SUTRA Model

Why in News

Many scientists are blaming the **government-backed model, called SUTRA (Susceptible, Undetected, Tested (positive), and Removed Approach)**, for having a larger role in creating the perception that a [second wave of Covid](#) **was unlikely in India.**

- The **second wave** of Covid-19 has **claimed thousands of lives since April 2021.**

Key Points

- **About:**
    - Scientists from the IITs of Kanpur and Hyderabad have applied the SUTRA Model **to predict the [Covid](#) graph in India.**
        - It first came into public attention when one of its expert members announced in October 2020 that India was **"past its peak".**
    - The model **uses three main parameters** to predict the course of the pandemic which are :
        - **Beta:** Also called **contact rate**, which measures **how many people an infected person infects per day.** It is **related to the** [R0 value](#), which is the number of people an infected person spreads the virus to over the course of their infection.
        - **Reach:** It is a **measure of the exposure level** of the population to the pandemic.
        - **Epsilon:** It is the **ratio of detected and undetected cases.**
- **Problems with SUTRA:**
    - **Variability:**
        - There have been many instances of the SUTRA forecasts being far out of bounds of the actual caseload and the **predictions of the SUTRA model are too variable to guide government policy.**
    - **Too Many Parameters:**
        - The SUTRA model was problematic as it **relied on too many parameters, and recalibrated those parameters whenever its predictions "broke down".**
        - The more parameters you have, the more you are in danger of 'overfitting'. You can fit any curve over a short time window with 3 or 4 parameters.
    - **Ignores Behaviour of the Virus:**
        - The SUTRA model's **omission of the importance of the behaviour of the virus**; the fact that some people were bigger transmitters of the virus than others (say a barber or a receptionist more than someone who worked from home); **a lack of accounting for social or geographic heterogeneity and not stratifying the population by age** as it didn't account for contacts between different age groups also undermined its validity.

- Ignores the Reason For Change:

    - New **variants** showed up in the SUTRA model as an increase in value of parameters called **'beta'** (that estimated contact rate).
    - As far as the model is concerned, it is observing changes in parameter values. **It does not care about what is the reason behind the change.**

Source:TH

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