COMP30760 Assignment 2

Deadline: Thursday 10th December 2020

Summary:

Increasingly, large-scale mobility datasets are being made publicly available for research purposes. This type of data describes the aggregated movement of people across a region or an entire country over time. Mobility data can naturally be represented using a time series, where each day is a different observation.

Recently Google made mobility data available[1] to help researchers to understand the effects of COVID-19 and associated government policies on public behaviour. This data charts movement patterns across different location categories (e.g. work, retail etc).

The objective of this assignment is construct different time series representations for a number of countries based on the supplied mobility data, and analyse and compare the resulting series.

Tasks:

Select and download three mobility dataset CSV files for three countries of your choice from the page below. Use these datasets to complete Task 1 and Task 2.

http://mlg.ucd.ie/modules/COMP30760/mobility.html

Task 1: Within-country analysis **(60%)**

For each of the three selected countries separately:

a) Construct a set of time series that represent the mobility patterns for the different location categories for the country (e.g. workplaces, residential, transit stations etc).

b) Characterise and visualise each of these time series. You may choose to apply resampling and/or smoothing in order to provide a clearer picture of the trends in the series.

c) Compare and contrast how the series for the different location categories have changed over time for the country. To what extent are these series correlated with one another?

d) Suggest explanations for any differences that you have observed between the time series for the location categories.

[1] See https://www.google.com/covid19/mobility

Task 2: Between-country analysis **(40%)**

Taking the three selected countries together:

a) Construct a set of time series that represent the overall mobility patterns for the three countries.

b) Characterise and visualise each of these time series. You may choose to apply resampling and/or smoothing in order to provide a clearer picture of the trends in the series.

c) Compare and contrast how the overall time series for the three countries have changed over time. To what extent are these series correlated with one another?

d) Suggest explanations for any differences that you have observed between the time series for the countries.

Guidelines:

- The assignment should be completed individually. Any evidence of plagiarism will result in a 0 grade.
- Submit your assignment via the COMP30760 Brightspace page. Your submission should be in the form of a single ZIP file which contains your Jupyter notebook. This notebook should be a IPYNB file, not a HTML file.
- In your notebook please clearly state your full name, student number, and the countries which you have chosen for your assignment.
- Hard deadline: Submit by end of 10th December 2020
    - 1-5 days late: 10% deduction from overall mark
    - 6-10 days late: 20% deduction from overall mark
    - Assignments will not be accepted after 10 days without extenuating circumstances.