# Weather Trends in London: A Data-Driven Exploration

By Hanlin Chen

# Motivation Questions

Q1: Does it rain more frequently in London these years?

Q2: When is a good time to visit London?

# Dataset (London Weather from 1979 to 2020)

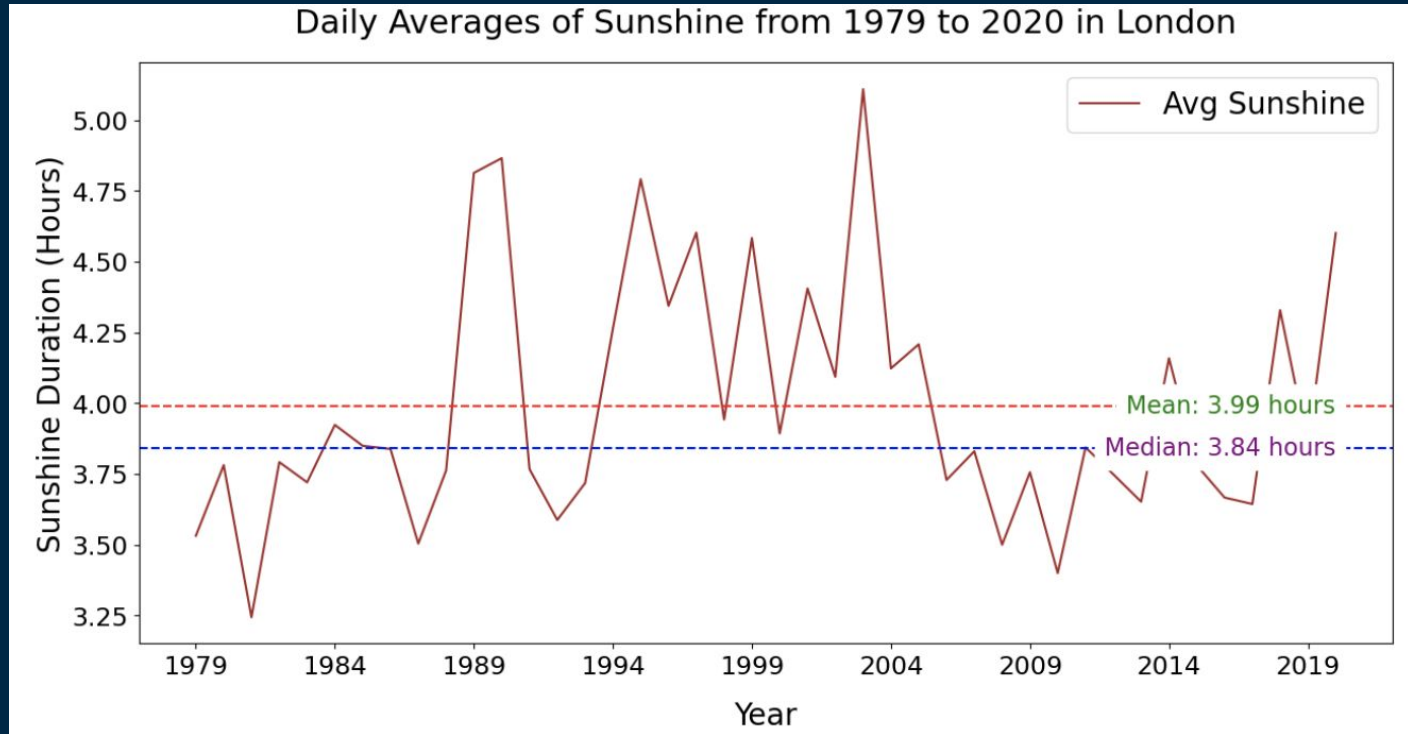| date | cloud_cover | sunshine | global_radia | max_temp | mean_temp | min_temp | precipitation | pressure | snow_depth |
|---|---|---|---|---|---|---|---|---|---|
| 19790101 | 2 | 7 | 52 | 2.3 | -4.1 | -7.5 | 0.4 | 101900 | 9 |
| 19790102 | 6 | 1.7 | 27 | 1.6 | -2.6 | -7.5 | 0 | 102530 | 8 |
| 19790103 | 5 | 0 | 13 | 1.3 | -2.8 | -7.2 | 0 | 102050 | 4 |
| 19790104 | 8 | 0 | 13 | -0.3 | -2.6 | -6.5 | 0 | 100840 | 2 |
| 19790105 | 6 | 2 | 29 | 5.6 | -0.8 | -1.4 | 0 | 102250 | 1 |
| 19790106 | 5 | 3.8 | 39 | 8.3 | -0.5 | -6.6 | 0.7 | 102780 | 1 |
| 19790107 | 8 | 0 | 13 | 8.5 | 1.5 | -5.3 | 5.2 | 102520 | 0 |
| 19790108 | 8 | 0.1 | 15 | 5.8 | 6.9 | 5.3 | 0.8 | 101870 | 0 |
| 19790109 | 4 | 5.8 | 50 | 5.2 | 3.7 | 1.6 | 7.2 | 101170 | 0 |
| 19790110 | 7 | 1.9 | 30 | 4.9 | 3.3 | 1.4 | 2.1 | 98700 | 0 |
| 19790111 | 1 | 6.8 | 55 | 2.9 | 2.6 | 0.3 | 2.3 | 98960 | 0 |
| 19790112 | 3 | 6.4 | 54 | 2 | 0.4 | -2 | 0 | 100650 | 1 |
| 19790113 | 1 | 7 | 57 | 4.3 | -2.6 | -7.1 | 0 | 102350 | 1 |

