Two Stage Cluster Sampling Simulation Results

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## Simulation Results

### Table 1. Artificial Population study (when r is not varying)

Case A, Procedure I (N = 10, M = 10, n’ = 7, n = 5, m = 7)

| p | q | PRE\_Maji | PRE\_Ibrahim | LOSS\_Maji | LOSS\_Ibrahim |
| --- | --- | --- | --- | --- | --- |
| 0.05 | 0.95 | 240.7166 | 247.7131 | -140.7166 | -147.7131 |
| 0.1 | 0.9 | 234.2475 | 254.8227 | -134.2475 | -154.8227 |
| 0.15 | 0.85 | 227.8759 | 266.1662 | -127.8759 | -166.1662 |
| 0.2 | 0.8 | 221.5513 | 280.8098 | -121.5513 | -180.8098 |

### Table 2. Artificial Population study (when r is not varying)

Case B, Procedure I (N = 10, M = 10, n’ = 7, n = 5, m = 7)

| p | q | PRE\_Maji | PRE\_Ibrahim | LOSS\_Maji | LOSS\_Ibrahim |
| --- | --- | --- | --- | --- | --- |
| 0.05 | 0.95 | 287.1852 | 309.8038 | -187.1852 | -209.8038 |
| 0.1 | 0.9 | 276.1314 | 325.5487 | -176.1314 | -225.5487 |
| 0.15 | 0.85 | 265.463 | 344.4662 | -165.463 | -244.4662 |
| 0.2 | 0.8 | 255.1155 | 367.6047 | -155.1155 | -267.6047 |

### Table 3. Artificial Population study (when r is not varying)

Procedure II (N = 10, M = 10, n = 5, m’ = 8, m = 7)

| p | q | PRE\_Maji | PRE\_Ibrahim | LOSS\_Maji | LOSS\_Ibrahim |
| --- | --- | --- | --- | --- | --- |
| 0.05 | 0.95 | 228.7942 | 120.1068 | -128.7942 | -20.10682 |
| 0.1 | 0.9 | 234.1931 | 148.4815 | -134.1931 | -48.48153 |
| 0.15 | 0.85 | 253.0895 | 211.4755 | -153.0895 | -111.4755 |
| 0.2 | 0.8 |  |  |  |  |

### Table 4. Artificial Population study (when r is varying)

Case A, Procedure I (N = 10, M = 10, n’ = 7, n = 4, m = 7)

| p1 | q1 | p2 | q2 | p3 | q3 | p4 | q4 | PRE\_Maji | PRE\_Ibrahim | LOSS\_Maji | LOSS\_Ibrahim |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0.05 | 0.95 | 0.05 | 0.95 | 0.05 | 0.95 | 0.1 | 0.9 | 278.6145 | 254.9173 | -178.6145 | -154.9173 |
| 0.05 | 0.95 | 0.05 | 0.95 | 0.1 | 0.9 | 0.05 | 0.95 | 278.7064 | 255.0313 | -178.7064 | -155.0313 |
| 0.05 | 0.95 | 0.05 | 0.95 | 0.1 | 0.9 | 0.1 | 0.9 | 276.8989 | 254.4278 | -176.8989 | -154.4278 |
| 0.1 | 0.9 | 0.1 | 0.9 | 0.1 | 0.9 | 0.05 | 0.95 | 275.0897 | 254.0803 | -175.0897 | -154.0803 |
| 0.1 | 0.9 | 0.15 | 0.85 | 0.05 | 0.95 | 0.05 | 0.95 | 274.8001 | 253.6213 | -174.8001 | -153.6213 |