CSI4142 Fundamentals of Data Science

Project Phase 1: Conceptual Design – Dimensional Model

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(See Last Page for Conceptual Model Figure)

Fact Table

Grain

Covid Outbreak Status(Number of Positive COVID Cases, Number of Recovered COVID Cases, Number of Recovered COVID Cases, Number of Tests, Number of Hospitalization, Number of Case Outcomes, Number of Full Vaccinations) per Location, per Day, per Individual Profile Classification

Fact Table Attributes

Foreign Keys

- Date ID (FK)
- Weather Forecast ID (FK)
- Location ID (FK)
- Mobility Trend ID (FK)
- COVID Outbreak Status ID (FK)
- Individual Profile (FK)

Facts/Measures

- Number of Postive Cases
- Number Recovered
- Number of Tests
- Total Hospitalization
- Total case outcomes (resolutions and deaths)
- Number of full Vaccinations
- Net Mobility Trend Change

Dimensions

- Weather Dimension
  - Weather Forecast
  - Location
  - Date(Day)
- Date Dimension
  - Date Stamp (date, minimum = 0001-01-01 and maximum = 9999-12-31, Sample value = 2020-10-01)
  - Day of the week
  - Holiday (y/n)
- Location Dimension
  - Available Testing Locations
  - Public Health Units
  - Restriction Status
- 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 Outbreak Status
  - 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 (Link)

  - 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 (Link)

  - 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 (Link)

  - 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 (Link)

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

- Community Mobility Reports (Link)

- Restrictions (Link)

  - Reporting PHU
  - Status PHU
  - Start Date
  - End Date
  - PHU url

- Daily Weather Data Ottawa (Link)

  - TIME
  - Temp °C
  - Dew Point °C
  - Rel Hum %
  - Precip. Amount mm
  - Wind Dir (10's deg)
  - Wind Spd km/h
  - Visibility km
  - Stn Press (kPa)
  - Hmdx
  - Wind Chill
  - Weather

- Daily Weather Data Toronto (Link)

  - TIME
  - Temp °C
  - Dew Point °C
  - Rel Hum %
  - Precip. Amount mm
  - Wind Dir (10's deg)
  - Wind Spd km/h
  - Visibility km
  - Stn Press (kPa)
  - Hmdx
  - Wind Chill
  - Weather

Date

Date Stamp

Day of Week

Holiday (y/n)

Date ID (PK)

Location

Restriction Status

Available Testing Locations

Public Health Units

Location ID (PK)

Weather

Weather Forecast

location

Date (day)

Weather Forecast ID (PK)

COVID Trends Fact Table

Date ID (FK)

Weather Forecast ID (FK)

Location ID (FK)

Mobility ID (FK)

COVID Info ID (FK)

Individual Profile (FK)

Number of Positive Cases

Number Recovered

Number of Tests

Net Mobility Change

Total Case Outcomes

Number of full Vaccinations

Mobility Trend

Mobility ID (PK)

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

Individual Profile

Profile ID (PK)

Age Group

Gender

Case Aquisition

COVID-19 Information

Daily doses administered

Individuals fully vaccinated

Total doses given to fully vaccinated individuals

Current hospitalizations

Current Tests Under investigation

Test outcomes

COVID Info ID (PK)

Reporting Date

Current Patients in ICUs

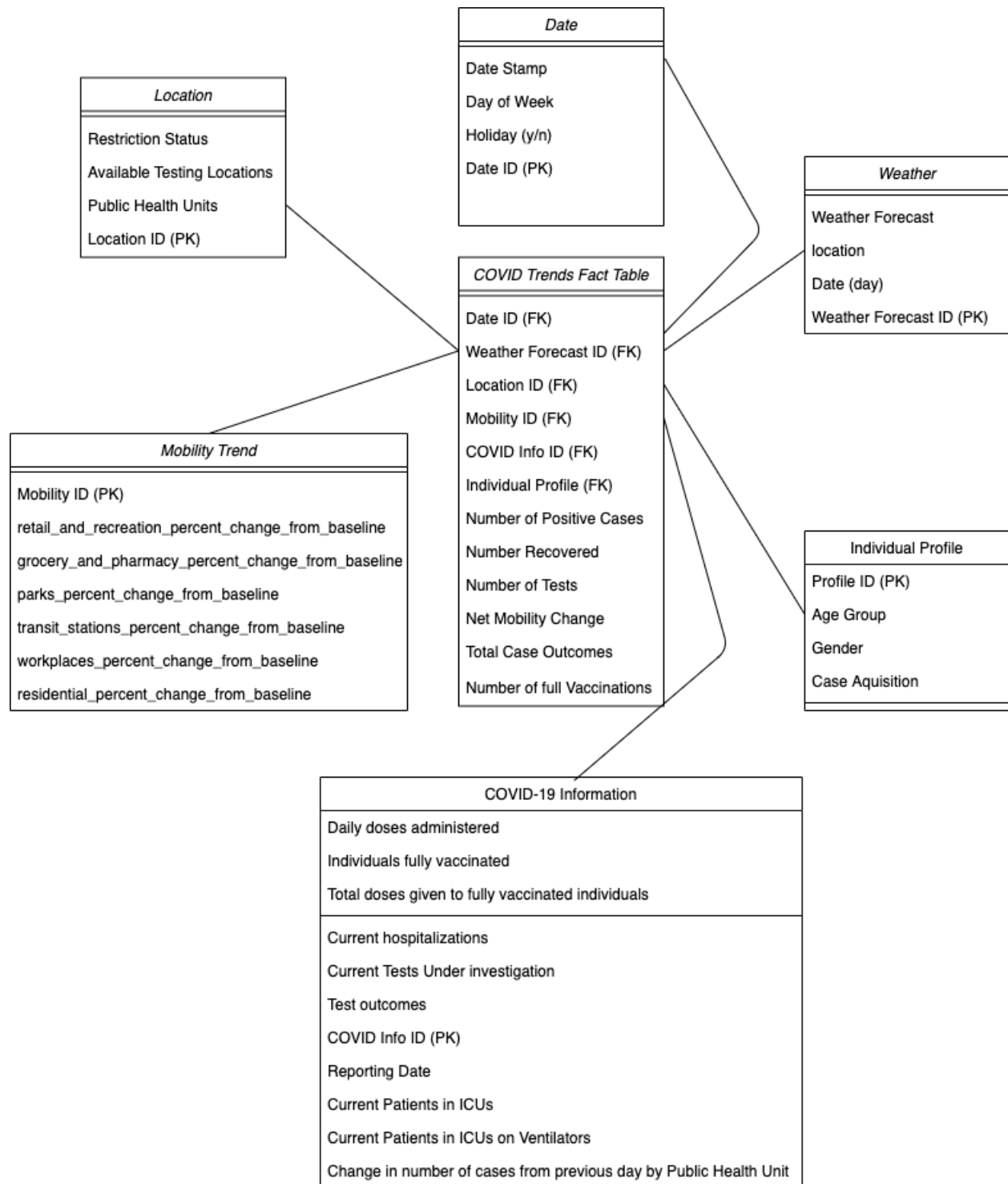Current Patients in ICUs on Ventilators

Change in number of cases from previous day by Public Health Unit

Figure 1: Conceptual Model