Original Source: European Climate Assessment and Dataset

# Motivation Questions

Does it rain more frequently in London these years?
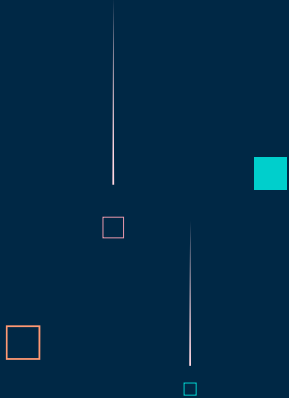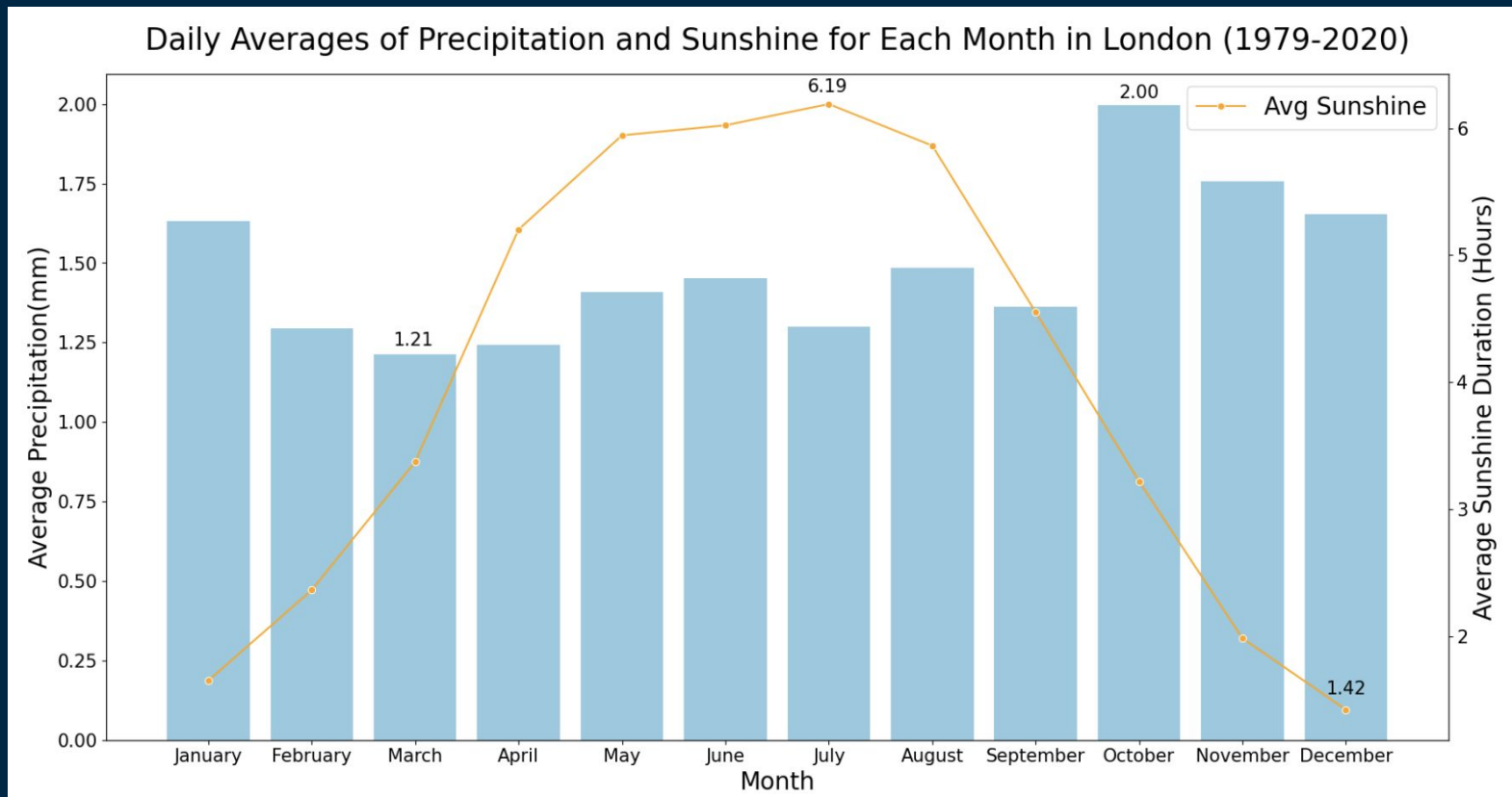
# Results for Q1- Overall Trend



