

Supplementary File

Section 1. Summary of statistical methods undertaken

Data and sample

Data on phone ownership are presented for the 17 countries that have captured Demographic and Health Survey (DHS) data on and women's ownership of mobile phones and 15 countries that have captured data on men's ownership of mobile phones since 2015. Of the 17 countries which collected data on women's ownership, the Philippines and Tajikistan did not collect data on men's ownership and hence are excluded from gender gap analyses but retained in analyses exploring the association between women's phone ownership and RMNCH outcomes. The survey sample includes 242,619 women and 91,937 men from 204,214 households. Survey completion rates among eligible women ranged from 84% to 99%. The survey is designed as a two-stage sample design: In stage 1, the Primary Sampling Units (PSU) are villages in rural areas (selected with probability proportional to size); and Census Enumeration Blocks (CEB) in urban areas; in second stage, a random sample of households in each PSU or CEB is selected, respectively. For analysis, a cluster refers to either a PSU or a segment of a PSU selected at stage 1 of the survey. The data are hierarchical in nature with PSUs nested within districts, and districts are nested within states.

Analyses

Estimates are derived using the *survey* package version 3.34 in R and adjusted for survey design with appropriate weights provided as part of the DHS dataset using a robust variance estimator for the confidence intervals. The dot plots are based on the prevalence of the household mobile phone ownership and women's access to phone indicators, adjusted for the survey design with weights. The plots are constructed using the *ggplot2* package in R.

| DHS Country | Survey Year(s) | Completion rate among eligible women |
|--------------|----------------|--------------------------------------|
| Albania | 2017-2018 | 93% |
| Armenia | 2015-2016 | 98% |
| Ethiopia | 2016 | 95% |
| Haiti | 2016-2017 | 99% |
| Jordan | 2017-2018 | 99% |
| Malawi | 2017 | 98% |
| Maldives | 2016-2017 | 84% |
| Nepal | 2016 | 98% |
| Pakistan | 2017-2018 | 94% |
| Philippines | 2017 | 98% |
| Senegal | 2017 | 96% |
| South Africa | 2016 | 86% |
| Tajikistan | 2017 | 99% |
| Tanzania | 2015-2016 | 97% |
| Timor Leste | 2016 | 97% |
| Uganda | 2016 | 97% |
| Zimbabwe | 2015 | 96% |

Multilevel logistic regression models were used to explore the association of RMNCH health outcomes with phone ownership. Models were adjusted for a range of socioeconomic and demographic characteristics, including age, educational attainment, household socio-economic status, residence, parity and marital status. The multilevel model is necessary since the data suggests considerable country level variance in the different health outcomes. The data have a hierarchical structure with women nested within clusters, which are in turn nested within and across countries. In the multilevel analysis, countries are the highest level ($n=17$), followed by clusters within countries and then individuals. The general form of the three level logistic regression model used may be expressed as

$$\log(P_{ijc}) = X_{ijc} * \beta + u_{jc} + v_c$$

where P_{ijc} is the probability of an outcome for an individual i , in the j th cluster in the c th country; X_{ijc} is the vector of covariates which may be defined at the individual, district or country level; β is the associated vector of regression parameter estimates; and the quantities, u_{jc} , v_{kc} are the residuals at the cluster and country levels with normal distribution of mean zero and variances σ_u^2 , σ_v^2 respectively. The multilevel models were analyzed using the *lme4* package in R.

Section 2. Supplementary Tables and Figures.

Supplementary Table 1. Characteristics of men and women phone owners

| | Men Mobile Phone Ownership | | | | Women Mobile Phone Ownership | | | |
|-------------------------------|----------------------------|---------|--------|-----|------------------------------|---------|--------|-----|
| | Weighted Frequency | Percent | 95% CI | | Weighted Frequency | Percent | 95% CI | |
| Wealth Index | | | | | | | | |
| Poorest | 11,375 | 60% | 59% | 61% | 22,714 | 44% | 43% | 45% |
| Poorer | 12,972 | 70% | 70% | 71% | 27,402 | 56% | 56% | 57% |
| Middle | 13,708 | 75% | 75% | 76% | 29,961 | 64% | 63% | 64% |
| Richer | 14,079 | 81% | 80% | 82% | 32,356 | 70% | 70% | 71% |
| Richest | 16,956 | 90% | 89% | 90% | 40,376 | 82% | 81% | 82% |
| Age | | | | | | | | |
| 15-19 years old | 9,881 | 53% | 52% | 54% | 19,737 | 45% | 44% | 45% |
| 20-29 years old | 21,818 | 82% | 82% | 83% | 53,563 | 67% | 66% | 67% |
| 30-39 years old | 17,933 | 84% | 83% | 85% | 44,707 | 68% | 68% | 69% |
| 40-49 years old | 19,458 | 76% | 76% | 77% | 34,440 | 67% | 67% | 68% |
| Education | | | | | | | | |
| No education | 6,872 | 55% | 54% | 56% | 14,133 | 34% | 33% | 35% |
| Primary | 18,567 | 63% | 63% | 64% | 34,689 | 48% | 48% | 49% |
| Secondary | 32,352 | 84% | 84% | 84% | 71,620 | 75% | 75% | 76% |
| Higher | 11,299 | 97% | 97% | 98% | 32,365 | 95% | 95% | 96% |
| Parity | | | | | | | | |
| One child | NA | NA | NA | NA | 24,240 | 70% | 70% | 71% |
| Two children | NA | NA | NA | NA | 28,043 | 73% | 73% | 74% |
| >2 children | NA | NA | NA | NA | 96,614 | 59% | 58% | 59% |
| Residence | | | | | | | | |
| Urban | 31,765 | 87% | 87% | 88% | 77,328 | 79% | 78% | 79% |
| Rural | 37,325 | 67% | 67% | 68% | 75,481 | 52% | 52% | 53% |
| Current Marital Status | | | | | | | | |
| Never in union | 27,945 | 69% | 68% | 69% | 48,891 | 62% | 62% | 63% |
| Married | 39,865 | 81% | 81% | 82% | 103,556 | 64% | 63% | 64% |

