

Introduction to the problem:

The COVID19 pandemic, a global health crisis, necessitated large-scale behavior change and impacted the psychological well-being of individuals, particularly the children, women and marginalised groups. This study, using [COVIDiSTRESS](#) global survey and YouGov dataset, examines the psychological well-being and behavioral practices such as individual's stress and resilience, confidence in government handling and health systems response, vaccine uptake and attitudes/behaviors, engagement with COVID19 appropriate practices and behaviors such as wearing masks, social distancing etc. during the initial months of COVID19 in India across states. This study, using [Healthcare professionals](#) data, examines the effect of COVID19 work engagement on mental health of healthcare professionals in India.

The objective is to uncover the behavioral patterns and how this may be aligned with the recommendations of public health experts using social and behavioral science approaches for the future epidemics/pandemics. This question is of policy importance to determine psychological support and mechanisms such as information channels etc. required to provide necessary support and guidance in navigating future public health crises.

Introduction to the datasets:

I have selected [Imperial College London YouGov Covid 19 Behaviour Tracker Data](#) to conduct the behavioral analysis on Indian populations response to the COVID19 pandemic. This dataset is the basis for [COVID19 Public Monitor](#) to provide the public health officials with data and insights to help them understand and respond better to the pandemic. The data covers survey responses from 16,145 individuals (male-8467, female-7678) across 36 states and union territories between 01st April 2020 to 20th September 2020 (for 16 weeks).

The attributes of the dataset (16145x334)¹ are as follows:

- Demographic variables such as gender, age, household size, no. of children in household
- Socio-economic variables such as employment status, occupation (i14_health), work from home and commute for work (work5, work8, work6, WAH), child education (child_education)
- Survey response (individual and household level) related to COVID19 susceptibility, infection and clinical/household treatment
 - Symptoms (i5_health, m8) and source of infection (i7_health)
 - COVID19 Testing and contact tracing (ct1)
 - Co-morbidity such as respiratory, cardiac etc. (d1_health)
- Survey response (individual and household level) related to adherence to COVID19 appropriate behavior and vaccination
 - Self-isolation upon testing positive (i6_health)
 - Social distancing and staying at home/away from large/medium/small gatherings (i1_health, i12_health)

¹ Metadata, <https://github.com/YouGov-Data/covid-19-tracker/blob/master/codebook.xlsx>

- Uptake/Usage/type of mask, hand wash, surface disinfection etc. (i12_health, m3, m4, m8, m14)
- Factors leading vaccine delays (v3, v4) and vaccine resistance (vac2, vac5, vac12)
- Information channels (av1)
- Survey response (individual) related to mental health
 - Feelings towards contracting COVID19 (WCRV_4) and general feelings (PHQ4, m7), positive feelings (w9)
 - Actions taken towards mental health issues due to COVID19 (w4)
 - Beliefs/Apprehensions regarding COVID19 (r1, Vent)
 - Sense of belonging to local community (w3)
- Survey response related to confidence in Government response (WCRex1) and in healthcare professionals/health systems (i11_health)

