

Supplementary file S1: Data sources

1. Total population

Summary: Total population: Estimated to be consistent with the 1984, 1994 and 2007 censuses adjusted for underenumeration, and with estimates of the subsequent trends in fertility, mortality and international migration.

Source: Census Date: 28-May-2007

2. Total fertility rate

Summary: Total fertility: Based on: (a) maternity-history data from the 2000, 2005, 2011 and preliminary results from the 2016 Ethiopia Demographic and Health Survey (DHS), and the 1990 National Family and Fertility Survey (NFFS); (b) data on births during the past 12 months, classified by age of mother, from the 1984, 1994 and 2007 censuses, the 1964 National Sample Survey (NSS), the 1st and 2nd rounds of the 1969/71 NSS, the 1981 Demographic Survey; (c) data on last births, classified by age of mother, from the round 1 and 2 of the 2014 Performance and Monitoring Accountability 2020 (PMA2020); and (d) indirect estimates obtained from the application of the reverse survival method to the 1981 Demographic Survey, the 2003 World Health Survey (WHS) and the 1994 and 2007 censuses.

3. Coverage data

Intervention	Data source
Iron supplementation in pregnancy	DHS 2011, DHS 2016
Multiple micronutrient supplementation	Not implemented
Balanced energy-supplementation	Not implemented
Calcium supplementation in pregnancy	Not implemented
Complementary feeding - education only	DHS 2011, DHS 2016
Complementary feeding - supplementary feeding and education	DHS 2011, DHS 2016
Vitamin A supplementation	UNICEF Vitamin A supplementation data (updated April 2018, currently available for 2000-2016)
Zinc supplementation	Not implemented
Improved water source	Source for all years: WHO/UNICEF Joint Monitoring Program on Water and Sanitation (JMP) - https://washdata.org/data ; updated 2017 (data available through 2015)
Water connection in the home	Source for all years: WHO/UNICEF Joint Monitoring Program on Water and Sanitation (JMP) - https://washdata.org/data ; updated 2017 (data available through 2015)
Improved sanitation - Utilization of latrines or toilets	Source for all years: WHO/UNICEF Joint Monitoring Program on Water and Sanitation (JMP) - https://washdata.org/data ; updated 2017 (data available through 2015)
Hand washing with soap	DHS 2011, DHS 2016
Hygienic disposal of children's stools	DHS 2011, DHS 2016
ITN/IRS - Households protected from malaria	DHS 2005 (ITN only), MIS 2015* (ITN only)

Rotavirus vaccine	WHO-UNICEF coverage estimates series, http://apps.who.int/immunization_monitoring/global_summary/timeseries/tswucoveragerotac.html ; dataset last updated 15 July 2018
KMC - Kangaroo mother care	DHS 2016 (proxies are used)
Zinc for treatment of diarrhea	DHS 2011, DHS 2016
Breastfeeding prevalence	DHS 2011, DHS 2016
Prevalence of early initiation of breastfeeding	DHS 2011, DHS 2016

4. Source of effectiveness/impact estimates

Impacts on stunting

[Term AGA](#)

Odds ratio source: LiST Technical Note.

<https://static1.squarespace.com/static/5bbba6574d8711a7dcafa92a/t/5c93e9b9f4e1fc34bdbe9cc8/1553197497868/Birth+outcomes+on+stunting+at+1+mo.pdf>

[Term SGA](#)

Odds ratio source: LiST Technical Note.

<https://static1.squarespace.com/static/5bbba6574d8711a7dcafa92a/t/5c93e9b9f4e1fc34bdbe9cc8/1553197497868/Birth+outcomes+on+stunting+at+1+mo.pdf>

[Pre-term AGA](#)

Odds ratio source: LiST Technical Note.

<https://static1.squarespace.com/static/5bbba6574d8711a7dcafa92a/t/5c93e9b9f4e1fc34bdbe9cc8/1553197497868/Birth+outcomes+on+stunting+at+1+mo.pdf>

[Pre-term SGA](#)

Odds ratio source: LiST Technical Note.

<https://static1.squarespace.com/static/5bbba6574d8711a7dcafa92a/t/5c93e9b9f4e1fc34bdbe9cc8/1553197497868/Birth+outcomes+on+stunting+at+1+mo.pdf>

[Not stunted at previous age cohort](#)

Odds ratio source: Cousens S, Perin J, Christian P, et al. Modelling stunting in LiST: the effect of applying smoothing to linear growth data. BMC Public Health 2017, 17(4S):778.

