CIV8760 - Lab 04

Agenda

$\rightarrow$ Return on PA1

$\rightarrow$ Presentation PA3

$\rightarrow$ Team work

Return on PA1

Share authorization :)

Data set

Travel times on road segments

Travel time collection road segments

Analysis of a road segment

1 - Select ONE road section/segment;

2 - Must have data in every year;

3 - Choose a section longer than 1000 meters;

4 - This segment must go in both directions, for example:

> *"Sherbrooke N06: Curatteau to SaintDonat"*
> and
> *"Sherbrooke S07: SaintDonat to Curatteau"*.

Analysis of a road segment

Analysis of travel times and speeds

- Descriptive statistics AND figures:

    $\rightarrow$ Avoid repeating information;

- For EACH direction and PER year;

- Quantity of information, what difference does it make?

- Suggest a method for filtering/cleaning (based on what, what value(s), etc.).

Analysis of a road segment

Analysis of travel times and speeds

- Why this theoretical law to describe speeds?

- What was the initial hypothesis (H_0)?

- What is the result of your test?

Don't forget to show me the procedure! Not just the explanation and the result. Also comment on the result and the limits of such a test!

Analysis of a road segment

Analysis of observations and travel times as a function of time

- Time distribution:

    - Make sure you have a column for the month, one for the year and one for the hour.

    - For the time, an assumption must be made, which one?

    - Once the columns are present : GROUP BY

    - Travel time $\rightarrow$ Which statistic should be used? Why or why not? Justify!

Study of factors associated with travel conditions

- Use speed and travel time data from 2016

- Choose five road segments in 5 different neighborhoods
    $\rightarrow$ Describe neighborhoods to identify potential differences
        between the results you'll get from your segments

- Develop a variable to describe with the model (Y) and explain how
you get it

- Add/create features (weather, segment and displacement)

Study factors associated with travel conditions

- Analyze your variables (check relationships and correlation between them) and generate models

- Make a final model choice and describe it. Justify your choice! (Coefficient, significance, residuals, etc.)

- No model is perfect! Not everything has to be significant. Describe the impacts and limitations of your model.

Study factors associated with travel conditions

Weather files: here

→ Select a date in the chosen year and a given month and export. All the data for that month for every hour of every day will be included.

→ Export for all 12 months of the year and you'll have all the weather data for the chosen year.

→ Then simply unite and you can attach the data you want to the speed file.

Study of factors associated with travel conditions

- On Excel → "Data" → "Analysis utility" → "Linear regression" or "Correlation analysis" → "Linear regression" or "Correlation analysis" → "Linear regression" or "Correlation analysis

- Regression example (Python)

Teamwork

GET TO WORK!