

# Identification of skill in an online game: The case of Fantasy Premier League

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17 - Sep - 2020 | Quantifying Success



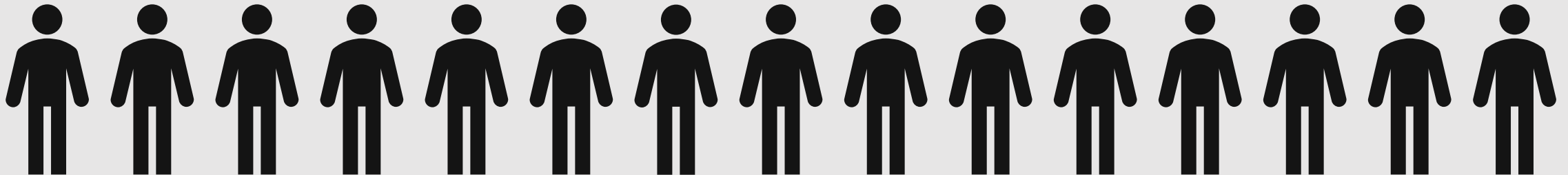
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# What is Fantasy Premier League?

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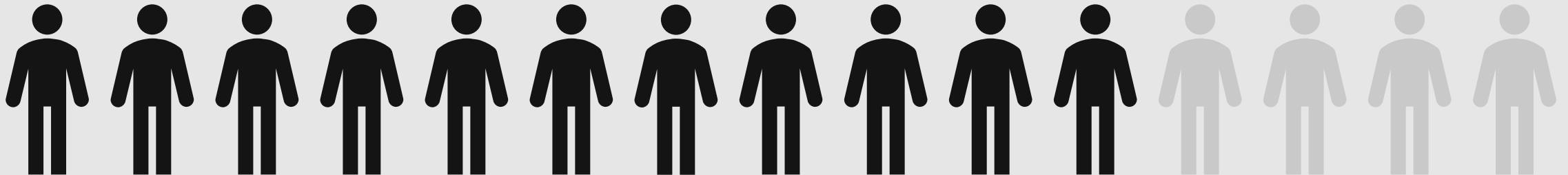
- Online game where users are provided with a virtual £100 million budget to assemble a squad of 15 real-life Premier League footballers.
- Each week choosing 11 of them to 'start' for the user's team, who then receive points based upon their statistical performance in the real game.
- Also choose one **captain** who receives double points. The challenge of the game is to **determine an optimal way of spending your budget as to maximize your points.**



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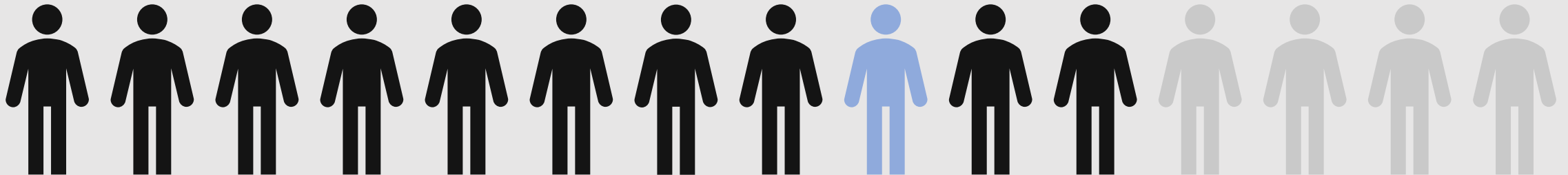
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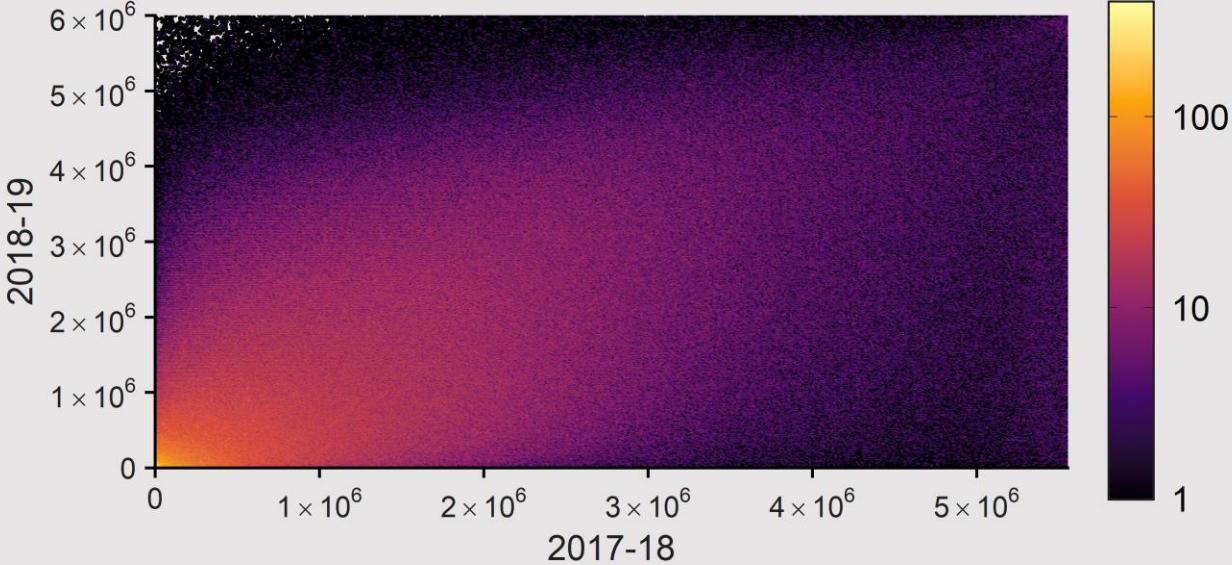
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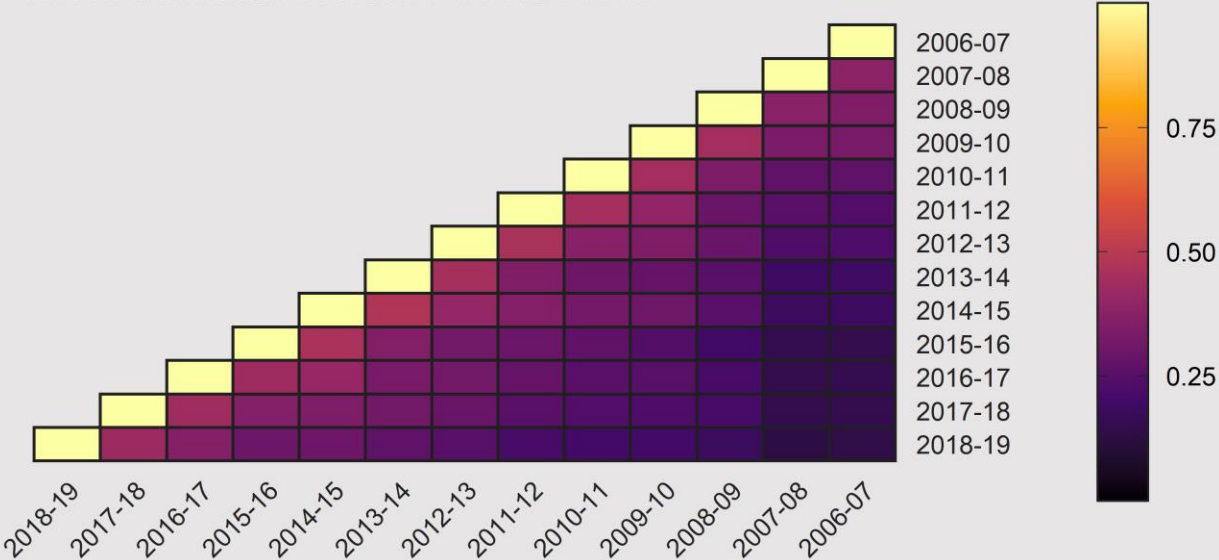
# Consistency Between Performances?

