

Pitch Control: The Money Moves Behind the Beautiful Game

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The Team



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The Bidding War for Top Talent

Can success be bought in international football?

Top teams around Europe shower money to create super teams stacked with top talent



The 5 biggest soccer leagues in the world do not have a salary cap...



Data

kaggle



+



Standings

Season
2023-24 ▾

Club	MP	W	D	L	GF	GA	GD	Pts	Last 5
1 Real Madrid									
2 Barcelona									
3 Girona									
4 Atlético Madrid									
5 Athletic Club									
6 Real Sociedad									
7 Real Betis									



Fuzzy Match: “Man Utd” → “Manchester United”

Success Metric

Each team was assigned a 'success metric' for every season based on-

1. Domestic League Standing

Pos	Club	P	GD	Pts
1	Liverpool	26	38	60
2	Man City	25	32	56
3	Arsenal	25	36	55
4	Aston Villa	25	19	49
5	Spurs	25	14	47
6	Man Utd	25	1	44
7	Brighton	25	8	38
8	Newcastle	25	12	37
9	West Ham	25	-8	36
10	Chelsea	25	1	35
11	Wolves	25	-1	35
12	Fulham	25	-7	29
13	Bournemouth	24	-13	28

2. Champions League Standing



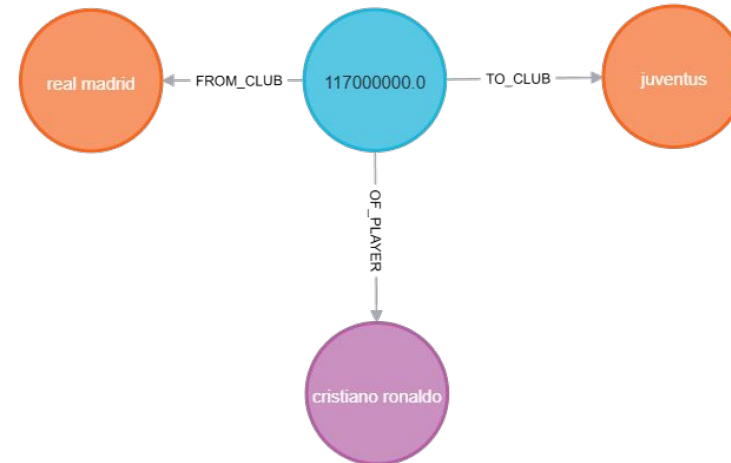
Tiki-taka

In 2018, Cristiano Ronaldo, one of the greatest strikers in the world, agreed to a \$117M blockbuster transfer to Juventus



<id>	5552
cl_success	3.0
composite_success	11.0
fee	117000000.0
id	cristiano_ronaldo_2018/2019_juventus
league_success	8
season	2018/2019

<id>	4343
name	real madrid



<id>	5390
name	juventus

Nodes

Player

- Name
- Position

Transfer

- Fee
- Position
- Success Scores

Club

- Name

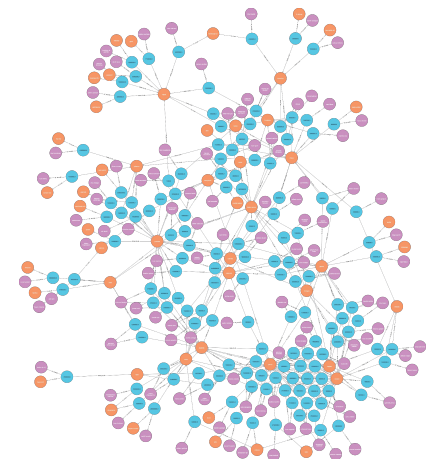
Relationships

To Club

From Club

Of Player

<id>	6809
name	cristiano ronaldo
position	Centre-Forward



Mapping The Path to Success

To investigate our central question, we took a look along 3 key personas...

1

BIG MOVERS

Which teams have the most influence within the transfer landscape?



Page Rank Algorithm

2

TRADING BLOCS

Which teams trade with each other the most? What trading blocs are the most successful?



