Statistics Resources with Non-Traditional Sports Data

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What is SCORE?

The SCORE Network is an NSF funded organization that…

- Develops and distributes Sports Content for Outreach, Research, and Education (SCORE)
- Seeks to implement an educational framework based on real-world problems and applications
- Increases student likelihood to be engaged in the classroom

The St. Lawrence chapter of SCORE focuses on using non-traditional sports data to develop introductory- level statistics resources for educators.

Olympic Medals: Data Cleaning and Summarization

Data Info: Olympics info about both medals and athletes

Module Goals:

- Understand what is considered tidy data
- Use R to clean and format data correctly for future use

Eric Seltzer (Data Science and Finance)

Giant Slalom: Paired Data and Data Tidying

Data Info: Alpine ski data scraped from FIS website containing information on two runs of women's GS at Mont Tremblant

Module Goals:

- Use paired data to perform a test for difference in means, find a confidence interval, obtain summary statistics, and interpret findings
- Clean an untidy data set using tidyr and dplyr

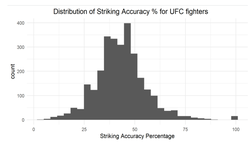
Emilia Agostinelli (Statistics)

UFC: The Normal Distribution

Data Info: Defense and striking statistics for each fighter that competed in the UFC from 1993 to 2021.

Module Goals:

- Using the Normal distribution in a real-world application
- Identifying proportions, quartiles and ranges
- Using StatKey given a mean and standard deviation



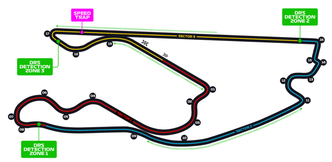
Brendan Karadenes (Data Science)

Formula 1: Histograms and Outliers

Data Info: Lap times for each driver (and constructor) that participated in the 2023 F1 Miami Grand Prix

Module Goals:

- Understand histograms and outliers and their relevance in statistical analysis.
- Highlight use of summary statistics in outlier detection



Norah Kuduk (Computer Science and Statistics)

Nordic Ski: Randomized Block and dplyr

Data Info: Data scraped from the FIS website about a women's 10k race in Norway. The dataset has 61 skiers with 20 variables at 1.3k, 4.3k, 7.5k, and 10k intervals

Module Goals:

- Use randomized block design to assess difference in mean speed based on skier and distance interval
- Use dplyr to calculate the speed of each skier at each distance

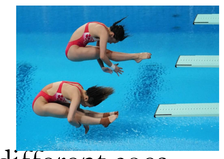
Abigail Winston Smith (Data Science and History)

Diving: Difference in Means Hypothesis Tests

Data Info: Diving results from the 2022 FINA Junior World Championships from women divers aged 16 – 18.

Module Goals:

- Conduct difference in means hypothesis tests to test if there is a significant difference in mean points scored between divers of different ages
- Practice conducting hypothesis tests in R or by hand.



Emma Deering (Data Science and Geology)

League of Legends: Chi-Squared Distribution

Data Info: Analyzing synergistic relationships between ADC and Support champions in League of Legends.

Module Goals:

- Utilize Chi-Squared analysis to explore relationships between popular champions
- Understand use of Chi-Squared to identify statistical significance

George Charalambous (Data Science)

SCORE Data Repository

Datasets in the SCORE repository come from a variety of sports, and consist of…

- The motivation behind using the data
- A description of the dataset (size and variables)
- A variety of questions that could be answered using the data

Each of the datasets highlighted in the previous sections has been published in the publicly available SCORE Data Repository