

**Supplementary table 1. Hazard ratios, 95% confidence intervals and p-values of interactions terms between age-group-specific and females and region-specific covariates from the Cox model**

| Interaction terms                    | Hazard ratio | 95% CI      |             | P-value |
|--------------------------------------|--------------|-------------|-------------|---------|
|                                      |              | Lower-bound | Upper-bound |         |
| <b>Age-group and females</b>         |              |             |             |         |
| 25-29years#Female                    | ref          |             |             |         |
| 0-4years#Female                      | 1.01         | 0.89        | 1.14        | 0.93    |
| 5-9years#Female                      | 1.04         | 0.91        | 1.19        | 0.56    |
| 10-14years#Female                    | 1.00         | 0.86        | 1.16        | 0.96    |
| 15-19years#Female                    | 0.93         | 0.81        | 1.08        | 0.36    |
| 20-24years#Female                    | 1.05         | 0.91        | 1.22        | 0.50    |
| 30-34years#Female                    | 0.89         | 0.76        | 1.04        | 0.14    |
| 35-39years#Female                    | 0.92         | 0.79        | 1.06        | 0.24    |
| 40-44years#Female                    | 0.93         | 0.79        | 1.09        | 0.38    |
| 45-49years#Female                    | 1.04         | 0.89        | 1.21        | 0.63    |
| 50-54years#Female                    | 0.94         | 0.80        | 1.10        | 0.44    |
| 55-59years#Female                    | 1.06         | 0.91        | 1.24        | 0.47    |
| 60-64years#Female                    | 1.03         | 0.88        | 1.21        | 0.70    |
| 65-69years#Female                    | 0.98         | 0.83        | 1.17        | 0.85    |
| 70-74years#Female                    | 1.05         | 0.89        | 1.22        | 0.58    |
| 75-79years#Female                    | 0.96         | 0.83        | 1.11        | 0.56    |
| 80-100years#Female                   | 1.09         | 0.94        | 1.26        | 0.26    |
| <b>Age-group and region-specific</b> |              |             |             |         |
| 25-29years#Greater Accra             | ref          |             |             |         |
| 0-4years#Ashanti                     | 0.63         | 0.50        | 0.81        | <0.001  |
| 0-4years#Brong Ahafo                 | 0.72         | 0.57        | 0.92        | 0.01    |
| 0-4years#Central                     | 0.86         | 0.62        | 1.21        | 0.39    |
| 0-4years#Eastern                     | 0.80         | 0.63        | 1.00        | 0.06    |
| 0-4years#Northern                    | 0.76         | 0.59        | 0.98        | 0.03    |
| 0-4years#Upper East                  | 0.84         | 0.59        | 1.18        | 0.31    |
