Trends in COVID-19 Data

A study of the correlation between UMD COVID-19 World Survey Data API indicators in Schengen Area countries

By: Manar Al-badarneh, Theodore Gaidis, Brendan Goodhue, Gabriel Sestieri

Problem Statement

1. For countries in the Schengen Area (the countries in Europe that have open borders with one another), does a spike in COVID-19 related indicators in one country correlate to a delayed spike in indicators in their neighboring countries?
2. Do the people's trust in government, trust in healthcare officials, and trust in the WHO, have an effect on the number of people willing to take a vaccine?
3. How do social behaviors (contact with someone outside your household) correlate to mask wearing habits, COVID-19 cases in the community, and financial worries?

Schengen Area

- Schengen Area consists of 26 countries, but the API only contained the following 19:
  - Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and Switzerland.

Key
- Schengen Area (EU)
- Schengen Area (non-EU)
- Set to implement later
- EU states outside Schengen
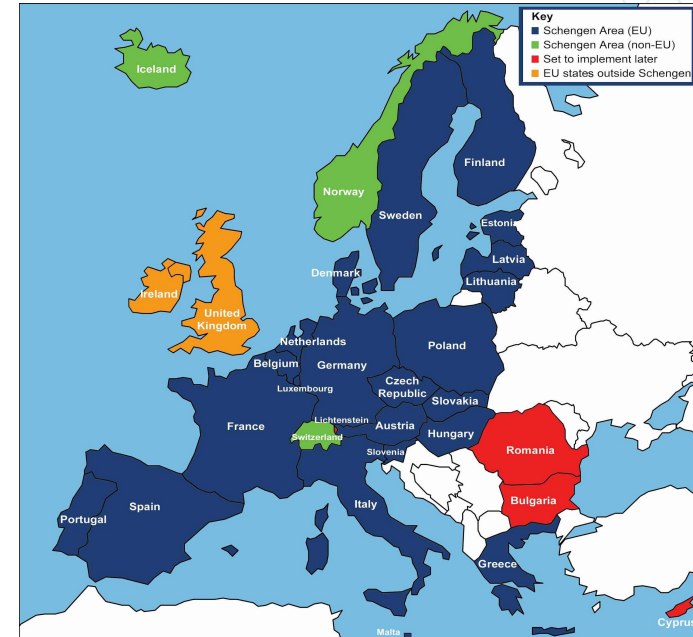
Indicators

Indicator	Description
covid	Respondents that have reported COVID-like illness (CLI). COVID-like illness: fever, along with cough, shortness of breath, or difficulty breathing.
flu	Respondents that have reported Influenza-like illness (ILI). Influenza-like illness: fever, along with cough or sore throat.
mask	Respondents who wore a mask all the time or most of the time when in public.
contact	Respondents that have reported having had direct contact (longer than 1 minute) with people not staying with them.
finance	Respondents who are very worried or somewhat worried about themselves and their household's finances.
anosmia	Respondents reporting anosmia (smell blindness).
vaccine_acpt	Respondents definitely or probably choosing to get vaccinated if a COVID-19 vaccine was offered to them.
covid_vaccine	Respondents vaccinated with a COVID-19 vaccine.
trust_fam	Respondents more likely to get vaccinated if recommended by friends and family.
trust_healthcare	Respondents more likely to get vaccinated if recommended by local healthcare workers.
trust_who	Respondents more likely to get vaccinated if recommended by the WHO.
trust_govt	Respondents more likely to get vaccinated if recommended by government health officials.
trust_politicians	Respondents more likely to get vaccinated if recommended by politicians.
twodoses	Respondents having received 2 doses of a COVID-19 vaccine.
concerned_sideeffects	Respondents being very or moderately concerned about COVID-19 vaccine side effects.
hesitant_sideeffects	Respondents very or moderately concerned about COVID-19 vaccine side effects, conditional on being hesitant (would NOT choose to get vaccinated if offered a vaccine).
modified_acceptance	Respondents that are vaccine accepting where people who are vaccinated are included as accepting.
access_wash	Respondents with access to soap and water for washing their hands.
wash_hands_24h_3to6	Respondents who washed their hands 3 to 6 times in the last 24 hours.
wash_hands_24h_7orMore	Respondents who washed their hands 7+ times in the last 24 hours.
cmty_covid	Respondents who personally know anyone in their local community who is sick with a fever and either a cough or difficulty breathing.