<https://doi.org/10.1186/s12889-017-4744-3>

[Stunted at previous age cohort](#)

Odds ratio source: Cousens S, Perin J, Christian P, et al. Modelling stunting in LiST: the effect of applying smoothing to linear growth data. BMC Public Health 2017, 17(4S):778.

<https://doi.org/10.1186/s12889-017-4744-3>

[Food secure with promotion](#)

Odds ratio source: Panjwani A and Heidkamp R. Complementary Feeding Interventions Have a Small but Significant Impact on Linear and Ponderal Growth of Children in Low- and Middle-Income Countries: A Systematic Review and Meta-Analysis. J Nutr 2017, 147(11S):2169S-2178S.

<https://doi.org/10.3945/jn.116.243857>

[Food secure without promotion](#)

Odds ratio source: Panjwani A and Heidkamp R. Complementary Feeding Interventions Have a Small but Significant Impact on Linear and Ponderal Growth of Children in Low- and Middle-Income Countries: A Systematic Review and Meta-Analysis. *J Nutr* 2017, 147(11S):2169S-2178S. <https://doi.org/10.3945/jn.116.243857>

[Insecure with promotion and supplementation](#)

Odds ratio source: Panjwani A and Heidkamp R. Complementary Feeding Interventions Have a Small but Significant Impact on Linear and Ponderal Growth of Children in Low- and Middle-Income Countries: A Systematic Review and Meta-Analysis. *J Nutr* 2017, 147(11S):2169S-2178S. <https://doi.org/10.3945/jn.116.243857>

[Insecure with neither promotion nor supplementation](#)

Odds ratio source: Panjwani A and Heidkamp R. Complementary Feeding Interventions Have a Small but Significant Impact on Linear and Ponderal Growth of Children in Low- and Middle-Income Countries: A Systematic Review and Meta-Analysis. *J Nutr* 2017, 147(11S):2169S-2178S. <https://doi.org/10.3945/jn.116.243857>

[Impact of diarrhea per episode](#)

Odds ratio source: Checkley W, Buckley G, Gilman RH, et al. Multi-country analysis of the effects of diarrhoea on childhood stunting. *Int J Epidemiol* 2008. <https://www.ncbi.nlm.nih.gov/pubmed/18567626>

[Zinc supplemented](#)

Odds ratio source: Bhutta ZA, Das JK, Rizvi A, et al. Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? *Lancet* 2013; 382(9890): 352-77. <http://www.ncbi.nlm.nih.gov/pubmed/23746776> (Supplemental material, page 16.)

[Not zinc supplemented](#)

Odds ratio source: Bhutta ZA, Das JK, Rizvi A, et al. Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? *Lancet* 2013; 382(9890): 352-77. <http://www.ncbi.nlm.nih.gov/pubmed/23746776> (Supplemental material, page 16.)

Impacts on maternal anemia

[Iron supplementation in pregnancy](#)

Effectiveness source: Pena-Rosas JP, De-Regil LM, Garcia-Casal MN, et al. Daily oral iron supplementation during pregnancy. *Cochrane Database Syst Rev* 2015. <http://www.ncbi.nlm.nih.gov/pubmed/26198451>

[Multiple micronutrient supplementation in pregnancy](#)

Effectiveness source: Pena-Rosas JP, De-Regil LM, Garcia-Casal MN, et al. Daily oral iron supplementation during pregnancy. *Cochrane Database Syst Rev* 2015. <http://www.ncbi.nlm.nih.gov/pubmed/26198451>

[Blanket iron supplementation/fortification](#)

Effectiveness source: Low MS, Speedy J, Styles CE, et al. Daily iron supplementation for improving anaemia, iron status and health in menstruating women. *Cochrane Database Syst Rev* 2016. <http://www.ncbi.nlm.nih.gov/pubmed/27087396>

[Pregnant women protected via IPTP](#)

Effectiveness source: Radeva-Petrova D, Kayentao K, Ter Kuile FO, et al. Drugs for preventing malaria in pregnant women in endemic areas: Any drug regimen versus placebo or no treatment. *Cochrane Database Syst Rev* 2014. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4498495/>

[ITN/IRS - Households protected from malaria](#)

Effectiveness source: Radeva-Petrova D, Kayentao K, Ter Kuile FO, et al. Drugs for preventing malaria in pregnant women in endemic areas: Any drug regimen versus placebo or no treatment. *Cochrane Database Syst Rev* 2014. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4498495/>