| 0-4years#Upper West                  | 0.46         | 0.34        | 0.61        | <0.001  |
| 0-4years#Volta                       | 0.78         | 0.62        | 0.97        | 0.03    |
| 0-4years#Western                     | 0.81         | 0.63        | 1.03        | 0.09    |
| 5-9years#Ashanti                     | 0.57         | 0.42        | 0.77        | <0.001  |
| 5-9years#Brong Ahafo                 | 0.75         | 0.57        | 0.98        | 0.04    |
| 5-9years#Central                     | 0.71         | 0.50        | 1.02        | 0.06    |
| 5-9years#Eastern                     | 0.73         | 0.57        | 0.94        | 0.02    |
| 5-9years#Northern                    | 0.61         | 0.46        | 0.82        | 0.001   |
| 5-9years#Upper East                  | 0.88         | 0.63        | 1.23        | 0.46    |
| 5-9years#Upper West                  | 0.39         | 0.28        | 0.55        | <0.001  |
| 5-9years#Volta                       | 0.73         | 0.56        | 0.94        | 0.01    |
| 5-9years#Western                     | 0.87         | 0.67        | 1.13        | 0.29    |
| 10-14years#Ashanti                   | 0.83         | 0.59        | 1.15        | 0.27    |
| 10-14years#Brong Ahafo               | 1.07         | 0.79        | 1.44        | 0.68    |
| 10-14years#Central                   | 1.33         | 0.91        | 1.94        | 0.14    |

|                        |      |      |      |        |
|------------------------|------|------|------|--------|
| 10-14years#Eastern     | 1.00 | 0.75 | 1.34 | 0.98   |
| 10-14years#Northern    | 0.88 | 0.58 | 1.31 | 0.52   |
| 10-14years#Upper East  | 1.34 | 0.88 | 2.03 | 0.17   |
| 10-14years#Upper West  | 0.61 | 0.40 | 0.94 | 0.03   |
| 10-14years#Volta       | 0.97 | 0.72 | 1.29 | 0.82   |
| 10-14years#Western     | 0.98 | 0.72 | 1.34 | 0.90   |
| 15-19years#Ashanti     | 0.68 | 0.51 | 0.91 | 0.01   |
| 15-19years#Brong Ahafo | 0.68 | 0.51 | 0.92 | 0.01   |
| 15-19years#Central     | 0.76 | 0.51 | 1.13 | 0.17   |
| 15-19years#Eastern     | 0.84 | 0.64 | 1.12 | 0.23   |
| 15-19years#Northern    | 0.80 | 0.59 | 1.10 | 0.17   |
| 15-19years#Upper East  | 0.87 | 0.60 | 1.27 | 0.47   |
| 15-19years#Upper West  | 0.52 | 0.38 | 0.71 | <0.001 |
| 15-19years#Volta       | 0.72 | 0.55 | 0.94 | 0.02   |
| 15-19years#Western     | 0.82 | 0.61 | 1.09 | 0.16   |
| 20-24years#Ashanti     | 0.83 | 0.62 | 1.10 | 0.19   |
| 20-24years#Brong Ahafo | 0.80 | 0.60 | 1.07 | 0.13   |
| 20-24years#Central     | 0.98 | 0.69 | 1.39 | 0.89   |
| 20-24years#Eastern     | 0.83 | 0.63 | 1.10 | 0.19   |
| 20-24years#Northern    | 0.75 | 0.55 | 1.01 | 0.06   |
| 20-24years#Upper East  | 0.90 | 0.60 | 1.36 | 0.62   |
| 20-24years#Upper West  | 0.63 | 0.45 | 0.87 | 0.01   |
| 20-24years#Volta       | 0.76 | 0.58 | 0.99 | 0.04   |
| 20-24years#Western     | 0.85 | 0.65 | 1.13 | 0.26   |
