Project Progress

What constitutes "Home field advantage" in the NFL?

Chau Nguyen

December 2, 2020

Background & Motivation

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- The Away team is at an even more disadvantage if they had to travel across timezones for the match up.
- With fans in the stand, the Home crowd is usually silent during the Home team's Offensive snaps (so that the Quarterback can "read" the opposing Defense and make adjustments to the play before the snap).
- On the other hand, during the Away team's Offensive snaps, the Home crowd is encouraged to get loud - therefore the opposing QB can't do the same.

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The situation is different in 2020. Many stadiums are required to limit fan attendance to a very low number to mitigate covid risks. Players have commented on how eerily quiet and different the game day atmosphere has been this year.
With that in mind, I wanted to see if I could build a model that quantifies "Home field advantage" in a normal year.

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- Or is it the lack of travel that helps?

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Overview of the NFL

- Currently, there are 32 teams in the NFL, divided into 2 conferences: the National Football Conference (NFC) and the American Football Conference (AFC). Each conference is divided into 4 divisions: North, South, East, West - each with 4 teams.

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- This has not always been the case before the "realignment" in 2002, the landscape of the NFL looked quite different.

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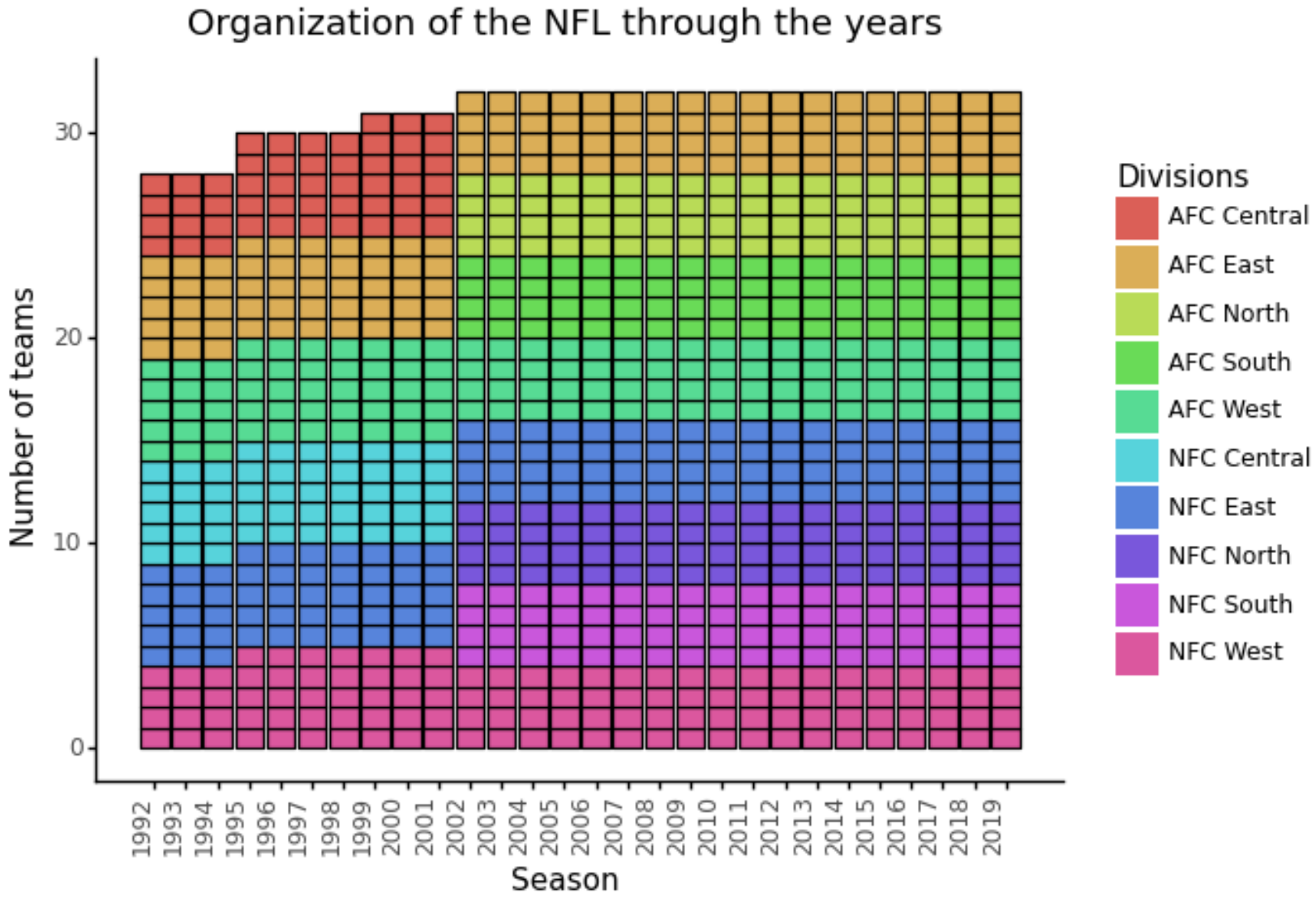

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- I want to format my dataset into a dyadic panel and use Machine Learning to study the difference between each pair.