## Correlation of Player Past Performance

2018-19 vs. 2017-18 Ranks



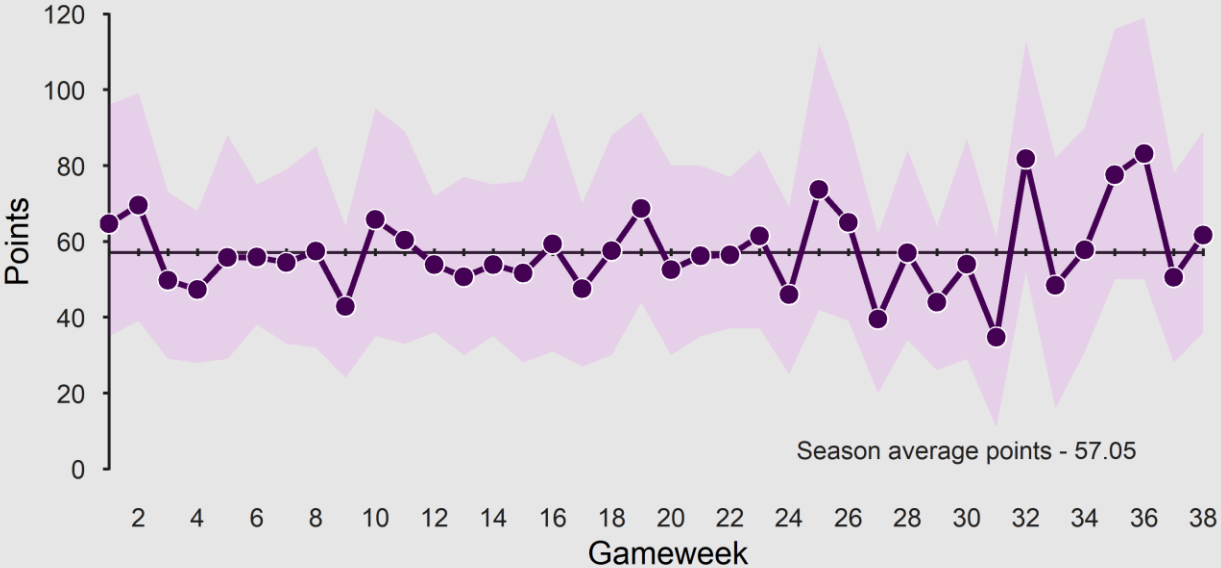
Pearson Correlation Between Previous Points