Supplementary Table 2. Determinants of mobile phone ownership among women (n= 242,618)

| Characteristics | Unadjusted Odds Ratio | p-value | Adjusted Odds Ratio | p-value |
|-------------------------------|-----------------------|---------|----------------------|---------|
| Wealth Index | | | | |
| Poorest | 1 | -- | 1 | -- |
| Poorer | 2.00 (1.93, 2.07) | <.001 | 1.79 (1.73, 1.85) | <.001 |
| Middle | 3.23 (3.11, 3.35) | <.001 | 2.57 (2.48, 2.67) | <.001 |
| Richer | 5.58 (5.37, 5.80) | <.001 | 3.81 (3.65, 3.97) | <.001 |
| Richest | 13.29 (12.71, 13.89) | <.001 | 7.21 (6.86, 7.59) | <.001 |
| Education | | | | |
| No education | 1 | -- | 1 | -- |
| Primary | 1.69 (1.63, 1.74) | <.001 | 1.91 (1.84, 1.98) | <.001 |
| Secondary | 3.61 (3.49, 3.74) | <.001 | 4.15 (3.99, 4.31) | <.001 |
| Higher | 20.58 (19.34, 21.90) | <.001 | 14.16 (13.26, 15.12) | <.001 |
| Residence | | | | |
| Urban | 1 | -- | 1 | -- |
| Rural | 0.28 (0.27, 0.30) | <.001 | 0.77 (0.74, 0.81) | <.001 |
| Parity | | | | |
| One child | 1 | -- | 1 | -- |
| Two children | 1.00 (0.96, 1.04) | 0.91 | 0.88 (0.85, 0.92) | <.001 |
| >2 children | 0.63 (0.61, 0.65) | <.001 | 0.75 (0.72, 0.78) | <.001 |
| Age | | | | |
| 15-19 years old | 1 | -- | 1 | -- |
| 20-29 years old | 3.51 (3.41, 3.62) | <.001 | 3.75 (3.62, 3.89) | <.001 |
| 30-39 years old | 3.47 (3.37, 3.59) | <.001 | 5.11 (4.92, 5.31) | <.001 |
| 40-49 years old | 2.31 (2.24, 2.39) | <.001 | 3.96 (3.80, 4.12) | <.001 |
| Current Marital Status | | | | |
| Never in union | 1 | -- | 1 | -- |
| Married | 1.41 (1.38, 1.45) | <.001 | 0.90 (0.87, 0.93) | <.001 |

Supplementary Table 3. RMNCH Health practice and care-seeking indicators examined in relation to mobile phone ownership

| Outcome | Description |
|------------------------------------|--|
| Demand satisfied by modern methods | Percentage of total demand for family planning that is satisfied by modern methods |
| 4 +Antenatal care visits | Percentage of women with a birth in the last 5 years who had four or more antenatal care visits |
| Early Antenatal Care | Percentage of women with a birth in the last 5 years, who had a antenatal visit in the first 3 months of pregnancy. |
| Protected against neonatal tetanus | <p>Percentage of women with a live birth in the 5 years preceding the survey whose most recent live birth was protected against neonatal tetanus:</p> <ul style="list-style-type: none"> • two tetanus toxoid injections during the pregnancy for her most recent live birth, or • two or more injections (the last within 3 years of the most recent live birth), or • three or more injections (the last within 5 years of the most recent live birth), or • four or more injections (the last within 10 years of the most recent live birth), or <p>five or more injections at any time prior to the most recent live birth</p> |
| Skilled birth attendance | Percentage of births in the 5 years preceding the survey that were assisted by a skilled provider. |
| Mother postnatal care | Percentage of women with a live birth in the 2 years preceding the survey who received a postnatal check during the first 2 days after giving birth. |
| Child postnatal care | Percentage of most recent live birth in the 2 years preceding the survey with a postnatal check for the newborn during the first 2 days after birth. |

