Covid-19 Tracking and Lifestyle Trends Data Mart: Conceptual Modelling

Questions to be Answered

1. What were the trends, in terms of the number of cases, over time? (Our aim is obtaining profiles of individuals, by age and gender, who tested positive for Covid-19; distinguishing between travel-related and other cases (if known); tracking outbreaks; exploring the types and availability of testing facilities; etc.)
2. Was there any interplay between special events (e.g., Thanksgiving or Canada Day) and the number of cases? (It should be noted that there is typically a delay between increased social interactions and an upsurge in positive Covid-19 tests.)
3. How did lockdown measures, such as stay at home orders or school closures, affect the number of cases? Did specific government announcements or restrictions lead to downward trends in the number of cases? (The effectiveness of specific government measures on the outbreak is of importance here. It should again be noted that there is typically a delay between restrictions and a decreased in positive Covid-19 tests.)
4. What were the trends in behaviours, in terms of the locations people visited and the duration they stayed? Did the weather have any impact on these trends? For instance, studies suggested that many Canadians started bicycling, walking, or visiting parks during the summer. (This question speaks to the mapping of potential changes in citizens' lifestyles. Note that mobility data are available online from e.g., the google mobility repository and that weather data may be obtained from Environment and Climate Change Canada.)

TODO :

- Declare the Grain (Todo once the fact table is fully completed)
- Add the attribute description for the fact table facts and the dimensional attributes (e.g., Age: integer, minimum = 0 and maximum = 130, Sample value = 35).

Fact Table

Grain

Per day

Fact Table Attributes

Foreign Keys

- Date ID (FK)
- Weather Forecast ID (FK)
- Location ID (FK)
- Mobility Trend ID (FK)
- Covid Info ID (FK)
- Individual Profile (FK)

Facts/Measures

- Number of Postive Cases
- Number Recovered
- Number of Tests
- Restriction Zones (Protect, Restrict, Lockdown)
- total case outcomes (resolutions and deaths)

Dimensions

- Weather Dimension
  - Weather Forecast
  - Location
  - Date(Day)
- Date Dimension
  - Date Stamp
  - Day of the week
  - Month
  - Holiday (y/n)
- Location Dimension
  - Median Income
  - Population Density
  - Available Testing Locations
  - Public Health Units
- Individual Profile
  - Age Group
  - Gender
  - Case Acquisition
- Mobility Trend
  - retail_and_recreation_percent_change_from_baseline
  - grocery_and_pharmacy_percent_change_from_baseline
  - parks_percent_change_from_baseline
  - transit_stations_percent_change_from_baseline
  - workplaces_percent_change_from_baseline
  - residential_percent_change_from_baseline
- Covid Information
  - reporting date
  - individuals fully vaccinated
  - current hospitalizations
  - tests under investigation
  - test outcomes
  - current tests under investigation
  - current patients in Intensive Care Units (ICUs)
  - current patients in Intensive Care Units (ICUs) on ventilators
  - change in number of cases from previous day by Public Health Unit (PHU)

DataSets Used

- Status of COVID-19
  - reporting date
  - daily tests completed
  - total tests completed
  - test outcomes
  - total case outcomes (resolutions and deaths)
  - current tests under investigation
  - current hospitalizations
  - current patients in Intensive Care Units (ICUs)
  - current patients in Intensive Care Units (ICUs) on ventilators
  - change in number of cases from previous day by Public Health Unit (PHU)

- COVID-19 testing locations
  - Location name
  - Location operator
  - Physical address
  - Phone number
  - Website
  - Public Health Unit (PHU)
  - Latitude
  - Longitude
  - Physical address Phone number Hours of operation Age restrictions Appointment requested Drive through availability Walk in availability Temporary closure Active centre (indefinite closures
- Confirmed positive cases of COVID-19 in Ontario

approximation of onset date age group patient gender case acquisition information patient outcome reporting Public Health Unit (PHU) postal code, website, longitude, and latitude of PHU

- COVID-19 Vaccine Data in Ontario

daily doses administered total doses administered individuals fully vaccinated total doses given to fully vaccinated individuals

- Community Mobility Reports

retail_and_recreation_percent_change_from_baseline
grocery_and_pharmacy_percent_change_from_baseline
parks_percent_change_from_baseline
transit_stations_percent_change_from_baseline
workplaces_percent_change_from_baseline residential_percent_change_from_baseline

- Restrictions
- [Daily Weather Data Ottawa](https://climate.weather.gc.ca/climate_data/daily_data_e.html?hlyRange=%7C&dlyRange=1889-11-01%7C2021-01-07&mlyRange=1889-01-01%7C2006-12-01&StationID=4333&Prov=ON&urlExtension=_e.html&searchType=stnName&optLimit=yearRange&StartYear=1840&EndYear=2021&selRowPerPage=25&Line=7&searchMethod=contains&Month=12&Day=31&txtStationName=Ottawa&timeframe=2&Year=2020
- Daily Weather Data Toronto