Impact of promotion on age-appropriate breastfeeding

Sinha B, Chowdhury R, Prakash Upadhyay R, Taneja S, Martines J, Bahl R, Jeeva Sankar M; Integrated Interventions Delivered in Health Systems, Home, and Community Have the Highest Impact on Breastfeeding Outcomes in Low- and Middle-Income Countries. *Journal Nutr* 2017. 147(11S): 2179S–2187S, <https://doi.org/10.3945/jn.116.242321>

Sinha B, Chowdhury R, Prakash Upadhyay R, Taneja S, Martines J, Bahl R, Jeeva Sankar M; Integrated Interventions Delivered in Health Systems, Home, and Community Have the Highest Impact on Breastfeeding Outcomes in Low- and Middle-Income Countries. *Journal Nutr* 2017. 147(11S): 2179S–2187S, <https://doi.org/10.3945/jn.116.242321>

Percent of children who are LBW

[Percent of children who are LBW](#)

Kozuki N, Lee AC, Silveira MF, Victora CG, Adair L, Humphrey J, et al. The associations of birth intervals with small-for-gestational-age, preterm, and neonatal and infant mortality: a meta-analysis. *BMC Public Health*. 2013;13 Suppl 3:S3.

Kangaroo mother care on breastfeeding

Odds ratio source: Boundy EO, Dastjerdi R, Spiegelman D, et al. Kangaroo mother care and neonatal outcomes: A meta-analysis. *Pediatrics* 2016; 137(1). <http://www.ncbi.nlm.nih.gov/pubmed/26702029>

Impacts on diarrhea incidence

[Improved sanitation - Utilization of latrines or toilets](#)

Effectiveness source: Meta-analysis of 3 studies by Christa Fischer-Walker. (publication forthcoming). (1) Aziz KMA, Hoque BA, Hasan KZ, Patwary MY, Huttly SRA, Rahman MM, et al. Reduction in diarrhoeal diseases in children in rural Bangladesh by environmental and behavioural modifications. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1990;84(3):433-8. (2) Garrett V, Ogutu P, Mabonga P, et al. Diarrhoea prevention in a high-risk rural Kenyan population through point-of-use chlorination, safe water storage, sanitation, and rainwater harvesting. *Epidemiology and Infection* 2008;136(11):1463-71. (3) Messou E, Sangare SV, Jossieran R, Le Corre C, Guelain J. Effect of hygiene and water sanitation and oral rehydration on diarrhoea and mortality of children children less than five years old in the south of Ivory Coast. *Bulletin de la Société de Pathologie Exotique* 1997;90(1):44-7.

[Improved water source](#)

Effectiveness source: Meta-analysis of 3 studies by Christa Fischer-Walker. (publication forthcoming). (1) Aziz KMA, Hoque BA, Hasan KZ, Patwary MY, Huttly SRA, Rahman MM, et al. Reduction in diarrhoeal diseases in children in rural Bangladesh by environmental and behavioural modifications. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1990;84(3):433-8. (2) Garrett V, Ogutu P, Mabonga P, et al. Diarrhoea prevention in a high-risk rural Kenyan population through point-of-use chlorination, safe water storage, sanitation, and rainwater harvesting. *Epidemiology and Infection* 2008;136(11):1463-71. (3) Messou E, Sangare SV, Jossieran R, Le Corre C, Guelain J. Effect of hygiene and water sanitation and oral rehydration on diarrhoea and mortality of children children less than five years old in the south of Ivory Coast. *Bulletin de la Société de Pathologie Exotique* 1997;90(1):44-7.

[Water connection in the home](#)

Effectiveness source: Cairncross S, Valdmanis V. Water supply, sanitation, and hygiene promotion. In: Jamison DT, Breman JG, Measham AR, et al., editors. Disease control priorities in developing countries. Washington DC: The World Bank, 2006; p. 771-792. <http://www.ncbi.nlm.nih.gov/books/NBK11728/>

[Hand washing with soap](#)

Effectiveness source: Darvesh et al. Water, sanitation and hygiene interventions for acute childhood diarrhea: a systematic review to provide estimates for the Lives Saved Tool. BMC Public Health. 2017 Nov 7;17(Suppl 4):776. doi: 10.1186/s12889-017-4746-1.

[Hygienic disposal of children's stools](#)

Effectiveness source: Clasen et al. Interventions to improve disposal of human excreta for preventing diarrhoea. Cochrane. 2010.