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- Why?

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  - The New Orleans Saints played their 2005 season on the road due to Hurricane Katrina - their "Home" games were played in nearby stadiums, but not the Superdome.

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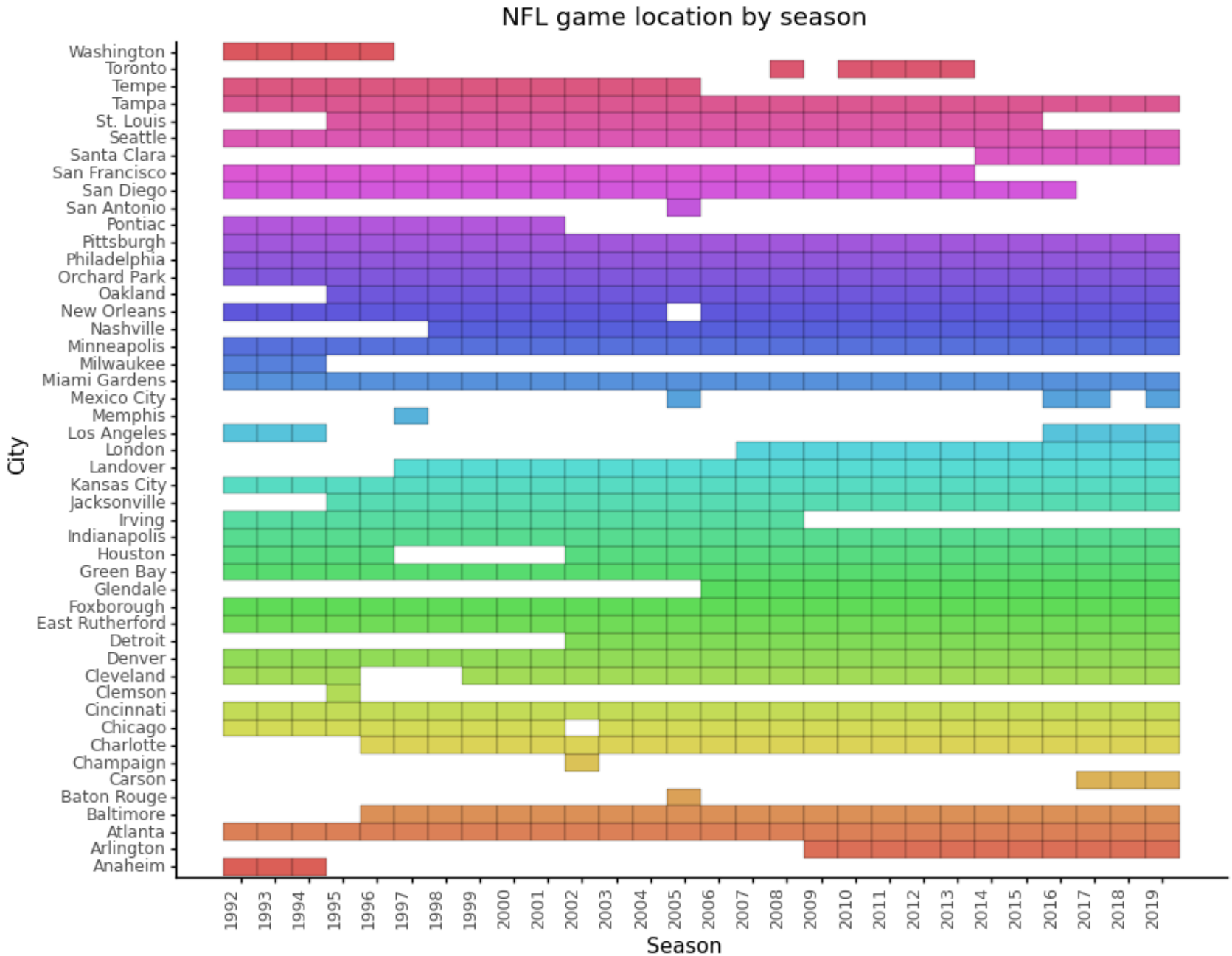