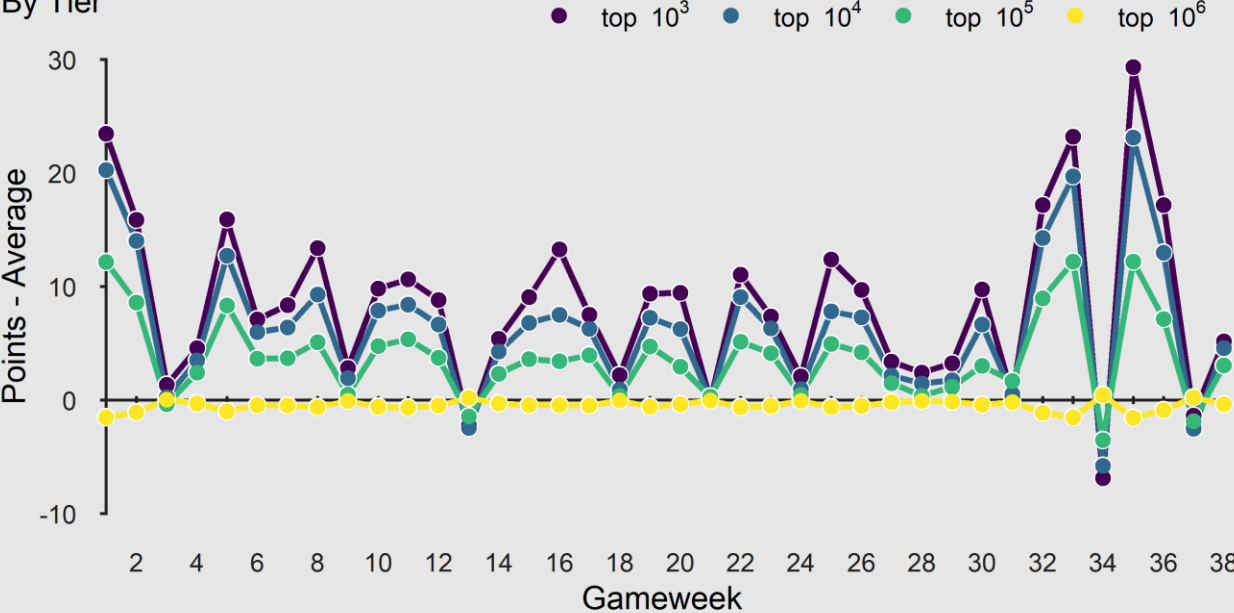
# Tiers among managers

### Average Points per Gameweek

All Managers



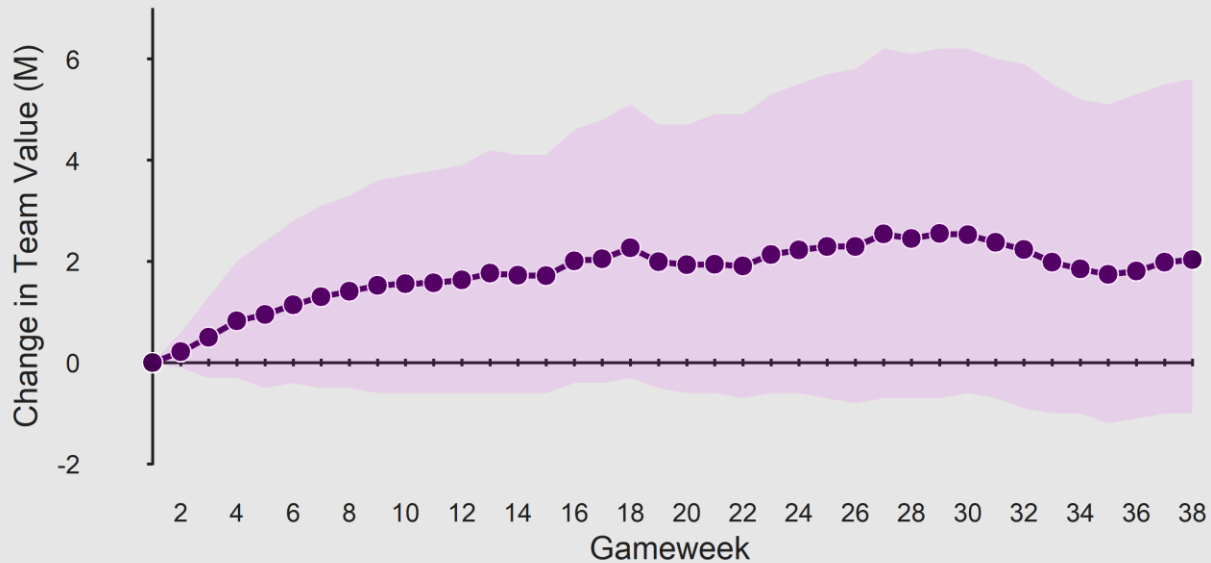
By Tier



# Difference in skill - money

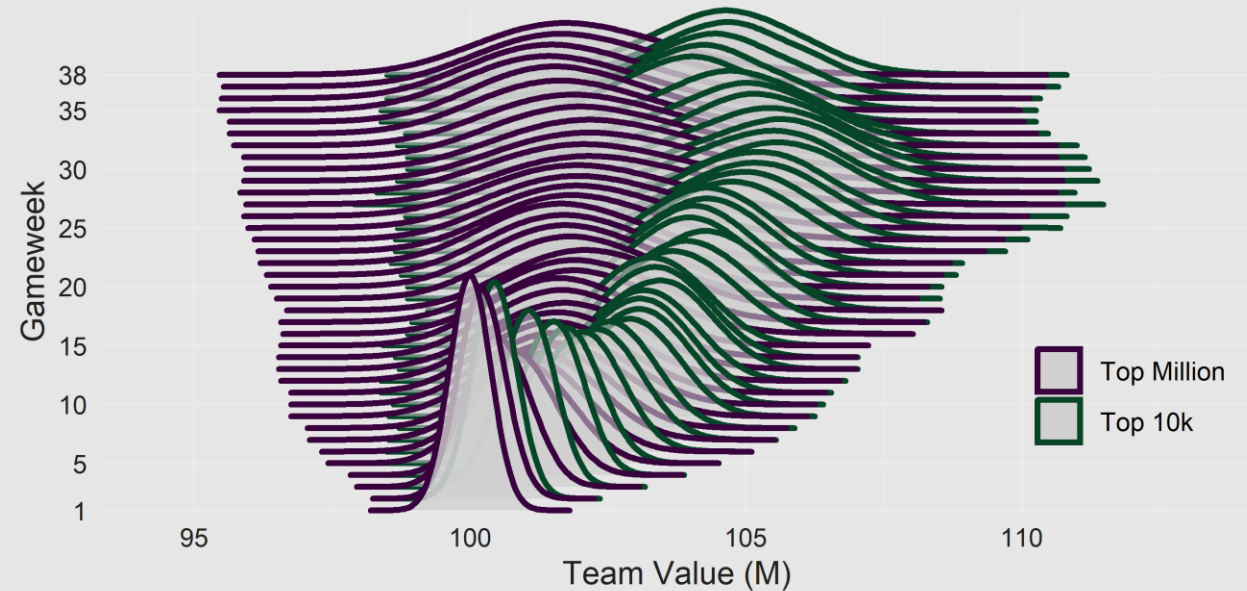