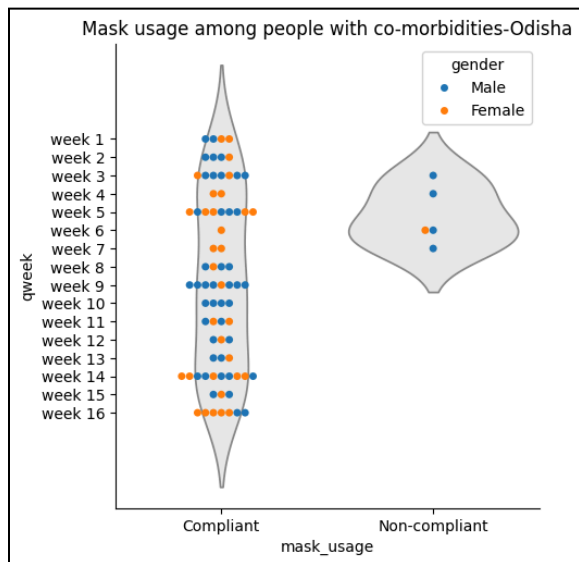
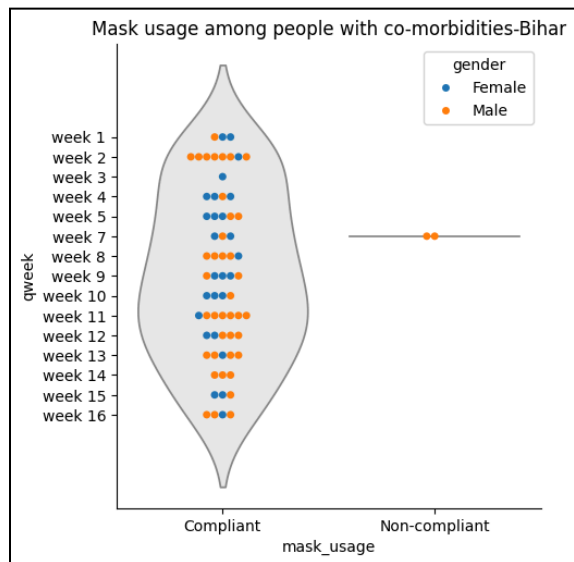
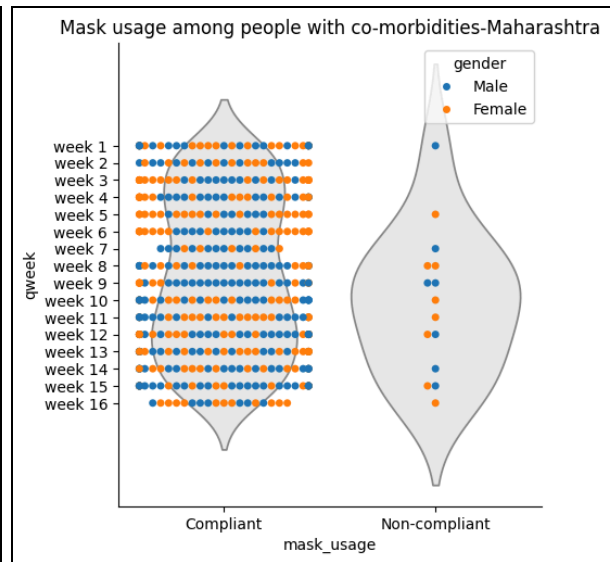
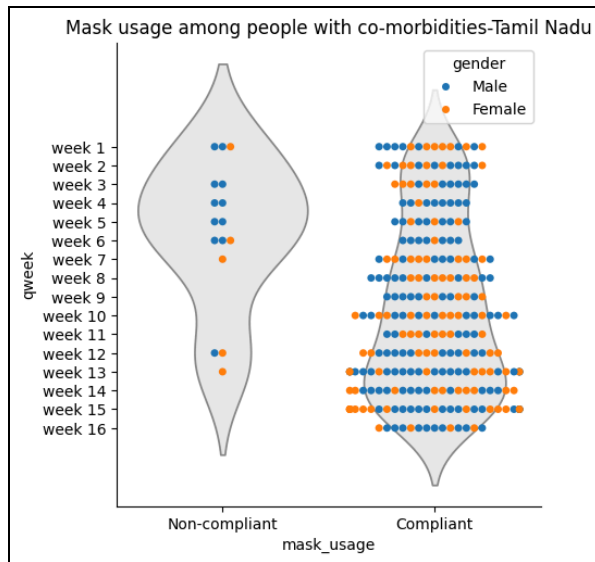
Exploration, analysis and visualisation

I'm interested in exploring the following questions:

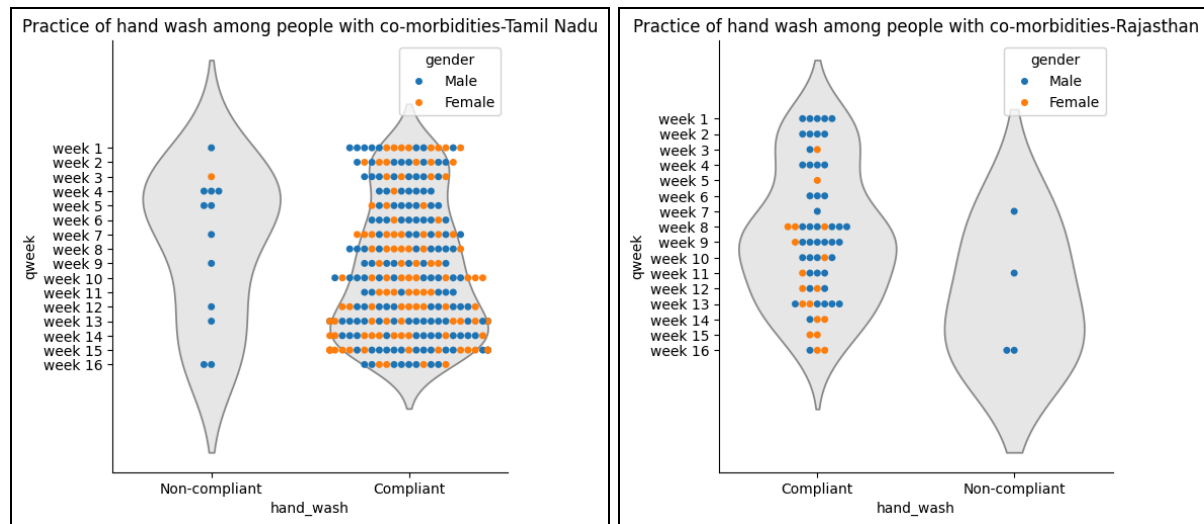
1. [COVID19 appropriate behavior among people with co-morbidities] Did people with co-morbidities and senior citizens know sufficiently the associated risk to adopt COVID19 appropriate behavior (such as mask usage, hand wash, social distancing)? Did this awareness differ in rich states such as Maharashtra, Tamilnadu etc. compared to poor states such as Bihar, Uttar Pradesh? How did this vary with time as information regarding risk became relatively known? What timely insights would have been helpful for public health officials such as information dissemination ?
2. [Trust in science/government] Did the confidence in scientific practices and the government's response vary across the states and with time?

COVID19 appropriate behavior among people with co-morbidities:

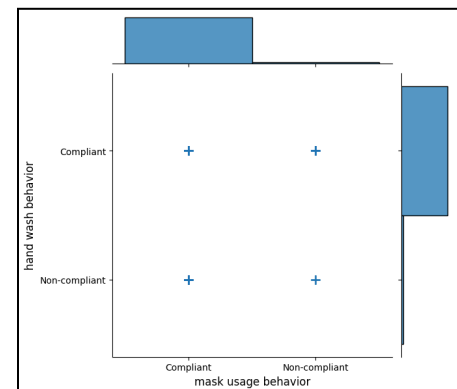
There are 2843 surveyed individuals (17.6%) with one or more co-morbidities (such as respiratory, heart, cancer, blood pressure). Nearly 1/4th (26%) of surveyed people with co-morbidities are in the southern states (TN, Kerala, K'ka, AP, Telangana). The mask usage and uptake does seem to grow more compliant with time. There doesn't seem to be a gender difference among the mask uptake in rich states, however this seems apparent in states like Bihar, Odisha. It's interesting to note the non-compliance of mask usage in the state of Bihar, Odisha stops after a certain number of weeks, the reason probably being the use of coercive measures by government officials. The non-compliance behavior persists in the state of Tamil Nadu, Maharashtra.



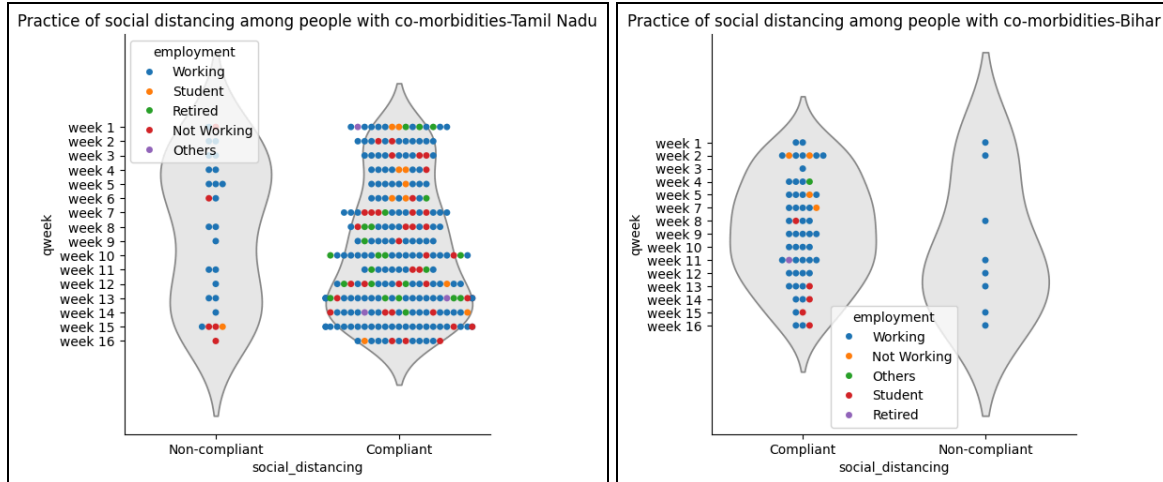
Similarly, the practice of hand washing seems compliant in Tamil Nadu, with males particularly registering resistance to the practice. It does seem to increase with time as people begin to adopt these behaviors. In the state of Rajasthan, the same pattern is prevalent among people with co-morbidities.