| | |
|-----------------------------------|--|
| Initial Breastfeeding | Percentage of last-born children born in the past 2 years who started breastfeeding within one hour of birth. |
| Exclusive breastfeeding | Percent of children 0-5 months who were exclusively breastfed—not given anything else but breastmilk in the last 24 hours. |
| Continued breastfeeding at 1 year | Percentage of children currently breastfeeding, continuing breastfeeding at 1 year (12-15 months) |
| DTP3 | Percentage of children age 12-23 months who received DTP3 at any time before the survey according to either vaccination card or mother's report. |
| Measles | Percentage of children age 12-23 months who received the first does of measles at any time before the survey according to either vaccination card or mother's report. *Notes: For Tajikistan and Armenia this is at 24-35 months |
| Rotavirus | Percentage of children age 12-23 months who received rotavirus vaccine at any time before the survey according to either vaccination card or mother's report. |
| Vitamin A Supplementation | Percentage of children age 6-59 months who received vitamin A supplements in the last six months. |
| ARI treatment | Percentage of children under age 5 with symptoms of ARI at any time in the 2 weeks preceding the survey for whom advice or treatment was sought. |
| Diarrheal care | Among children under age 5 who had diarrhea in the 2 weeks preceding the survey, percentage given ORS and zinc |

Supplementary Table 4. Linking phone ownership, demand for modern contraception, and pregnancy care *

| | Demand Satisfied | | | | Early Antenatal Care visits | | | | 4+ Antenatal Care visits | | | | Tetanus | | | |
|---------------------------------|------------------|--------|---------|-------|-----------------------------|-------|---------|-------|--------------------------|-------|---------|-------|-----------|-------|---------|-------|
| | OR | 95% CI | P-value | | OR | 95%CI | P-value | | OR | 95%CI | P-value | | OR | 95%CI | P-value | |
| Mobile Phone Access | Reference | | | | Reference | | | | Reference | | | | Reference | | | |
| No mobile phone access | | | | | | | | | | | | | | | | |
| Has Access | 1.22 | 1.15 | 1.30 | <.001 | 1.25 | 1.17 | 1.34 | <.001 | 1.27 | 1.19 | 1.36 | <.001 | 1.43 | 1.34 | 1.54 | <.001 |
| Wealth | Reference | | | | Reference | | | | Reference | | | | Reference | | | |
| Poorest | | | | | | | | | | | | | | | | |
| Poorer | 1.25 | 1.18 | 1.33 | <.001 | 1.21 | 1.13 | 1.28 | <.001 | 1.23 | 1.16 | 1.30 | <.001 | 1.20 | 1.12 | 1.28 | <.001 |
| Middle | 1.41 | 1.32 | 1.51 | <.001 | 1.32 | 1.23 | 1.41 | <.001 | 1.42 | 1.33 | 1.52 | <.001 | 1.31 | 1.21 | 1.41 | <.001 |
| Richer | 1.46 | 1.36 | 1.57 | <.001 | 1.44 | 1.33 | 1.55 | <.001 | 1.59 | 1.48 | 1.71 | <.001 | 1.39 | 1.27 | 1.52 | <.001 |
| Richest | 1.48 | 1.34 | 1.63 | <.001 | 1.81 | 1.63 | 2.01 | <.001 | 1.92 | 1.73 | 2.12 | <.001 | 1.57 | 1.38 | 1.78 | <.001 |
| Wealth:Phone Interaction | Reference | | | | Reference | | | | Reference | | | | Reference | | | |
| Phone | | | | | | | | | | | | | | | | |
| Access: Poorest Phone | | | | | | | | | | | | | | | | <.001 |
| Access: Poorer Phone | 0.90 | 0.82 | 0.97 | 0.01 | 0.96 | 0.88 | 1.05 | 0.38 | 1.02 | 0.93 | 1.11 | 0.69 | 0.83 | 0.75 | 0.91 | <.001 |
| Access: Middle Phone | 0.85 | 0.78 | 0.92 | <.001 | 0.96 | 0.87 | 1.05 | 0.37 | 1.00 | 0.91 | 1.10 | 0.97 | 0.76 | 0.69 | 0.85 | <.001 |
| Access: Richer Phone | 0.83 | 0.76 | 0.91 | | 1.01 | 0.91 | 1.11 | 0.86 | 1.01 | 0.92 | 1.12 | 0.80 | 0.75 | 0.67 | 0.84 | <.001 |
| Access: Richest | 0.89 | 0.80 | 1.00 | 0.04 | 1.05 | 0.93 | 1.18 | 0.42 | 1.21 | 1.07 | 1.36 | <.001 | 0.79 | 0.69 | 0.91 | |
| Education | Reference | | | | Reference | | | | Reference | | | | Reference | | | |
| No education | | | | | | | | | | | | | | | | |
| Primary | 1.17 | 1.12 | 1.22 | <.001 | 1.38 | 1.31 | 1.45 | <.001 | 1.44 | 1.37 | 1.50 | <.001 | 1.48 | 1.40 | 1.56 | <.001 |
| Secondary | 1.07 | 1.01 | 1.12 | 0.01 | 1.49 | 1.41 | 1.57 | <.001 | 1.75 | 1.66 | 1.85 | <.001 | 1.92 | 1.80 | 2.04 | <.001 |
| Higher | 0.99 | 0.93 | 1.05 | 0.74 | 2.24 | 2.08 | 2.41 | <.001 | 2.84 | 2.62 | 3.08 | <.001 | 2.12 | 1.95 | 2.31 | <.001 |
| Residence | Reference | | | | Reference | | | | Reference | | | | Reference | | | |
| Urban | | | | | | | | | | | | | | | | |

