**Supplemental Table 1. Additional details of ARIMA models used for time-series analyses**

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| **Example of candidate ARIMA models and AIC for Walukuba for TPR** |
| **ARIMA(p,d,q)(P,D,Q)m 1** | **Predictor (lag in months)** | **AIC** |
| (2,1,1)(1,1,1)6 | ITN, rainfall (1) (**FINAL MODEL**) | 21.1 |
| (2,1,1)(1,1,1)6 | ITN, rainfall (1), age, proportion female | 21.9 |
| (1,1,1)(0,1,0)6 | ITN, rainfall (1), age | 22.0 |
| (0,1,0)(0,0,0)6 | ITN | 37.4 |
| (1,1,0)(0,0,0)6 | ITN, rainfall (1) | 39.4 |
| **Final ARIMA models** 2 |
| **Study site** | **Malaria metric** | **ARIMA(p,d,q)(P,D,Q)m****1** |
| **Walukuba** | Test positivity rate  | (2,1,1)(1,1,1)6 |
| Incidence of malaria  | (4,1,1)(0,1,1) 6 |
| Human biting rate | (1,1,1)(1,1,0)6 |
| **Kihihi** | Test positivity rate  | (1,1,0)(1,1,0)6 |
| Incidence of malaria  | (3,1,1)(0,0,1)6 |
| Human biting rate | (2,1,1)(1,1,0)6 |
| **Nagongera** | Test positivity rate ITN model IRS model  | (3,1,1)(1,1,0)6(1,1,1)(1,1,1)6 |
| Incidence of malaria  ITN model IRS model | (0,1,1)(0,0,0)6(0,1,1)(0,0,0)6 |
| Human biting rate ITN model IRS model | (2,1,1)(1,1,0)6(2,1,1)(0,1,0)6 |

1 p=autoregressive order, d=differencing order, q=moving average order; *m* refers to the number of periods in each season, and the uppercase P,D,Q refer to the autoregressive, differencing, and moving average terms for the seasonal part of the ARIMA model.

2 All models adjusted for rainfall with a one-month lag