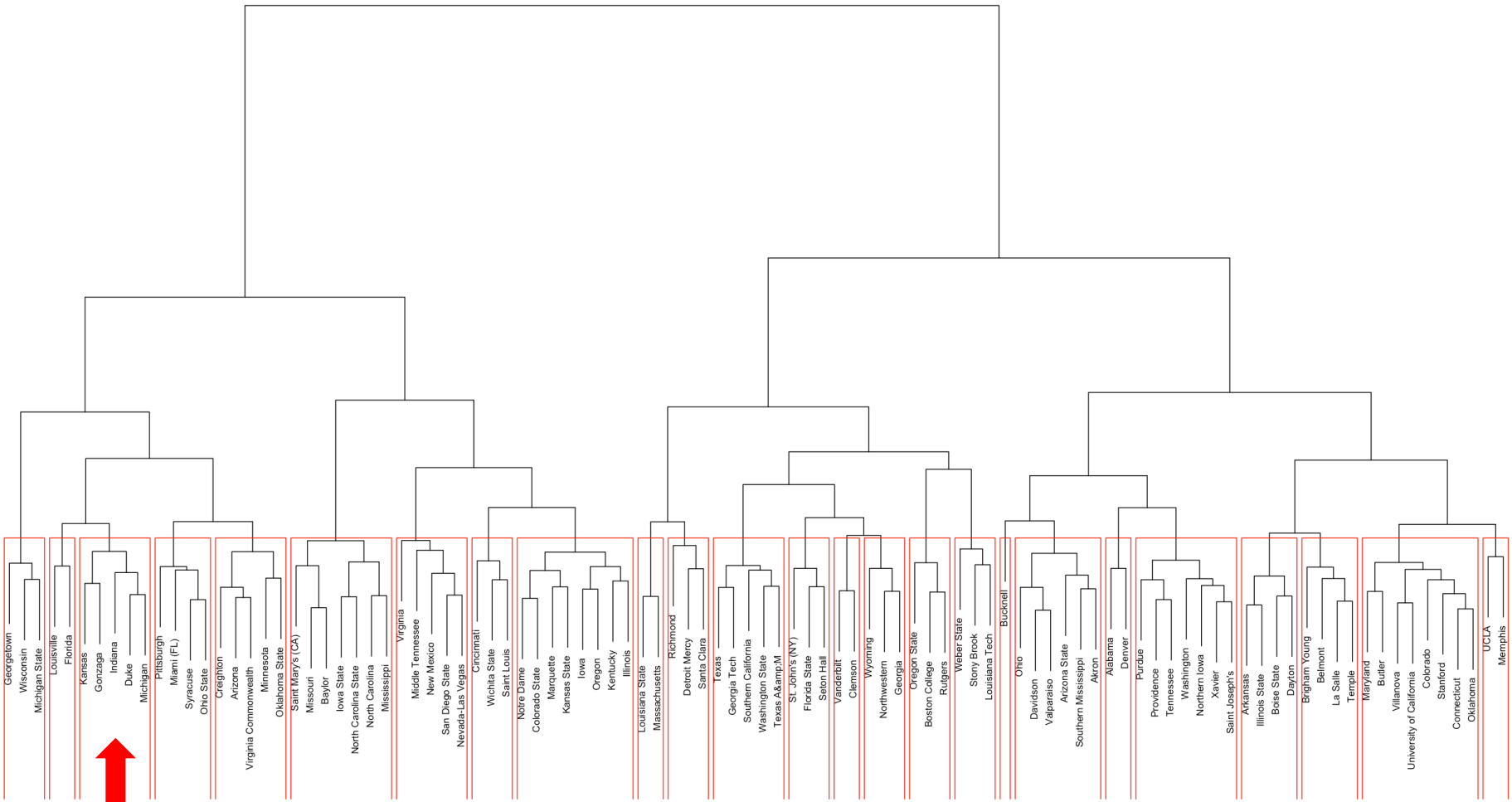
Tried **Bradley-Terry**, **logistic regression**

- Arbitrary betas
- Not specific enough

Use **k-means** and a **dendrogram** where each cluster is a group of teams with roughly similar seeds based on Euclidian distance of various statistics

- Applying method from *Machine Learning for Social Scientists*!