Daily Averages of Sunshine from 1979 to 2020 in London

# Results for Q1- Overall Trend



Daily Averages of Precipitation from 1979 to 2020 in London
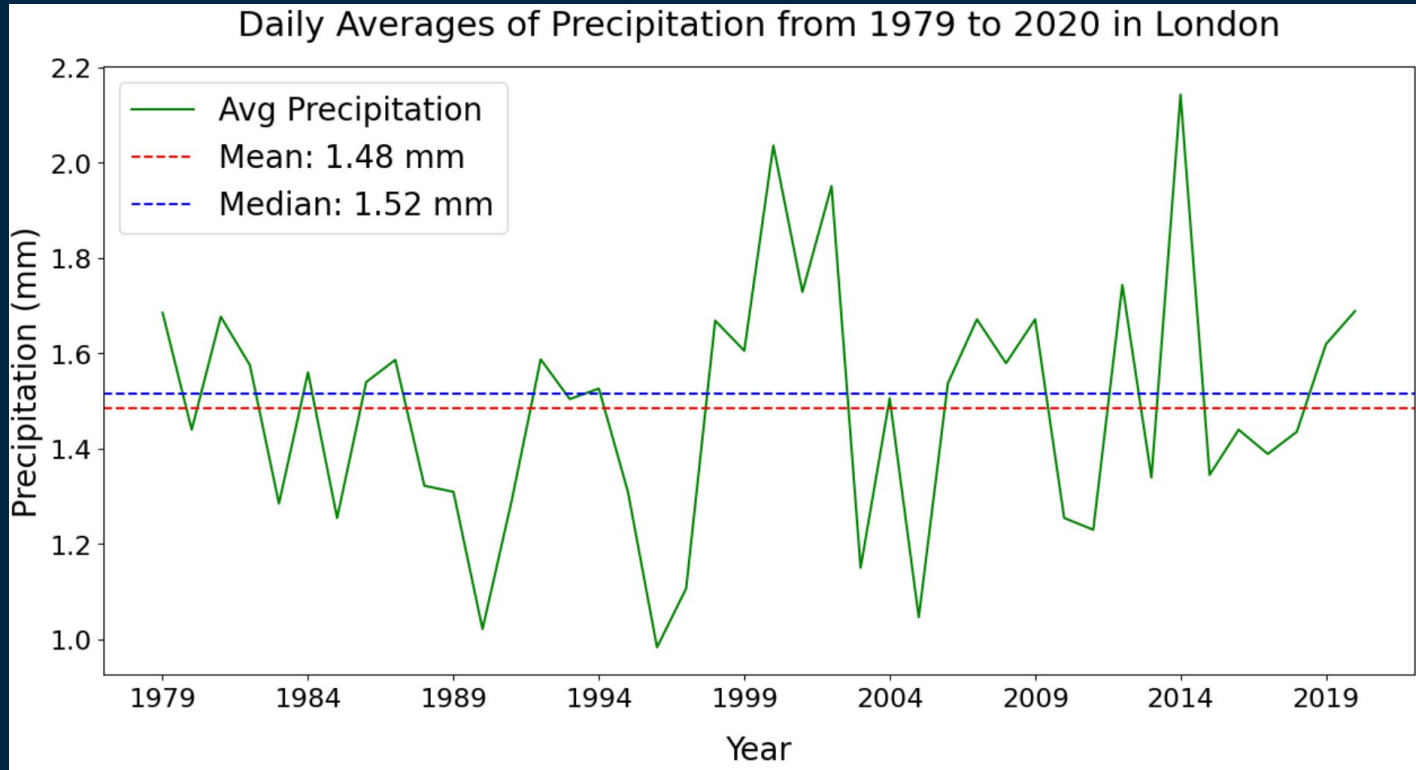
# Motivation Questions

When is a good time to visit London?

# Results for Q2- Monthly Differences



Daily Averages of Precipitation and Sunshine for Each Month in London (1979-2020)

