



# How does weather affect Major League Soccer Games?

A data analytics capstone  
for Nashville Software School

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Soccer is “the world’s game” and I was lucky to have grown up playing into my early adulthood.

My childhood dream was to play in the world cup for the USA.

Today, I am interested bringing value to a soccer organization, analytically, and I am grateful to NSS for this opportunity to share what I’ve found with you today

Fan Base ~4Billion

MLS Valued at \$3Billion

# **Agenda**

- ⚽ About Me
- ⚽ Disclaimer
- ⚽ Analysis
- ⚽ Lessons learned
- ⚽ Conclusions

## About Me

- Nashville since 2018
- 3x Bootcamp graduate:  
Data Analytics  
Full Stack Web Development  
US Navy
- Attended the World Cup  
hosted by the USA 1994
- Eagerly await the tournament's  
return to North America 2026;  
Nashville is a candidate to host

[gradyrobins.github.io](http://gradyrobins.github.io)



*Motivation: I grew up playing soccer in the deep south;  
the Gulf of Mexico is a few short miles from where this picture was taken.*

14 years before this picture was taken, a British statistician named George Box wrote the famous line ..... Next slide

 **Disclaimer**

**“All models are wrong, some are useful”**

**George Box**

His point was that we should focus more on whether something can be applied to everyday life in a useful manner rather than debating endlessly if an answer is correct in all cases. ..... next slide

## **Data Challenges Discovered**

Soccer: Major League Soccer has a 25 year history; this analysis covers 8 seasons

Weather: Soccer games average 2 hours; my analysis uses daily, not hourly precipitation measurements, observed at the nearest International Airport for the Home Team. For example: LA Galaxy > LAX.

The datasets utilized in this study were derived from two sources:

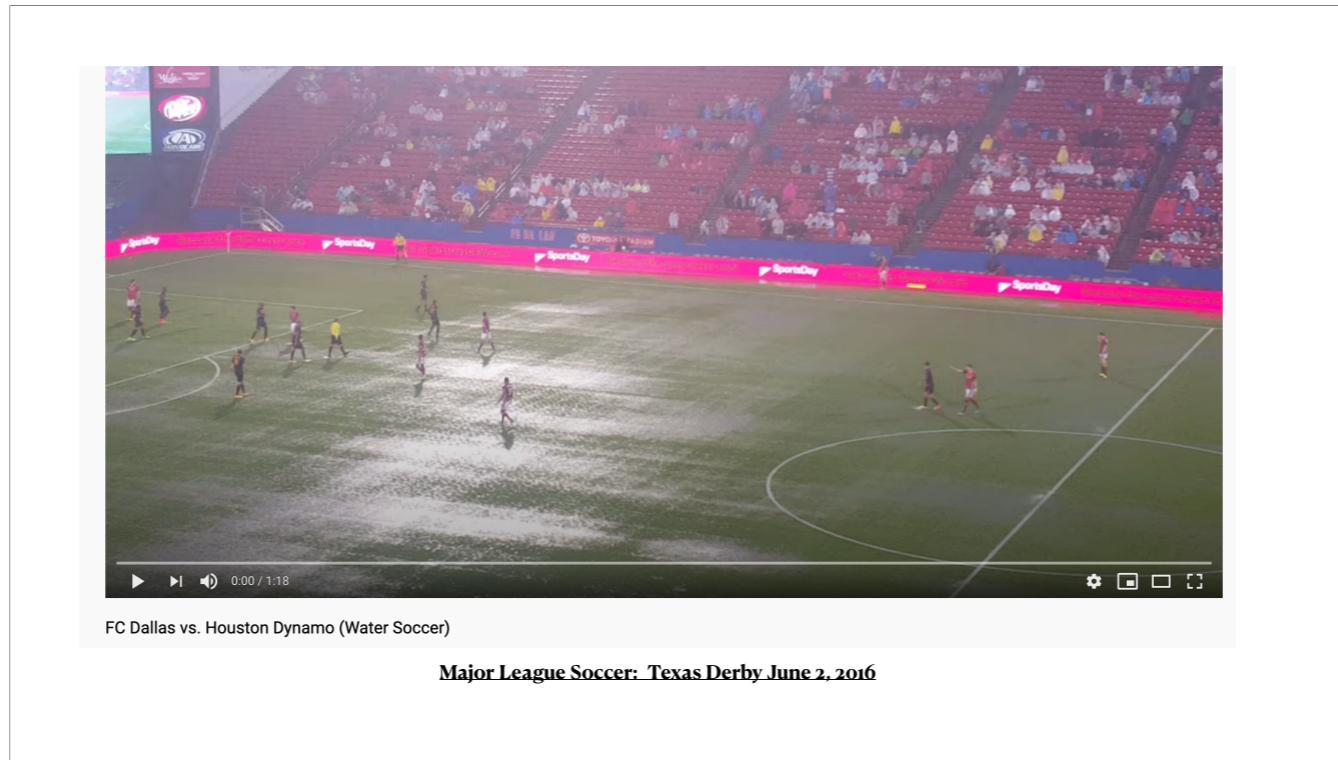
Major League Soccer data: <https://sports-statistics.com/database/soccer-data/usa.csv>

, and public weather data retrieved from Weather Underground

## Analysis

**Hypothesis - There will be more draws (ties) and fewer goals on game days with *any* precipitation.**

This hypothesis came from my personal experience, and also the following photo/video of one of the games in my dataset



How much did it rain? (1.48")

What was the final score? (1-1 draw)

Side note: Roughly 1 out of ~17 games

end in nil - nil draws... a good rebuttal against “soccer games are boring”

These Rain Amount Guidelines are presented as a guide since many variables such as terrain, drainage and intensity vary.

**1/100 (0.01) of an inch of rain** – The first measurable amount of rainfall reported by The National Weather Service. This would not leave puddles on the ground and would slightly wet the surface. This might occur during a light shower for 2-5 minutes or even a drizzle for 2 hours.

**1/10 (0.10) of an inch of rain** – A light rain for 30-45 minutes, moderate rain for 10 minutes or heavy rain for 5 minutes. Small puddles would form but usually disappear after a short while.

**1/4 (0.25) of an inch of rain** – A light rain for 2-3 hours, moderate rain for 30-60 minutes or heavy rain for 15 minutes. There would be many puddles on the ground and they would not disappear easily.

**1/2 (0.5) of an inch of rain** – A light rain never reaches this amount, moderate rain for 1-2 hours or heavy rain for 30-45 minutes. There would be deep standing water and they would last for long periods of time.

**3/4 (0.75) of an inch of rain** – A light moderate rain never reaches this amount, heavy rain lasting for 2-4 hours. There would be deep standing water for long periods of time.

**One (1.00) inch of rain** – A light moderate rain never reaches this amount, heavy rain for several hours (2-5 hours). There would be deep standing water for long periods of time.



**2.82**

Avg Goals per Game



**2.94**



**25%**

Percentage of Games  
to end as Draws



**23%**

## ⚽ Lessons Learned

- Tools are good
- Answers are better
- Teachers are best

Muchos Gracias: UrLeaka, Taylor, Matt, Mary

Cohort DA2E: Congratulations, ya'll!  
What title would you give this chapter of your life?



## Conclusions

My hypothesis was only a starting point, and was not borne out by the data

Others have published similar case studies that I could not access: Using Weather and Playing Surface to Predict the Occurrence of Injury in Major League Soccer Games

Publisher: IEEE. Authors: Sara Landset ; Michael F. Bergeron ; Taghi M. Khoshgoftaar

<https://ieeexplore.ieee.org/document/8102958/references#references>

Questions?