## Average Change in Team Value

All Managers



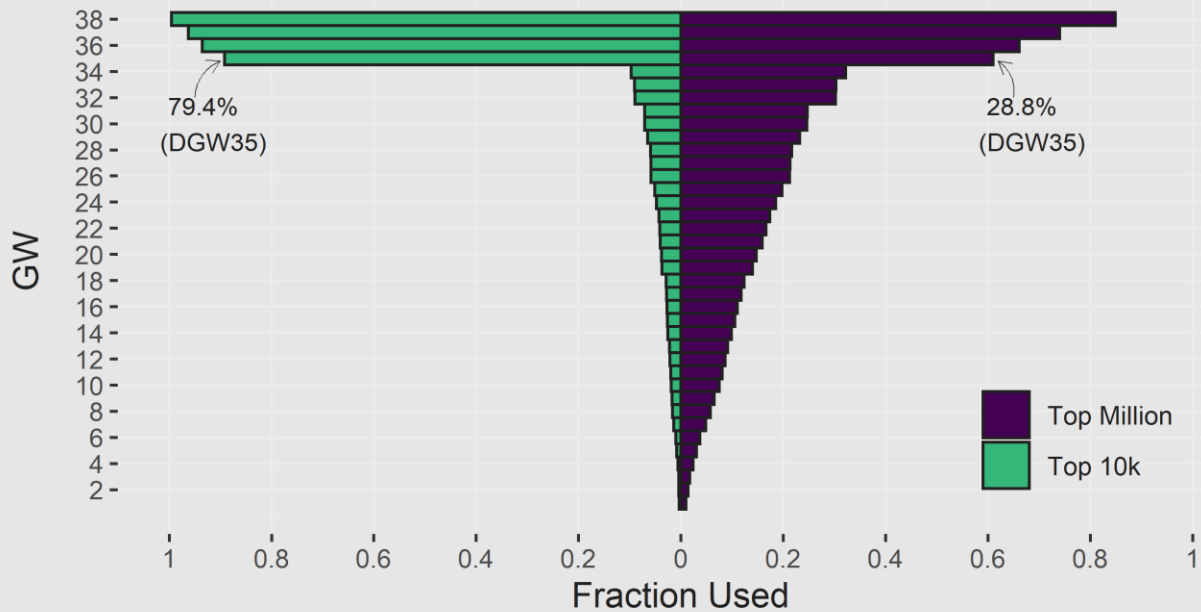
## Team Value Distribution

Top 10k vs. Top 1M

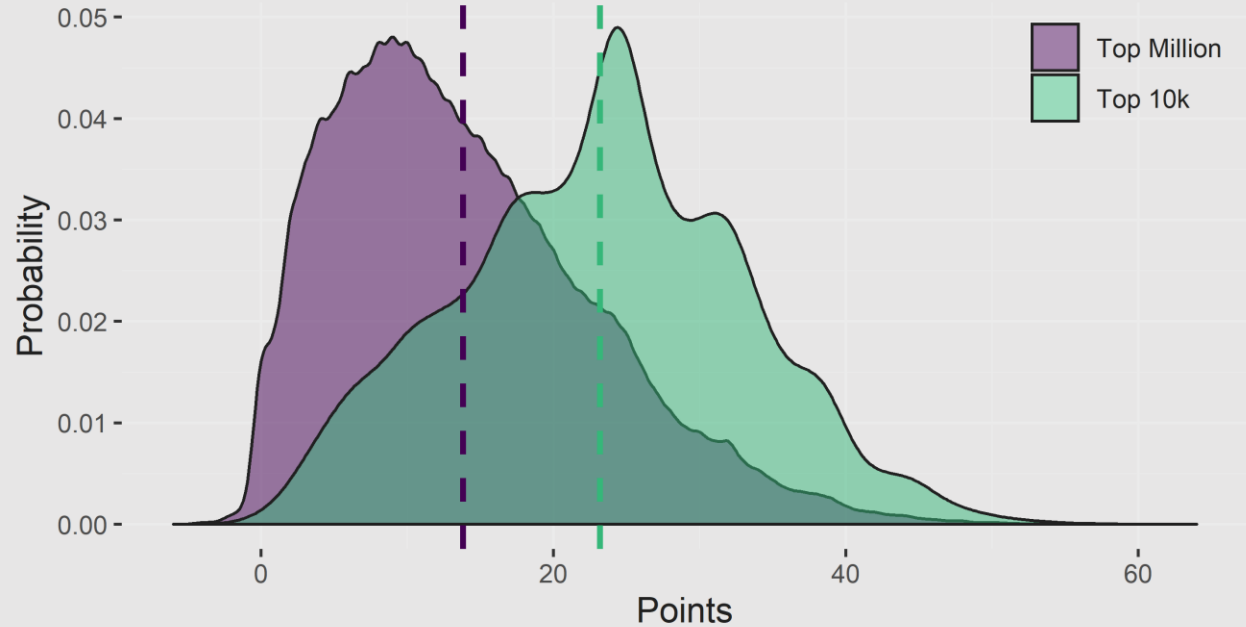


# Difference in skill - chips

Bench Boost Chip

