

# Indian Statistical Institute

## Applied Statistics Unit

### SEMINAR NOTICE

**Speaker:** Meghna Bose

**Title:** Sample Sizes required to estimate the protective efficacy of a vaccine when there is an unequal allocation of individuals across the vaccine and placebo groups

**Date:** 17 October, 2023

**Time:** 16:15 PM

**Online Platform:** Google Meet ([meet.google.com/zfa-onsd-ucq](https://meet.google.com/zfa-onsd-ucq))

#### **Abstract:**

The effectiveness of a vaccine is measured by means of protective vaccine efficacy, defined by  $VE = 1 - ARV/ARU$ , where ARV and ARU are, respectively, the disease attack rates in the vaccinated and the unvaccinated population. For each of the cohort and case-control designs, methods have been presented in the literature for calculating the required sample size when the desired width of the confidence interval (CI) and the probability of coverage are pre-specified, where an equal number of individuals were assumed to be allocated to the vaccine and placebo group. We present a method for calculating the required sample size with a specified degree of precision when there is an unequal allocation of individuals across the two groups. The sample size required to achieve a desired power for the relevant level  $\alpha$  test has also been explored, keeping the unequal allocation proportion in mind. The fraction of individuals allocated to the placebo group ( $p$ ) can be so chosen that the total sample size or the expected number of people developing the disease or some other criteria of interest is minimized. The implementation of the methods in real-life scenarios have also been shown.

**All are invited to attend.**

Please write to SOMENATH DAS [somenath1011@isical.ac.in](mailto:somenath1011@isical.ac.in) in case you do not receive the invitation link 48 hours before the seminar time.