Motivation

- Wanting to make an impact in the fight against COVID
- Ease impact and burden of disease that COVID-19 has left
- Help the general public, Public Health officials & world leaders
- Find trends in data that may be beneficial in the event of another global health crisis

Data Acquisition

- UMD's COVID-19 World Survey Data API
  - Facebook survey data on 21 indicators
    - https://covidmap.umd.edu/api.html
  - Wrote program to generate links necessary to collect all data from API
    - Collected smoothed data to account for lasting symptoms
- Wrote programs to manipulate the datasets and graph them
- Created an aggregate dataset to represent the Schengen Area Countries as a whole

Data Analysis

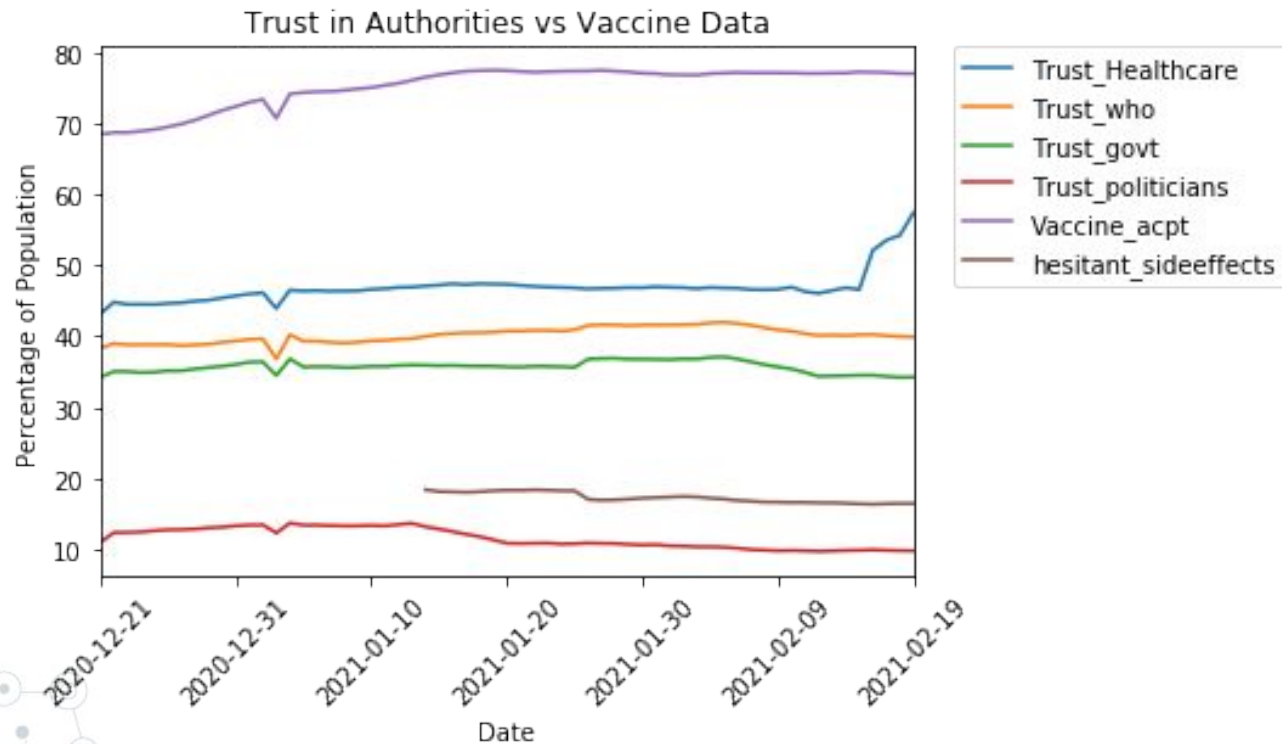# Graphs for Q1

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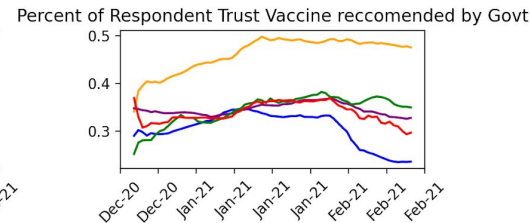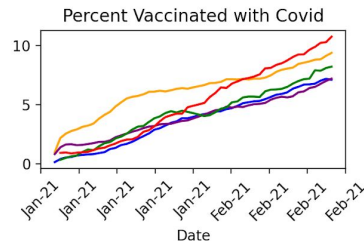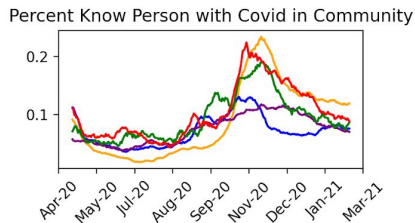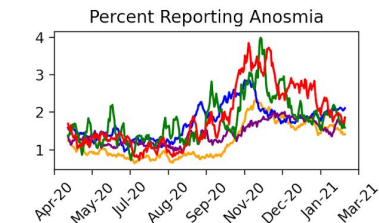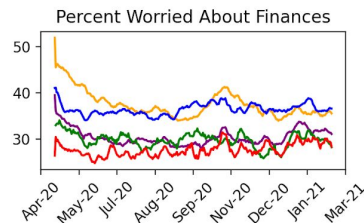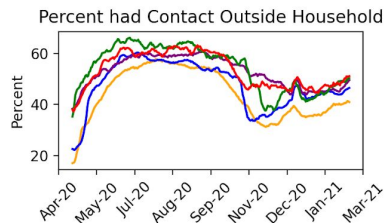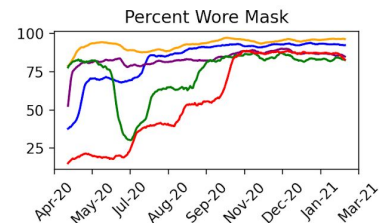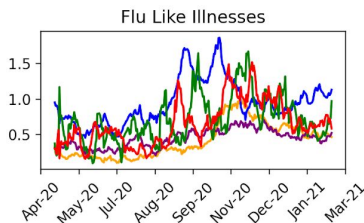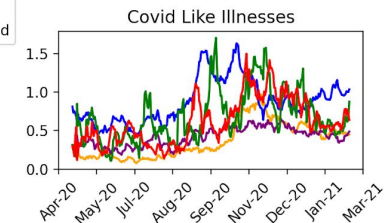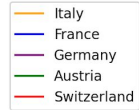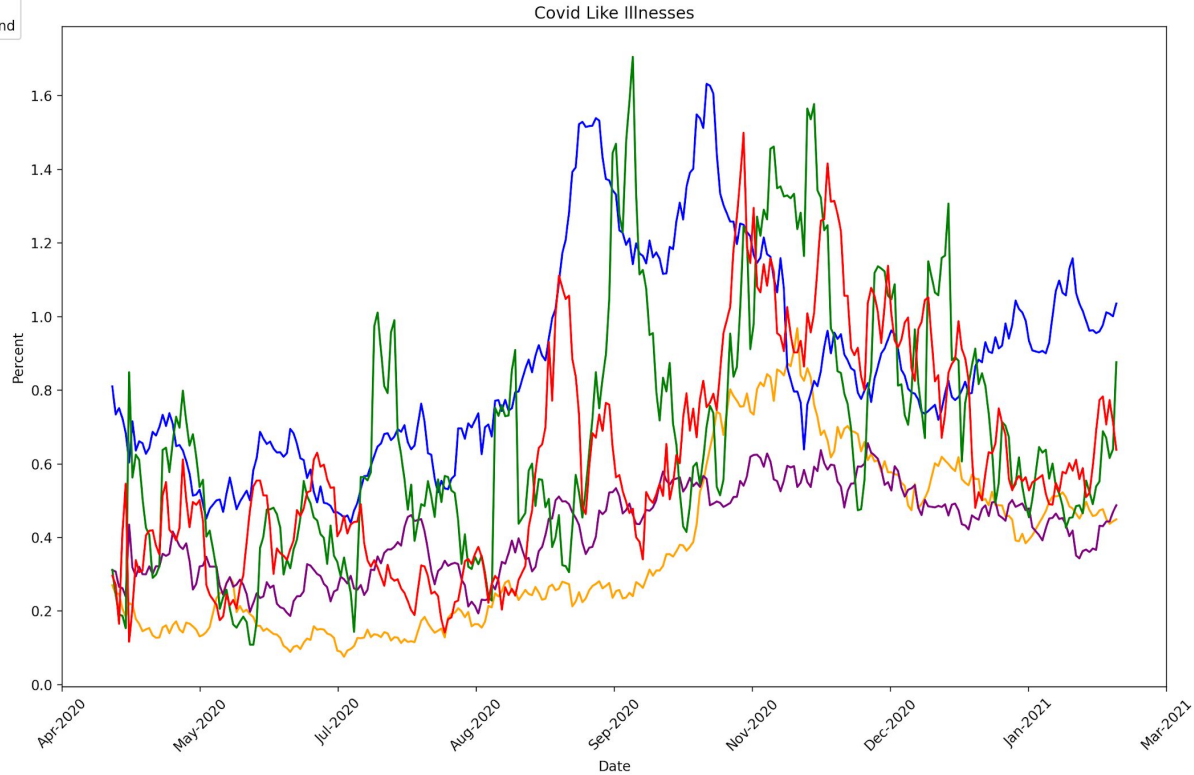
Insights from Analysis Q1