| 30-34years#Ashanti     | 0.90 | 0.65 | 1.24 | 0.51   |
| 30-34years#Brong Ahafo | 1.00 | 0.73 | 1.36 | 0.98   |
| 30-34years#Central     | 0.78 | 0.48 | 1.25 | 0.30   |
| 30-34years#Eastern     | 0.90 | 0.67 | 1.22 | 0.51   |
| 30-34years#Northern    | 0.96 | 0.68 | 1.34 | 0.80   |
| 30-34years#Upper East  | 1.13 | 0.75 | 1.70 | 0.57   |
| 30-34years#Upper West  | 0.73 | 0.46 | 1.16 | 0.18   |
| 30-34years#Volta       | 0.93 | 0.69 | 1.26 | 0.65   |
| 30-34years#Western     | 0.91 | 0.65 | 1.26 | 0.57   |
| 35-39years#Ashanti     | 0.70 | 0.49 | 1.00 | 0.05   |
| 35-39years#Brong Ahafo | 0.95 | 0.67 | 1.35 | 0.76   |
| 35-39years#Central     | 1.12 | 0.72 | 1.74 | 0.63   |
| 35-39years#Eastern     | 0.97 | 0.69 | 1.36 | 0.86   |
| 35-39years#Northern    | 0.95 | 0.66 | 1.37 | 0.79   |
| 35-39years#Upper East  | 1.04 | 0.66 | 1.62 | 0.87   |
| 35-39years#Upper West  | 0.84 | 0.57 | 1.24 | 0.39   |
| 35-39years#Volta       | 0.99 | 0.71 | 1.40 | 0.98   |
| 35-39years#Western     | 1.08 | 0.76 | 1.54 | 0.65   |
| 40-44years#Ashanti     | 0.59 | 0.41 | 0.83 | 0.003  |
| 40-44years#Brong Ahafo | 0.73 | 0.51 | 1.03 | 0.08   |
| 40-44years#Central     | 0.83 | 0.53 | 1.33 | 0.44   |
| 40-44years#Eastern     | 0.73 | 0.52 | 1.03 | 0.07   |

|                        |      |      |      |       |
|------------------------|------|------|------|-------|
| 40-44years#Northern    | 0.68 | 0.46 | 1.00 | 0.05  |
| 40-44years#Upper East  | 0.66 | 0.42 | 1.04 | 0.07  |
| 40-44years#Upper West  | 0.44 | 0.27 | 0.71 | 0.001 |
| 40-44years#Volta       | 0.60 | 0.43 | 0.85 | 0.004 |
| 40-44years#Western     | 0.84 | 0.59 | 1.18 | 0.31  |
| 45-49years#Ashanti     | 0.60 | 0.42 | 0.87 | 0.01  |
| 45-49years#Brong Ahafo | 0.73 | 0.51 | 1.04 | 0.08  |
| 45-49years#Central     | 0.70 | 0.43 | 1.14 | 0.15  |
| 45-49years#Eastern     | 0.72 | 0.50 | 1.02 | 0.06  |
| 45-49years#Northern    | 0.90 | 0.61 | 1.34 | 0.61  |
| 45-49years#Upper East  | 0.90 | 0.57 | 1.43 | 0.66  |
| 45-49years#Upper West  | 0.60 | 0.39 | 0.91 | 0.02  |
| 45-49years#Volta       | 0.81 | 0.57 | 1.14 | 0.23  |
| 45-49years#Western     | 0.90 | 0.63 | 1.30 | 0.56  |
| 50-54years#Ashanti     | 0.78 | 0.54 | 1.14 | 0.20  |
| 50-54years#Brong Ahafo | 0.86 | 0.59 | 1.25 | 0.4   |
| 50-54years#Central     | 0.86 | 0.54 | 1.35 | 0.51  |
| 50-54years#Eastern     | 0.77 | 0.54 | 1.10 | 0.15  |
| 50-54years#Northern    | 0.97 | 0.62 | 1.51 | 0.90  |
| 50-54years#Upper East  | 1.03 | 0.65 | 1.63 | 0.90  |
| 50-54years#Upper West  | 0.85 | 0.54 | 1.34 | 0.48  |
| 50-54years#Volta       | 0.76 | 0.54 | 1.08 | 0.13  |
| 50-54years#Western     | 1.05 | 0.71 | 1.53 | 0.82  |
| 55-59years#Ashanti     | 0.92 | 0.59 | 1.43 | 0.71  |
| 55-59years#Brong Ahafo | 1.07 | 0.70 | 1.62 | 0.76  |
| 55-59years#Central     | 1.18 | 0.73 | 1.91 | 0.50  |
| 55-59years#Eastern     | 0.85 | 0.57 | 1.27 | 0.43  |
| 55-59years#Northern    | 0.98 | 0.62 | 1.56 | 0.95  |