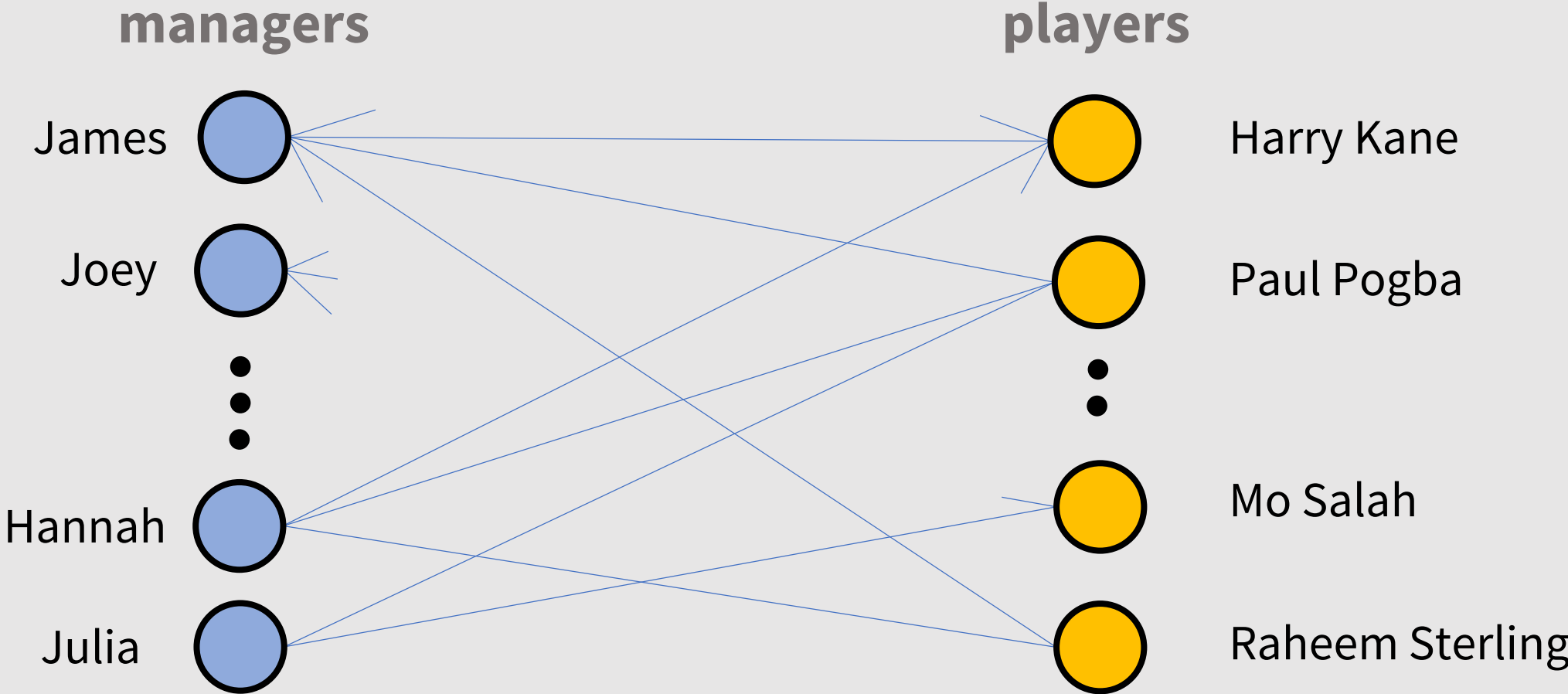


Distribution of Points from Bench Boost

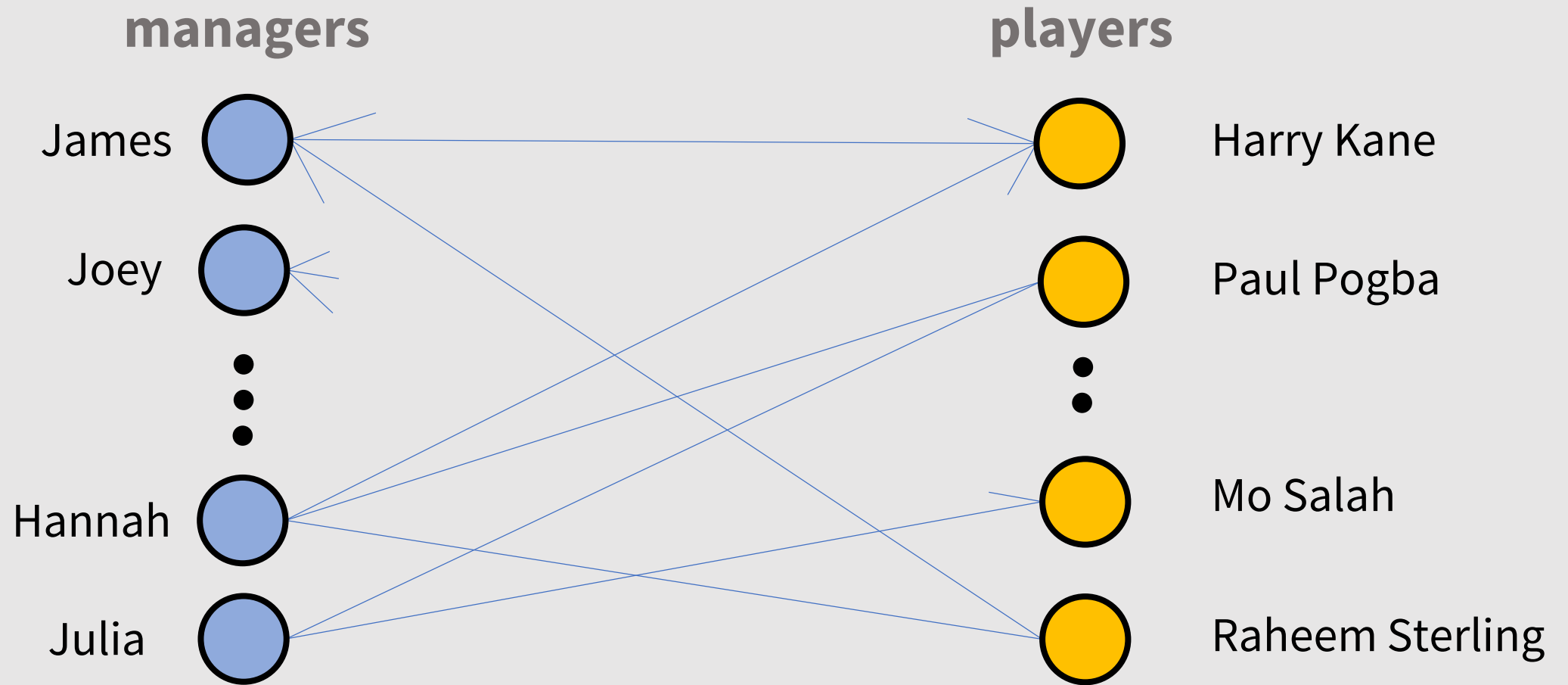




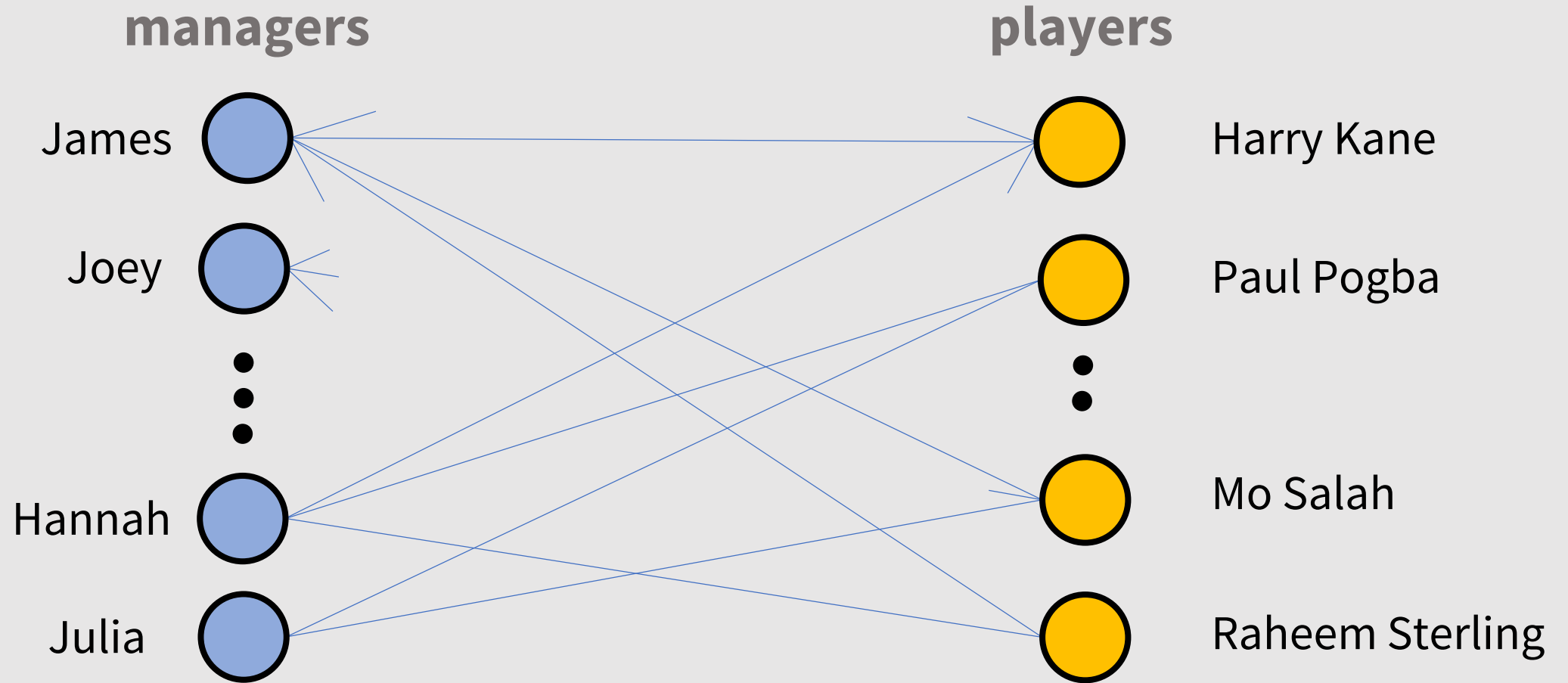
# Network analysis



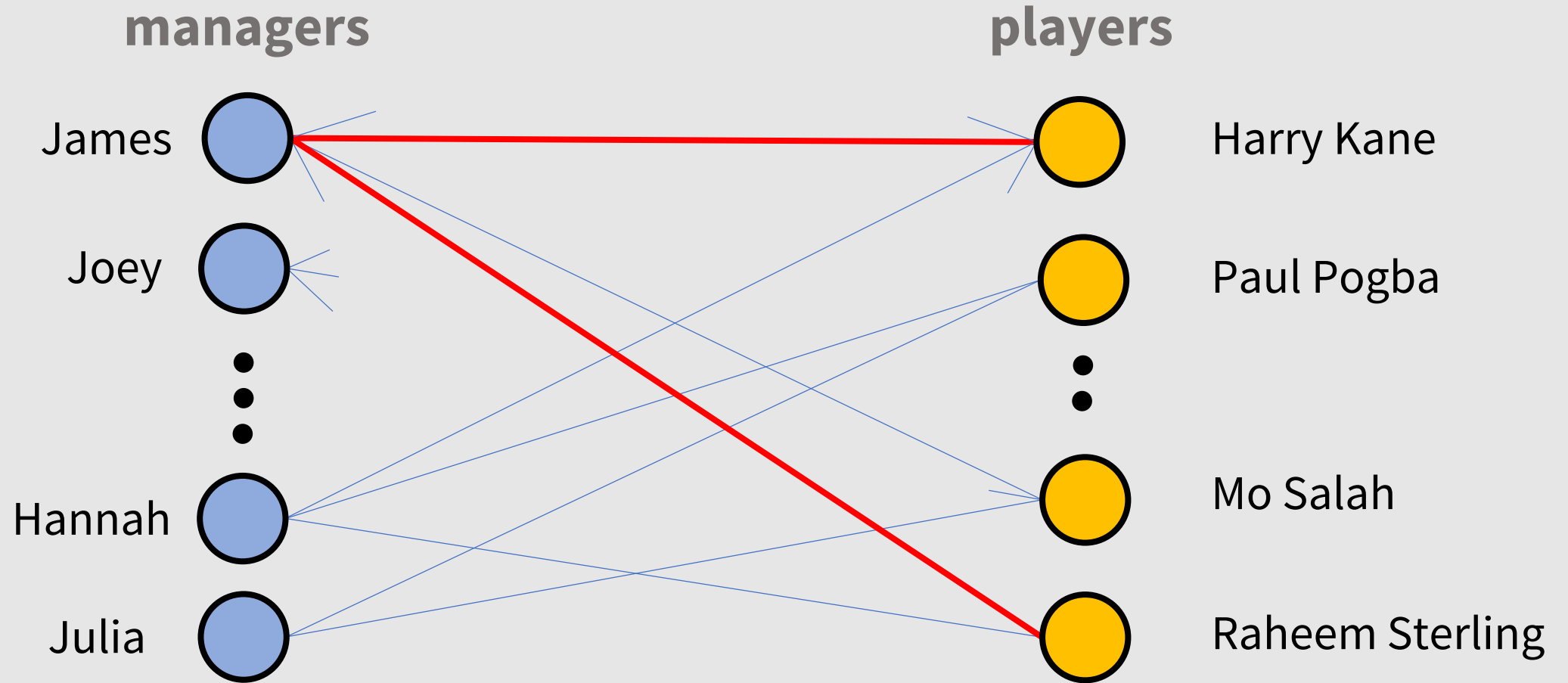