- Overall similar trends
- Switzerland and France slow to inforce mask wearing
- Italy was ahead in covid vaccine administration and second dose
- France currently is higher in CLI trends
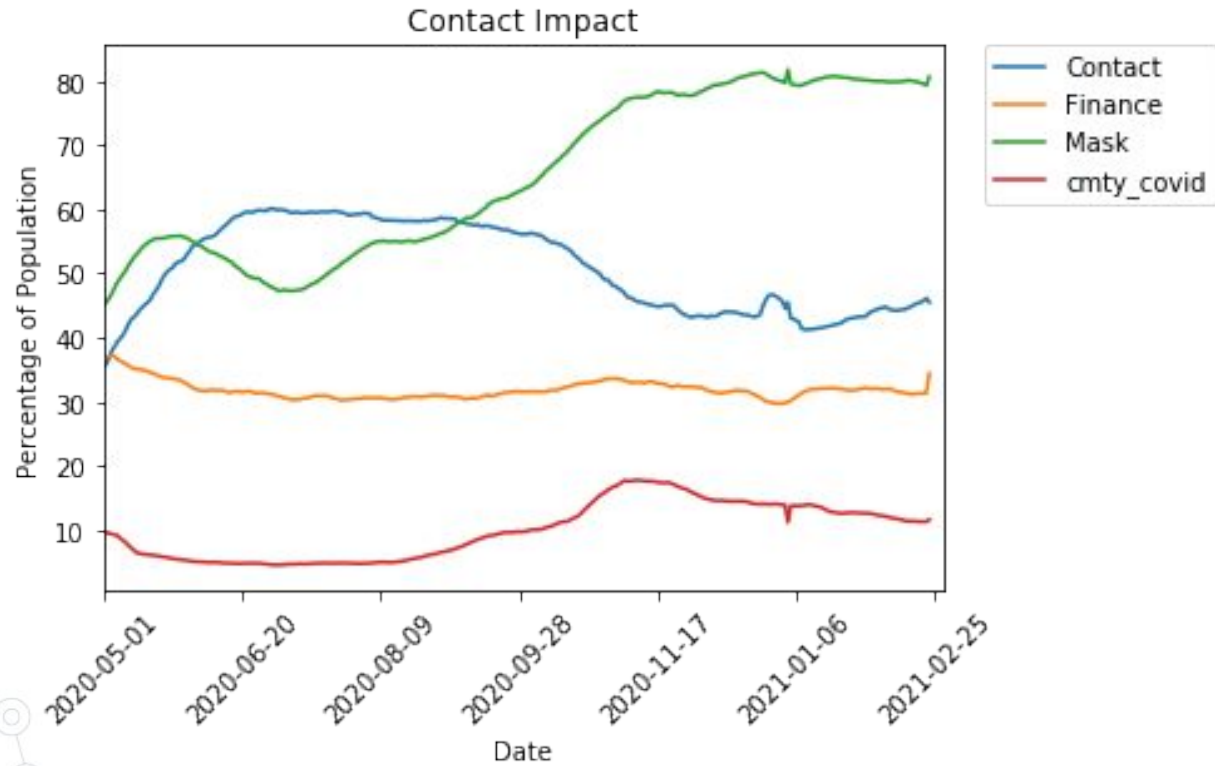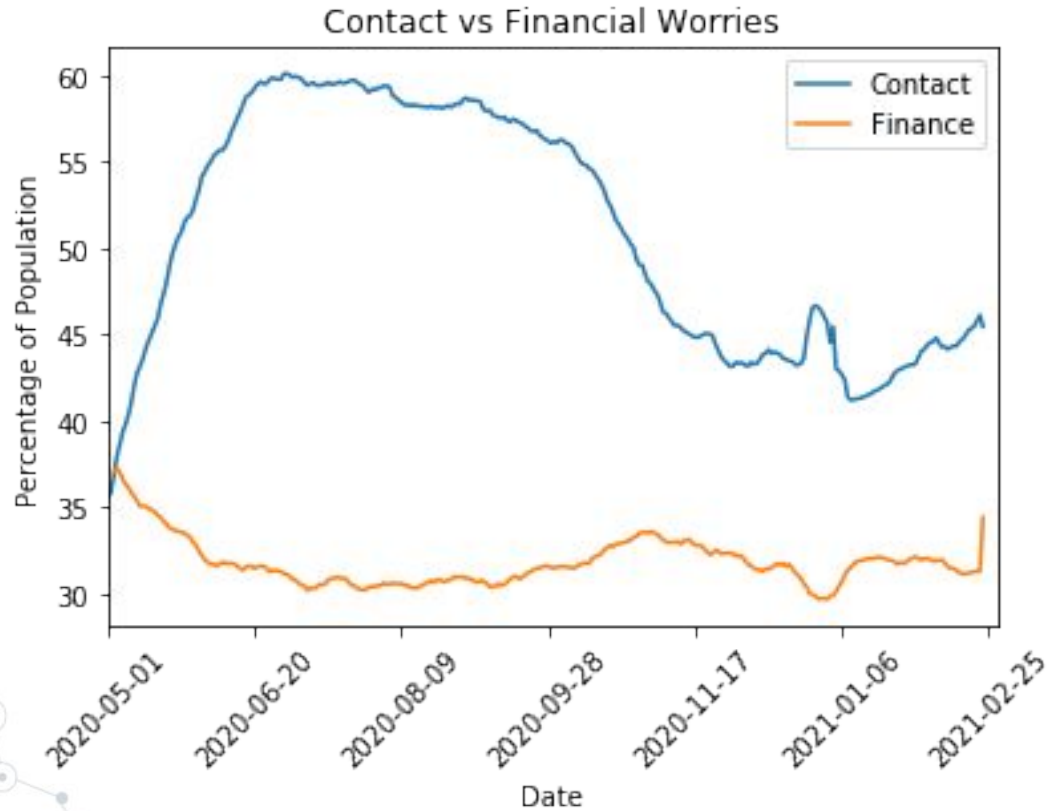
Graphs for Q2

