COVID-19 Tracking App Proposal

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The Problem

As of this writing, 126 cases of novel coronavirus (COVID-19) have been confirmed in India. This number may, however, mask the reality of many times more cases in our cities that remain undetected. Most of these cases stem directly from people who had histories of travel abroad, or who were in direct contact with people who had travelled abroad; however these people in turn could have interacted with dozens of others each in the days between the onset of their symptoms and their isolation.

Community transmission of COVID-19 has been acknowledged by the Ministry of Health as a major threat to India, given the high population density of cities that have reported COVID-19 cases, such as Mumbai, Delhi, Jaipur, and Bangalore. In order to contain community transmission, it is extremely important for India to acquire a better idea of the scale of that transmission, and the number of positive COVID-19 cases that remain undetected. Random sampling and testing of people with flu-like symptoms is one important way to do this, and the Indian government has already begun doing so in places, but the data remains woefully inadequate for predicting COVID-19 hotspots.

The Solution

We propose to design and realise a mobile application ('app') on major app stores, for free, to help gather data and map out community transmission of COVID-19 in India cities.

The app will contain a simple, easy-to-use interface in English, Hindi, and other major regional languages. The operation is simple:

- Every morning, the app sends the user a reminder to log their data.
- The user opens the app, and selects various symptoms (for instance 'cough', 'sneezing', 'shortness of breath', 'fever') corresponding to their health.
- The user also fills in other relevant data, including age, any recent travel abroad, and medical history.

The data is collated at the servers and can then be cross-referenced with other information, such as historic flu rates in areas, and the known symptoms of COVID-19, to paint a useful picture of the spread of COVID-19. For instance:

- A higher-than-normal incidence of flu-like symptoms, concentrated in an area, may be an indicator of COVID-19 spread.
- A disproportionate incidence of flu-like symptoms among the elderly and the immunocompromised may be an indicator of COVID-19 proliferation.
- High incidence of flu-like symptoms in areas known to have been visited by COVID-19 positive cases may be an indicator of undetected transmission.

This data can then be used to create a heatmap of likely sites of COVID-19 community transmission, which would be invaluable for containment, random sampling and testing, and precautionary measures to halt the further spread of the virus.

<u>The Request</u>

We are prepared to design, build, and release the app for no compensation, and the app itself will be entirely free and nonprofit. However, it would only work if a critical mass of people downloaded the app and entered their symptoms and information regularly in possibly affected areas. We would therefore request that the Government of India, through the Ministry of Health:

- Support the app and do not place obstacles in the way of its release.
- Release information about the app and urge everybody with a smartphone to download the app and regularly log their symptoms, through social media, government information releases, and whatever other means may be effective.

In return for this, the anonymized data would be shared with the government of India, hospitals, research labs, and any other bodies who request access for the purpose of understanding and combating the spread of COVID-19 in India.

The app could be built and deployed in a matter of days once we have such approval. The matter is urgent, and we hope it will merit consideration quickly; lives are at stake, and the sooner we understand the spread of COVID-19 in India, the sooner it can be contained.

<u>Who We Are</u>

Soham Sankaran is a graduate of Yale, and spent two years as a PhD. student at Cornell in Computer Science. He is also the founder of Pashi, an industrial software start-up funded by the YCombinator accelerator and currently in its second round of funding. He has worked on the intersections of technology and epidemiology with the renowned sociologist Nicholas Christakis.

Sahaj Sankaran studies history and social science at Yale, focusing on social connections and patterns in modern India. He has worked with social historians and sociologists across the Ivy League on research concerning social trends in modern Indian cities.