Louvain Community Detection

3

FACILITATORS

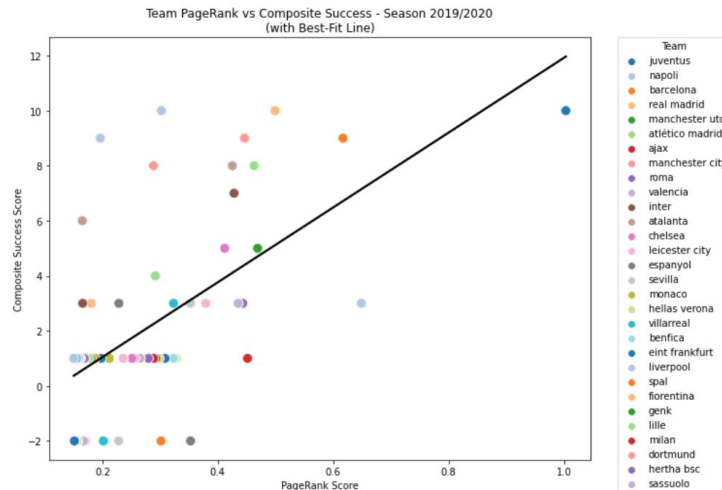
*Are there key intermediaries facilitating these transfers?
Does being an intermediary provide any benefit?*



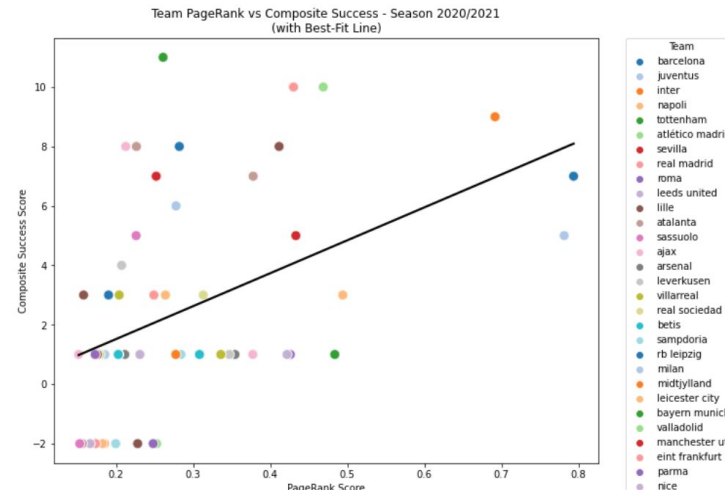
Betweenness Centrality

Findings - PageRank vs Success

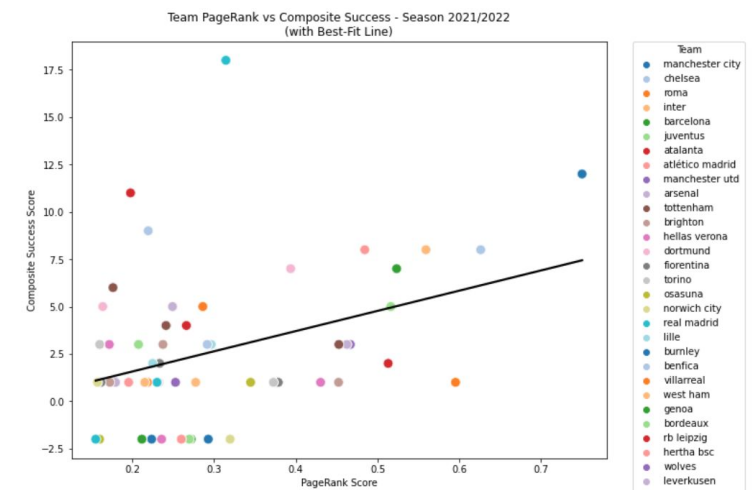
2019/2020



2020/2021



2021/2022



High PageRank score

Juventus 19/20

- Expenditure: **187 million**
- League position: 1st - Champion
- Champions league: Round of 16