Insights from Analysis Q2

- Residents of the Schengen Area place a low level of trust in their politicians, and a significantly higher level of trust in healthcare professionals.
- Dip in trust levels in early January
  - Uncertain as to why, possible data inconsistencies

Graphs for Q3

Contact Impact

Graphs for Q3

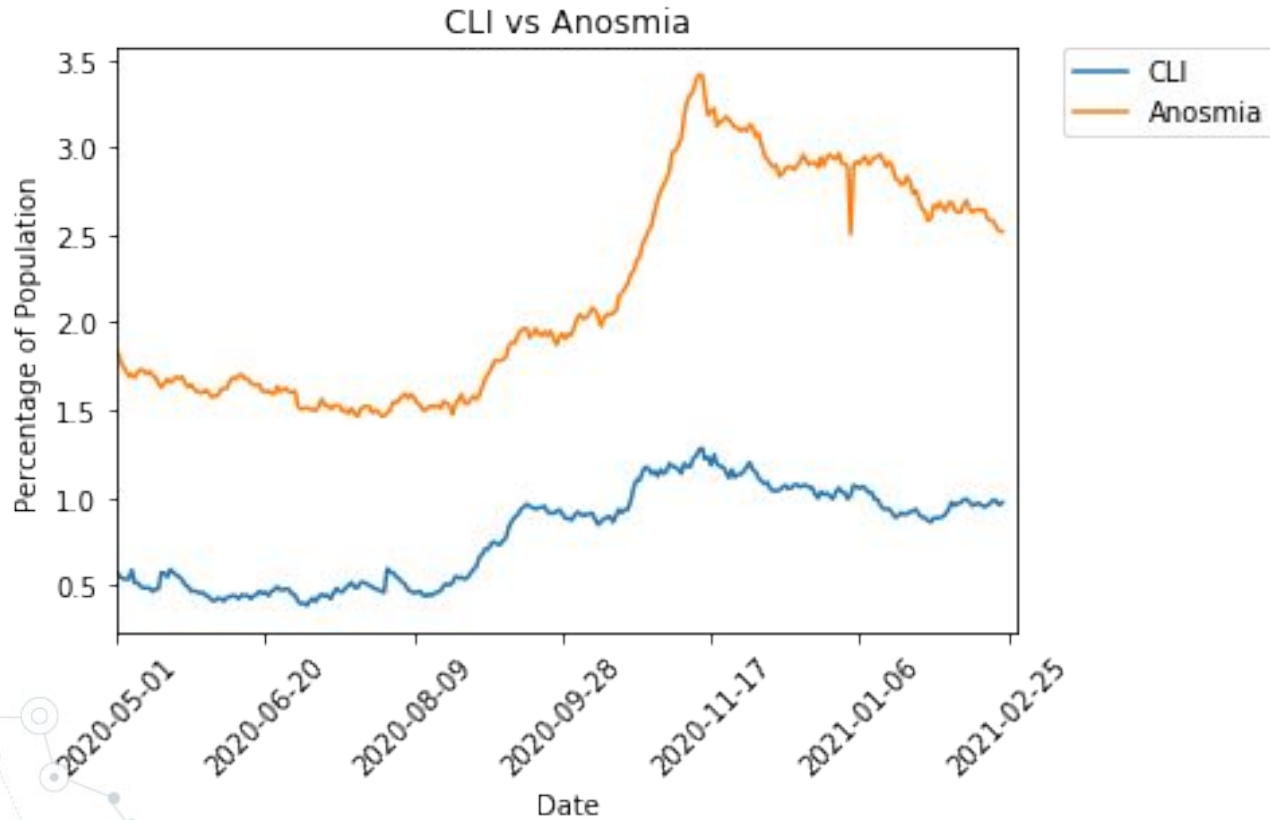Contact vs Financial Worries

Insights from Analysis Q3

- Mask usage decreased over the summer months while contact with people outside the house increased
- No notable increase in COVID-19 cases in the community over summer months despite more risky behavior
- People tend to worry about finance less when they are more social