[Zinc supplementation](#)

Effectiveness source: Yakoob MY, Theodoratou E, Jabeen A, et al. Preventive zinc supplementation in developing countries: impact on mortality and morbidity due to diarrhea, pneumonia and malaria. BMC Public Health 2011; 11(Suppl 3): S23. <http://www.ncbi.nlm.nih.gov/pubmed/21501441>.

Black RE, Victora CG, Walker SP, et al. Maternal and child undernutrition and overweight in low-income and middle-income countries. Lancet 2013; 382(9890): 427-51. (Supplemental material, page 18-19.) <http://www.ncbi.nlm.nih.gov/pubmed/23746772>

[Vitamin A supplementation](#)

Effectiveness source: Imdad A, Yakoob MY, Sudfeld CR, et al. Impact of vitamin A supplementation on infant and childhood mortality. BMC Public Health 2011; 11(Suppl 3): S20. <http://www.ncbi.nlm.nih.gov/pubmed/21501438>

Age and birth order: impacts on birth outcomes

[All ages](#)

Relative risk source: Kozuki N, Lee ACC, Silveira MF, et al. The associations of parity and maternal age with small-for-gestational-age, preterm, and neonatal and infant mortality: a meta-analysis. BMC Public Health 2013; 13(Suppl 3): S2. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3847520/>. (Relative risks are from unpublished calculations associated with the paper.)

[Less than 18 years](#)

Relative risk source: Kozuki N, Lee ACC, Silveira MF, et al. The associations of parity and maternal age with small-for-gestational-age, preterm, and neonatal and infant mortality: a meta-analysis. BMC Public Health 2013; 13(Suppl 3): S2. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3847520/>. (Relative risks are from unpublished calculations associated with the paper.)

[18 - 34 years old](#)

Relative risk source: Kozuki N, Lee ACC, Silveira MF, et al. The associations of parity and maternal age with small-for-gestational-age, preterm, and neonatal and infant mortality: a meta-analysis. BMC Public Health 2013; 13(Suppl 3): S2. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3847520/>. (Relative risks are from unpublished calculations associated with the paper.)

[All ages](#)

Relative risk source: Kozuki N, Lee ACC, Silveira MF, et al. The associations of parity and maternal age with small-for-gestational-age, preterm, and neonatal and infant mortality: a meta-analysis. BMC Public

Health 2013; 13(Suppl 3): S2. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3847520/>. (Relative risks are from unpublished calculations associated with the paper.)

Less than 18 years

Relative risk source: Kozuki N, Lee ACC, Silveira MF, et al. The associations of parity and maternal age with small-for-gestational-age, preterm, and neonatal and infant mortality: a meta-analysis. BMC Public Health 2013; 13(Suppl 3): S2. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3847520/>. (Relative risks are from unpublished calculations associated with the paper.)

18 - 34 years old

Relative risk source: Kozuki N, Lee ACC, Silveira MF, et al. The associations of parity and maternal age with small-for-gestational-age, preterm, and neonatal and infant mortality: a meta-analysis. BMC Public Health 2013; 13(Suppl 3): S2. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3847520/>. (Relative risks are from unpublished calculations associated with the paper.)

All ages

Relative risk source: Kozuki N, Lee ACC, Silveira MF, et al. The associations of parity and maternal age with small-for-gestational-age, preterm, and neonatal and infant mortality: a meta-analysis. BMC Public Health 2013; 13(Suppl 3): S2. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3847520/>. (Relative risks are from unpublished calculations associated with the paper.)

Less than 18 years

Relative risk source: Kozuki N, Lee ACC, Silveira MF, et al. The associations of parity and maternal age with small-for-gestational-age, preterm, and neonatal and infant mortality: a meta-analysis. BMC Public Health 2013; 13(Suppl 3): S2. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3847520/>. (Relative risks are from unpublished calculations associated with the paper.)

18 - 34 years old

Relative risk source: Kozuki N, Lee ACC, Silveira MF, et al. The associations of parity and maternal age with small-for-gestational-age, preterm, and neonatal and infant mortality: a meta-analysis. BMC Public Health 2013; 13(Suppl 3): S2. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3847520/>. (Relative risks are from unpublished calculations associated with the paper.)

