Researchers analyzing Zoe COVID tracking app urge more people to use it

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Researchers from King's College London and The School of Biomedical Engineering & Imaging Sciences have joined forces to help analyze the data acquired through the COVID19 Symptoms Tracker App produced by Zoe, a start-up in healthcare data science.

The new COVID-19 tracker App from Zoe gathers reported symptoms by users along with personal health and demographic information to

make predictions if symptomatic users who have not been tested for [coronavirus](link) would be likely to test positive.

Head of School Professor Sebastien Ourselin said researchers from the School have been supporting the big data analytics program to provide robust prediction models at individual and population levels.

"Our team has used advanced statistical tools and machine learning capability to provide predictions of severity, required treatment, healthcare burden and future resources requirement and collateral effects," he said.

"We've also disseminated daily maps of standardized rates to the government and the NHS in England, Scotland and Wales. This has highlighted potential hotspots two weeks before hospital admissions increase."

"Through the Zoe app, we are gathering a wide amount of data that is key to better understand the disease and how to better manage it."

Interestingly, throughout their analyses, researchers have found that respondents are disproportionately young, female and of a higher socio-economic status than the general population. One of the researchers involved in this project, Mr Thomas Varsavsky, Ph.D. student at King's College London and University College London, said a more widespread and diverse use of the app would be beneficial to improve results accuracy.

"We want older people and those from all parts of society to use the app to paint a better picture of what's going on in the UK," Mr Varsavsky said.

"We hope to also grow the userbase in the U.S. so that we can test our

hypotheses in two different geographies."

Within 48 hours of the launch of the social media campaign, the app has had more than 1 million users and there are currently more than 2.4 million users with over 17 million daily reports.

User numbers are increasing at 25,000 per day. Around 600,000 people have reported most days and one million alternate days since their enrollment.

Anonymised data is provided daily to King's College London analysis team as well as to HDR-UK/SAIL/BREATHE server hub in Swansea who create maps and distribute it to central and devolved governments daily.

The NHS-X have also asked for a direct feed. The researchers say that personal data remains safe as the data are stored securely according to GDPR rules on a ZOE server with appropriate security.

How does the app work?

When signing up app users record basic health data, risk factors location postcode and give consent for data to be shared with NHS and used for non-commercial research purposes.

Users are required to answer a series of questions about their health every day. Questions change according to whether you feel healthy or unhealthy.

Researchers have developed the ability to make a prediction from the symptoms of people that have not been tested, to try to see who, among the users, is likely to be positive.

They trained a logistic regression model on the subset of people who reported a negative or positive COVID-19 test to predict which symptoms are likely to indicate whether a person has COVID.

They extrapolate that to the UK population, per region according to the number of people that were responding, divided by age range as well, and then extrapolate that to the UK population so as to have a global estimate of what were likely to be COVID symptomatic cases.

Research Fellow at The School of Biomedical Engineering & Imaging Sciences Dr. Carole Sudre said it's a lot of understanding what the data is, how biased it is, if it's representative or not of the UK population.

"We also have to consider what information is provided and what is missing, what people may say and not say," she said.

In the future, they could be able to predict who is likely to be hospitalized or is at a higher risk than anybody else as there are some specific patterns seen in the presentation of symptoms that can inform researchers.

They can represent that at the scale of the country to make a useful prediction.

Study lead Professor Tim Spector said: "The more of the public that also use the app, the better the real-time data we will have to combat the outbreak in this country."

Provided by King's College London

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