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|----------------------------|-----------|------|------|-------|-----------|------|------|-------|-----------|------|------|-------|-----------|------|------|-------|
| Rural | 0.88 | 0.84 | 0.92 | <.001 | 0.93 | 0.88 | 0.98 | <.001 | 0.86 | 0.81 | 0.91 | <.001 | 0.94 | 0.89 | 1.00 | 0.07 |
| Parity | | | | | | | | | | | | | | | | |
| One child | Reference | | | | Reference | | | | Reference | | | | Reference | | | |
| Two Children | 1.18 | 1.13 | 1.24 | <.001 | 0.92 | 0.88 | 0.96 | <.001 | 0.86 | 0.82 | 0.90 | <.001 | 1.16 | 1.10 | 1.22 | <.001 |
| More than two children | 1.15 | 1.11 | 1.21 | <.001 | 0.73 | 0.70 | 0.77 | <.001 | 0.72 | 0.69 | 0.76 | <.001 | 1.28 | 1.21 | 1.34 | <.001 |
| Age | | | | | | | | | | | | | | | | |
| 15-19 years old | Reference | | | | Reference | | | | Reference | | | | Reference | | | |
| 20-29 years old | 1.95 | 1.83 | 2.07 | <.001 | 1.31 | 1.22 | 1.40 | <.001 | 1.24 | 1.16 | 1.32 | <.001 | 1.31 | 1.22 | 1.41 | <.001 |
| 30-39 years old | 2.34 | 2.20 | 2.50 | <.001 | 1.43 | 1.33 | 1.55 | <.001 | 1.39 | 1.29 | 1.50 | <.001 | 1.26 | 1.16 | 1.37 | <.001 |
| 40-49 years old | 2.18 | 2.03 | 2.33 | <.001 | 1.27 | 1.17 | 1.39 | <.001 | 1.26 | 1.16 | 1.38 | 0.00 | 1.13 | 1.03 | 1.24 | 0.01 |
| Marital Status | | | | | | | | | | | | | | | | |
| Unmarried/no t in union | Reference | | | | Reference | | | | Reference | | | | Reference | | | |
| Married/In union | 0.72 | 0.69 | 0.76 | <.001 | 1.25 | 1.19 | 1.31 | <.001 | 1.22 | 1.16 | 1.28 | <.001 | 1.15 | 1.08 | 1.21 | <.001 |

*Models are adjusted for survey round, phone access, wealth, education, residence, parity, age, and marital status

Supplementary Table 5. Linking phone ownership, skilled birth attendance, women and newborn postnatal care*