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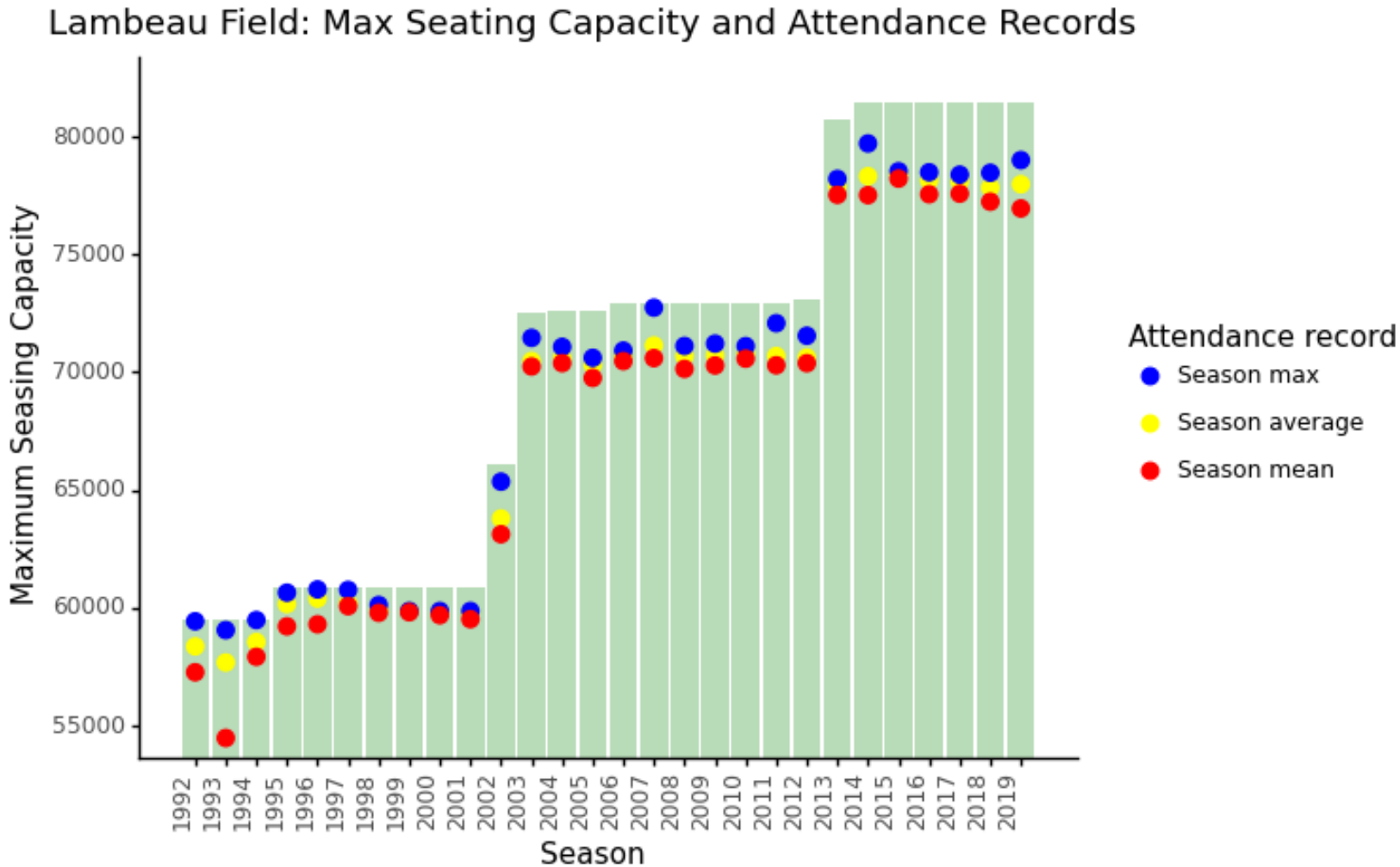