Seeding Dendrogram



Teams by Cluster

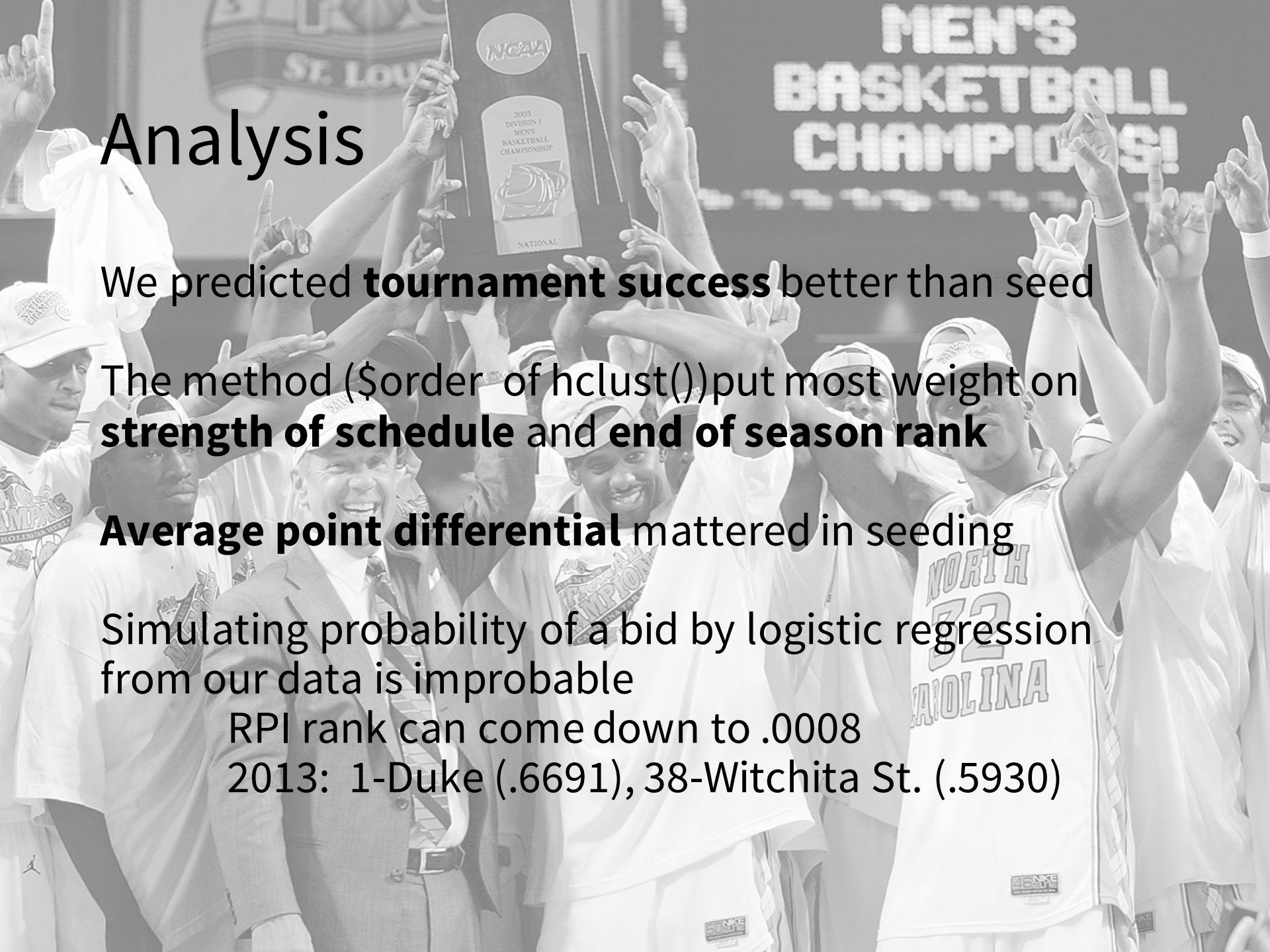
top cluster

Overall:

Predicted **62** out of **68 teams** in the tournament **(91.2%)**

Top teams:

Our Seeding	Actual Tournament Rank	Elite Eight Teams
1) Indiana	3 (1-seed)	Wichita St.
2) Syracuse	16 (4-seed)	Syracuse
3) Ohio State	8 (2-seed)	Ohio St.
4) Florida	10 (3-seed)	Florida
5) Duke	6 (2-seed)	Duke
6) Michigan	13 (4-seed)	Michigan
7) Louisville	1 (1-seed)	Louisville
8) Kansas	2 (1-seed)	Marquette



Analysis

We predicted **tournament success** better than seed

The method ($order of hclust())put most weight on **strength of schedule** and **end of season rank**

Average point differential mattered in seeding

Simulating probability of a bid by logistic regression from our data is improbable

RPI rank can come down to .0008

2013: 1-Duke (.6691), 38-Witchita St. (.5930)

Room for Improvement

Technical flaws:

- Opponents' opponents' record is not included in strength of schedule value
- Missing marquee wins
- Hot streaks

Qualitative flaws:

- Team reputation
- Name recognition probably matters

Bottom line: we're trying to model a small committee of humans with a computer

Potential Future Projects

Predict **seed** better

- Consider what happens when you win the regular season conference but lose in the conference tournament

Improving through **miles to tournament site**

Adding qualitative variables

- Team revenue
- Historical performance

Questions?