| | Skilled Birth | | | Woman's Postnatal Care | | | Newborn Postnatal Care | | | | | |
|---------------------------------|---------------|-------|---------|------------------------|-------|---------|------------------------|-------|---------|------|------|-------|
| | OR | 95%CI | P-value | OR | 95%CI | P-value | OR | 95%CI | P-value | | | |
| Mobile Phone Access | | | | | | | | | | | | |
| No mobile phone access | Reference | | | Reference | | | Reference | | | | | |
| Has Access | 1.25 | 1.17 | 1.34 | <.001 | 1.23 | 1.12 | 1.35 | <.001 | 1.23 | 1.12 | 1.35 | <.001 |
| Wealth | | | | | | | | | | | | |
| Poorest | Reference | | | Reference | | | Reference | | | | | |
| Poorer | 1.41 | 1.33 | 1.50 | <.001 | 1.25 | 1.15 | 1.35 | <.001 | 1.24 | 1.14 | 1.34 | <.001 |
| Middle | 1.75 | 1.64 | 1.87 | <.001 | 1.44 | 1.31 | 1.58 | <.001 | 1.47 | 1.34 | 1.61 | <.001 |
| Richer | 2.17 | 2.00 | 2.36 | <.001 | 1.67 | 1.50 | 1.86 | <.001 | 1.77 | 1.59 | 1.97 | <.001 |
| Richest | 2.92 | 2.56 | 3.34 | <.001 | 2.19 | 1.89 | 2.54 | <.001 | 1.90 | 1.64 | 2.21 | <.001 |
| Wealth:Phone Interaction | | | | | | | | | | | | |
| Phone Access: Poorest | Reference | | | Reference | | | Reference | | | | | |
| Phone Access: Poorer | 0.96 | 0.87 | 1.05 | 0.36 | 1.04 | 0.91 | 1.18 | 0.55 | 1.07 | 0.94 | 1.21 | 0.34 |
| Phone Access: Middle | 1.09 | 0.98 | 1.20 | 0.11 | 1.01 | 0.88 | 1.15 | 0.92 | 1.00 | 0.87 | 1.15 | 0.99 |
| Phone Access: Richer | 1.14 | 1.02 | 1.28 | 0.02 | 1.02 | 0.88 | 1.17 | 0.84 | 0.97 | 0.84 | 1.12 | 0.70 |
| Phone Access: Richest | 1.82 | 1.55 | 2.13 | <.001 | 1.01 | 0.85 | 1.19 | 0.95 | 1.20 | 1.01 | 1.43 | 0.04 |
| Education | | | | | | | | | | | | |
| No education | Reference | | | Reference | | | Reference | | | | | |
| Primary | 1.32 | 1.26 | 1.39 | <.001 | 1.27 | 1.18 | 1.36 | <.001 | 1.32 | 1.23 | 1.42 | <.001 |
| Secondary | 2.08 | 1.96 | 2.21 | <.001 | 1.74 | 1.61 | 1.89 | <.001 | 1.80 | 1.66 | 1.95 | <.001 |
| Higher | 4.98 | 4.41 | 5.62 | <.001 | 2.60 | 2.32 | 2.91 | <.001 | 2.30 | 2.06 | 2.58 | <.001 |
| Residence | | | | | | | | | | | | |
| Urban | Reference | | | Reference | | | Reference | | | | | |
| Rural | 0.42 | 0.39 | 0.46 | <.001 | 0.76 | 0.71 | 0.82 | <.001 | 0.72 | 0.67 | 0.78 | <.001 |
| Parity | | | | | | | | | | | | |
| One child | Reference | | | Reference | | | Reference | | | | | |

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|------------------------|-----------|------|------|-------|-----------|------|------|-------|-----------|------|------|-------|
| Two Children | 0.59 | 0.55 | 0.63 | <.001 | 0.81 | 0.76 | 0.86 | <.001 | 0.81 | 0.76 | 0.87 | <.001 |
| More than two children | 0.36 | 0.34 | 0.39 | <.001 | 0.69 | 0.65 | 0.74 | <.001 | 0.68 | 0.64 | 0.73 | <.001 |
| Age | | | | | | | | | | | | |
| 15-19 years old | Reference | | | | Reference | | | | Reference | | | |
| 20-29 years old | 1.08 | 1.00 | 1.18 | 0.06 | 1.18 | 1.08 | 1.28 | <.001 | 1.12 | 1.03 | 1.22 | 0.01 |
| 30-39 years old | 1.18 | 1.07 | 1.29 | <.001 | 1.40 | 1.27 | 1.55 | <.001 | 1.31 | 1.19 | 1.45 | <.001 |
| 40-49 years old | 1.09 | 0.99 | 1.21 | 0.09 | 1.38 | 1.21 | 1.57 | <.001 | 1.30 | 1.14 | 1.49 | <.001 |
| Marital Status | | | | | | | | | | | | |
| Unmarried/not in union | Reference | | | | Reference | | | | Reference | | | |
| Married/In union | 1.10 | 1.04 | 1.17 | <.001 | 1.04 | 0.96 | 1.12 | 0.31 | 1.07 | 0.99 | 1.16 | 0.08 |

*Models are adjusted for survey round, phone access, wealth, education, residence, parity, age, and marital status

