

Title: Post-vaccination study to find causes of non-adherence and low participation of people in a particular region

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Incubator:

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Objective:

Post vaccination study to find

- a) the causes for low participation of people in a particular center/region,
- b) the causes of not taking second dose of vaccination.

Type of Intervention:

Post Vaccination studies.

Details of intervention:

(Should cover details about the product/ technology, methodology, milestones, timeline, Line-item wise financial along with tentative cost of transportation, annual maintenance etc.)

Please see at the end of this proposal for details.

Do you have State Government connection, or will you require support from CSR -

I will require support from CSR.

States that you can provide technology to -

Please answer following questions depending on the intervention you choose and if applicable to you:

Can you do the Community engagement yourselves or will need help by CSR-

If you have a Market ready technology available,

- How do you plan to deploy: NOT APPLICABLE
- Number of unites available: NOT APPLICABLE

Do u wish to partner with an NGO? If yes, name the NGO and provide details on how u will partner? (item wise costing should include cost to NGO for their scope of work)

NOT APPLICABLE

**** For this type intervention, please send a separate 1-2 pager proposal that will include abstract of the planned/proposed work, methodology, tentative budget, and estimated timeline.**

Title: Post-vaccination study to find causes of non-adherence and low participation of people in a particular region

Abstract:

Indian Government has started the COVID-19 vaccination drive on 16 January 2021. Given India's huge population, it will take more than a year to vaccinate a considerable number of people. The COVID-19 vaccine is one unique vaccine of its kind, which will be eventually given to people of all ages in two separate dosages in a gap of 21 or 28 days, depending on the type of vaccine. **There will be people who will not show up at the vaccination center to get the first dose, and some people will not take the second dose of the vaccine for some reasons after taking the first dose. For a successful COVID-19 vaccination drive and to reduce the wastage of vaccines, we need to ensure higher participation of common people in all regions of India and adherence to the second dose of the vaccine.** In this project, we will determine the causes of non-adherence and low participation of people in a particular region. Finding from the project can address non-adherence and low participation, thus saving a huge amount of public money.

Methodology:

There can be many reasons for low participation in taking the vaccine in a specific region. Similar reasons or some other reasons can drive the non-adherence to the second dose of the vaccine. For example, if the vaccination center is far away, people may feel reluctant to get the vaccine. Similarly, some people may not take the second dose of the vaccine because of mild adverse events (AE) or for migration after the vaccine's first dose.

Aim 1: Find the causes for **Low Participation** to take the first-dosage of the vaccine.

Aim 2: Find the causes for **Non-Adherence** to take the second dose of vaccination.

Figure 1 shows the flow chart of the proposed methodology. We will use the data from the COWIN platform database (R&D, IIT Guwahati are in talks with the Ministry of Health to get the access). The data will be cleaned and filtered for the center/block/district or state level, depending on the requirement. A variable selection technique will be used for each region to find the best set of predictor variables. We expect different regions will have a different set of predictor variables. Once the variable selection is made, we deploy the statistical models like logistic regression and other classification techniques to see the predictor variables' effect on the primary outcome. Using statistical hypothesis, we will decide significant variables. A receiver operating characteristic (ROC) curve will be used to do sensitivity analysis.

Shiny-APP: A shiny web-app (using the open-source R-statistical software) will be developed that will automate the entire process. For example, it can be deployed

centrally in a shiny-server, and any government health officer can use it to check aims 1 and 2 by choosing a specific region. Therefore, it will help the government to take appropriate measures depending on the report of low participation and issues of non-adherence in a specific region.

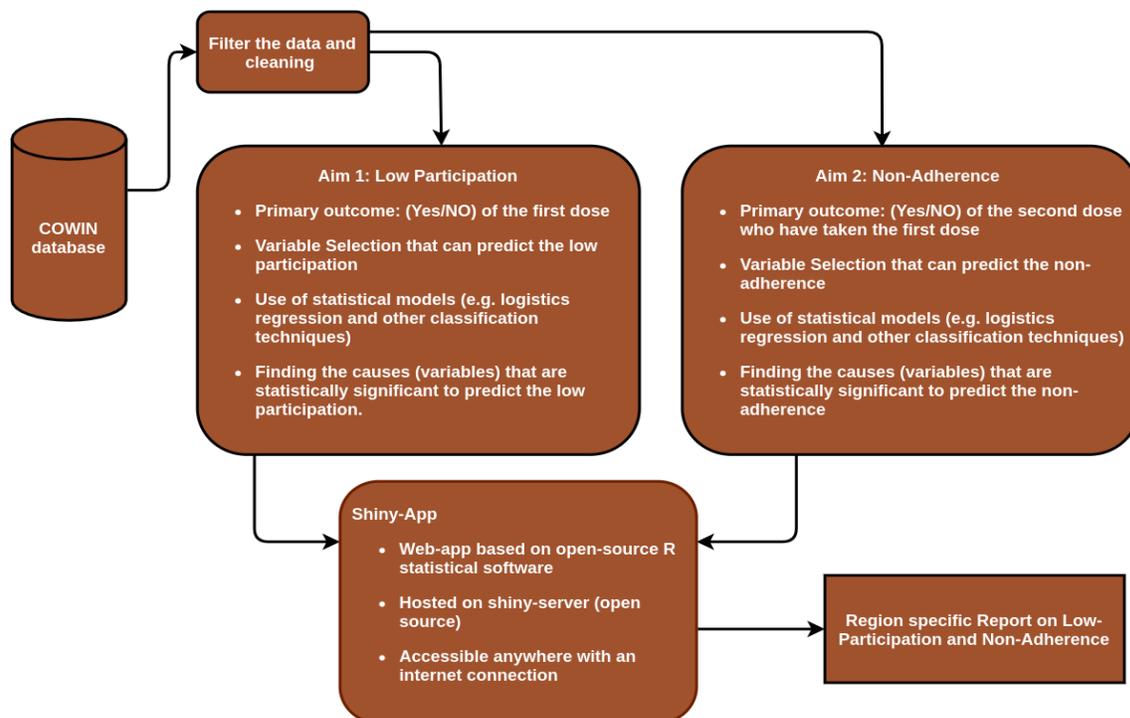


Figure 1: Flow chart of the proposed methodology.

Tentative Budget:

Manpower: One Associate Project Scientist (1 Year): 6,00,000. Equipment: Budget for one laptop: 80,000. Total 6,80,000 + Overhead cost.

Estimated Timeline:

1st-2nd months: Data Collection, Cleaning and Developing the statistical models,

2nd-3rd months: Testing and fine tune the statistical models and getting preliminary results; developing shiny-app,

4th-12th months: Producing results using shiny-app and fine tune the models for specific center/regional issues as we get more data.

References:

1. Hastie, T., Tibshirani, R., & Friedman, J. (2009). *The elements of statistical learning: data mining, inference, and prediction*. Springer Science & Business Media.
2. Agresti, A. (2003). *Categorical data analysis* (Vol. 482). John Wiley & Sons.