# Results for Q2- Relationship



Relationship between Average Daily Temperature and Average Daily Sunshine

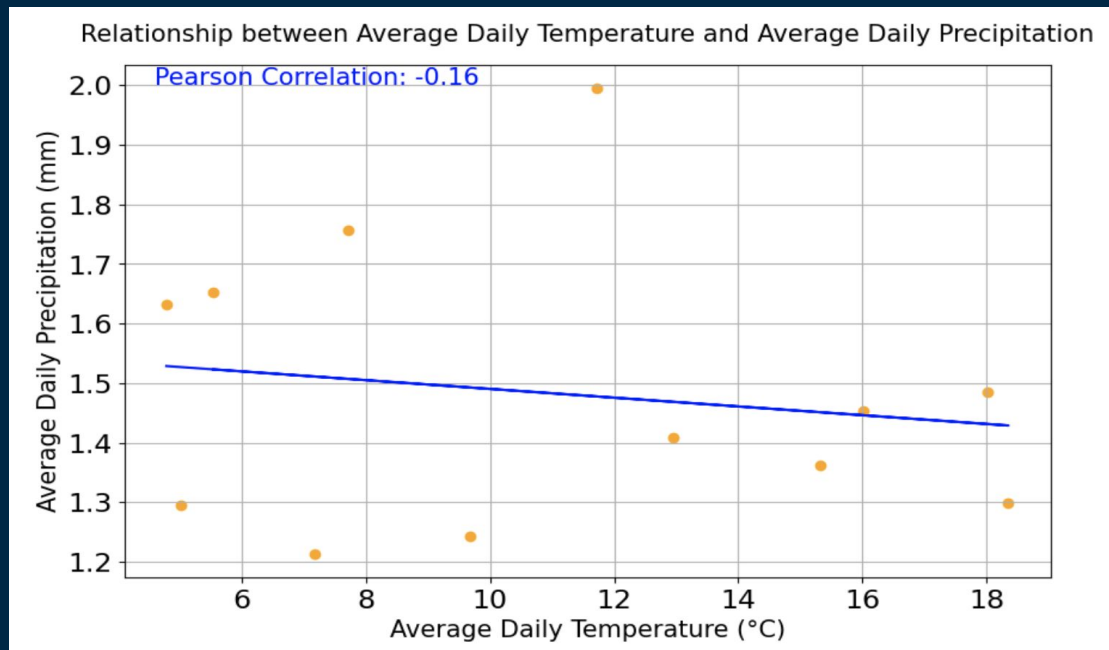Pearson Correlation: 0.88
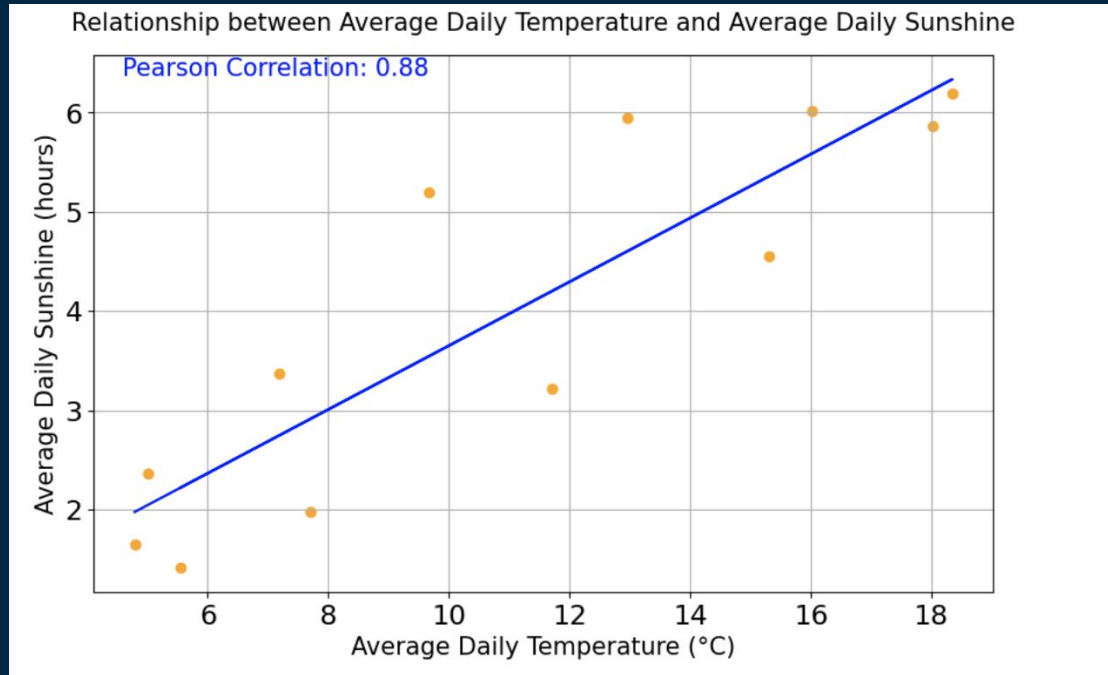
PearsonRResult(statistic=0.8788019645498905, pvalue=0.00016746416363140452)

# Results for Q2- Relationship



PearsonRResult(statistic=-0.15845045739932134, pvalue=0.6228251707001026)

# Takeaway

1. Overall Trend of Sunshine & Precipitation
   a. Over this 42-year period, both sunshine and precipitation exhibited variability, yet **neither** displayed **significant upward** or **downward trends.**
2. Visit Time
   a. **July** is a good time with **more sunshine** and **fewer rains.**
      i. **July** has **the most sunshine** (6.19 hours).
      ii. The temperature is strongly positively correlated with sunshine duration.
      iii. On a daily average basis, **October** experiences **the highest rainfall** (2 mm), while **March** has the **least** (1.21 mm). July has a precipitation around 1.25mm.

Thank you