Supplementary Table 6. Linking phone ownership and infant feeding practices*

| | Initial Breastfeeding | | | | Exclusive Breastfeeding | | | | Continued Breastfeeding | | | |
|---------------------------------|-----------------------|-------|------|---------|-------------------------|-------|------|---------|-------------------------|-------|------|---------|
| | OR | 95%CI | | P-value | OR | 95%CI | | P-value | OR | 95%CI | | P-value |
| Mobile Phone Access | Reference | | | | Reference | | | | Reference | | | |
| No mobile phone access | Reference | | | | Reference | | | | Reference | | | |
| Has Access | 0.99 | 0.93 | 1.05 | 0.68 | 1.09 | 0.92 | 1.29 | 0.32 | 0.83 | 0.64 | 1.07 | 0.15 |
| Wealth | Reference | | | | Reference | | | | Reference | | | |
| Poorest | Reference | | | | Reference | | | | Reference | | | |
| Poorer | 0.97 | 0.92 | 1.03 | 0.33 | 1.01 | 0.87 | 1.16 | 0.94 | 0.80 | 0.63 | 1.03 | 0.08 |
| Middle | 1.04 | 0.98 | 1.11 | 0.22 | 1.03 | 0.87 | 1.20 | 0.76 | 0.91 | 0.69 | 1.21 | 0.51 |
| Richer | 0.94 | 0.87 | 1.01 | 0.10 | 0.85 | 0.71 | 1.01 | 0.07 | 0.82 | 0.60 | 1.12 | 0.22 |
| Richest | 0.97 | 0.87 | 1.08 | 0.58 | 0.84 | 0.65 | 1.08 | 0.17 | 0.66 | 0.45 | 0.98 | 0.04 |
| Wealth:Phone Interaction | Reference | | | | Reference | | | | Reference | | | |
| Phone Access: Poorest | Reference | | | | Reference | | | | Reference | | | |
| Phone Access: Poorer | 1.04 | 0.96 | 1.13 | 0.37 | 0.98 | 0.78 | 1.22 | 0.86 | 1.37 | 0.96 | 1.94 | 0.08 |
| Phone Access: Middle | 0.96 | 0.88 | 1.04 | 0.31 | 0.87 | 0.69 | 1.09 | 0.23 | 0.94 | 0.65 | 1.36 | 0.72 |
| Phone Access: Richer | 1.08 | 0.98 | 1.19 | 0.11 | 0.89 | 0.69 | 1.13 | 0.33 | 0.92 | 0.62 | 1.36 | 0.67 |
| Phone Access: Richest | 1.01 | 0.90 | 1.13 | 0.87 | 0.94 | 0.70 | 1.26 | 0.68 | 0.99 | 0.63 | 1.55 | 0.96 |
| Education | Reference | | | | Reference | | | | Reference | | | |
| No education | Reference | | | | Reference | | | | Reference | | | |
| Primary | 1.00 | 0.96 | 1.05 | 0.84 | 1.05 | 0.93 | 1.18 | 0.42 | 1.11 | 0.90 | 1.36 | 0.35 |
| Secondary | 1.03 | 0.97 | 1.09 | 0.30 | 0.98 | 0.85 | 1.12 | 0.75 | 0.99 | 0.79 | 1.25 | 0.96 |
| Higher | 0.96 | 0.89 | 1.03 | 0.23 | 0.90 | 0.75 | 1.08 | 0.24 | 0.82 | 0.62 | 1.07 | 0.15 |
| Residence | Reference | | | | Reference | | | | Reference | | | |
| Urban | Reference | | | | Reference | | | | Reference | | | |
| Rural | 0.93 | 0.88 | 0.98 | 0.01 | 0.97 | 0.87 | 1.08 | 0.57 | 1.17 | 1.00 | 1.37 | 0.05 |
| Parity | Reference | | | | Reference | | | | Reference | | | |
| One child | Reference | | | | Reference | | | | Reference | | | |

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|------------------------|-----------|------|------|-------|-----------|------|------|------|-----------|------|------|------|
| Two Children | 1.15 | 1.10 | 1.20 | <.001 | 0.94 | 0.84 | 1.06 | 0.33 | 1.09 | 0.92 | 1.30 | 0.32 |
| More than two children | 1.23 | 1.18 | 1.29 | <.001 | 0.95 | 0.85 | 1.07 | 0.41 | 1.20 | 1.01 | 1.44 | 0.04 |
| Age | | | | | | | | | | | | |
| 15-19 years old | Reference | | | | Reference | | | | Reference | | | |
| 20-29 years old | 1.00 | 0.94 | 1.07 | 0.94 | 1.17 | 1.02 | 1.34 | 0.03 | 1.15 | 0.89 | 1.48 | 0.29 |
| 30-39 years old | 0.98 | 0.92 | 1.06 | 0.67 | 1.16 | 0.98 | 1.36 | 0.09 | 1.17 | 0.87 | 1.56 | 0.30 |
| 40-49 years old | 0.97 | 0.89 | 1.06 | 0.50 | 1.32 | 1.04 | 1.68 | 0.02 | 1.05 | 0.72 | 1.54 | 0.80 |
| Marital Status | | | | | | | | | | | | |
| Unmarried/not in union | Reference | | | | Reference | | | | Reference | | | |
| Married/In union | 1.02 | 0.97 | 1.07 | 0.35 | 1.02 | 0.88 | 1.19 | 0.75 | 1.31 | 1.05 | 1.64 | 0.02 |

*Models are adjusted for survey round, phone access, wealth, education, residence, parity, age, and marital status

Supplementary Table 7. Linking phone ownership and child health immunizations and vitamin A*