Birth intervals: impacts on birth outcomes

First birth

Relative risk source: Kozuki N, Lee ACC, Silveira MF, et al. The associations of birth intervals with small-for-gestational-age, preterm, and neonatal and infant mortality: a meta-analysis. BMC Public Health 2013; 13(Suppl 3): S3. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3847557/>. (Relative risks are from unpublished calculations associated with the paper.)

less than 18 months

Relative risk source: Kozuki N, Lee ACC, Silveira MF, et al. The associations of birth intervals with small-for-gestational-age, preterm, and neonatal and infant mortality: a meta-analysis. BMC Public Health 2013; 13(Suppl 3): S3. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3847557/>. (Relative risks are from unpublished calculations associated with the paper.)

18-23 months

Relative risk source: Kozuki N, Lee ACC, Silveira MF, et al. The associations of birth intervals with small-for-gestational-age, preterm, and neonatal and infant mortality: a meta-analysis. BMC Public Health 2013; 13(Suppl 3): S3. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3847557/>. (Relative risks are from unpublished calculations associated with the paper.)

24 months or greater

Relative risk source: Kozuki N, Lee ACC, Silveira MF, et al. The associations of birth intervals with small-for-gestational-age, preterm, and neonatal and infant mortality: a meta-analysis. *BMC Public Health* 2013; 13(Suppl 3): S3. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3847557/>. (Relative risks are from unpublished calculations associated with the paper.)

Maternal nutrition

[IPTp - Intermittent preventive treatment of malaria during pregnancy](#)

Effectiveness source: Eisele TP, Larsen D, Steketee RW. Protective efficacy of interventions for preventing malaria mortality in children in *Plasmodium falciparum* endemic areas. *International Journal of Epidemiology* 2010; 39(Suppl 1): i88-i10. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2845865/> (The effect size for ITN usage is used as a proxy for IPTp.)

[Balanced energy supplementation](#)

Effectiveness source: Imdad A, Butta Z. Effect of balanced protein energy supplementation during pregnancy on birth outcomes. *BMC Public Health* 2011, (Suppl 3): S17. DOI: 10.1186/1471-2458-11-S3-S17

Ota E, Hori H, Mori R, et al. Antenatal dietary education and supplementation to increase energy and protein intake. *Cochrane Database Syst Rev* 2015. <http://www.ncbi.nlm.nih.gov/pubmed/26031211>.

[Iron supplementation in pregnancy](#)

Effectiveness source: Haider BA, Olofin I, Wang M, et al. Anaemia, prenatal iron use, and risk of adverse pregnancy outcomes: systematic review and meta-analysis. *BMJ*. 2013;346:f3443. <https://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0057254/>. See also: LiST Technical Note. http://livessavedtool.org/images/documents/Technical_Notes/Iron-and-MMN-effect-sizes.pdf

[Multiple micronutrient supplementation in pregnancy \(low BMI women\)](#)

Effectiveness source: Smith ER, Shankar AH, Wu LSF, et al. Modifiers of the effect of maternal multiple micronutrient supplementation on stillbirth, birth outcomes, and infant mortality: a meta-analysis of individual patient data from 17 randomised trials in low-income and middle-income countries. *Lancet Global Health* 2017; 5(11): e1090-e1100. [http://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(17\)30371-6/fulltext](http://www.thelancet.com/journals/langlo/article/PIIS2214-109X(17)30371-6/fulltext)

[Multiple micronutrient supplementation in pregnancy \(healthy BMI\)](#)

Effectiveness source: Smith ER, Shankar AH, Wu LSF, et al. Modifiers of the effect of maternal multiple micronutrient supplementation on stillbirth, birth outcomes, and infant mortality: a meta-analysis of individual patient data from 17 randomised trials in low-income and middle-income countries. *Lancet Global Health* 2017; 5(11): e1090-e1100. [http://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(17\)30371-6/fulltext](http://www.thelancet.com/journals/langlo/article/PIIS2214-109X(17)30371-6/fulltext)

[Calcium supplementation](#)

Effectiveness source: Imdad A, Jabeen A, Bhutta, ZA. Role of calcium supplementation during pregnancy in reducing risk of developing gestational hypertensive disorders: a meta-analysis of studies from developing countries. *BMC Public Health* 2011; 11(Suppl 3): S18. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3231891/>

[ITN/IRS - Households protected from malaria](#)

Effectiveness source: Eisele TP, Larsen D, Steketee RW. Protective efficacy of interventions for preventing malaria mortality in children in *Plasmodium falciparum* endemic areas. *International Journal of Epidemiology* 2010; 39(Suppl 1): i88-i10. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2845865/>