Optimal Meteorological Conditions at Selected NASCAR Facilities

Carolyn Kiss

Academic Advisors Dr. Randell Barry and Dr. Christopher Herbster

Which month has the highest probability of optimal fan comfort at a particular NASCAR facility?

Definition of Optimal Fan Comfort:

- Apparent Temperature ≥ 65°F and ≤ 80°F
  \( AT = T + 0.33 \times e - 0.70 \times ws - 4.0 \)
- Wind Speed < 17 knots
  Based on the Beaufort Wind Scale
- No Measurable Precipitation

Procedure:

- Time frame between 7 AM and Midnight LST
- Use Excel to filter data and determine:
  - The number of hours that meet all optimal conditions
  - The number of total hours during the observation time
  - A percentage of which all optimal conditions are met

Results

Daytona International Speedway

Left: Number of all observations and number of observations that meet all optimal conditions at each hour
Below: Percentage of optimal conditions met for each month

\[ \text{Daytona International Speedway} \]

\[ \text{Based on the Beaufort Wind Scale} \]

\[ \text{AT = T} + 0.33 \times e - 0.70 \times ws - 4.0 \]

\[ \text{Optimum Conditions} \]

\[ \text{Count evening} \]

\[ \text{Count afternoon} \]

\[ \text{Optimum Conditions} \]

\[ \text{Count evening} \]

\[ \text{Count afternoon} \]

~38 years of data

(10 stations, ~340,000 observations per station)