Manchester City 21/22

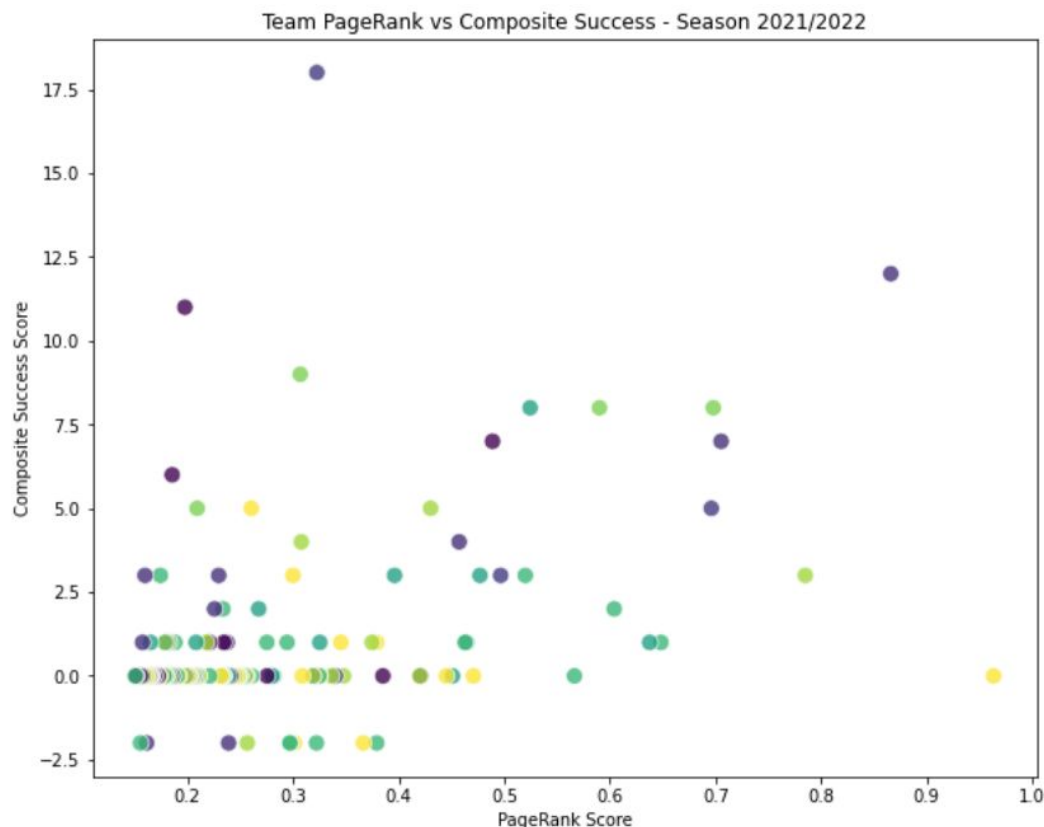
- Expenditure: **138 million**
- League position: 1st - Champion
- Champions league: Semi-Finals

Low PageRank score

Cagliari Calcio 21/22

- Expenditure: **16 million**
- League position: 18th - Relegated
- Champions league: N/A