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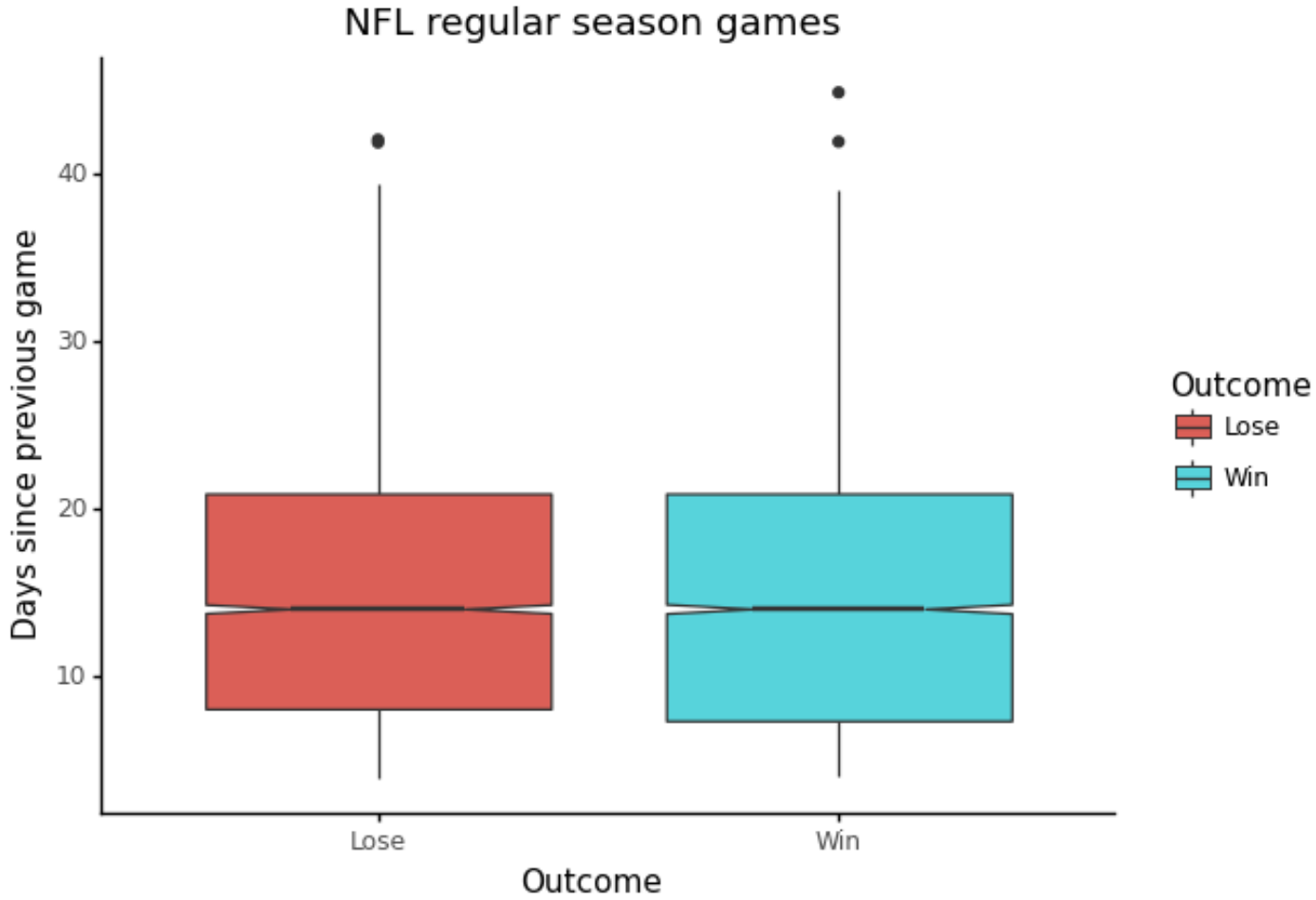
  - For example, take a look at this graph



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  - If you are not familiar with the NFL - teams play each other every weekend. Then why is the average number of days between the losing team and the winning team around 14 days?
  - This has to do with how I cleaned my data before turning it into a dyad. I will have to revisit this and fix it.

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	Season	Week	Team_A	Team_B	Outcome	Miles_traveled	Time_rest_days	Capacity	attendance	Surface	Same_surface	Rivalry
13784	2018	10	Pittsburgh Steelers	Carolina Panthers	Win	0.00	11.31	68400.0	62881.0	Grass	Yes	No
13785	2018	10	Carolina Panthers	Pittsburgh Steelers	Lose	363.60	18.31	68400.0	62881.0	Grass	Yes	No
13786	2018	10	Buffalo Bills	New York Jets	Win	277.93	21.00	82500.0	77982.0	Turf	Yes	Division
13787	2018	10	New York Jets	Buffalo Bills	Lose	0.00	21.00	82500.0	77982.0	Turf	Yes	Division
13788	2018	10	New England Patriots	Tennessee Titans	Lose	924.59	12.70	69143.0	69363.0	Grass	No	Conference
13789	2018	10	Tennessee Titans	New England Patriots	Win	0.00	27.86	69143.0	69363.0	Grass	Yes	Conference
13790	2018	10	Tampa Bay Buccaneers	Washington Redskins	Lose	0.00	21.00	65618.0	52667.0	Grass	Yes	Conference
13791	2018	10	Washington Redskins	Tampa Bay Buccaneers	Win	821.85	14.00	65618.0	52667.0	Grass	Yes	Conference
13792	2018	10	Kansas City Chiefs	Arizona Cardinals	Win	0.00	14.00	76416.0	76712.0	Grass	Yes	No
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- I am not entirely confident in studying dyadic data.

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- Instead of Markdown, I am using pure LaTeX to make this presentation.

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- My priorities right now are to finish up the very last bits of cleaning fixes to the data, and move onto the machine learning part.
- I think it's realistic to think that I will not be able to complete the 2020 season part of this project - but if things go well I do want to keep playing with the models even after the semester ends.

Thank you!

Thank you for taking your time to listen to my presentation. Any feedback is greatly appreciated!