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**Estimand / Question:** How does time of day affect the number of bike rentals in Seoul, South Korea?

**Description of Data:** The dataset contains the count of public bicycles rented per hour in the Seoul Bike Sharing System along with corresponding weather data and holiday information. Some columns, like whether the day is functional, will be omitted because they don’t really serve a purpose. The dataset consists of 8760 entries spanning from January 2017 - December 2018 with no missing values.

**Data Columns:**

Date : year-month-day

Rented Bike count - Count of bikes rented at each hour

Hour - Hour of the day

Temperature-Temperature in Celsius

Humidity - %

Windspeed - m/s

Visibility - 10m

Dew point temperature - Celsius

Solar radiation - MJ/m2

Rainfall - mm

Snowfall - cm

Seasons - Winter, Spring, Summer, Autumn

Holiday - Holiday/No holiday

Functional Day - NoFunc(Non Functional Hours), Fun(Functional hours)

Source: <https://archive.ics.uci.edu/dataset/560/seoul+bike+sharing+demand>

**DAG / Causal Model:**

**Proposed Statistical Model**

Since we are dealing with the number of occurrences of bike rentals over fixed intervals during the day, we chose a Poisson distribution. The Poisson distribution is best suited in this case because we could be dealing with a large maximum number of bike rides in an hour, and the number will always be positive.

Direct Causal Effect

Total Causal Effect