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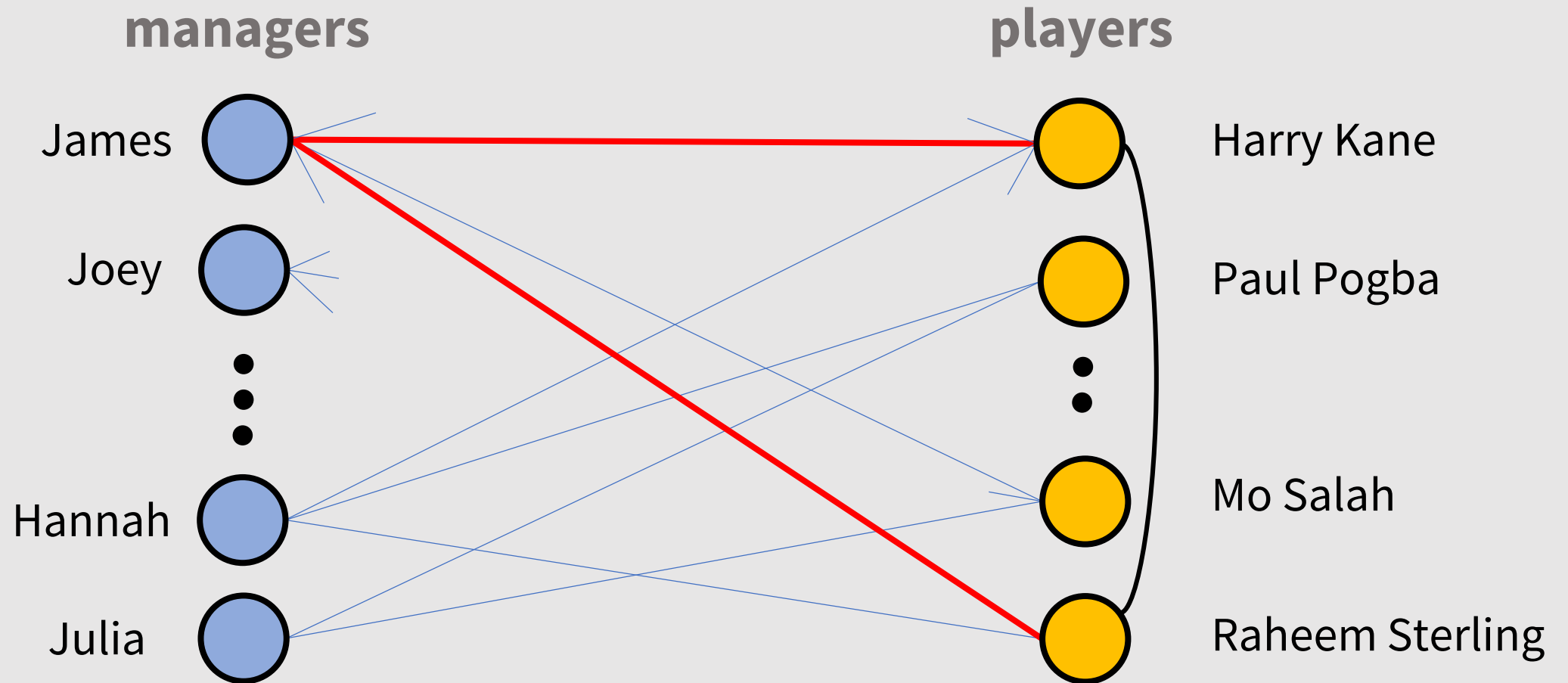
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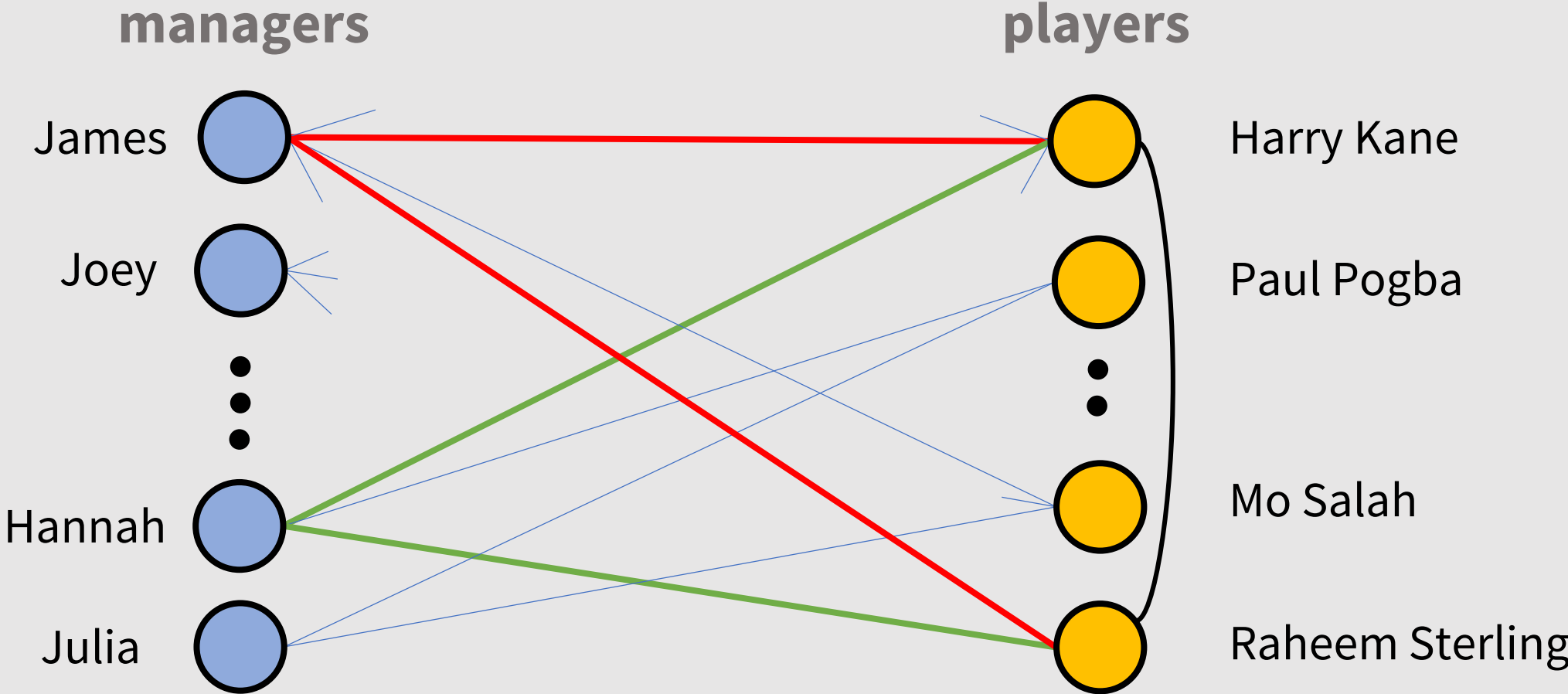
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