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| **MSc Medical Statistics Project 2020/21** | | **Project number:** [Please leave blank] | |
| **Contact Person:** Nicholas P. Jewell | | | |
| **Location:** [e.g. LSHTM] LSHTM | | | |
| **Email:** Nicholas.jewell@lshtm.ac.uk | | **Phone:** 020 7927 2469 | |
| **Title of Project:** *Wolbachia*, dengue fever and randomized test-negative studies | | | |
| **Medical Field:** Mosquito vector control | **Type of Study:** Statistical Methodology and data analysis | | |
| **Brief details:** **Overall Aim of the Project**  A novel intervention to reduce, or eliminate, infection with the dengue virus using deployment of Aedes Aegypti mosquitos transinfected with the common in sect bacteria, *Wolbachia* has recently been completed in Indonesia with the data now available. The study design used a novel application of a cluster randomised intervention complemented by a test-negative recruitment of participants suffering from symptoms compatible with dengue infection. The study, and primary data analysis has now been completed with the data now available for various important secondary analyses. The primary results showed a very high reduction in dengue incidence associated with the intervention.  **Specific Objectives**  The specific objectives of the project include several possible data analyses: (i) analysis of how the intervention efficacy changes over time as control contamination with *Wolbachia* increased, (ii) comparisons of spatial clustering of dengue infections across intervention and control areas, and (iii) examination of the performance of specific statistical efficacy estimates for specific sub-strains of the dengue virus (there are four) where the data becomes much sparser.  **Methods**  For each of these tasks, different statistical methods will be required to tackle the specific objectives. For example, the second goal noted above requires developing an understanding of measures of spatial clustering and how to assess variation in estimation of such measures.  Preliminary reading will involve development of an understanding of cluster-randomized test negative studies and related work on the application of interrupted time series methods to dengue case counts. The other sub-projects will require similar techniques but examined in a sparse data setting. | | | |
| **How demanding is the analysis?**  (delete as appropriate) | | | Medium / Difficult |
| **How much data cleaning will be required by student?**  (delete as appropriate) | | | <1 week |
| **If dedicated to a particular student write name here:** | | |  |
| **Could this project be taken by a first year part time student, i.e. completed in September 2022?** | | | Possibly |