STAT 447C Project Proposal

Basic information

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Project theme: time series models (and possibly non-parametric models)

Project repo: GitHub

Dataset options

1. Historical daily weather data from Vancouver Harbour CS, obtained from Canadian Centre for Climate Services (hourly data is also available)

Some selected variables:

Date	Min Temp	Mean Temp	Max Temp	Total Precipitation	Rain	Snow
1981-07-15	12.7	17.8	22.8	0.0	0.0	0
2000-07-07	13.8	18.7	23.6	0.0	NA	NA
1966-05-05	8.9	NA	NA	NA	NA	0
2002-01-18	2.6	3.2	3.7	10.2	NA	NA
1942-11-01	NA	NA	NA	4.3	4.3	0
1985-11-18	-1.7	0.2	2.1	2.0	0.0	2

2. Daily vehicle, bicycle, and pedestrian count data for the Burrard Bridge, obtained from the City of Vancouver (the data can be viewed as a table on the website)

Analysis approaches

These datasets could be analyzed using regression models, possibly with hierarchical structure and/or the use of sinusoidal functions as predictors. Climate data will likely show repeated seasonal variations in temperature and precipitation totals which could be modeled using combinations of sinusoids. Traffic count data will likely show weekly patterns which could be modeled either with sinusoids or with separate parameters for each day of the week. Non-parametric techniques such as Gaussian basis functions could also be applied to either dataset. Exploratory data analysis including visualizations will also be used to inform the choice of model.