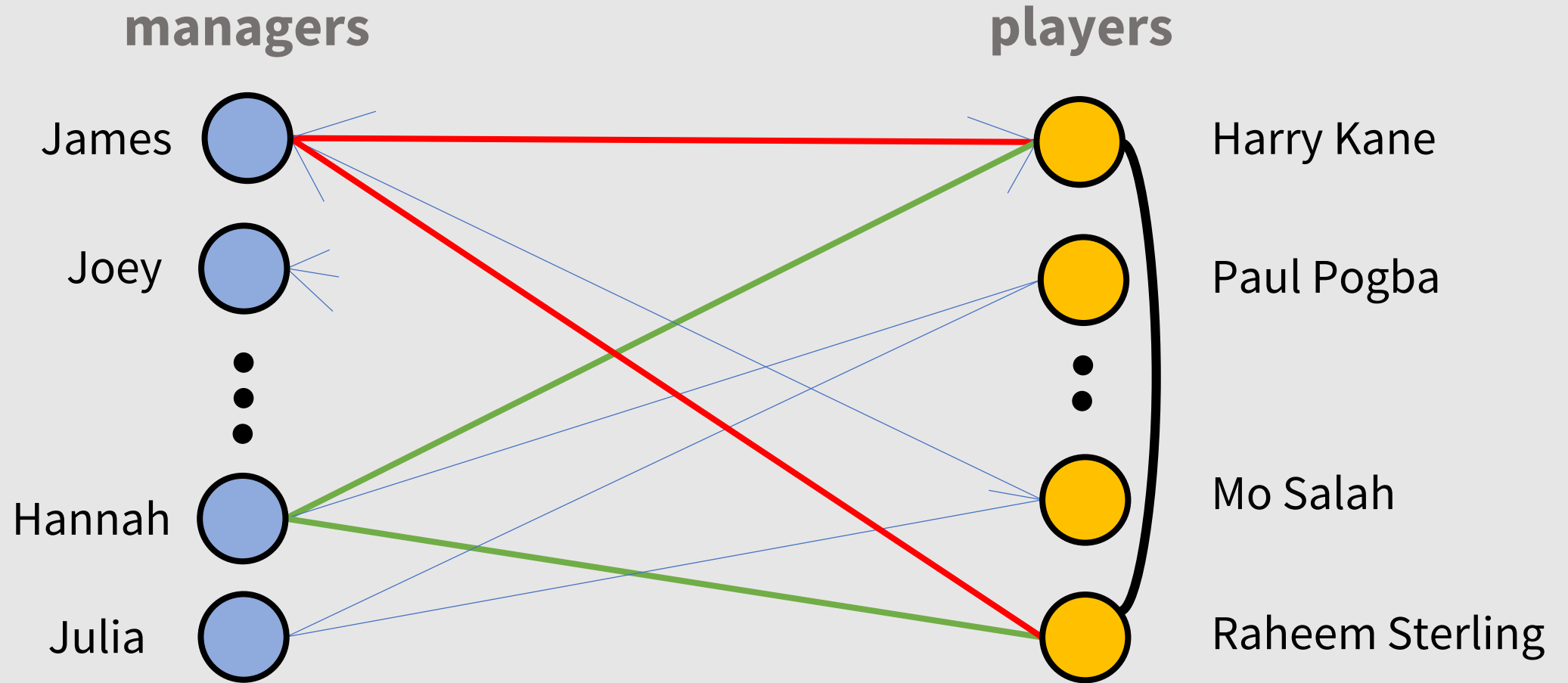
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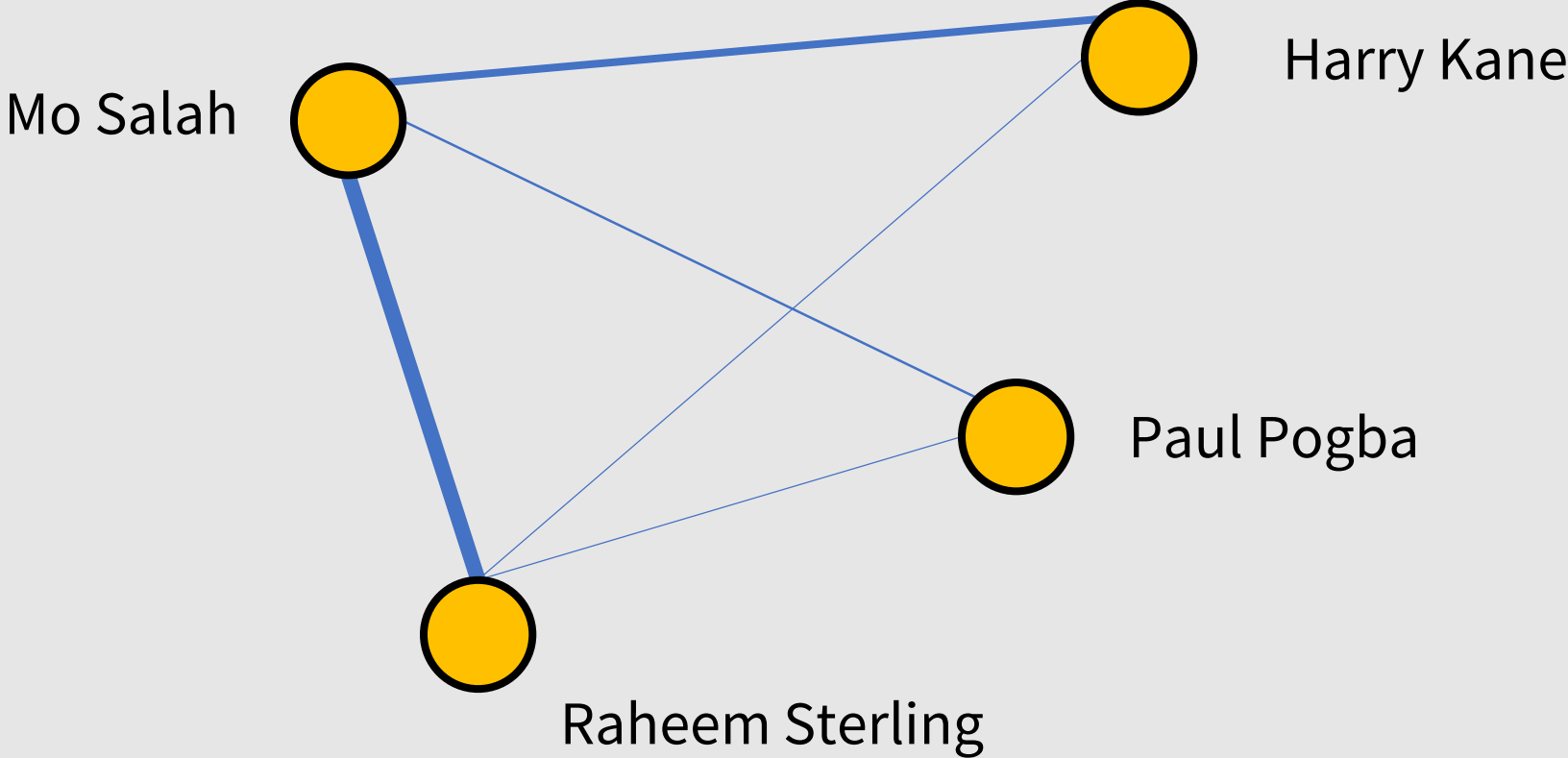
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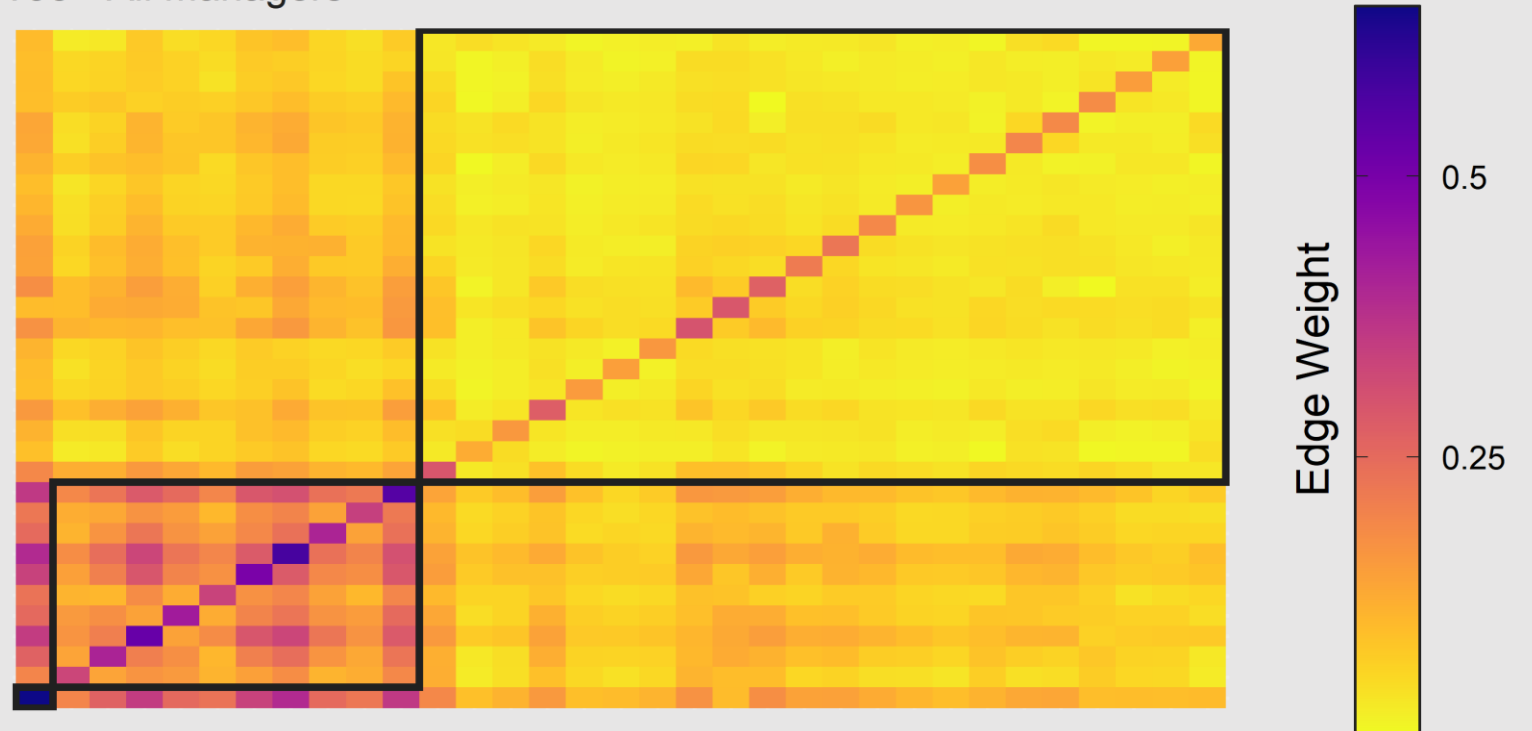