Additional Insights

Additional Insights Continued

CLI vs Anosmia vs Community COVID rates
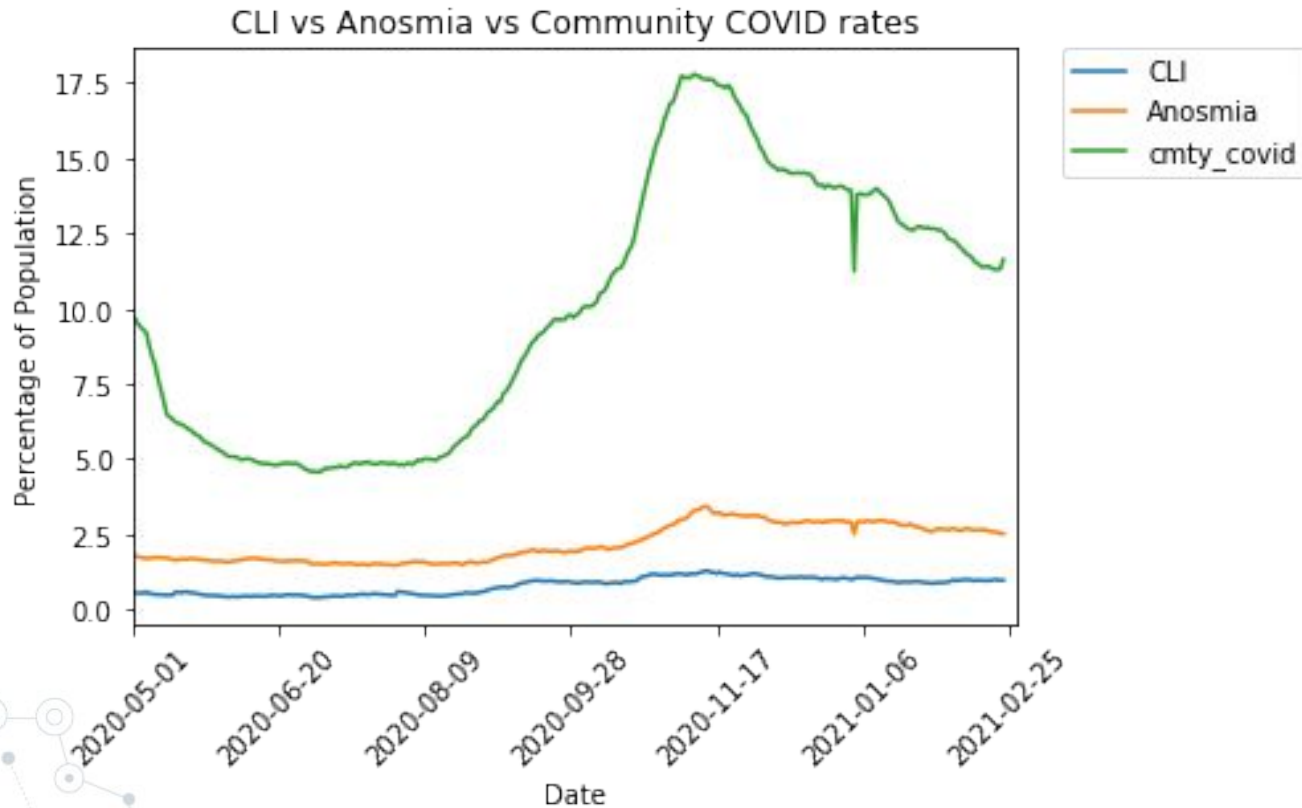
Impact of Analysis

- Leaving Schengen Area borders open may contribute to COVID-19 spikes in neighboring countries due to travel
    - Causation vs Correlation
- People have less worries when the weather is warm and they have more social interaction
- Self reported rates of CLI is lower than those reporting Anosmia, and people reporting COVID in community is higher than both those indicators

Conclusion

- What could we do in the future to improve this analysis?
- What data would be useful to collect?
- How can COVID-19 data be further used to make a difference?

Questions?