Modeling Traffic Accidents in COVID-19 Times

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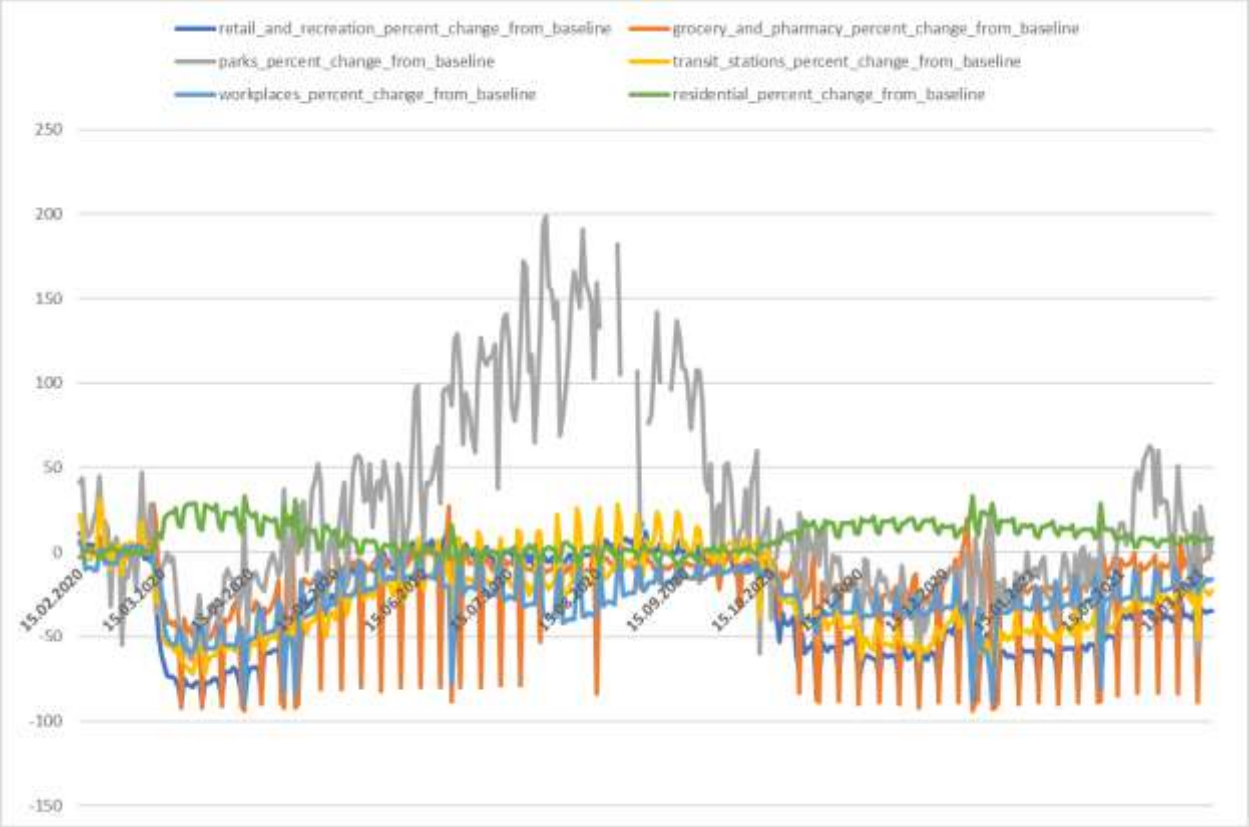
The COVID-19 pandemic has significantly changed our lives. Various restrictions and changes of our habits are changing our mobility patterns and there is plenty of public data to support that. Among those are data provided by Google (https://www.google.com/covid19/mobility/) and Apple (https://covid19.apple.com/mobility).

Those datasets are analysing mobility trends in a different manner, but both are comparing changes in mobility in regard to the levels of early months of 2020. In such a way, obvious seasonal effects are ignored (people usually spend more time outside in the summer than in winter), but those datasets still provide valuable information.



Picture 1: Mobility trends according to Google Mobility

There is also plenty of healthcare-based information about COVID-19 available. The main site for tracking these in Slovenia is the COVID-19 tracker (https://covid-19.sledilnik.org/en/stats), which provides data about testing, confirmed cases, prediction models, all historical restrictions and much more.

One of the aspects of mobility changes is the reduced time we spend traveling. We spend less time in our cars and our total distance travelled has reduced significantly. It is assumed that due to reduced

traffic and reduced time we spend in cars, the number of traffic accidents will also decrease. This thesis is supported and has been confirmed by various sources around the world.

Some data about traffic accidents in Slovenia is available online by Slovenian police (https://www.avp-rs.si/wp-content/uploads/2021/03/analiza-in-pregled-stanja-varnosti-cestnega-prometa-v-letu-2020.pdf). As data is only available in local language, table of translations for various attributes are provided as an attachment to this challenge (`translated_pn2019.xlsx`).

Using all data and any other publicly available data sources prepare a model that will predict the number of traffic accidents in the future. Your analysis should account for the fact that changes might be different regarding various accident attributes (Accident classification, Type of accident, Traffic, Vehicle type, Blood alcohol levels, etc.). When building the model, assume that the population has not changed significantly compared to last year (ignore vaccination or resistance getting over disease), and use restrictions in place on 31. 3. 2021.

The solution to this challenge should be a model that predicts the number of traffic accidents in the future. In addition to the model, you are required to provide predictions for one year and a description of methods used to create your model.