# *Seattle (SEA) vs Atlanta (ATL)*

Understanding Rainfall Patterns (2018–2022)

This study challenges the common perception of Seattle as America's rainiest city by comparing it to Atlanta's rainfall pattern. But what does it mean to '**rain more'**? Well, in this study, through analyzing five years of daily weather data, we discovered that the answer depends on how you define "more rain."

## Data & Methodology

We used simple, transparent steps to answer the question:

- **Data:** Daily precipitation for Seattle, WA and Atlanta, GA, 2018–2022 (five years) from **NOAA National Centers for Environmental Information (NCEI)**
- **Station selection:** Atlanta restricted to Hartsfield–Jackson Atlanta International Airport (ATL), GA, US to match a single station in the Seattle dataset.
- **Rainy day:** A day with precipitation > 0 inches.
- **Frequency:** % of days in each month that are rainy.
- **Intensity:** Average precipitation on rainy days only.
- **Missing data:** Seattle's precipitation gaps were filled using the average for that same calendar day across other years.

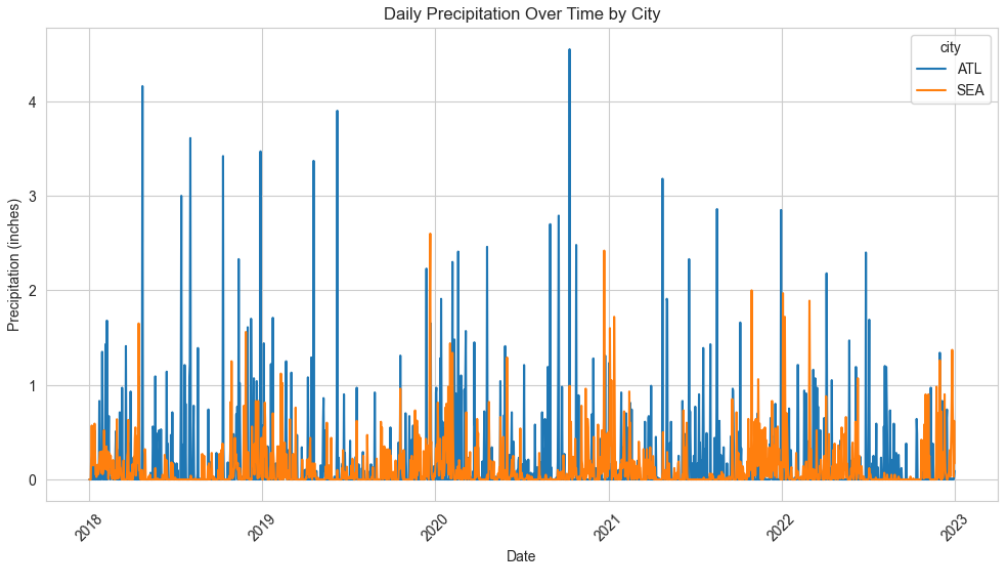


Figure 1: Units: inches. Daily precipitation amounts by date. Lines show observed precipitation for each city.

In figure 1, does it seem like Atlanta's blue spikes are taller while Seattle's orange series looks denser (more frequent) but shorter? To answer which city 'rains more', we analyzed the data through several visualizations:

# Results and Analysis

Using simple summaries such as averages and percentages, we found that Atlanta averages 0.155 inches per day, while Seattle averages 0.113 inches. However, averages don't tell us the whole story.

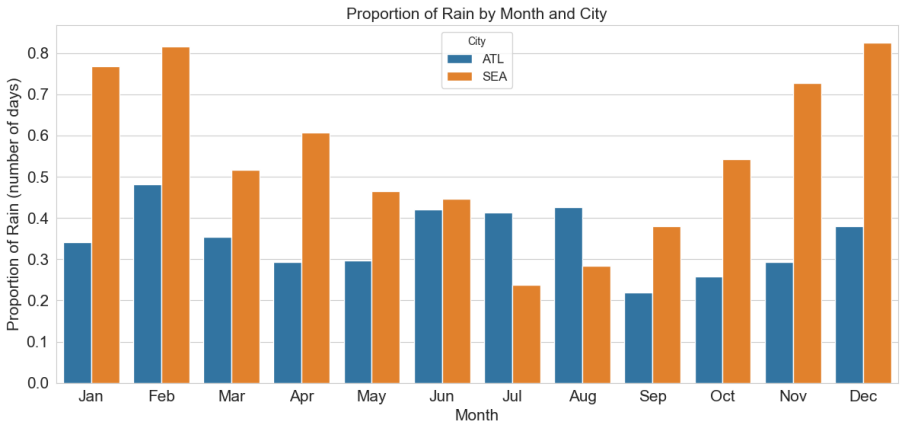


Figure 2: Frequency view. Proportion of rain" = percent of days in each month with precipitation > 0 in (rainy-day threshold).

With additional summaries, figure 2 shows that, in December, Seattle experiences rain on 82.6% of days, while Atlanta's rainiest month (February) only sees rain 48.2% of days.

Why does Atlanta have a higher daily average? By framing the question this way, we can next examine the amount of rain on rainy days only (intensity).

Figure 3 shows that, on rainy days, Atlanta's precipitation amounts are much higher than Seattle's.

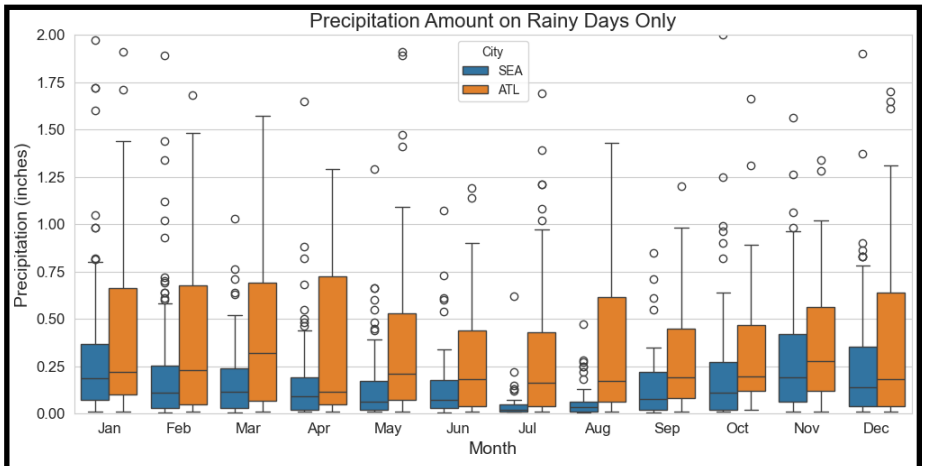


Figure 3: Intensity view. Distribution of precipitation amounts on rainy days (precipitation > 0 in).
Units: inches. (Atlanta uses the Hartsfield–Jackson station for comparability.)

These three visualizations refine 'rains more' into two questions:

1. Which city rains more frequently?

2. Which city rains more intensely?

# Conclusion

Seattle has more rainy days, while Atlanta's rainy days are more intense. This explains why visitors often feel Seattle is 'always raining,' whereas Atlanta residents recall dramatic thunderstorms in summer. We advise travelers to bring a light raincoat in Seattle and be prepared for occasional heavy thunderstorms in Atlanta.