The behavioral practices such as mask usage, hand wash are strongly correlated among people with co-morbidities. Nearly 93% of people with co-morbidities are compliant with both behaviors. This implies that public health officials should have targeted behavioral interventions aimed at ensuring adherence to simple practices. Interestingly, the majority of survey respondents among people with co-morbidities didn't mention specific issues such as difficulty in breathing/communicating, discomfort around ears, steaming up etc. during the mask usage. 90% of the people with co-morbidities stated that by wearing masks, they were setting a good example to others. This implies, the behavioral interventions like signalling virtue, role-modelling may have been utilised to promote the uptake of masks.

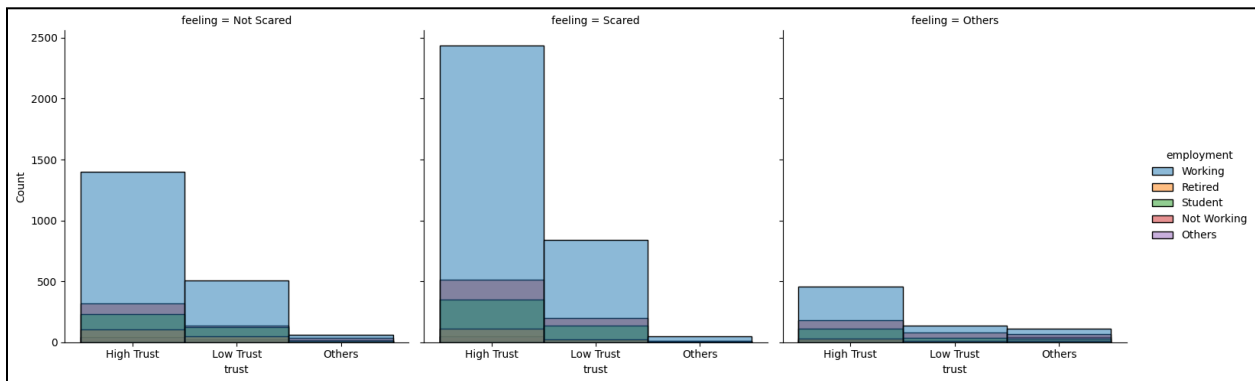


The practice of social distancing has been analysed in states like Tamil Nadu and Bihar and the working population doesn't seem to comply with social distancing norms. It seems the people are commuting for work and probably, not able to follow social distancing norms.



Population Mental Health:

Though people are scared of COVID19 due to unknown implications, there is high trust on government's handling of COVID19 issues. Working people and students show high trust compared to non-working and retired individuals.



Conclusions and future work

The population level feeling may be diagnosed with regard to inadequacy and lack of support to cope with emotions/apprehensions regarding COVID19. The demographic and socio-economic variation may be explored to identify suitable public policy interventions. Since the Indian dataset is during the first COVID19 wave (Apr '20-Sep'20), the vaccine uptake/resistance behavior data may not be useful as there was significant uncertainty with regard to timely availability of COVID19 vaccine. Hence, the vaccine uptake behavior data needs to be explored for identifying pockets of vaccine resistance behavior, particularly among marginalised groups. The correlation between COVID19 behavioral variables may be explored to build a linear regression model to predict the adherence to COVID19 practices and norms.