# Template team

- From the network we can identify **clusters of players** based upon their section frequency.
- Find that four clusters can describe the different groups with **three of them** containing only **~30 players** (out of >600).

## Structure of Clusters

GW38 - All Managers



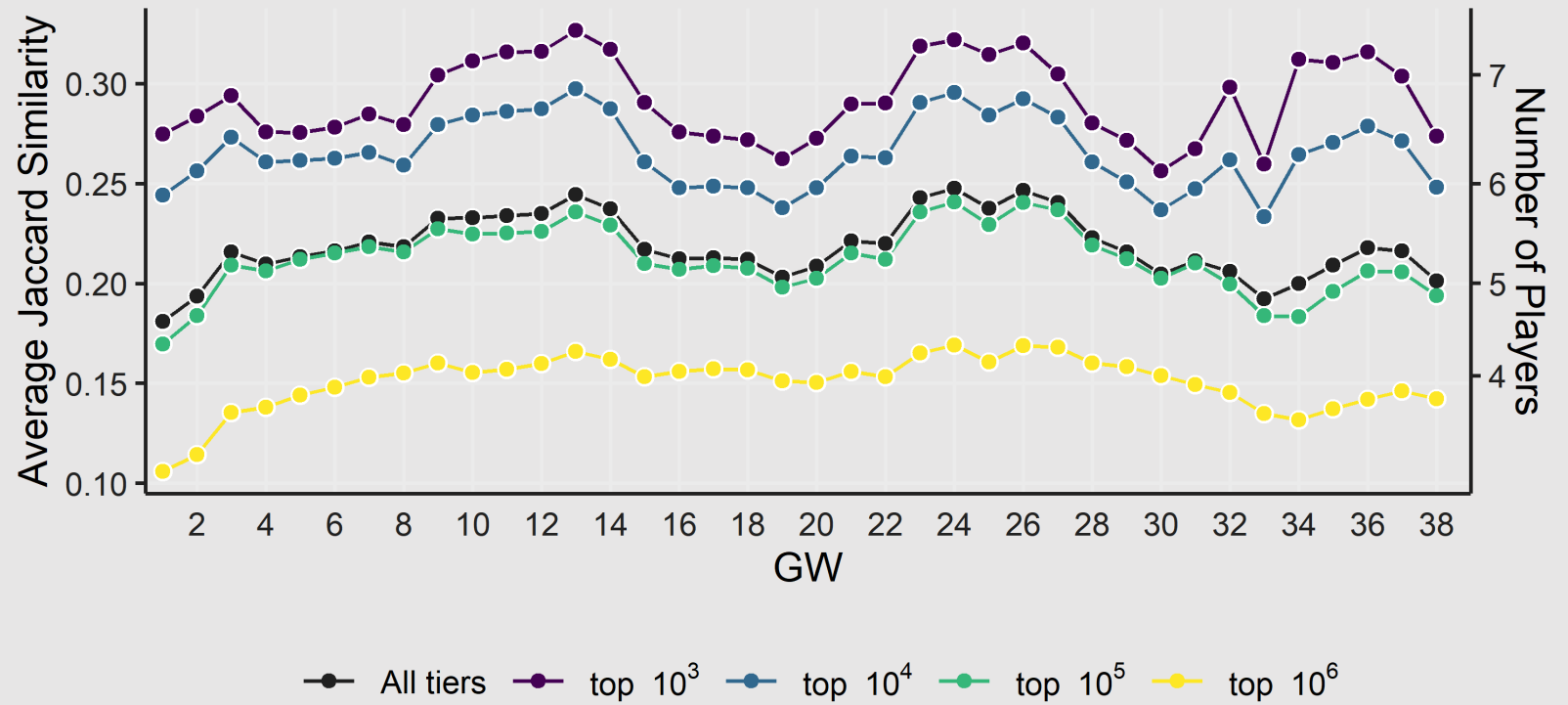
# Similarity of teams

- We determine the similarity between two teams A and B through the **Jaccard Similarity** measure.

$$J(A, B) = \frac{|A \cap B|}{|A \cup B|}$$

## Jaccard Similarity of Teams

All and Within Tiers



# Collaborators & Thanks

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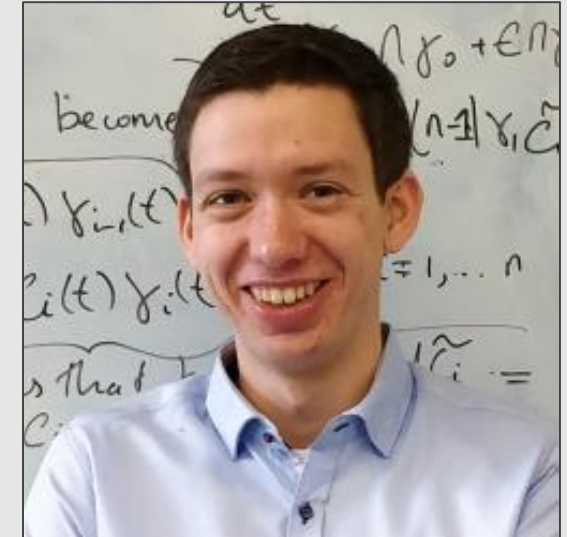


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**David O'Sullivan**



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**Thank you for listening!**

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arXiv: 2009.01206

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