| 55-59years#Upper East  | 0.98 | 0.57 | 1.69 | 0.95  |
| 55-59years#Upper West  | 0.93 | 0.57 | 1.54 | 0.79  |
| 55-59years#Volta       | 1.06 | 0.71 | 1.58 | 0.79  |
| 55-59years#Western     | 1.11 | 0.73 | 1.67 | 0.63  |
| 60-64years#Ashanti     | 0.92 | 0.64 | 1.32 | 0.65  |
| 60-64years#Brong Ahafo | 0.94 | 0.65 | 1.36 | 0.75  |
| 60-64years#Central     | 1.01 | 0.64 | 1.59 | 0.96  |
| 60-64years#Eastern     | 1.05 | 0.74 | 1.48 | 0.801 |
| 60-64years#Northern    | 1.13 | 0.77 | 1.65 | 0.54  |
| 60-64years#Upper East  | 1.16 | 0.69 | 1.94 | 0.57  |
| 60-64years#Upper West  | 0.93 | 0.61 | 1.41 | 0.73  |
| 60-64years#Volta       | 0.99 | 0.69 | 1.41 | 0.94  |
| 60-64years#Western     | 1.17 | 0.82 | 1.68 | 0.39  |
| 65-69years#Ashanti     | 0.88 | 0.61 | 1.27 | 0.49  |
| 65-69years#Brong Ahafo | 0.96 | 0.66 | 1.37 | 0.81  |
| 65-69years#Central     | 1.05 | 0.69 | 1.62 | 0.81  |
| 65-69years#Eastern     | 0.85 | 0.60 | 1.21 | 0.37  |
| 65-69years#Northern    | 0.86 | 0.54 | 1.38 | 0.54  |

|                         |      |      |      |       |
|-------------------------|------|------|------|-------|
| 65-69years#Upper East   | 1.23 | 0.67 | 2.26 | 0.51  |
| 65-69years#Upper West   | 0.57 | 0.38 | 0.86 | 0.01  |
| 65-69years#Volta        | 0.77 | 0.55 | 1.07 | 0.12  |
| 65-69years#Western      | 0.79 | 0.53 | 1.16 | 0.23  |
| 70-74years#Ashanti      | 0.77 | 0.54 | 1.11 | 0.17  |
| 70-74years#Brong Ahafo  | 0.69 | 0.46 | 1.04 | 0.08  |
| 70-74years#Central      | 1.00 | 0.64 | 1.57 | 0.10  |
| 70-74years#Eastern      | 0.75 | 0.52 | 1.07 | 0.12  |
| 70-74years#Northern     | 0.93 | 0.62 | 1.38 | 0.71  |
| 70-74years#Upper East   | 0.82 | 0.54 | 1.25 | 0.37  |
| 70-74years#Upper West   | 0.48 | 0.29 | 0.79 | 0.004 |
| 70-74years#Volta        | 0.83 | 0.58 | 1.18 | 0.30  |
| 70-74years#Western      | 0.67 | 0.45 | 0.99 | 0.04  |
| 75-79years#Ashanti      | 0.86 | 0.61 | 1.22 | 0.40  |
| 75-79years#Brong Ahafo  | 0.84 | 0.60 | 1.18 | 0.32  |
| 75-79years#Central      | 1.07 | 0.68 | 1.70 | 0.77  |
| 75-79years#Eastern      | 0.91 | 0.65 | 1.26 | 0.57  |
| 75-79years#Northern     | 0.89 | 0.62 | 1.27 | 0.51  |
| 75-79years#Upper East   | 0.91 | 0.60 | 1.37 | 0.65  |
| 75-79years#Upper West   | 0.62 | 0.43 | 0.91 | 0.01  |
| 75-79years#Volta        | 0.90 | 0.65 | 1.25 | 0.53  |
| 75-79years#Western      | 0.92 | 0.65 | 1.30 | 0.63  |
| 80-100years#Ashanti     | 0.93 | 0.63 | 1.38 | 0.73  |
| 80-100years#Brong Ahafo | 1.07 | 0.73 | 1.56 | 0.74  |
| 80-100years#Central     | 1.02 | 0.66 | 1.57 | 0.93  |
| 80-100years#Eastern     | 1.04 | 0.71 | 1.51 | 0.84  |
| 80-100years#Northern    | 0.89 | 0.56 | 1.44 | 0.65  |
| 80-100years#Upper East  | 1.09 | 0.67 | 1.77 | 0.73  |
| 80-100years#Upper West  | 0.61 | 0.40 | 0.92 | 0.02  |
| 80-100years#Volta       | 0.84 | 0.58 | 1.23 | 0.37  |
| 80-100years#Western     | 0.92 | 0.62 | 1.36 | 0.66  |