| | DTP3 | | | | Measles | | | | Rotavirus | | | | Vitamin A | | | |
|---------------------------------|-----------|-------|------|---------|-----------|-------|------|---------|-----------|-------|------|---------|-----------|-------|------|---------|
| | OR | 95%CI | | P-value | OR | 95%CI | | P-value | OR | 95%CI | | P-value | OR | 95%CI | | P-value |
| Mobile Phone Access | Reference | | | | Reference | | | | Reference | | | | Reference | | | |
| No mobile phone access | 1.49 | 1.28 | 1.74 | <.001 | 1.39 | 1.21 | 1.61 | <.001 | 1.27 | 1.04 | 1.54 | 0.02 | 1.12 | 1.06 | 1.20 | <.001 |
| Has Access | | | | | | | | | | | | | | | | |
| Wealth | Reference | | | | Reference | | | | Reference | | | | Reference | | | |
| Poorest | 1.54 | 1.34 | 1.77 | <.001 | 1.33 | 1.17 | 1.51 | <.001 | 1.44 | 1.22 | 1.71 | <.001 | 1.20 | 1.13 | 1.26 | <.001 |
| Poorer | 1.59 | 1.36 | 1.86 | <.001 | 1.42 | 1.22 | 1.64 | <.001 | 1.49 | 1.23 | 1.80 | <.001 | 1.24 | 1.16 | 1.31 | <.001 |
| Middle | 1.86 | 1.54 | 2.23 | <.001 | 1.65 | 1.38 | 1.97 | <.001 | 1.92 | 1.53 | 2.41 | <.001 | 1.22 | 1.14 | 1.31 | <.001 |
| Richer | 2.48 | 1.90 | 3.23 | <.001 | 2.30 | 1.77 | 2.98 | <.001 | 2.19 | 1.58 | 3.02 | <.001 | 1.40 | 1.27 | 1.55 | <.001 |
| Richest | | | | | | | | | | | | | | | | |
| Wealth:Phone Interaction | Reference | | | | Reference | | | | Reference | | | | Reference | | | |
| Phone Access: Poorest | 0.81 | 0.65 | 1.01 | 0.06 | 0.85 | 0.69 | 1.04 | 0.10 | 0.81 | 0.61 | 1.07 | 0.13 | 0.95 | 0.87 | 1.03 | 0.20 |
| Phone Access: Poorer | 0.82 | 0.66 | 1.03 | 0.08 | 0.91 | 0.74 | 1.13 | 0.40 | 0.99 | 0.74 | 1.32 | 0.92 | 0.96 | 0.88 | 1.05 | 0.38 |
| Phone Access: Middle | 0.84 | 0.66 | 1.08 | 0.17 | 0.94 | 0.74 | 1.19 | 0.59 | 0.75 | 0.55 | 1.02 | 0.07 | 0.98 | 0.89 | 1.07 | 0.65 |
| Phone Access: Richer | 0.69 | 0.51 | 0.93 | 0.02 | 0.85 | 0.63 | 1.15 | 0.28 | 0.75 | 0.52 | 1.09 | 0.14 | 0.89 | 0.79 | 1.00 | 0.04 |
| Phone Access: Richest | | | | | | | | | | | | | | | | |
| Education | Reference | | | | Reference | | | | Reference | | | | Reference | | | |
| No education | 1.75 | 1.55 | 1.96 | <.001 | 1.61 | 1.44 | 1.79 | <.001 | 1.63 | 1.41 | 1.89 | <.001 | 1.24 | 1.19 | 1.30 | <.001 |
| Primary | 2.37 | 2.07 | 2.71 | <.001 | 2.32 | 2.04 | 2.64 | <.001 | 2.13 | 1.77 | 2.56 | <.001 | 1.36 | 1.29 | 1.44 | <.001 |
| Secondary | 2.80 | 2.32 | 3.37 | <.001 | 2.57 | 2.15 | 3.08 | <.001 | 2.40 | 1.84 | 3.14 | <.001 | 1.24 | 1.16 | 1.34 | <.001 |
| Higher | | | | | | | | | | | | | | | | |
| Residence | Reference | | | | Reference | | | | Reference | | | | Reference | | | |
| Urban | 1.08 | 0.96 | 1.22 | 0.19 | 1.10 | 0.98 | 1.23 | 0.10 | 1.00 | 0.85 | 1.18 | 0.98 | 1.10 | 1.04 | 1.17 | <.001 |
| Rural | | | | | | | | | | | | | | | | |
| Parity | Reference | | | | Reference | | | | Reference | | | | Reference | | | |
| One child | 0.90 | 0.80 | 1.01 | 0.07 | 0.88 | 0.79 | 0.99 | 0.03 | 0.90 | 0.78 | 1.05 | 0.18 | 1.00 | 0.96 | 1.05 | 0.94 |
| Two Children | 0.79 | 0.70 | 0.89 | <.001 | 0.72 | 0.64 | 0.81 | <.001 | 0.84 | 0.72 | 0.98 | 0.02 | 0.96 | 0.92 | 1.01 | 0.11 |
| More than two children | | | | | | | | | | | | | | | | |
| Age | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | |
|------------------------|-----------|------|------|-------|-----------|------|------|-------|--|-----------|------|------|------|--|-----------|------|------|-------|
| 15-19 years old | Reference | | | | Reference | | | | | Reference | | | | | Reference | | | |
| 20-29 years old | 1.25 | 1.06 | 1.47 | 0.01 | 1.29 | 1.10 | 1.51 | <.001 | | 1.03 | 0.84 | 1.27 | 0.75 | | 1.21 | 1.12 | 1.30 | <.001 |
| 30-39 years old | 1.55 | 1.30 | 1.87 | <.001 | 1.51 | 1.26 | 1.80 | <.001 | | 1.24 | 0.98 | 1.56 | 0.07 | | 1.39 | 1.29 | 1.51 | <.001 |
| 40-49 years old | 1.77 | 1.40 | 2.23 | <.001 | 1.83 | 1.47 | 2.29 | <.001 | | 1.25 | 0.94 | 1.67 | 0.13 | | 1.39 | 1.27 | 1.53 | <.001 |
| Marital Status | | | | | | | | | | | | | | | | | | |
| Unmarried/not in union | Reference | | | | Reference | | | | | Reference | | | | | Reference | | | |
| Married/In union | 1.23 | 1.07 | 1.41 | <.001 | 1.16 | 1.01 | 1.32 | 0.03 | | 0.94 | 0.80 | 1.10 | 0.43 | | 1.06 | 1.01 | 1.11 | 0.02 |