Findings - PageRank vs Success by Community

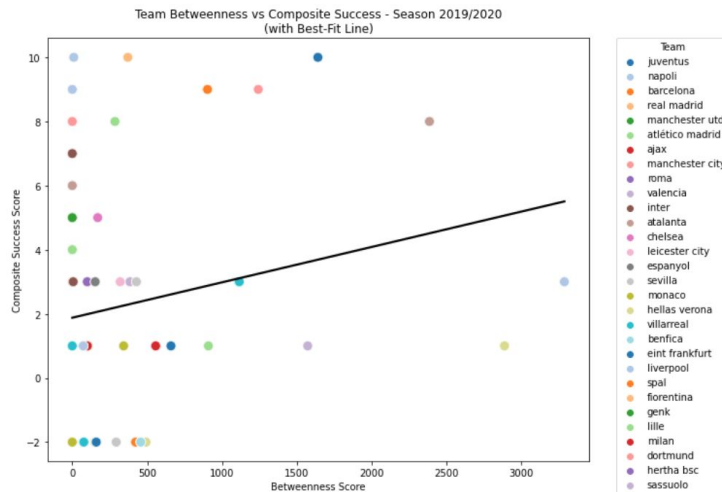


No correlation between success
and teams who trade together

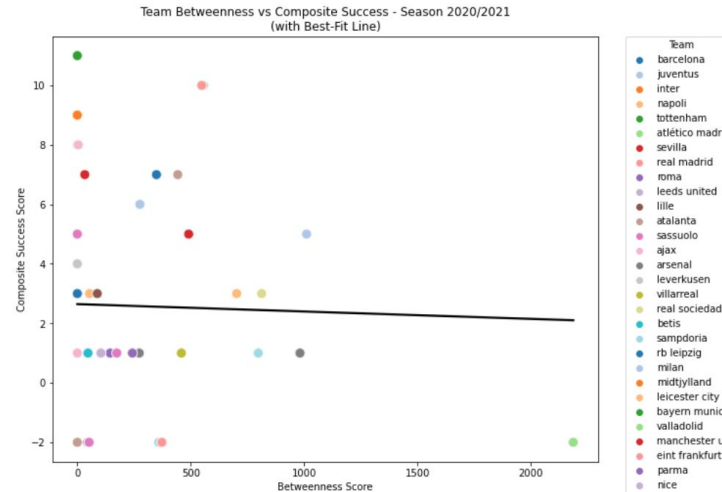
community	avg_compositeSuccess	teams
71	3.857143	frosinone
		gladbach
		juventus
		eibar
		elche
		manchester utd
		monza
		psv eindhoven
		real madrid
		antwerp
		aston villa
159	2.909091	benfica
		burnley
		cádiz
		everton
		girona
		huesca
		leverkusen
		mallorca
		norwich city
		osasuna
		schalke 04
		slavia prague
		southampton
		stoke city
		swansea city
48	2.000000	torino
		trangers
		werder bremen
		loko moscow
		mainz 05
		milan
		monaco
		olympiacos
		spartak moscow
		bayern munich
		braga
		cesena
		dortmund
		dynamo kyiv
141	0.208333	empoli
		feyenoord
		lecce
		marseille
		sampdoria
		sassuolo
		shakhtar
		spezia
		ajax
		atalanta
		başakşehir
		bordeaux
		cagliari
		club brugge
		crotone
		cska moscow
		genoa
		hellas verona
		hertha bsc
		lazio
		ludogorets
		montpellier
		nantes
		nice
		nott'ham forest
		parma
		pescara
		roma
		udinese
		watford
		west ham
		young boys

Findings - Betweenness vs Success

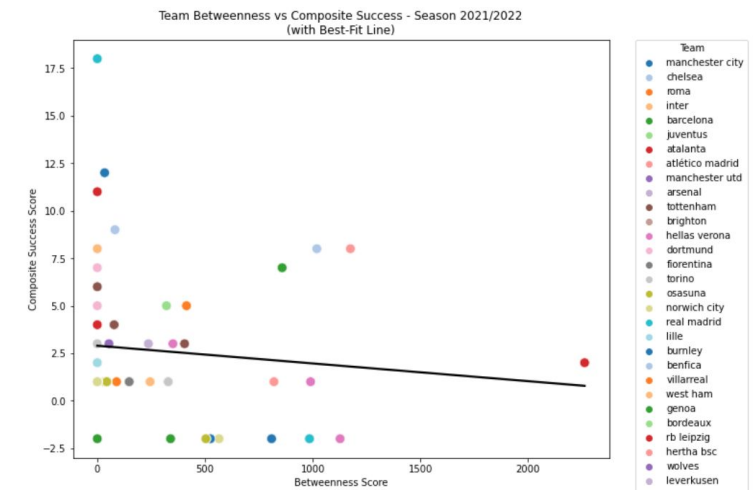
2019/2020



2020/2021



2021/2022



Low betweenness score

Bayern Munich 20/21

- **11** transfer involvements
- League position: 1st - Champion
- Champions league: Quarter Finals

Real Madrid 21/22

- **9** transfer involvements
- League position: 1st - Champion
- Champions league: Champion

High betweenness score











Real Valladolid 20/21













- **35** transfer involvements
- League position: 19th - Relegated
- Champions league: N/A

Expanding The Roster

We can enhance our modeling of the transfer landscape using other NoSQL databases

Match & Player Data Sources

Player		Goals
1	 Raphinha  Barcelona	12
2	 Robert Lewandowski  Barcelona	11
3	 Harry Kane  Bayern	10
3	 Serhou Guirassy  Dortmund	10
5	 Jonathan David  LOSC	9

 Aston Villa  PSG	Tue, Apr 15 12:00 PM	 Dortmund  Barcelona	Tue, Apr 15 12:00 PM		
 PSG	3	FT	 Barcelona	4	FT
 Aston Villa	1	Wed, Apr 9	 Dortmund	0	Wed, Apr 9
 Arsenal	3	FT	 Bayern	1	FT
 Real Madrid	0	Tue, Apr 8	 Inter	2	Tue, Apr 8



Player Stats



Club Stats

Update club and player stats live as matches progress. Understand the landscape in real time during the transfer window



Player JSON

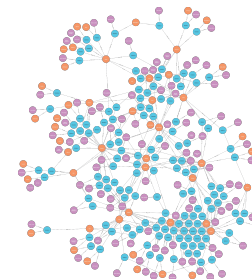


Club JSON



Transfer JSON

Capture detailed player, club, and transfer information in MongoDB



Use information from mongoDB to update our graphs

Berkeley SCHOOL OF
INFORMATION