*Models are adjusted for survey round, phone access, wealth, education, residence, parity, age, and marital status

Supplementary Table 8. Linking phone ownership and careseeking for acute respiratory infections, and diarrhea treatment (ORS+Zinc)*

| | ARI Careseeking | | | | Diarrheal treatment | | | |
|---------------------------------|-----------------|-------|------|---------|---------------------|-------|------|---------|
| | OR | 95%CI | | P-value | OR | 95%CI | | P-value |
| Mobile Phone Access | | | | | | | | |
| No mobile phone access | Reference | | | | Reference | | | |
| Has Access | 0.92 | 0.71 | 1.20 | 0.55 | 1.09 | 0.90 | 1.33 | 0.38 |
| Wealth | | | | | | | | |
| Poorest | Reference | | | | Reference | | | |
| Poorer | 1.19 | 0.97 | 1.45 | 0.09 | 0.94 | 0.81 | 1.08 | 0.39 |
| Middle | 1.24 | 0.98 | 1.56 | 0.07 | 1.01 | 0.86 | 1.19 | 0.87 |
| Richer | 1.37 | 1.04 | 1.80 | 0.03 | 0.96 | 0.80 | 1.16 | 0.68 |
| Richest | 1.90 | 1.22 | 2.95 | <.001 | 1.15 | 0.88 | 1.50 | 0.29 |
| Wealth:Phone Interaction | | | | | | | | |
| Phone Access: Poorest | Reference | | | | Reference | | | |
| Phone Access: Poorer | 1.10 | 0.78 | 1.55 | 0.60 | 1.04 | 0.80 | 1.35 | 0.77 |
| Phone Access: Middle | 1.43 | 0.98 | 2.07 | 0.06 | 0.99 | 0.76 | 1.29 | 0.94 |
| Phone Access: Richer | 1.39 | 0.93 | 2.07 | 0.10 | 1.04 | 0.79 | 1.37 | 0.80 |
| Phone Access: Richest | 1.14 | 0.68 | 1.93 | 0.61 | 1.10 | 0.79 | 1.52 | 0.57 |
| Education | | | | | | | | |
| No education | Reference | | | | Reference | | | |
| Primary | 1.19 | 1.00 | 1.42 | 0.05 | 1.12 | 0.99 | 1.27 | 0.07 |
| Secondary | 1.27 | 1.03 | 1.57 | 0.03 | 1.31 | 1.13 | 1.52 | <.001 |
| Higher | 1.50 | 1.08 | 2.08 | 0.02 | 1.41 | 1.12 | 1.76 | <.001 |
| Residence | | | | | | | | |
| Urban | Reference | | | | Reference | | | |
| Rural | 0.85 | 0.71 | 1.01 | 0.06 | 1.00 | 0.88 | 1.14 | 0.99 |
| Parity | | | | | | | | |
| One child | Reference | | | | Reference | | | |
| Two Children | 0.98 | 0.80 | 1.20 | 0.85 | 0.97 | 0.85 | 1.10 | 0.59 |
| More than two children | 0.81 | 0.67 | 1.00 | 0.05 | 0.88 | 0.78 | 1.00 | 0.06 |
| Age | | | | | | | | |
| 15-19 years old | Reference | | | | Reference | | | |
| 20-29 years old | 1.14 | 0.84 | 1.55 | 0.39 | 1.26 | 1.06 | 1.50 | 0.01 |
| 30-39 years old | 1.31 | 0.94 | 1.82 | 0.11 | 1.34 | 1.10 | 1.64 | <.001 |
| 40-49 years old | 1.48 | 1.01 | 2.17 | 0.05 | 1.35 | 1.04 | 1.74 | 0.02 |
| Marital Status | | | | | | | | |
| Unmarried/not in union | Reference | | | | Reference | | | |
| Married/In union | 0.97 | 0.78 | 1.22 | 0.80 | 1.10 | 0.96 | 1.26 | 0.16 |

*Models are adjusted for survey round, phone access, wealth, education, residence, parity, age, and martial status